CITY OF VISALIA
315 E. ACEQUIA AVENUE
VISALIA, CA 93291

NOTICE OF A PROPOSED

INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION

Project Title: Annexation No. 2022-02, Belissa Tentative Subdivision Map No. 5587, Conditional Use Permit No. 2022-05, and Conditional Use Permit No. 2023-22.

Project Description:
Annexation No. 2022-02 is a request by 4Creeks, Inc. to annex two parcels totaling approximately 59.84 acres into the city limits of Visalia and to detach said parcel from Tulare County Service Area No. 1.

The Belissa Tentative Subdivision Map No. 5587 is a request to subdivide the 59.84-acre site into the following: 159 low density residential lots; 150 medium density residential lots; a high density residential lot that will be developed with a 168 unit apartment complex on a 7.15 acre site; and a 7.88 acre Neighborhood Commercial site which will be developed in the future.

Conditional Use Permit No. 2022-05 is a request for a Planned Development which will include 160 low density residential lots and 150 Medium Residential lots, most of which will be less than 5,000 square feet as required by the R-1-5 zoning district. The R-M multifamily lots must be a minimum of 2 acres in area. The project will include the construction of local streets within the subdivision, connection to N. Demaree Street to the east and W. Riverway Avenue to the south. Frontage street improvements will also be required along both streets along with right of way dedications. These types of improvements include construction of curb, gutter, sidewalks, and the installation of park strip landscaping and streetlights throughout the subdivision. The subdivision is anticipated to provide vehicular connectivity to an existing subdivision to the southeast of the subject site.

Conditional Use Permit No. 2023-22 is a request by 4Creeks to establish a 168-unit multifamily residential development on a 5.74 acre property within the R-M-3 (Multi-Family Residential, 1,200 sq. ft. minimum site area) Zone.

The development of the property, if approved, will create additional housing units in the northwest portion of the City at a density of 5.7 dwelling units to the gross acre within the Low Density Residential designation area, 10 dwelling units to the gross acre within the Medium Density Residential designation area; and 22.1 dwelling units to the gross acre within the High Density Residential designation area; all of which are consistent with the General Plan.

Project Location: The project site is located near the northwest corner of N. Demaree Street and W. Riverway Avenue within the jurisdiction of the County of Tulare (APN: 077-050-004 and 077-050-006).

Contact Person: Cristobal Carrillo, Associate Planner, Phone: (559) 713-4443, Email: cristobal.carrillo@visalia.city

Pursuant to City Ordinance No. 2388, the Environmental Coordinator of the City of Visalia has reviewed the proposed project described herein and has found that the project will not result in any significant effect upon the environment because of the reasons listed below:

Reasons for Mitigated Negative Declaration: Initial Study No. 2022-39 has identified environmental impact(s) that may occur because of the project; however, with the implementation of mitigation measures identified, impact(s) will be reduced to a level that is less than significant.

Copies of the initial study and other documents relating to the subject project may be examined by interested parties at the Planning Division in City Hall East, at 315 East Acequia Avenue, Visalia, CA. In the event that City Hall front counter services are closed to the public, copies of the initial study and

other documents relating to the subject project may be requested by contacting project planner Cristobal Carrillo, Associate Planner, by phone at (559) 713-4443 or by email at cristobal.carrillo@visalia.city or by visiting the following webpage: https://www.visalia.city/depts/community_development/planning/ceqa_environmental_review.asp

Comments on this proposed Mitigated Negative Declaration will be accepted from August 10, 2023 to August 29, 2023.

At this time a public hearing date for the project described above has not been scheduled. A separate public notice will be distributed once a public hearing date has been set.

Date August 7, 2023

Signed:

Brandon Smith, AICP
Environmental Coordinator
City of Visalia

DRAFT Initial Study and Mitigated Negative Declaration for Belissa Residential Community

July 2023

Prepared By:

4Creeks, Inc.
324 S Santa Fe, Suite A
Visalia, CA 93292

Prepared For:

City of Visalia
315 E Acequia Ave
Visalia, CA 93291

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Section 1

Initial Study/Negative Declaration Process

City of Visalia
315 E Acequia Ave
Visalia, CA 93291

SECTION 1
CEQA Review Process

Project Title: Belissa Residential Community

1.1 California Environmental Quality Act Guidelines

Section 15063 of the California Environmental Quality Act (CEQA) Guidelines requires that the Lead Agency prepare an Initial Study to determine whether a discretionary project will have a significant effect on the environment. All phases of the project planning, implementation, and operation must be considered in the Initial Study. The purposes of an Initial Study, as listed under Section 15063(c) of the CEQA Guidelines, include:

(1) Provide the lead agency with information to use as the basis for deciding whether to prepare an EIR or negative declaration;
(2) Enable an applicant or lead agency to modify a project, mitigating adverse impacts before an EIR is prepared, thereby enabling the project to qualify for a negative declaration;
(3) Assist the preparation of an EIR, if one is required, by:
    (a) Focusing the EIR on the effects determined to be significant,
    (b) Identifying the effects determined not to be significant,
    (c) Explaining the reasons for determining that potentially significant effects would not be significant, and
    (d) Identifying whether a program EIR, tiering, or another appropriate process can be used for analysis of the project's environmental effects.
(4) Facilitate environmental assessment early in the design of a project;
(5) Provide documentation of the factual basis for the finding in a negative declaration that a project will not have a significant effect on the environment
(6) Eliminate unnecessary EIRs;
(7) Determine whether a previously prepared EIR could be used with the project.

1.2 Initial Study

The Initial Study provided herein covers the potential environmental effects of the construction and operation of 477 low, medium, and high-density residential dwelling units, commercial, and open space on approximately 59.84 gross acres. The site is zoned AE-40 by Tulare County and is designated as Low Density Residential, Medium Density Residential, High Density Residential, and Neighborhood Commercial. The City of Visalia will act as the Lead Agency for processing the Initial Study/Mitigated Negative Declaration pursuant to the CEQA Guidelines.

1.3 Environmental Checklist

The Lead Agency may use the CEQA Environmental Checklist Form [CEQA Guidelines, Section 15063(d)(3) and (f)] in preparation of an Initial Study to provide information for determination if there are significant effects of the project on the environment. A copy of the completed Environmental Checklist is set forth in **Section Three**.

1.4 Notice of Intent to Adopt a Negative Declaration

The Lead Agency shall provide a Notice of Intent to Adopt a Negative Declaration (CEQA Guidelines, Section 15072) to the public, responsible agencies, trustee agencies and the County Clerk within which the project is located, sufficiently prior to adoption by the Lead Agency of the Negative Declaration to allow the public and agencies the review period. The public review period (CEQA Guidelines, Section 15105) shall not be less than 30 days when the Initial Study/Negative Declaration is submitted to the State Clearinghouse unless a shorter period, not less than 20 days, is approved by the State Clearinghouse.

Prior to approving the project, the Lead Agency shall consider the proposed Negative Declaration together with any comments received during the public review process, and shall adopt the proposed Negative Declaration only if it finds on the basis of the whole record before it, that there is no substantial evidence that the project will have a significant effect on the environment and that the Negative Declaration reflects the Lead Agency's independent judgment and analysis.

The written and oral comments received during the public review period will be considered by The City of Tulare prior to adopting the Negative Declaration. Regardless of the type of CEQA document that must be prepared, the overall purpose of the CEQA process is to:

1) Assure that the environment and public health and safety are protected in the face of discretionary projects initiated by public agencies or private concerns;
2) Provide for full disclosure of the project's environmental effects to the public, the agency decision-makers who will approve or deny the project, and the responsible trustee agencies charged with managing resources (e.g. wildlife, air quality) that may be affected by the project; and
3) Provide a forum for public participation in the decision-making process pertaining to potential environmental effects.

According to Section 15070(a) a public agency shall prepare or have prepared a proposed negative declaration for a project subject to CEQA when:

> ***The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment. Less than significant impacts with mitigation measures have been identified.***

The Environmental Checklist Discussion contained in Section Three of this document has determined that the environmental impacts of the project are less than significant with mitigation measures and that a Mitigated Negative Declaration is adequate for adoption by the Lead Agency.

1.5 Negative Declaration or Mitigated Negative Declaration

The Lead Agency shall prepare or have prepared a proposed Negative Declaration or Mitigated Negative Declaration (CEQA Guidelines Section 15070) for a project subject to CEQA when the Initial Study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment. The proposed Negative Declaration or Mitigated Negative Declaration circulated for public review shall include the following:

(a) A brief description of the project, including a commonly used name for the project.
(b) The location of the project, preferably shown on a map.
(c) A proposed finding that the project will not have a significant effect on the environment.
(d) An attached copy of the Initial Study documenting reasons to support the finding.
(e) Mitigation measures, if any.

1.6 Intended Uses of Initial Study/Negative Declaration documents

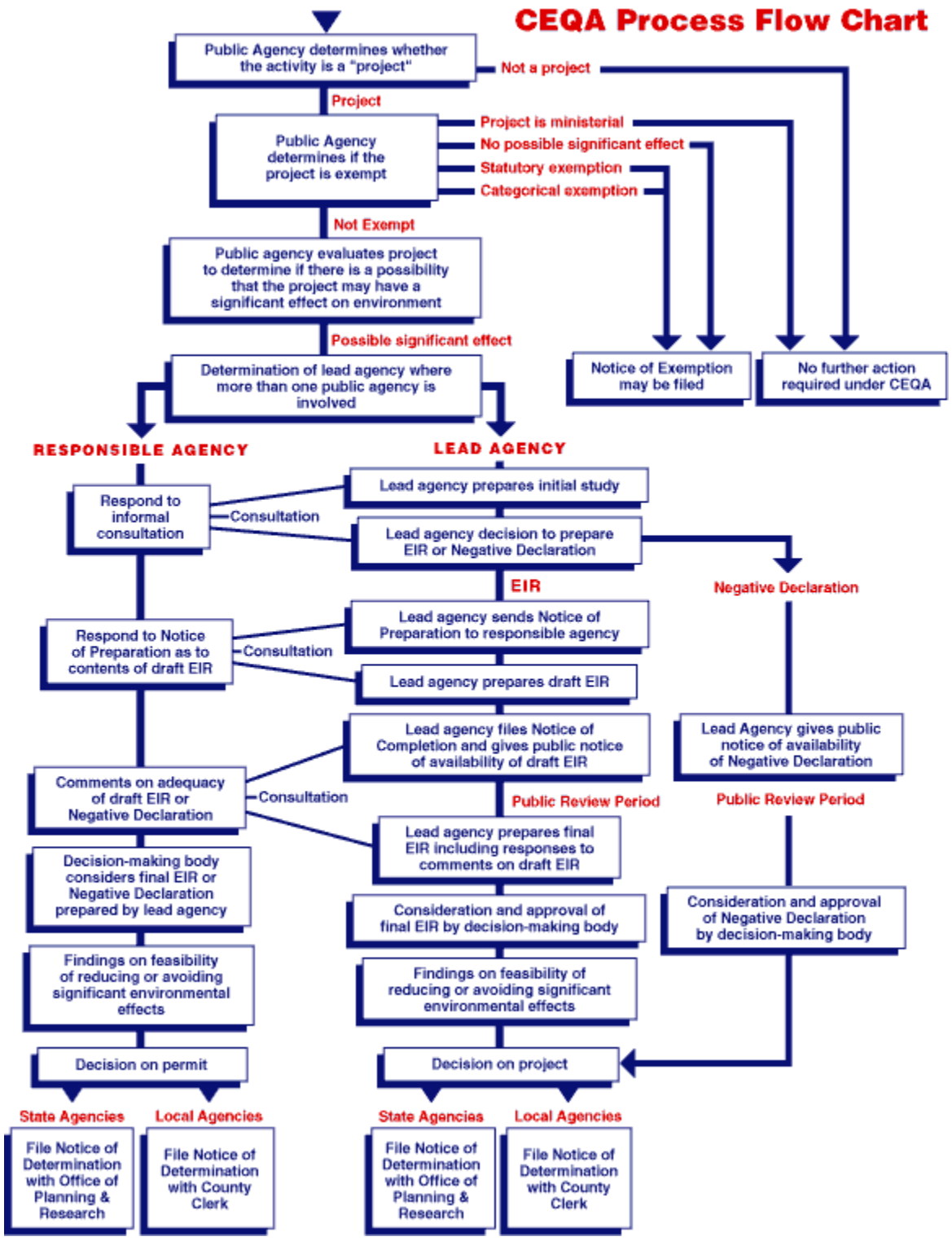
The Initial Study/Negative Declaration document is an informational document that is intended to inform decision-makers, other responsible or interested agencies, and the general public of potential environmental effects of the proposed project. The environmental review process has been established to enable the public agencies to evaluate environmental consequences and to examine and implement methods of eliminating or reducing any adverse impacts. While CEQA requires that consideration be given to avoiding environmental damage, the Lead Agency must balance any potential environmental effects against other public objectives, including economic and social goals. The City of Visalia, as Lead Agency, will make a determination, based on the environmental review for the Environmental Study, Initial Study and comments from the general public, if there are less than significant impacts from the proposed project and the requirements of CEQA can be met by adoption of a Mitigated Negative Declaration.

1.7 Notice of Determination (NOD)

The Lead Agency shall file a Notice of Determination within five working days after deciding to approve the project. The Notice of Determination (CEQA Guidelines, Section 15075) shall include the following:

(1) An identification of the project including the project title as identified on the proposed negative declaration, its location, and the State Clearinghouse identification number for the proposed negative declaration if the notice of determination is filed with the State Clearinghouse.
(2) A brief description of the project.
(3) The agency's name and the date on which the agency approved the project.
(4) The determination of the agency that the project will not have a significant effect on the environment.
(5) A statement that a negative declaration or a mitigated negative declaration was adopted pursuant to the provisions of CEQA.
(6) A statement indicating whether mitigation measures were made a condition of the approval of the project, and whether a mitigation monitoring plan/program was adopted.
(7) The address where a copy of the negative declaration or mitigated negative declaration may be examined.
(8) The identity of the person undertaking a project which is supported, in whole or in part, through contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies or the identity of the person receiving a lease, permit, license, certificate, or other entitlement for use from one or more public agencies.

1.8 CEQA Process Flow Chart



Section 2

Project Description

City of Visalia
315 E Acequia Ave
Visalia, CA 93291

SECTION 2
Project Description

Project Title: Belissa Residential Community

2.1 Project Description and Purpose

The Project proposes a 477-unit, low, medium, and high-density residential development with commercial and open space on 59.84 gross acres within the City of Visalia planning area. The Project site's existing zoning is AE-40 in Tulare County and proposed zoning is R-1-5 (Single-Family Residential, 5,000 square foot minimum lot size), R-M-2 (Multi-Family Residential, one unit per 3,000 square feet lot area), R-M-3 (Multi-Family Residential, one unit per 1,200 square feet lot area), and C-N (Neighborhood Commercial). The project includes 159 low density homes, 150 medium density homes, 168 apartment units, 7.88 acres of neighborhood commercial, and 2.18 acres of parks and open space. The first phase will construct the 159 single family homes and the 150 medium density homes. The second phase will be the 168 apartment homes. The final phase will be the 7.88 acres of neighborhood commercial.

The Project would result in onsite and offsite infrastructure improvements including new and relocated utilities, new residential streets, and the continuation and improvement of Demaree Street and Riverway Drive. The project will dedicate right-of-way to widen Demaree Street and Riverway Drive. The Project would require demolition of one single family home.

2.2 Project Location

The proposed project site is located within in Tulare County within the Visalia planning area and Urban Development Boundary Tier II, North of the Visalia city limits. The site is located North of Riverway Avenue and West of Demaree Street on vacant land behind an existing single-family residential subdivision. The site is approximately three miles Northwest of the Visalia downtown. The Project involves construction on approximately 59.84 acres on parcels identified with APNs 077-050-004 and 077-050-006. The site is topographically flat and is bounded by agricultural uses to the North, South, East, and West. The site partially borders a single-family residential development to the Southeast. The site is zoned AE-40 by Tulare County and is designated as Low Density Residential, Medium Density Residential, High Density Residential, and Neighborhood Commercial. The site currently contains one single-family residence and agriculture uses. The site is bisected by Modoc Ditch, an irrigation canal that flows from the southeast corner of APN 077-050-004 toward the west and then toward the northwest corner of APN 077-050-006.

2.3 Other Permits and Approvals

The following discretionary and ministerial approvals are required from the City of Visalia for the proposed project:

- One or more City of Visalia Tentative Subdivision Map and/or Tentative Parcel Map

- City of Visalia Conditional Use Permit for density spread and lot sizes that do not meet the zoning standards
- Tulare County Local Agency Formation Commission Annexation into the city limits of Visalia
- City of Visalia Building and Encroachment Permits
- Right-of-way dedication and street improvements for Demaree Street and Riverway Avenue.
- San Joaquin Valley Air Pollution Control District (SJVAPCD). The proposed project is within the jurisdiction of the SJVAPCD and will be required to comply with Rule VIII, 3135, 4101, and 9510.
- Central Valley Regional Water Quality Control Board, SWPPP. The proposed project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB will require a Storm Water Pollution Prevention Plan (SWPPP) to prevent impacts related to stormwater because of project construction

Figure 2-1. Regional Location Map

4CREEKS

Vicinity Map
Belissa Residential Community
City of Visalia

Date: 4/13/2022

N

1 in = 1,000 ft

Figure 2-2. Vicinity Map

Section 3

Evaluation of Environmental Impacts

City of Visalia
315 E Acequia Ave
Visalia, CA 93291

SECTION 3
Evaluation of Environmental Impacts

Project Title: Belissa Residential Community

This document is the Initial Study/Mitigated Negative Declaration for the proposed construction and operation of 477 units of low, medium, and high-density residential development with commercial and open space on approximately 59.84 gross acres in the County of Tulare, within the Visalia Planning Area. The City of Visalia will act as Lead Agency for this project pursuant to the California Environmental Quality Act (CEQA) and the CEQA Guidelines.

3.1 PURPOSE

The purpose of this environmental document is to implement the California Environmental Quality Act (CEQA). Section 15002(a) of the CEQA Guidelines describes the basic purposes of CEQA as follows.

(1) Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
(2) Identify the ways that environmental damage can be avoided or significantly reduced.
(3) Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
(4) Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

This Initial Study of environmental impacts has been prepared to conform to the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.). According to Section 15070, a public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when:

(a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or
(b) The initial study identifies potentially significant effects, but:
  (1) Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and
  (2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

3.2 INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

1. **Project Title:** Belissa Residential Community

2. **Lead Agency:** City of Visalia, Planning and Development Department
Rafael Garcia, Planning Division
315 E Acequia Ave
Visalia, CA 93291
Phone Number: (559) 713-4031

3. **Applicant:** JPA Investments LLC
Contact Person: Josh Peterson
2505 Alluvial Ave.
Clovis, CA, 93611

4. **Project Location:** The proposed project site is located within in Tulare County within the Visalia planning area and Urban Development Boundary Tier II; North of the Visalia city limits. The site is located North of Riverway Avenue and West of Demaree Street on vacant land behind an existing single-family residential subdivision. The site is approximately three miles Northwest of the Visalia downtown. The Project involves construction on approximately 59.84 acres on parcels identified with APNs 077-050-004 and 077-050-006. The site is topographically flat and is bounded by agricultural uses to the North, South, East, and West. The site partially borders a single-family residential development to the Southeast. The site is zoned AE-40 by Tulare County and is designated as Low Density Residential, Medium Density Residential, High Density Residential, and Neighborhood Commercial. The site currently contains one single-family residence and agriculture uses. The site is bisected by Modoc Ditch, an irrigation canal that flows from the southeast corner of APN 077-050-004 toward the west and then toward the northwest corner of APN 077-050-006.

5. **General Plan Designation:** The proposed project site is designated as Low Density Residential, Medium Density Residential, High Density Residential, and Neighborhood Commercial by the Visalia General Plan.

6. **Zoning Designation:** The site is zoned AE-40 by Tulare County. Upon annexation into the City of Visalia and approval of a General Plan Amendment, the property will be zoned R-1-5 (Single-Family Residential, 5,000 square foot minimum lot size), R-M-2 (Multi-Family Residential, one unit per 3,000 square feet lot area), R-M-3 (Multi-Family Residential, one unit per 1,200 square feet lot area), and C-N (Neighborhood Commercial).

7. **Project Description:** The Project proposes a 477-unit, low, medium, and high-density residential development with commercial and open space on 59.84 gross acres within the City of Visalia planning area. The Project site's existing zoning is AE-40 in Tulare County and proposed zoning is R-1-5(Single-Family Residential, 5,000 square foot minimum lot size), R-M-2 (Multi-Family Residential, one unit per 3,000 square feet lot area), R-M-3 (Multi-Family Residential, one unit per 1,200 square feet lot area), and C-N (Neighborhood Commercial). The project includes 159 low density homes, 150 medium density homes, 168 apartment units, 7.88 acres of neighborhood commercial, and 2.18 acres of park

and open space. The project will be constructed in three phases. The first phase will construct the 159 single family homes and the 150 medium density homes. The second phase will be the 168 apartment homes. The final phase will be the 7.88 acres of neighborhood commercial.

The Project would result in onsite and offsite infrastructure improvements including new and relocated utilities, new residential streets, and the continuation and improvement of Demaree Street and Riverway Drive. The project will dedicate right-of-way to widen Demaree Street and Riverway Drive. The Project would require demolition of one single family home.

8. **Surrounding Land Uses and Settings:**

North: Medium and Low Density Residential (Visalia General Plan, Visalia Planning Area), currently under agricultural use.

South: Medium and Low Density Residential (Visalia General Plan, Visalia Planning Area), currently a single-family development and agricultural use.

East: Medium Density Residential, Parks/Recreation, and Public Facilities. (Visalia General Plan, Visalia Planning Area) currently under agricultural use.

West: Low Density Residential and Parks/Recreation (Visalia General Plan, Visalia Planning Area) currently single-family development and agricultural use.

9. **Required Approvals:** The following discretionary and ministerial approvals are required from the City of Visalia for the proposed project:
   - One or more City of Visalia Tentative Subdivision Map and/or Tentative Parcel Map
   - City of Visalia Conditional Use Permit for density spread and lot sizes that do not meet the zoning standards
   - Tulare County Local Agency Formation Commission Annexation into the city limits of Visalia.
   - City of Visalia Building and Encroachment Permits
   - Right-of-way dedication and street improvements for Demaree Street and Riverway Avenue.
   - San Joaquin Valley Air Pollution Control District (SJVAPCD). The proposed project is within the jurisdiction of the SJVAPCD and will be required to comply with Rule VIII, 3135, 4101, and 9510
   - Central Valley Regional Water Quality Control Board, SWPPP. The proposed project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB will require a Storm Water Pollution Prevention Plan (SWPPP) to prevent impacts related to stormwater because of project construction

10. **Native American Consultation:** The State requires lead agencies to consider the potential effects of proposed projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Historic Register or local historic register, or, the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a)(1-2)). According to the most recent census data, California is home to 109 currently recognized Indian tribes. Tribes in California currently

have nearly 100 separate reservations or Rancherias. Tulare County has several Rancherias that were consulted for this project: the Big Sandy Rancheria of Western Mono Indians, Santa Rosa Rancheria Tachi Yokut Tribe, Tule River Indian Tribe, Wuksache Indian Tribe/Eshom Valley Band. These Rancherias are not located within the city limits.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

11. **Parking and access:** Vehicular access to the project is available via Demaree Street, Riverway Drive, and a future road connection via the proposed Linwood Street. The project includes new streets and courts that provide full access to the project site. During construction, workers will utilize existing parking areas and/or temporary construction staging areas for parking of vehicles and equipment.

12. **Landscaping and Design:** The landscape and design plans will be required during building permit submittal and during final map submittal for any areas maintained by a landscape and lighting district.

13. **Utilities and Electrical Services:** The Project would result in onsite and offsite infrastructure improvements including new and relocated utilities. Water will be provided by Cal Water and sewer services will be provided by the City of Visalia via existing lines on Riverway Drive. A temporary stormwater basin will be located in the Commercial area, in the Southwest corner of the site.

Acronyms

BMP	Best Management Practices
BAU	Business as Usual
CAA	Clean Air Act
CBC	California Building Code
CCAP	Climate Change Action Plan
CCR	California Code of Regulation
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CRHR	California Register of Historic Places
CWA	California Water Act
DHS	Department of Health Services
FEIR	Final Environmental Impact Report
FMMP	Important Farmland Mapping and Monitoring Program
ISMND	Initial Study Mitigated Negative Declaration
ISR	Indirect Source Review
MCL	Maximum Contaminant Level
MEIR	Master Environmental Impact Report
NOI	Notice of Intent
ND	Negative Declaration
NAC	Noise Abatement Criteria
RCRA	Resource Conservation and Recovery Act of 1976
ROW	Right-of-Way
RWQCB	Regional Water Quality Control Board
SCE	Southern California Edison
SHPO	State Historic Preservation Office
SJVAPCD	San Joaquin Valley Air Pollution Control District
SSJVIC	Southern San Joaquin Information Center
SWPPP	Storm Water Pollution Prevention Plan
TCR	Tribal Cultural Resource
UWMP	Urban Water Management Plan

Figure 3-1. Vicinity Map

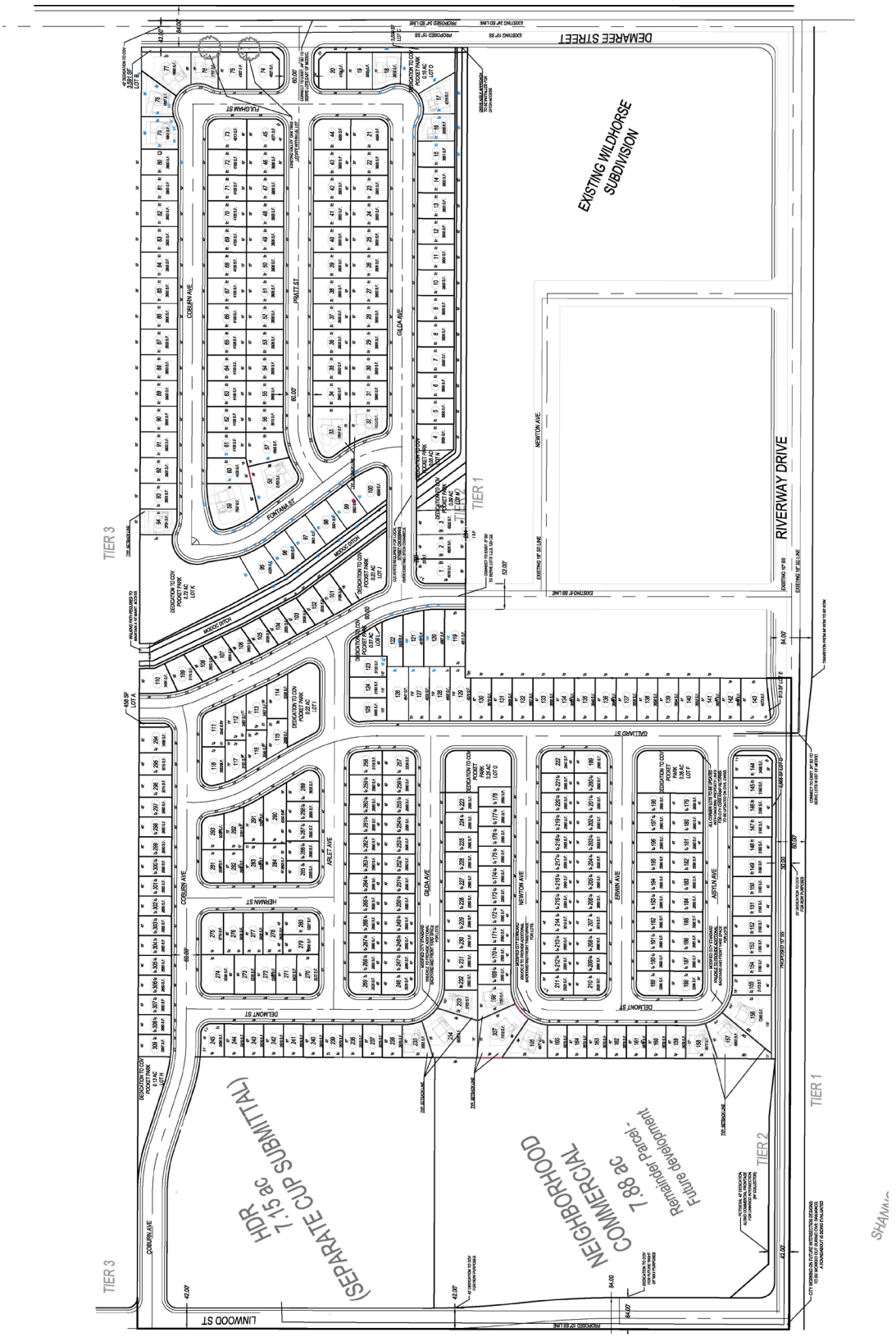


Figure 3-2: Site Plan

3.3 EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "no Impact" answers that are adequately supported by the information sources a lead agency cites, in the parentheses following each question. A "No Impact" answer is adequately supported if the reference information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR if required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c) (3)(D). In this case, a brief discussion should identify the following.

    - Earlier Analysis Used. Identify and state where they are available for review.
    - Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    - Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated." Describe and mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

3.4 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Greenhouse Gas Emissions	☐ Public Services
☐ Agriculture and Forest Resources	☐ Hazards & Hazardous Materials	☐ Recreation
☐ Air Quality	☐ Hydrology and Water Quality	☐ Transportation
☐ Biological Resources	☐ Land Use and Planning	☐ Tribal Cultural Resources
☐ Cultural Resources	☐ Mineral Resources	☐ Utilities and Service System
☐ Energy	☐ Noise	☐ Wildfire
☐ Geology and soils	☐ Population	☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Agency) Where potential impacts are anticipated to be significant, mitigation measures will be required, so that impacts may be avoided or reduced to insignificant levels.

On the basis of this initial evaluation:

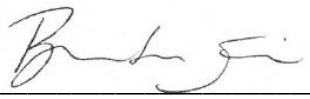
☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION WILL BE PREPARED.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☑ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. A Negative Declaration is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is requested.



SIGNATURE

August 9, 2023
DATE

Brandon Smith
PRINTED NAME

City of Visalia
AGENCY

3.5 ENVIRONMENTAL ANALYSIS

The following section provides an evaluation of the impact categories and questions contained in the checklist and identify mitigation measures, if applicable.

I. AESTHETICS

Except as provided in Public Resource Code Section 21099, would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☑	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within state scenic highway?	☐	☐	☐	☑
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☑
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☑	☐

Environmental Setting

Scenic Resources

Scenic resources include landscapes and features that are visually or aesthetically pleasing. They contribute positively to a distinct community or region. These resources produce a visual benefit upon communities. The City of Visalia has a visual character of a mix of rural and built environments. Visalia is surrounded by natural open space agricultural land, characterized by uses such as grazing, open space, and cultivated agriculture. Downtown Visalia is the physical, cultural, and economic center, with historical homes surrounding the downtown. St. John's River flows along the North side of Visalia's city limits, along with smaller creeks and ditches throughout the city. Valley Oak trees, both individually and in groves, also provide an important scenic feature and link to the natural setting of the San Joaquin Valley. The goal of Visalia's General Plan regarding visual resources is to preserve and re-establish the city's natural waterway system and Valley Oak tree groves with parks, conservation areas, and trailways.

Scenic Vistas

The Visalia General Plan identifies the Sierra Nevada mountains to the East and agricultural lands surrounding the city as scenic vistas surrounding Visalia.

Existing Visual Character

The following photos demonstrate the aesthetic character of the project area. As shown, the proposed project site area is in a relatively flat area characterized by agricultural uses.

Photo 1: Southwest Site Boundary (View Northeast) Source: Google Maps 2011

Photo 2: South Site Boundary (View North) Source: Google Maps 2011

Photo 3: East Site Boundary (View West) Source: Google Maps 2019

Photo 4: Northeast Site Boundary (View Southwest) Source: Google Maps 2019

Photo 5: Center of site (View North) Source: Taylored Archaeology, 2021

Regulatory Setting

Scenic Roadways

The California Scenic Highway Program was established in 1963 by the State Legislature for the purpose of protecting and enhancing the natural beauty of California highways and adjacent corridors through conservation strategies. The State Scenic Highway System includes a list of highways that have either been officially designated or are eligible for designation. State laws affiliated with governing the scenic highway program can be found in Sections 260-263 in The Street and Highways Code.

State Scenic Highways

According to the California Department of Transportation mapping of State Scenic Highways, the City of Visalia does not have officially designated State Scenic Highways, however the City has one

eligible State Scenic Highway, a 44-mile stretch of State Route 198 from State Route 99 to Sequoia National Park. This is designated as a scenic corridor in the City's General Plan This portion of the highway is approximately 2.5 miles away from the proposed site.

City of Visalia General Plan

The 2030 General Plan includes the policies related to aesthetic resources that correlate to the proposed project:

LU-P-28: Continue to use natural and man-made edges, such as major roadways and waterways within the City's Urban Area Boundary, as urban development limit and growth phasing lines.

LU-P-34: Work with Tulare County to prevent urban development of agricultural land outside of the current growth boundaries and to promote the of use agricultural preserves, where they will promote orderly development.

LU-P-42: Develop scenic corridor and gateway guidelines that will maintain the agricultural character of Visalia at its urban fringe.

LU-P-72: Ensure that noise, traffic, and other potential conflicts that may arise in a mix of commercial and residential uses are mitigated through good site planning, building design, and/or appropriate operational measures.

OSC-P-13: In new neighborhoods that include waterways, improvement of the waterway corridor, including preservation and/or enhancement of natural features and development of a continuous waterway trail on at least one side, shall be required.

OSC-P-17: Require that new development along waterways maintain a visual orientation and active interface with waterways. Develop design guidelines to be used for review and approval of subdivision and development proposals to illustrate how this can be accomplished for different land uses in various geographic settings.

OSC-P-34: Enhance views and public access to Planning Area waterways and other significant features such as Valley Oak groves consistent with flood protection, irrigation water conveyance, habitat preservation and recreation planning policies.

Tulare County General Plan

The 2030 Tulare County General Plan contains following goals and policies related to aesthetic resources that correlate to the proposed project:

SL-1.1 Natural Landscapes: During review of discretionary approvals, including parcel and subdivision maps, the County shall as appropriate, require new development to not significantly impact or block views of Tulare County's natural landscapes.

1. Be sited to minimize obstruction of views from public lands and rights-of-ways,
3. Screen parking areas from view,
4. Include landscaping that screens the development,
5. Limit the impact of new roadways and grading on natural settings, and

6. Include signage that is compatible and in character with the location and building design

SL-1.2 Working Landscapes: The County shall require that new non-agricultural structures and infrastructure located in or adjacent to croplands, orchards, vineyards, and open rangelands be sited so as to not obstruct important viewsheds and to be designed to reflect unique relationships with the landscape.

1. Referencing traditional agricultural building forms and materials,
2. Screening and breaking up parking and paving with landscaping, and
3. Minimizing light pollution and bright signage.

SL-3.2 Urban Expansion–Edges: The County shall design and plan the edges and interface of communities with working and natural landscapes to protect their scenic qualities by:

1. Maintaining urban separators between cities and communities,
2. Encouraging cities to master plan mixed-density neighborhoods at their edges, locating compatible lower density uses adjacent to working and natural landscapes, and
3. 3. Protecting important natural, cultural, and scenic resources located within areas that may be urbanized in the future

City of Visalia Zoning Ordinance

The Visalia Zoning Ordinance governs the distribution and intensity of land uses, sets the principles for evaluating development and guides the development and growth of the City. The Zoning Ordinance establishes specific development criteria for each zoning district (i.e. parking requirements, walls, fencing, setbacks, building height, etc.).

Discussion

a) Would the project have a substantial adverse effect on a scenic vista?

Less than Significant Impact: A scenic vista is defined as a viewpoint that provides expansive views of highly valued landscape for the benefit of the general public. The Sierra Nevada mountains to the East and agricultural lands surrounding the city are the primary scenic vista within this region. The site is surrounded by agricultural uses and the Sierra Nevada foothills are approximately 10 miles East of the project site. The project would obstruct some views of agricultural uses. However, the project would not significantly alter views overall from the surrounding community. There is *a less than significant impact.*

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within state scenic highway?

No Impact: There are no officially designated State Scenic Highways located in the City of Visalia or nearby the site. The proposed project would not damage any scenic resources within a state scenic highway and there is *no impact.*

c) In non-urbanized areas, would the project substantially degrade the existing visual character or quality of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

No Impact: The proposed project site is in an urbanized area within the City of Visalia. The materials, signage, fencing, landscaping, and building materials used in the construction of the project will be selected based on their ability to improve the overall visual character of the area. The proposed project will comply with all applicable zoning and other regulations governing scenic quality. There is *no impact.*

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less than Significant Impact: The proposed project would result in new lighting sources on the project site consistent with adjacent residential development. New lighting sources would include interior lighting from residences, street lighting, and security lighting. All street and landscape lighting will be consistent with the City's lighting standards, which are developed to minimize impacts related to excessive light and glare. Although the project will introduce new light sources to the area, all lighting will be consistent with adjacent residential land uses and the City's lighting standards. The impacts are *less than significant.*

II. AGRICULTURE AND FOREST RESOURCES:

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☑	☐	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract?	☐	☐	☑	☐
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned timberland Production (as defined by Government Code section 51104(g)?	☐	☐	☐	☑
d) Result in the loss of forestland or conversion of forest land to non-forest use?	☐	☐	☐	☑
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?	☐	☐	☑	☐

Environmental Setting

Central California is one of the world's premier growing regions. Agriculture is an important economic resource for Visalia and the surrounding areas. 39,518 acres, or 65 percent, of the Visalia Planning Area is farmland, producing fruit and nut crops, vegetables, nursery products (trees), apiary products (honey), seed crops (cotton), industrial crops (timber), field crops (alfalfa, barley, corn), and livestock.

The proposed project site is located within the Visalia Planning Area. The proposed project site is not under Williamson Act Contract or a Farmland Security Zone contract. The proposed site is designated as Prime Farmland under the Important Farmland Mapping and Monitoring Program (FMMP). Nearby to the North, South, East, are currently Prime Farmland. To the West is built single family homes and Prime Farmland. However, the General Plan has designated low and medium density housing for the land surrounding the site in all directions.

Regulatory Setting

California Land Conservation Act of 1965

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, allows local governments to enter into contracts with private landowners to restrict the activities on specific parcels of land to agricultural or open space uses. The landowners benefit from the contract by receiving greatly reduced property tax assessments. The California Land Conservation Act is overseen by the California Department of Conservation; however local governments are responsible for determining specific allowed uses and enforcing the contract.

Right to Farm Ordinance

Tulare County adopted a "Right to Farm Ordinance," to protect the rights of commercial farming operations, while promoting a "good neighbor policy" between these uses. Under this ordinance, property owners and residents are made aware that they may experience inconveniences due to commercial agricultural operations.

California Farmland Mapping and Monitoring Program (FMMP)

The FMMP is implemented by the California Department of Conservation (DOC) to conserve and protect agricultural lands within the State. Land is included in this program based on soil type, annual crop yields, and other factors that influence the quality of farmland. The FMMP mapping categories for the most important statewide farmland are as follows:

- ***Prime Farmland*** has the ideal physical and chemical composition for crop production. It has been used for irrigated production in the four years prior to classification and can produce sustained yields. 51% of the Visalia Planning Area is classified as Prime Farmland.
- ***Farmland of Statewide Importance*** has also been used for irrigated production in the four years prior to classification and is only slightly poorer quality than Prime Farmland. 11% of the Visalia Planning Area is classified as Farmland of Statewide Importance.
- ***Unique Farmland*** has been cropped in the four years prior to classification and does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but has produced specific crops with high economic value. Less than 1% of the Visalia Planning Area is classified as Unique Farmland.

- ***Farmland of Local Importance*** encompasses farmland that does not meet the criteria for the previous three categories. These may lack irrigation, produce major crops, be zoned as agricultural, and/or support dairy. 2% of the Visalia Planning Area is classified as Farmland of Local Importance.

City of Visalia General Plan

The 2030 General Plan includes the policies related to agricultural resources that correlate to the proposed project:

- *LU-P-19:* Ensure that growth occurs in a compact and concentric fashion by implementing the General Plan's phased growth strategy.
- *LU-P-21*: Allow annexation and development of residential, commercial, and industrial land to occur within the Tier II UDB and the Tier III Urban Growth Boundary consistent with the City's Land Use Diagram, according to the stated phasing thresholds.
- *OSC-P-28:* Require new development to implement measures, as appropriate, to minimize soil erosion related to grading, site preparation, landscaping, and construction.

Tulare County General Plan

The 2030 Tulare County General Plan contains following goals related to agricultural resources that correlate to the proposed project:

- Promote the long-term preservation of productive and potentially productive agricultural lands and to accommodate agricultural-support services and agriculturally related activities that support the viability of agriculture and further the County's economic development goals;
- Support increased viability of agriculture production and promote high-value, employment-intensive, and diverse agricultural production, and processing in Tulare County;
- Support the reasonable development and economic viability of animal confinement facilities.

City of Visalia Agricultural Land Preservation Ordinance

The City of Visalia Agricultural Land Preservation Ordinance was adopted in May 2023 and requires agricultural preservation at a 1:1 ratio for prime farmland converted to agricultural uses.

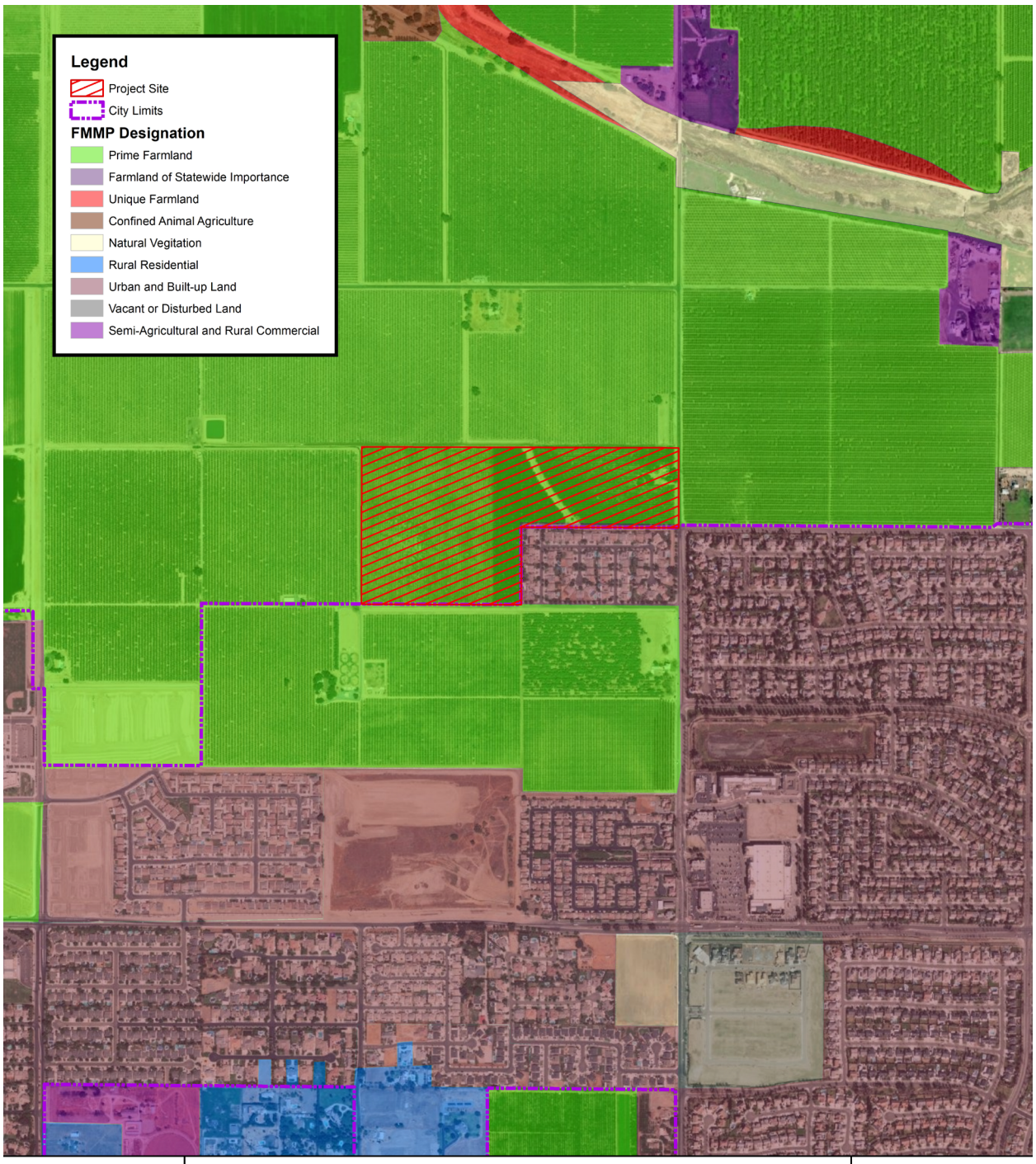


Figure 3-3: Important Farmlands Map

Discussion

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Less Than Significant Impact: The project site is currently occupied by a single-family home surrounded by fruit trees within unincorporated Tulare County. It is currently zoned AE-40 (Exclusive Agriculture-40 acres minimum), within Tier II, and proposed for annexation into the City. As such, the area is subject to the City's agricultural mitigation policy (See MM AG – 1). Implementation of the proposed Project would result in the permanent conversion of approximately 59.84 acres of Prime Farmland to non-agricultural uses.

The General Plan identifies the need for the conversion of agricultural land to urban development. The City has set aside three-tiered areas planned for development which contain land designated as Prime Farmland and Farmland of Statewide Importance. The Project is within Tier 2, which has been deemed as land to be converted from agricultural land to urban development.

Because the site is located within the Tier 2 growth boundary, the project is subject to the City of Visalia's Agricultural Land Preservation Ordinance (VMC 18.04.060), which was adopted in May 2023 and requires a 1:1 ratio of agricultural land preserved to agricultural land converted towards urban development. Per VMC 18.04.060(c), the following exclusions apply to the proposed project:

- Public Facilities: 3.71 acres
- Roadways: 17.71 acres

Mitigation is required for the remaining 38.42 acres of Prime Farmland that will be converted from agricultural use. Implementation of Mitigation Measure AG-1 will reduce impacts to a *less than significant* level.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act Contract?

Less Than Significant Impact: The site is currently zoned for agriculture by Tulare County. However, it is within the Visalia planning area and is expected to be annexed by the city. It currently has a General Plan designation of neighborhood commercial and low, medium, and high density residential that would suit the proposed project. The project site is not under a Williamson Act Contract. There is *a less than significant impact.*

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned timberland Production (as defined by Government Code section 51104(g)?

No Impact: The project site is not zoned for forest or timberland production. Therefore, *no impacts* would occur.

d) Would the project result in the loss of forestland or conversion of forest land to non-forest use?

No Impact: No conversion of forestland, as defined under Public Resource Code or General Code, will occur as a result of the project and there would be *no impacts*.

e) Would the project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?

Less Than Significant Impact: As discussed above, new development including the project site would be focused in and around existing communities. This would prevent new infrastructure from interfering with surrounding farmland. The project does not include any features which could result in the conversion of forestland to non-forest use. There is a *less than significant impact.*

Mitigation Measures for Agricultural Resources

Mitigation Measure AG-1: Prior to the issuance of grading or building permits, the Project proponent shall mitigate impacts for loss of 38.42 acres of Prime Farmland and Farmland of Statewide Importance on the Project site at a 1:1 ratio. The preserved land obligation, as established in VMC section 18.04.070(A), shall be preserved through acquisition of an agricultural easement in accordance with VMC section 18.04.080, unless eligible for payment of an in-lieu fee in accordance with VMC section 18.04.090.

III. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☑	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☑	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☑	☐

Environmental Setting

Air pollution is directly related to regional topography. Topographic features can either stimulate the movement of air or restrict air movement. California is divided into regional air basins based on topographic air drainage features. The proposed project site is within the San Joaquin Valley Air Basin, which is bordered by the Sierra Nevada Mountains to the East, Coastal Ranges to the West, and the Tehachapi Mountains to the South.

The mountain ranges surrounding the San Joaquin Valley Air Basin (SJVAB) serve to restrict air movement and prevent the dispersal of pollution. As a result, the SJVAB is highly susceptible to pollution accumulation over time. As shown in the Table 3-1, the SJVAB is in nonattainment for several pollutant standards. The primary pollutants of concern in the San Joaquin Valley are ozone (O3) and PM10.

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone – One hour	No Federal Standard[f]	Nonattainment/Severe
Ozone – Eight hour	Nonattainment/Extreme[e]	Nonattainment
PM 10	Attainment[c]	Nonattainment
PM 2.5	Nonattainment[d]	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

[a] See 40 CFR Part 81
[b] See CCR Title 17 Sections 60200-60210
[c] On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.

[d] The Valley is designated nonattainment for the 1997 PM2.5 NAAQS. EPA designated the Valley as nonattainment for the 2006 PM2.5 NAAQS on November 13, 2009 (effective December 14, 2009).
[e] Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).
[f] Effective June 15, 2005, the U.S. Environmental Protection Agency (EPA) revoked the federal 1-hour ozone standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.

Table 3-1. San Joaquin Valley Attainment Status; Source: SJVAPCD

Valley Fever

Valley Fever is an illness caused by a fungus (*Coccidioides immitis* and *C. posadasii*) that grows in soils under certain conditions. Favorable conditions for the Valley Fever fungus include low rainfall, high summer temperatures, and moderate winter temperatures. In California, the counties with the highest incident of Valley Fever are Fresno, Kern and Kings counties. When soils are disturbed by wind or activities like construction and farming, Valley Fever fungal spores can become airborne. The spores present a potential health hazard when inhaled. Individuals in occupations such as construction, agriculture, and archaeology have a higher risk of exposure due to working in areas of disturbed soils which may have the Valley Fever fungus.

Regulatory Setting

City of Visalia General Plan

The 2030 General Plan includes the policies related to air quality that correlate to the proposed project:

- *AQ-P-2:* Require use of Best Management Practices (BMPs) to reduce particulate emission as a condition of approval for all subdivisions, development plans and grading permits, in conformance with the San Joaquin Valley Air Pollution Control District Fugitive Dust Rule.
- *AQ-P-9:* Continue to mitigate short-term construction impacts and long-term stationary source impacts on air quality on a case-by-case basis and continue to assess air quality impacts through environmental review. Require developers to implement Best Management Practices (BMPs) to reduce air pollutant emissions associated with the construction and operation of development projects

Federal Clean Air Act

The 1977 Federal Clean Air Act (CAA) authorized the establishment of the National Ambient Air Quality Standards (NAAQS) and set deadlines for their attainment. The Clean Air Act identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to meet interim milestones. The U.S. EPA is the federal agency charged with administering the Act and other air quality-related legislation. EPA's principal functions include setting NAAQS; establishing minimum national emission limits for major sources of pollution; and promulgating regulations. Under CAA, the NCCAB is identified as an attainment area for all pollutants.

California Clean Air Act

California Air Resources Board coordinates and oversees both state and federal air pollution control programs in California. As part of this responsibility, California Air Resources Board monitors existing air quality, establishes California Ambient Air Quality Standards, and limits allowable emissions from vehicular sources. Regulatory authority within established air basins is provided by air pollution

control and management districts, which control stationary-source and most categories of area-source emissions and develop regional air quality plans. The project is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District.

The state and federal standards for the criteria pollutants are presented in Section 8.4 of The San Joaquin Valley Unified Air Pollution Control District's 2015 "Guidance for Assessing and Mitigating Air Quality Impacts". These standards are designed to protect public health and welfare. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soils, water, visibility, materials, vegetation, and other aspects of general welfare. The U.S. EPA revoked the national 1-hour ozone standard on June 15, 2005, and the annual PM_{10} standard on September 21, 2006, when a new $PM_{2.5}$ 24-hour standard was established.

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (03)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet 8 Hour Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.075 ppm (147 µg/m³)		
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	20 µg/m3		--		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour		Gravimetric or Beta Attenuation	35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	12 µg/m³		15 µg/m³		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m³)	--	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	--	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		--	--	
Nitrogen Dioxide (NO_2) [8]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m³)	--	Gas Phase Annual Chemiluminescence
	Arithmetic Mean	0.030 ppm (57 µg/m³)		53 ppb (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	--	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	--		--	0.5 ppm (1300 µg/m³)	
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)9	--	
	Annual Arithmetic Mean	--		0.030 ppm (for certain areas)9	--	
Lead[10,11]	30 Day Average	1.5 µg/m³	Atomic Absorption	--	--	

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
	Calendar Quarter	--		1.5 µg/m3 (for certain areas)11	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average	--		0.15 µg/m^3		
Visibility Reducing Particles[12]	8 Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No National Standard		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.
9. On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
10. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
11. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
12. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Table 3-2. Ambient Air Quality Standards; Source: SJVAPCD

San Joaquin Valley Air Pollution Control District (SJVAPCD)

The SJVAPCD is responsible for enforcing air quality standards in the project area. To meet state and federal air quality objectives, the SJVAPCD adopted the following thresholds of significance for projects:

Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
	Emissions (tpy)	Emissions (tpy)	Emissions (tpy)
CO	100	100	100
Nox	10	10	10
ROG	10	10	10
SOx	27	27	27
PM10	15	15	15
PM2.5	15	15	15

Table 3-3. SJVAPCD Thresholds of Significance for Criteria Pollutants; Source: SJVAPCD

The following SJVAPCD rules and regulations may apply to the proposed project:

- **Rule 3135:** Dust Control Plan Fee. All projects which include construction, demolition, excavation, extraction, and/or other earth moving activities as defined by Regulation VIII (Described below) are required to submit a Dust Control Plan and required fees to mitigate impacts related to dust.
- **Rule 4101:** Visible Emissions. District Rule 4101 prohibits visible emissions of air contaminants that are dark in color and/or have the potential to obstruct visibility.
- **Rule 9510:** Indirect Source Review (ISR). This rule reduces the impact PM10 and NOX emissions from growth on the SJVB. This rule places application and emission reduction requirements on applicable development projects in order to reduce emissions through onsite mitigation, offsite SJVAPCD administered projects, or a combination of the two. This project will submit an Air Impact Assessment (AIA) application in accordance with Rule 9510's requirements.
- **Regulation VIII:** Fugitive PM10 Prohibitions. Regulation VIII is composed of eight rules which together aim to limit PM10 emissions by reducing fugitive dust. These rules contain required management practices to limit PM10 emissions during construction, demolition, excavation, extraction, and/or other earth moving activities.

Discussion

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

No Impact: The proposed project is located within the boundaries of the San Joaquin Valley Air Pollution Control District (SJVAPCD) and would result in air pollutant emissions that are regulated by the air district during both its construction and operational phases. The SJVAPCD is responsible for bringing air quality in the Visalia Planning Area into compliance with federal and state air quality standards. The Air District has Particulate Matter (PM) plans, Ozone Plans, and Carbon Monoxide Plans that serve as the clean air plan for the basin.

Together, these plans quantify the required emission reductions to meet federal and state air quality standards and provide strategies to meet these standards. The SJVAPCD adopted the Indirect Source Review (ISR) Rule in order to fulfill the District's emission reduction commitments in its PM10 and Ozone (NOx) attainment plans and has since determined that implementation and compliance with ISR would reduce the cumulative PM10 and NOx impacts anticipated in the air quality plans to a less than significant level.

Construction Phase. Project construction would generate pollutant emissions from the following construction activities: demolition, site preparation, grading, building construction, application of architectural coatings, and paving. The construction related emissions from these activities were calculated using CalEEMod. The full CalEEMod Report can be found in Appendix A. As shown in Table 3-4 below, project construction related emissions do not exceed the thresholds established by the SJVAPCD.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	Nox (tpy)	PM10 (tpy)	PM2.5 (tpy)
Emissions Generated from Project Construction	**3.3184**	**7.2943**	**.00804**	**3.4786**	**1.2036**	**.5800**
SJVAPCD Air Quality Thresholds of Significance	**100**	**10**	**27**	**10**	**15**	**15**
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

Table 3-4. Projected Project Emissions Compared to SJVAPCD Thresholds of Significance for Criteria Pollutants related to Construction; Source: SJVAPCD, CalEEMod (v. 2020.4.0) Analysis (Appendix A)

Operational Phase. Implementation of the proposed project would result in long-term emissions associated with area sources, such as natural gas consumption, landscaping, applications of architectural coatings, and consumer products, as well as mobile emissions. Operational emissions from these factors were calculated using CalEEMod. The full CalEEMod report can be found in Appendix A. As shown in Table 3-5 below, the project's operational emissions do not exceed the thresholds established by the SJVAPCD.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	Nox (tpy)	PM10 (tpy)	PM2.5 (tpy)
Operational Emissions (Dry Years)	**24.9838**	**6.5072**	**.0525**	**4.3347**	**5.3962**	**1.5302**
SJVAPCD Air Quality Thresholds of Significance	**100**	**10**	**27**	**10**	**15**	**15**
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

Table 3-5. Projected Project Emissions Compared to SJVAPCD Thresholds of Significance for Criteria Pollutants related to Operations; Source: SJVAPCD, CalEEMod (v. 2020.4.0) Analysis (Appendix A)

Because the emissions from both construction and operation of the proposed project would be below the thresholds of significance established by the SJVAPCD, the project would not conflict with or obstruct implementation of an applicable air quality plan and there is *no impact.*

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact: The SJVAPCD is responsible for bringing air quality in the Visalia Planning Area into compliance with federal and state air quality standards. The significance

thresholds and rules developed by the SJVAPCD are designed to prevent projects from violating air quality standards or significantly contributing to existing air quality violations. As discussed above, neither construction-related emissions nor operation-related emissions will exceed thresholds established by the SJVAPCD. The project will comply with all applicable SJVAPCD rules and regulations, which will further reduce the potential for any significant impacts related to air quality as a result of project implementation. Because these thresholds and regulations are designed to achieve and/or maintain federal and state air quality standards, and the project is compliant with these thresholds and regulations, the project will not violate an air quality standard or significantly contribute to an existing air quality violation. The impact is *less than significant.*

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact: The single-family residences bordering the project site located to the southeast and, in the future, surrounding the project site are the closest sensitive receptors. The C-N zone of the project is located 1,000 feet away from the nearest existing residence. Table 1-1 of the California Air Resources Board Air Quality and Land Use Handbook (2005) identifies source categories with advisory recommendations for distance from sensitive receptors. Of the pollution sources listed, dry cleaning centers and gasoline dispensing facilities are the only uses permitted within the C-N zone and would therefore be the only sources that could expose sensitive receptors to substantial pollutant concentrations. These uses are subject to separate district permitting under SJVAPCD Rules 4672, 7070, and 4622. These rules are developed specifically to limit toxic pollutant emissions and prevent exposure to sensitive receptors. The project does not include any project components identified by the California Air Resources Board that could potentially impact any sensitive receptors. These include heavily traveled roads, distribution centers, fueling stations, and dry-cleaning operations. The project would not expose sensitive receptors to substantial pollutant concentrations. Therefore, the impact would be less than significant.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact: Less Than Significant Impact: The project will create temporary localized odors during project construction. The proposed project will not introduce a conflicting land use (surrounding land includes residential neighborhoods) to the area and will not have any component that would typically emit odors. The project would not create objectionable odors affecting a substantial number of people. However, restaurants in the C-N zone may use under-fired charbroilers. These can create significant amounts of Particulate Matter. Mitigation measure AQ-1 will reduce these pollutants to a less than significant level. Therefore, Impacts would be less than significant with mitigation incorporation.

- **Mitigation Measure AQ-1:** If any restaurants in the C-N portion of the project will utilize under-fired charbroilers, measures will be utilized to reduce Particulate Matter to a less than significant level, as technologically feasible. These can include Mechanical Filtration Systems, Electrostatic Precipitators, or Wet-Scrubbers.

IV. BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) 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 or U.S. fish and Wildlife Service?	☐	☑	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☑
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through director removal, filling, hydrological interruption, or other means?	☐	☐	☐	☑
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☑	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

Discussion for this section originates from the Biological Resource Review that was prepared for this project by Soar Environmental Consulting to identify biological resources present or potentially present on the project site and assess the significance of project impacts on such resources per provisions of the California Environmental Quality Act (CEQA), the Federal Clean Water Act (CWA), the state and federal endangered species acts (FESA and CESA respectively), California Fish and Game Code, and California Water Code. The research included the California Natural Diversity Database (CNDDB), the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), and the California Native Plant Society (CNPS) Online Rare Plant Inventory. The full document can be found in Appendix B.

Environmental Setting

The Project site is in the northern portion of the Visalia Planning Area within the lower San Joaquin Valley, in the Central Valley of California. The Central Valley is bordered by the Sierra Nevada Mountain Ranges to the east and the Coast Ranges to the west. Like most of California, Visalia is considered a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. Summer temperatures often reach above 90 degrees Fahrenheit, and the humidity is relatively low. Winter temperatures are often below 60 degrees Fahrenheit during the day and rarely exceed 70 degrees. On average, the Central Valley receives approximately 10 inches of precipitation in the form of rainfall yearly, most of which occurs between October and March.

The proposed Project site is in a residential and agricultural interface environment just outside the northern boundary of the City of Visalia. The proposed Project site is bounded by agricultural fields to the north, east, and west, and single-family homes to the south. A canal runs north and south in the central portion of the site. The canal is surrounded by agricultural fields. No other natural water features occur in the vicinity of the proposed Project site. The topography of the area is flat. The soil on the proposed Project site is highly compacted. Few trees exist in the surrounding area.

Regulatory Setting

Federal Endangered Species Act (FESA): defines an *endangered species* as "any species or subspecies that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species or subspecies that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703-712): FMBTA prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it actually covers almost all birds native to the United States, even those that are non-migratory. The FMBTA encompasses whole birds, parts of birds, and bird nests and eggs. Although the USFWS and its parent administration, the U.S. Department of the Interior, have traditionally interpreted the FMBTA as prohibiting incidental as well as intentional "take" of birds, a January 2018 legal opinion issued by the Department of the Interior now states that incidental take of migratory birds while engaging in otherwise lawful activities is permissible under the FMBTA. However, California Fish and Game Code makes it unlawful to take or possess any non-game bird covered by the FMBTA (Section 3513), as well as any other native non-game bird (Section 3800), even if incidental to lawful activities.

Birds of Prey (CA Fish and Game Code Section 3503.5): Birds of prey are protected in California under provisions of the Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the federal Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs.

Clean Water Act: Section 404 of the Clean Water Act of (1972) is to maintain, restore, and enhance the physical, chemical, and biological integrity of the nation's waters. Under Section 404 of the Clean Water Act, the US Army Corps of Engineers (USACE) regulates discharges of dredged and fill materials into "waters of the United States" (jurisdictional waters). Waters of the US including navigable waters of the

United States, interstate waters, tidally influenced waters, and all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries.

California Endangered Species Act (CESA): prohibits the take of any state-listed threatened and endangered species. CESA defines *take* as "any action or attempt to hunt, pursue, catch, capture, or kill any listed species." If the proposed project results in a take of a listed species, a permit pursuant to Section 2080 of CESA is required from the CDFG.

City of Visalia Oak Tree Ordinance: The City of Visalia has an oak tree ordinance that protects valley oak trees with a diameter at breast height (dbh) of 2 inches or greater. Under this ordinance, removal or encroachment within the drip-line of or damage to valley oak trees is prohibited. Removal requires a permit from the city manager and mitigation either by replacement in-kind or payment of an in-lieu fee to be used for oak tree planting.

Visalia Planning Area General Plan: The Visalia Planning Area General Plan contains the following policies related to the preservation of biological resources that may be considered relevant to the proposed Project's environmental review:

- OSC-P-8 Protect, restore, and enhance a continuous corridor of native riparian vegetation along Planning Area waterways, including the St. Johns River; Mill, Packwood, and Cameron Creeks; and segments of other creeks and ditches where feasible, in conformance with the Parks and Open Space diagram of this General Plan.
- OSC-P-19 Establish easements or require dedication of land along waterways to protect natural habitat areas, allow maintenance operations and promote trails and bike paths.
- OSC-P-26 Establish Best Management Practices (BMPs) for control of invasive plant species where such plants could adversely impact wildlife habitat.
- OSC-P-27 Establish a "no net loss" standard for sensitive habitat acreage, including wetlands and vernal pools potentially affected by development.
- OSC-P-30 Require assessments of biological resources prior to approval of any discretionary development projects involving riparian habitat, wetlands, or special status species habitat. Early in the development review process, consult with California Department of Fish and Game, U.S. Fish and Wildlife Service, and other agencies.
- OSC-P-31 Protect and enhance habitat for special status species, designated under state and federal law. Require protection of sensitive habitat areas and special status species in new development in the following order: 1) avoidance; 2) onsite mitigation, and 3) offsite mitigation.

Discussion

a) Would the project 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 or U.S. fish and Wildlife Service?

Less Than Significant Impact with Mitigation: Soar Environmental Consulting conducted a records search of three database record systems for historical occurrences of special-status species within the vicinity of the project site. The record search identified the following special status species with known occurrences within 5 miles of the Project site.

1. California tiger salamander (Ambystoma californiense)
2. Hoover's spurge (Euphorbia hooveri)
3. San Joaquin kit fox (Vulpes macrotis mutica)
4. San Joaquin Valley Orcutt grass (Orcuttia inaequalis)
5. Swainson's hawk (Buteo swainsoni)
6. Vernal pool fairy shrimp (Branchinecta lynchi)
7. Western yellow-billed cuckoo (Coccyzus americanus occidentalis)

Vernal pools, which provide habitat for Hoover's Spurge, San Joaquin Valley Orcutt Grass, and Vernal Pool Fairy Shrimp, are absent from the project site. Therefore, the project is not anticipated to have any impact on these species.

Suitable habitat for California tiger salamander, Jan Joaquin kit fox, Swainson's hawk, and western yellow-billed cuckoo is poor on and near the proposed Project site due to agricultural activity. CNDDB records indicate that the nearest and most recent occurrence of San Joaquin kit fox was approximately 3.2 miles east of the proposed Project site, the Swainsons's hawk approximately 4 miles southwest, the Western yellow-billed cuckoo approximately 3.5 miles southeast, and the California tiger salamander approximately 5 miles north. Due to the level of agricultural activity, residential development of the surrounding area, lack of suitable habitat, and the distance of other known occurrences from the site, occurrence of these special-status species within the vicinity of the proposed Project site is unlikely, and the proposed Project would be unlikely to adversely affect populations of this species. However, there is a possibility that special status species may be present within the Project site. Therefore, mitigations BIO-1 – BIO-4 would reduce potential impacts to less than significant. Impacts would be *less than significant with mitigation incorporation.*

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

No Impact: There are no CNDDB-designated "natural communities of special concern" recorded within the proposed Project area or surrounding lands. The Visalia General Plan identifies Grasslands, Valley Oak Riparian Woodland, Valley Oak Woodland, Vernal Pools, and Wetlands as vegetation communities to protect. The nearest community is a Wetland approximately 0.5 miles south. The proposed Project site consists of agricultural fields. There would be *no impact.*

c) Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through director removal, filling, hydrological interruption, or other means?

No Impact: A canal runs through the eastern portion of the site. However, the project will not affect the canal and leave a buffer surrounding the canal. There is *less than significant impact*.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less than Significant Impact: The proposed Project area is surrounded by cultivated agricultural lands, residential development, and paved roads. Therefore, the proposed Project area does not contain features that would be likely to function as a wildlife movement corridor. The San Joaquin kit fox, Swainson's hawk, Western yellow-billed cuckoo, and California tiger salamander, are the only special status species with potential to exist within the site. Due to the level of agricultural activity, residential development of the surrounding area, lack of suitable habitat, and distance of other known occurrences from the site, occurrence of special status species within the vicinity of the proposed Project site is unlikely. Impacts would be *less than significant.*

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact: The proposed Project would comply with the goals and policies of the Visalia General Plan. There are few trees on the site, but the project will follow the Visalia Tree Ordinance. There would be *no impact.*

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact: There are no known habitat conservation plans or Natural Community Conservation Plans (NCCP) in the proposed Project area. There would be *no impact.*

Mitigation Measures for Biological Resources:

Mitigation Measure BIO-1: Mitigation Measures for Swainson's Hawk

- **Mitigation Measure BIO-1a:** Construction Timing. If feasible, project construction will occur entirely outside the Swainson's hawk nesting season, typically defined as March 1- September 15.
- **Mitigation Measure BIO-1b:** Preconstruction Surveys. If construction activities must occur between March 1 and September 15, then within 10 days prior to the start of work, a qualified biologist will conduct preconstruction surveys from publicly accessible roads for Swainson's hawk nests within ½ mile of the work area(s) in question.
- **Mitigation Measure BIO-1c:** Avoidance. Should any active nests be identified, the biologist will establish a suitable disturbance-free buffer around the nest, to be maintained until the biologist has determined that the young have fledged.

Mitigation Measure BIO-2: Mitigation Measures for Nesting Birds Including the Western yellow-billed cuckoo

- **Mitigation Measure BIO-2a:** Avoidance. In order to avoid impacts to nesting migratory birds and raptors, construction will occur, where possible, outside the nesting season, or between September 1 and January 31.
- **Mitigation Measure BIO-2b:** Preconstruction Surveys. If construction must occur during the nesting season (February 1-August 31), a qualified biologist will conduct preconstruction surveys for active migratory bird and raptor nests within 10 days of the onset of these activities. Nest surveys will include all areas on and within 500 feet of the project site, where accessible. Inaccessible areas will be surveyed using binoculars or a spotting scope. If no active nests are found within the survey area, no further mitigation is required.
- **Mitigation Measure BIO-2c:** Establish Buffers. Should any active nests be discovered in or near proposed work areas, the biologist will determine appropriate construction setback distances based on applicable CDFW guidelines and/or the biology of the affected species. Construction-free buffers will be identified on the ground with flagging, fencing, or by other easily visible means, and will be maintained until the biologist has determined that the young have fledged.
- **Mitigation Measure BIO-2d:** Nest Monitoring. Should construction need to occur within the construction free buffers, then prior to initiation of these activities a qualified biologist will conduct a survey to establish a behavioral baseline of the affected nest(s). When construction begins within the buffer, the qualified biologist will continuously monitor nests to detect behavioral changes resulting from the project. If behavioral changes occur, the work causing that change will cease. If there are no behavioral changes after one week of monitoring, then monitoring may be reduced as determined by the biologist.

Mitigation Measure BIO-3: Mitigation Measures for San Joaquin Kit Fox

- **Mitigation Measure BIO-3a:** Pre-construction Surveys. Preconstruction surveys for the San Joaquin kit fox shall be conducted on and within 200 feet of the project site, no less than 14 days and no more than 30 days prior to the start of ground disturbance activities on the site. The primary objective is to identify kit fox habitat features (e.g., potential dens and refugia) on and adjacent to the site and evaluate their use by kit foxes.
- **Mitigation Measure 3b:** Avoidance. Should active kit fox dens be detected during preconstruction surveys, the Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW will be notified. A disturbance-free buffer will be established around the burrows in consultation with the USFWS and CDFW, to be maintained until an agency-approved biologist has determined that the burrows have been abandoned.
- **Mitigation Measure BIO-3c:** Minimization. Construction activities shall be carried out in a manner that minimizes disturbance to kit foxes in accordance with the USFWS Standardized Recommendations. The applicant shall implement all minimization measures presented in the Construction and On-going Operational Requirements section of the Standardized Recommendations, including, but not limited to: restriction of project- related vehicle traffic to established roads, construction areas, and other designated areas; inspection and covering of structures (e.g. pipes), as well as installation of escape structures, to prevent the inadvertent entrapment of kit foxes; restriction of rodenticide and herbicide use; and proper disposal of food items and trash.

- **Mitigation Measure BIO-3d:** Mortality Reporting. The Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW will be notified in writing within three working days in case of the accidental death or injury of a San Joaquin kit fox during project-related activities. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and any other pertinent information.

Mitigation Measure BIO-4: Mitigation Measures for California Tiger Salamander

- **Mitigation Measure BIO-4:** Pre-construction Surveys. Preconstruction surveys for the California tiger salamander shall be conducted on and within 200 feet of the project site, no less than 14 days and no more than 30 days prior to the start of ground disturbance activities on the site.
    - If special status animal species are not identified during pre-construction surveys, no further action is required.
    - If special status animal species are detected during pre-construction surveys, the Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW shall be contacted immediately to identify the appropriate avoidance and minimization actions to be taken as applicable for the species identified and to determine permitting needs.

V. CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☑	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☑	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☑	☐	☐

Taylored Archaeology performed a phase 1 cultural resources assessment for the Belissa Tentative Subdivision Project in the Visalia Planning Area, Tulare County, California. The Project proposes to construct 310 single-family units and 168 multi-family units of residential development and 7.88 acres of neighborhood commercial development. The Project is subject to the California Environmental Quality Act (CEQA).

Environmental Setting

The Project area is in the Southern Valley Yokuts ethnographic territory of the San Joaquin Valley and located between the Kings River and the north shore of Tulare Lake. The Yokuts were generally divided into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts. The Project area is likely within the Telamni and Wukchamni Yokuts territory. The closest village for this area was Waitatshulu, which was located on Packwood Creek approximately 5.5 miles south of the Project site.

The San Joaquin Valley did not experience contact with Europeans until the late 1700s. The earliest exploration of the San Joaquin Valley by Europeans was likely by the Spaniards when in the fall of 1772 a group known as the Catalonian Volunteers entered the valley through Tejon Pass in search of deserters from the Southern California Missions. However, the group only made it as far north as Buena Vista Lake in modern day Kern County before turning around due to the extensive swamps. Initial settlement within the valley by Europeans in the 1830s was largely either by trappers or horse thieves. With the end of the Mexican American War and the beginning of the gold rush in 1848, the San Joaquin Valley became more populated with ranchers and prospectors. By 1850, California became a state, Tulare County was established in 1853, and Visalia was formed in 1852. During the first few decades, Visalia was a supply center for nearby gold rushes, and had an agricultural economy based on livestock.

On August 20, 2021, Taylored Archaeology requested a copy of prior cultural resource studies reports in the result letter that the SSJVIC of the CHRIS at California State University in Bakersfield, California, provided to 4Creeks. The records search included the Project area and surrounding land within a 0.5-mile radius of the Project. Sources consulted included archaeological site and survey base maps, historical USGS topographic maps, reports of previous investigations, cultural resource records (DPR forms) as well as listings of the Historic Properties Directory of the Office of Historic Preservation, General Land Office

Maps, Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources. According to the SSJVIC records search, there has been no previous cultural resource investigations within the Project area. There has only been one cultural resource study conducted withing a 0.5-mile radius of the project. There have been no cultural resources were previously recorded within the Project area or within the 0.5-mile radius. Additionally, no recorded cultural resources are recorded within the Project area or 0.5-mile radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Interest, California Inventory of Historic Resources, or the California State Historic Landmarks.

Regulatory Setting

Cultural resources within the context of this report are defined as a historical or prehistorical archaeological site, or a historical structure, object, or building. Consistent with 36 CFR 60.3, the term "historical" in this report applies to archaeological features and artifacts, and additionally to buildings, objects, or structures that are at least 50 years old. While exceptions to the 50-year criterion occur, they are relatively rare. The significance or importance of a cultural resource is dependent upon whether the resource qualifies for inclusion at the local or state in the California Register of Historical Places (CRHR). Cultural resources that are determined to be eligible for inclusion in the CRHR are called "historical resources" (CCR 15064.5[a]). Under this statue the determination of eligibility is partially based on the consideration of the criteria of significance as defined in 14 CCR 15064.5(a)(3).

National Historic Preservation Act

The National Historic Preservation Act was adopted in 1966 to preserve historic and archeological sites in the United States. The Act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation offices.

California Historic Register

The California Historic Register was developed as a program to identify, evaluate, register, and protect Historical Resources in California. Historical resources may include, but are not limited to, "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically or archaeologically significant" (PRC §5020.1[j]). In addition, a resource included in a local register of historical resources or identified as significant in a local survey conducted in accordance with the state guidelines are also considered historic resources under California Public Resources Code (PRC) Section 5020.1. According to CEQA guidelines §15064.5 (a)(3), criteria for listing on the California Register of Historical Resources includes the following:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Is associated with the lives of persons important in our past.
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- Has yielded, or may be likely to yield, information important in prehistory or history.

City of Visalia General Plan

The 2030 General Plan includes the policies related to cultural resources that correlate to the proposed project:

- *LU-P-48:* Preserve established and distinctive neighborhoods throughout the City by maintaining appropriate zoning and development standards to achieve land use compatibility in terms of height, massing, and other characteristics; providing design guidelines for high-quality new development; supporting housing rehabilitation programs; and other means.
- *OSC-P-42:* Establish requirements to avoid potential impacts to sites suspected of being archeologically, paleontologically, or historically significant or of concern, by:
    - Requiring a records review for development proposed in areas that are considered archaeologically or paleontologically sensitive;
    - Determining the potential effects of development and construction on archaeological or paleontological resources (as required by CEQA);
    - Requiring pre-construction surveys and monitoring during any ground disturbance for all development in areas of historical and archaeological sensitivity (defined as areas identified according to the National Historic Preservation Act as part of the Section 106 process); and
    - Implementing appropriate measures to avoid the identified impacts, as conditions of project approval.

Discussion

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to in Section 15064.5?

Less Than Significant Impact with Mitigation: A records search was conducted on behalf of the Applicant from the SSJVIC of the CHRIS at California State University in Bakersfield, California, to determine if historical or archaeological sites had previously been recorded within the study area, if the project area had been systematically surveyed by archaeologists prior to the initial study, and/or whether the region of the field project was known to contain archaeological sites and to thereby be archaeologically sensitive.

According to the SSJVIC records search, there has been no previous cultural resource investigations within the Project area. There has only been one cultural resource study conducted withing a 0.5-mile radius of the project. There have been no cultural resources were previously recorded within the Project area or within the 0.5-mile radius. Additionally, no recorded cultural resources are recorded within the Project area or 0.5-mile radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Interest, California Inventory of Historic Resources, or the California State Historic Landmarks.

Additionally, a pedestrian survey was taken, and it also did not locate any prehistoric resources. However, a historic-era resource, a canal segment of the Modoc Ditch was identified in the Project boundary during the survey. The segment of the Modoc Ditch within the Project boundary was evaluated and found to not be eligible for inclusion within the CRHR.

Although no cultural resources were identified, the presence of remains or unanticipated cultural resources under the ground surface is possible. Implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that impacts to this checklist item will be *less than significant with mitigation* incorporation.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less Than Significant Impact with Mitigation: There are no known archaeological resources located within the project area. Implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that potential impact to unknown archeological resources will be *less than significant with mitigation* incorporation.

c) Would the project disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact with Mitigation: There are no known human remains buried in the project vicinity. If human remains are unearthed during project construction, there is a potential for a significant impact. As such, implementation of Mitigation Measure CUL-2 will ensure that impacts remain *less than significant with mitigation incorporation.*

Mitigation Measures for Impacts to Cultural Resources

Mitigation Measure CUL-1: If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance.

If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.

Mitigation Measure CUL-2: In the event that human remains are unearthed during excavation and grading activities of any future development project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if

applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

Mitigation Measure CUL-3: Native American pre-construction presentation. Prior to any ground disturbance, the proponent shall retain Santa Rosa Rancheria Cultural Staff to provide a pre-construction Cultural Sensitivity Training to construction staff regarding the discovery of cultural resources and the potential for discovery during ground disturbing activities, which will include information on potential cultural material finds and, on the procedures, to be enacted if resources are found. Tribal participation would be dependent upon the availability and interest of the Tribe.

VI. ENERGY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☑	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☑

Environmental Setting

Southern California Edison (SCE) provides electricity services to the City of Visalia. SCE serves approximately 15 million people in a 50,000 square-mile area of Central, Coastal, and Southern California. SCE supplies electricity to its customers through a variety of renewable and nonrenewable sources. Table 3-6 below shows the proportion of each energy resource sold to California consumers by SCE in 2019 as compared to the statewide average.

Fuel Type		SCE Power Mix	California Power Mix
Coal		0%	2.7%
Large Hydroelectric		7.9%	12.2%
Natural Gas		16.1%	37%
Nuclear		8.2%	9.3%
Other (Oil/Petroleum Coke/Waste Heat)		0.1%	0.2%
Unspecified Sources of Power[1]		32.6%	5.4%
Eligible Renewables	Biomass	0.6%	2.5%
	Geothermal	5.9%	4.9%
	Small Hydro	1%	1.4%
	Solar	16%	13.2%
	Wind	11.5%	11.1%
	Total Eligible Renewable	**35.1%**	**33.1%**
1. "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.			

Table 3-6. 2019 SCE and 2020 State average power resources; Source: Southern California Edison, California Energy Commission

SCE also offers Green Rate Options, which allow consumers to indirectly purchase up to 100% of their energy from renewable sources. To accomplish this, SCE purchases the renewable energy necessary to meet the needs of Green Rate participants from solar renewable developers.

Southern California Gas (SoCalGas) Company provides natural gas services to the project area. Natural gas is an energy source developed from fossil fuels composed primarily of methane (CH4). Approximately 45% of the natural gas burned in California is used for electricity generation, while 21% is consumed by the residential sector, 25% is consumed by the industrial sector, and 9% is consumed by the commercial sector.

Regulatory Setting

California Code of Regulations, Title 20

Title 20 of the California Code of Regulations establishes standards and requirements for appliance energy efficiency. The standards apply to a broad range of appliances sold in California.

California Code of Regulations, Title 24

Title 24 of the California Code of Regulations is a broad set of standards designed to address the energy efficiency of new and altered homes and commercial buildings. These standards regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. Title 24 requirements are enforced locally by the City of Selma Building Department.

California Green Building Standards Code (CALGreen)

CalGreen is a mandatory green building code that sets minimum environmental standards for new buildings. It includes standards for volatile organic compound (VOC) emitting materials, water conservation, and construction waste recycling.

SB 100

SB 100, passed in 2018, set a deadline in 2045 for 100% of energy to be renewable. Additionally, by 2030, 60% of all energy must be renewable. California is targeting this goal through solar and other renewable sources.

AB 178

For California to meet its renewable goals, AB 178 was passed in 2018. AB 178 states that starting in 2020 all new low rise residential buildings must be built with solar power.

City of Visalia General Plan

The 2030 General Plan includes the policies related to energy use that correlate to the proposed project:

- *T-P-41:* Integrate the bicycle transportation system into new development and infill redevelopment. Development shall provide short term bicycle parking and long-term bicycle storage facilities, such as bicycle racks, stocks, and rental bicycle lockers. Development also shall provide safe and convenient bicycle and pedestrian access to high activity land uses such as schools, parks, shopping, employment, and entertainment centers.
- *T-P-53:* Develop flexible parking requirements in the zoning ordinance for development proposals based on “best practices” and the proven potential to reduce parking demand.

Discussion

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less Than Significant Impact: The proposed project includes the construction and operation of single-family housing and neighborhood commercial space. During project construction there would be an increase in energy consumption related to worker trips and operation of construction equipment. This increase in energy use would be temporary and limited to the greatest extent possible through compliance with local, state, and federal regulations. Vehicle fuel consumption during project construction was estimated based on the assumed construction schedule, vehicle trip lengths, and the number of workers per construction phase as provided by CalEEMod, and Year 2023 gasoline/diesel MPG factors provided by the EMFAC2017. To simplify the estimation process, it was assumed that all worker vehicles used gasoline as a fuel source and all vendor vehicles used diesel as a fuel source. Table 3-7, below, provides gasoline and diesel fuel used by construction and on-road sources during each phase of project construction.

Construction Phase	# of Days	Daily Worker Trips[1]	Daily Vendor Trips[1]	Daily Hauling Trips[1]	Total Gasoline Fuel Use (gallons)[2]	Total Diesel Fuel Use (gallons)[2]
Demolition	70	15	0	45	13,790	2,727
Site Preparation	40	18	0	0	7,799	0
Grading	110	20	0	0	33,871	0
Building Construction	1110	289	76	0	262,856	73,051
Paving	75	15	0	0	8,836	0
Architectural Coating	75	58	0	0	2,574	0
Total	**1480**	**N/A**	**N/A**	**N/A**	**315,935**	**75,779**

1. Data provided by CalEEMod (Appendix A)
2. See Appendix D

Table 3-7. On-Road Mobile Fuel Use Generated by Construction Activities. Source: CalEEMod (v. 2020.4.0); EMFAC2014

While construction of the proposed project will result in additional energy consumption, this energy use is not unnecessary or inefficient. This energy use is justified by the energy-efficient nature of the proposed project and would be limited to the greatest extent possible through compliance with local, state, and federal regulations. Once construction is complete, the project is expected to achieve net zero energy consumption. The proposed project is subject to the California New Residential Zero Net Energy Action Plan 2015-2020. This plan establishes a goal for all residential buildings built after January 1, 2020, to be zero net energy. The California Energy Commission is responsible for the development and enforcement of specific strategies to achieve this goal. These strategies are implemented through Title 24, Part 6 of the California Building Code, which requires developers to include certain measures (including solar panels on all new residential buildings) to achieve required building efficiency standards.

Total Annual Operational VMT[1]	Annual Fuel Use (Gasoline)	Annual Fuel Use (Diesel)	Average MPG
14,141,034 Miles	**541,798 Gallons**	**60,808 Gallons**	**23.5**

1. Data Provided by CalEEMod
2. See Appendix D

Table 3-8. On-Road Mobile Fuel Use Generated by Operational Activities. Source CalEEMod (v. 2020.4.0); EMFAC2014

During project operations, the proposed project is not anticipated to result in wasteful fuel consumption. This is due to the distance of the project site to the commercial, recreational, and denser residential uses, resulting in less of a reliance on personal vehicles.

Because construction-related energy use would be temporary and limited to the greatest extent feasible through consistency with Federal, State, and local policies related to energy conservation, and operation of the project will comply with all energy efficiency standards required under Title 24, Section 6, and these standards were specifically developed to achieve net zero energy for residential projects, it can be presumed that the project will achieve net zero energy. The project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. The impact is *less than significant.*

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact: The proposed project will not conflict with or obstruct any state or local plans for renewable energy or energy efficiency. The proposed project will comply with all state and local policies related to energy efficiency and there is *no impact*.

VII. GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☑
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☑
ii) Strong seismic ground shaking?	☐	☐	☐	☑
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☑
iv) Landslides?	☐	☐	☐	☑
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☑
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct and indirect risks to life or property?	☐	☐	☐	☑
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☑
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☑	☐	☐

Environmental Setting

Geologic Stability and Seismic Activity

- **Seismicity**

  The Visalia Planning Area has no known major fault systems within its boundaries. There are small faults in the Southern San Joaquin Valley, approximately 30 miles away, though none of them are known to be active. The greatest potential for seismic activity in Visalia Planning Area is posed by the San Andreas Fault, approximately 75 miles away from the site, or the

Owens Valley Fault Group, which is located approximately 125 miles away from the project site.

- **Liquefaction**

  Liquefaction is a phenomenon whereby unconsolidated and/or near saturated soils lose cohesion and are converted to a fluid state as a result of severe vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in temporary, fluid-like behavior of the soil, which can result in landslides and lateral spreading. Soil liquefaction causes ground failure that can damage roads, pipelines, underground cables, and buildings with shallow foundations. Liquefaction hazards may exist in and around wetland areas and creeks, though soil types are generally too coarse or too high in clay content, and not likely to be subject to sufficient acceleration to cause liquefaction.

- **Landslides**

  Landslides refer to a wide variety of processes that result in the downward and outward movement of soil, rock, and vegetation under gravitational influence. Landslides are caused by both natural and human-induced changes in slope stability and often accompany other natural hazard events, such as floods, wildfire, or earthquake. Due very little elevation changes throughout the planning area, including the proposed project site, it is considered a low landslide hazard area.

- **Subsidence**

  Land Subsidence refers to the vertical sinking of land because of either manmade or natural underground voids. Subsidence has occurred throughout the Central Valley because of groundwater, oil, and gas withdrawal. The Kaweah Subbasin that underlies the Planning Area is in an overdraft condition on an average long-term basis. According to the most recent Urban Water Management Plan (UWMP), groundwater elevations have declined up to 50 feet between 1990 and 2010. While groundwater recharge efforts are in progress, groundwater levels will continue to decline unless recharge is increased.

Soils Involved in Project

The proposed project involves construction on two soil types. The properties of the soil are described briefly below:

- **Akers:** The Akers series consists of very deep, well drained soils formed in alluvium derived from granitic rock. Akers soils are on terraces. Slopes are 0 to 2 percent. They are well drained, negligible runoff, moderate permeability, but have moderately slow permeability in saline-sodic phases. There is available water storage of 24.61 cm.
- **Grangeville:** The Grangeville series consists of very deep, somewhat poorly drained soils that formed in moderate coarse textured alluvium dominantly from granitic rock sources. Grangeville soils are on alluvial fans and floodplains and have slopes ranging from 0 to 2 percent. It has negligible to very low runoff; moderately rapid permeability and moderate permeability in saline-sodic phases. There is available water storage of 18.34 cm.

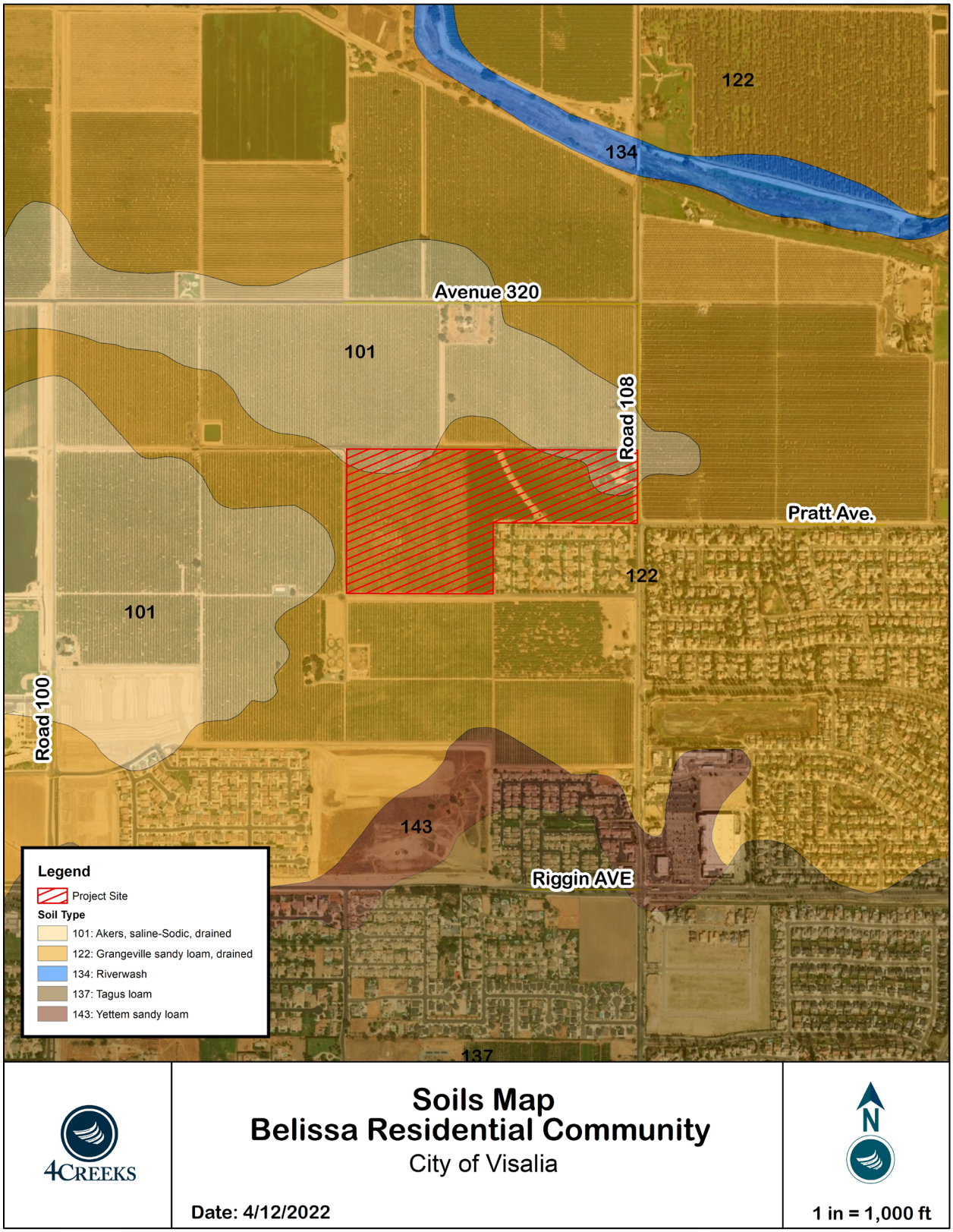


Figure 3-4: Soils Map

Regulatory Setting

California Building Code

The California Building Code (CBC) contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance. CBC provisions provide minimum standards to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location and maintenance of all buildings and structures and certain equipment.

City of Visalia Municipal Code (California Building Code)

The City of Visalia Municipal Code has incorporated and adopted the CBC, 2013 Edition, as promulgated by the California Building Standards Commission, which incorporates the adoption of the 2012 edition of the of the International Building Code, as amended with necessary California amendments and the 2012 International Building Code of the International Code Council.

City of Visalia General Plan

The 2030 General Plan includes the policies related to geology and soils that correlate to the proposed project:

- *OSC-P-28:* Require new development to implement measures, as appropriate, to minimize soil erosion related to grading, site preparation, landscaping, and construction.

Discussion

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

No Impact: Although the project is located in an area of relatively low seismic activity, the project site has a low chance of being affected by ground shaking from distant faults. The potential for strong seismic ground shaking on the project site is not a significant environmental concern due to the infrequent seismic activity of the area and distance to the faults. The project does not propose any components which could cause substantial adverse effects in the event of an earthquake. Additionally, the project has no potential to indirectly or directly cause the rupture of an earthquake fault. Therefore, there is *no impact* related to the risk of loss, injury or death involving a rupture of a known earthquake fault.

ii. Strong seismic ground shaking?

No Impact: The project site is in an area of low seismic activity. The proposed project does not include any activities or components which could feasibly cause strong seismic ground shaking, either directly or indirectly. There is *no impact.*

iii. Seismic-related ground failure, including liquefaction?

No Impact: The risk of liquification within the planning area outside of wetland areas is low because the soil types are generally unsuitable for liquefaction. The area's low potential for seismic activity would further reduce the likelihood of liquefaction occurrence. Because the project site is within an area of low seismic activity, and the soils associated with the project area not suitable for liquefaction, there are *no impacts.*

iv. Landslides?

No Impact: The Planning Area of Visalia is considered at low risk of small landslides. Additionally, the project site is generally flat and there are no hill slopes in the area. No geologic landforms exist on or near the site that would result in a landslide event. As a result, there is very low potential for landslides. There would be *no impact.*

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact: Because the project site is relatively flat, the potential for erosion is low. However, construction-related activities and increased impermeable surfaces can increase the probability for erosion to occur. Construction-related impacts related to erosion will be temporary and subject to best management practices (BMPs) required by SWPPP, which are developed to prevent significant impacts related to erosion from construction. Because impacts related to erosion would be temporary and limited to construction, and because required best management practices would prevent significant impacts related to erosion, the impact will remain *less than significant.*

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

No Impact: The soils associated with the project site are considered stable and have a low capacity for landslides, lateral spreading, subsidence, liquefaction, or collapse. Because the project area is stable, and this project would not result in a substantial grade change to the topography to the point that it would increase the risk of landslides, lateral spreading, subsidence, liquefaction or collapse, there is *no impact.*

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

No Impact: The proposed project site is not in an area with expansive soils. Because the soils associated with the project do not exhibit shrink swell behavior, implementation of the project will pose no risk to life or property caused by expansive soils and there is *no impact.*

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?

No Impact: The proposed project would not include the use of septic tanks or any other alternative wastewater disposal systems. The proposed buildings will tie into the Visalia's existing sewer services. Therefore, there would be *no impact.*

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact with Mitigation: There are no unique geologic features and no known paleontological resources located within the project area. However, there is always the possibility that paleontological resources may exist below the ground surface. Implementation of Mitigation Measures CUL-1 and CUL-2 will ensure that any impacts resulting from project implementation remain less than significant with mitigation incorporation.

VIII. GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	☐	☐	☑	☐
a) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☑

Environmental Setting

Natural processes and human activities emit greenhouse gases. The presence of GHGs in the atmosphere affects the earth's temperature. Without the natural heat-trapping effect of GHGs, the earth's surface would be about 34ºC cooler. However, it is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

The effect of greenhouse gasses on earth's temperature is equivalent to the way a greenhouse retains heat. Common GHGs include water vapor, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydro chlorofluorocarbons, and hydro fluorocarbons, per fluorocarbons, sulfur, and hexafluoride. Some gases are more effective than others. The Global Warming Potential (GWP) has been calculated for each greenhouse gas to reflect how long it remains in the atmosphere, on average, and how strongly it absorbs energy. Gases with a higher GWP absorb more energy, per pound, than gases with a lower GWP, and thus contribute more to global warming. For example, one pound of methane is equivalent to twenty-one pounds of carbon dioxide.

GHGs as defined by AB 32 include the following gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. GHGs as defined by AB 32 are summarized in Table 3-9. Each gas's effect on climate change depends on three main factors. The first being the quantity of these gases are in the atmosphere, followed by how long they stay in the atmosphere and finally how strongly they impact global temperatures.

Greenhouse Gas	Description and Physical Properties	Lifetime	GWP	Sources
Methane (CH4)	Is a flammable gas and is the main component of natural gas	12 years	21	Emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.

Greenhouse Gas	Description and Physical Properties	Lifetime	GWP	Sources
Carbon dioxide (CO2)	An odorless, colorless, natural greenhouse gas.	30-95 years	1	Enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees, and wood products, and also as a result of certain chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
Chloro-fluorocarbons	Gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are non-toxic nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface).	55-140 years	3,800 to 8,100	Were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone.
Hydro-fluorocarbons	A man-made greenhouse gas. It was developed to replace ozone-depleting gases found in a variety of appliances. Composed of a group of greenhouse gases containing carbon, chlorine an at least one hydrogen atom.	14 years	140 to 11,700	Powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases.
Nitrous oxide (N2O)	Commonly known as laughing gas, is a chemical compound with the formula N2O. It is an oxide of nitrogen. At room temperature, it is a colorless, non-flammable gas, with a slightly sweet odor and taste. It is used in surgery and dentistry for its anesthetic and analgesic effects.	120 years	310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
Pre-fluorocarbons	Has a stable molecular structure and only breaks down by ultraviolet rays about 60 kilometers above Earth's surface.	50,000 years	6,500 to 9,200	Two main sources of pre-fluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	An inorganic, odorless, colorless, and nontoxic nonflammable gas.	3,200 years	23,900	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing and as a tracer gas.

Table 3-9. Greenhouse Gasses; Source: EPA, Intergovernmental Panel on Climate Change

Regarding the quantity of these gases are in the atmosphere, we first must establish the amount of the particular gas in the air, known as Concentration, or abundance, which are measured in parts per million, parts per billion and even parts per trillion**.** To put these measurements in more relatable terms, one part per million is equivalent to one drop of water diluted into about 13 gallons of water, roughly a full tank of gas in a compact car. Therefore, it can be assumed larger emission of greenhouse gases lead to a higher concentration in the atmosphere.

Each of the designated gases described above can reside in the atmosphere for different amounts of time, ranging from a few years to thousands of years. All these gases remain in the atmosphere long enough to become well mixed, meaning that the amount that is measured in the atmosphere is roughly the same all over the world regardless of the source of the emission.

Regulatory Setting

AB 32

AB 32 set the 2020 greenhouse gas emissions reduction goal into law. It directed the California Air Resources Board to begin developing discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit. The reduction measures to meet the 2020 target are to be adopted by the start of 2011.

SB 1078, SB 107, and Executive Order S-14-08

SB 1078, SB 107, and Executive Order S-14-08 require California to generate 20% of its electricity from renewable energy by 2017. SB 107 then changes the 2017 deadline to 2010. Executive Order S-14-08 required that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.

San Joaquin Valley Air Pollution Control District

SJVAPCD adopted a Climate Change Action Plan (CCAP) in August 2008. While the plan does not have regulatory powers, it directs SJVAPCD to develop guidance to assist District staff, valley businesses, land-use agencies, and other permitting agencies in addressing GHG emissions as part of the CEQA process.

City of Visalia Climate Action Plan (CAP)

Visalia's draft 2013 CAP includes a baseline GHG emissions inventory of municipal and community emissions, identification, and analysis of existing and proposed GHG reduction measures, and reduction targets to help Visalia work toward the State's goal of an 80 percent reduction below baseline emissions by 2050. The plan sets 2020 and 2030 reduction targets, and includes reduction actions for energy, transportation, and waste and resource conservation.

City of Visalia Climate Change Initiatives

In January 2007, Visalia's mayor signed the "Cool Cities" pledge, part of the U.S. Mayors Climate Protection Agreement. By entering into this agreement, the City has adopted the goal of reducing citywide GHG emissions to 7% below 1990 levels by 2012. As detailed in the CAP, this goal was subsequently expanded in response to ARB's recommended reduction target of 15% below the 2005 baseline, and the City added a 2030 mitigation target to correlate with the 2030 General Plan Update and the goal of achieving an 80% reduction by 2050.

Discussion

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Less Than Significant Impact: The SJVAPCD does not provide numeric thresholds to assess the significance of greenhouse gas emissions. Instead, the SJVAPCD "Guidance for Valley Land Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" states that projects which achieve a 29% GHG emission reduction compared to Business as Usual (BAU) would be determined to have a less than significant individual and cumulative impact for GHG. "Business as usual" (BAU) conditions are defined based on the year 2005 building energy efficiency, average vehicle emissions, and electricity energy conditions. The BAU conditions assume no improvements in energy efficiency, fuel efficiency, or renewable energy generation beyond that existing today. The 2005 BAU conditions were estimated using CalEEMod.

Implementation of the proposed project would result in long-term greenhouse gas emissions associated with area sources, such as natural gas consumption, landscaping, applications of architectural coatings, and consumer products, as well as mobile emissions. The GHG emissions were estimated using CalEEMod (Appendix A).

	C02 (MT/Year)	CH4 (MT/Year)	N20 (MT/Year)	CO2e (MT/Year)
Operational Emissions	6,298	7.08	.29	6,562
2005 BAU	9,708	9.49	.75	10,171
% Reduction From BAU				**35%**

Table 3-10: Projected Project Operational GHG Emissions Compared to 2005 BAU; Source: (CalEEMod, V.2020.4.0)

The project's operational GHG are estimated to be 3,609 CO2e MT lower than the 2005 BAU. This is a reduction of 35%, more than the 29% threshold. Therefore, the impact is considered *less than significant.*

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

No Impact: The SJVAPCD states that individual and cumulative GHG emissions are considered less than significant if a project complies with an approved GHG emission reduction plan or GHG mitigation program with within the geographic area in which the project is located. The City of Visalia Climate Action Plan meets the requirements for a Qualified Greenhouse Gas Reduction Strategy. Therefore, the proposed project's GHG emissions would not be considered a significant impact if the proposed Project would be consistent with the City's GHG Reduction Strategy. Table 3-11, below, evaluates the proposed project's consistency with the applicable measures, both existing and proposed, in the GHG reduction plan.

Climate Action Plan Measures	Project Consistency with Strategy
2. Increase in Solar Photovoltaic (PV) Installations:	**Consistent.** The proposed project would involve solar panels on the new homes.
7. Urban Forestry: Requirement for all new development to have street trees, require shade over at least 25% of area in city pocket parks.	**Consistent.** The proposed project plans to provide trees on all local roads and included in the improvements on existing roads.
10. Bicycle Path Plan:	**Consistent.** The proposed project includes improvements with bike paths on Demaree Street and Linwood Street.
11. Infill and High-Density Development	**Consistent.** The proposed project has denser residential housing consistent with the 2030 General Plan.

Table 3-11. Project Consistency with Climate Action Plan Strategies.

As discussed above, the proposed project is consistent with the City of Visalia Climate Action Plan. The proposed project will comply with all Federal, State, and Local rules pertaining to the regulation of greenhouse gas emissions and the project will implement Best Performance Standards developed by the SJVAPCD. The project will not conflict with any plan, policy, or regulation developed to reduce GHG emissions. There is *no impact.*

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☑	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☑	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☑
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard or excessive noise to the public or the environment?	☐	☐	☐	☑
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
g) Expose people or structures, either directly or indirectly, to significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☑

Environmental Setting

The proposed project site is located approximately .6 miles Southeast of the nearest school (Ridgeview Middle School) and approximately 4.3 miles Northeast of the nearest public airport (Visalia Municipal Airport).

The Department of Toxic Substances Control's (DTSC's) Envirostor was used to identify any sites known to be associated with releases of hazardous materials or wastes within the project area. This research confirmed that the project would not be located on or nearby a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

Regulatory Setting

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S. Code [U.S.C.] §9601 et seq.).

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or the Superfund Act) authorizes the President to respond to releases or threatened releases of hazardous substances into the environment.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) sets and enforces Occupational Safety and Health Standards to assure safe working conditions. OSHA provides training, outreach, education, and compliance assistance to promote safe workplaces. The proposed Project would be subject to OSHA requirements during construction, operation, and maintenance.

Toxic Substances Control Act of 1976 (15 U.S.C. §2601 et seq.).

The Toxic Substance Control Act was enacted by Congress in 1976 and authorizes the EPA to regulate any chemical substances determined to cause an unreasonable risk to public health or the environment.

Hazardous Waste Control Law, Title 26.

The Hazardous Waste Control Law creates hazardous waste management program requirements. The law is implemented by regulations contained in Title 26 of the California Code of Regulations (CCR), which contains requirements for the following aspects of hazardous waste management:

- Identification and classification;
- Generation and transportation;
- Design and permitting of recycling, treatment, storage, and disposal facilities;
- Treatment standards;
- Operation of facilities and staff training; and
- Closure of facilities and liability requirements.

California Code of Regulations, Title 22, Chapter 11.

Title 22 of the California Code of Regulations contains regulations for the identification and classification of hazardous wastes. The CCR defines a waste as hazardous if it has any of the following characteristics: ignitability, corrosivity, reactivity, and/or toxicity.

California Emergency Services Act

The California Emergency Services Act created a multi-agency emergency response plan for the state of California. The Act coordinates various agencies, including CalEPA, Caltrans, the California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices.

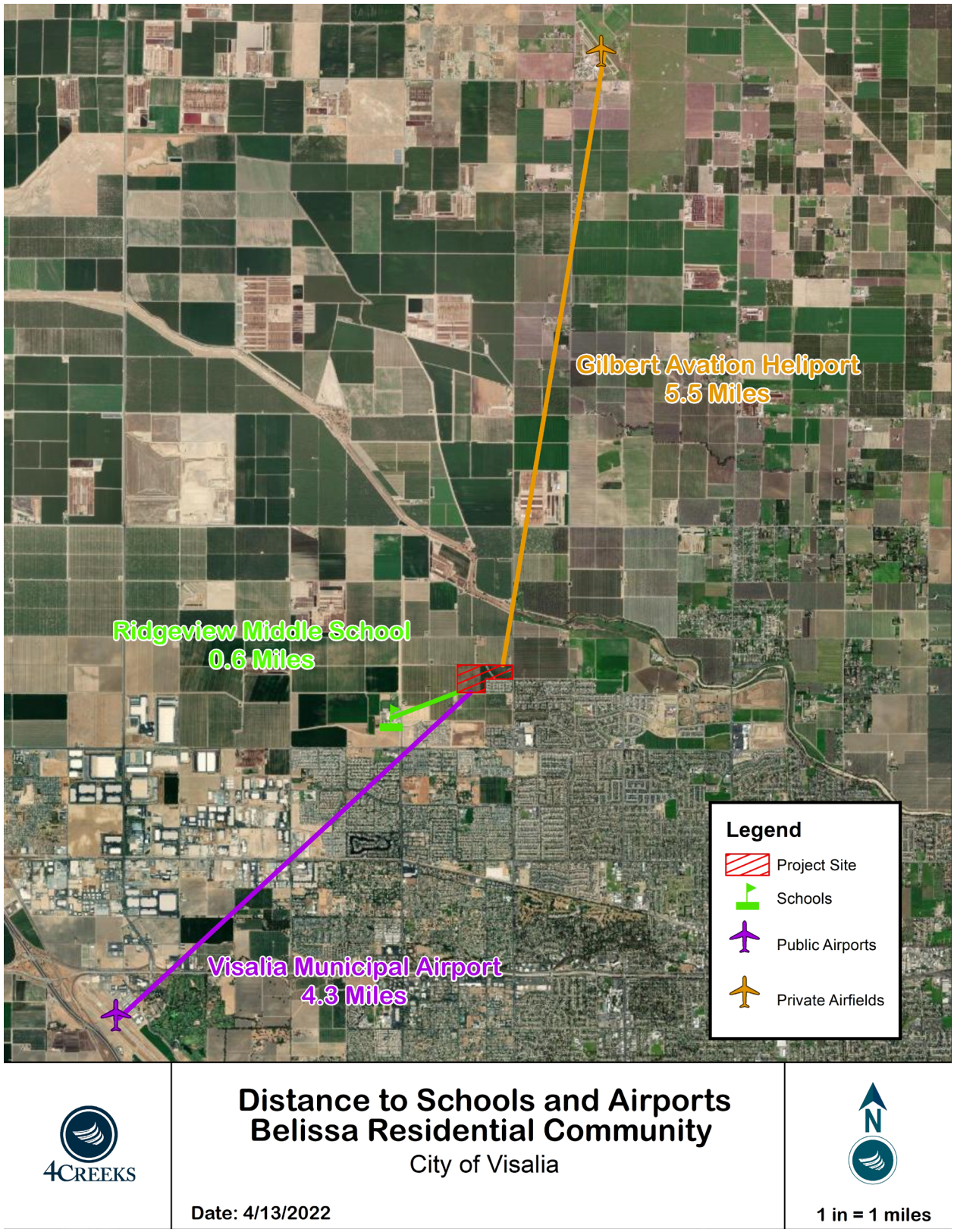


Figure 3-5: Distance to Schools and Airports

Discussion

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than Significant Impact: Project construction activities may involve the use, storage, and transport of hazardous materials. During construction, the contractor will use fuel trucks to refuel onsite equipment and may use paints and solvents to a limited degree. The storage, transport, and use of these materials will comply with Local, State, and Federal regulatory requirements. There is the potential for small leaks due to refueling of construction equipment, however standard construction Best Management Practices (BMPs) included in the SWPPP will reduce the potential for the release of construction related fuels and other hazardous materials by controlling runoff from the site and requiring proper disposal or recycling of hazardous materials. The impact is *less than significant.*

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less than Significant Impact: There is no reasonably foreseeable condition or incident involving the project that could result in release of hazardous materials into the environment, other than any potential accidental releases of standard fuels, solvents, or chemicals encountered during typical construction of a residential subdivision. Should an accidental hazardous release occur or should the project encounter hazardous soils, existing regulations for handling hazardous materials require coordination with the California Department of Toxic Substances Control for an appropriate plan of action, which can include studies or testing to determine the nature and extent of contamination, as well as handling and proper disposal. Therefore, potential impacts are *less than significant*.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact: The project is located approximately .6 miles from an existing middle school. The project does not involve the use or storage of hazardous substances other than small amounts of pesticides, fertilizers, and cleaning agents required for normal maintenance of structures and landscaping. The project would not emit hazardous emissions or involve the handling of acutely hazardous materials or waste. Therefore, there would be *no impact.*

d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact: The project site is not listed as a hazardous materials site pursuant to Government Code Section 65962.5 and is not included on a list compiled by the Department of Toxic Substances Control. There would be *no impact.*

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact: The proposed project is located approximately 4.1 miles West of the nearest public airport (Visalia Municipal Airport) and is not located in an airport land use plan. Implementation of the proposed project would not result in a safety hazard for people residing or working in the project area. There is *no impact.*

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact: The City's design and environmental review procedures shall ensure compliance with emergency response and evacuation plans. In addition, the site plan will be reviewed by the Fire Department per standard City procedure to ensure consistency with emergency response and evacuation needs. Therefore, the proposed project would have *no impact* on emergency evacuation.

g) Would the project expose people or structures, either directly or indirectly, to significant risk of loss, injury or death involving wildland fires?

No Impact: The land surrounding the project site is developed with urban uses and farmlands which are not considered to be wildlands. Additionally, the City of Visalia General Plan finds that fire hazards within the Planning Area, including the proposed project site, have low frequency, limited extent, limited magnitude, and low significance. The proposed project would not expose people or structures to significant risk of loss, injury or death involving wildland fires and there is *no impact.*

X. HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise sustainably degrade surface or ground water quality?	☐	☑	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☑	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner, which would:				
(i) result in substantial erosion or siltation on- or off-site?	☐	☑	☐	☐
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	☐	☑	☐	☐
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☑	☐	☐
(iv) impede or redirect flood flows?	☐	☑	☐	☐
d) In flood hazard, tsunami, or seiche zones risk the release of pollutants due to project inundation?	☐	☐	☐	☑
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater movement plan?	☐	☐	☐	☑

Environmental Setting

Surface Water

Visalia is in the center of the Kaweah River Delta System, resulting in many rivers and creeks flowing through the city. The St. Johns River is the City's primary surface water feature. Other significant surface water features include Modoc Ditch, Mill Creek Ditch, Mill Creek, Tulare Irrigation District (TID) Canal, Packwood Creek, Cameron Creek, Deep Creek, Evans Creek, Persian Ditch, and several other local ditches. These receive a significant amount of water during the rainy season and help drain stormwater.

Groundwater

Groundwater in Tulare County is present in valley deposits of alluvium that are several thousand feet thick and occurs in both confined and unconfined conditions. The creeks in Visalia are tied to the groundwater system. The creeks lose water in the winter while they feed the groundwater, and gain water in the summer when the groundwater feeds the creeks. The depth to groundwater varies

significantly throughout the valley floor area of Tulare County. In the area around Visalia, depth to groundwater varies from about 120 feet below ground surface along the western portion of the city to approximately 100 feet below ground surface to the east, as measured in spring 2010. Groundwater levels measured in the city have declined since the 1940s, from approximately 30 feet below ground surface in 1940 to 120 feet below ground surface in 2010. Water quality of the groundwater that underlies the Planning Area is excellent for domestic and agricultural uses. This is most likely due to the abundant snowmelt that originates in the Sierra Nevada. Groundwater is the primary source of drinking water for the planning area residents.

Stormwater Drainage

The City, in conjunction with Kaweah Delta Water Conservation District and Tulare Irrigation District, operates and maintains a vast municipal storm drainage system that consists of drainage channels, 23 detention and retention basins, 33 pump stations and 250 miles of pipe. Stormwater from the project site will be collected and conveyed to an on-site stormwater basin.

Regulatory Setting

Clean Water Act

The Clean Water Act (CWA) is enforced by the U.S. EPA and was developed in 1972 to regulate discharges of pollutants into the waters of the United States. The Act made it unlawful to discharge any pollutant from a point source into navigable waters unless a National Pollution Discharge Elimination System (NPDES) Permit is obtained.

National Flood Insurance Act

The Federal Emergency Management Agency (FEMA) is tasked with responding to, planning for, recovering from, and mitigating against disasters. The Federal Insurance and Mitigation Administration within FEMA is responsible for administering the National Flood Insurance Program (NFIP) and administering programs that aid with mitigating future damages from natural hazards.

California Water Quality Porter-Cologne Act

California's primary statute leading water quality and water pollution concerns with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resource Control Board (SWRCB) and each of the nine Regional Water Quality Boards (RWQCB) power to protect water quality and further develop the Clean Water Act within California. The applicable RWQCB for the proposed project is the Central Valley RWQCB.

Central Valley RWQCB

The proposed project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB requires a National Pollution Discharge Elimination System (NPDES) Permit and Stormwater Pollution Prevention Plan (SWPPP) for projects disturbing more than one acre of total land area. Because the project is greater than one acre, a NPDES Permit and SWPPP will be required.

City of Visalia General Plan

The 2030 General Plan includes the policies related to hydrology and water quality that correlate to the proposed project:

- *PSCU-P-59:* Require new developments to incorporate floodwater detention basins into project designs where consistent with the Stormwater Master Plan and the Groundwater Recharge Plan.
- *PSCU-P-60:* Control urban and stormwater runoff and point and non-point discharge of pollutants. As part of the City's Stormwater Management Program, adopt and implement a Stormwater Management Ordinance to minimize stormwater runoff rates and volumes, control water pollution, and maximize groundwater recharge. New development will be required to include Low Impact Development features that reduce impermeable surface areas and increase infiltration. Such features may include, but are not limited to:
    - Canopy trees or shrubs to absorb rainwater;
    - Grading that lengthens flow paths over permeable surfaces and increases runoff travel time to reduce the peak hour flow rate;
    - Partially removing curbs and gutters from parking areas where appropriate to allow stormwater sheet flow into vegetated areas;
    - Use of permeable paving in parking lots and other areas characterized by significant impervious surfaces;
    - On-site stormwater detention, use of bioswales and bioretention basins to facilitate infiltration; and
    - Integrated or subsurface water retention facilities to capture rainwater for use in landscape irrigation and other non-potable uses.
- *PSCU-P-46:* Adopt and implement a Water Efficient Landscaping Ordinance for new and/or refurbished development that exceeds mandated sizes, and ensure that all new City parks, streetscapes, and landscaped areas conform to the Ordinance's requirements. The Ordinance should include provisions to optimize outdoor water use by:
    - Promoting appropriate use of plants and landscaping;
    - Establishing limitations on use of turf including size of turf areas and use of cool-season turf such as Fescue grasses, with exceptions for specified uses (e.g., recreation playing fields, golf courses, and parks);
    - Establishing water budgets and penalties for exceeding them;
    - Requiring automatic irrigation systems and schedules, including controllers that incorporate weather-based or other self-adjusting technology;
    - Promoting the use of recycled water; and
    - Minimizing overspray and runoff.

Discussion

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less than Significant with Mitigation: The project will result in less than significant impacts to water quality due to potentially polluted runoff generated during construction activities. Construction may include excavation, grading, and other earthwork across most of the 59.84-acre project site. During storm events, exposed construction areas across the project site may cause runoff to carry pollutants, such a chemicals, oils, sediment, and debris. Implementation of a Stormwater Pollution Prevention Plan (SWPPP) will be required for the project. A SWPPP identifies all potential sources of pollution that could affect stormwater discharges from the project site and identifies best management practices (BMPs) related to stormwater runoff. As such, implementation of Mitigation Measures HYD-1 and HYD-2 will ensure impacts remain *less than significant with mitigation.*

b) **Would the project substantially decrease groundwater supplies or interfere with groundwater recharge such that the project may impede sustainable groundwater management of the basin?**

Less than Significant Impact: Water services will be provided by the Cal Water, Visalia District, upon development. The District currently produces about 27 million gallons of local groundwater per day from 75 active wells and delivers it to customers through more than 519 miles of pipeline. The District delivers water to residential, commercial, industrial, and governmental customers. Residential customers account for most of the District's service connections and 69 percent of its water uses. Non-residential water uses account for 28 percent of total demand, while distribution system losses account for 3 percent. The system produced 30,152 acre-feet (AF) of groundwater in 2020. The available water supply is expected to supply the projected population. The system has a capacity to pump 100,829 acre-feet per year (afy), all from groundwater. The projected demand is expected to 35,276 AF in 2030, 38,310 AF in 2035, and 41,258 AF in 2040.

Using average per-person water use in Visalia (183 gallons; 2020 Urban Water Management Plan) and the average household size in Visalia (2.99 persons; US Census Bureau), water demand for the proposed 477-unit residential development is estimated to be approximately 261,000 gallons of water daily, or about 292-acre feet per year. With an expected increase of 5,124 AF from 2020 to 2030, there will be enough water supply for the proposed project. The most water-intensive aspect of the Project (High Density Residential homes) is consistent with the City's General Plan land use designation. As such, the Project would not affect groundwater supplies beyond what has already been analyzed in the most current General Plan EIR or Urban Water Management Plan.

The project would result in nearly full development of the site, which would convert approximately 59.84 acres from pervious surfaces to impervious surfaces. However, this would not significantly interfere with groundwater recharge because all stormwaters would be collected and diverted to a new stormwater basin located on the Southwest area of the project site for groundwater recharge. Because the addition of impervious surfaces would not interfere substantially with groundwater recharge and the project would not utilize groundwater resources beyond what has been previously analyzed in the Visalia Planning Area General Plan EIR or the Urban Water Management Plan, the impact would be *less than significant.*

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner, which would:

i. Result in substantial erosion or siltation on- or off-site?

Less than Significant with Mitigation: The proposed project would result in the addition of impervious surfaces and alter existing drainage patterns on the 59.84-acre project site which would have the potential to result in erosion or siltation on- or off-site. The disturbance of soils during construction could cause erosion, resulting in temporary construction impacts. However, this impact would be appropriately mitigated through implementation of a Stormwater Pollution Prevention Plan (SWPPP) which include mandated erosion control measures, which are developed to prevent significant impacts related to erosion caused by runoff during construction (Mitigation Measure HYD-1). The Project proponent will also be required to prepare drainage plans (Mitigation Measure HYD-2) and a

Development Maintenance Manual (Mitigation Measure HYD-3) to ensure that existing drainage patterns are maintained during project operations and that that the project would not result in substantial erosion or siltation on- or off-site. The impact is *less than significant with implementation of these mitigation measures.*

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

Less than Significant with Mitigation: The proposed project would result in the addition of impervious surfaces on the 59.84-acre project site which would have the potential to increase surface runoff resulting in flooding on- or off-site. This impact would be appropriately mitigated through implementation of Mitigation Measure HYD-2, which requires the project to submit drainage plans to the City Engineer prior to the issuance of grading permits. The drainage plans will include BMPs to ensure runoff from the project will not result in flooding on- or off-site. Therefore, impacts are *less than significant with mitigation.*

iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less than Significant with Mitigation: The proposed project would result in the addition of impervious surfaces and alter existing drainage patterns on the 59.84-acre project site which would have the potential to impact existing stormwater drainage systems or provide additional sources of polluted runoff. The proposed project would contain a storm drainage basin to collect all runoff from the site. The disturbance of soils during construction could cause erosion, resulting in temporary construction impacts. However, this impact would be appropriately mitigated through implementation of a Stormwater Pollution Prevention Plan (SWPPP) which include mandated erosion control measures, which are developed to prevent significant impacts related to erosion caused by runoff during construction (Mitigation Measure HYD-1). During project operations, the proposed impervious surfaces, including roads, building pads, and parking areas, would collect automobile derived pollutants such as oils, greases, rubber, and heavy metals. This could contribute to point source and non-point source pollution if these pollutants were transported into waterways during storm events. The Project proponent will be required to prepare drainage plans (Mitigation Measure HYD-2) and a Development Maintenance Manual (Mitigation Measure HYD-3) to ensure that the project would not overwhelm the planned stormwater drainage basin or result in discharges of polluted runoff into local waterways. The impact is *less than significant with implementation of these mitigation measures.*

iv. Impede or redirect flood flows?

Less than Significant with Mitigation: The Project site is generally flat and no significant grading or leveling will be required. The proposed project site is not in proximity to a stream or river and will not alter the course of a stream or river. According to National Flood Hazard mapping by the Federal Emergency Management Agency, the proposed project is slightly in an AE flood zone, which has a 1% chance of flooding every year. Only .46 acres on the Northern portion of the site is designated as an AE flood zone, while the rest is not at risk of flooding.

The proposed project would result in the addition of impervious surfaces on the 59.84-acre project site which could affect drainage and flood patterns. This impact would be appropriately mitigated

through implementation of Mitigation Measure HYD-2, which requires the project to submit drainage plans to the City Engineer prior to the issuance of grading permits. The drainage plans will include BMPs to ensure the project would not impede or redirect flood flows. Therefore, impacts are *less than significant with mitigation.*

d) Would the project, in flood hazard, tsunami, or seiche zones, risk the release of pollutants due to project inundation?

No Impact: The proposed project is located inland and not near an ocean or large body of water, therefore, would not be affected by a tsunami. The proposed project is in a relatively flat area and would not be impacted by inundation related to mudflow. Since the project is in an area that is not susceptible to inundation, the project would not risk release of pollutants due to project inundation. As such, there is *no impact.*

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact: The project would not conflict with or obstruct the implementation of a water quality control plan or sustainable groundwater management plan. The proposed project is consistent with the Central Valley RWQCB. The project will comply with all applicable rules and regulations regarding water quality and groundwater management and there is *no impact.*

Mitigation Measures for Hydrology and Water Quality

Mitigation Measure HYD-1: Prior to the issuance of any construction/grading permit and/or the commencement of any clearing, grading, or excavation, the Applicant shall submit a Notice of Intent (NOI) for discharge from the Project site to the California SWRCB Storm Water Permit Unit.

- Prior to issuance of grading permits for Phase 1 the Applicant shall submit a copy of the NOI to the City.
- The City shall review noticing documentation prior to approval of the grading permit. City monitoring staff will inspect the site during construction for compliance.

Mitigation Measure HYD-2: The Applicant shall require the building contractor to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the City 45 days prior to the start of work for approval. The contractor is responsible for understanding the State General Permit and instituting the SWPPP during construction. A SWPPP for site construction shall be developed prior to the initiation of grading and implemented for all construction activity on the Project site in excess of one (1) acre, or where the area of disturbance is less than one acre but is part of the Project's plan of development that in total disturbs one or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to storm water and shall include specific BMPs to control the discharge of material from the site. The following BMP methods shall include, but would not be limited to:

- Dust control measures will be implemented to ensure success of all onsite activities to control fugitive dust;
- A routine monitoring plan will be implemented to ensure success of all onsite erosion and sedimentation control measures;

- Provisional detention basins, straw bales, erosion control blankets, mulching, silt fencing, sand bagging, and soil stabilizers will be used;
- Soil stockpiles and graded slopes will be covered after two weeks of inactivity and 24 hours prior to and during extreme weather conditions; and,
- BMPs will be strictly followed to prevent spills and discharges of pollutants onsite, such as material storage, trash disposal, construction entrances, etc.

Mitigation Measure HYD-3: A Development Maintenance Manual for the Project shall include comprehensive procedures for maintenance and operations of any stormwater facilities to ensure long-term operation and maintenance of post-construction stormwater controls. The maintenance manual shall require that stormwater BMP devices be inspected, cleaned, and maintained in accordance with the manufacturer's maintenance conditions. The manual shall require that devices be cleaned prior to the onset of the rainy season (i.e., mid-October) and immediately after the end of the rainy season (i.e., mid-May). The manual shall also require that all devices be checked after major storm events. The Development Maintenance Manual shall include the following:

- Runoff shall be directed away from trash and loading dock areas;
- Bins shall be lined or otherwise constructed to reduce leaking of liquid wastes;
- Trash and loading dock areas shall be screened or walled to minimize offsite transport of trash; and,
- Impervious berms, trench catch basin, drop inlets, or overflow containment structures nearby docks and trash areas shall be installed to minimize the potential for leaks, spills or wash down water to enter the drainage system.

XI. LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☑
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑

Environmental Setting

The proposed project site is in the Visalia Planning Area, just outside of the city limits. The site is approximately 3 miles Northwest of the Visalia downtown. The site is currently zoned as AE-40 by the County of Tulare and is designated as Neighborhood Commercial, as well as Low, Medium, and High Density Residential by the Visalia General Plan. The Project involves rezoning from AE-40 to R-1-5 but does not need any General Plan Amendments.

The site currently contains one single-family residence and agriculture uses. The site is topographically flat and is bounded by agricultural uses to the North, South, East, and West. The site partially borders a single-family residential development to the Southeast. The agricultural properties adjacent to the site are designated by the Visalia General Plan as Low Density Residential, Medium Density Residential, Public Space, and Parks/Recreation.

Regulatory Setting

Visalia General Plan

The proposed project site is designated as Neighborhood Commercial, as well as Low, Medium, and High Density Residential by the Visalia General Plan.

- The Neighborhood Commercial designation provides for small-scale commercial that primary serves local neighborhoods such as convince shopping and small offices. Residential uses ranging from 10 to 15 housing units per gross acre are also allowed but are not assumed in the buildout.
- The Low-Density Residential designation is intended to provide for single family detached housing. Residential densities are typical of single-family subdivisions. The typical residential density for this designation ranges from two to 10 housing units per gross acre. Buildout is assumed at four units per gross acre.
- The Medium-Density Residential designation can accommodate a mix of housing types, from small-lot starter homes, zero-lot-line developments, and duplexes, to townhouses and garden apartments. Pedestrian-oriented design and clustering can support higher density. The typical residential density for this designation ranges from 10 to 15 housing units per gross acre. Buildout is assumed at 10 units per gross acre.
- The High-Density Residential designation is intended to accommodate attached homes, two- to four-plexes, and apartment buildings. High density residential development is typically found at

neighborhood centers and along corridors. The typical residential density for this designation ranges from 15 to 35 housing units per gross acre. Buildout is assumed at 16.5 units per gross acre.

The 2030 General Plan includes the policies related to land use that correlate to the proposed project:

- *LU-P-19:* Ensure that growth occurs in a compact and concentric fashion by implementing the General Plan's phased growth strategy.
- *LU-P-20:* Allow annexation and development of residential, commercial, and industrial land to occur within the Tier I Urban Development Boundary (UDB) at any time, consistent with the City's Land Use Diagram.
- *LU-P-28:* Continue to use natural and man-made edges, such as major roadways and waterways within the city's Urban Area Boundary, as urban development limit and growth phasing lines.
- *LU-P-71:* Ensure that noise, traffic, and other potential conflicts that may arise in a mix of commercial and residential uses are mitigated through good site planning, building design, and/or appropriate operational measures.
- *LU-P-47:* Establish criteria and standards for pedestrian, bicycle, and vehicle circulation networks within new subdivisions and non-residential development.

City of Visalia Zoning Ordinance

The proposed project site needs rezoning from AE-40 to R-1-5. A conditional use permit is needed for density spread and lot sizes that do not meet the R-1 zoning standards. R-1-5 is intended to provide living area within the city where development is limited to low density concentrations of one-family dwellings where regulations are designed to accomplish the following:

- to promote and encourage a suitable environment for family life;
- to provide space for community facilities needed to compliment urban residential areas and for institutions that require a residential environment;
- to minimize traffic congestion and to avoid an overload of utilities designed to service only low-density residential use.

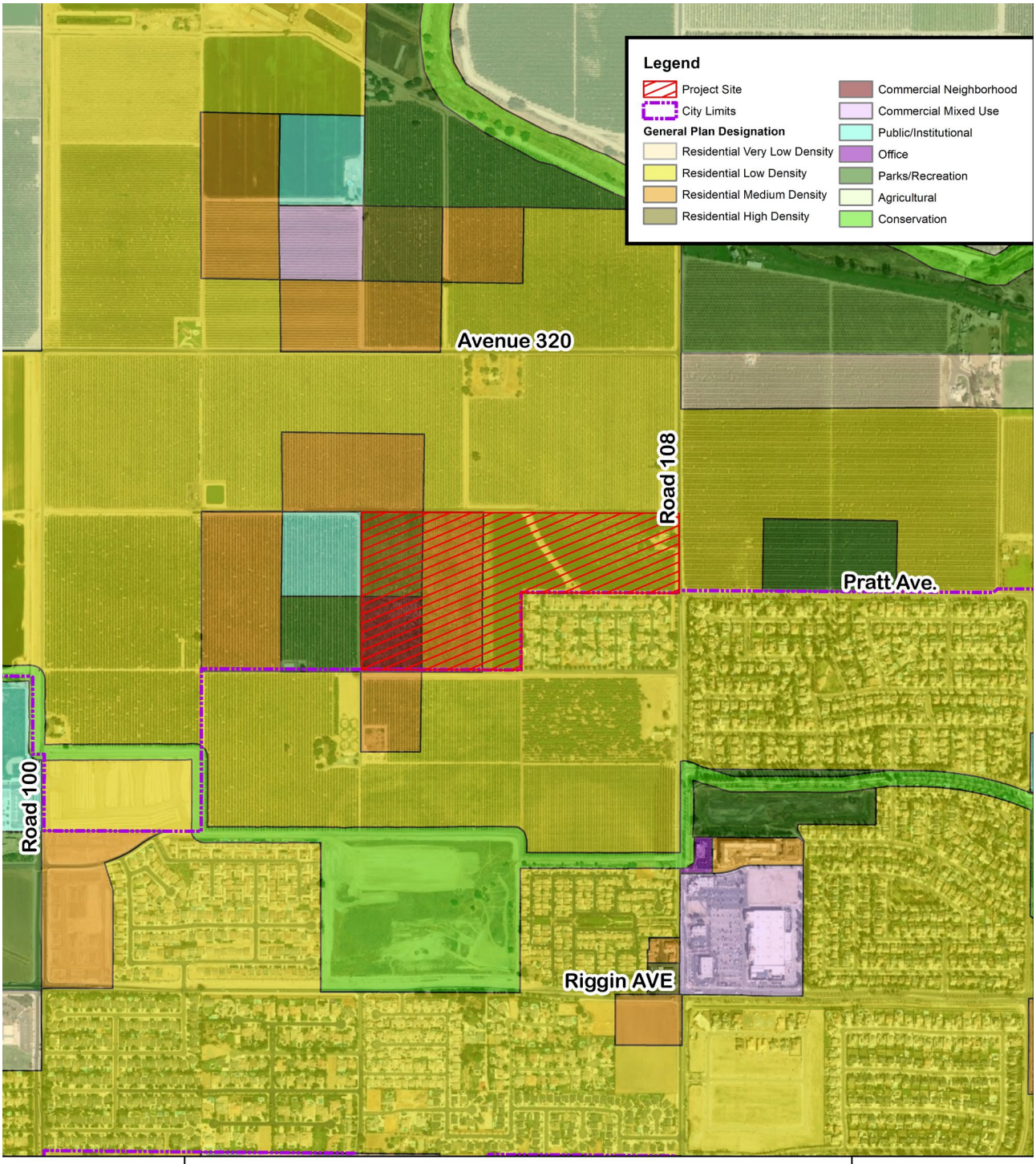


Figure 3-6: General Plan Land Use Designation

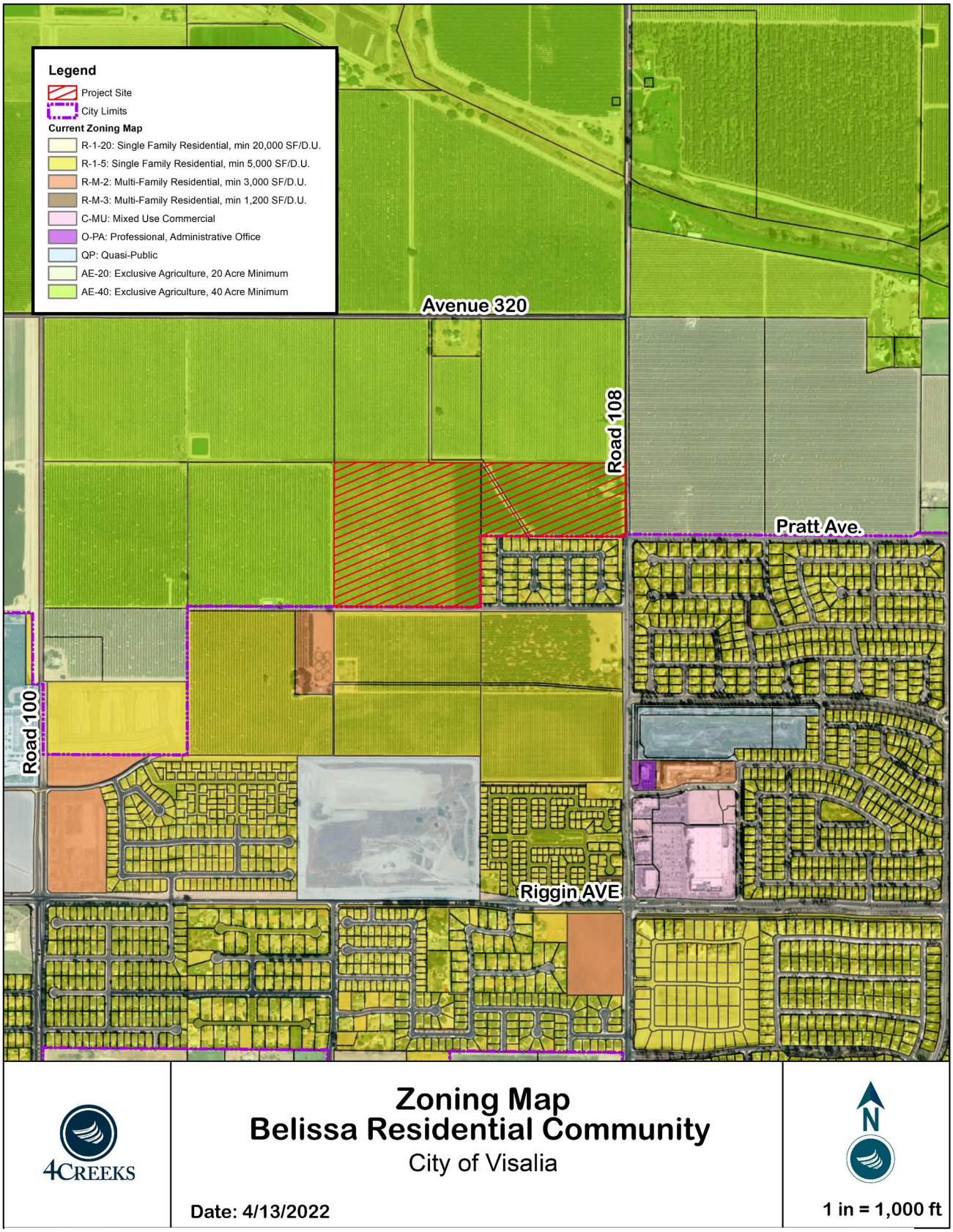


Figure 3-7: Zoning Map

Discussion

a) Would the project physically divide an established community?

No Impact: The proposed project will not physically divide an established community. The proposed project site is designated for Neighborhood Commercial, as well as Low, Medium, and High Density Residential by the Visalia General Plan and the project is consistent with this land use designation. The project would continue to operate as the same designation following project implementation. There is *no impact.*

b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact: The project site is located on land designated for residential and commercial use. The proposed project does not conflict with this land use, or any other policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect. There is *no impact.*

XII. MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b) Result in the loss of availability of a locally - important mineral resource recovery site delineated on a local general plan, specific plan, or other lands use plan?	☐	☐	☐	☑

Environmental Setting

Tulare County contains mineral resources of sand, gravel, and crushed stone, found in alluvial deposits and hard rock quarries. Most of this mining takes place along rivers and at the base of the Sierra foothills. However, the Visalia Planning Area currently contains three former sand and gravel mines, but no currently operating mines and no designated Mineral Resource Zones.

Regulatory Setting

California State Surface Mining and Reclamation Act

The California State Surface Mining and Reclamation Act was adopted in 1975 to regulate surface mining to prevent adverse environmental impacts and to preserve the state's mineral resources. The Act is enforced by the California Department of Conservation's Division of Mine Reclamation.

Discussion

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact: The project site has no known mineral resources that would be of a value to the region and the residents of the state, therefore the proposed project would not result in the loss of impede the mining of regionally or locally important mineral resources. There is *no impact.*

b) Would the project result in the loss of availability of a locally - important mineral resource recovery site delineated on a local general plan, specific plan, or other lands use plan?

No Impact: There are no known mineral resources of importance to the region and the project site is not designated under the City's or County's General Plan as an important mineral resource recovery site. For that reason, the proposed project would not result in the loss of availability of known regionally or locally important mineral resources. There is *no impact.*

XIII. NOISE

Would the project result in:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permeant increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑	☐
b) Generation of excessive ground-borne vibration or groundborne noise levels?	☐	☐	☑	☐
c) For a project located within the vicinity of a private airstrip or, an airport land use plan or, where such a plan has not been adopted, within two miles of public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑

Environmental Setting

Noise is often described as unwanted sound. Sound is the variation in air pressure that the human ear can detect. If the pressure variations occur at least 20 times per second, they can be detected by the human ear. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Ambient noise is the "background" noise of an environment. Ambient noise levels on the proposed project site are primarily due to agricultural activities and traffic. Construction activities usually result in an increase in sound above ambient noise levels.

Vibration is seismic waves that radiate along the surface of the earth and downward into the earth. Operation of heavy construction equipment, particularly pile driving and other impacts devices such as pavement breakers create this vibration.

Sensitive Receptors

Noise level allowances for various types of land uses reflect the varying noise sensitivities associated with those uses. Residences, hotels/motels, hospitals, schools, and libraries are some of the most sensitive land uses to noise intrusion and therefore have more stringent noise level allowances than most commercial or agricultural uses that are not subject to impacts such as sleep disturbance. The nearest sensitive receptor is the Wildhorse Subdivision that borders the Southeast border of the site.

Regulatory Setting

City of Visalia Noise Ordinance

The City of Visalia Noise Ordinance provides noise level standards for land use compatibility. Exterior and interior noise levels may not exceed any of the categorical noise level standards shown in Table 3-13. The standards are shown in A-weighted decibels (dBA). For Single Family Residential, the exterior noise during the daytime is to be below 70 dBA, and the indoor noise during the daytime is to be below 55 dBA.

Category	*Cumulative number of minutes in any one hour time period*	*Evening and daytime (6:00 a.m. to 7:00 p.m.)*	*Nighttime (7:00 p.m. to 6:00 a.m.)*
Exterior Levels			
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65
Interior Levels			
1	5	45	35
2	1	50	40
3	0	55	45

Table 3-12: City of Visalia Noise Standards. Source: City of Visalia Noise Ordinance

City of Visalia General Plan

The current noise element of the City's General Plan establishes goals and policies intended to limit community exposure to excessive noise levels. Visalia's current General Plan identifies noise sources such as roadways, rails, and airports within the city and includes land use compatibility guidelines.

- *N-P-3:* Establish performance standards for noise reduction for new housing that may be exposed to community noise levels above 65 dB DNL/CNEL, as shown on the Noise Contour Maps, based on the target acceptable noise levels for outdoor activity levels and interior spaces in Tables 8-2 and 8-3. Noise mitigation measures that may be considered to achieve these noise level targets include but are not limited to the following:
    - Construct façades with substantial weight and insulation;
    - Use sound-rated windows for primary sleeping and activity areas;
    - Use sound-rated doors for all exterior entries at primary sleeping and activity areas;
    - Use minimum setbacks and exterior barriers;
    - Use acoustic baffling of vents for chimneys, attics, and gable ends;
    - Install a mechanical ventilation system that provides fresh air under closed window conditions.

Discussion

a) Would the project result in generation of a substantial temporary or permeant increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than Significant Impact: Project construction is anticipated to last approximately 70 months and will involve temporary noise sources in the vicinity of the project. The average noise levels generated by construction equipment that will likely be used in the proposed project are provided in Table 3-13.

The nearest residence and sensitive receptor is the Wildhorse Subdivision along the Southeast portion of the site. The City requires that mitigation measures be implemented if noise levels exceed 70 dB in sensitive outdoor areas or if interior noise levels exceed 55 dB. As shown in Figure 3-8, it was found that a residence must be at least 250 feet from construction in the exterior and 100 feet from construction in the interior to avoid noise levels exceeding these thresholds.

With the project bordering another residential community, a noise disturbance is unavoidable. However, the construction would comply with Visalia Municipal Code Chapter 8.36 to ensure that the construction noise impacts would be less than significant. Measures such as maintaining minimum setback distances between construction equipment and receptors, only having construction during weekday daytime hours, and noise barriers would be implemented to avoid significant construction noise impacts.

Long term noise levels resulting from the project would be produced by single family residential homes and neighborhood commercial, which are not normally associated with high operational noise levels. Because noise generated during project construction would be intermittent, short term, and would not exceed the thresholds established by the Visalia Noise Ordinance for sensitive receptors and the project does not propose uses that would typically generate high noise levels, the impact is *less than significant*.

Type of Equipment	Exterior Lmax at 50 feet (dBA)
Tractors	84
Loaders	80
Backhoes	80
Excavators	85
Generator Sets	82
Air Compressors	80
Rubber Tired Dozers	85
Forklifts	75
Welders	73
Graders	85
Scrapers	85
Cranes	85
Paving Equipment	85
Rollers	85

Table 3-13. Noise levels of noise-generating construction equipment at various distances. Source: Federal Highway Administration Construction Noise Handbook (dBA at 50 feet). Noise levels beyond 50 feet were estimated using the inverse square law based on given values for dBA at 50 feet.

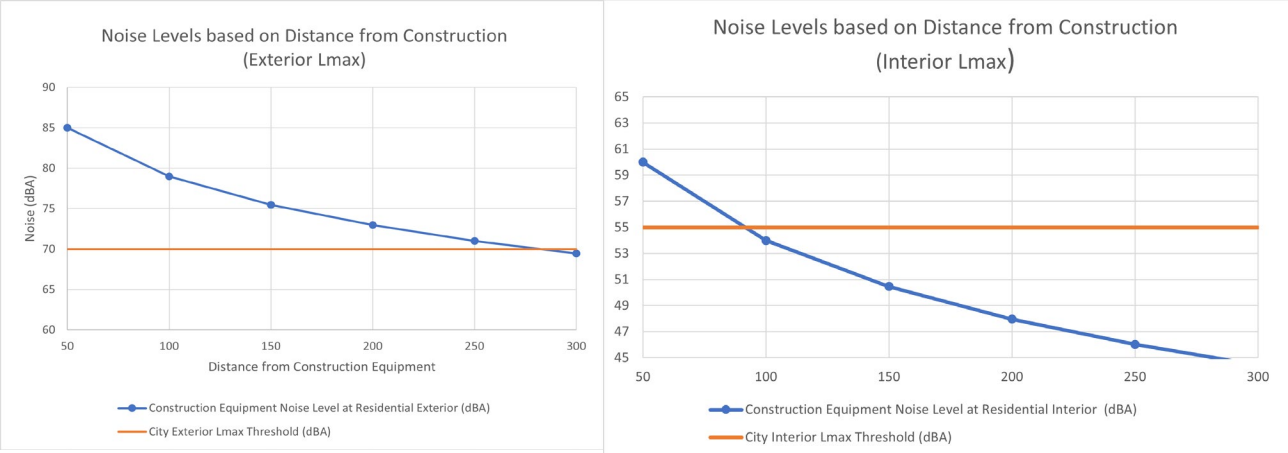


Figure 3-8: Construction Related Noise Levels Based on Distance from Construction Equipment. Interior Noise Assume 25 dB Exterior to Interior Noise Reduction

b) Would the project result in generation of excessive ground-borne vibration or groundborne noise levels?

Less than Significant Impact: Although project operations would not include uses or activities that typically generate excessive groundborne vibration or groundborne noise levels, project construction could introduce temporary groundborne vibration to the project site and the surrounding area. Sources that may produce perceptible vibrations are provided in Table 3-14.

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level (LV) at 25 feet
Pile driver (impact)	1.518 (upper range) 0.644 (typical)	112 104
Pile driver (sonic)	0.734 upper range 0.170 typical	105 93
Clam shovel drop (slurry wall)	0.202	94
Hydromill (slurry wall)	0.008 in soil 0.017 in rock	66 75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Table 3-14. Vibration Levels Generated by Construction Equipment. Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, September 2018.

The primary source of vibration during project construction would likely be from a bulldozer (tractor), which would generate 0.089 inch per second PPV at 25 feet with an approximate vibration level of 87 VdB. Vibration from the bulldozer would be intermittent and not a source of continual vibration. There are no adopted City standards or thresholds of significance for vibration. The evaluation of potential impacts related to construction vibration levels is based on the published data in the 2018 FTA Guidelines. At 25 feet, the buildings most susceptible to vibration could be impacted at .12 inch/second. Because vibrations generated by project construction would not exceed 0.12 inch/second, the impact is *less than significant.*

c) For a project located within the vicinity of a private airstrip or, an airport land use plan or, where such a plan has not been adopted, within two miles of public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact: The proposed project is not located within an airport land use plan, within the vicinity of a private airstrip, or within two miles of a public airport. There is *no impact*.

XIV. POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☑
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

Environmental Setting

The United States Census Bureau stated the population in the City of Visalia to be 141,214 as of April 2020. This is an increase from the 2010 census, which counted the population in the City of Visalia to be 124,442. Factors that influence population growth in Visalia include job availability, housing availability, and the capacity of proposed and existing infrastructure.

Regulatory Setting

The City of Visalia population size is controlled by the development code and Housing Element of the General Plan. These documents regulate the number of dwelling units per acre allowed on various land uses and establish minimum and maximum lot sizes, which has a direct impact on the City's population size.

City of Visalia 2003 General Plan Housing Element

The 2030 General Plan includes the policies related to population and housing that correlate to the proposed project:

- *LU-P-50:* Provide development standards to ensure residential development is not negatively affected by adjacent non-residential land uses.
- *U-P-71:* Ensure that noise, traffic, and other potential conflicts that may arise in a mix of commercial and residential uses are mitigated through good site planning, building design, and/or appropriate operational measures.

Discussion

a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact: The United States Census Bureau stated the population in the City of Visalia to be 141,214 as of April 2020. The project proposes to construct 309 new single family residential lots and 168

multifamily residential units. The US Census Bureau states that the City's average household size is 2.99 persons. Based on this average household size, the anticipated population increase because of the proposed project is 1,429 persons. The construction of housing at this location would not be unplanned, as the Visalia General Plan designated the proposed project site for low, medium, and high density residential, as well as neighborhood commercial. Additionally, the city is planning for more businesses, services, and infrastructure to accommodate the new population. Overall, the project will not constitute an unplanned increase in growth and population. There is *no impact.*

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact: There project would not displace any existing housing. There is one existing house on the site which will be removed. Overall, this will increase the amount of available housing in the community. There is *No Impact*.

XV. PUBLIC SERVICES

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable serve ratios, response times of other performance objectives for any of the public services:				
a. Fire protection?	☐	☐	☑	☐
b. Police protection?	☐	☐	☑	☐
c. Schools?	☐	☐	☑	☐
d. Parks?	☐	☐	☑	☐
e. Other public facilities?	☐	☐	☑	☐

Environmental Setting

Fire

Visalia and project site is served by The Visalia Fire Department (VFD), which operates 5 fire stations within the City of Visalia. The VFD will continue to provide fire protection services to the proposed project site following project implementation. VFD Fire Station No.55 is the nearest fire station to the site, approximately 1.9 miles to the Southwest.

Police

Law enforcement services are provided to the project site via The Visalia Police Department (VPD). The VPD will continue to provide police protection services to the proposed project site following project implementation. The VPD headquarters are located approximately 3.24 miles Southeast of the proposed project site. VPD Substation District 1 is located approximately 2.9 miles Southeast of the project site.

Schools

The proposed project site is located within the Visalia Unified School District (VUSD) from Kindergarten through 12th Grade. The District includes 25 elementary schools, four middle schools, four traditional high schools, and alternative education programs. The nearest school is located approximately .6 miles Southeast (Ridgeview Middle School).

Regulatory Setting

California Fire Code

The California Fire Code (Title 24, Part 9 of the California Code of Regulations) establishes regulations to safeguard against hazards of fire, explosion, or dangerous conditions in new and existing buildings,

structures, and premises. The provisions of the Fire Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure throughout the State of California. The Fire Code includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, and wildland-urban interface areas.

City of Visalia Fire Department Plan Check and Hydrant Ordinance

Visalia's requirements for new construction include provisions for the Fire Department to review building and site plans prior to the issuance of any permit. The Fire Department ensures that proposed projects will be adequately served by water, and accessible to emergency vehicles. The Department also enforces the City's Hydrant Ordinance, which states that subdividers are responsible for the installation of water mains and hydrants and determines the minimum spacing for fire hydrants. Street dimensions are scrutinized to ensure that space will be preserved for ladder trucks to be stabilized, and for emergency vehicles to turn around. Basic requirements in the City's subdivision ordinance include 52-foot minimum right-of-way widths and a 53-foot turning radius for cul-de-sacs.

City of Visalia General Plan

The 2030 General Plan includes the policies related to public services that correlate to the proposed project:

- *PSCU-P-33:* Coordinate land use and development with school location and site design, working with the Visalia Unified School District and other districts to ensure that adequate facilities are available and integrated with neighborhoods.

Discussion

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable serve ratios, response times of other performance objectives for any of the public services:

a. Fire protection?

Less than Significant Impact: The VFD will provide fire protection services to the proposed development. The closest fire station is Station No.55, located 1.9 miles Southwest of the project site at 6921 W Ferguson Ave. The Fire Department uses the National Fire Protection Association (NFPA) standard for fire protection services, which requires 1 responder per 1,000 residents. The addition of 477 residential units will increase the demand for fire protection services. The city currently has .48 responders per 1,000 residents. By 2030, the city expects growth up to a total of 210,000 residents. This would result in .32 responders per 1,000 residents. This will require an additional 85 on-duty responders by 2030 to meet 1 responder per 1,000 residents, or 41 new responders to meet the current ratio. The existing fire stations are placed to provide optimum service, however new stations will be needed to support the expanding city. To support the expansion of fire services, payment of development impact fees will be required for the proposed project.

The timing of when new fire service facilities would be required or details about size and location cannot be known until such facilities are planned and proposed, and any attempt to analyze impacts to a potential future facility would be speculative. As new or expanded fire service facilities become necessary, construction or expansion projects would be subject to their own separate CEQA review in order to identify and mitigate any potential environmental impacts. Therefore, the impact is *less than significant.*

b. Police protection?

Less than Significant Impact: The VPD will provide services to the proposed development. The VPD headquarters are located approximately 3.24 miles Southeast of the proposed project site. VPD Substation District 1 is located approximately 2.9 miles Southeast of the project site. The development would increase the demand for police service with the addition of 477 residential units. The VPD does not establish service standards either in terms of officers per thousand residents or in incident response time but plans to maintain the current ratio of 1.7 officers per 1,000 residents. The Department has 143 sworn officers working out of two districts, as well as seven reserve sworn officers, 64 civilian officers, and 65 volunteers. The demand for additional officers and equipment will be compensated by the development impact fees required for the proposed Project.

The timing of when new police service facilities would be required or details about size and location cannot be known until such facilities are planned and proposed, and any attempt to analyze impacts to a potential future facility would be speculative. As new or expanded police service facilities become necessary, construction or expansion projects would be subject to their own separate CEQA review in order to identify and mitigate any potential environmental impacts. Therefore, the impact is *less than significant*.

c. Schools?

Less than Significant Impact: The proposed project is within the (VUSD) from Kindergarten through 12th Grade. The District includes 25 elementary schools, four middle schools, four traditional high schools, and alternative education programs. The City of Visalia predicts the generation rates shown below in Table 3-15.

School Type	Single Family Generation Rate	Multi Family Generation Rate
Elementary School	0.448	.144
Middle School	.092	.017
High School	.156	.025

Table 3-15: Student Generation Rates, City of Visalia General Plan

Since the proposed project includes the addition of 309 single family homes and 168 multi-family residential units, the number of students will increase by approximately 672. The proposed project site is located within the Planning Area's limits and therefore, growth associated with the Project has been planned and expected. In addition to the goals and policies of the City's General Plan, future development is required to pay development impact fees to the school districts at the time of building permit issuanceThese impact fees are used by the school districts to maintain existing and develop new facilities, as needed. Therefore, the impact is *less than significant.*

d. Parks?

Less than Significant Impact: The addition of 477 new residential units would result in more use of the existing parks. Parks within a half-mile to one-mile radius that would service the proposed development include Shannon Ranch Neighborhood Park. The project plans to include 2.18 acres of parkland. Since the project would not lower the existing level of services for parks, and the proposed project would contribute its fair share to parks facilities through in-lieu fees, the impact is *less than significant.*

e. Other public facilities?

Less than Significant Impact: The proposed project would be required to pay a development impact fee for Public Facilities, including for the Civic Center, Corporation Yard, and Libraries. Additional development fees will be paid to offset the increased demand for public services related to transportation, water, wastewater, groundwater recharge, storm drainage, and general governmental services. Fees for transportation, water, wastewater, and general government are based on building square footage and will be calculated prior to the issuance of building permits. Fees for groundwater recharge and storm drainage are based on site acreage.

While the payment of development fees could result in the construction of new or altered public service facilities, no specific projects have been identified at this time. As new or expanded public service facilities become necessary, construction or expansion projects would be subject to their own separate CEQA review in order to identify and mitigate any potential environmental impacts. Therefore, the impact is *less than significant*.

XVI. PARKS AND RECREATION

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☑	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☑

Environmental Setting

There are 40 park facilities totaling 678 acres within the Visalia Planning Area. The City of Visalia provides different types of parks and open space facilities, or park types, to meet park and open space recreation needs of the community. Park types include:

- Pocket Parks: A park typically between one-half and two acres in size intended to serve the needs of a specific neighborhood within a half-mile radius. There are currently 17 pocket parks in Visalia.
- Neighborhood Parks: A park typically 2 to 5 acres in size that provides basic recreation activities for one or more neighborhoods. There are currently 19 neighborhood parks in Visalia.
- Community Parks: A park typically ranging from 5 to 12 acres in size or larger, which are intended to serve the recreational needs of a larger area of the city. There are currently 4 community parks in Visalia.
- Large City Parks: A park generally larger than 40 acres in size intended to serve the recreational needs of all city residents and to create opportunities for contact with the natural environment. These parks may include a concentration of sports fields, golf courses, and areas for picnicking and passive enjoyment of open space. There are currently 2 large city parks in Visalia.
- Natural Corridors and Greenways: A network of greenways of varying size intended to serve the recreational needs of city residents. These parks may include facilities such as bikeways, walkways, and riding trails, and are primarily developed along the city's waterways. There is a total of 196 acres of natural corridors and greenways.

The Visalia Planning Area additionally contains two county parks and a public golf course. The golf course is not counted to the total amount of parkland. The Visalia General Plan states a total parkland standard of 5 acres of city parkland per 1,000 residents.

Regulatory Setting

Quimby Act

The 1975 Quimby Act (California Government Code section 66477) authorized cities and counties to pass ordinances requiring that developers set aside land, donate conservation easements, or pay fees for park improvements. The Act states that the dedication requirement of parkland can be a minimum of three acres per thousand residents or more and up to five acres per thousand residents if the existing ratio is greater than the minimum standard. Revenues generated through in-lieu fees collected and the Quimby Act cannot be used for the operation and maintenance of park facilities. In 1982, the Act was substantially amended. The amendments further defined acceptable uses of or restrictions on Quimby funds, provided acreage/population standards and formulas for determining the exaction, and indicated that the exactions must be closely tied (nexus) to a project's impacts as identified through studies required by the California Environmental Quality Act (CEQA).

City of Visalia General Plan

The 2030 General Plan includes the policies related to parks and recreation that correlate to the proposed project:

- *PSCU-P-2:* Strive to achieve and maintain a citywide standard of at least five acres of neighborhood and community parks per 1,000 residents.
- *PSCU-P-7:* Promote development of small pocket parks or play lots dispersed throughout new neighborhoods and in existing neighborhoods, where needed, on a voluntary basis in coordination with new infill development, consistent with the following planning guidelines:
    - Size: 0.5 to 2 acres; and
    - Facilities: the specific features of pocket parks should address the anticipated needs of nearby residents and/or workers. In a residential environment, the needs of small children and seniors should be emphasized. In mixed-use or commercial areas, lunchtime use by office workers and shoppers should be facilitated.
- *PSCU-P-10:* Adopt and implement parkland dedication requirements for all subdivisions, consistent with the Quimby Act and Policy PSCU-P-2. This requirement will be integrated with the City's Park Acquisition Development Fee Program.

Discussion

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less than Significant Impact: The proposed project is anticipated to increase the Visalia population by approximately 1,429 residents. Based on the desired parkland ratio of 5 acres per 1000 residents identified in the Visalia General Plan, the Project would need to provide approximately 7.14 acres of parkland/open space. The project would provide the minimum of 2.18 acres on site but will be required to pay in-lieu fees to offset the costs of parks and recreational facilities outside of the site. The impact is *less than significant.*

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact: The proposed project does not include any recreational facilities or require the construction or expansion of any recreational facilities that would have an adverse physical effect on the environment. There is *no impact.*

XVII. TRANSPORTATION

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☑	☐
b) Conflict or be inconsistent with the CEQA guidelines Section 15064.3, Subdivision (b)?	☐	☐	☑	☐
d) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☑
e) Result in inadequate emergency access?	☐	☐	☐	☑

Environmental Setting

Vehicular Access

Vehicular access to the project is available via North Demaree Street, River Way Drive, North Linwood Street and through the existing Wildhorse Subdivision via North Chinowth Street. The project includes a network of local streets that provide full access to the project site.

Parking

Each Single-Family home will contain a two-car garage, as well as room for two more cars in the driveway. Additionally, there will be parking available on the street. For the 168-unit Multi-family section, there is 284 parking spots. 168 of these spots are in garages. During construction, workers will utilize existing parking areas and/or temporary construction staging areas for parking of vehicles and equipment.

Regulatory Setting

CEQA Guidelines Section 15064.3, Subdivision (b): Criteria for Analyzing Transportation Impacts

(1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be considered to have a less than significant transportation impact.

(2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent

that such impacts have already been adequately addressed at a programmatic level, a lead agency may tier from that analysis as provided in Section 15152.

(3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

(4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

City of Visalia Standard Specifications

The City of Visalia Standard Specifications are developed and enforced by the City of Visalia Public Works Department to guide the development and maintenance of streets within the City. The cross-section drawings contained in the City's Standard Specifications dictate the development of roads within the City.

City of Visalia General Plan:

The 2030 General Plan includes the policies related to transportation that correlate to the proposed project:

- *T-P-3:* Design and build future roadways that complement and enhance the existing network, as shown on the General Plan Circulation Diagram, to ensure that each new and existing roadway continues to function as intended.
- *T-P-5:* Take advantage of opportunities to consolidate driveways, access points, and curb cuts along existing arterials when a change in development or a change in intensity occurs or when traffic operation or safety warrants.
- *T-P-10:* Manage local residential streets to limit average daily vehicle volumes to 1,500 or less and maintain average vehicle speeds between 15 and 25 miles per hour.
- *T-P-22:* Require all residential subdivisions to be designed to discourage use of local streets as a bypass to congested arterials, and when feasible, require access to residential development to be from collector streets.
- *T-P-23:* Require that all new developments provide right-of-way, which may be dedicated or purchased, and improvements (including necessary grading, installation of curbs, gutters, sidewalks, parkway/landscape strips, bike, and parking lanes) other city street design standards. Design standards will be updated following General Plan adoption
- *T-P-24:* Require that proposed developments make necessary off-site improvements if the location and traffic generation of a proposed development will result in congestion on major streets or failure to meet LOS D during peak periods or if it creates safety hazards.
- *T-P-26:* Require that future commercial developments or modifications to existing developments be designed with limited points of automobile ingress and egress, including shared access, onto major streets.

- *T-P-40:* Develop a community-wide trail system along selected planning area waterways, consistent with the Waterways and Trails Master Plan and General Plan diagrams.

Discussion

a) Would the project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Less than Significant Impact: The existing General Plan established LOS "D" as the minimum acceptable LOS standard on city facilities. A traffic study prepared by Ruettgers and Schuler (Appendix E) studied the impacts from the project on all intersections within a one-mile radius. Analysis was provided for Existing Traffic, 2023 Traffic, 2025 Traffic, 2031 Traffic, and 2041 Traffic. The studied intersections are:

- Akers St & Ave 320
- Demaree St & Ave 320
- Demaree St & Pratt Rd
- Country Center St & Pratt Rd
- Mooney Blvd & Pratt Rd
- Akers St & Shannon Prkwy
- Chinowth St & Shannon Prkwy
- Demaree St & River Way Dr
- Demaree St & Shannon Pkwy
- Country Center St & Shannon Pkwy
- Demaree St & Flagstaff Ave
- Akers St & Riggin Ave
- Linwood St & Riggin Ave
- Demaree St & Riggin Ave
- Country Center St & Riggin Ave
- Linwood St & Ferguson Ave
- Demaree St & Ferguson Ave
- Also included are the driveways for the multi-family and retail portions of the project.

PM Intersection Level of Service

Intersection	2021 LOS	2023 LOS	2025 LOS	2031 LOS	2041 LOS
Akers St. and Ave 320	A	A	A	B	B
Demaree St. and Ave 320	B	B	B	B	B
Linwood St. and Project Road North	A	A	A	A	A
Demaree St. and Arlet Ave	A	A	A	A	A
Demaree St. and Pratt Rd.	B	B	B	B	C
Country Center St. and Pratt Rd.	A	A	A	A	A
Mooney Blvd. and Pratt Rd.	A	A	A	A	A
Akers St. and Shannon Prkwy.	A	A	A	A	A
Linwood St. and Shannon Prkwy.	A	A	A	A	A
Chinowth St. and Shannon Prkwy.	A	A	A	B	B
Coburn Ave. & Shannon Prkwy. / Residential Driveway & Shannon Prkwy.	A	A	A	B	B

Demaree St & River Way Dr	B	B	B	C	C
Demaree St & Shannon Pkwy	C	C	D	F (A LOS with Traffic Signal)	F (A LOS with Traffic Signal)
Country Center St & Shannon Pkwy	A	A	A	A	A
Demaree St & Flagstaff Ave	B	C	D	F (A LOS with Traffic Signal)	F (A LOS with Traffic Signal)
Akers St & Riggin Ave	D	D	D	D	D
Linwood St & Riggin Ave	C	C	D	E (B LOS with Traffic Signal)	F (F LOS with Traffic Signal)
Demaree St & Riggin Ave	D	D	D	D	E
Country Center St & Riggin Ave	C	C	C	E	F (B LOS with Traffic Signal)
Linwood St & Ferguson Ave	A	A	B	B	C
Demaree St & Ferguson Ave	D	D	D	D	F
Linwood St & Residential Driveway	A	A	A	A	A
Linwood St & Commercial Driveway				A	A
Commercial Driveway & Shannon Prkwy				A	A

Table 3-16: PM Projected LOS

AM Intersection Level of Service

Intersection	2021 LOS	2023 LOS	2025 LOS	2031 LOS	2041 LOS
Akers St. and Ave 320	A	A	A	B	B
Demaree St. and Ave 320	B	B	B	B	C
Linwood St. and Project Road North	A	A	A	A	A
Demaree St. and Arlet Ave	A	A	A	A	A
Demaree St. and Pratt Rd.	B	B	B	B	C
Country Center St. and Pratt Rd.	A	A	A	A	A
Mooney Blvd. and Pratt Rd.	A	A	A	A	A
Akers St. and Shannon Prkwy.	A	A	A	A	A
Linwood St. and Shannon Prkwy.	A	A	A	A	A
Chinowth St. and Shannon Prkwy.	A	A	A	A	A
Coburn Ave. & Shannon Prkwy. / Residential Driveway & Shannon Prkwy.	A	A	A	A	A
Demaree St & River Way Dr	A	A	B	B	B
Demaree St & Shannon Pkwy	B	B	C	E (A LOS with Traffic Signal)	F (A LOS with Traffic Signal)
Country Center St & Shannon Pkwy	A	A	A	A	A
Demaree St & Flagstaff Ave	B	B	C	C	E (A LOS with

					Traffic Signal)
Akers St & Riggin Ave	D	D	D	D	D
Linwood St & Riggin Ave	B	C	C	E (B LOS with Traffic Signal)	F (C LOS with Traffic Signal)
Demaree St & Riggin Ave	D	D	D	D	E
Country Center St & Riggin Ave	B	B	B	B	C
Linwood St & Ferguson Ave	B	B	B	B	D
Demaree St & Ferguson Ave	D	D	D	D	D
Linwood St & Residential Driveway				A	A
Linwood St & Commercial Driveway				A	A
Commercial Driveway & Shannon Prkwy				A	A

Table 3-17: AM Projected LOS

The proposed project would cause unacceptable LOS at four separate intersections. Intersection improvements needed to maintain or improve the operational level of service of the street system in the vicinity of the project is presented in Table 3-19.

Intersection	Improvements Required by 2031	Improvements Required by 2041
Demaree St & Shannon Pkwy	Signal	
Demaree St & Flagstaff Ave	Signal	
Linwood St & Riggin Ave	Signal	
Country Center St & Riggin Ave		Signal

Table 3-18: Unacceptable Projected LOS in One Mile Radius

The City of Visalia Traffic Impact Fee facilities list includes signal projects which are not individually identified. Three of the four intersections (excluding Demaree Street and Flagstaff Avenue) are arterial or collector roadways and are understood to be included in the traffic impact fee. The intersection of Demaree Street and Flagstaff Avenue is currently full access and will require signalization in the future with or without the project. Inclusion of Demaree Street and Flagstaff Avenue in the traffic impact fee facilities list should be considered. The project will pay its fair share of traffic impact fees to support payment of the signals. There is *a less than significant impact.*

b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b)?

Less than Significant Impact: The State of California Governor's Office of Planning and Research document entitled Technical Advisory on Evaluating Transportation Impacts in CEQA dated December 2018 (OPR Guidelines) provides guidance for determining a project's transportation impacts based on vehicle miles traveled (VMT). The City of Visalia has adopted a VMT thresholds and guidelines to address the shift from delay-based LOS CEQA traffic analyses to VMT CEQA traffic analyses. Visalia currently has a threshold of 84 percent of the existing County average, or 16 percent less than the County average, for residential and mixed-use projects. The County currently has a VMT per Capita of 11.9, requiring a VMT per Capita of 10.0 or less. The location of the project site currently has a VMT per capita of less than 10.0, a "green-colored VMT zone."

However, projects can be screened out to not have a VMT analysis. Some projects have conditions that may exist which would presume the development project has a less than significant impact. These may be size, location, proximity to transit, or trip-making potential. One of the screening criteria is if the project is a "Residential, office, or mixed-use projects that are consistent with the City's General Plan and located within green-colored VMT zones…Residential and office projects that are located in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT." The project is consistent with the Visalia General Plan and is located within a green VMT zone. There is a *less than significant impact.*

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact: The project does not propose any incompatible uses or include any design features that could increase traffic hazards. The project does include three new vehicle access points at North Demaree Street, River Way Drive, and North Linwood Street. This improvement will be subject to review by the City's engineer to ensure the new access point does not pose any safety risks due to project design. The proposed project would not substantially increase hazards in or around the project area there is *no impact.*

d) Would the project result in inadequate emergency access?

No Impact This project would not result in inadequate emergency access. Emergency access to the site would be via North Demaree Street, River Way Drive, and North Linwood Street. A network of local roads within the proposed project property provides full access to all buildings within the development. The Project would have *no impact* on emergency access.

XVIII. TRIBAL CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) 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	☐	☑	☐	☐
ii) 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.	☐	☑	☐	☐

Environmental Setting

The Project area is in the Southern Valley Yokuts ethnographic territory of the San Joaquin Valley. The Yokuts are a sub-group of the Penutian language that covers much of coastal and central California and Oregon. The Yokuts were generally divided into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts. The Project area is likely within the Telamni and Wukchamni Yokuts territory. The closest village for this area was *Waitatshulu*, which was located on Packwood Creek approximately 5.5 miles south of the Project site. Primary Yokuts villages were typically located along lakeshores and major stream courses, with scattered secondary or temporary camps and settlements located near gathering areas in the foothills. Prior to Euro-American contact, the Yokuts were one of the densest populations of Native Americans in western North America due to the substantial natural resources surrounding Tulare Lake. According to the Native American Heritage Commission, six Native American tribal groups are currently associated with the Project area, including the Tubatulabals of Kern Valley, Wukasache Indian Tribe/Eshom Valley Band, the Kern Valley Indian Community, the Santa Rosa Rancheria Tachi Yokut Tribe, and the Tule River Indian Tribe.

Cultural Resources Record Search

A records search was conducted on behalf of the Applicant from the SSJVIC of the CHRIS at California State University in Bakersfield, California, to determine if historical or archaeological sites had

previously been recorded within the study area, if the project area had been systematically surveyed by archaeologists prior to the initial study, and/or whether the region of the field project was known to contain archaeological sites and to thereby be archaeologically sensitive. According to the SSJVIC records search, there has been no previous cultural resource investigations within the Project area. There has only been one cultural resource study conducted withing a 0.5-mile radius of the project. There have been no cultural resources were previously recorded within the Project area or within the 0.5-mile radius. Additionally, no recorded cultural resources are recorded within the Project area or 0.5-mile radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Interest, California Inventory of Historic Resources, or the California State Historic Landmarks.

Native American Consultation

The State requires lead agencies to consider the potential effects of proposed projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Historic Register or local historic register, or, the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a)(1-2)).

Additional information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality.

The site is currently vacant and has been routinely disturbed as part of the agricultural operations. If any artifacts are inadvertently discovered during ground-disturbing activities, existing federal, State, and local laws, and regulations as well as the mitigation measures will require construction activities to cease until such artifacts are properly examined and determined not to be of significance by a qualified cultural resource professional.

The NAHC Sacred Lands File search and outreach to local tribal representatives did not result in the identification of sacred places or other special areas important to the tribes within the Project boundary.

Regulatory Setting

Historical Resources

Historical resources are defined by CEQA as resources that are listed in or eligible for the California Register of Historical Resources, resources that are listed in a local historical resource register, or resources that are otherwise determined to be historical under California Public Resources Code Section 21084.1 or California Code of Regulations Section 15064.5. Under these definitions Historical Resources can include archaeological resources, Tribal cultural resources, and Paleontological Resources.

Archaeological Resources

As stated above, archaeological resources may be considered historical resources. If they do not meet the qualifications under the California Public Resources Code 21084.1 or California Code of Regulations Section 15064.5, they are instead determined to be "unique" as defined by the CEQA Statute Section 21083.2. A unique archaeological resource is an artifact, object, or site that: (1) contains information (for which there is a demonstrable public interest) needed to answer important scientific research questions; (2) has a special and particular quality, such as being the oldest of its type or the best available example of its type; or (3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

Tribal Cultural Resource (TCR)

Tribal Cultural Resources can include site features, places, cultural landscapes, sacred places, or objects, which are of cultural value to a Tribe. It is either listed on or eligible for the CA Historic Register or a local historic register or determined by the lead agency to be treated as TCR.

Paleontological Resources

For the purposes of this section, "paleontological resources" refers to the fossilized plant and animal remains of prehistoric species. Paleontological Resources are a limited scientific and educational resource and are valued for the information they yield about the history of the earth and its ecology. Fossilized remains, such as bones, teeth, shells, and leaves, are found in geologic deposits (i.e., rock formations). Paleontological resources generally include the geologic formations and localities in which the fossils are collected.

Native American Reserve (NAR)

This designation recognizes tribal trust and reservation lands managed by a Native American Tribe under the United States Department of the Interior's Bureau of Indian Affairs over which the County has no land use jurisdiction. The County encourages adoption of tribal management plans for these areas that consider compatibility and impacts upon adjacent area facilities and plans.

National Historic Preservation Act

The National Historic Preservation Act was adopted in 1966 to preserve historic and archeological sites in the United States. The Act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation offices.

California Historic Register

The California Historic Register was developed as a program to identify, evaluate, register, and protect Historical Resources in California. California Historical Landmarks are sites, buildings, features, or events that are of statewide significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, experimental, or other value. For a resource to be designated as a historical landmark, it must meet the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Is associated with the lives of persons important in our past.
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- Has yielded, or may be likely to yield, information important in prehistory or history.

City of Visalia General Plan

The 2030 General Plan includes the policies related to tribal resources that correlate to the proposed project:

OSC-P-42: Establish requirements to avoid potential impacts to sites suspected of being archeologically, paleontologically, or historically significant or of concern, by:

- Requiring a records review for development proposed in areas that are considered archaeologically or paleontologically sensitive;
- Determining the potential effects of development and construction on archaeological or paleontological resources (as required by CEQA);
- Requiring pre-construction surveys and monitoring during any ground disturbance for all development in areas of historical and archaeological sensitivity (defined as areas identified according to the National Historic Preservation Act as part of the Section 106 process); and
- Implementing appropriate measures to avoid the identified impacts, as conditions of project approval.

Discussion

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. 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

Less Than Significant Impact with Mitigation: The project would not cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources. Based on the results of the records search, no previously recorded tribal cultural resources are located within the project site. Although no cultural resources were identified, the presence of remains or unanticipated cultural resources under the ground surface is possible. Implementation of Mitigation Measures TCR-1 and TCR-2 will ensure that impacts to this checklist item will be *less than significant with mitigation* incorporation.

ii. 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.

Less Than Significant Impact with Mitigation: The lead agency has not determined there to be any known tribal cultural resources located within the project area. Additionally, there are not believed to be any paleontological resources or human remains buried within the project area's vicinity. However, if resources were found to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resources to a California Native American Tribe. Implementation of Mitigation

Measures TCR-1 and TCR-2 will ensure that any impacts resulting from project implementation remain *less than significant with mitigation* incorporation.

Mitigation Measures for Impacts to Cultural Resources:

Mitigation Measure TCR-1: If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance.

If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.

Mitigation Measure TCR-2: In the event that human remains are unearthed during excavation and grading activities of any future development project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

Mitigation Measure TCR-3: Native American pre-construction presentation. Prior to any ground disturbance, the proponent shall retain Santa Rosa Rancheria Cultural Staff to provide a pre-construction Cultural Sensitivity Training to construction staff regarding the discovery of cultural resources and the potential for discovery during ground disturbing activities, which will include information on potential cultural material finds and on the procedures to be enacted if resources are found. Tribal participation would be dependent upon the availability and interest of the Tribe.

XIX. UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relation of which could cause significant environmental effects?	☐	☐	☑	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☑	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☑	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☑
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☑

Environmental Setting

Wastewater

Sewer services are provided to the site by the City of Visalia. Visalia owns a Water Conservation Plant (WCP) located West of Highway 99 and South of Highway 198. Presently, the WCP's permitted capacity as established by the Regional Water Quality Control Board (RWQCB) is 20 million gallons per day (mgd). A planned upgrade will increase the capacity to 26 mgd. The WCP has a daily flow of 13 mgd. The City of Visalia operates a sewer system divided into eight service areas. The system currently has over 468 miles of sewer pipe.

Solid Waste

The City of Visalia provides solid waste collection, and the County of Tulare provides disposal services via landfills. Sunset Waste Paper is contracted to process residential and commercial recycling. The Tulare County Resource Management Agency manages some solid waste disposal. Programs include household hazardous waste disposal, electronics recycling, tire recovery, yard waste recycling, metal recycling and appliance recovery programs. The county landfills approximately 300,000 tons of waste per year, which is equivalent to about 5 pounds per person per day or one ton per county resident per year. The County operates three disposal sites: the Visalia Disposal Site, northwest of Visalia; the

Woodville Disposal Site, southeast of Tulare; and the Teapot Dome Disposal Site, southwest of Porterville. These sites have a remaining capacity of 24,258,052 cubic yards, with a total capacity of 37,101,523 cubic yards.

Water

The California Water Service Company (Cal Water) distribute groundwater supply. Cal Water's Visalia District supply wells extract groundwater from the Kaweah Groundwater Subbasin. The Cal Water system includes 75 operational groundwater wells, about one third of which have auxiliary power for backup. There are 519 miles of main pipeline in the system. The system includes two elevated 300,000-gallon storage tanks, an ion exchange treatment plant, four granular activated carbon filter plants and one nitrate blending facility.

The system currently has the capacity to pump 100,829 acre-feet per year (afy), all from groundwater. This will be able to supply a growing population, as in 2010, 31,762 AF was needed. By 2030, the city is expected to use 43,002 afy.

Regulatory Setting

CalRecycle

California Code of Regulations, Title 14, Natural Resources – Division 7 contains all current CalRecycle regulations regarding nonhazardous waste management in the state. These regulations include standards for the handling of solid waste, standards for the handling of compostable materials, design standards for disposal facilities, and disposal standards for specific types of waste.

Central Valley RWQCB

The Central Valley RWQCB requires a Stormwater Pollution Prevention Plan (SWPPP) for projects disturbing more than one acre of total land area. Because the project is greater than one acre, a SWPPP to manage stormwater generated during project construction will be required.

The Central Valley RWQCB regulates Wastewater Discharges to Land by establishing thresholds for discharged pollutants and implementing monitoring programs to evaluate program compliance. This program regulates approximately 1500 dischargers in the region.

The Central Valley RWQCB is also responsible for implementing the federal program, the National Pollutant Discharge Elimination System (NPDES). The NPDES Program is the federal permitting program that regulates discharges of pollutants to surface waters of the U.S. Under this program, a NPDES permit is required to discharge pollutants into Waters of the U.S. There are 350 permitted facilities within the Central Valley Region.

Cal Water Urban Water Management Plan (UWMP) – Visalia District

The UWMP describes the Visalia District service area, system demand and usage, available water resources, reliability of the water supply, and contingency planning for water shortage. It also contains a conservation section in compliance with SB X7-7 describing water usage reduction targets and implementation measures. The UWMP identifies five core programs for water conservation in the District that involve promotion of high-efficiency fixtures in residential settings, promotion of high-efficiency irrigation systems, and public information and education.

City of Visalia General Plan

The 2030 General Plan includes the objectives and policies related to utilities and service systems that correlate to the proposed project:

- *PSCU-O-14*: Provide for long-range community water needs by adopting best management practices for water use, conservation, groundwater recharge and wastewater and stormwater management.
- *PSCU-P-46:* Adopt and implement a Water Efficient Landscaping Ordinance for new and/or refurbished development that exceeds mandated sizes, and ensure that all new City parks, streetscapes, and landscaped areas conform to the Ordinance's requirements. The Ordinance should include provisions to optimize outdoor water use by:
    - Promoting appropriate use of plants and landscaping;
    - Establishing limitations on use of turf including size of turf areas and use of cool-season turf such as Fescue grasses, with exceptions for specified uses (e.g., recreation playing fields, golf courses, and parks);
    - Establishing water budgets and penalties for exceeding them;
    - Requiring automatic irrigation systems and schedules, including controllers that incorporate weather-based or other self-adjusting technology;
    - Promoting the use of recycled water; and
    - Minimizing overspray and runoff.
- *PSCU-P-59:* Require new developments to incorporate floodwater detention basins into project designs where consistent with the Stormwater Master Plan and the Groundwater Recharge Plan.
- *PSCU-P-60:* Control urban and stormwater runoff and point and non-point discharge of pollutants. As part of the City's Stormwater Management Program, adopt and implement a Stormwater Management Ordinance to minimize stormwater runoff rates and volumes, control water pollution, and maximize groundwater recharge. New development will be required to include Low Impact Development features that reduce impermeable surface areas and increase infiltration. Such features may include, but are not limited to:
    - Canopy trees or shrubs to absorb rainwater;
    - Grading that lengthens flow paths over permeable surfaces and increases runoff travel time to reduce the peak hour flow rate;
    - Partially removing curbs and gutters from parking areas where appropriate to allow stormwater sheet flow into vegetated areas;
    - Use of permeable paving in parking lots and other areas characterized by significant impervious surfaces;
    - On-site stormwater detention, use of bioswales and bioretention basins to facilitate infiltration; and
    - Integrated or subsurface water retention facilities to capture rainwater for use in landscape irrigation and other non-potable uses.

Discussion

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relation of which could cause significant environmental effects?

Less than Significant Impact: The proposed project would result in new water services. However, the proposed site has no change of use proposal. Visalia's current system for water and wastewater have the capacity to handle the projected growth expected in the General Plan. To compensate for these services, new development will be required to pay impact fees. It is not anticipated that implementation of the proposed project would result in increased demand for any utility services beyond the planned conditions. There is *a less than significant impact.*

b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less than Significant Impact: Water services will be provided by Cal Water. The City's water supply source is comprised of 75 operational groundwater wells. The system currently has the capacity to pump 100,829 acre-feet per year (afy), all from groundwater. This will be able to supply a growing population, as in 2010, 31,762 AF was needed. By 2030, the city is expected to use 43,002 afy. Using average per-person water use in Visalia (183 gallons; 2020 Urban Water Management Plan) and the average household size in Visalia (2.99 persons; US Census Bureau), water demand for the proposed

477-unit residential development is estimated to be approximately 261,000 gallons of water daily, or about 292-acre feet per year. With the system capacity at 100,829 afy, there will be enough water supply for the proposed project. The project does not propose any new or expanded uses against the Visalia General Plan. The available water supply is expected to supply the projected population. In 2030, the projected demand is expected to 35,276 AF of groundwater, in 2035, there is expected to be 38,310 AF of groundwater, and in 2040 there is expected to be 41,258 AF of groundwater. To compensate for these services, new development will be required to pay impact fees for new water services, along with the reduced water use implementations from the polices set forth in the Visalia General Plan. Therefore, the impact is *less than significant.*

c) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less than Significant Impact: The project does not propose any new or expanded uses and is therefore not anticipated to result in increased demand for wastewater treatment services beyond existing conditions in the Visalia General Plan. Additionally, the City's MEIR has evaluated the site's current and future wastewater service demand. The current capacity of the wastewater system is approximately 20 mgd. It currently receives 13 mgd, leaving an available 7 mgd. In addition, a future upgrade plans to increase the capacity to 26 mgd.

Adjusted Flow Coefficients provided in the City of Visalia 2005 Sewer Master Plan were used to calculate an assumed volume of effluent for the proposed project. Based on these calculations, the total expected flow from the project is 62,140 gallons per day. A memorandum describing the calculations and data sources used in this analysis is provided in Appendix F.

Because the City's sewer system has the capacity to meet the project site's expected demand for wastewater treatment, and it is not anticipated that the project will increase the site's demand for wastewater treatment, it can be inferred that the existing wastewater treatment system has adequate capacity to serve the proposed project. There is a *less than significant impact.*

d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

No Impact: Sunset Waste Systems provides solid waste services to the proposed project site. The project does not propose any new or expanded uses and is therefore not anticipated to result in increased generation of solid waste beyond existing conditions. Additionally, the disposal sites are at less than half capacity. Because the City's existing infrastructure has the capacity to accommodate the solid waste currently planned in the General Plan for expanded population, it can be inferred that the existing solid waste infrastructure has adequate capacity to serve the proposed project. The project would not generate solid waste in excess of State or Local Standards and there is *no impact.*

e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact: This proposed project conforms to all applicable statutes and regulations related to solid waste disposal. The proposed project will comply with the adopted policies related to solid waste, and will comply with all applicable federal, state, and local statutes and regulations pertaining to disposal of solid waste, including recycling. Therefore, the proposed project would have *no impact* on solid waste regulations.

XX. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☑
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☑	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☑

Environmental Setting

There are no State Responsibility Areas (SRAs) within the vicinity of the project site, and the project site is not categorized as a "Very High" Fire Hazard Severity Zone (FHSZ) by CalFire. This CEQA topic only applies to areas within an SRA or a Very High FHSZ.

Regulatory Setting

Fire Hazard Severity Zones: geographical areas designated pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very High, High, or Moderate in State Responsibility Areas or as Local Agency Very High Fire Hazard Severity Zones designated pursuant to California Government Code, Sections 51175 through 51189.

Discussion

a) Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact: The project would not substantially impair an adopted emergency response plan or emergency evacuation plan. The project will be reviewed by the Visalia Fire Department to ensure the project does not impair emergency response or emergency evacuation. Additionally, the proposed project site is not located within an SRA or a Very High FHSZ. There is *no impact.*

b) Due to slope, prevailing winds, and other factors, would the project exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

No Impact: The project is located on a flat area of agricultural and urban land which is considered to be at little risk of fire. Additionally, the proposed project site is not located within an SRA or a Very High FHSZ. There is *no impact.*

c) Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Less than Significant Impact: The construction of the project involves adding new local residential streets, and new and relocated utilities. Utilities such as emergency water sources and power lines would be included as part of the proposed development, however all improvements would be subject to City standards and Fire Chief approval. The proposed project would not exacerbate fire risk and the impact would be *less than significant*

d) Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire instability, or drainage changes?

No Impact: The project site is not located in an area designated as a Fire Hazard Severity Zone and lands associated with the Project site are relatively flat. Therefore, the project would not be susceptible to downslope or downstream flooding or landslides as a result of post-fire instability or drainage changes. There is *no impact.*

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Does the project have the potential substantially to degrade the quality of the environment, 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 or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☑	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☑	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☑	☐

Discussion

a) Does the project have the potential to degrade the quality of the environment, 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, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less than Significant Impact with Mitigation: This initial study/mitigated negative declaration found the project could have significant impacts on biological resources, hydrology and water quality, historical, and Tribal cultural resources. However, implementation of the identified mitigation measures for each respective section would ensure that impacts are *less than significant with mitigation incorporation.*

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Less than Significant Impact: CEQA Guidelines Section 15064(h) states that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of the project are cumulatively considerable. The assessment of the significance of the cumulative effects of a project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects. Due to the nature of the project and consistency with environmental policies, incremental contributions to impacts are considered less than cumulatively considerable. The proposed project would not contribute substantially to adverse cumulative conditions, or create any substantial indirect impacts (i.e., increase in population could lead to an increased need for housing, increase in traffic, air pollutants, etc). Impacts would be *less than significant*.

c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant Impact: The analyses of environmental issues contained in this Initial Study indicate that the project is not expected to have substantial impact on human beings, either directly or indirectly. Mitigation measures have been incorporated in the project design to reduce all potentially significant impacts to less than significant, which results in a *less than significant* impact to this checklist item.

3.6 MITIGATION MONITORING AND REPORTING PROGRAM

As required by Public Resources Code Section 21081.6, subd. (a)(1), a Mitigation Monitoring and Reporting Program (MMRP) has been prepared for the project in order to monitor the implementation of the mitigation measures that have been adopted for the project. This Mitigation Monitoring and Reporting Program (MMRP) has been created based upon the findings of the Initial Study/Mitigated Negative Declaration (IS/MND) for the Radio Neighborhood Park Project in the City of Visalia.

The first column of the table identifies the mitigation measure. The second column names the party responsible for carrying out the required action. The third column, "Timing of Mitigation Measure" identifies the time the mitigation measure should be initiated. The fourth column, "Responsible Party for Monitoring," names the party ensuring that the mitigation measure is implemented. The last column will be used by the City to ensure that the individual mitigation measures have been monitored.

Plan checking and verification of mitigation compliance shall be the responsibility of the City of Visalia.

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
Mitigation Measure AG-1: Prior to the issuance of grading or building permits, the Project proponent shall mitigate impacts for loss of 38.42 acres of Prime Farmland and Farmland of Statewide Importance on the Project site at a 1:1 ratio. The preserved land obligation, as established in VMC section 18.04.070(A), shall be preserved through acquisition of an agricultural easement in accordance with VMC section 18.04.080, unless eligible for payment of an in-lieu fee in accordance with VMC section 18.04.090.	Project Applicant	Prior to the Start of Construction	Contractor/Lead Agency	
Mitigation Measure TCR-1: If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance. If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the	Project Applicant	Ongoing during construction	Contractor/Lead Agency	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.				
Mitigation Measure TCR-2: In the event that human remains are unearthed during excavation and grading activities of any future development project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.	Project Applicant	Ongoing during construction	Contractor/Lead Agency	
Mitigation Measure TCR-3: Prior to any ground disturbance, the proponent shall retain Santa Rosa Rancheria Cultural Staff to provide a pre-construction Cultural Sensitivity Training to construction staff regarding the discovery of cultural resources and the potential for discovery during ground disturbing activities, which will include information on potential cultural material finds and, on the procedures, to be enacted if resources are found. Tribal participation would be dependent upon the availability and interest of the Tribe.	Project Applicant	Prior to the Start of Construction and Ongoing During Construction	Contractor/Lead Agency	
Mitigation Measure HYD-1: Prior to the issuance of any construction/grading permit and/or the commencement of any clearing, grading, or excavation, the Applicant shall submit a Notice of Intent (NOI) for discharge from the Project site to the	Project Applicant	Prior to the Start of Construction	Contractor/Lead Agency	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
California SWRCB Storm Water Permit Unit. • Prior to issuance of grading permits for Phase 1 the Applicant shall submit a copy of the NOI to the City. • The City shall review noticing documentation prior to approval of the grading permit. City monitoring staff will inspect the site during construction for compliance.				
Mitigation Measure HYD-2: The Applicant shall require the building contractor to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the City 45 days prior to the start of work for approval. The contractor is responsible for understanding the State General Permit and instituting the SWPPP during construction. A SWPPP for site construction shall be developed prior to the initiation of grading and implemented for all construction activity on the Project site in excess of one (1) acre, or where the area of disturbance is less than one acre but is part of the Project's plan of development that in total disturbs one or more acres. The SWPPP shall identify potential pollutant sources that may affect the quality of discharges to storm water and shall include specific BMPs to control the discharge of material from the site. The following BMP methods shall include, but would not be limited to: • Dust control measures will be implemented to ensure success of all onsite activities to control fugitive dust; • A routine monitoring plan will be implemented to ensure success of all onsite erosion and sedimentation control measures; • Provisional detention basins, straw bales, erosion control blankets, mulching, silt fencing, sand bagging, and soil stabilizers will be used; • Soil stockpiles and graded slopes will be covered after two weeks of inactivity and 24 hours prior to and during extreme weather conditions; and, • BMPs will be strictly followed to prevent spills and discharges of pollutants onsite, such as material storage, trash disposal, construction entrances, etc.	Project Applicant	45 Days Prior to the Start of Construction	Contractor/Lead Agency	
Mitigation Measure HYD-3: A Development Maintenance Manual for the Project shall include comprehensive procedures for maintenance and operations of any stormwater facilities to ensure long-term operation and maintenance of post-construction stormwater controls. The maintenance manual shall require that stormwater BMP devices be inspected, cleaned, and	Project Applicant	Prior to the Start of Construction	Contractor/Lead Agency	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
maintained in accordance with the manufacturer's maintenance conditions. The manual shall require that devices be cleaned prior to the onset of the rainy season (i.e., mid-October) and immediately after the end of the rainy season (i.e., mid-May). The manual shall also require that all devices be checked after major storm events. The Development Maintenance Manual shall include the following: • Runoff shall be directed away from trash and loading dock areas; • Bins shall be lined or otherwise constructed to reduce leaking of liquid wastes; • Trash and loading dock areas shall be screened or walled to minimize offsite transport of trash; and, • Impervious berms, trench catch basin, drop inlets, or overflow containment structures nearby docks and trash areas shall be installed to minimize the potential for leaks, spills or wash down water to enter the drainage system.				
Mitigation Measure CUL-1: If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance. If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.	Project Applicant	Ongoing during construction	Contractor/Lead Agency	
Mitigation Measure CUL-2: In the event that human remains are unearthed during excavation and	Project Applicant	Ongoing during construction	Contractor/Lead Agency	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
grading activities of any future development project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment				
Mitigation Measure CUL-3: Prior to any ground disturbance, the proponent shall retain Santa Rosa Rancheria Cultural Staff to provide a pre-construction Cultural Sensitivity Training to construction staff regarding the discovery of cultural resources and the potential for discovery during ground disturbing activities, which will include information on potential cultural material finds and, on the procedures, to be enacted if resources are found. Tribal participation would be dependent upon the availability and interest of the Tribe.	Project Applicant	Prior to the Start of Construction and Ongoing During Construction	Contractor/Lead Agency	
Mitigation Measure AQ-1: If any restaurants in the C-N portion of the project will utilize under-fired charbroilers, measures will be utilized to reduce Particulate Matter to a less than significant level, as technologically feasible. These can include Mechanical Filtration Systems, Electrostatic Precipitators, or Wet-Scrubbers.	Project Applicant	Prior to the start of construction and ongoing during operational use.	Contractor/Lead Agency	
Mitigation Measure BIO-1a: Construction Timing. If feasible, project construction will occur entirely outside the Swainson's hawk nesting season, typically defined as March 1- September 15.	Project Applicant	Prior to the Start of Construction	Contractor/Lead Agency	
Mitigation Measure BIO-1b: Preconstruction Surveys. If construction activities must occur	Project Applicant	Prior to the Start of Construction	Contractor/Lead Agency	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
between March 1 and September 15, then within 10 days prior to the start of work, a qualified biologist will conduct preconstruction surveys from publicly accessible roads for Swainson's hawk nests within ½ mile of the work area(s) in question.				
Mitigation Measure BIO-1c: Avoidance. Should any active nests be identified, the biologist will establish a suitable disturbance-free buffer around the nest, to be maintained until the biologist has determined that the young have fledged.	Project Applicant	Ongoing during construction	Contractor/Lead Agency	
Mitigation Measure BIO-2a: Avoidance. In order to avoid impacts to nesting migratory birds and raptors, construction will occur, where possible, outside the nesting season, or between September 1 and January 31.	Project Applicant	Prior to the Start of Construction	Contractor/Lead Agency	
Mitigation Measure BIO-2b: Preconstruction Surveys. If construction must occur during the nesting season (February 1-August 31), a qualified biologist will conduct preconstruction surveys for active migratory bird and raptor nests within 10 days of the onset of these activities. Nest surveys will include all areas on and within 500 feet of the project site, where accessible. Inaccessible areas will be surveyed using binoculars or a spotting scope. If no active nests are found within the survey area, no further mitigation is required.	Project Applicant	Prior to the Start of Construction	Contractor/Lead Agency	
Mitigation Measure BIO-2c: Establish Buffers. Should any active nests be discovered in or near proposed work areas, the biologist will determine appropriate construction setback distances based on applicable CDFW guidelines and/or the biology of the affected species. Construction-free buffers will be identified on the ground with flagging, fencing, or by other easily visible means, and will be maintained until the biologist has determined that the young have fledged.	Project Applicant	Ongoing during construction	Contractor/Lead Agency	
Mitigation Measure BIO-2d: Nest Monitoring. Should construction need to occur within the construction free buffers, then prior to initiation of these activities a qualified biologist will conduct a survey to establish a behavioral baseline of the affected nest(s). When construction begins within the buffer, the qualified biologist will continuously monitor nests to detect behavioral changes resulting from the project. If behavioral changes occur, the work causing that change will cease. If there are no behavioral changes after one week of monitoring, then monitoring may be reduced as determined by the biologist.	Project Applicant	Prior to the Start of Construction	Contractor/Lead Agency	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
Mitigation Measure BIO-3a: Pre-construction Surveys. Preconstruction surveys for the San Joaquin kit fox shall be conducted on and within 200 feet of the project site, no less than 14 days and no more than 30 days prior to the start of ground disturbance activities on the site. The primary objective is to identify kit fox habitat features (e.g., potential dens and refugia) on and adjacent to the site and evaluate their use by kit foxes.	Project Applicant	14-30 days prior to the Start of Construction	Contractor/Lead Agency	
Mitigation Measure BIO-3b: Avoidance. Should active kit fox dens be detected during preconstruction surveys, the Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW will be notified. A disturbance-free buffer will be established around the burrows in consultation with the USFWS and CDFW, to be maintained until an agency-approved biologist has determined that the burrows have been abandoned.	Project Applicant	Prior to the Start of Construction	Contractor/Lead Agency	
Mitigation Measure BIO-3c: Minimization. Construction activities shall be carried out in a manner that minimizes disturbance to kit foxes in accordance with the USFWS Standardized Recommendations. The applicant shall implement all minimization measures presented in the Construction and On-going Operational Requirements section of the Standardized Recommendations, including, but not limited to: restriction of project- related vehicle traffic to established roads, construction areas, and other designated areas; inspection and covering of structures (e.g. pipes), as well as installation of escape structures, to prevent the inadvertent entrapment of kit foxes; restriction of rodenticide and herbicide use; and proper disposal of food items and trash.	Project Applicant	Ongoing during construction	Contractor/Lead Agency	
Mitigation Measure BIO-3d: Mortality Reporting. The Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW will be notified in writing within three working days in case of the accidental death or injury of a San Joaquin kit fox during project-related activities. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and any other pertinent information.	Project Applicant	Ongoing during construction	Contractor/Lead Agency	
Mitigation Measure BIO-4: Pre-construction Surveys. Preconstruction surveys for the California tiger salamander shall be conducted on and within 200 feet of the project site, no less than 14 days and no more than 30 days prior to the start of ground disturbance activities on the site.	Project Applicant	14-30 days Prior to the Start of Construction	Contractor/Lead Agency	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
If special status animal species are not identified during pre-construction surveys, no further action is required. If special status animal species are detected during pre-construction surveys, the Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW shall be contacted immediately to identify the appropriate avoidance and minimization actions to be taken as applicable for the species identified and to determine permitting needs.				

3.7 Supporting Information and Sources

1. AB 3098 List
2. EMFAC2014
3. Tulare County General Plan
4. City of Visalia General Plan
5. City of Visalia General Plan MEIR
6. City of Visalia Greenhouse Gas Reduction Plan
7. City of Visalia Zoning Ordinance
8. Engineering Standards, City of Visalia
9. SJVAPCD Regulations and Guidelines
10. FEMA Flood Maps
11. California Air Resources Board's (CARB's) Air Quality and Land Use Handbook
12. 2019 California Environmental Quality Act CEQA Guidelines
13. California Building Code
14. California Stormwater Pollution Prevention Program (SWPPP)
15. "Construction Noise Handbook." U.S. Department of Transportation/Federal Highway Administration.
16. Government Code Section 65962.5
17. California Environmental Protection Agency (CEPA) San Joaquin Valley Air Pollution Control District Mitigation Measures (http://www.valleyair.org/transportation/Mitigation-Measures.pdf
18. Southern California Edison 2019 Power Content Label
19. Transit Noise and Vibration Impact Assessment, Federal Transit Administration, September 2018.
20. 2020 U.S. Census
21. California Department of Transportation Scenic Roadways
22. EPA, Intergovernmental Panel on Climate Change
23. 2020 Cal Water Urban Water Management Plan (UWMP) – Visalia District
24. State of California Governor's Office of Planning and Research

Section 4

List of Preparers

City of Visalia
315 E Acequia Ave
Visalia, CA 93291

SECTION 4
List of Preparers

Project Title: Belissa Residential Community

List of Preparers

4-Creeks Inc.

- David Duda, AICP, GISP
- Steve Macias, Civil Engineer
- Molly Baumeister, AICP

Persons and Agencies Consulted

The following individuals and agencies contributed to this Initial Study/Mitigated Negative Declaration:

City of Visalia

- Brandon Smith, Planning Division
- Paul Bernal, Community Development Director
- Adrian Rubalcaba, Associate Engineer

Taylored Archaeology

- Consuelo Y. Sauls

Ruettgers and Schuler Civil Engineers

- Ian J. Parks, RCE

SOAR Environmental Consulting

Appendix A

CalEEMod Report

Part 1

Projected Emissions from CalEEMod

Belissa Residential Community - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Belissa Residential Community

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	1.97	Acre	1.97	85,813.20	0
Apartments Low Rise	168.00	Dwelling Unit	7.15	168,000.00	480
Single Family Housing	160.00	Dwelling Unit	26.54	288,000.00	458
Single Family Housing	150.00	Dwelling Unit	14.87	270,000.00	429
Strip Mall	65.00	1000sqft	7.88	65,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	7			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Lot Acerage Already Established

Demolition -

Land Use Change -

Sequestration -

Mobile Land Use Mitigation -

Area Mitigation -

Fleet Mix - District Accepted Fleet Mix for Residential Projects

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	10.50	7.15
tblLandUse	LotAcreage	48.70	14.87
tblLandUse	LotAcreage	51.95	26.54
tblLandUse	LotAcreage	1.49	7.88

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0877	0.8405	0.6846	1.3100e-003	8.8100e-003	0.0404	0.0493	1.8200e-003	0.0376	0.0394	0.0000	114.9155	114.9155	0.0312	3.0000e-004	115.7851
2023	0.3869	3.4786	3.3184	7.6500e-003	1.0589	0.1447	1.2036	0.4460	0.1340	0.5800	0.0000	681.4717	681.4717	0.1540	0.0151	689.8183
2024	0.3251	2.2911	3.1991	8.0400e-003	0.3674	0.0847	0.4521	0.0992	0.0797	0.1789	0.0000	730.3476	730.3476	0.0801	0.0358	743.0014
2025	0.3006	2.1441	3.1005	7.8900e-003	0.3660	0.0731	0.4391	0.0988	0.0688	0.1676	0.0000	718.5778	718.5778	0.0786	0.0345	730.8324
2026	0.2923	2.1333	3.0402	7.7700e-003	0.3660	0.0730	0.4390	0.0988	0.0687	0.1675	0.0000	709.3109	709.3109	0.0779	0.0335	721.2470
2027	0.2602	1.9701	2.8260	6.9600e-003	0.3123	0.0701	0.3824	0.0843	0.0658	0.1501	0.0000	635.0459	635.0459	0.0785	0.0276	645.2368
2028	7.2943	0.1965	0.3694	6.5000e-004	0.0194	9.3300e-003	0.0288	5.1600e-003	8.7400e-003	0.0139	0.0000	58.4541	58.4541	0.0122	3.5000e-004	58.8628
Maximum	**7.2943**	**3.4786**	**3.3184**	**8.0400e-003**	**1.0589**	**0.1447**	**1.2036**	**0.4460**	**0.1340**	**0.5800**	**0.0000**	**730.3476**	**730.3476**	**0.1540**	**0.0358**	**743.0014**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0877	0.8405	0.6846	1.3100e-003	8.8100e-003	0.0404	0.0493	1.8200e-003	0.0376	0.0394	0.0000	114.9153	114.9153	0.0312	3.0000e-004	115.7849
2023	0.3869	3.4786	3.3184	7.6500e-003	1.0589	0.1447	1.2036	0.4460	0.1340	0.5800	0.0000	681.4711	681.4711	0.1540	0.0151	689.8177
2024	0.3251	2.2911	3.1991	8.0400e-003	0.3674	0.0847	0.4521	0.0992	0.0797	0.1789	0.0000	730.3473	730.3473	0.0801	0.0358	743.0010
2025	0.3006	2.1441	3.1005	7.8900e-003	0.3660	0.0731	0.4391	0.0988	0.0688	0.1676	0.0000	718.5774	718.5774	0.0786	0.0345	730.8320
2026	0.2923	2.1333	3.0402	7.7700e-003	0.3660	0.0730	0.4390	0.0988	0.0687	0.1675	0.0000	709.3105	709.3105	0.0779	0.0335	721.2467
2027	0.2602	1.9701	2.8259	6.9600e-003	0.3123	0.0701	0.3824	0.0843	0.0658	0.1501	0.0000	635.0456	635.0456	0.0785	0.0276	645.2364
2028	7.2943	0.1965	0.3694	6.5000e-004	0.0194	9.3300e-003	0.0288	5.1600e-003	8.7400e-003	0.0139	0.0000	58.4540	58.4540	0.0122	3.5000e-004	58.8628
Maximum	**7.2943**	**3.4786**	**3.3184**	**8.0400e-003**	**1.0589**	**0.1447**	**1.2036**	**0.4460**	**0.1340**	**0.5800**	**0.0000**	**730.3473**	**730.3473**	**0.1540**	**0.0358**	**743.0010**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**10-3-2022**	**1-2-2023**	0.9353	0.9353
2	**1-3-2023**	**4-2-2023**	1.0469	1.0469
3	**4-3-2023**	**7-2-2023**	1.2339	1.2339
4	**7-3-2023**	**10-2-2023**	0.8934	0.8934

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5	**10-3-2023**	**1-2-2024**	0.7008	0.7008
6	**1-3-2024**	**4-2-2024**	0.6542	0.6542
7	**4-3-2024**	**7-2-2024**	0.6479	0.6479
8	**7-3-2024**	**10-2-2024**	0.6551	0.6551
9	**10-3-2024**	**1-2-2025**	0.6606	0.6606
10	**1-3-2025**	**4-2-2025**	0.6069	0.6069
11	**4-3-2025**	**7-2-2025**	0.6074	0.6074
12	**7-3-2025**	**10-2-2025**	0.6142	0.6142
13	**10-3-2025**	**1-2-2026**	0.6204	0.6204
14	**1-3-2026**	**4-2-2026**	0.6020	0.6020
15	**4-3-2026**	**7-2-2026**	0.6024	0.6024
16	**7-3-2026**	**10-2-2026**	0.6092	0.6092
17	**10-3-2026**	**1-2-2027**	0.6154	0.6154
18	**1-3-2027**	**4-2-2027**	0.5975	0.5975
19	**4-3-2027**	**7-2-2027**	0.5979	0.5979
20	**7-3-2027**	**10-2-2027**	0.6046	0.6046
21	**10-3-2027**	**1-2-2028**	0.4238	0.4238
22	**1-3-2028**	**4-2-2028**	3.2295	3.2295
23	**4-3-2028**	**7-2-2028**	4.2550	4.2550
		Highest	4.2550	4.2550

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.7912	0.6073	20.3233	0.0564		2.7599	2.7599		2.7599	2.7599	363.7238	347.1662	710.8900	1.7124	6.2600e-003	755.5658
Energy	0.0563	0.4822	0.2127	3.0700e-003		0.0389	0.0389		0.0389	0.0389	0.0000	1,229.9331	1,229.9331	0.0675	0.0171	1,236.7148
Mobile	2.5886	3.7962	22.7224	0.0523	5.8442	0.0432	5.8874	1.5632	0.0406	1.6038	0.0000	5,039.1204	5,039.1204	0.2633	0.2620	5,123.7727
Waste						0.0000	0.0000		0.0000	0.0000	94.3949	0.0000	94.3949	5.5786	0.0000	233.8593
Water						0.0000	0.0000		0.0000	0.0000	11.4079	49.9819	61.3898	1.1759	0.0282	99.1848
Total	**8.4361**	**4.8856**	**43.2583**	**0.1118**	**5.8442**	**2.8420**	**8.6862**	**1.5632**	**2.8393**	**4.4025**	**469.5266**	**6,666.2016**	**7,135.7281**	**8.7977**	**0.3135**	**7,449.0973**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.9577	0.3356	3.6719	2.0700e-003		0.0435	0.0435		0.0435	0.0435	0.0000	347.1662	347.1662	0.0121	6.2600e-003	349.3336
Energy	0.0563	0.4822	0.2127	3.0700e-003		0.0389	0.0389		0.0389	0.0389	0.0000	1,229.9331	1,229.9331	0.0675	0.0171	1,236.7148
Mobile	2.4932	3.5169	21.0993	0.0474	5.2744	0.0394	5.3138	1.4108	0.0370	1.4478	0.0000	4,565.1726	4,565.1726	0.2486	0.2425	4,643.6613
Waste						0.0000	0.0000		0.0000	0.0000	94.3949	0.0000	94.3949	5.5786	0.0000	233.8593
Water						0.0000	0.0000		0.0000	0.0000	11.4079	49.9819	61.3898	1.1759	0.0282	99.1848
Total	**6.5072**	**4.3347**	**24.9838**	**0.0525**	**5.2744**	**0.1218**	**5.3962**	**1.4108**	**0.1194**	**1.5302**	**105.8028**	**6,192.2537**	**6,298.0565**	**7.0827**	**0.2941**	**6,562.7538**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**22.86**	**11.28**	**42.25**	**53.01**	**9.75**	**95.71**	**37.88**	**9.75**	**95.79**	**65.24**	**77.47**	**7.11**	**11.74**	**19.49**	**6.20**	**11.90**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	-359.6000
Total	**-359.6000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/3/2022	1/6/2023	5	70	
2	Site Preparation	Site Preparation	1/7/2023	3/3/2023	5	40	
3	Grading	Grading	3/4/2023	8/4/2023	5	110	
4	Building Construction	Building Construction	8/5/2023	11/5/2027	5	1110	
5	Paving	Paving	11/6/2027	2/18/2028	5	75	
6	Architectural Coating	Architectural Coating	2/19/2028	6/2/2028	5	75	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 330

Acres of Paving: 0

Residential Indoor: 1,470,150; Residential Outdoor: 490,050; Non-Residential Indoor: 97,500; Non-Residential Outdoor: 32,500; Striped Parking Area: 0 (Architectural Coating – sqft)

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	45.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Building Construction	9	289.00	76.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	58.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.5700e-003	0.0000	4.5700e-003	6.9000e-004	0.0000	6.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0858	0.8359	0.6693	1.2600e-003		0.0404	0.0404		0.0376	0.0376	0.0000	110.4682	110.4682	0.0310	0.0000	111.2440
Total	**0.0858**	**0.8359**	**0.6693**	**1.2600e-003**	**4.5700e-003**	**0.0404**	**0.0450**	**6.9000e-004**	**0.0376**	**0.0382**	**0.0000**	**110.4682**	**110.4682**	**0.0310**	**0.0000**	**111.2440**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	3.2500e-003	6.1000e-004	1.0000e-005	3.6000e-004	3.0000e-005	3.9000e-004	1.0000e-004	3.0000e-005	1.3000e-004	0.0000	1.2397	1.2397	1.0000e-005	1.9000e-004	1.2980
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8700e-003	1.3700e-003	0.0147	3.0000e-005	3.8800e-003	2.0000e-005	3.9000e-003	1.0300e-003	2.0000e-005	1.0500e-003	0.0000	3.2076	3.2076	1.2000e-004	1.1000e-004	3.2431
Total	**1.9500e-003**	**4.6200e-003**	**0.0153**	**4.0000e-005**	**4.2400e-003**	**5.0000e-005**	**4.2900e-003**	**1.1300e-003**	**5.0000e-005**	**1.1800e-003**	**0.0000**	**4.4472**	**4.4472**	**1.3000e-004**	**3.0000e-004**	**4.5411**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.5700e-003	0.0000	4.5700e-003	6.9000e-004	0.0000	6.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0858	0.8359	0.6693	1.2600e-003		0.0404	0.0404		0.0376	0.0376	0.0000	110.4681	110.4681	0.0310	0.0000	111.2438
Total	**0.0858**	**0.8359**	**0.6693**	**1.2600e-003**	**4.5700e-003**	**0.0404**	**0.0450**	**6.9000e-004**	**0.0376**	**0.0382**	**0.0000**	**110.4681**	**110.4681**	**0.0310**	**0.0000**	**111.2438**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	3.2500e-003	6.1000e-004	1.0000e-005	3.6000e-004	3.0000e-005	3.9000e-004	1.0000e-004	3.0000e-005	1.3000e-004	0.0000	1.2397	1.2397	1.0000e-005	1.9000e-004	1.2980
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8700e-003	1.3700e-003	0.0147	3.0000e-005	3.8800e-003	2.0000e-005	3.9000e-003	1.0300e-003	2.0000e-005	1.0500e-003	0.0000	3.2076	3.2076	1.2000e-004	1.1000e-004	3.2431
Total	**1.9500e-003**	**4.6200e-003**	**0.0153**	**4.0000e-005**	**4.2400e-003**	**5.0000e-005**	**4.2900e-003**	**1.1300e-003**	**5.0000e-005**	**1.1800e-003**	**0.0000**	**4.4472**	**4.4472**	**1.3000e-004**	**3.0000e-004**	**4.5411**

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.5000e-004	0.0000	3.5000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6700e-003	0.0537	0.0491	1.0000e-004		2.4900e-003	2.4900e-003		2.3200e-003	2.3200e-003	0.0000	8.4980	8.4980	2.3800e-003	0.0000	8.5575
Total	**5.6700e-003**	**0.0537**	**0.0491**	**1.0000e-004**	**3.5000e-004**	**2.4900e-003**	**2.8400e-003**	**5.0000e-005**	**2.3200e-003**	**2.3700e-003**	**0.0000**	**8.4980**	**8.4980**	**2.3800e-003**	**0.0000**	**8.5575**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	2.0000e-004	4.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0914	0.0914	0.0000	1.0000e-005	0.0957
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	9.0000e-005	1.0200e-003	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2402	0.2402	1.0000e-005	1.0000e-005	0.2427
Total	**1.3000e-004**	**2.9000e-004**	**1.0600e-003**	**0.0000**	**3.3000e-004**	**0.0000**	**3.3000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.3317**	**0.3317**	**1.0000e-005**	**2.0000e-005**	**0.3384**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.5000e-004	0.0000	3.5000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.6700e-003	0.0537	0.0491	1.0000e-004		2.4900e-003	2.4900e-003		2.3200e-003	2.3200e-003	0.0000	8.4980	8.4980	2.3800e-003	0.0000	8.5575
Total	**5.6700e-003**	**0.0537**	**0.0491**	**1.0000e-004**	**3.5000e-004**	**2.4900e-003**	**2.8400e-003**	**5.0000e-005**	**2.3200e-003**	**2.3700e-003**	**0.0000**	**8.4980**	**8.4980**	**2.3800e-003**	**0.0000**	**8.5575**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	2.0000e-004	4.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0914	0.0914	0.0000	1.0000e-005	0.0957
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	9.0000e-005	1.0200e-003	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2402	0.2402	1.0000e-005	1.0000e-005	0.2427
Total	**1.3000e-004**	**2.9000e-004**	**1.0600e-003**	**0.0000**	**3.3000e-004**	**0.0000**	**3.3000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.3317**	**0.3317**	**1.0000e-005**	**2.0000e-005**	**0.3384**

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3931	0.0000	0.3931	0.2021	0.0000	0.2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0532	0.5505	0.3649	7.6000e-004		0.0253	0.0253		0.0233	0.0233	0.0000	66.9014	66.9014	0.0216	0.0000	67.4423
Total	**0.0532**	**0.5505**	**0.3649**	**7.6000e-004**	**0.3931**	**0.0253**	**0.4185**	**0.2021**	**0.0233**	**0.2253**	**0.0000**	**66.9014**	**66.9014**	**0.0216**	**0.0000**	**67.4423**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2600e-003	8.8000e-004	9.8200e-003	2.0000e-005	2.8700e-003	1.0000e-005	2.8800e-003	7.6000e-004	1.0000e-005	7.8000e-004	0.0000	2.3060	2.3060	8.0000e-005	7.0000e-005	2.3299
Total	**1.2600e-003**	**8.8000e-004**	**9.8200e-003**	**2.0000e-005**	**2.8700e-003**	**1.0000e-005**	**2.8800e-003**	**7.6000e-004**	**1.0000e-005**	**7.8000e-004**	**0.0000**	**2.3060**	**2.3060**	**8.0000e-005**	**7.0000e-005**	**2.3299**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3931	0.0000	0.3931	0.2021	0.0000	0.2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0532	0.5505	0.3649	7.6000e-004		0.0253	0.0253		0.0233	0.0233	0.0000	66.9013	66.9013	0.0216	0.0000	67.4422
Total	**0.0532**	**0.5505**	**0.3649**	**7.6000e-004**	**0.3931**	**0.0253**	**0.4185**	**0.2021**	**0.0233**	**0.2253**	**0.0000**	**66.9013**	**66.9013**	**0.0216**	**0.0000**	**67.4422**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2600e-003	8.8000e-004	9.8200e-003	2.0000e-005	2.8700e-003	1.0000e-005	2.8800e-003	7.6000e-004	1.0000e-005	7.8000e-004	0.0000	2.3060	2.3060	8.0000e-005	7.0000e-005	2.3299
Total	**1.2600e-003**	**8.8000e-004**	**9.8200e-003**	**2.0000e-005**	**2.8700e-003**	**1.0000e-005**	**2.8800e-003**	**7.6000e-004**	**1.0000e-005**	**7.8000e-004**	**0.0000**	**2.3060**	**2.3060**	**8.0000e-005**	**7.0000e-005**	**2.3299**

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5062	0.0000	0.5062	0.2010	0.0000	0.2010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1827	1.8984	1.5428	3.4100e-003		0.0784	0.0784		0.0721	0.0721	0.0000	299.9437	299.9437	0.0970	0.0000	302.3688
Total	**0.1827**	**1.8984**	**1.5428**	**3.4100e-003**	**0.5062**	**0.0784**	**0.5846**	**0.2010**	**0.0721**	**0.2730**	**0.0000**	**299.9437**	**299.9437**	**0.0970**	**0.0000**	**302.3688**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8400e-003	2.7000e-003	0.0300	8.0000e-005	8.7600e-003	5.0000e-005	8.8100e-003	2.3300e-003	4.0000e-005	2.3700e-003	0.0000	7.0461	7.0461	2.4000e-004	2.3000e-004	7.1192
Total	**3.8400e-003**	**2.7000e-003**	**0.0300**	**8.0000e-005**	**8.7600e-003**	**5.0000e-005**	**8.8100e-003**	**2.3300e-003**	**4.0000e-005**	**2.3700e-003**	**0.0000**	**7.0461**	**7.0461**	**2.4000e-004**	**2.3000e-004**	**7.1192**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5062	0.0000	0.5062	0.2010	0.0000	0.2010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1827	1.8984	1.5428	3.4100e-003		0.0784	0.0784		0.0721	0.0721	0.0000	299.9433	299.9433	0.0970	0.0000	302.3685
Total	**0.1827**	**1.8984**	**1.5428**	**3.4100e-003**	**0.5062**	**0.0784**	**0.5846**	**0.2010**	**0.0721**	**0.2730**	**0.0000**	**299.9433**	**299.9433**	**0.0970**	**0.0000**	**302.3685**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8400e-003	2.7000e-003	0.0300	8.0000e-005	8.7600e-003	5.0000e-005	8.8100e-003	2.3300e-003	4.0000e-005	2.3700e-003	0.0000	7.0461	7.0461	2.4000e-004	2.3000e-004	7.1192
Total	**3.8400e-003**	**2.7000e-003**	**0.0300**	**8.0000e-005**	**8.7600e-003**	**5.0000e-005**	**8.8100e-003**	**2.3300e-003**	**4.0000e-005**	**2.3700e-003**	**0.0000**	**7.0461**	**7.0461**	**2.4000e-004**	**2.3000e-004**	**7.1192**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0826	0.7552	0.8528	1.4100e-003		0.0367	0.0367		0.0346	0.0346	0.0000	121.6975	121.6975	0.0290	0.0000	122.4212
Total	**0.0826**	**0.7552**	**0.8528**	**1.4100e-003**		**0.0367**	**0.0367**		**0.0346**	**0.0346**	**0.0000**	**121.6975**	**121.6975**	**0.0290**	**0.0000**	**122.4212**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5100e-003	0.1797	0.0542	8.1000e-004	0.0264	1.1500e-003	0.0275	7.6200e-003	1.1000e-003	8.7200e-003	0.0000	77.5587	77.5587	3.6000e-004	0.0117	81.0438
Worker	0.0530	0.0372	0.4137	1.0500e-003	0.1209	6.3000e-004	0.1215	0.0321	5.8000e-004	0.0327	0.0000	97.1886	97.1886	3.3000e-003	3.1100e-003	98.1970
Total	**0.0575**	**0.2170**	**0.4679**	**1.8600e-003**	**0.1472**	**1.7800e-003**	**0.1490**	**0.0398**	**1.6800e-003**	**0.0414**	**0.0000**	**174.7473**	**174.7473**	**3.6600e-003**	**0.0148**	**179.2408**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0826	0.7552	0.8528	1.4100e-003		0.0367	0.0367		0.0346	0.0346	0.0000	121.6974	121.6974	0.0290	0.0000	122.4211
Total	**0.0826**	**0.7552**	**0.8528**	**1.4100e-003**		**0.0367**	**0.0367**		**0.0346**	**0.0346**	**0.0000**	**121.6974**	**121.6974**	**0.0290**	**0.0000**	**122.4211**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5100e-003	0.1797	0.0542	8.1000e-004	0.0264	1.1500e-003	0.0275	7.6200e-003	1.1000e-003	8.7200e-003	0.0000	77.5587	77.5587	3.6000e-004	0.0117	81.0438
Worker	0.0530	0.0372	0.4137	1.0500e-003	0.1209	6.3000e-004	0.1215	0.0321	5.8000e-004	0.0327	0.0000	97.1886	97.1886	3.3000e-003	3.1100e-003	98.1970
Total	**0.0575**	**0.2170**	**0.4679**	**1.8600e-003**	**0.1472**	**1.7800e-003**	**0.1490**	**0.0398**	**1.6800e-003**	**0.0414**	**0.0000**	**174.7473**	**174.7473**	**3.6600e-003**	**0.0148**	**179.2408**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0109	0.4485	0.1321	1.9900e-003	0.0658	2.8800e-003	0.0687	0.0190	2.7600e-003	0.0218	0.0000	190.5429	190.5429	8.6000e-004	0.0286	199.0946
Worker	0.1214	0.0816	0.9491	2.5200e-003	0.3016	1.4800e-003	0.3030	0.0802	1.3600e-003	0.0815	0.0000	236.0824	236.0824	7.3700e-003	7.1200e-003	238.3889
Total	**0.1323**	**0.5300**	**1.0812**	**4.5100e-003**	**0.3674**	**4.3600e-003**	**0.3718**	**0.0992**	**4.1200e-003**	**0.1033**	**0.0000**	**426.6253**	**426.6253**	**8.2300e-003**	**0.0358**	**437.4835**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0109	0.4485	0.1321	1.9900e-003	0.0658	2.8800e-003	0.0687	0.0190	2.7600e-003	0.0218	0.0000	190.5429	190.5429	8.6000e-004	0.0286	199.0946
Worker	0.1214	0.0816	0.9491	2.5200e-003	0.3016	1.4800e-003	0.3030	0.0802	1.3600e-003	0.0815	0.0000	236.0824	236.0824	7.3700e-003	7.1200e-003	238.3889
Total	**0.1323**	**0.5300**	**1.0812**	**4.5100e-003**	**0.3674**	**4.3600e-003**	**0.3718**	**0.0992**	**4.1200e-003**	**0.1033**	**0.0000**	**426.6253**	**426.6253**	**8.2300e-003**	**0.0358**	**437.4835**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0106	0.4449	0.1292	1.9400e-003	0.0656	2.8700e-003	0.0685	0.0190	2.7500e-003	0.0217	0.0000	186.4616	186.4616	8.3000e-004	0.0280	194.8177
Worker	0.1116	0.0719	0.8722	2.4300e-003	0.3004	1.4000e-003	0.3018	0.0799	1.2900e-003	0.0812	0.0000	229.4613	229.4613	6.6000e-003	6.5600e-003	231.5812
Total	**0.1222**	**0.5168**	**1.0015**	**4.3700e-003**	**0.3660**	**4.2700e-003**	**0.3703**	**0.0988**	**4.0400e-003**	**0.1029**	**0.0000**	**415.9229**	**415.9229**	**7.4300e-003**	**0.0345**	**426.3989**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0106	0.4449	0.1292	1.9400e-003	0.0656	2.8700e-003	0.0685	0.0190	2.7500e-003	0.0217	0.0000	186.4616	186.4616	8.3000e-004	0.0280	194.8177
Worker	0.1116	0.0719	0.8722	2.4300e-003	0.3004	1.4000e-003	0.3018	0.0799	1.2900e-003	0.0812	0.0000	229.4613	229.4613	6.6000e-003	6.5600e-003	231.5812
Total	**0.1222**	**0.5168**	**1.0015**	**4.3700e-003**	**0.3660**	**4.2700e-003**	**0.3703**	**0.0988**	**4.0400e-003**	**0.1029**	**0.0000**	**415.9229**	**415.9229**	**7.4300e-003**	**0.0345**	**426.3989**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0104	0.4419	0.1271	1.9100e-003	0.0656	2.8600e-003	0.0684	0.0190	2.7300e-003	0.0217	0.0000	183.0243	183.0243	8.0000e-004	0.0274	191.2135
Worker	0.1034	0.0640	0.8140	2.3500e-003	0.3004	1.3200e-003	0.3017	0.0799	1.2100e-003	0.0811	0.0000	223.6317	223.6317	5.9500e-003	6.1100e-003	225.6000
Total	**0.1138**	**0.5060**	**0.9412**	**4.2600e-003**	**0.3660**	**4.1800e-003**	**0.3702**	**0.0988**	**3.9400e-003**	**0.1028**	**0.0000**	**406.6560**	**406.6560**	**6.7500e-003**	**0.0335**	**416.8135**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0104	0.4419	0.1271	1.9100e-003	0.0656	2.8600e-003	0.0684	0.0190	2.7300e-003	0.0217	0.0000	183.0243	183.0243	8.0000e-004	0.0274	191.2135
Worker	0.1034	0.0640	0.8140	2.3500e-003	0.3004	1.3200e-003	0.3017	0.0799	1.2100e-003	0.0811	0.0000	223.6317	223.6317	5.9500e-003	6.1100e-003	225.6000
Total	**0.1138**	**0.5060**	**0.9412**	**4.2600e-003**	**0.3660**	**4.1800e-003**	**0.3702**	**0.0988**	**3.9400e-003**	**0.1028**	**0.0000**	**406.6560**	**406.6560**	**6.7500e-003**	**0.0335**	**416.8135**

3.5 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1511	1.3779	1.7774	2.9800e-003		0.0583	0.0583		0.0548	0.0548	0.0000	256.2710	256.2710	0.0602	0.0000	257.7770
Total	**0.1511**	**1.3779**	**1.7774**	**2.9800e-003**		**0.0583**	**0.0583**		**0.0548**	**0.0548**	**0.0000**	**256.2710**	**256.2710**	**0.0602**	**0.0000**	**257.7770**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6300e-003	0.3713	0.1062	1.5800e-003	0.0555	2.4000e-003	0.0579	0.0161	2.3000e-003	0.0184	0.0000	151.8497	151.8497	6.6000e-004	0.0227	158.6349
Worker	0.0814	0.0488	0.6448	1.9300e-003	0.2544	1.0500e-003	0.2554	0.0676	9.7000e-004	0.0686	0.0000	185.1474	185.1474	4.5700e-003	4.8600e-003	186.7086
Total	**0.0900**	**0.4201**	**0.7510**	**3.5100e-003**	**0.3099**	**3.4500e-003**	**0.3134**	**0.0837**	**3.2700e-003**	**0.0869**	**0.0000**	**336.9971**	**336.9971**	**5.2300e-003**	**0.0276**	**345.3435**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1511	1.3779	1.7774	2.9800e-003		0.0583	0.0583		0.0548	0.0548	0.0000	256.2707	256.2707	0.0602	0.0000	257.7767
Total	**0.1511**	**1.3779**	**1.7774**	**2.9800e-003**		**0.0583**	**0.0583**		**0.0548**	**0.0548**	**0.0000**	**256.2707**	**256.2707**	**0.0602**	**0.0000**	**257.7767**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6300e-003	0.3713	0.1062	1.5800e-003	0.0555	2.4000e-003	0.0579	0.0161	2.3000e-003	0.0184	0.0000	151.8497	151.8497	6.6000e-004	0.0227	158.6349
Worker	0.0814	0.0488	0.6448	1.9300e-003	0.2544	1.0500e-003	0.2554	0.0676	9.7000e-004	0.0686	0.0000	185.1474	185.1474	4.5700e-003	4.8600e-003	186.7086
Total	**0.0900**	**0.4201**	**0.7510**	**3.5100e-003**	**0.3099**	**3.4500e-003**	**0.3134**	**0.0837**	**3.2700e-003**	**0.0869**	**0.0000**	**336.9971**	**336.9971**	**5.2300e-003**	**0.0276**	**345.3435**

3.6 Paving - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0183	0.1716	0.2916	4.6000e-004		8.3700e-003	8.3700e-003		7.7000e-003	7.7000e-003	0.0000	40.0385	40.0385	0.0130	0.0000	40.3622
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0183**	**0.1716**	**0.2916**	**4.6000e-004**		**8.3700e-003**	**8.3700e-003**		**7.7000e-003**	**7.7000e-003**	**0.0000**	**40.0385**	**40.0385**	**0.0130**	**0.0000**	**40.3622**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.6000e-004	4.6000e-004	6.0600e-003	2.0000e-005	2.3900e-003	1.0000e-005	2.4000e-003	6.4000e-004	1.0000e-005	6.4000e-004	0.0000	1.7393	1.7393	4.0000e-005	5.0000e-005	1.7540
Total	**7.6000e-004**	**4.6000e-004**	**6.0600e-003**	**2.0000e-005**	**2.3900e-003**	**1.0000e-005**	**2.4000e-003**	**6.4000e-004**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**1.7393**	**1.7393**	**4.0000e-005**	**5.0000e-005**	**1.7540**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0183	0.1716	0.2916	4.6000e-004		8.3700e-003	8.3700e-003		7.7000e-003	7.7000e-003	0.0000	40.0385	40.0385	0.0130	0.0000	40.3622
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0183**	**0.1716**	**0.2916**	**4.6000e-004**		**8.3700e-003**	**8.3700e-003**		**7.7000e-003**	**7.7000e-003**	**0.0000**	**40.0385**	**40.0385**	**0.0130**	**0.0000**	**40.3622**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.6000e-004	4.6000e-004	6.0600e-003	2.0000e-005	2.3900e-003	1.0000e-005	2.4000e-003	6.4000e-004	1.0000e-005	6.4000e-004	0.0000	1.7393	1.7393	4.0000e-005	5.0000e-005	1.7540
Total	**7.6000e-004**	**4.6000e-004**	**6.0600e-003**	**2.0000e-005**	**2.3900e-003**	**1.0000e-005**	**2.4000e-003**	**6.4000e-004**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**1.7393**	**1.7393**	**4.0000e-005**	**5.0000e-005**	**1.7540**

3.6 Paving - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0160	0.1502	0.2551	4.0000e-004		7.3200e-003	7.3200e-003		6.7400e-003	6.7400e-003	0.0000	35.0337	35.0337	0.0113	0.0000	35.3170
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0160**	**0.1502**	**0.2551**	**4.0000e-004**		**7.3200e-003**	**7.3200e-003**		**6.7400e-003**	**6.7400e-003**	**0.0000**	**35.0337**	**35.0337**	**0.0113**	**0.0000**	**35.3170**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2028

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	3.6000e-004	5.0000e-003	2.0000e-005	2.0900e-003	1.0000e-005	2.1000e-003	5.6000e-004	1.0000e-005	5.6000e-004	0.0000	1.4911	1.4911	3.0000e-005	4.0000e-005	1.5032
Total	**6.2000e-004**	**3.6000e-004**	**5.0000e-003**	**2.0000e-005**	**2.0900e-003**	**1.0000e-005**	**2.1000e-003**	**5.6000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.4911**	**1.4911**	**3.0000e-005**	**4.0000e-005**	**1.5032**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0160	0.1502	0.2551	4.0000e-004		7.3200e-003	7.3200e-003		6.7400e-003	6.7400e-003	0.0000	35.0337	35.0337	0.0113	0.0000	35.3169
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0160**	**0.1502**	**0.2551**	**4.0000e-004**		**7.3200e-003**	**7.3200e-003**		**6.7400e-003**	**6.7400e-003**	**0.0000**	**35.0337**	**35.0337**	**0.0113**	**0.0000**	**35.3169**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2028

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	3.6000e-004	5.0000e-003	2.0000e-005	2.0900e-003	1.0000e-005	2.1000e-003	5.6000e-004	1.0000e-005	5.6000e-004	0.0000	1.4911	1.4911	3.0000e-005	4.0000e-005	1.5032
Total	**6.2000e-004**	**3.6000e-004**	**5.0000e-003**	**2.0000e-005**	**2.0900e-003**	**1.0000e-005**	**2.1000e-003**	**5.6000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.4911**	**1.4911**	**3.0000e-005**	**4.0000e-005**	**1.5032**

3.7 Architectural Coating - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.2661					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.4100e-003	0.0430	0.0678	1.1000e-004		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	9.5747	9.5747	5.2000e-004	0.0000	9.5878
Total	**7.2725**	**0.0430**	**0.0678**	**1.1000e-004**		**1.9300e-003**	**1.9300e-003**		**1.9300e-003**	**1.9300e-003**	**0.0000**	**9.5747**	**9.5747**	**5.2000e-004**	**0.0000**	**9.5878**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2028

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1700e-003	3.0100e-003	0.0414	1.3000e-004	0.0173	7.0000e-005	0.0174	4.6100e-003	6.0000e-005	4.6700e-003	0.0000	12.3546	12.3546	2.8000e-004	3.1000e-004	12.4549
Total	**5.1700e-003**	**3.0100e-003**	**0.0414**	**1.3000e-004**	**0.0173**	**7.0000e-005**	**0.0174**	**4.6100e-003**	**6.0000e-005**	**4.6700e-003**	**0.0000**	**12.3546**	**12.3546**	**2.8000e-004**	**3.1000e-004**	**12.4549**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.2661					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.4100e-003	0.0430	0.0678	1.1000e-004		1.9300e-003	1.9300e-003		1.9300e-003	1.9300e-003	0.0000	9.5747	9.5747	5.2000e-004	0.0000	9.5878
Total	**7.2725**	**0.0430**	**0.0678**	**1.1000e-004**		**1.9300e-003**	**1.9300e-003**		**1.9300e-003**	**1.9300e-003**	**0.0000**	**9.5747**	**9.5747**	**5.2000e-004**	**0.0000**	**9.5878**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2028

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1700e-003	3.0100e-003	0.0414	1.3000e-004	0.0173	7.0000e-005	0.0174	4.6100e-003	6.0000e-005	4.6700e-003	0.0000	12.3546	12.3546	2.8000e-004	3.1000e-004	12.4549
Total	**5.1700e-003**	**3.0100e-003**	**0.0414**	**1.3000e-004**	**0.0173**	**7.0000e-005**	**0.0174**	**4.6100e-003**	**6.0000e-005**	**4.6700e-003**	**0.0000**	**12.3546**	**12.3546**	**2.8000e-004**	**3.1000e-004**	**12.4549**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.4932	3.5169	21.0993	0.0474	5.2744	0.0394	5.3138	1.4108	0.0370	1.4478	0.0000	4,565.1726	4,565.1726	0.2486	0.2425	4,643.6613
Unmitigated	2.5886	3.7962	22.7224	0.0523	5.8442	0.0432	5.8874	1.5632	0.0406	1.6038	0.0000	5,039.1204	5,039.1204	0.2633	0.2620	5,123.7727

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,229.76	1,367.52	1055.04	3,451,484	3,114,964
City Park	1.54	3.86	4.31	4,837	4,365
Single Family Housing	1,510.40	1,526.40	1368.00	4,206,518	3,796,382
Single Family Housing	1,416.00	1,431.00	1282.50	3,943,610	3,559,108
Strip Mall	2,880.80	2,732.60	1327.95	4,062,288	3,666,215
Total	7,038.50	7,061.38	5,037.80	15,668,736	14,141,034

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.538342	0.051819	0.168795	0.151588	0.026524	0.007013	0.012251	0.015932	0.000625	0.000467	0.022272	0.001337	0.003033
City Park	0.538342	0.051819	0.168795	0.151588	0.026524	0.007013	0.012251	0.015932	0.000625	0.000467	0.022272	0.001337	0.003033
Single Family Housing	0.538342	0.051819	0.168795	0.151588	0.026524	0.007013	0.012251	0.015932	0.000625	0.000467	0.022272	0.001337	0.003033
Strip Mall	0.538342	0.051819	0.168795	0.151588	0.026524	0.007013	0.012251	0.015932	0.000625	0.000467	0.022272	0.001337	0.003033

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	672.7079	672.7079	0.0568	6.8800e-003	676.1782
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	672.7079	672.7079	0.0568	6.8800e-003	676.1782
NaturalGas Mitigated	0.0563	0.4822	0.2127	3.0700e-003		0.0389	0.0389		0.0389	0.0389	0.0000	557.2252	557.2252	0.0107	0.0102	560.5366
NaturalGas Unmitigated	0.0563	0.4822	0.2127	3.0700e-003		0.0389	0.0389		0.0389	0.0389	0.0000	557.2252	557.2252	0.0107	0.0102	560.5366

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	2.70822e+006	0.0146	0.1248	0.0531	8.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	144.5210	144.5210	2.7700e-003	2.6500e-003	145.3798
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.56445e+006	0.0192	0.1642	0.0699	1.0500e-003		0.0133	0.0133		0.0133	0.0133	0.0000	190.2128	190.2128	3.6500e-003	3.4900e-003	191.3431
Single Family Housing	3.80208e+006	0.0205	0.1752	0.0746	1.1200e-003		0.0142	0.0142		0.0142	0.0142	0.0000	202.8936	202.8936	3.8900e-003	3.7200e-003	204.0993
Strip Mall	367250	1.9800e-003	0.0180	0.0151	1.1000e-004		1.3700e-003	1.3700e-003		1.3700e-003	1.3700e-003	0.0000	19.5979	19.5979	3.8000e-004	3.6000e-004	19.7143
Total		**0.0563**	**0.4822**	**0.2127**	**3.0800e-003**		**0.0389**	**0.0389**		**0.0389**	**0.0389**	**0.0000**	**557.2253**	**557.2253**	**0.0107**	**0.0102**	**560.5366**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	2.70822e+006	0.0146	0.1248	0.0531	8.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	144.5210	144.5210	2.7700e-003	2.6500e-003	145.3798
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.56445e+006	0.0192	0.1642	0.0699	1.0500e-003		0.0133	0.0133		0.0133	0.0133	0.0000	190.2128	190.2128	3.6500e-003	3.4900e-003	191.3431
Single Family Housing	3.80208e+006	0.0205	0.1752	0.0746	1.1200e-003		0.0142	0.0142		0.0142	0.0142	0.0000	202.8936	202.8936	3.8900e-003	3.7200e-003	204.0993
Strip Mall	367250	1.9800e-003	0.0180	0.0151	1.1000e-004		1.3700e-003	1.3700e-003		1.3700e-003	1.3700e-003	0.0000	19.5979	19.5979	3.8000e-004	3.6000e-004	19.7143
Total		**0.0563**	**0.4822**	**0.2127**	**3.0800e-003**		**0.0389**	**0.0389**		**0.0389**	**0.0389**	**0.0000**	**557.2253**	**557.2253**	**0.0107**	**0.0102**	**560.5366**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	692530	122.8170	0.0104	1.2600e-003	123.4506
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.19084e+006	211.1906	0.0178	2.1600e-003	212.2801
Single Family Housing	1.27023e+006	225.2700	0.0190	2.3000e-003	226.4321
Strip Mall	639600	113.4302	9.5700e-003	1.1600e-003	114.0154
Total		**672.7079**	**0.0568**	**6.8800e-003**	**676.1782**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	692530	122.8170	0.0104	1.2600e-003	123.4506
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.19084e+006	211.1906	0.0178	2.1600e-003	212.2801
Single Family Housing	1.27023e+006	225.2700	0.0190	2.3000e-003	226.4321
Strip Mall	639600	113.4302	9.5700e-003	1.1600e-003	114.0154
Total		**672.7079**	**0.0568**	**6.8800e-003**	**676.1782**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.9577	0.3356	3.6719	2.0700e-003		0.0435	0.0435		0.0435	0.0435	0.0000	347.1662	347.1662	0.0121	6.2600e-003	349.3336
Unmitigated	5.7912	0.6073	20.3233	0.0564		2.7599	2.7599		2.7599	2.7599	363.7238	347.1662	710.8900	1.7124	6.2600e-003	755.5658

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.7266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.0901					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.8681	0.5664	16.7768	0.0562		2.7402	2.7402		2.7402	2.7402	363.7238	341.3674	705.0912	1.7069	6.2600e-003	749.6282
Landscaping	0.1065	0.0409	3.5465	1.9000e-004		0.0197	0.0197		0.0197	0.0197	0.0000	5.7988	5.7988	5.5500e-003	0.0000	5.9376
Total	**5.7912**	**0.6073**	**20.3233**	**0.0564**		**2.7599**	**2.7599**		**2.7599**	**2.7599**	**363.7238**	**347.1662**	**710.8900**	**1.7124**	**6.2600e-003**	**755.5658**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.7266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.0901					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0345	0.2948	0.1254	1.8800e-003		0.0238	0.0238		0.0238	0.0238	0.0000	341.3674	341.3674	6.5400e-003	6.2600e-003	343.3960
Landscaping	0.1065	0.0409	3.5465	1.9000e-004		0.0197	0.0197		0.0197	0.0197	0.0000	5.7988	5.7988	5.5500e-003	0.0000	5.9376
Total	**3.9577**	**0.3356**	**3.6719**	**2.0700e-003**		**0.0435**	**0.0435**		**0.0435**	**0.0435**	**0.0000**	**347.1662**	**347.1662**	**0.0121**	**6.2600e-003**	**349.3336**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	61.3898	1.1759	0.0282	99.1848
Unmitigated	61.3898	1.1759	0.0282	99.1848

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	10.9459 / 6.90066	18.2598	0.3579	8.5700e-003	29.7625
City Park	0 / 2.34722	1.4569	1.2000e-004	1.0000e-005	1.4645
Single Family Housing	20.1977 / 12.7334	33.6936	0.6605	0.0158	54.9190
Strip Mall	4.81471 / 2.95095	7.9795	0.1574	3.7700e-003	13.0389
Total		**61.3898**	**1.1759**	**0.0282**	**99.1848**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	10.9459 / 6.90066	18.2598	0.3579	8.5700e-003	29.7625
City Park	0 / 2.34722	1.4569	1.2000e-004	1.0000e-005	1.4645
Single Family Housing	20.1977 / 12.7334	33.6936	0.6605	0.0158	54.9190
Strip Mall	4.81471 / 2.95095	7.9795	0.1574	3.7700e-003	13.0389
Total		**61.3898**	**1.1759**	**0.0282**	**99.1848**

8.0 Waste Detail

8.1 Mitigation Measures Waste

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	94.3949	5.5786	0.0000	233.8593
Unmitigated	94.3949	5.5786	0.0000	233.8593

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	77.28	15.6871	0.9271	0.0000	38.8642
City Park	0.17	0.0345	2.0400e-003	0.0000	0.0855
Single Family Housing	319.32	64.8191	3.8307	0.0000	160.5865
Strip Mall	68.25	13.8541	0.8188	0.0000	34.3230
Total		**94.3949**	**5.5786**	**0.0000**	**233.8593**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	77.28	15.6871	0.9271	0.0000	38.8642
City Park	0.17	0.0345	2.0400e-003	0.0000	0.0855
Single Family Housing	319.32	64.8191	3.8307	0.0000	160.5865
Strip Mall	68.25	13.8541	0.8188	0.0000	34.3230
Total		**94.3949**	**5.5786**	**0.0000**	**233.8593**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-359.6000	0.0000	0.0000	-359.6000

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	58 / 0	-359.6000	0.0000	0.0000	-359.6000
Total		**-359.6000**	**0.0000**	**0.0000**	**-359.6000**

Part 2

2005 BAU from CalEEMod

Belissa Residential Community, 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Belissa Residential Community, 2005 BAU

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	1.97	Acre	1.97	85,813.20	0
Apartments Low Rise	168.00	Dwelling Unit	7.15	168,000.00	480
Single Family Housing	160.00	Dwelling Unit	26.54	288,000.00	458
Single Family Housing	150.00	Dwelling Unit	14.87	270,000.00	429
Strip Mall	65.00	1000sqft	7.88	65,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	7			**Operational Year**	2010
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Lot Acerage Already Established

Off-road Equipment -

Trips and VMT -

On-road Fugitive Dust -

Demolition -

Grading -

Architectural Coating -

Belissa Residential Community, 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vehicle Trips -

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves -

Energy Use -

Solid Waste -

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Fleet Mix - District Accepted Fleet Mix for Residential Projects

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	10.50	7.15
tblLandUse	LotAcreage	48.70	14.87
tblLandUse	LotAcreage	51.95	26.54
tblLandUse	LotAcreage	1.49	7.88

2.0 Emissions Summary

Belissa Residential Community, 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2005	0.2850	2.1889	0.9242	0.0146	8.8100e-003	0.1221	0.1309	1.8200e-003	0.1220	0.1239	0.0000	134.9729	134.9729	0.0232	7.8000e-004	135.7855
2006	1.6732	10.8795	7.6120	0.0741	1.0589	0.6130	1.6719	0.4460	0.6109	1.0569	0.0000	833.5007	833.5007	0.1319	0.0333	846.7130
2007	1.9300	8.9904	10.4873	0.0652	0.3660	0.5695	0.9354	0.0988	0.5642	0.6631	0.0000	920.2821	920.2821	0.1464	0.0785	947.3381
2008	1.9374	9.0248	10.5274	0.0654	0.3674	0.5717	0.9390	0.0992	0.5664	0.6656	0.0000	923.8081	923.8081	0.1470	0.0788	950.9678
2009	1.9300	8.9904	10.4873	0.0652	0.3660	0.5695	0.9354	0.0988	0.5642	0.6631	0.0000	920.2821	920.2821	0.1464	0.0785	947.3381
2010	1.1806	6.8204	7.1563	8.5200e-003	0.3123	0.4038	0.7160	0.0843	0.3813	0.4656	0.0000	795.9148	795.9148	0.1289	0.0544	815.3345
2011	7.3646	0.6857	0.6244	7.4000e-004	0.0194	0.0415	0.0609	5.1600e-003	0.0391	0.0442	0.0000	69.1838	69.1838	0.0154	1.7500e-003	70.0880
Maximum	**7.3646**	**10.8795**	**10.5274**	**0.0741**	**1.0589**	**0.6130**	**1.6719**	**0.4460**	**0.6109**	**1.0569**	**0.0000**	**923.8081**	**923.8081**	**0.1470**	**0.0788**	**950.9678**

Belissa Residential Community, 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2005	0.2850	2.1889	0.9242	0.0146	8.8100e-003	0.1221	0.1309	1.8200e-003	0.1220	0.1239	0.0000	134.9728	134.9728	0.0232	7.8000e-004	135.7854
2006	1.6732	10.8794	7.6120	0.0741	1.0589	0.6130	1.6719	0.4460	0.6109	1.0569	0.0000	833.5000	833.5000	0.1319	0.0333	846.7123
2007	1.9300	8.9904	10.4873	0.0652	0.3660	0.5695	0.9354	0.0988	0.5642	0.6631	0.0000	920.2817	920.2817	0.1464	0.0785	947.3377
2008	1.9374	9.0248	10.5274	0.0654	0.3674	0.5716	0.9390	0.0992	0.5664	0.6656	0.0000	923.8077	923.8077	0.1470	0.0788	950.9673
2009	1.9300	8.9904	10.4873	0.0652	0.3660	0.5695	0.9354	0.0988	0.5642	0.6631	0.0000	920.2817	920.2817	0.1464	0.0785	947.3377
2010	1.1806	6.8204	7.1563	8.5200e-003	0.3123	0.4038	0.7160	0.0843	0.3813	0.4656	0.0000	795.9144	795.9144	0.1289	0.0544	815.3341
2011	7.3646	0.6857	0.6244	7.4000e-004	0.0194	0.0415	0.0609	5.1600e-003	0.0391	0.0442	0.0000	69.1837	69.1837	0.0154	1.7500e-003	70.0879
Maximum	**7.3646**	**10.8794**	**10.5274**	**0.0741**	**1.0589**	**0.6130**	**1.6719**	**0.4460**	**0.6109**	**1.0569**	**0.0000**	**923.8077**	**923.8077**	**0.1470**	**0.0788**	**950.9673**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**10-3-2005**	**1-2-2006**	2.5027	2.5027
2	**1-3-2006**	**4-2-2006**	2.9507	2.9507
3	**4-3-2006**	**7-2-2006**	3.7643	3.7643
4	**7-3-2006**	**10-2-2006**	3.1147	3.1147

Belissa Residential Community, 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5	**10-3-2006**	**1-2-2007**	2.7870	2.7870
6	**1-3-2007**	**4-2-2007**	2.7251	2.7251
7	**4-3-2007**	**7-2-2007**	2.6966	2.6966
8	**7-3-2007**	**10-2-2007**	2.7275	2.7275
9	**10-3-2007**	**1-2-2008**	2.7870	2.7870
10	**1-3-2008**	**4-2-2008**	2.7554	2.7554
11	**4-3-2008**	**7-2-2008**	2.6966	2.6966
12	**7-3-2008**	**10-2-2008**	2.7275	2.7275
13	**10-3-2008**	**1-2-2009**	2.7870	2.7870
14	**1-3-2009**	**4-2-2009**	2.7251	2.7251
15	**4-3-2009**	**7-2-2009**	2.6966	2.6966
16	**7-3-2009**	**10-2-2009**	2.7275	2.7275
17	**10-3-2009**	**1-2-2010**	2.7743	2.7743
18	**1-3-2010**	**4-2-2010**	2.1537	2.1537
19	**4-3-2010**	**7-2-2010**	2.1334	2.1334
20	**7-3-2010**	**10-2-2010**	2.1578	2.1578
21	**10-3-2010**	**1-2-2011**	1.5249	1.5249
22	**1-3-2011**	**4-2-2011**	3.6180	3.6180
23	**4-3-2011**	**7-2-2011**	4.4115	4.4115
		Highest	4.4115	4.4115

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	6.3047	0.6117	20.5546	0.0564		2.7589	2.7589		2.7589	2.7589	363.7238	347.1662	710.8900	1.7140	6.2600e-003	755.6036
Energy	0.0563	0.4822	0.2127	3.0700e-003		0.0389	0.0389		0.0389	0.0389	0.0000	1,229.9331	1,229.9331	0.0675	0.0171	1,236.7148
Mobile	9.1926	19.5879	91.0386	0.0823	5.8738	0.3731	6.2469	1.5760	0.3548	1.9308	0.0000	7,611.7824	7,611.7824	0.9548	0.7034	7,845.2548
Waste						0.0000	0.0000		0.0000	0.0000	94.3949	0.0000	94.3949	5.5786	0.0000	233.8593
Water						0.0000	0.0000		0.0000	0.0000	11.4079	49.9819	61.3898	1.1759	0.0282	99.1848
Total	**15.5535**	**20.6818**	**111.8059**	**0.1418**	**5.8738**	**3.1709**	**9.0447**	**1.5760**	**3.1526**	**4.7286**	**469.5266**	**9,238.8635**	**9,708.3901**	**9.4907**	**0.7549**	**10,170.6173**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	6.3047	0.6117	20.5546	0.0564		2.7589	2.7589		2.7589	2.7589	363.7238	347.1662	710.8900	1.7140	6.2600e-003	755.6036
Energy	0.0563	0.4822	0.2127	3.0700e-003		0.0389	0.0389		0.0389	0.0389	0.0000	1,229.9331	1,229.9331	0.0675	0.0171	1,236.7148
Mobile	9.1926	19.5879	91.0386	0.0823	5.8738	0.3731	6.2469	1.5760	0.3548	1.9308	0.0000	7,611.7824	7,611.7824	0.9548	0.7034	7,845.2548
Waste						0.0000	0.0000		0.0000	0.0000	94.3949	0.0000	94.3949	5.5786	0.0000	233.8593
Water						0.0000	0.0000		0.0000	0.0000	11.4079	49.9819	61.3898	1.1759	0.0282	99.1848
Total	**15.5535**	**20.6818**	**111.8059**	**0.1418**	**5.8738**	**3.1709**	**9.0447**	**1.5760**	**3.1526**	**4.7286**	**469.5266**	**9,238.8635**	**9,708.3901**	**9.4907**	**0.7549**	**10,170.6173**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	-359.6000
Total	**-359.6000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/3/2005	1/6/2006	5	70	
2	Site Preparation	Site Preparation	1/7/2006	3/3/2006	5	40	
3	Grading	Grading	3/4/2006	8/4/2006	5	110	
4	Building Construction	Building Construction	8/5/2006	11/5/2010	5	1110	
5	Paving	Paving	11/6/2010	2/18/2011	5	75	
6	Architectural Coating	Architectural Coating	2/19/2011	6/3/2011	5	75	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 330

Acres of Paving: 0

Residential Indoor: 1,470,150; Residential Outdoor: 490,050; Non-Residential Indoor: 97,500; Non-Residential Outdoor: 32,500; Striped Parking Area: 0 (Architectural Coating – sqft)

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	45.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	9	289.00	76.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	58.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2005

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.5700e-003	0.0000	4.5700e-003	6.9000e-004	0.0000	6.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2749	2.1592	0.8323	0.0144		0.1213	0.1213		0.1213	0.1213	0.0000	129.0959	129.0959	0.0224	0.0000	129.6561
Total	**0.2749**	**2.1592**	**0.8323**	**0.0144**	**4.5700e-003**	**0.1213**	**0.1259**	**6.9000e-004**	**0.1213**	**0.1220**	**0.0000**	**129.0959**	**129.0959**	**0.0224**	**0.0000**	**129.6561**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2005

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4900e-003	0.0187	4.8300e-003	1.5000e-004	3.6000e-004	6.7000e-004	1.0300e-003	1.0000e-004	6.4000e-004	7.4000e-004	0.0000	1.5426	1.5426	7.0000e-005	2.4000e-004	1.6161
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.5600e-003	0.0109	0.0871	5.0000e-005	3.8800e-003	1.0000e-004	3.9900e-003	1.0300e-003	1.0000e-004	1.1300e-003	0.0000	4.3344	4.3344	6.9000e-004	5.4000e-004	4.5132
Total	**0.0101**	**0.0297**	**0.0919**	**2.0000e-004**	**4.2400e-003**	**7.7000e-004**	**5.0200e-003**	**1.1300e-003**	**7.4000e-004**	**1.8700e-003**	**0.0000**	**5.8770**	**5.8770**	**7.6000e-004**	**7.8000e-004**	**6.1294**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.5700e-003	0.0000	4.5700e-003	6.9000e-004	0.0000	6.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2749	2.1592	0.8323	0.0144		0.1213	0.1213		0.1213	0.1213	0.0000	129.0958	129.0958	0.0224	0.0000	129.6560
Total	**0.2749**	**2.1592**	**0.8323**	**0.0144**	**4.5700e-003**	**0.1213**	**0.1259**	**6.9000e-004**	**0.1213**	**0.1220**	**0.0000**	**129.0958**	**129.0958**	**0.0224**	**0.0000**	**129.6560**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2005

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4900e-003	0.0187	4.8300e-003	1.5000e-004	3.6000e-004	6.7000e-004	1.0300e-003	1.0000e-004	6.4000e-004	7.4000e-004	0.0000	1.5426	1.5426	7.0000e-005	2.4000e-004	1.6161
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.5600e-003	0.0109	0.0871	5.0000e-005	3.8800e-003	1.0000e-004	3.9900e-003	1.0300e-003	1.0000e-004	1.1300e-003	0.0000	4.3344	4.3344	6.9000e-004	5.4000e-004	4.5132
Total	**0.0101**	**0.0297**	**0.0919**	**2.0000e-004**	**4.2400e-003**	**7.7000e-004**	**5.0200e-003**	**1.1300e-003**	**7.4000e-004**	**1.8700e-003**	**0.0000**	**5.8770**	**5.8770**	**7.6000e-004**	**7.8000e-004**	**6.1294**

3.2 Demolition - 2006

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.5000e-004	0.0000	3.5000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0212	0.1661	0.0640	1.1100e-003		9.3300e-003	9.3300e-003		9.3300e-003	9.3300e-003	0.0000	9.9305	9.9305	1.7200e-003	0.0000	9.9736
Total	**0.0212**	**0.1661**	**0.0640**	**1.1100e-003**	**3.5000e-004**	**9.3300e-003**	**9.6800e-003**	**5.0000e-005**	**9.3300e-003**	**9.3800e-003**	**0.0000**	**9.9305**	**9.9305**	**1.7200e-003**	**0.0000**	**9.9736**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2006

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	1.4400e-003	3.7000e-004	1.0000e-005	3.0000e-005	5.0000e-005	8.0000e-005	1.0000e-005	5.0000e-005	6.0000e-005	0.0000	0.1187	0.1187	1.0000e-005	2.0000e-005	0.1243
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	8.4000e-004	6.7000e-003	0.0000	3.0000e-004	1.0000e-005	3.1000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	0.3334	0.3334	5.0000e-005	4.0000e-005	0.3472
Total	**7.7000e-004**	**2.2800e-003**	**7.0700e-003**	**1.0000e-005**	**3.3000e-004**	**6.0000e-005**	**3.9000e-004**	**9.0000e-005**	**6.0000e-005**	**1.5000e-004**	**0.0000**	**0.4521**	**0.4521**	**6.0000e-005**	**6.0000e-005**	**0.4715**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.5000e-004	0.0000	3.5000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0212	0.1661	0.0640	1.1100e-003		9.3300e-003	9.3300e-003		9.3300e-003	9.3300e-003	0.0000	9.9304	9.9304	1.7200e-003	0.0000	9.9735
Total	**0.0212**	**0.1661**	**0.0640**	**1.1100e-003**	**3.5000e-004**	**9.3300e-003**	**9.6800e-003**	**5.0000e-005**	**9.3300e-003**	**9.3800e-003**	**0.0000**	**9.9304**	**9.9304**	**1.7200e-003**	**0.0000**	**9.9735**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2006

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	1.4400e-003	3.7000e-004	1.0000e-005	3.0000e-005	5.0000e-005	8.0000e-005	1.0000e-005	5.0000e-005	6.0000e-005	0.0000	0.1187	0.1187	1.0000e-005	2.0000e-005	0.1243
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	8.4000e-004	6.7000e-003	0.0000	3.0000e-004	1.0000e-005	3.1000e-004	8.0000e-005	1.0000e-005	9.0000e-005	0.0000	0.3334	0.3334	5.0000e-005	4.0000e-005	0.3472
Total	**7.7000e-004**	**2.2800e-003**	**7.0700e-003**	**1.0000e-005**	**3.3000e-004**	**6.0000e-005**	**3.9000e-004**	**9.0000e-005**	**6.0000e-005**	**1.5000e-004**	**0.0000**	**0.4521**	**0.4521**	**6.0000e-005**	**6.0000e-005**	**0.4715**

3.3 Site Preparation - 2006

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3931	0.0000	0.3931	0.2021	0.0000	0.2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1866	1.3985	0.5263	9.0000e-003		0.0863	0.0863		0.0863	0.0863	0.0000	80.0092	80.0092	0.0152	0.0000	80.3895
Total	**0.1866**	**1.3985**	**0.5263**	**9.0000e-003**	**0.3931**	**0.0863**	**0.4794**	**0.2021**	**0.0863**	**0.2884**	**0.0000**	**80.0092**	**80.0092**	**0.0152**	**0.0000**	**80.3895**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2006

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3200e-003	8.0700e-003	0.0643	3.0000e-005	2.8700e-003	8.0000e-005	2.9400e-003	7.6000e-004	7.0000e-005	8.3000e-004	0.0000	3.2008	3.2008	5.1000e-004	4.0000e-004	3.3329
Total	**6.3200e-003**	**8.0700e-003**	**0.0643**	**3.0000e-005**	**2.8700e-003**	**8.0000e-005**	**2.9400e-003**	**7.6000e-004**	**7.0000e-005**	**8.3000e-004**	**0.0000**	**3.2008**	**3.2008**	**5.1000e-004**	**4.0000e-004**	**3.3329**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3931	0.0000	0.3931	0.2021	0.0000	0.2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1866	1.3985	0.5263	9.0000e-003		0.0863	0.0863		0.0863	0.0863	0.0000	80.0091	80.0091	0.0152	0.0000	80.3894
Total	**0.1866**	**1.3985**	**0.5263**	**9.0000e-003**	**0.3931**	**0.0863**	**0.4794**	**0.2021**	**0.0863**	**0.2884**	**0.0000**	**80.0091**	**80.0091**	**0.0152**	**0.0000**	**80.3894**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2006

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3200e-003	8.0700e-003	0.0643	3.0000e-005	2.8700e-003	8.0000e-005	2.9400e-003	7.6000e-004	7.0000e-005	8.3000e-004	0.0000	3.2008	3.2008	5.1000e-004	4.0000e-004	3.3329
Total	**6.3200e-003**	**8.0700e-003**	**0.0643**	**3.0000e-005**	**2.8700e-003**	**8.0000e-005**	**2.9400e-003**	**7.6000e-004**	**7.0000e-005**	**8.3000e-004**	**0.0000**	**3.2008**	**3.2008**	**5.1000e-004**	**4.0000e-004**	**3.3329**

3.4 Grading - 2006

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5062	0.0000	0.5062	0.2010	0.0000	0.2010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.6626	5.6630	2.5349	0.0376		0.2879	0.2879		0.2879	0.2879	0.0000	359.8995	359.8995	0.0540	0.0000	361.2488
Total	**0.6626**	**5.6630**	**2.5349**	**0.0376**	**0.5062**	**0.2879**	**0.7941**	**0.2010**	**0.2879**	**0.4889**	**0.0000**	**359.8995**	**359.8995**	**0.0540**	**0.0000**	**361.2488**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2006

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0193	0.0247	0.1965	1.1000e-004	8.7600e-003	2.3000e-004	8.9900e-003	2.3300e-003	2.1000e-004	2.5400e-003	0.0000	9.7802	9.7802	1.5500e-003	1.2200e-003	10.1837
Total	**0.0193**	**0.0247**	**0.1965**	**1.1000e-004**	**8.7600e-003**	**2.3000e-004**	**8.9900e-003**	**2.3300e-003**	**2.1000e-004**	**2.5400e-003**	**0.0000**	**9.7802**	**9.7802**	**1.5500e-003**	**1.2200e-003**	**10.1837**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5062	0.0000	0.5062	0.2010	0.0000	0.2010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.6626	5.6630	2.5349	0.0376		0.2879	0.2879		0.2879	0.2879	0.0000	359.8991	359.8991	0.0540	0.0000	361.2484
Total	**0.6626**	**5.6630**	**2.5349**	**0.0376**	**0.5062**	**0.2879**	**0.7941**	**0.2010**	**0.2879**	**0.4889**	**0.0000**	**359.8991**	**359.8991**	**0.0540**	**0.0000**	**361.2484**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2006

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0193	0.0247	0.1965	1.1000e-004	8.7600e-003	2.3000e-004	8.9900e-003	2.3300e-003	2.1000e-004	2.5400e-003	0.0000	9.7802	9.7802	1.5500e-003	1.2200e-003	10.1837
Total	**0.0193**	**0.0247**	**0.1965**	**1.1000e-004**	**8.7600e-003**	**2.3000e-004**	**8.9900e-003**	**2.3300e-003**	**2.1000e-004**	**2.5400e-003**	**0.0000**	**9.7802**	**9.7802**	**1.5500e-003**	**1.2200e-003**	**10.1837**

3.5 Building Construction - 2006

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3946	2.1759	1.0704	0.0160		0.1827	0.1827		0.1827	0.1827	0.0000	138.0020	138.0020	0.0322	0.0000	138.8071
Total	**0.3946**	**2.1759**	**1.0704**	**0.0160**		**0.1827**	**0.1827**		**0.1827**	**0.1827**	**0.0000**	**138.0020**	**138.0020**	**0.0322**	**0.0000**	**138.8071**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2006

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1155	1.1010	0.4390	8.7800e-003	0.0264	0.0432	0.0696	7.6200e-003	0.0414	0.0490	0.0000	97.3261	97.3261	5.3100e-003	0.0147	101.8399
Worker	0.2663	0.3399	2.7097	1.4800e-003	0.1209	3.1900e-003	0.1241	0.0321	2.9600e-003	0.0351	0.0000	134.9003	134.9003	0.0214	0.0169	140.4660
Total	**0.3819**	**1.4410**	**3.1486**	**0.0103**	**0.1472**	**0.0464**	**0.1936**	**0.0398**	**0.0443**	**0.0841**	**0.0000**	**232.2264**	**232.2264**	**0.0267**	**0.0316**	**242.3059**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3946	2.1759	1.0704	0.0160		0.1827	0.1827		0.1827	0.1827	0.0000	138.0019	138.0019	0.0322	0.0000	138.8070
Total	**0.3946**	**2.1759**	**1.0704**	**0.0160**		**0.1827**	**0.1827**		**0.1827**	**0.1827**	**0.0000**	**138.0019**	**138.0019**	**0.0322**	**0.0000**	**138.8070**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2006

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1155	1.1010	0.4390	8.7800e-003	0.0264	0.0432	0.0696	7.6200e-003	0.0414	0.0490	0.0000	97.3261	97.3261	5.3100e-003	0.0147	101.8399
Worker	0.2663	0.3399	2.7097	1.4800e-003	0.1209	3.1900e-003	0.1241	0.0321	2.9600e-003	0.0351	0.0000	134.9003	134.9003	0.0214	0.0169	140.4660
Total	**0.3819**	**1.4410**	**3.1486**	**0.0103**	**0.1472**	**0.0464**	**0.1936**	**0.0398**	**0.0443**	**0.0841**	**0.0000**	**232.2264**	**232.2264**	**0.0267**	**0.0316**	**242.3059**

3.5 Building Construction - 2007

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.9808	5.4086	2.6607	0.0397		0.4541	0.4541		0.4541	0.4541	0.0000	343.0336	343.0336	0.0801	0.0000	345.0348
Total	**0.9808**	**5.4086**	**2.6607**	**0.0397**		**0.4541**	**0.4541**		**0.4541**	**0.4541**	**0.0000**	**343.0336**	**343.0336**	**0.0801**	**0.0000**	**345.0348**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2007

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2872	2.7368	1.0912	0.0218	0.0656	0.1074	0.1730	0.0190	0.1028	0.1217	0.0000	241.9248	241.9248	0.0132	0.0365	253.1449
Worker	0.6620	0.8450	6.7354	3.6700e-003	0.3004	7.9400e-003	0.3084	0.0799	7.3600e-003	0.0872	0.0000	335.3237	335.3237	0.0532	0.0420	349.1584
Total	**0.9492**	**3.5818**	**7.8266**	**0.0255**	**0.3660**	**0.1154**	**0.4813**	**0.0988**	**0.1101**	**0.2090**	**0.0000**	**577.2485**	**577.2485**	**0.0663**	**0.0785**	**602.3033**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.9808	5.4086	2.6607	0.0397		0.4541	0.4541		0.4541	0.4541	0.0000	343.0332	343.0332	0.0801	0.0000	345.0344
Total	**0.9808**	**5.4086**	**2.6607**	**0.0397**		**0.4541**	**0.4541**		**0.4541**	**0.4541**	**0.0000**	**343.0332**	**343.0332**	**0.0801**	**0.0000**	**345.0344**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2007

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2872	2.7368	1.0912	0.0218	0.0656	0.1074	0.1730	0.0190	0.1028	0.1217	0.0000	241.9248	241.9248	0.0132	0.0365	253.1449
Worker	0.6620	0.8450	6.7354	3.6700e-003	0.3004	7.9400e-003	0.3084	0.0799	7.3600e-003	0.0872	0.0000	335.3237	335.3237	0.0532	0.0420	349.1584
Total	**0.9492**	**3.5818**	**7.8266**	**0.0255**	**0.3660**	**0.1154**	**0.4813**	**0.0988**	**0.1101**	**0.2090**	**0.0000**	**577.2485**	**577.2485**	**0.0663**	**0.0785**	**602.3033**

3.5 Building Construction - 2008

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.9846	5.4293	2.6709	0.0398		0.4558	0.4558		0.4558	0.4558	0.0000	344.3479	344.3479	0.0804	0.0000	346.3568
Total	**0.9846**	**5.4293**	**2.6709**	**0.0398**		**0.4558**	**0.4558**		**0.4558**	**0.4558**	**0.0000**	**344.3479**	**344.3479**	**0.0804**	**0.0000**	**346.3568**

Belissa Residential Community, 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2008

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2883	2.7473	1.0954	0.0219	0.0658	0.1078	0.1737	0.0190	0.1032	0.1222	0.0000	242.8517	242.8517	0.0133	0.0367	254.1148
Worker	0.6645	0.8482	6.7612	3.6800e-003	0.3016	7.9700e-003	0.3095	0.0802	7.3900e-003	0.0876	0.0000	336.6085	336.6085	0.0534	0.0421	350.4962
Total	**0.9528**	**3.5956**	**7.8566**	**0.0256**	**0.3674**	**0.1158**	**0.4832**	**0.0992**	**0.1106**	**0.2098**	**0.0000**	**579.4602**	**579.4602**	**0.0666**	**0.0788**	**604.6110**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.9846	5.4293	2.6709	0.0398		0.4558	0.4558		0.4558	0.4558	0.0000	344.3475	344.3475	0.0804	0.0000	346.3564
Total	**0.9846**	**5.4293**	**2.6709**	**0.0398**		**0.4558**	**0.4558**		**0.4558**	**0.4558**	**0.0000**	**344.3475**	**344.3475**	**0.0804**	**0.0000**	**346.3564**

Belissa Residential Community, 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2008

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2883	2.7473	1.0954	0.0219	0.0658	0.1078	0.1737	0.0190	0.1032	0.1222	0.0000	242.8517	242.8517	0.0133	0.0367	254.1148
Worker	0.6645	0.8482	6.7612	3.6800e-003	0.3016	7.9700e-003	0.3095	0.0802	7.3900e-003	0.0876	0.0000	336.6085	336.6085	0.0534	0.0421	350.4962
Total	**0.9528**	**3.5956**	**7.8566**	**0.0256**	**0.3674**	**0.1158**	**0.4832**	**0.0992**	**0.1106**	**0.2098**	**0.0000**	**579.4602**	**579.4602**	**0.0666**	**0.0788**	**604.6110**

3.5 Building Construction - 2009

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.9808	5.4086	2.6607	0.0397		0.4541	0.4541		0.4541	0.4541	0.0000	343.0336	343.0336	0.0801	0.0000	345.0348
Total	**0.9808**	**5.4086**	**2.6607**	**0.0397**		**0.4541**	**0.4541**		**0.4541**	**0.4541**	**0.0000**	**343.0336**	**343.0336**	**0.0801**	**0.0000**	**345.0348**

Belissa Residential Community, 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2009

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2872	2.7368	1.0912	0.0218	0.0656	0.1074	0.1730	0.0190	0.1028	0.1217	0.0000	241.9248	241.9248	0.0132	0.0365	253.1449
Worker	0.6620	0.8450	6.7354	3.6700e-003	0.3004	7.9400e-003	0.3084	0.0799	7.3600e-003	0.0872	0.0000	335.3237	335.3237	0.0532	0.0420	349.1584
Total	**0.9492**	**3.5818**	**7.8266**	**0.0255**	**0.3660**	**0.1154**	**0.4813**	**0.0988**	**0.1101**	**0.2090**	**0.0000**	**577.2485**	**577.2485**	**0.0663**	**0.0785**	**602.3033**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.9808	5.4086	2.6607	0.0397		0.4541	0.4541		0.4541	0.4541	0.0000	343.0332	343.0332	0.0801	0.0000	345.0344
Total	**0.9808**	**5.4086**	**2.6607**	**0.0397**		**0.4541**	**0.4541**		**0.4541**	**0.4541**	**0.0000**	**343.0332**	**343.0332**	**0.0801**	**0.0000**	**345.0344**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2009

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.2872	2.7368	1.0912	0.0218	0.0656	0.1074	0.1730	0.0190	0.1028	0.1217	0.0000	241.9248	241.9248	0.0132	0.0365	253.1449
Worker	0.6620	0.8450	6.7354	3.6700e-003	0.3004	7.9400e-003	0.3084	0.0799	7.3600e-003	0.0872	0.0000	335.3237	335.3237	0.0532	0.0420	349.1584
Total	**0.9492**	**3.5818**	**7.8266**	**0.0255**	**0.3660**	**0.1154**	**0.4813**	**0.0988**	**0.1101**	**0.2090**	**0.0000**	**577.2485**	**577.2485**	**0.0663**	**0.0785**	**602.3033**

3.5 Building Construction - 2010

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5220	3.9492	2.1679	2.9800e-003		0.2890	0.2890		0.2729	0.2729	0.0000	276.0698	276.0698	0.0748	0.0000	277.9389
Total	**0.5220**	**3.9492**	**2.1679**	**2.9800e-003**		**0.2890**	**0.2890**		**0.2729**	**0.2729**	**0.0000**	**276.0698**	**276.0698**	**0.0748**	**0.0000**	**277.9389**

Belissa Residential Community, 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2010

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1879	1.7813	0.7189	2.0600e-003	0.0555	0.0760	0.1315	0.0160	0.0727	0.0887	0.0000	197.9422	197.9422	8.9700e-003	0.0297	207.0089
Worker	0.4105	0.4635	3.9239	2.9900e-003	0.2544	3.9600e-003	0.2583	0.0676	3.6700e-003	0.0713	0.0000	274.7805	274.7805	0.0319	0.0245	282.8645
Total	**0.5984**	**2.2448**	**4.6428**	**5.0500e-003**	**0.3099**	**0.0799**	**0.3898**	**0.0837**	**0.0764**	**0.1600**	**0.0000**	**472.7227**	**472.7227**	**0.0408**	**0.0541**	**489.8734**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5220	3.9492	2.1679	2.9800e-003		0.2890	0.2890		0.2729	0.2729	0.0000	276.0695	276.0695	0.0748	0.0000	277.9386
Total	**0.5220**	**3.9492**	**2.1679**	**2.9800e-003**		**0.2890**	**0.2890**		**0.2729**	**0.2729**	**0.0000**	**276.0695**	**276.0695**	**0.0748**	**0.0000**	**277.9386**

Belissa Residential Community, 2005 BAU - Tulare County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2010

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1879	1.7813	0.7189	2.0600e-003	0.0555	0.0760	0.1315	0.0160	0.0727	0.0887	0.0000	197.9422	197.9422	8.9700e-003	0.0297	207.0089
Worker	0.4105	0.4635	3.9239	2.9900e-003	0.2544	3.9600e-003	0.2583	0.0676	3.6700e-003	0.0713	0.0000	274.7805	274.7805	0.0319	0.0245	282.8645
Total	**0.5984**	**2.2448**	**4.6428**	**5.0500e-003**	**0.3099**	**0.0799**	**0.3898**	**0.0837**	**0.0764**	**0.1600**	**0.0000**	**472.7227**	**472.7227**	**0.0408**	**0.0541**	**489.8734**

3.6 Paving - 2010

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0563	0.6221	0.3088	4.6000e-004		0.0349	0.0349		0.0321	0.0321	0.0000	44.5409	44.5409	0.0130	0.0000	44.8650
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0563**	**0.6221**	**0.3088**	**4.6000e-004**		**0.0349**	**0.0349**		**0.0321**	**0.0321**	**0.0000**	**44.5409**	**44.5409**	**0.0130**	**0.0000**	**44.8650**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2010

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8600e-003	4.3500e-003	0.0369	3.0000e-005	2.3900e-003	4.0000e-005	2.4300e-003	6.4000e-004	3.0000e-005	6.7000e-004	0.0000	2.5814	2.5814	3.0000e-004	2.3000e-004	2.6573
Total	**3.8600e-003**	**4.3500e-003**	**0.0369**	**3.0000e-005**	**2.3900e-003**	**4.0000e-005**	**2.4300e-003**	**6.4000e-004**	**3.0000e-005**	**6.7000e-004**	**0.0000**	**2.5814**	**2.5814**	**3.0000e-004**	**2.3000e-004**	**2.6573**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0563	0.6221	0.3088	4.6000e-004		0.0349	0.0349		0.0321	0.0321	0.0000	44.5408	44.5408	0.0130	0.0000	44.8649
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0563**	**0.6221**	**0.3088**	**4.6000e-004**		**0.0349**	**0.0349**		**0.0321**	**0.0321**	**0.0000**	**44.5408**	**44.5408**	**0.0130**	**0.0000**	**44.8649**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2010

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8600e-003	4.3500e-003	0.0369	3.0000e-005	2.3900e-003	4.0000e-005	2.4300e-003	6.4000e-004	3.0000e-005	6.7000e-004	0.0000	2.5814	2.5814	3.0000e-004	2.3000e-004	2.6573
Total	**3.8600e-003**	**4.3500e-003**	**0.0369**	**3.0000e-005**	**2.3900e-003**	**4.0000e-005**	**2.4300e-003**	**6.4000e-004**	**3.0000e-005**	**6.7000e-004**	**0.0000**	**2.5814**	**2.5814**	**3.0000e-004**	**2.3000e-004**	**2.6573**

3.6 Paving - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0476	0.5266	0.2696	4.0000e-004		0.0296	0.0296		0.0272	0.0272	0.0000	38.8732	38.8732	0.0113	0.0000	39.1568
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0476**	**0.5266**	**0.2696**	**4.0000e-004**		**0.0296**	**0.0296**		**0.0272**	**0.0272**	**0.0000**	**38.8732**	**38.8732**	**0.0113**	**0.0000**	**39.1568**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2011

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2100e-003	3.5200e-003	0.0302	2.0000e-005	2.0900e-003	3.0000e-005	2.1200e-003	5.6000e-004	3.0000e-005	5.8000e-004	0.0000	2.2331	2.2331	2.5000e-004	1.9000e-004	2.2953
Total	**3.2100e-003**	**3.5200e-003**	**0.0302**	**2.0000e-005**	**2.0900e-003**	**3.0000e-005**	**2.1200e-003**	**5.6000e-004**	**3.0000e-005**	**5.8000e-004**	**0.0000**	**2.2331**	**2.2331**	**2.5000e-004**	**1.9000e-004**	**2.2953**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0476	0.5266	0.2696	4.0000e-004		0.0296	0.0296		0.0272	0.0272	0.0000	38.8732	38.8732	0.0113	0.0000	39.1568
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0476**	**0.5266**	**0.2696**	**4.0000e-004**		**0.0296**	**0.0296**		**0.0272**	**0.0272**	**0.0000**	**38.8732**	**38.8732**	**0.0113**	**0.0000**	**39.1568**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2011

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2100e-003	3.5200e-003	0.0302	2.0000e-005	2.0900e-003	3.0000e-005	2.1200e-003	5.6000e-004	3.0000e-005	5.8000e-004	0.0000	2.2331	2.2331	2.5000e-004	1.9000e-004	2.2953
Total	**3.2100e-003**	**3.5200e-003**	**0.0302**	**2.0000e-005**	**2.0900e-003**	**3.0000e-005**	**2.1200e-003**	**5.6000e-004**	**3.0000e-005**	**5.8000e-004**	**0.0000**	**2.2331**	**2.2331**	**2.5000e-004**	**1.9000e-004**	**2.2953**

3.7 Architectural Coating - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.2661					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0212	0.1264	0.0744	1.1000e-004		0.0116	0.0116		0.0116	0.0116	0.0000	9.5747	9.5747	1.7200e-003	0.0000	9.6177
Total	**7.2872**	**0.1264**	**0.0744**	**1.1000e-004**		**0.0116**	**0.0116**		**0.0116**	**0.0116**	**0.0000**	**9.5747**	**9.5747**	**1.7200e-003**	**0.0000**	**9.6177**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2011

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0266	0.0292	0.2502	2.0000e-004	0.0173	2.5000e-004	0.0176	4.6100e-003	2.3000e-004	4.8300e-003	0.0000	18.5028	18.5028	2.0400e-003	1.5600e-003	19.0182
Total	**0.0266**	**0.0292**	**0.2502**	**2.0000e-004**	**0.0173**	**2.5000e-004**	**0.0176**	**4.6100e-003**	**2.3000e-004**	**4.8300e-003**	**0.0000**	**18.5028**	**18.5028**	**2.0400e-003**	**1.5600e-003**	**19.0182**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	7.2661					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0212	0.1264	0.0744	1.1000e-004		0.0116	0.0116		0.0116	0.0116	0.0000	9.5747	9.5747	1.7200e-003	0.0000	9.6177
Total	**7.2872**	**0.1264**	**0.0744**	**1.1000e-004**		**0.0116**	**0.0116**		**0.0116**	**0.0116**	**0.0000**	**9.5747**	**9.5747**	**1.7200e-003**	**0.0000**	**9.6177**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2011

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0266	0.0292	0.2502	2.0000e-004	0.0173	2.5000e-004	0.0176	4.6100e-003	2.3000e-004	4.8300e-003	0.0000	18.5028	18.5028	2.0400e-003	1.5600e-003	19.0182
Total	**0.0266**	**0.0292**	**0.2502**	**2.0000e-004**	**0.0173**	**2.5000e-004**	**0.0176**	**4.6100e-003**	**2.3000e-004**	**4.8300e-003**	**0.0000**	**18.5028**	**18.5028**	**2.0400e-003**	**1.5600e-003**	**19.0182**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	9.1926	19.5879	91.0386	0.0823	5.8738	0.3731	6.2469	1.5760	0.3548	1.9308	0.0000	7,611.7824	7,611.7824	0.9548	0.7034	7,845.2548
Unmitigated	9.1926	19.5879	91.0386	0.0823	5.8738	0.3731	6.2469	1.5760	0.3548	1.9308	0.0000	7,611.7824	7,611.7824	0.9548	0.7034	7,845.2548

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,229.76	1,367.52	1055.04	3,451,484	3,451,484
City Park	1.54	3.86	4.31	4,837	4,837
Single Family Housing	1,510.40	1,526.40	1368.00	4,206,518	4,206,518
Single Family Housing	1,416.00	1,431.00	1282.50	3,943,610	3,943,610
Strip Mall	2,880.80	2,732.60	1327.95	4,062,288	4,062,288
Total	7,038.50	7,061.38	5,037.80	15,668,736	15,668,736

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
Single Family Housing	10.80	7.30	7.50	38.40	22.60	39.00	86	11	3
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.428189	0.070895	0.165995	0.215914	0.047522	0.008681	0.013333	0.012976	0.000955	0.000418	0.026058	0.002026	0.007039
City Park	0.428189	0.070895	0.165995	0.215914	0.047522	0.008681	0.013333	0.012976	0.000955	0.000418	0.026058	0.002026	0.007039
Single Family Housing	0.428189	0.070895	0.165995	0.215914	0.047522	0.008681	0.013333	0.012976	0.000955	0.000418	0.026058	0.002026	0.007039
Strip Mall	0.428189	0.070895	0.165995	0.215914	0.047522	0.008681	0.013333	0.012976	0.000955	0.000418	0.026058	0.002026	0.007039

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	672.7079	672.7079	0.0568	6.8800e-003	676.1782
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	672.7079	672.7079	0.0568	6.8800e-003	676.1782
NaturalGas Mitigated	0.0563	0.4822	0.2127	3.0700e-003		0.0389	0.0389		0.0389	0.0389	0.0000	557.2252	557.2252	0.0107	0.0102	560.5366
NaturalGas Unmitigated	0.0563	0.4822	0.2127	3.0700e-003		0.0389	0.0389		0.0389	0.0389	0.0000	557.2252	557.2252	0.0107	0.0102	560.5366

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	2.70822e+006	0.0146	0.1248	0.0531	8.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	144.5210	144.5210	2.7700e-003	2.6500e-003	145.3798
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.56445e+006	0.0192	0.1642	0.0699	1.0500e-003		0.0133	0.0133		0.0133	0.0133	0.0000	190.2128	190.2128	3.6500e-003	3.4900e-003	191.3431
Single Family Housing	3.80208e+006	0.0205	0.1752	0.0746	1.1200e-003		0.0142	0.0142		0.0142	0.0142	0.0000	202.8936	202.8936	3.8900e-003	3.7200e-003	204.0993
Strip Mall	367250	1.9800e-003	0.0180	0.0151	1.1000e-004		1.3700e-003	1.3700e-003		1.3700e-003	1.3700e-003	0.0000	19.5979	19.5979	3.8000e-004	3.6000e-004	19.7143
Total		**0.0563**	**0.4822**	**0.2127**	**3.0800e-003**		**0.0389**	**0.0389**		**0.0389**	**0.0389**	**0.0000**	**557.2253**	**557.2253**	**0.0107**	**0.0102**	**560.5366**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	2.70822e+006	0.0146	0.1248	0.0531	8.0000e-004		0.0101	0.0101		0.0101	0.0101	0.0000	144.5210	144.5210	2.7700e-003	2.6500e-003	145.3798
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.56445e+006	0.0192	0.1642	0.0699	1.0500e-003		0.0133	0.0133		0.0133	0.0133	0.0000	190.2128	190.2128	3.6500e-003	3.4900e-003	191.3431
Single Family Housing	3.80208e+006	0.0205	0.1752	0.0746	1.1200e-003		0.0142	0.0142		0.0142	0.0142	0.0000	202.8936	202.8936	3.8900e-003	3.7200e-003	204.0993
Strip Mall	367250	1.9800e-003	0.0180	0.0151	1.1000e-004		1.3700e-003	1.3700e-003		1.3700e-003	1.3700e-003	0.0000	19.5979	19.5979	3.8000e-004	3.6000e-004	19.7143
Total		**0.0563**	**0.4822**	**0.2127**	**3.0800e-003**		**0.0389**	**0.0389**		**0.0389**	**0.0389**	**0.0000**	**557.2253**	**557.2253**	**0.0107**	**0.0102**	**560.5366**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	692530	122.8170	0.0104	1.2600e-003	123.4506
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.19084e+006	211.1906	0.0178	2.1600e-003	212.2801
Single Family Housing	1.27023e+006	225.2700	0.0190	2.3000e-003	226.4321
Strip Mall	639600	113.4302	9.5700e-003	1.1600e-003	114.0154
Total		**672.7079**	**0.0568**	**6.8800e-003**	**676.1782**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	692530	122.8170	0.0104	1.2600e-003	123.4506
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.19084e+006	211.1906	0.0178	2.1600e-003	212.2801
Single Family Housing	1.27023e+006	225.2700	0.0190	2.3000e-003	226.4321
Strip Mall	639600	113.4302	9.5700e-003	1.1600e-003	114.0154
Total		**672.7079**	**0.0568**	**6.8800e-003**	**676.1782**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	6.3047	0.6117	20.5546	0.0564		2.7589	2.7589		2.7589	2.7589	363.7238	347.1662	710.8900	1.7140	6.2600e-003	755.6036
Unmitigated	6.3047	0.6117	20.5546	0.0564		2.7589	2.7589		2.7589	2.7589	363.7238	347.1662	710.8900	1.7140	6.2600e-003	755.6036

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.2110					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.0901					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.8681	0.5664	16.7768	0.0562		2.7402	2.7402		2.7402	2.7402	363.7238	341.3674	705.0912	1.7069	6.2600e-003	749.6282
Landscaping	0.1355	0.0453	3.7778	1.9000e-004		0.0187	0.0187		0.0187	0.0187	0.0000	5.7988	5.7988	7.0700e-003	0.0000	5.9755
Total	**6.3047**	**0.6117**	**20.5546**	**0.0564**		**2.7589**	**2.7589**		**2.7589**	**2.7589**	**363.7238**	**347.1662**	**710.8900**	**1.7140**	**6.2600e-003**	**755.6036**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.2110					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.0901					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.8681	0.5664	16.7768	0.0562		2.7402	2.7402		2.7402	2.7402	363.7238	341.3674	705.0912	1.7069	6.2600e-003	749.6282
Landscaping	0.1355	0.0453	3.7778	1.9000e-004		0.0187	0.0187		0.0187	0.0187	0.0000	5.7988	5.7988	7.0700e-003	0.0000	5.9755
Total	**6.3047**	**0.6117**	**20.5546**	**0.0564**		**2.7589**	**2.7589**		**2.7589**	**2.7589**	**363.7238**	**347.1662**	**710.8900**	**1.7140**	**6.2600e-003**	**755.6036**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	61.3898	1.1759	0.0282	99.1848
Unmitigated	61.3898	1.1759	0.0282	99.1848

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	10.9459 / 6.90066	18.2598	0.3579	8.5700e-003	29.7625
City Park	0 / 2.34722	1.4569	1.2000e-004	1.0000e-005	1.4645
Single Family Housing	20.1977 / 12.7334	33.6936	0.6605	0.0158	54.9190
Strip Mall	4.81471 / 2.95095	7.9795	0.1574	3.7700e-003	13.0389
Total		**61.3898**	**1.1759**	**0.0282**	**99.1848**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	10.9459 / 6.90066	18.2598	0.3579	8.5700e-003	29.7625
City Park	0 / 2.34722	1.4569	1.2000e-004	1.0000e-005	1.4645
Single Family Housing	20.1977 / 12.7334	33.6936	0.6605	0.0158	54.9190
Strip Mall	4.81471 / 2.95095	7.9795	0.1574	3.7700e-003	13.0389
Total		**61.3898**	**1.1759**	**0.0282**	**99.1848**

8.0 Waste Detail

8.1 Mitigation Measures Waste

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	94.3949	5.5786	0.0000	233.8593
Unmitigated	94.3949	5.5786	0.0000	233.8593

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	77.28	15.6871	0.9271	0.0000	38.8642
City Park	0.17	0.0345	2.0400e-003	0.0000	0.0855
Single Family Housing	319.32	64.8191	3.8307	0.0000	160.5865
Strip Mall	68.25	13.8541	0.8188	0.0000	34.3230
Total		**94.3949**	**5.5786**	**0.0000**	**233.8593**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	77.28	15.6871	0.9271	0.0000	38.8642
City Park	0.17	0.0345	2.0400e-003	0.0000	0.0855
Single Family Housing	319.32	64.8191	3.8307	0.0000	160.5865
Strip Mall	68.25	13.8541	0.8188	0.0000	34.3230
Total		**94.3949**	**5.5786**	**0.0000**	**233.8593**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-359.6000	0.0000	0.0000	-359.6000

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	58 / 0	-359.6000	0.0000	0.0000	-359.6000
Total		**-359.6000**	**0.0000**	**0.0000**	**-359.6000**

Appendix B

Biological Evaluation

1401 Fulton Street, Suite 918 Fresno, CA 93721
www.soarhere.com • 559.547.8884

Belissa Residential Community - Biological Resource Desktop Review

Purpose of Review: The developer seeks to construct the Belissa Residential Community near the corner of Demaree Street and Riverway Drive in Visalia, California. Currently, the project site is 58.78 acres of farmland on APNs 077-050-004 and 077-050-006. 4Creeks has tasked Soar Environmental Consulting to provide a proposal for a biological desktop review with the option to include a full CEQA Biological Resources Assessment.

Soar Environmental Consulting conducted a records search of three (3) database record systems for historical occurrences of special-status species within the vicinity of the project site.

Data Records Research included a review of the following database systems:

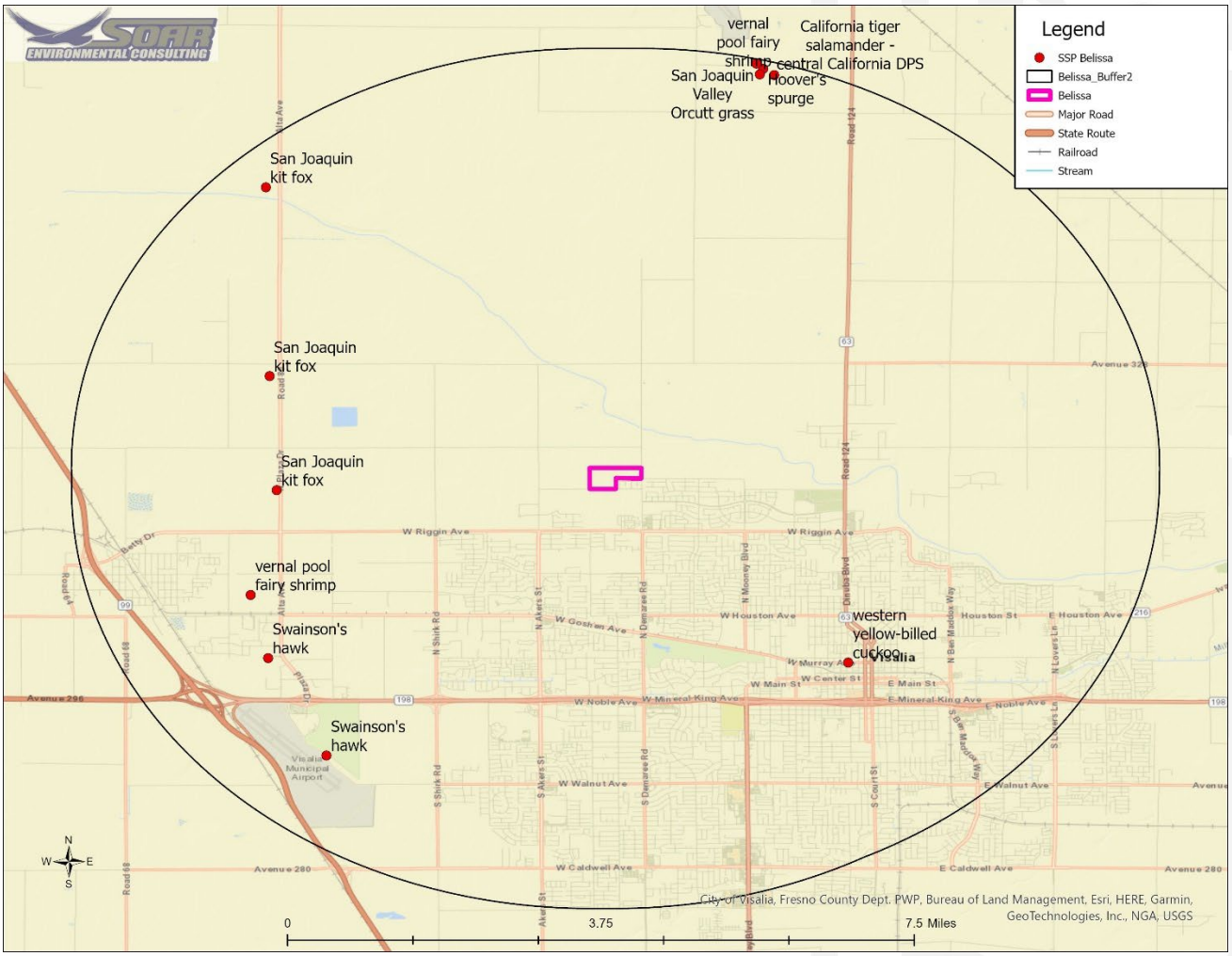
- California Natural Diversity Database (CNDDB).
- United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC).
- California Native Plant Society (CNPS) Online Rare Plant Inventory.

The area covered by the data records search included nine (9) USGS 7.5 minute quadrangles:

1. Visalia (Project Site)
2. Cairns Corner
3. Exeter
4. Goshen
5. Ivanhoe
6. Monson
7. Paige
8. Traver
9. Tulare

Special-status species Identified within 5 miles of the project site include:

1. California tiger salamander (*Ambystoma californiense*)
2. Hoover's spurge (*Euphorbia hooveri*)
3. San Joaquin kit fox (*Vulpes macrotis mutica*)
4. San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*)
5. Swainson's hawk (*Buteo swainsoni*)
6. vernal pool fairy shrimp (*Branchinecta lynchi*)
7. western yellow-billed cuckoo(*Coccyzus americanus occidentalis*)


Legend
SSP Belissa
Belissa_Buffer2
Belissa
Major Road
State Route
Railroad
Stream
vernal pool fairy shrimp
California tiger salamander - central California DPS
San Joaquin Valley Orcutt grass
hoover's spurge
San Joaquin kit fox
San Joaquin kit fox
San Joaquin kit fox
vernal pool fairy shrimp
Swainson's hawk
western yellow-billed cuckoo
Swainson's hawk
W Riggin Ave
W Houston Ave
W Main St
W Noble Ave
W Walnut Ave
W Caldwell Ave
E Main St
E Houston Ave
E Caldwell Ave
Avenue 296
Avenue 280
Visalia Municipal Airport
City of Visalia, Fresno County Dept. PWP, Bureau of Land Management, Esri, HERE, Garmin, GeoTechnologies, Inc., NGA, USGS
0
3.75
7.5 Miles

Appendix C

Cultural Records Search Results

Cultural Resources Assessment for the Belissa Tentative Subdivision Project, City of Visalia, Tulare County, California

Consuelo Y. Sauls

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October 2021

USGS Visalia 7.5' topographic quadrangle;
58.78 total project acres; 58.78 acres surveyed
Keywords: Modoc Ditch

MANAGEMENT SUMMARY

Taylored Archaeology performed a cultural resources assessment for the Belissa Tentative Subdivision Project (Project), City of Visalia, Tulare County. The Project seeks to construct a residential development consisting of 318 single-family units with an additional 6.88 acres zoned for the future neighborhood commercial development. The Project thus requires compliance with California Environmental Quality Act (CEQA).

To meet state standards, Taylored Archaeology completed a cultural resources assessment under contract to 4Creeks, Inc. to determine identify potential cultural resources within the 58.78 acres in the Project area. The assessment included a records search through the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS), a search of the Native American Heritage Commission's (NAHC) Sacred Lands File including tribal representatives' contact information, and an archaeological pedestrian survey of the proposed Project area; and preparation of California Department of Parks and Recreation 523 series cultural resource record forms.

The records search results from SSJVIC indicated that there were no records of recorded cultural resources and no records of prior investigations in the Project area. In addition, no recorded cultural resource was identified within a 0.5-mile radius. The NAHC's Sacred Lands File results and outreach to local tribal representatives did not result in the indicated identifications of sacred or important tribal cultural sites within the Project area, and no archaeological cultural resources were identified during archaeological pedestrian survey; however, Taylored Archaeology identified one segment of the Modoc Ditch canal system that intersect the Project boundary.

Based upon the results of this assessment, the Proposed Project work will cause a minor disturbance to the historical ditch within the Project boundary. Taylored Archaeology advises that in the event of accidental discovery of unidentified archaeological remains during development or ground-moving activities in the Project area, all work within the immediate vicinity (within a 100-foot radius) shall be halted until a qualified archaeologist can identify the discovery and assess its significance.

If human remains are uncovered during construction, the Tulare County Coroner is to be notified to investigate the remains and arrange proper treatment and disposition. If the remains are identified on the basis of archaeological context, age, cultural associations, or biological traits to be those of a Native American, California Health and Safety Code 7050.5 and PRC 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who will be afforded an opportunity to make recommendations regarding the treatment and disposition of the remains.

A copy of this report will be provided to the SSJVIC for inclusion in the CHRIS statewide database.

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1
INTRODUCTION

The private developer proposes to construct a residential development consisting of 318 single-family units with an additional 6.88 acres zoned for future neighborhood commercial development on a 58.78-acre lot in the City of Visalia. 4Creeks, Inc., as the prime contractor to the private developer for environmental compliance services, retained Taylored Archaeology to conduct a Phase I cultural resource assessment of the Belissa Tentative Subdivision Project (Project) for compliance with the California Environmental Quality Act (CEQA).

1.1 PROJECT LOCATION AND DESCRIPTION

The Project area is in the City of Visalia in Tulare County (Figure 1-1). Specifically, the Project site is located approximately 800 feet northwest of North Demaree Street and Riverway Drive within Section 14 of Township 18 South, Range 24 East, Mount Diablo Meridian of the Visalia, California 7.5-minute USGS topographic quadrangle (Figure 1-2).

The Project site is approximately 58.78-acres of agricultural land, comprised of Assessor Parcel Numbers 077-050-004 and 077-050-006 within the northwest area of the City of Visalia. The Project site is surrounded by agricultural uses and rural residences to the east, north, west, and south. Adjacent to the southwest is the Wildhorse single-family subdivision. The Project site is bordered by Riverway Drive to the south and North Demaree Street / County Road 108 to the east.

The proposed Project will involve construction of 318 single-family residential lots, a 168 multi-family residential unit apartment complex, five pocket parks totaling 1.03 acres, and zoning of 7.88 acres of neighborhood commercial for future development. The Project will additionally include a pool, parking, landscaping, neighborhood streets and associated utilities, and sidewalks along streets within the Project site. Wet utilities will be installed at a depth of 12 to 15 feet below ground surface (bgs), and dry utilities will be installed at a maximum depth of 4 feet bgs. Vehicle access will include entrances along Riverway Drive and North Chinowth Street to the south, and North Demaree Street / County Road 108 to the east. The apartment complex will have vehicle access to a future planned extension of Linwood Street to the west.

1.2 REGULATORY SETTING

Cultural resources within the context of this report is defined as a historical or prehistorical archaeological site, or a historical structure, object, or building. Consistent with 36 CFR 60.3, the term “historical” in this report applies to archaeological features and artifacts, and additionally to buildings, objects, or structures that are at least 50 years old. While exceptions to the 50-year criterion occur, they are relatively rare. The significance or importance of a cultural resource is dependent upon whether the resource qualifies for inclusion at the local or state in the California Register of Historical Places (CRHR). Cultural resources that are determined to be eligible for inclusion in the CRHR are called “historical resources” (CCR 15064.5[a]). Under

this statue the determination of eligibility is partially based on the consideration of the criteria of significance as defined in 14 CCR 15064.5(a)(3).

1.2.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

Pursuant to CEQA, a historical resource is a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources. Historical resources may include, but are not limited to, "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically or archaeologically significant" (PRC §5020.1[j]). In addition, a resource included in a local register of historical resources or identified as significant in a local survey conducted in accordance with the state guidelines are also considered historic resources under California Public Resources Code (PRC) Section 5020.1.

According to CEQA guidelines §15064.5 (a)(3), criteria for listing on the California Register of Historical Resources includes the following:

> (A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
> (B) Is associated with the lives of persons important in our past.
> (C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
> (D) Has yielded, or may be likely to yield, information important in prehistory or history.

According to CEQA guidelines §21074 (a)(1)(2), criteria for tribal cultural resources includes the following:

> (1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following: (A) included or determined to be eligible for inclusion in the California Register of Historical Resources. (B) included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

1.3 PROFESSIONAL QUALIFICATIONS

Archaeologist Consuelo Y. Sauls (M.A.), a Registered Professional Archaeologist (RPA 41591505), served as project manager, providing technical and administrative oversight for all cultural resource tasks conducted, and as report author for the Project study. Ms. Sauls meets the Secretary of the Interior's Standards for Professional Qualifications in Archaeology. Statement of Qualifications for key personnel is provided in Appendix A.

Figure 1-1 Project vicinity in Tulare County, California.

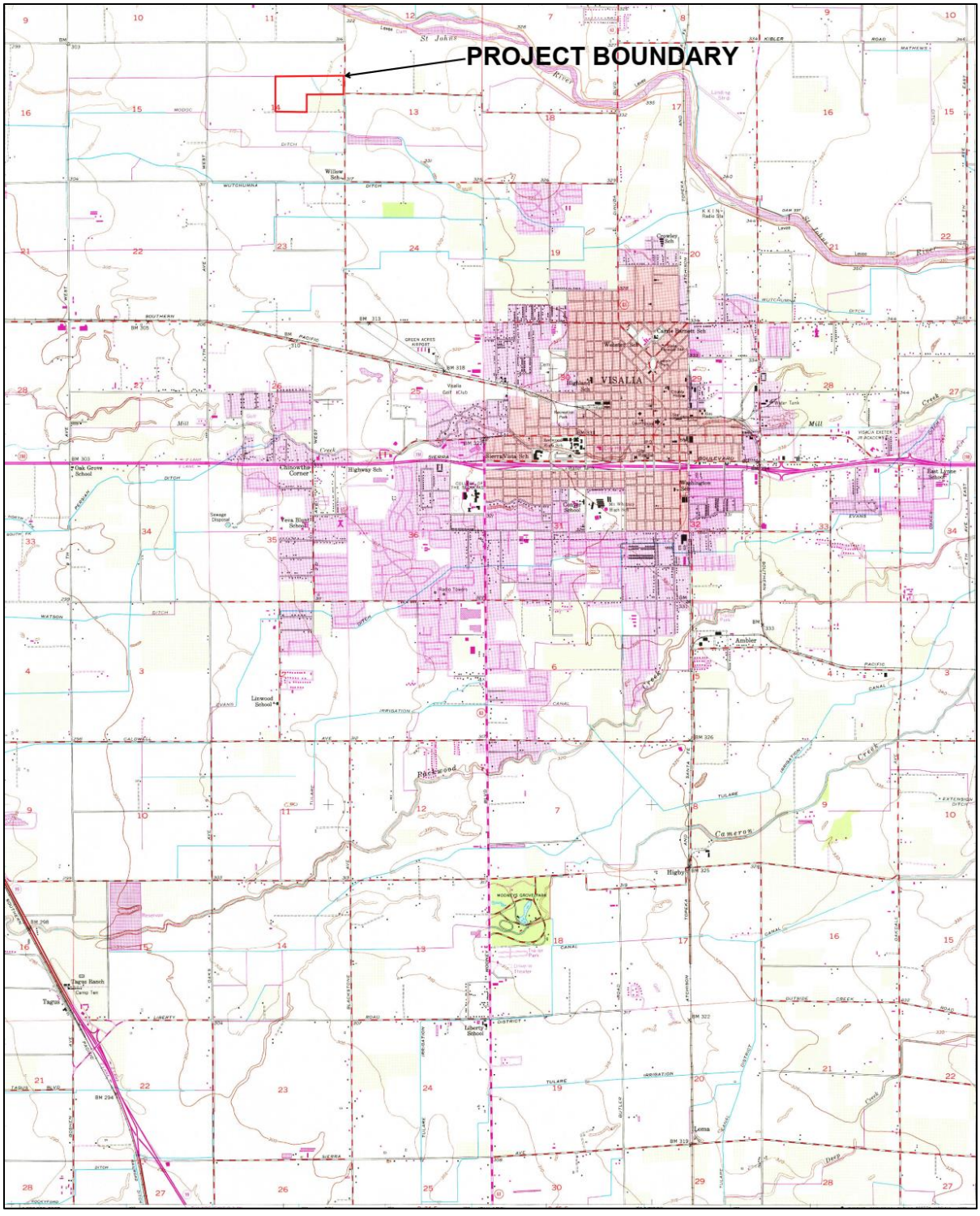

Figure 1-2 Project location on the USGS Visalia, CA 7.5-minute quadrangle.

Figure 1-3 Aerial view of the Project boundary showing survey coverage.

1.4 REPORT ORGANIZATION

This report documents the results of a cultural resource assessment of the proposed Project area. In order to comply with California regulations for CEQA, the following specific tasks were completed: (1) requesting a records search from the Southern San Joaquin Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS), at California State University, Bakersfield; (2) requesting a Sacred Lands File Search and list of interested parties from the Native American Heritage Commission (NAHC) and initiating outreach to local Native American individuals and tribal representatives; (3) conducting an archaeological pedestrian survey, (4) preparing this technical report.

Taylored Archaeology prepared this report following the California Office of Historic Preservation standards in the 1990 Archaeological Resources Management Report Recommended Contents and Format. Chapter 1 describes the Project and its location, and identifies the key personnel involved in this report. Chapter 2 summarizes the Project setting, including the natural, prehistoric, historic, and ethnohistoric background for the Project area and surrounding area. Chapters 3 and 4 includes the methods and findings of the archival studies, Native American outreach, and pedestrian survey. Chapter 5 discusses the Project findings and offers management recommendations. Chapter 6 is a bibliography of references cited within this report. The report also contains the following appendices: Qualifications of key personnel (Appendix A), the CHRIS records search results (Appendix B), and Taylored Archaeology's nongovernmental Native American outreach (Appendix C) and (5) California Department of Parks and Recreation (DPR) 523 series record forms for recorded cultural resources (Appendix D).

2
PROJECT SETTING

2.1 NATURAL ENVIRONMENT

Tulare County lies within the southern portion of the Central Valley, which is approximately 450 miles long from north to south, and ranges in width from 40 to 60 miles east to west (Prothero 2017). The Central Valley is divided into two subunits named after the primary rivers within the area, the Sacramento Valley in the north and the San Joaquin Valley in the south. The Project area is located approximately 315 feet above sea level on the open flat plains of the Southern San Joaquin Valley. The San Joaquin Valley is a comprised of a structural trough created approximately 65 million years ago and is filled with nearly 6 miles of sediment (Bull 1964). The San Joaquin Valley ranges from Stockton and San Joaquin-Sacramento River Delta in the north to Wheeler Ridge to the south, ranging nearly sixty miles wide at its widest (Zack 2017). It is split by late Pleistocene alluvial fans between the San Joaquin River hydrologic area in the north and the Tulare Lake Drainage Basin in the south (Rosenthal et al 2007). Tulare County is located within the latter of the two hydrologic units. The Kaweah, Tule, Kern, and Kings rivers flowed into large inland lakes with no outflow except in high flood events, in which the lakes would flow from through the Fresno Slough into the San Joaquin River. The largest of these inland lakes was the Tulare Lake, which occupied a vast area of Tulare and Kings Counties.

The Project is in central western Tulare County on the valley floor of the San Joaquin Valley within the Kaweah River Delta alluvial fan. Specifically, the Project is located approximately 0.45 miles north of St. John's River, which is a distributary of the Kaweah River. Distributaries form when debris-laden river waters meet abrupt changes in channel and slope confinement, resulting in unstable channel networks that change with time (Wagner et al. 2013). Before the appearance of agriculture in the nineteenth century, the Project location would have been comprised of prairie grasslands with scatter oak tree savannas near the foothills, and along the various streams and drainages (Preston 1981). Riparian environments would also have been present along various waterways, including drainages and marshes. Native vegetation likely would have consisted of needle grasses and other perennial bunchgrasses before the introduction of non-native species in the 1800s.

The valley floor of the region was largely dominated by marshlands, lakes, and annual grasslands. Historically, these habitats provided a lush environment for large animals, including various migratory birds and other waterfowl, grizzly bear (*Ursus arctos californicus*), tule elk (*Cervus* sp.), pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), and mountain lion (*Puma concolor*) (Preston 1981). Native trees and plants observed in the Project vicinity include various blue, live, and white oaks (*Quercus* sp.), cottonwood (*Populus aegiros*), and willow (*Salix* sp.). The introduction of agriculture to region resulted in large animals being forced out of their habitat. Common land mammals now include valley coyote (*Canis latrans*), bobcat (*Lynx rufus*), gray fox, kit fox (*Vulpes macrotis*), and rabbits (Leporidae). Rivers and lakes throughout the valley provide habitat for freshwater fish, including rainbow trout (*Oncorhynchus mykiss*), Sacramento sucker (*Catostomidae* sp.), and Sacramento perch (*Archoplites interruptus*), (Preston 1981).

2.2 PREHISTORIC SETTING

To better understand the past, archaeologists develop models of prehistoric resource chronologies and description of lifestyles based on data collected at the archaeological sites they investigate. Models of prehistoric life patterns are developed from both archaeological and ethnographic research. Within archaeology, models of prehistoric lifestyles are based on data collected from archaeological sites. The Southern San Joaquin Valley is of one of the least understood areas within California (Rosenthal et al. 2007). This is largely due to the valley floor being filled with thick alluvial deposits, and from human activity largely disturbing much of the valley floor due to a century and a half of agricultural use (Dillon 2002; Siefken 1999). Much of the early to middle Holocene archaeological sites may have been as deep as 10 meters due to millennia of erosion and alluvial deposits from the western Sierras (Moratto 1984).

Agricultural activities have heavily disturbed and changed the landscape of the Southern San Joaquin Valley, from the draining of marshes and the vanishing of the extensive Tulare Lake, to grading nearly the entire valley for agricultural operations (Garone 2011). These activities have impacted or scattered much of the shallow surface deposits and mounds throughout the valley (Rosenthal et al 2007). Riddell suggested that potentially as much as 90 percent of all Central California archaeological sites have been destroyed (Riddell 2002).

The cultural traits and chronologies which are summarized below are largely based upon information discussed in multiple sources, including Bennyhoff and Fredrickson (Fredrickson 1973, 1974), Garfinkel (2015), McGuire and Garfinkel (1980), Moratto (1984), and Rosenthal et al. (2007).

The Paleo-Indian Period (13,500-10,600 cal B.P.) was largely represented by ephemeral lake sites which were characterized by atlatl and spear projectile points. Around 14,000 years ago, California was largely a cooler and wetter place, but with the retreat of continental Pleistocene glaciers, California largely experienced a warming and drying red. Lakes filled with glacial meltwater were located in the valley floor and used by populations of now extinct large game animals. A few prehistoric sites were discovered near the southwestern shore of Tulare Lake (Garfinkel 2015). Foragers appear to have operated in small groups which migrated on a regular basis.

During the Lower Archaic Period (10,500-7450 cal B.P.), climate change created a largely different environment which led to the creation of larger alluvial fans and flood plains. Most of the archaeological records of the prior period wound up being buried by geological processes. During this time, cultural patterns appear to have emerged between the foothill and valley populations of the local people. The foothill sites were often categorized by dense flaked and ground stone assemblages, while the valley sites were instead characterized by a predominance of crescents and stemmed projectile points. Variations in consumption patterns emerged as well, with the valley sites more marked by consumption of waterfowl, mussels, and freshwater fish, while the foothills sites saw an increase in nuts, seeds, and a more narrowly focused diet than the valley sites.

The Middle Archaic (7450-2500 cal B.P.) saw an increase in semi-permanent villages along river and creek settings, with more permanent sites located along lakes with a more stable supply of water and wildlife. Due to the warmer and drier weather of this period, many lakes within the

valley dramatically reduced in size, while some vanished completely (Garone 2011). Cultural patterns during this time saw an increase in stone tools, while a growth in shell beads, ornaments, and obsidian evidence an extensive and ever-growing long-distance trade network. Little is known of cultural patterns in the valley during the Upper Archaic (2500-850), but large village structures appeared to be more common around local rivers. An overall reduction of projectile point size suggests changing bow and arrow technologies. Finally, the Emergent Period (850 cal B.P.-Historic Era) was generally marked by an ever-increasing specialization in tools, and the bow and arrow generally replaced the dominance of the dart and atlatl. Cultural traditions ancestral to those recorded during ethnographic research in the early 1900s are identifiable.

2.3 ETHNOGRAPHY

The Project area is in the Southern Valley Yokuts ethnographic territory of the San Joaquin Valley. The Yokuts are a sub-group of the Penutian language that covers much of coastal and central California and Oregon (Callaghan 1958). The Yokuts language contained multiple dialects spoken throughout the region, though many of them were mutually understandable (Merriam 1904). The Yokuts were generally divided into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts.

The Yokuts have been extensively researched and recorded by ethnographers, including Powers (1877), Kroeber (1925), Gifford and Schenck (1926, 1929), Gayton (1930, 1945), Driver (1937), Harrington (1957), Latta (1977), and Wallace (1978). Much of the research from these ethnographers focuses on the central Yokuts tribes due to the northernmost tribes being impacted by Euro-Americans during the California Gold Rush of the mid 1800s, and by the southernmost tries often being removed and relocated by the Spanish to various Bay Area or coastal missions. The central Yokuts tribes, and especially the western Sierra Nevada foothill tribes, were the most intact at the time of ethnographic study.

Based upon Kroeber's map of Southern and Central Yokuts (1925: Plate 47), the Project area is likely within the Telamni and Wukchamni Yokuts territory. The closest village for this area was *Waitatshulu*, which was located on Packwood Creek approximately 5.5 miles south of the Project site (Kroeber 1925). Primary Yokuts villages were typically located along lakeshores and major stream courses, with scattered secondary or temporary camps and settlements located near gathering areas in the foothills. Wukchamni Yokuts lived in conical houses that were made of oak poles, horizontal willow bands and covered with long grass or fine willow thatch (Anderson 2005). Yokuts were organized into groups originally designated as tribelets by Kroeber, with one or more linked villages and smaller settlements within a territory (Kroeber 1925). Designation of these units as 'tribelets' is often viewed as pejorative by many Native Americans, and for the remainder of this report will be referred to as 'local tribes' instead. Each local tribe was a land-owning group that was organized around a central village, and shared common territory and ancestry. Most local tribe populations ranged from 150 to 500 people (Kroeber 1925). These local tribes were often led by a chief, who was often advised by a variety of assistants including the winatum, who served as a messenger and assistant chief (Gayton 1930).

Prior to Euro-American contact, the Yokuts were one of the densest populations of Native Americans in western North America due to the substantial natural resources surrounding Tulare Lake (Cook 1955). According to the Native American Heritage Commission, six Native American

tribal groups are currently associated with the Project area, including the Tubatulabals of Kern Valley, Wukasache Indian Tribe/Eshom Valley Band, the Kern Valley Indian Community, the Santa Rosa Rancheria Tachi Yokut Tribe, and the Tule River Indian Tribe.

2.4 HISTORIC SETTING

2.4.1 Central California History

While the California coast saw European contact as early as the 1500s, the San Joaquin valley did not experience contact until the late 1700s (Starr 2007). The earliest exploration of the San Joaquin Valley by Europeans was likely by the Spaniards when in the fall of 1772 when a group known as the Catalonian Volunteers entered into the valley through Tejon Pass in search deserters from the Southern California Missions (Zack 2017). However, the group only made it as far north as Buena Vista Lake before turning around due to the extensive swamps. Additional excursions to the valley were for exploration such as those led by Lieutenant Bariel Moraga in 1806, but also to find sites for suitable missions and to track down Native Americans fleeing the coastal missions (Cook 1958).

Subsequent expeditions were also sent to pursue outlaws from the coast who would often flee to the valley for safety. One of the subsequent explorations was an expedition in 1814 to 1815 with Sargent Juan Ortega and Father Juan Cabot, who left the Mission San Miguel with a company of approximately 30 Spanish soldiers and explored the San Joaquin Valley (Smith 2004). This expedition passed through the Kaweah Delta and modern-day Visalia and made a recommendation to establish a mission near modern-day Visalia. Some of the first Euro-Americans to reside in what would become modern-day Tulare County were Jedediah and Pegleg Smith (Menefee and Dodge 1913). As the valley was still relatively lawless in the 1830s, those drawn to it were often either trappers like Jedediah Smith or horse thieves like Pegleg Smith (Clough and Secrest 1984). In fact, horse and other livestock theft was so rampant that ranching operations on the Rancho Laguna de Tache by the Kings River and Rancho del San Joaquin Rancho along the San Joaquin River could not be properly established (Cook 1962). With the end of the Mexican-American War and the beginning of the gold rush in 1848, the San Joaquin Valley became more populated with ranchers and prospectors. By 1850, California became a state and Tulare County was established in 1853.

2.4.2 Local History

The City of Visalia is one of the oldest cities within the Southern San Joaquin Valley and was founded in 1852. By the mid-1850s the town of Visalia was a major station along the Butterfield Overland Mail state route as it traveled north from Los Angeles to Stockton (Helmich 2008; OHP 2019). During the first few decades, Visalia was a supply center for nearby gold rushes, and had an agricultural economy based on livestock (Dyett and Bhatia 2014).

The Southern Pacific Railroad was extended from Fresno into Tulare County in the early 1870s (ESA 2010). The City of Tulare was founded in 1872 as the San Joaquin Valley headquarters of the Southern Pacific Railroad and was later incorporated in 1888 (City of Tulare 2021). With it, the rail line brought an increased in agriculture and farms that clashed with existing ranching operations in the local area. Escalating conflicts and livestock disputes between ranchers and farmers lead to the "No Fence Law" in 1874, which forced ranchers to pay for crop and property

damage caused by their cattle (Ludeke 1980). With the passage of this law and the expansion of irrigation systems, predominant land use in the 1870s switched from grazing to farming (Mitchell 1974). This led to the beginning of the vast change of the San Joaquin Valley from native vegetation and grasslands to irrigated crops (Varner and Stuart 1975). One such irrigation system was the Modoc Canal, later known as the Modoc Ditch, which was constructed in 1876 and originally intended to be made a distributary for the Wutchumna Canal in Tulare County near the town of Visalia (Grunsky 1898). By 1898, the Modoc Canal was approximately 4 miles in length running from the St. John's River north of Visalia, toward Goshen to the west and irrigated approximately 1,000 acres (Figure 2-1).

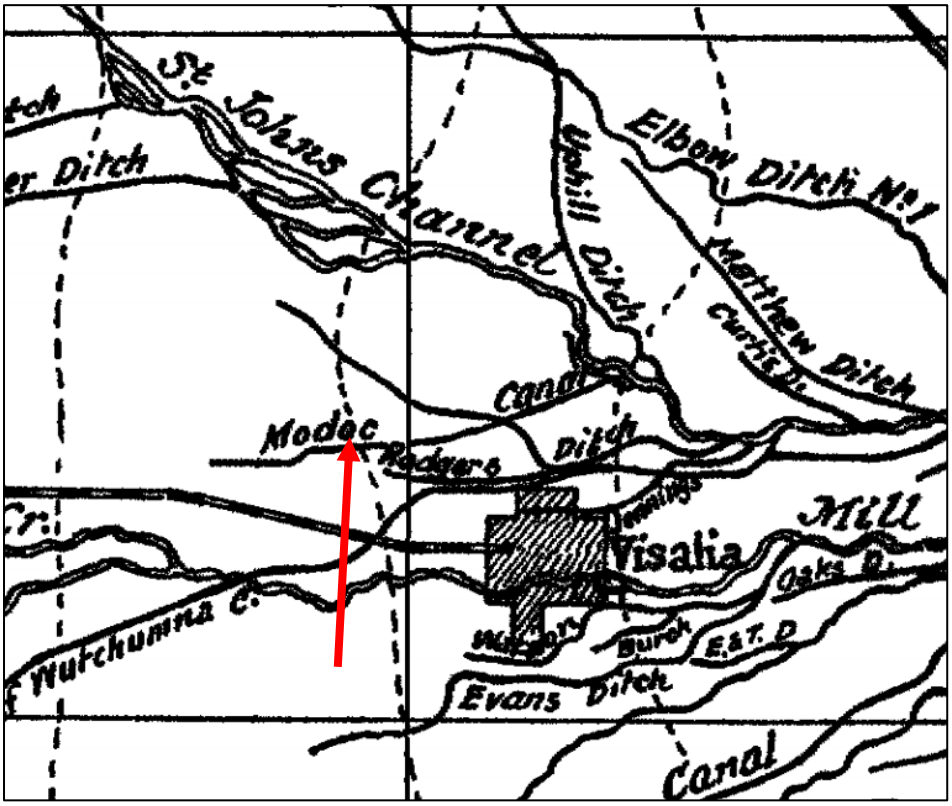

Figure 2-1 Modoc Canal depicted in Grunsky's (1898:10) map of Kaweah and Tule canals. Arrow indicates approximate Project location.

Because water rights within California originally arose from the first come first serve policy of the Gold Rush era, diverting surface water to farms became big business, but a convoluted mess of customs, traditions, and conflicting claims (Zack 2019). To solve this mess, the Wright Act of 1887 was passed that allowed residents to petition a local county board of supervisors to create irrigation districts that had the power to issues bonds, and tax land within the district boundaries to pay for the creation and maintenance of canals and ditches for irrigation purposes.

One such district was the Tulare Irrigation District, which was organized on September 21, 1889. The Tulare Irrigation District originally covered 219,000 acres from the foothills of the Sierra Nevada to the eastern boundary of Tulare Lake but was ultimately reduced to approximately 32,000 acres (PID 2012). Only two years later, the Modoc Ditch Company was incorporated in Tulare County, California on September 14, 1891 (California Secretary of State 1891). The

officers and founders of the company were L. Burrel, M.W. Smith, Charles Jogni, John R. Parr, and T.J. Akens; and the company was formed with 100 shares of stock totaling $10,000 in value. The purpose of the company was to "clean out and keep in repair the Modoc Ditch . . . and to convey water from the St. John's River through said ditch". The Modoc Ditch Company may have been a successor to a previous company, as the original articles of incorporation referenced a transfer of rights from an "old Modoc Ditch Company" to the 1891 company. The Modoc Ditch diverted water from the St. John's River near present-day Highway 63 and terminated approximately 6 miles to the west near the community of Goshen. By 1920, the Modoc Ditch irrigated approximately 3,500 acres of agricultural lands annually, and only diverted water from the St. John's River between April and July of each year (California Department of Public Works 1923).

At the same time, an important step forward was made in ditch-digging technology that allowed irrigation systems to be built at a faster pace. From the 1840s to 1890s, farm ditches and canals were largely constructed through the use of buckboards and slip-scoops, which involved the use of a board pulled by horses in an uprights position in order to level ground (Bulls 2010). Between 1883 and 1885, Scottish immigrant James Porteous had moved to Fresno and made significant improvements to the buckboard style scraper that allowed the new scraper to be pulled by two horses and scrape and move soil while dumping it at a controlled depth. This new design was patented and sold as the "Fresno Scraper", which lead to an explosion of ditch digging efforts within the San Joaquin Valley (Zack 2019).

Water conveyance systems were also developed throughout the region in order to minimize flooding and to divert water to the dryer areas (PID 2012). However, surface waters and local wells were only able to satisfy the water demands of the valley for so long, and in 1911 California created the State Reclamation Board to solve water issues in the valley. Various reports were commissioned and 12 years later the California State Water Plan was proposed (Stene 2015). The Central Valley Project was approved in 1933, but funds were stalled until funded by the Rivers and Harbors Act in 1937. Construction on the Central Valley Project began soon after and continued until the mid-1950s (Stene 2015). One cornerstone of this project was the Friant-Kern Canal (FKC), which is located along the base of the western Sierra foothills. The FKC, built between 1945 and 1951, is over 150 miles long and represents one of the largest lined canals in the western US (Hundley 2001). Creation of the FKC brought new opportunities for irrigation to the region and led to the creation of new irrigation districts.

3
METHODS

3.1 RECORDS SEARCH

On August 20, 2021, Taylored Archaeology requested a copy of prior cultural resource studies reports in the result letter that the SSJVIC of the CHRIS at California State University in Bakersfield, California, provided to 4Creeks. The records search included the Project area and surrounding land within a 0.5-mile radius of the Project. Sources consulted included archaeological site and survey base maps, historical USGS topographic maps, reports of previous investigations, cultural resource records (DPR forms) as well as listings of the Historic Properties Directory of the Office of Historic Preservation, General Land Office Maps, Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources (Appendix B).

3.2 ARCHIVAL RESEARCH

Taylored Archeology conducted archival research of historical maps, historical aerial photographs, historical US Geological Survey (USGS) topographic maps, Google Earth aerial photographs, Google Street View photos, books, articles and other records regarding the prehistory and history of the Project area. The results of this research are presented in Chapter 4.

3.3 NATIVE AMERICAN OUTREACH

Taylored Archaeology sent a request to the Native American Heritage Commission (NAHC) for a Sacred Lands File (SLF) search, to determine if any known Native American cultural properties (e.g., places of religious, sacred activity or traditional use or gathering areas) are present within the Project area. The NAHC also included contact information for local Native American tribal representatives who may have knowledge or interest in sharing information of resources of sacred or spiritual significance in the Project area and surrounding area.

3.4 PEDESTRIAN SURVEY

Archaeologist Consuelo Sauls performed an intensive Phase I pedestrian survey of the 58.78-acre Project site on September 4, 2021. The whole area in the Project boundary was accessible and surveyed. Additionally, the survey was completed by walking parallel transects spaced 5 to 15 meters apart. The survey began in the southwest corner of the Project area and was completed from west to east along transects oriented south-east. The purpose of this survey was to identify any archaeological or historical sensitive cultural resources such as archaeological sites, and historic-era features and structures, which may be present on the ground surface. Additionally, the survey sought to identify potential historical features, structures, and artifacts more than 50 years old. Plan maps and visible landmarks were used for navigation to locate and survey the Project area. Ms. Sauls photographed the survey area using an iPhone 11 Pro digital camera and recorded location data using the Gaia GPS application. Overviews of the Project site are shown in the photographs that follow (Figure 4-1, 4-2, and 4-3).

4
FINDINGS

4.1 RECORDS SEARCH

The SSJVIC provided the results of the records search in a letter dated July 19, 2021 (Records Search File No. 21-269; Appendix B). The letter indicated that there have been no previous cultural resource studies conducted within the Project area, and there has been one cultural resource study (TU-00103) conducted within a 0.5-mile radius of the Project area.

The SSJVIC also reported that no cultural resources were previously recorded within the Project area or within the 0.5-mile radius. Additionally, no recorded cultural resources are recorded within the Project area or 0.5-mile radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Interest, California Inventory of Historic Resources, or the California State Historic Landmarks.

4.2 ARCHIVAL RESEARCH

Available USGS topographic maps covering the Project area began in 1927. A review of the USGS Visalia, CA 7.5-minute 1927 topographic map showed one structure at the eastern edge of the Project site along a road corresponding with modern day North Demaree Street, and an irrigation ditch bisecting the Project site and running diagonally in a southeast to northwest direction. The 1950 Visalia topographic map shows two additional structures at the eastern edge of the Project site, and a realignment of the Modoc ditch south of the Project site from a southeast-northwest alignment to a west-east alignment along the southern boundary of the Project site. The alignment of the Modoc ditch within the Project site appears unchanged in the 1950 topographic map.

Available historic aerial photograph coverage of the Project area began in 1948. The 1948 historical aerial photograph shows the Modoc Ditch in the Project site in the same alignment as modern aerial photographs show. Three structures are observed in the eastern portion of the Project site in the 1948 aerial photograph, with one structure located in approximately the same location as the rural residence on the Project site located along North Demaree Street. Most of the Project site appears to consist of low-lying row crops, with a small orchard near the Modoc Ditch in the center of the site. Historic aerial photographs between 1956 and 1969 show the Project site in a similar agricultural state. No historic aerial photographs were available between 1970 and 1991. Aerial photographs between 1992 and present day show the Project site in its current state as an orchard.

On September 13, 2021, Taylored Archaeology contacted Mr. James Silva of the Modoc Ditch Company via email requesting copies of any company archives pertinent to the historic of the company and the ditch. On September 29, 2021, Mr. Silva stated he was not able to locate any pertinent Modoc Ditch Company archives.

4.3 NATIVE AMERICAN OUTREACH

On September 8, 2021, the NAHC sent a letter via email to Taylored Archaeology with the results of the SLF search findings and attached a list of Native American tribes and individuals culturally affiliated with the Project area. The letter stated the SLF results were negative and did not indicate the presence of resources in the immediate Project area (see Appendix C). All potentially interested tribes identified by the NAHC were contacted for information regarding their knowledge of cultural resources that were within the study locale.

The NAHC supplied a list of tribal representatives and recommended to contact the following representatives for information regarding Native American cultural resources in the study locale:

- Chairperson Elizabeth D. Kipp of Big Sandy Rancheria of Western Mono Indians;
- Chairperson Leo Sisco of the Santa Rosa Rancheria Tachi Yokut Tribe;
- Chairperson Neil Peyron of the Tule River Indian Tribe;
- Environmental Department Director Kerri Vera of the Tule River Indian Tribe;
- Tribal Archaeologist Joey Garfield of the Tule River Indian Tribe; and
- Chairperson Kenneth Woodrow of the Wuksache Indian Tribe/Eshom Valley Band.

The letters were sent to each individual dated September 9, 2021 and included a description of the proposed Project and a map of the location. Follow-up email correspondence and phone calls were made to confirm receipt of the letter and gather any information or input tribal representatives may want to share about the Project area or general vicinity.

Kerri Vera, Director of the Department of Environmental Protection of the Tule River Indian Tribe, recommend Native American monitoring of Project construction activities.

Samantha McMarty, Cultural Specialist II for the Santa Rosa Rancheria Tachi-Yokut Tribe, commented and requested to be retained for a cultural presentation for all construction staff.

No other responses were received to date.

4.4 PEDESTRIAN SURVEY RESULTS

The landscape in the Project site consisted primarily of plum orchards in a semi-abandoned state (Figure 4-1). The ground visibility at the time of survey was fair (50 to 68 percent) due to vegetation (e.g., fallen tree branches, leaves, tall grasses and weeds) (Figure 4-2). Visibility was greater near rodent burrows. Ground visibility along a ditch running through the eastern portion of the Project site was 100 percent (Figure 4-3). Surface sediments were observed to be grayish-brown sandy loam with abundant silt with many angular shaped pebbles and gravel (Figure 4-4).

All areas were examined for potential cultural remains. One potential cultural resource was encountered during the survey, the Modoc Ditch, and was observed on the Project site. That segment of Modoc Ditch within the Project site did not contain water at the time of the survey. The ditch had a dirt bottom and was approximately 5 feet deep at the lowest point. The Modoc Ditch ran from the southeast corner of the Project site and continued directly west for approximately 800 feet (Figure 4-5), before turning northwest and continuing for an additional approximately 750 feet (Figure 4-6) before reaching the northern edge of the Project site. The Modoc Ditch was interrupted by a single concrete and corrugated metal culvert near the southern boundary of the Project site.

There were two houses on the northeastern portion of the Project site (Figure 4-7). The age of both structures was undetermined, and close study of the structures was not able to be conducted due to the presence of hostile canines.

No other cultural resources (e.g., isolated artifacts, features, archaeological sites, or historic-era built environment properties) were identified or collected during the field survey of the Project area.

Figure 4-1 Central portion of project site, facing north. Abandoned orchard in foreground.

Figure 4-2 Ground visibility on project site.

Figure 4-3 South central portion of project site, facing northwest. Modoc Ditch in foreground.

Figure 4-4 Soil consistency on project site.

Figure 4-5 Southeast corner of project site, facing west. Modoc ditch in foreground.

Figure 4-6 South central portion of project site, facing northwest. Modoc Ditch in foreground.

Figure 4-7 Rural residential house at eastern edge of project site, facing east.

5
SUMMARY AND RECOMMENDATION

Taylored Archaeology completed a cultural resource assessment for the Belissa TSM Project to identify potential cultural resources in the 58.78-acres Project boundary. The Project proposes to construct a residential development consisting of 318 single-family units with an additional 6.88 acres zoned for the future neighborhood commercial development in the City of Visalia.

As a subconsultant to 4Creeks, Inc., Taylored Archaeology conducted background research and pedestrian survey of the Project boundary to determine whether prehistoric and historic resources will be affected by the Project. The investigation included: (1) a records search at the SSJVIC; (2) a request of the NAHC Sacred Lands File including the tribal representatives' contact information, and nongovernmental tribal outreach; (3) archival research; (4) an archaeological pedestrian survey; and (5) documentation of resources identified with the Project boundary.

The SSJVIC records search results indicated that there have been no previous cultural resource investigations conducted within the Project area. The records search did not identify any known cultural resources within the Project area or within a 0.5-mile radius surrounding area. Though, the records noted one cultural resource investigation conducted within a 0.5-mile radius (Appendix B).

The NAHC Sacred Lands File search and outreach to local tribal representatives did not result in the identification of sacred places or other special areas important to the tribes within the Project boundary. The pedestrian survey of the Project site did not identify any prehistoric resources. However, a historic-era resource, a canal segment of the Modoc Ditch was identified in the Project boundary during the survey. The segment of the Modoc Ditch within the Project boundary was evaluated and found to not be eligible for inclusion within the CRHR.

Two houses were observed in the eastern portion of the project site but were unable to be assessed for potential age due to the presence of hostile canines. If the residences are more than 50 years old, they may need to potentially be evaluated by a qualified architectural historian.

Taylored Archaeology recommends that in the event of accidental discovery of unidentified archaeological remains during development or ground-moving activities in the Project area, all work shall be halted in the immediate vicinity (within a 100-foot radius) until a qualified archaeologist can identify the discovery and assess its significance.

If human remains are uncovered during construction, the Tulare County Coroner is to be notified to investigate the remains and arrange proper treatment and disposition. If the remains are identified on the basis of archaeological context, age, cultural associations, or biological traits to be those of a Native American, California Health and Safety Code 7050.5 and PRC 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who will be afforded an opportunity to make recommendations regarding the treatment and disposition of the remains.

6
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APPENDIX A

Personnel Qualifications

Consuelo Sauls, M.A., RPA 41591505
Archaeologist
csaulsarchaeo@gmail.com
559.797.1572

Areas of Expertise

- Prehistoric archaeology
- Rock art recordation and analysis
- Laboratory management

Years of Experience

- 12

Education

- M.A., Archaeology, University of Durham, 2014
- B.A., Anthropology, California State University, Fresno, 2009

Registrations/Certifications

- Registered Professional Archaeologist 41591505

Professional Affiliations

- California Rock Art Foundation
- Coalition for Diversity in California Archaeology
- Society for American Archaeology
- Society for California Archaeology
- Society of Black Archaeologists

Professional Experience

2019 – 2021	Principal Investigator, Taylored Archaeology, Fresno, California
2018 – 2019	Staff Archaeologist, Applied EarthWorks, Inc., Fresno, California
2016 – 2018	Principal Investigator, Soar Environmental Consulting, Inc., Fresno, California
2015	Archivist/Database Technician, Development and Conservation Management, Inc., Laguna Beach, California
2013	Laboratory Research Assistant, Durham University Archaeology Department and Archaeology Museum, Durham, England, UK
2011 – 2012	Laboratory Technician (volunteer), University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, Pennsylvania
2008 – 2009	Laboratory Technician (intern), California State University, Fresno
2008	Field School, California State University, Fresno

Technical Qualifications

Ms. Sauls meets the Secretary of the Interior's Professional Qualification Standards as an archaeologist. She has conducted pedestrian surveys, supervised Extended Phase I survey, authored technical reports, and completed the Section 106 process with the State Historic Preservation Officer and Tribal Historic Preservation Officer. Her experience includes data recovery excavation at Western Mono sites and processing recovered artifacts in the laboratory as well as conducting archival research about prehistory and ethnography of Central California. Ms. Sauls has authored and contributed to technical and letter reports in compliance with of the National Historical Preservation Act (NHPA) Section 106 and the California Environmental Quality Act (CEQA). She also has supported NHPA tribal consultation and responded to Assembly Bill 52 tribal comments. Ms. Sauls also has an extensive background supervising laboratory processing, cataloging, and conservation of prehistoric and historical archaeological collections. In addition, she worked with the Rock Art Heritage Group in the management, preservation, and presentation of rock art in museums throughout England, including a thorough analysis of the British Museum's rock art collections. At Durham University Archaeology Museum, Ms. Sauls processed the excavated skeletal remains of 30 individuals from the seventeenth century

APPENDIX B

Records Search Results

APPENDIX C

Native American Outreach

California Historical Resources Information System

Fresno
Kern
Kings
Madera
Tulare

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic

To: Emily Huang
4Creeks, Inc.
324 S. Santa Fe Street, Suite A
Visalia, CA 93292

Record Search 21-269

Date: July 19, 2021

Re: Belissa Tentative Subdivision Map

County: Tulare

Map(s): Visalia 7.5'

CULTURAL RESOURCES RECORDS SEARCH

The California Office of Historic Preservation (OHP) contracts with the California Historical Resources Information System's (CHRIS) regional Information Centers (ICs) to maintain information in the CHRIS inventory and make it available to local, state, and federal agencies, cultural resource professionals, Native American tribes, researchers, and the public. Recommendations made by IC coordinators or their staff regarding the interpretation and application of this information are advisory only. Such recommendations do not necessarily represent the evaluation or opinion of the State Historic Preservation Officer in carrying out the OHP's regulatory authority under federal and state law.

The following are the results of a search of the cultural resource files at the Southern San Joaquin Valley Information Center. These files include known and recorded cultural resources sites, inventory and excavation reports filed with this office, and resources listed on the National Register of Historic Places, the OHP Built Environment Resources Directory, California State Historical Landmarks, California Register of Historical Resources, California Inventory of Historic Resources, and California Points of Historical Interest. Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the OHP are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area.

PRIOR CULTURAL RESOURCE STUDIES CONDUCTED WITHIN THE PROJECT AREA AND THE ONE-HALF MILE RADIUS

According to the information in our files, there have been no previous cultural resource studies conducted within the project area. There has been one cultural resource study conducted within a one-half mile radius, TU-00103.

KNOWN/RECORDED CULTURAL RESOURCES WITHIN THE PROJECT AREA AND THE ONE-HALF MILE RADIUS

There are no recorded resources within the project area or within the one-half mile radius, and it is not known if any exist there.

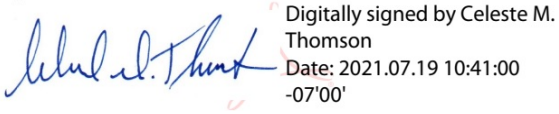
There are no recorded cultural resources within the project area or radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Historical Interest, California Inventory of Historic Resources, or the California State Historic Landmarks.

COMMENTS AND RECOMMENDATIONS

We understand this project consists of dividing a 58.78-acre agricultural site into 318 single family residential parcels for development. Please note that agriculture does not constitute previous development, as it does not destroy cultural resources, but merely moves them around within the plow zone. Because a cultural resource study has not been conducted on this property, it is unknown if any exist there. Therefore, prior to any ground disturbance activities, we recommend a qualified, professional consultant conduct a field survey to determine if any cultural resources are present. A list of qualified consultants can be found at www.chrisinfo.org.

We also recommend that you contact the Native American Heritage Commission in Sacramento. They will provide you with a current list of Native American individuals/organizations that can assist you with information regarding cultural resources that may not be included in the CHRIS Inventory and that may be of concern to the Native groups in the area. The Commission can consult their "Sacred Lands Inventory" file to determine what sacred resources, if any, exist within this project area and the way in which these resources might be managed. Finally, please consult with the lead agency on this project to determine if any other cultural resource investigation is required. If you need any additional information or have any questions or concerns, please contact our office at (661) 654-2289.

By:



Celeste M. Thomson, Coordinator **Date**: July 19, 2021

Please note that invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

NATIVE AMERICAN HERITAGE COMMISSION

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September 8, 2021

Consuelo Sauls
Taylored Archaeology

Via Email to: csaulsarchaeo@gmail.com

Re: Belissa TSM Project, Tulare County

Dear Mr. Sauls:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Tulare County
9/8/2021

Big Sandy Rancheria of Western Mono Indians
Elizabeth Kipp, Chairperson
P.O. Box 337 — Western Mono
Auberry, CA, 93602
Phone: (559) 374 - 0066
Fax: (559) 374-0055
lkipp@bsrnation.com

Santa Rosa Rancheria Tachi Yokut Tribe
Leo Sisco, Chairperson
P.O. Box 8 — Southern Valley
Lemoore, CA, 93245 — Yokut
Phone: (559) 924 - 1278
Fax: (559) 924-3583

Tule River Indian Tribe
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This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Belissa TSM Project, Tulare County.

Native American Outreach Log

Belissa Tentative Subdivision Project, Tulare County, California

Organization	Name	Position	Address	Phone Number	Email Address	Letter	E-Mail	Phone	Summary of Contact
Native American Heritage Commission							8/20/2021		In a letter dated September 8, 2021, the NAHC stated that the results were negative, there are no known resources within the project area. The NAHC alos sent a list of 6 Native American contacts.
Big Sandy Rancheria of Western Mono Indians	Elizabeth Kipp	Chairperson	P.O. Box 337 Auberry, CA 93602	559-374-0066	lkipp@bsrnation.com	9/9/2021	9/17/2021	9/22/2021	Unable to reach anyone by email and phone. Left a voice message.
Santa Rosa Rancheria Tachi Yokut Tribe	Leo Sisco	Chairperson	P.O. Box 8 Lemoore, CA 93245	559-924-1278	no email address	9/9/2021		9/22/2021	Spoke with Samantha McCarty.
Tule River Indian Tribe	Neil Peyron	Chairperson	P.O. Box 589 Porterville, CA 93258	559-781-4271	neil.peyron@tulrivertribe-nsn.gov	9/9/2021	9/17/2021	9/22/2021	Unable to reach anyone by email and phone. Left a voice message.
Tule River Indian Tribe	Kerri Vera	Environmental Department	P.O. Box 589 Porterville, CA 93258	559-783-8892	kerri.vera@tulerivertribe-nsn.gov	9/9/2021	9/17/2021	9/22/2021	Kerri responded by email about the project.
Tule River Indian Tribe	Joey Garfield	Tribal Archaeologist	P.O. Box 589 Porterville, CA 93258	559-783-8932	joey.garfield@tulerivertribe-nsn.gov	9/9/2021	9/17/2021	9/22/2021	Unable to reach anyone by phone and email and left a voice message.
Wuksache Indian Tribe/Eshom Valley Band	Kenneth Woodrow	Chairperson	1179 Rock Haven Ct. Salinas, CA 93906	831-443-9702	kwood8934@aol.com	9/9/2021	9/17/2021	9/22/2021	Unable to reach someone by email and phone. Left a voice message.

APPENDIX D

Cultural Resource Record Forms

(CONFIDENTIAL – NOT FOR PUBLIC DISTRIBUTION)

Appendix D

Energy Calculations

Construction Equipment Energy Use

Phase Name	Off Road Equipment Type	Off Road Equipment Unit Amount[1]	Usage Hours Per Day[1]	Horse Power (lbs/sec)[1]	Load Factor[1]	Total Operational Hours	BSFC[2]	Fuel Used (gallons)[3]	MBTU[4]	
Demolition	Rubber Tired Dozers	2	8	247	0.4	1120	0.367	5712.58	794.049	
Demolition	Concrete/Industrial Saws	1	8	81	0.73	560	0.408	1900.41	264.1571	
Demolition	Excavators	3	8	158	0.38	1680	0.408	5788.97	804.6674	
Site Preparation	Rubber Tired Dozers	3	8	247	0.4	960	0.367	4896.50	680.6135	
Site Preparation	Graders	0	8	187	0.41	0	0.367	0.00	0	
Site Preparation	Tractors/Loaders/Backhoes	4	8	97	0.37	1280	0.408	2636.54	366.4797	7533.04
Grading	Excavators	2	8	158	0.38	1760	0.367	5455.20	758.2732	
Grading	Graders	1	8	187	0.41	880	0.367	3483.10	484.1506	33057.81
Grading	Rubber Tired Dozers	1	8	247	0.4	880	0.367	4488.46	623.8957	
Grading	Scrapers	2	8	367	0.48	1760	0.367	16005.80	2224.807	
Grading	Tractors/Loaders/Backhoes	2	8	97	0.37	1760	0.408	3625.25	503.9095	
Building Construction	Cranes	1	7	231	0.29	7770	0.367	26871.29	3735.11	144328.96
Building Construction	Forklifts	3	8	89	0.2	26640	0.408	27214.85	3782.864	
Building Construction	Generator Sets	1	8	84	0.74	8880	0.408	31679.30	4403.423	
Building Construction	Tractors/Loaders/Backhoes	3	7	97	0.37	23310	0.408	48013.94	6673.938	
Building Construction	Welders	1	8	46	0.45	8880	0.408	10549.57	1466.391	
Paving	Pavers	2	8	130	0.42	1200	0.367	3382.45	470.1606	8419.96
Paving	Paving Equipment	2	8	132	0.36	1200	0.367	2943.85	409.1947	
Paving	Rollers	2	8	80	0.38	1200	0.408	2093.66	291.019	
Paving	Cement and Mortar Mixers	0	8	9	0.56	0	0.408	0.00	0	
Paving	Tractors/Loaders/Backhoes	0	8	97	0.37	0	0.408	0.00	0	
Architectural Coating	Air Compressors	1	6	78	0.48	450	0.408	966.94	134.4048	
Total								207708.68	28871.51	

Construction Phases

PhaseNumber	Phase Name	Phase Type	Phase Start Date	Phase End Date	Num Days Week	Total Number of Days
1	**Demolition**	**Demolition**	10/3/2022	1/6/2023	5	70
2	Site Preparation	Site Preparation	1/7/2023	3/3/2023	5	40
3	Grading	Grading	3/4/2023	8/4/2023	5	110
4	Building Construction	Building Construction	8/5/2023	11/5/2027	5	1110
5	Paving	Paving	11/6/2027	2/18/2028	5	75
6	Architectural Coating	Architectural Coating	2/19/2028	6/2/2028	5	75

Notes

1. CalEEMod Default Values Used
2. BSFC - Brake Specific Fuel Consumption (pounds per horsepower-hour) – If less than 100 Horsepower = 0.408, if greater than 100 Horsepower = 0.367
3. Fuel Used = Load Factor x Horsepower x Total Operational Hours x BSFC / Unit Conversion
4. MBTU calculated for comparison purposes. Assumed 1 gallon of diesel = 0.139 MBTU

Mobile Energy Use (Construction)

Worker Trips

	Daily Worker Trips[1]	Worker Trip Length[1]	VMT/Day	MPG Factor (EMFAC2017)	Gallons of Gas/Day	# of Days	Total Gallons of Gas	MBTU	Total Gallons in Construction
Demolition	15	10.8	162	29.23	5.5	70	388.0	45.038	13790
Site Preparation	18	10.8	194.4	29.23	6.7	40	266.0	30.8832	7799
Grading	20	10.8	216	29.23	7.4	110	812.9	94.36532	33871
Building Construction	289	10.8	3121.2	29.23	106.8	1110	118526.6	13759.75	262856
Paving	15	10.8	162	29.23	5.5	75	415.7	48.25499	8836
Architectural Coating	58	10.8	626.4	29.23	21.4	75	1607.3	186.586	2574
Total	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**1410**	**121628.4**	**14119.84**	**315935**

Vendor Trips

	Daily Vendor Trips	Vendor Trip Length	VMT/Day	MPG Factor	Gallons of Diesel/Day	# of Days	Total Gallons of Diesel	MBTU
Building Construction	76	7.3	554.8	8.43	65.8	1110	73051.9573	10154.22

Hauling Trips

	Daily Hauling Trips	Hauling Trip Length	VMT/Day	MPG Factor	Gallons of Gas/Day	# of Days	Total Gallons of Diesel	MBTU
Demolition	45	7.3	328.5	8.43	39.0	70	2727.758007	379.1584

Fleet Characteristics

75779.7153

	Vehicle Class	Fleet Mix	2024 MPG Factor (EMFAC2017)	Average MPG Factor
Assumed Vehicle Fleet for Workers	LDA	33%	33.24	
	LDT1	33%	28.07	
	LDT2	33%	26.38	29.23
Assumed Vehicle Fleet for Vendor Trips	MHD	50%	9.74	
	HHD	50%	7.12	8.43

Notes
1. CalEEMod Default values used
2. MBTU calculated for comparison purposes. Assumed 1 gallon of gasoline = 0.11609 MBTU

Mobile Energy Use (Operations)

Total Annual VMT from Project (CalEEMod)	14,141,034

Fleet Mix & Fuel Calculations

Vehicle Class	Proportion of Fleet Mix[1]	Annual VMT by Vehicle Class	Proportion of vehicle class using gas or diesel (EMFAC2021)[2]		Annual VMT by Vehicle Class and Fuel Type		Fuel Efficiency (MPG) by Vehicle Class and Fuel Type (EMFAC2021)		Annual Fuel Use from Project (gallons)		MBTU/Year[3]
			Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	
LDA	52.16%	7375963.3	100%	0%	7362437.00	13526.34	28.92	42.70	254546.3	316.8	29594.3
LDT1	21.00%	2969617.1	100%	0%	2968519.11	1098.03	23.79	24.66	124805.5	44.5	14494.9
LDT2	17.00%	2403975.8	100%	0%	2396219.60	7756.18	23.27	32.65	102995.4	237.5	11989.8
MDV	6.00%	848462.0	98%	2%	835040.23	13421.81	18.87	23.72	44258.0	565.8	5216.5
LHD1	0.08%	11312.8	50%	50%	5644.86	5667.97	9.67	15.77	583.6	359.4	117.7
LHD2	0.09%	12726.9	27%	73%	3445.10	9281.83	8.58	13.15	401.5	706.1	144.8
MHD	0.76%	107471.9	18%	82%	19185.06	88286.80	4.80	8.78	3996.9	10054.4	1861.6
HHD	2.00%	282820.7	0%	100%	62.16	282758.52	3.37	6.22	18.4	45483.9	6324.4
OBUS	0.00%	0.0	63%	37%	0.00	0.00	4.79	6.96	0.0	0.0	0.0
UBUS	0.43%	60806.4	64%	36%	39196.89	21609.55	8.41	12.12	4661.0	1782.4	788.9
MCY	0.25%	35352.6	100%	0%	35352.59	0.00	40.47	NA	873.6	0.0	101.4
SBUS	0.01%	1414.1	38%	62%	536.81	877.30	9.83	8.13	54.6	108.0	21.3
MH	0.22%	31110.3	65%	35%	20316.91	10793.36	4.41	9.39	4603.1	1149.2	694.1
Total	**100.00%**	**14141034.0**			**13685956.31**	**455077.69**	**14.55**		**541798**	**60808**	**71349.6**

Fleet Characteristics

23.5

Source: EMFAC 2021 (v1.0.1) Emissions Inventory
Region Type: County
Region: Tulare County
Calendar Year: 2028
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/year for VMT, trips/year for Trips, tons/year for Emissions, 1000 gallons/year for Fuel Consumption

GASOLINE

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT (Annual)	Trips (Annual)	Fuel Consumption (1000 gal/year)	Annual Fuel Consumption (gallons)	MPG
Kings County	2025	HHDT	Aggregated	Aggregated	GAS	2	164	36	0.0486	49	3.37
Kings County	2025	LDA	Aggregated	Aggregated	GAS	62800	2580000	292000	89.2	89200	28.92
Kings County	2025	LDT1	Aggregated	Aggregated	GAS	5590	186000	24100	7.82	7820	23.79
Kings County	2025	LDT2	Aggregated	Aggregated	GAS	29000	1140000	135000	49	49000	23.27
Kings County	2025	LHDT1	Aggregated	Aggregated	GAS	2670	97700	39800	10.1	10100	9.67
Kings County	2025	LHDT2	Aggregated	Aggregated	GAS	336	12100	5010	1.41	1410	8.58
Kings County	2025	MCY	Aggregated	Aggregated	GAS	3370	19100	6750	0.472	472	40.47
Kings County	2025	MDV	Aggregated	Aggregated	GAS	27500	983000	125000	52.1	52100	18.87
Kings County	2025	MH	Aggregated	Aggregated	GAS	356	3200	36	0.725	725	4.41
Kings County	2025	MHDT	Aggregated	Aggregated	GAS	176	10800	3520	2.25	2250	4.80
Kings County	2025	OBUS	Aggregated	Aggregated	GAS	73	3870	1460	0.808	808	4.79
Kings County	2025	SBUS	Aggregated	Aggregated	GAS	28	1750	110	0.178	178	9.83
Kings County	2025	UBUS	Aggregated	Aggregated	GAS	12	497	47	0.0591	59	8.41

DIESEL

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption (1000 gal/year)	Annual Fuel Consumption (gallons)	MPG
Kings County	2025	HHDT	Aggregated	Aggregated	DSL	4890	746000	88700	120	120000	6.22
Kings County	2025	LDA	Aggregated	Aggregated	DSL	159	4740	658	0.111	111	42.70
Kings County	2025	LDT1	Aggregated	Aggregated	DSL	4	69	12	0.00279	3	24.66
Kings County	2025	LDT2	Aggregated	Aggregated	DSL	88	3690	422	0.113	113	32.65
Kings County	2025	LHDT1	Aggregated	Aggregated	DSL	2760	98100	34700	6.22	6220	15.77
Kings County	2025	LHDT2	Aggregated	Aggregated	DSL	871	32600	11000	2.48	2480	13.15
Kings County	2025	MDV	Aggregated	Aggregated	DSL	424	15800	1950	0.666	666	23.72
Kings County	2025	MH	Aggregated	Aggregated	DSL	196	1700	20	0.181	181	9.39
Kings County	2025	MHDT	Aggregated	Aggregated	DSL	1060	49700	12400	5.66	5660	8.78
Kings County	2025	OBUS	Aggregated	Aggregated	DSL	32	2240	390	0.322	322	6.96
Kings County	2025	SBUS	Aggregated	Aggregated	DSL	135	2860	1950	0.352	352	8.13
Kings County	2025	UBUS	Aggregated	Aggregated	DSL	3	274	14	0.0226	23	12.12

Notes

1. Used project-specific vehicle fleet mix for residential
2. Proportion of diesel vs. gasoline vehicles calculated based on total annual VMT for each vehicle class

3. MBTU Calculated for comparison purposes. Assumed 1 gallon of gasoline = 0.116090 MBTU and 1 gallong of diesel = 0.139 MBTU

Appendix E

Traffic Study

Project No: 646-02

TRAFFIC STUDY

CRANDELL TENTATIVE SUBDIVISION
LOCATED WEST OF DEMAREE STREET AND NORTH OF RIVER WAY DRIVE
VISALIA, CALIFORNIA

Prepared for:

WCP DEVELOPERS

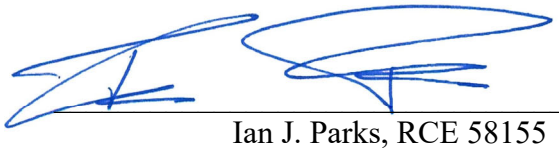
March 2022

REVISED JUNE 2022

Prepared by:

RUETTGERS & SCHULER CIVIL ENGINEERS

1800 30TH STREET, SUITE 260
BAKERSFIELD, CA 93301



Ian J. Parks, RCE 58155

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EXECUTIVE SUMMARY

The proposed residential and commercial development is located along River Way Drive, west of Demaree Street, in Visalia, CA. Site access is proposed along River Way Drive.

Proposed Project

The proposed project includes the following uses:

- Phase 1: Single Family Residential 104 units
- Phase 2: Single Family Residential 317 units (includes 104 units from Phase 1)
- Phase 3: Multi-Family Residential 180 units
- Phase 3: Neighborhood Commercial 6.88 acres

Project Trip Generation

The following table shows the anticipated project trip generation and peak hour volumes calculated using the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition. It is noted that a pass-by of 15% is shown for the commercial portion of the project.

Project Trip Generation – Phase III

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	317 Dwelling Units	eq	3005	eq	25% 57	75% 172	eq	63% 194	37% 114
220	Multifamily Housing (Low Rise)	180 Dwelling Units	eq	1320	eq	23% 19	77% 64	eq	63% 63	37% 37
820	Shopping Center	65 1000 sq ft GLA	eq	4485	eq	62% 114	38% 70	eq	48% 190	52% 205
sub-total				8,811		190	306		447	356
Adjustments Pass-by[1]		15%		673		17	11		29	31
Total				8,138		173	295		418	325

[1]Shopping Center only

Project Study Scope

Based on the number of peak hour trips calculated (between 500-1,000 trips in the peak hour), the study falls into Category III traffic impact analysis. Category III requires all signalized and major intersections be studied within a one-mile radius of the project.

Following is a list of the intersections:

Study Intersections:

- Akers St & Ave 320
- Demaree St & Ave 320
- Demaree St & Pratt Rd
- County Center St & Pratt Rd
- Mooney Blvd & Pratt Rd
- Akers St & Shannon Prkwy
- N Chinowth St & River Way Dr
- Demaree St & River Way Dr
- Demaree St & Shannon Pkwy
- County Center St & Shannon Pkwy
- Demaree St & Flagstaff Ave
- Akers St & Riggin Ave
- Linwood St & Riggin Ave
- Demaree St & Riggin Ave
- County Center St & Riggin Ave
- Linwood St & Ferguson Ave
- Demaree St & Ferguson Ave

Also included in the analysis are the driveways for the multi-family and retail portions of the project.

Analysis Scenarios

In accordance with Category III requirements, analysis will be provided for the following scenarios:

- Existing
- 2023 Traffic
- 2023 Traffic + Phase 1 Project Traffic
- 2023 Traffic + Phase 1 Project Traffic + Mitigation
- 2025 Traffic
- 2025 Traffic + Phase 1 & 2 Project Traffic
- 2025 Traffic + Phase 1 & 2 Project Traffic + Mitigation
- 2031 Traffic
- 2031 Traffic + Phase 1,2 & 3 Project Traffic
- 2031 Traffic + Phase 1,2 & 3 Project Traffic + Mitigation
- 2041 Traffic
- 2041 Traffic + Phase 1,2 & 3 Project Traffic
- 2041 Traffic + Phase 1,2 & 3 Project Traffic + Mitigation

Level of Service Analysis

PM Peak Hour Intersection Analysis

#	Intersection	Control Type	2021	2023	2023+ Project	2025	2025+ Project	2031	2031+ Project	2031+ Project w/Improvements[1]	2041	2041+ Project	2041+ Project w/Improvements[1]
1	Akers St & Ave 320	NB	A	A	A	A	A	B	B	-	B	B	-
2	Demaree St & Ave 320	EB	B	B	B	B	B	B	B	-	B	B	-
3	Linwood St & Project Road North	NB	A	A	A	A	A	A	A	-	A	A	-
4	Demaree St & Arlet Ave	EB	A	A	A	A	A	A	A	-	A	A	-
5	Demaree St & Pratt Rd	WB	B	B	B	B	B	B	B	-	C	C	-
6	County Center St & Pratt Rd	NB	A	A	A	A	A	A	A	-	A	A	-
7	Mooney Blvd & Pratt Rd	SB	A	A	A	A	A	A	A	-	A	A	-
8	Akers St & Shannon Prkwy	AWSC	A	A	A	A	A	A	A	-	A	A	-
9	Linwood St & Shannon Prkwy	EB WB	A A	A A	A A	A A	A A	A A	A A	- -	A A	A A	- -
9	Linwood St & Shannon Prkwy[2]	Roundabout	A	A	A	A	A	A	A	-	A	A	-
10	Project Entrance/ River Way Dr	SB	A	A	A	A	A	A	B	-	A	B	-
11	N Chinowth St/ River Way Dr	SB	A	A	A	A	A	A	B	-	A	B	-
12	Demaree St & River Way Dr	EB	B	B	B	B	B	B	C	-	B	C	-
13	Demaree St & Shannon Pkwy	WB	C	C	C	C	D	D	F (93.3)	-	F (>300)	F (>300)	-
		Signal	-	-	-	-	-	-	-	A	-	-	A
14	County Center St & Shannon Pkwy	Roundabout	A	A	A	A	A	A	A	-	A	A	-
15	Demaree St & Flagstaff Ave	EB WB	A B	A B	A C	A B	A D	A D	A F (56.4)	-	A F (96.0)	A F (>300)	-
		Signal	-	-	-	-	-	-	-	A	-	-	A
16	Akers St & Riggin Ave	Signal	D	D	D	D	D	D	D	-	D	D	-
17	Linwood St & Riggin Ave	NB	C	C	C	C	D	D	E (39.9)	-	F (>300)	F (>300)	-
		Signal	-	-	-	-	-	-	-	B	-	-	F (135.4)
18	Demaree St & Riggin Ave	Signal	D	D	D	D	D	D	D	-	E (61.7)	E (77.4)	-
19	County Center St & Riggin Ave	AWSC	C	C	C	C	D	E (35.3)	E (47.5)	-	F (54.1)	F (56.6)	-
		Signal	-	-	-	-	-	-	-	-	-	-	B

[1]Mitigation measures shown in Table 6

[2]Linwood St & Shannon Prkwy was analyzed for both stop-controlled and roundabout conditions pursuant to the City of Visalia NW Quadrant Traffic Circulation Plan.

PM Peak Hour Intersection Analysis Continued

#	Intersection	Control Type	2021	2023	2023+ Project	2025	2025+	2031	2031+ Project	2031+ Project w/Improvements[1]	2041	2041+ Project	2041+ Project w/Improvements[1]
20	Linwood St & Ferguson Ave	AWSC	A	A	A	B	B	B	B	-	C	C	-
21	Demaree St & Ferguson Ave	Signal	D	D	D	D	D	D	D	-	F (88.5)	F (90.7)	-
22	Linwood St & Residential Driveway	WB	A	A	A	A	A	A	A	-	A	A	-
23	Linwood St & Commercial Driveway	WB	-	-	-	-	-	A	A	-	A	A	-
24	Commercial Driveway & Shannon Prkwy	SB	-	-	-	-	-	A	A	-	A	A	-

[1]Mitigation measures shown in Table 6

AM Peak Hour Intersection Analysis

#	Intersection	Control Type	2021	2023	2023+ Project	2025	2025+	2031	2031+ Project	2031+ Project w/Improvements[1]	2041	2041+ Project	2041+ Project w/Improvements[1]
1	Akers St & Ave 320	NB	A	A	A	A	A	B	B	-	B	B	-
2	Demaree St & Ave 320	EB	B	B	B	B	B	B	B	-	C	C	-
3	Linwood St & Project Road North	NB	A	A	A	A	A	A	A	-	A	A	-
4	Demaree St & Arlet Ave	EB	A	A	A	A	A	A	A	-	A	A	-
5	Demaree St & Pratt Rd	WB	B	B	B	B	B	B	B	-	C	C	-
6	County Center St & Pratt Rd	NB	A	A	A	A	A	A	A	-	A	A	-
7	Mooney Blvd & Pratt Rd	SB	A	A	A	A	A	A	A	-	A	A	-
8	Akers St & Shannon Prkwy	AWSC	A	A	A	A	A	A	A	-	A	A	-
9	Linwood St & Shannon Prkwy	EB	A	A	A	A	A	A	A	-	A	A	-
		WB	A	A	A	A	A	A	A	-	A	A	-
9	Linwood St & Shannon Prkwy[3]	Roundabout	A	A	A	A	A	A	A	-	A	A	-
10	Project Entrance/ River Way Dr	SB	A	A	A	A	A	A	A	-	A	A	-
11	N Chinowth St/ River Way Dr	SB	A	A	A	A	A	A	A	-	A	A	-
12	Demaree St & River Way Dr	EB	A	A	A	A	B	B	B	-	B	B	-
13	Demaree St & Shannon Pkwy	WB	B	B	B	C	C	C	E (39.8)	-	F (156.3)	F (>300)	-
		Signal	-	-	-	-	-	-	-	A	-	-	A
14	County Center St & Shannon Pkwy	Roundabout	A	A	A	A	A	A	A	-	A	A	-
15	Demaree St & Flagstaff Ave	EB	A	A	A	A	A	A	A	-	A	A	-
		WB	B	B	B	B	C	C	C	-	D	E (38.2)	
		Signal	-	-	-	-	-	-	-	-	-	-	A
16	Akers St & Riggin Ave	Signal	D	D	D	D	D	D	D	-	D	D	-
17	Linwood St & Riggin Ave	NB	B	B	C	C	C	E (36.7)	E (40.6)	-	F (>300)	F (>300)	-
		Signal	-	-	-	-	-	-	-	B	-	-	C
18	Demaree St & Riggin Ave	Signal	D	D	D	D	D	D	D	-	E (68.9)	E (74.6)	-
19	County Center St & Riggin Ave	AWSC	B	B	B	B	B	B	B	-	B	C	-
		Signal	-	-	-	-	-	-	-	-	-	-	C[2]

[1]Mitigation measures shown in Table 6

[2]Mitigation necessary due to PM Peak Hour Traffic

[3]Linwood St & Shannon Prkwy was analyzed for both stop-controlled and roundabout conditions pursuant to the City of Visalia NW Quadrant Traffic Circulation Plan.

AM Peak Hour Intersection Analysis Continued

#	Intersection	Control Type	2021	2023	2023+ Project	2025	2025+	2031	2031+ Project	2031+ Project w/Improvements[1]	2041	2041+ Project	2041+ Project w/Improvements[1]
20	Linwood St & Ferguson Ave	AWSC	B	B	B	B	B	B	B	-	D	D	-
21	Demaree St & Ferguson Ave	Signal	D	D	D	D	D	D	D	-	D	D	-
22	Linwood St & Residential Driveway	WB	-	-	-	-	-	A	A	-	A	A	-
23	Linwood St & Commercial Driveway	WB	-	-	-	-	-	A	A	-	A	A	-
24	Commercial Driveway & Shannon Prkwy	SB	-	-	-	-	-	A	A	-	A	A	-

[1]Mitigation measures shown in Table 6

Mitigation

Based on the results of the Level of Service (LOS) analysis and eight-hour vehicular volume warrant, and the City of Visalia thresholds for mitigation, it is recommended that signals be constructed at four intersections in order to operate at an acceptable level of service by the year 2041.

#	Intersection	Improvements Required by 2031	Improvements Required by 2041	Percent Share
13	Demaree St & Shannon Parkway	Signal	-	25.03%
15	Demaree St & Flagstaff Ave	Signal	-	33.95%
17	Linwood St & Riggin Ave	Signal	-	5.75%
19	County Center St & Riggin Ave	-	Signal	24.86%

INTRODUCTION

The purpose of this study is to evaluate the potential traffic impacts of a proposed residential and commercial development located along River Way Drive, west of Demaree Street, in Visalia, CA. A vicinity map, location map, and tentative subdivision map are presented in Figures 1 through 3, respectively.

A. Land Use, Site and Study Area Boundaries

The existing zoning is AE-40 (County). The proposed general plan designation will be low, medium, and high density residential along with neighborhood commercial.

Based on the number of peak hour trips calculated (between 500-1,000 trips in the peak hour), the study falls into Category III traffic impact analysis. Category III requires all signalized and major intersections be studied within a one-mile radius of the project. The study area includes a total of 24 intersections (three signalized, 18 unsignalized and three driveways). The scope of the study was developed in association with the City of Visalia Public Works Department. Figure 4 shows the intersections included in the study.

B. Existing Site Uses and Site Access

The project site is currently being used for agricultural production. As currently planned, access to the proposed development would be provided along River Way Drive, Demaree Street, and Linwood Street. Intersections for the residential portion of the project are shown on the tentative map. Retail access is assumed to be along Linwood Street and River Way Drive.

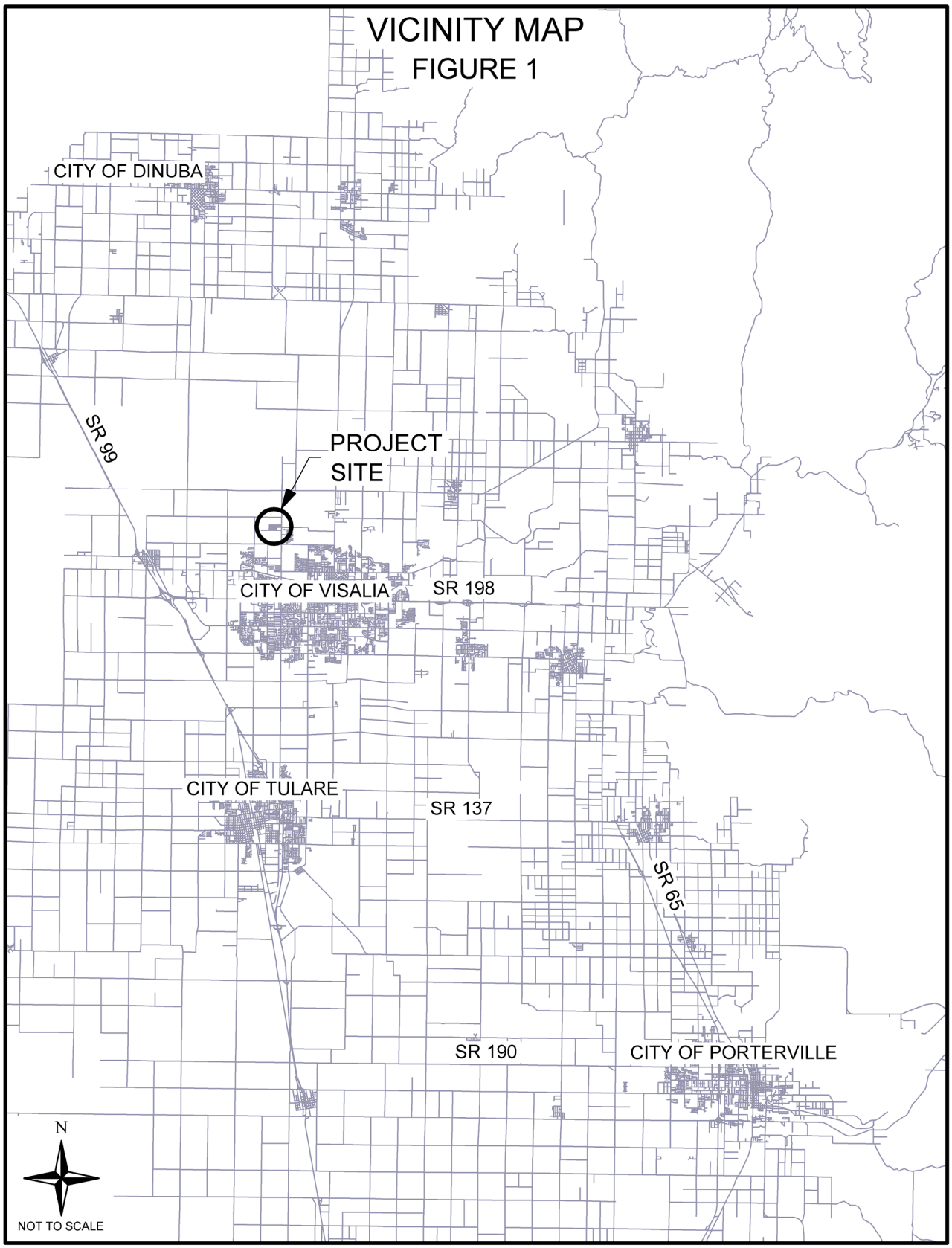
The proposed project includes the following uses:

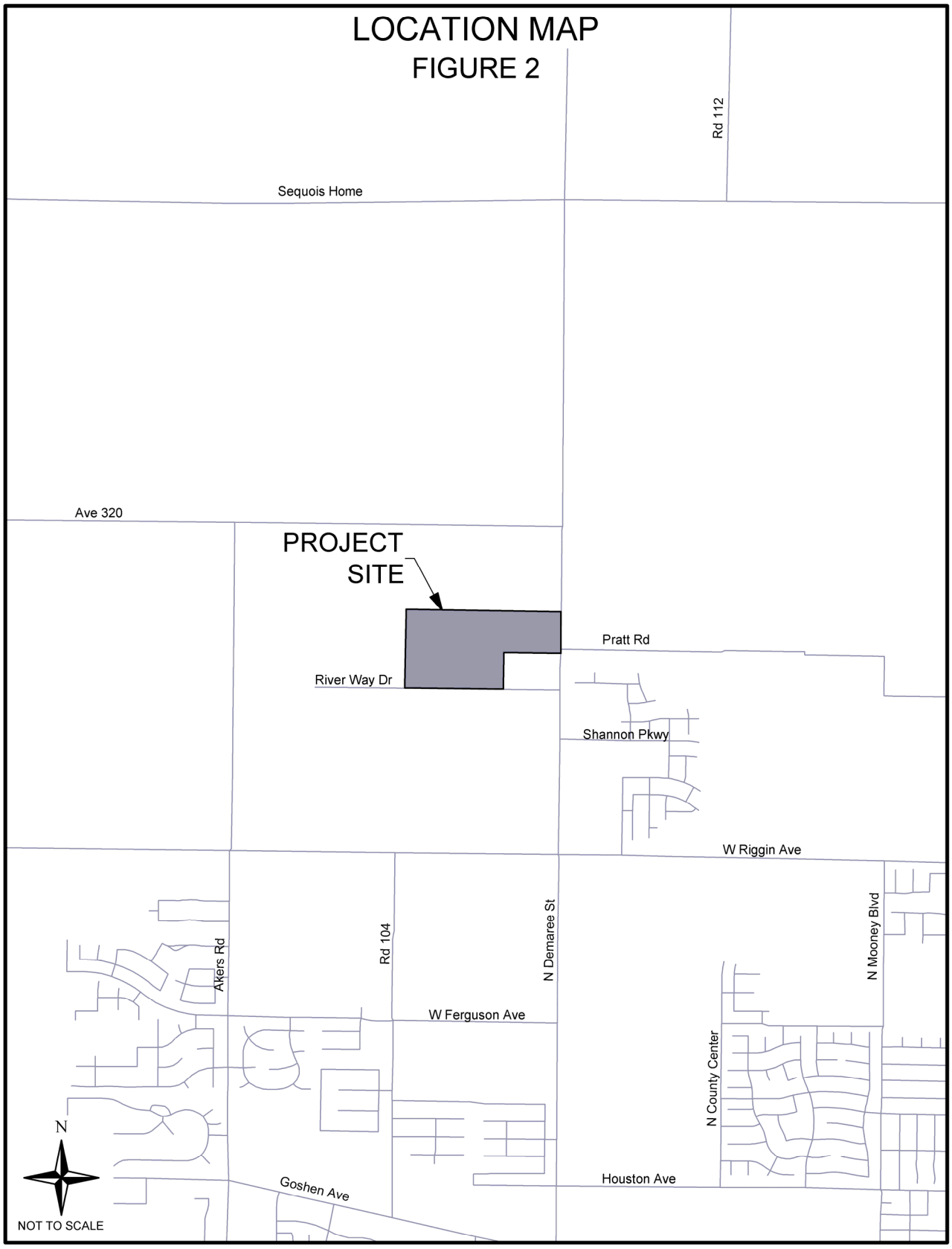
- Phase 1: Single Family Residential 104 units
- Phase 2: Single Family Residential 317 units (includes 104 units from Phase 1)
- Phase 3: Multi-Family Residential 180 units
- Phase 3: Neighborhood Commercial 6.88 acres

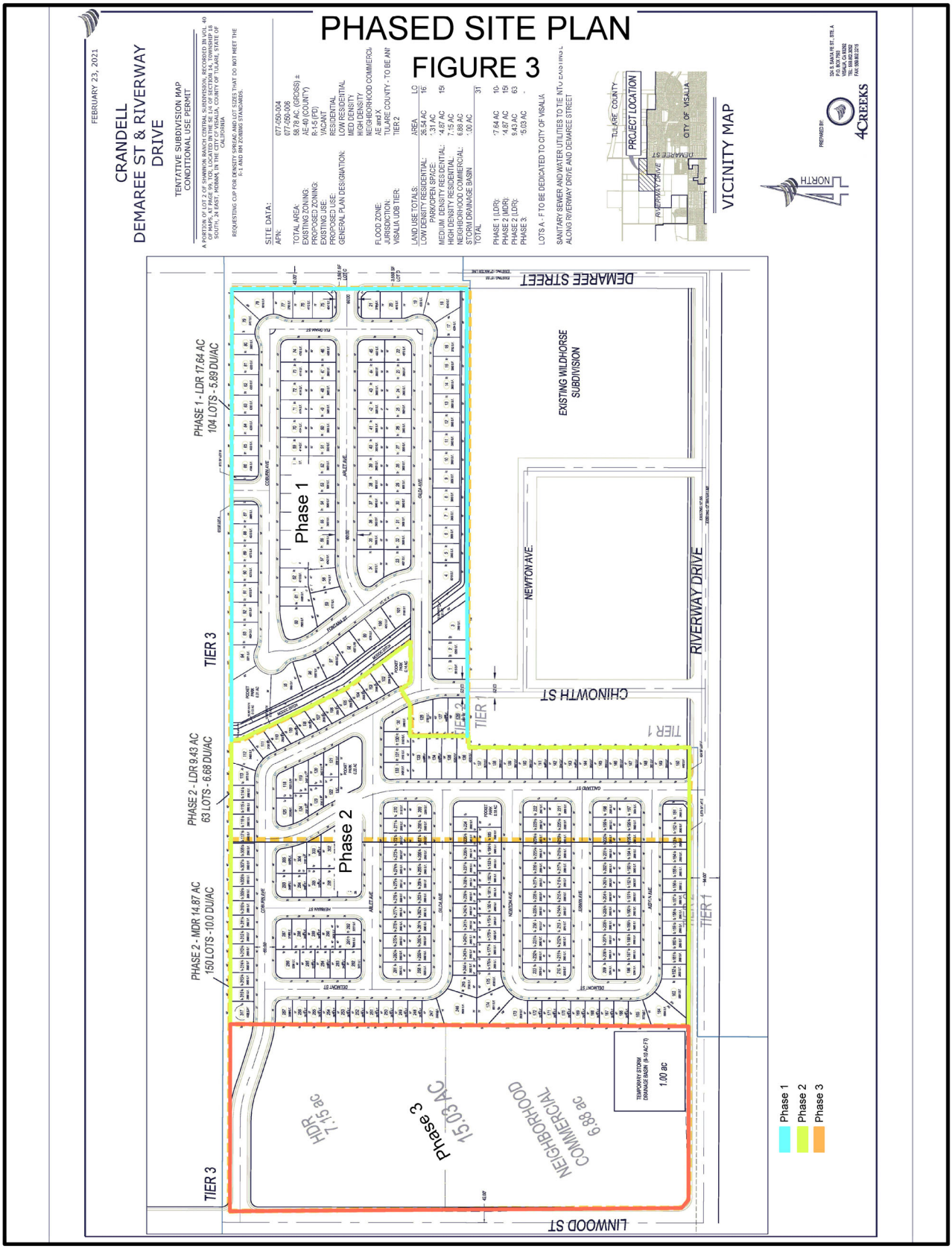
River Way Drive will be constructed to the extent of the of the single-family residential units in Phases 1 and 2. Phase 3 will complete the remaining improvements on River Way Drive, the River Way Drive/Linwood Street roundabout, and Linwood Street along the project frontage.

C. Existing Uses in Vicinity of the Site

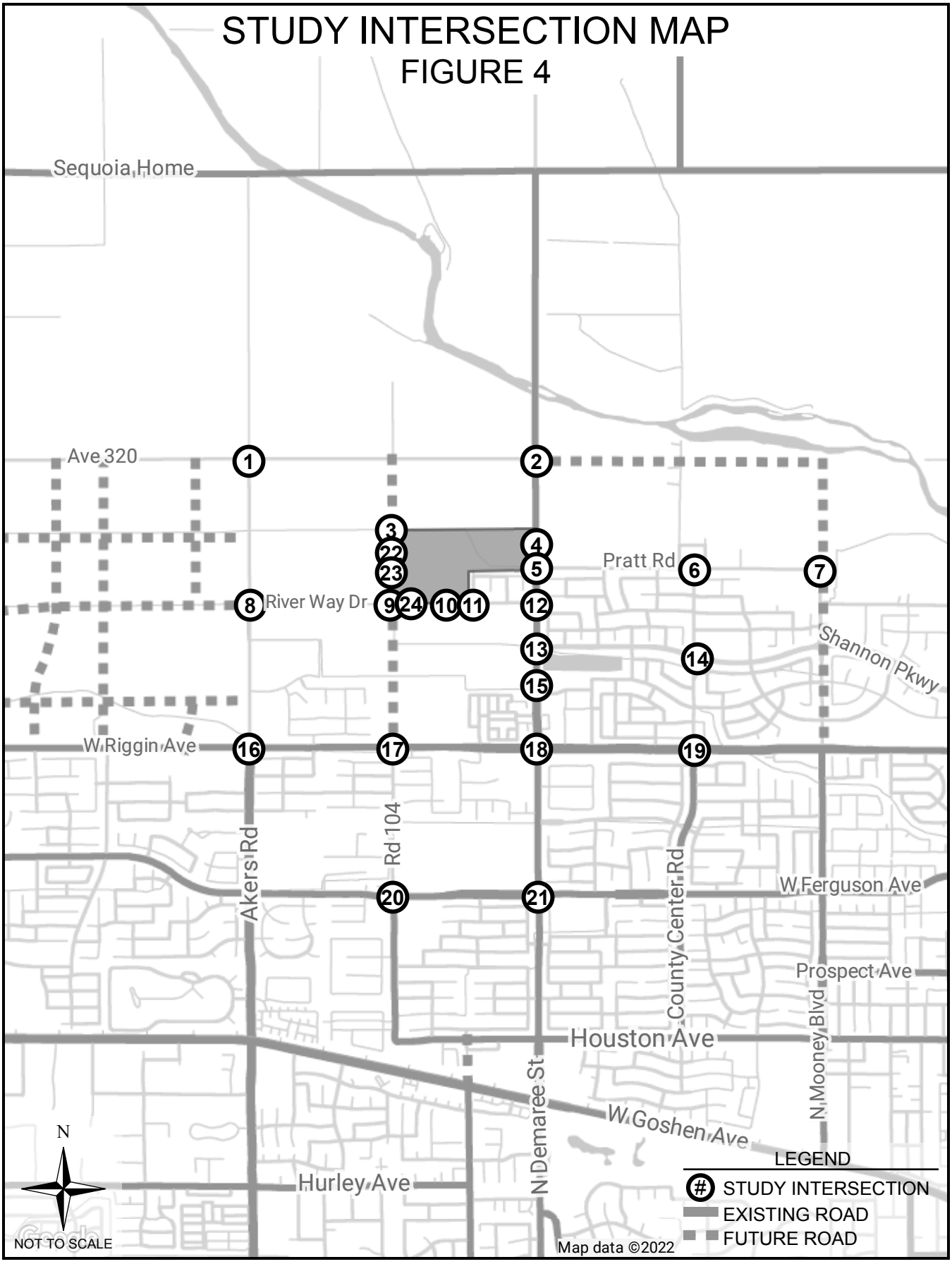
Existing land uses in the vicinity of the project site include a mix of agricultural land uses and residential subdivisions. Residential subdivisions exist to the east of the proposed project and agriculture uses exist to the north, west, and south of the site.


VICINITY MAP
FIGURE 1
CITY OF DINUBA
SR 99
PROJECT
SITE
CITY OF VISALIA
SR 198
CITY OF TULARE
SR 137
SR 65
SR 190
CITY OF PORTERVILLE
N
NOT TO SCALE


LOCATION MAP
FIGURE 2
Rd 112
Sequois Home
Ave 320
PROJECT SITE
Pratt Rd
River Way Dr
Shannon Pkwy
W Riggin Ave
Akers Rd
Rd 104
N Demaree St
N Mooney Blvd
W Ferguson Ave
N County Center
Houston Ave
Goshen Ave
N
NOT TO SCALE


PHASED SITE PLAN
FIGURE 3
FEBRUARY 23, 2021
CRANDELL
DEMAREE ST & RIVERWAY DRIVE
TENTATIVE SUBDIVISION MAP
CONDITIONAL USE PERMIT
SITE DATA:
APN:
077-050-004
077-050-006
TOTAL AREA:
58.78 AC (GROSS) ±
EXISTING ZONING:
AE-40 (COUNTY)
PROPOSED ZONING:
R-1-5 (PD)
EXISTING USE:
VACANT
PROPOSED USE:
RESIDENTIAL
GENERAL PLAN DESIGNATION:
LOW RESIDENTIAL
MED DENSITY
HIGH DENSITY
NEIGHBORHOOD COMMERCIAL
FLOOD ZONE:
AE and X
JURISDICTION:
TULARE COUNTY - TO BE ANI
VISALIA UDB TIER:
TIER 2
LAND USE TOTALS:
AREA
LC
LOW DENSITY RESIDENTIAL:
26.54 AC
16
PARK/OPEN SPACE:
.31 AC
MEDIUM DENSITY RES DENTIAL:
4.87 AC
15
HIGH DENSITY RESIDENTIAL:
7.15 AC
NEIGHBORHOOD COMMERCIAL:
6.88 AC
STORM DRAINAGE BASIN
1.00 AC
TOTAL
31
PHASE 1 (LDR):
17.64 AC
10-
PHASE 2 (MDR):
14.87 AC
15
PHASE 2 (LDR):
9.43 AC
63
PHASE 3:
15.03 AC
LOTS A - F TO BE DEDICATED TO CITY OF VISALIA
SANITARY SEWER AND WATER UTILITIES TO TIE INTO EXISTING L
ALONG RIVERWAY DRIVE AND DEMAREE STREET
TULARE COUNTY
PROJECT LOCATION
DEMAREE ST
RIVERWAY DRIVE
CITY OF VISALIA
VICINITY MAP
NORTH
PREPARED BY:
4CREEKS
DEMAREE STREET
EXISTING WILDHORSE SUBDIVISION
NEWTON AVE.
RIVERWAY DRIVE
CHINOWTH ST
LINWOOD ST
PHASE 1 - LDR 17.64 AC
104 LOTS - 5.89 DU/AC
PHASE 2 - LDR 9.43 AC
63 LOTS - 6.68 DU/AC
PHASE 2 - MDR 14.87 AC
150 LOTS -10.0 DU/AC
Phase 1
Phase 2
Phase 3
TIER 3
TIER 2
TIER 1
HDR 7.15 ac
Phase 3
15.03 AC
NEIGHBORHOOD COMMERCIAL 6.88 ac
TEMPORARY STORM DRAINAGE BASIN (IN ALT-7)
1.00 ac
Phase 1
Phase 2
Phase 3

STUDY INTERSECTION MAP
FIGURE 4



D. Roadway Descriptions

Akers Street is currently a north-south arterial south of Ferguson Avenue and a proposed Year 1-20 arterial north of Ferguson Avenue. In the vicinity of the project it exists as four-lane roadway with curb and gutter. Akers Street provides access to residential, educational, and agricultural land uses.

Avenue 320 is classified as a Year 11-25 east-west arterial that currently extends west from N Demaree Street. In the vicinity of the project it exists as a two-lane roadway. Avenue 320 currently provides access to agricultural land uses.

County Center Street is a north-south collector that extends south from Pratt Road to Connelly Avenue. In the vicinity of the project it exists as a two-lane roadway with curb and gutter. County Center Street provides access to residential land uses and east-west arterials

Demaree Street is designated as a north-south arterial within the City of Visalia. In the vicinity of the project it exists as a four-lane roadway with curb and gutter and two-way left turn. Demaree Street provides access to agricultural, commercial, and residential land uses.

Ferguson Avenue is an east-west collector that currently extends from Kelsey Street to Santa Fe Street. In the vicinity of the project it exists as a two-lane roadway and provides access to agricultural, residential, educational, and industrial land uses.

Linwood Street is a designated as a north-south collector south of Ferguson Avenue and a Year 1-10 collector north of Ferguson Avenue. In the vicinity of the project it exists as a two-lane roadway and provides access to residential land uses.

Pratt Road is an east-west collector between Demaree Street and Mooney Boulevard. In the vicinity of the project it exists as a two-lane roadway with curb and gutter on its south side and provides access to agricultural and residential land uses.

Riggin Avenue is designated as an east-west arterial with portions listed as a Year 11-25 arterial. Riggins Avenue currently extends from State Route 99 to its easterly extension at St John's Parkway. In the vicinity of the project it exists a two-lane roadway. Riggins Avenue provides access agricultural, industrial, and residential land uses.

Shannon Parkway is an east-west collector that extends from Demaree Street to Santa Fe Street. In the vicinity of the project it exists as a two-lane roadway with curb and gutter. Shannon Parkway provides access to residential, educational, and recreational land uses.

PROJECT TRIP GENERATION AND DESIGN HOUR VOLUMES

The trip generation and design hour volumes for the residential development were calculated using the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition. Trip generation and design hour volumes for all land uses in the various phases are shown in Tables 1a through 1c.

The ADT, AM and PM peak hour of adjacent street traffic rate equations, and peak hour directional splits for ITE Land Use Code 210 (Single-Family detached Housing), 220 (Multifamily Housing), and 820 (Shopping Center were used to estimate the project traffic.

Table 1a
Project Trip Generation – Phase I

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	104 Dwelling Units	eq	1078	eq	25% 20	75% 59	eq	63% 66	37% 39

Table 1b
Project Trip Generation – Phase II

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	317 Dwelling Units	eq	3005	eq	25% 57	75% 172	eq	63% 194	37% 114

Table 1c
Project Trip Generation – Phase III

General Information			Daily Trips		AM Peak Hour Trips			PM Peak Hour Trips		
ITE Code	Development Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Rate	In % Split/ Trips	Out % Split/ Trips
210	Single-Family detached Housing	317 Dwelling Units	eq	3005	eq	25% 57	75% 172	eq	63% 194	37% 114
220	Multifamily Housing (Low Rise)	180 Dwelling Units	eq	1320	eq	23% 19	77% 64	eq	63% 63	37% 37
820	Shopping Center	65 1000 sq ft GLA	eq	4485	eq	62% 114	38% 70	eq	48% 190	52% 205
sub-total				8,811		190	306		447	356
Adjustments Pass-by[1]		15%		673		17	11		29	31
Total				8,138		173	295		418	325

[1]Shopping Center only

TRIP DISTRIBUTION AND ASSIGNMENT

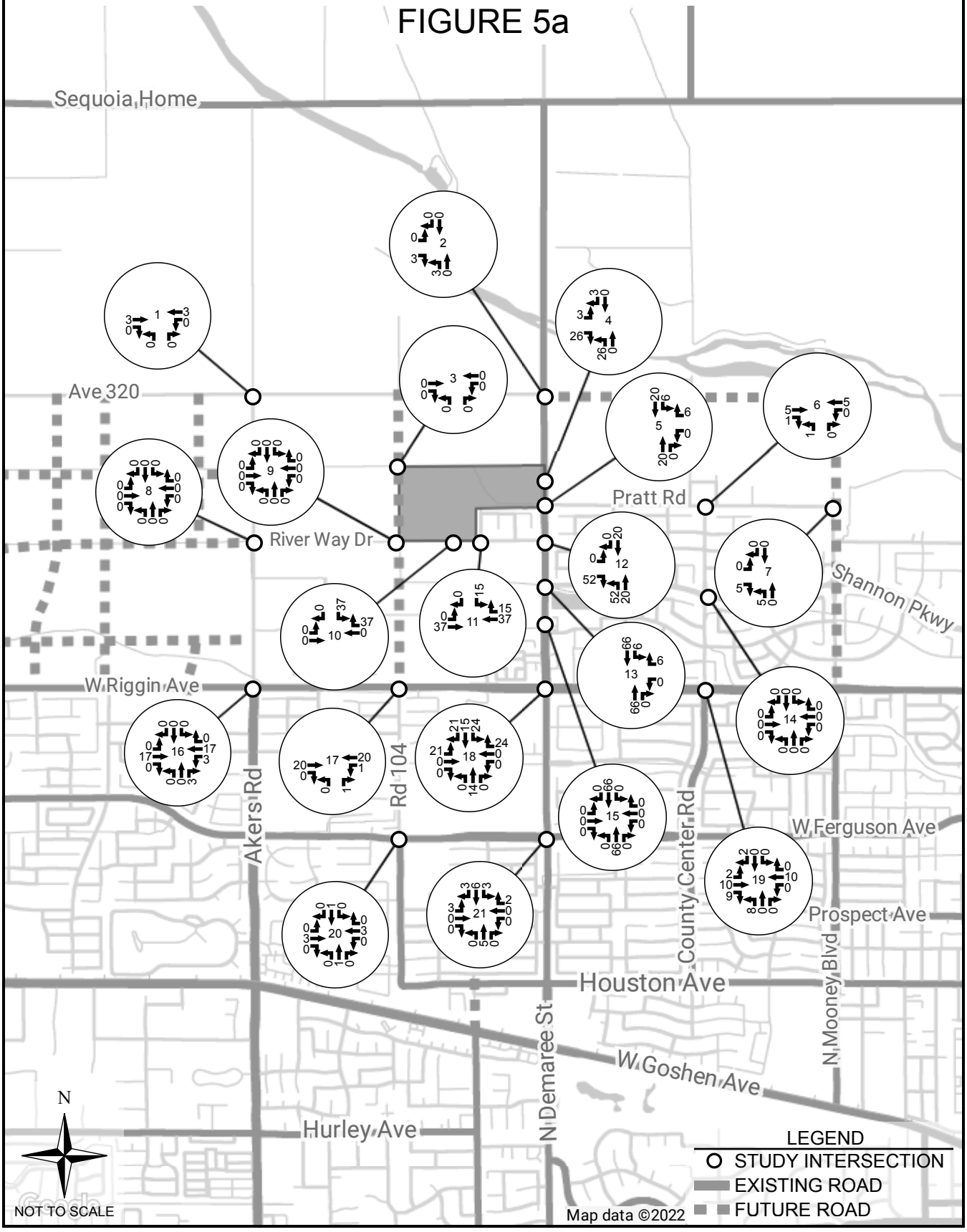
The project trip distribution in Table 2 represents the most likely travel routes for traffic accessing the project. Project traffic distribution was estimated based on a review of the potential draw from population centers within the region and the types of land uses involved. These assumptions were used to distribute the phased project traffic as shown in Figures 4-6.

Table 2
Project Trip Distribution

Direction	Percent
North	5
East	35
South	50
West	10

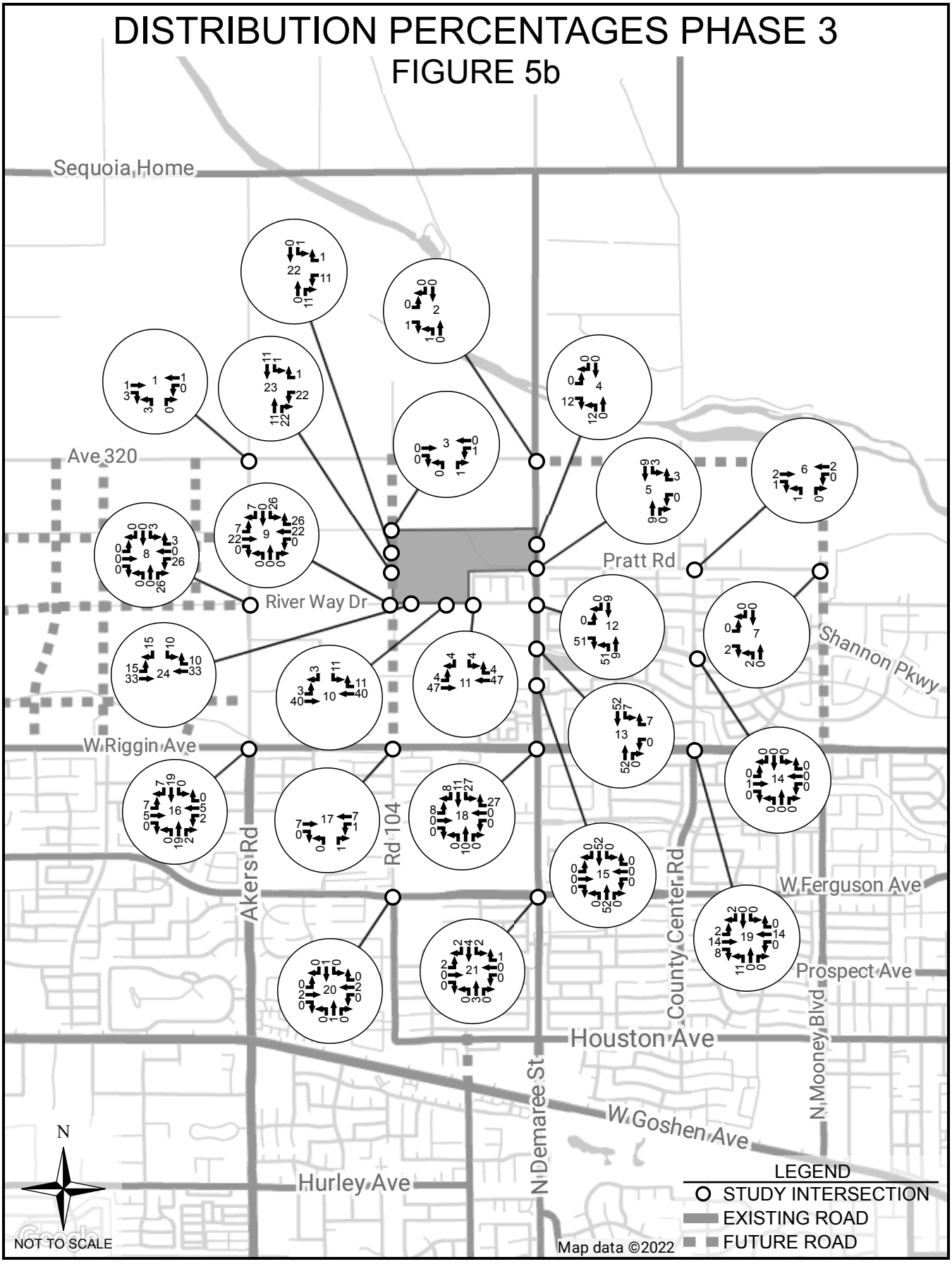
DISTRIBUTION PERCENTAGES PHASES 1&2

FIGURE 5a



DISTRIBUTION PERCENTAGES PHASE 3

FIGURE 5b



EXISTING AND FUTURE TRAFFIC

Traffic counts were conducted between the hours of 6:00 to 8:00 AM and 4:00 to 6:00 PM at the study intersections in May, June, and September 2021 and are shown in Figure 5. The count data was adjusted (+15 percent) to account for traffic volume reductions on public roadways because of the coronavirus pandemic. The adjustment was developed based on a review of historical (pre-pandemic) count data obtained from multiple sources (shown in Appendix).

Annual growth rates ranging between 0.50% and 5.62% were applied to existing traffic volumes to estimate future traffic volumes for the project phases. These growth rates were estimated based the future TCAG traffic model data and the addition of proposed developments in the vicinity of the project (cumulative project traffic).

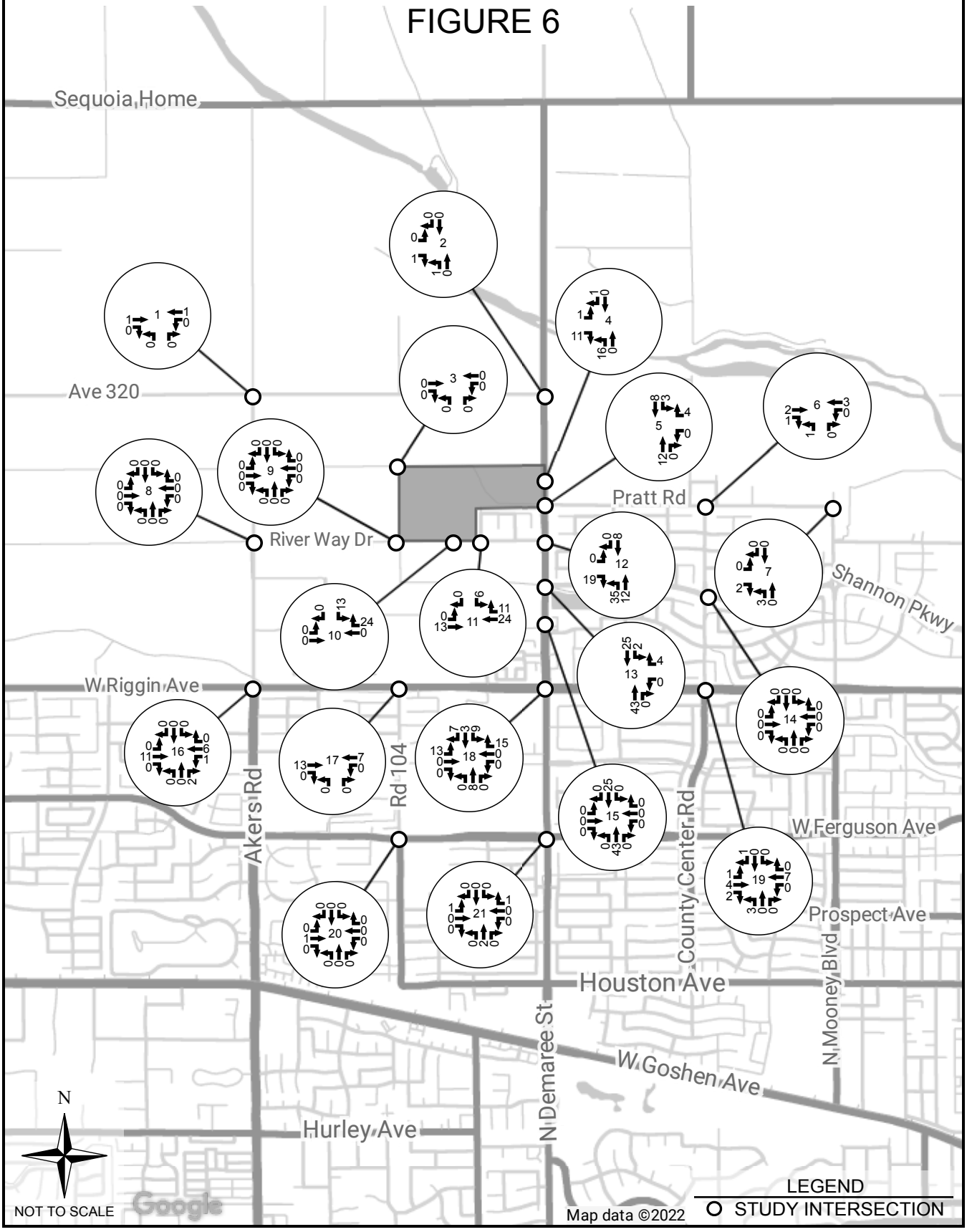
In accordance with Category III requirements, analysis will be provided for the following scenarios:

- Existing
- 2023 Traffic
- 2023 Traffic + Phase 1 Project Traffic
- 2023 Traffic + Phase 1 Project Traffic + Mitigation
- 2025 Traffic
- 2025 Traffic + Phase 1 & 2 Project Traffic
- 2025 Traffic + Phase 1 & 2 Project Traffic + Mitigation
- 2031 Traffic
- 2031 Traffic + Phase 1,2 & 3 Project Traffic
- 2031 Traffic + Phase 1,2 & 3 Project Traffic + Mitigation
- 2041 Traffic
- 2041 Traffic + Phase 1,2 & 3 Project Traffic
- 2041 Traffic + Phase 1,2 & 3 Project Traffic + Mitigation

Phases 1-3 and future peak hour volumes are shown in Figures 8 through 15.

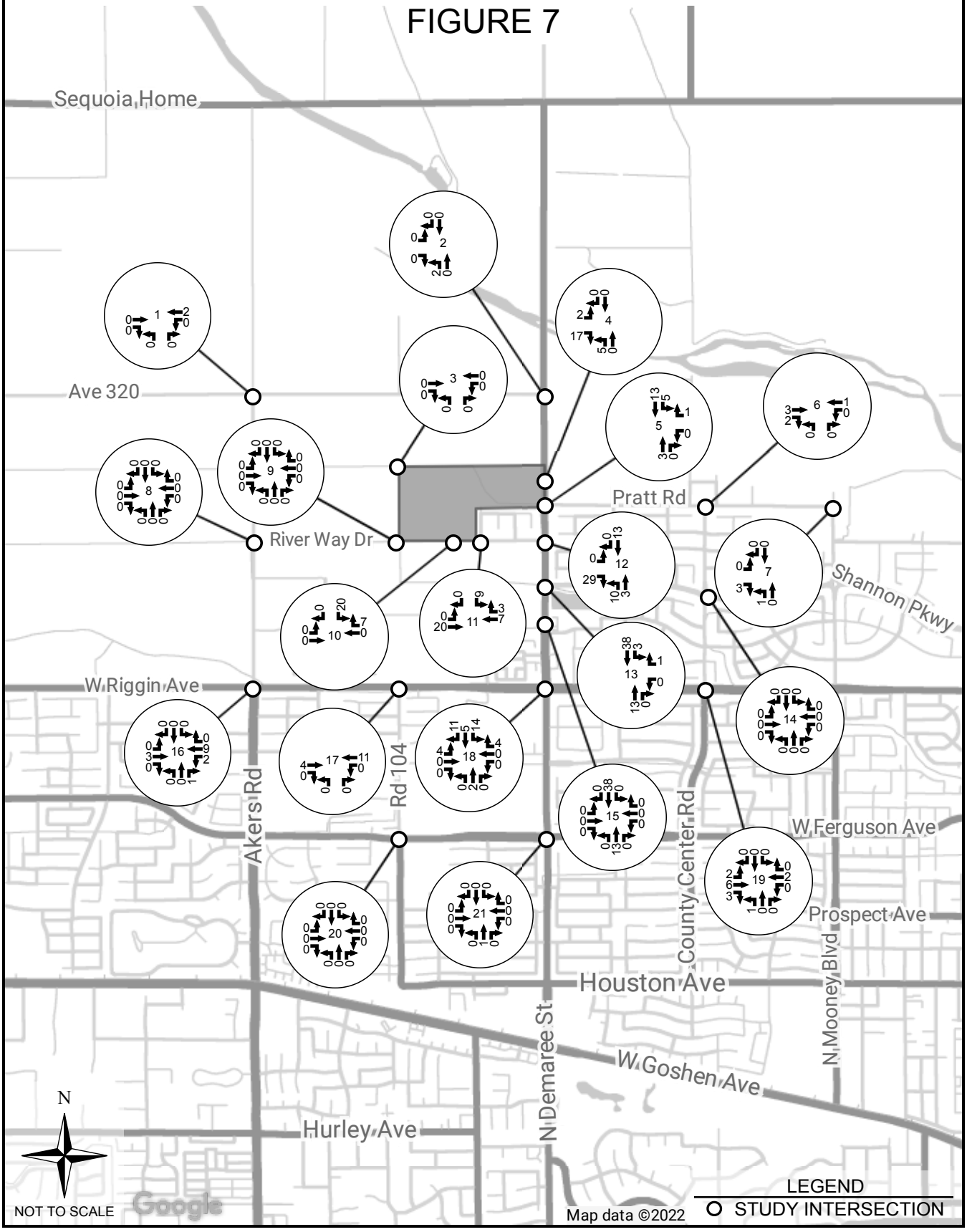
PM PROJECT PHASE 1 PEAK HOUR TRAFFIC

FIGURE 6



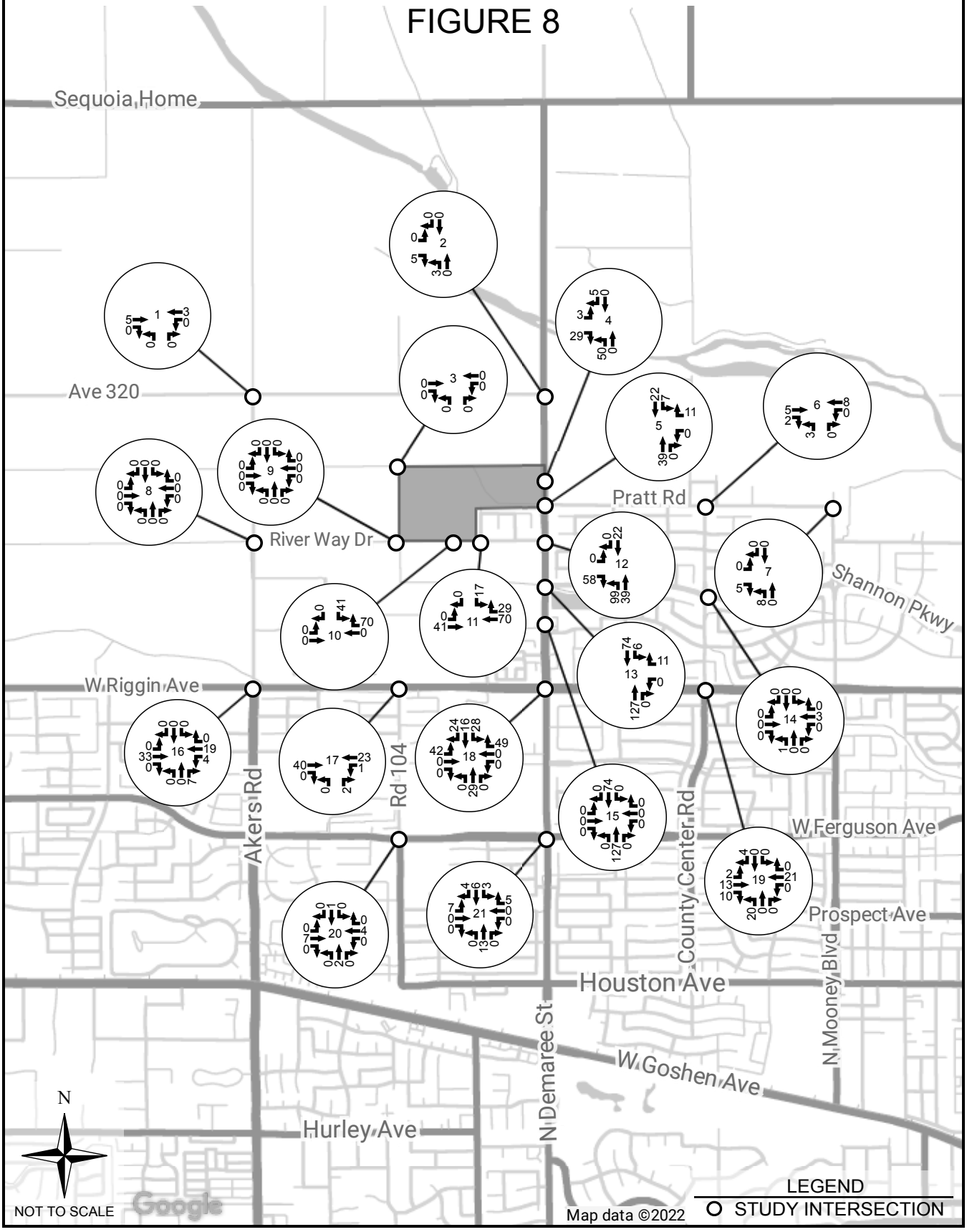
AM PROJECT PHASE 1 PEAK HOUR TRAFFIC

FIGURE 7



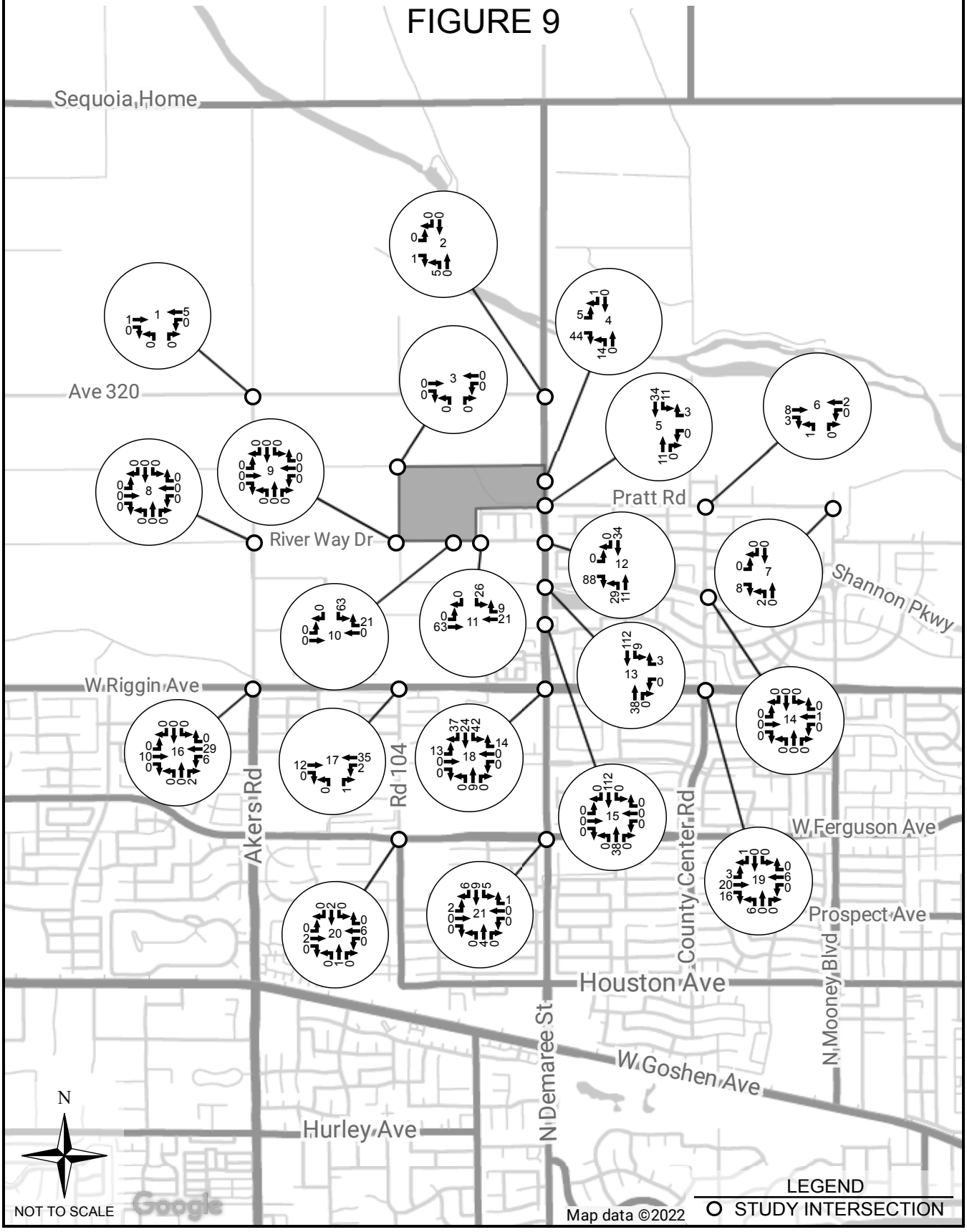
PM PROJECT PHASE 1&2 PEAK HOUR TRAFFIC

FIGURE 8



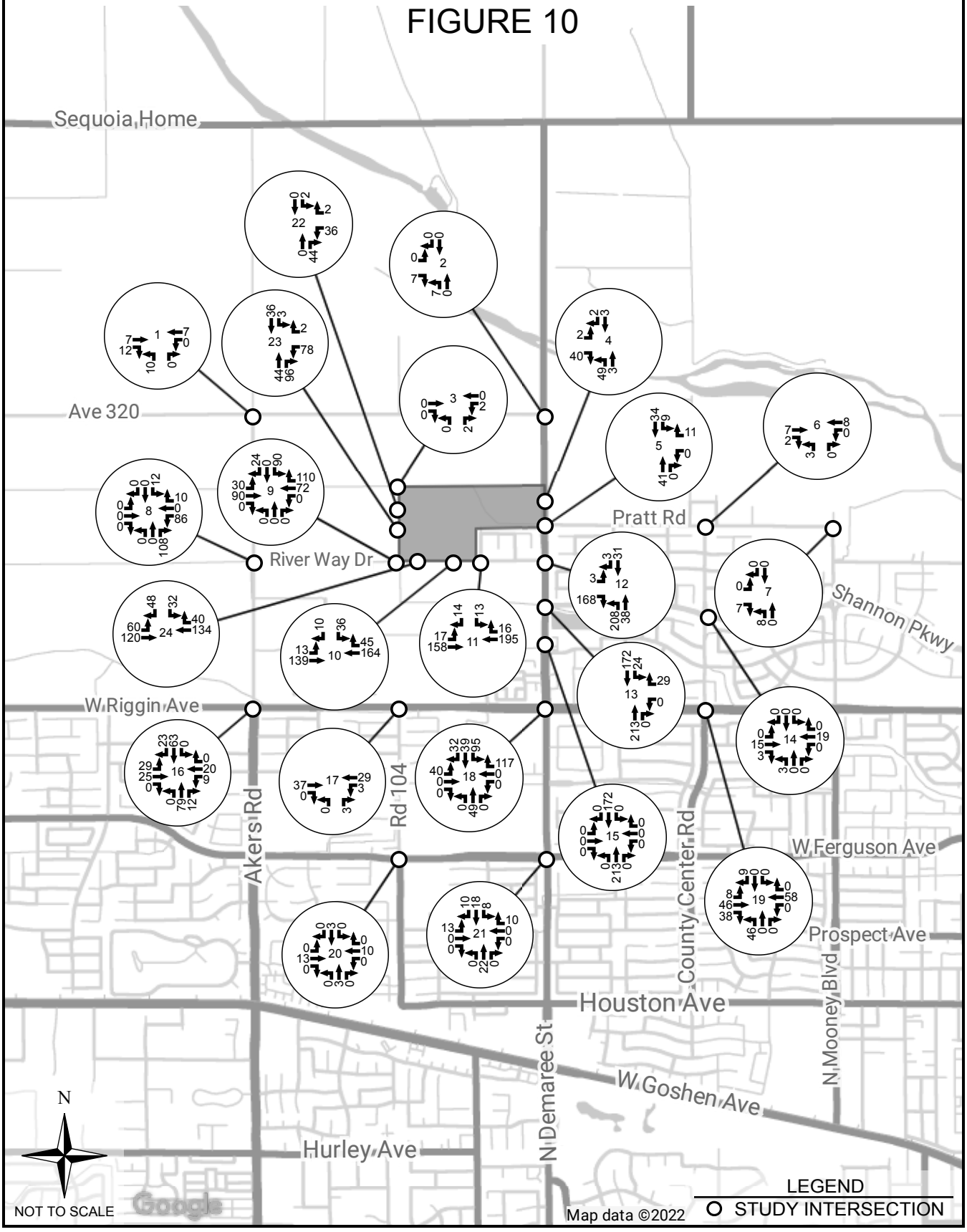
AM PROJECT PHASE 1&2 PEAK HOUR TRAFFIC

FIGURE 9



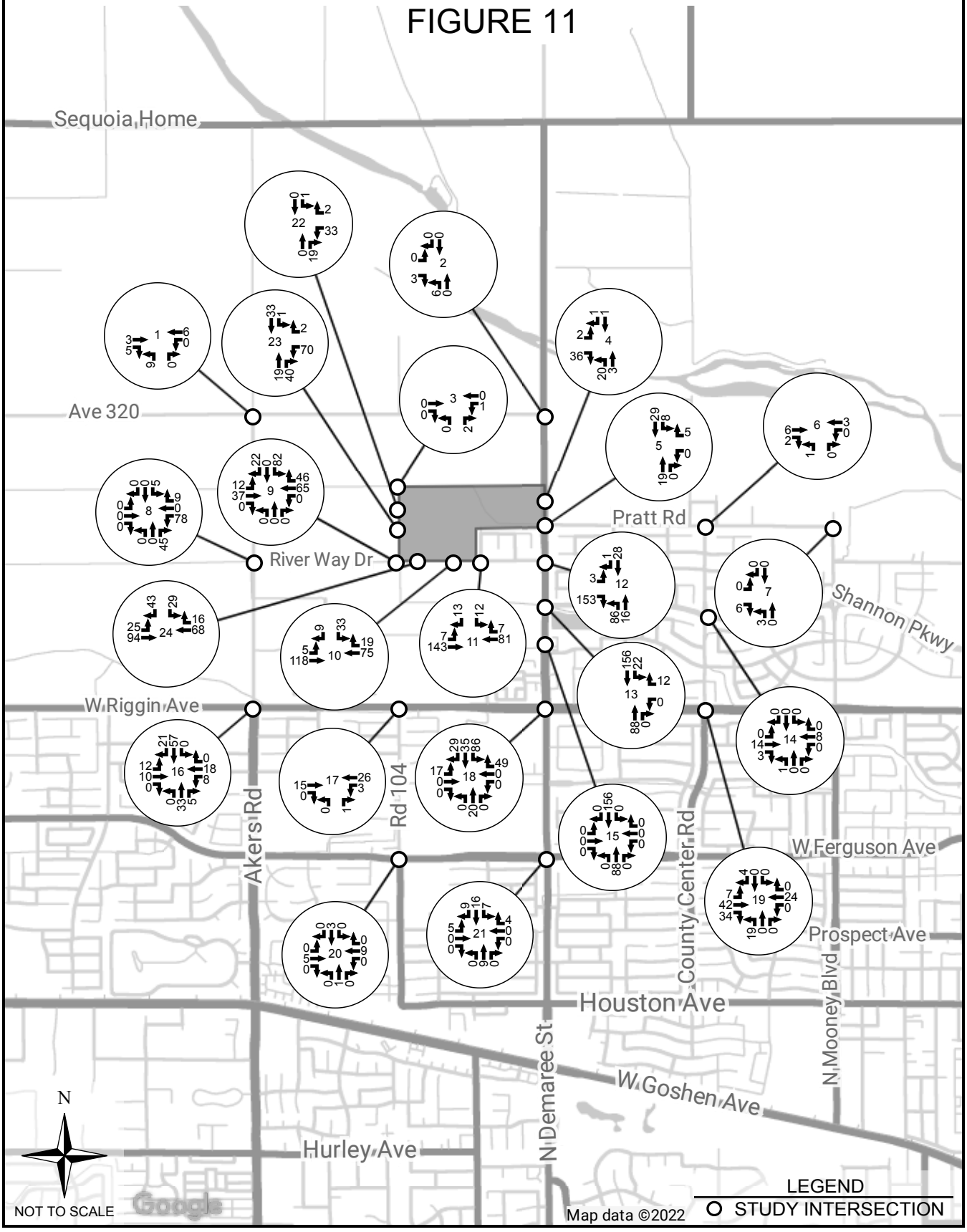
PM PROJECT PHASE 1,2&3 PEAK HOUR TRAFFIC

FIGURE 10

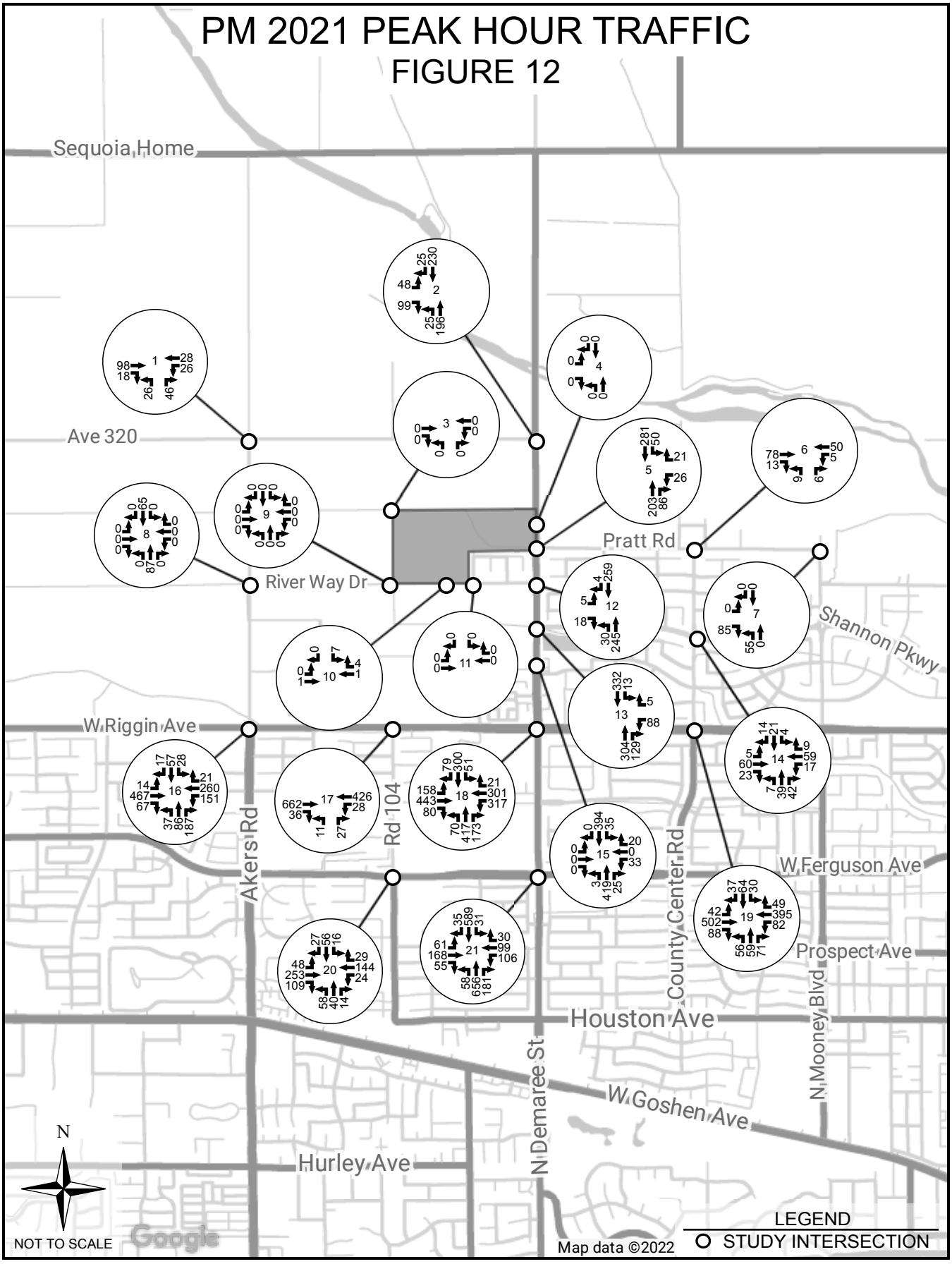


AM PROJECT PHASE 1,2&3 PEAK HOUR TRAFFIC

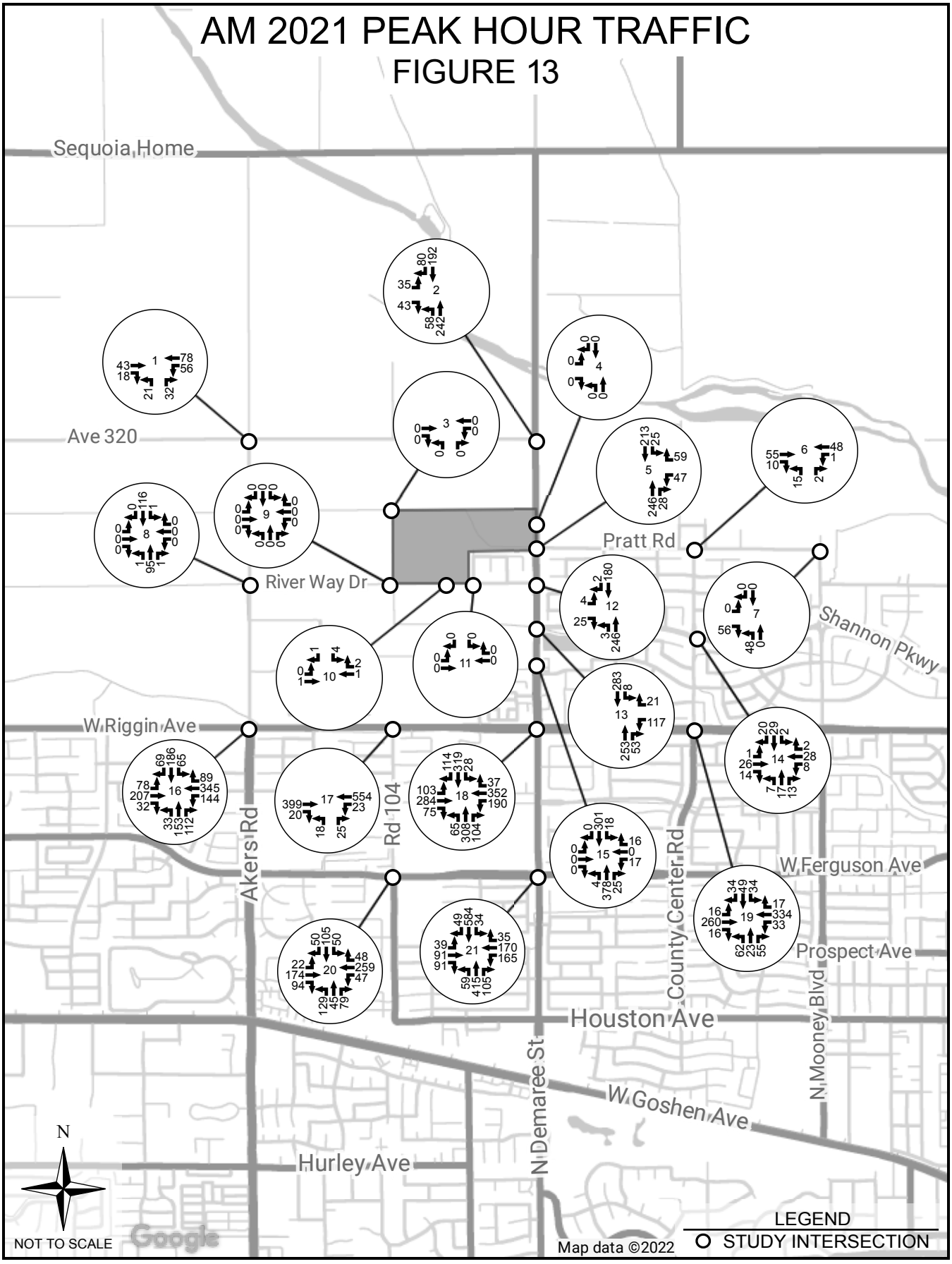
FIGURE 11



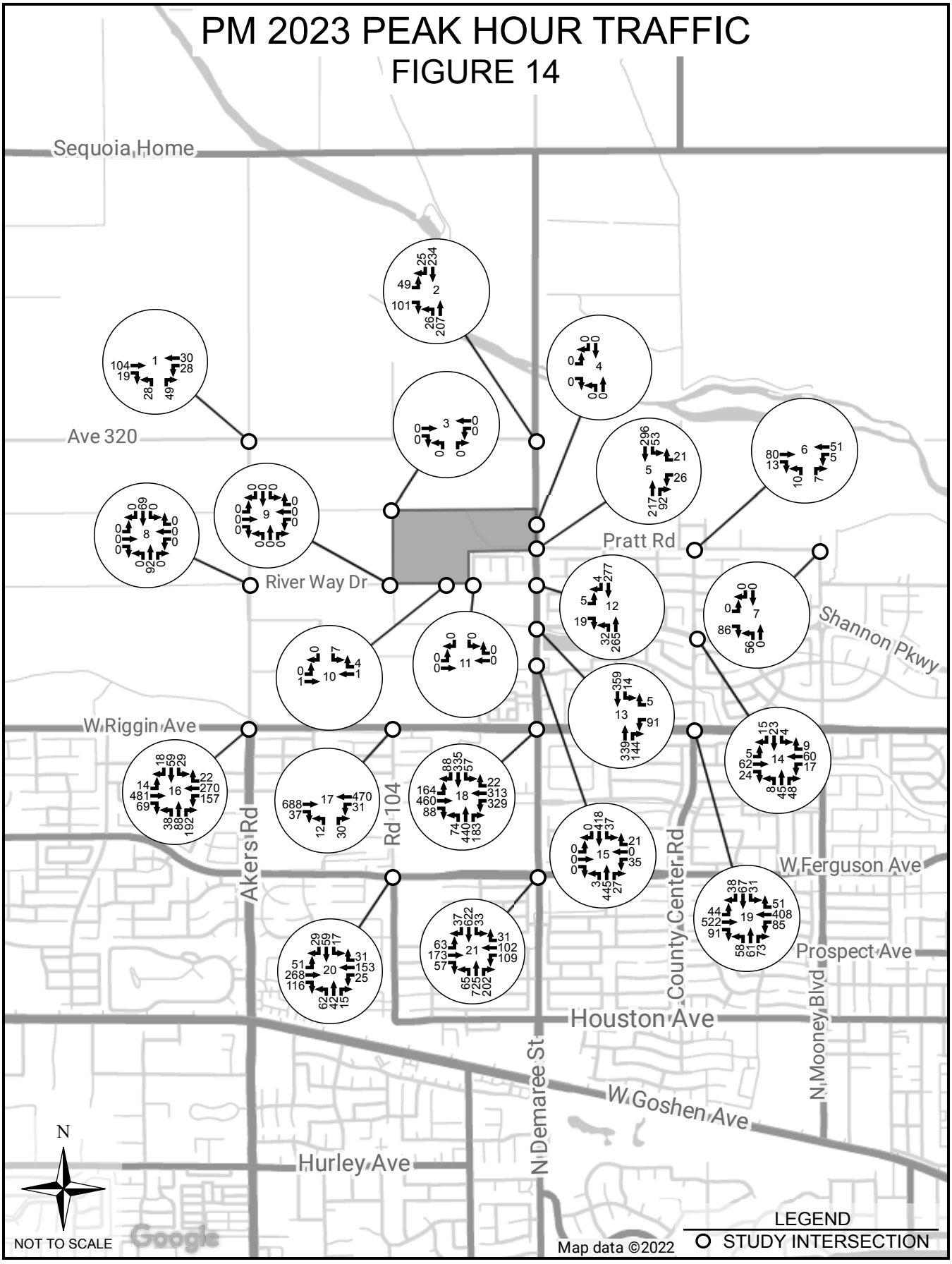
PM 2021 PEAK HOUR TRAFFIC
FIGURE 12



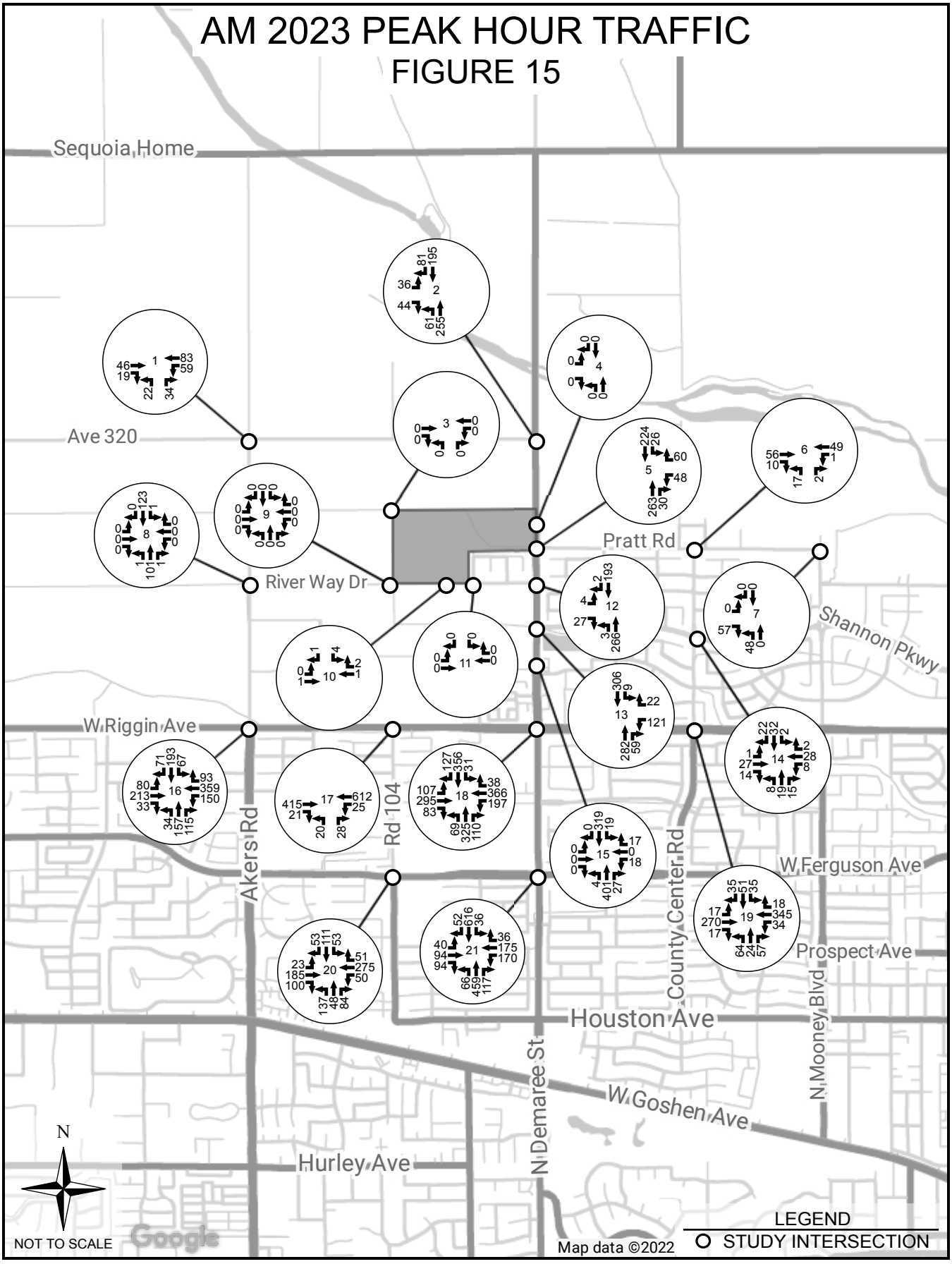
AM 2021 PEAK HOUR TRAFFIC
FIGURE 13



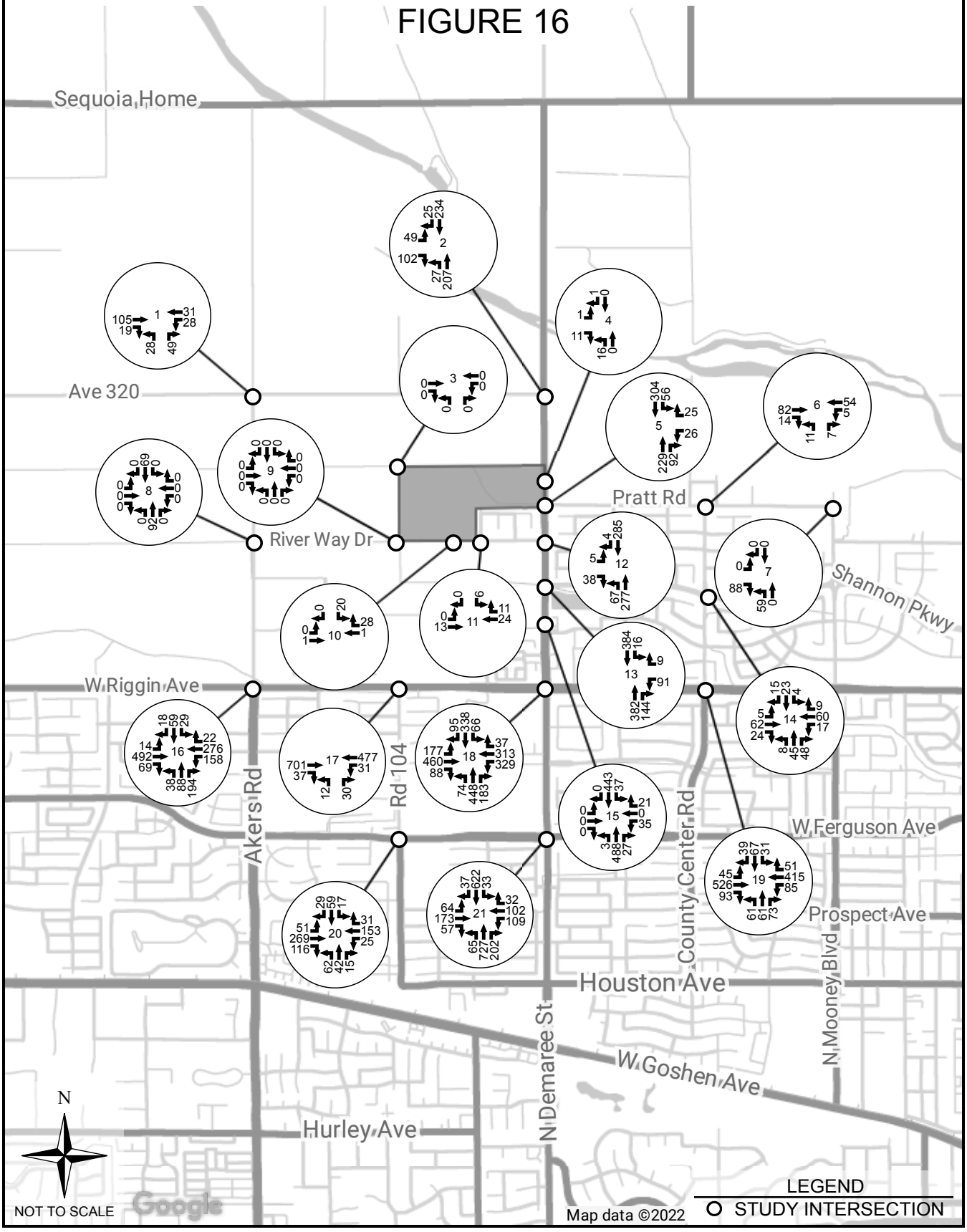
PM 2023 PEAK HOUR TRAFFIC
FIGURE 14



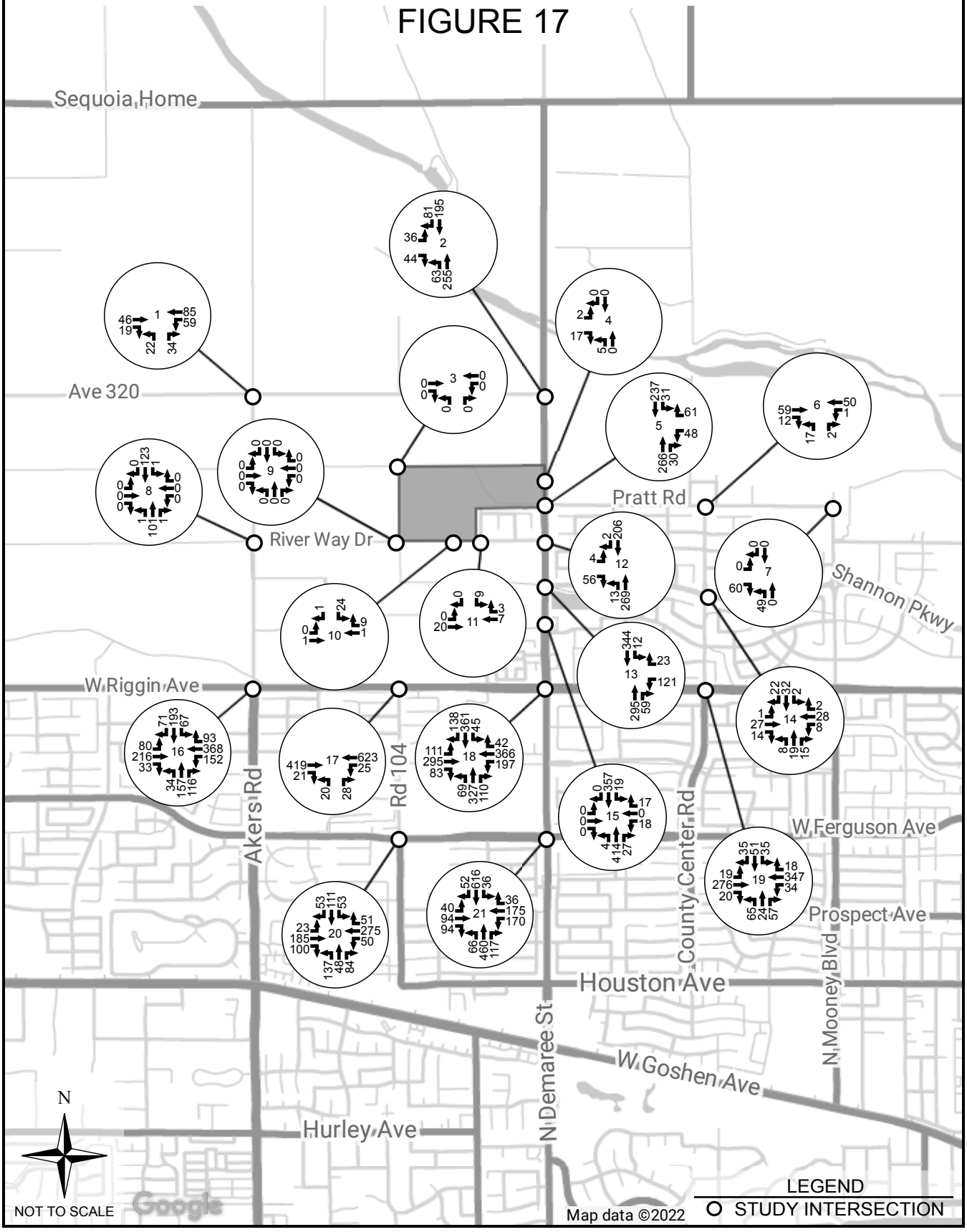
AM 2023 PEAK HOUR TRAFFIC
FIGURE 15



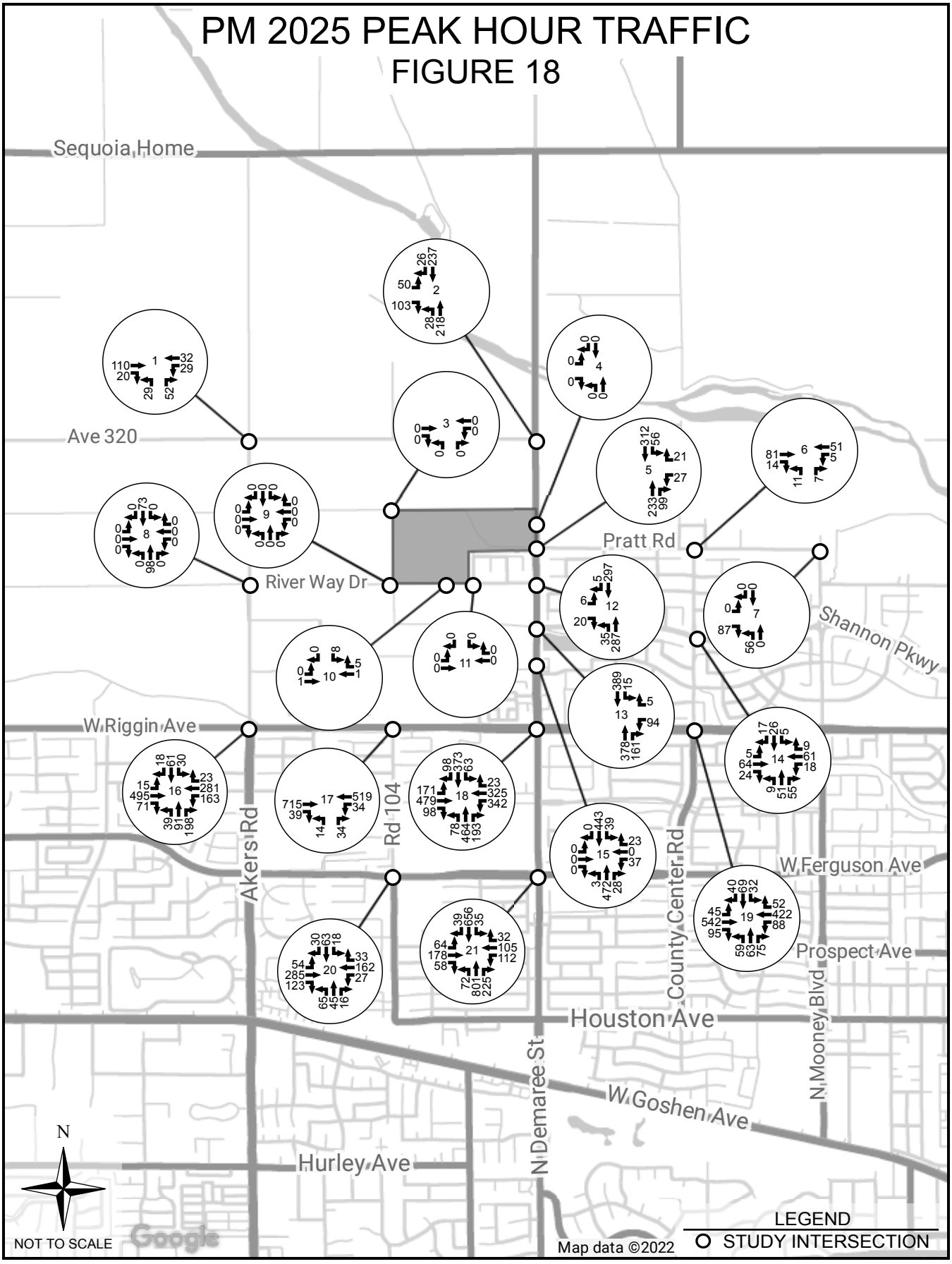
PM 2023+PROJECT PEAK HOUR TRAFFIC
FIGURE 16



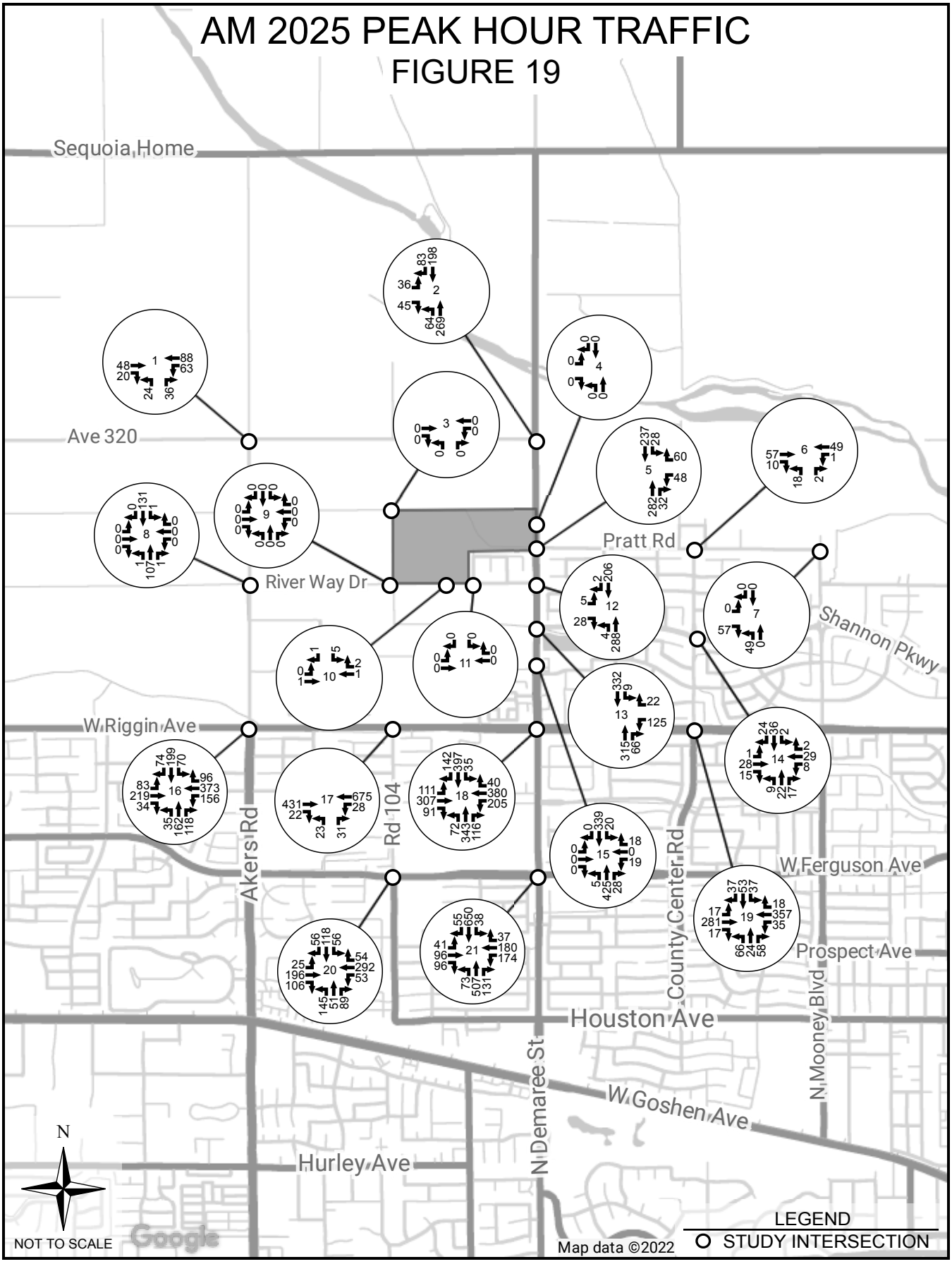
AM 2023+PROJECT PEAK HOUR TRAFFIC
FIGURE 17



PM 2025 PEAK HOUR TRAFFIC
FIGURE 18

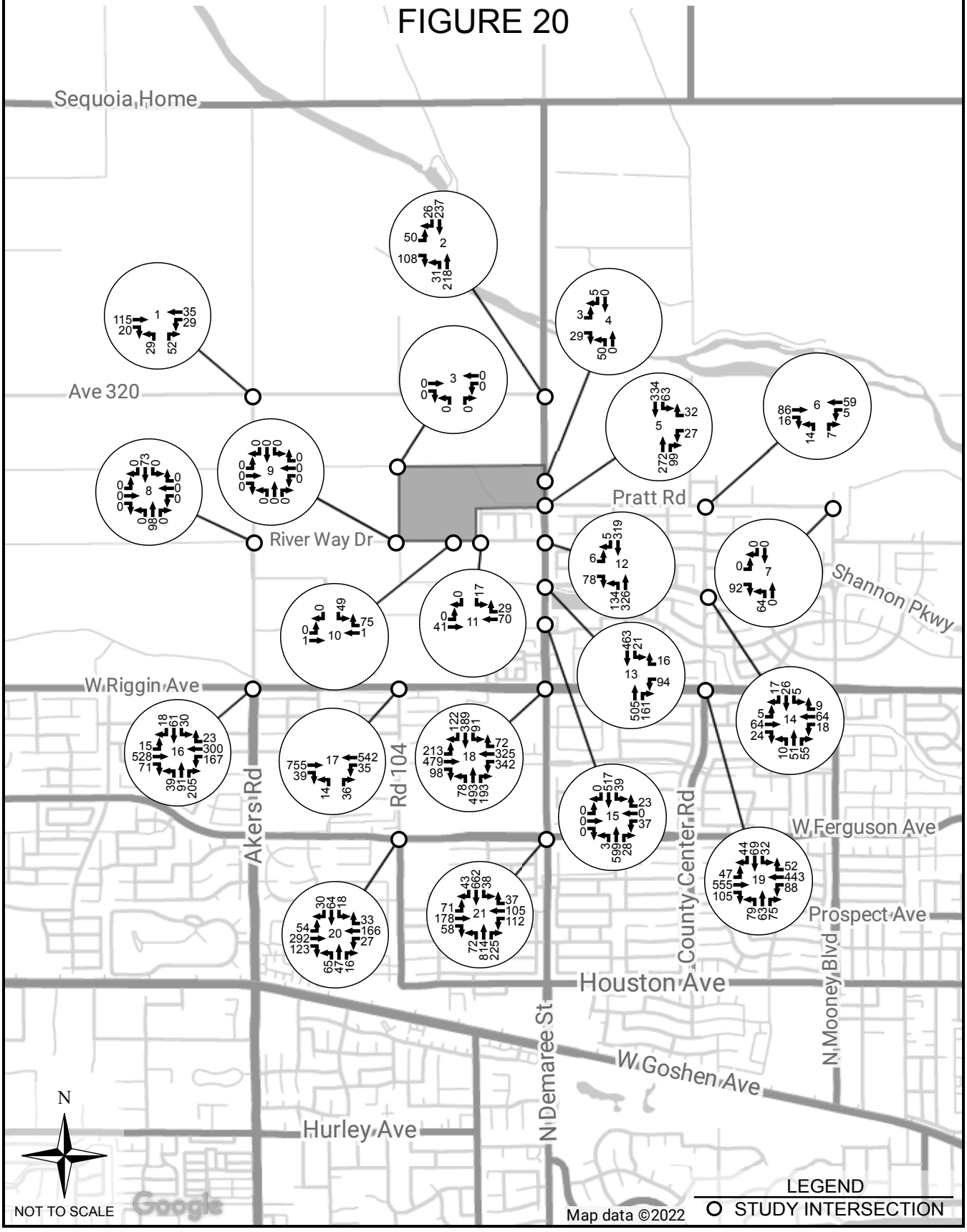


AM 2025 PEAK HOUR TRAFFIC
FIGURE 19

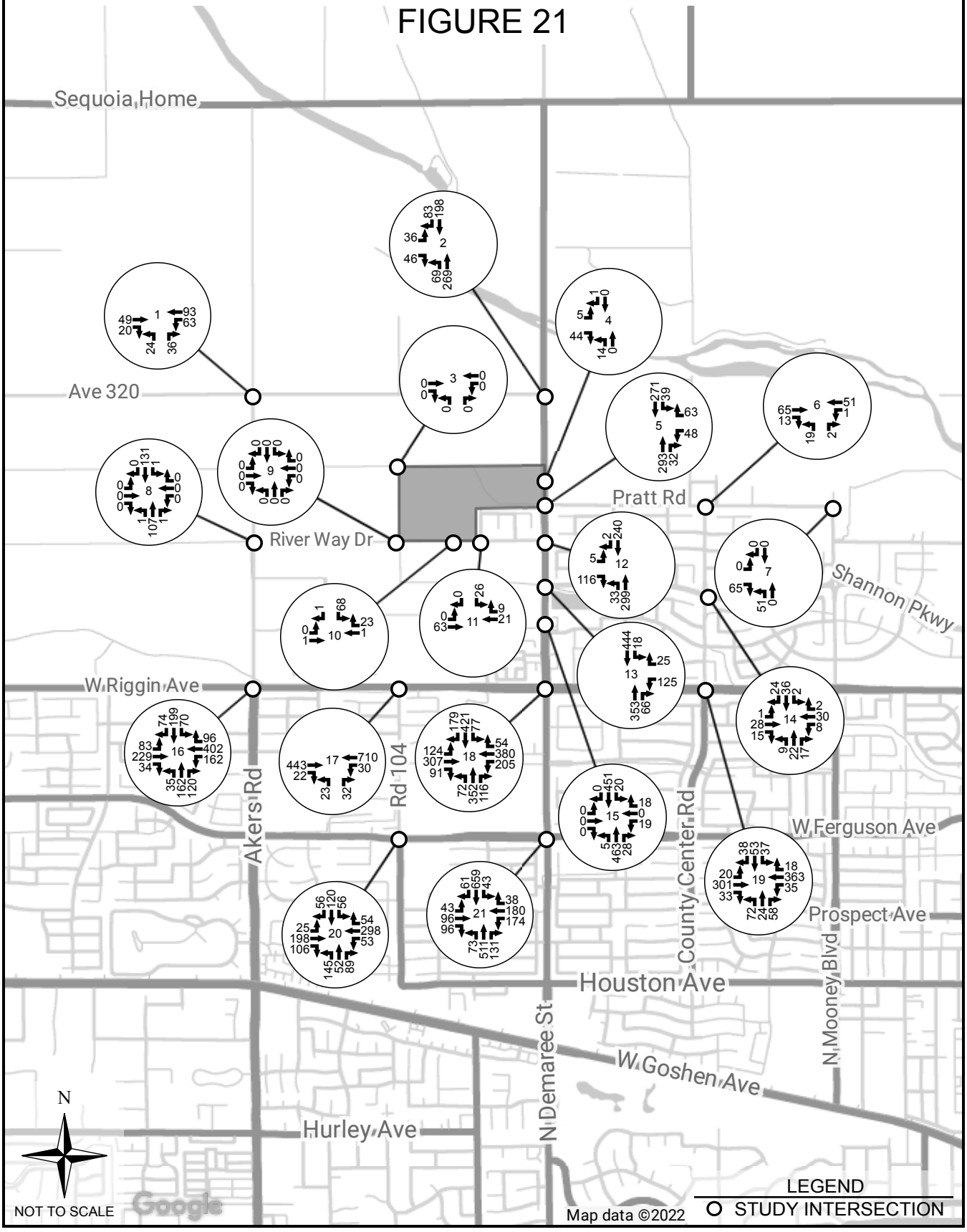


PM 2025+PROJECT PEAK HOUR TRAFFIC

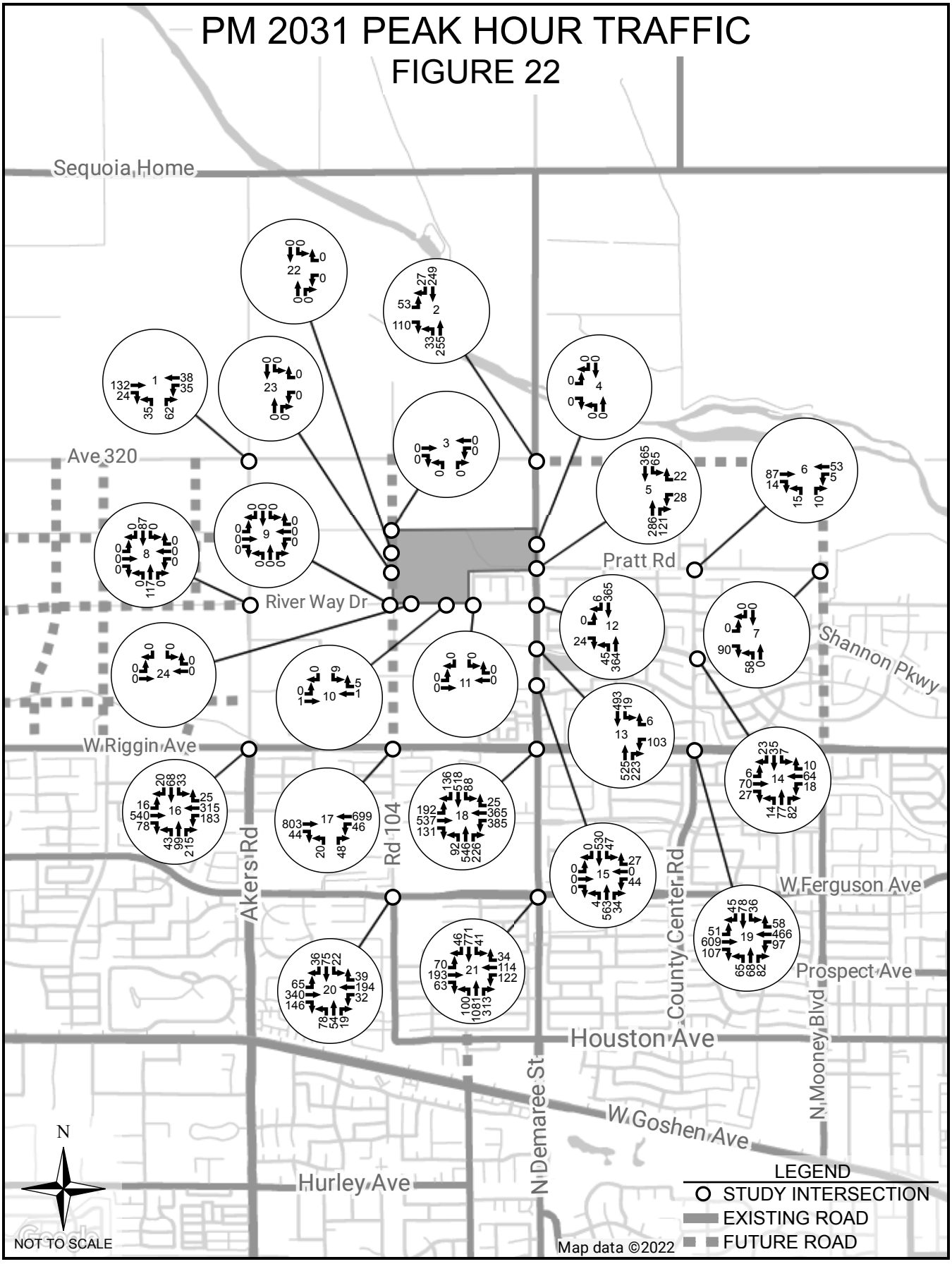
FIGURE 20



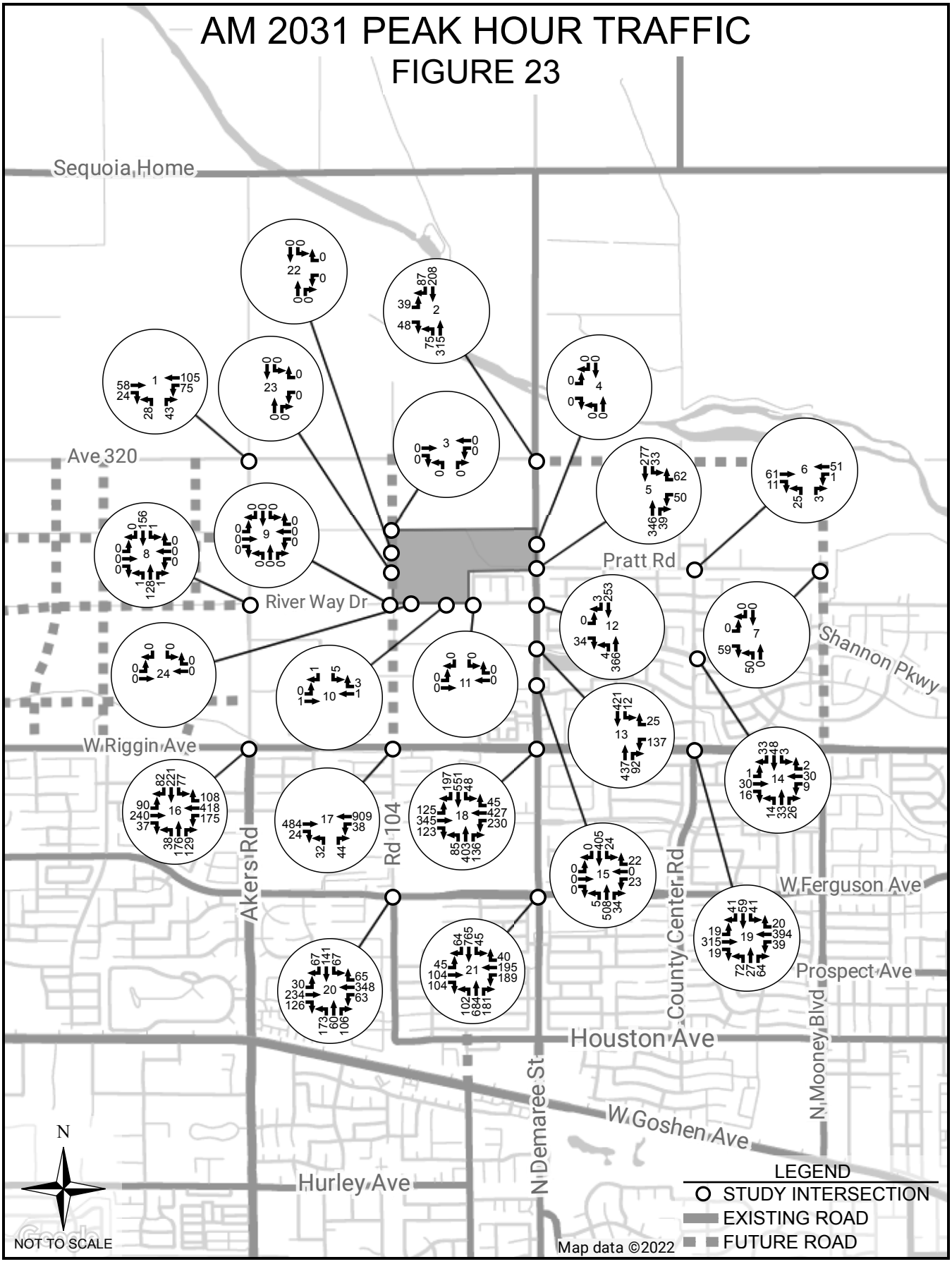
AM 2025+PROJECT PEAK HOUR TRAFFIC
FIGURE 21



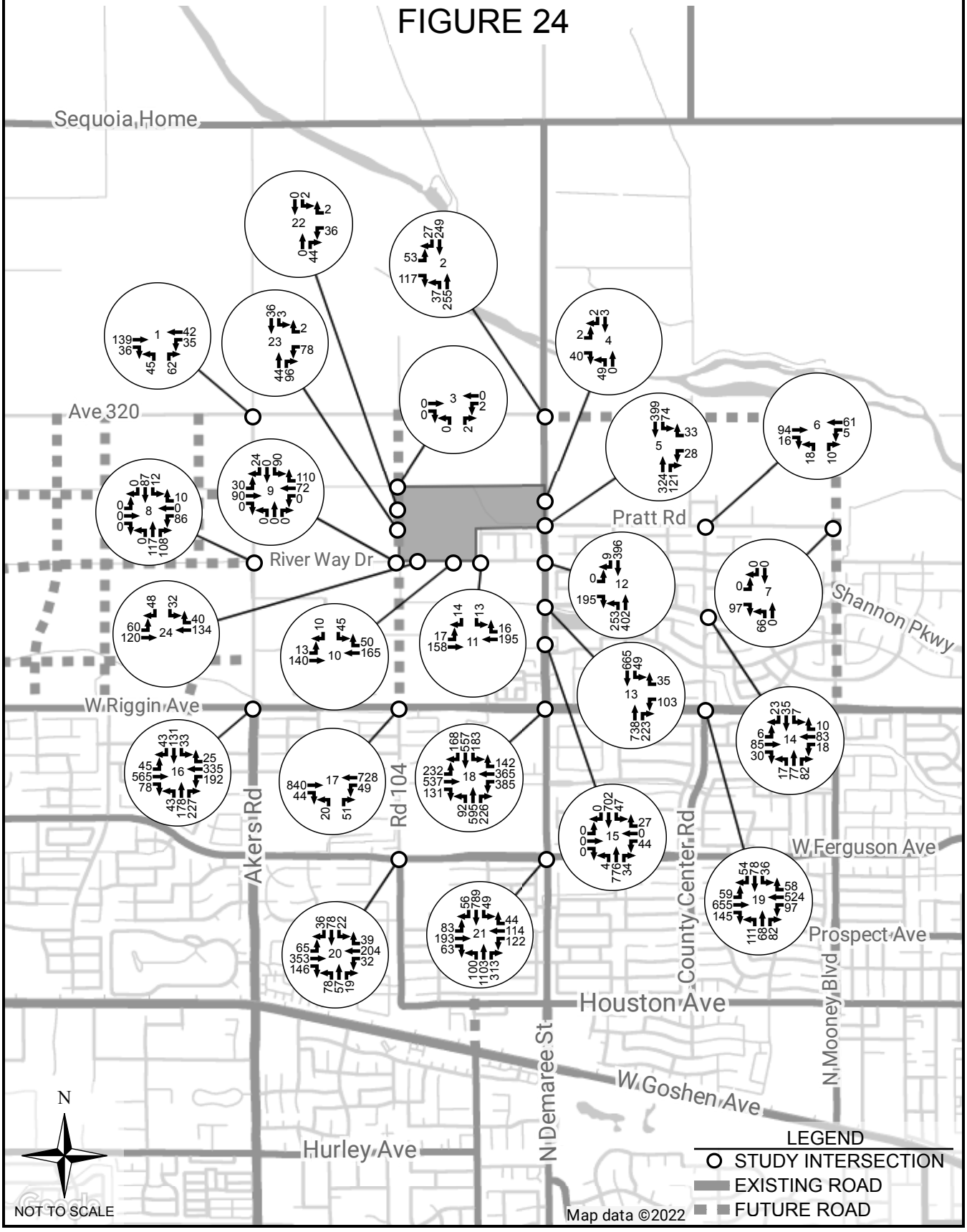
PM 2031 PEAK HOUR TRAFFIC
FIGURE 22



AM 2031 PEAK HOUR TRAFFIC
FIGURE 23

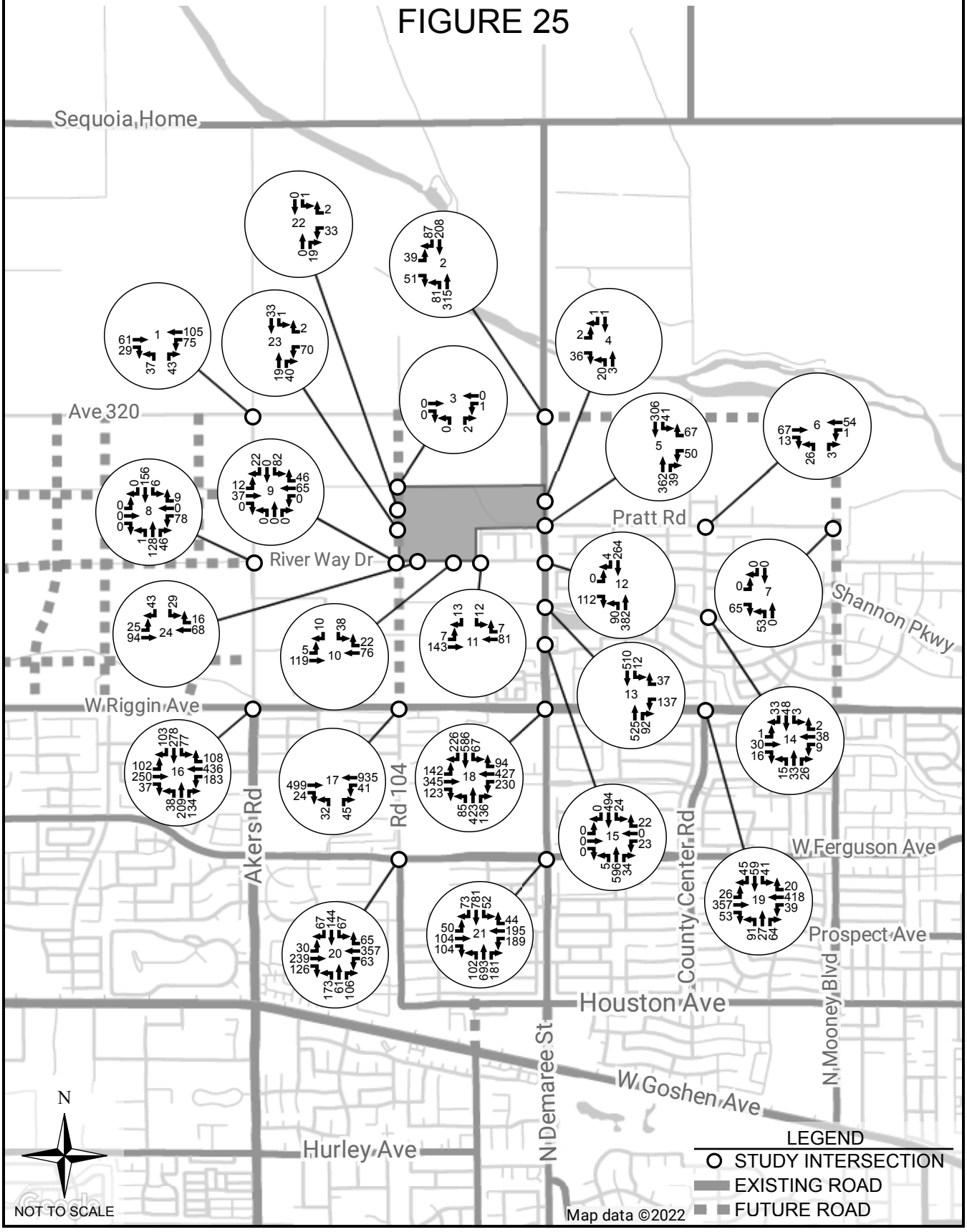


PM 2031+PROJECT PEAK HOUR TRAFFIC
FIGURE 24

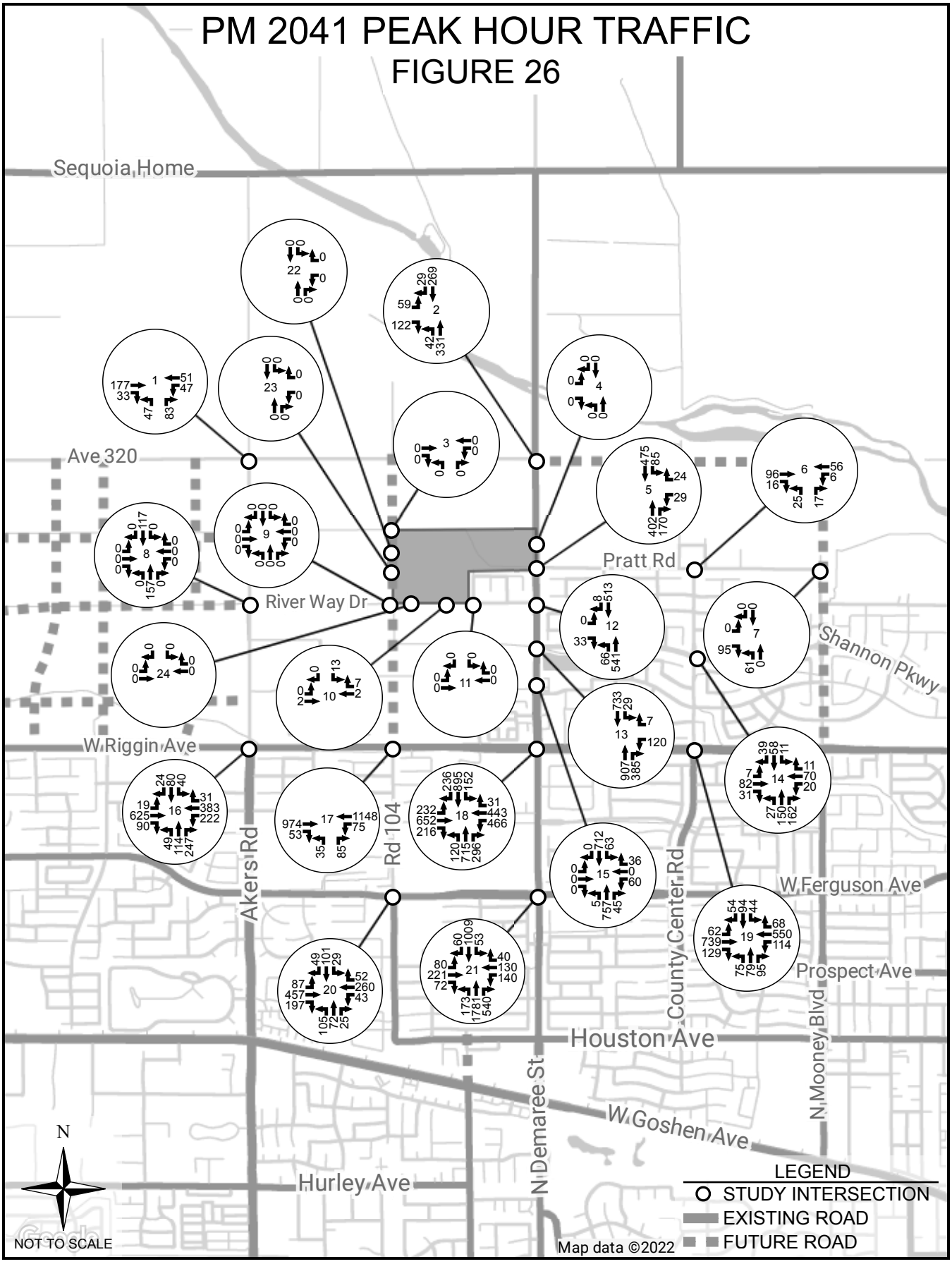


AM 2031+PROJECT PEAK HOUR TRAFFIC

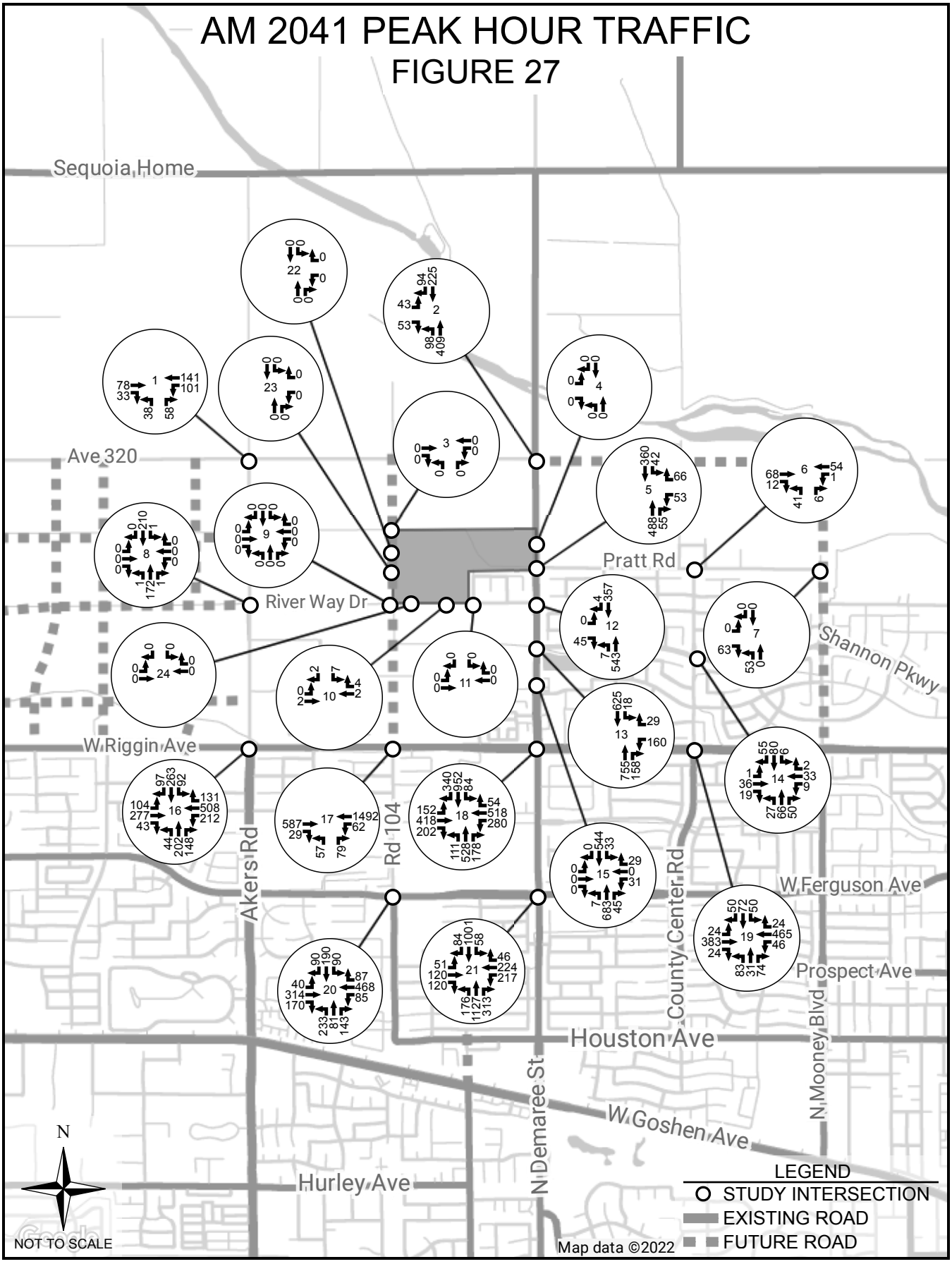
FIGURE 25



PM 2041 PEAK HOUR TRAFFIC
FIGURE 26

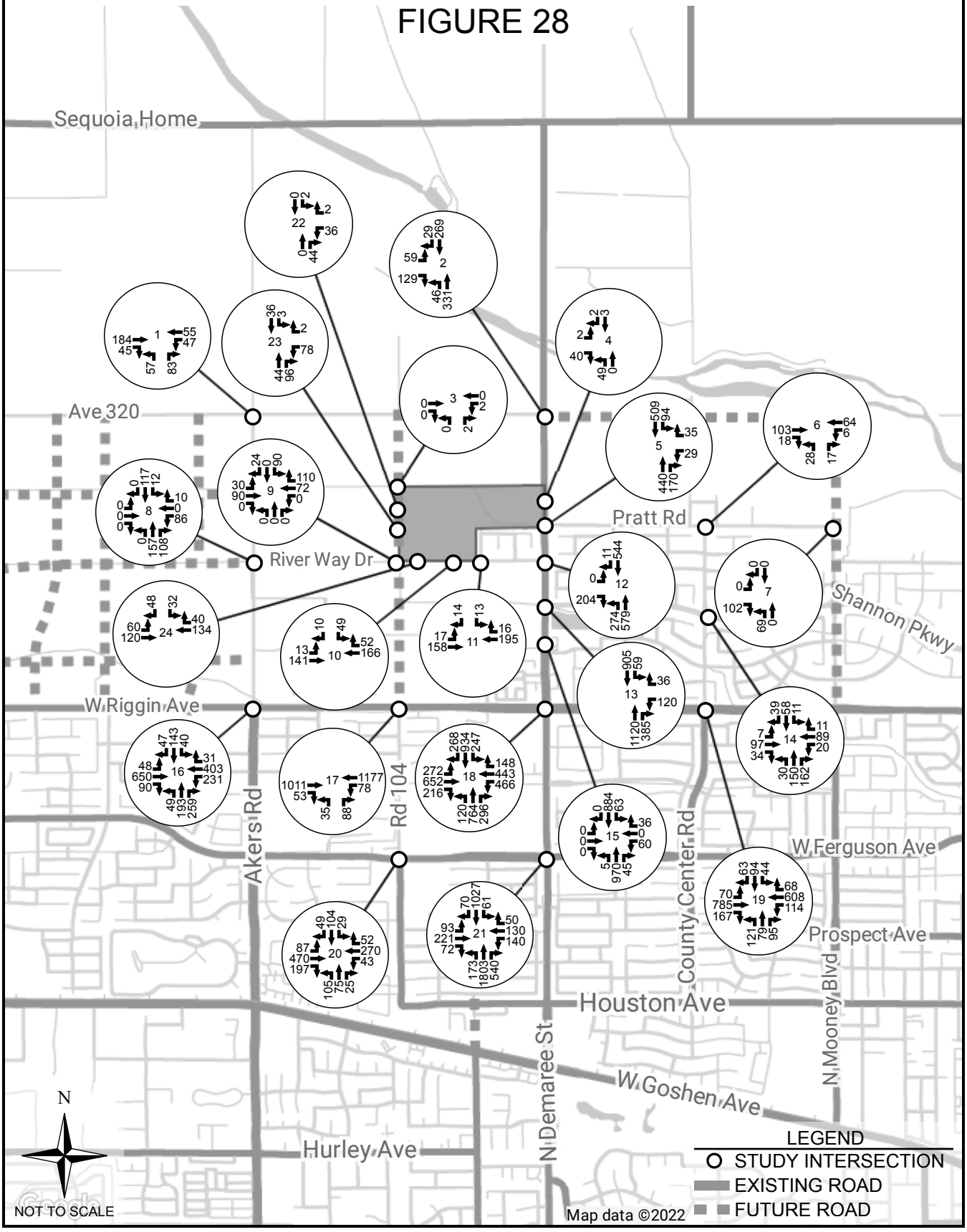


AM 2041 PEAK HOUR TRAFFIC
FIGURE 27

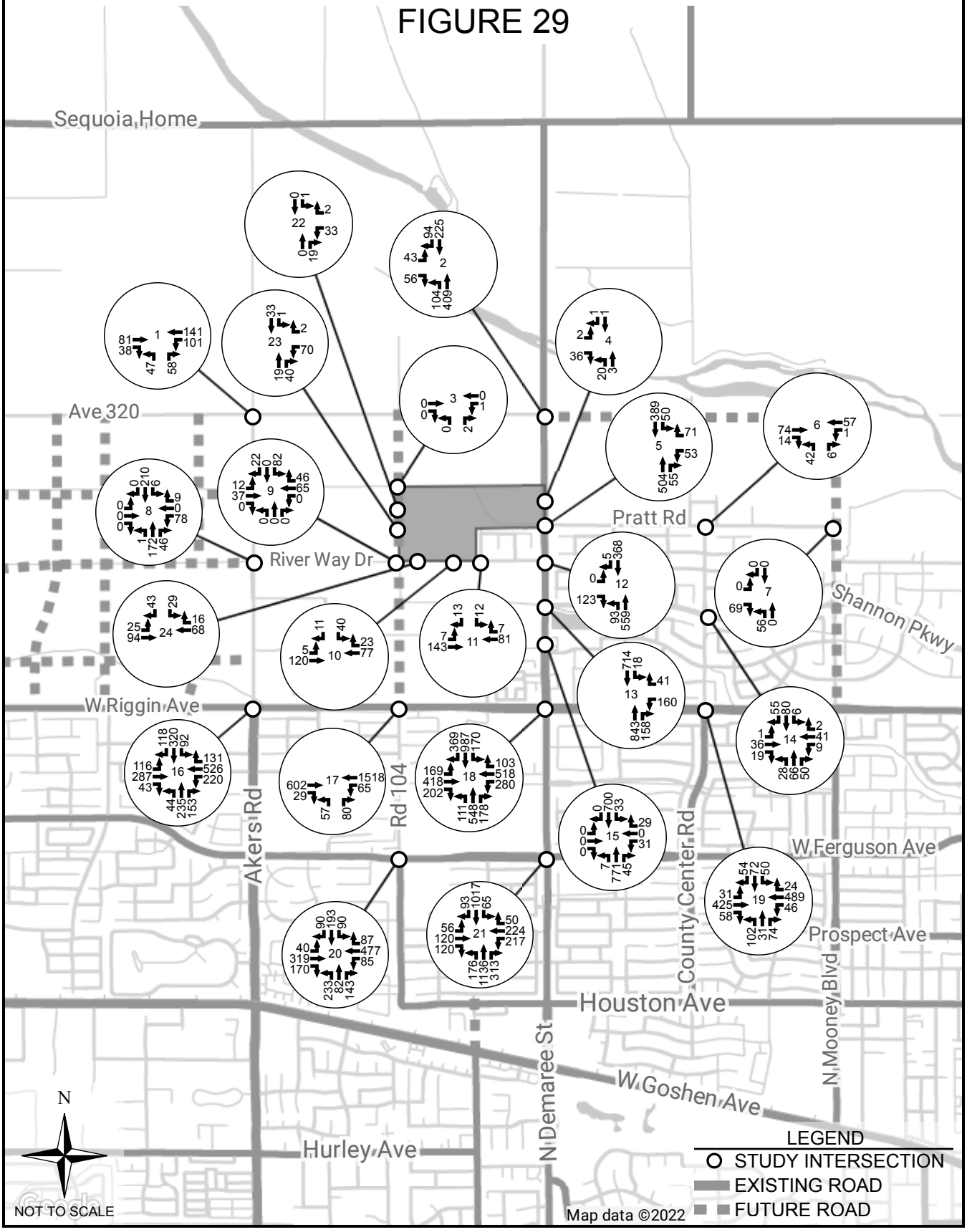


PM 2041+PROJECT PEAK HOUR TRAFFIC

FIGURE 28



AM 2041+PROJECT PEAK HOUR TRAFFIC
FIGURE 29



INTERSECTION ANALYSIS

A capacity analysis of the study intersections was conducted using Synchro software from Trafficware. This software utilizes the 2010 capacity analysis methodology in the Transportation Research Board's Highway Capacity Manual.

Criteria for intersection level of service (LOS) are shown in the tables below.

LEVEL OF SERVICE CRITERIA
UNSIGNALIZED INTERSECTION

Average Control Delay (sec/veh)	Level of Service	Expected Delay to Minor Street Traffic
≤ 10	A	Little or no delay
> 10 and ≤ 15	B	Short traffic delays
> 15 and ≤ 25	C	Average traffic delays
> 25 and ≤ 35	D	Long traffic delays
> 35 and ≤ 50	E	Very long traffic delays
> 50	F	Extreme delays

LEVEL OF SERVICE CRITERIA
SIGNALIZED INTERSECTIONS

Volume/Capacity	Control Delay (sec/veh)	Level of Service
< 0.60	≤ 10	A
0.61 - 0.70	> 10 and ≤ 20	B
0.71 - 0.80	> 20 and ≤ 35	C
0.81 - 0.90	> 35 and ≤ 55	D
0.91 - 1.00	> 55 and ≤ 80	E
> 1.0	> 80	F

Level of service for the study intersections is presented in Tables 3a and 3b. The level of service goal for roadway facilities in Visalia is LOS "D". Intersection delays are shown for all intersections that operate below LOS "D". For intersections operating below LOS D mitigation measures were identified and analyzed to confirm the measures meet the operational threshold. It is noted that two signalized intersections, Demaree Street at Riggin Avenue, and Demaree Street at Ferguson Avenue will operate below LOS D in the future baseline scenarios. The project traffic does not degrade the LOS at either of the intersections when added to the future baseline traffic, therefore the intersections do not require project mitigation.

Table 3a
PM Intersection Level of Service

#	Intersection	Control Type	2021	2023	2023+ Project	2025	2025+ Project	2031	2031+ Project	2031+ Project w/Improvements[1]	2041	2041+ Project	2041+ Project w/Improvements[1]
1	Akers St & Ave 320	NB	A	A	A	A	A	B	B	-	B	B	-
2	Demaree St & Ave 320	EB	B	B	B	B	B	B	B	-	B	B	-
3	Linwood St & Project Road North	NB	A	A	A	A	A	A	A	-	A	A	-
4	Demaree St & Arlet Ave	EB	A	A	A	A	A	A	A	-	A	A	-
5	Demaree St & Pratt Rd	WB	B	B	B	B	B	B	B	-	C	C	-
6	County Center St & Pratt Rd	NB	A	A	A	A	A	A	A	-	A	A	-
7	Mooney Blvd & Pratt Rd	SB	A	A	A	A	A	A	A	-	A	A	-
8	Akers St & Shannon Prkwy	AWSC	A	A	A	A	A	A	A	-	A	A	-
9	Linwood St & Shannon Prkwy	EB WB	A A	A A	A A	A A	A A	A A	A A	- -	A A	A A	- -
9	Linwood St & Shannon Prkwy[2]	Roundabout	A	A	A	A	A	A	A	-	A	A	-
10	Project Entrance/ River Way Dr	SB	A	A	A	A	A	A	B	-	A	B	-
11	N Chinowth St/ River Way Dr	SB	A	A	A	A	A	A	B	-	A	B	-
12	Demaree St & River Way Dr	EB	B	B	B	B	B	B	C	-	B	C	-
13	Demaree St & Shannon Pkwy	WB	C	C	C	C	D	D	F (93.3)	-	F (>300)	F (>300)	-
		Signal	-	-	-	-	-	-	-	A	-	-	A
14	County Center St & Shannon Pkwy	Roundabout	A	A	A	A	A	A	A	-	A	A	-
15	Demaree St & Flagstaff Ave	EB WB	A B	A B	A C	A B	A D	A D	A F (56.4)	-	A F (96.0)	A F (>300)	-
		Signal	-	-	-	-	-	-	-	A	-	-	A
16	Akers St & Riggin Ave	Signal	D	D	D	D	D	D	D	-	D	D	-
17	Linwood St & Riggin Ave	NB	C	C	C	C	D	D	E (39.9)	-	F (>300)	F (>300)	-
		Signal	-	-	-	-	-	-	-	B	-	-	F (135.4)
18	Demaree St & Riggin Ave	Signal	D	D	D	D	D	D	D	-	E (61.7)	E (77.4)	-
19	County Center St & Riggin Ave	AWSC	C	C	C	C	D	E (35.3)	E (47.5)	-	F (54.1)	F (56.6)	-
		Signal	-	-	-	-	-	-	-	-	-	-	B

[1]Mitigation measures shown in Table 6

[2]Linwood St & Shannon Prkwy was analyzed for both stop-controlled and roundabout conditions pursuant to the City of Visalia NW Quadrant Traffic Circulation Plan.

Table 3a Continued
PM Intersection Level of Service

#	Intersection	Control Type	2021	2023	2023+ Project	2025	2025+	2031	2031+ Project	2031+ Project w/Improvements[1]	2041	2041+ Project	2041+ Project w/Improvements[1]
20	Linwood St & Ferguson Ave	AWSC	A	A	A	B	B	B	B	-	C	C	-
21	Demaree St & Ferguson Ave	Signal	D	D	D	D	D	D	D	-	F (88.5)	F (90.7)	-
22	Linwood St & Residential Driveway	WB	A	A	A	A	A	A	A	-	A	A	-
23	Linwood St & Commercial Driveway	WB	-	-	-	-	-	A	A	-	A	A	-
24	Commercial Driveway & Shannon Prkwy	SB	-	-	-	-	-	A	A	-	A	A	-

[1]Mitigation measures shown in Table 6

Table 3b
AM Intersection Level of Service

#	Intersection	Control Type	2021	2023	2023+ Project	2025	2025+	2031	2031+ Project	2031+ Project w/Improvements[1]	2041	2041+ Project	2041+ Project w/Improvements[1]
1	Akers St & Ave 320	NB	A	A	A	A	A	B	B	-	B	B	-
2	Demaree St & Ave 320	EB	B	B	B	B	B	B	B	-	C	C	-
3	Linwood St & Project Road North	NB	A	A	A	A	A	A	A	-	A	A	-
4	Demaree St & Arlet Ave	EB	A	A	A	A	A	A	A	-	A	A	-
5	Demaree St & Pratt Rd	WB	B	B	B	B	B	B	B	-	C	C	-
6	County Center St & Pratt Rd	NB	A	A	A	A	A	A	A	-	A	A	-
7	Mooney Blvd & Pratt Rd	SB	A	A	A	A	A	A	A	-	A	A	-
8	Akers St & Shannon Prkwy	AWSC	A	A	A	A	A	A	A	-	A	A	-
9	Linwood St & Shannon Prkwy	EB	A	A	A	A	A	A	A	-	A	A	-
		WB	A	A	A	A	A	A	A	-	A	A	-
9	Linwood St & Shannon Prkwy[3]	Roundabout	A	A	A	A	A	A	A	-	A	A	-
10	Project Entrance/ River Way Dr	SB	A	A	A	A	A	A	A	-	A	A	-
11	N Chinowth St/ River Way Dr	SB	A	A	A	A	A	A	A	-	A	A	-
12	Demaree St & River Way Dr	EB	A	A	A	A	B	B	B	-	B	B	-
13	Demaree St & Shannon Pkwy	WB	B	B	B	C	C	C	E (39.8)	-	F (156.3)	F (>300)	-
		Signal	-	-	-	-	-	-	-	A	-	-	A
14	County Center St & Shannon Pkwy	Roundabout	A	A	A	A	A	A	A	-	A	A	-
15	Demaree St & Flagstaff Ave	EB	A	A	A	A	A	A	A	-	A	A	-
		WB	B	B	B	B	C	C	C	-	D	E (38.2)	
		Signal	-	-	-	-	-	-	-	-	-	-	A
16	Akers St & Riggin Ave	Signal	D	D	D	D	D	D	D	-	D	D	-
17	Linwood St & Riggin Ave	NB	B	B	C	C	C	E (36.7)	E (40.6)	-	F (>300)	F (>300)	-
		Signal	-	-	-	-	-	-	-	B	-	-	C
18	Demaree St & Riggin Ave	Signal	D	D	D	D	D	D	D	-	E (68.9)	E (74.6)	-
19	County Center St & Riggin Ave	AWSC	B	B	B	B	B	B	B	-	B	C	-
		Signal	-	-	-	-	-	-	-	-	-	-	C[2]

[1]Mitigation measures shown in Table 6
[2]Mitigation necessary due to PM Peak Hour Traffic
[3]Linwood St & Shannon Prkwy was analyzed for both stop-controlled and roundabout conditions pursuant to the City of Visalia NW Quadrant Traffic Circulation Plan.

Table 3b Continued
AM Intersection Level of Service

#	Intersection	Control Type	2021	2023	2023+ Project	2025	2025+	2031	2031+ Project	2031+ Project w/Improvements[1]	2041	2041+ Project	2041+ Project w/Improvements[1]
20	Linwood St & Ferguson Ave	AWSC	B	B	B	B	B	B	B	-	D	D	-
21	Demaree St & Ferguson Ave	Signal	D	D	D	D	D	D	D	-	D	D	-
22	Linwood St & Residential Driveway	WB	-	-	-	-	-	A	A	-	A	A	-
23	Linwood St & Commercial Driveway	WB	-	-	-	-	-	A	A	-	A	A	-
24	Commercial Driveway & Shannon Prkwy	SB	-	-	-	-	-	A	A	-	A	A	-

[1]Mitigation measures shown in Table 6

TRAFFIC SIGNAL WARRANT ANALYSIS

In accordance with the City of Visalia policy, intersections were evaluated for Warrant #1 (Eight-Hour Vehicular Volume) in accordance with the California Manual on Uniform Traffic Control Devices (MUTCD). Signal warrant analysis results are shown in Table 4. Traffic signals would be considered at intersections which meet the signal warrant and are not able to be mitigated by adding capacity to intersections with additional lanes. Warrant analysis was performed on arterial and collector street intersections. Count data for signal warrant analysis was obtained in March and May of 2022. The count data is included in the appendix.

Table 4
8-Hour Traffic Signal Warrants

#	Intersection	Existing	2023	2023+ Project Phase 1	2025	2025+ Project Phase 1&2	2031	2031+ Project Phase 1,2&3	2041	2031+ Project Phase 1,2&3
1	Akers St at Ave 320	NO	NO	NO	NO	NO	NO	NO	NO	NO
2	Demaree St at Ave 320	NO	NO	NO	NO	NO	NO	NO	YES	YES
4	Demaree St at Arlet Ave	NO	NO	NO	NO	NO	NO	NO	NO	NO
5	Demaree St at Pratt Rd	NO	NO	NO	NO	NO	NO	NO	YES	YES
6	County Center St at Pratt Rd	NO	NO	NO	NO	NO	NO	NO	NO	NO
13	Demaree St at Shannon Pkwy	NO	NO	YES	YES	YES	YES	YES	YES	YES
15	Demaree St at Flagstaff Ave	NO	NO	NO	YES	YES	YES	YES	YES	YES
17	Linwood St at Riggin Ave	NO	NO	NO	NO	NO	NO	NO	YES	YES
19	County Center St at Riggin Ave	YES	YES	YES	YES	YES	YES	YES	YES	YES
20	Linwood St at Ferguson Ave	NO	NO	NO	NO	NO	NO	NO	NO	NO

QUEUE LENGTH ANALYSIS

Existing volumes and future volumes, both with and without project traffic were used to analyze turn movements at all intersections. Queue length analysis was conducted using the equations provided in the City of Visalia Traffic Guidelines. The results of the queue length analysis are shown in Tables 5a and 5b below.

Table 5a
PM Queue Length Analysis – Phase I

#	Intersection	Turn Movement	Storage Capacity	2021			2023			2023+ Project		
				Cycle	VOL	CAP	Cycle	VOL	CAP	Cycle	VOL	CAP
5	Demaree St & Pratt Rd	WBR	200	-	21	18	-	26	22	-	25	21
		NBR	375	-	86	72	-	92	77	-	92	77
6	County Center St & Pratt Rd	WBL	125	-	5	4	-	5	4	-	5	4
		NBL	235	-	6	5	-	7	6	-	7	6
12	Demaree St & River Way Dr	NBL	175	-	30	25	-	32	27	-	67	56
13	Demaree St & Shannon Pkwy	SBL	105	-	13	11	-	15	13	-	16	13
16	Akers St & Riggin Ave	EBL	305	120	14	23	120	14	23	120	14	23
		EBR	305	120	67	112	120	69	115	120	69	115
		WBL	305	120	151	252	120	157	262	120	158	263
		WBR	305	120	21	35	120	22	37	120	22	37
		NBL	305	120	37	62	120	38	63	120	38	63
		NBR	305	120	187	**312**	120	192	**320**	120	194	**323**
		SBL	300	120	28	47	120	29	48	120	29	48
		SBR	155	120	17	28	120	18	30	120	18	30
18	Demaree St & Riggin Ave	EBL	280	120	158	263	120	164	273	120	177	295
		EBR	155	120	80	133	120	88	147	120	88	147
		WBL	155	120	317	**528**	120	329	**548**	120	329	**548**
		WBR	155	120	21	35	120	22	37	120	37	62
		NBL	255	120	70	117	120	74	123	120	74	123
		SBL	210	120	51	85	120	57	95	120	66	110
19	County Center St & Riggin Ave	EBL	250	-	42	35	-	44	37	-	45	38
		WBL	160	-	82	68	-	85	71	-	85	71
		NBL	195	-	56	47	-	58	48	-	61	51
		SBL	130	-	30	25	-	31	26	-	31	26
		SBR	130	-	37	31	-	38	32	-	39	33
20	Linwood St & Ferguson Ave	EBL	150	-	48	40	-	51	43	-	51	43
		WBL	150	-	24	20	-	25	21	-	25	21
21	Demaree St & Ferguson Ave	EBL	210	120	61	102	120	63	105	120	64	107
		WBL	300	120	106	177	120	109	182	120	109	182
		WBR	160	120	30	50	120	31	52	120	32	53

Table 5a Continued
PM Queue Length Analysis – Phase II

#	Intersection	Turn Movement	Storage Capacity	2025			2025+ Project		
				Cycle	VOL	CAP	Cycle	VOL	CAP
5	Demaree St & Pratt Rd	WBR	200	-	27	23	-	32	27
		NBR	375	-	99	83	-	99	83
6	County Center St & Pratt Rd	WBL	125	-	5	4	-	5	4
		NBL	235	-	7	6	-	7	6
12	Demaree St & River Way Dr	NBL	175	-	35	29	-	134	112
13	Demaree St & Shannon Pkwy	SBL	105	-	15	13	-	21	18
16	Akers St & Riggin Ave	EBL	305	120	15	25	120	15	25
		EBR	305	120	71	118	120	71	118
		WBL	305	120	163	272	120	167	278
		WBR	305	120	23	38	120	23	38
		NBL	305	120	39	65	120	39	65
		NBR	305	120	198	**330**	120	205	**342**
		SBL	300	120	30	50	120	30	50
		SBR	155	120	18	30	120	18	30
18	Demaree St & Riggin Ave	EBL	280	120	171	285	120	213	355
		EBR	155	120	98	163	120	98	163
		WBL	155	120	342	**570**	120	342	**570**
		WBR	155	120	23	38	120	72	120
		NBL	255	120	78	130	120	78	130
		SBL	210	120	63	105	120	91	152
19	County Center St & Riggin Ave	EBL	250	-	45	38	-	47	39
		WBL	160	-	88	73	-	88	73
		NBL	195	-	59	49	-	79	66
		SBL	130	-	32	27	-	32	27
		SBR	130	-	40	33	-	44	37
20	Linwood St & Ferguson Ave	EBL	150	-	54	45	-	54	45
		WBL	150	-	27	23	-	27	23
21	Demaree St & Ferguson Ave	EBL	210	120	64	107	120	71	118
		WBL	300	120	112	187	120	112	187
		WBR	160	120	32	53	120	37	62

Table 5a Continued
PM Queue Length Analysis – Phase III

#	Intersection	Turn Movement	Storage Capacity	2031			2031+ Project		
				Cycle	VOL	CAP	Cycle	VOL	CAP
5	Demaree St & Pratt Rd	WBR	200	-	22	18	-	33	28
		NBR	375	-	121	101	-	121	101
6	County Center St & Pratt Rd	WBL	125	-	5	4	-	5	4
		NBL	235	-	15	13	-	18	15
12	Demaree St & River Way Dr	NBL	175	-	45	38	-	253	211
13	Demaree St & Shannon Pkwy	SBL	105	-	19	16	-	43	36
16	Akers St & Riggin Ave	EBL	305	120	16	27	120	45	75
		EBR	305	120	78	130	120	78	130
		WBL	305	120	183	**305**	120	192	**320**
		WBR	305	120	25	42	120	25	42
		NBL	305	120	43	72	120	43	72
		NBR	305	120	215	**358**	120	227	**378**
		SBL	300	120	33	55	120	33	55
		SBR	155	120	20	33	120	43	72
18	Demaree St & Riggin Ave	EBL	280	120	192	320	120	232	387
		EBR	155	120	131	218	120	131	218
		WBL	155	120	385	**642**	120	385	**642**
		WBR	155	120	25	42	120	142	237
		NBL	255	120	92	153	120	92	153
		SBL	210	120	88	147	120	183	305
19	County Center St & Riggin Ave	EBL	250	-	51	43	-	59	49
		WBL	160	-	97	81	-	97	81
		NBL	195	-	65	54	-	111	93
		SBL	130	-	36	30	-	36	30
		SBR	130	-	47	39	-	54	45
20	Linwood St & Ferguson Ave	EBL	150	-	65	54	-	65	54
		WBL	150	-	32	27	-	32	27
21	Demaree St & Ferguson Ave	EBL	210	120	70	117	120	83	138
		WBL	300	120	122	203	120	122	203
		WBR	160	120	34	57	120	44	73

Table 5a Continued
PM Queue Length Analysis – 2041 Phase III

#	Intersection	Turn Movement	Storage Capacity	2041			2041+ Project		
				Cycle	VOL	CAP	Cycle	VOL	CAP
5	Demaree St & Pratt Rd	WBR	200	-	24	20	-	24	20
		NBR	375	-	170	142	-	170	142
6	County Center St & Pratt Rd	WBL	125	-	6	5	-	6	5
		NBL	235	-	17	14	-	25	21
12	Demaree St & River Way Dr	NBL	175	-	66	55	-	66	55
13	Demaree St & Shannon Pkwy	SBL	105	-	29	24	-	29	24
16	Akers St & Riggin Ave	EBL	305	120	19	32	120	19	32
		EBR	305	120	90	150	120	90	150
		WBL	305	120	222	**370**	120	222	**370**
		WBR	305	120	31	52	120	31	52
		NBL	305	120	49	82	120	49	82
		NBR	305	120	247	**412**	120	247	**412**
		SBL	300	120	40	67	120	40	67
		SBR	155	120	24	40	120	24	40
18	Demaree St & Riggin Ave	EBL	280	120	232	387	120	232	387
		EBR	155	120	216	360	120	216	360
		WBL	155	120	466	**777**	120	466	**777**
		WBR	155	120	31	52	120	31	52
		NBL	255	120	120	200	120	120	200
		SBL	210	120	152	253	120	152	253
19	County Center St & Riggin Ave	EBL	250	-	62	52	-	62	52
		WBL	160	-	114	95	-	114	95
		NBL	195	-	75	63	-	75	63
		SBL	130	-	44	37	-	44	37
		SBR	130	-	54	45	-	54	45
20	Linwood St & Ferguson Ave	EBL	150	-	87	73	-	87	73
		WBL	150	-	43	36	-	43	36
21	Demaree St & Ferguson Ave	EBL	210	120	80	133	118	80	131
		WBL	300	120	140	233	118	140	233
		WBR	160	120	40	67	118	40	66

Table 5b
AM Queue Length Analysis – Phase I

#	Intersection	Turn Movement	Storage Capacity	2021			2023			2023+ Project		
				Cycle	VOL	CAP	Cycle	VOL	CAP	Cycle	VOL	CAP
5	Demaree St & Pratt Rd	WBL	-	-	47	39	-	48	40	-	48	40
		WBR	200	-	59	49	-	60	50	-	61	51
		NBR	375	-	28	23	-	30	25	-	30	25
6	County Center St & Pratt Rd	WBL	125	-	1	1	-	2	2	-	1	1
		NBL	235	-	15	13	-	17	14	-	17	14
		NBR	-	-	2	2	-	2	2	-	2	2
12	Demaree St & Shannon Pkwy	EBL	-	-	4	3	-	4	3	-	4	3
		EBR	-	-	25	21	-	27	23	-	56	47
		NBL	175	-	3	3	-	3	3	-	13	11
		SBR	-	-	2	2	-	2	2	-	2	2
13	Demaree St & Shannon Pkwy	WBL	-	-	117	98	-	121	101	-	121	101
		WBR	-	-	21	18	-	22	18	-	23	19
		NBR	-	-	53	44	-	59	49	-	59	49
		SBL	105	-	8	7	-	9	8	-	12	10
16	Akers St & Riggin Ave	EBL	305	120	78	130	120	80	133	120	80	133
		EBR	305	120	32	53	120	33	55	120	33	55
		WBL	305	120	144	240	120	150	250	120	152	253
		WBR	305	120	89	148	120	93	155	120	93	155
		NBL	305	120	33	55	120	34	57	120	34	57
		NBR	305	120	112	187	120	115	192	120	116	193
		SBL	300	120	65	108	120	67	112	120	67	112
		SBR	155	120	69	115	120	71	118	120	71	118
18	Demaree St & Riggin Ave	EBL	280	90	103	129	90	107	134	120	111	185
		EBR	155	90	75	94	90	83	104	120	83	138
		WBL	155	90	190	**238**	90	197	**246**	120	197	**246**
		WBR	155	90	37	46	90	38	48	120	42	70
		NBL	255	90	65	81	90	69	86	120	69	115
		SBL	215	90	28	35	90	31	39	120	45	75
19	Country Center St & Riggin Ave	EBL	250	-	16	13	-	17	14	-	19	16
		WBL	160	-	33	28	-	34	28	-	34	28
		NBL	195	-	62	52	-	64	53	-	65	54
		SBL	130	-	34	28	-	35	29	-	35	29
		SBR	130	-	34	28	-	35	29	-	35	29
20	Linwood St & Ferguson Ave	EBL	150	-	22	18	-	23	19	-	23	19
		WBL	150	-	47	39	-	50	42	-	50	42
21	Demaree St & Ferguson Ave	WBL	300	120	165	275	120	170	283	120	170	283
		WBR	160	120	35	58	120	36	60	120	36	60

Table 5b Continued
AM Queue Length Analysis – Phase II

#	Intersection	Turn Movement	Storage Capacity	2025			2025+ Project		
				Cycle	VOL	CAP	Cycle	VOL	CAP
5	Demaree St & Pratt Rd	WBL	-	-	39	33	-	39	33
		WBR	200	-	53	44	-	53	44
		NBR	375	-	36	30	-	94	78
6	County Center St & Pratt Rd	WBL	125	-	2	2	-	2	2
		NBL	235	-	18	15	-	19	16
		NBR	-	-	2	2	-	11	9
12	Demaree St & Shannon Pkwy	EBL	-	-	5	4	-	5	4
		EBR	-	-	28	23	-	116	97
		NBL	175	-	4	3	-	33	28
		SBR	-	-	2	2	-	2	2
13	Demaree St & Shannon Pkwy	WBL	-	-	113	94	-	113	94
		WBR	-	-	22	18	-	25	21
		NBR	-	-	54	45	-	54	45
		SBL	105	-	8	7	-	17	14
16	Akers St & Riggin Ave	EBL	305	120	31	52	120	31	52
		EBR	305	120	14	23	120	14	23
		WBL	305	120	144	240	120	150	250
		WBR	305	120	38	63	120	38	63
		NBL	305	120	47	78	120	47	78
		NBR	305	120	81	135	120	83	138
		SBL	300	120	14	23	120	14	23
		SBR	155	120	28	47	120	28	47
18	Demaree St & Riggin Ave	EBL	280	90	81	101	90	94	118
		EBR	155	90	87	109	90	78	98
		WBL	155	90	172	**215**	90	172	**215**
		WBR	155	90	35	44	90	49	61
		NBL	255	90	53	66	90	53	66
		SBL	215	90	26	33	90	68	85
19	Country Center St & Riggin Ave	EBL	250	-	16	13	-	19	16
		WBL	160	-	33	28	-	33	28
		NBL	195	-	56	47	-	62	52
		SBL	130	-	29	24	-	29	24
		SBR	130	-	36	30	-	37	31
20	Linwood St & Ferguson Ave	EBL	150	-	15	13	-	15	13
		WBL	150	-	32	27	-	32	27
21	Demaree St & Ferguson Ave	WBL	300	120	174	290	120	174	290
		WBR	160	120	20	33	120	21	35

Table 5b Continued
AM Queue Length Analysis – Phase III

Intersection	Turn Movement	Storage Capacity	2031			2031+ Project		
			Cycle	VOL	CAP	Cycle	VOL	CAP
Demaree St & Pratt Rd	WBL	-	-	50	42	-	50	42
	WBR	200	-	62	52	-	67	56
	NBR	375	-	39	33	-	39	33
County Center St & Pratt Rd	WBL	125	-	1	1	-	1	1
	NBL	235	-	25	21	-	26	22
	NBR	-	-	3	3	-	3	3
Demaree St & Shannon Pkwy	EBL	-	-	5	4	-	8	7
	EBR	-	-	34	28	-	187	156
	NBL	175	-	4	3	-	90	75
	SBR	-	-	3	3	-	4	3
Demaree St & Shannon Pkwy	WBL	-	-	137	114	-	137	114
	WBR	-	-	25	21	-	37	31
	NBR	-	-	92	77	-	92	77
	SBL	105	-	12	10	-	34	28
Akers St & Riggin Ave	EBL	305	120	90	83	120	102	170
	EBR	305	120	37	34	120	37	62
	WBL	305	120	175	156	120	183	305
	WBR	305	120	108	96	120	108	180
	NBL	305	120	38	35	120	38	63
	NBR	305	120	129	118	120	134	223
	SBL	300	120	77	70	120	77	128
	SBR	155	120	82	74	120	103	172
Demaree St & Riggin Ave	EBL	280	90	125	156	90	142	178
	EBR	155	90	123	154	90	123	154
	WBL	155	90	230	**288**	90	230	**288**
	WBR	155	90	45	56	90	94	118
	NBL	255	90	85	106	90	85	106
	SBL	215	90	48	60	90	134	168
Country Center St & Riggin Ave	EBL	250	-	19	16	-	26	22
	WBL	160	-	39	33	-	39	33
	NBL	195	-	72	60	-	91	76
	SBL	130	-	41	34	-	41	34
	SBR	130	-	41	34	-	45	38
Linwood St & Ferguson Ave	EBL	150	-	30	25	-	30	25
	WBL	150	-	63	53	-	63	53
Demaree St & Ferguson Ave	WBL	300	120	189	315	120	189	315
	WBR	160	120	40	67	120	44	73

Table 5b Continued
AM Queue Length Analysis – 2041 Phase III

#	Intersection	Storage Capacity	Turn Movement	2041			2041+ Project		
				Cycle	VOL	CAP	Cycle	VOL	CAP
5	Demaree St & Pratt Rd	-	WBL	-	53	44	-	53	44
		200	WBR	-	66	55	-	71	59
		375	NBR	-	55	46	-	55	46
6	County Center St & Pratt Rd	125	WBL	-	1	1	-	1	1
		235	NBL	-	41	34	-	42	35
		-	NBR	-	6	5	-	6	5
12	Demaree St & Shannon Pkwy	-	EBL	-	7	6	-	10	8
		-	EBR	-	45	38	-	198	165
		175	NBL	-	7	6	-	93	78
		-	SBR	-	4	3	-	5	4
13	Demaree St & Shannon Pkwy	-	WBL	-	160	133	-	160	133
		-	WBR	-	29	24	-	41	34
		-	NBR	-	158	132	-	158	132
		105	SBL	-	18	15	-	40	33
16	Akers St & Riggin Ave	305	EBL	120	104	173	120	116	193
		305	EBR	120	43	72	120	43	72
		305	WBL	120	212	353	120	220	367
		305	WBR	120	131	218	120	131	218
		305	NBL	120	44	73	120	44	73
		305	NBR	120	148	247	120	153	255
		300	SBL	120	92	153	120	92	153
		155	SBR	120	97	162	120	118	197
18	Demaree St & Riggin Ave	280	EBL	90	152	190	90	169	211
		155	EBR	90	202	253	90	202	253
		155	WBL	90	280	**350**	90	280	**350**
		155	WBR	90	54	68	90	103	129
		255	NBL	90	111	139	90	111	139
		215	SBL	90	84	105	90	170	213
19	Country Center St & Riggin Ave	250	EBL	-	24	20	-	31	26
		160	WBL	-	46	38	-	46	38
		195	NBL	-	83	69	-	102	85
		130	SBL	-	50	42	-	50	42
		130	SBR	-	50	42	-	54	45
20	Linwood St & Ferguson Ave	150	EBL	-	40	33	-	40	33
		150	WBL	-	85	71	-	85	71
21	Demaree St & Ferguson Ave	300	WBL	120	217	362	120	217	362
		160	WBR	120	46	77	120	50	83

Queue lengths which exceed capacity of the turn lane storage are shown in bold text in the table. An analysis of the highlighted queue lengths indicates that in all cases either existing baseline, or future baseline traffic exceeds the storage length prior to the addition of project traffic. With the addition of project traffic, some queue lengths are increased from existing or future base traffic, but by 20 feet or less (less than the average car length of 25 feet). Therefore, project traffic queue length impacts are minor and mitigation by the project is not required.

MITIGATION

Based on the results of the Level of Service (LOS) analysis and eight-hour vehicular volume warrant, and the City of Visalia thresholds for mitigation, it is recommended that signals be constructed at the four intersections identified in Table 6 in order to operate at an acceptable level of service by the year 2041.

Table 6
Future Intersection Improvements

#	Intersection	Improvements Required by 2031	Improvements Required by 2041	Percent Share
13	Demaree St & Shannon Parkway	Signal	-	25.03%
15	Demaree St & Flagstaff Ave	Signal	-	33.95%
17	Linwood St & Riggin Ave	Signal	-	5.75%
19	County Center St & Riggin Ave	-	Signal	24.86%

The City of Visalia Traffic Impact Fee facilities list includes signal projects which are not individually identified. Three of the four intersections (excluding Demaree Street and Flagstaff Avenue) are arterial or collector roadways and are understood to be included in the traffic impact fee. The intersection of Demaree Street and Flagstaff Avenue is currently full access and will require signalization in the future with or without the project. Inclusion of Demaree Street and Flagstaff Avenue in the traffic impact fee facilities list should be considered.

VEHICLE MILES TRAVELED (VMT) ANALYSIS

An evaluation of project vehicle miles traveled (VMT) was conducted based on VMT analysis guidelines adopted by the City of Visalia. The guidelines provide "screening thresholds" for identifying whether a land use project should be expected to result in a less than significant transportation impact under CEQA. Projects meeting one or more of these criteria would not be required to undergo a detailed VMT analysis. The project includes both residential and retail uses and is therefore analyzed as a mixed used development for VMT. One of the screening criteria is "Project Location Screening". Development projects that are located in a low VMT zone would be expected to generate similar low vehicle miles travelled. Using the City of Visalia online VMT screening application, the project was determined to be located in TAZ 1694. Utilizing the service population metric due to being a mixed-use project, the average VMT was determined to be 20.33 miles. The average VMT per service population for Tulare County is 29.0. Therefore, the project is determined to be in a low VMT zone and the project would be expected to result in a less than significant transportation impact under CEQA.

A printout of the application findings and mapping is included in the appendix.

REFERENCES

1. Annual Traffic Census, TCAG
2. Highway Capacity Manual, Special Report 209, Transportation Research Board
3. California Manual on Uniform Traffic Control Devices for Streets and Highways, 2012 Edition, Federal Highway Administration (FHA)
4. Trip Generation, 10th Edition, Institute of Transportation Engineers (ITE)
5. Visalia General Plan, October 2014

APPENDIX

Intersection 1
Akers St & Ave 320

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	98	18	26	28	26	46
Future Vol, veh/h	98	18	26	28	26	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	107	20	28	30	28	50

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	126	0	203	116
Stage 1	-	-	-	-	116	-
Stage 2	-	-	-	-	87	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1460	-	786	936
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	936	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1460	-	770	936
Mov Cap-2 Maneuver	-	-	-	-	770	-
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	917	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	868	-	-	1460	-
HCM Lane V/C Ratio	0.09	-	-	0.019	-
HCM Control Delay (s)	9.6	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	104	19	28	30	28	49
Future Vol, veh/h	104	19	28	30	28	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	113	21	30	33	30	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	134	0	216	123
Stage 1	-	-	-	-	123	-
Stage 2	-	-	-	-	93	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1451	-	772	928
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	931	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1451	-	756	928
Mov Cap-2 Maneuver	-	-	-	-	756	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	911	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	857	-	-	1451	-
HCM Lane V/C Ratio	0.098	-	-	0.021	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	105	19	28	31	28	49
Future Vol, veh/h	105	19	28	31	28	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	114	21	30	34	30	53

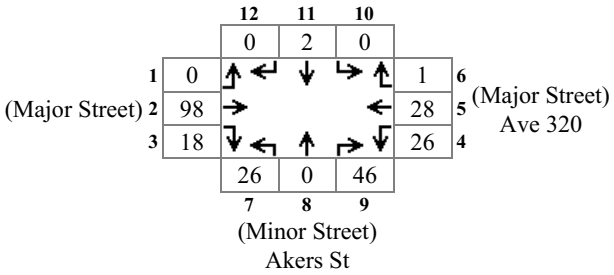
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	135	0	219	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	95	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1449	-	769	927
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	929	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1449	-	753	927
Mov Cap-2 Maneuver	-	-	-	-	753	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	9.7
HCM LOS			A

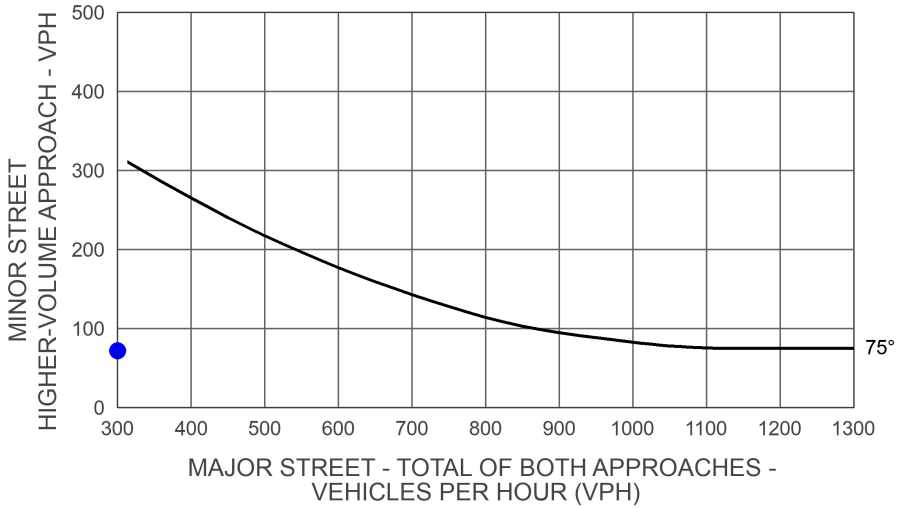
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	855	-	-	1449	-
HCM Lane V/C Ratio	0.098	-	-	0.021	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 1

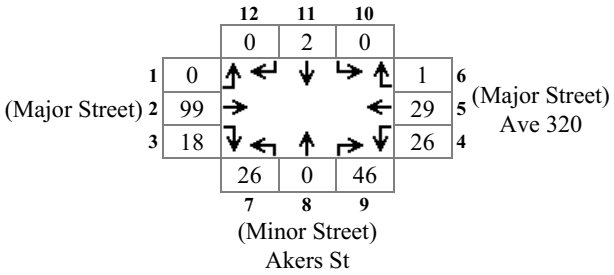


Major Total: 171
Minor High Volume: 72

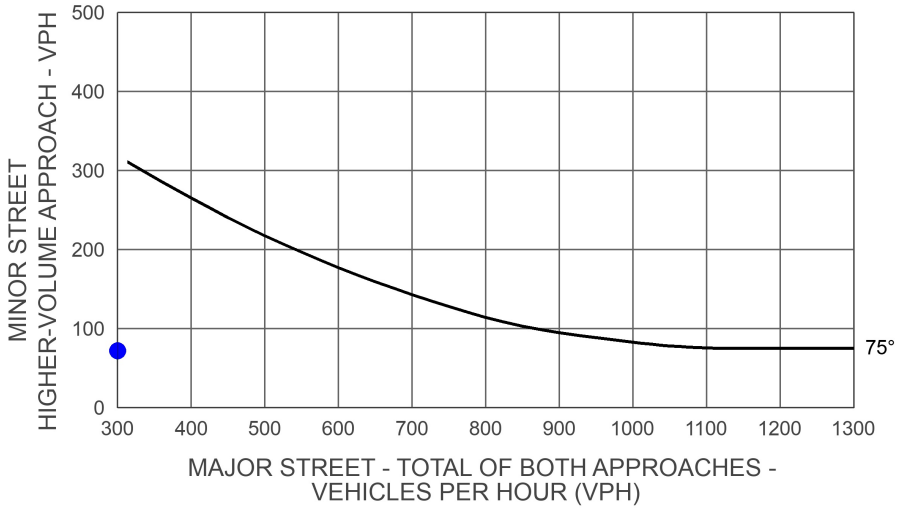


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 1

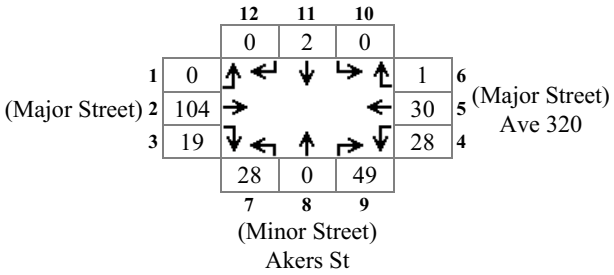


Major Total: 173
Minor High Volume: 72

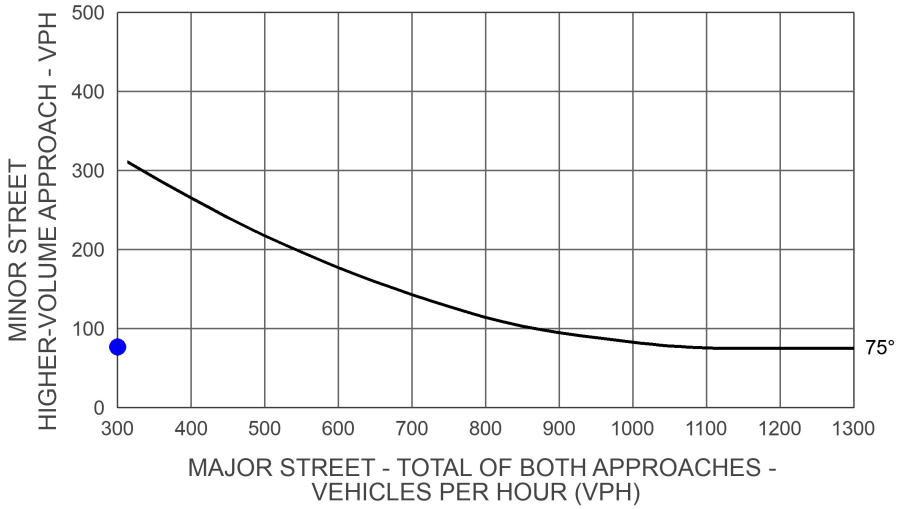


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 1

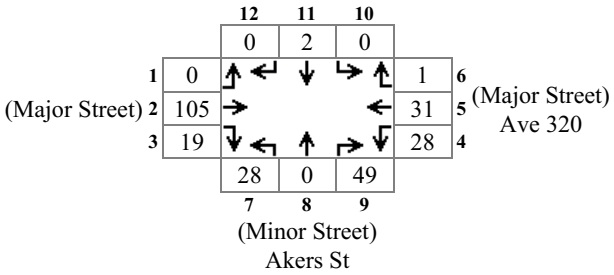


Major Total: 182
Minor High Volume: 77

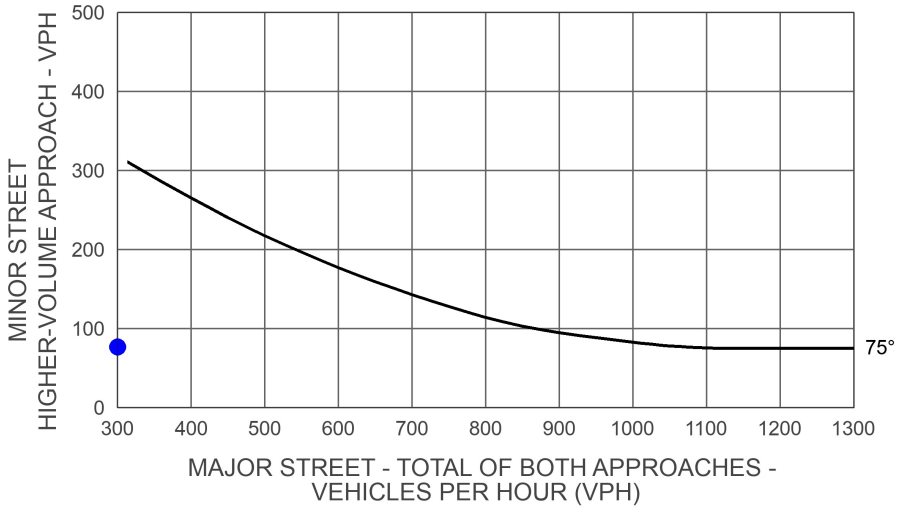


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 1



Major Total: 184
Minor High Volume: 77



Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	43	18	56	78	21	32
Future Vol, veh/h	43	18	56	78	21	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	47	20	61	85	23	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	66	0	264	57
Stage 1	-	-	-	-	57	-
Stage 2	-	-	-	-	207	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1536	-	725	1009
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	828	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1536	-	695	1009
Mov Cap-2 Maneuver	-	-	-	-	695	-
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	793	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	856	-	-	1536	-
HCM Lane V/C Ratio	0.067	-	-	0.04	-
HCM Control Delay (s)	9.5	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	46	19	59	83	22	34
Future Vol, veh/h	46	19	59	83	22	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	50	21	64	90	24	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	71	0	278	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	218	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1529	-	712	1005
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	818	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1529	-	681	1005
Mov Cap-2 Maneuver	-	-	-	-	681	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	782	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	847	-	-	1529	-
HCM Lane V/C Ratio	0.072	-	-	0.042	-
HCM Control Delay (s)	9.6	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	46	19	59	85	22	34
Future Vol, veh/h	46	19	59	85	22	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	50	21	64	92	24	37

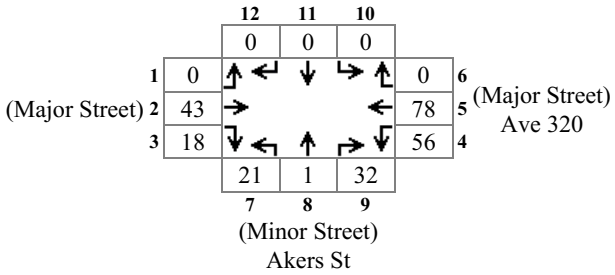
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	71	0	281	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	221	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1529	-	709	1005
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	816	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1529	-	678	1005
Mov Cap-2 Maneuver	-	-	-	-	678	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	780	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	9.6
HCM LOS			A

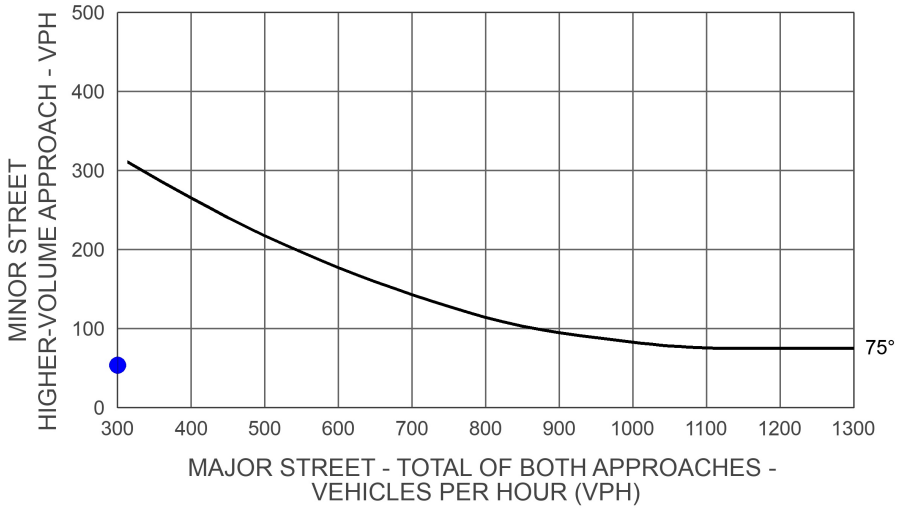
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	845	-	-	1529	-
HCM Lane V/C Ratio	0.072	-	-	0.042	-
HCM Control Delay (s)	9.6	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 1

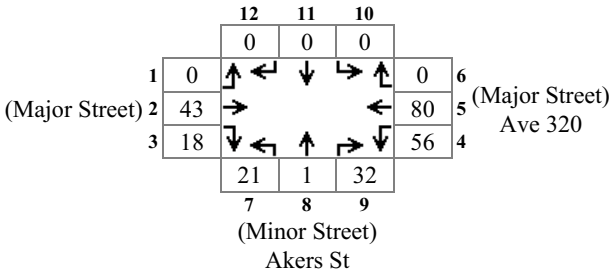


Major Total: 195
Minor High Volume: 54

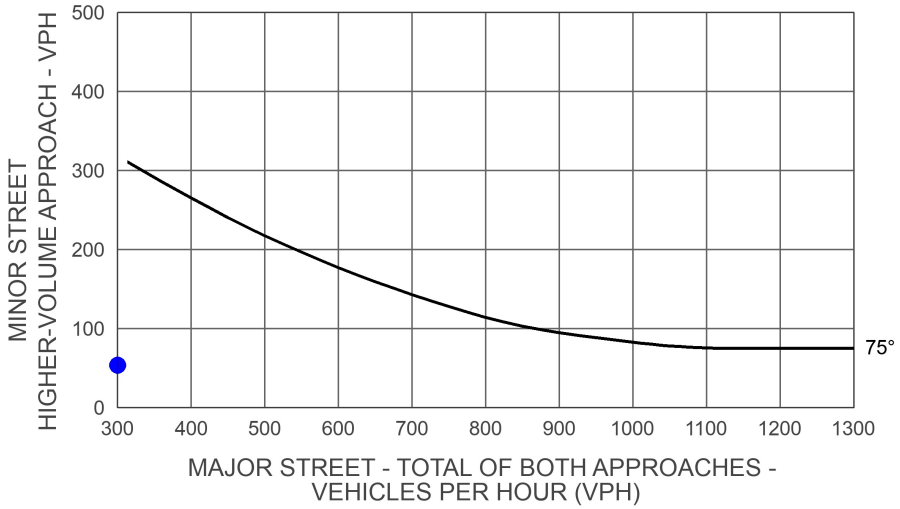


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 1

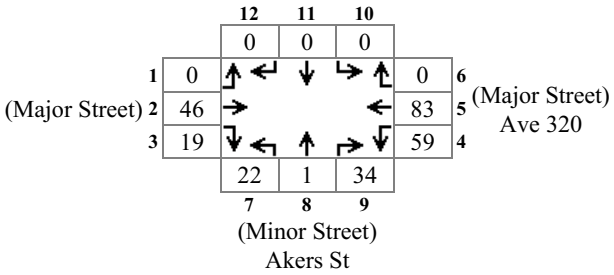


Major Total: 197
Minor High Volume: 54

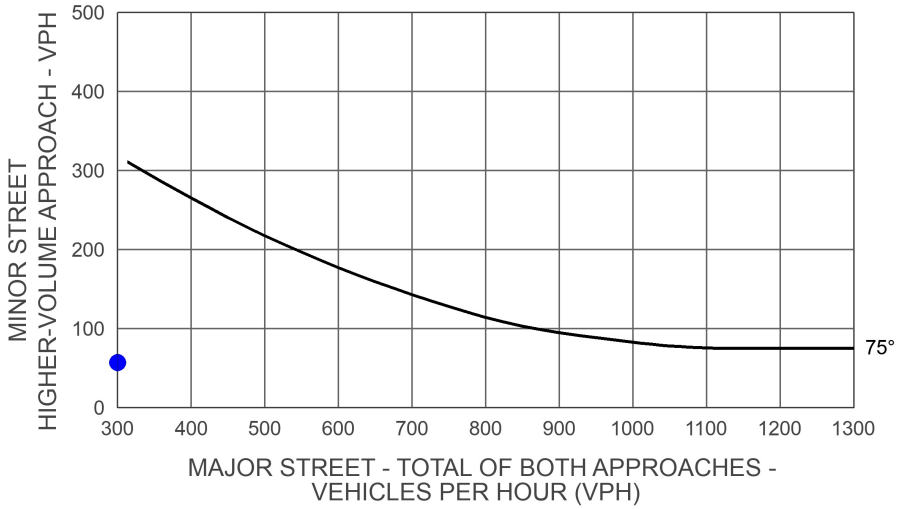


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 1

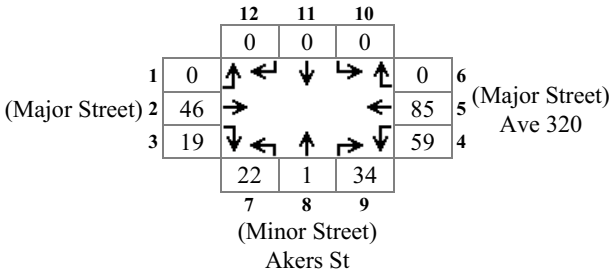


Major Total: 207
Minor High Volume: 57

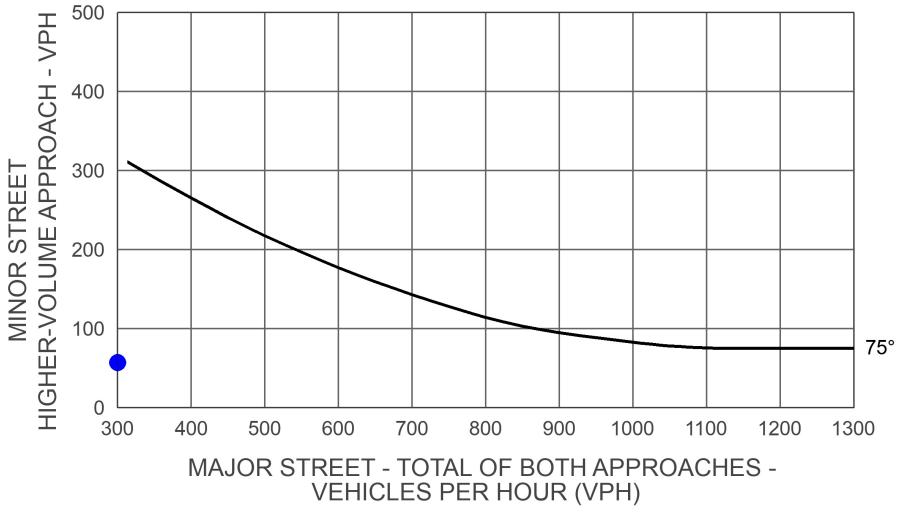


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 1



Major Total: 209
Minor High Volume: 57



Intersection 2
Demaree St & Ave 320

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	48	99	25	196	230	25
Future Vol, veh/h	48	99	25	196	230	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	52	108	27	213	250	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	531	264	277	0	-	0
Stage 1	264	-	-	-	-	-
Stage 2	267	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	509	775	1286	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	497	775	1286	-	-	-
Mov Cap-2 Maneuver	497	-	-	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	759	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1286	-	655	-	-
HCM Lane V/C Ratio	0.021	-	0.244	-	-
HCM Control Delay (s)	7.9	0	12.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	49	101	26	207	234	25
Future Vol, veh/h	49	101	26	207	234	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	53	110	28	225	254	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	550	268	282	0	-	0
Stage 1	268	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	496	771	1280	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	484	771	1280	-	-	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	747	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1280	-	646	-	-
HCM Lane V/C Ratio	0.022	-	0.252	-	-
HCM Control Delay (s)	7.9	0	12.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	49	102	27	207	234	25
Future Vol, veh/h	49	102	27	207	234	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	53	111	29	225	254	27

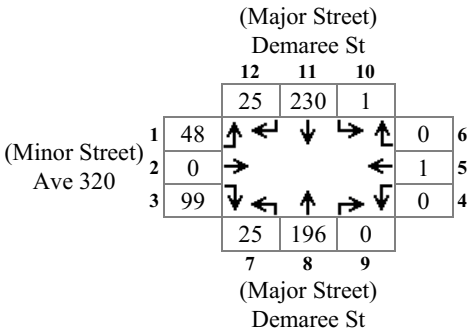
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	552	268	282	0	-	0
Stage 1	268	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	495	771	1280	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	482	771	1280	-	-	-
Mov Cap-2 Maneuver	482	-	-	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	744	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.5	0.9	0
HCM LOS	B		

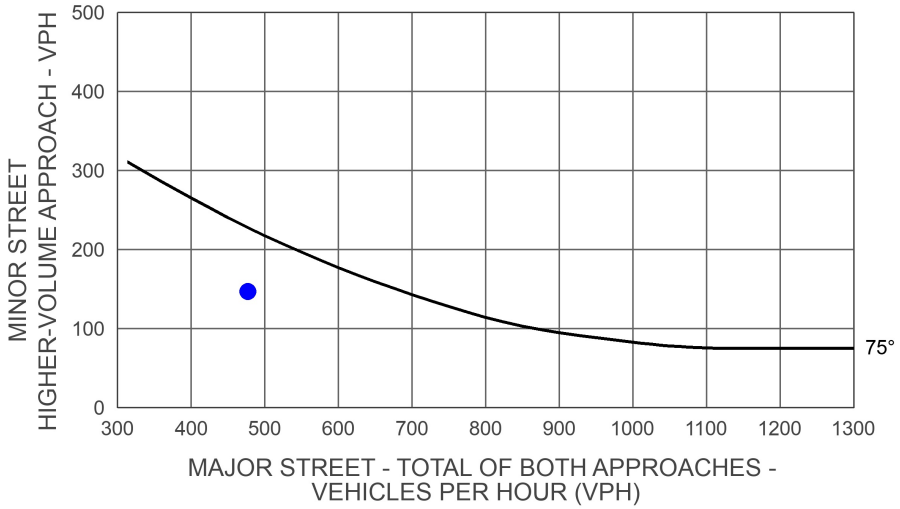
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1280	-	645	-	-
HCM Lane V/C Ratio	0.023	-	0.254	-	-
HCM Control Delay (s)	7.9	0	12.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 2

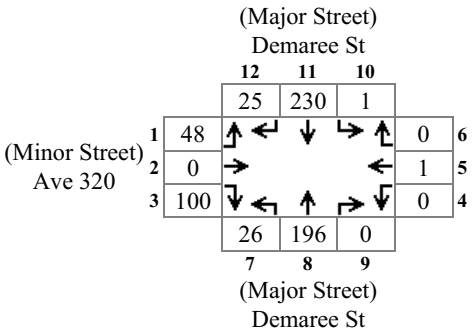


Major Total: 477
Minor High Volume: 147

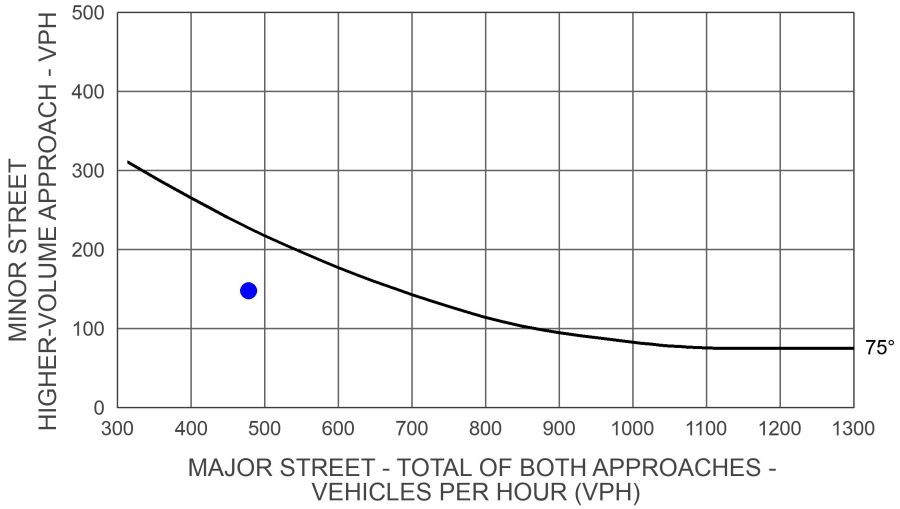


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 2

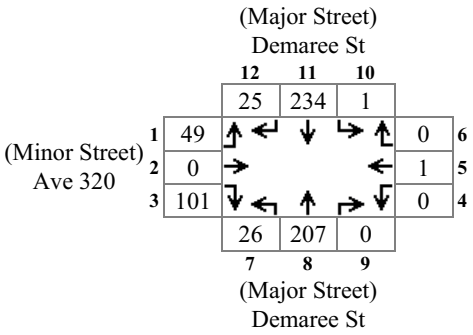


Major Total: 478
Minor High Volume: 148

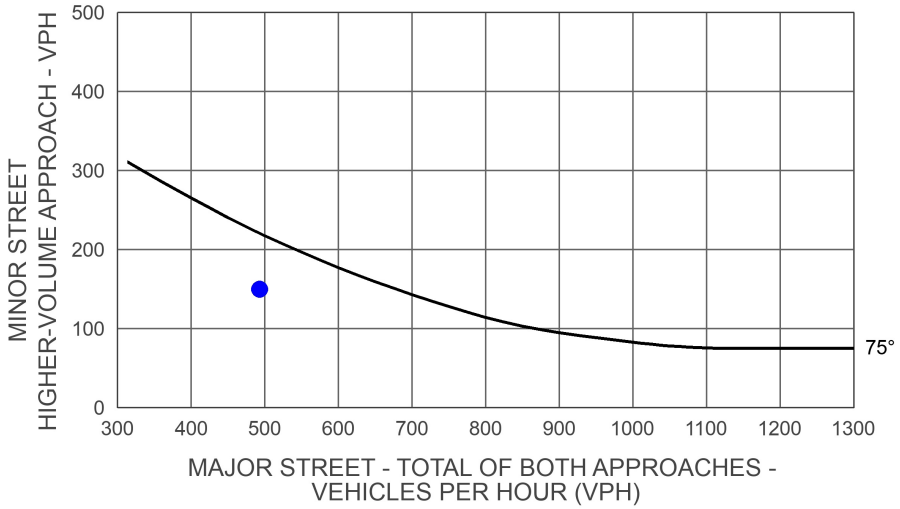


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 2

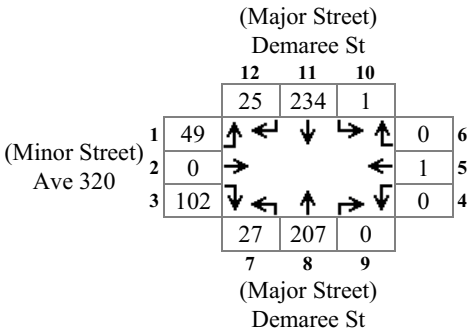


Major Total: 493
Minor High Volume: 150

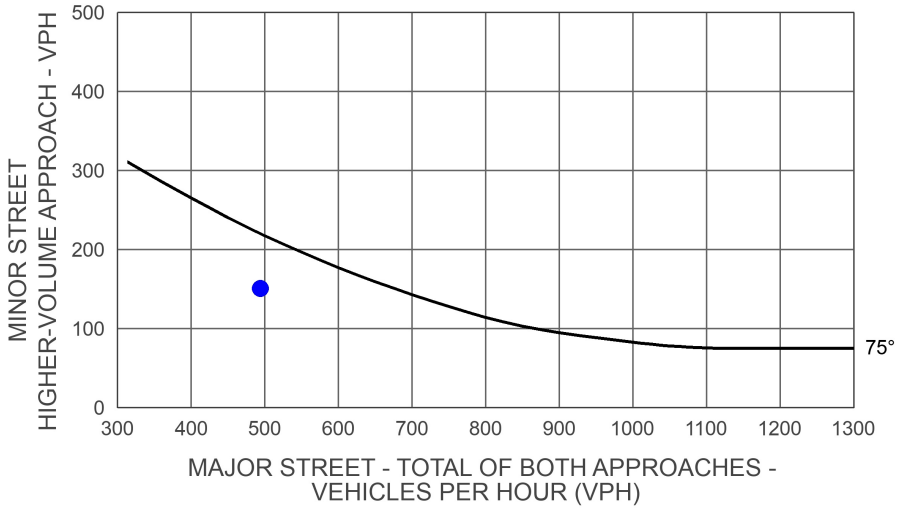


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 2



Major Total: 494
Minor High Volume: 151



Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	35	43	58	242	192	80
Future Vol, veh/h	35	43	58	242	192	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	38	47	63	263	209	87

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	641	252	296	0	-	0
Stage 1	252	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	439	787	1265	-	-	-
Stage 1	790	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	414	787	1265	-	-	-
Mov Cap-2 Maneuver	414	-	-	-	-	-
Stage 1	790	-	-	-	-	-
Stage 2	645	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.6	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1265	-	560	-	-
HCM Lane V/C Ratio	0.05	-	0.151	-	-
HCM Control Delay (s)	8	0	12.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	36	44	61	255	195	81
Future Vol, veh/h	36	44	61	255	195	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	39	48	66	277	212	88

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	666	256	300	0	-	0
Stage 1	256	-	-	-	-	-
Stage 2	410	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	425	783	1261	-	-	-
Stage 1	787	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	399	783	1261	-	-	-
Mov Cap-2 Maneuver	399	-	-	-	-	-
Stage 1	787	-	-	-	-	-
Stage 2	628	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1261	-	546	-	-
HCM Lane V/C Ratio	0.053	-	0.159	-	-
HCM Control Delay (s)	8	0	12.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	36	44	63	255	195	81
Future Vol, veh/h	36	44	63	255	195	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	39	48	68	277	212	88

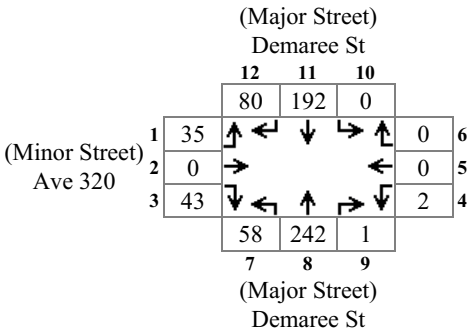
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	670	256	300	0	-	0
Stage 1	256	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	422	783	1261	-	-	-
Stage 1	787	-	-	-	-	-
Stage 2	667	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	395	783	1261	-	-	-
Mov Cap-2 Maneuver	395	-	-	-	-	-
Stage 1	787	-	-	-	-	-
Stage 2	624	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.9	1.6	0
HCM LOS	B		

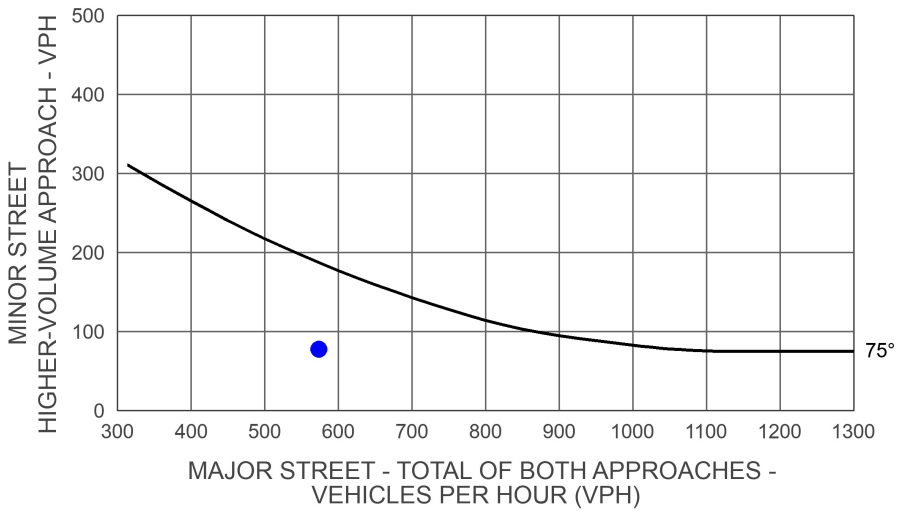
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1261	-	543	-	-
HCM Lane V/C Ratio	0.054	-	0.16	-	-
HCM Control Delay (s)	8	0	12.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 2

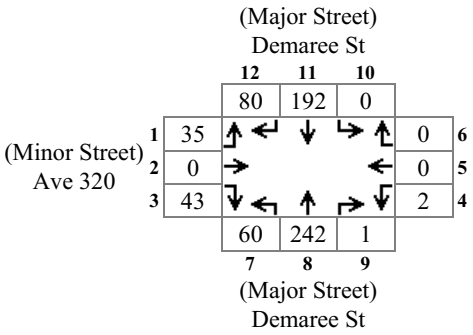


Major Total: 573
Minor High Volume: 78

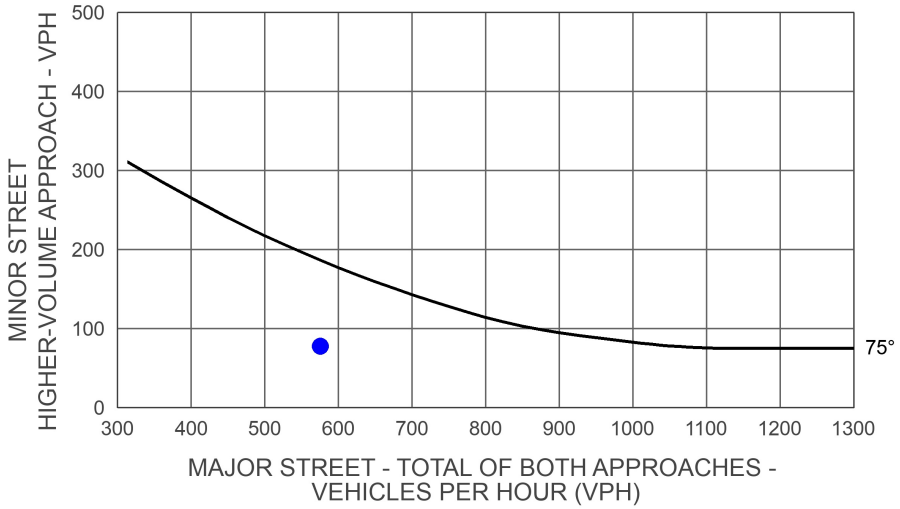


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 2

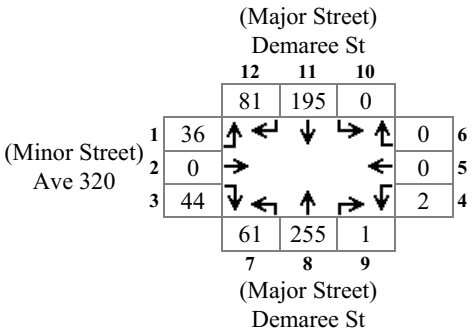


Major Total: 575
Minor High Volume: 78

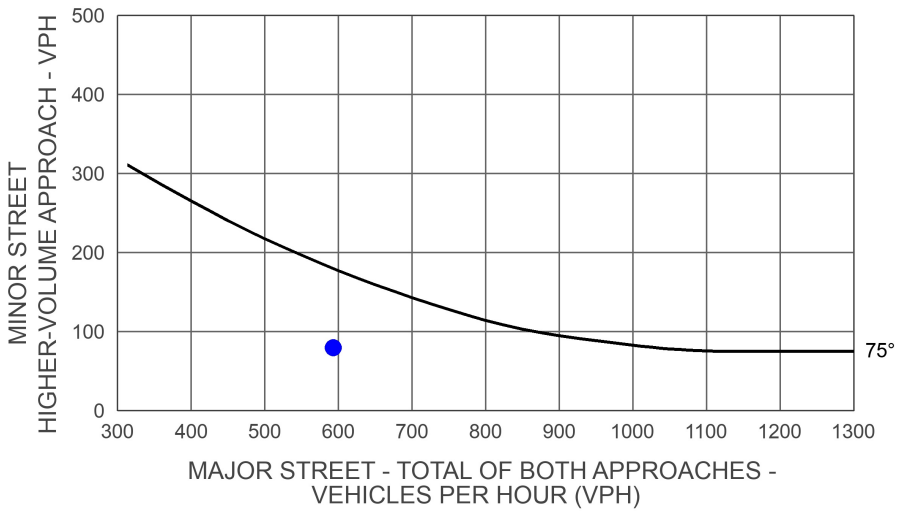


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 2

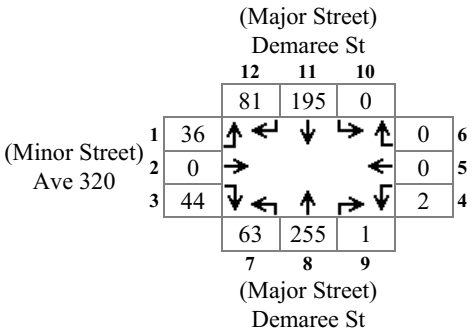


Major Total: 593
Minor High Volume: 80

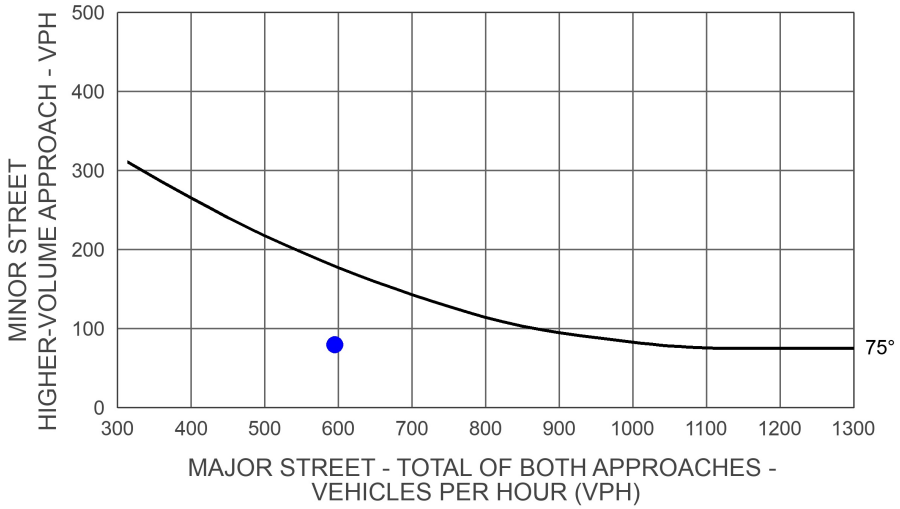


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 2



Major Total: 595
Minor High Volume: 80



Intersection 3
Linwood St & Project Road North

Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

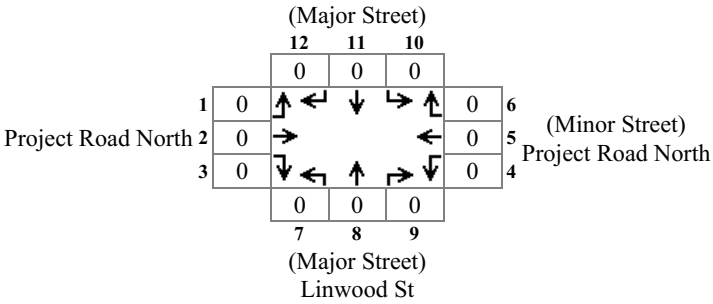
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

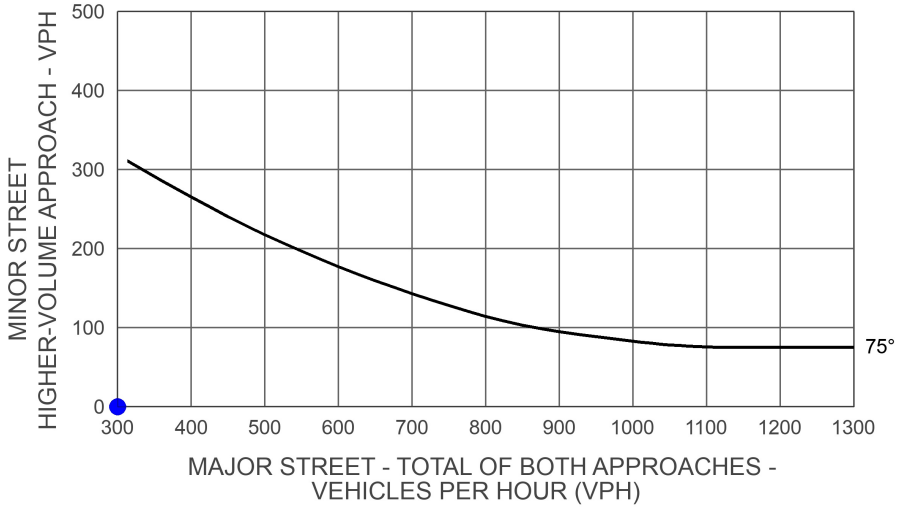
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 3

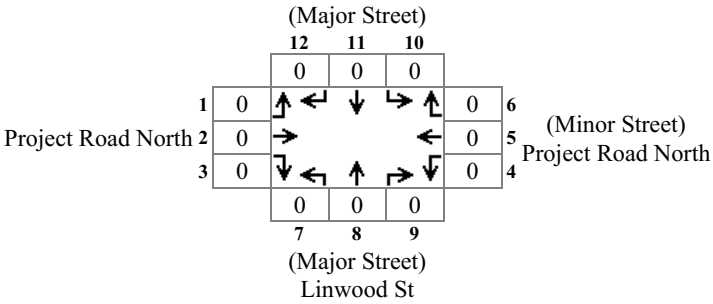


Major Total: 0
Minor High Volume: 0

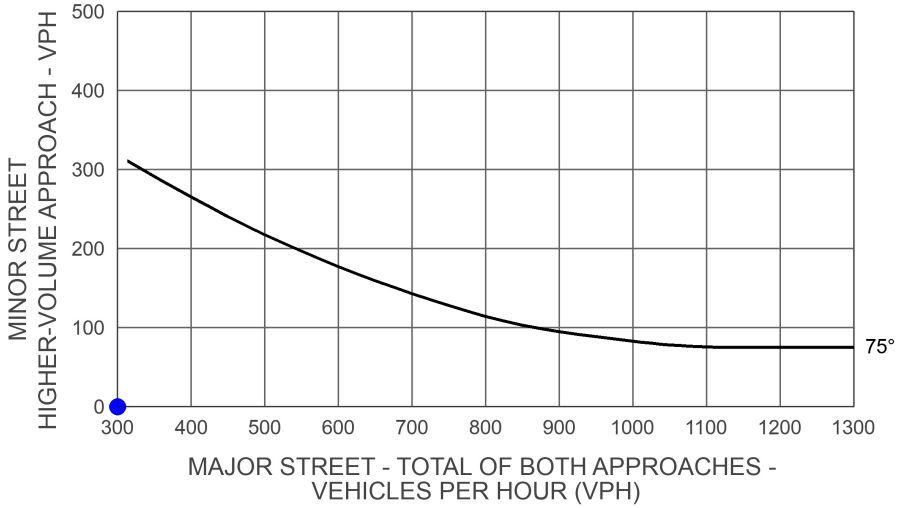


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 3

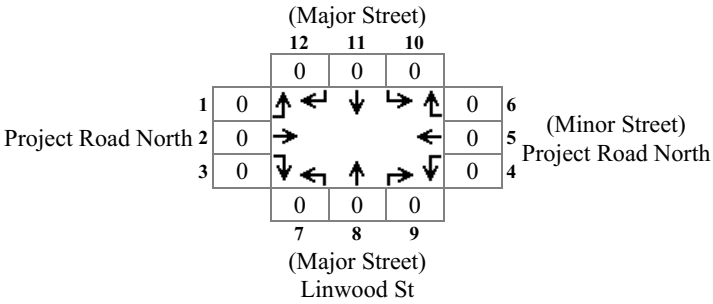


Major Total: 0
Minor High Volume: 0

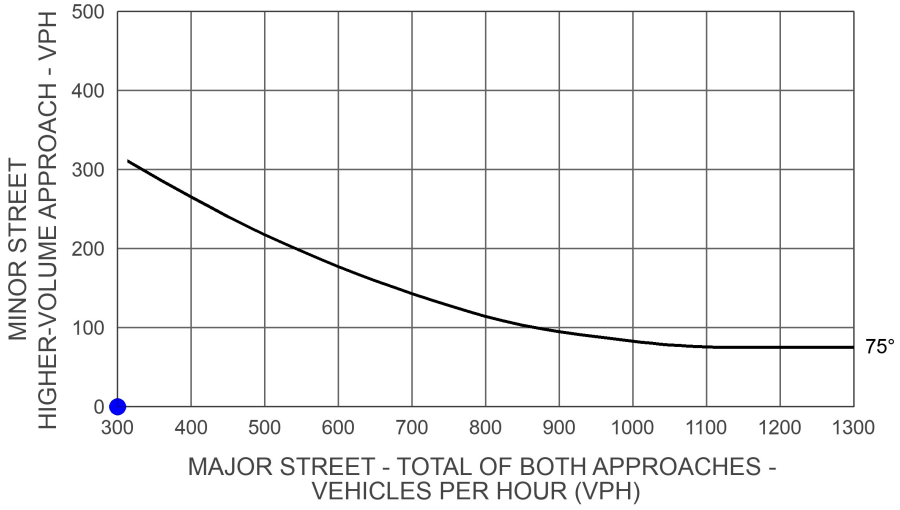


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 3

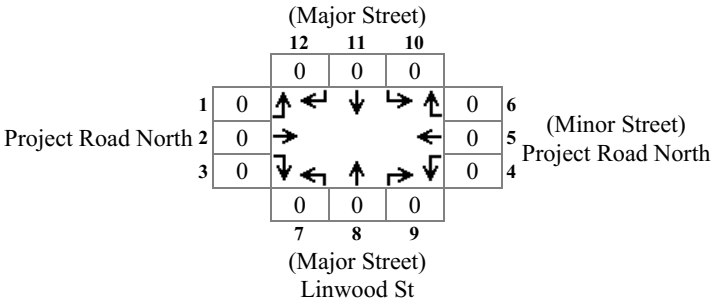


Major Total: 0
Minor High Volume: 0

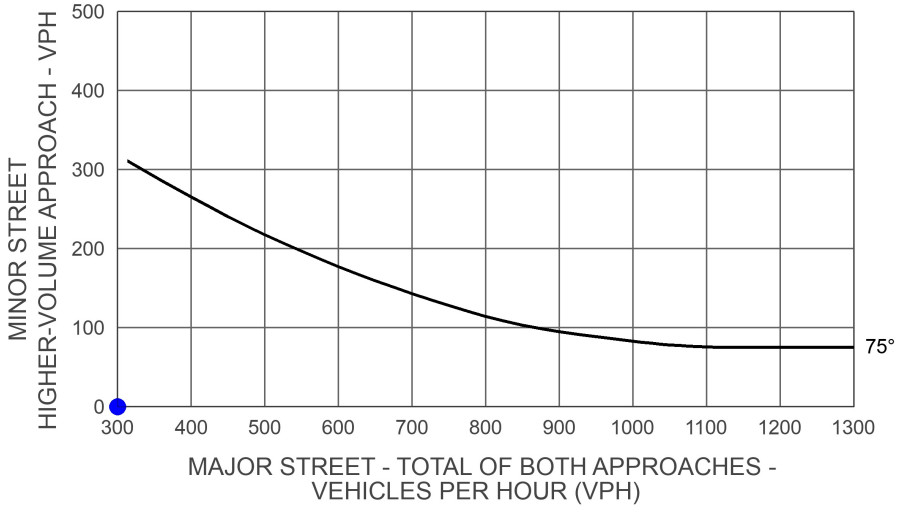


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 3



Major Total: 0
Minor High Volume: 0



Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

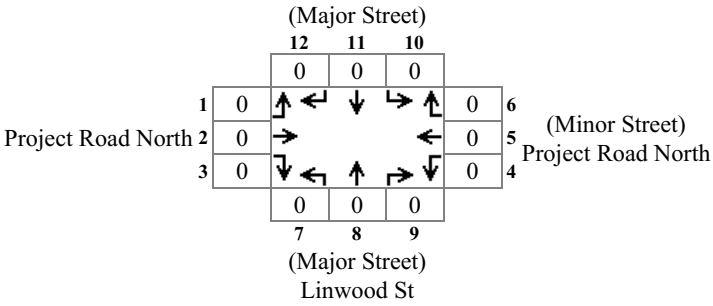
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

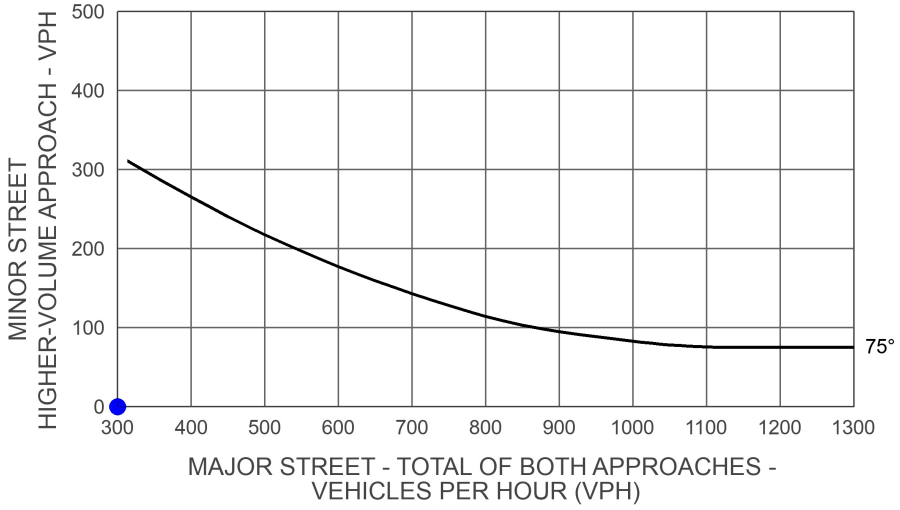
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 3

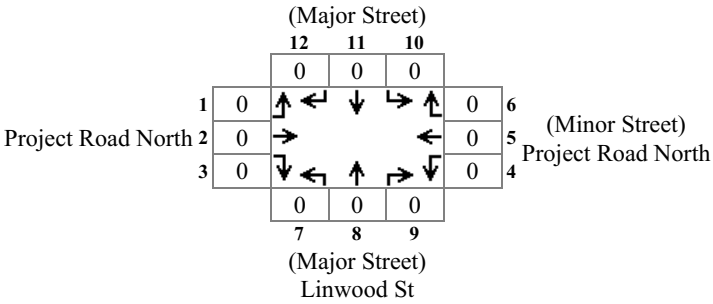


Major Total: 0
Minor High Volume: 0

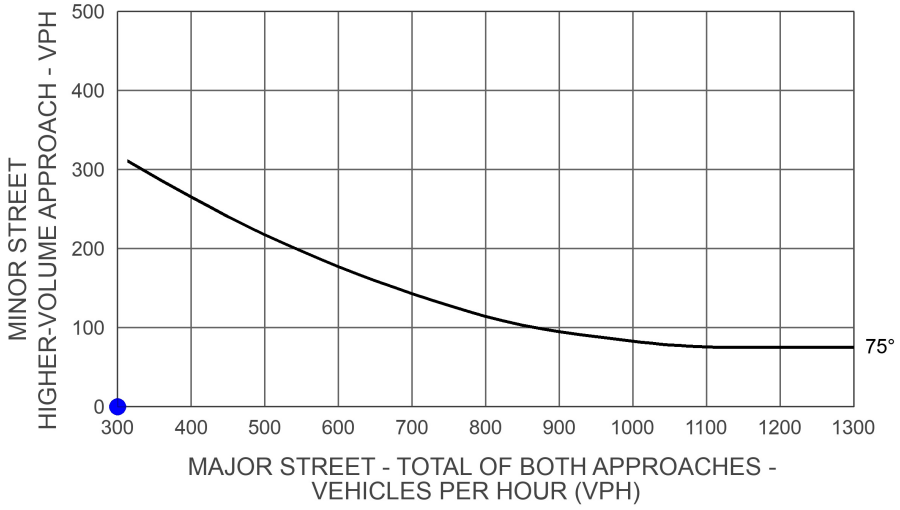


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 3

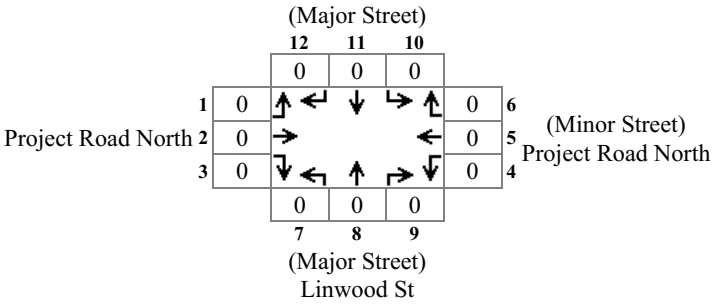


Major Total: 0
Minor High Volume: 0

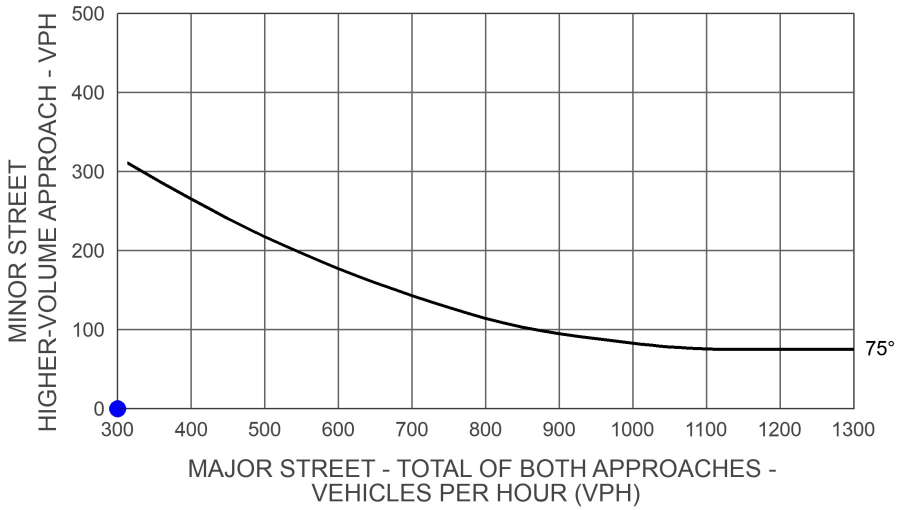


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 3

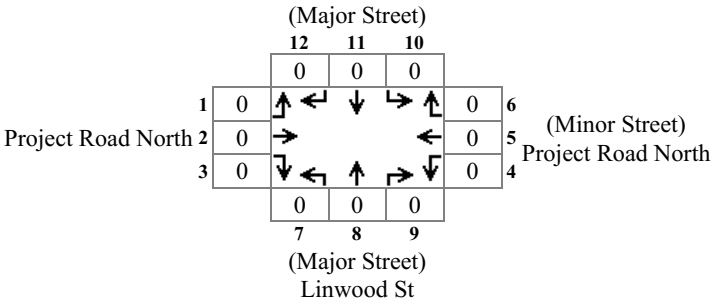


Major Total: 0
Minor High Volume: 0

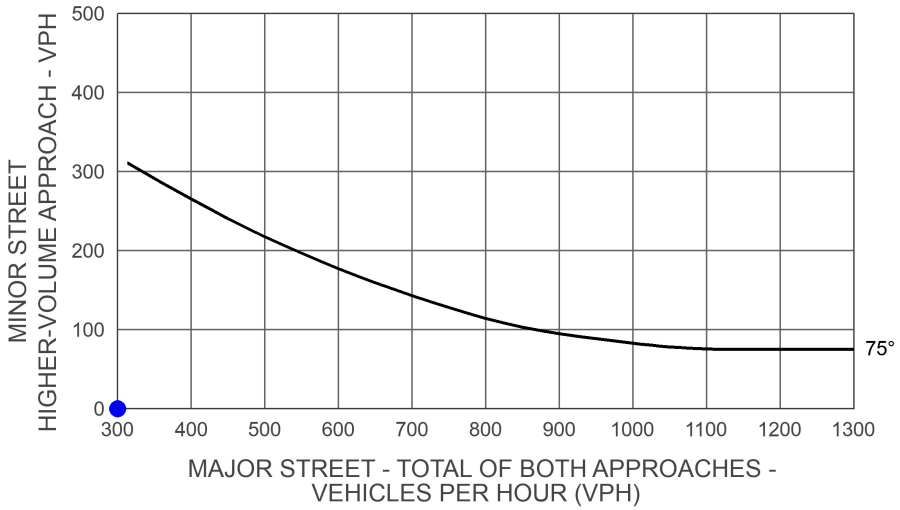


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 3



Major Total: 0
Minor High Volume: 0



Intersection 4
Demaree St & Arlet Ave

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	0	0	0	0	-	0
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	0	0	0	0	-	0
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	1	11	16	0	0	1
Future Vol, veh/h	1	11	16	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	1	12	17	0	0	1

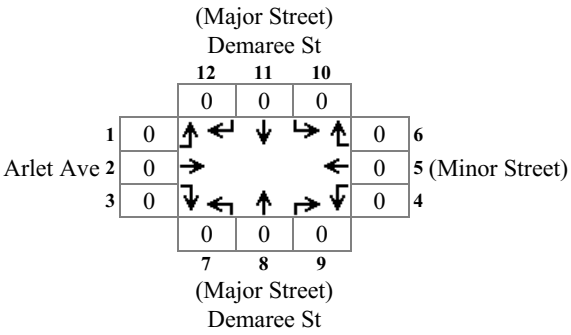
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	36	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	35	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	977	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	987	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	967	1084	1622	-	-	-
Mov Cap-2 Maneuver	967	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	977	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	7.2	0
HCM LOS	A		

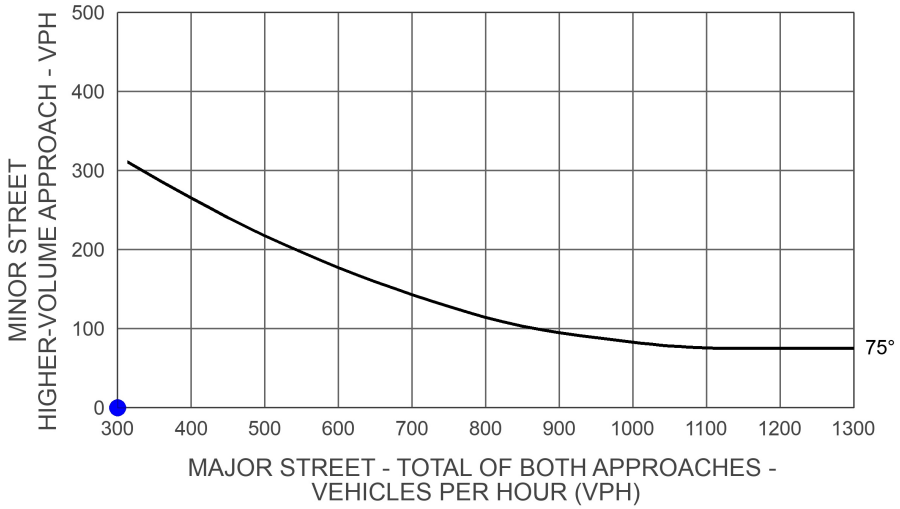
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1622	-	1073	-	-
HCM Lane V/C Ratio	0.011	-	0.012	-	-
HCM Control Delay (s)	7.2	0	8.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 4

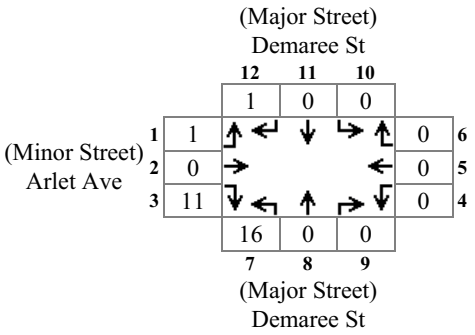


Major Total: 0
Minor High Volume: 0

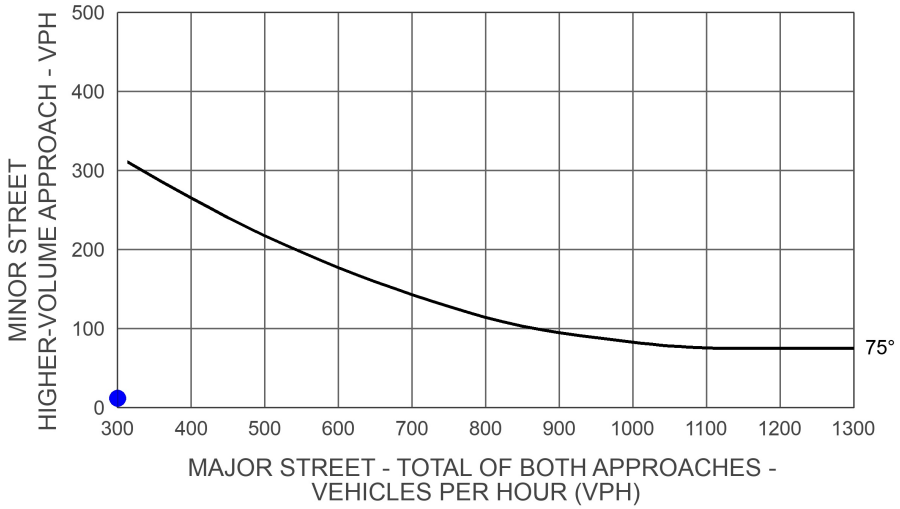


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 4

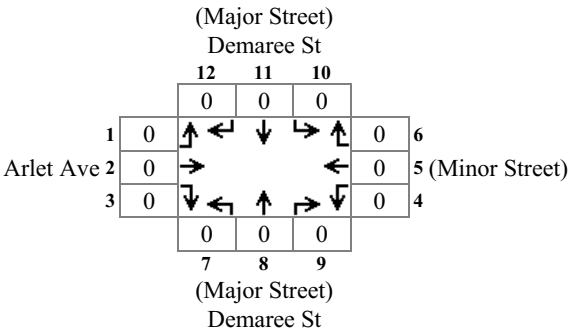


Major Total: 17
Minor High Volume: 12

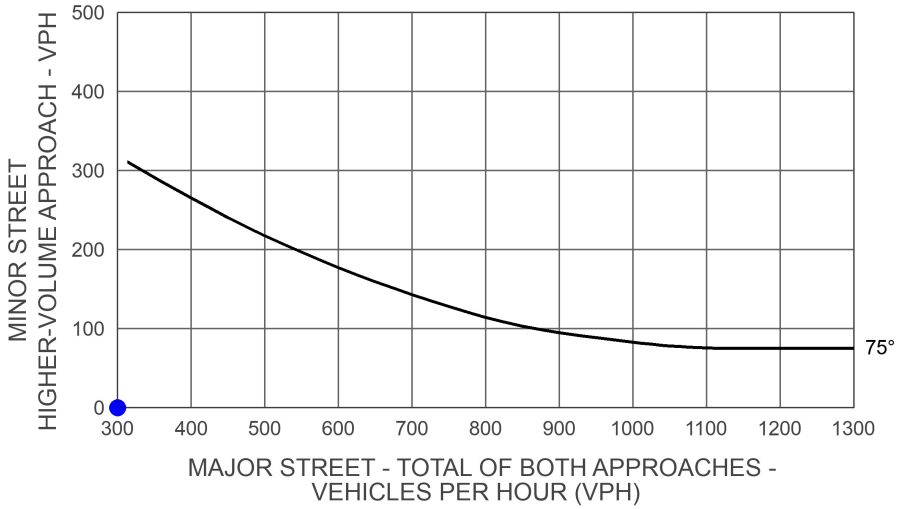


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 4

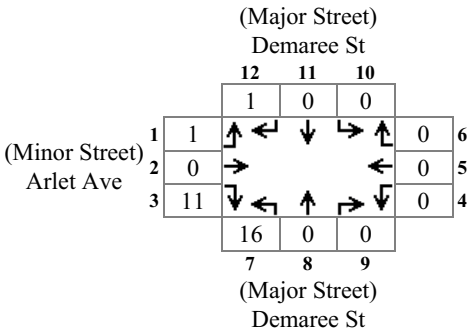


Major Total: 0
Minor High Volume: 0

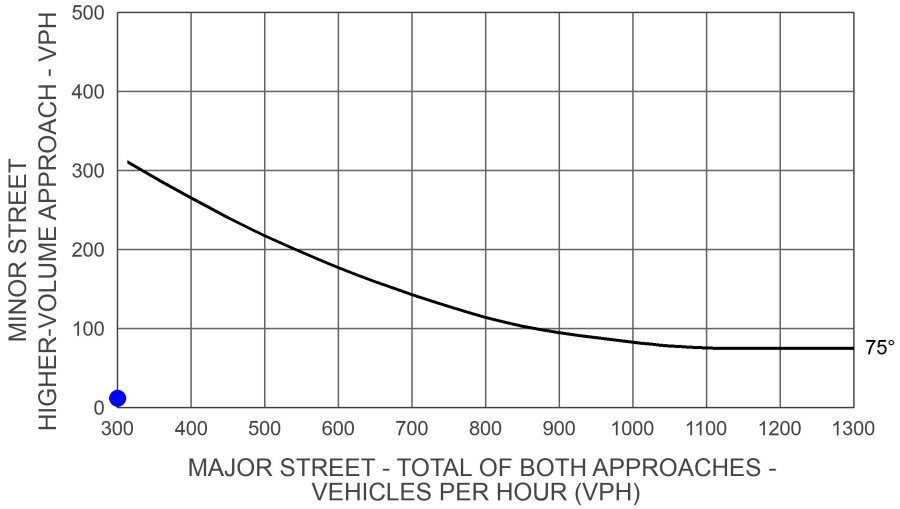


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 4



Major Total: 17
Minor High Volume: 12



Intersection	
Int Delay, s/veh	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	0	0	0	0	-	0
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	0	0	0	0	-	0
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	2	17	5	0	0	0
Future Vol, veh/h	2	17	5	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	2	18	5	0	0	0

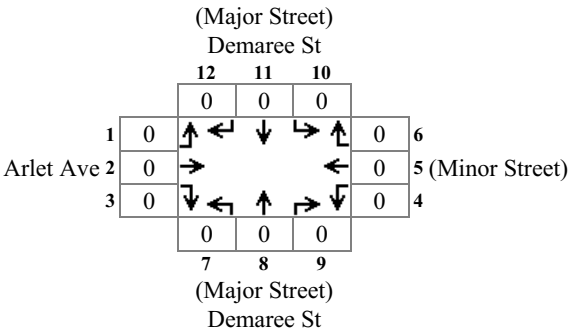
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	11	0	0	0	-	0
Stage 1	0	-	-	-	-	-
Stage 2	11	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1009	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1012	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1009	-	-	-	-	-
Mov Cap-2 Maneuver	1009	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1012	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s			0
HCM LOS	-		

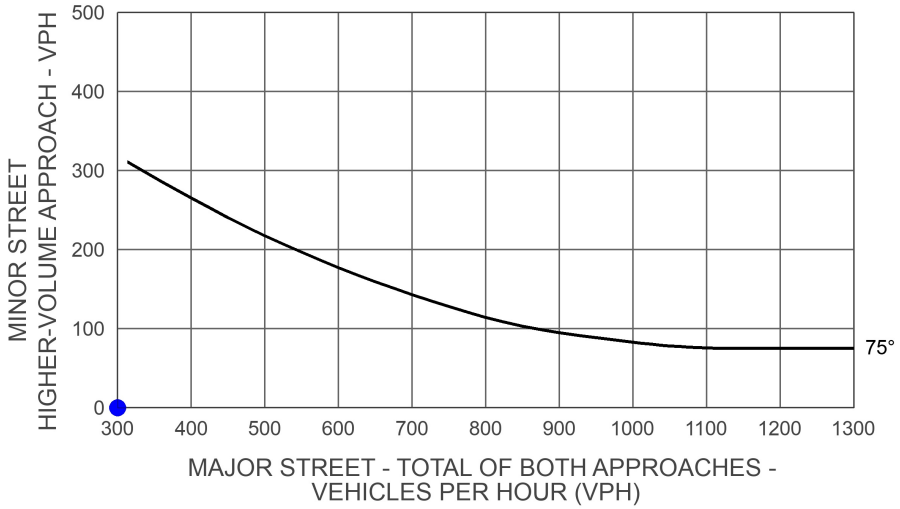
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 4

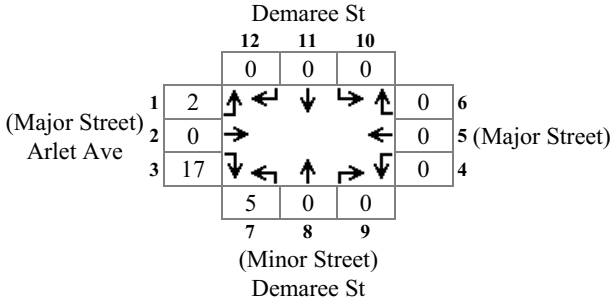


Major Total: 0
Minor High Volume: 0

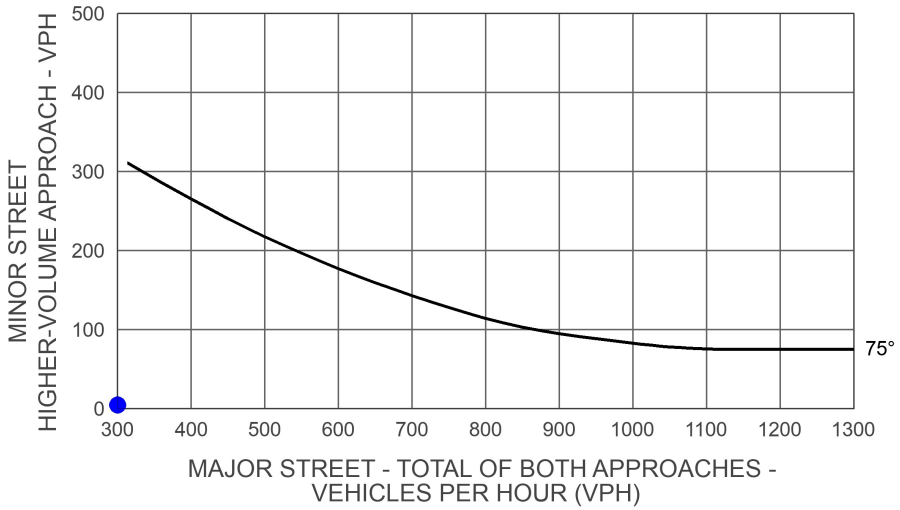


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 4

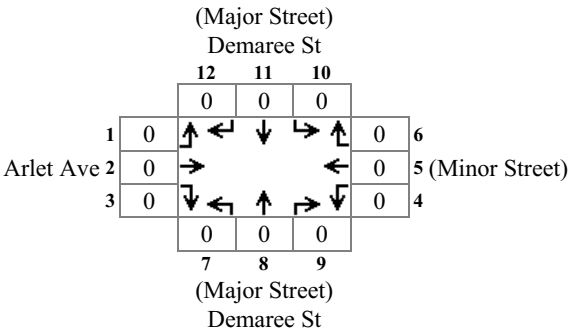


Major Total: 19
Minor High Volume: 5

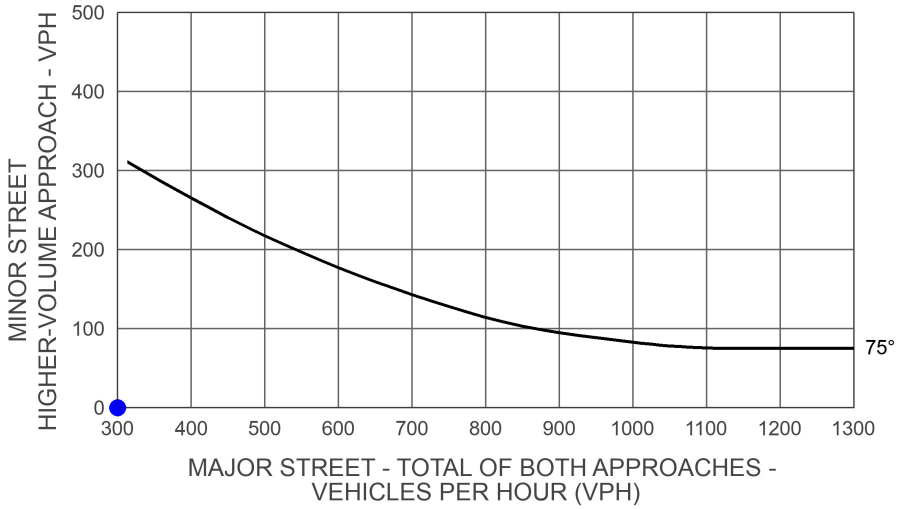


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 4

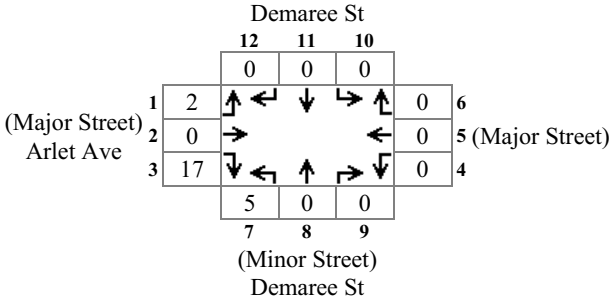


Major Total: 0
Minor High Volume: 0

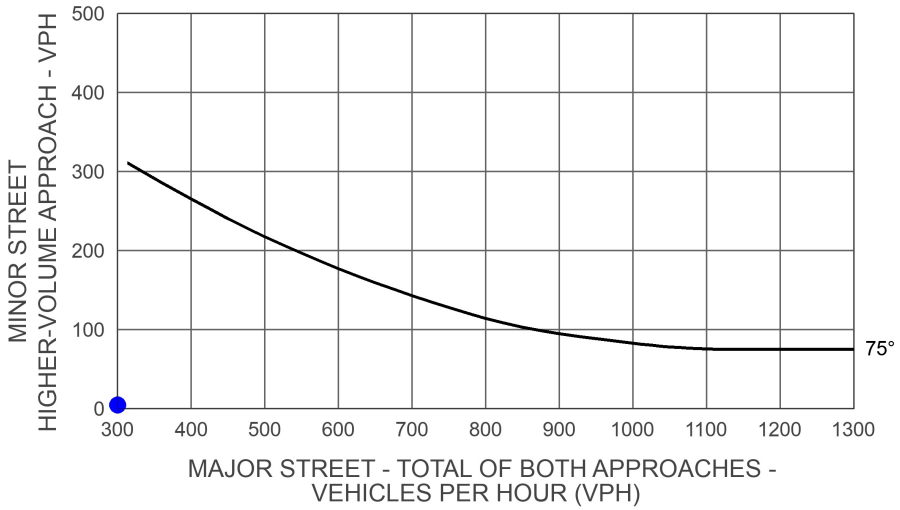


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 4



Major Total: 19
Minor High Volume: 5



Intersection 5
Demaree St & Pratt Rd

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	26	21	203	86	50	281
Future Vol, veh/h	26	21	203	86	50	281
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	28	23	221	93	54	305

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	635	221	0	0	221	0
Stage 1	221	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	443	819	-	-	1348	-
Stage 1	816	-	-	-	-	-
Stage 2	667	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	422	819	-	-	1348	-
Mov Cap-2 Maneuver	422	-	-	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	635	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	422	819	1348	-
HCM Lane V/C Ratio	-	-	0.067	0.028	0.04	-
HCM Control Delay (s)	-	-	14.1	9.5	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1	-

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	26	21	217	92	53	296
Future Vol, veh/h	26	21	217	92	53	296
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	28	23	236	100	58	322

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	673	236	0	0	236	0
Stage 1	236	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	421	803	-	-	1331	-
Stage 1	803	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	399	803	-	-	1331	-
Mov Cap-2 Maneuver	399	-	-	-	-	-
Stage 1	803	-	-	-	-	-
Stage 2	616	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	399	803	1331	-
HCM Lane V/C Ratio	-	-	0.071	0.028	0.043	-
HCM Control Delay (s)	-	-	14.7	9.6	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1	-

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	26	25	229	92	56	304
Future Vol, veh/h	26	25	229	92	56	304
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	28	27	249	100	61	330

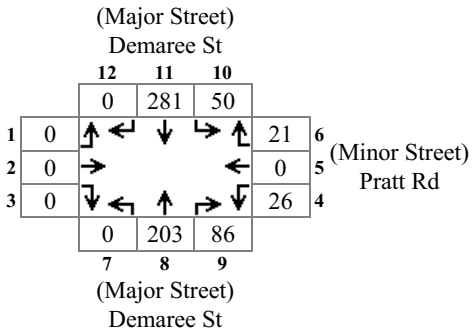
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	701	249	0	0	249	0
Stage 1	249	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	405	790	-	-	1317	-
Stage 1	792	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	382	790	-	-	1317	-
Mov Cap-2 Maneuver	382	-	-	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	1.2
HCM LOS	B		

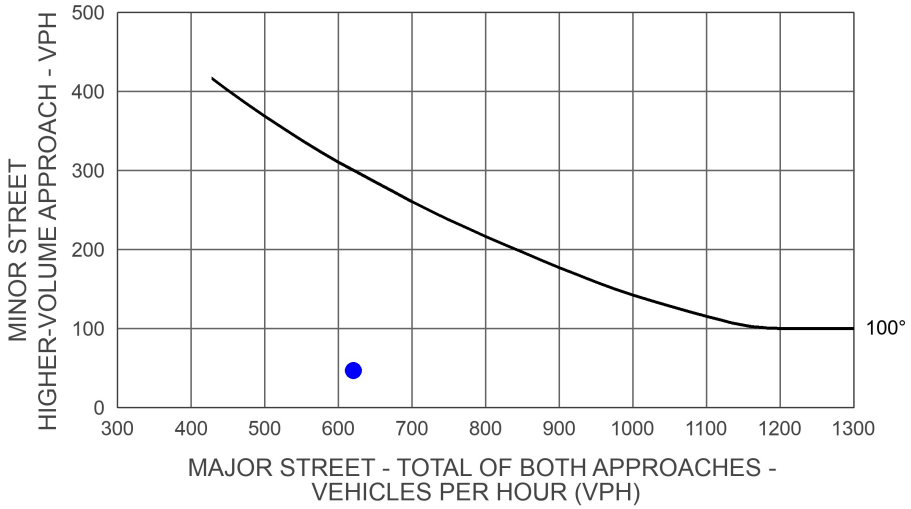
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	382	790	1317	-
HCM Lane V/C Ratio	-	-	0.074	0.034	0.046	-
HCM Control Delay (s)	-	-	15.2	9.7	7.9	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 5

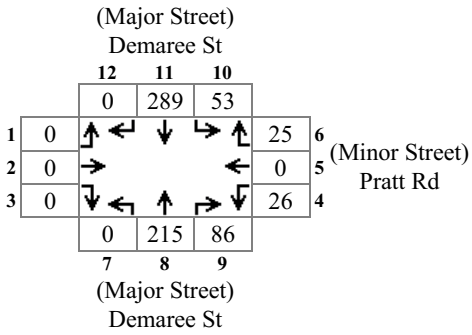


Major Total: 620
Minor High Volume: 47

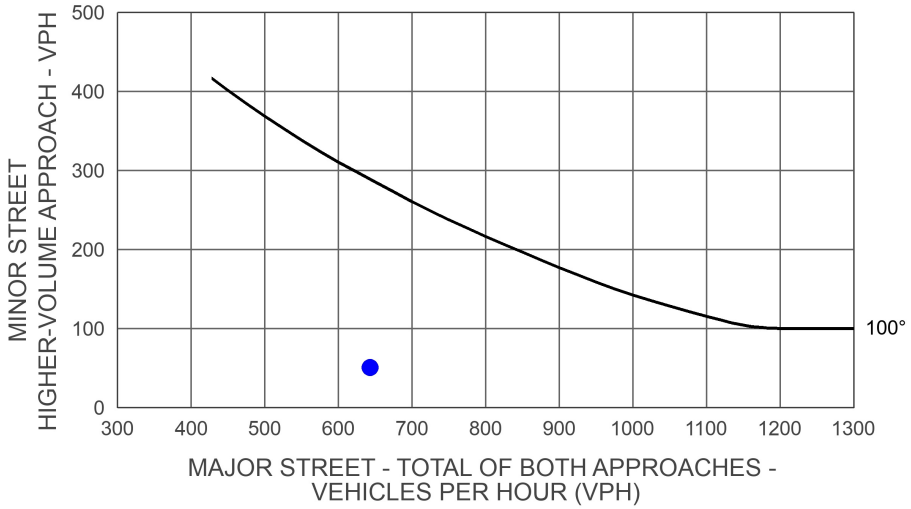


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 5

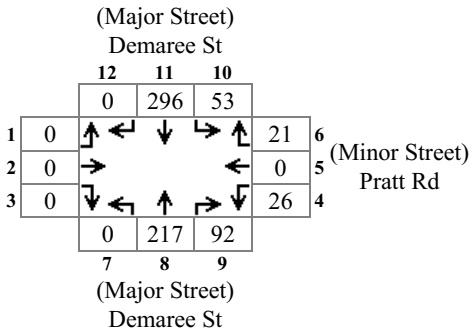


Major Total: 643
Minor High Volume: 51

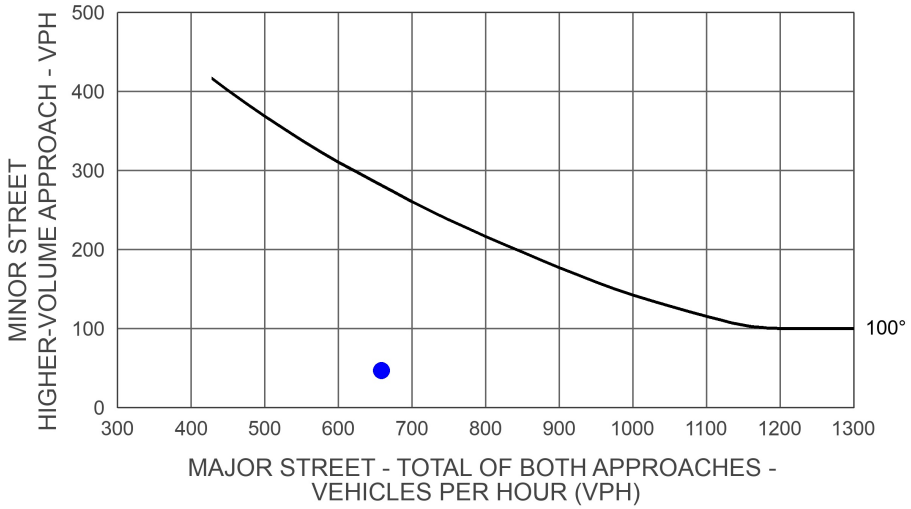


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 5

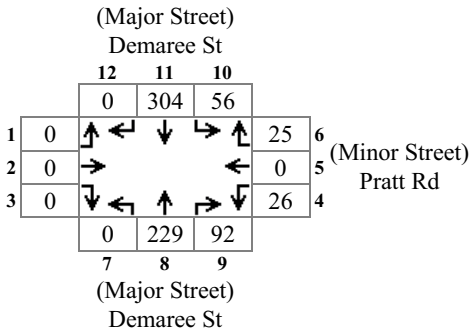


Major Total: 658
Minor High Volume: 47

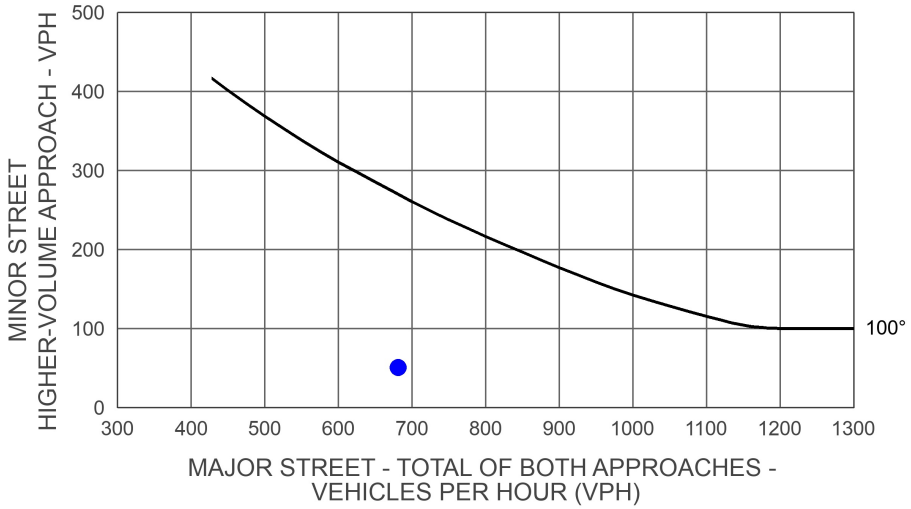


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 5



Major Total: 681
Minor High Volume: 51



Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	47	59	246	28	25	213
Future Vol, veh/h	47	59	246	28	25	213
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	51	64	267	30	27	232

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	553	267	0	0	267	0
Stage 1	267	-	-	-	-	-
Stage 2	286	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	494	772	-	-	1297	-
Stage 1	778	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	482	772	-	-	1297	-
Mov Cap-2 Maneuver	482	-	-	-	-	-
Stage 1	778	-	-	-	-	-
Stage 2	745	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	482	772	1297	-
HCM Lane V/C Ratio	-	-	0.106	0.083	0.021	-
HCM Control Delay (s)	-	-	13.4	10.1	7.8	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.3	0.1	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	48	60	263	30	26	224
Future Vol, veh/h	48	60	263	30	26	224
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	52	65	286	33	28	243

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	586	286	0	0	286	0
Stage 1	286	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	473	753	-	-	1276	-
Stage 1	763	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	461	753	-	-	1276	-
Mov Cap-2 Maneuver	461	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	733	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	461	753	1276	-
HCM Lane V/C Ratio	-	-	0.113	0.087	0.022	-
HCM Control Delay (s)	-	-	13.8	10.2	7.9	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.3	0.1	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	48	61	266	30	31	237
Future Vol, veh/h	48	61	266	30	31	237
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	52	66	289	33	34	258

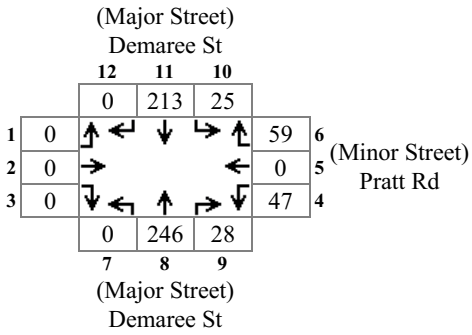
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	614	289	0	0	289	0
Stage 1	289	-	-	-	-	-
Stage 2	325	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	455	750	-	-	1273	-
Stage 1	760	-	-	-	-	-
Stage 2	732	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	441	750	-	-	1273	-
Mov Cap-2 Maneuver	441	-	-	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.9
HCM LOS	B		

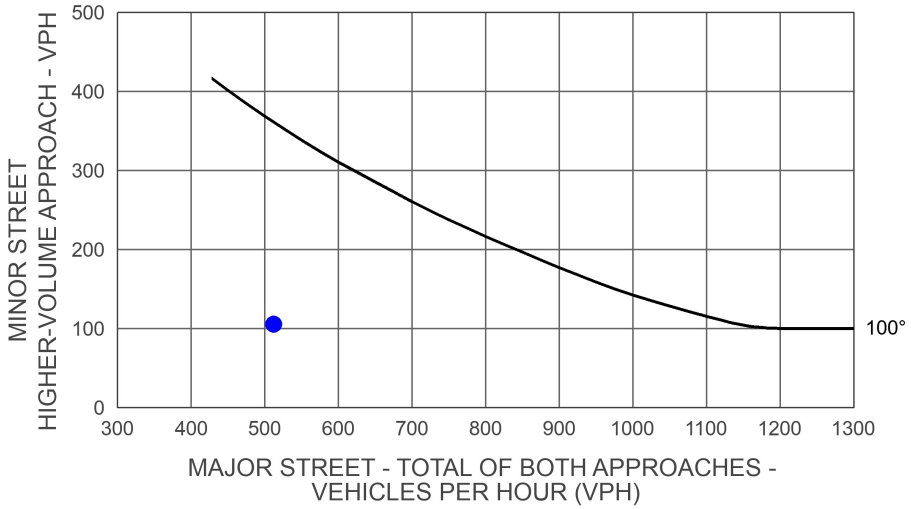
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	441	750	1273	-
HCM Lane V/C Ratio	-	-	0.118	0.088	0.026	-
HCM Control Delay (s)	-	-	14.3	10.3	7.9	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.3	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 5

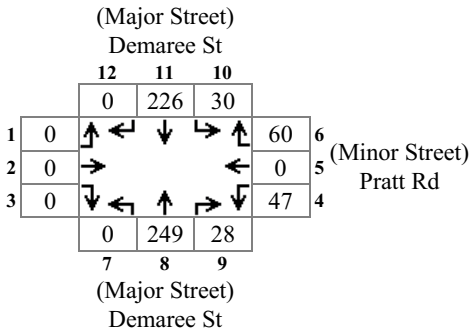


Major Total: 512
Minor High Volume: 106

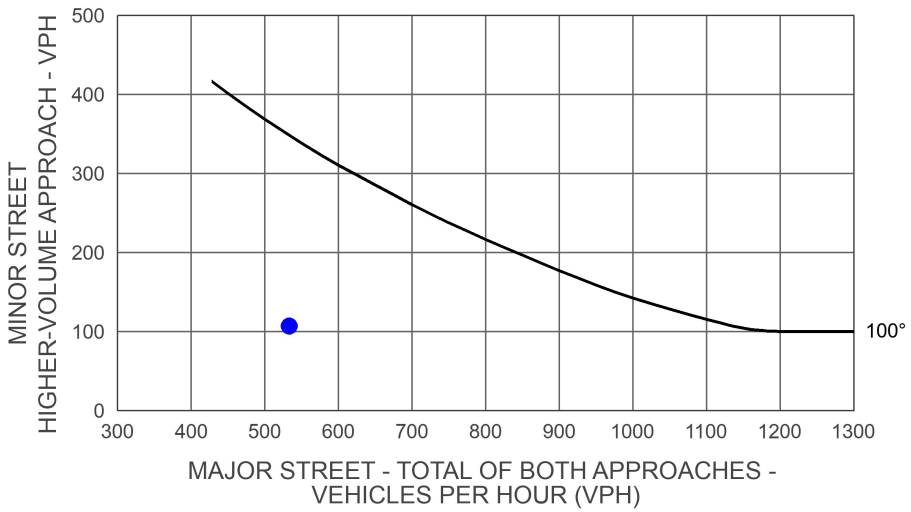


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 5

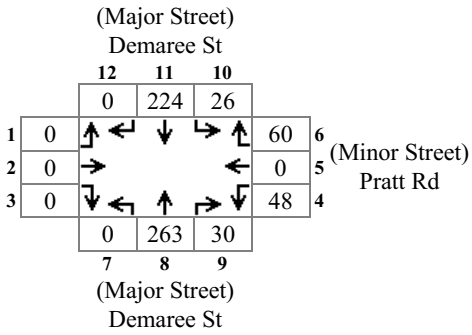


Major Total: 533
Minor High Volume: 107

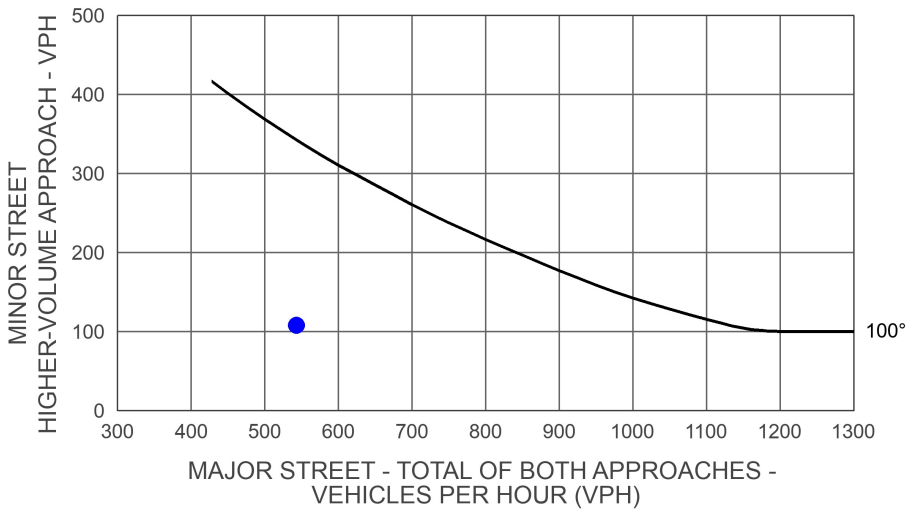


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 5

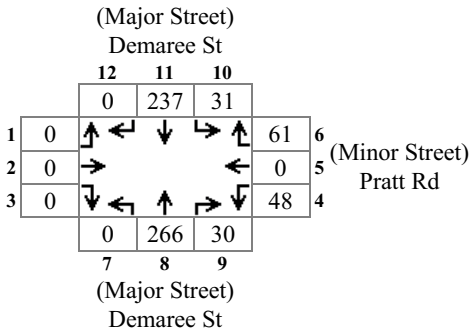


Major Total: 543
Minor High Volume: 108

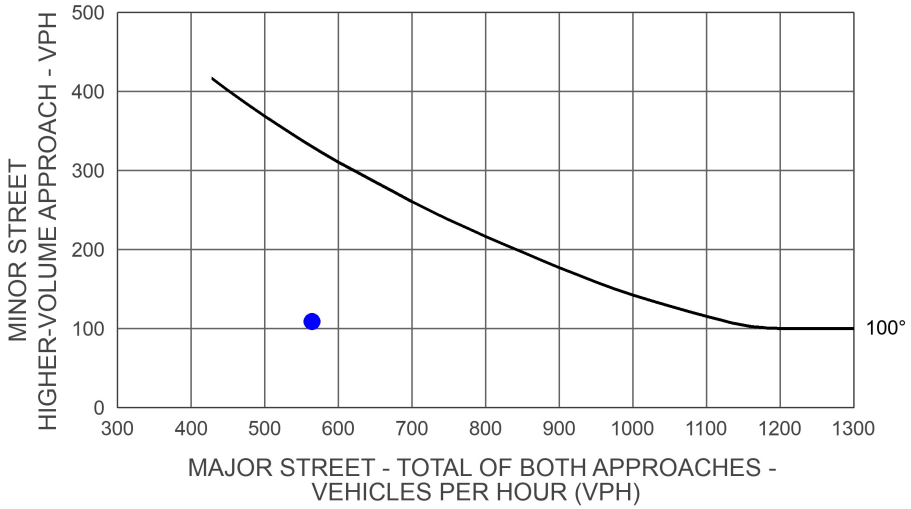


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 5



Major Total: 564
Minor High Volume: 109



Intersection 6
Country Center St & Pratt Rd

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	78	13	5	50	9	6
Future Vol, veh/h	78	13	5	50	9	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	85	14	5	54	10	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	99	0	157	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	65	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1494	-	834	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	958	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1494	-	831	965
Mov Cap-2 Maneuver	-	-	-	-	831	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	955	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	831	965	-	-	1494	-
HCM Lane V/C Ratio	0.012	0.007	-	-	0.004	-
HCM Control Delay (s)	9.4	8.8	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	80	13	5	51	10	7
Future Vol, veh/h	80	13	5	51	10	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	87	14	5	55	11	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	101	0	160	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	66	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1491	-	831	963
Stage 1	-	-	-	-	930	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1491	-	828	963
Mov Cap-2 Maneuver	-	-	-	-	828	-
Stage 1	-	-	-	-	930	-
Stage 2	-	-	-	-	954	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	828	963	-	-	1491	-
HCM Lane V/C Ratio	0.013	0.008	-	-	0.004	-
HCM Control Delay (s)	9.4	8.8	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	82	14	5	54	11	7
Future Vol, veh/h	82	14	5	54	11	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	89	15	5	59	12	8

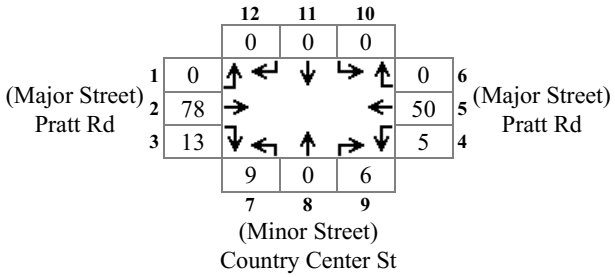
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	104	0	167	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	70	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1488	-	823	959
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	953	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1488	-	820	959
Mov Cap-2 Maneuver	-	-	-	-	820	-
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	950	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.2
HCM LOS			A

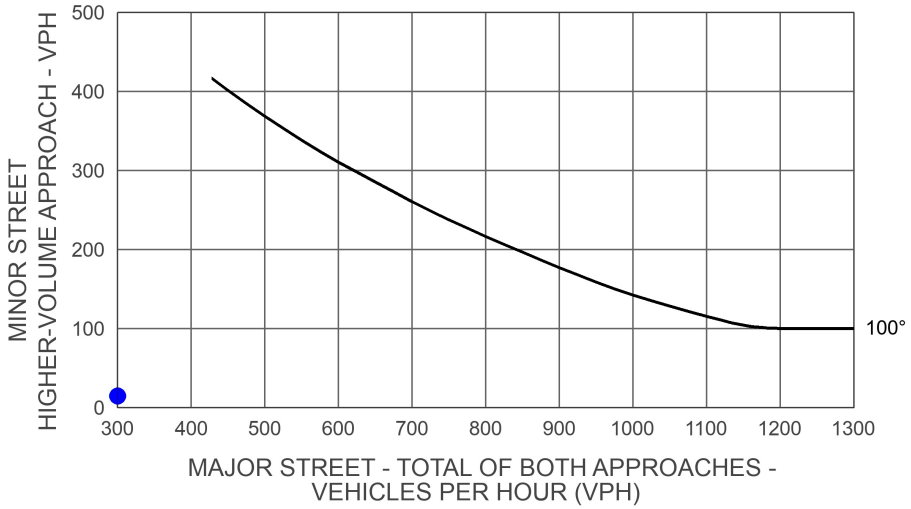
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	820	959	-	-	1488	-
HCM Lane V/C Ratio	0.015	0.008	-	-	0.004	-
HCM Control Delay (s)	9.5	8.8	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 6

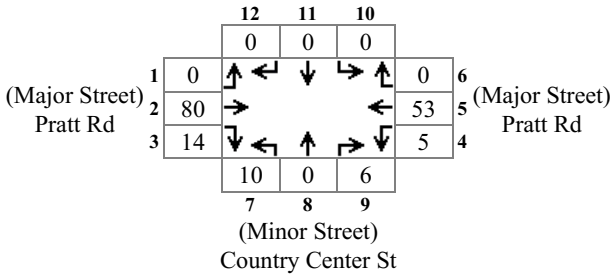


Major Total: 146
Minor High Volume: 15

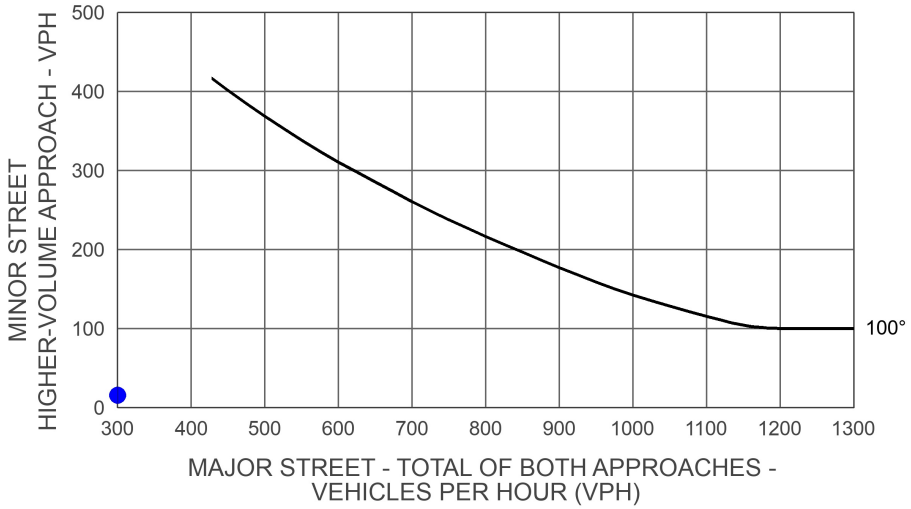


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 6

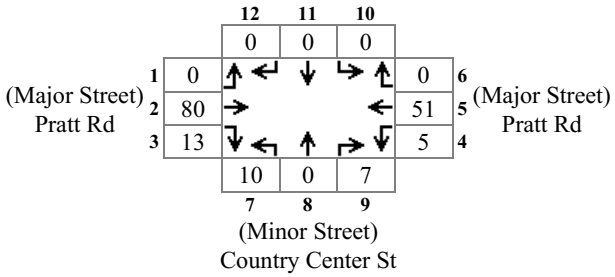


Major Total: 152
Minor High Volume: 16

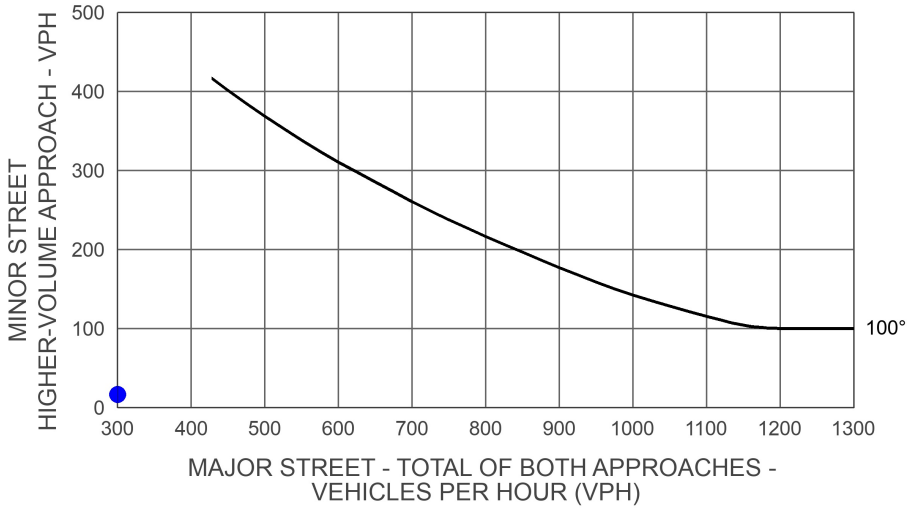


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 6

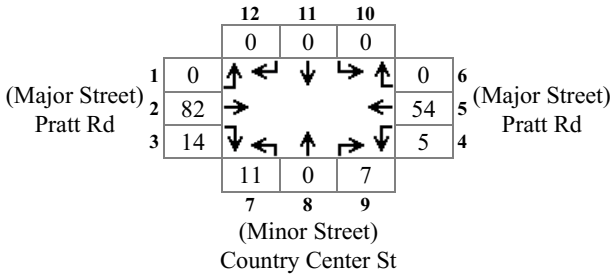


Major Total: 149
Minor High Volume: 17

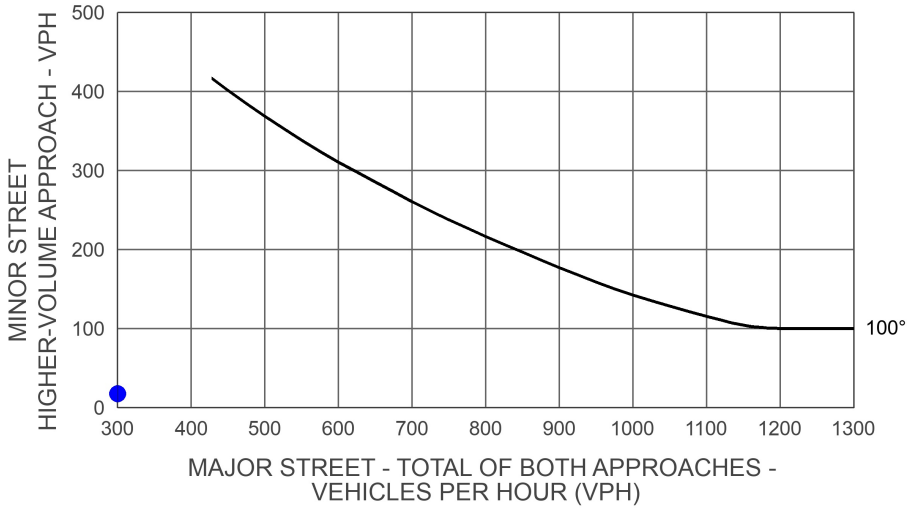


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 6



Major Total: 155
Minor High Volume: 18



Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	55	10	1	48	15	2
Future Vol, veh/h	55	10	1	48	15	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	60	11	1	52	16	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	71	0	119	65
Stage 1	-	-	-	-	65	-
Stage 2	-	-	-	-	54	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1529	-	877	999
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1529	-	876	999
Mov Cap-2 Maneuver	-	-	-	-	876	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	968	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	876	999	-	-	1529	-
HCM Lane V/C Ratio	0.019	0.002	-	-	0.001	-
HCM Control Delay (s)	9.2	8.6	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	56	10	1	49	17	2
Future Vol, veh/h	56	10	1	49	17	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	61	11	1	53	18	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	72	0	121	66
Stage 1	-	-	-	-	66	-
Stage 2	-	-	-	-	55	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1528	-	874	998
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	968	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1528	-	873	998
Mov Cap-2 Maneuver	-	-	-	-	873	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	967	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	873	998	-	-	1528	-
HCM Lane V/C Ratio	0.021	0.002	-	-	0.001	-
HCM Control Delay (s)	9.2	8.6	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	59	12	1	50	17	2
Future Vol, veh/h	59	12	1	50	17	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	64	13	1	54	18	2

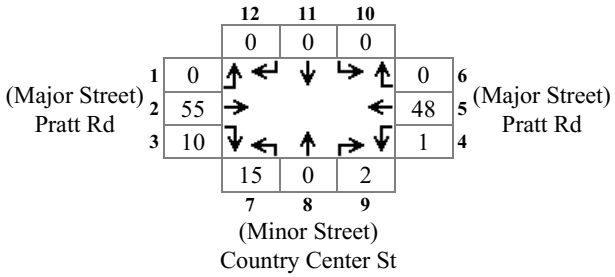
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	77	0	128	71
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	57	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1522	-	866	991
Stage 1	-	-	-	-	952	-
Stage 2	-	-	-	-	966	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1522	-	865	991
Mov Cap-2 Maneuver	-	-	-	-	865	-
Stage 1	-	-	-	-	952	-
Stage 2	-	-	-	-	965	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.2
HCM LOS			A

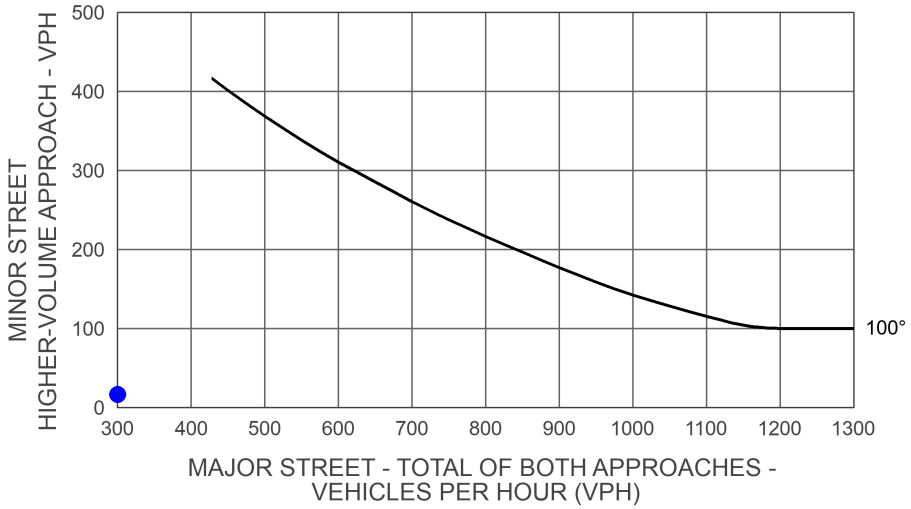
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	865	991	-	-	1522	-
HCM Lane V/C Ratio	0.021	0.002	-	-	0.001	-
HCM Control Delay (s)	9.3	8.6	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 6

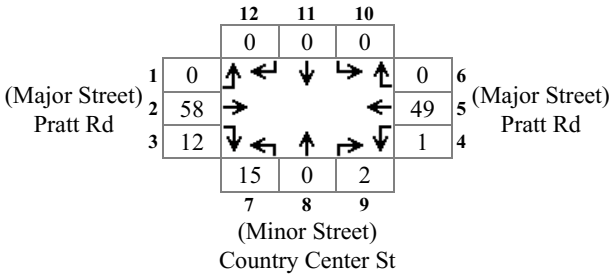


Major Total: 114
Minor High Volume: 17

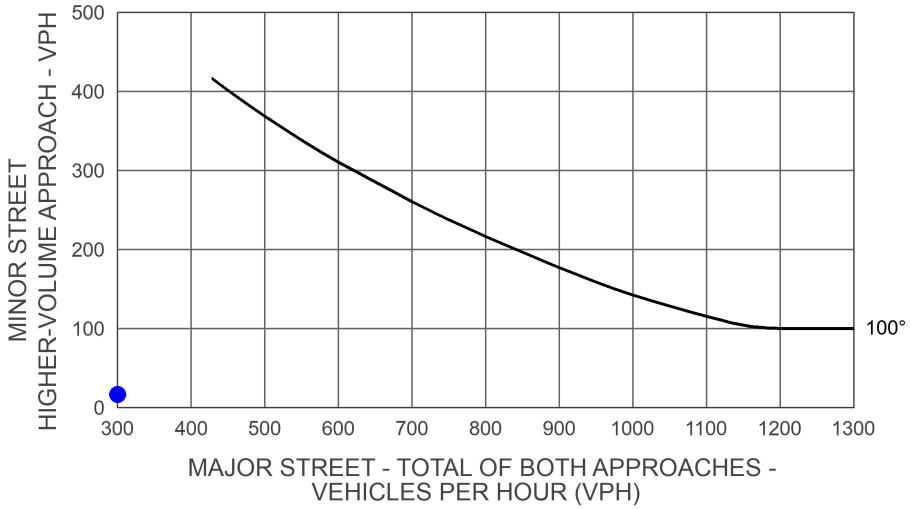


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 6

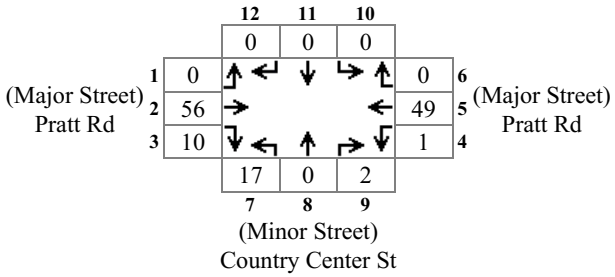


Major Total: 120
Minor High Volume: 17

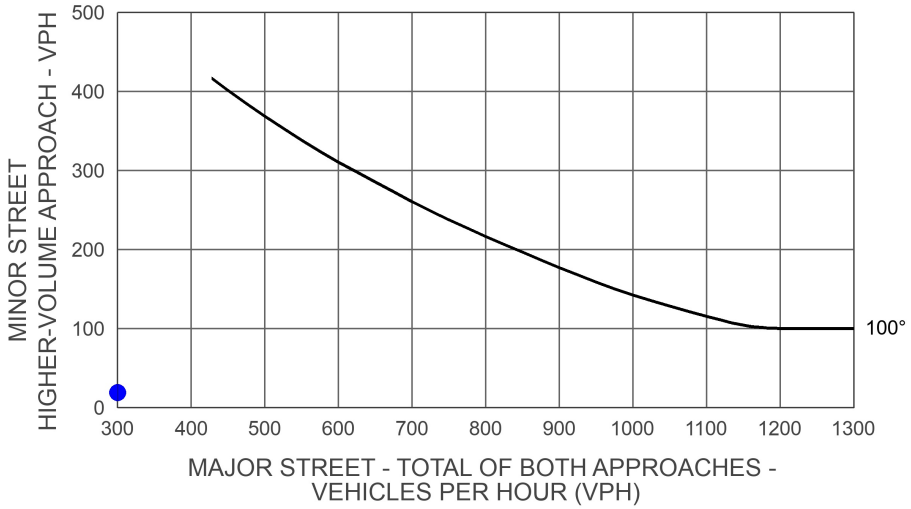


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 6

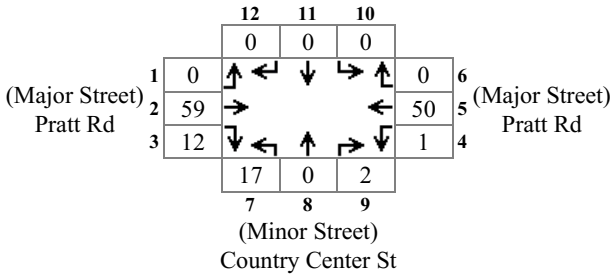


Major Total: 116
Minor High Volume: 19

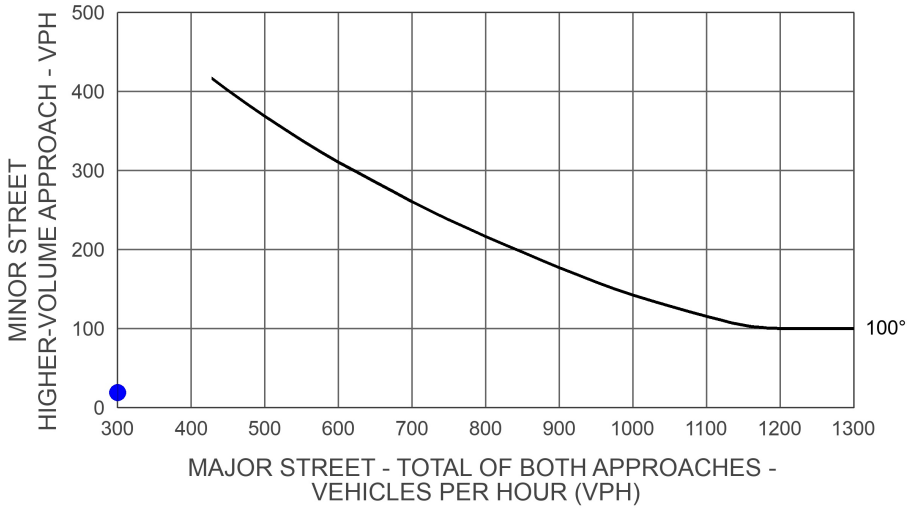


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 6



Major Total: 122
Minor High Volume: 19



Intersection 7
Mooney Blvd & Pratt Rd

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	85	55	0	0	0
Future Vol, veh/h	0	85	55	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	92	60	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	92	0	212	0
Stage 1	-	-	-	-	120	-
Stage 2	-	-	-	-	92	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	685	-
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	86	56	0	0	0
Future Vol, veh/h	0	86	56	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	93	61	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	93	0	215	0
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	93	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	683	-
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	88	59	0	0	0
Future Vol, veh/h	0	88	59	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	96	64	0	0	0

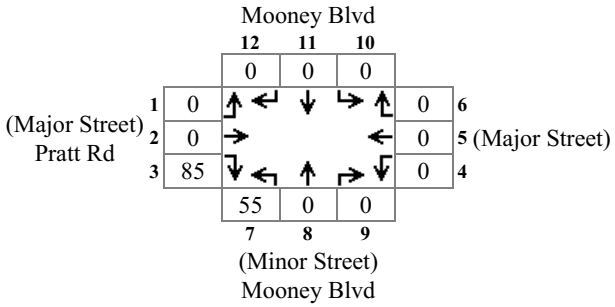
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	96	0	224	0
Stage 1	-	-	-	-	128	-
Stage 2	-	-	-	-	96	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	675	-
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

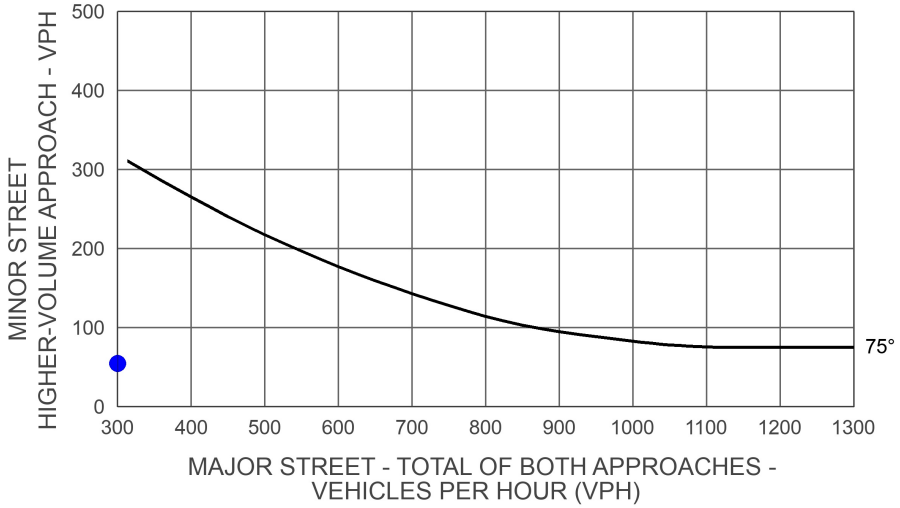
Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 7

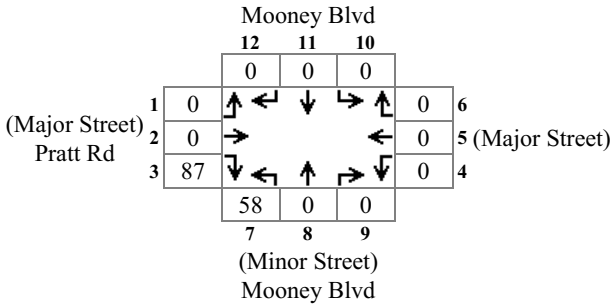


Major Total: 85
Minor High Volume: 55

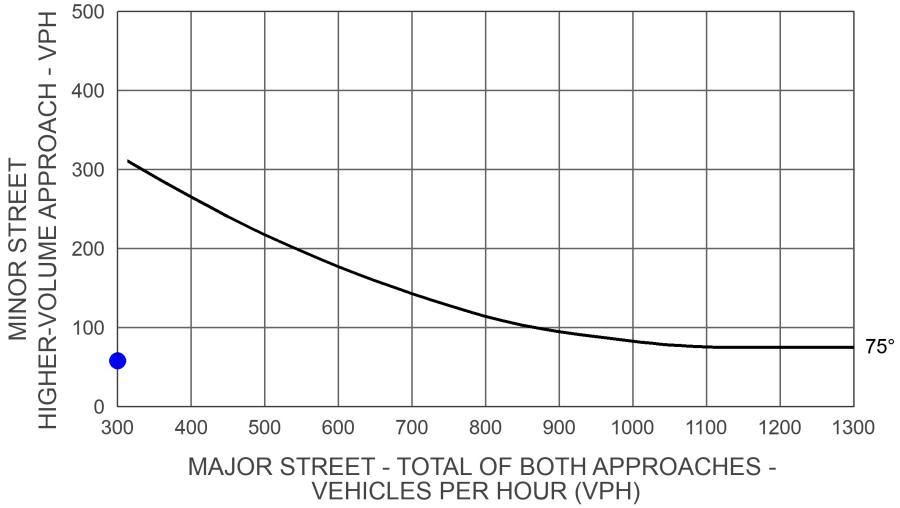


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 7

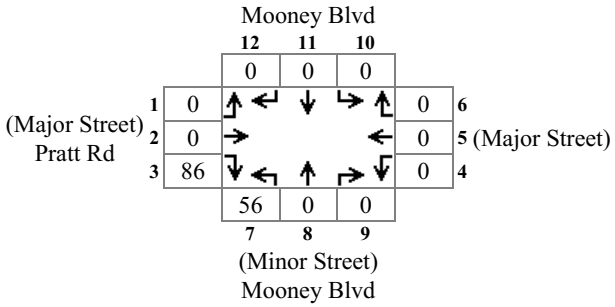


Major Total: 87
Minor High Volume: 58

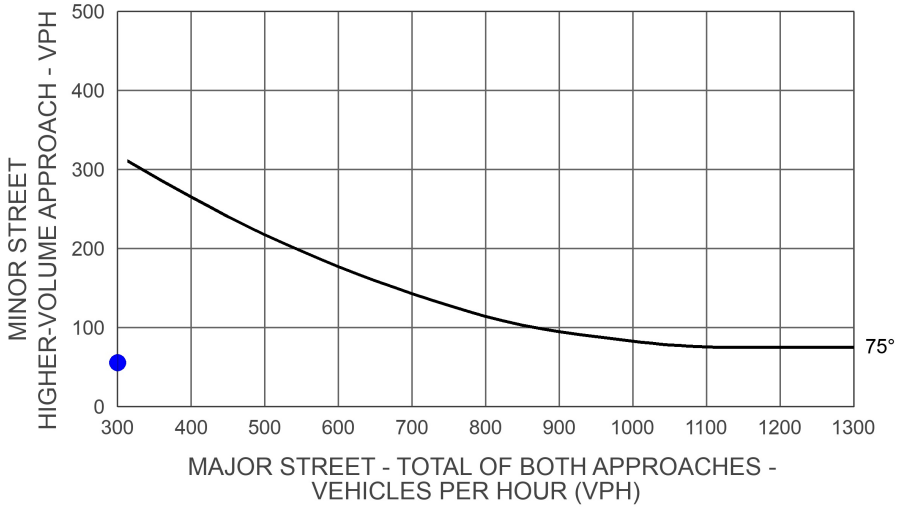


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 7

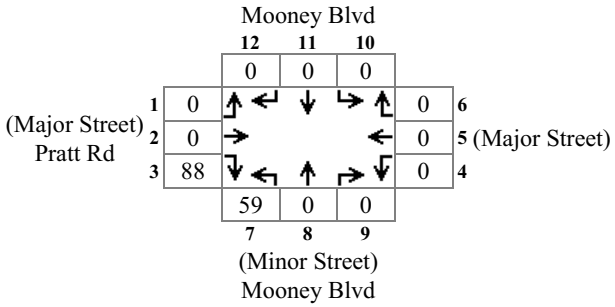


Major Total: 86
Minor High Volume: 56

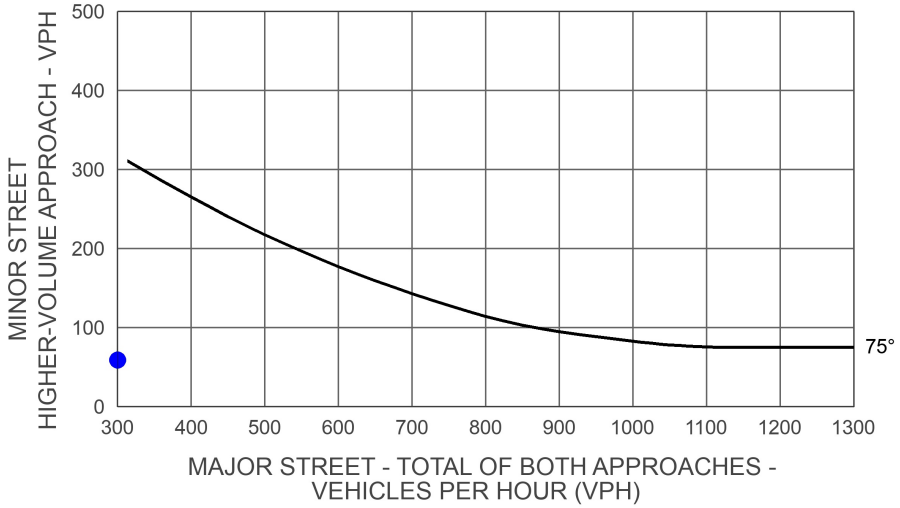


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 7



Major Total: 88
Minor High Volume: 59



Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	56	48	0	0	0
Future Vol, veh/h	0	56	48	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	61	52	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	61	0	165	0
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	61	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	728	-
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	57	48	0	0	0
Future Vol, veh/h	0	57	48	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	62	52	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	62	0	166	0
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	62	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	727	-
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	60	49	0	0	0
Future Vol, veh/h	0	60	49	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	65	53	0	0	0

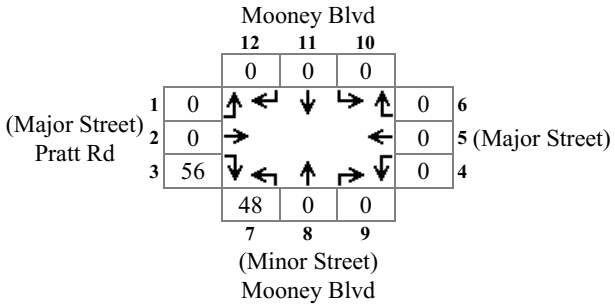
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	65	0	172	0
Stage 1	-	-	-	-	107	-
Stage 2	-	-	-	-	65	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	721	-
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

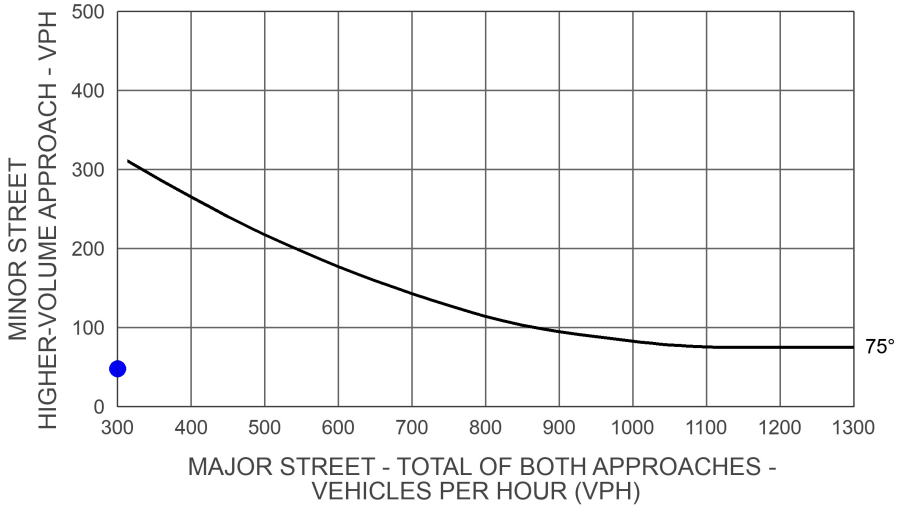
Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 7

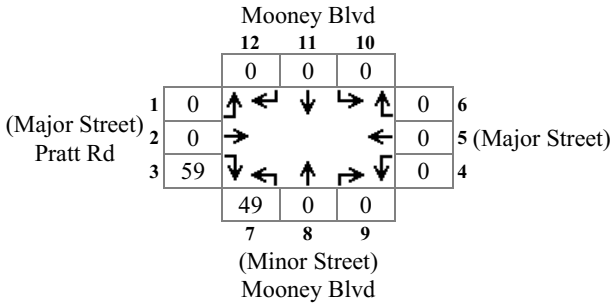


Major Total: 56
Minor High Volume: 48

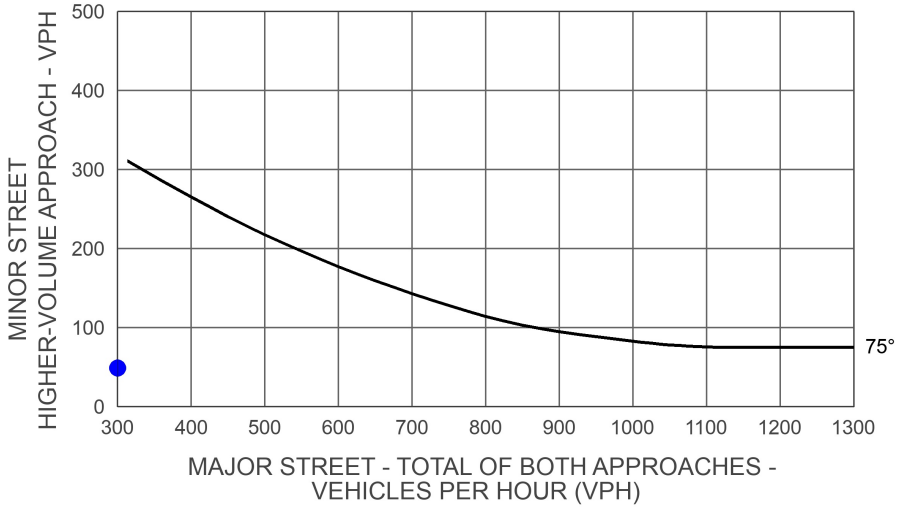


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 7

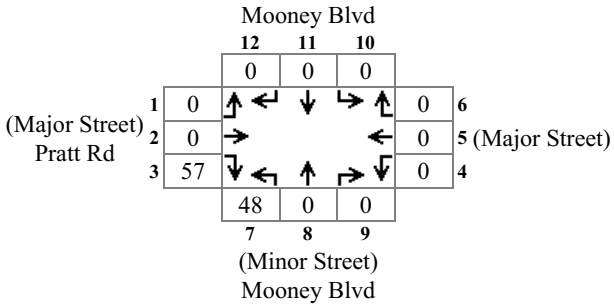


Major Total: 59
Minor High Volume: 49

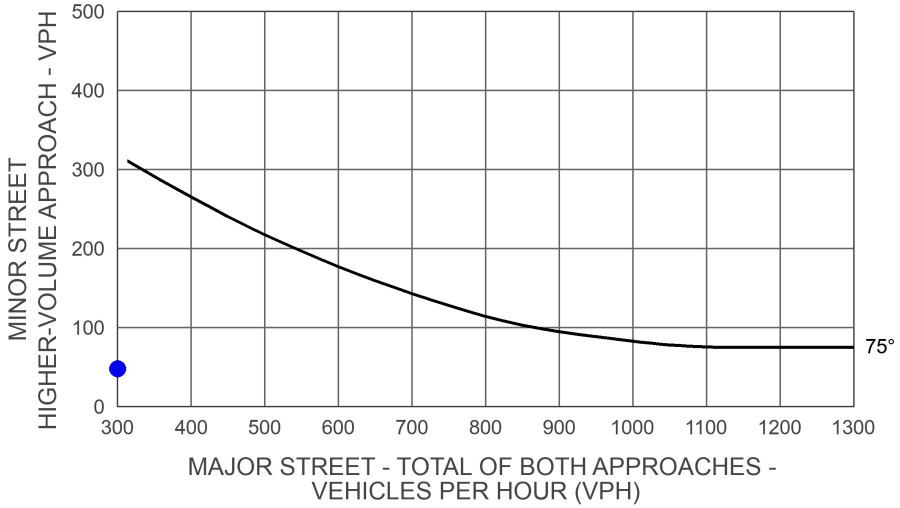


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 7



Major Total: 57
Minor High Volume: 48



Intersection 8
Akers St & Shannon Prkwy

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	87	0	0	0	65	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	87	0	0	0	65	0
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	95	0	0	0	71	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.5	7.4
HCM LOS	-	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	87	0	0	65
LT Vol	0	0	0	0
Through Vol	87	0	0	65
RT Vol	0	0	0	0
Lane Flow Rate	95	0	0	71
Geometry Grp	1	1	1	1
Degree of Util (X)	0.105	0	0	0.079
Departure Headway (Hd)	3.986	4.218	4.218	4.004
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	901	0	0	897
Service Time	2	2.288	2.288	2.021
HCM Lane V/C Ratio	0.105	0	0	0.079
HCM Control Delay	7.5	7.3	7.3	7.4
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.4	0	0	0.3

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	92	0	0	0	69	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	92	0	0	0	69	0
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	100	0	0	0	75	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.5	7.4
HCM LOS	-	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	0	0	69
LT Vol	0	0	0	0
Through Vol	92	0	0	69
RT Vol	0	0	0	0
Lane Flow Rate	100	0	0	75
Geometry Grp	1	1	1	1
Degree of Util (X)	0.111	0	0	0.084
Departure Headway (Hd)	3.99	4.235	4.235	4.008
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	901	0	0	896
Service Time	2.004	2.309	2.309	2.026
HCM Lane V/C Ratio	0.111	0	0	0.084
HCM Control Delay	7.5	7.3	7.3	7.4
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.4	0	0	0.3

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

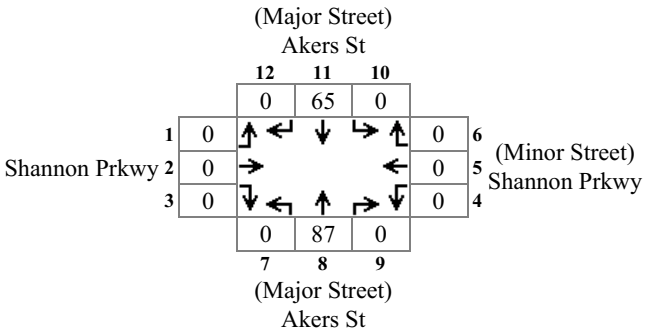
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	92	0	0	0	69	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	92	0	0	0	69	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	100	0	0	0	75	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.5	7.4
HCM LOS	-	-	A	A

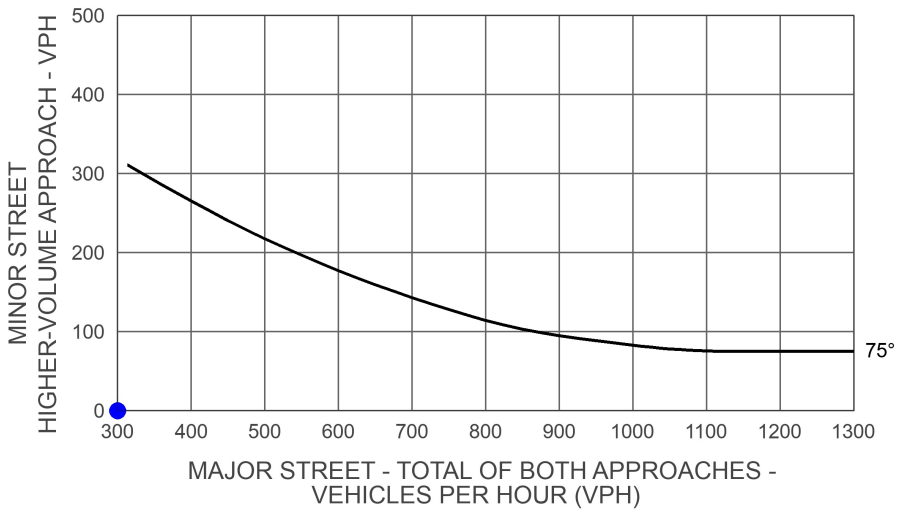
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	0	0	69
LT Vol	0	0	0	0
Through Vol	92	0	0	69
RT Vol	0	0	0	0
Lane Flow Rate	100	0	0	75
Geometry Grp	1	1	1	1
Degree of Util (X)	0.111	0	0	0.084
Departure Headway (Hd)	3.99	4.235	4.235	4.008
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	901	0	0	896
Service Time	2.004	2.309	2.309	2.026
HCM Lane V/C Ratio	0.111	0	0	0.084
HCM Control Delay	7.5	7.3	7.3	7.4
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.4	0	0	0.3

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 8

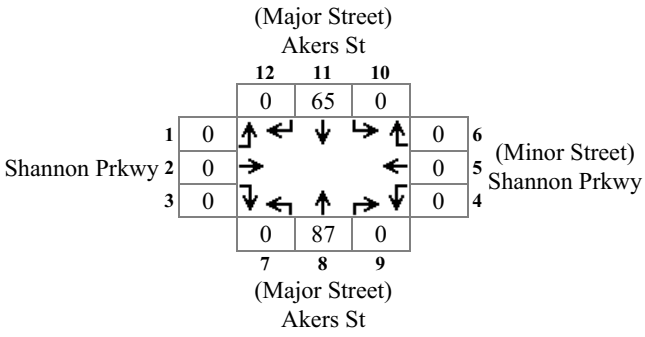


Major Total: 152
Minor High Volume: 0

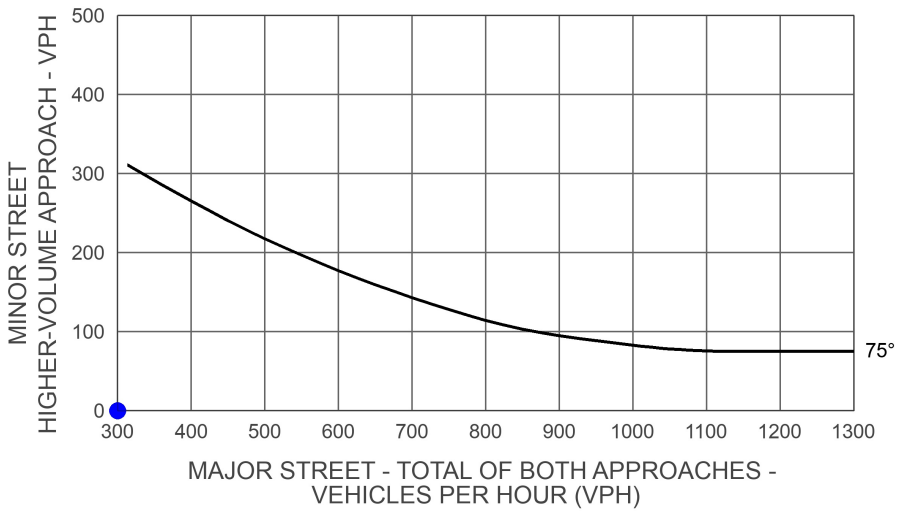


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 8

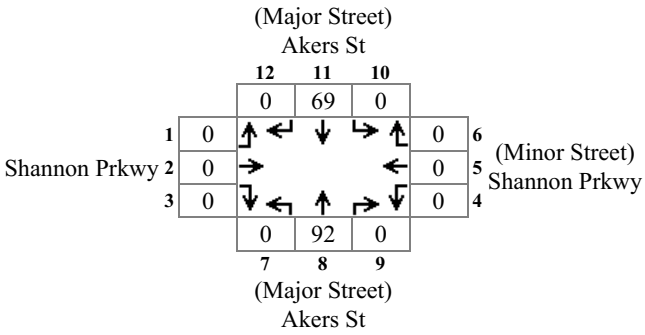


Major Total: 152
Minor High Volume: 0

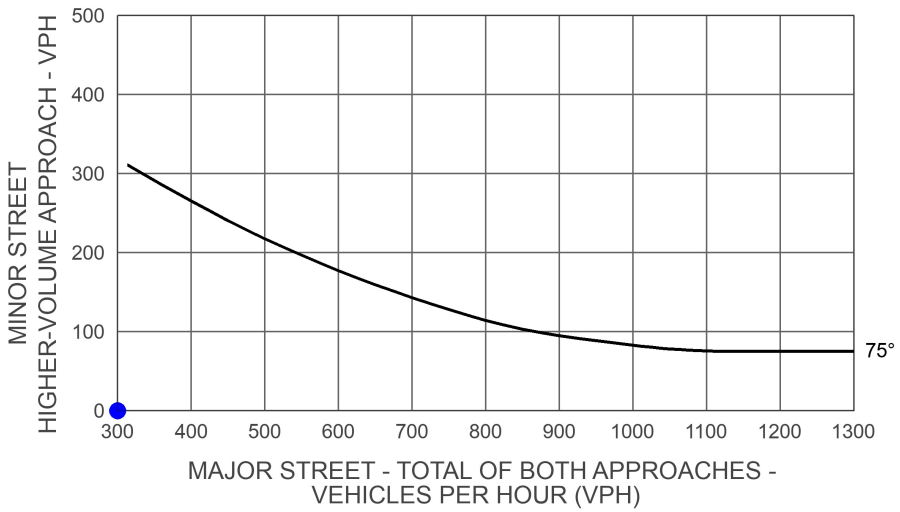


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 8

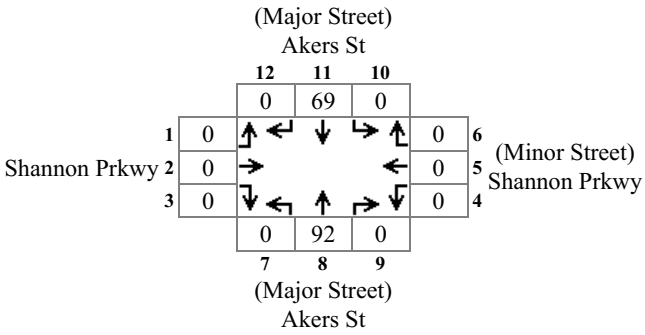


Major Total: 161
Minor High Volume: 0

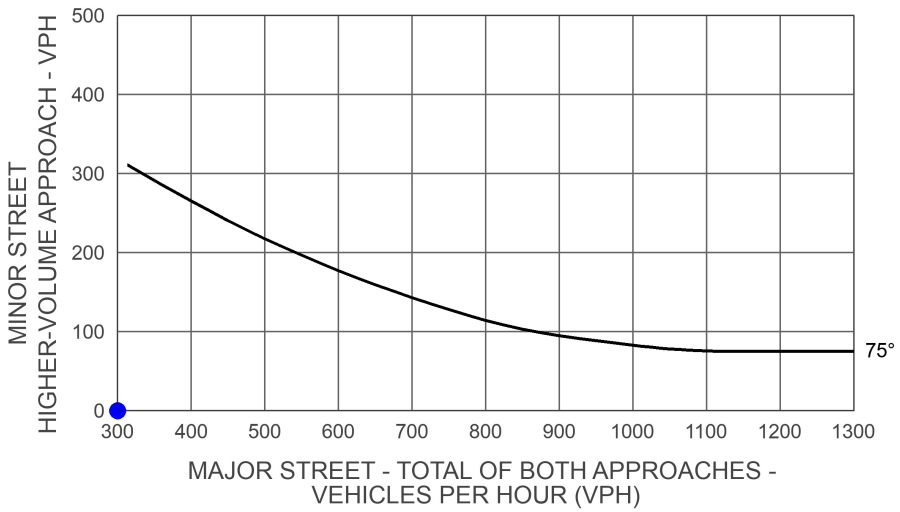


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 8



Major Total: 161
Minor High Volume: 0



Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	1	95	1	0	1	116	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	1	95	1	0	1	116	0
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	1	103	1	0	1	126	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.6	7.7
HCM LOS	-	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	0%	0%	1%
Vol Thru, %	98%	100%	100%	99%
Vol Right, %	1%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	97	0	0	117
LT Vol	1	0	0	1
Through Vol	95	0	0	116
RT Vol	1	0	0	0
Lane Flow Rate	105	0	0	127
Geometry Grp	1	1	1	1
Degree of Util (X)	0.118	0	0	0.142
Departure Headway (Hd)	4.024	4.331	4.331	4.014
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	891	0	0	894
Service Time	2.048	2.43	2.43	2.034
HCM Lane V/C Ratio	0.118	0	0	0.142
HCM Control Delay	7.6	7.4	7.4	7.7
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.4	0	0	0.5

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	1	101	1	0	1	123	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	1	101	1	0	1	123	0
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	1	110	1	0	1	134	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.6	7.8
HCM LOS	-	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	0%	0%	1%
Vol Thru, %	98%	100%	100%	99%
Vol Right, %	1%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	103	0	0	124
LT Vol	1	0	0	1
Through Vol	101	0	0	123
RT Vol	1	0	0	0
Lane Flow Rate	112	0	0	135
Geometry Grp	1	1	1	1
Degree of Util (X)	0.125	0	0	0.15
Departure Headway (Hd)	4.03	4.458	4.458	4.019
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	889	0	0	894
Service Time	2.055	2.458	2.458	2.04
HCM Lane V/C Ratio	0.126	0	0	0.151
HCM Control Delay	7.6	7.5	7.5	7.8
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.4	0	0	0.5

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

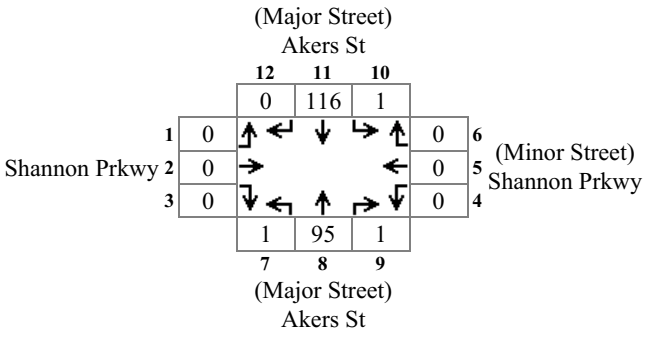
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	1	101	1	0	1	123	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	1	101	1	0	1	123	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	1	110	1	0	1	134	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.6	7.8
HCM LOS	-	-	A	A

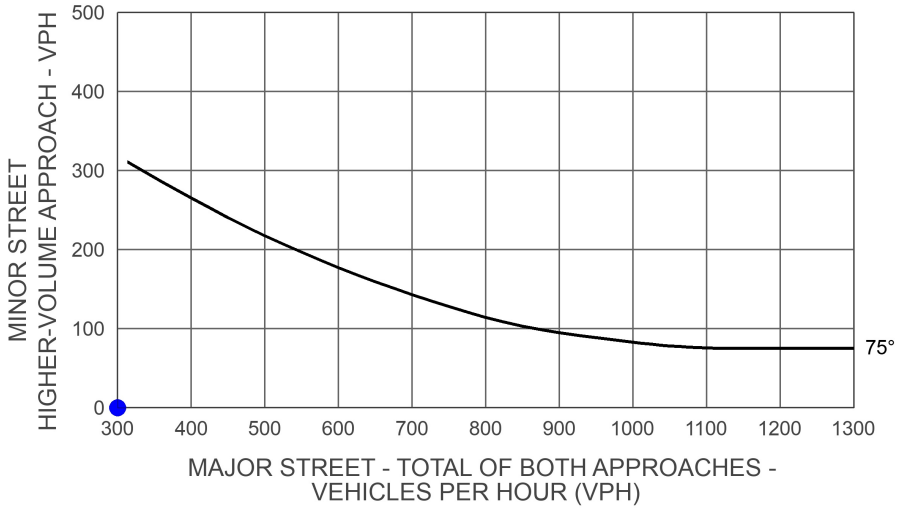
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	0%	0%	1%
Vol Thru, %	98%	100%	100%	99%
Vol Right, %	1%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	103	0	0	124
LT Vol	1	0	0	1
Through Vol	101	0	0	123
RT Vol	1	0	0	0
Lane Flow Rate	112	0	0	135
Geometry Grp	1	1	1	1
Degree of Util (X)	0.125	0	0	0.15
Departure Headway (Hd)	4.03	4.458	4.458	4.019
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	889	0	0	894
Service Time	2.055	2.458	2.458	2.04
HCM Lane V/C Ratio	0.126	0	0	0.151
HCM Control Delay	7.6	7.5	7.5	7.8
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.4	0	0	0.5

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 8

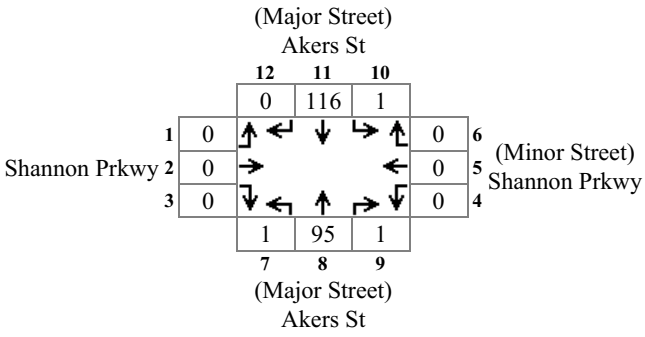


Major Total: 214
Minor High Volume: 0

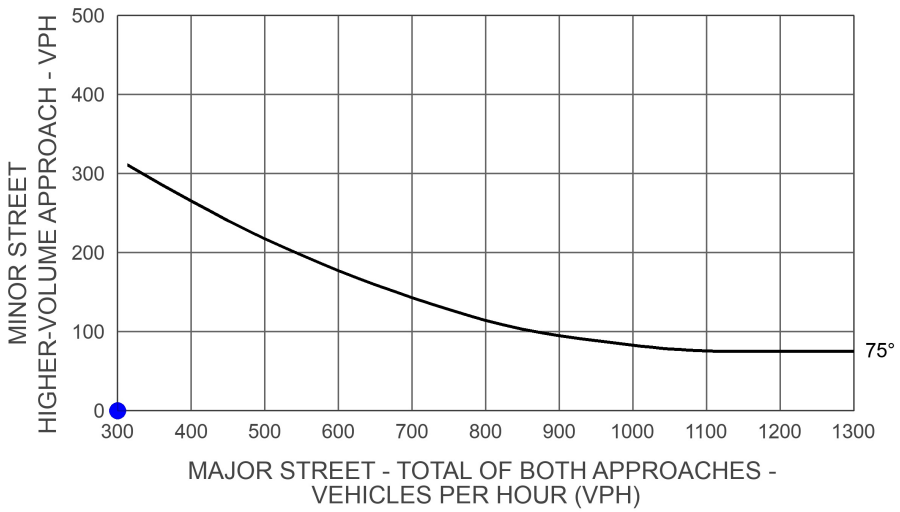


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 8

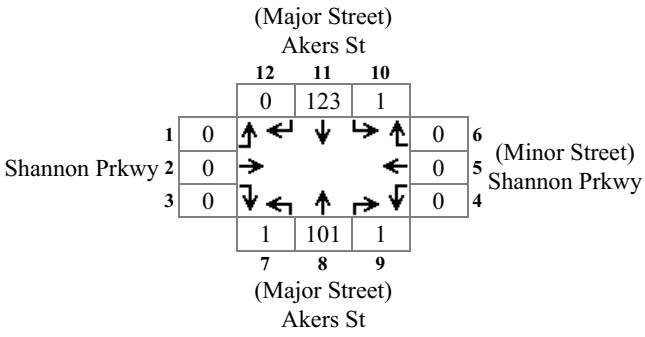


Major Total: 214
Minor High Volume: 0

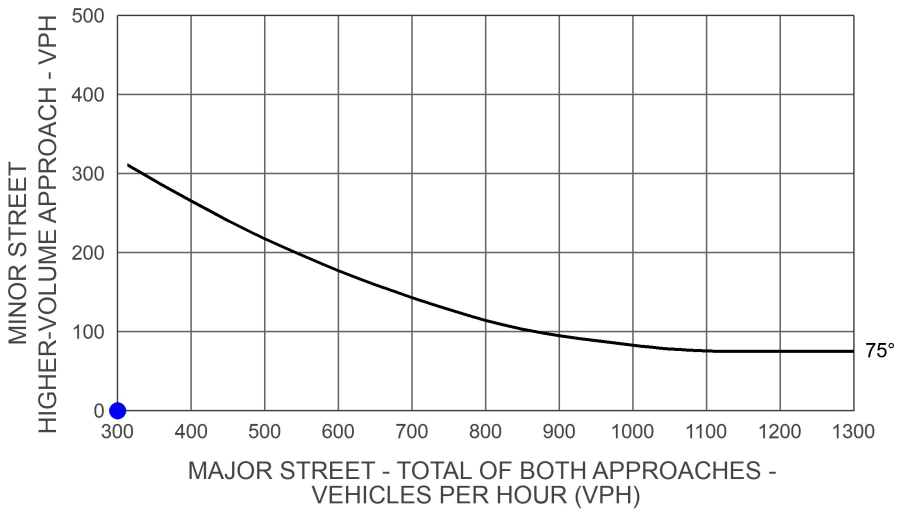


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 8

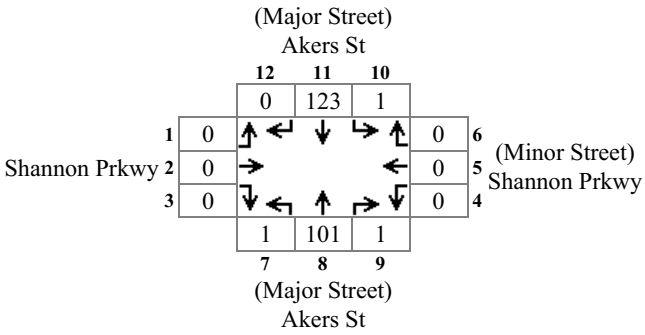


Major Total: 227
Minor High Volume: 0

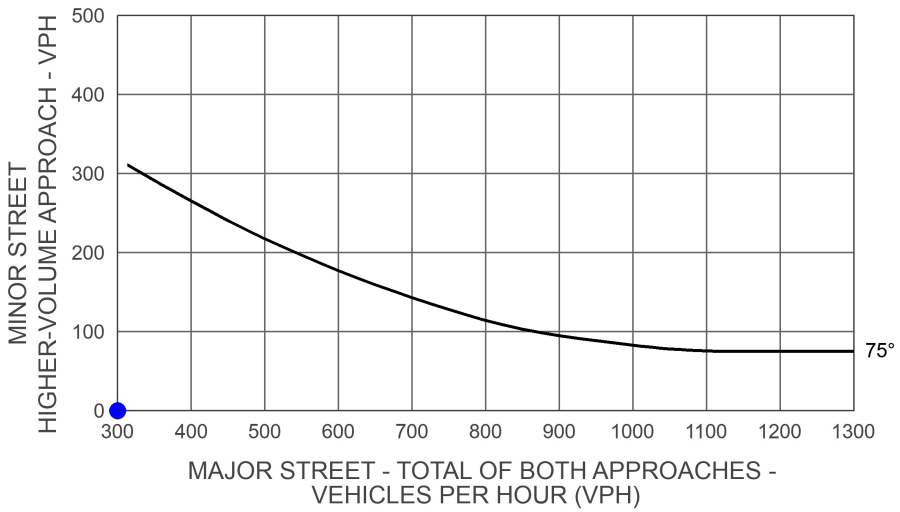


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 8



Major Total: 227
Minor High Volume: 0



Intersection 9
Linwood St & Shannon Prkwy

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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)	-	-	-	-	-	-	-	-
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)	-	-	-	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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)	-	-	-	-	-	-	-	-
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)	-	-	-	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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

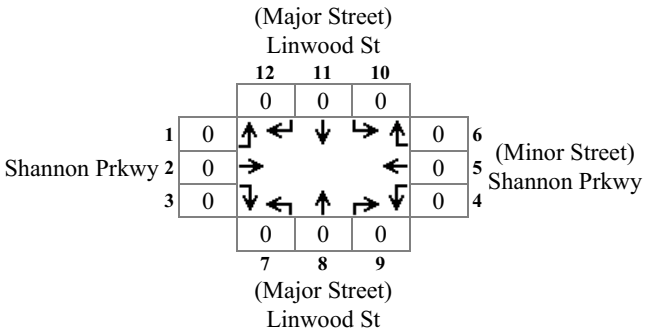
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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

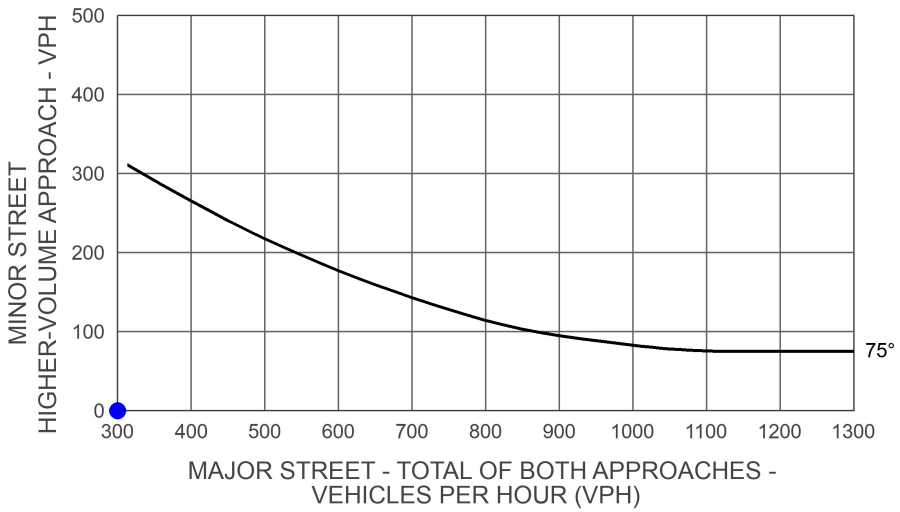
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 9

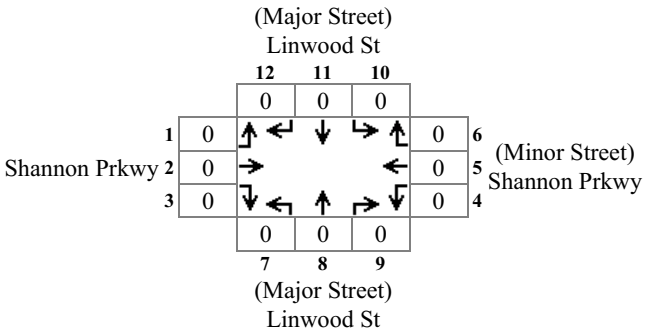


Major Total: 0
Minor High Volume: 0

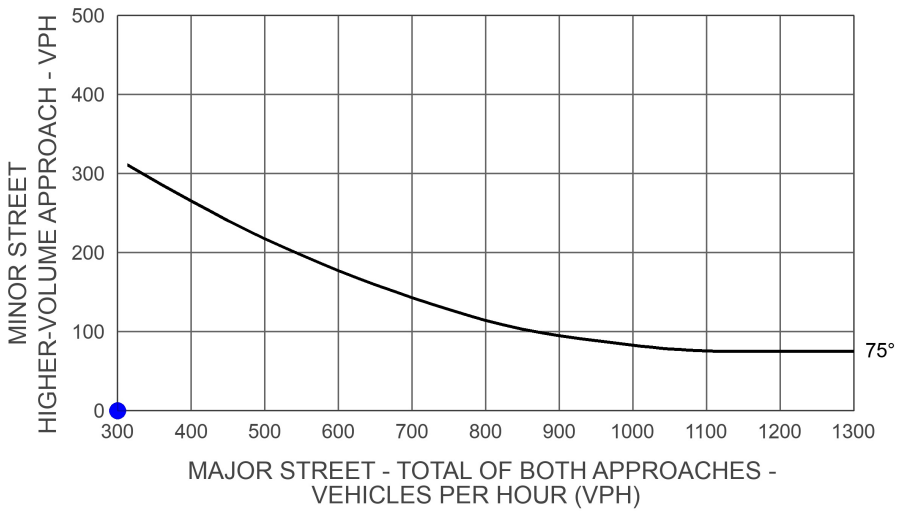


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 9

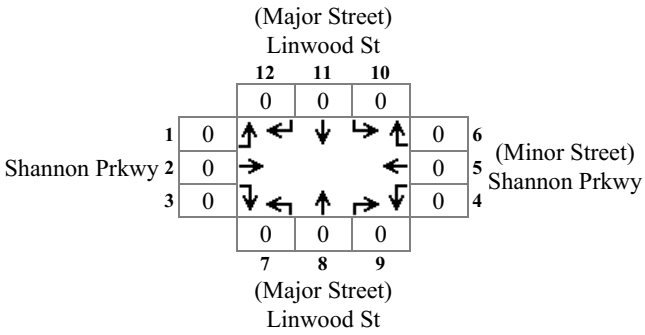


Major Total: 0
Minor High Volume: 0

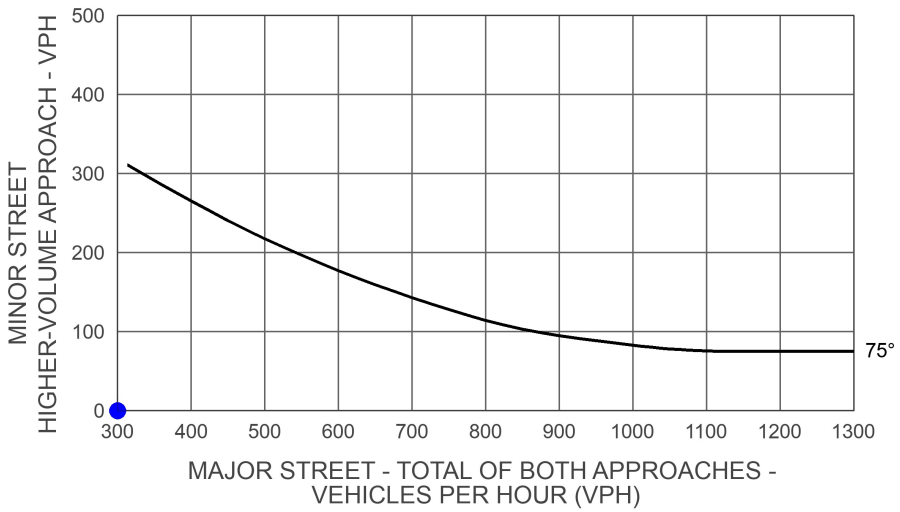


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 9

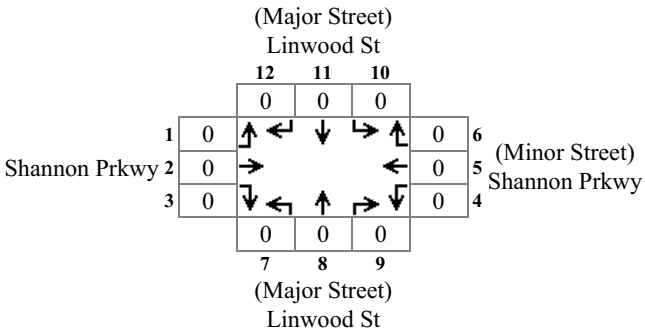


Major Total: 0
Minor High Volume: 0

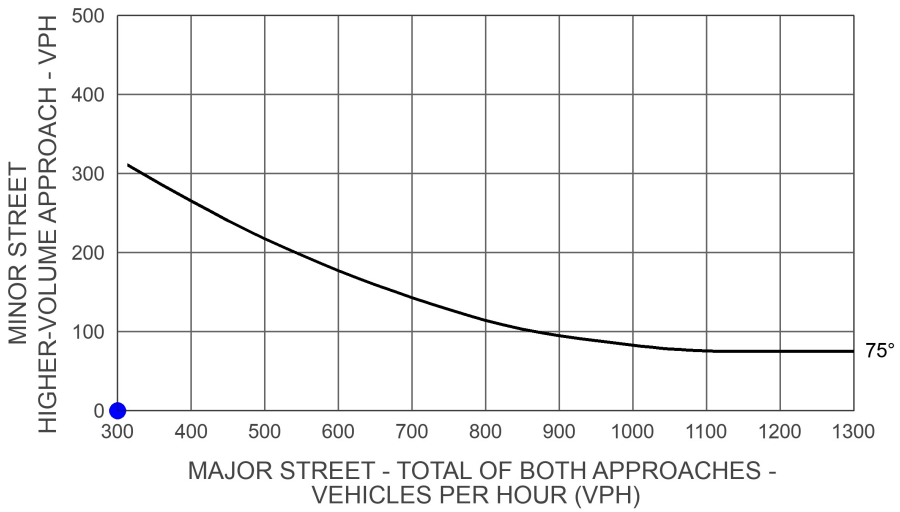


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 9



Major Total: 0
Minor High Volume: 0



Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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)	-	-	-	-	-	-	-	-
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)	-	-	-	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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)	-	-	-	-	-	-	-	-
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)	-	-	-	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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

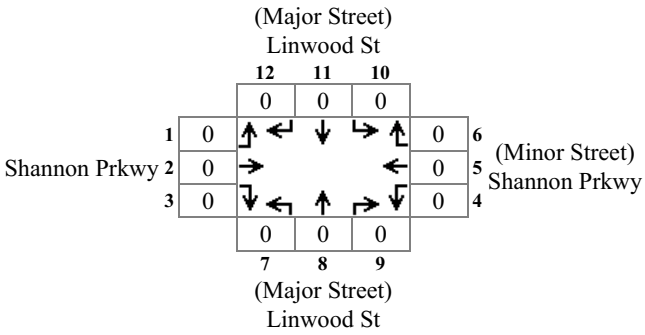
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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

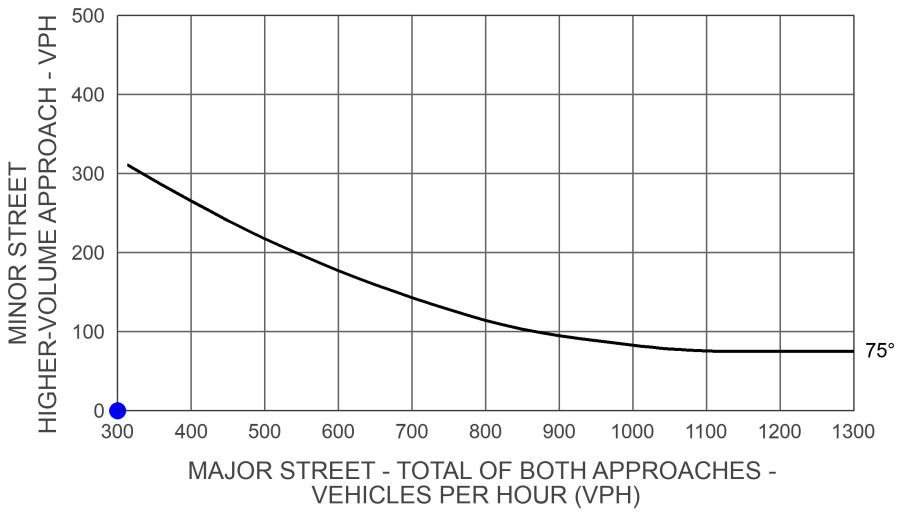
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 9

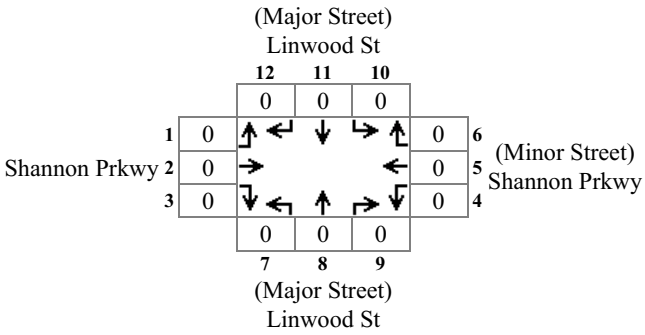


Major Total: 0
Minor High Volume: 0

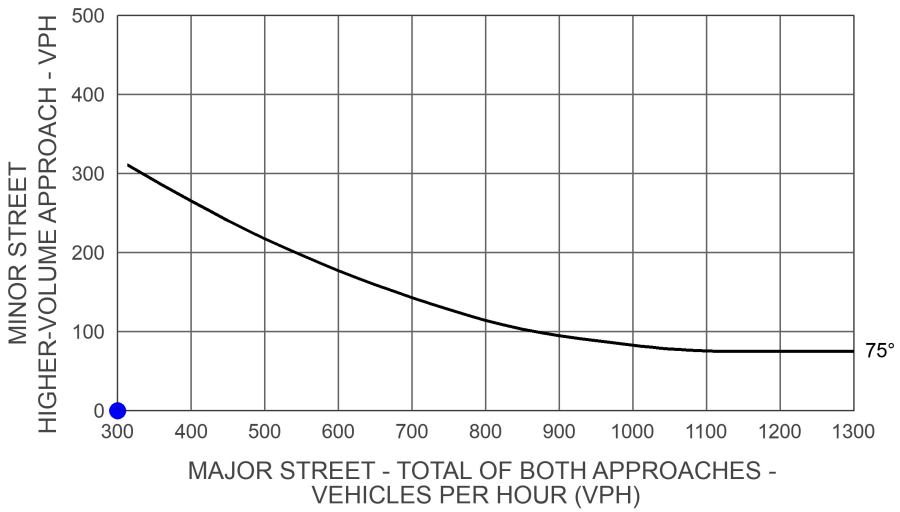


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 9

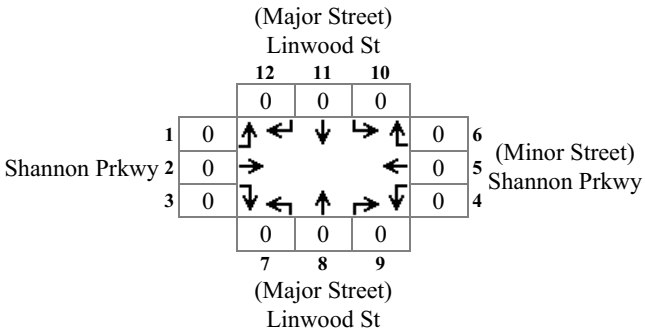


Major Total: 0
Minor High Volume: 0

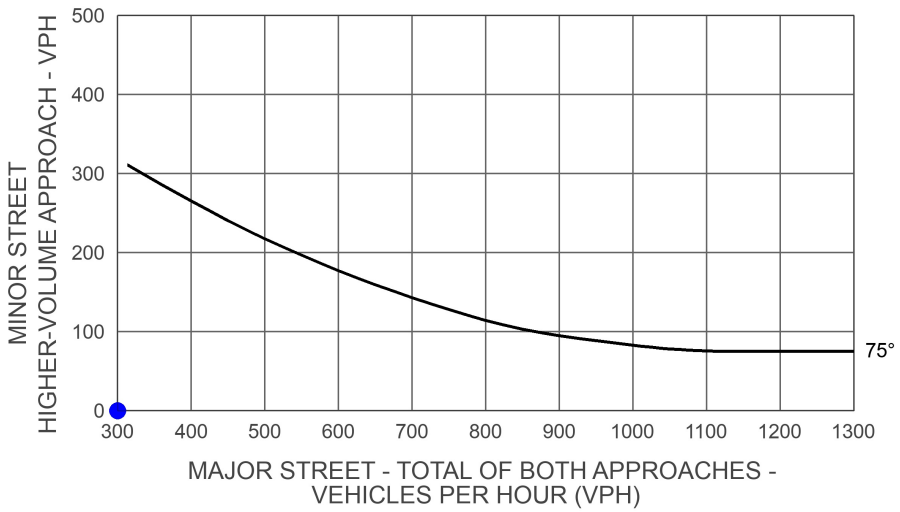


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 9

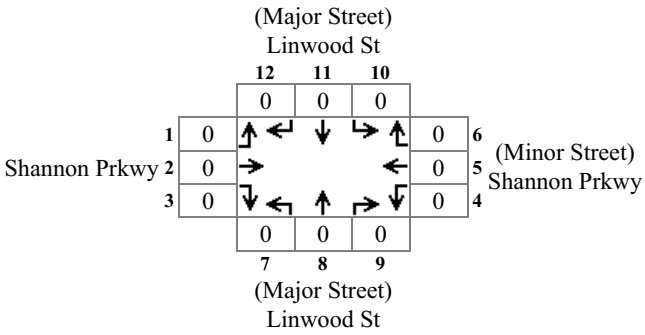


Major Total: 0
Minor High Volume: 0

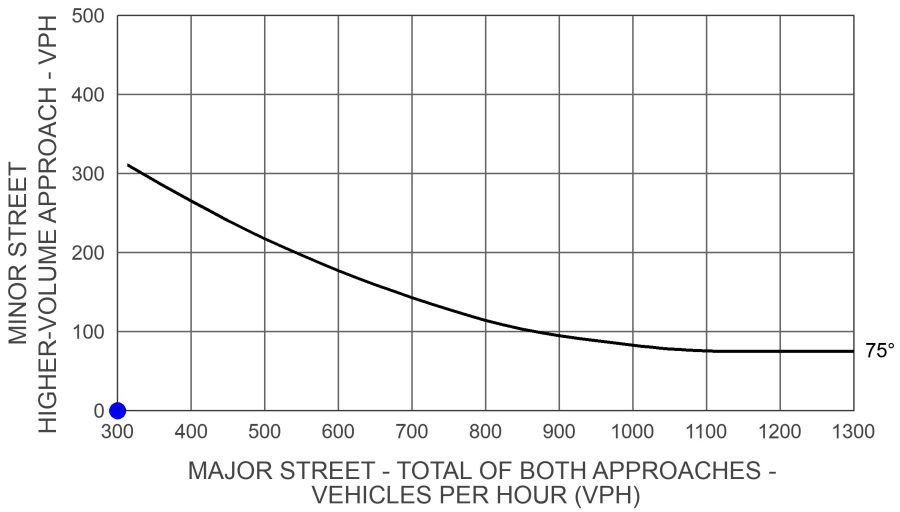


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 9



Major Total: 0
Minor High Volume: 0



Intersection 10
N Chinowth St & Shannon Prkwy

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	4	7	0
Future Vol, veh/h	0	1	1	4	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	4	8	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	5	0	-	0	4	3
Stage 1	-	-	-	-	3	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1616	-	-	-	1018	1081
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1616	-	-	-	1018	1081
Mov Cap-2 Maneuver	-	-	-	-	1018	-
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1616	-	-	-	1018
HCM Lane V/C Ratio	-	-	-	-	0.007
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	4	7	0
Future Vol, veh/h	0	1	1	4	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	4	8	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	5	0	-	0	4	3
Stage 1	-	-	-	-	3	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1616	-	-	-	1018	1081
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1616	-	-	-	1018	1081
Mov Cap-2 Maneuver	-	-	-	-	1018	-
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1616	-	-	-	1018
HCM Lane V/C Ratio	-	-	-	-	0.007
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	28	20	0
Future Vol, veh/h	0	1	1	28	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	30	22	0

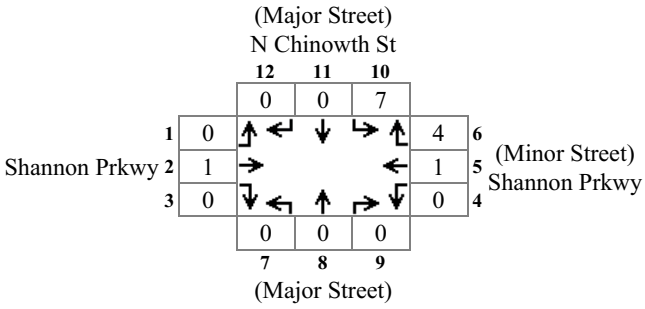
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	32	0	-	0	17	16
Stage 1	-	-	-	-	16	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1580	-	-	-	1001	1063
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1580	-	-	-	1001	1063
Mov Cap-2 Maneuver	-	-	-	-	1001	-
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	1022	-

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

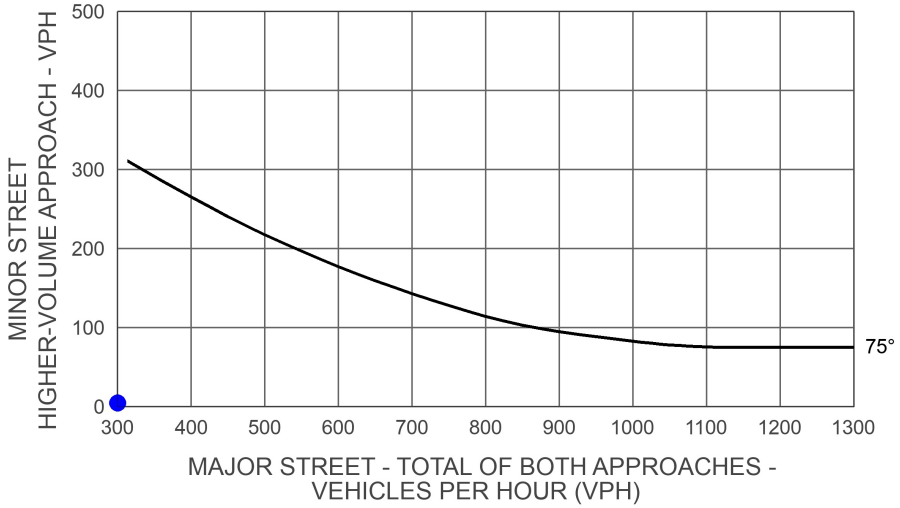
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1580	-	-	-	1001
HCM Lane V/C Ratio	-	-	-	-	0.022
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 10

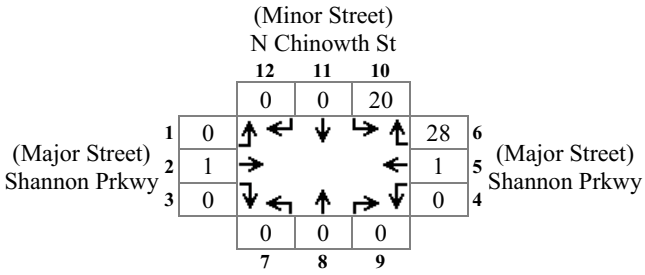


Major Total: 7
Minor High Volume: 5

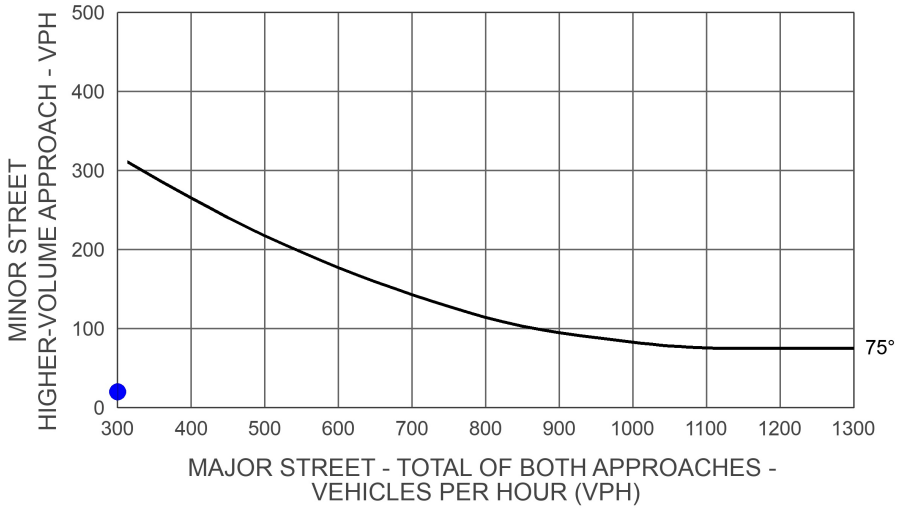


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 10

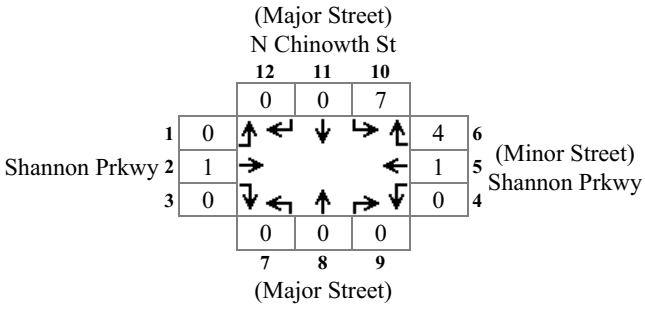


Major Total: 30
Minor High Volume: 20

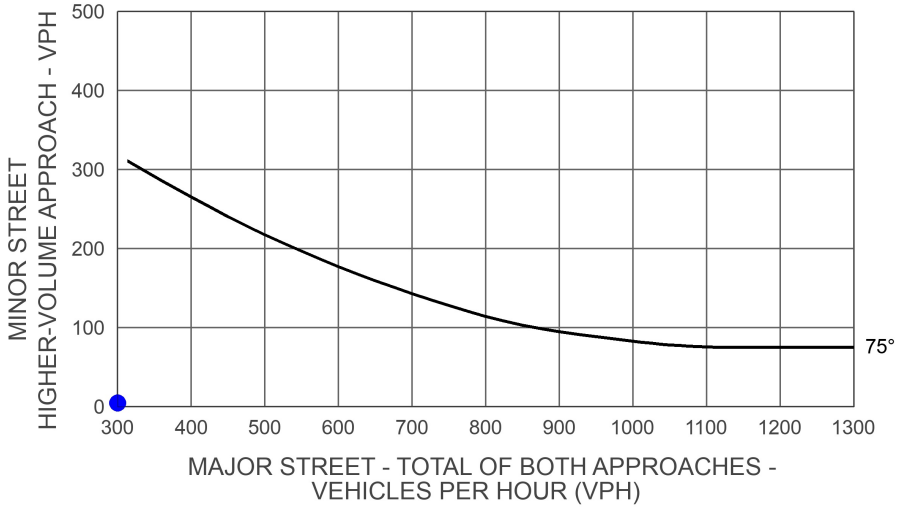


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 10

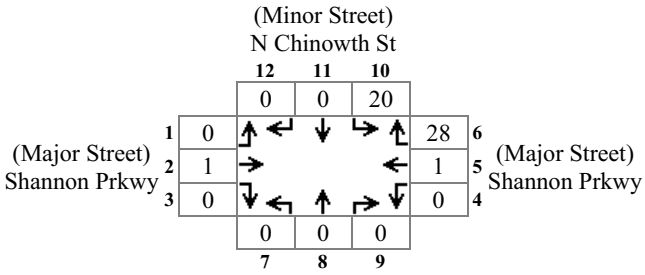


Major Total: 7
Minor High Volume: 5

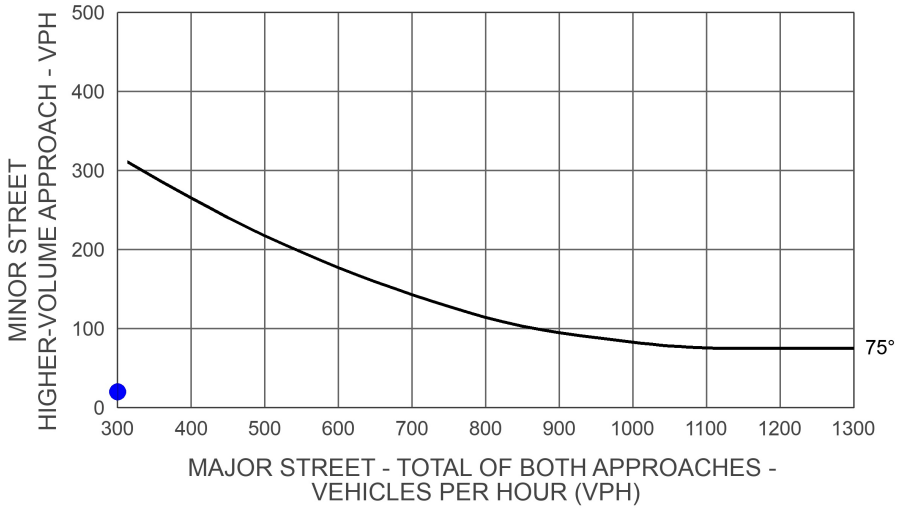


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 10



Major Total: 30
Minor High Volume: 20



Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	2	4	1
Future Vol, veh/h	0	1	1	2	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	2	4	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	3	0	-	0	3	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1619	-	-	-	1019	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1619	-	-	-	1019	1082
Mov Cap-2 Maneuver	-	-	-	-	1019	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1619	-	-	-	1031
HCM Lane V/C Ratio	-	-	-	-	0.005
HCM Control Delay (s)	0	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	2	4	1
Future Vol, veh/h	0	1	1	2	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	2	4	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	3	0	-	0	3	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1619	-	-	-	1019	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1619	-	-	-	1019	1082
Mov Cap-2 Maneuver	-	-	-	-	1019	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1619	-	-	-	1031
HCM Lane V/C Ratio	-	-	-	-	0.005
HCM Control Delay (s)	0	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	9	24	1
Future Vol, veh/h	0	1	1	9	24	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	10	26	1

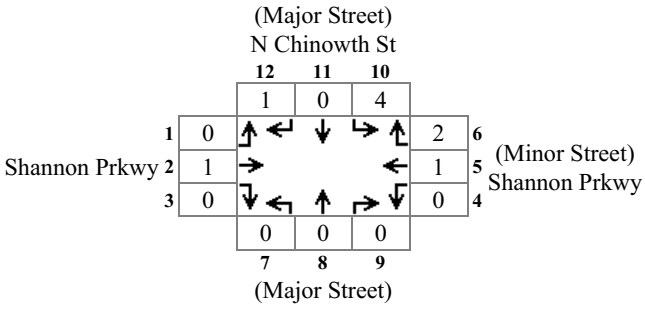
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	11	0	-	0	7	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1608	-	-	-	1014	1077
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1608	-	-	-	1014	1077
Mov Cap-2 Maneuver	-	-	-	-	1014	-
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

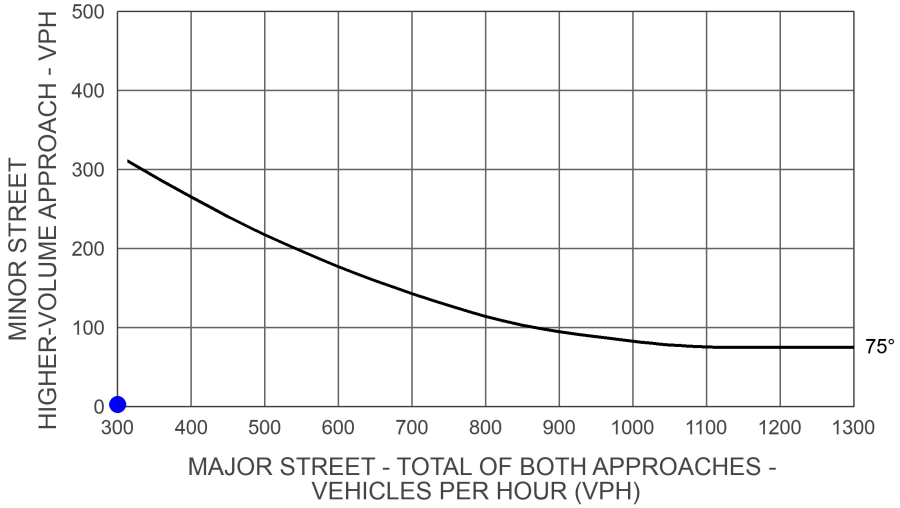
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1608	-	-	-	1016
HCM Lane V/C Ratio	-	-	-	-	0.027
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 10

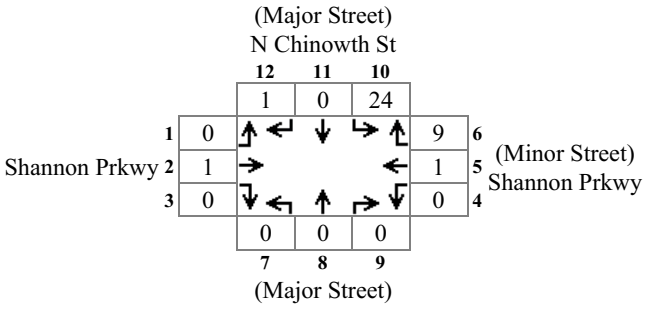


Major Total: 5
Minor High Volume: 3

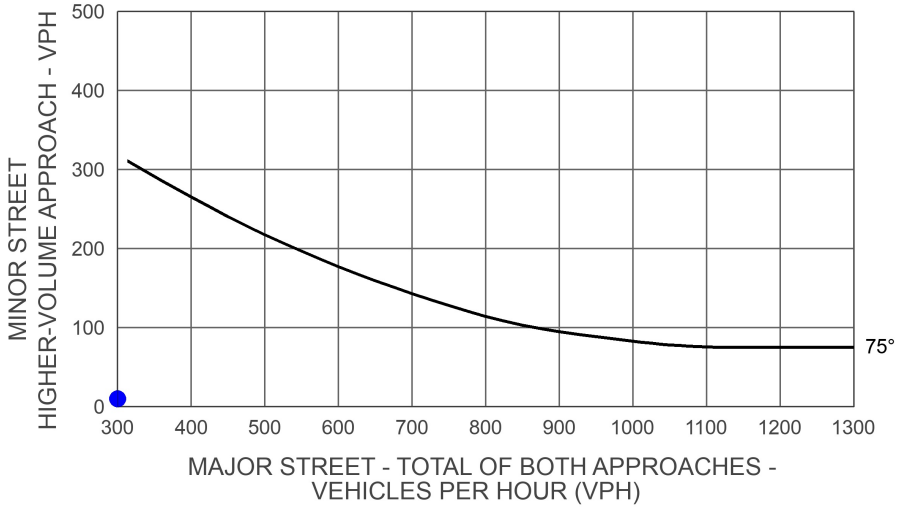


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 10

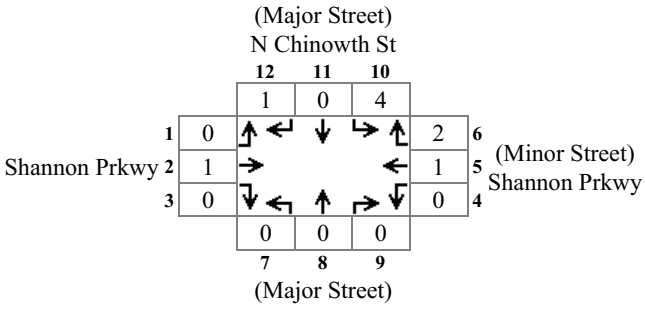


Major Total: 25
Minor High Volume: 10

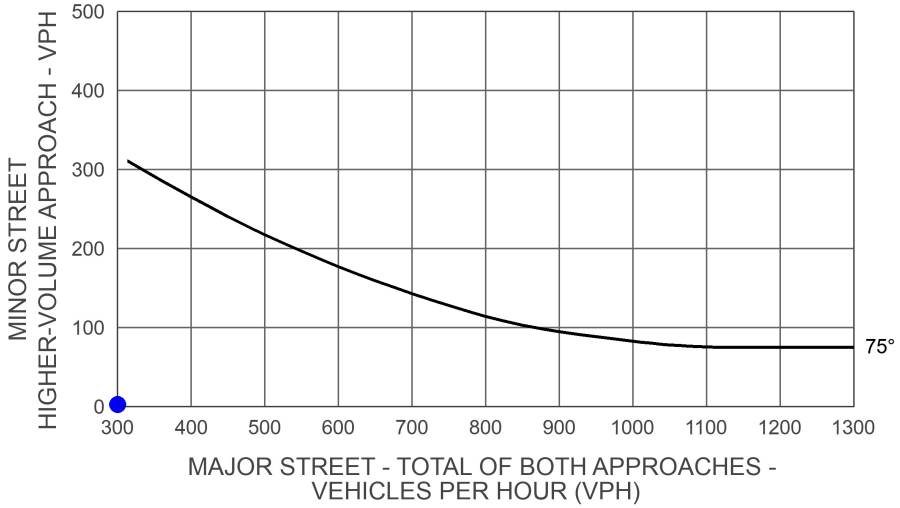


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 10

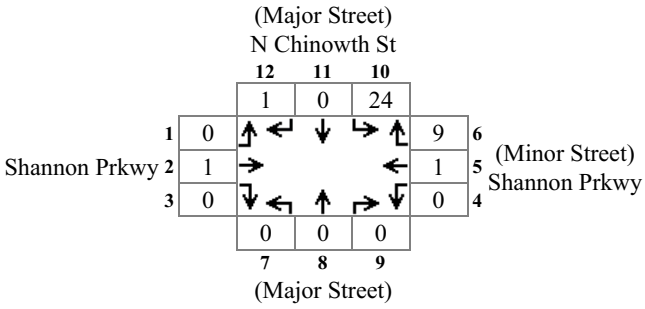


Major Total: 5
Minor High Volume: 3

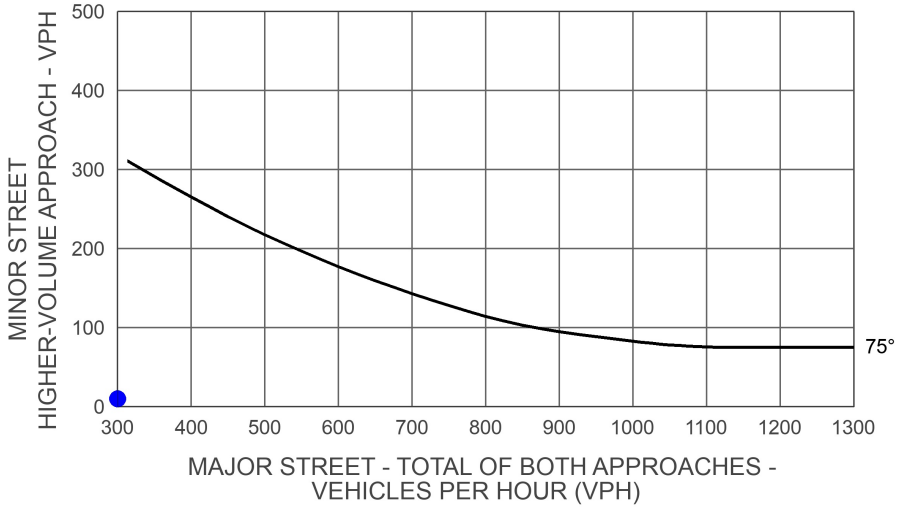


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 10



Major Total: 25
Minor High Volume: 10



Intersection 11
Coburn Ave & Shannon Prkwy

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	-	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	-	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	13	24	11	6	0
Future Vol, veh/h	0	13	24	11	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	14	26	12	7	0

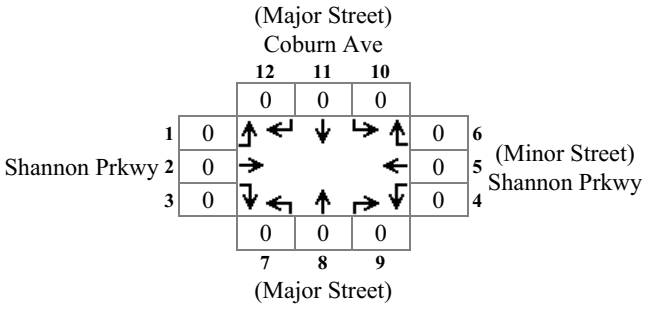
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	38	0	-	0	46	32
Stage 1	-	-	-	-	32	-
Stage 2	-	-	-	-	14	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1572	-	-	-	964	1042
Stage 1	-	-	-	-	991	-
Stage 2	-	-	-	-	1009	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1572	-	-	-	964	1042
Mov Cap-2 Maneuver	-	-	-	-	964	-
Stage 1	-	-	-	-	991	-
Stage 2	-	-	-	-	1009	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

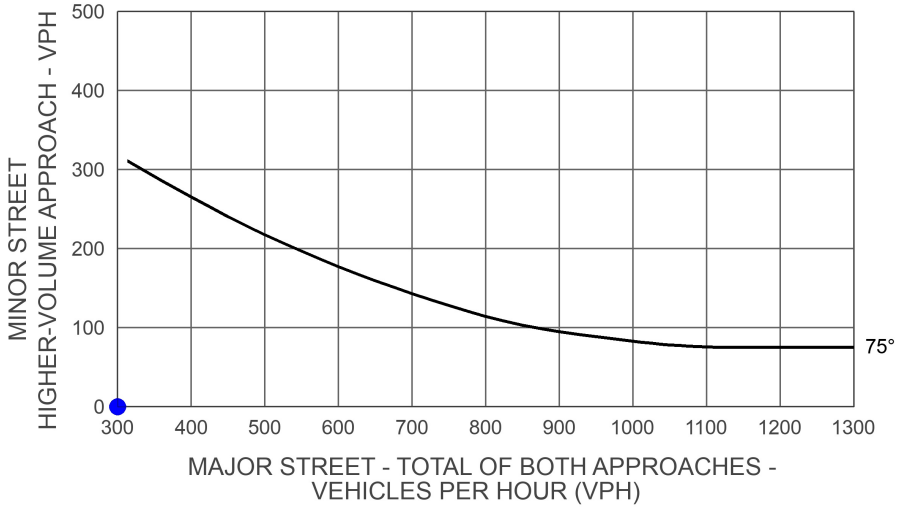
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1572	-	-	-	964
HCM Lane V/C Ratio	-	-	-	-	0.007
HCM Control Delay (s)	0	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 11

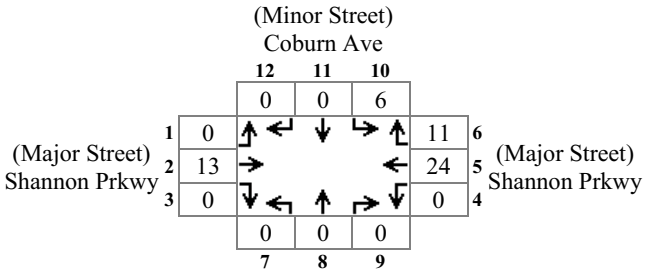


Major Total: 0
Minor High Volume: 0

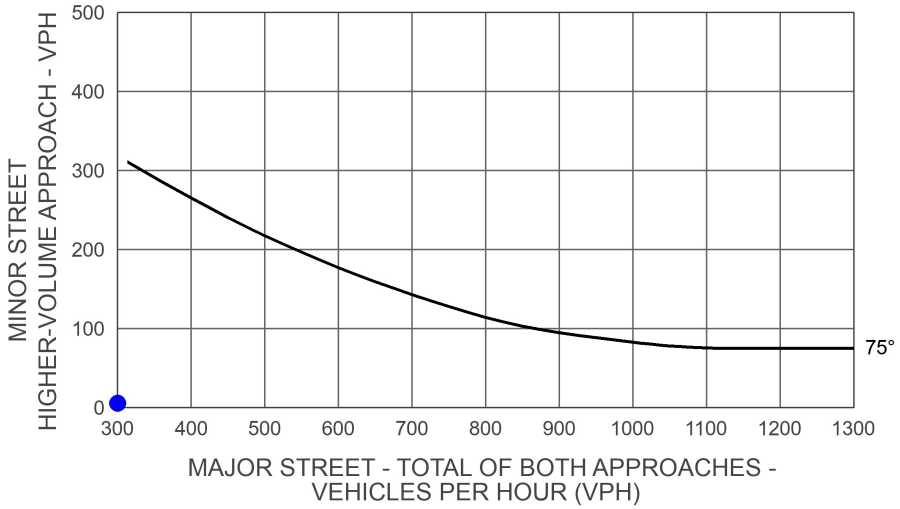


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 11

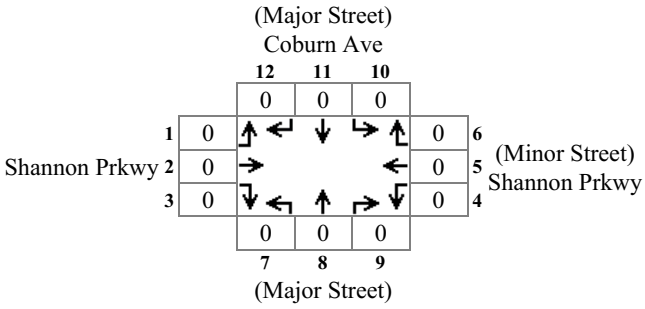


Major Total: 48
Minor High Volume: 6

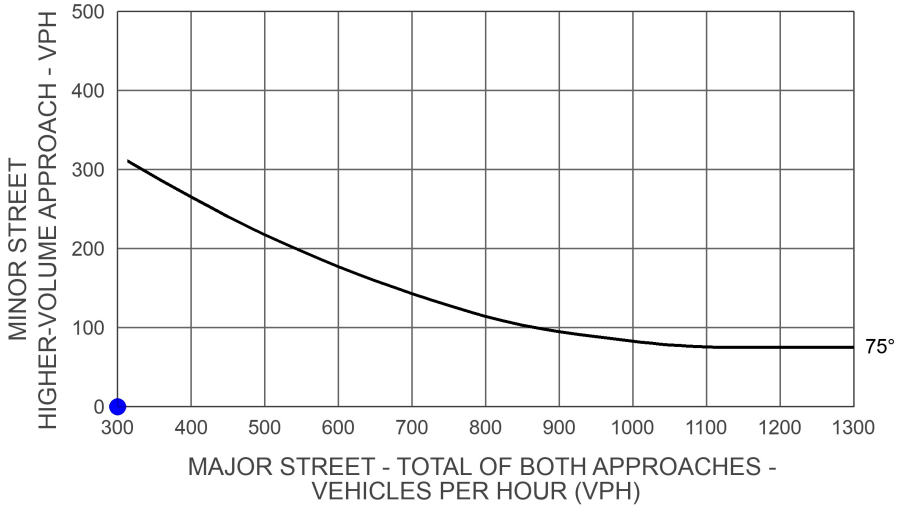


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 11

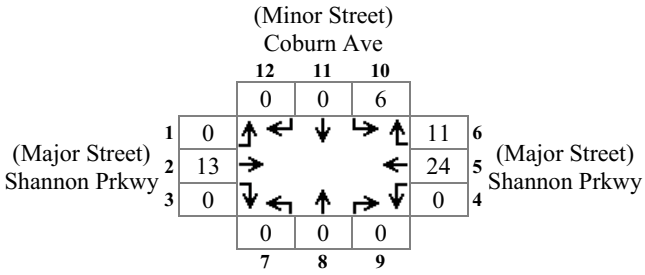


Major Total: 0
Minor High Volume: 0

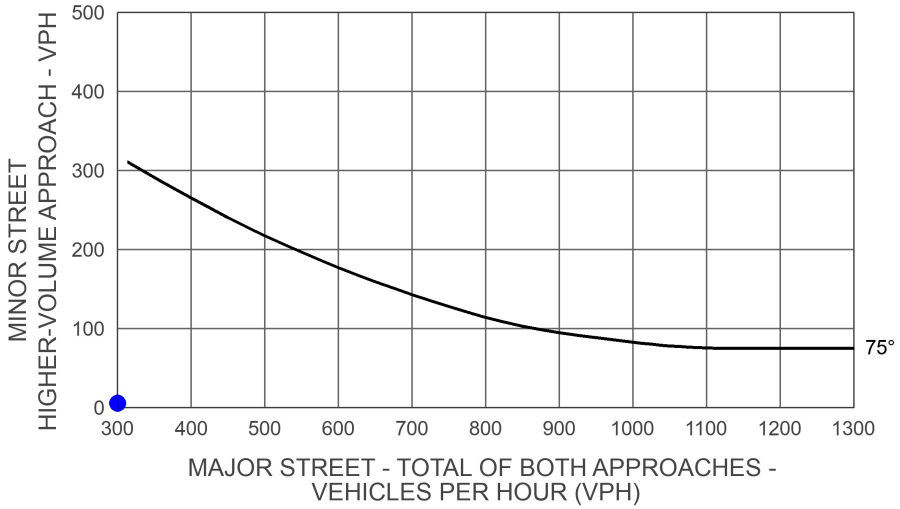


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 11



Major Total: 48
Minor High Volume: 6



Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	-	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	-	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	20	7	3	9	0
Future Vol, veh/h	0	20	7	3	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	22	8	3	10	0

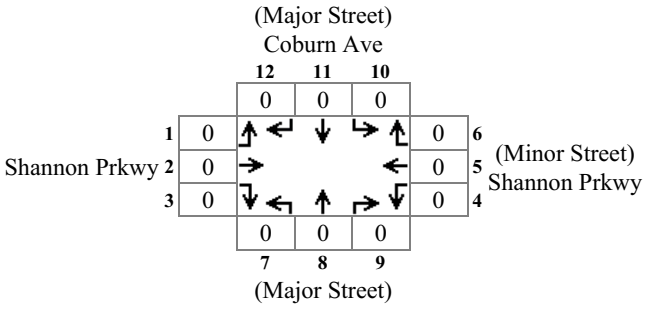
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	11	0	-	0	31	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	22	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1608	-	-	-	983	1073
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1001	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1608	-	-	-	983	1073
Mov Cap-2 Maneuver	-	-	-	-	983	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1001	-

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

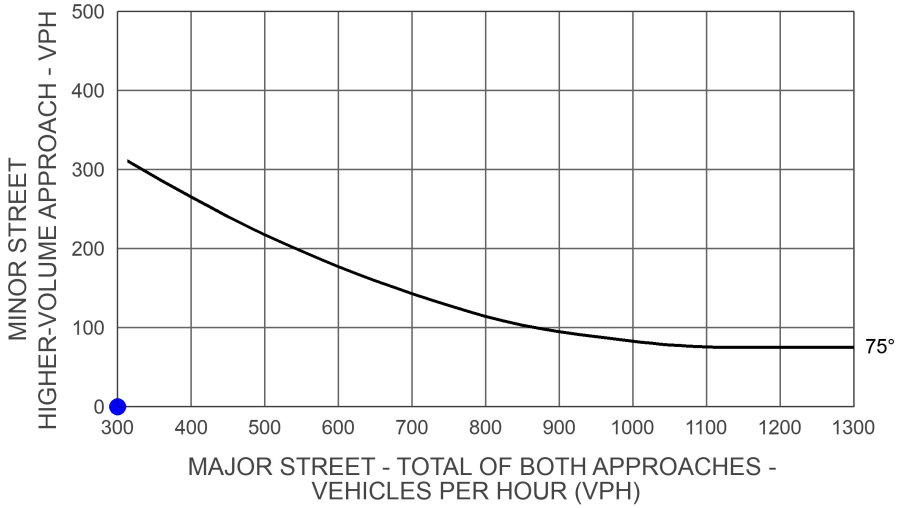
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1608	-	-	-	983
HCM Lane V/C Ratio	-	-	-	-	0.01
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 11

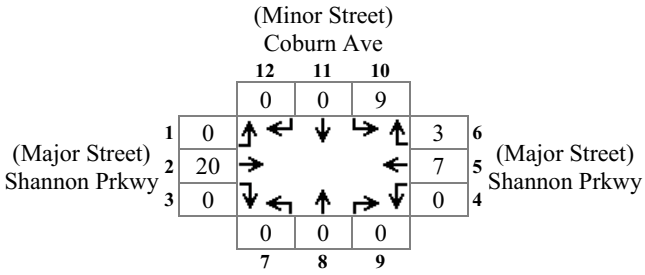


Major Total: 0
Minor High Volume: 0

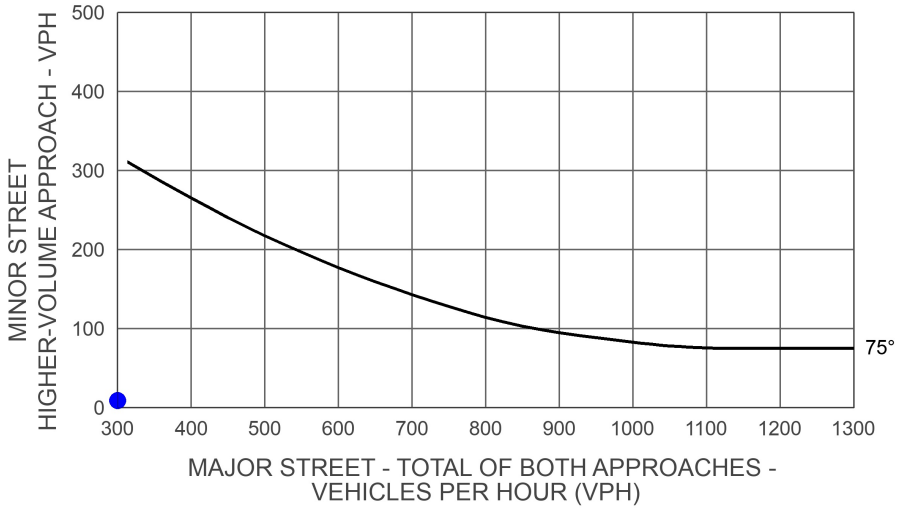


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 11

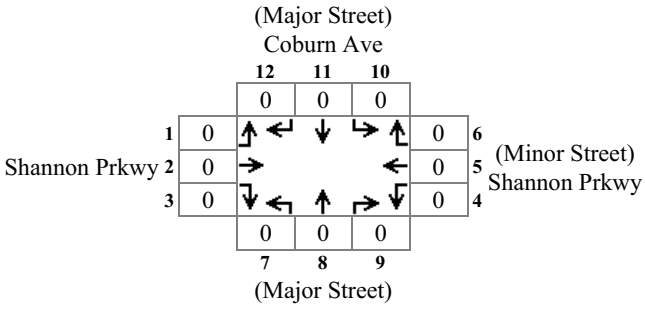


Major Total: 30
Minor High Volume: 9

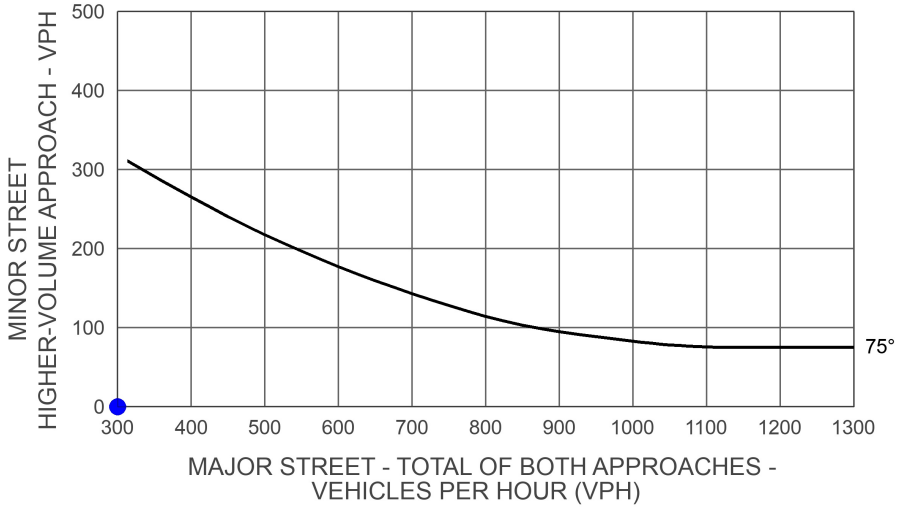


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 11

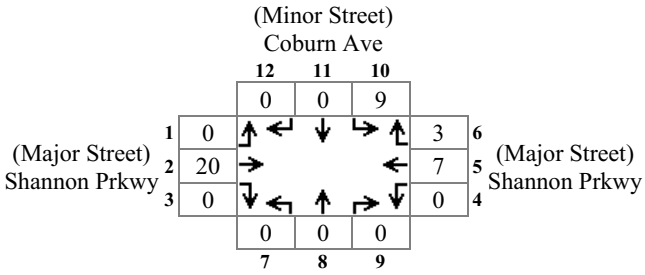


Major Total: 0
Minor High Volume: 0

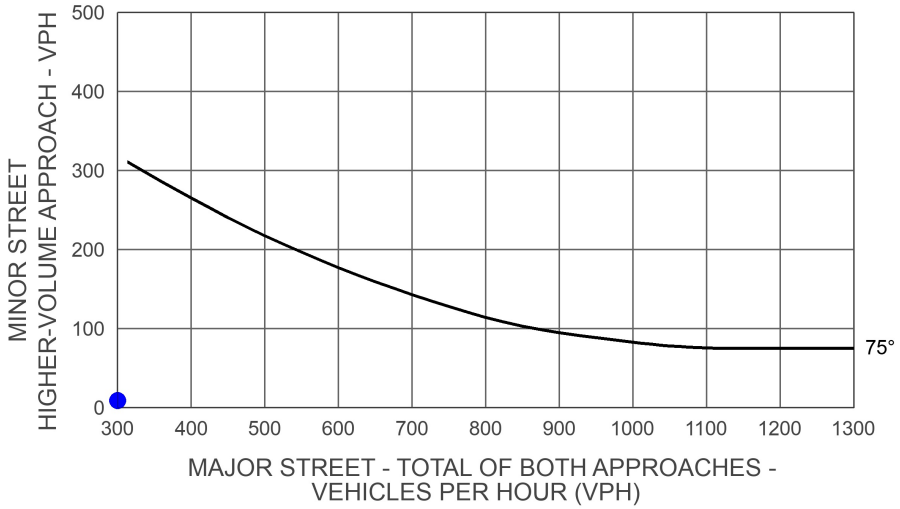


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 11



Major Total: 30
Minor High Volume: 9



Intersection 12
Demaree St & Shannon Prkwy

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	5	18	30	245	259	4
Future Vol, veh/h	5	18	30	245	259	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	5	20	33	266	282	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	482	284	286	0	-	0
Stage 1	284	-	-	-	-	-
Stage 2	198	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	528	754	1276	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	514	754	1276	-	-	-
Mov Cap-2 Maneuver	514	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	796	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1276	-	685	-	-
HCM Lane V/C Ratio	0.026	-	0.036	-	-
HCM Control Delay (s)	7.9	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	5	19	32	265	277	4
Future Vol, veh/h	5	19	32	265	277	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	5	21	35	288	301	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	517	303	305	0	-	0
Stage 1	303	-	-	-	-	-
Stage 2	214	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	503	736	1256	-	-	-
Stage 1	748	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	489	736	1256	-	-	-
Mov Cap-2 Maneuver	489	-	-	-	-	-
Stage 1	748	-	-	-	-	-
Stage 2	780	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1256	-	666	-	-
HCM Lane V/C Ratio	0.028	-	0.039	-	-
HCM Control Delay (s)	7.9	-	10.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	5	38	67	277	285	4
Future Vol, veh/h	5	38	67	277	285	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	5	41	73	301	310	4

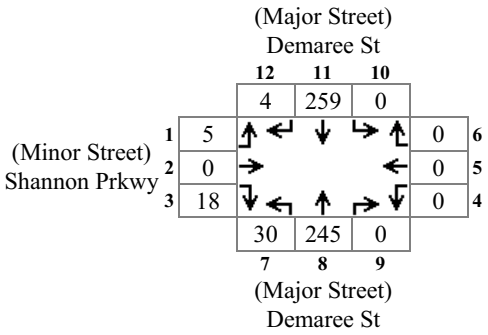
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	608	312	314	0	-	0
Stage 1	312	-	-	-	-	-
Stage 2	296	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	443	727	1246	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	729	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	417	727	1246	-	-	-
Mov Cap-2 Maneuver	417	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	686	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	1.6	0
HCM LOS	B		

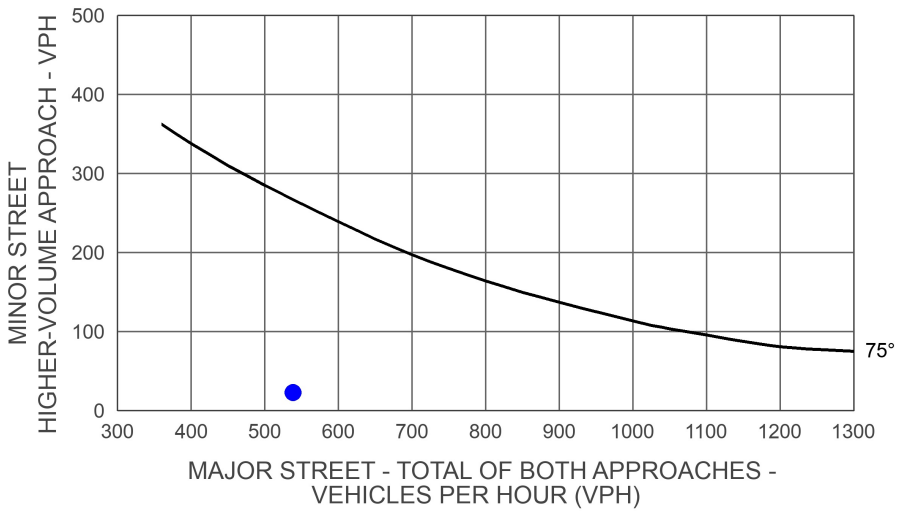
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1246	-	669	-	-
HCM Lane V/C Ratio	0.058	-	0.07	-	-
HCM Control Delay (s)	8.1	-	10.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 12

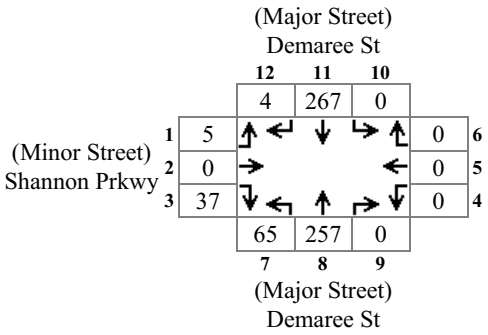


Major Total: 538
Minor High Volume: 23

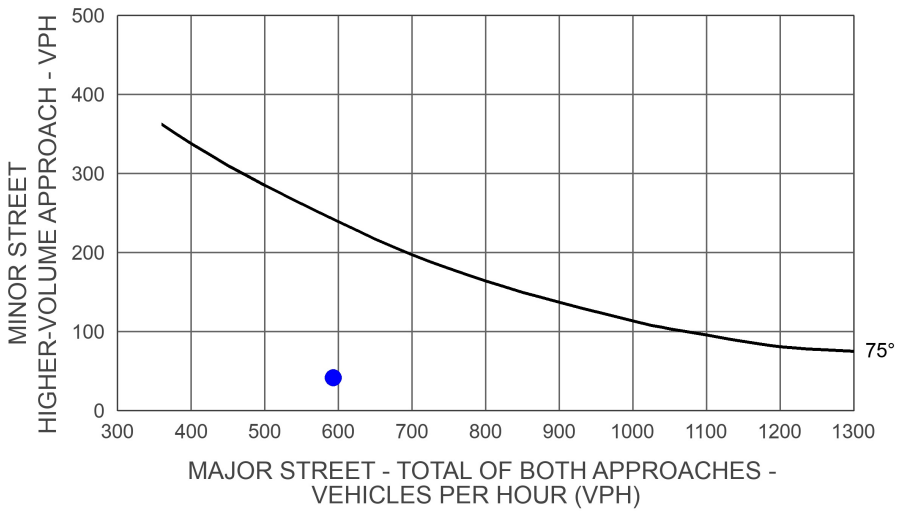


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 12

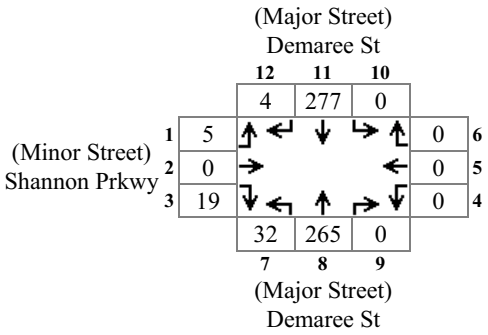


Major Total: 593
Minor High Volume: 42

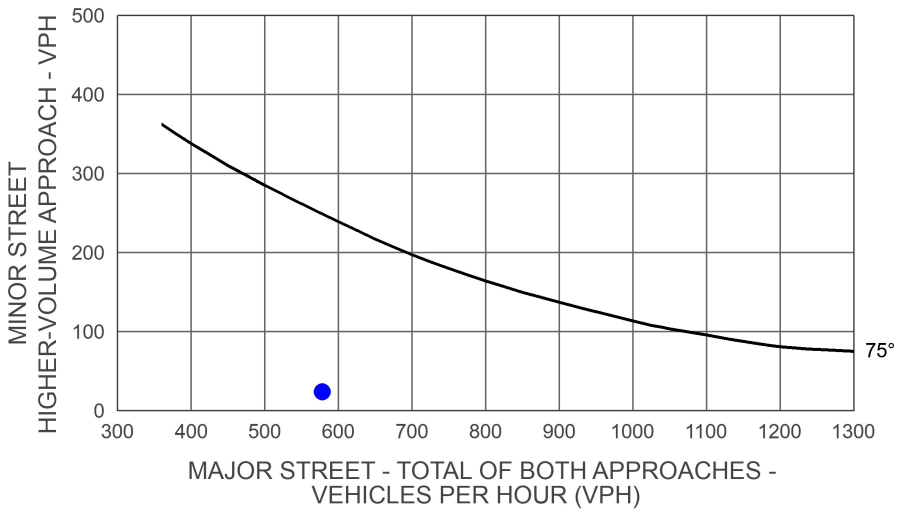


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 12

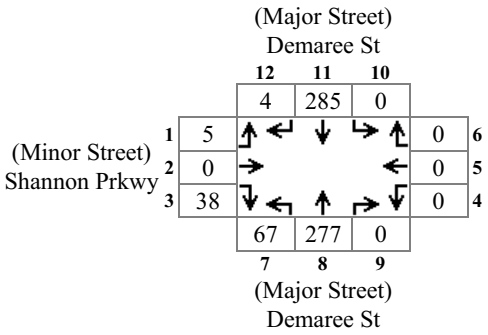


Major Total: 578
Minor High Volume: 24

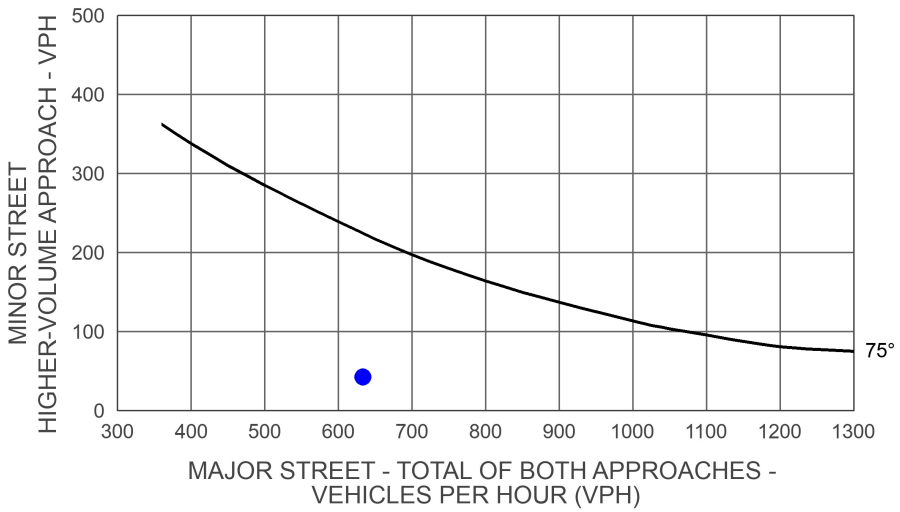


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 12



Major Total: 633
Minor High Volume: 43



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	4	25	3	246	180	2
Future Vol, veh/h	4	25	3	246	180	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	4	27	3	267	196	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	337	197	198	0	-	0
Stage 1	197	-	-	-	-	-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	646	843	1375	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	873	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	645	843	1375	-	-	-
Mov Cap-2 Maneuver	645	-	-	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	871	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1375	-	809	-	-
HCM Lane V/C Ratio	0.002	-	0.039	-	-
HCM Control Delay (s)	7.6	-	9.6	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	4	27	3	266	193	2
Future Vol, veh/h	4	27	3	266	193	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	4	29	3	289	210	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	362	211	212	0	-	0
Stage 1	211	-	-	-	-	-
Stage 2	151	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	624	828	1358	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	623	828	1358	-	-	-
Mov Cap-2 Maneuver	623	-	-	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	860	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1358	-	794	-	-
HCM Lane V/C Ratio	0.002	-	0.042	-	-
HCM Control Delay (s)	7.7	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	4	56	13	269	206	2
Future Vol, veh/h	4	56	13	269	206	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	4	61	14	292	224	2

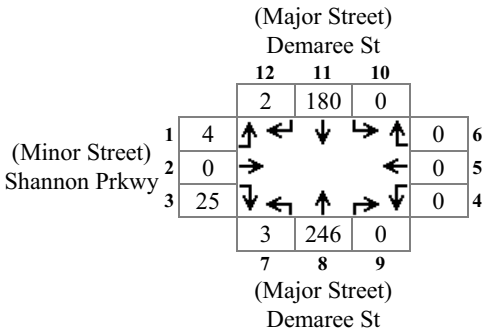
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	399	225	226	0	-	0
Stage 1	225	-	-	-	-	-
Stage 2	174	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	593	814	1342	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	587	814	1342	-	-	-
Mov Cap-2 Maneuver	587	-	-	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	830	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.4	0
HCM LOS	A		

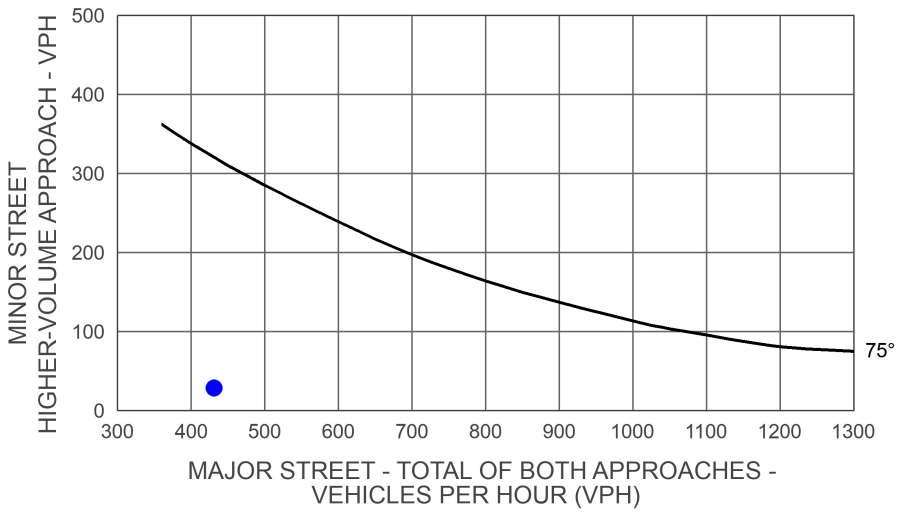
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1342	-	794	-	-
HCM Lane V/C Ratio	0.011	-	0.082	-	-
HCM Control Delay (s)	7.7	-	9.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 12

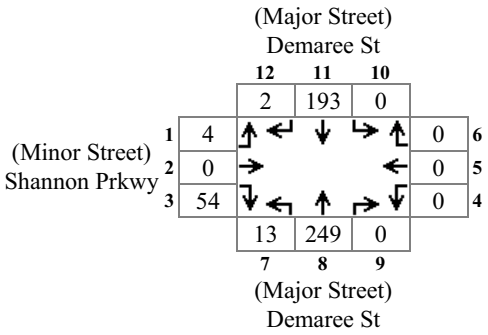


Major Total: 431
Minor High Volume: 29

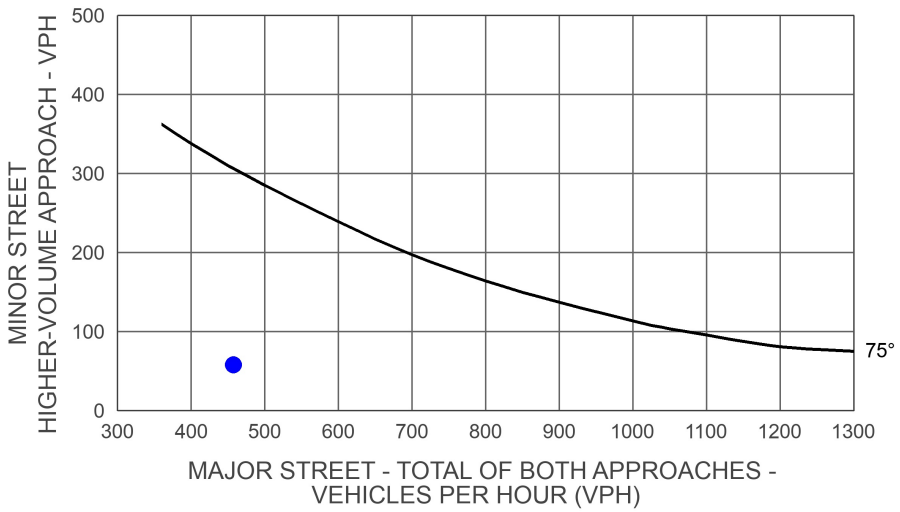


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 12

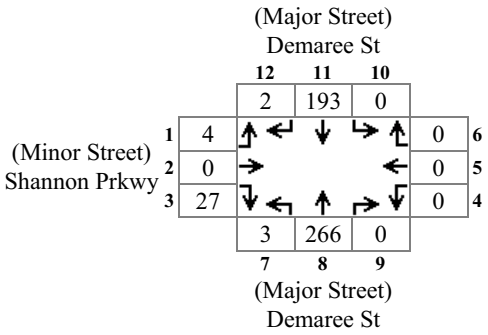


Major Total: 457
Minor High Volume: 58

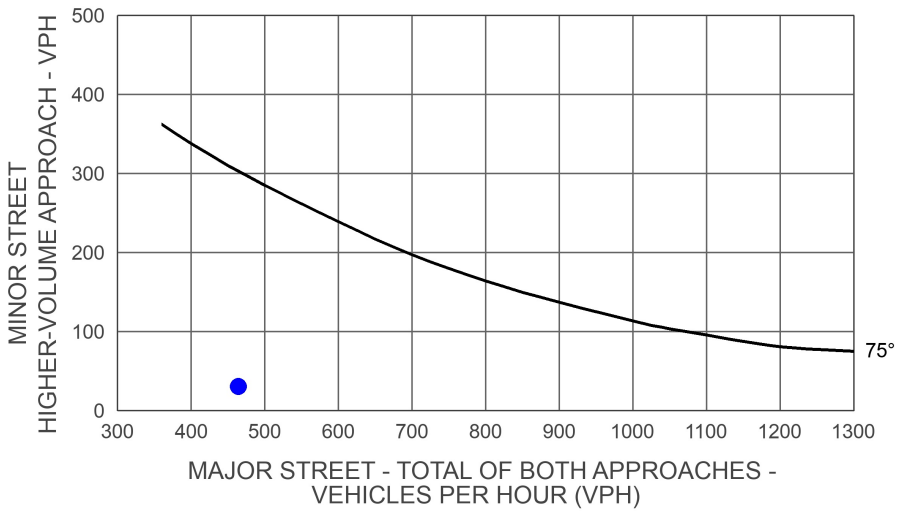


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 12

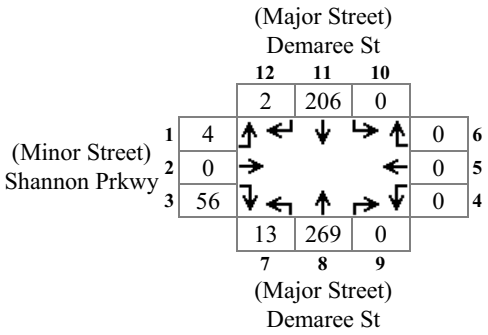


Major Total: 464
Minor High Volume: 31

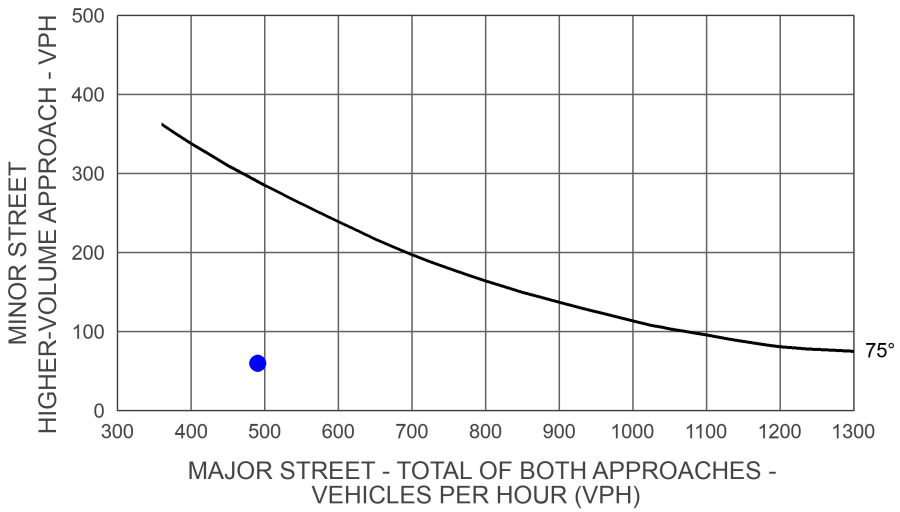


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 12



Major Total: 490
Minor High Volume: 60



Intersection 13
Demaree St & Shannon Pkwy

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	88	5	304	129	13	332
Future Vol, veh/h	88	5	304	129	13	332
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	96	5	330	140	14	361

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	615	240	0	0	476	0
Stage 1	406	-	-	-	-	-
Stage 2	209	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	423	761	-	-	1082	-
Stage 1	641	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	416	758	-	-	1082	-
Mov Cap-2 Maneuver	416	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	796	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.9	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	416	758	1082	-
HCM Lane V/C Ratio	-	-	0.23	0.007	0.013	-
HCM Control Delay (s)	-	-	16.2	9.8	8.4	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	91	5	339	144	14	359
Future Vol, veh/h	91	5	339	144	14	359
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	99	5	368	157	15	390

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	678	268	0	0	530	0
Stage 1	452	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	386	730	-	-	1033	-
Stage 1	608	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	379	727	-	-	1033	-
Mov Cap-2 Maneuver	379	-	-	-	-	-
Stage 1	605	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.4	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	379	727	1033	-
HCM Lane V/C Ratio	-	-	0.261	0.007	0.015	-
HCM Control Delay (s)	-	-	17.8	10	8.5	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1	0	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	91	9	382	144	16	384
Future Vol, veh/h	91	9	382	144	16	384
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	99	10	415	157	17	417

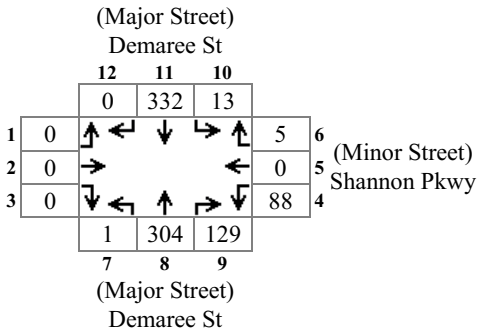
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	741	291	0	0	577	0
Stage 1	498	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	352	706	-	-	993	-
Stage 1	576	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	345	703	-	-	993	-
Mov Cap-2 Maneuver	345	-	-	-	-	-
Stage 1	574	-	-	-	-	-
Stage 2	762	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.8	0	0.3
HCM LOS	C		

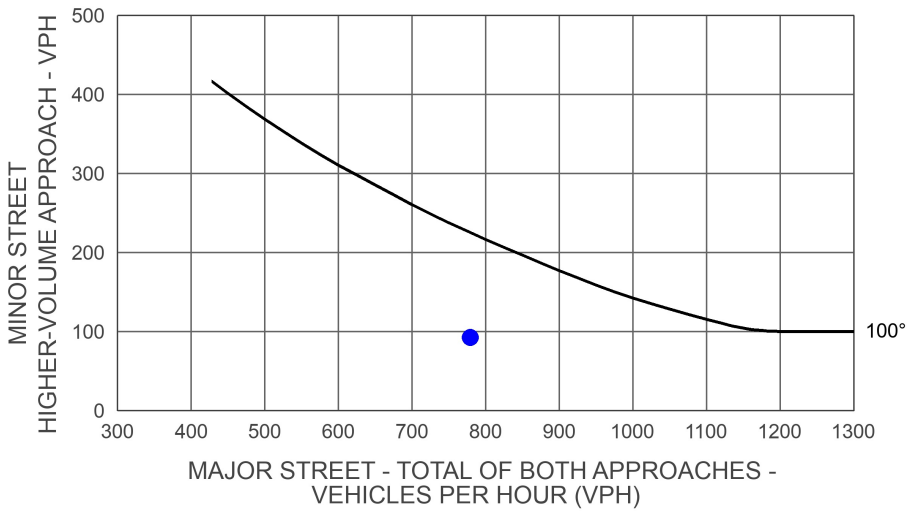
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	345	703	993	-
HCM Lane V/C Ratio	-	-	0.287	0.014	0.018	-
HCM Control Delay (s)	-	-	19.6	10.2	8.7	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 13

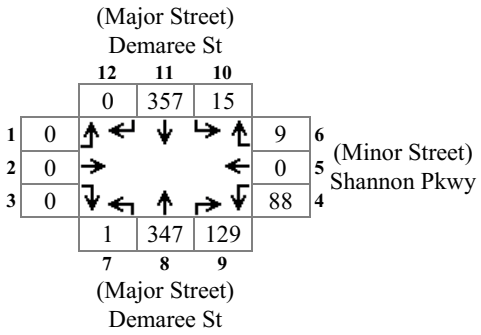


Major Total: 779
Minor High Volume: 93

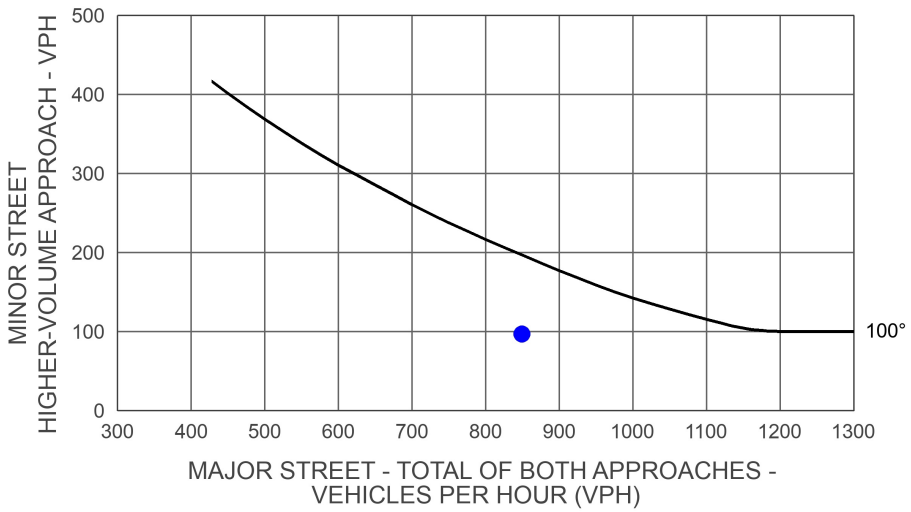


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 13

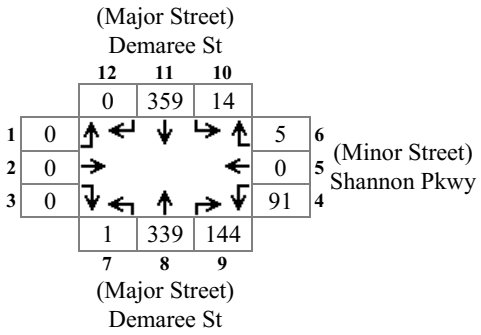


Major Total: 849
Minor High Volume: 97

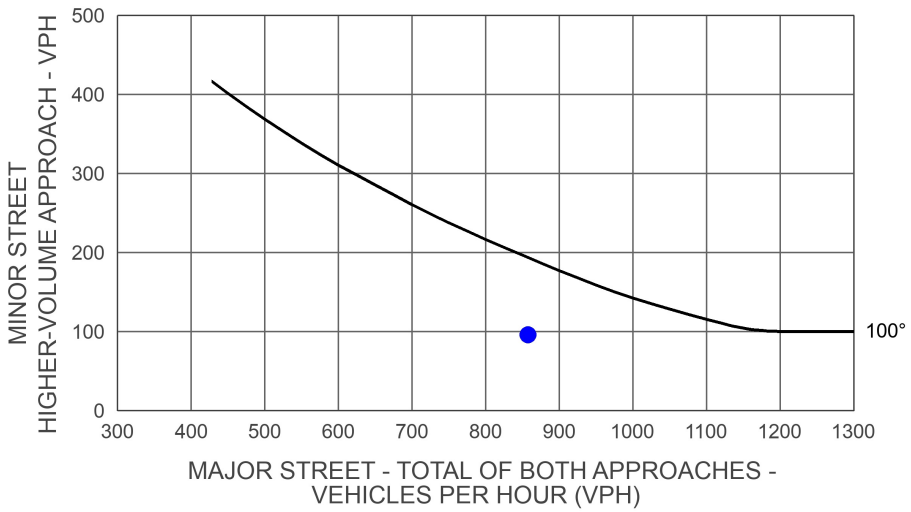


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 13

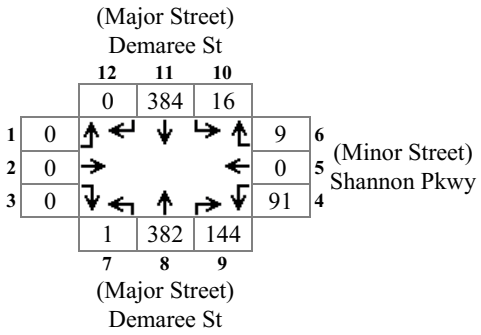


Major Total: 857
Minor High Volume: 96

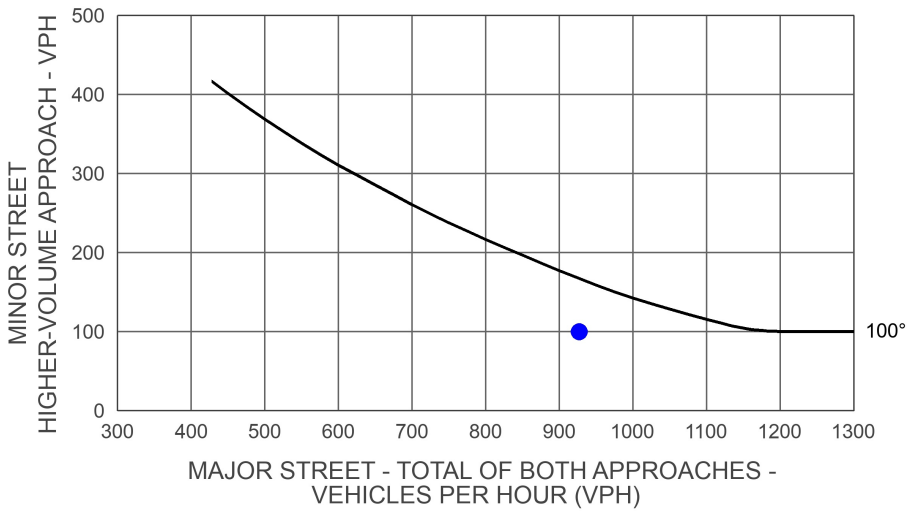


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 13



Major Total: 927
Minor High Volume: 100



Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	117	21	253	53	8	283
Future Vol, veh/h	117	21	253	53	8	283
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	127	23	275	58	9	308

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	480	171	0	0	338	0
Stage 1	309	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	515	843	-	-	1218	-
Stage 1	718	-	-	-	-	-
Stage 2	842	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	509	839	-	-	1218	-
Mov Cap-2 Maneuver	509	-	-	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	836	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	509	839	1218	-
HCM Lane V/C Ratio	-	-	0.25	0.027	0.007	-
HCM Control Delay (s)	-	-	14.4	9.4	8	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	1	0.1	0	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	121	22	282	59	9	306
Future Vol, veh/h	121	22	282	59	9	306
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	132	24	307	64	10	333

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	530	190	0	0	376	0
Stage 1	344	-	-	-	-	-
Stage 2	186	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	479	820	-	-	1179	-
Stage 1	689	-	-	-	-	-
Stage 2	827	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	473	817	-	-	1179	-
Mov Cap-2 Maneuver	473	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	820	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	473	817	1179	-
HCM Lane V/C Ratio	-	-	0.278	0.029	0.008	-
HCM Control Delay (s)	-	-	15.5	9.5	8.1	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	1.1	0.1	0	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	121	23	295	59	12	344
Future Vol, veh/h	121	23	295	59	12	344
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	132	25	321	64	13	374

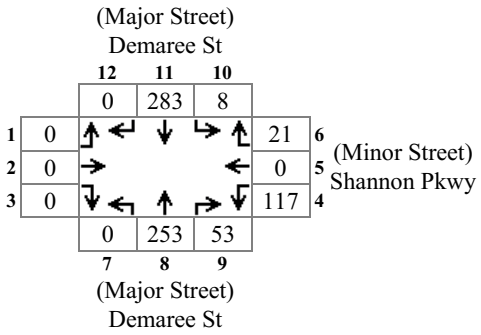
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	571	197	0	0	390	0
Stage 1	358	-	-	-	-	-
Stage 2	213	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	451	811	-	-	1165	-
Stage 1	678	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	444	808	-	-	1165	-
Mov Cap-2 Maneuver	444	-	-	-	-	-
Stage 1	675	-	-	-	-	-
Stage 2	793	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.4	0	0.3
HCM LOS	C		

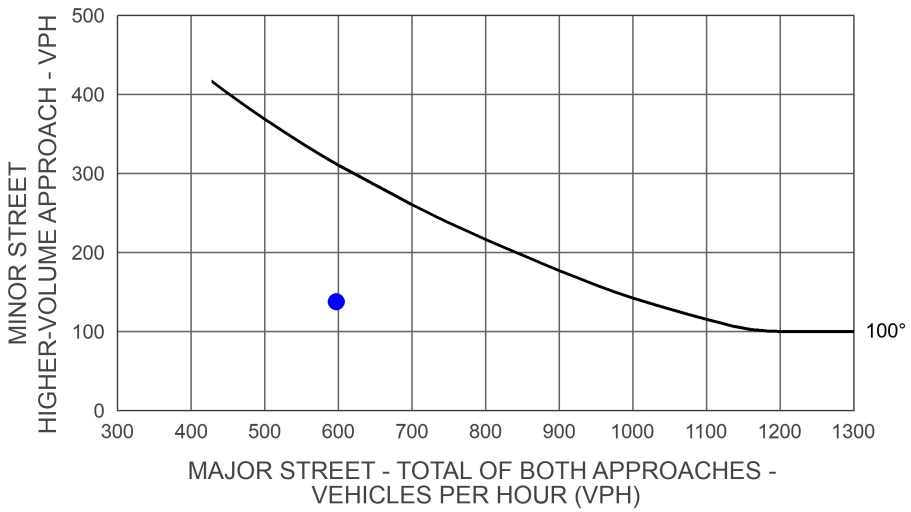
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	444	808	1165	-
HCM Lane V/C Ratio	-	-	0.296	0.031	0.011	-
HCM Control Delay (s)	-	-	16.5	9.6	8.1	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.1	0	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 13

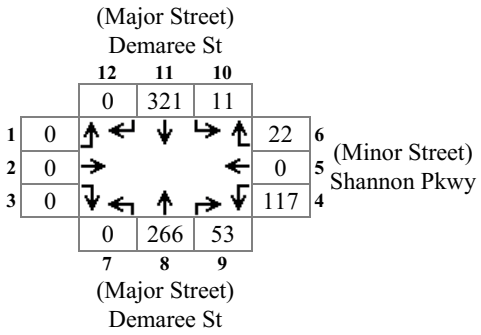


Major Total: 597
Minor High Volume: 138

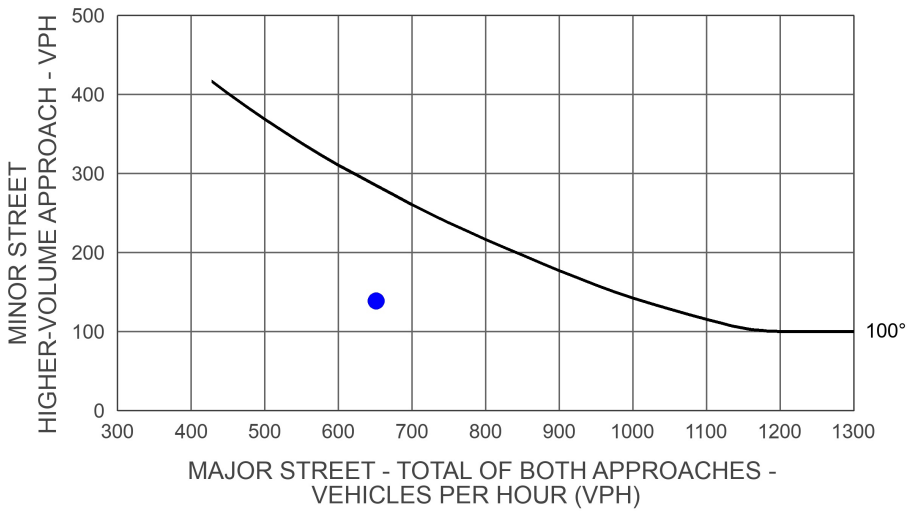


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 13

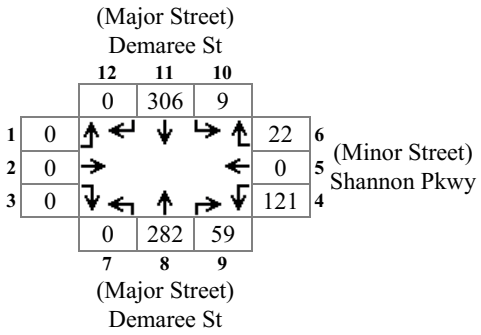


Major Total: 651
Minor High Volume: 139

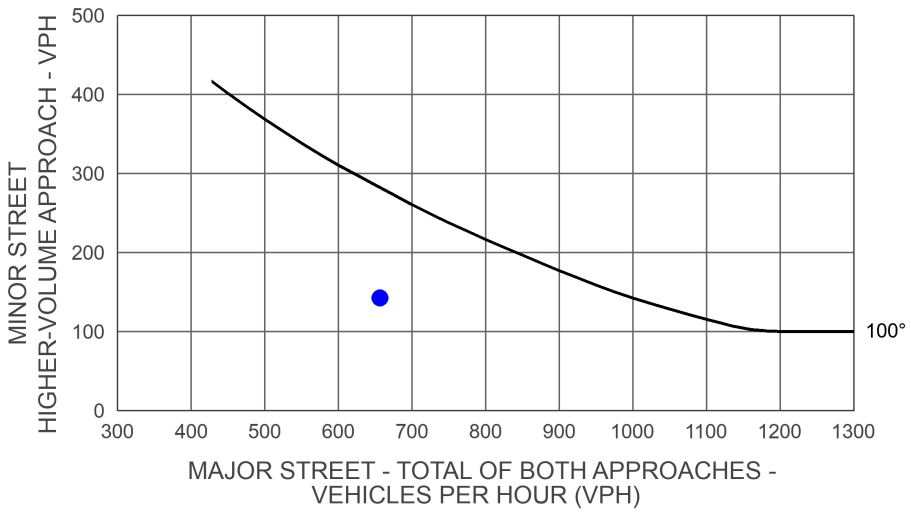


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 13

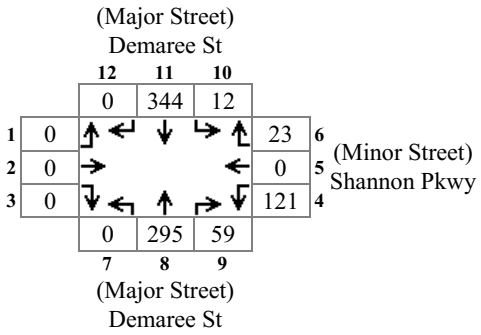


Major Total: 656
Minor High Volume: 143

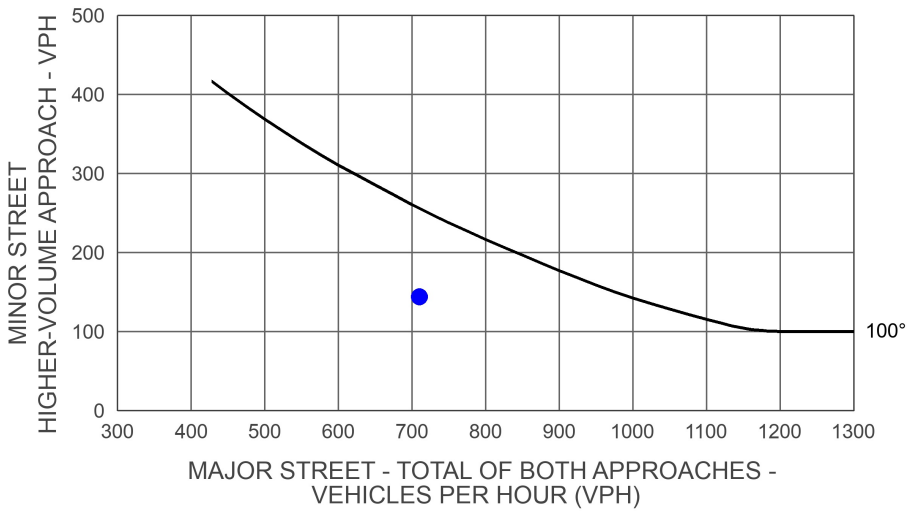


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 13



Major Total: 710
Minor High Volume: 144



Intersection 14
Country Center St & Shannon Pkwy

Intersection	
Intersection Delay, s/veh	4.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	95	92	96	42
Demand Flow Rate, veh/h	97	93	98	42
Vehicles Circulating, veh/h	45	56	75	91
Vehicles Exiting, veh/h	88	117	66	58
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.2	4.2	4.3	3.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	97	93	98	42
Cap Entry Lane, veh/h	1080	1068	1048	1032
Entry HV Adj Factor	0.976	0.986	0.981	0.989
Flow Entry, veh/h	95	92	96	42
Cap Entry, veh/h	1054	1053	1028	1020
V/C Ratio	0.090	0.087	0.094	0.041
Control Delay, s/veh	4.2	4.2	4.3	3.9
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Intersection	
Intersection Delay, s/veh	4.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	98	93	110	45
Demand Flow Rate, veh/h	100	94	112	46
Vehicles Circulating, veh/h	47	64	77	93
Vehicles Exiting, veh/h	91	125	70	65
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.2	4.2	4.5	3.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	100	94	112	46
Cap Entry Lane, veh/h	1078	1060	1046	1030
Entry HV Adj Factor	0.977	0.986	0.982	0.989
Flow Entry, veh/h	98	93	110	45
Cap Entry, veh/h	1052	1045	1027	1017
V/C Ratio	0.093	0.089	0.107	0.045
Control Delay, s/veh	4.2	4.2	4.5	3.9
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

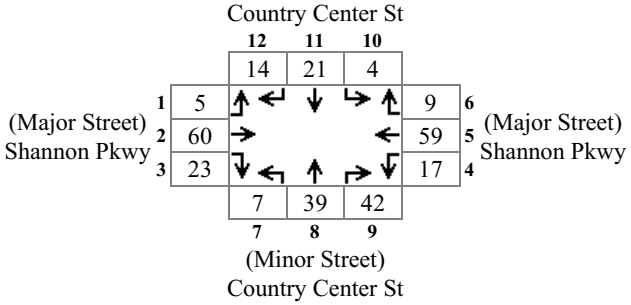
Intersection	
Intersection Delay, s/veh	4.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	98	93	110	45
Demand Flow Rate, veh/h	100	94	112	46
Vehicles Circulating, veh/h	47	64	77	93
Vehicles Exiting, veh/h	91	125	70	65
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.2	4.2	4.5	3.9
Approach LOS	A	A	A	A

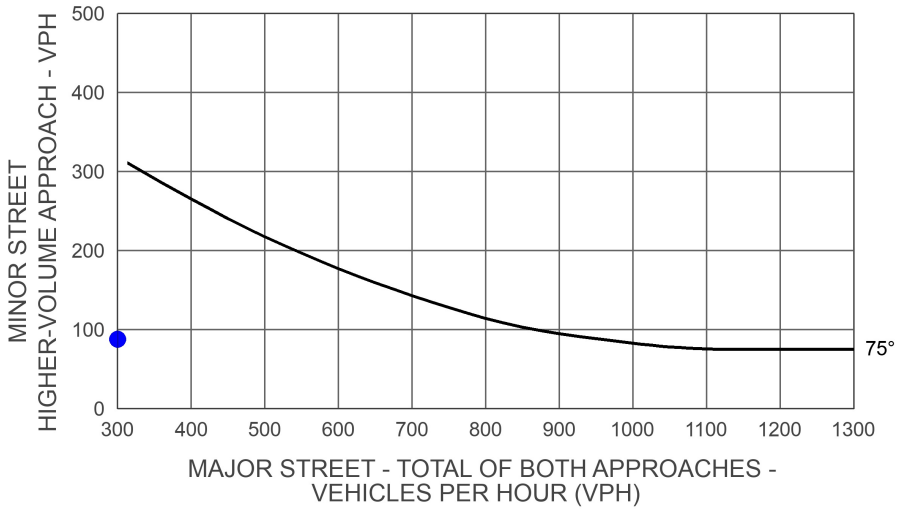
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	100	94	112	46
Cap Entry Lane, veh/h	1078	1060	1046	1030
Entry HV Adj Factor	0.977	0.986	0.982	0.989
Flow Entry, veh/h	98	93	110	45
Cap Entry, veh/h	1052	1045	1027	1017
V/C Ratio	0.093	0.089	0.107	0.045
Control Delay, s/veh	4.2	4.2	4.5	3.9
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 14

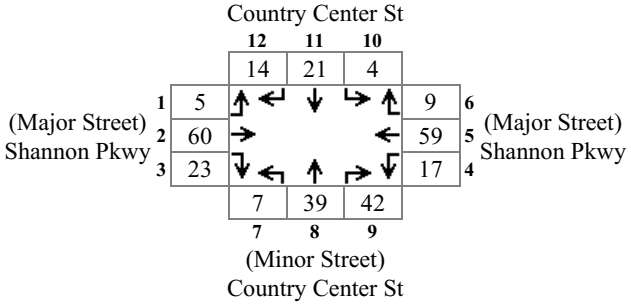


Major Total: 173
Minor High Volume: 88

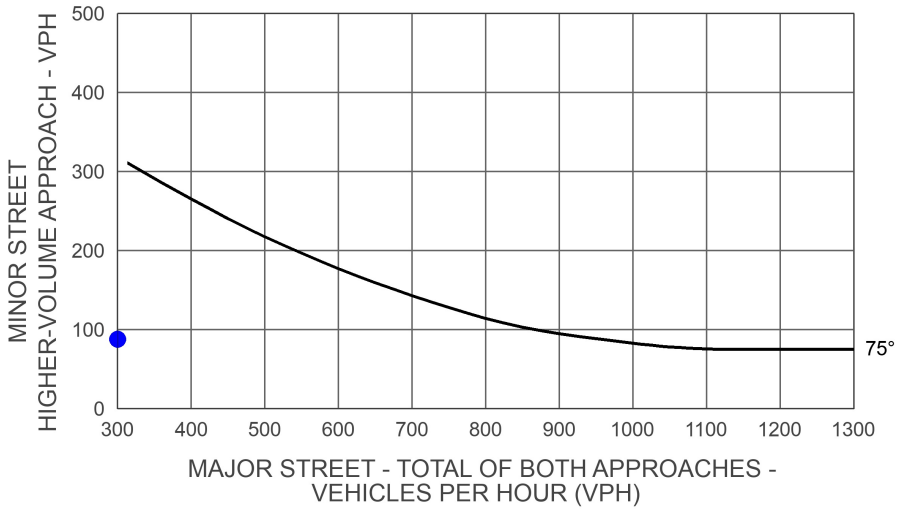


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 14

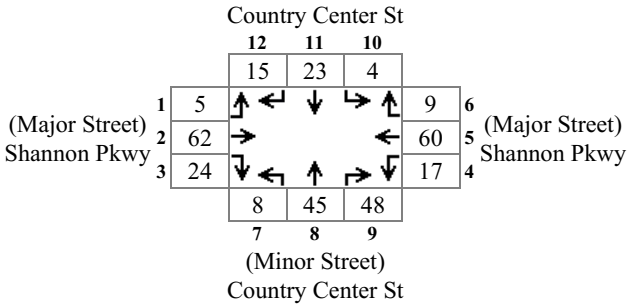


Major Total: 173
Minor High Volume: 88

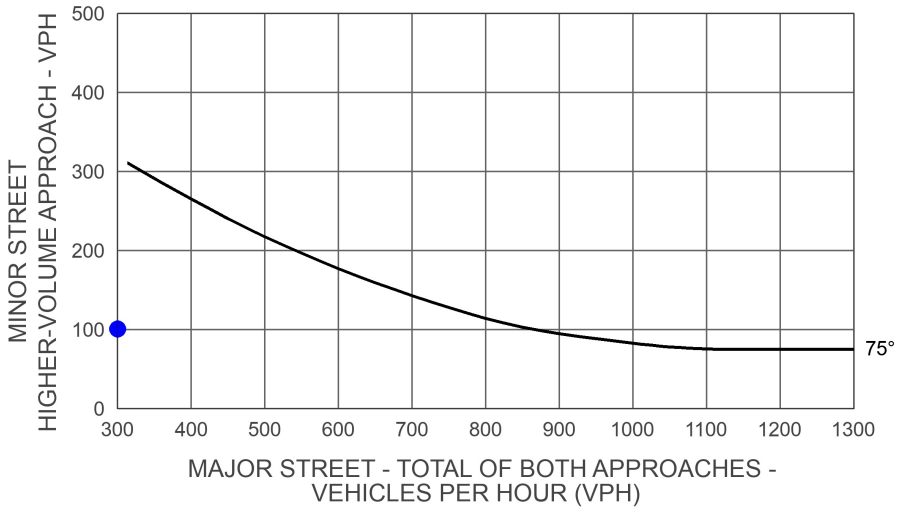


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 14

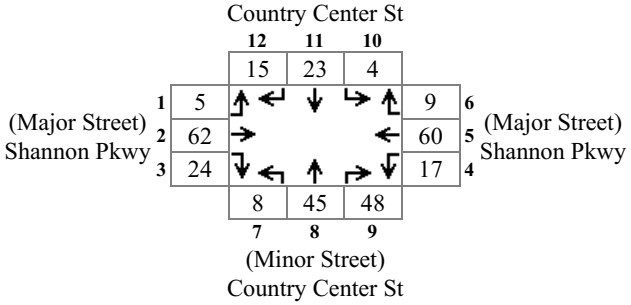


Major Total: 177
Minor High Volume: 101

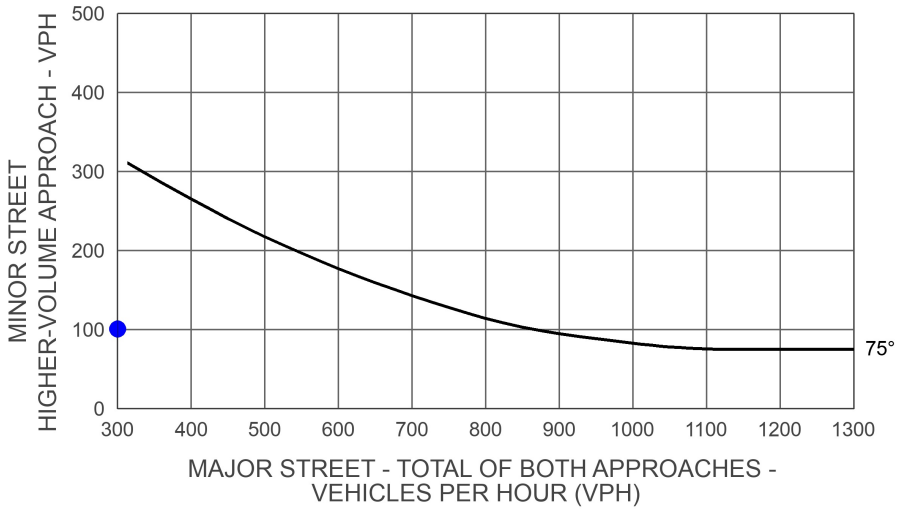


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 14



Major Total: 177
Minor High Volume: 101



Intersection	
Intersection Delay, s/veh	3.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	44	41	40	56
Demand Flow Rate, veh/h	45	42	40	57
Vehicles Circulating, veh/h	44	27	32	48
Vehicles Exiting, veh/h	61	45	57	21
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.7	3.6	3.6	3.8
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	45	42	40	57
Cap Entry Lane, veh/h	1081	1100	1094	1077
Entry HV Adj Factor	0.987	0.986	0.991	0.989
Flow Entry, veh/h	44	41	40	56
Cap Entry, veh/h	1067	1083	1084	1064
V/C Ratio	0.042	0.038	0.037	0.053
Control Delay, s/veh	3.7	3.6	3.6	3.8
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Intersection	
Intersection Delay, s/veh	3.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	45	41	46	61
Demand Flow Rate, veh/h	46	42	46	62
Vehicles Circulating, veh/h	47	31	33	49
Vehicles Exiting, veh/h	64	48	60	24
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.7	3.7	3.7	3.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	46	42	46	62
Cap Entry Lane, veh/h	1078	1095	1093	1076
Entry HV Adj Factor	0.987	0.986	0.991	0.989
Flow Entry, veh/h	45	41	46	61
Cap Entry, veh/h	1064	1079	1083	1063
V/C Ratio	0.043	0.038	0.042	0.058
Control Delay, s/veh	3.7	3.7	3.7	3.9
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

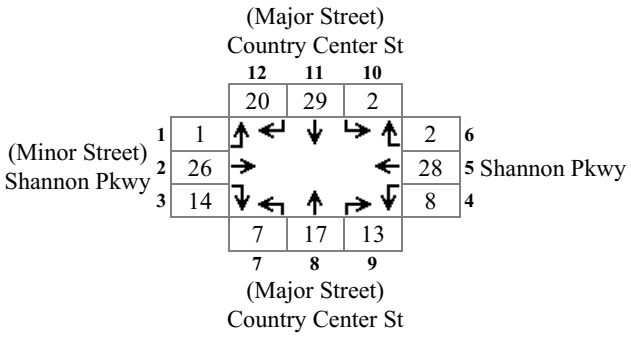
Intersection	
Intersection Delay, s/veh	3.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	45	41	46	61
Demand Flow Rate, veh/h	46	42	46	62
Vehicles Circulating, veh/h	47	31	33	49
Vehicles Exiting, veh/h	64	48	60	24
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.7	3.7	3.7	3.9
Approach LOS	A	A	A	A

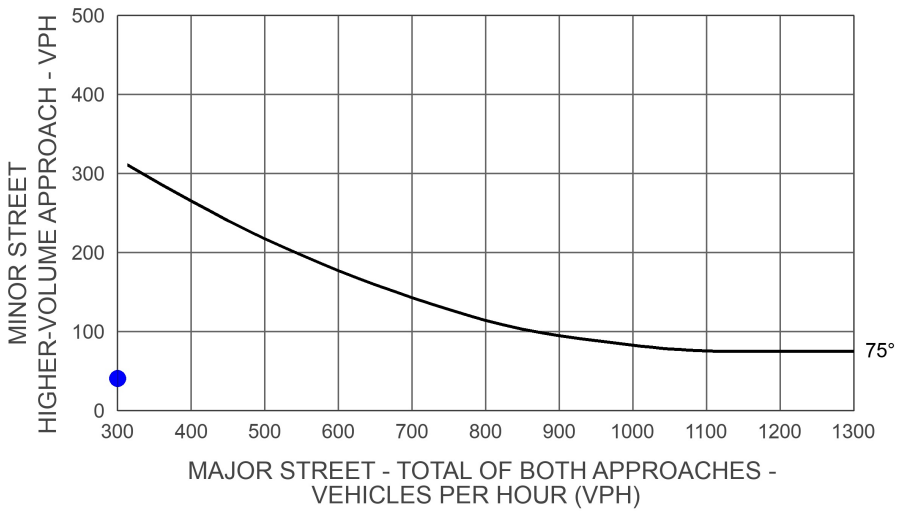
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	46	42	46	62
Cap Entry Lane, veh/h	1078	1095	1093	1076
Entry HV Adj Factor	0.987	0.986	0.991	0.989
Flow Entry, veh/h	45	41	46	61
Cap Entry, veh/h	1064	1079	1083	1063
V/C Ratio	0.043	0.038	0.042	0.058
Control Delay, s/veh	3.7	3.7	3.7	3.9
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 14

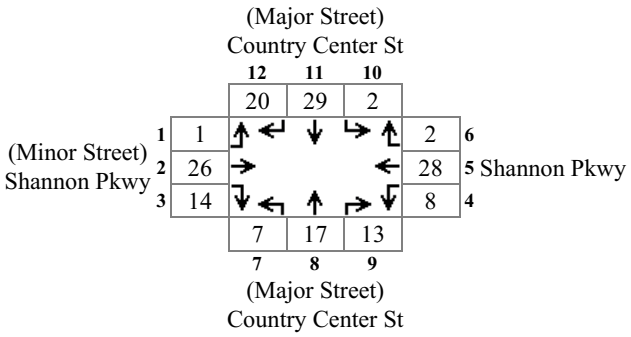


Major Total: 88
Minor High Volume: 41

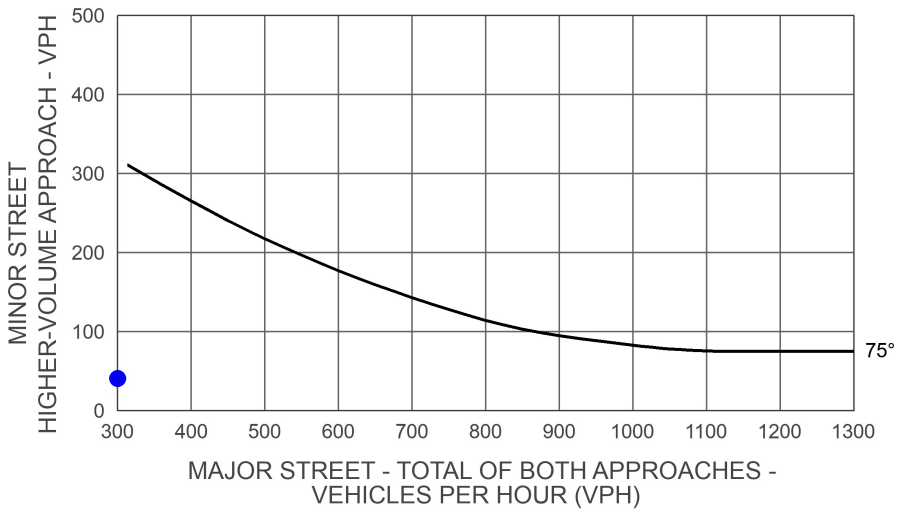


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 14

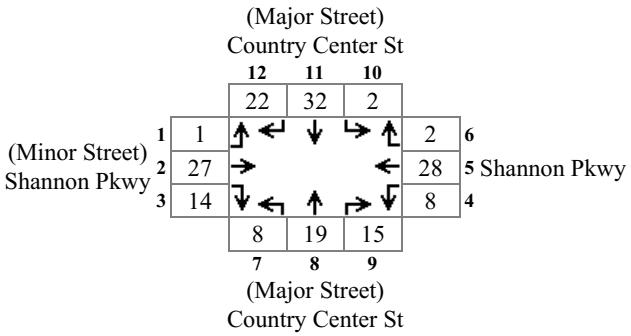


Major Total: 88
Minor High Volume: 41

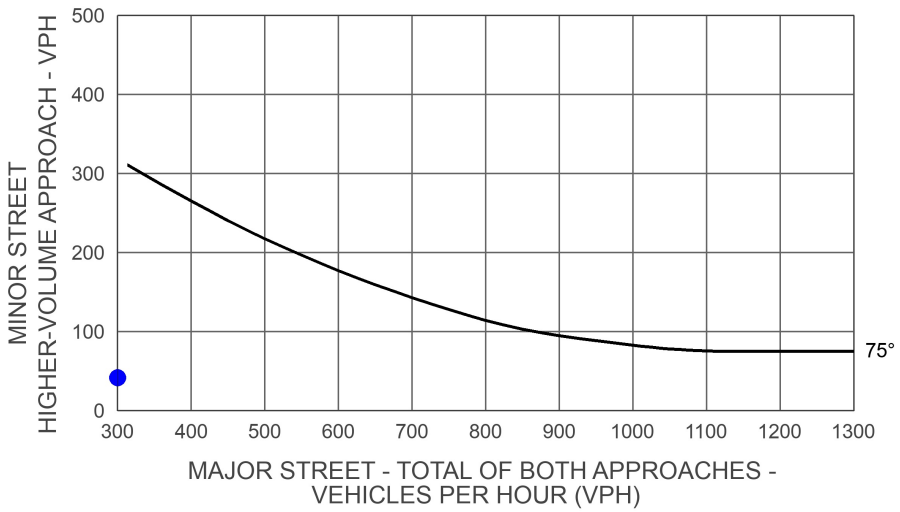


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 14

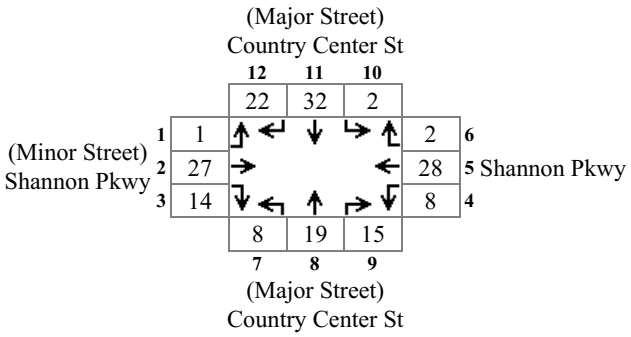


Major Total: 98
Minor High Volume: 42

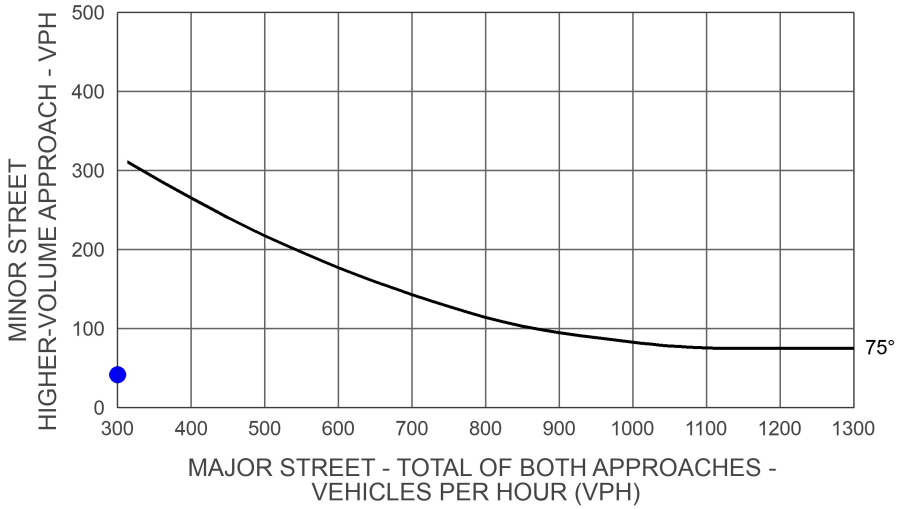


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 14



Major Total: 98
Minor High Volume: 42



Intersection 15
Demaree St & Flagstaff Ave

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	33	0	20	3	419	25	35	394	0
Future Vol, veh/h	0	0	0	33	0	20	3	419	25	35	394	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	36	0	22	3	455	27	38	428	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	738	993	214	766	980	241	428	0	0	483	0	0
Stage 1	504	504	-	476	476	-	-	-	-	-	-	-
Stage 2	234	489	-	290	504	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	306	244	791	292	248	760	1128	-	-	1076	-	-
Stage 1	518	539	-	539	555	-	-	-	-	-	-	-
Stage 2	748	548	-	694	539	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	286	232	791	281	236	760	1128	-	-	1076	-	-
Mov Cap-2 Maneuver	286	232	-	281	236	-	-	-	-	-	-	-
Stage 1	516	514	-	537	553	-	-	-	-	-	-	-
Stage 2	724	546	-	662	514	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	16.6	0.1	0.9
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1128	-	-	-	369	1076	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.156	0.035	-	-
HCM Control Delay (s)	8.2	0	-	0	16.6	8.5	0.2	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	35	0	21	3	445	27	37	418	0
Future Vol, veh/h	0	0	0	35	0	21	3	445	27	37	418	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	38	0	23	3	484	29	40	454	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	783	1055	227	813	1040	257	454	0	0	513	0	0
Stage 1	535	535	-	505	505	-	-	-	-	-	-	-
Stage 2	248	520	-	308	535	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	284	224	776	270	229	742	1103	-	-	1049	-	-
Stage 1	497	522	-	518	539	-	-	-	-	-	-	-
Stage 2	734	530	-	677	522	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	264	212	776	259	216	742	1103	-	-	1049	-	-
Mov Cap-2 Maneuver	264	212	-	259	216	-	-	-	-	-	-	-
Stage 1	495	495	-	516	537	-	-	-	-	-	-	-
Stage 2	709	528	-	642	495	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	17.7	0.1	0.9
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1103	-	-	-	343	1049	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.177	0.038	-	-
HCM Control Delay (s)	8.3	0	-	0	17.7	8.6	0.2	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	35	0	21	3	488	27	37	443	0
Future Vol, veh/h	0	0	0	35	0	21	3	488	27	37	443	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	38	0	23	3	530	29	40	482	0

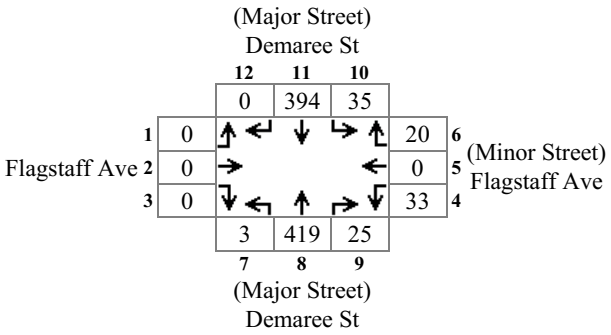
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	834	1128	241	873	1114	280	482	0	0	560	0	0
Stage 1	562	562	-	552	552	-	-	-	-	-	-	-
Stage 2	272	566	-	321	562	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	261	203	760	244	207	717	1077	-	-	1007	-	-
Stage 1	479	508	-	486	513	-	-	-	-	-	-	-
Stage 2	711	506	-	665	508	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	242	191	760	233	195	717	1077	-	-	1007	-	-
Mov Cap-2 Maneuver	242	191	-	233	195	-	-	-	-	-	-	-
Stage 1	477	481	-	484	511	-	-	-	-	-	-	-
Stage 2	686	504	-	629	481	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	19.3	0	0.9
HCM LOS	A	C		

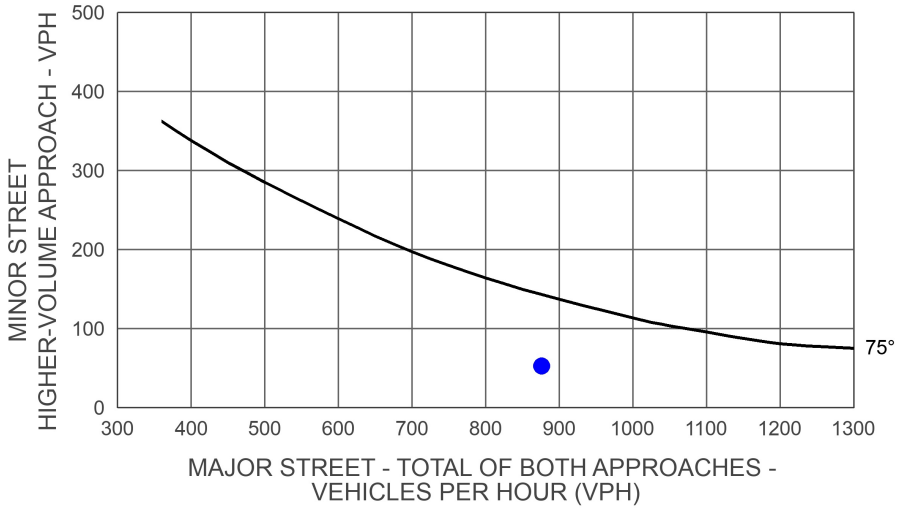
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1077	-	-	-	312	1007	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.195	0.04	-	-
HCM Control Delay (s)	8.4	0	-	0	19.3	8.7	0.2	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.7	0.1	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 15

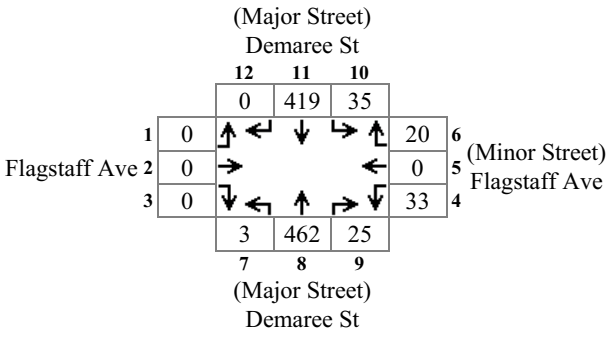


Major Total: 876
Minor High Volume: 53

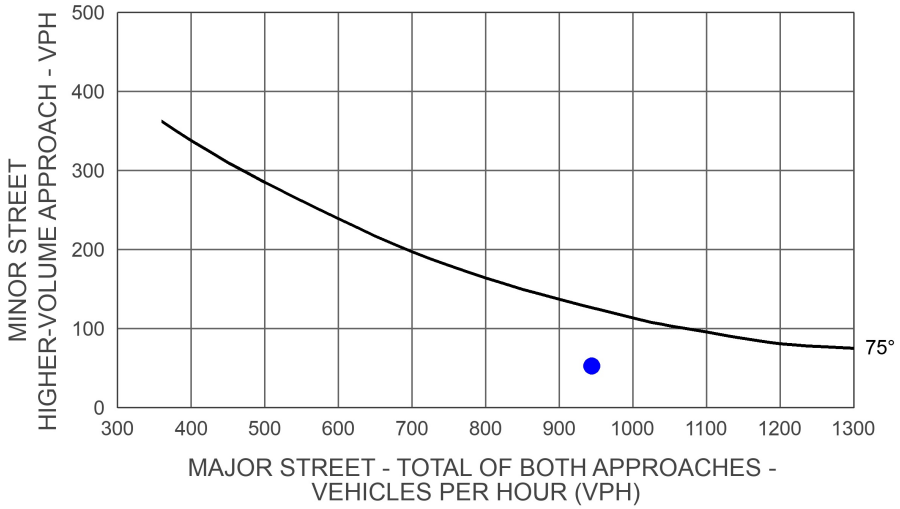


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 15

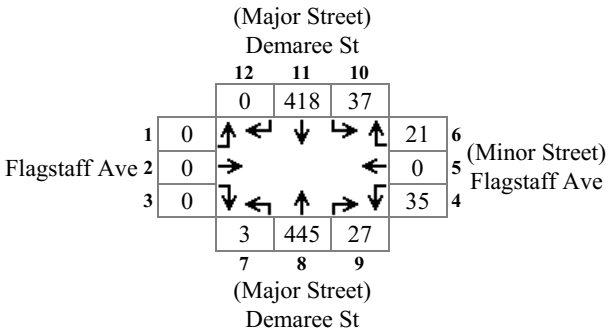


Major Total: 944
Minor High Volume: 53

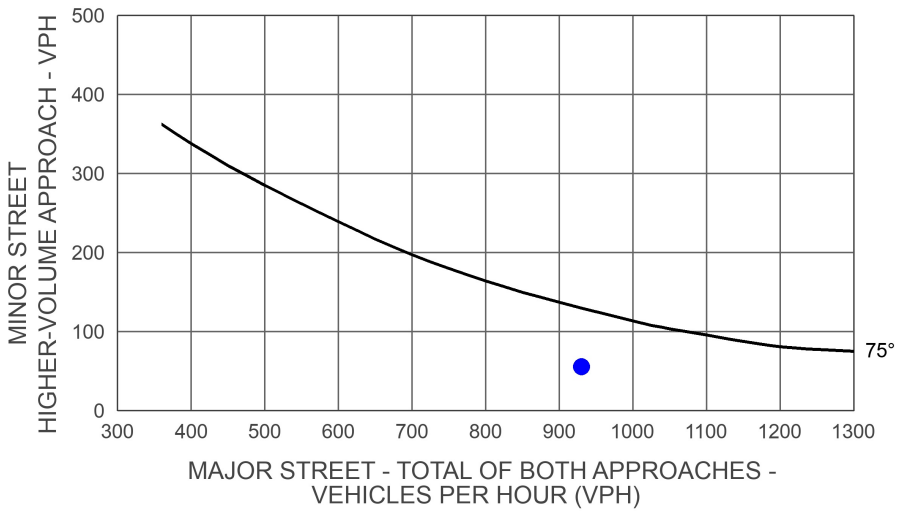


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 15

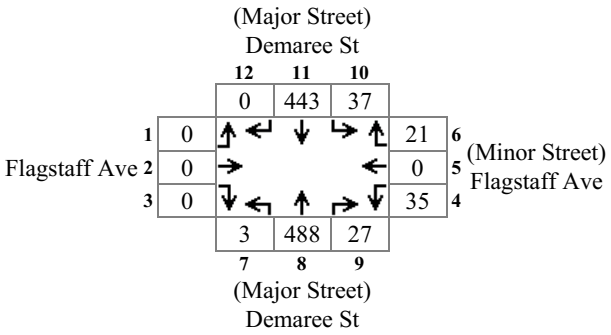


Major Total: 930
Minor High Volume: 56

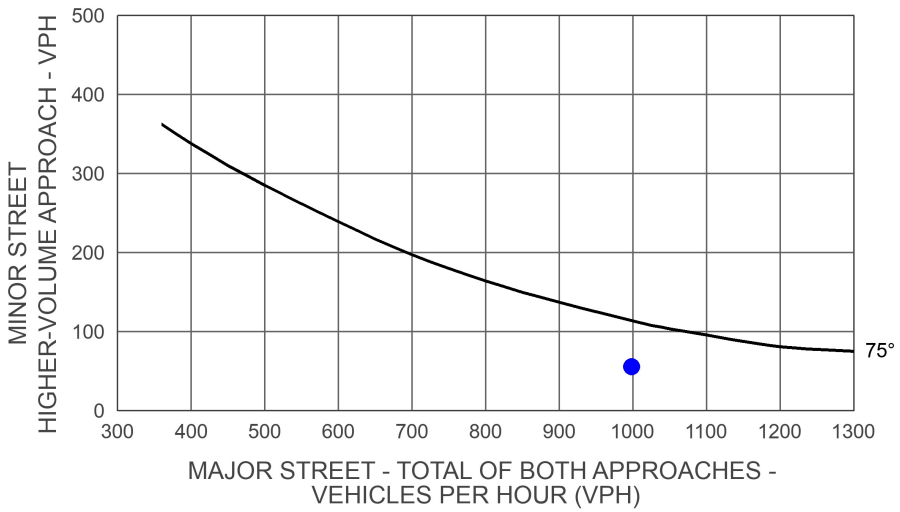


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 15



Major Total: 998
Minor High Volume: 56



Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	17	0	16	4	378	25	18	301	0
Future Vol, veh/h	0	0	0	17	0	16	4	378	25	18	301	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	18	0	17	4	411	27	20	327	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	580	813	164	636	799	219	327	0	0	438	0	0
Stage 1	366	366	-	433	433	-	-	-	-	-	-	-
Stage 2	214	447	-	203	366	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	398	311	852	363	317	785	1229	-	-	1118	-	-
Stage 1	626	621	-	571	580	-	-	-	-	-	-	-
Stage 2	768	572	-	780	621	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	381	303	852	356	309	785	1229	-	-	1118	-	-
Mov Cap-2 Maneuver	381	303	-	356	309	-	-	-	-	-	-	-
Stage 1	623	607	-	569	578	-	-	-	-	-	-	-
Stage 2	748	570	-	763	607	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	13	0.1	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1229	-	-	-	484	1118	-	-
HCM Lane V/C Ratio	0.004	-	-	-	0.074	0.018	-	-
HCM Control Delay (s)	7.9	0	-	0	13	8.3	0.1	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	18	0	17	4	401	27	19	319	0
Future Vol, veh/h	0	0	0	18	0	17	4	401	27	19	319	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	20	0	18	4	436	29	21	347	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	615	862	173	674	847	233	347	0	0	465	0	0
Stage 1	388	388	-	459	459	-	-	-	-	-	-	-
Stage 2	227	474	-	215	388	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	375	291	840	340	297	769	1209	-	-	1093	-	-
Stage 1	607	607	-	551	565	-	-	-	-	-	-	-
Stage 2	755	556	-	767	607	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	358	283	840	333	289	769	1209	-	-	1093	-	-
Mov Cap-2 Maneuver	358	283	-	333	289	-	-	-	-	-	-	-
Stage 1	605	592	-	549	563	-	-	-	-	-	-	-
Stage 2	734	554	-	749	592	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	13.5	0.1	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1209	-	-	-	460	1093	-	-
HCM Lane V/C Ratio	0.004	-	-	-	0.083	0.019	-	-
HCM Control Delay (s)	8	0	-	0	13.5	8.4	0.1	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	18	0	17	4	414	27	19	357	0
Future Vol, veh/h	0	0	0	18	0	17	4	414	27	19	357	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	20	0	18	4	450	29	21	388	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	663	917	194	708	902	240	388	0	0	479	0	0
Stage 1	429	429	-	473	473	-	-	-	-	-	-	-
Stage 2	234	488	-	235	429	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	347	270	815	322	276	761	1167	-	-	1080	-	-
Stage 1	574	582	-	541	557	-	-	-	-	-	-	-
Stage 2	748	548	-	747	582	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	331	262	815	315	268	761	1167	-	-	1080	-	-
Mov Cap-2 Maneuver	331	262	-	315	268	-	-	-	-	-	-	-
Stage 1	571	567	-	538	554	-	-	-	-	-	-	-
Stage 2	726	545	-	728	567	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	14	0.1	0.5
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1167	-	-	-	440	1080	-	-
HCM Lane V/C Ratio	0.004	-	-	-	0.086	0.019	-	-
HCM Control Delay (s)	8.1	0	-	0	14	8.4	0.1	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	18	0	17	4	414	27	19	357	0
Future Vol, veh/h	0	0	0	18	0	17	4	414	27	19	357	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	20	0	18	4	450	29	21	388	0

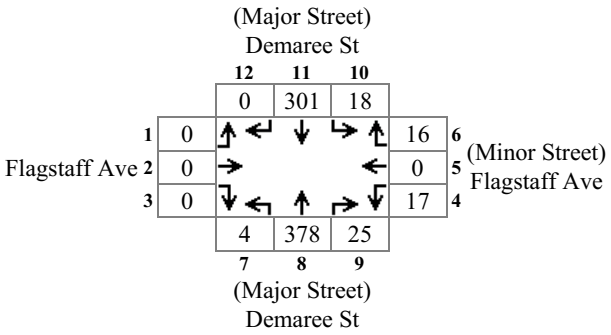
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	663	917	194	708	902	240	388	0	0	479	0	0
Stage 1	429	429	-	473	473	-	-	-	-	-	-	-
Stage 2	234	488	-	235	429	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	347	270	815	322	276	761	1167	-	-	1080	-	-
Stage 1	574	582	-	541	557	-	-	-	-	-	-	-
Stage 2	748	548	-	747	582	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	331	262	815	315	268	761	1167	-	-	1080	-	-
Mov Cap-2 Maneuver	331	262	-	315	268	-	-	-	-	-	-	-
Stage 1	571	567	-	538	554	-	-	-	-	-	-	-
Stage 2	726	545	-	728	567	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	14	0.1	0.5
HCM LOS	A	B		

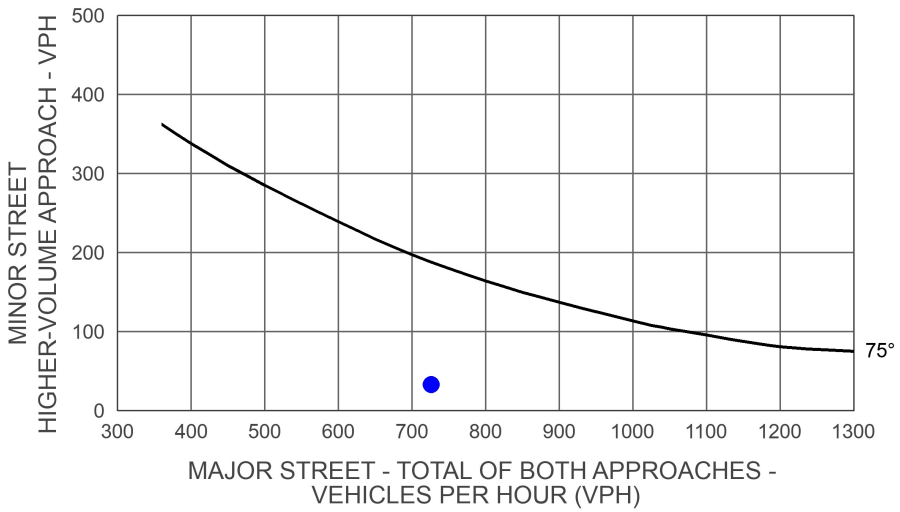
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1167	-	-	-	440	1080	-	-
HCM Lane V/C Ratio	0.004	-	-	-	0.086	0.019	-	-
HCM Control Delay (s)	8.1	0	-	0	14	8.4	0.1	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.1	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 15

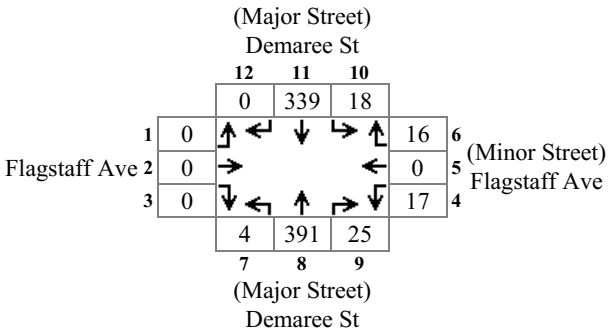


Major Total: 726
Minor High Volume: 33

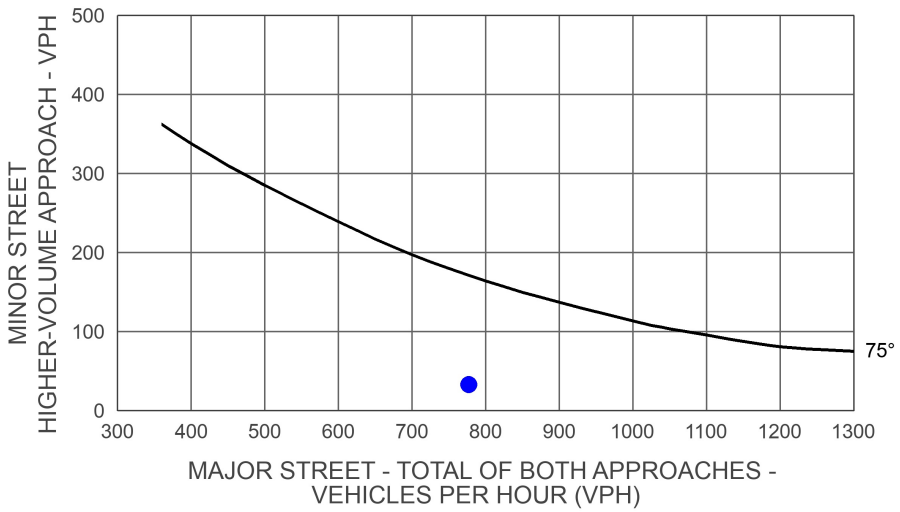


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 15

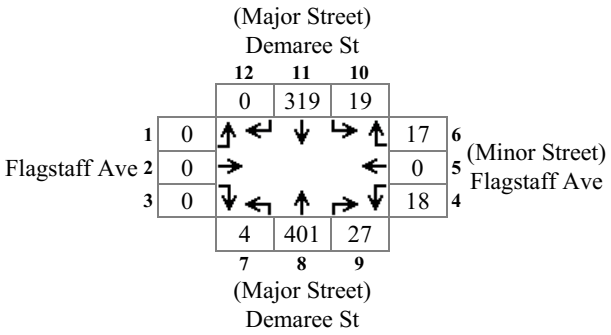


Major Total: 777
Minor High Volume: 33

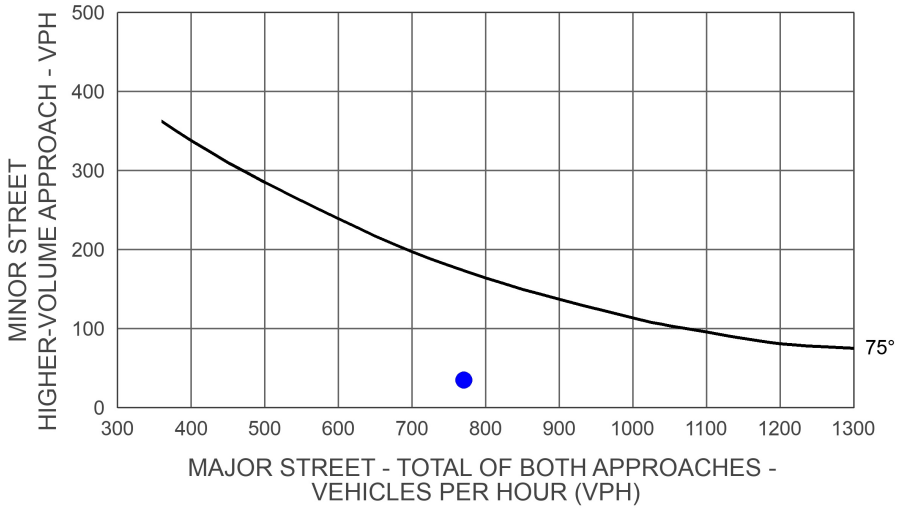


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 15

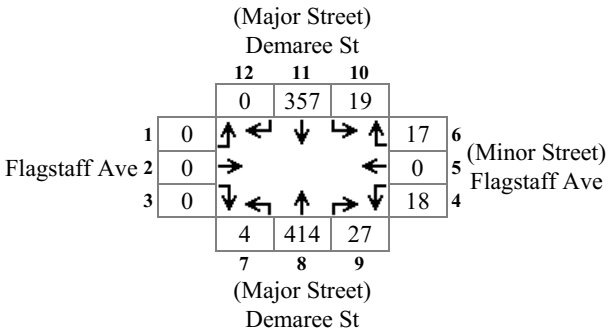


Major Total: 770
Minor High Volume: 35

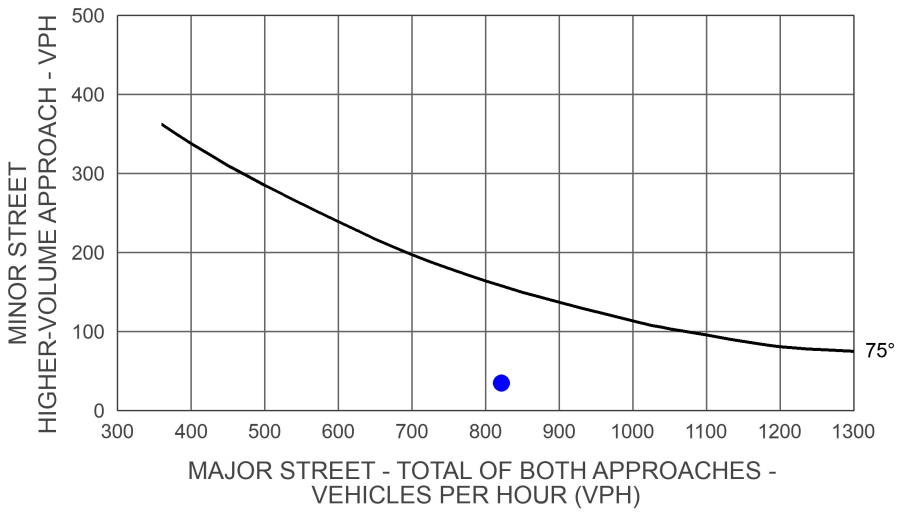


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 15



Major Total: 821
Minor High Volume: 35



Intersection 16
Akers St & Riggen Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	467	67	151	260	21	37	86	187	28	57	17
Future Volume (veh/h)	14	467	67	151	260	21	37	86	187	28	57	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	15	508	73	164	283	23	40	93	203	30	62	18
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	49	572	440	217	764	581	67	348	262	392	1366	547
Arrive On Green	0.03	0.31	0.31	0.13	0.41	0.41	0.04	0.19	0.19	0.24	0.39	0.39
Sat Flow, veh/h	1634	1863	1432	1634	1863	1418	1634	1863	1404	1634	3539	1417
Grp Volume(v), veh/h	15	508	73	164	283	23	40	93	203	30	62	18
Grp Sat Flow(s),veh/h/ln	1634	1863	1432	1634	1863	1418	1634	1863	1404	1634	1770	1417
Q Serve(g_s), s	1.1	31.2	3.6	11.6	12.7	0.5	2.9	5.1	16.5	1.7	1.3	0.9
Cycle Q Clear(g_c), s	1.1	31.2	3.6	11.6	12.7	0.5	2.9	5.1	16.5	1.7	1.3	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	49	572	440	217	764	581	67	348	262	392	1366	547
V/C Ratio(X)	0.31	0.89	0.17	0.76	0.37	0.04	0.60	0.27	0.77	0.08	0.05	0.03
Avail Cap(c_a), veh/h	82	714	549	259	916	697	72	512	386	392	1366	547
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	39.6	19.3	50.2	24.6	4.0	56.6	41.8	46.4	35.3	23.0	22.9
Incr Delay (d2), s/veh	3.5	11.1	0.2	10.1	0.3	0.0	11.4	1.9	19.6	0.1	0.1	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	0.5	17.9	1.4	5.8	6.6	0.2	1.5	2.8	7.8	0.8	0.6	0.4
LnGrp Delay(d),s/veh	60.5	50.7	19.4	60.3	24.9	4.0	68.0	43.6	66.0	35.4	23.1	23.0
LnGrp LOS	E	D	B	E	C	A	E	D	E	D	C	C
Approach Vol, veh/h		596			470			336			110	
Approach Delay, s/veh		47.1			36.2			60.0			26.4	
Approach LOS		D			D			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.8	26.4	19.9	40.9	8.9	50.3	7.6	53.2
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	3.7	18.5	13.6	33.2	4.9	3.3	3.1	14.7
Green Ext Time (p_c), s	0.0	0.9	0.7	1.7	0.0	0.4	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	45.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	481	69	157	270	22	38	88	192	29	59	18
Future Volume (veh/h)	14	481	69	157	270	22	38	88	192	29	59	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	15	523	75	171	293	24	41	96	209	32	64	20
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	49	587	451	223	785	598	68	355	268	367	1323	529
Arrive On Green	0.03	0.31	0.31	0.14	0.42	0.42	0.04	0.19	0.19	0.22	0.37	0.37
Sat Flow, veh/h	1634	1863	1432	1634	1863	1418	1634	1863	1405	1634	3539	1417
Grp Volume(v), veh/h	15	523	75	171	293	24	41	96	209	32	64	20
Grp Sat Flow(s),veh/h/ln	1634	1863	1432	1634	1863	1418	1634	1863	1405	1634	1770	1417
Q Serve(g_s), s	1.1	32.1	3.6	12.1	13.0	0.5	3.0	5.3	17.0	1.9	1.4	1.1
Cycle Q Clear(g_c), s	1.1	32.1	3.6	12.1	13.0	0.5	3.0	5.3	17.0	1.9	1.4	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	49	587	451	223	785	598	68	355	268	367	1323	529
V/C Ratio(X)	0.31	0.89	0.17	0.77	0.37	0.04	0.60	0.27	0.78	0.09	0.05	0.04
Avail Cap(c_a), veh/h	82	714	549	259	916	697	72	512	386	367	1323	529
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	39.2	18.7	50.0	23.8	4.1	56.5	41.5	46.2	36.8	24.0	23.9
Incr Delay (d2), s/veh	3.5	11.8	0.2	11.3	0.3	0.0	12.1	1.9	20.0	0.1	0.1	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	0.5	18.5	1.4	6.2	6.7	0.2	1.6	2.9	8.1	0.8	0.7	0.4
LnGrp Delay(d),s/veh	60.5	50.9	18.9	61.2	24.1	4.1	68.7	43.3	66.1	36.9	24.0	24.0
LnGrp LOS	E	D	B	E	C	A	E	D	E	D	C	C
Approach Vol, veh/h		613			488			346			116	
Approach Delay, s/veh		47.2			36.1			60.1			27.6	
Approach LOS		D			D			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.0	26.9	20.4	41.8	9.0	48.8	7.6	54.6
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	3.9	19.0	14.1	34.1	5.0	3.4	3.1	15.0
Green Ext Time (p_c), s	0.0	1.0	0.6	1.7	0.0	0.4	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	45.2
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	492	69	158	276	22	38	88	194	29	59	18
Future Volume (veh/h)	14	492	69	158	276	22	38	88	194	29	59	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	15	535	75	172	300	24	41	96	211	32	64	20
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	49	598	460	224	798	607	68	357	269	355	1299	520
Arrive On Green	0.03	0.32	0.32	0.14	0.43	0.43	0.04	0.19	0.19	0.22	0.37	0.37
Sat Flow, veh/h	1634	1863	1432	1634	1863	1418	1634	1863	1405	1634	3539	1417
Grp Volume(v), veh/h	15	535	75	172	300	24	41	96	211	32	64	20
Grp Sat Flow(s),veh/h/ln	1634	1863	1432	1634	1863	1418	1634	1863	1405	1634	1770	1417
Q Serve(g_s), s	1.1	32.8	3.6	12.2	13.2	0.5	3.0	5.3	17.1	1.9	1.4	1.1
Cycle Q Clear(g_c), s	1.1	32.8	3.6	12.2	13.2	0.5	3.0	5.3	17.1	1.9	1.4	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	49	598	460	224	798	607	68	357	269	355	1299	520
V/C Ratio(X)	0.31	0.89	0.16	0.77	0.38	0.04	0.60	0.27	0.78	0.09	0.05	0.04
Avail Cap(c_a), veh/h	82	714	549	259	916	697	72	512	386	355	1299	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	38.8	18.3	49.9	23.4	4.1	56.5	41.3	46.1	37.5	24.5	24.4
Incr Delay (d2), s/veh	3.5	12.3	0.2	11.4	0.3	0.0	12.1	1.8	20.1	0.1	0.1	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	0.5	18.8	1.4	6.2	6.8	0.2	1.6	2.9	8.1	0.9	0.7	0.4
LnGrp Delay(d),s/veh	60.5	51.2	18.5	61.3	23.7	4.1	68.7	43.2	66.2	37.6	24.6	24.5
LnGrp LOS	E	D	B	E	C	A	E	D	E	D	C	C
Approach Vol, veh/h		625			496			348			116	
Approach Delay, s/veh		47.5			35.8			60.1			28.2	
Approach LOS		D			D			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	27.0	20.4	42.5	9.0	48.0	7.6	55.4
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	3.9	19.1	14.2	34.8	5.0	3.4	3.1	15.2
Green Ext Time (p_c), s	0.0	1.0	0.6	1.7	0.0	0.4	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	45.2
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	207	32	144	345	89	33	153	112	65	186	69
Future Volume (veh/h)	78	207	32	144	345	89	33	153	112	65	186	69
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	85	225	35	157	375	97	36	166	122	71	202	75
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	82	325	249	214	477	361	61	265	199	684	1852	743
Arrive On Green	0.05	0.17	0.17	0.13	0.26	0.26	0.04	0.14	0.14	0.42	0.52	0.52
Sat Flow, veh/h	1634	1863	1425	1634	1863	1411	1634	1863	1397	1634	3539	1420
Grp Volume(v), veh/h	85	225	35	157	375	97	36	166	122	71	202	75
Grp Sat Flow(s),veh/h/ln	1634	1863	1425	1634	1863	1411	1634	1863	1397	1634	1770	1420
Q Serve(g_s), s	6.0	13.6	2.1	11.1	22.5	2.0	2.6	10.1	9.9	3.2	3.5	3.2
Cycle Q Clear(g_c), s	6.0	13.6	2.1	11.1	22.5	2.0	2.6	10.1	9.9	3.2	3.5	3.2
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	82	325	249	214	477	361	61	265	199	684	1852	743
V/C Ratio(X)	1.04	0.69	0.14	0.73	0.79	0.27	0.59	0.63	0.61	0.10	0.11	0.10
Avail Cap(c_a), veh/h	82	714	546	259	916	694	72	512	384	684	1852	743
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	46.5	29.1	50.1	41.6	3.4	56.8	48.5	48.4	21.2	14.5	14.4
Incr Delay (d2), s/veh	111.1	2.6	0.3	8.3	2.9	0.4	8.5	10.7	13.4	0.1	0.1	0.3
Initial Q Delay(d3),s/veh	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	7.2	0.8	5.5	11.9	0.8	1.3	6.0	4.5	1.4	1.7	1.3
LnGrp Delay(d),s/veh	168.9	49.1	29.3	58.4	44.5	3.8	65.4	59.2	61.8	21.3	14.6	14.7
LnGrp LOS	F	D	C	E	D	A	E	E	E	C	B	B
Approach Vol, veh/h		345			629			324			348	
Approach Delay, s/veh		76.6			41.7			60.9			16.0	
Approach LOS		E			D			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	54.2	21.1	19.7	25.0	8.5	66.8	10.0	34.7
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	5.2	12.1	13.1	15.6	4.6	5.5	8.0	24.5
Green Ext Time (p_c), s	0.0	1.0	1.0	0.9	0.0	1.4	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	47.3
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	213	33	150	359	93	34	157	115	67	193	71
Future Volume (veh/h)	80	213	33	150	359	93	34	157	115	67	193	71
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	87	232	36	163	390	101	37	171	125	73	210	77
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	82	331	254	220	489	370	63	269	202	669	1826	733
Arrive On Green	0.05	0.18	0.18	0.13	0.26	0.26	0.04	0.14	0.14	0.41	0.52	0.52
Sat Flow, veh/h	1634	1863	1425	1634	1863	1411	1634	1863	1397	1634	3539	1420
Grp Volume(v), veh/h	87	232	36	163	390	101	37	171	125	73	210	77
Grp Sat Flow(s),veh/h/ln	1634	1863	1425	1634	1863	1411	1634	1863	1397	1634	1770	1420
Q Serve(g_s), s	6.0	14.0	2.1	11.5	23.4	2.2	2.7	10.4	10.1	3.3	3.7	3.3
Cycle Q Clear(g_c), s	6.0	14.0	2.1	11.5	23.4	2.2	2.7	10.4	10.1	3.3	3.7	3.3
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	82	331	254	220	489	370	63	269	202	669	1826	733
V/C Ratio(X)	1.06	0.70	0.14	0.74	0.80	0.27	0.59	0.64	0.62	0.11	0.12	0.11
Avail Cap(c_a), veh/h	82	714	546	259	916	694	72	512	384	669	1826	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	46.3	28.8	49.9	41.3	3.5	56.8	48.3	48.2	21.9	15.0	14.9
Incr Delay (d2), s/veh	118.4	2.7	0.3	9.1	3.0	0.4	9.2	10.9	13.4	0.1	0.1	0.3
Initial Q Delay(d3),s/veh	1.1	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	5.4	7.5	0.9	5.8	12.4	0.9	1.4	6.1	4.6	1.5	1.8	1.4
LnGrp Delay(d),s/veh	176.5	49.0	29.0	59.1	44.3	3.9	66.0	59.3	61.7	22.0	15.1	15.2
LnGrp LOS	F	D	C	E	D	A	E	E	E	C	B	B
Approach Vol, veh/h		355			654			333			360	
Approach Delay, s/veh		78.2			41.8			60.9			16.5	
Approach LOS		E			D			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	53.2	21.3	20.1	25.3	8.6	65.9	10.0	35.5
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	5.3	12.4	13.5	16.0	4.7	5.7	8.0	25.4
Green Ext Time (p_c), s	0.0	1.0	1.0	0.9	0.0	1.4	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	47.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	216	33	152	368	93	34	157	116	67	193	71
Future Volume (veh/h)	80	216	33	152	368	93	34	157	116	67	193	71
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	87	235	36	165	400	101	37	171	126	73	210	77
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	82	334	256	222	493	374	63	269	202	665	1817	729
Arrive On Green	0.05	0.18	0.18	0.14	0.26	0.26	0.04	0.14	0.14	0.41	0.51	0.51
Sat Flow, veh/h	1634	1863	1425	1634	1863	1412	1634	1863	1397	1634	3539	1420
Grp Volume(v), veh/h	87	235	36	165	400	101	37	171	126	73	210	77
Grp Sat Flow(s),veh/h/ln	1634	1863	1425	1634	1863	1412	1634	1863	1397	1634	1770	1420
Q Serve(g_s), s	6.0	14.2	2.1	11.7	24.1	2.2	2.7	10.4	10.2	3.3	3.7	3.3
Cycle Q Clear(g_c), s	6.0	14.2	2.1	11.7	24.1	2.2	2.7	10.4	10.2	3.3	3.7	3.3
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	82	334	256	222	493	374	63	269	202	665	1817	729
V/C Ratio(X)	1.06	0.70	0.14	0.74	0.81	0.27	0.59	0.64	0.62	0.11	0.12	0.11
Avail Cap(c_a), veh/h	82	714	546	259	916	694	72	512	384	665	1817	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	46.3	28.7	49.9	41.3	3.5	56.8	48.3	48.3	22.1	15.1	15.0
Incr Delay (d2), s/veh	118.4	2.7	0.2	9.4	3.2	0.4	9.2	10.9	13.7	0.1	0.1	0.3
Initial Q Delay(d3),s/veh	1.1	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	5.4	7.6	0.9	5.9	12.9	0.9	1.4	6.1	4.7	1.5	1.8	1.4
LnGrp Delay(d),s/veh	176.5	49.0	28.9	59.3	44.5	3.9	66.0	59.3	61.9	22.1	15.2	15.3
LnGrp LOS	F	D	C	E	D	A	E	E	E	C	B	B
Approach Vol, veh/h		358			666			334			360	
Approach Delay, s/veh		77.9			42.0			61.0			16.7	
Approach LOS		E			D			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	52.9	21.3	20.3	25.5	8.6	65.6	10.0	35.8
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	5.3	12.4	13.7	16.2	4.7	5.7	8.0	26.1
Green Ext Time (p_c), s	0.0	1.0	1.0	0.9	0.0	1.4	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	47.9
HCM 2010 LOS	D

Intersection 17
Linwood St & Riggen Ave

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	662	36	28	426	11	27
Future Vol, veh/h	662	36	28	426	11	27
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	720	39	30	463	12	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	764	0	1268	744
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	524	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	849	-	186	415
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	594	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	849	-	176	413
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	468	-
Stage 2	-	-	-	-	565	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	19.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	297	-	-	849	-
HCM Lane V/C Ratio	0.139	-	-	0.036	-
HCM Control Delay (s)	19.1	-	-	9.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	688	37	31	470	12	30
Future Vol, veh/h	688	37	31	470	12	30
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	748	40	34	511	13	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	793	0	1351	773
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	578	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	828	-	166	399
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	561	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	828	-	156	397
Mov Cap-2 Maneuver	-	-	-	-	156	-
Stage 1	-	-	-	-	453	-
Stage 2	-	-	-	-	529	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	20.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	275	-	-	828	-
HCM Lane V/C Ratio	0.166	-	-	0.041	-
HCM Control Delay (s)	20.7	-	-	9.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	701	37	31	477	12	30
Future Vol, veh/h	701	37	31	477	12	30
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	762	40	34	518	13	33

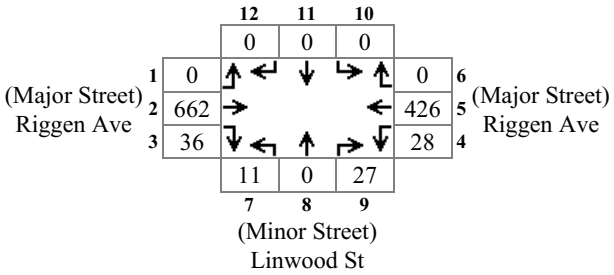
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	807	0	1373	787
Stage 1	-	-	-	-	787	-
Stage 2	-	-	-	-	586	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	818	-	161	392
Stage 1	-	-	-	-	449	-
Stage 2	-	-	-	-	556	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	818	-	151	390
Mov Cap-2 Maneuver	-	-	-	-	151	-
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	524	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	21.1
HCM LOS			C

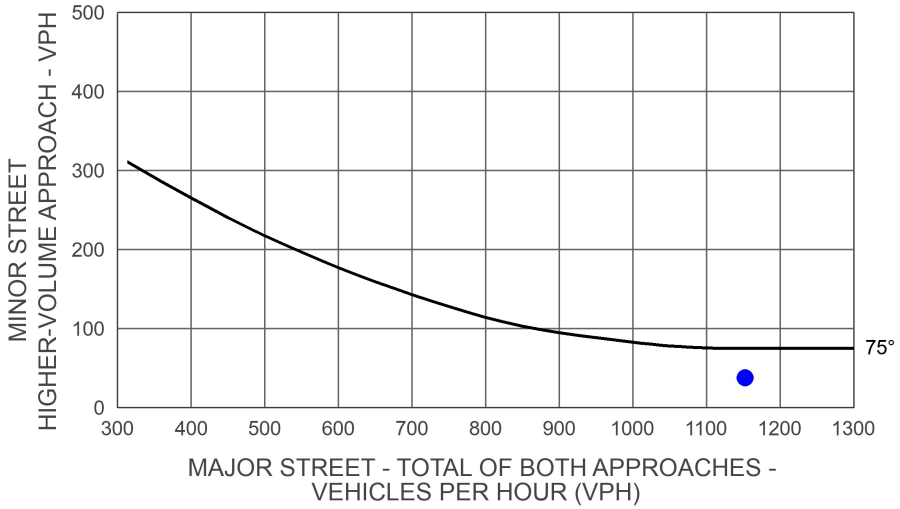
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	269	-	-	818	-
HCM Lane V/C Ratio	0.17	-	-	0.041	-
HCM Control Delay (s)	21.1	-	-	9.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 17

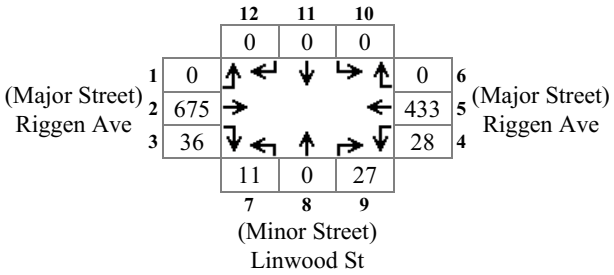


Major Total: 1152
Minor High Volume: 38

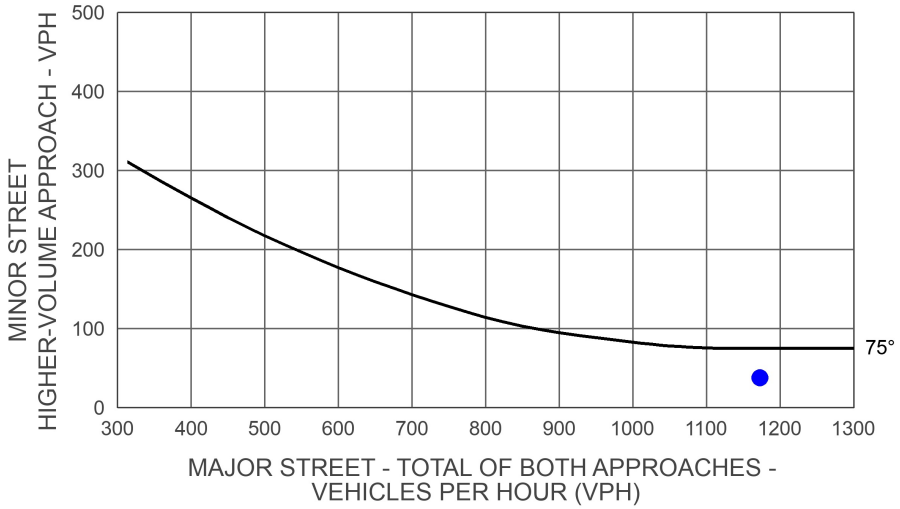


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 17

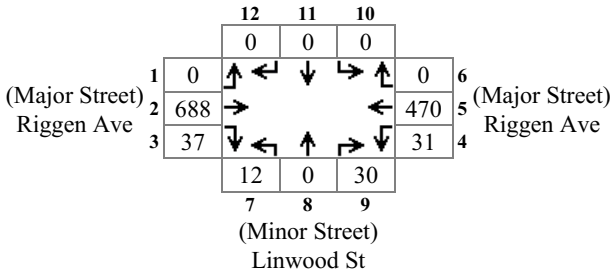


Major Total: 1172
Minor High Volume: 38

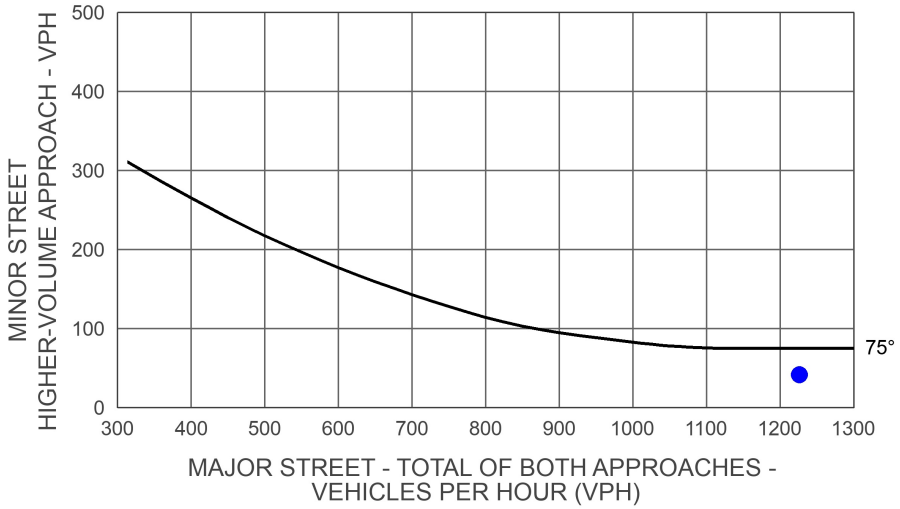


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 17

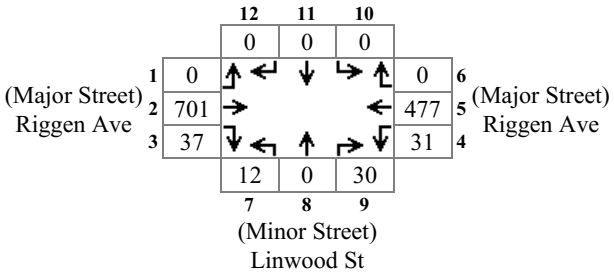


Major Total: 1226
Minor High Volume: 42

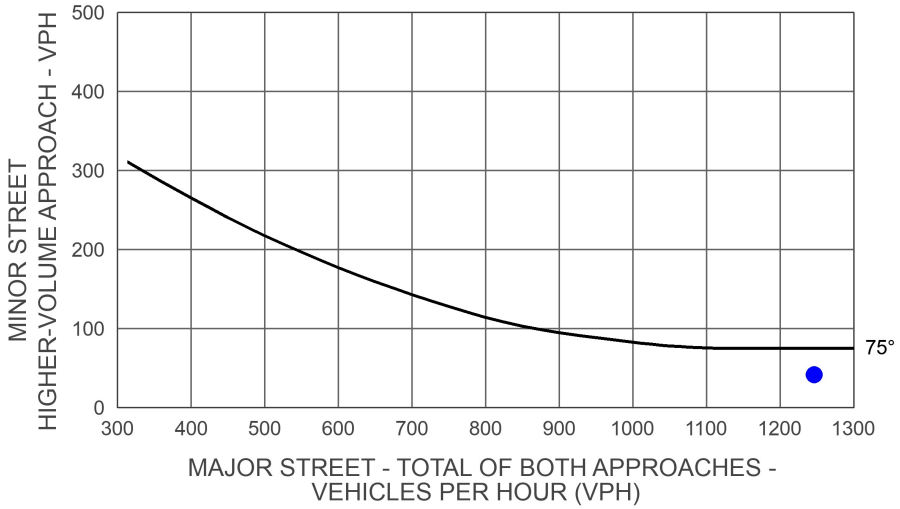


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 17



Major Total: 1246
Minor High Volume: 42



Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	399	20	23	554	18	25
Future Vol, veh/h	399	20	23	554	18	25
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	434	22	25	602	20	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	460	0	1102	450
Stage 1	-	-	-	-	450	-
Stage 2	-	-	-	-	652	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1101	-	234	609
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	518	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1101	-	225	606
Mov Cap-2 Maneuver	-	-	-	-	225	-
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	500	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	16.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	355	-	-	1101	-
HCM Lane V/C Ratio	0.132	-	-	0.023	-
HCM Control Delay (s)	16.7	-	-	8.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	415	21	25	612	20	28
Future Vol, veh/h	415	21	25	612	20	28
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	451	23	27	665	22	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	479	0	1188	468
Stage 1	-	-	-	-	468	-
Stage 2	-	-	-	-	720	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1083	-	208	595
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	482	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1083	-	199	593
Mov Cap-2 Maneuver	-	-	-	-	199	-
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	463	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	18.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	325	-	-	1083	-
HCM Lane V/C Ratio	0.161	-	-	0.025	-
HCM Control Delay (s)	18.2	-	-	8.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	419	21	25	623	20	28
Future Vol, veh/h	419	21	25	623	20	28
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	455	23	27	677	22	30

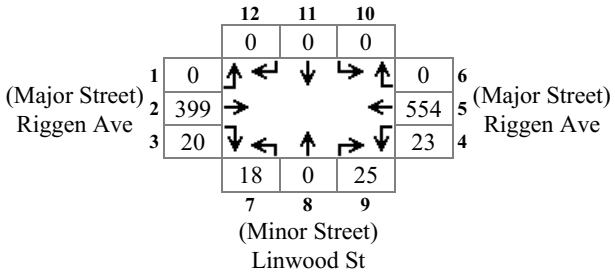
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	483	0	1204	472
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	732	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1080	-	203	592
Stage 1	-	-	-	-	628	-
Stage 2	-	-	-	-	476	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1080	-	194	590
Mov Cap-2 Maneuver	-	-	-	-	194	-
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	457	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	18.5
HCM LOS			C

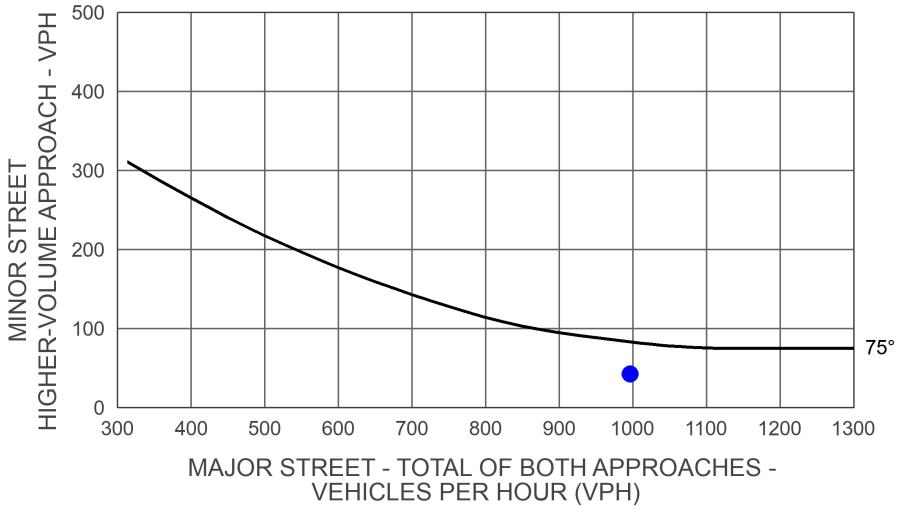
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	1080	-
HCM Lane V/C Ratio	0.164	-	-	0.025	-
HCM Control Delay (s)	18.5	-	-	8.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 17

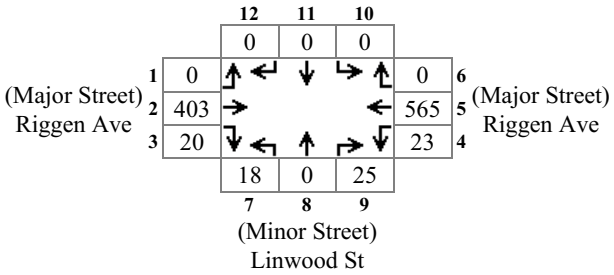


Major Total: 996
Minor High Volume: 43

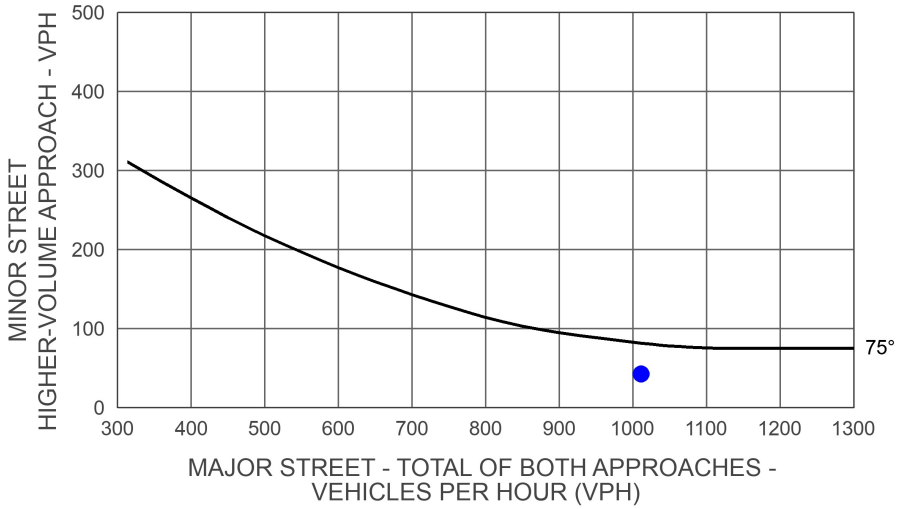


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 17

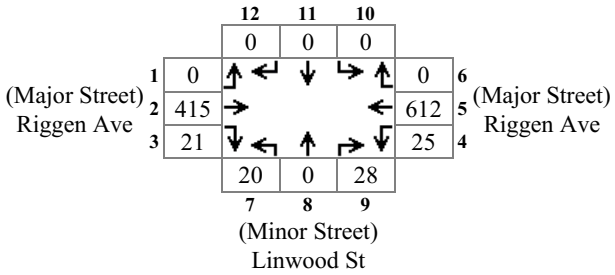


Major Total: 1011
Minor High Volume: 43

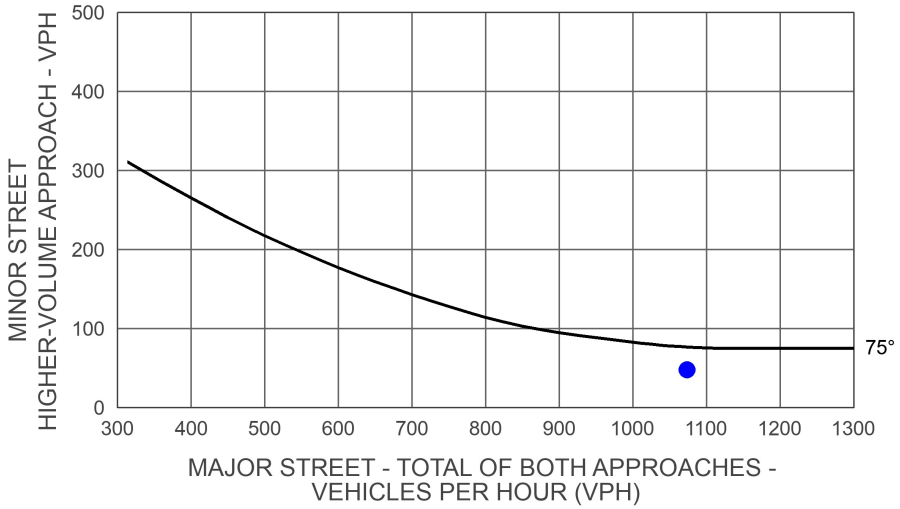


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 17

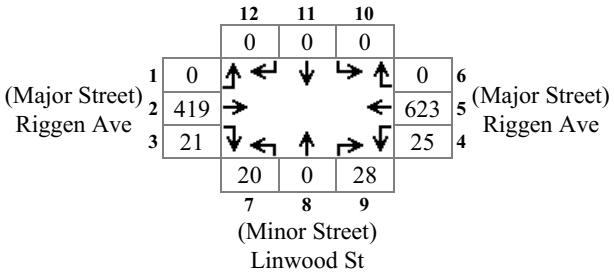


Major Total: 1073
Minor High Volume: 48

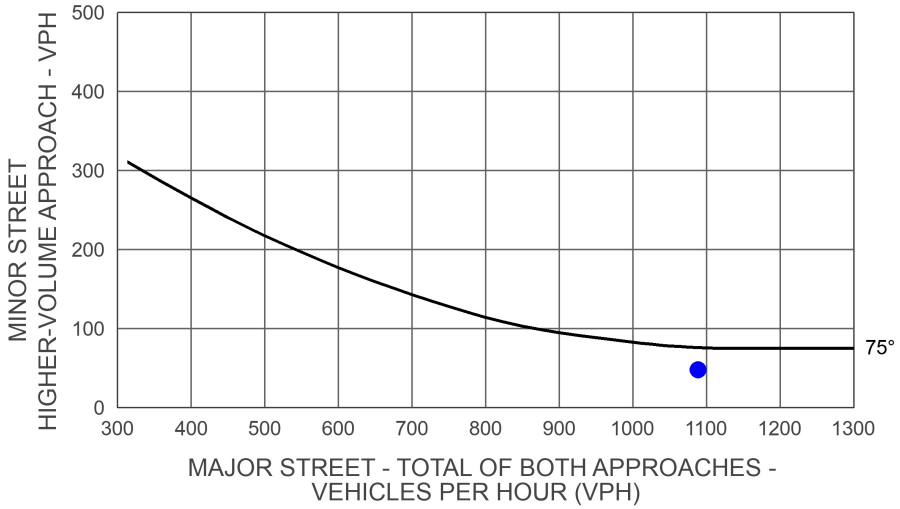


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 17



Major Total: 1088
Minor High Volume: 48



Intersection 18
Demaree St & Riggen Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	443	80	317	301	21	70	417	173	51	300	79
Future Volume (veh/h)	158	443	80	317	301	21	70	417	173	51	300	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	172	482	87	345	327	23	76	453	188	55	326	86
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	220	1569	636	396	1534	622	112	575	237	101	634	164
Arrive On Green	0.13	0.44	0.44	0.13	0.43	0.43	0.02	0.08	0.07	0.06	0.23	0.22
Sat Flow, veh/h	1634	3539	1435	3170	3539	1434	1634	2431	1000	1634	2761	715
Grp Volume(v), veh/h	172	482	87	345	327	23	76	329	312	55	207	205
Grp Sat Flow(s),veh/h/ln	1634	1770	1435	1585	1770	1434	1634	1770	1662	1634	1770	1706
Q Serve(g_s), s	12.2	10.5	4.3	12.8	6.9	0.8	5.5	21.9	22.2	3.9	12.2	12.7
Cycle Q Clear(g_c), s	12.2	10.5	4.3	12.8	6.9	0.8	5.5	21.9	22.2	3.9	12.2	12.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.60	1.00		0.42
Lane Grp Cap(c), veh/h	220	1569	636	396	1534	622	112	419	393	101	406	392
V/C Ratio(X)	0.78	0.31	0.14	0.87	0.21	0.04	0.68	0.78	0.79	0.55	0.51	0.52
Avail Cap(c_a), veh/h	324	1569	636	396	1534	622	114	507	476	251	655	631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.89	0.89	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.2	21.5	19.8	51.5	21.2	10.2	57.3	52.3	52.6	54.7	40.3	40.7
Incr Delay (d2), s/veh	7.2	0.5	0.4	18.5	0.3	0.1	13.0	5.9	6.8	4.5	1.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	5.3	1.8	6.6	3.4	0.3	2.9	11.4	11.0	1.9	6.1	6.1
LnGrp Delay(d),s/veh	57.4	22.0	20.2	70.0	21.5	10.4	70.4	58.2	59.4	59.2	41.3	41.8
LnGrp LOS	E	C	C	E	C	B	E	E	E	E	D	D
Approach Vol, veh/h		741			695			717			467	
Approach Delay, s/veh		30.0			45.2			60.0			43.6	
Approach LOS		C			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	32.4	19.0	57.2	12.2	31.6	20.2	56.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	5.9	24.2	14.8	12.5	7.5	14.7	14.2	8.9
Green Ext Time (p_c), s	1.3	1.8	0.0	3.9	0.0	1.7	0.3	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	44.7
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	460	88	329	313	22	74	440	183	57	335	88
Future Volume (veh/h)	164	460	88	329	313	22	74	440	183	57	335	88
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	178	500	96	358	340	24	80	478	199	62	364	96
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	226	1516	614	396	1468	595	114	595	246	112	672	175
Arrive On Green	0.14	0.43	0.43	0.13	0.41	0.41	0.02	0.08	0.08	0.07	0.24	0.23
Sat Flow, veh/h	1634	3539	1434	3170	3539	1434	1634	2428	1003	1634	2760	717
Grp Volume(v), veh/h	178	500	96	358	340	24	80	347	330	62	231	229
Grp Sat Flow(s),veh/h/ln	1634	1770	1434	1585	1770	1434	1634	1770	1661	1634	1770	1707
Q Serve(g_s), s	12.6	11.3	4.9	13.4	7.5	0.9	5.8	23.2	23.4	4.4	13.7	14.1
Cycle Q Clear(g_c), s	12.6	11.3	4.9	13.4	7.5	0.9	5.8	23.2	23.4	4.4	13.7	14.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.60	1.00		0.42
Lane Grp Cap(c), veh/h	226	1516	614	396	1468	595	114	434	407	112	431	415
V/C Ratio(X)	0.79	0.33	0.16	0.90	0.23	0.04	0.70	0.80	0.81	0.55	0.54	0.55
Avail Cap(c_a), veh/h	324	1516	614	396	1468	595	114	507	476	251	655	632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	22.8	21.0	51.8	22.7	10.9	57.4	52.3	52.5	54.1	39.5	39.9
Incr Delay (d2), s/veh	7.9	0.6	0.5	23.4	0.4	0.1	15.0	6.8	7.7	4.2	1.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	5.6	2.0	7.2	3.7	0.4	3.1	12.2	11.6	2.1	6.8	6.8
LnGrp Delay(d),s/veh	57.9	23.4	21.6	75.2	23.1	11.0	72.4	59.1	60.2	58.4	40.6	41.0
LnGrp LOS	E	C	C	E	C	B	E	E	E	E	D	D
Approach Vol, veh/h		774			722			757			522	
Approach Delay, s/veh		31.1			48.5			61.0			42.9	
Approach LOS		C			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.2	33.4	19.0	55.4	12.4	33.2	20.6	53.8
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	6.4	25.4	15.4	13.3	7.8	16.1	14.6	9.5
Green Ext Time (p_c), s	1.5	1.8	0.0	4.1	0.0	2.0	0.3	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	46.0
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	177	460	88	329	313	37	74	448	183	66	338	95
Future Volume (veh/h)	177	460	88	329	313	37	74	448	183	66	338	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	192	500	96	358	340	40	80	487	199	72	367	103
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	240	1481	600	396	1404	569	114	603	245	125	688	190
Arrive On Green	0.15	0.42	0.42	0.13	0.40	0.40	0.02	0.08	0.08	0.08	0.25	0.24
Sat Flow, veh/h	1634	3539	1434	3170	3539	1434	1634	2442	991	1634	2718	751
Grp Volume(v), veh/h	192	500	96	358	340	40	80	352	334	72	237	233
Grp Sat Flow(s),veh/h/ln	1634	1770	1434	1585	1770	1434	1634	1770	1664	1634	1770	1700
Q Serve(g_s), s	13.6	11.5	5.0	13.4	7.7	1.5	5.8	23.5	23.7	5.1	13.9	14.3
Cycle Q Clear(g_c), s	13.6	11.5	5.0	13.4	7.7	1.5	5.8	23.5	23.7	5.1	13.9	14.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.60	1.00		0.44
Lane Grp Cap(c), veh/h	240	1481	600	396	1404	569	114	437	411	125	448	430
V/C Ratio(X)	0.80	0.34	0.16	0.90	0.24	0.07	0.70	0.81	0.81	0.58	0.53	0.54
Avail Cap(c_a), veh/h	324	1481	600	396	1404	569	114	507	477	251	655	629
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	23.6	21.7	51.8	24.2	11.5	57.4	52.3	52.5	53.6	38.6	39.0
Incr Delay (d2), s/veh	9.8	0.6	0.6	23.4	0.4	0.2	15.0	7.1	7.9	4.2	1.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	5.8	2.1	7.2	3.9	0.6	3.1	12.4	11.9	2.4	6.9	6.8
LnGrp Delay(d),s/veh	59.3	24.2	22.3	75.2	24.6	11.8	72.3	59.3	60.4	57.7	39.6	40.1
LnGrp LOS	E	C	C	E	C	B	E	E	E	E	D	D
Approach Vol, veh/h		788			738			766			542	
Approach Delay, s/veh		32.5			48.5			61.2			42.2	
Approach LOS		C			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	33.6	19.0	54.2	12.4	34.4	21.6	51.6
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	7.1	25.7	15.4	13.5	7.8	16.3	15.6	9.7
Green Ext Time (p_c), s	1.5	1.7	0.0	4.1	0.0	2.0	0.3	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	46.3
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	284	75	190	352	37	65	308	104	28	319	114
Future Volume (veh/h)	103	284	75	190	352	37	65	308	104	28	319	114
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.96
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
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	112	309	82	207	383	40	71	335	113	30	347	124
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	159	1819	738	305	1816	736	106	481	159	117	488	171
Arrive On Green	0.10	0.51	0.51	0.10	0.51	0.51	0.04	0.12	0.12	0.07	0.19	0.18
Sat Flow, veh/h	1634	3539	1435	3170	3539	1435	1634	2597	860	1634	2543	891
Grp Volume(v), veh/h	112	309	82	207	383	40	71	226	222	30	239	232
Grp Sat Flow(s),veh/h/ln	1634	1770	1435	1585	1770	1435	1634	1770	1687	1634	1770	1665
Q Serve(g_s), s	8.0	5.6	3.5	7.6	7.1	1.1	5.1	14.7	15.2	2.1	15.2	15.7
Cycle Q Clear(g_c), s	8.0	5.6	3.5	7.6	7.1	1.1	5.1	14.7	15.2	2.1	15.2	15.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.51	1.00		0.54
Lane Grp Cap(c), veh/h	159	1819	738	305	1816	736	106	328	312	117	339	319
V/C Ratio(X)	0.71	0.17	0.11	0.68	0.21	0.05	0.67	0.69	0.71	0.26	0.71	0.73
Avail Cap(c_a), veh/h	324	1819	738	396	1816	736	114	507	484	251	655	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	15.5	15.0	52.5	16.0	6.3	56.1	49.3	49.7	52.7	45.3	45.9
Incr Delay (d2), s/veh	5.6	0.2	0.3	3.1	0.3	0.1	12.5	2.5	2.9	1.2	2.7	3.1
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	3.9	2.8	1.5	3.5	3.5	0.5	2.7	7.4	7.3	1.0	7.7	7.5
LnGrp Delay(d),s/veh	58.1	15.7	15.3	55.5	16.2	6.5	68.6	51.7	52.5	53.9	48.0	49.0
LnGrp LOS	E	B	B	E	B	A	E	D	D	D	D	D
Approach Vol, veh/h		503			630			519			501	
Approach Delay, s/veh		25.1			28.5			54.4			48.8	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	26.2	15.5	65.7	11.8	27.0	15.7	65.6
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	4.1	17.2	9.6	7.6	7.1	17.7	10.0	9.1
Green Ext Time (p_c), s	1.6	1.5	0.3	3.5	0.0	1.9	0.2	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	38.7
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	295	83	197	366	38	69	325	110	31	356	127
Future Volume (veh/h)	107	295	83	197	366	38	69	325	110	31	356	127
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.96
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
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	116	321	90	214	398	41	75	353	120	34	387	138
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	163	1752	711	311	1747	708	111	496	166	134	523	184
Arrive On Green	0.10	0.50	0.50	0.10	0.49	0.49	0.05	0.13	0.12	0.08	0.21	0.19
Sat Flow, veh/h	1634	3539	1435	3170	3539	1435	1634	2591	866	1634	2543	893
Grp Volume(v), veh/h	116	321	90	214	398	41	75	239	234	34	267	258
Grp Sat Flow(s),veh/h/ln	1634	1770	1435	1585	1770	1435	1634	1770	1686	1634	1770	1666
Q Serve(g_s), s	8.3	6.0	4.1	7.8	7.7	1.2	5.4	15.5	16.0	2.3	17.0	17.5
Cycle Q Clear(g_c), s	8.3	6.0	4.1	7.8	7.7	1.2	5.4	15.5	16.0	2.3	17.0	17.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.51	1.00		0.54
Lane Grp Cap(c), veh/h	163	1752	711	311	1747	708	111	339	323	134	364	343
V/C Ratio(X)	0.71	0.18	0.13	0.69	0.23	0.06	0.68	0.71	0.72	0.25	0.73	0.75
Avail Cap(c_a), veh/h	324	1752	711	396	1747	708	114	507	483	251	655	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	16.8	16.3	52.3	17.3	6.7	56.0	49.1	49.5	51.7	44.6	45.1
Incr Delay (d2), s/veh	5.6	0.2	0.4	3.5	0.3	0.2	13.7	2.5	2.9	1.0	2.9	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	3.0	1.7	3.6	3.8	0.5	2.9	7.9	7.8	1.1	8.6	8.3
LnGrp Delay(d),s/veh	58.0	17.0	16.7	55.8	17.6	6.9	69.7	51.6	52.4	52.7	47.5	48.5
LnGrp LOS	E	B	B	E	B	A	E	D	D	D	D	D
Approach Vol, veh/h		527			653			548			559	
Approach Delay, s/veh		26.0			29.5			54.4			48.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	27.0	15.8	63.4	12.1	28.7	16.0	63.2
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	4.3	18.0	9.8	8.0	7.4	19.5	10.3	9.7
Green Ext Time (p_c), s	1.8	1.6	0.3	3.7	0.0	2.1	0.2	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	39.2
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	295	83	197	366	42	69	327	110	45	361	138
Future Volume (veh/h)	111	295	83	197	366	42	69	327	110	45	361	138
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.96
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
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	121	321	90	214	398	46	75	355	120	49	392	150
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	168	1734	703	311	1717	696	111	498	166	141	525	198
Arrive On Green	0.10	0.49	0.49	0.10	0.49	0.49	0.05	0.13	0.12	0.09	0.21	0.20
Sat Flow, veh/h	1634	3539	1435	3170	3539	1435	1634	2595	862	1634	2488	937
Grp Volume(v), veh/h	121	321	90	214	398	46	75	240	235	49	277	265
Grp Sat Flow(s),veh/h/ln	1634	1770	1435	1585	1770	1435	1634	1770	1687	1634	1770	1656
Q Serve(g_s), s	8.6	6.1	4.1	7.8	7.8	1.3	5.4	15.6	16.1	3.4	17.6	18.1
Cycle Q Clear(g_c), s	8.6	6.1	4.1	7.8	7.8	1.3	5.4	15.6	16.1	3.4	17.6	18.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.51	1.00		0.57
Lane Grp Cap(c), veh/h	168	1734	703	311	1717	696	111	340	324	141	373	349
V/C Ratio(X)	0.72	0.19	0.13	0.69	0.23	0.07	0.68	0.71	0.72	0.35	0.74	0.76
Avail Cap(c_a), veh/h	324	1734	703	396	1717	696	114	507	484	251	655	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	17.2	16.7	52.3	17.9	6.9	56.0	49.0	49.4	51.6	44.3	44.8
Incr Delay (d2), s/veh	5.7	0.2	0.4	3.5	0.3	0.2	13.7	2.6	2.9	1.5	2.9	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	3.0	1.7	3.6	3.9	0.6	2.9	7.9	7.8	1.6	8.9	8.6
LnGrp Delay(d),s/veh	57.8	17.4	17.0	55.8	18.2	7.1	69.7	51.6	52.4	53.1	47.2	48.2
LnGrp LOS	E	B	B	E	B	A	E	D	D	D	D	D
Approach Vol, veh/h		532			658			550			591	
Approach Delay, s/veh		26.5			29.7			54.4			48.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	27.0	15.8	62.8	12.1	29.3	16.4	62.2
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	5.4	18.1	9.8	8.1	7.4	20.1	10.6	9.8
Green Ext Time (p_c), s	1.8	1.6	0.3	3.7	0.0	2.2	0.2	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	39.5
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Intersection 19
Country Center St & Riggen Ave

Intersection	
Intersection Delay, s/veh	19.3
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	42	502	88	0	82	395	49	0	56	59	71	0	30	64	37
Future Vol, veh/h	0	42	502	88	0	82	395	49	0	56	59	71	0	30	64	37
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	46	546	96	0	89	429	53	0	61	64	77	0	33	70	40
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	23.6	17.9	13.2	12.8
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	22%	0%	100%	66%	0%	100%	73%	0%	100%	0%
Vol Right, %	0%	0%	78%	0%	0%	34%	0%	0%	27%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	39	91	42	335	255	82	263	181	30	64	37
LT Vol	56	0	0	42	0	0	82	0	0	30	0	0
Through Vol	0	39	20	0	335	167	0	263	132	0	64	0
RT Vol	0	0	71	0	0	88	0	0	49	0	0	37
Lane Flow Rate	61	43	99	46	364	278	89	286	196	33	70	40
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.155	0.103	0.222	0.1	0.747	0.551	0.2	0.603	0.404	0.084	0.171	0.091
Departure Headway (Hd)	9.145	8.645	8.097	7.891	7.391	7.15	8.09	7.59	7.4	9.328	8.828	8.128
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	391	414	442	454	487	505	443	475	485	383	406	440
Service Time	6.913	6.413	5.865	5.646	5.146	4.904	5.847	5.347	5.157	7.103	6.603	5.903
HCM Lane V/C Ratio	0.156	0.104	0.224	0.101	0.747	0.55	0.201	0.602	0.404	0.086	0.172	0.091
HCM Control Delay	13.6	12.4	13.2	11.5	29	18.4	12.9	21.3	15.1	13	13.4	11.7
HCM Lane LOS	B	B	B	B	D	C	B	C	C	B	B	B
HCM 95th-tile Q	0.5	0.3	0.8	0.3	6.3	3.3	0.7	3.9	1.9	0.3	0.6	0.3

Intersection	
Intersection Delay, s/veh	21
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	44	522	91	0	85	408	51	0	58	61	73	0	31	67	38
Future Vol, veh/h	0	44	522	91	0	85	408	51	0	58	61	73	0	31	67	38
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	48	567	99	0	92	443	55	0	63	66	79	0	34	73	41
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	26.4	19	13.5	13.2
HCM LOS	D	C	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	22%	0%	100%	66%	0%	100%	73%	0%	100%	0%
Vol Right, %	0%	0%	78%	0%	0%	34%	0%	0%	27%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	41	93	44	348	265	85	272	187	31	67	38
LT Vol	58	0	0	44	0	0	85	0	0	31	0	0
Through Vol	0	41	20	0	348	174	0	272	136	0	67	0
RT Vol	0	0	73	0	0	91	0	0	51	0	0	38
Lane Flow Rate	63	44	101	48	378	288	92	296	203	34	73	41
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.163	0.108	0.233	0.107	0.79	0.583	0.211	0.635	0.426	0.089	0.182	0.095
Departure Headway (Hd)	9.325	8.825	8.278	8.022	7.522	7.282	8.233	7.733	7.542	9.517	9.017	8.317
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	384	405	432	446	480	495	435	467	476	375	397	429
Service Time	7.104	6.604	6.057	5.78	5.28	5.039	5.994	5.494	5.303	7.3	6.8	6.1
HCM Lane V/C Ratio	0.164	0.109	0.234	0.108	0.787	0.582	0.211	0.634	0.426	0.091	0.184	0.096
HCM Control Delay	13.9	12.7	13.6	11.7	33.2	19.8	13.2	23.1	15.8	13.2	13.8	12
HCM Lane LOS	B	B	B	B	D	C	B	C	C	B	B	B
HCM 95th-tile Q	0.6	0.4	0.9	0.4	7.2	3.7	0.8	4.3	2.1	0.3	0.7	0.3

Intersection	
Intersection Delay, s/veh	21.6
Intersection LOS	C

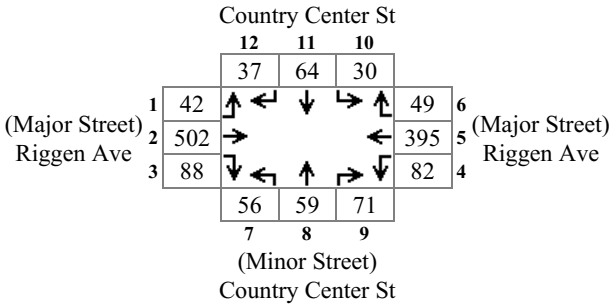
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	45	526	93	0	85	415	51	0	61	61	73	0	31	67	39
Future Vol, veh/h	0	45	526	93	0	85	415	51	0	61	61	73	0	31	67	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	49	572	101	0	92	451	55	0	66	66	79	0	34	73	42
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	27.3	19.6	13.6	13.3
HCM LOS	D	C	B	B

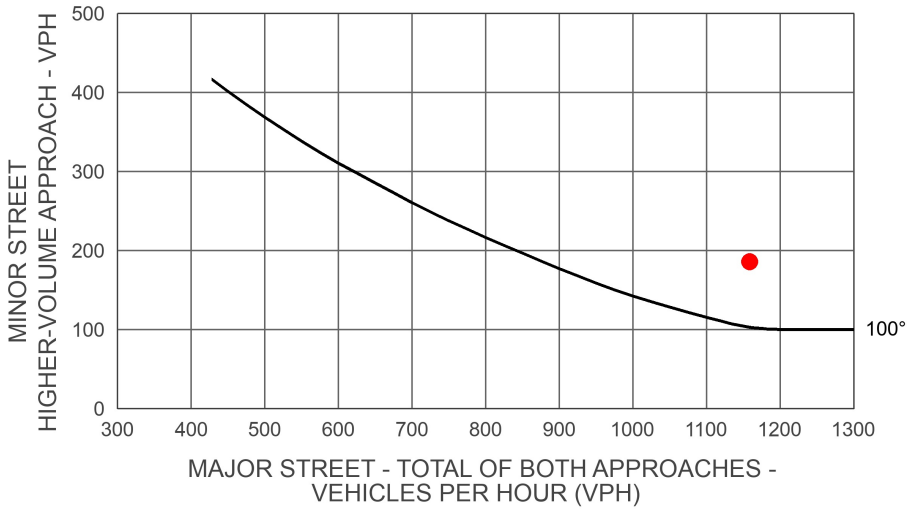
Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	22%	0%	100%	65%	0%	100%	73%	0%	100%	0%
Vol Right, %	0%	0%	78%	0%	0%	35%	0%	0%	27%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	41	93	45	351	268	85	277	189	31	67	39
LT Vol	61	0	0	45	0	0	85	0	0	31	0	0
Through Vol	0	41	20	0	351	175	0	277	138	0	67	0
RT Vol	0	0	73	0	0	93	0	0	51	0	0	39
Lane Flow Rate	66	44	101	49	381	292	92	301	206	34	73	42
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.173	0.109	0.235	0.11	0.802	0.594	0.212	0.65	0.434	0.09	0.184	0.099
Departure Headway (Hd)	9.386	8.886	8.338	8.071	7.571	7.328	8.28	7.78	7.592	9.585	9.085	8.385
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	381	402	429	443	476	490	432	463	473	373	393	426
Service Time	7.17	6.67	6.122	5.835	5.335	5.092	6.049	5.549	5.36	7.373	6.873	6.173
HCM Lane V/C Ratio	0.173	0.109	0.235	0.111	0.8	0.596	0.213	0.65	0.436	0.091	0.186	0.099
HCM Control Delay	14.1	12.8	13.7	11.8	34.6	20.3	13.3	24	16.1	13.3	13.9	12.1
HCM Lane LOS	B	B	B	B	D	C	B	C	C	B	B	B
HCM 95th-tile Q	0.6	0.4	0.9	0.4	7.4	3.8	0.8	4.5	2.2	0.3	0.7	0.3

Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Existing
Intersection #: 19

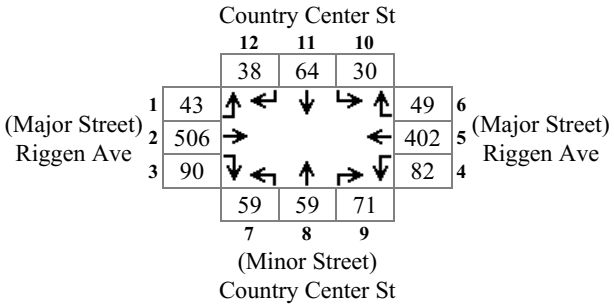


Major Total: 1158
Minor High Volume: 186

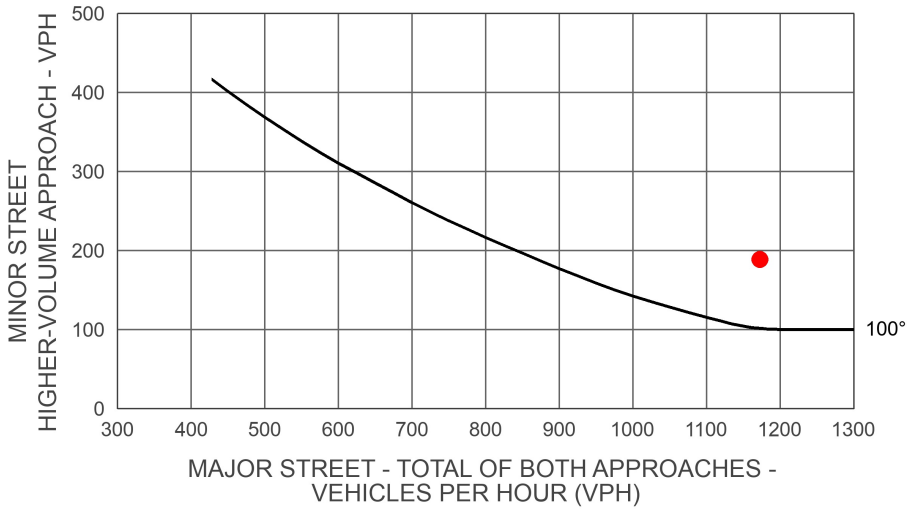


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Existing+Project
Intersection #: 19

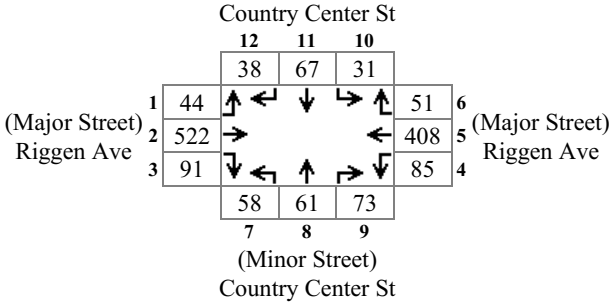


Major Total: 1172
Minor High Volume: 189

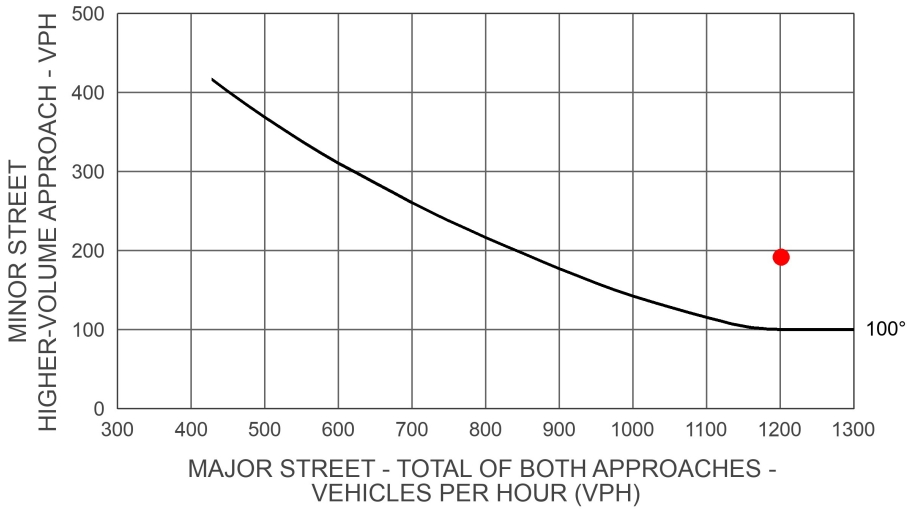


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 19

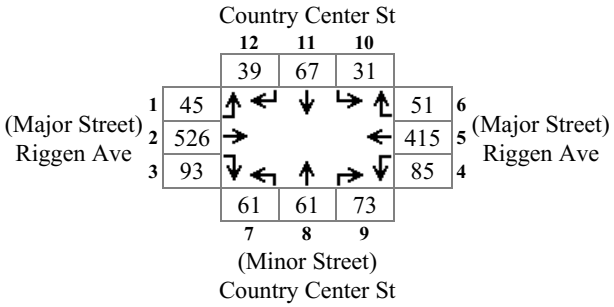


Major Total: 1201
Minor High Volume: 192

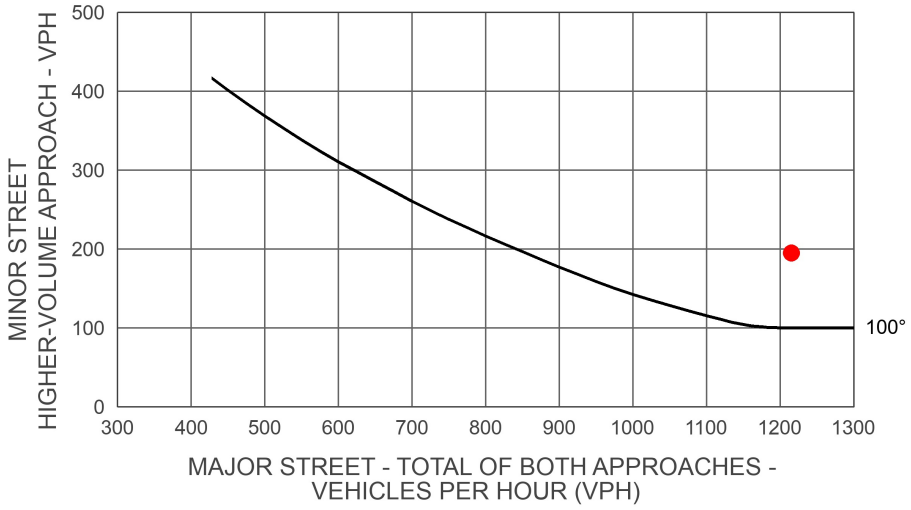


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project
Intersection #: 19



Major Total: 1215
Minor High Volume: 195



Intersection	
Intersection Delay, s/veh	11.5
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	16	260	16	0	33	334	17	0	62	23	55	0	34	49	34
Future Vol, veh/h	0	16	260	16	0	33	334	17	0	62	23	55	0	34	49	34
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	17	283	17	0	36	363	18	0	67	25	60	0	37	53	37
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	11.6	12.2	10.6	10.4
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	12%	0%	100%	84%	0%	100%	87%	0%	100%	0%
Vol Right, %	0%	0%	88%	0%	0%	16%	0%	0%	13%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	62	15	63	16	173	103	33	223	128	34	49	34
LT Vol	62	0	0	16	0	0	33	0	0	34	0	0
Through Vol	0	15	8	0	173	87	0	223	111	0	49	0
RT Vol	0	0	55	0	0	16	0	0	17	0	0	34
Lane Flow Rate	67	17	68	17	188	112	36	242	139	37	53	37
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.139	0.032	0.12	0.033	0.336	0.195	0.067	0.419	0.238	0.077	0.104	0.065
Departure Headway (Hd)	7.442	6.942	6.328	6.913	6.413	6.304	6.726	6.226	6.133	7.503	7.003	6.303
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	480	514	564	517	560	568	532	576	584	476	510	565
Service Time	5.209	4.709	4.095	4.67	4.17	4.061	4.48	3.98	3.887	5.271	4.771	4.071
HCM Lane V/C Ratio	0.14	0.033	0.121	0.033	0.336	0.197	0.068	0.42	0.238	0.078	0.104	0.065
HCM Control Delay	11.4	9.9	10	9.9	12.4	10.6	10	13.4	10.8	10.9	10.6	9.5
HCM Lane LOS	B	A	A	A	B	B	A	B	B	B	B	A
HCM 95th-tile Q	0.5	0.1	0.4	0.1	1.5	0.7	0.2	2.1	0.9	0.2	0.3	0.2

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	17	270	17	0	34	345	18	0	64	24	57	0	35	51	35
Future Vol, veh/h	0	17	270	17	0	34	345	18	0	64	24	57	0	35	51	35
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	18	293	18	0	37	375	20	0	70	26	62	0	38	55	38
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	11.9	12.6	10.8	10.5
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	12%	0%	100%	84%	0%	100%	86%	0%	100%	0%
Vol Right, %	0%	0%	88%	0%	0%	16%	0%	0%	14%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	64	16	65	17	180	107	34	230	133	35	51	35
LT Vol	64	0	0	17	0	0	34	0	0	35	0	0
Through Vol	0	16	8	0	180	90	0	230	115	0	51	0
RT Vol	0	0	57	0	0	17	0	0	18	0	0	35
Lane Flow Rate	70	17	71	18	196	116	37	250	145	38	55	38
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.146	0.034	0.126	0.036	0.353	0.206	0.07	0.438	0.249	0.08	0.109	0.068
Departure Headway (Hd)	7.54	7.04	6.426	6.992	6.492	6.381	6.805	6.305	6.21	7.604	7.104	6.404
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	474	507	555	511	552	561	525	570	577	469	502	556
Service Time	5.31	4.81	4.197	4.752	4.252	4.141	4.561	4.061	3.966	5.378	4.878	4.178
HCM Lane V/C Ratio	0.148	0.034	0.128	0.035	0.355	0.207	0.07	0.439	0.251	0.081	0.11	0.068
HCM Control Delay	11.6	10.1	10.1	10	12.8	10.8	10.1	13.9	11	11	10.8	9.7
HCM Lane LOS	B	B	B	A	B	B	B	B	B	B	B	A
HCM 95th-tile Q	0.5	0.1	0.4	0.1	1.6	0.8	0.2	2.2	1	0.3	0.4	0.2

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

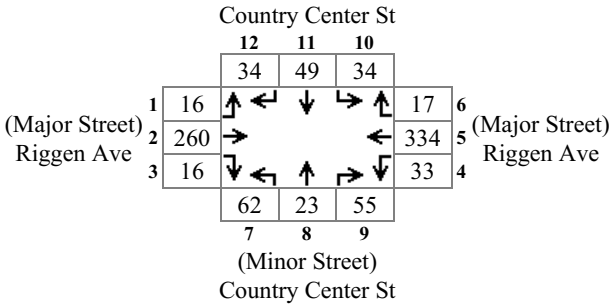
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	19	276	20	0	34	347	18	0	65	24	57	0	35	51	35
Future Vol, veh/h	0	19	276	20	0	34	347	18	0	65	24	57	0	35	51	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	21	300	22	0	37	377	20	0	71	26	62	0	38	55	38
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	12.1	12.8	10.9	10.6
HCM LOS	B	B	B	B

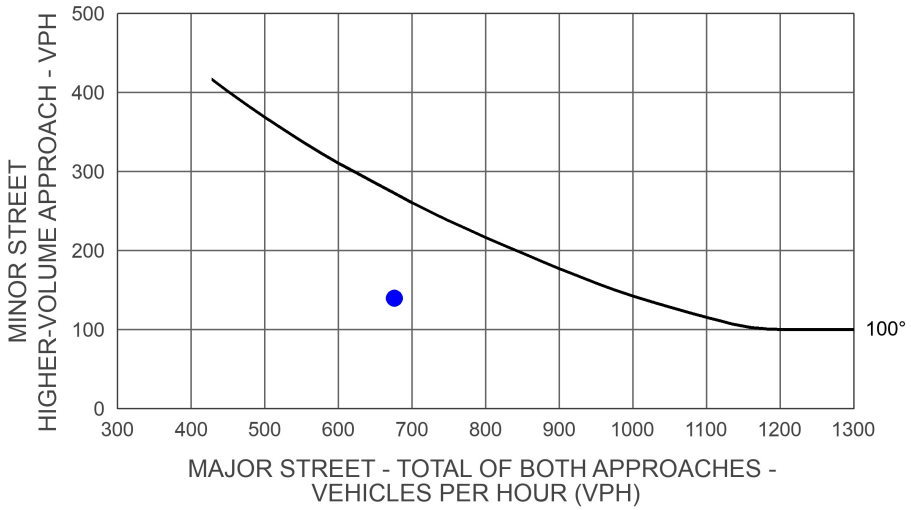
Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	12%	0%	100%	82%	0%	100%	87%	0%	100%	0%
Vol Right, %	0%	0%	88%	0%	0%	18%	0%	0%	13%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	16	65	19	184	112	34	231	134	35	51	35
LT Vol	65	0	0	19	0	0	34	0	0	35	0	0
Through Vol	0	16	8	0	184	92	0	231	116	0	51	0
RT Vol	0	0	57	0	0	20	0	0	18	0	0	35
Lane Flow Rate	71	17	71	21	200	122	37	251	145	38	55	38
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.149	0.034	0.127	0.04	0.362	0.216	0.07	0.443	0.252	0.081	0.11	0.068
Departure Headway (Hd)	7.582	7.082	6.468	7.009	6.509	6.384	6.839	6.339	6.245	7.651	7.151	6.451
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	503	552	509	550	560	523	566	574	466	499	552
Service Time	5.354	4.854	4.24	4.771	4.271	4.146	4.598	4.098	4.004	5.425	4.925	4.225
HCM Lane V/C Ratio	0.151	0.034	0.129	0.041	0.364	0.218	0.071	0.443	0.253	0.082	0.11	0.069
HCM Control Delay	11.7	10.1	10.2	10.1	13	10.9	10.1	14.1	11.1	11.1	10.8	9.7
HCM Lane LOS	B	B	B	B	B	B	B	B	B	B	B	A
HCM 95th-tile Q	0.5	0.1	0.4	0.1	1.6	0.8	0.2	2.3	1	0.3	0.4	0.2

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 19

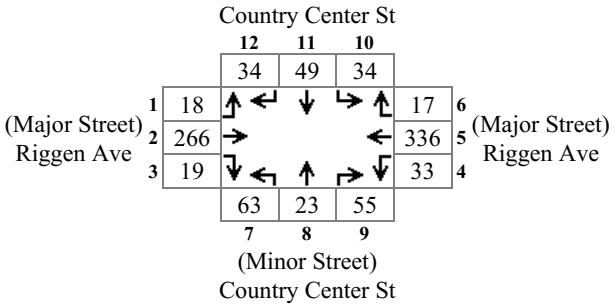


Major Total: 676
Minor High Volume: 140

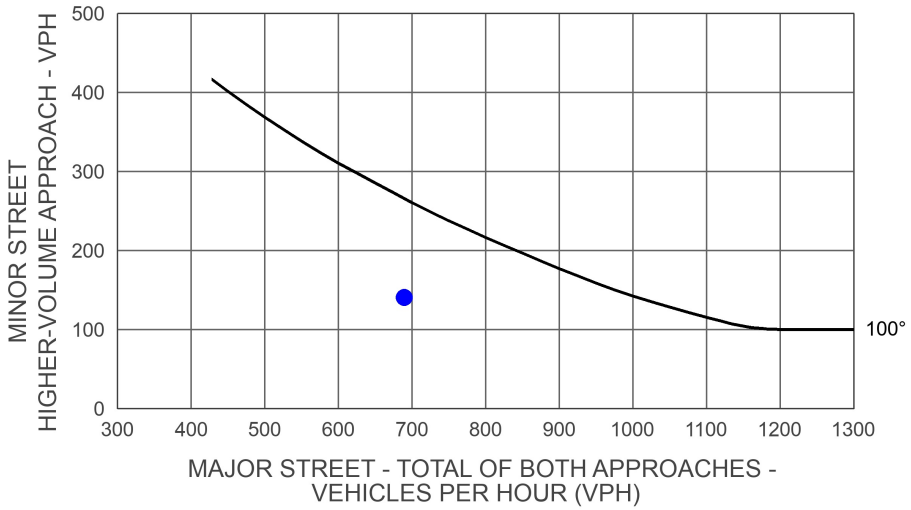


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project
Intersection #: 19

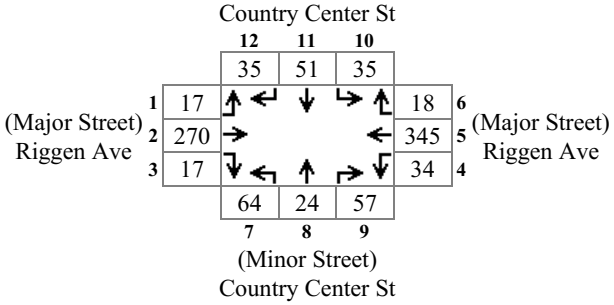


Major Total: 689
Minor High Volume: 141

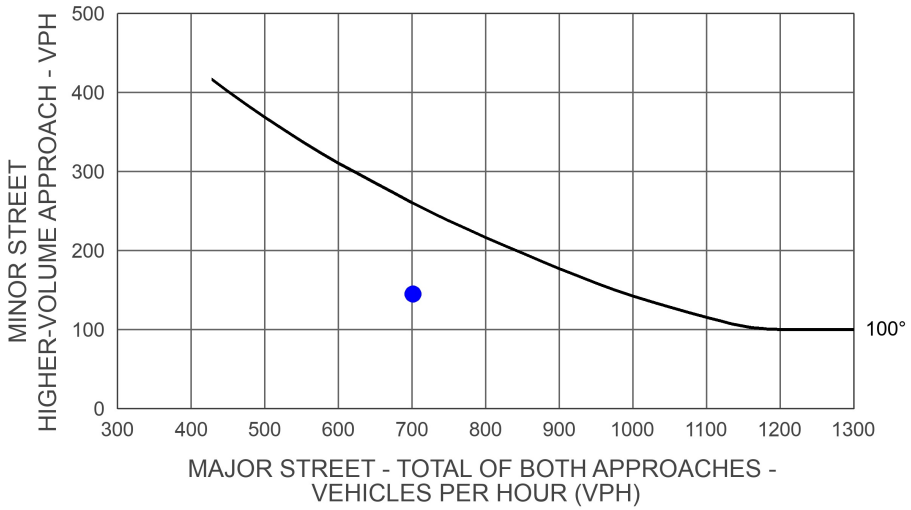


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 19

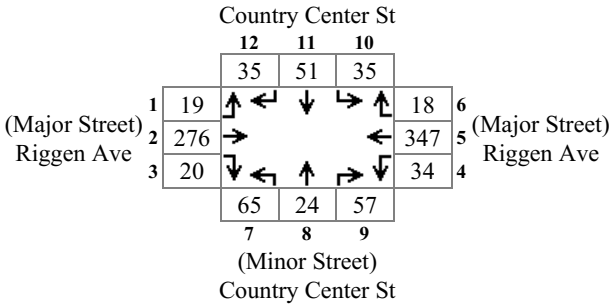


Major Total: 701
Minor High Volume: 145

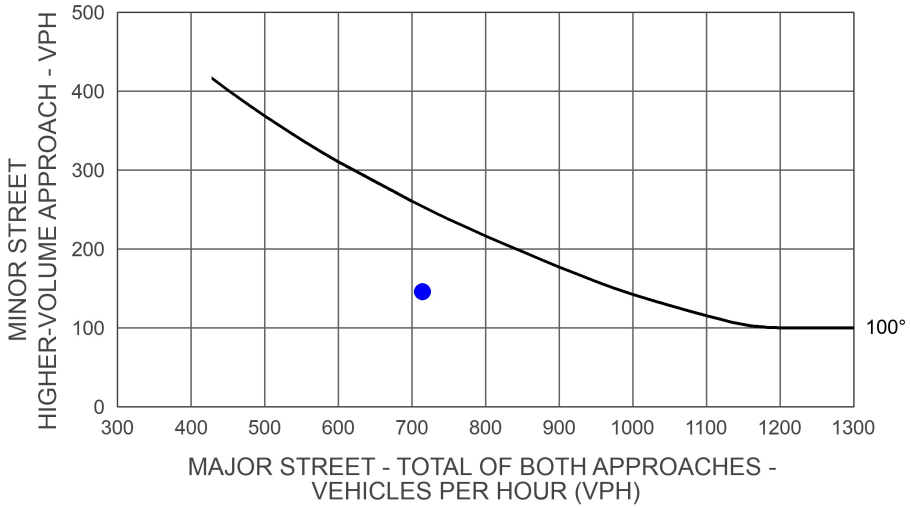


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 19



Major Total: 714
Minor High Volume: 146



Intersection 20
Linwood St & Ferguson Ave

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	48	253	109	0	24	144	29	0	58	40	14	0	16	56	27
Future Vol, veh/h	0	48	253	109	0	24	144	29	0	58	40	14	0	16	56	27
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	52	275	118	0	26	157	32	0	63	43	15	0	17	61	29
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	10.2	9.4	10.9	10.3
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	52%	100%	0%	0%	100%	0%	0%	16%
Vol Thru, %	36%	0%	100%	44%	0%	100%	62%	57%
Vol Right, %	12%	0%	0%	56%	0%	0%	38%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	112	48	169	193	24	96	77	99
LT Vol	58	48	0	0	24	0	0	16
Through Vol	40	0	169	84	0	96	48	56
RT Vol	14	0	0	109	0	0	29	27
Lane Flow Rate	122	52	183	210	26	104	84	108
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.218	0.087	0.279	0.296	0.046	0.169	0.13	0.185
Departure Headway (Hd)	6.441	6.107	5.601	5.201	6.345	5.838	5.571	6.196
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	560	590	645	696	566	616	645	581
Service Time	4.155	3.807	3.301	2.901	4.066	3.559	3.291	3.912
HCM Lane V/C Ratio	0.218	0.088	0.284	0.302	0.046	0.169	0.13	0.186
HCM Control Delay	10.9	9.4	10.5	10.1	9.4	9.7	9.1	10.3
HCM Lane LOS	B	A	B	B	A	A	A	B
HCM 95th-tile Q	0.8	0.3	1.1	1.2	0.1	0.6	0.4	0.7

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	51	268	116	0	25	153	31	0	62	42	15	0	17	59	29
Future Vol, veh/h	0	51	268	116	0	25	153	31	0	62	42	15	0	17	59	29
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	55	291	126	0	27	166	34	0	67	46	16	0	18	64	32
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	10.5	9.7	11.3	10.6
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	52%	100%	0%	0%	100%	0%	0%	16%
Vol Thru, %	35%	0%	100%	44%	0%	100%	62%	56%
Vol Right, %	13%	0%	0%	56%	0%	0%	38%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	119	51	179	205	25	102	82	105
LT Vol	62	51	0	0	25	0	0	17
Through Vol	42	0	179	89	0	102	51	59
RT Vol	15	0	0	116	0	0	31	29
Lane Flow Rate	129	55	194	223	27	111	89	114
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.236	0.095	0.305	0.326	0.049	0.183	0.141	0.2
Departure Headway (Hd)	6.559	6.169	5.663	5.262	6.455	5.947	5.679	6.316
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	547	582	635	683	555	603	631	568
Service Time	4.297	3.9	3.394	2.993	4.192	3.684	3.415	4.055
HCM Lane V/C Ratio	0.236	0.095	0.306	0.327	0.049	0.184	0.141	0.201
HCM Control Delay	11.3	9.5	10.9	10.5	9.5	10	9.4	10.6
HCM Lane LOS	B	A	B	B	A	A	A	B
HCM 95th-tile Q	0.9	0.3	1.3	1.4	0.2	0.7	0.5	0.7

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

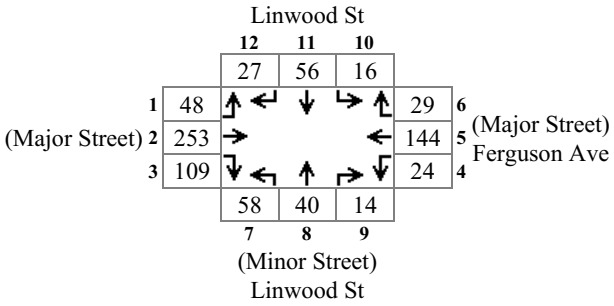
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	51	269	116	0	25	153	31	0	62	42	15	0	17	59	29
Future Vol, veh/h	0	51	269	116	0	25	153	31	0	62	42	15	0	17	59	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	55	292	126	0	27	166	34	0	67	46	16	0	18	64	32
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	10.5	9.7	11.3	10.6
HCM LOS	B	A	B	B

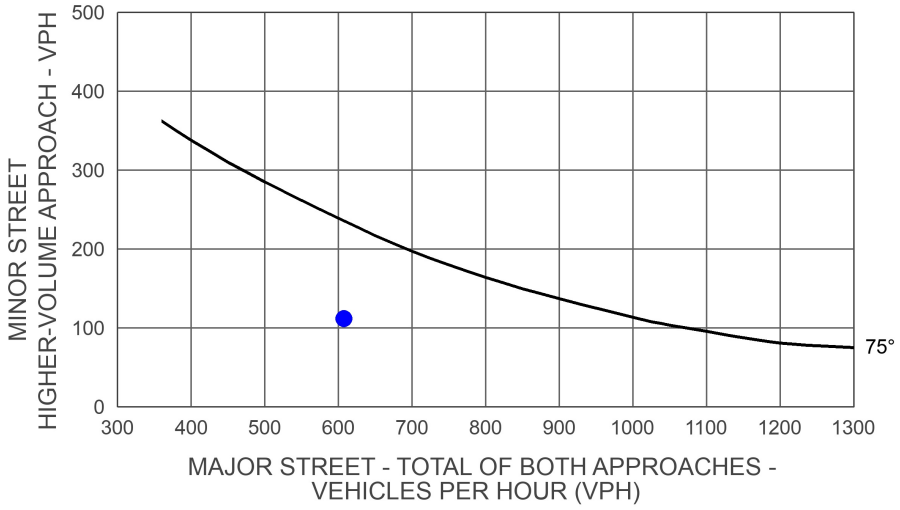
Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	52%	100%	0%	0%	100%	0%	0%	16%
Vol Thru, %	35%	0%	100%	44%	0%	100%	62%	56%
Vol Right, %	13%	0%	0%	56%	0%	0%	38%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	119	51	179	206	25	102	82	105
LT Vol	62	51	0	0	25	0	0	17
Through Vol	42	0	179	90	0	102	51	59
RT Vol	15	0	0	116	0	0	31	29
Lane Flow Rate	129	55	195	224	27	111	89	114
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.236	0.095	0.307	0.327	0.049	0.183	0.141	0.2
Departure Headway (Hd)	6.563	6.169	5.663	5.263	6.457	5.95	5.681	6.32
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	547	582	635	684	555	603	631	568
Service Time	4.301	3.9	3.394	2.993	4.194	3.687	3.418	4.059
HCM Lane V/C Ratio	0.236	0.095	0.307	0.327	0.049	0.184	0.141	0.201
HCM Control Delay	11.3	9.5	10.9	10.5	9.5	10	9.4	10.6
HCM Lane LOS	B	A	B	B	A	A	A	B
HCM 95th-tile Q	0.9	0.3	1.3	1.4	0.2	0.7	0.5	0.7

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 20

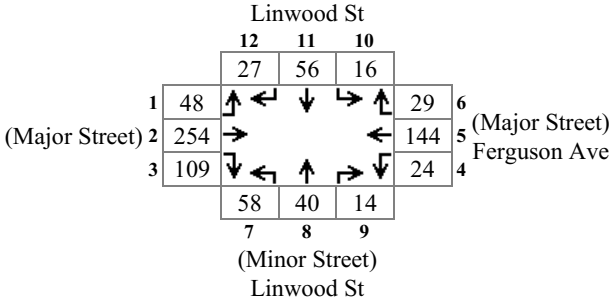


Major Total: 607
Minor High Volume: 112

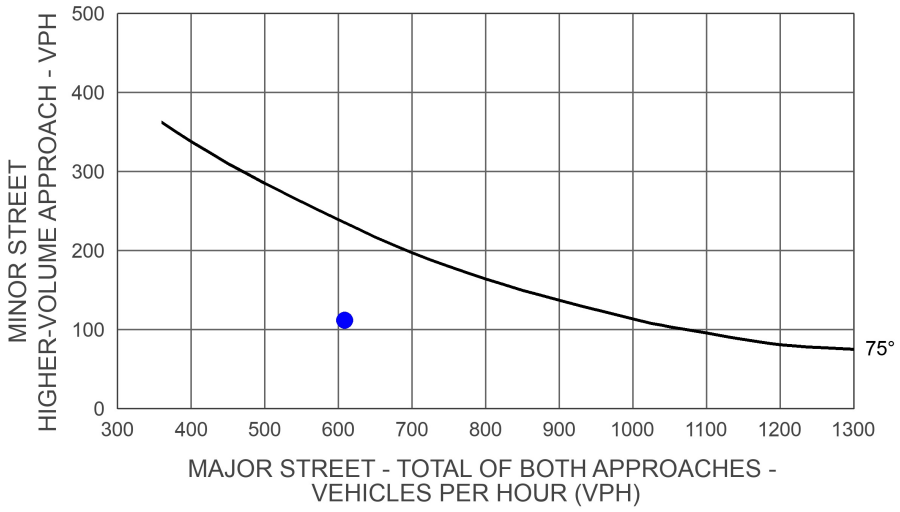


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project
Intersection #: 20

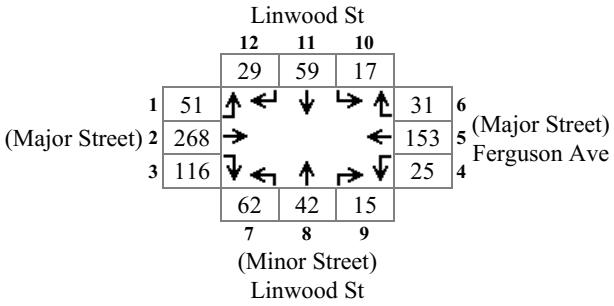


Major Total: 608
Minor High Volume: 112

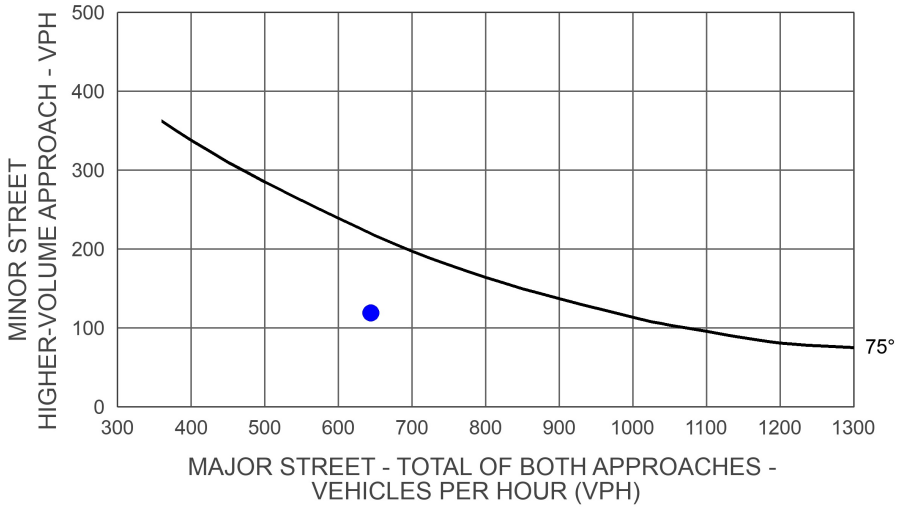


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 20

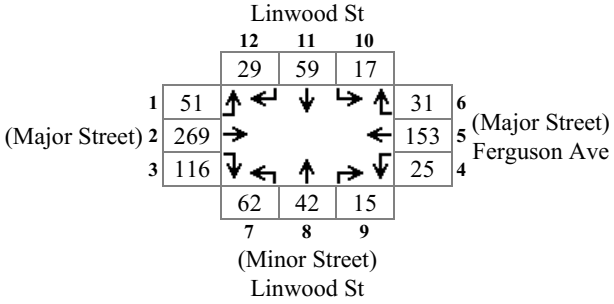


Major Total: 644
Minor High Volume: 119

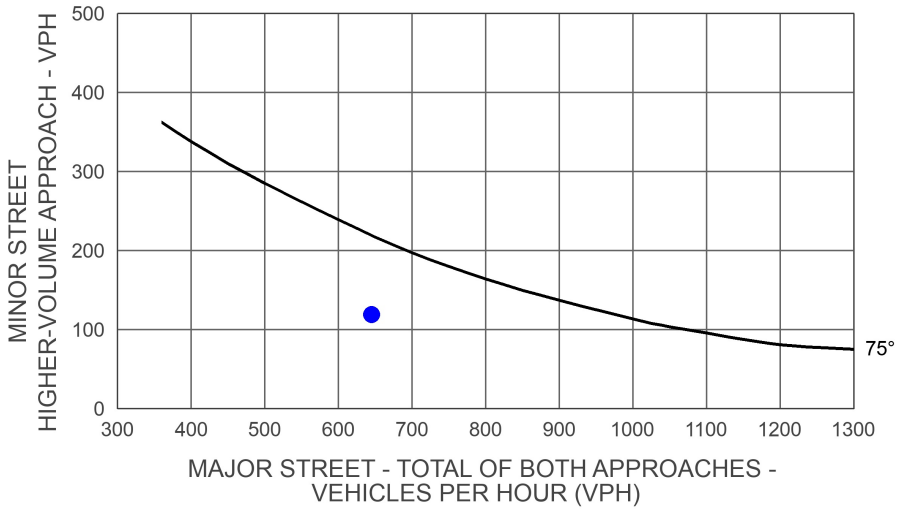


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 20



Major Total: 645
Minor High Volume: 119



Intersection	
Intersection Delay, s/veh	14.3
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	22	174	94	0	47	259	48	0	129	45	79	0	50	105	50
Future Vol, veh/h	0	22	174	94	0	47	259	48	0	129	45	79	0	50	105	50
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	24	189	102	0	51	282	52	0	140	49	86	0	54	114	54
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	12.2	12.7	17.9	15.4
HCM LOS	B	B	C	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	51%	100%	0%	0%	100%	0%	0%	24%
Vol Thru, %	18%	0%	100%	38%	0%	100%	64%	51%
Vol Right, %	31%	0%	0%	62%	0%	0%	36%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	253	22	116	152	47	173	134	205
LT Vol	129	22	0	0	47	0	0	50
Through Vol	45	0	116	58	0	173	86	105
RT Vol	79	0	0	94	0	0	48	50
Lane Flow Rate	275	24	126	165	51	188	146	223
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.541	0.051	0.25	0.307	0.107	0.365	0.274	0.441
Departure Headway (Hd)	7.086	7.654	7.138	6.691	7.523	7.007	6.749	7.131
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	509	468	503	537	477	514	531	506
Service Time	4.828	5.401	4.884	4.437	5.268	4.752	4.494	4.878
HCM Lane V/C Ratio	0.54	0.051	0.25	0.307	0.107	0.366	0.275	0.441
HCM Control Delay	17.9	10.8	12.3	12.4	11.2	13.7	12	15.4
HCM Lane LOS	C	B	B	B	B	B	B	C
HCM 95th-tile Q	3.2	0.2	1	1.3	0.4	1.7	1.1	2.2

Intersection	
Intersection Delay, s/veh	15.6
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	23	185	100	0	50	275	51	0	137	48	84	0	53	111	53
Future Vol, veh/h	0	23	185	100	0	50	275	51	0	137	48	84	0	53	111	53
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	25	201	109	0	54	299	55	0	149	52	91	0	58	121	58
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	13	13.6	20.2	16.9
HCM LOS	B	B	C	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	51%	100%	0%	0%	100%	0%	0%	24%
Vol Thru, %	18%	0%	100%	38%	0%	100%	64%	51%
Vol Right, %	31%	0%	0%	62%	0%	0%	36%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	269	23	123	162	50	183	143	217
LT Vol	137	23	0	0	50	0	0	53
Through Vol	48	0	123	62	0	183	92	111
RT Vol	84	0	0	100	0	0	51	53
Lane Flow Rate	292	25	134	176	54	199	155	236
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.593	0.055	0.275	0.339	0.117	0.401	0.301	0.483
Departure Headway (Hd)	7.307	7.908	7.39	6.942	7.766	7.249	6.99	7.374
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	494	452	485	517	461	496	513	488
Service Time	5.063	5.669	5.15	4.701	5.525	5.008	4.748	5.133
HCM Lane V/C Ratio	0.591	0.055	0.276	0.34	0.117	0.401	0.302	0.484
HCM Control Delay	20.2	11.1	13	13.2	11.6	14.8	12.8	16.9
HCM Lane LOS	C	B	B	B	B	B	B	C
HCM 95th-tile Q	3.8	0.2	1.1	1.5	0.4	1.9	1.3	2.6

Intersection	
Intersection Delay, s/veh	15.6
Intersection LOS	C

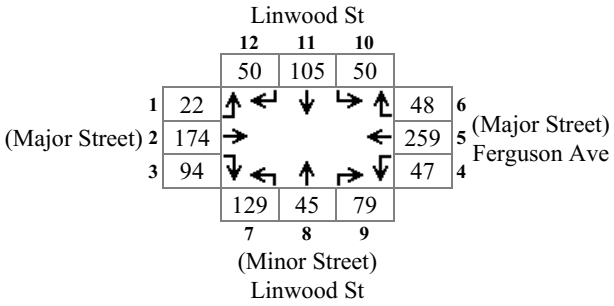
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	23	185	100	0	50	275	51	0	137	48	84	0	53	111	53
Future Vol, veh/h	0	23	185	100	0	50	275	51	0	137	48	84	0	53	111	53
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	25	201	109	0	54	299	55	0	149	52	91	0	58	121	58
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	13	13.6	20.2	16.9
HCM LOS	B	B	C	C

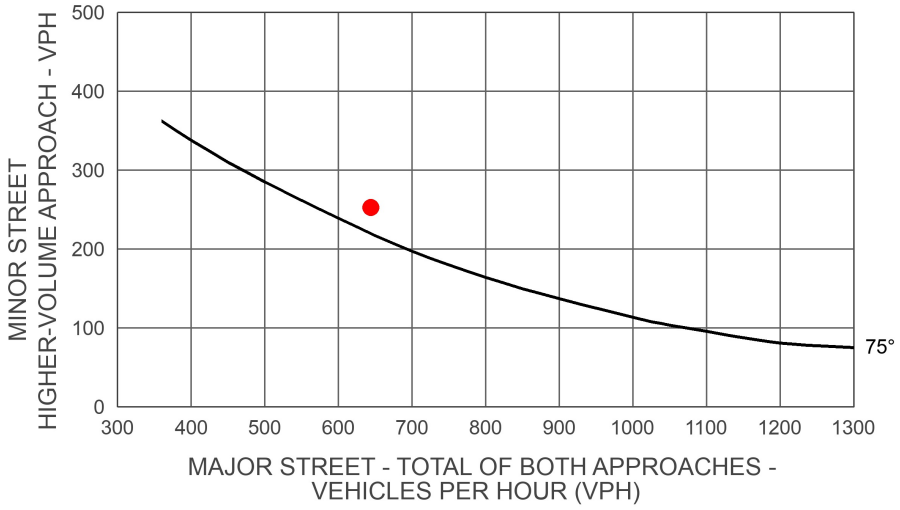
Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	51%	100%	0%	0%	100%	0%	0%	24%
Vol Thru, %	18%	0%	100%	38%	0%	100%	64%	51%
Vol Right, %	31%	0%	0%	62%	0%	0%	36%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	269	23	123	162	50	183	143	217
LT Vol	137	23	0	0	50	0	0	53
Through Vol	48	0	123	62	0	183	92	111
RT Vol	84	0	0	100	0	0	51	53
Lane Flow Rate	292	25	134	176	54	199	155	236
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.593	0.055	0.275	0.339	0.117	0.401	0.301	0.483
Departure Headway (Hd)	7.307	7.908	7.39	6.942	7.766	7.249	6.99	7.374
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	494	452	485	517	461	496	513	488
Service Time	5.063	5.669	5.15	4.701	5.525	5.008	4.748	5.133
HCM Lane V/C Ratio	0.591	0.055	0.276	0.34	0.117	0.401	0.302	0.484
HCM Control Delay	20.2	11.1	13	13.2	11.6	14.8	12.8	16.9
HCM Lane LOS	C	B	B	B	B	B	B	C
HCM 95th-tile Q	3.8	0.2	1.1	1.5	0.4	1.9	1.3	2.6

Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Existing
Intersection #: 20

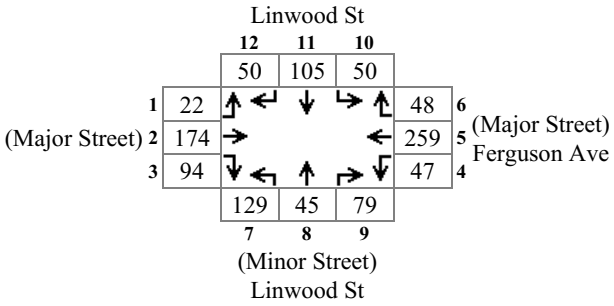


Major Total: 644
Minor High Volume: 253

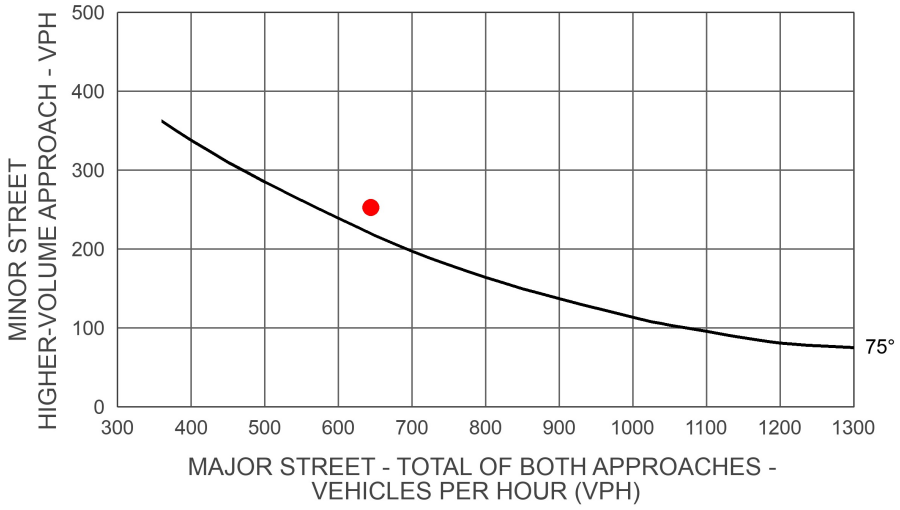


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Existing+Project
Intersection #: 20

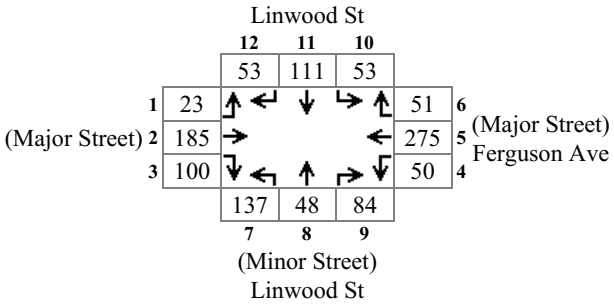


Major Total: 644
Minor High Volume: 253

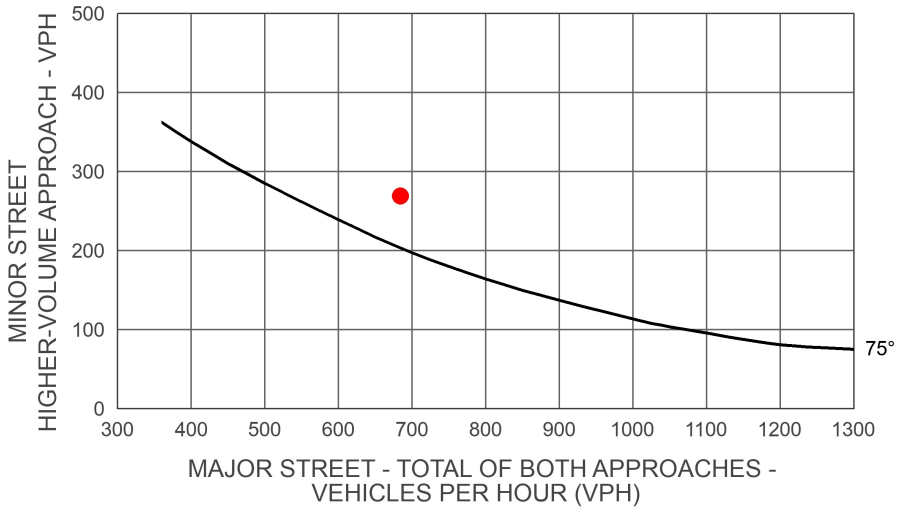


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future
Intersection #: 20

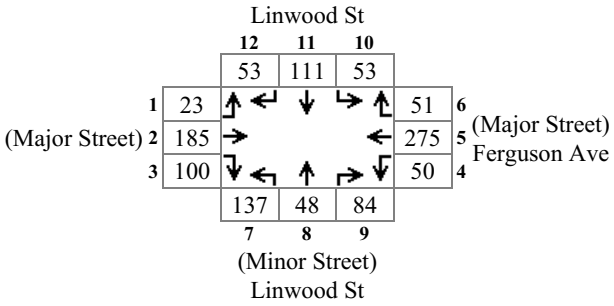


Major Total: 684
Minor High Volume: 269

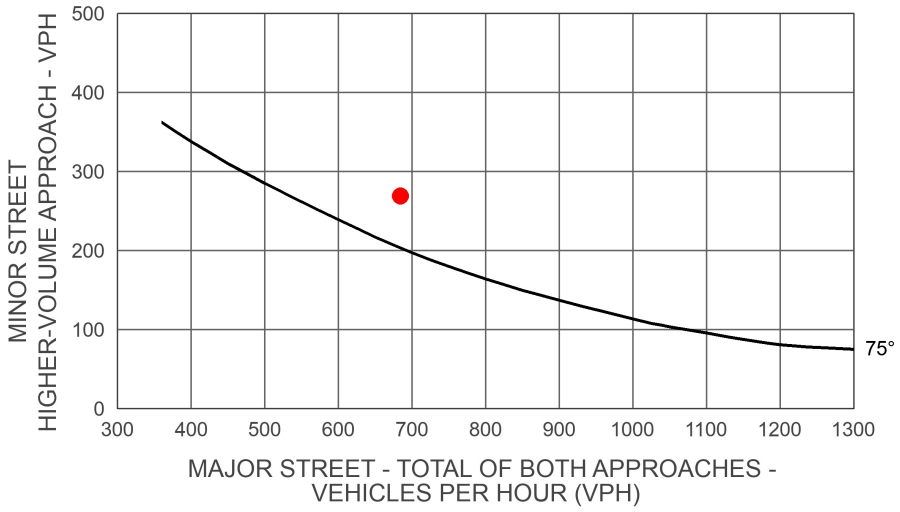


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project
Intersection #: 20



Major Total: 684
Minor High Volume: 269



Intersection 21
Demaree St & Ferguson Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	168	55	106	99	30	58	656	181	31	589	35
Future Volume (veh/h)	61	168	55	106	99	30	58	656	181	31	589	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	66	183	60	115	108	33	63	713	197	34	640	38
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	100	290	92	136	246	187	717	1741	481	59	796	47
Arrive On Green	0.06	0.11	0.10	0.08	0.13	0.13	0.44	0.64	0.63	0.01	0.08	0.07
Sat Flow, veh/h	1634	2643	841	1634	1863	1420	1634	2731	754	1634	3395	201
Grp Volume(v), veh/h	66	121	122	115	108	33	63	462	448	34	333	345
Grp Sat Flow(s),veh/h/ln	1634	1770	1714	1634	1863	1420	1634	1770	1716	1634	1770	1827
Q Serve(g_s), s	4.7	7.8	8.2	8.3	6.4	2.5	2.7	15.4	15.5	2.5	22.2	22.3
Cycle Q Clear(g_c), s	4.7	7.8	8.2	8.3	6.4	2.5	2.7	15.4	15.5	2.5	22.2	22.3
Prop In Lane	1.00		0.49	1.00		1.00	1.00		0.44	1.00		0.11
Lane Grp Cap(c), veh/h	100	194	188	136	246	187	717	1128	1094	59	415	429
V/C Ratio(X)	0.66	0.62	0.65	0.84	0.44	0.18	0.09	0.41	0.41	0.58	0.80	0.80
Avail Cap(c_a), veh/h	177	360	349	136	332	253	717	1128	1094	72	749	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	55.1	51.0	51.5	54.2	48.0	46.3	19.6	10.7	10.9	58.4	52.6	52.7
Incr Delay (d2), s/veh	7.2	3.2	3.7	35.9	1.2	0.4	0.1	1.1	1.1	7.2	12.9	12.7
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	2.3	4.0	4.1	5.1	3.4	1.0	1.2	7.8	7.6	1.2	12.4	12.8
LnGrp Delay(d),s/veh	62.3	54.2	55.3	90.1	49.2	46.7	19.7	11.8	12.0	65.6	65.6	65.3
LnGrp LOS	E	D	E	F	D	D	B	B	B	E	E	E
Approach Vol, veh/h		309			256			973			712	
Approach Delay, s/veh		56.4			67.3			12.4			65.5	
Approach LOS		E			E			B			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	80.5	14.0	17.2	56.7	32.1	11.3	19.8
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	4.5	17.5	10.3	10.2	4.7	24.3	6.7	8.4
Green Ext Time (p_c), s	0.0	4.3	0.0	0.7	3.4	2.6	0.1	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	41.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	173	57	109	102	31	65	725	202	33	622	37
Future Volume (veh/h)	63	173	57	109	102	31	65	725	202	33	622	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	68	188	62	118	111	34	71	788	220	36	676	40
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	102	295	94	136	247	188	695	1726	482	62	836	49
Arrive On Green	0.06	0.11	0.10	0.08	0.13	0.13	0.43	0.63	0.62	0.01	0.08	0.08
Sat Flow, veh/h	1634	2639	844	1634	1863	1420	1634	2724	760	1634	3396	201
Grp Volume(v), veh/h	68	124	126	118	111	34	71	512	496	36	352	364
Grp Sat Flow(s),veh/h/ln	1634	1770	1714	1634	1863	1420	1634	1770	1715	1634	1770	1827
Q Serve(g_s), s	4.9	8.0	8.5	8.6	6.6	2.6	3.1	17.9	18.1	2.6	23.5	23.5
Cycle Q Clear(g_c), s	4.9	8.0	8.5	8.6	6.6	2.6	3.1	17.9	18.1	2.6	23.5	23.5
Prop In Lane	1.00		0.49	1.00		1.00	1.00		0.44	1.00		0.11
Lane Grp Cap(c), veh/h	102	198	192	136	247	188	695	1121	1087	62	436	450
V/C Ratio(X)	0.66	0.63	0.66	0.87	0.45	0.18	0.10	0.46	0.46	0.58	0.81	0.81
Avail Cap(c_a), veh/h	177	360	348	136	332	253	695	1121	1087	72	749	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.82	0.82
Uniform Delay (d), s/veh	55.0	50.9	51.4	54.3	48.0	46.3	20.7	11.3	11.5	58.3	52.3	52.4
Incr Delay (d2), s/veh	7.2	3.3	3.8	40.5	1.3	0.5	0.1	1.3	1.4	7.0	12.5	12.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	4.1	4.2	5.4	3.5	1.0	1.4	9.1	8.9	1.3	13.0	13.4
LnGrp Delay(d),s/veh	62.2	54.2	55.2	94.9	49.3	46.7	20.8	12.7	12.9	65.3	64.9	64.6
LnGrp LOS	E	D	E	F	D	D	C	B	B	E	E	E
Approach Vol, veh/h		318			263			1079			752	
Approach Delay, s/veh		56.3			69.4			13.3			64.8	
Approach LOS		E			E			B			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	80.1	14.0	17.4	55.0	33.5	11.5	19.9
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	4.6	20.1	10.6	10.5	5.1	25.5	6.9	8.6
Green Ext Time (p_c), s	0.0	5.0	0.0	0.7	3.8	2.7	0.1	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	41.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	173	57	109	102	32	65	727	202	33	622	37
Future Volume (veh/h)	64	173	57	109	102	32	65	727	202	33	622	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	70	188	62	118	111	35	71	790	220	36	676	40
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	105	295	94	136	244	186	695	1727	481	62	836	49
Arrive On Green	0.06	0.11	0.10	0.08	0.13	0.13	0.43	0.63	0.62	0.01	0.08	0.08
Sat Flow, veh/h	1634	2639	844	1634	1863	1420	1634	2726	759	1634	3396	201
Grp Volume(v), veh/h	70	124	126	118	111	35	71	513	497	36	352	364
Grp Sat Flow(s),veh/h/ln	1634	1770	1714	1634	1863	1420	1634	1770	1715	1634	1770	1827
Q Serve(g_s), s	5.0	8.0	8.5	8.6	6.6	2.6	3.1	17.9	18.1	2.6	23.5	23.5
Cycle Q Clear(g_c), s	5.0	8.0	8.5	8.6	6.6	2.6	3.1	17.9	18.1	2.6	23.5	23.5
Prop In Lane	1.00		0.49	1.00		1.00	1.00		0.44	1.00		0.11
Lane Grp Cap(c), veh/h	105	198	192	136	244	186	695	1121	1087	62	436	450
V/C Ratio(X)	0.67	0.63	0.66	0.87	0.45	0.19	0.10	0.46	0.46	0.58	0.81	0.81
Avail Cap(c_a), veh/h	177	360	348	136	332	253	695	1121	1087	72	749	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.82	0.82
Uniform Delay (d), s/veh	54.9	50.9	51.4	54.3	48.2	46.5	20.7	11.3	11.5	58.3	52.3	52.4
Incr Delay (d2), s/veh	7.1	3.3	3.8	40.5	1.3	0.5	0.1	1.3	1.4	7.0	12.5	12.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	4.1	4.2	5.4	3.5	1.1	1.4	9.1	8.9	1.3	13.0	13.4
LnGrp Delay(d),s/veh	62.0	54.2	55.2	94.9	49.5	46.9	20.8	12.7	12.9	65.3	64.8	64.6
LnGrp LOS	E	D	E	F	D	D	C	B	B	E	E	E
Approach Vol, veh/h		320			264			1081			752	
Approach Delay, s/veh		56.3			69.4			13.3			64.7	
Approach LOS		E			E			B			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	80.1	14.0	17.4	55.0	33.5	11.7	19.7
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	4.6	20.1	10.6	10.5	5.1	25.5	7.0	8.6
Green Ext Time (p_c), s	0.0	5.0	0.0	0.7	3.8	2.7	0.1	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	41.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	91	91	165	170	35	59	415	105	34	584	49
Future Volume (veh/h)	39	91	91	165	170	35	59	415	105	34	584	49
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	42	99	99	179	185	38	64	451	114	37	635	53
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	70	189	169	136	275	210	98	1783	447	63	2039	170
Arrive On Green	0.04	0.11	0.10	0.08	0.15	0.15	0.06	0.64	0.63	0.01	0.20	0.20
Sat Flow, veh/h	1634	1770	1583	1634	1863	1422	1634	2795	701	1634	3308	276
Grp Volume(v), veh/h	42	99	99	179	185	38	64	284	281	37	339	349
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1863	1422	1634	1770	1726	1634	1770	1814
Q Serve(g_s), s	3.0	6.4	7.2	10.0	11.3	2.8	4.6	8.3	8.5	2.7	19.6	19.6
Cycle Q Clear(g_c), s	3.0	6.4	7.2	10.0	11.3	2.8	4.6	8.3	8.5	2.7	19.6	19.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.15
Lane Grp Cap(c), veh/h	70	189	169	136	275	210	98	1129	1101	63	1091	1118
V/C Ratio(X)	0.60	0.52	0.59	1.31	0.67	0.18	0.65	0.25	0.26	0.59	0.31	0.31
Avail Cap(c_a), veh/h	177	360	322	136	332	254	256	1129	1101	72	1091	1118
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80
Uniform Delay (d), s/veh	56.4	50.7	51.7	55.0	48.4	44.8	55.2	9.4	9.5	58.3	26.1	26.2
Incr Delay (d2), s/veh	8.1	2.2	3.2	184.0	4.0	0.4	7.1	0.5	0.6	7.4	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	3.2	3.3	11.5	6.1	1.1	2.3	4.2	4.2	1.4	9.8	10.1
LnGrp Delay(d),s/veh	64.6	52.9	54.9	239.0	52.4	45.2	62.3	9.9	10.1	65.7	26.7	26.8
LnGrp LOS	E	D	D	F	D	D	E	A	B	E	C	C
Approach Vol, veh/h		240			402			629			725	
Approach Delay, s/veh		55.8			134.8			15.3			28.7	
Approach LOS		E			F			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	80.5	14.0	16.8	11.2	78.0	9.1	21.7
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	4.7	10.5	12.0	9.2	6.6	21.6	5.0	13.3
Green Ext Time (p_c), s	0.0	5.5	0.0	1.3	0.1	5.3	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	49.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	94	94	170	175	36	66	459	117	36	616	52
Future Volume (veh/h)	40	94	94	170	175	36	66	459	117	36	616	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	43	102	102	185	190	39	72	499	127	39	670	57
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	71	183	163	136	266	203	108	1785	452	66	2028	172
Arrive On Green	0.04	0.10	0.09	0.08	0.14	0.14	0.07	0.64	0.63	0.01	0.20	0.20
Sat Flow, veh/h	1634	1770	1583	1634	1863	1421	1634	2789	706	1634	3302	281
Grp Volume(v), veh/h	43	102	102	185	190	39	72	315	311	39	359	368
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1863	1421	1634	1770	1726	1634	1770	1813
Q Serve(g_s), s	3.1	6.6	7.4	10.0	11.7	2.9	5.2	9.4	9.6	2.8	20.8	20.8
Cycle Q Clear(g_c), s	3.1	6.6	7.4	10.0	11.7	2.9	5.2	9.4	9.6	2.8	20.8	20.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.15
Lane Grp Cap(c), veh/h	71	183	163	136	266	203	108	1132	1104	66	1087	1114
V/C Ratio(X)	0.61	0.56	0.62	1.36	0.71	0.19	0.67	0.28	0.28	0.59	0.33	0.33
Avail Cap(c_a), veh/h	177	360	322	136	332	253	256	1132	1104	72	1087	1114
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.78	0.78	0.78
Uniform Delay (d), s/veh	56.4	51.2	52.2	55.0	49.1	45.3	54.8	9.5	9.6	58.2	26.7	26.8
Incr Delay (d2), s/veh	8.1	2.7	3.9	201.5	5.3	0.5	6.9	0.6	0.6	8.3	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.4	3.4	12.1	6.4	1.2	2.5	4.7	4.7	1.4	10.4	10.7
LnGrp Delay(d),s/veh	64.4	53.9	56.1	256.5	54.4	45.8	61.7	10.1	10.3	66.5	27.4	27.4
LnGrp LOS	E	D	E	F	D	D	E	B	B	E	C	C
Approach Vol, veh/h		247			414			698			766	
Approach Delay, s/veh		56.6			143.9			15.5			29.4	
Approach LOS		E			F			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	80.8	14.0	16.4	11.9	77.7	9.2	21.2
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	4.8	11.6	12.0	9.4	7.2	22.8	5.1	13.7
Green Ext Time (p_c), s	0.0	6.1	0.0	0.6	0.1	5.8	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	50.3
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	94	94	170	175	36	66	460	117	36	616	52
Future Volume (veh/h)	40	94	94	170	175	36	66	460	117	36	616	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	43	102	102	185	190	39	72	500	127	39	670	57
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	71	183	163	136	266	203	108	1786	451	66	2028	172
Arrive On Green	0.04	0.10	0.09	0.08	0.14	0.14	0.07	0.64	0.63	0.01	0.20	0.20
Sat Flow, veh/h	1634	1770	1583	1634	1863	1421	1634	2791	705	1634	3302	281
Grp Volume(v), veh/h	43	102	102	185	190	39	72	316	311	39	359	368
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1863	1421	1634	1770	1726	1634	1770	1813
Q Serve(g_s), s	3.1	6.6	7.4	10.0	11.7	2.9	5.2	9.4	9.6	2.8	20.8	20.8
Cycle Q Clear(g_c), s	3.1	6.6	7.4	10.0	11.7	2.9	5.2	9.4	9.6	2.8	20.8	20.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.15
Lane Grp Cap(c), veh/h	71	183	163	136	266	203	108	1132	1104	66	1087	1114
V/C Ratio(X)	0.61	0.56	0.62	1.36	0.71	0.19	0.67	0.28	0.28	0.59	0.33	0.33
Avail Cap(c_a), veh/h	177	360	322	136	332	253	256	1132	1104	72	1087	1114
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.78	0.78	0.78
Uniform Delay (d), s/veh	56.4	51.2	52.2	55.0	49.1	45.3	54.8	9.5	9.6	58.2	26.7	26.8
Incr Delay (d2), s/veh	8.1	2.7	3.9	201.5	5.3	0.5	6.9	0.6	0.6	8.3	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.4	3.4	12.1	6.4	1.2	2.5	4.8	4.7	1.4	10.4	10.7
LnGrp Delay(d),s/veh	64.4	53.9	56.1	256.5	54.4	45.8	61.7	10.1	10.3	66.5	27.4	27.4
LnGrp LOS	E	D	E	F	D	D	E	B	B	E	C	C
Approach Vol, veh/h		247			414			699			766	
Approach Delay, s/veh		56.6			143.9			15.5			29.4	
Approach LOS		E			F			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	80.8	14.0	16.4	11.9	77.7	9.2	21.2
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	4.8	11.6	12.0	9.4	7.2	22.8	5.1	13.7
Green Ext Time (p_c), s	0.0	6.1	0.0	0.6	0.1	5.8	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	50.3
HCM 2010 LOS	D

Intersection 1
Akers St & Ave 320

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	110	20	29	32	29	52
Future Vol, veh/h	110	20	29	32	29	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	120	22	32	35	32	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	141	0	228	130
Stage 1	-	-	-	-	130	-
Stage 2	-	-	-	-	98	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1442	-	760	920
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	926	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1442	-	743	920
Mov Cap-2 Maneuver	-	-	-	-	743	-
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	905	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	848	-	-	1442	-
HCM Lane V/C Ratio	0.104	-	-	0.022	-
HCM Control Delay (s)	9.7	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	115	20	29	35	29	52
Future Vol, veh/h	115	20	29	35	29	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	125	22	32	38	32	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	147	0	237	136
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	101	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1435	-	751	913
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	923	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1435	-	734	913
Mov Cap-2 Maneuver	-	-	-	-	734	-
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	902	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	840	-	-	1435	-
HCM Lane V/C Ratio	0.105	-	-	0.022	-
HCM Control Delay (s)	9.8	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	115	20	29	35	29	52
Future Vol, veh/h	115	20	29	35	29	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	125	22	32	38	32	57

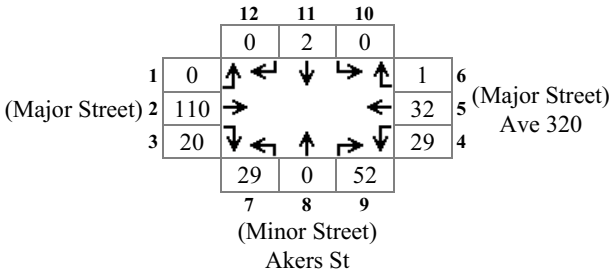
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	147	0	237	136
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	101	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1435	-	751	913
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	923	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1435	-	734	913
Mov Cap-2 Maneuver	-	-	-	-	734	-
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	902	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	9.8
HCM LOS			A

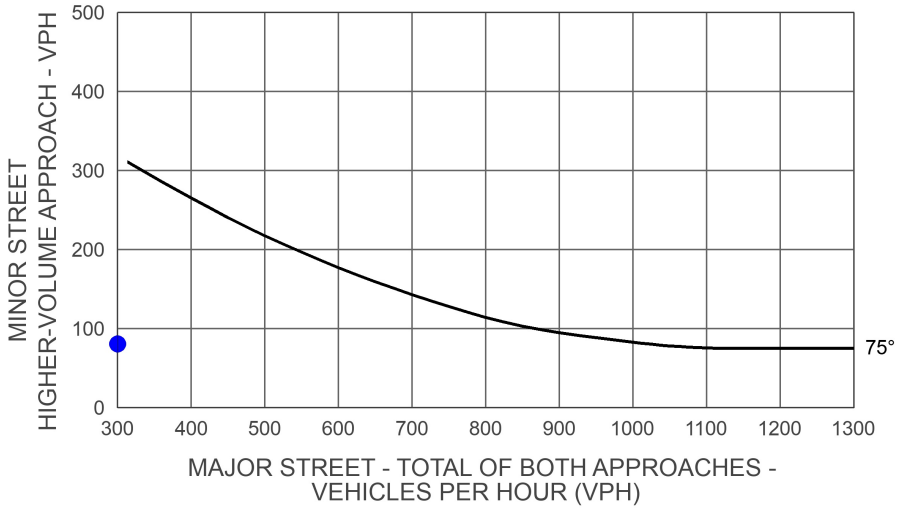
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	840	-	-	1435	-
HCM Lane V/C Ratio	0.105	-	-	0.022	-
HCM Control Delay (s)	9.8	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 1

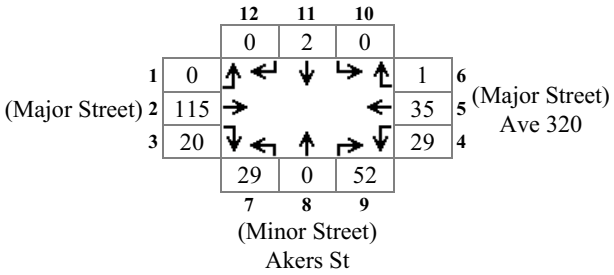


Major Total: 192
Minor High Volume: 81

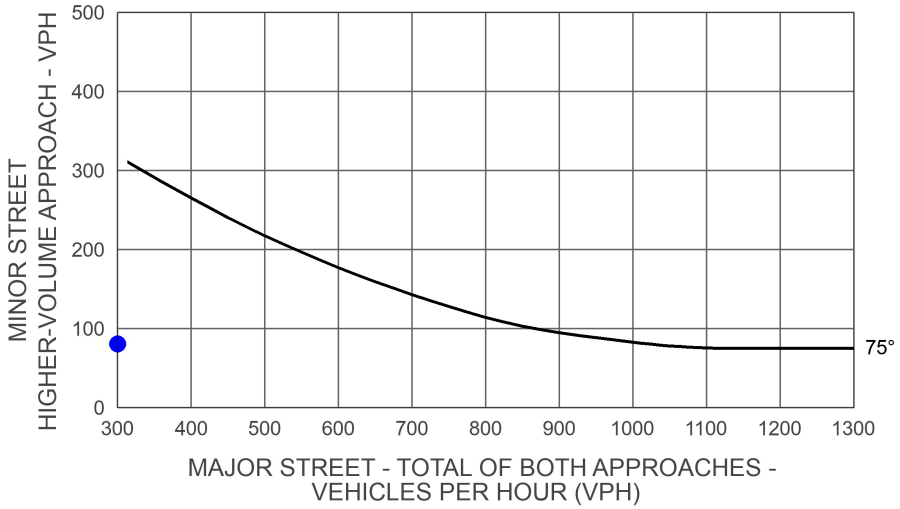


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 1



Major Total: 200
Minor High Volume: 81



Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	48	20	63	88	24	36
Future Vol, veh/h	48	20	63	88	24	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	52	22	68	96	26	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	74	0	296	63
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	233	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1526	-	695	1002
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	806	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1526	-	662	1002
Mov Cap-2 Maneuver	-	-	-	-	662	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	768	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	831	-	-	1526	-
HCM Lane V/C Ratio	0.078	-	-	0.045	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	49	20	63	93	24	36
Future Vol, veh/h	49	20	63	93	24	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	53	22	68	101	26	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	75	0	302	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	238	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1524	-	690	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	802	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1524	-	658	1000
Mov Cap-2 Maneuver	-	-	-	-	658	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	764	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	828	-	-	1524	-
HCM Lane V/C Ratio	0.079	-	-	0.045	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	49	20	63	93	24	36
Future Vol, veh/h	49	20	63	93	24	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	53	22	68	101	26	39

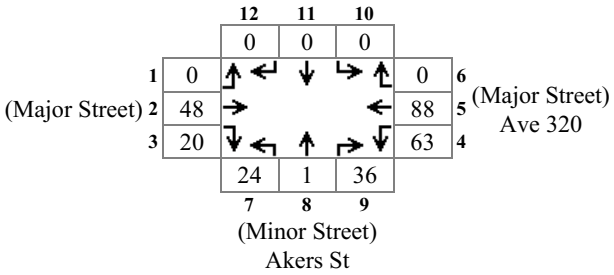
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	75	0	302	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	238	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1524	-	690	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	802	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1524	-	658	1000
Mov Cap-2 Maneuver	-	-	-	-	658	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	764	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	9.7
HCM LOS			A

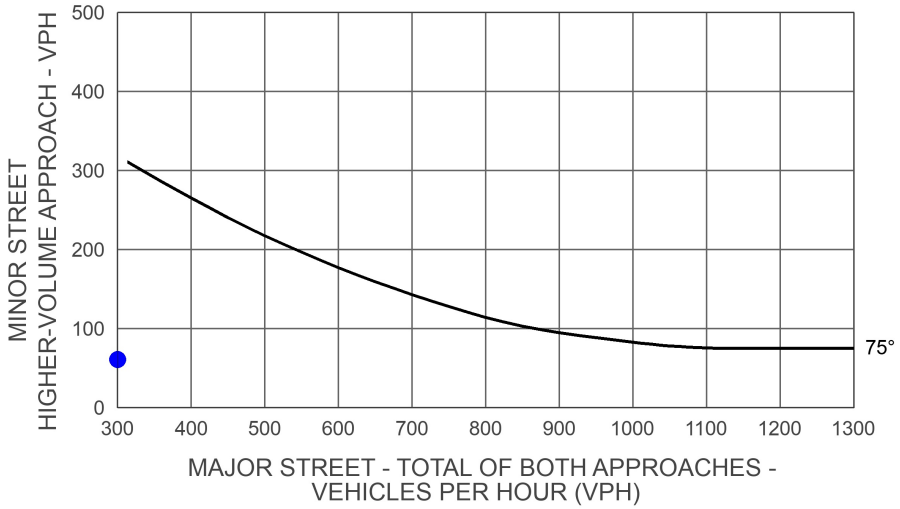
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	828	-	-	1524	-
HCM Lane V/C Ratio	0.079	-	-	0.045	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 1

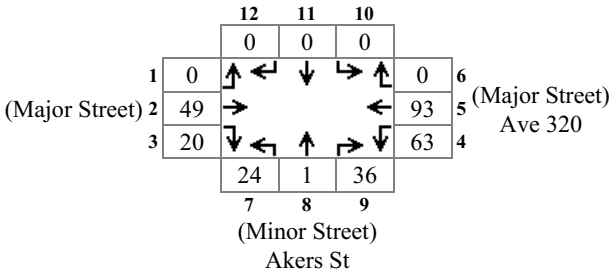


Major Total: 219
Minor High Volume: 61

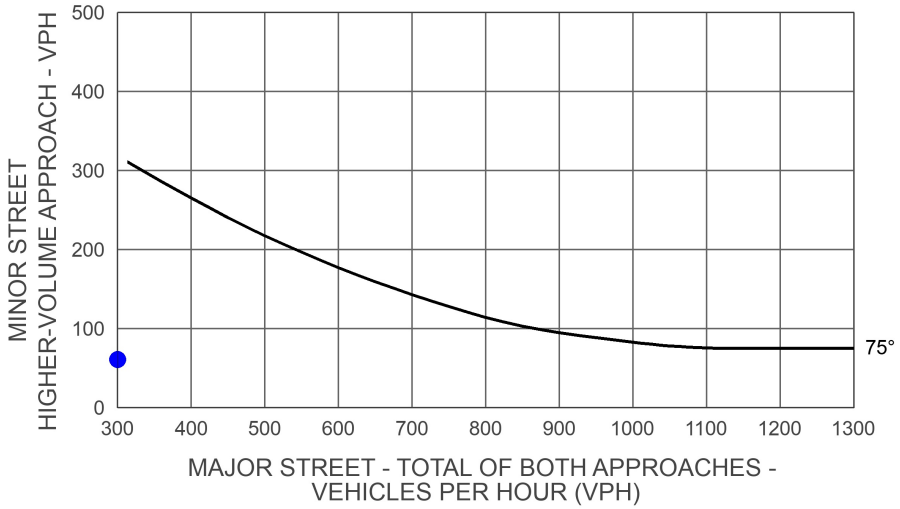


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 1



Major Total: 225
Minor High Volume: 61



Intersection 2
Demaree St & Ave 320

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	50	103	28	218	237	26
Future Vol, veh/h	50	103	28	218	237	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	54	112	30	237	258	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	570	272	286	0	-	0
Stage 1	272	-	-	-	-	-
Stage 2	298	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	483	767	1276	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	470	767	1276	-	-	-
Mov Cap-2 Maneuver	470	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	733	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1276	-	636	-	-
HCM Lane V/C Ratio	0.024	-	0.261	-	-
HCM Control Delay (s)	7.9	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	50	108	31	218	237	26
Future Vol, veh/h	50	108	31	218	237	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	54	117	34	237	258	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	576	272	286	0	-	0
Stage 1	272	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	479	767	1276	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	464	767	1276	-	-	-
Mov Cap-2 Maneuver	464	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	725	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1276	-	636	-	-
HCM Lane V/C Ratio	0.026	-	0.27	-	-
HCM Control Delay (s)	7.9	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	50	108	31	218	237	26
Future Vol, veh/h	50	108	31	218	237	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	54	117	34	237	258	28

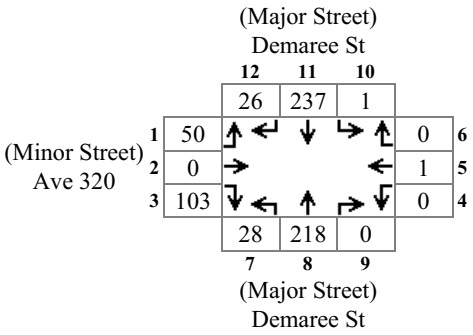
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	576	272	286	0	-	0
Stage 1	272	-	-	-	-	-
Stage 2	304	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	479	767	1276	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	464	767	1276	-	-	-
Mov Cap-2 Maneuver	464	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	725	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	1	0
HCM LOS	B		

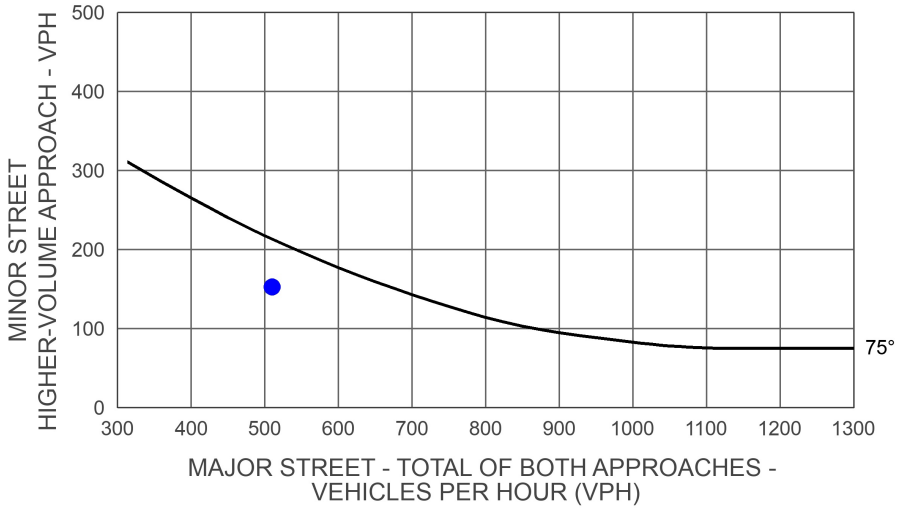
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1276	-	636	-	-
HCM Lane V/C Ratio	0.026	-	0.27	-	-
HCM Control Delay (s)	7.9	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 2

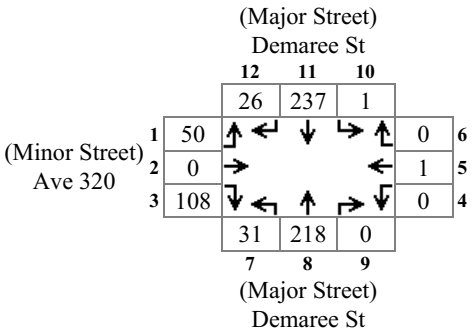


Major Total: 510
Minor High Volume: 153

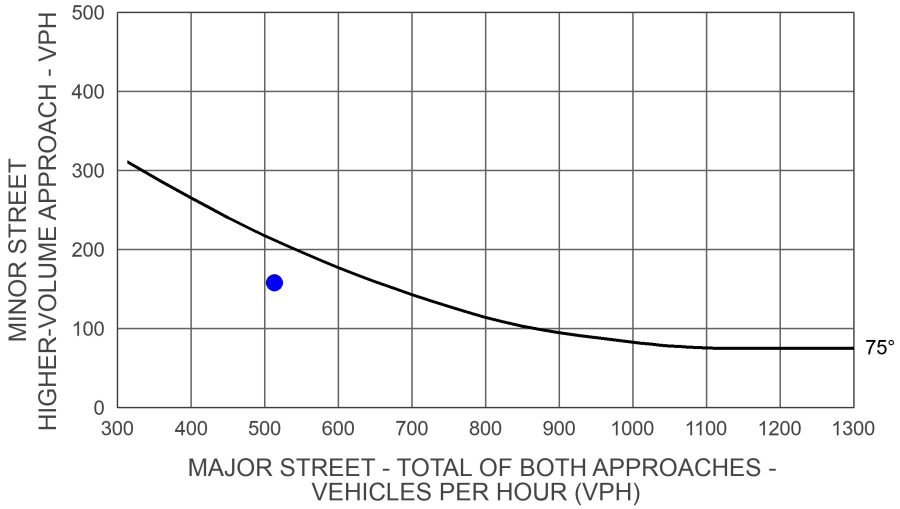


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 2



Major Total: 513
Minor High Volume: 158



Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	36	45	64	269	198	83
Future Vol, veh/h	36	45	64	269	198	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	39	49	70	292	215	90

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	692	260	305	0	-	0
Stage 1	260	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	410	779	1256	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	383	779	1256	-	-	-
Mov Cap-2 Maneuver	383	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	611	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1256	-	534	-	-
HCM Lane V/C Ratio	0.055	-	0.165	-	-
HCM Control Delay (s)	8	0	13.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	36	46	69	269	198	83
Future Vol, veh/h	36	46	69	269	198	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	39	50	75	292	215	90

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	702	260	305	0	-	0
Stage 1	260	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	404	779	1256	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	375	779	1256	-	-	-
Mov Cap-2 Maneuver	375	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	602	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1256	-	529	-	-
HCM Lane V/C Ratio	0.06	-	0.168	-	-
HCM Control Delay (s)	8	0	13.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	36	46	69	269	198	83
Future Vol, veh/h	36	46	69	269	198	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	39	50	75	292	215	90

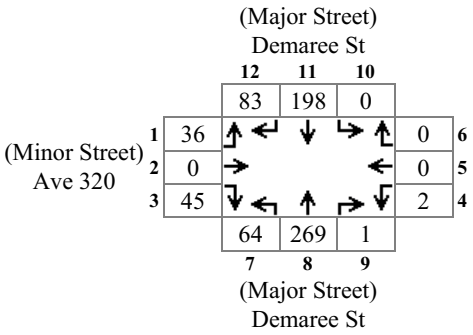
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	702	260	305	0	-	0
Stage 1	260	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	404	779	1256	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	375	779	1256	-	-	-
Mov Cap-2 Maneuver	375	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	602	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	1.6	0
HCM LOS	B		

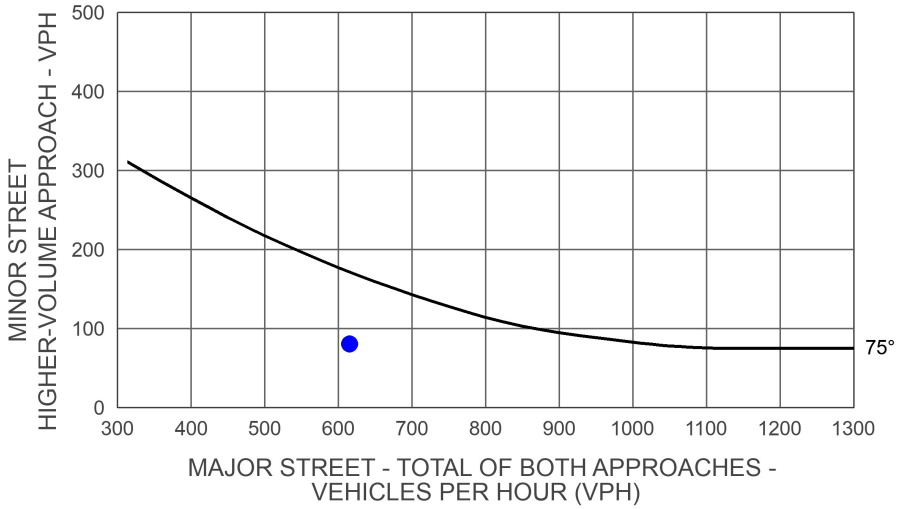
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1256	-	529	-	-
HCM Lane V/C Ratio	0.06	-	0.168	-	-
HCM Control Delay (s)	8	0	13.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 2

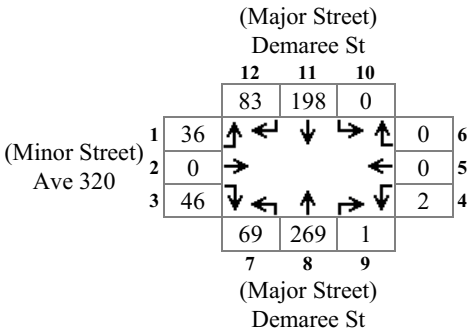


Major Total: 615
Minor High Volume: 81

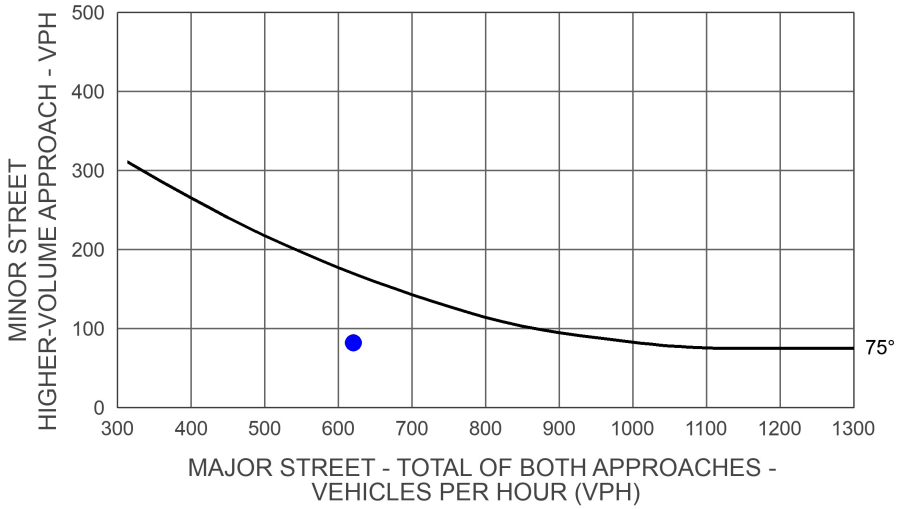


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 2



Major Total: 620
Minor High Volume: 82



Intersection 3
Linwood St & Project Road North

Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

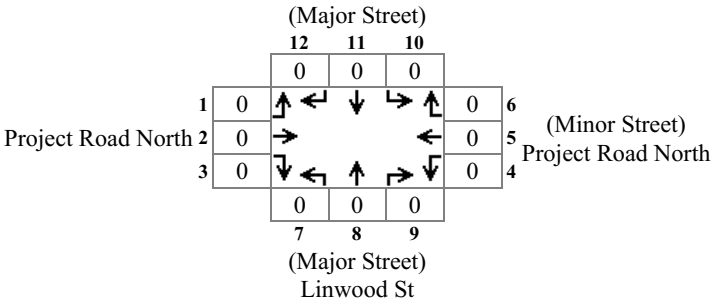
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

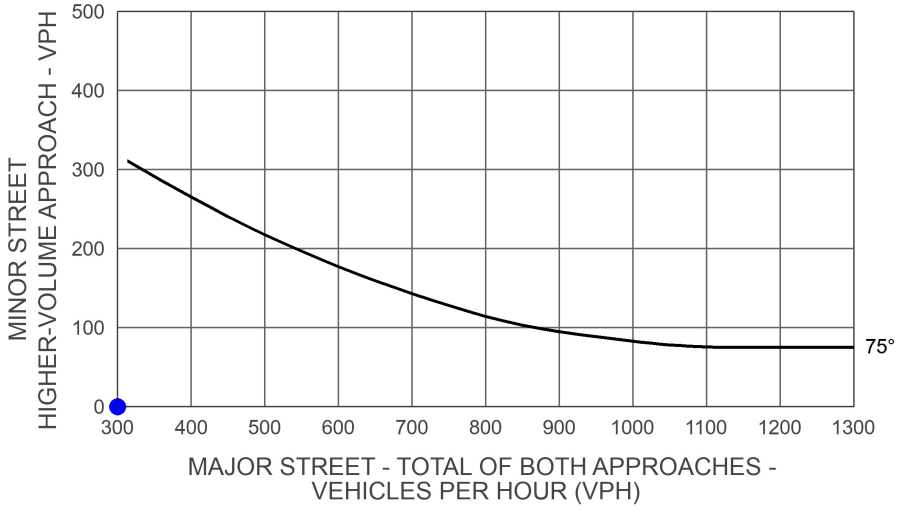
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 3

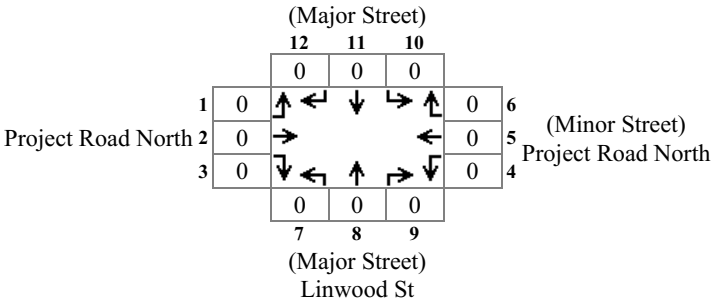


Major Total: 0
Minor High Volume: 0

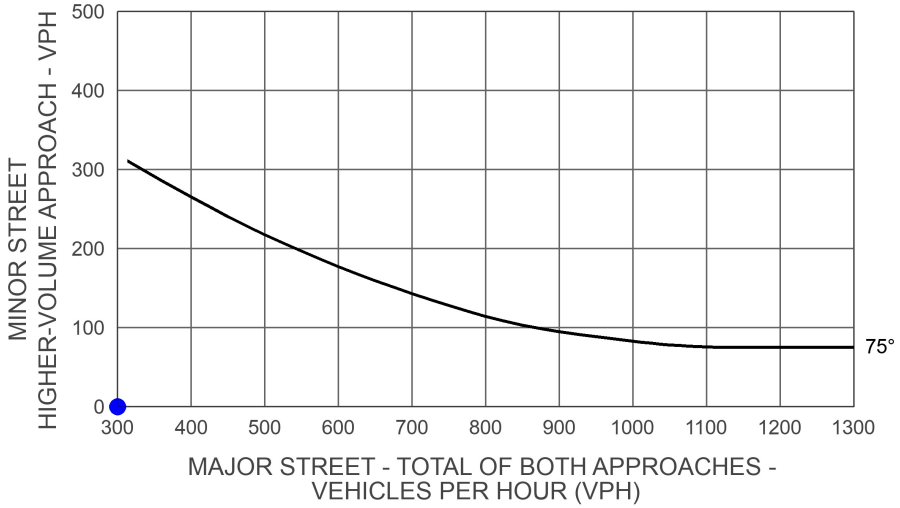


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 3



Major Total: 0
Minor High Volume: 0



Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

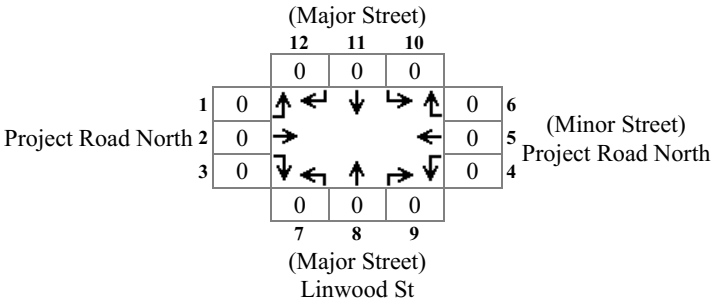
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

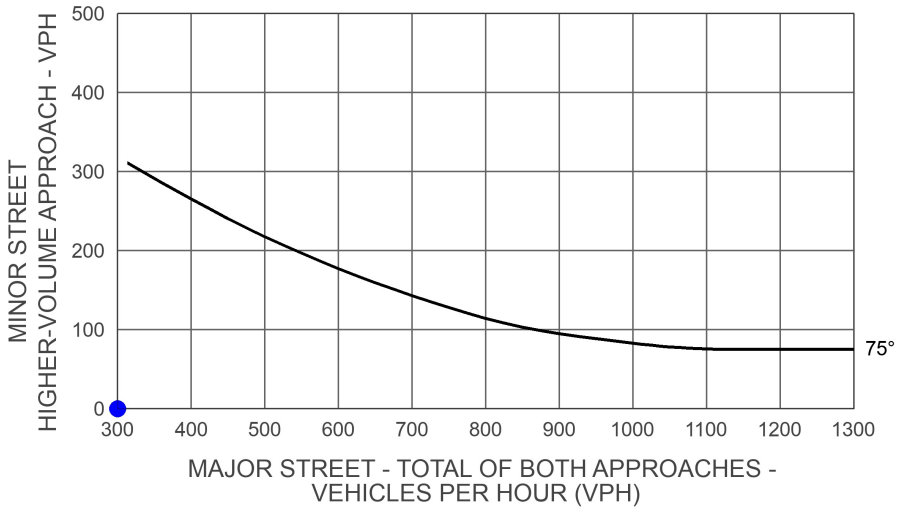
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 3

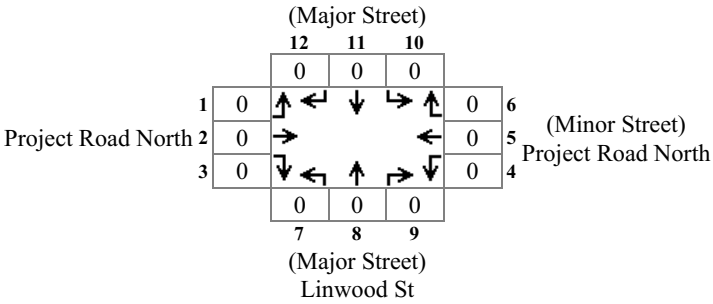


Major Total: 0
Minor High Volume: 0

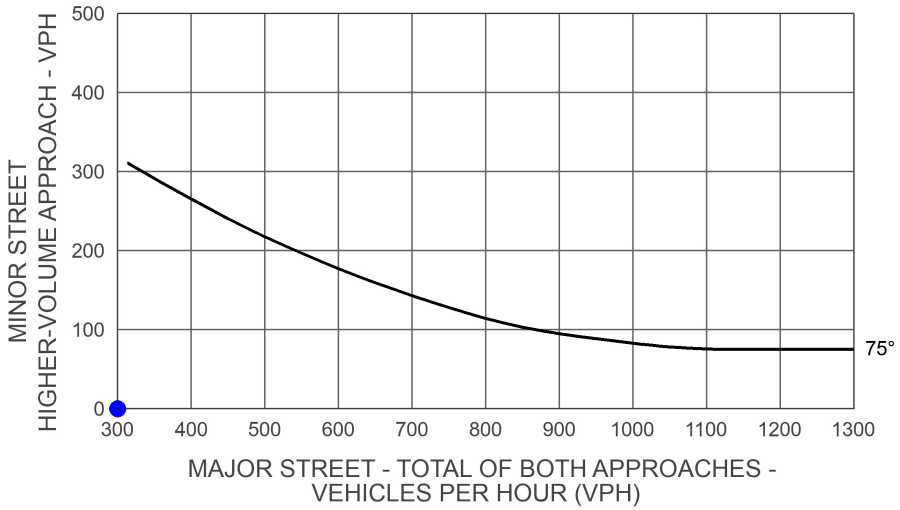


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 3



Major Total: 0
Minor High Volume: 0



Intersection 4
Demaree St & Arlet Ave

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	0	0	0	0	-	0
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	3	29	50	0	0	5
Future Vol, veh/h	3	29	50	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	3	32	54	0	0	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	112	3	5	0	-	0
Stage 1	3	-	-	-	-	-
Stage 2	109	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	885	1081	1616	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	856	1081	1616	-	-	-
Mov Cap-2 Maneuver	856	-	-	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	886	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	7.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1616	-	1055	-	-
HCM Lane V/C Ratio	0.034	-	0.033	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	3	29	50	0	0	5
Future Vol, veh/h	3	29	50	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	3	32	54	0	0	5

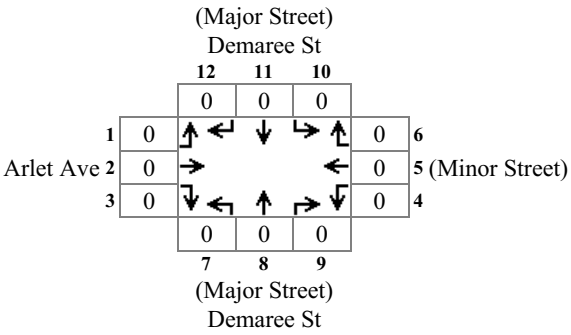
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	112	3	5	0	-	0
Stage 1	3	-	-	-	-	-
Stage 2	109	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	885	1081	1616	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	856	1081	1616	-	-	-
Mov Cap-2 Maneuver	856	-	-	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	886	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	7.3	0
HCM LOS	A		

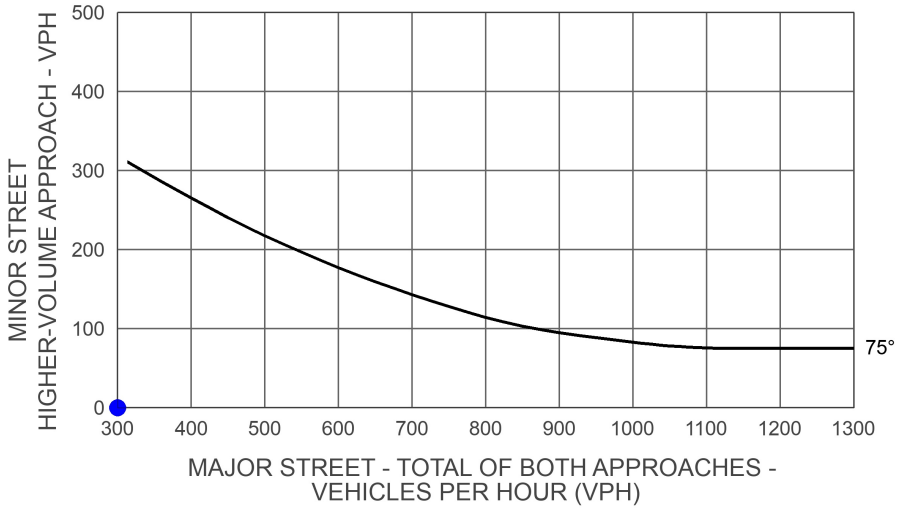
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1616	-	1055	-	-
HCM Lane V/C Ratio	0.034	-	0.033	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 4

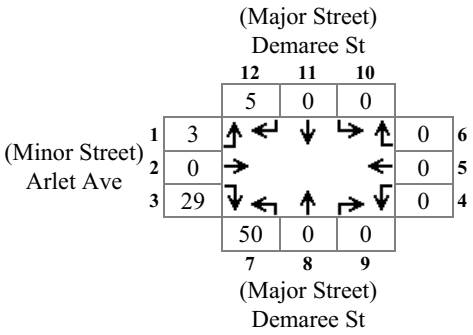


Major Total: 0
Minor High Volume: 0

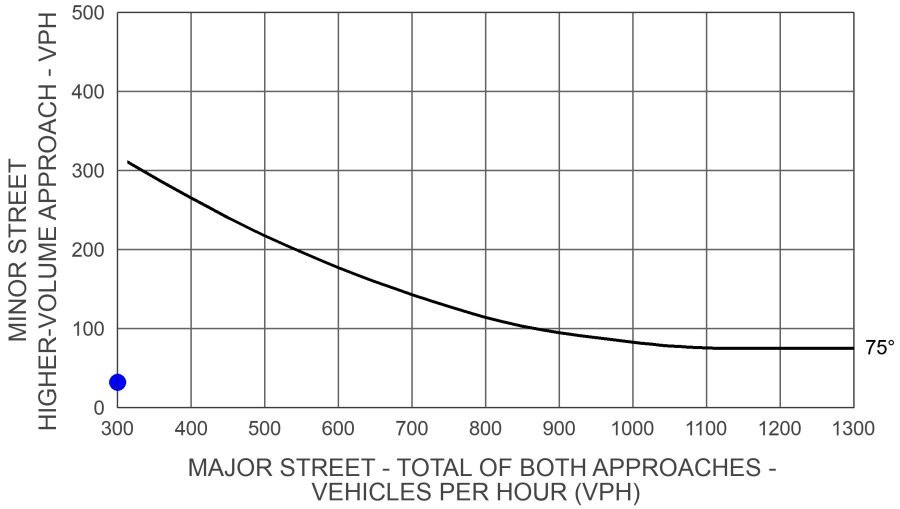


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 4



Major Total: 55
Minor High Volume: 32



Intersection	
Int Delay, s/veh	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	0	0	0	0	-	0
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	5	44	14	0	0	1
Future Vol, veh/h	5	44	14	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	5	48	15	0	0	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	31	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	30	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	983	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	974	1084	1622	-	-	-
Mov Cap-2 Maneuver	974	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	984	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	7.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1622	-	1072	-	-
HCM Lane V/C Ratio	0.009	-	0.05	-	-
HCM Control Delay (s)	7.2	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	5	44	14	0	0	1
Future Vol, veh/h	5	44	14	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	5	48	15	0	0	1

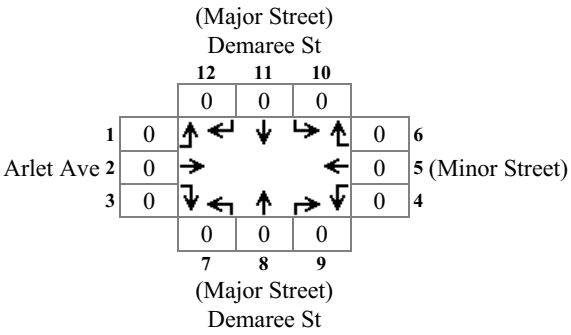
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	31	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	30	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	983	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	974	1084	1622	-	-	-
Mov Cap-2 Maneuver	974	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	984	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	7.2	0
HCM LOS	A		

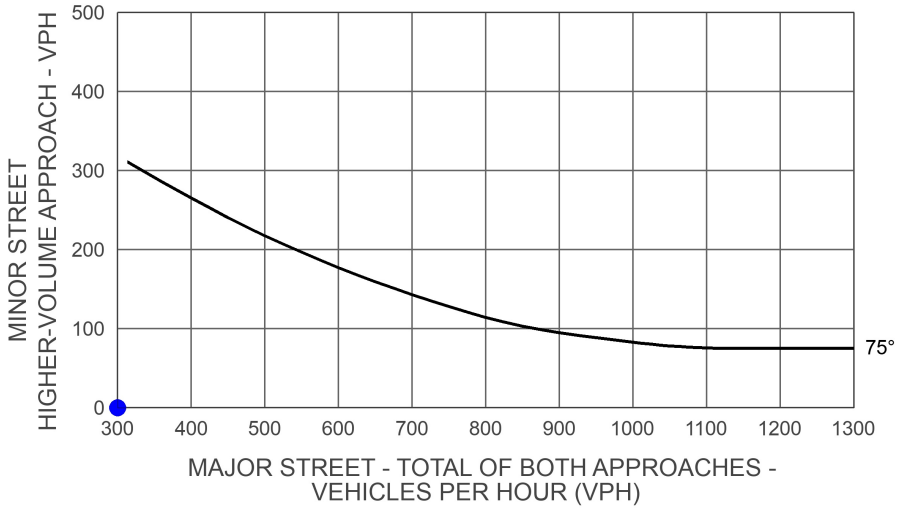
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1622	-	1072	-	-
HCM Lane V/C Ratio	0.009	-	0.05	-	-
HCM Control Delay (s)	7.2	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 4

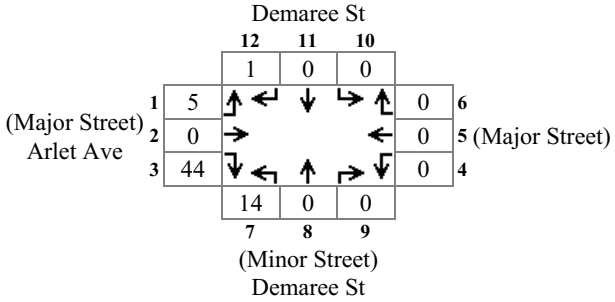


Major Total: 0
Minor High Volume: 0

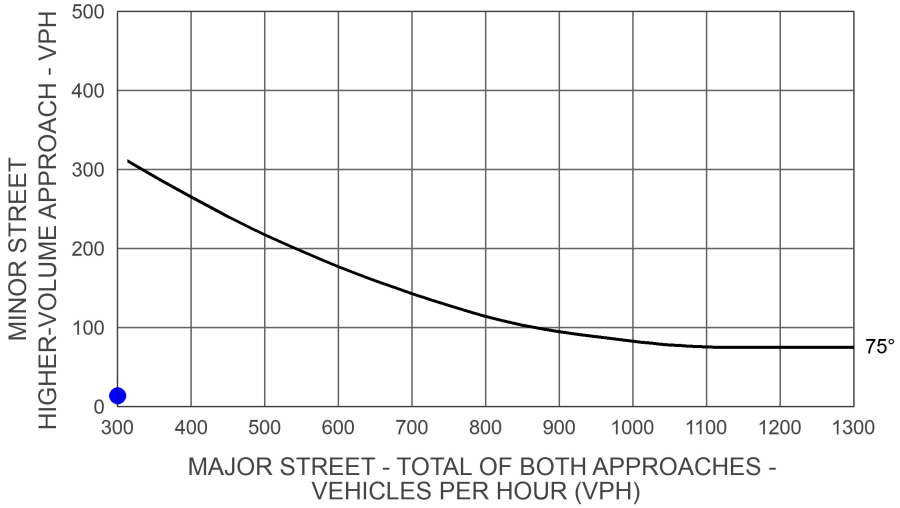


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 4



Major Total: 49
Minor High Volume: 14



Intersection 5
Demaree St & Pratt Rd

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	27	21	233	99	56	312
Future Vol, veh/h	27	21	233	99	56	312
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	29	23	253	108	61	339

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	714	253	0	0	253	0
Stage 1	253	-	-	-	-	-
Stage 2	461	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	398	786	-	-	1312	-
Stage 1	789	-	-	-	-	-
Stage 2	635	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	375	786	-	-	1312	-
Mov Cap-2 Maneuver	375	-	-	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	599	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	375	786	1312	-
HCM Lane V/C Ratio	-	-	0.078	0.029	0.046	-
HCM Control Delay (s)	-	-	15.4	9.7	7.9	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	0.1	-

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	27	32	272	99	63	334
Future Vol, veh/h	27	32	272	99	63	334
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	29	35	296	108	68	363

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	796	296	0	0	296	0
Stage 1	296	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	356	743	-	-	1265	-
Stage 1	755	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	332	743	-	-	1265	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	568	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	332	743	1265	-
HCM Lane V/C Ratio	-	-	0.088	0.047	0.054	-
HCM Control Delay (s)	-	-	16.9	10.1	8	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	0.2	-

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	27	32	272	99	63	334
Future Vol, veh/h	27	32	272	99	63	334
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	29	35	296	108	68	363

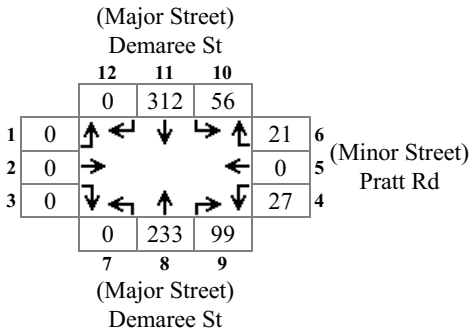
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	796	296	0	0	296	0
Stage 1	296	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	356	743	-	-	1265	-
Stage 1	755	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	332	743	-	-	1265	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	568	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	1.3
HCM LOS	B		

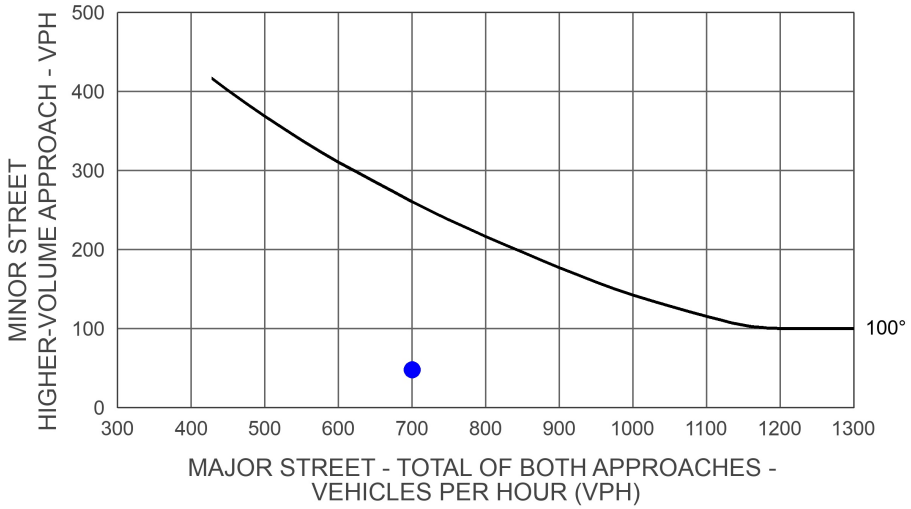
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	332	743	1265	-
HCM Lane V/C Ratio	-	-	0.088	0.047	0.054	-
HCM Control Delay (s)	-	-	16.9	10.1	8	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	0.2	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 5

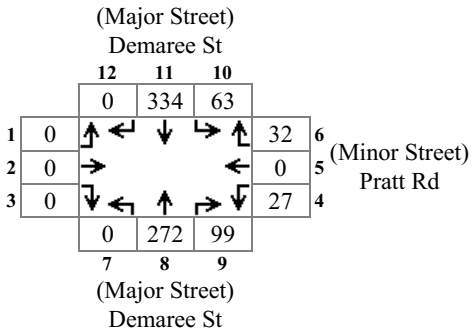


Major Total: 700
Minor High Volume: 48

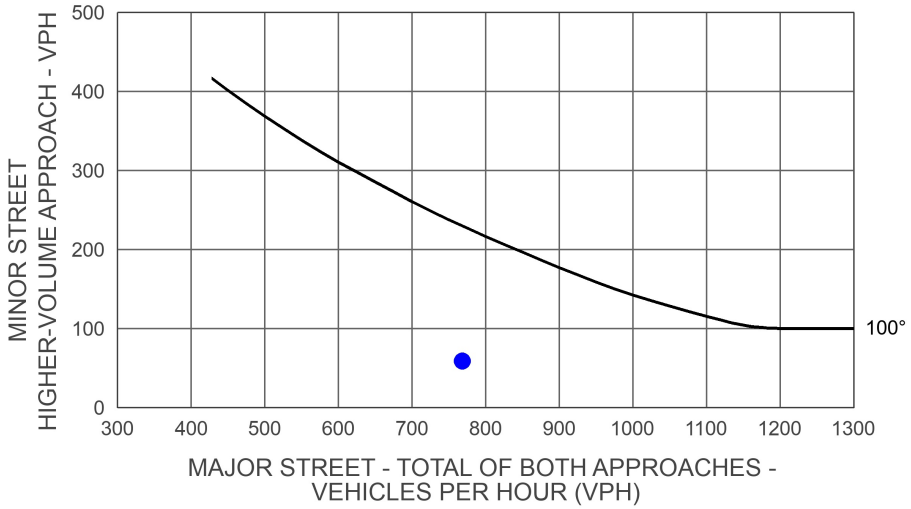


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 5



Major Total: 768
Minor High Volume: 59



Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	48	60	282	32	28	237
Future Vol, veh/h	48	60	282	32	28	237
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	52	65	307	35	30	258

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	625	307	0	0	307	0
Stage 1	307	-	-	-	-	-
Stage 2	318	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	449	733	-	-	1254	-
Stage 1	746	-	-	-	-	-
Stage 2	738	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	436	733	-	-	1254	-
Mov Cap-2 Maneuver	436	-	-	-	-	-
Stage 1	746	-	-	-	-	-
Stage 2	717	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	436	733	1254	-
HCM Lane V/C Ratio	-	-	0.12	0.089	0.024	-
HCM Control Delay (s)	-	-	14.4	10.4	7.9	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.3	0.1	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	48	63	293	32	39	271
Future Vol, veh/h	48	63	293	32	39	271
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	52	68	318	35	42	295

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	697	318	0	0	318	0
Stage 1	318	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	407	723	-	-	1242	-
Stage 1	738	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	391	723	-	-	1242	-
Mov Cap-2 Maneuver	391	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	664	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	391	723	1242	-
HCM Lane V/C Ratio	-	-	0.133	0.095	0.034	-
HCM Control Delay (s)	-	-	15.6	10.5	8	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.3	0.1	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	48	63	293	32	39	271
Future Vol, veh/h	48	63	293	32	39	271
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	52	68	318	35	42	295

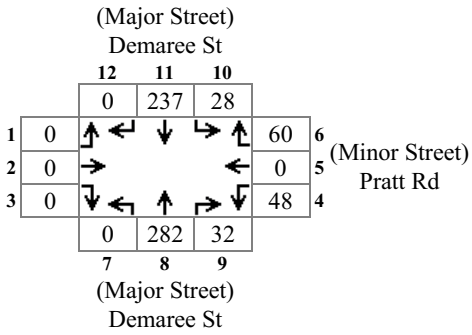
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	697	318	0	0	318	0
Stage 1	318	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	407	723	-	-	1242	-
Stage 1	738	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	391	723	-	-	1242	-
Mov Cap-2 Maneuver	391	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	664	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	1
HCM LOS	B		

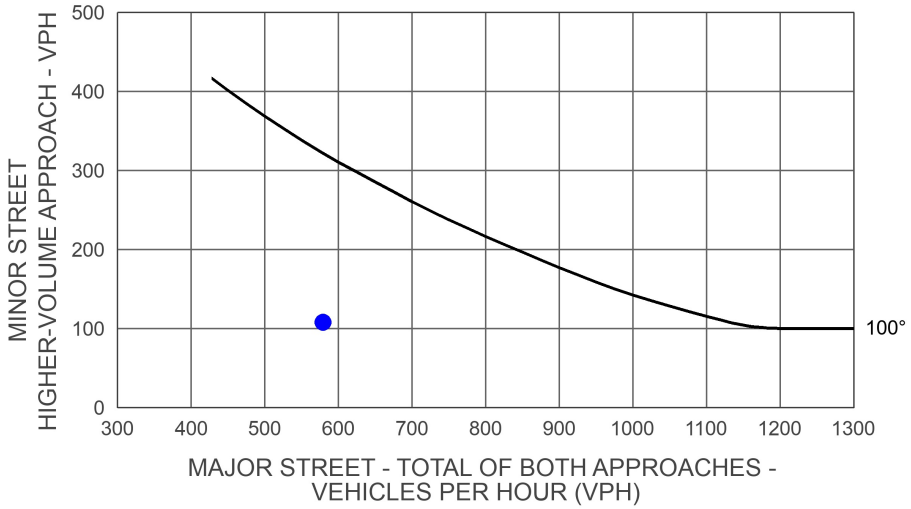
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	391	723	1242	-
HCM Lane V/C Ratio	-	-	0.133	0.095	0.034	-
HCM Control Delay (s)	-	-	15.6	10.5	8	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.3	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 5

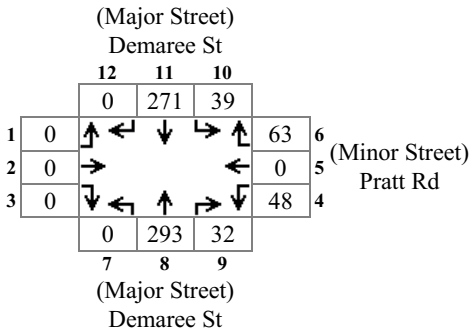


Major Total: 579
Minor High Volume: 108

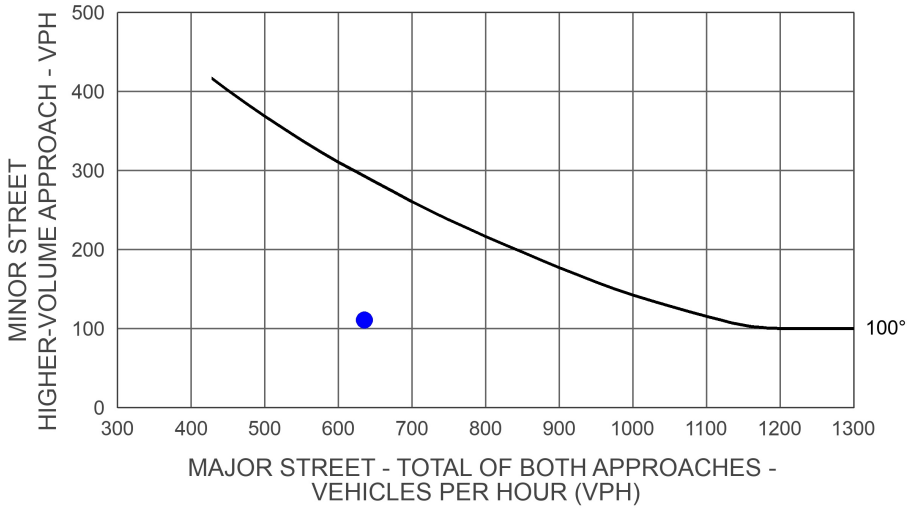


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 5



Major Total: 635
Minor High Volume: 111



Intersection 6
Country Center St & Pratt Rd

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	81	14	5	51	11	7
Future Vol, veh/h	81	14	5	51	11	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	88	15	5	55	12	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	103	0	162	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	66	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1489	-	829	960
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1489	-	826	960
Mov Cap-2 Maneuver	-	-	-	-	826	-
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	954	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	826	960	-	-	1489	-
HCM Lane V/C Ratio	0.014	0.008	-	-	0.004	-
HCM Control Delay (s)	9.4	8.8	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	86	16	5	59	14	7
Future Vol, veh/h	86	16	5	59	14	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	93	17	5	64	15	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	111	0	177	102
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	75	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1479	-	813	953
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1479	-	810	953
Mov Cap-2 Maneuver	-	-	-	-	810	-
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	945	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	810	953	-	-	1479	-
HCM Lane V/C Ratio	0.019	0.008	-	-	0.004	-
HCM Control Delay (s)	9.5	8.8	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	86	16	5	59	14	7
Future Vol, veh/h	86	16	5	59	14	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	93	17	5	64	15	8

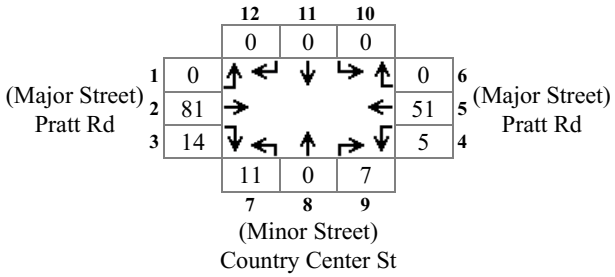
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	111	0	177	102
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	75	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1479	-	813	953
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1479	-	810	953
Mov Cap-2 Maneuver	-	-	-	-	810	-
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	945	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.3
HCM LOS			A

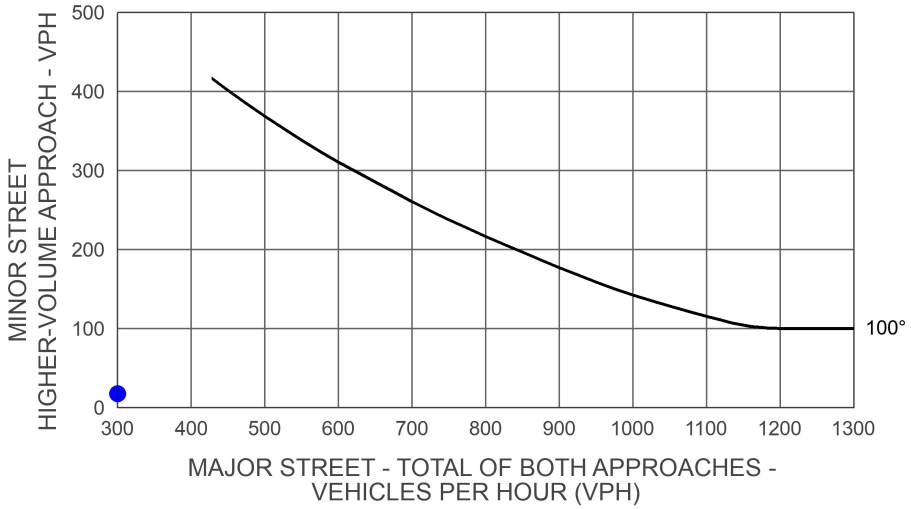
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	810	953	-	-	1479	-
HCM Lane V/C Ratio	0.019	0.008	-	-	0.004	-
HCM Control Delay (s)	9.5	8.8	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 6

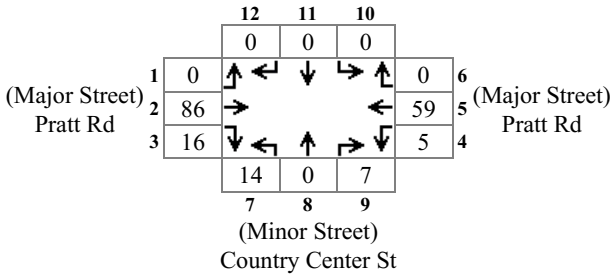


Major Total: 151
Minor High Volume: 18

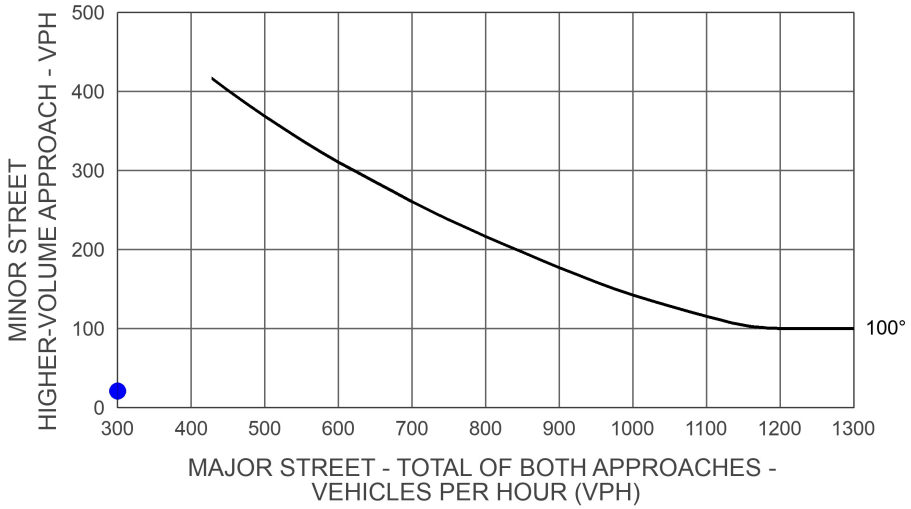


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 6



Major Total: 166
Minor High Volume: 21



Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	57	10	1	49	18	2
Future Vol, veh/h	57	10	1	49	18	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	62	11	1	53	20	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	73	0	122	67
Stage 1	-	-	-	-	67	-
Stage 2	-	-	-	-	55	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1527	-	873	997
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	968	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1527	-	872	997
Mov Cap-2 Maneuver	-	-	-	-	872	-
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	967	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	872	997	-	-	1527	-
HCM Lane V/C Ratio	0.022	0.002	-	-	0.001	-
HCM Control Delay (s)	9.2	8.6	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	65	13	1	51	19	2
Future Vol, veh/h	65	13	1	51	19	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	71	14	1	55	21	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	85	0	136	78
Stage 1	-	-	-	-	78	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1512	-	857	983
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1512	-	856	983
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	964	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	856	983	-	-	1512	-
HCM Lane V/C Ratio	0.024	0.002	-	-	0.001	-
HCM Control Delay (s)	9.3	8.7	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	65	13	1	51	19	2
Future Vol, veh/h	65	13	1	51	19	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	71	14	1	55	21	2

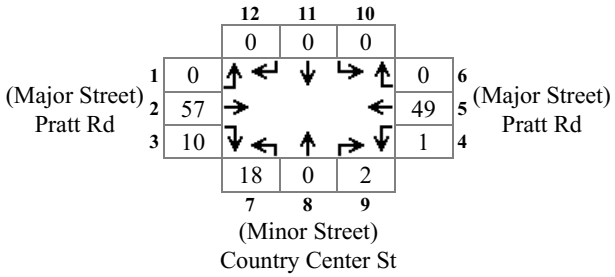
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	85	0	136	78
Stage 1	-	-	-	-	78	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1512	-	857	983
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1512	-	856	983
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	964	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.2
HCM LOS			A

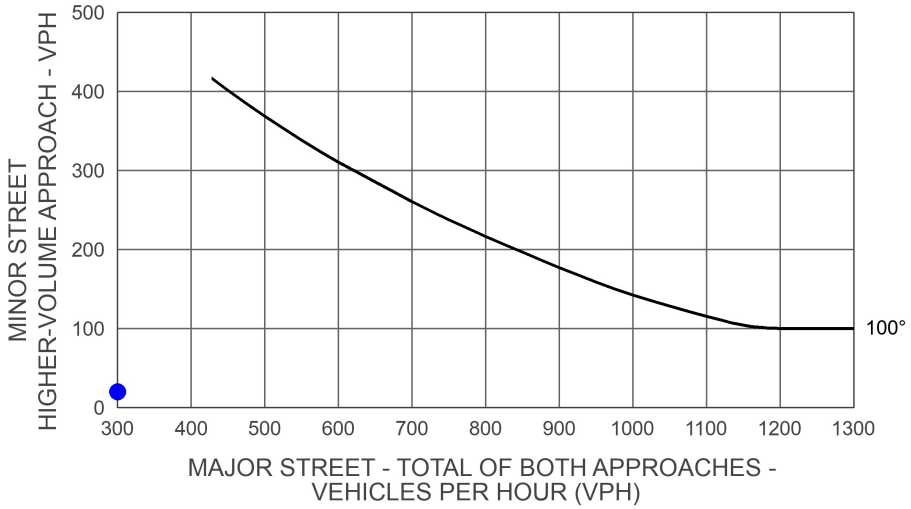
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	856	983	-	-	1512	-
HCM Lane V/C Ratio	0.024	0.002	-	-	0.001	-
HCM Control Delay (s)	9.3	8.7	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 6

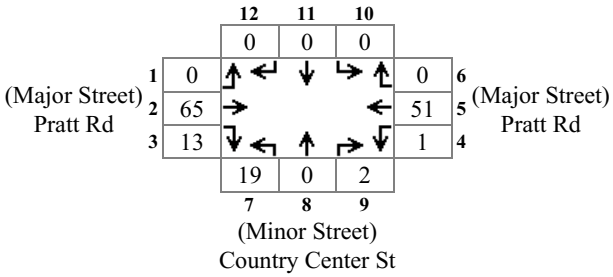


Major Total: 117
Minor High Volume: 20

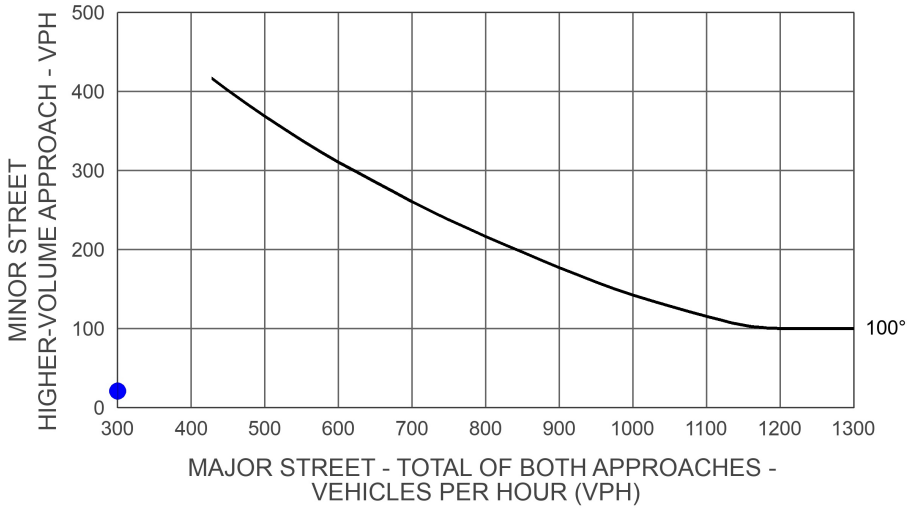


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 6



Major Total: 130
Minor High Volume: 21



Intersection 7
Mooney Blvd & Pratt Rd

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	87	56	0	0	0
Future Vol, veh/h	0	87	56	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	95	61	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	95	0	217	0
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	95	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	681	-
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	92	64	0	0	0
Future Vol, veh/h	0	92	64	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	100	70	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	100	0	239	0
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	100	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	662	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	92	64	0	0	0
Future Vol, veh/h	0	92	64	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	100	70	0	0	0

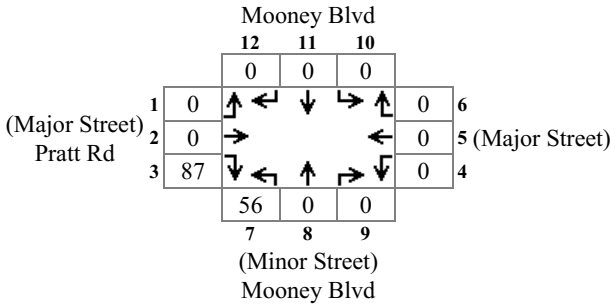
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	100	0	239	0
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	100	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	662	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

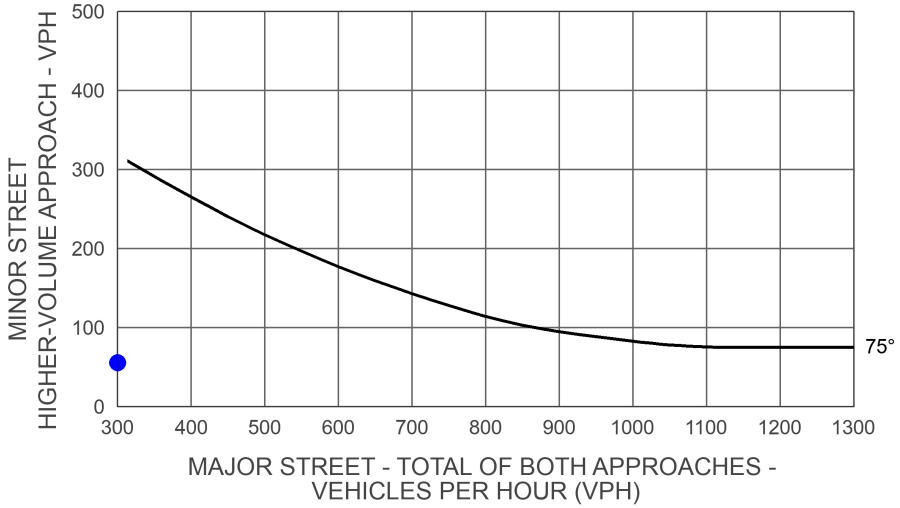
Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 7

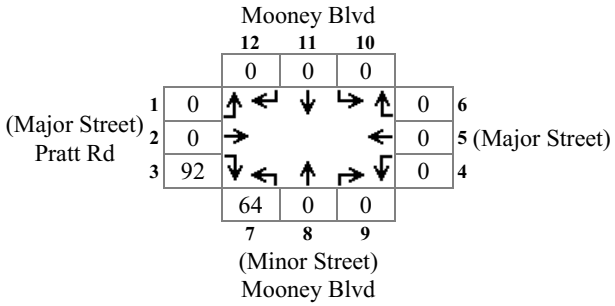


Major Total: 87
Minor High Volume: 56

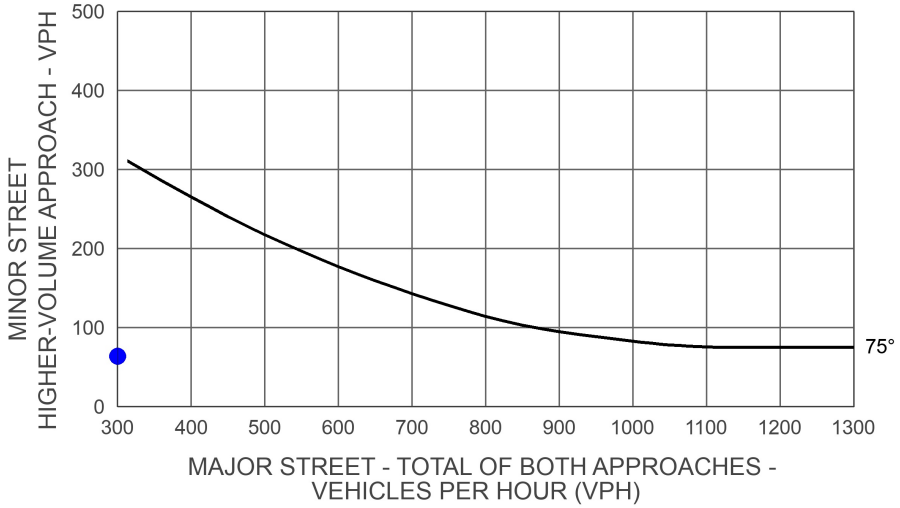


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 7



Major Total: 92
Minor High Volume: 64



Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	57	49	0	0	0
Future Vol, veh/h	0	57	49	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	62	53	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	62	0	169	0
Stage 1	-	-	-	-	107	-
Stage 2	-	-	-	-	62	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	724	-
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	65	51	0	0	0
Future Vol, veh/h	0	65	51	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	71	55	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	71	0	182	0
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	71	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	712	-
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	65	51	0	0	0
Future Vol, veh/h	0	65	51	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	71	55	0	0	0

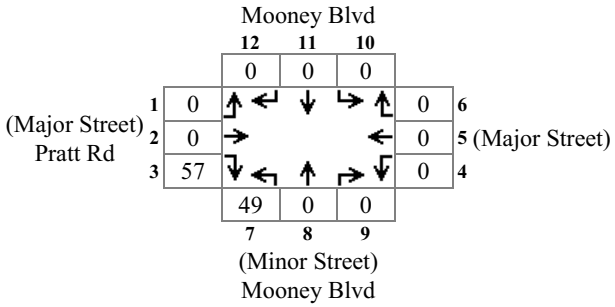
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	71	0	182	0
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	71	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	712	-
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

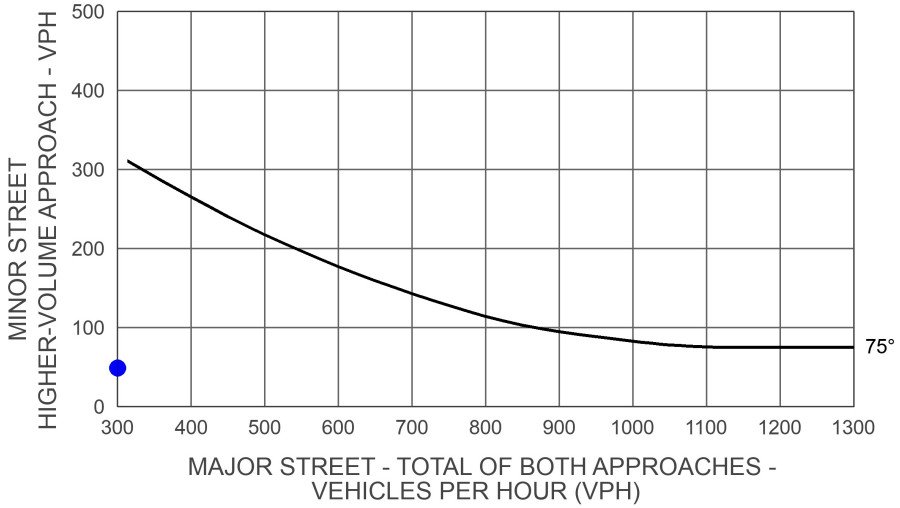
Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 7

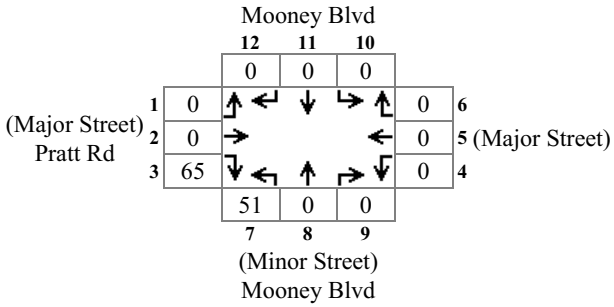


Major Total: 57
Minor High Volume: 49

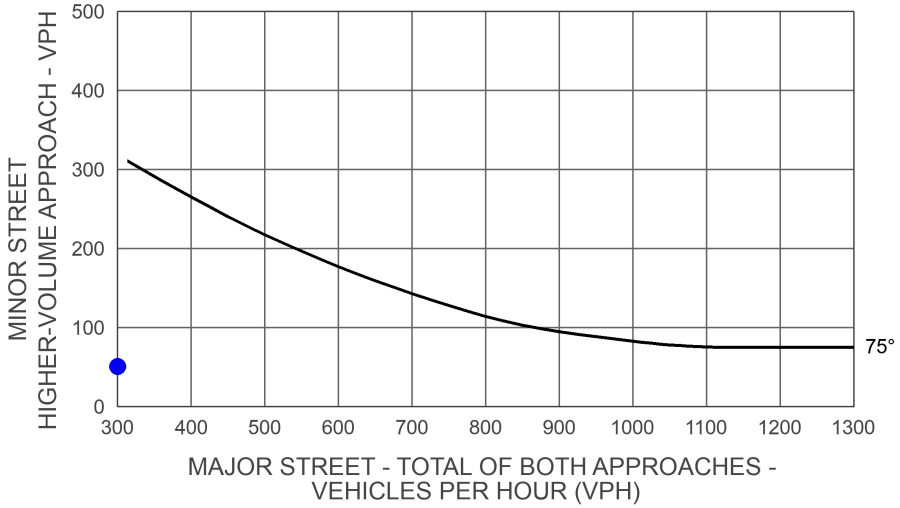


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 7



Major Total: 65
Minor High Volume: 51



Intersection 8
Akers St & Shannon Prkwy

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	98	0	0	0	73	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	98	0	0	0	73	0
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	107	0	0	0	79	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.5	7.4
HCM LOS	-	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	98	0	0	73
LT Vol	0	0	0	0
Through Vol	98	0	0	73
RT Vol	0	0	0	0
Lane Flow Rate	107	0	0	79
Geometry Grp	1	1	1	1
Degree of Util (X)	0.118	0	0	0.088
Departure Headway (Hd)	3.993	4.254	4.254	4.013
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	900	0	0	894
Service Time	2.007	2.329	2.329	2.032
HCM Lane V/C Ratio	0.119	0	0	0.088
HCM Control Delay	7.5	7.3	7.3	7.4
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.4	0	0	0.3

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	98	0	0	0	73	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	98	0	0	0	73	0
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	107	0	0	0	79	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.5	7.4
HCM LOS	-	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	98	0	0	73
LT Vol	0	0	0	0
Through Vol	98	0	0	73
RT Vol	0	0	0	0
Lane Flow Rate	107	0	0	79
Geometry Grp	1	1	1	1
Degree of Util (X)	0.118	0	0	0.088
Departure Headway (Hd)	3.993	4.254	4.254	4.013
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	900	0	0	894
Service Time	2.007	2.329	2.329	2.032
HCM Lane V/C Ratio	0.119	0	0	0.088
HCM Control Delay	7.5	7.3	7.3	7.4
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.4	0	0	0.3

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

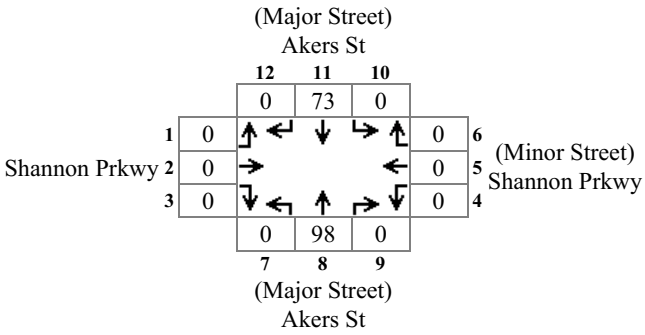
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	98	0	0	0	73	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	98	0	0	0	73	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	107	0	0	0	79	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.5	7.4
HCM LOS	-	-	A	A

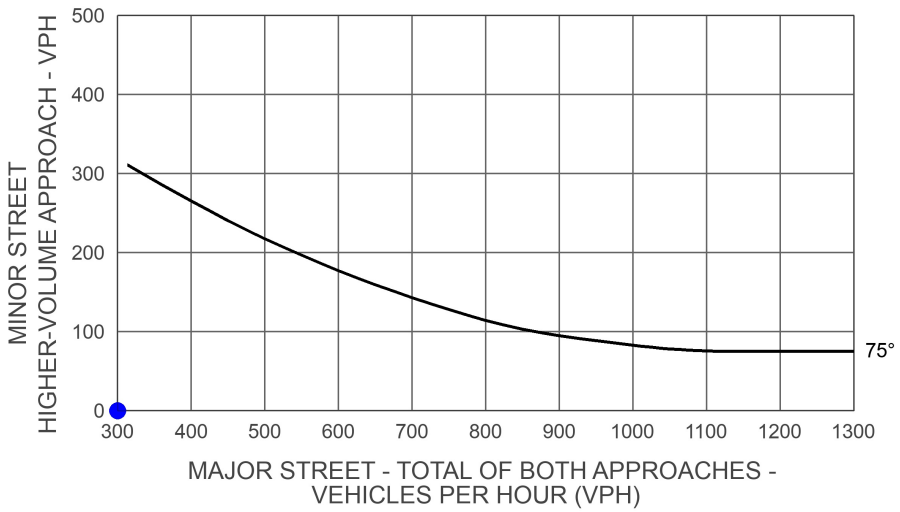
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	98	0	0	73
LT Vol	0	0	0	0
Through Vol	98	0	0	73
RT Vol	0	0	0	0
Lane Flow Rate	107	0	0	79
Geometry Grp	1	1	1	1
Degree of Util (X)	0.118	0	0	0.088
Departure Headway (Hd)	3.993	4.254	4.254	4.013
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	900	0	0	894
Service Time	2.007	2.329	2.329	2.032
HCM Lane V/C Ratio	0.119	0	0	0.088
HCM Control Delay	7.5	7.3	7.3	7.4
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.4	0	0	0.3

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 8

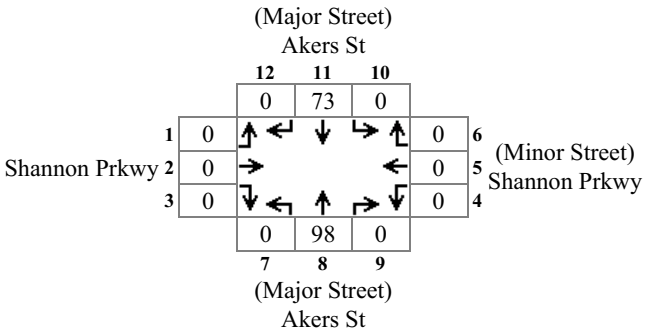


Major Total: 171
Minor High Volume: 0

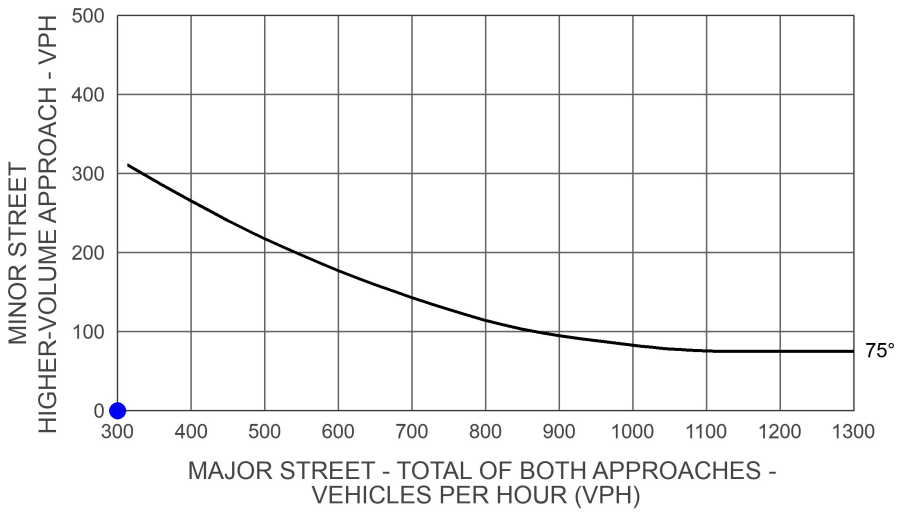


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 8



Major Total: 171
Minor High Volume: 0



Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	1	107	1	0	1	131	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	1	107	1	0	1	131	0
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	1	116	1	0	1	142	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.7	7.8
HCM LOS	-	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	0%	0%	1%
Vol Thru, %	98%	100%	100%	99%
Vol Right, %	1%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	109	0	0	132
LT Vol	1	0	0	1
Through Vol	107	0	0	131
RT Vol	1	0	0	0
Lane Flow Rate	118	0	0	143
Geometry Grp	1	1	1	1
Degree of Util (X)	0.133	0	0	0.16
Departure Headway (Hd)	4.037	4.492	4.492	4.023
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	887	0	0	892
Service Time	2.064	2.492	2.492	2.046
HCM Lane V/C Ratio	0.133	0	0	0.16
HCM Control Delay	7.7	7.5	7.5	7.8
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.5	0	0	0.6

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	1	107	1	0	1	131	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	1	107	1	0	1	131	0
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	1	116	1	0	1	142	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.7	7.8
HCM LOS	-	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	0%	0%	1%
Vol Thru, %	98%	100%	100%	99%
Vol Right, %	1%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	109	0	0	132
LT Vol	1	0	0	1
Through Vol	107	0	0	131
RT Vol	1	0	0	0
Lane Flow Rate	118	0	0	143
Geometry Grp	1	1	1	1
Degree of Util (X)	0.133	0	0	0.16
Departure Headway (Hd)	4.037	4.492	4.492	4.023
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	887	0	0	892
Service Time	2.064	2.492	2.492	2.046
HCM Lane V/C Ratio	0.133	0	0	0.16
HCM Control Delay	7.7	7.5	7.5	7.8
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.5	0	0	0.6

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

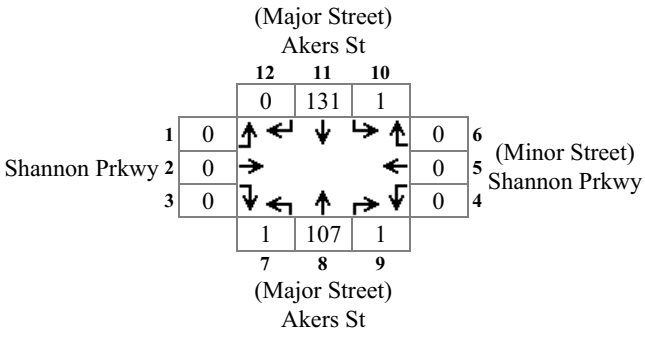
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	1	107	1	0	1	131	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	1	107	1	0	1	131	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	1	116	1	0	1	142	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	0	0	7.7	7.8
HCM LOS	-	-	A	A

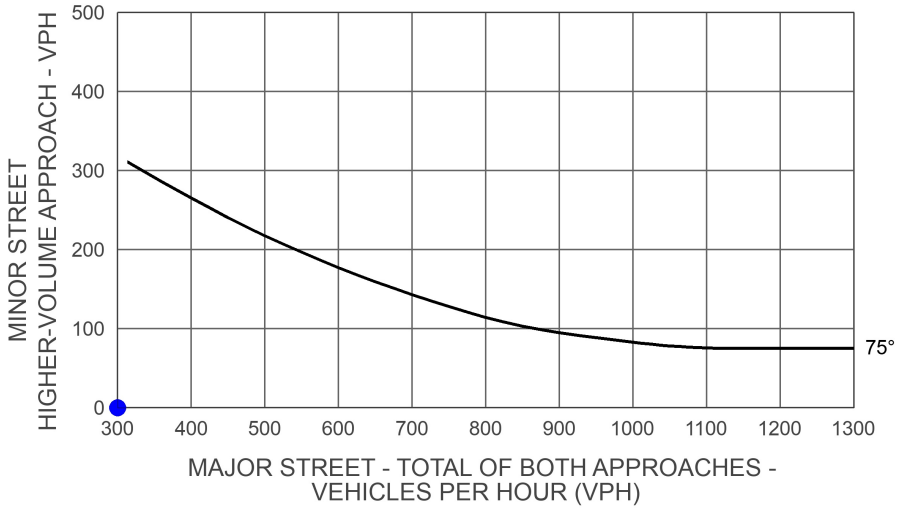
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	0%	0%	1%
Vol Thru, %	98%	100%	100%	99%
Vol Right, %	1%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	109	0	0	132
LT Vol	1	0	0	1
Through Vol	107	0	0	131
RT Vol	1	0	0	0
Lane Flow Rate	118	0	0	143
Geometry Grp	1	1	1	1
Degree of Util (X)	0.133	0	0	0.16
Departure Headway (Hd)	4.037	4.492	4.492	4.023
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	887	0	0	892
Service Time	2.064	2.492	2.492	2.046
HCM Lane V/C Ratio	0.133	0	0	0.16
HCM Control Delay	7.7	7.5	7.5	7.8
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.5	0	0	0.6

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 8

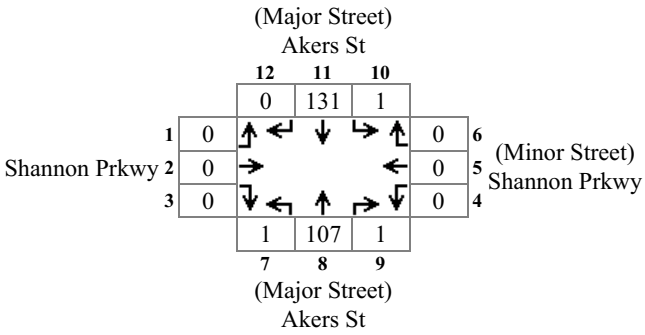


Major Total: 241
Minor High Volume: 0

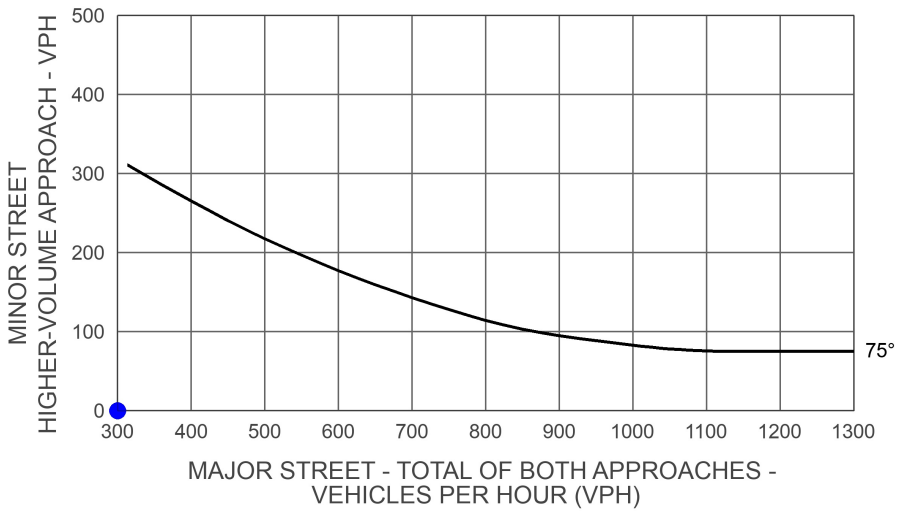


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 8



Major Total: 241
Minor High Volume: 0



Intersection 9
Linwood St & Shannon Prkwy

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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)	-	-	-	-	-	-	-	-
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)	-	-	-	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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)	-	-	-	-	-	-	-	-
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)	-	-	-	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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

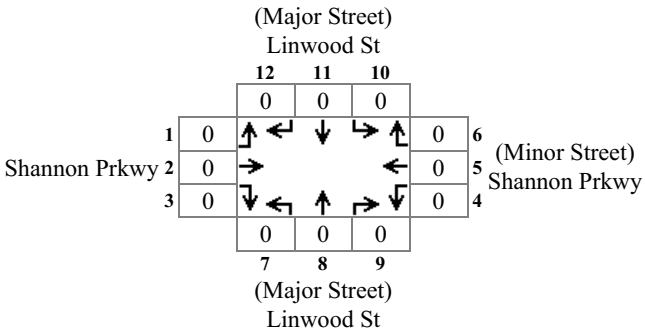
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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

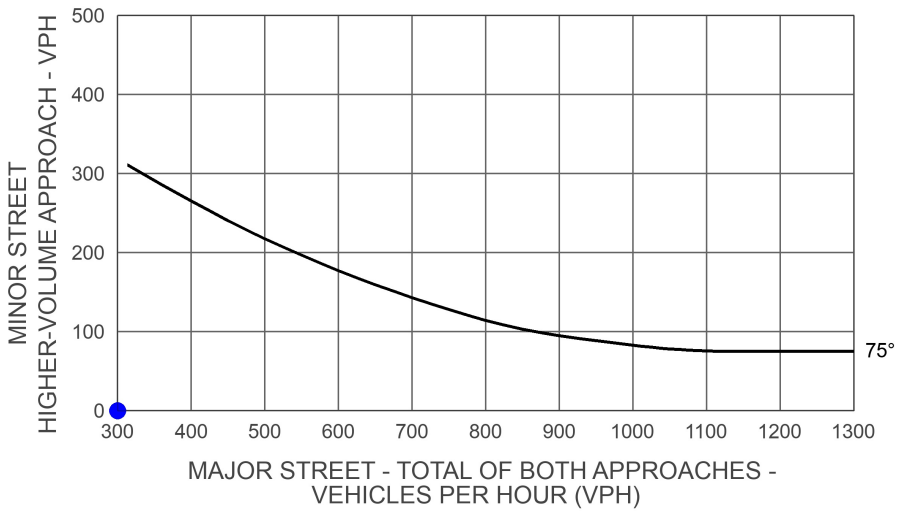
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 9

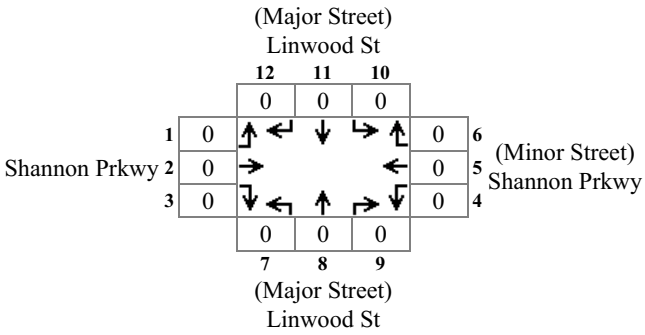


Major Total: 0
Minor High Volume: 0

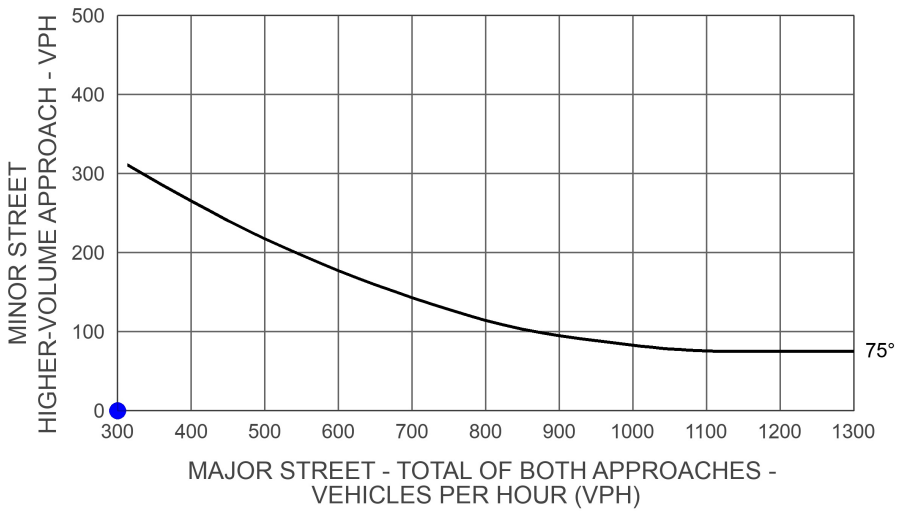


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 9



Major Total: 0
Minor High Volume: 0



Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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)	-	-	-	-	-	-	-	-
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)	-	-	-	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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)	-	-	-	-	-	-	-	-
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)	-	-	-	-	-	-	-	-

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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

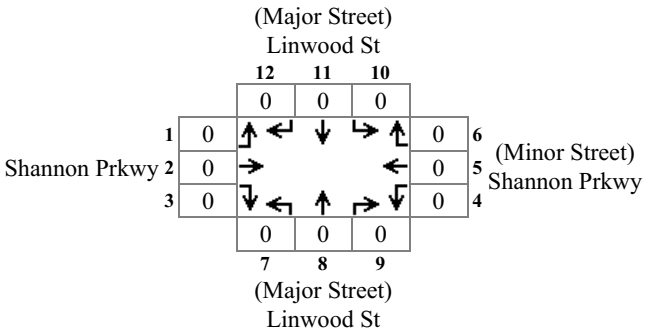
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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

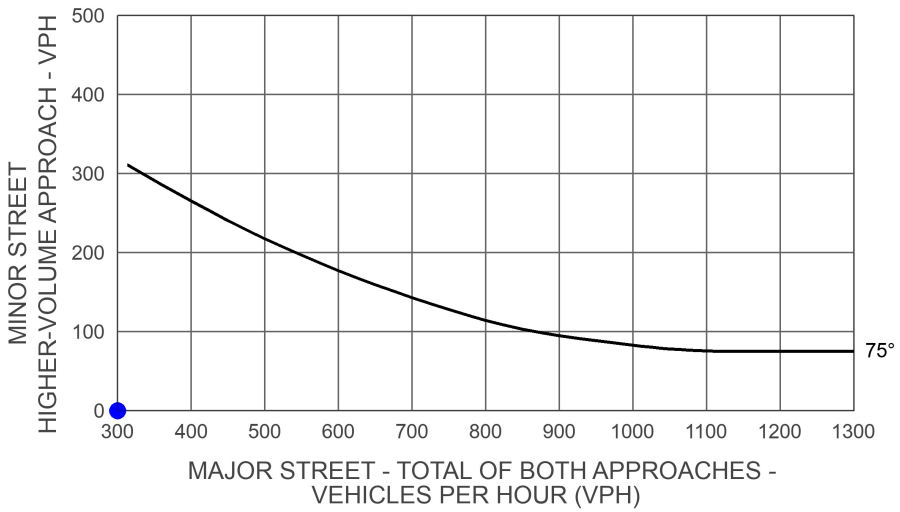
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-	-	-	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 9

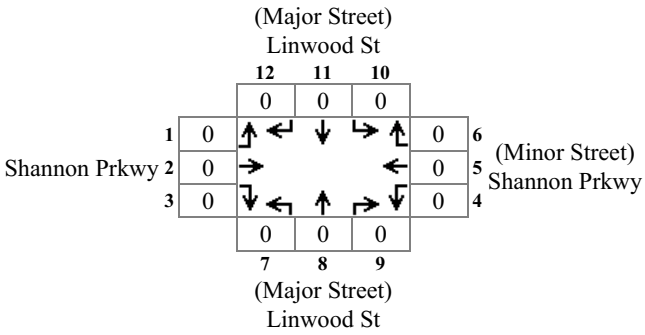


Major Total: 0
Minor High Volume: 0

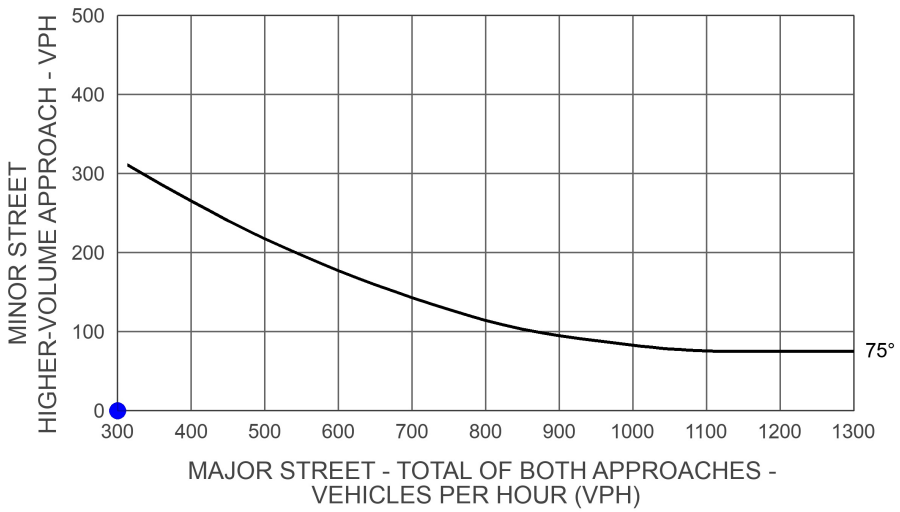


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 9



Major Total: 0
Minor High Volume: 0



Intersection 10
N Chinowth St & Shannon Prkwy

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	5	8	0
Future Vol, veh/h	0	1	1	5	8	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	5	9	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	7	0	-	0	5	4
Stage 1	-	-	-	-	4	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1614	-	-	-	1017	1080
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1614	-	-	-	1017	1080
Mov Cap-2 Maneuver	-	-	-	-	1017	-
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1614	-	-	-	1017
HCM Lane V/C Ratio	-	-	-	-	0.009
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	75	49	0
Future Vol, veh/h	0	1	1	75	49	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	82	53	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	83	0	-	0	43	42
Stage 1	-	-	-	-	42	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1514	-	-	-	968	1029
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1514	-	-	-	968	1029
Mov Cap-2 Maneuver	-	-	-	-	968	-
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1514	-	-	-	968
HCM Lane V/C Ratio	-	-	-	-	0.055
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	75	49	0
Future Vol, veh/h	0	1	1	75	49	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	82	53	0

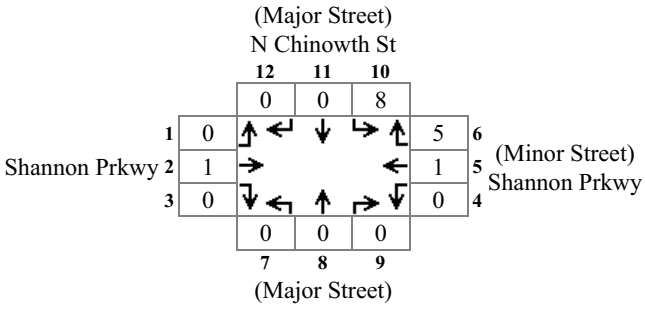
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	83	0	-	0	43	42
Stage 1	-	-	-	-	42	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1514	-	-	-	968	1029
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1514	-	-	-	968	1029
Mov Cap-2 Maneuver	-	-	-	-	968	-
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

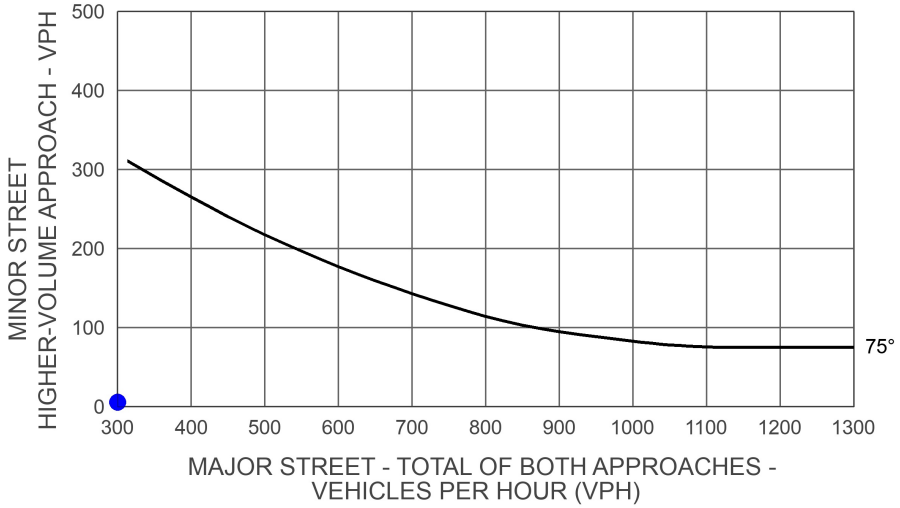
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1514	-	-	-	968
HCM Lane V/C Ratio	-	-	-	-	0.055
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 10

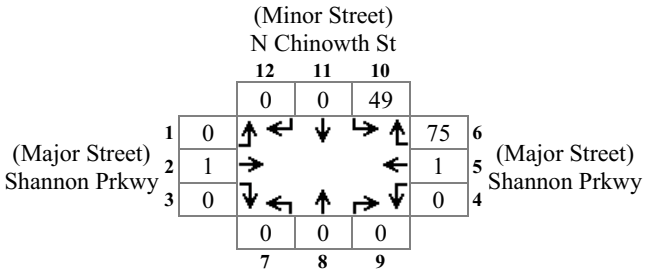


Major Total: 8
Minor High Volume: 6

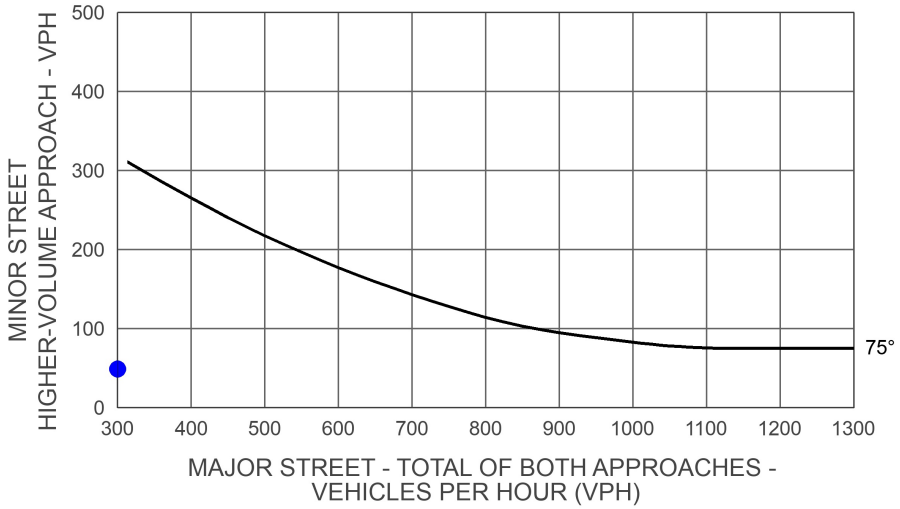


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 10



Major Total: 77
Minor High Volume: 49



Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	2	5	1
Future Vol, veh/h	0	1	1	2	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	2	5	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	3	0	-	0	3	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1619	-	-	-	1019	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1619	-	-	-	1019	1082
Mov Cap-2 Maneuver	-	-	-	-	1019	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1619	-	-	-	1029
HCM Lane V/C Ratio	-	-	-	-	0.006
HCM Control Delay (s)	0	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	23	68	1
Future Vol, veh/h	0	1	1	23	68	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	25	74	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	26	0	-	0	15	14
Stage 1	-	-	-	-	14	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1588	-	-	-	1004	1066
Stage 1	-	-	-	-	1009	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1588	-	-	-	1004	1066
Mov Cap-2 Maneuver	-	-	-	-	1004	-
Stage 1	-	-	-	-	1009	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1588	-	-	-	1005
HCM Lane V/C Ratio	-	-	-	-	0.075
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	23	68	1
Future Vol, veh/h	0	1	1	23	68	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	25	74	1

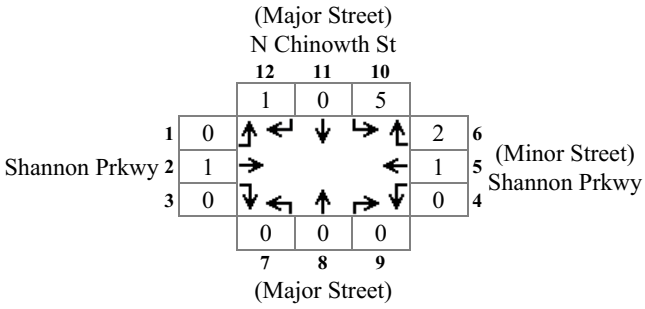
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	26	0	-	0	15	14
Stage 1	-	-	-	-	14	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1588	-	-	-	1004	1066
Stage 1	-	-	-	-	1009	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1588	-	-	-	1004	1066
Mov Cap-2 Maneuver	-	-	-	-	1004	-
Stage 1	-	-	-	-	1009	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

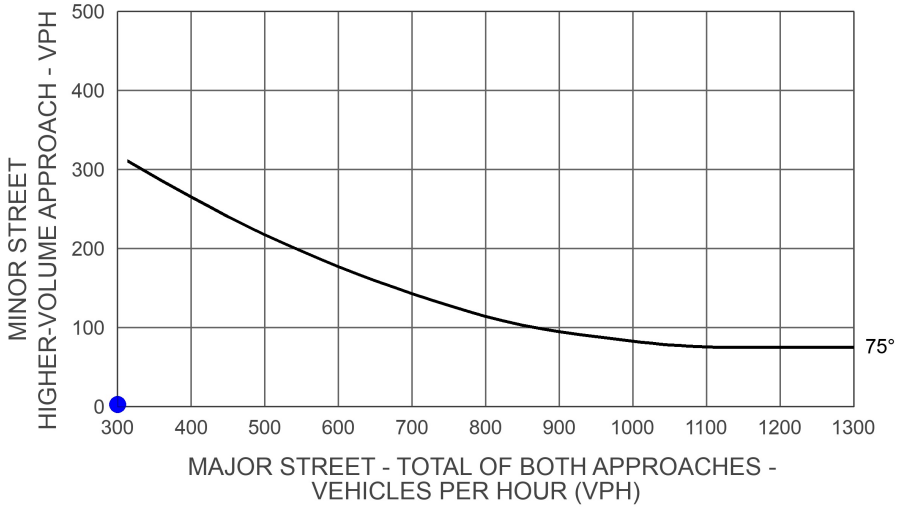
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1588	-	-	-	1005
HCM Lane V/C Ratio	-	-	-	-	0.075
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 10

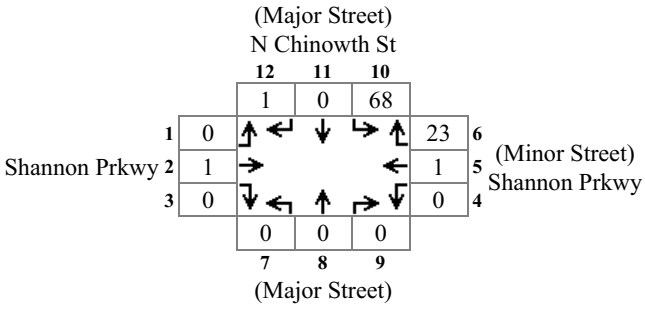


Major Total: 6
Minor High Volume: 3

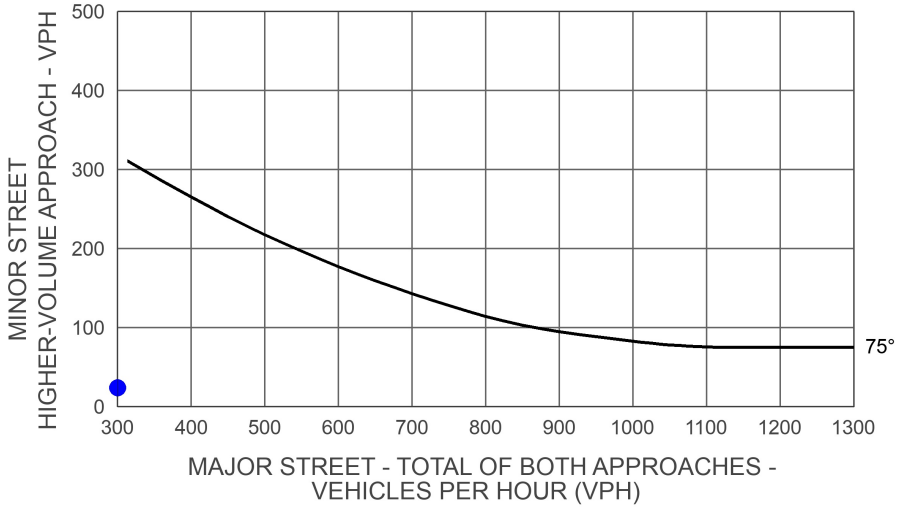


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 10



Major Total: 69
Minor High Volume: 24



Intersection 11
Coburn Ave & Shannon Prkwy

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	-	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	41	70	29	17	0
Future Vol, veh/h	0	41	70	29	17	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	45	76	32	18	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	108	0	-	0	137	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1483	-	-	-	856	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1483	-	-	-	856	965
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	977	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1483	-	-	-	856
HCM Lane V/C Ratio	-	-	-	-	0.022
HCM Control Delay (s)	0	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	41	70	29	17	0
Future Vol, veh/h	0	41	70	29	17	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	45	76	32	18	0

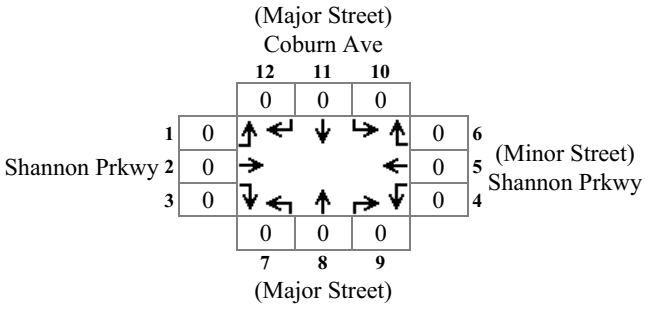
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	108	0	-	0	137	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1483	-	-	-	856	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1483	-	-	-	856	965
Mov Cap-2 Maneuver	-	-	-	-	856	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	977	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

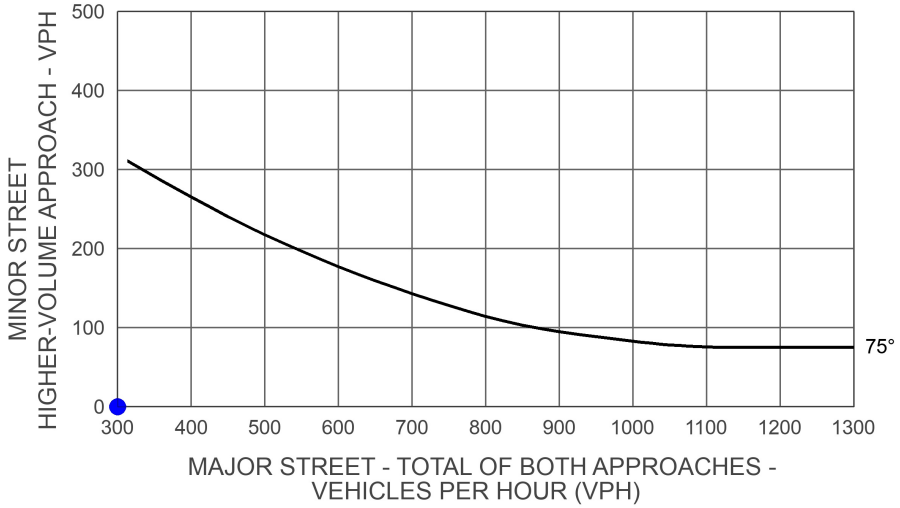
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1483	-	-	-	856
HCM Lane V/C Ratio	-	-	-	-	0.022
HCM Control Delay (s)	0	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 11

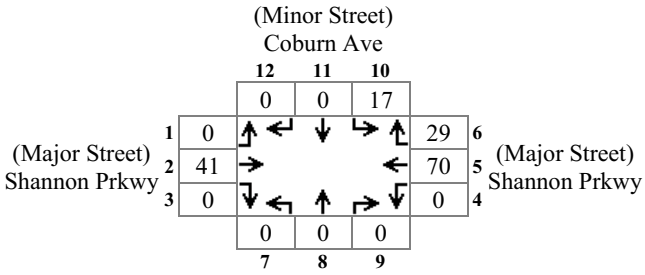


Major Total: 0
Minor High Volume: 0

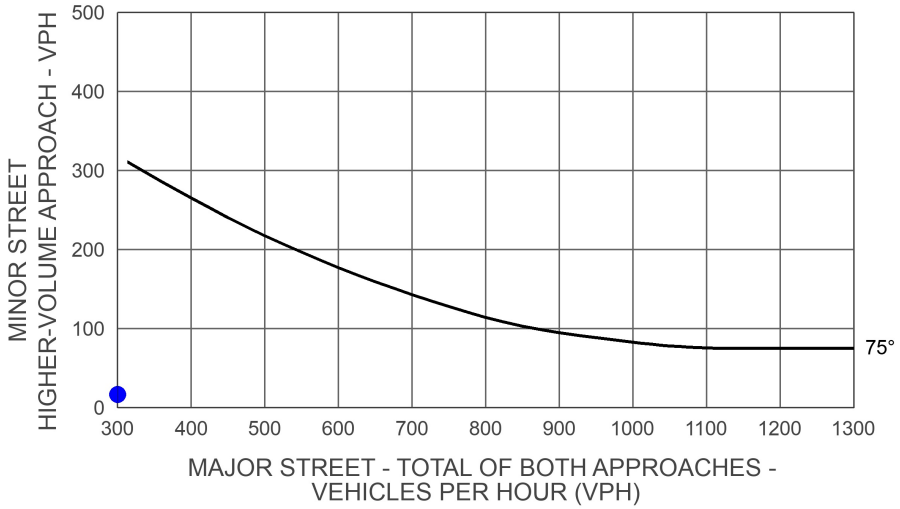


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 11



Major Total: 140
Minor High Volume: 17



Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	-	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	63	21	9	26	0
Future Vol, veh/h	0	63	21	9	26	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	68	23	10	28	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	33	0	-	0	96	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	68	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1579	-	-	-	903	1047
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1579	-	-	-	903	1047
Mov Cap-2 Maneuver	-	-	-	-	903	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	955	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1579	-	-	-	903
HCM Lane V/C Ratio	-	-	-	-	0.031
HCM Control Delay (s)	0	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	63	21	9	26	0
Future Vol, veh/h	0	63	21	9	26	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	68	23	10	28	0

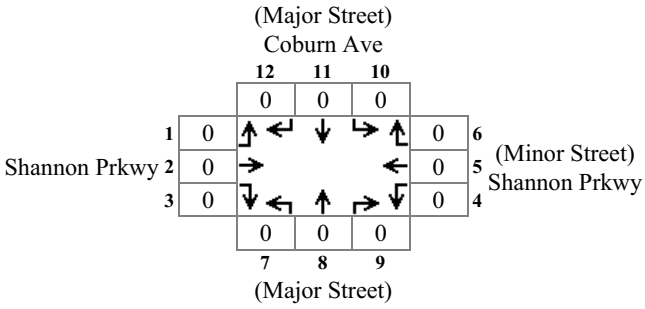
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	33	0	-	0	96	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	68	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1579	-	-	-	903	1047
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1579	-	-	-	903	1047
Mov Cap-2 Maneuver	-	-	-	-	903	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	955	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

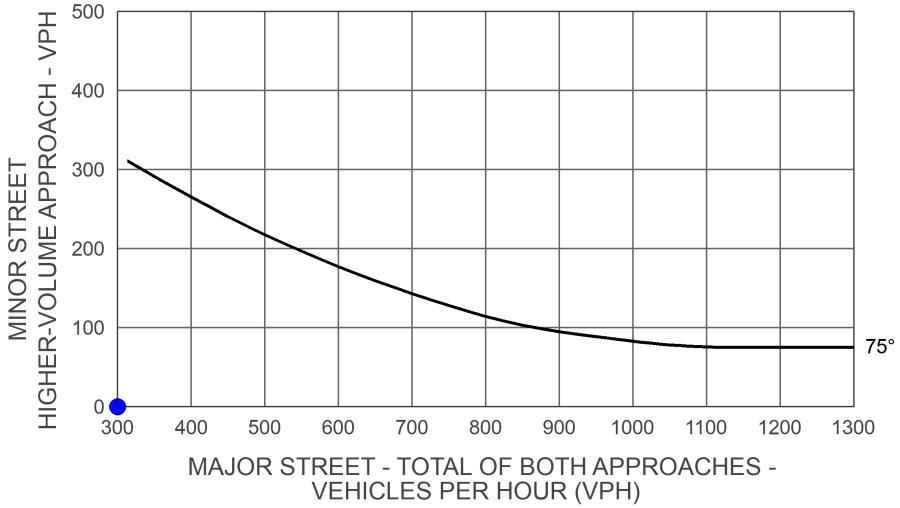
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1579	-	-	-	903
HCM Lane V/C Ratio	-	-	-	-	0.031
HCM Control Delay (s)	0	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 11

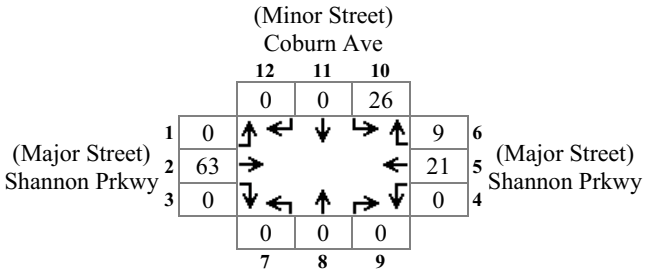


Major Total: 0
Minor High Volume: 0

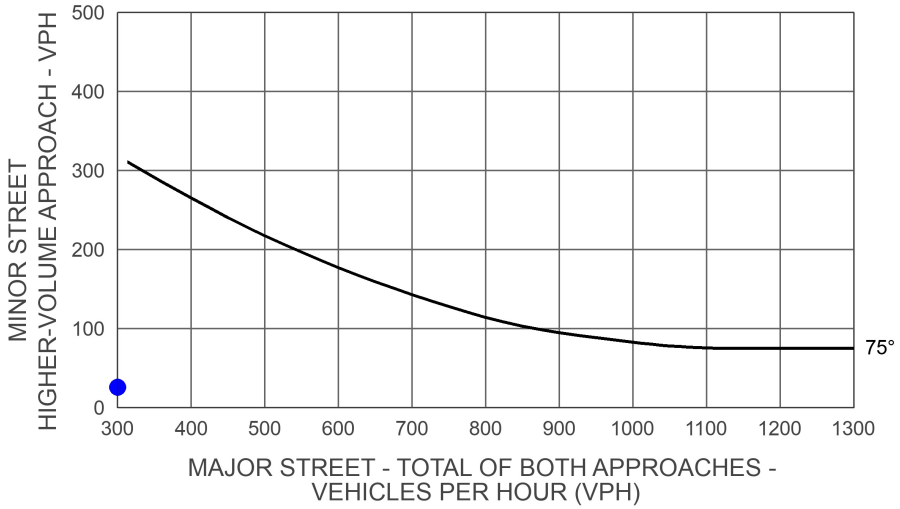


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 11



Major Total: 93
Minor High Volume: 26



Intersection 12
Demaree St & Shannon Prkwy

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	6	20	35	287	297	5
Future Vol, veh/h	6	20	35	287	297	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	7	22	38	312	323	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	558	326	328	0	-	0
Stage 1	326	-	-	-	-	-
Stage 2	232	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	475	714	1232	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	460	714	1232	-	-	-
Mov Cap-2 Maneuver	460	-	-	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	761	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1232	-	633	-	-
HCM Lane V/C Ratio	0.031	-	0.045	-	-
HCM Control Delay (s)	8	-	11	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	6	78	134	326	319	5
Future Vol, veh/h	6	78	134	326	319	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	7	85	146	354	347	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	817	349	352	0	-	0
Stage 1	349	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	330	693	1207	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	290	693	1207	-	-	-
Mov Cap-2 Maneuver	290	-	-	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	2.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1207	-	630	-	-
HCM Lane V/C Ratio	0.121	-	0.145	-	-
HCM Control Delay (s)	8.4	-	11.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.5	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	6	78	134	326	319	5
Future Vol, veh/h	6	78	134	326	319	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	7	85	146	354	347	5

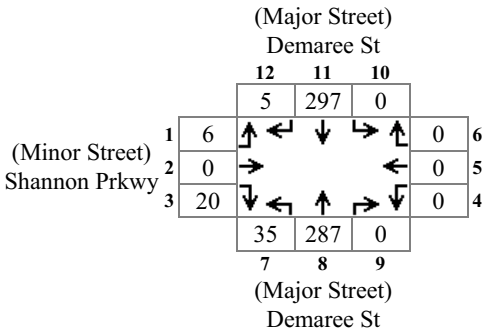
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	817	349	352	0	-	0
Stage 1	349	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	330	693	1207	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	290	693	1207	-	-	-
Mov Cap-2 Maneuver	290	-	-	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	2.4	0
HCM LOS	B		

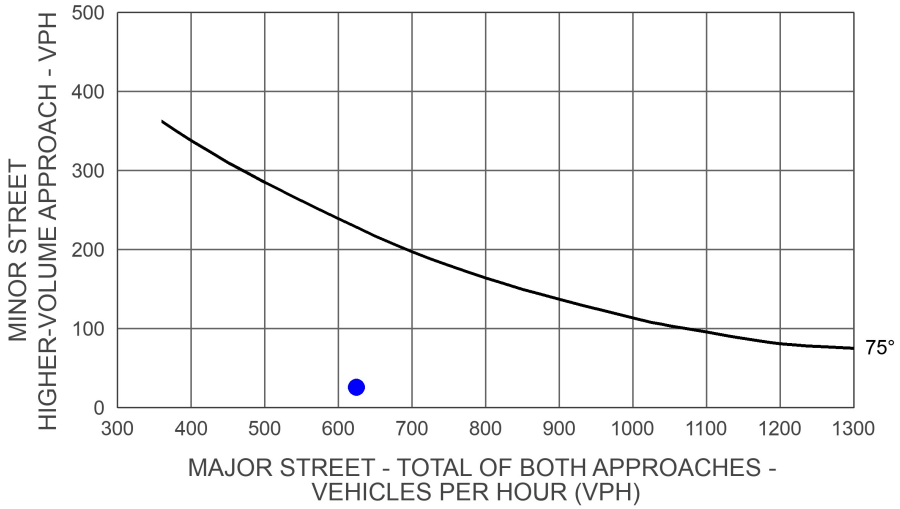
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1207	-	630	-	-
HCM Lane V/C Ratio	0.121	-	0.145	-	-
HCM Control Delay (s)	8.4	-	11.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.5	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 12

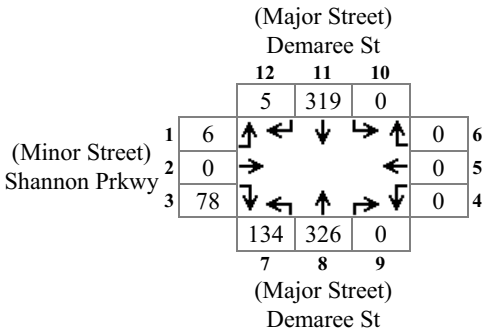


Major Total: 624
Minor High Volume: 26

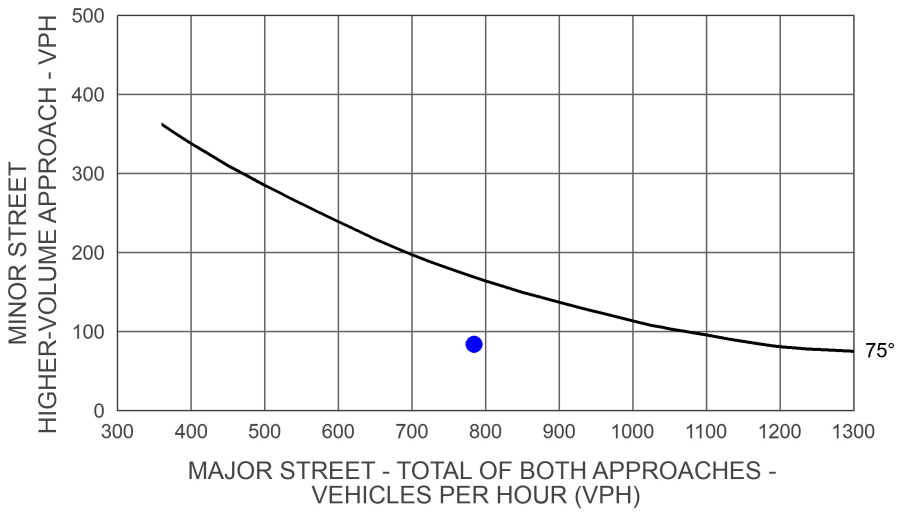


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 12



Major Total: 784
Minor High Volume: 84



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	5	28	4	288	206	2
Future Vol, veh/h	5	28	4	288	206	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	5	30	4	313	224	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	390	225	226	0	-	0
Stage 1	225	-	-	-	-	-
Stage 2	165	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	600	814	1342	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	598	814	1342	-	-	-
Mov Cap-2 Maneuver	598	-	-	-	-	-
Stage 1	812	-	-	-	-	-
Stage 2	845	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1342	-	772	-	-
HCM Lane V/C Ratio	0.003	-	0.046	-	-
HCM Control Delay (s)	7.7	-	9.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	5	116	33	299	240	2
Future Vol, veh/h	5	116	33	299	240	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	5	126	36	325	261	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	496	262	263	0	-	0
Stage 1	262	-	-	-	-	-
Stage 2	234	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	518	776	1301	-	-	-
Stage 1	781	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	504	776	1301	-	-	-
Mov Cap-2 Maneuver	504	-	-	-	-	-
Stage 1	781	-	-	-	-	-
Stage 2	761	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1301	-	759	-	-
HCM Lane V/C Ratio	0.028	-	0.173	-	-
HCM Control Delay (s)	7.8	-	10.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	5	116	33	299	240	2
Future Vol, veh/h	5	116	33	299	240	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	5	126	36	325	261	2

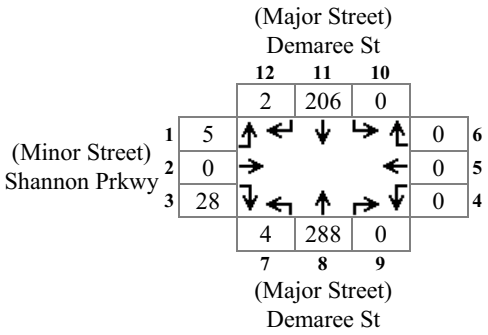
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	496	262	263	0	-	0
Stage 1	262	-	-	-	-	-
Stage 2	234	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	518	776	1301	-	-	-
Stage 1	781	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	504	776	1301	-	-	-
Mov Cap-2 Maneuver	504	-	-	-	-	-
Stage 1	781	-	-	-	-	-
Stage 2	761	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.8	0
HCM LOS	B		

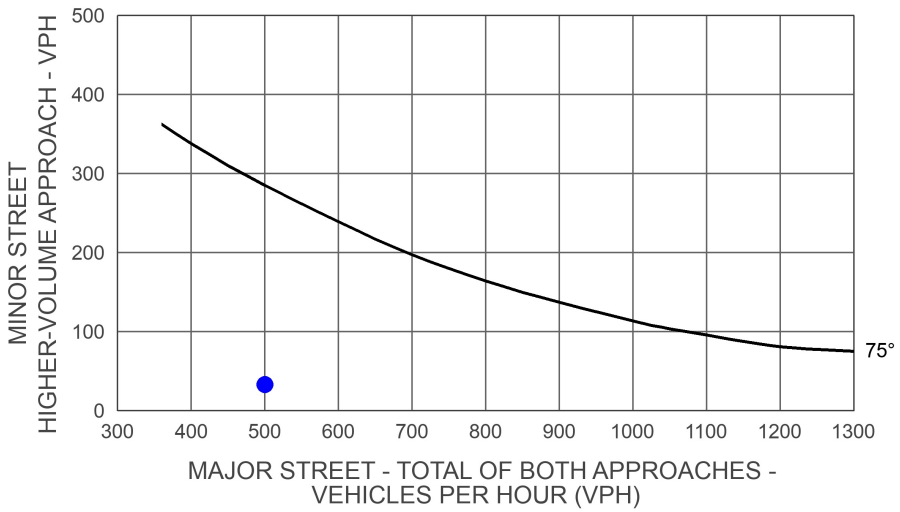
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1301	-	759	-	-
HCM Lane V/C Ratio	0.028	-	0.173	-	-
HCM Control Delay (s)	7.8	-	10.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 12

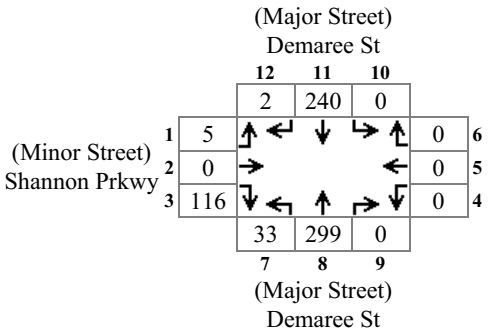


Major Total: 500
Minor High Volume: 33

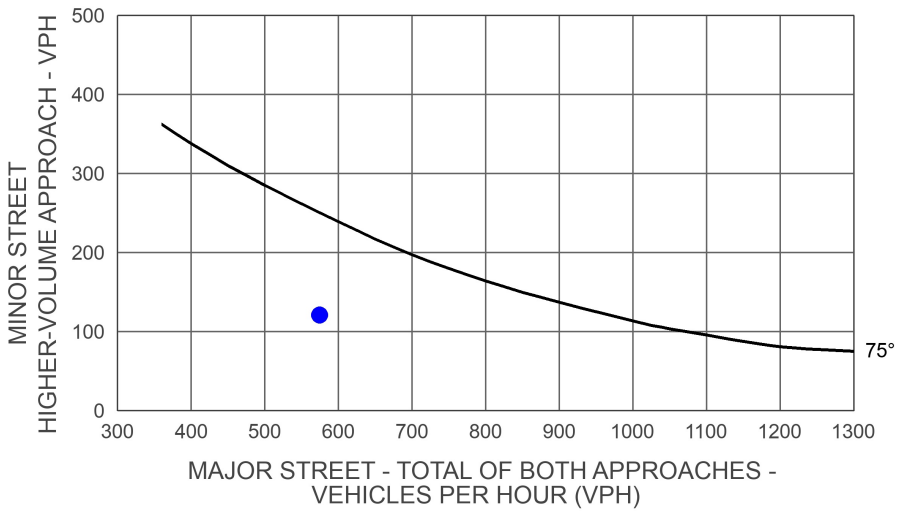


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 12



Major Total: 574
Minor High Volume: 121



Intersection 13
Demaree St & Shannon Pkwy

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	94	5	378	161	15	389
Future Vol, veh/h	94	5	378	161	15	389
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	102	5	411	175	16	423

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	747	298	0	0	591	0
Stage 1	503	-	-	-	-	-
Stage 2	244	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	349	698	-	-	981	-
Stage 1	573	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	342	695	-	-	981	-
Mov Cap-2 Maneuver	342	-	-	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	761	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.4	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	342	695	981	-
HCM Lane V/C Ratio	-	-	0.299	0.008	0.017	-
HCM Control Delay (s)	-	-	19.9	10.2	8.7	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0	0.1	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	94	16	505	161	21	463
Future Vol, veh/h	94	16	505	161	21	463
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	102	17	549	175	23	503

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	938	367	0	0	729	0
Stage 1	641	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	263	630	-	-	871	-
Stage 1	487	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	255	627	-	-	871	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	485	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.7	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	255	627	871	-
HCM Lane V/C Ratio	-	-	0.401	0.028	0.026	-
HCM Control Delay (s)	-	-	28.2	10.9	9.2	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	1.8	0.1	0.1	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	94	16	505	161	21	463
Future Vol, veh/h	94	16	505	161	21	463
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	102	17	549	175	23	503

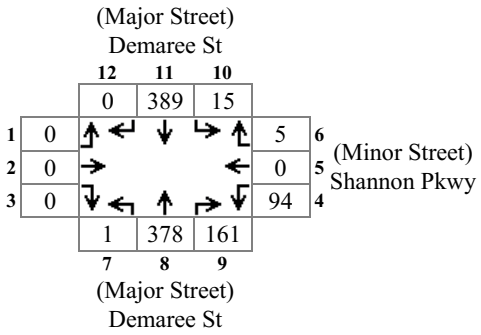
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	938	367	0	0	729	0
Stage 1	641	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	263	630	-	-	871	-
Stage 1	487	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	255	627	-	-	871	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	485	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.7	0	0.4
HCM LOS	D		

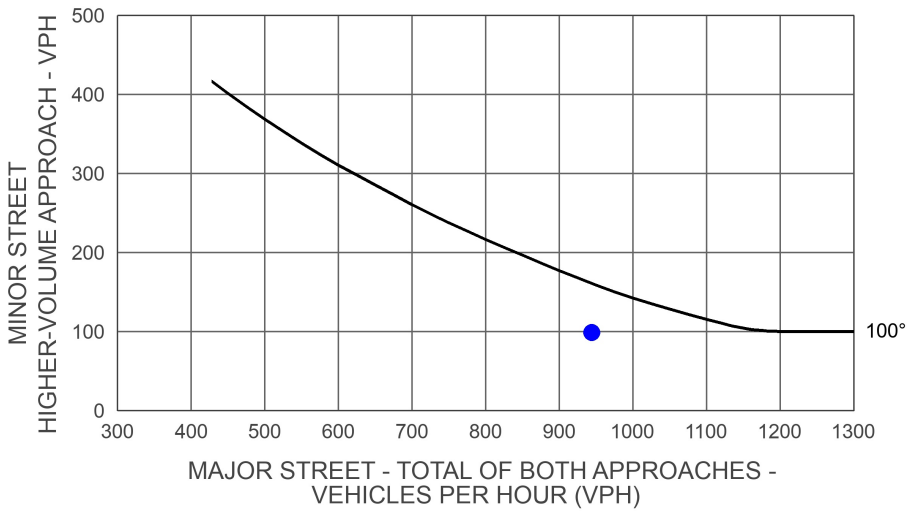
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	255	627	871	-
HCM Lane V/C Ratio	-	-	0.401	0.028	0.026	-
HCM Control Delay (s)	-	-	28.2	10.9	9.2	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	1.8	0.1	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 13

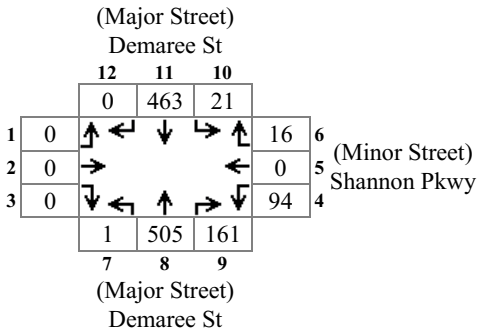


Major Total: 944
Minor High Volume: 99

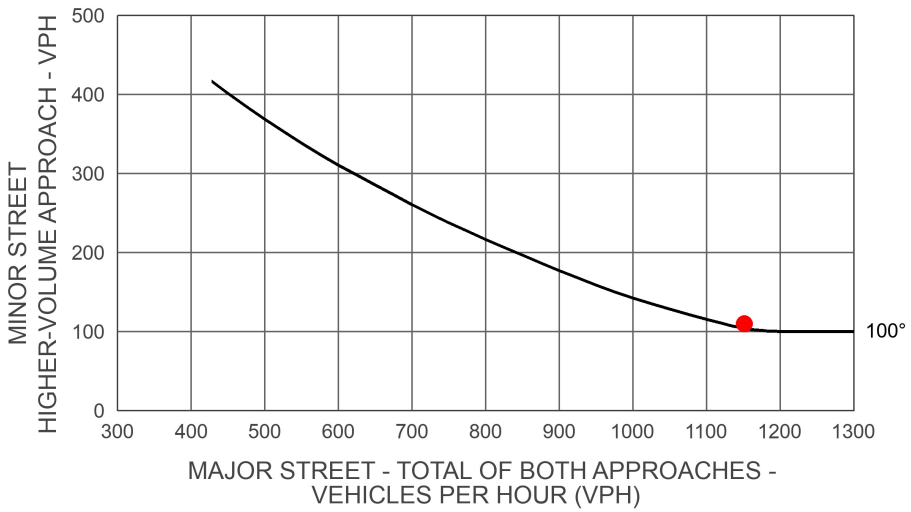


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project
Intersection #: 13



Major Total: 1151
Minor High Volume: 110



Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	125	22	315	66	9	332
Future Vol, veh/h	125	22	315	66	9	332
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	136	24	342	72	10	361

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	583	212	0	0	419	0
Stage 1	383	-	-	-	-	-
Stage 2	200	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	443	793	-	-	1137	-
Stage 1	659	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	437	790	-	-	1137	-
Mov Cap-2 Maneuver	437	-	-	-	-	-
Stage 1	656	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	437	790	1137	-
HCM Lane V/C Ratio	-	-	0.311	0.03	0.009	-
HCM Control Delay (s)	-	-	16.9	9.7	8.2	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	1.3	0.1	0	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	125	25	353	66	18	444
Future Vol, veh/h	125	25	353	66	18	444
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	136	27	384	72	20	483

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	705	233	0	0	460	0
Stage 1	425	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	371	769	-	-	1097	-
Stage 1	627	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	363	766	-	-	1097	-
Mov Cap-2 Maneuver	363	-	-	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	728	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.9	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	363	766	1097	-
HCM Lane V/C Ratio	-	-	0.374	0.035	0.018	-
HCM Control Delay (s)	-	-	20.7	9.9	8.3	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	1.7	0.1	0.1	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	125	25	353	66	18	444
Future Vol, veh/h	125	25	353	66	18	444
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	136	27	384	72	20	483

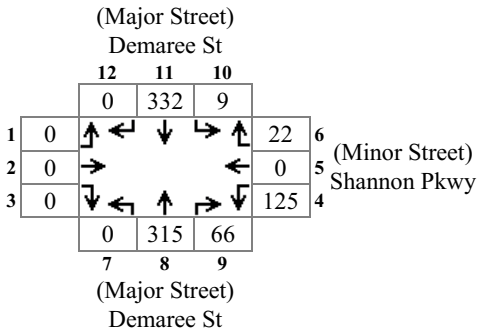
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	705	233	0	0	460	0
Stage 1	425	-	-	-	-	-
Stage 2	280	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	371	769	-	-	1097	-
Stage 1	627	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	363	766	-	-	1097	-
Mov Cap-2 Maneuver	363	-	-	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	728	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.9	0	0.3
HCM LOS	C		

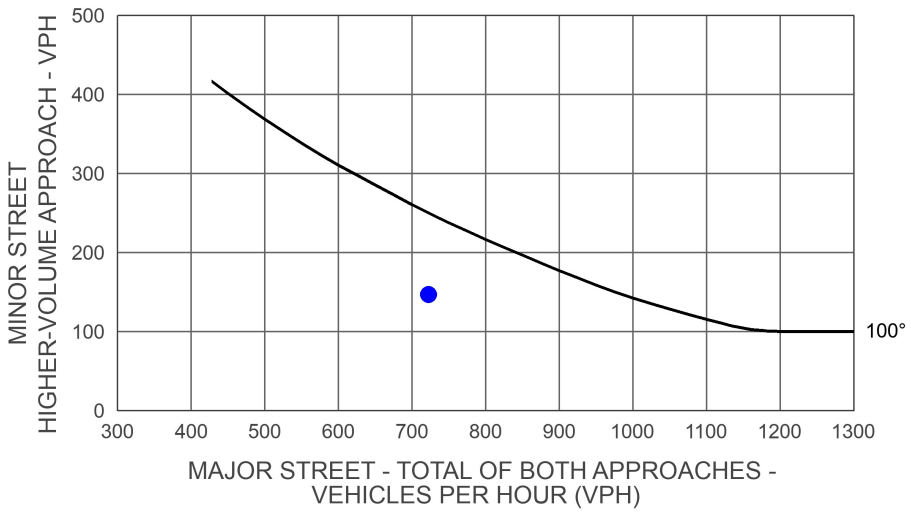
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	363	766	1097	-
HCM Lane V/C Ratio	-	-	0.374	0.035	0.018	-
HCM Control Delay (s)	-	-	20.7	9.9	8.3	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	1.7	0.1	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 13

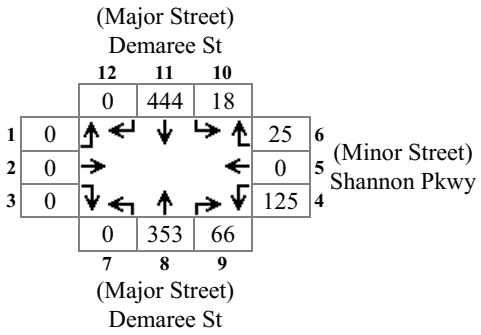


Major Total: 722
Minor High Volume: 147

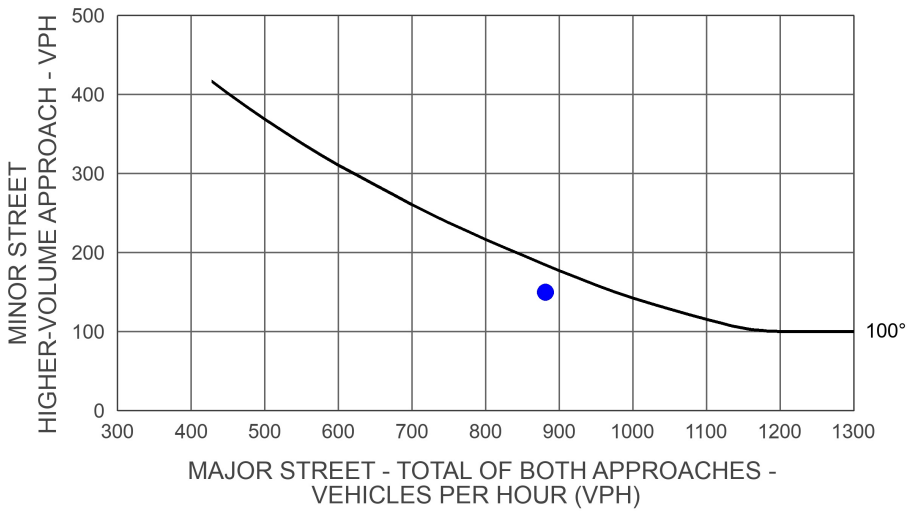


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 13



Major Total: 881
Minor High Volume: 150



Intersection 14
Country Center St & Shannon Pkwy

Intersection	
Intersection Delay, s/veh	4.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	101	96	125	51
Demand Flow Rate, veh/h	103	97	127	52
Vehicles Circulating, veh/h	54	71	81	97
Vehicles Exiting, veh/h	95	137	76	71
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.3	4.3	4.6	4.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	103	97	127	52
Cap Entry Lane, veh/h	1071	1052	1042	1025
Entry HV Adj Factor	0.977	0.986	0.983	0.989
Flow Entry, veh/h	101	96	125	51
Cap Entry, veh/h	1045	1038	1024	1014
V/C Ratio	0.096	0.092	0.122	0.051
Control Delay, s/veh	4.3	4.3	4.6	4.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Intersection	
Intersection Delay, s/veh	4.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	101	100	126	51
Demand Flow Rate, veh/h	103	101	128	52
Vehicles Circulating, veh/h	54	72	81	102
Vehicles Exiting, veh/h	100	137	76	71
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.3	4.3	4.6	4.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	103	101	128	52
Cap Entry Lane, veh/h	1071	1051	1042	1020
Entry HV Adj Factor	0.977	0.986	0.984	0.989
Flow Entry, veh/h	101	100	126	51
Cap Entry, veh/h	1045	1036	1024	1009
V/C Ratio	0.096	0.096	0.123	0.051
Control Delay, s/veh	4.3	4.3	4.6	4.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

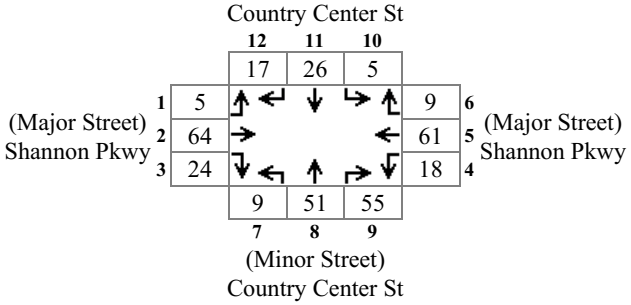
Intersection	
Intersection Delay, s/veh	4.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	101	100	126	51
Demand Flow Rate, veh/h	103	101	128	52
Vehicles Circulating, veh/h	54	72	81	102
Vehicles Exiting, veh/h	100	137	76	71
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.3	4.3	4.6	4.0
Approach LOS	A	A	A	A

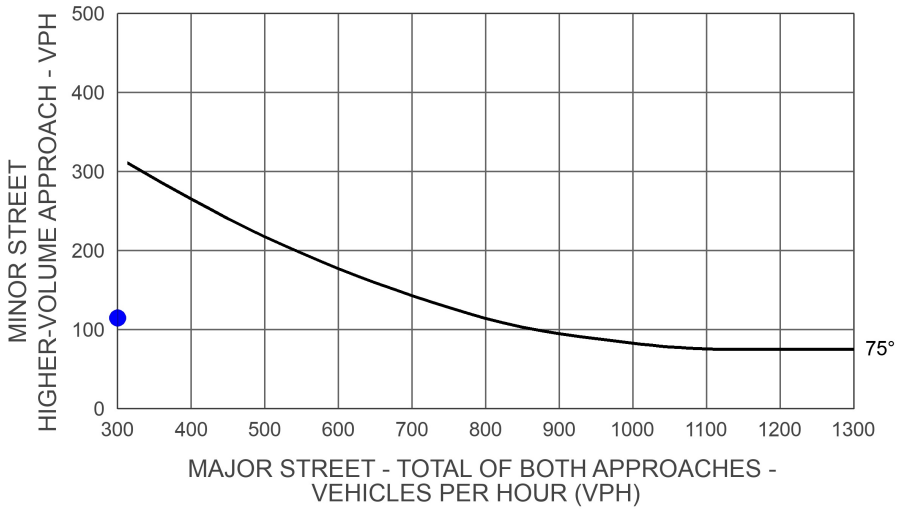
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	103	101	128	52
Cap Entry Lane, veh/h	1071	1051	1042	1020
Entry HV Adj Factor	0.977	0.986	0.984	0.989
Flow Entry, veh/h	101	100	126	51
Cap Entry, veh/h	1045	1036	1024	1009
V/C Ratio	0.096	0.096	0.123	0.051
Control Delay, s/veh	4.3	4.3	4.6	4.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 14

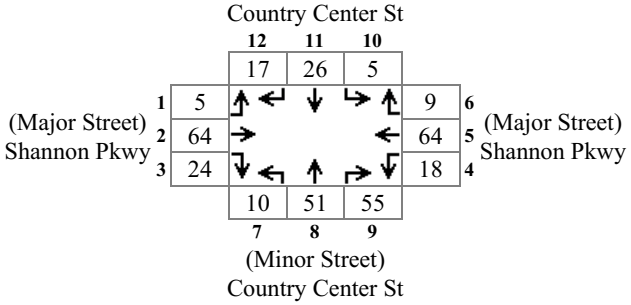


Major Total: 181
Minor High Volume: 115

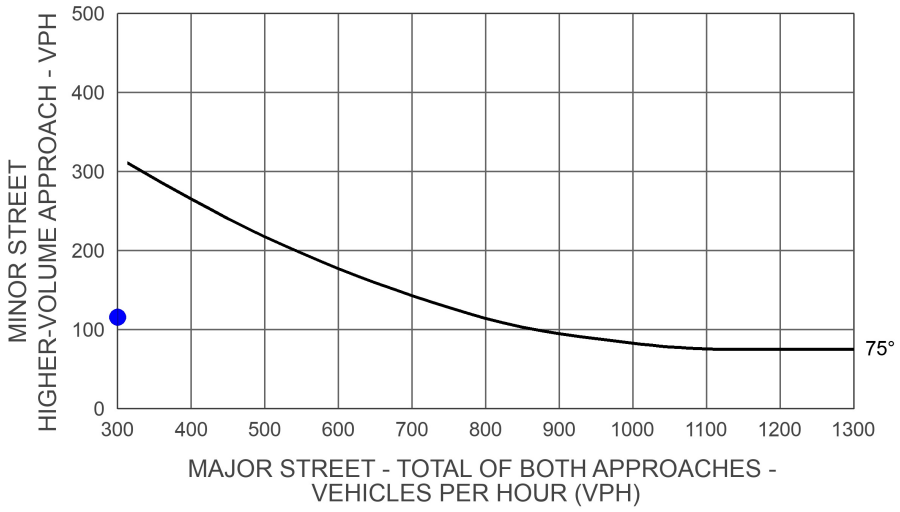


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 14



Major Total: 184
Minor High Volume: 116



Intersection	
Intersection Delay, s/veh	3.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	47	43	52	67
Demand Flow Rate, veh/h	48	44	52	69
Vehicles Circulating, veh/h	51	35	34	52
Vehicles Exiting, veh/h	70	51	65	27
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.8	3.7	3.7	4.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	48	44	52	69
Cap Entry Lane, veh/h	1074	1091	1092	1073
Entry HV Adj Factor	0.987	0.985	0.991	0.974
Flow Entry, veh/h	47	43	52	67
Cap Entry, veh/h	1059	1074	1082	1044
V/C Ratio	0.045	0.040	0.048	0.064
Control Delay, s/veh	3.8	3.7	3.7	4.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Intersection	
Intersection Delay, s/veh	3.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	47	44	52	67
Demand Flow Rate, veh/h	48	45	52	69
Vehicles Circulating, veh/h	51	35	34	53
Vehicles Exiting, veh/h	71	51	65	27
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.8	3.7	3.7	4.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	48	45	52	69
Cap Entry Lane, veh/h	1074	1091	1092	1072
Entry HV Adj Factor	0.987	0.985	0.991	0.974
Flow Entry, veh/h	47	44	52	67
Cap Entry, veh/h	1059	1074	1082	1043
V/C Ratio	0.045	0.041	0.048	0.064
Control Delay, s/veh	3.8	3.7	3.7	4.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

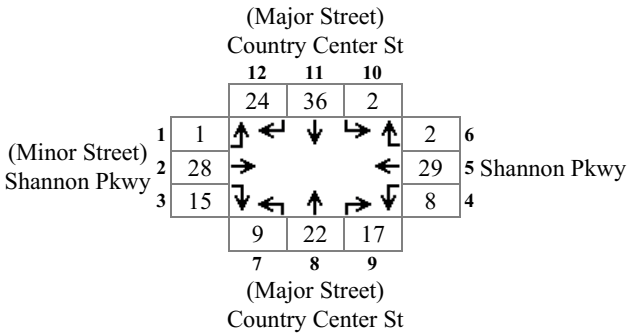
Intersection	
Intersection Delay, s/veh	3.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	47	44	52	67
Demand Flow Rate, veh/h	48	45	52	69
Vehicles Circulating, veh/h	51	35	34	53
Vehicles Exiting, veh/h	71	51	65	27
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	3.8	3.7	3.7	4.0
Approach LOS	A	A	A	A

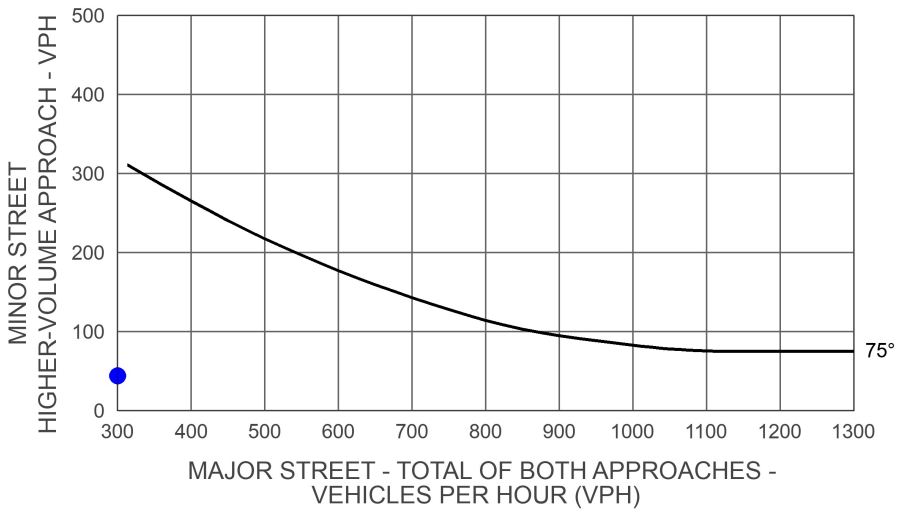
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	48	45	52	69
Cap Entry Lane, veh/h	1074	1091	1092	1072
Entry HV Adj Factor	0.987	0.985	0.991	0.974
Flow Entry, veh/h	47	44	52	67
Cap Entry, veh/h	1059	1074	1082	1043
V/C Ratio	0.045	0.041	0.048	0.064
Control Delay, s/veh	3.8	3.7	3.7	4.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 14

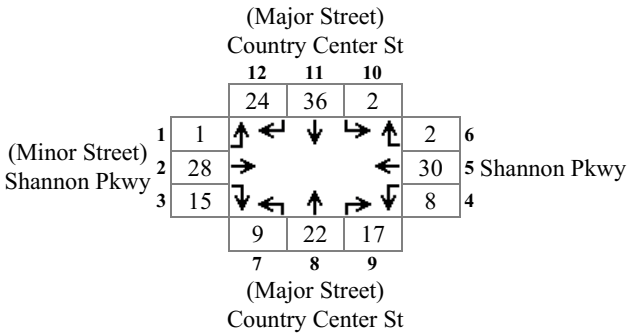


Major Total: 110
Minor High Volume: 44

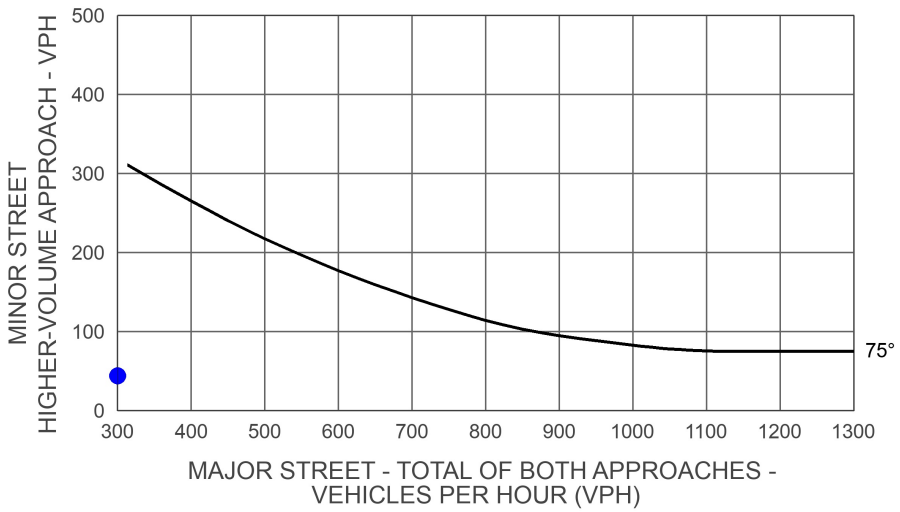


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 14



Major Total: 110
Minor High Volume: 44



Intersection 15
Demaree St & Flagstaff Ave

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	37	0	23	3	472	28	39	443	0
Future Vol, veh/h	0	0	0	37	0	23	3	472	28	39	443	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	40	0	25	3	513	30	42	482	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	829	1116	241	861	1101	272	482	0	0	543	0	0
Stage 1	566	566	-	535	535	-	-	-	-	-	-	-
Stage 2	263	550	-	326	566	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	263	206	760	249	211	726	1077	-	-	1022	-	-
Stage 1	476	506	-	497	522	-	-	-	-	-	-	-
Stage 2	719	514	-	661	506	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	242	194	760	238	198	726	1077	-	-	1022	-	-
Mov Cap-2 Maneuver	242	194	-	238	198	-	-	-	-	-	-	-
Stage 1	474	478	-	495	520	-	-	-	-	-	-	-
Stage 2	691	512	-	624	478	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	19.1	0	0.9
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1077	-	-	-	321	1022	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.203	0.041	-	-
HCM Control Delay (s)	8.4	0	-	0	19.1	8.7	0.2	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.7	0.1	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	37	0	23	3	599	28	39	517	0
Future Vol, veh/h	0	0	0	37	0	23	3	599	28	39	517	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	40	0	25	3	651	30	42	562	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	979	1335	281	1039	1320	341	562	0	0	682	0	0
Stage 1	647	647	-	673	673	-	-	-	-	-	-	-
Stage 2	332	688	-	366	647	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	204	152	716	185	156	655	1005	-	-	907	-	-
Stage 1	426	465	-	411	452	-	-	-	-	-	-	-
Stage 2	655	445	-	626	465	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	185	141	716	175	145	655	1005	-	-	907	-	-
Mov Cap-2 Maneuver	185	141	-	175	145	-	-	-	-	-	-	-
Stage 1	424	434	-	409	450	-	-	-	-	-	-	-
Stage 2	627	443	-	584	434	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	25.2	0	0.9
HCM LOS	A	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1005	-	-	-	243	907	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.268	0.047	-	-
HCM Control Delay (s)	8.6	0	-	0	25.2	9.2	0.3	-
HCM Lane LOS	A	A	-	A	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	1.1	0.1	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	37	0	23	3	599	28	39	517	0
Future Vol, veh/h	0	0	0	37	0	23	3	599	28	39	517	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	40	0	25	3	651	30	42	562	0

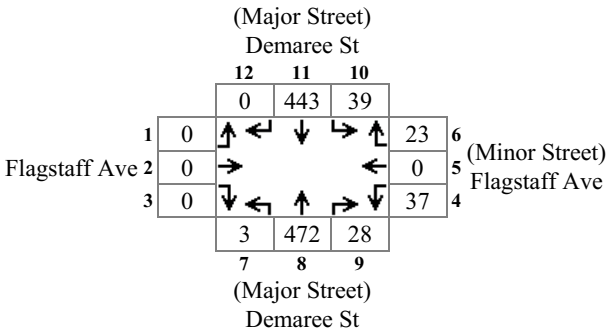
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	979	1335	281	1039	1320	341	562	0	0	682	0	0
Stage 1	647	647	-	673	673	-	-	-	-	-	-	-
Stage 2	332	688	-	366	647	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	204	152	716	185	156	655	1005	-	-	907	-	-
Stage 1	426	465	-	411	452	-	-	-	-	-	-	-
Stage 2	655	445	-	626	465	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	185	141	716	175	145	655	1005	-	-	907	-	-
Mov Cap-2 Maneuver	185	141	-	175	145	-	-	-	-	-	-	-
Stage 1	424	434	-	409	450	-	-	-	-	-	-	-
Stage 2	627	443	-	584	434	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	25.2	0	0.9
HCM LOS	A	D		

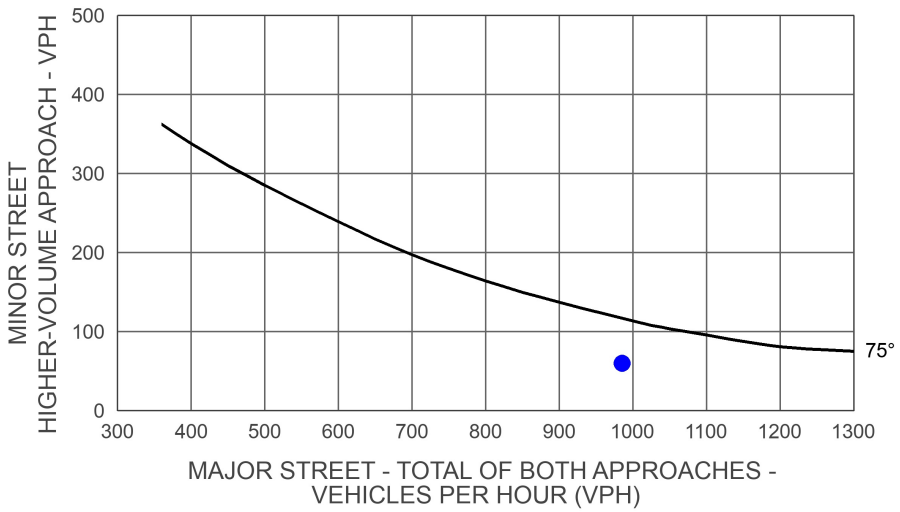
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1005	-	-	-	243	907	-	-
HCM Lane V/C Ratio	0.003	-	-	-	0.268	0.047	-	-
HCM Control Delay (s)	8.6	0	-	0	25.2	9.2	0.3	-
HCM Lane LOS	A	A	-	A	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	1.1	0.1	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 15

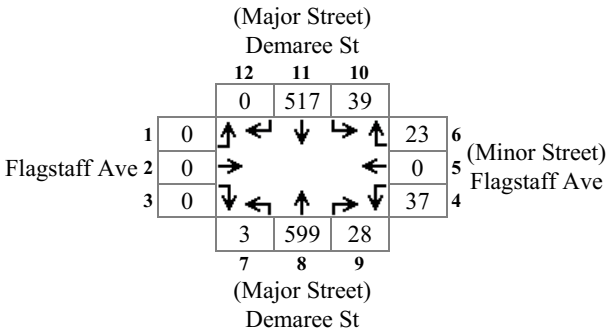


Major Total: 985
Minor High Volume: 60

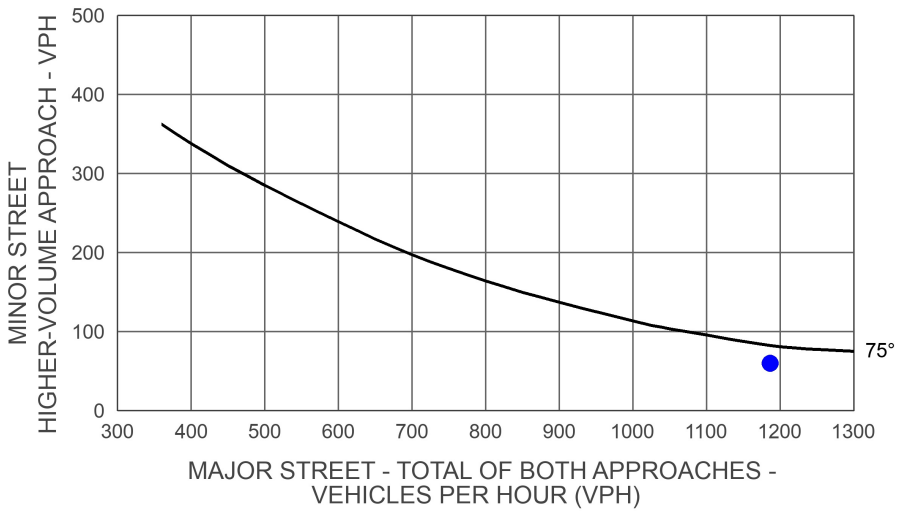


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 15



Major Total: 1186
Minor High Volume: 60



Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	19	0	18	5	425	28	20	339	0
Future Vol, veh/h	0	0	0	19	0	18	5	425	28	20	339	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	21	0	20	5	462	30	22	368	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	654	915	184	716	900	246	368	0	0	492	0	0
Stage 1	412	412	-	488	488	-	-	-	-	-	-	-
Stage 2	242	503	-	228	412	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	352	271	827	317	277	754	1187	-	-	1068	-	-
Stage 1	588	593	-	530	548	-	-	-	-	-	-	-
Stage 2	740	540	-	754	593	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	335	262	827	309	268	754	1187	-	-	1068	-	-
Mov Cap-2 Maneuver	335	262	-	309	268	-	-	-	-	-	-	-
Stage 1	584	578	-	527	545	-	-	-	-	-	-	-
Stage 2	716	537	-	734	578	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	14.2	0.1	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1187	-	-	-	433	1068	-	-
HCM Lane V/C Ratio	0.005	-	-	-	0.093	0.02	-	-
HCM Control Delay (s)	8	0	-	0	14.2	8.4	0.1	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	19	0	18	5	463	28	20	451	0
Future Vol, veh/h	0	0	0	19	0	18	5	463	28	20	451	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	21	0	20	5	503	30	22	490	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	797	1079	245	818	1063	267	490	0	0	534	0	0
Stage 1	534	534	-	529	529	-	-	-	-	-	-	-
Stage 2	263	545	-	289	534	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	277	217	755	268	222	731	1070	-	-	1030	-	-
Stage 1	498	523	-	501	525	-	-	-	-	-	-	-
Stage 2	719	517	-	694	523	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	262	209	755	261	214	731	1070	-	-	1030	-	-
Mov Cap-2 Maneuver	262	209	-	261	214	-	-	-	-	-	-	-
Stage 1	495	508	-	497	521	-	-	-	-	-	-	-
Stage 2	695	513	-	674	508	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	15.6	0.1	0.5
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1070	-	-	-	380	1030	-	-
HCM Lane V/C Ratio	0.005	-	-	-	0.106	0.021	-	-
HCM Control Delay (s)	8.4	0	-	0	15.6	8.6	0.1	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	19	0	18	5	463	28	20	451	0
Future Vol, veh/h	0	0	0	19	0	18	5	463	28	20	451	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	21	0	20	5	503	30	22	490	0

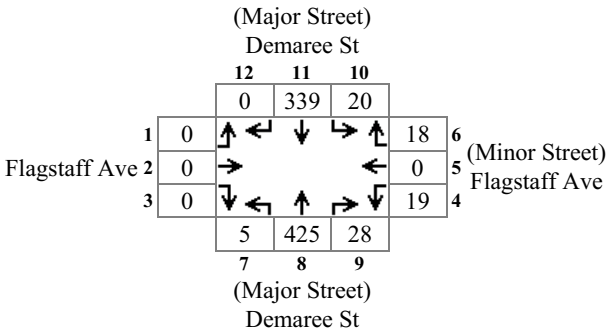
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	797	1079	245	818	1063	267	490	0	0	534	0	0
Stage 1	534	534	-	529	529	-	-	-	-	-	-	-
Stage 2	263	545	-	289	534	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	277	217	755	268	222	731	1070	-	-	1030	-	-
Stage 1	498	523	-	501	525	-	-	-	-	-	-	-
Stage 2	719	517	-	694	523	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	262	209	755	261	214	731	1070	-	-	1030	-	-
Mov Cap-2 Maneuver	262	209	-	261	214	-	-	-	-	-	-	-
Stage 1	495	508	-	497	521	-	-	-	-	-	-	-
Stage 2	695	513	-	674	508	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	15.6	0.1	0.5
HCM LOS	A	C		

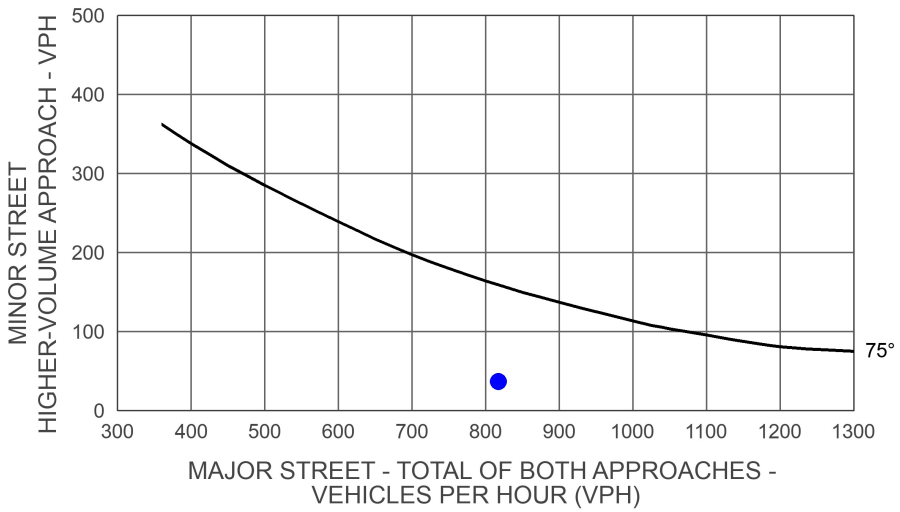
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1070	-	-	-	380	1030	-	-
HCM Lane V/C Ratio	0.005	-	-	-	0.106	0.021	-	-
HCM Control Delay (s)	8.4	0	-	0	15.6	8.6	0.1	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0.1	-	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 15

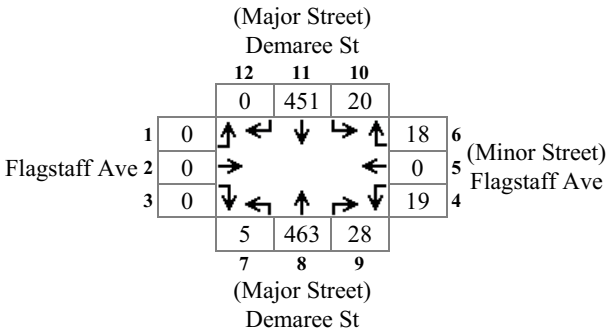


Major Total: 817
Minor High Volume: 37

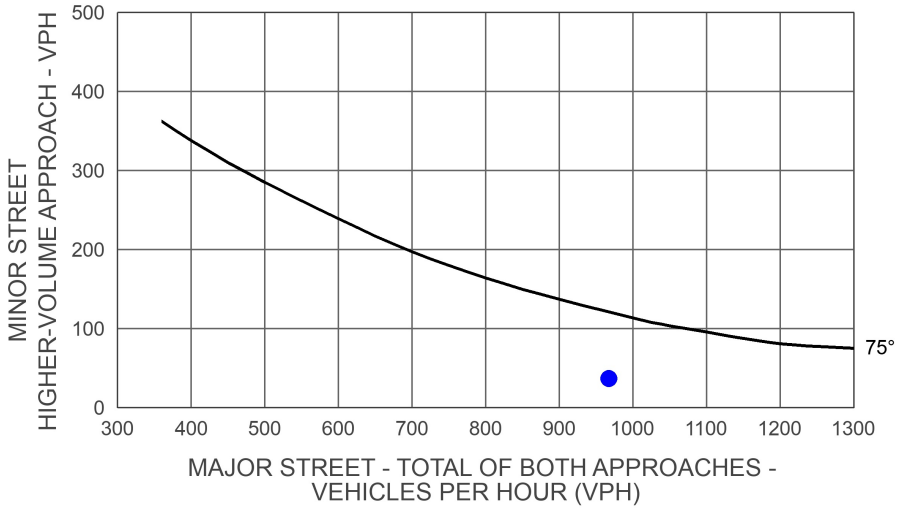


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 15



Major Total: 967
Minor High Volume: 37



Intersection 16
Akers St & Riggen Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	495	71	163	281	23	39	91	198	30	61	18
Future Volume (veh/h)	15	495	71	163	281	23	39	91	198	30	61	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	16	538	77	177	305	25	42	99	215	33	66	20
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	50	601	462	228	804	612	69	361	273	344	1281	513
Arrive On Green	0.03	0.32	0.32	0.14	0.43	0.43	0.04	0.19	0.19	0.21	0.36	0.36
Sat Flow, veh/h	1634	1863	1432	1634	1863	1418	1634	1863	1405	1634	3539	1416
Grp Volume(v), veh/h	16	538	77	177	305	25	42	99	215	33	66	20
Grp Sat Flow(s),veh/h/ln	1634	1863	1432	1634	1863	1418	1634	1863	1405	1634	1770	1416
Q Serve(g_s), s	1.2	33.0	3.6	12.5	13.4	0.6	3.0	5.4	17.5	2.0	1.5	1.1
Cycle Q Clear(g_c), s	1.2	33.0	3.6	12.5	13.4	0.6	3.0	5.4	17.5	2.0	1.5	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	50	601	462	228	804	612	69	361	273	344	1281	513
V/C Ratio(X)	0.32	0.90	0.17	0.78	0.38	0.04	0.61	0.27	0.79	0.10	0.05	0.04
Avail Cap(c_a), veh/h	82	714	549	259	916	697	72	512	386	344	1281	513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	38.7	18.2	49.8	23.2	4.2	56.5	41.2	46.0	38.2	24.9	24.8
Incr Delay (d2), s/veh	3.7	12.5	0.2	12.3	0.3	0.0	12.8	1.9	20.3	0.1	0.1	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	0.6	19.1	1.5	6.4	6.9	0.2	1.6	3.0	8.3	0.9	0.7	0.5
LnGrp Delay(d),s/veh	60.6	51.2	18.3	62.1	23.5	4.2	69.3	43.0	66.3	38.3	25.0	24.9
LnGrp LOS	E	D	B	E	C	A	E	D	E	D	C	C
Approach Vol, veh/h		631			507			356			119	
Approach Delay, s/veh		47.4			36.0			60.2			28.6	
Approach LOS		D			D			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.3	27.3	20.8	42.7	9.1	47.4	7.7	55.8
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	4.0	19.5	14.5	35.0	5.0	3.5	3.2	15.4
Green Ext Time (p_c), s	0.0	1.0	0.6	1.7	0.0	0.4	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	45.3
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	528	71	167	300	23	39	91	205	30	61	18
Future Volume (veh/h)	15	528	71	167	300	23	39	91	205	30	61	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	16	574	77	182	326	25	42	99	223	33	66	20
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	50	633	487	233	842	641	69	370	279	303	1210	484
Arrive On Green	0.03	0.34	0.34	0.14	0.45	0.45	0.04	0.20	0.20	0.19	0.34	0.34
Sat Flow, veh/h	1634	1863	1433	1634	1863	1419	1634	1863	1406	1634	3539	1416
Grp Volume(v), veh/h	16	574	77	182	326	25	42	99	223	33	66	20
Grp Sat Flow(s),veh/h/ln	1634	1863	1433	1634	1863	1419	1634	1863	1406	1634	1770	1416
Q Serve(g_s), s	1.2	35.3	3.5	12.9	13.9	0.6	3.0	5.4	18.1	2.0	1.5	1.1
Cycle Q Clear(g_c), s	1.2	35.3	3.5	12.9	13.9	0.6	3.0	5.4	18.1	2.0	1.5	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	50	633	487	233	842	641	69	370	279	303	1210	484
V/C Ratio(X)	0.32	0.91	0.16	0.78	0.39	0.04	0.61	0.27	0.80	0.11	0.05	0.04
Avail Cap(c_a), veh/h	82	714	549	259	916	698	72	512	387	303	1210	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	37.8	17.0	49.7	21.8	4.4	56.5	40.7	45.8	40.6	26.5	26.4
Incr Delay (d2), s/veh	3.7	14.2	0.1	13.1	0.3	0.0	12.8	1.8	20.8	0.2	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	20.7	1.4	6.7	7.2	0.2	1.6	3.0	8.6	0.9	0.7	0.5
LnGrp Delay(d),s/veh	60.6	52.0	17.1	62.7	22.1	4.4	69.3	42.5	66.5	40.8	26.6	26.5
LnGrp LOS	E	D	B	E	C	A	E	D	E	D	C	C
Approach Vol, veh/h		667			533			364			119	
Approach Delay, s/veh		48.2			35.2			60.3			30.5	
Approach LOS		D			D			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.3	27.8	21.1	44.8	9.1	45.0	7.7	58.2
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	4.0	20.1	14.9	37.3	5.0	3.5	3.2	15.9
Green Ext Time (p_c), s	0.0	1.0	0.5	1.5	0.0	0.4	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	45.4
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	528	71	167	300	23	39	91	205	30	61	18
Future Volume (veh/h)	15	528	71	167	300	23	39	91	205	30	61	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	16	574	77	182	326	25	42	99	223	33	66	20
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	50	633	487	233	842	641	69	370	279	303	1210	484
Arrive On Green	0.03	0.34	0.34	0.14	0.45	0.45	0.04	0.20	0.20	0.19	0.34	0.34
Sat Flow, veh/h	1634	1863	1433	1634	1863	1419	1634	1863	1406	1634	3539	1416
Grp Volume(v), veh/h	16	574	77	182	326	25	42	99	223	33	66	20
Grp Sat Flow(s),veh/h/ln	1634	1863	1433	1634	1863	1419	1634	1863	1406	1634	1770	1416
Q Serve(g_s), s	1.2	35.3	3.5	12.9	13.9	0.6	3.0	5.4	18.1	2.0	1.5	1.1
Cycle Q Clear(g_c), s	1.2	35.3	3.5	12.9	13.9	0.6	3.0	5.4	18.1	2.0	1.5	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	50	633	487	233	842	641	69	370	279	303	1210	484
V/C Ratio(X)	0.32	0.91	0.16	0.78	0.39	0.04	0.61	0.27	0.80	0.11	0.05	0.04
Avail Cap(c_a), veh/h	82	714	549	259	916	698	72	512	387	303	1210	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	37.8	17.0	49.7	21.8	4.4	56.5	40.7	45.8	40.6	26.5	26.4
Incr Delay (d2), s/veh	3.7	14.2	0.1	13.1	0.3	0.0	12.8	1.8	20.8	0.2	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	20.7	1.4	6.7	7.2	0.2	1.6	3.0	8.6	0.9	0.7	0.5
LnGrp Delay(d),s/veh	60.6	52.0	17.1	62.7	22.1	4.4	69.3	42.5	66.5	40.8	26.6	26.5
LnGrp LOS	E	D	B	E	C	A	E	D	E	D	C	C
Approach Vol, veh/h		667			533			364			119	
Approach Delay, s/veh		48.2			35.2			60.3			30.5	
Approach LOS		D			D			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.3	27.8	21.1	44.8	9.1	45.0	7.7	58.2
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	4.0	20.1	14.9	37.3	5.0	3.5	3.2	15.9
Green Ext Time (p_c), s	0.0	1.0	0.5	1.5	0.0	0.4	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	45.4
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	219	34	156	373	96	35	162	118	70	199	74
Future Volume (veh/h)	83	219	34	156	373	96	35	162	118	70	199	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	90	238	37	170	405	104	38	176	128	76	216	80
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	82	337	258	226	501	380	64	274	205	655	1800	722
Arrive On Green	0.05	0.18	0.18	0.14	0.27	0.27	0.04	0.15	0.15	0.40	0.51	0.51
Sat Flow, veh/h	1634	1863	1425	1634	1863	1412	1634	1863	1398	1634	3539	1420
Grp Volume(v), veh/h	90	238	37	170	405	104	38	176	128	76	216	80
Grp Sat Flow(s),veh/h/ln	1634	1863	1425	1634	1863	1412	1634	1863	1398	1634	1770	1420
Q Serve(g_s), s	6.0	14.4	2.2	12.0	24.4	2.2	2.7	10.7	10.3	3.5	3.8	3.5
Cycle Q Clear(g_c), s	6.0	14.4	2.2	12.0	24.4	2.2	2.7	10.7	10.3	3.5	3.8	3.5
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	82	337	258	226	501	380	64	274	205	655	1800	722
V/C Ratio(X)	1.10	0.71	0.14	0.75	0.81	0.27	0.59	0.64	0.62	0.12	0.12	0.11
Avail Cap(c_a), veh/h	82	714	546	259	916	694	72	512	384	655	1800	722
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	46.2	28.5	49.7	41.0	3.6	56.7	48.2	48.1	22.6	15.4	15.4
Incr Delay (d2), s/veh	129.8	2.7	0.3	10.3	3.2	0.4	10.0	11.1	13.5	0.1	0.1	0.3
Initial Q Delay(d3),s/veh	0.2	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	5.6	7.7	0.9	6.1	12.9	0.9	1.4	6.3	4.8	1.6	1.9	1.4
LnGrp Delay(d),s/veh	187.0	48.9	28.7	60.0	44.1	4.0	66.7	59.3	61.5	22.7	15.6	15.7
LnGrp LOS	F	D	C	E	D	A	E	E	E	C	B	B
Approach Vol, veh/h		365			679			342			372	
Approach Delay, s/veh		80.9			42.0			61.0			17.0	
Approach LOS		F			D			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	52.1	21.6	20.6	25.7	8.7	65.0	10.0	36.3
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	5.5	12.7	14.0	16.4	4.7	5.8	8.0	26.4
Green Ext Time (p_c), s	0.0	1.1	0.9	0.9	0.0	1.5	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	48.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	229	34	162	402	96	35	162	120	70	199	74
Future Volume (veh/h)	83	229	34	162	402	96	35	162	120	70	199	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	90	249	37	176	437	104	38	176	130	76	216	80
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	82	346	265	231	517	392	64	274	205	641	1770	710
Arrive On Green	0.05	0.19	0.19	0.14	0.28	0.28	0.04	0.15	0.15	0.39	0.50	0.50
Sat Flow, veh/h	1634	1863	1426	1634	1863	1412	1634	1863	1398	1634	3539	1420
Grp Volume(v), veh/h	90	249	37	176	437	104	38	176	130	76	216	80
Grp Sat Flow(s),veh/h/ln	1634	1863	1426	1634	1863	1412	1634	1863	1398	1634	1770	1420
Q Serve(g_s), s	6.0	15.1	2.2	12.4	26.6	2.2	2.7	10.7	10.5	3.6	3.9	3.6
Cycle Q Clear(g_c), s	6.0	15.1	2.2	12.4	26.6	2.2	2.7	10.7	10.5	3.6	3.9	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	82	346	265	231	517	392	64	274	205	641	1770	710
V/C Ratio(X)	1.10	0.72	0.14	0.76	0.85	0.27	0.59	0.64	0.63	0.12	0.12	0.11
Avail Cap(c_a), veh/h	82	714	547	259	916	694	72	512	384	641	1770	710
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	45.9	28.1	49.5	40.9	3.6	56.7	48.2	48.1	23.2	16.0	15.9
Incr Delay (d2), s/veh	129.8	2.8	0.2	11.2	3.9	0.4	10.0	11.1	13.9	0.1	0.1	0.3
Initial Q Delay(d3),s/veh	0.2	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	5.6	8.0	0.9	6.3	14.3	0.9	1.4	6.3	4.9	1.6	1.9	1.5
LnGrp Delay(d),s/veh	187.0	48.8	28.3	60.7	44.9	3.9	66.7	59.3	62.1	23.3	16.1	16.2
LnGrp LOS	F	D	C	E	D	A	E	E	E	C	B	B
Approach Vol, veh/h		376			717			344			372	
Approach Delay, s/veh		79.8			42.8			61.2			17.6	
Approach LOS		E			D			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	51.1	21.6	21.0	26.3	8.7	64.0	10.0	37.3
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	5.6	12.7	14.4	17.1	4.7	5.9	8.0	28.6
Green Ext Time (p_c), s	0.0	1.1	0.9	1.0	0.0	1.5	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	48.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	229	34	162	402	96	35	162	120	70	199	74
Future Volume (veh/h)	83	229	34	162	402	96	35	162	120	70	199	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	90	249	37	176	437	104	38	176	130	76	216	80
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	82	346	265	231	517	392	64	274	205	641	1770	710
Arrive On Green	0.05	0.19	0.19	0.14	0.28	0.28	0.04	0.15	0.15	0.39	0.50	0.50
Sat Flow, veh/h	1634	1863	1426	1634	1863	1412	1634	1863	1398	1634	3539	1420
Grp Volume(v), veh/h	90	249	37	176	437	104	38	176	130	76	216	80
Grp Sat Flow(s),veh/h/ln	1634	1863	1426	1634	1863	1412	1634	1863	1398	1634	1770	1420
Q Serve(g_s), s	6.0	15.1	2.2	12.4	26.6	2.2	2.7	10.7	10.5	3.6	3.9	3.6
Cycle Q Clear(g_c), s	6.0	15.1	2.2	12.4	26.6	2.2	2.7	10.7	10.5	3.6	3.9	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	82	346	265	231	517	392	64	274	205	641	1770	710
V/C Ratio(X)	1.10	0.72	0.14	0.76	0.85	0.27	0.59	0.64	0.63	0.12	0.12	0.11
Avail Cap(c_a), veh/h	82	714	547	259	916	694	72	512	384	641	1770	710
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	45.9	28.1	49.5	40.9	3.6	56.7	48.2	48.1	23.2	16.0	15.9
Incr Delay (d2), s/veh	129.8	2.8	0.2	11.2	3.9	0.4	10.0	11.1	13.9	0.1	0.1	0.3
Initial Q Delay(d3),s/veh	0.2	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	5.6	8.0	0.9	6.3	14.3	0.9	1.4	6.3	4.9	1.6	1.9	1.5
LnGrp Delay(d),s/veh	187.0	48.8	28.3	60.7	44.9	3.9	66.7	59.3	62.1	23.3	16.1	16.2
LnGrp LOS	F	D	C	E	D	A	E	E	E	C	B	B
Approach Vol, veh/h		376			717			344			372	
Approach Delay, s/veh		79.8			42.8			61.2			17.6	
Approach LOS		E			D			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	51.1	21.6	21.0	26.3	8.7	64.0	10.0	37.3
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	5.6	12.7	14.4	17.1	4.7	5.9	8.0	28.6
Green Ext Time (p_c), s	0.0	1.1	0.9	1.0	0.0	1.5	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	48.8
HCM 2010 LOS	D

Intersection 17
Linwood St & Riggen Ave

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	715	39	34	519	14	34
Future Vol, veh/h	715	39	34	519	14	34
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	777	42	37	564	15	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	825	0	1441	803
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	638	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	805	-	146	383
Stage 1	-	-	-	-	441	-
Stage 2	-	-	-	-	526	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	805	-	136	381
Mov Cap-2 Maneuver	-	-	-	-	136	-
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	491	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	23.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	250	-	-	805	-
HCM Lane V/C Ratio	0.209	-	-	0.046	-
HCM Control Delay (s)	23.2	-	-	9.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	755	39	35	542	14	36
Future Vol, veh/h	755	39	35	542	14	36
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	821	42	38	589	15	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	868	0	1512	847
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	665	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	776	-	132	362
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	776	-	122	360
Mov Cap-2 Maneuver	-	-	-	-	122	-
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	474	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	25.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	233	-	-	776	-
HCM Lane V/C Ratio	0.233	-	-	0.049	-
HCM Control Delay (s)	25.1	-	-	9.9	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	755	39	35	542	14	36
Future Vol, veh/h	755	39	35	542	14	36
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	821	42	38	589	15	39

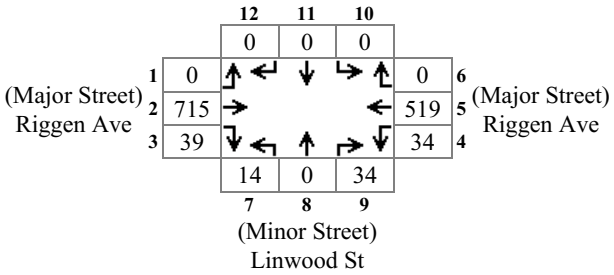
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	868	0	1512	847
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	665	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	776	-	132	362
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	776	-	122	360
Mov Cap-2 Maneuver	-	-	-	-	122	-
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	474	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	25.1
HCM LOS			D

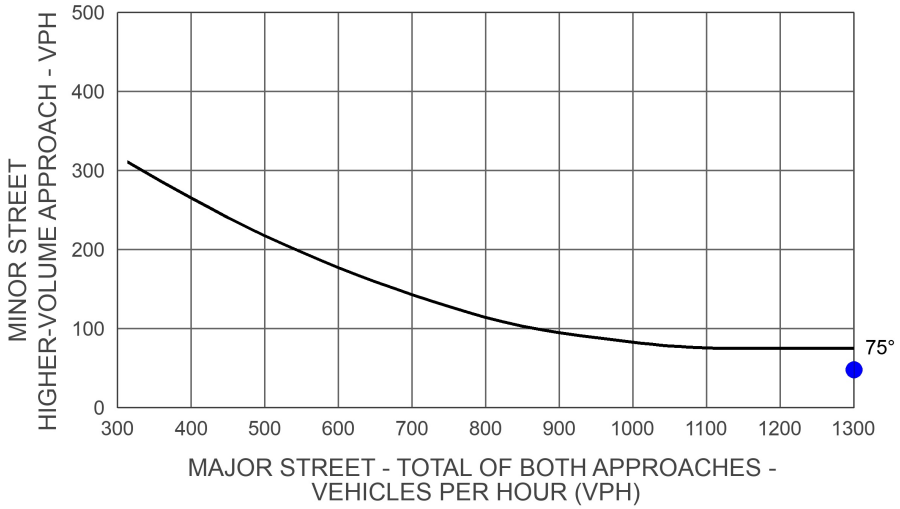
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	233	-	-	776	-
HCM Lane V/C Ratio	0.233	-	-	0.049	-
HCM Control Delay (s)	25.1	-	-	9.9	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.2	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 17

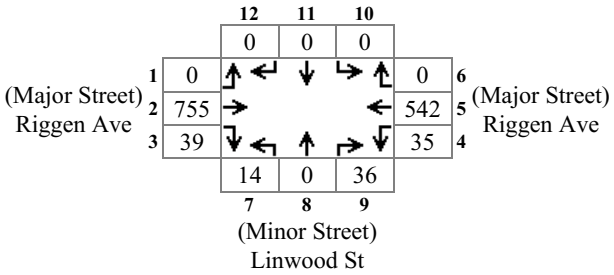


Major Total: 1307
Minor High Volume: 48

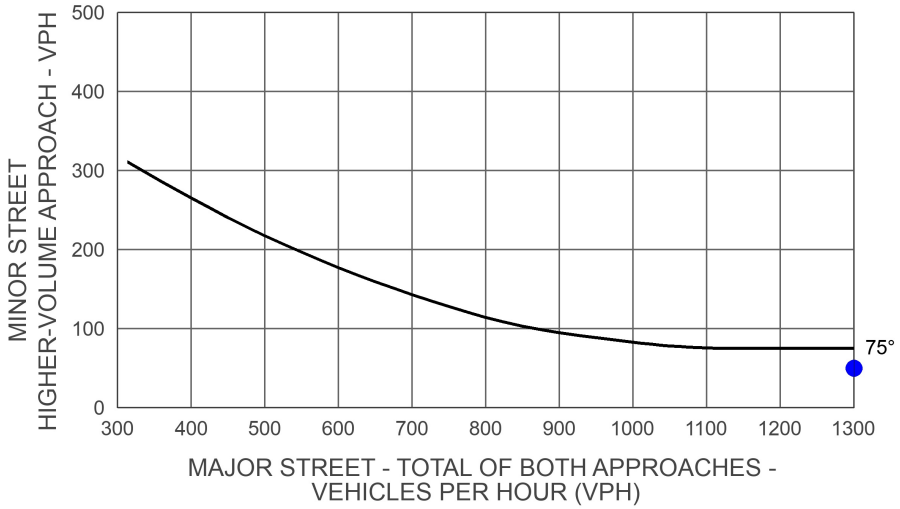


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 17



Major Total: 1371
Minor High Volume: 50



Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	431	22	28	675	23	31
Future Vol, veh/h	431	22	28	675	23	31
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	468	24	30	734	25	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	497	0	1280	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	795	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1067	-	183	582
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	445	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1067	-	174	580
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	424	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	20.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	291	-	-	1067	-
HCM Lane V/C Ratio	0.202	-	-	0.029	-
HCM Control Delay (s)	20.5	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	443	22	30	710	23	32
Future Vol, veh/h	443	22	30	710	23	32
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	482	24	33	772	25	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	510	0	1335	498
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	837	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1055	-	169	572
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	425	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1055	-	159	570
Mov Cap-2 Maneuver	-	-	-	-	159	-
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	402	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	21.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	274	-	-	1055	-
HCM Lane V/C Ratio	0.218	-	-	0.031	-
HCM Control Delay (s)	21.8	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	443	22	30	710	23	32
Future Vol, veh/h	443	22	30	710	23	32
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	482	24	33	772	25	35

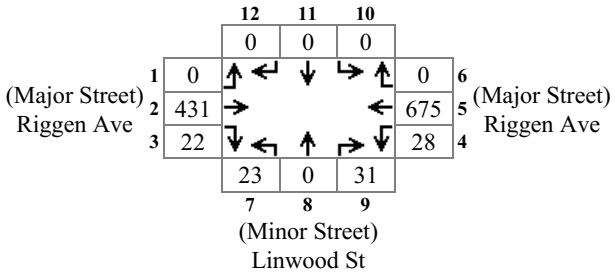
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	510	0	1335	498
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	837	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1055	-	169	572
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	425	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1055	-	159	570
Mov Cap-2 Maneuver	-	-	-	-	159	-
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	402	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	21.8
HCM LOS			C

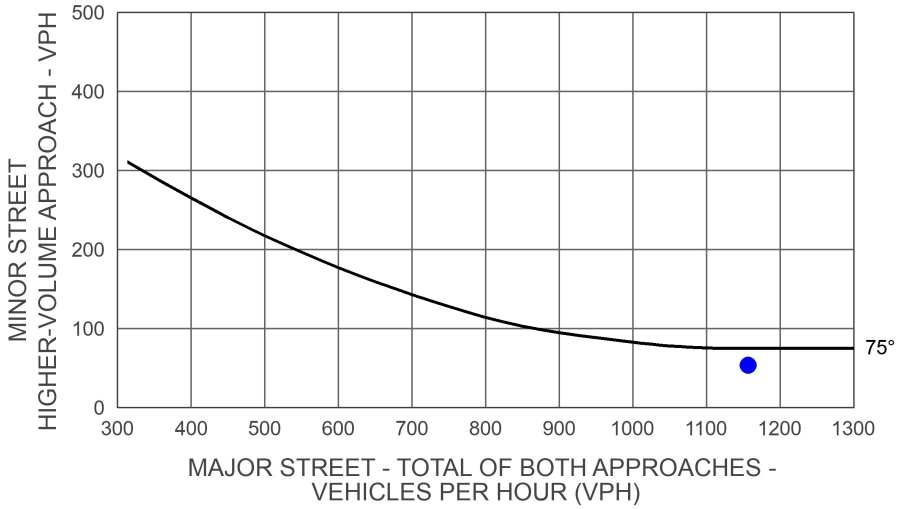
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	274	-	-	1055	-
HCM Lane V/C Ratio	0.218	-	-	0.031	-
HCM Control Delay (s)	21.8	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 17

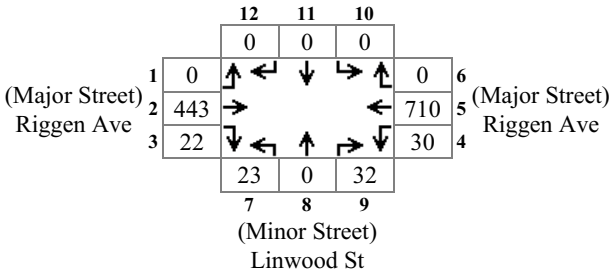


Major Total: 1156
Minor High Volume: 54

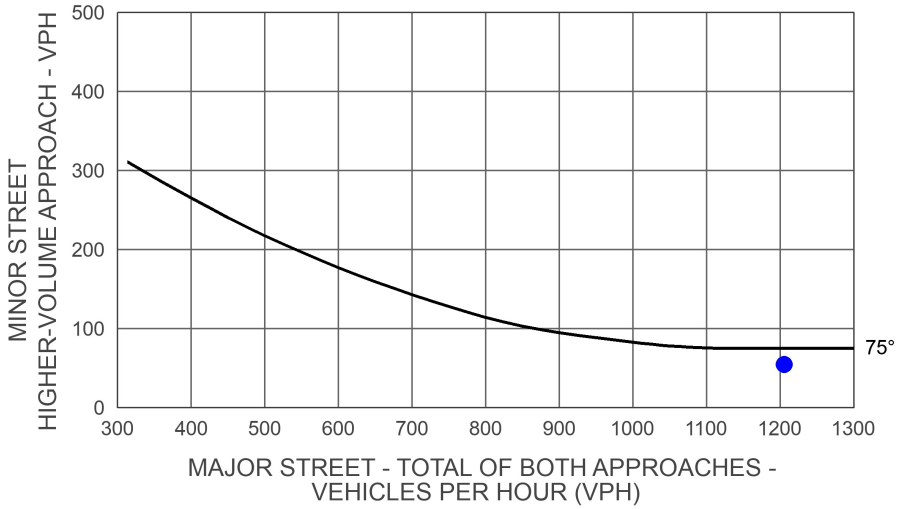


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 17



Major Total: 1205
Minor High Volume: 55



Intersection 18
Demaree St & Riggen Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	479	98	342	325	23	78	464	193	63	373	98
Future Volume (veh/h)	171	479	98	342	325	23	78	464	193	63	373	98
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	186	521	107	372	353	25	85	504	210	68	405	107
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	234	1466	594	396	1401	568	114	615	255	121	710	185
Arrive On Green	0.14	0.41	0.41	0.13	0.40	0.40	0.02	0.08	0.08	0.07	0.26	0.25
Sat Flow, veh/h	1634	3539	1434	3170	3539	1434	1634	2426	1005	1634	2757	720
Grp Volume(v), veh/h	186	521	107	372	353	25	85	367	347	68	258	254
Grp Sat Flow(s),veh/h/ln	1634	1770	1434	1585	1770	1434	1634	1770	1661	1634	1770	1707
Q Serve(g_s), s	13.2	12.1	5.7	14.0	8.0	0.9	6.2	24.5	24.7	4.8	15.2	15.6
Cycle Q Clear(g_c), s	13.2	12.1	5.7	14.0	8.0	0.9	6.2	24.5	24.7	4.8	15.2	15.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.60	1.00		0.42
Lane Grp Cap(c), veh/h	234	1466	594	396	1401	568	114	448	421	121	456	440
V/C Ratio(X)	0.79	0.36	0.18	0.94	0.25	0.04	0.74	0.82	0.82	0.56	0.57	0.58
Avail Cap(c_a), veh/h	324	1466	594	396	1401	568	114	507	476	251	655	632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.7	24.2	22.3	52.0	24.3	11.6	57.5	52.3	52.5	53.7	38.7	39.1
Incr Delay (d2), s/veh	9.0	0.7	0.7	30.1	0.4	0.1	18.8	7.5	8.4	4.0	1.1	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	6.1	2.3	7.8	4.0	0.4	3.4	13.0	12.4	2.3	7.6	7.5
LnGrp Delay(d),s/veh	58.7	24.8	22.9	82.1	24.8	11.7	76.3	59.8	60.9	57.7	39.8	40.3
LnGrp LOS	E	C	C	F	C	B	E	E	E	E	D	D
Approach Vol, veh/h		814			750			799			580	
Approach Delay, s/veh		32.3			52.8			62.0			42.1	
Approach LOS		C			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.9	34.4	19.0	53.7	12.4	34.9	21.2	51.5
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	6.8	26.7	16.0	14.1	8.2	17.6	15.2	10.0
Green Ext Time (p_c), s	1.7	1.7	0.0	4.2	0.0	2.2	0.3	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	47.5
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	213	479	98	342	325	72	78	493	193	91	389	122
Future Volume (veh/h)	213	479	98	342	325	72	78	493	193	91	389	122
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	232	521	107	372	353	78	85	536	210	99	423	133
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	278	1363	552	396	1203	487	114	643	251	158	755	235
Arrive On Green	0.17	0.39	0.39	0.13	0.34	0.34	0.02	0.09	0.08	0.10	0.29	0.28
Sat Flow, veh/h	1634	3539	1434	3170	3539	1433	1634	2474	965	1634	2637	819
Grp Volume(v), veh/h	232	521	107	372	353	78	85	383	363	99	282	274
Grp Sat Flow(s),veh/h/ln	1634	1770	1434	1585	1770	1433	1634	1770	1670	1634	1770	1687
Q Serve(g_s), s	16.5	12.7	6.0	14.0	8.8	3.2	6.2	25.6	25.7	7.0	16.2	16.7
Cycle Q Clear(g_c), s	16.5	12.7	6.0	14.0	8.8	3.2	6.2	25.6	25.7	7.0	16.2	16.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.58	1.00		0.49
Lane Grp Cap(c), veh/h	278	1363	552	396	1203	487	114	460	434	158	507	483
V/C Ratio(X)	0.83	0.38	0.19	0.94	0.29	0.16	0.74	0.83	0.84	0.63	0.56	0.57
Avail Cap(c_a), veh/h	324	1363	552	396	1203	487	114	507	479	251	655	624
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.1	26.6	24.5	52.0	29.0	13.9	57.5	52.3	52.5	52.1	36.3	36.8
Incr Delay (d2), s/veh	15.0	0.8	0.8	30.1	0.6	0.7	18.6	8.6	9.4	4.0	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	6.4	2.5	7.8	4.4	1.4	3.4	13.7	13.0	3.3	8.1	7.9
LnGrp Delay(d),s/veh	63.1	27.4	25.3	82.1	29.7	14.6	76.2	60.9	61.9	56.2	37.3	37.8
LnGrp LOS	E	C	C	F	C	B	E	E	E	E	D	D
Approach Vol, veh/h		860			803			831			655	
Approach Delay, s/veh		36.8			52.5			62.9			40.4	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	35.2	19.0	50.2	12.4	38.4	24.4	44.8
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	9.0	27.7	16.0	14.7	8.2	18.7	18.5	10.8
Green Ext Time (p_c), s	1.7	1.6	0.0	4.5	0.0	2.5	0.3	4.1

Intersection Summary	
HCM 2010 Ctrl Delay	48.4
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	213	479	98	342	325	72	78	493	193	91	389	122
Future Volume (veh/h)	213	479	98	342	325	72	78	493	193	91	389	122
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	232	521	107	372	353	78	85	536	210	99	423	133
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	278	1363	552	396	1203	487	114	643	251	158	755	235
Arrive On Green	0.17	0.39	0.39	0.13	0.34	0.34	0.02	0.09	0.08	0.10	0.29	0.28
Sat Flow, veh/h	1634	3539	1434	3170	3539	1433	1634	2474	965	1634	2637	819
Grp Volume(v), veh/h	232	521	107	372	353	78	85	383	363	99	282	274
Grp Sat Flow(s),veh/h/ln	1634	1770	1434	1585	1770	1433	1634	1770	1670	1634	1770	1687
Q Serve(g_s), s	16.5	12.7	6.0	14.0	8.8	3.2	6.2	25.6	25.7	7.0	16.2	16.7
Cycle Q Clear(g_c), s	16.5	12.7	6.0	14.0	8.8	3.2	6.2	25.6	25.7	7.0	16.2	16.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.58	1.00		0.49
Lane Grp Cap(c), veh/h	278	1363	552	396	1203	487	114	460	434	158	507	483
V/C Ratio(X)	0.83	0.38	0.19	0.94	0.29	0.16	0.74	0.83	0.84	0.63	0.56	0.57
Avail Cap(c_a), veh/h	324	1363	552	396	1203	487	114	507	479	251	655	624
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.1	26.6	24.5	52.0	29.0	13.9	57.5	52.3	52.5	52.1	36.3	36.8
Incr Delay (d2), s/veh	15.0	0.8	0.8	30.1	0.6	0.7	18.6	8.6	9.4	4.0	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	6.4	2.5	7.8	4.4	1.4	3.4	13.7	13.0	3.3	8.1	7.9
LnGrp Delay(d),s/veh	63.1	27.4	25.3	82.1	29.7	14.6	76.2	60.9	61.9	56.2	37.3	37.8
LnGrp LOS	E	C	C	F	C	B	E	E	E	E	D	D
Approach Vol, veh/h		860			803			831			655	
Approach Delay, s/veh		36.8			52.5			62.9			40.4	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	35.2	19.0	50.2	12.4	38.4	24.4	44.8
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	9.0	27.7	16.0	14.7	8.2	18.7	18.5	10.8
Green Ext Time (p_c), s	1.7	1.6	0.0	4.5	0.0	2.5	0.3	4.1

Intersection Summary	
HCM 2010 Ctrl Delay	48.4
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	307	91	205	380	40	72	343	116	35	397	142
Future Volume (veh/h)	111	307	91	205	380	40	72	343	116	35	397	142
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.96
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
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	121	334	99	223	413	43	78	373	126	38	432	154
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	168	1681	682	320	1673	678	113	508	169	155	563	198
Arrive On Green	0.10	0.47	0.47	0.10	0.47	0.47	0.07	0.20	0.19	0.10	0.22	0.21
Sat Flow, veh/h	1634	3539	1435	3170	3539	1435	1634	2594	863	1634	2541	895
Grp Volume(v), veh/h	121	334	99	223	413	43	78	253	246	38	299	287
Grp Sat Flow(s),veh/h/ln	1634	1770	1435	1585	1770	1435	1634	1770	1687	1634	1770	1666
Q Serve(g_s), s	8.6	6.6	4.7	8.2	8.4	1.3	5.6	16.1	16.5	2.6	19.0	19.5
Cycle Q Clear(g_c), s	8.6	6.6	4.7	8.2	8.4	1.3	5.6	16.1	16.5	2.6	19.0	19.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.51	1.00		0.54
Lane Grp Cap(c), veh/h	168	1681	682	320	1673	678	113	347	330	155	392	369
V/C Ratio(X)	0.72	0.20	0.15	0.70	0.25	0.06	0.69	0.73	0.75	0.24	0.76	0.78
Avail Cap(c_a), veh/h	324	1681	682	396	1673	678	114	507	484	251	655	617
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.1	18.3	17.8	52.2	18.9	7.0	54.6	45.3	45.8	50.3	43.8	44.3
Incr Delay (d2), s/veh	5.7	0.3	0.4	4.0	0.4	0.2	14.7	2.7	3.3	0.8	3.1	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	3.3	1.9	3.7	4.2	0.5	3.0	8.1	8.0	1.2	9.7	9.3
LnGrp Delay(d),s/veh	57.8	18.5	18.2	56.1	19.2	7.2	69.2	48.0	49.1	51.1	46.9	47.8
LnGrp LOS	E	B	B	E	B	A	E	D	D	D	D	D
Approach Vol, veh/h		554			679			577			624	
Approach Delay, s/veh		27.0			30.6			51.3			47.6	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.4	27.5	16.1	61.0	12.3	30.6	16.4	60.7
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	4.6	18.5	10.2	8.6	7.6	21.5	10.6	10.4
Green Ext Time (p_c), s	2.0	1.6	0.2	3.8	0.0	2.4	0.2	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.1
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	307	91	205	380	54	72	352	116	77	421	179
Future Volume (veh/h)	124	307	91	205	380	54	72	352	116	77	421	179
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	135	334	99	223	413	59	78	383	126	84	458	195
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	183	1612	653	320	1573	637	113	518	168	183	578	244
Arrive On Green	0.11	0.46	0.46	0.10	0.44	0.44	0.07	0.20	0.19	0.11	0.24	0.23
Sat Flow, veh/h	1634	3539	1435	3170	3539	1435	1634	2613	847	1634	2400	1012
Grp Volume(v), veh/h	135	334	99	223	413	59	78	258	251	84	337	316
Grp Sat Flow(s),veh/h/ln	1634	1770	1435	1585	1770	1435	1634	1770	1691	1634	1770	1642
Q Serve(g_s), s	9.6	6.8	4.8	8.2	8.8	1.8	5.6	16.4	16.8	5.8	21.4	21.8
Cycle Q Clear(g_c), s	9.6	6.8	4.8	8.2	8.8	1.8	5.6	16.4	16.8	5.8	21.4	21.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.50	1.00		0.62
Lane Grp Cap(c), veh/h	183	1612	653	320	1573	637	113	351	335	183	426	396
V/C Ratio(X)	0.74	0.21	0.15	0.70	0.26	0.09	0.69	0.73	0.75	0.46	0.79	0.80
Avail Cap(c_a), veh/h	324	1612	653	396	1573	637	114	507	485	251	655	608
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.6	19.6	19.1	52.2	21.0	7.6	54.6	45.1	45.6	49.9	42.7	43.2
Incr Delay (d2), s/veh	5.7	0.3	0.5	4.0	0.4	0.3	14.6	2.9	3.5	1.8	3.6	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	3.4	2.0	3.7	4.4	0.8	3.0	8.3	8.2	2.7	10.9	10.3
LnGrp Delay(d),s/veh	57.3	19.9	19.6	56.1	21.4	7.9	69.2	48.1	49.2	51.6	46.3	47.5
LnGrp LOS	E	B	B	E	C	A	E	D	D	D	D	D
Approach Vol, veh/h		568			695			587			737	
Approach Delay, s/veh		28.8			31.4			51.4			47.4	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.5	27.8	16.1	58.7	12.3	32.9	17.4	57.3
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	7.8	18.8	10.2	8.8	7.6	23.8	11.6	10.8
Green Ext Time (p_c), s	2.1	1.7	0.2	3.9	0.0	2.8	0.3	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.9
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	307	91	205	380	54	72	352	116	77	421	179
Future Volume (veh/h)	124	307	91	205	380	54	72	352	116	77	421	179
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	135	334	99	223	413	59	78	383	126	84	458	195
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	183	1610	653	320	1571	637	114	530	172	177	578	244
Arrive On Green	0.11	0.45	0.45	0.10	0.44	0.44	0.02	0.07	0.06	0.11	0.24	0.23
Sat Flow, veh/h	1634	3539	1435	3170	3539	1435	1634	2613	847	1634	2400	1012
Grp Volume(v), veh/h	135	334	99	223	413	59	78	258	251	84	337	316
Grp Sat Flow(s),veh/h/ln	1634	1770	1435	1585	1770	1435	1634	1770	1691	1634	1770	1642
Q Serve(g_s), s	9.6	6.8	4.8	8.2	8.8	1.8	5.7	17.1	17.5	5.8	21.4	21.8
Cycle Q Clear(g_c), s	9.6	6.8	4.8	8.2	8.8	1.8	5.7	17.1	17.5	5.8	21.4	21.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.50	1.00		0.62
Lane Grp Cap(c), veh/h	183	1610	653	320	1571	637	114	359	343	177	426	396
V/C Ratio(X)	0.74	0.21	0.15	0.70	0.26	0.09	0.68	0.72	0.73	0.48	0.79	0.80
Avail Cap(c_a), veh/h	324	1610	653	396	1571	637	114	507	485	251	655	608
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.6	19.7	19.2	52.2	21.0	7.8	57.3	52.6	52.9	50.3	42.7	43.2
Incr Delay (d2), s/veh	5.7	0.3	0.5	4.0	0.4	0.3	14.2	2.6	3.2	2.0	3.6	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	3.4	2.0	3.7	4.4	0.8	3.0	8.7	8.5	2.7	10.9	10.3
LnGrp Delay(d),s/veh	57.3	20.0	19.6	56.1	21.4	8.1	71.5	55.3	56.1	52.3	46.3	47.5
LnGrp LOS	E	B	B	E	C	A	E	E	E	D	D	D
Approach Vol, veh/h		568			695			587			737	
Approach Delay, s/veh		28.8			31.4			57.8			47.5	
Approach LOS		C			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	28.3	16.1	58.6	12.4	32.9	17.4	57.3
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	7.8	19.5	10.2	8.8	7.7	23.8	11.6	10.8
Green Ext Time (p_c), s	2.1	1.6	0.2	3.9	0.0	2.8	0.3	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	41.4
HCM 2010 LOS	D

Notes

User approved changes to right turn type.

Intersection 19
Country Center St & Riggen Ave

Intersection	
Intersection Delay, s/veh	23.1
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	45	542	95	0	88	422	52	0	59	63	75	0	32	69	40
Future Vol, veh/h	0	45	542	95	0	88	422	52	0	59	63	75	0	32	69	40
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	49	589	103	0	96	459	57	0	64	68	82	0	35	75	43
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	30	20.5	13.8	13.5
HCM LOS	D	C	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	22%	0%	100%	66%	0%	100%	73%	0%	100%	0%
Vol Right, %	0%	0%	78%	0%	0%	34%	0%	0%	27%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	59	42	96	45	361	276	88	281	193	32	69	40
LT Vol	59	0	0	45	0	0	88	0	0	32	0	0
Through Vol	0	42	21	0	361	181	0	281	141	0	69	0
RT Vol	0	0	75	0	0	95	0	0	52	0	0	40
Lane Flow Rate	64	46	104	49	393	300	96	306	209	35	75	43
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.169	0.114	0.245	0.111	0.835	0.617	0.222	0.669	0.447	0.094	0.192	0.103
Departure Headway (Hd)	9.512	9.012	8.465	8.151	7.651	7.41	8.373	7.873	7.684	9.706	9.206	8.506
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	376	396	423	439	471	485	428	459	467	368	389	420
Service Time	7.301	6.801	6.255	5.918	5.418	5.177	6.145	5.645	5.456	7.498	6.998	6.298
HCM Lane V/C Ratio	0.17	0.116	0.246	0.112	0.834	0.619	0.224	0.667	0.448	0.095	0.193	0.102
HCM Control Delay	14.2	13	14	11.9	38.7	21.5	13.5	25.3	16.6	13.5	14.2	12.3
HCM Lane LOS	B	B	B	B	E	C	B	D	C	B	B	B
HCM 95th-tile Q	0.6	0.4	1	0.4	8.2	4.1	0.8	4.8	2.3	0.3	0.7	0.3

Intersection	
Intersection Delay, s/veh	26.2
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	47	555	105	0	88	443	52	0	79	63	75	0	32	69	44
Future Vol, veh/h	0	47	555	105	0	88	443	52	0	79	63	75	0	32	69	44
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	51	603	114	0	96	482	57	0	86	68	82	0	35	75	48
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	34.8	23.1	14.6	13.9
HCM LOS	D	C	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	22%	0%	100%	64%	0%	100%	74%	0%	100%	0%
Vol Right, %	0%	0%	78%	0%	0%	36%	0%	0%	26%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	79	42	96	47	370	290	88	295	200	32	69	44
LT Vol	79	0	0	47	0	0	88	0	0	32	0	0
Through Vol	0	42	21	0	370	185	0	295	148	0	69	0
RT Vol	0	0	75	0	0	105	0	0	52	0	0	44
Lane Flow Rate	86	46	104	51	402	315	96	321	217	35	75	48
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.235	0.118	0.255	0.119	0.879	0.667	0.228	0.722	0.477	0.098	0.2	0.118
Departure Headway (Hd)	9.844	9.344	8.797	8.372	7.872	7.618	8.699	8.199	8.017	10.108	9.608	8.908
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	367	386	410	426	458	473	415	443	451	357	376	405
Service Time	7.55	7.05	6.503	6.168	5.668	5.415	6.399	5.899	5.717	7.817	7.317	6.617
HCM Lane V/C Ratio	0.234	0.119	0.254	0.12	0.878	0.666	0.231	0.725	0.481	0.098	0.199	0.119
HCM Control Delay	15.5	13.3	14.5	12.3	45.8	24.5	13.9	29.4	17.8	13.9	14.7	12.8
HCM Lane LOS	C	B	B	B	E	C	B	D	C	B	B	B
HCM 95th-tile Q	0.9	0.4	1	0.4	9.3	4.8	0.9	5.7	2.5	0.3	0.7	0.4

Intersection	
Intersection Delay, s/veh	26.2
Intersection LOS	D

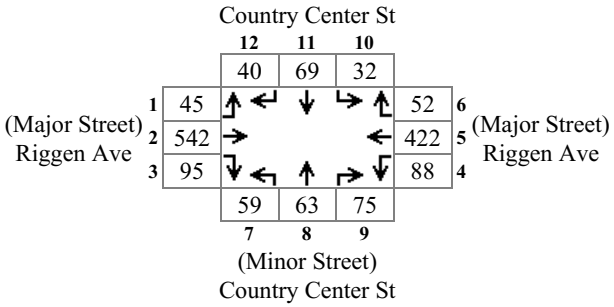
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	47	555	105	0	88	443	52	0	79	63	75	0	32	69	44
Future Vol, veh/h	0	47	555	105	0	88	443	52	0	79	63	75	0	32	69	44
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	51	603	114	0	96	482	57	0	86	68	82	0	35	75	48
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	34.8	23.1	14.6	13.9
HCM LOS	D	C	B	B

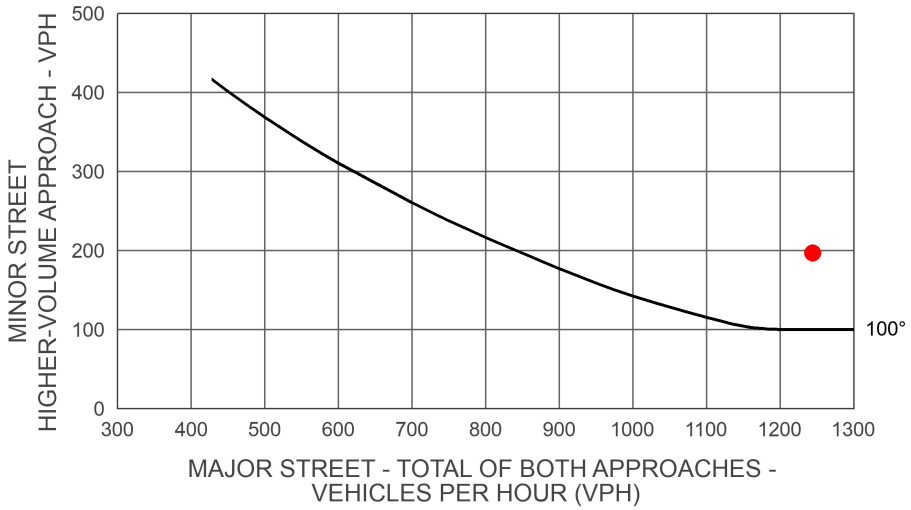
Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	22%	0%	100%	64%	0%	100%	74%	0%	100%	0%
Vol Right, %	0%	0%	78%	0%	0%	36%	0%	0%	26%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	79	42	96	47	370	290	88	295	200	32	69	44
LT Vol	79	0	0	47	0	0	88	0	0	32	0	0
Through Vol	0	42	21	0	370	185	0	295	148	0	69	0
RT Vol	0	0	75	0	0	105	0	0	52	0	0	44
Lane Flow Rate	86	46	104	51	402	315	96	321	217	35	75	48
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.235	0.118	0.255	0.119	0.879	0.667	0.228	0.722	0.477	0.098	0.2	0.118
Departure Headway (Hd)	9.844	9.344	8.797	8.372	7.872	7.618	8.699	8.199	8.017	10.108	9.608	8.908
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	367	386	410	426	458	473	415	443	451	357	376	405
Service Time	7.55	7.05	6.503	6.168	5.668	5.415	6.399	5.899	5.717	7.817	7.317	6.617
HCM Lane V/C Ratio	0.234	0.119	0.254	0.12	0.878	0.666	0.231	0.725	0.481	0.098	0.199	0.119
HCM Control Delay	15.5	13.3	14.5	12.3	45.8	24.5	13.9	29.4	17.8	13.9	14.7	12.8
HCM Lane LOS	C	B	B	B	E	C	B	D	C	B	B	B
HCM 95th-tile Q	0.9	0.4	1	0.4	9.3	4.8	0.9	5.7	2.5	0.3	0.7	0.4

Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 19

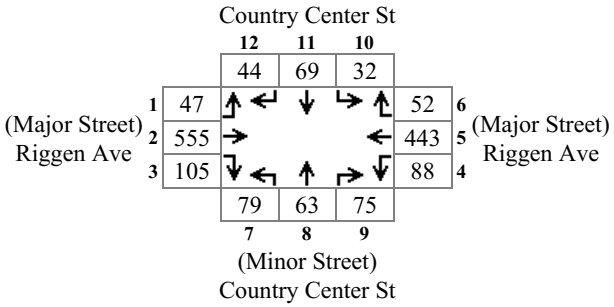


Major Total: 1244
Minor High Volume: 197

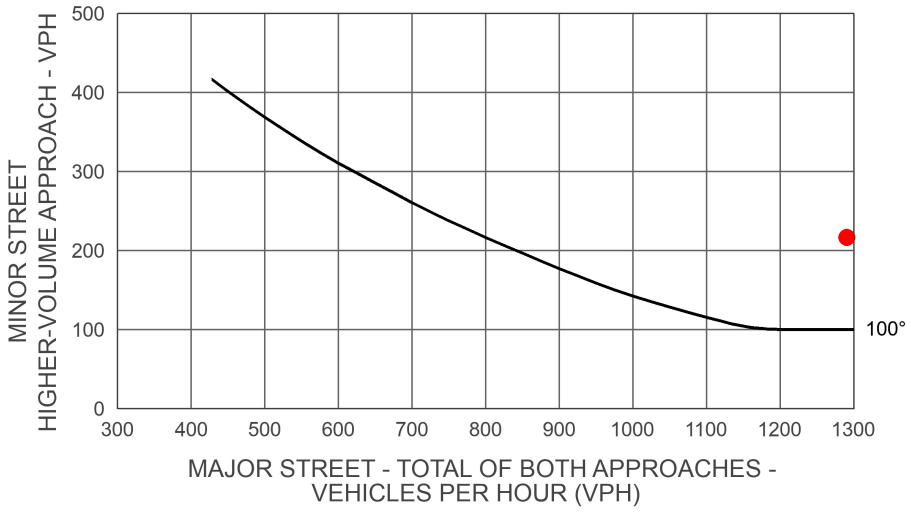


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project
Intersection #: 19



Major Total: 1290
Minor High Volume: 217



Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	17	281	17	0	35	357	18	0	66	24	58	0	37	53	37
Future Vol, veh/h	0	17	281	17	0	35	357	18	0	66	24	58	0	37	53	37
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	18	305	18	0	38	388	20	0	72	26	63	0	40	58	40
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	12.3	13.1	11	10.7
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	12%	0%	100%	85%	0%	100%	87%	0%	100%	0%
Vol Right, %	0%	0%	88%	0%	0%	15%	0%	0%	13%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	66	16	66	17	187	111	35	238	137	37	53	37
LT Vol	66	0	0	17	0	0	35	0	0	37	0	0
Through Vol	0	16	8	0	187	94	0	238	119	0	53	0
RT Vol	0	0	58	0	0	17	0	0	18	0	0	37
Lane Flow Rate	72	17	72	18	204	120	38	259	149	40	58	40
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.152	0.034	0.13	0.036	0.372	0.216	0.073	0.458	0.26	0.086	0.115	0.073
Departure Headway (Hd)	7.639	7.139	6.524	7.07	6.57	6.462	6.879	6.379	6.287	7.696	7.196	6.496
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	468	499	546	505	546	553	519	564	569	464	495	548
Service Time	5.418	4.918	4.303	4.836	4.336	4.228	4.641	4.141	4.049	5.476	4.976	4.276
HCM Lane V/C Ratio	0.154	0.034	0.132	0.036	0.374	0.217	0.073	0.459	0.262	0.086	0.117	0.073
HCM Control Delay	11.8	10.2	10.3	10.1	13.2	11	10.2	14.5	11.3	11.2	10.9	9.8
HCM Lane LOS	B	B	B	B	B	B	B	B	B	B	B	A
HCM 95th-tile Q	0.5	0.1	0.4	0.1	1.7	0.8	0.2	2.4	1	0.3	0.4	0.2

Intersection	
Intersection Delay, s/veh	12.6
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	20	301	33	0	35	363	18	0	72	24	58	0	37	53	38
Future Vol, veh/h	0	20	301	33	0	35	363	18	0	72	24	58	0	37	53	38
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	22	327	36	0	38	395	20	0	78	26	63	0	40	58	41
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	12.8	13.5	11.3	10.9
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	12%	0%	100%	75%	0%	100%	87%	0%	100%	0%
Vol Right, %	0%	0%	88%	0%	0%	25%	0%	0%	13%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	16	66	20	201	133	35	242	139	37	53	38
LT Vol	72	0	0	20	0	0	35	0	0	37	0	0
Through Vol	0	16	8	0	201	100	0	242	121	0	53	0
RT Vol	0	0	58	0	0	33	0	0	18	0	0	38
Lane Flow Rate	78	17	72	22	218	145	38	263	151	40	58	41
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.169	0.035	0.133	0.043	0.402	0.26	0.074	0.476	0.27	0.088	0.118	0.076
Departure Headway (Hd)	7.786	7.286	6.671	7.143	6.643	6.469	7.014	6.514	6.424	7.861	7.361	6.661
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	459	489	534	499	539	552	509	550	556	454	484	534
Service Time	5.571	5.071	4.456	4.917	4.417	4.243	4.783	4.283	4.193	5.648	5.148	4.448
HCM Lane V/C Ratio	0.17	0.035	0.135	0.044	0.404	0.263	0.075	0.478	0.272	0.088	0.12	0.077
HCM Control Delay	12.2	10.3	10.5	10.2	13.9	11.5	10.3	15.1	11.6	11.4	11.1	10
HCM Lane LOS	B	B	B	B	B	B	B	C	B	B	B	A
HCM 95th-tile Q	0.6	0.1	0.5	0.1	1.9	1	0.2	2.5	1.1	0.3	0.4	0.2

Intersection	
Intersection Delay, s/veh	12.6
Intersection LOS	B

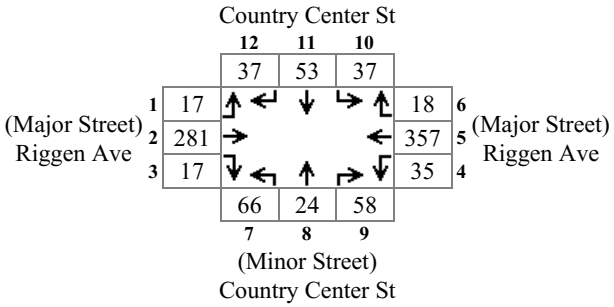
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	20	301	33	0	35	363	18	0	72	24	58	0	37	53	38
Future Vol, veh/h	0	20	301	33	0	35	363	18	0	72	24	58	0	37	53	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	22	327	36	0	38	395	20	0	78	26	63	0	40	58	41
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	12.8	13.5	11.3	10.9
HCM LOS	B	B	B	B

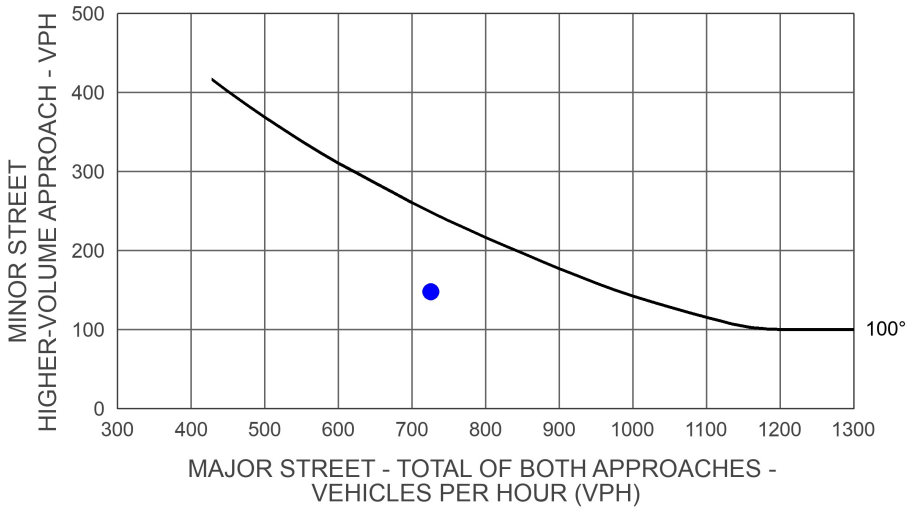
Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	12%	0%	100%	75%	0%	100%	87%	0%	100%	0%
Vol Right, %	0%	0%	88%	0%	0%	25%	0%	0%	13%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	16	66	20	201	133	35	242	139	37	53	38
LT Vol	72	0	0	20	0	0	35	0	0	37	0	0
Through Vol	0	16	8	0	201	100	0	242	121	0	53	0
RT Vol	0	0	58	0	0	33	0	0	18	0	0	38
Lane Flow Rate	78	17	72	22	218	145	38	263	151	40	58	41
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.169	0.035	0.133	0.043	0.402	0.26	0.074	0.476	0.27	0.088	0.118	0.076
Departure Headway (Hd)	7.786	7.286	6.671	7.143	6.643	6.469	7.014	6.514	6.424	7.861	7.361	6.661
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	459	489	534	499	539	552	509	550	556	454	484	534
Service Time	5.571	5.071	4.456	4.917	4.417	4.243	4.783	4.283	4.193	5.648	5.148	4.448
HCM Lane V/C Ratio	0.17	0.035	0.135	0.044	0.404	0.263	0.075	0.478	0.272	0.088	0.12	0.077
HCM Control Delay	12.2	10.3	10.5	10.2	13.9	11.5	10.3	15.1	11.6	11.4	11.1	10
HCM Lane LOS	B	B	B	B	B	B	B	C	B	B	B	A
HCM 95th-tile Q	0.6	0.1	0.5	0.1	1.9	1	0.2	2.5	1.1	0.3	0.4	0.2

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 19

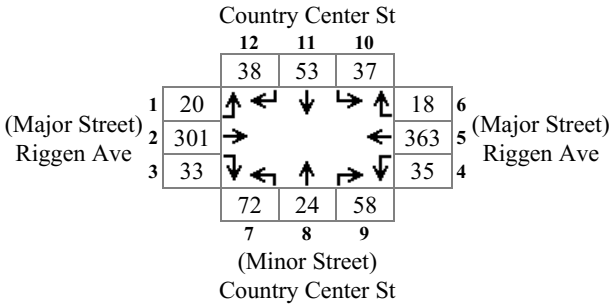


Major Total: 725
Minor High Volume: 148

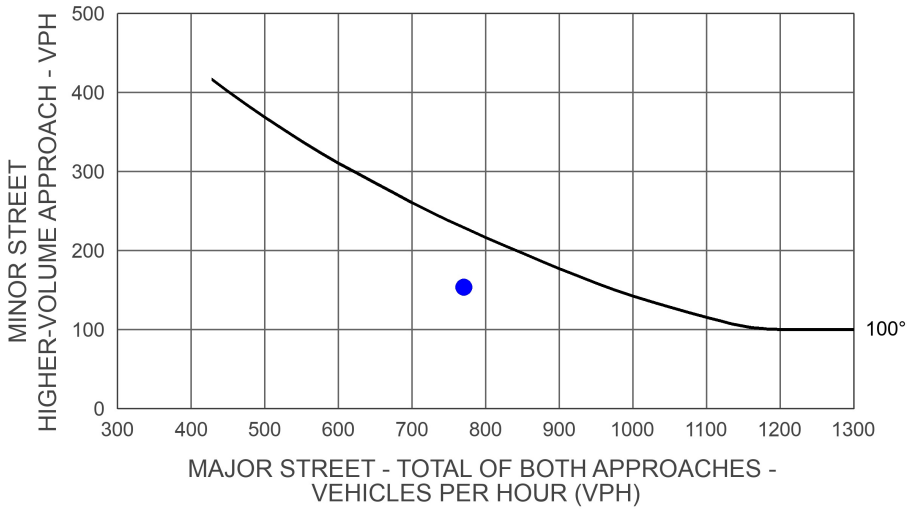


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 19



Major Total: 770
Minor High Volume: 154



Intersection 20
Linwood St & Ferguson Ave

Intersection	
Intersection Delay, s/veh	10.9
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	54	285	123	0	27	162	33	0	65	45	16	0	18	63	30
Future Vol, veh/h	0	54	285	123	0	27	162	33	0	65	45	16	0	18	63	30
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	59	310	134	0	29	176	36	0	71	49	17	0	20	68	33
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	11	10	11.7	11
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	52%	100%	0%	0%	100%	0%	0%	16%
Vol Thru, %	36%	0%	100%	44%	0%	100%	62%	57%
Vol Right, %	13%	0%	0%	56%	0%	0%	38%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	126	54	190	218	27	108	87	111
LT Vol	65	54	0	0	27	0	0	18
Through Vol	45	0	190	95	0	108	54	63
RT Vol	16	0	0	123	0	0	33	30
Lane Flow Rate	137	59	207	237	29	117	95	121
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.254	0.102	0.33	0.353	0.054	0.198	0.152	0.216
Departure Headway (Hd)	6.686	6.264	5.757	5.356	6.575	6.067	5.797	6.455
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	537	572	626	671	544	592	618	556
Service Time	4.431	3.999	3.491	3.091	4.317	3.808	3.538	4.2
HCM Lane V/C Ratio	0.255	0.103	0.331	0.353	0.053	0.198	0.154	0.218
HCM Control Delay	11.7	9.7	11.3	11	9.7	10.3	9.6	11
HCM Lane LOS	B	A	B	B	A	B	A	B
HCM 95th-tile Q	1	0.3	1.4	1.6	0.2	0.7	0.5	0.8

Intersection	
Intersection Delay, s/veh	10.9
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	54	292	123	0	27	166	33	0	65	47	16	0	18	64	30
Future Vol, veh/h	0	54	292	123	0	27	166	33	0	65	47	16	0	18	64	30
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	59	317	134	0	29	180	36	0	71	51	17	0	20	70	33
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	11.1	10	11.8	11.1
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	51%	100%	0%	0%	100%	0%	0%	16%
Vol Thru, %	37%	0%	100%	44%	0%	100%	63%	57%
Vol Right, %	12%	0%	0%	56%	0%	0%	37%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	128	54	195	220	27	111	88	112
LT Vol	65	54	0	0	27	0	0	18
Through Vol	47	0	195	97	0	111	55	64
RT Vol	16	0	0	123	0	0	33	30
Lane Flow Rate	139	59	212	239	29	120	96	122
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.26	0.103	0.34	0.358	0.054	0.204	0.155	0.22
Departure Headway (Hd)	6.716	6.288	5.78	5.384	6.605	6.096	5.83	6.491
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	534	570	622	668	542	588	614	553
Service Time	4.466	4.028	3.52	3.123	4.352	3.844	3.578	4.242
HCM Lane V/C Ratio	0.26	0.104	0.341	0.358	0.054	0.204	0.156	0.221
HCM Control Delay	11.8	9.8	11.5	11.1	9.7	10.4	9.7	11.1
HCM Lane LOS	B	A	B	B	A	B	A	B
HCM 95th-tile Q	1	0.3	1.5	1.6	0.2	0.8	0.5	0.8

Intersection	
Intersection Delay, s/veh	10.9
Intersection LOS	B

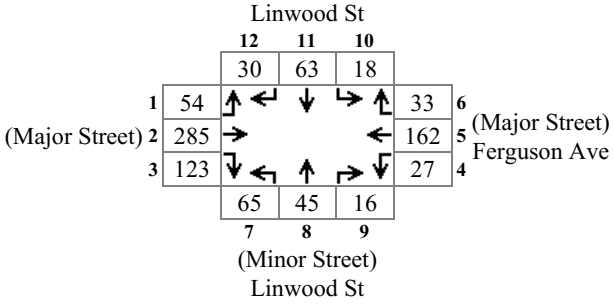
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	54	292	123	0	27	166	33	0	65	47	16	0	18	64	30
Future Vol, veh/h	0	54	292	123	0	27	166	33	0	65	47	16	0	18	64	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	59	317	134	0	29	180	36	0	71	51	17	0	20	70	33
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	11.1	10	11.8	11.1
HCM LOS	B	A	B	B

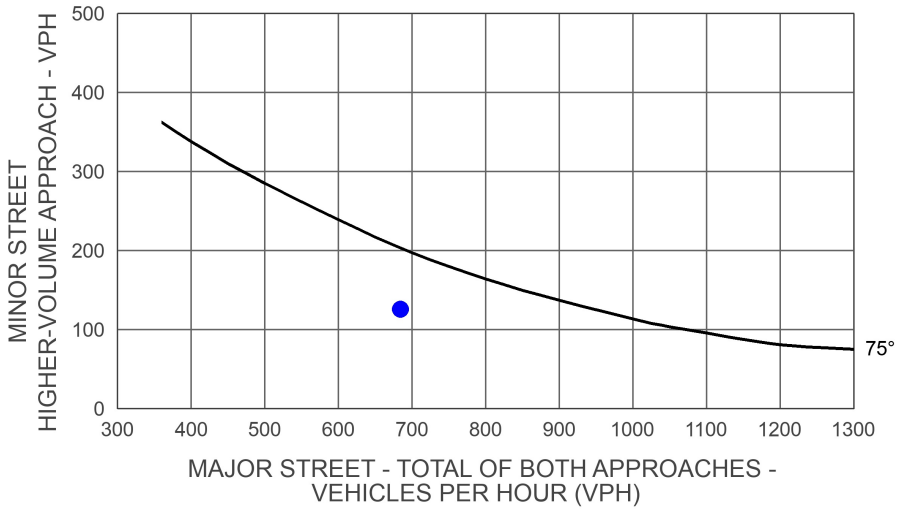
Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	51%	100%	0%	0%	100%	0%	0%	16%
Vol Thru, %	37%	0%	100%	44%	0%	100%	63%	57%
Vol Right, %	12%	0%	0%	56%	0%	0%	37%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	128	54	195	220	27	111	88	112
LT Vol	65	54	0	0	27	0	0	18
Through Vol	47	0	195	97	0	111	55	64
RT Vol	16	0	0	123	0	0	33	30
Lane Flow Rate	139	59	212	239	29	120	96	122
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.26	0.103	0.34	0.358	0.054	0.204	0.155	0.22
Departure Headway (Hd)	6.716	6.288	5.78	5.384	6.605	6.096	5.83	6.491
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	534	570	622	668	542	588	614	553
Service Time	4.466	4.028	3.52	3.123	4.352	3.844	3.578	4.242
HCM Lane V/C Ratio	0.26	0.104	0.341	0.358	0.054	0.204	0.156	0.221
HCM Control Delay	11.8	9.8	11.5	11.1	9.7	10.4	9.7	11.1
HCM Lane LOS	B	A	B	B	A	B	A	B
HCM 95th-tile Q	1	0.3	1.5	1.6	0.2	0.8	0.5	0.8

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 20

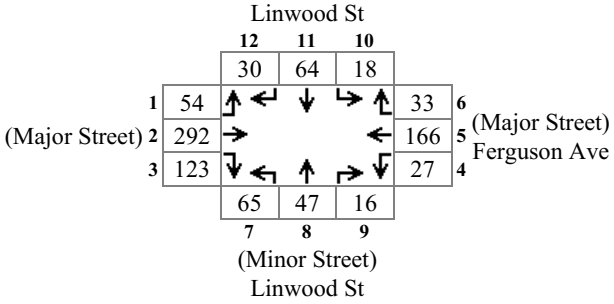


Major Total: 684
Minor High Volume: 126

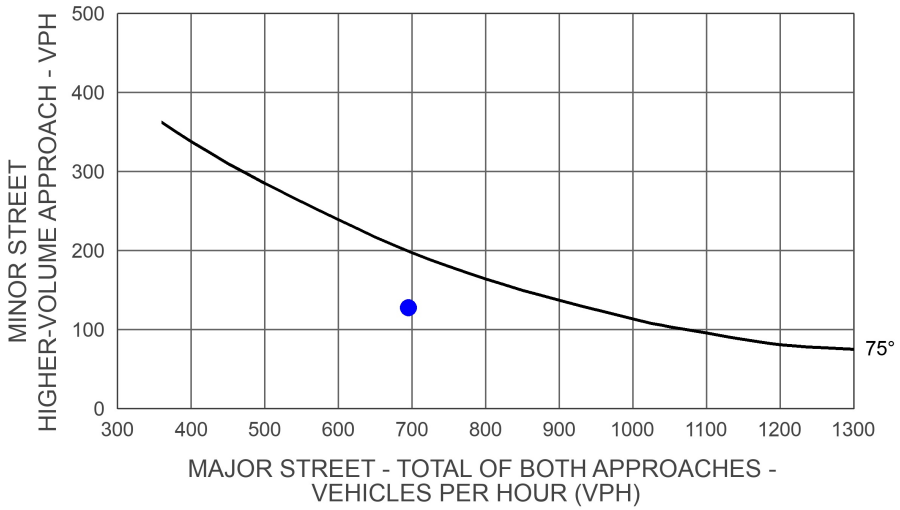


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 20



Major Total: 695
Minor High Volume: 128



Intersection	
Intersection Delay, s/veh	17.2
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	25	196	106	0	53	292	54	0	145	51	89	0	56	118	56
Future Vol, veh/h	0	25	196	106	0	53	292	54	0	145	51	89	0	56	118	56
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	27	213	115	0	58	317	59	0	158	55	97	0	61	128	61
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	13.9	14.7	23.4	18.8
HCM LOS	B	B	C	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	51%	100%	0%	0%	100%	0%	0%	24%
Vol Thru, %	18%	0%	100%	38%	0%	100%	64%	51%
Vol Right, %	31%	0%	0%	62%	0%	0%	36%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	285	25	131	171	53	195	151	230
LT Vol	145	25	0	0	53	0	0	56
Through Vol	51	0	131	65	0	195	97	118
RT Vol	89	0	0	106	0	0	54	56
Lane Flow Rate	310	27	142	186	58	212	164	250
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.65	0.062	0.302	0.373	0.129	0.442	0.331	0.53
Departure Headway (Hd)	7.549	8.185	7.665	7.215	8.033	7.514	7.254	7.635
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	477	436	467	495	445	478	493	470
Service Time	5.321	5.966	5.446	4.995	5.81	5.291	5.031	5.413
HCM Lane V/C Ratio	0.65	0.062	0.304	0.376	0.13	0.444	0.333	0.532
HCM Control Delay	23.4	11.5	13.8	14.3	12	16.2	13.6	18.8
HCM Lane LOS	C	B	B	B	B	C	B	C
HCM 95th-tile Q	4.6	0.2	1.3	1.7	0.4	2.2	1.4	3

Intersection	
Intersection Delay, s/veh	17.5
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	25	198	106	0	53	298	54	0	145	52	89	0	56	120	56
Future Vol, veh/h	0	25	198	106	0	53	298	54	0	145	52	89	0	56	120	56
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	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	27	215	115	0	58	324	59	0	158	57	97	0	61	130	61
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	14	14.9	23.8	19.1
HCM LOS	B	B	C	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	51%	100%	0%	0%	100%	0%	0%	24%
Vol Thru, %	18%	0%	100%	38%	0%	100%	65%	52%
Vol Right, %	31%	0%	0%	62%	0%	0%	35%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	286	25	132	172	53	199	153	232
LT Vol	145	25	0	0	53	0	0	56
Through Vol	52	0	132	66	0	199	99	120
RT Vol	89	0	0	106	0	0	54	56
Lane Flow Rate	311	27	143	187	58	216	167	252
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.656	0.062	0.307	0.377	0.129	0.453	0.338	0.538
Departure Headway (Hd)	7.593	8.227	7.707	7.258	8.067	7.547	7.291	7.678
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	476	433	465	494	442	475	492	469
Service Time	5.367	6.013	5.492	5.043	5.848	5.329	5.072	5.457
HCM Lane V/C Ratio	0.653	0.062	0.308	0.379	0.131	0.455	0.339	0.537
HCM Control Delay	23.8	11.6	13.9	14.4	12.1	16.5	13.8	19.1
HCM Lane LOS	C	B	B	B	B	C	B	C
HCM 95th-tile Q	4.7	0.2	1.3	1.7	0.4	2.3	1.5	3.1

Intersection	
Intersection Delay, s/veh	17.5
Intersection LOS	C

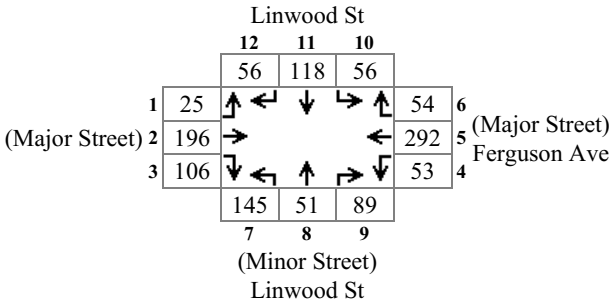
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	25	198	106	0	53	298	54	0	145	52	89	0	56	120	56
Future Vol, veh/h	0	25	198	106	0	53	298	54	0	145	52	89	0	56	120	56
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	27	215	115	0	58	324	59	0	158	57	97	0	61	130	61
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	14	14.9	23.8	19.1
HCM LOS	B	B	C	C

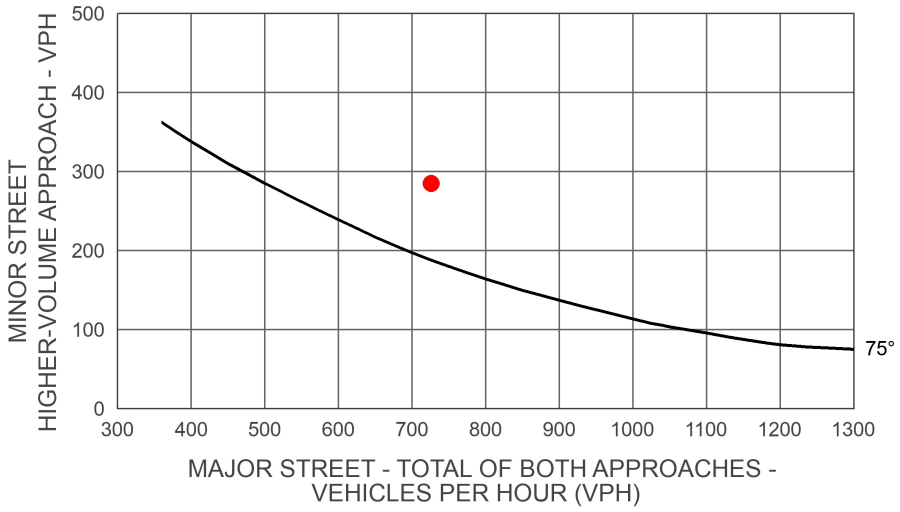
Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	51%	100%	0%	0%	100%	0%	0%	24%
Vol Thru, %	18%	0%	100%	38%	0%	100%	65%	52%
Vol Right, %	31%	0%	0%	62%	0%	0%	35%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	286	25	132	172	53	199	153	232
LT Vol	145	25	0	0	53	0	0	56
Through Vol	52	0	132	66	0	199	99	120
RT Vol	89	0	0	106	0	0	54	56
Lane Flow Rate	311	27	143	187	58	216	167	252
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.656	0.062	0.307	0.377	0.129	0.453	0.338	0.538
Departure Headway (Hd)	7.593	8.227	7.707	7.258	8.067	7.547	7.291	7.678
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	476	433	465	494	442	475	492	469
Service Time	5.367	6.013	5.492	5.043	5.848	5.329	5.072	5.457
HCM Lane V/C Ratio	0.653	0.062	0.308	0.379	0.131	0.455	0.339	0.537
HCM Control Delay	23.8	11.6	13.9	14.4	12.1	16.5	13.8	19.1
HCM Lane LOS	C	B	B	B	B	C	B	C
HCM 95th-tile Q	4.7	0.2	1.3	1.7	0.4	2.3	1.5	3.1

Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future
Intersection #: 20

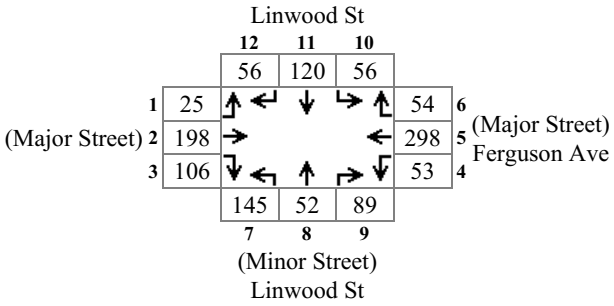


Major Total: 726
Minor High Volume: 285

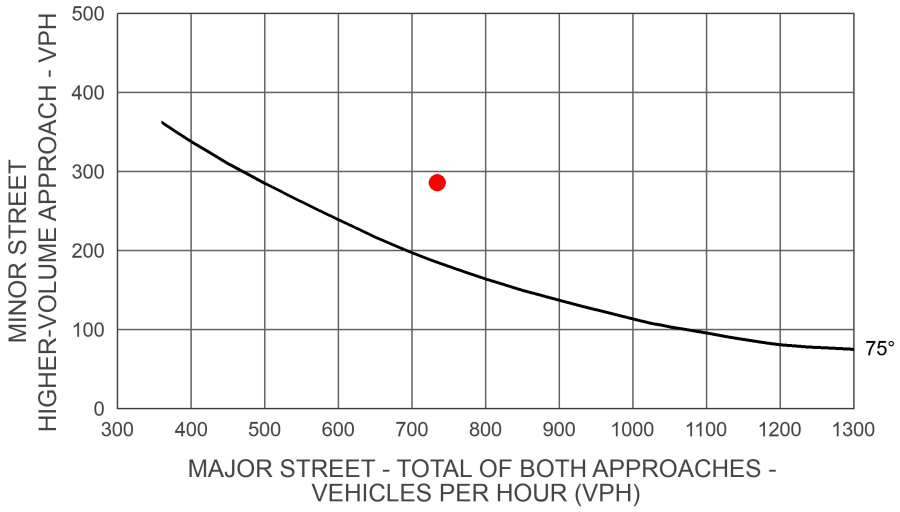


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project
Intersection #: 20



Major Total: 734
Minor High Volume: 286



Intersection 21
Demaree St & Ferguson Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	178	58	112	105	32	72	801	225	35	656	39
Future Volume (veh/h)	64	178	58	112	105	32	72	801	225	35	656	39
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	70	193	63	122	114	35	78	871	245	38	713	42
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	105	300	95	136	247	188	673	1715	482	64	876	52
Arrive On Green	0.06	0.11	0.10	0.08	0.13	0.13	0.41	0.63	0.62	0.01	0.09	0.08
Sat Flow, veh/h	1634	2646	839	1634	1863	1420	1634	2720	764	1634	3397	200
Grp Volume(v), veh/h	70	127	129	122	114	35	78	566	550	38	371	384
Grp Sat Flow(s),veh/h/ln	1634	1770	1715	1634	1863	1420	1634	1770	1714	1634	1770	1827
Q Serve(g_s), s	5.0	8.2	8.7	8.9	6.8	2.6	3.5	20.9	21.1	2.8	24.7	24.8
Cycle Q Clear(g_c), s	5.0	8.2	8.7	8.9	6.8	2.6	3.5	20.9	21.1	2.8	24.7	24.8
Prop In Lane	1.00		0.49	1.00		1.00	1.00		0.45	1.00		0.11
Lane Grp Cap(c), veh/h	105	201	194	136	247	188	673	1116	1081	64	457	471
V/C Ratio(X)	0.67	0.63	0.66	0.90	0.46	0.19	0.12	0.51	0.51	0.59	0.81	0.81
Avail Cap(c_a), veh/h	177	360	349	136	332	253	673	1116	1081	72	749	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80
Uniform Delay (d), s/veh	54.9	50.8	51.3	54.5	48.1	46.3	21.8	12.0	12.3	58.3	52.0	52.1
Incr Delay (d2), s/veh	7.1	3.3	3.8	47.4	1.3	0.5	0.1	1.7	1.7	8.0	12.1	11.8
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	2.5	4.2	4.3	5.8	3.6	1.1	1.6	10.6	10.5	1.4	13.7	14.1
LnGrp Delay(d),s/veh	62.0	54.1	55.1	101.8	49.4	46.8	21.9	13.7	14.0	66.2	64.1	63.9
LnGrp LOS	E	D	E	F	D	D	C	B	B	E	E	E
Approach Vol, veh/h		326			271			1194			793	
Approach Delay, s/veh		56.2			72.7			14.4			64.1	
Approach LOS		E			E			B			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	79.7	14.0	17.6	53.4	35.0	11.7	19.9
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	4.8	23.1	10.9	10.7	5.5	26.8	7.0	8.8
Green Ext Time (p_c), s	0.0	5.7	0.0	0.7	4.2	2.9	0.1	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	41.0
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	178	58	112	105	37	72	814	225	38	662	43
Future Volume (veh/h)	71	178	58	112	105	37	72	814	225	38	662	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	77	193	63	122	114	40	78	885	245	41	720	47
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	113	300	95	136	238	181	667	1715	474	68	883	58
Arrive On Green	0.07	0.11	0.10	0.08	0.13	0.13	0.41	0.63	0.62	0.01	0.09	0.08
Sat Flow, veh/h	1634	2646	839	1634	1863	1419	1634	2731	755	1634	3373	220
Grp Volume(v), veh/h	77	127	129	122	114	40	78	573	557	41	378	389
Grp Sat Flow(s),veh/h/ln	1634	1770	1715	1634	1863	1419	1634	1770	1716	1634	1770	1824
Q Serve(g_s), s	5.5	8.2	8.7	8.9	6.8	3.0	3.6	21.4	21.6	3.0	25.2	25.2
Cycle Q Clear(g_c), s	5.5	8.2	8.7	8.9	6.8	3.0	3.6	21.4	21.6	3.0	25.2	25.2
Prop In Lane	1.00		0.49	1.00		1.00	1.00		0.44	1.00		0.12
Lane Grp Cap(c), veh/h	113	201	194	136	238	181	667	1111	1078	68	463	478
V/C Ratio(X)	0.68	0.63	0.66	0.90	0.48	0.22	0.12	0.52	0.52	0.60	0.81	0.82
Avail Cap(c_a), veh/h	177	360	349	136	332	253	667	1111	1078	72	749	772
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80
Uniform Delay (d), s/veh	54.6	50.8	51.3	54.5	48.6	47.0	22.1	12.3	12.5	58.2	52.0	52.0
Incr Delay (d2), s/veh	7.0	3.3	3.8	47.4	1.5	0.6	0.1	1.7	1.8	9.6	11.9	11.6
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	2.7	4.2	4.3	5.8	3.6	1.2	1.6	10.9	10.6	1.5	13.9	14.3
LnGrp Delay(d),s/veh	61.6	54.1	55.1	101.8	50.1	47.6	22.2	14.0	14.3	67.8	63.8	63.6
LnGrp LOS	E	D	E	F	D	D	C	B	B	E	E	E
Approach Vol, veh/h		333			276			1208			808	
Approach Delay, s/veh		56.2			72.6			14.6			63.9	
Approach LOS		E			E			B			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	79.4	14.0	17.6	53.0	35.4	12.3	19.3
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	5.0	23.6	10.9	10.7	5.6	27.2	7.5	8.8
Green Ext Time (p_c), s	0.0	5.8	0.0	0.7	4.2	2.9	0.1	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	41.2
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	178	58	112	105	37	72	814	225	38	662	43
Future Volume (veh/h)	71	178	58	112	105	37	72	814	225	38	662	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	77	193	63	122	114	40	78	885	245	41	720	47
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	113	300	95	136	238	181	667	1715	474	68	883	58
Arrive On Green	0.07	0.11	0.10	0.08	0.13	0.13	0.41	0.63	0.62	0.01	0.09	0.08
Sat Flow, veh/h	1634	2646	839	1634	1863	1419	1634	2731	755	1634	3373	220
Grp Volume(v), veh/h	77	127	129	122	114	40	78	573	557	41	378	389
Grp Sat Flow(s),veh/h/ln	1634	1770	1715	1634	1863	1419	1634	1770	1716	1634	1770	1824
Q Serve(g_s), s	5.5	8.2	8.7	8.9	6.8	3.0	3.6	21.4	21.6	3.0	25.2	25.2
Cycle Q Clear(g_c), s	5.5	8.2	8.7	8.9	6.8	3.0	3.6	21.4	21.6	3.0	25.2	25.2
Prop In Lane	1.00		0.49	1.00		1.00	1.00		0.44	1.00		0.12
Lane Grp Cap(c), veh/h	113	201	194	136	238	181	667	1111	1078	68	463	478
V/C Ratio(X)	0.68	0.63	0.66	0.90	0.48	0.22	0.12	0.52	0.52	0.60	0.81	0.82
Avail Cap(c_a), veh/h	177	360	349	136	332	253	667	1111	1078	72	749	772
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80	0.80
Uniform Delay (d), s/veh	54.6	50.8	51.3	54.5	48.6	47.0	22.1	12.3	12.5	58.2	52.0	52.0
Incr Delay (d2), s/veh	7.0	3.3	3.8	47.4	1.5	0.6	0.1	1.7	1.8	9.6	11.9	11.6
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	2.7	4.2	4.3	5.8	3.6	1.2	1.6	10.9	10.6	1.5	13.9	14.3
LnGrp Delay(d),s/veh	61.6	54.1	55.1	101.8	50.1	47.6	22.2	14.0	14.3	67.8	63.8	63.6
LnGrp LOS	E	D	E	F	D	D	C	B	B	E	E	E
Approach Vol, veh/h		333			276			1208			808	
Approach Delay, s/veh		56.2			72.6			14.6			63.9	
Approach LOS		E			E			B			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	79.4	14.0	17.6	53.0	35.4	12.3	19.3
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	5.0	23.6	10.9	10.7	5.6	27.2	7.5	8.8
Green Ext Time (p_c), s	0.0	5.8	0.0	0.7	4.2	2.9	0.1	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	41.2
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	96	96	174	180	37	73	507	131	38	650	55
Future Volume (veh/h)	41	96	96	174	180	37	73	507	131	38	650	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	45	104	104	189	196	40	79	551	142	41	707	60
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	74	195	174	136	277	211	116	1755	451	68	1989	169
Arrive On Green	0.05	0.11	0.10	0.08	0.15	0.15	0.07	0.63	0.62	0.01	0.20	0.20
Sat Flow, veh/h	1634	1770	1583	1634	1863	1422	1634	2780	714	1634	3303	280
Grp Volume(v), veh/h	45	104	104	189	196	40	79	350	343	41	379	388
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1863	1422	1634	1770	1724	1634	1770	1813
Q Serve(g_s), s	3.2	6.7	7.5	10.0	12.0	3.0	5.7	10.9	11.1	3.0	22.1	22.2
Cycle Q Clear(g_c), s	3.2	6.7	7.5	10.0	12.0	3.0	5.7	10.9	11.1	3.0	22.1	22.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.15
Lane Grp Cap(c), veh/h	74	195	174	136	277	211	116	1117	1088	68	1066	1092
V/C Ratio(X)	0.61	0.53	0.60	1.39	0.71	0.19	0.68	0.31	0.32	0.60	0.36	0.36
Avail Cap(c_a), veh/h	177	360	322	136	332	254	256	1117	1088	72	1066	1092
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.75	0.75
Uniform Delay (d), s/veh	56.3	50.5	51.5	55.0	48.6	44.8	54.4	10.2	10.3	58.2	28.0	28.0
Incr Delay (d2), s/veh	8.0	2.3	3.2	213.3	5.4	0.4	6.8	0.7	0.8	9.1	0.7	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	1.6	3.4	3.5	12.6	6.6	1.2	2.8	5.5	5.5	1.5	11.1	11.4
LnGrp Delay(d),s/veh	64.2	52.7	54.7	268.3	54.1	45.2	61.2	10.9	11.1	67.3	28.7	28.7
LnGrp LOS	E	D	D	F	D	D	E	B	B	E	C	C
Approach Vol, veh/h		253			425			772			808	
Approach Delay, s/veh		55.6			148.5			16.1			30.7	
Approach LOS		E			F			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	79.8	14.0	17.2	12.5	76.3	9.4	21.8
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	5.0	13.1	12.0	9.5	7.7	24.2	5.2	14.0
Green Ext Time (p_c), s	0.0	6.8	0.0	1.4	0.1	6.3	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	50.7
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	96	96	174	180	38	73	511	131	43	659	61
Future Volume (veh/h)	43	96	96	174	180	38	73	511	131	43	659	61
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	47	104	104	189	196	41	79	555	142	47	716	66
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	76	185	165	136	263	200	116	1768	451	72	1992	184
Arrive On Green	0.05	0.10	0.09	0.08	0.14	0.14	0.07	0.63	0.62	0.01	0.20	0.20
Sat Flow, veh/h	1634	1770	1583	1634	1863	1421	1634	2785	710	1634	3277	302
Grp Volume(v), veh/h	47	104	104	189	196	41	79	352	345	47	386	396
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1863	1421	1634	1770	1725	1634	1770	1809
Q Serve(g_s), s	3.4	6.7	7.6	10.0	12.1	3.1	5.7	10.9	11.1	3.4	22.6	22.6
Cycle Q Clear(g_c), s	3.4	6.7	7.6	10.0	12.1	3.1	5.7	10.9	11.1	3.4	22.6	22.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.17
Lane Grp Cap(c), veh/h	76	185	165	136	263	200	116	1123	1095	72	1076	1100
V/C Ratio(X)	0.62	0.56	0.63	1.39	0.75	0.20	0.68	0.31	0.32	0.65	0.36	0.36
Avail Cap(c_a), veh/h	177	360	322	136	332	253	256	1123	1095	72	1076	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.73	0.73
Uniform Delay (d), s/veh	56.2	51.1	52.2	55.0	49.5	45.6	54.4	10.0	10.1	58.2	27.8	27.9
Incr Delay (d2), s/veh	7.9	2.7	3.9	213.3	6.8	0.5	6.8	0.7	0.8	14.1	0.7	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	1.7	3.4	3.5	12.6	6.8	1.2	2.8	5.5	5.5	1.8	11.3	11.6
LnGrp Delay(d),s/veh	64.0	53.8	56.1	268.3	56.2	46.1	61.2	10.7	10.9	72.3	28.5	28.5
LnGrp LOS	E	D	E	F	E	D	E	B	B	E	C	C
Approach Vol, veh/h		255			426			776			829	
Approach Delay, s/veh		56.6			149.4			15.9			31.0	
Approach LOS		E			F			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	80.2	14.0	16.5	12.5	77.0	9.6	20.9
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	5.4	13.1	12.0	9.6	7.7	24.6	5.4	14.1
Green Ext Time (p_c), s	0.0	7.0	0.0	0.6	0.1	6.4	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	50.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	96	96	174	180	38	73	511	131	43	659	61
Future Volume (veh/h)	43	96	96	174	180	38	73	511	131	43	659	61
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	47	104	104	189	196	41	79	555	142	47	716	66
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	76	185	165	136	263	200	673	1768	451	72	876	81
Arrive On Green	0.05	0.10	0.09	0.08	0.14	0.14	0.41	0.63	0.62	0.01	0.09	0.08
Sat Flow, veh/h	1634	1770	1583	1634	1863	1421	1634	2785	710	1634	3277	302
Grp Volume(v), veh/h	47	104	104	189	196	41	79	352	345	47	386	396
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1863	1421	1634	1770	1725	1634	1770	1809
Q Serve(g_s), s	3.4	6.7	7.6	10.0	12.1	3.1	3.6	10.9	11.1	3.4	25.7	25.8
Cycle Q Clear(g_c), s	3.4	6.7	7.6	10.0	12.1	3.1	3.6	10.9	11.1	3.4	25.7	25.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.17
Lane Grp Cap(c), veh/h	76	185	165	136	263	200	673	1123	1095	72	473	484
V/C Ratio(X)	0.62	0.56	0.63	1.39	0.75	0.20	0.12	0.31	0.32	0.65	0.82	0.82
Avail Cap(c_a), veh/h	177	360	322	136	332	253	673	1123	1095	72	749	766
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.73	0.73
Uniform Delay (d), s/veh	56.2	51.1	52.2	55.0	49.5	45.6	21.8	10.0	10.1	58.2	51.8	51.9
Incr Delay (d2), s/veh	7.9	2.7	3.9	213.3	6.8	0.5	0.1	0.7	0.8	14.1	10.9	10.7
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	1.7	3.4	3.5	12.6	6.8	1.2	1.6	5.5	5.5	1.8	14.1	14.4
LnGrp Delay(d),s/veh	64.0	53.8	56.1	268.3	56.2	46.1	21.9	10.7	10.9	72.3	62.7	62.6
LnGrp LOS	E	D	E	F	E	D	C	B	B	E	E	E
Approach Vol, veh/h		255			426			776			829	
Approach Delay, s/veh		56.6			149.4			11.9			63.2	
Approach LOS		E			F			B			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	80.2	14.0	16.5	53.4	36.1	9.6	20.9
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	5.4	13.1	12.0	9.6	5.6	27.8	5.4	14.1
Green Ext Time (p_c), s	0.0	3.2	0.0	0.6	2.5	3.0	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	61.1
HCM 2010 LOS	E

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	61	29	75	105	37	43
Future Volume (vph)	61	29	75	105	37	43
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.956				0.927	
Flt Protected				0.980	0.978	
Satd. Flow (prot)	1781	0	0	1825	1555	0
Flt Permitted				0.980	0.978	
Satd. Flow (perm)	1781	0	0	1825	1555	0
Link Speed (mph)	55			55	45	
Link Distance (ft)	1617			5265	2625	
Travel Time (s)	20.0			65.3	39.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	32	82	114	40	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	98	0	0	196	87	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.1%		ICU Level of Service A	
Analysis Period (min) 15			

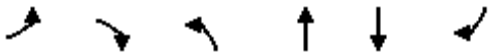
Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	61	29	75	105	37	43
Future Vol, veh/h	61	29	75	105	37	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	66	32	82	114	40	47

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	98	0	359	82
Stage 1	-	-	-	-	82	-
Stage 2	-	-	-	-	277	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1495	-	640	978
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	770	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1495	-	602	978
Mov Cap-2 Maneuver	-	-	-	-	602	-
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	759	-	-	1495	-
HCM Lane V/C Ratio	0.115	-	-	0.055	-
HCM Control Delay (s)	10.4	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	51	81	315	208	87
Future Volume (vph)	39	51	81	315	208	87
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.923				0.960	
Flt Protected	0.979			0.990		
Satd. Flow (prot)	1550	0	0	1844	1788	0
Flt Permitted	0.979			0.990		
Satd. Flow (perm)	1550	0	0	1844	1788	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	5265			1260	5250	
Travel Time (s)	65.3			19.1	79.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	55	88	342	226	95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	97	0	0	430	321	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	39	51	81	315	208	87
Future Vol, veh/h	39	51	81	315	208	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	42	55	88	342	226	95

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	791	273	321	0	-	0
Stage 1	273	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	358	766	1239	-	-	-
Stage 1	773	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	326	766	1239	-	-	-
Mov Cap-2 Maneuver	326	-	-	-	-	-
Stage 1	773	-	-	-	-	-
Stage 2	545	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.3	1.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1239	-	483	-	-
HCM Lane V/C Ratio	0.071	-	0.203	-	-
HCM Control Delay (s)	8.1	0	14.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.8	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	1	0	0	2
Future Volume (vph)	0	0	1	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1863	0	0	1770	1611	0
Flt Permitted				0.950		
Satd. Flow (perm)	1863	0	0	1770	1611	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	703			2658	404	
Travel Time (s)	8.7			33.0	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	1	0	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.3%		ICU Level of Service A	
Analysis Period (min) 15			

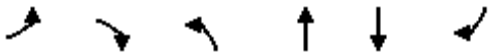
Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	1	0	0	2
Future Vol, veh/h	0	0	1	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	1	0	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	2	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	2	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	1021	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	1021	-
Mov Cap-2 Maneuver	-	-	-	-	1021	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1021	-

Approach	EB	WB	NB
HCM Control Delay, s	0		
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	36	20	3	1	1
Future Volume (vph)	2	36	20	3	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.872				0.932	
Flt Protected	0.998			0.958		
Satd. Flow (prot)	1621	0	0	1785	1736	0
Flt Permitted	0.998			0.958		
Satd. Flow (perm)	1621	0	0	1785	1736	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	657			433	280	
Travel Time (s)	8.1			6.6	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	39	22	3	1	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	0	0	25	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	2	36	20	3	1	1
Future Vol, veh/h	2	36	20	3	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	2	39	22	3	1	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	49	2	2	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	47	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	960	1082	1620	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	975	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	947	1082	1620	-	-	-
Mov Cap-2 Maneuver	947	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	961	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	6.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1620	-	1074	-	-
HCM Lane V/C Ratio	0.013	-	0.038	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	50	67	362	39	41	306
Future Volume (vph)	50	67	362	39	41	306
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	200	200		350	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					0.994
Satd. Flow (prot)	1630	1458	1863	1458	0	1852
Flt Permitted	0.950					0.994
Satd. Flow (perm)	1630	1458	1863	1458	0	1852
Link Speed (mph)	55		45			45
Link Distance (ft)	2907		663			433
Travel Time (s)	36.0		10.0			6.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	73	393	42	45	333
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	73	393	42	0	378
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	50	67	362	39	41	306
Future Vol, veh/h	50	67	362	39	41	306
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	54	73	393	42	45	333

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	815	393	0	0	393	0
Stage 1	393	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	347	656	-	-	1166	-
Stage 1	682	-	-	-	-	-
Stage 2	662	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	331	656	-	-	1166	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	682	-	-	-	-	-
Stage 2	631	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	331	656	1166	-
HCM Lane V/C Ratio	-	-	0.164	0.111	0.038	-
HCM Control Delay (s)	-	-	18	11.2	8.2	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.4	0.1	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	67	13	1	54	26	3
Future Volume (vph)	67	13	1	54	26	3
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Storage Length (ft)		0	125		235	235
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.978					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1822	0	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1822	0	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2907			2297	1612	
Travel Time (s)	36.0			28.5	20.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	14	1	59	28	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	0	1	59	28	3
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.3%	ICU Level of Service	A
Analysis Period (min)	15		

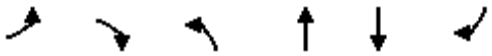
Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	67	13	1	54	26	3
Future Vol, veh/h	67	13	1	54	26	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	73	14	1	59	28	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	87	0	141	80
Stage 1	-	-	-	-	80	-
Stage 2	-	-	-	-	61	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1509	-	852	980
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1509	-	851	980
Mov Cap-2 Maneuver	-	-	-	-	851	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	961	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	851	980	-	-	1509	-
HCM Lane V/C Ratio	0.033	0.003	-	-	0.001	-
HCM Control Delay (s)	9.4	8.7	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	65	53	0	0	0
Future Volume (vph)	0	65	53	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected				0.950		
Satd. Flow (prot)	1484	0	0	1770	1863	0
Flt Permitted				0.950		
Satd. Flow (perm)	1484	0	0	1770	1863	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2297			627	473	
Travel Time (s)	28.5			7.8	5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	71	58	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	0	0	58	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.4%		ICU Level of Service A	
Analysis Period (min) 15			

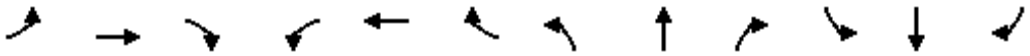
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	65	53	0	0	0
Future Vol, veh/h	0	65	53	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	71	58	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	71	0	186	0
Stage 1	-	-	-	-	115	-
Stage 2	-	-	-	-	71	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	708	-
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	78	0	9	1	128	46	6	156	0
Future Volume (vph)	0	0	0	78	0	9	1	128	46	6	156	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.986			0.964				
Flt Protected					0.957						0.998	
Satd. Flow (prot)	0	1863	0	0	1758	0	0	1796	0	0	1859	0
Flt Permitted					0.957						0.998	
Satd. Flow (perm)	0	1863	0	0	1758	0	0	1796	0	0	1859	0
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		341			2586			2647			2625	
Travel Time (s)		4.2			32.1			40.1			39.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	85	0	10	1	139	50	7	170	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	95	0	0	190	0	0	177	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	0	0	0	78	0	9	0	1	128	46
Future Vol, veh/h	0	0	0	0	0	78	0	9	0	1	128	46
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	85	0	10	0	1	139	50
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	0	8.6	8.4
HCM LOS	-	A	A

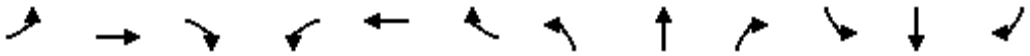
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	0%	90%	4%
Vol Thru, %	73%	100%	0%	96%
Vol Right, %	26%	0%	10%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	175	0	87	162
LT Vol	1	0	78	6
Through Vol	128	0	0	156
RT Vol	46	0	9	0
Lane Flow Rate	190	0	95	176
Geometry Grp	1	1	1	1
Degree of Util (X)	0.222	0	0.127	0.214
Departure Headway (Hd)	4.204	4.865	4.85	4.375
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	856	0	740	822
Service Time	2.217	2.892	2.871	2.389
HCM Lane V/C Ratio	0.222	0	0.128	0.214
HCM Control Delay	8.4	7.9	8.6	8.6
HCM Lane LOS	A	N	A	A
HCM 95th-tile Q	0.8	0	0.4	0.8

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	6	156	0
Future Vol, veh/h	0	6	156	0
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	7	170	0
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.6
HCM LOS	A

Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	37	0	0	65	46	0	0	0	82	0	22
Future Volume (vph)	12	37	0	0	65	46	0	0	0	82	0	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.944						0.971	
Flt Protected		0.988									0.962	
Satd. Flow (prot)	0	1840	0	0	1758	0	0	1863	0	0	1740	0
Flt Permitted		0.988									0.962	
Satd. Flow (perm)	0	1840	0	0	1758	0	0	1863	0	0	1740	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2586			388			731			574	
Travel Time (s)		32.1			4.8			9.1			7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	40	0	0	71	50	0	0	0	89	0	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	53	0	0	121	0	0	0	0	0	113	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		

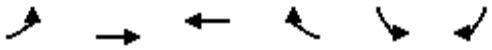
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	12	37	0	0	65	46	0	0	0	82	0	22
Future Vol, veh/h	12	37	0	0	65	46	0	0	0	82	0	22
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	13	40	0	0	71	50	0	0	0	89	0	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	250	190	12	210	202	0	24	0	0	0	0	0
Stage 1	190	190	-	0	0	-	-	-	-	-	-	-
Stage 2	60	0	-	210	202	-	-	-	-	-	-	-
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	703	705	1069	747	694	-	1591	-	-	-	-	-
Stage 1	812	743	-	-	-	-	-	-	-	-	-	-
Stage 2	951	-	-	792	734	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	705	1069	714	694	-	1591	-	-	-	-	-
Mov Cap-2 Maneuver	-	705	-	714	694	-	-	-	-	-	-	-
Stage 1	812	743	-	-	-	-	-	-	-	-	-	-
Stage 2	951	-	-	749	734	-	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1591	-	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	-	-	-	-
HCM Lane LOS	A	-	-	-	-	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	119	76	22	38	10
Future Volume (vph)	5	119	76	22	38	10
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.970		0.971	
Flt Protected		0.998			0.962	
Satd. Flow (prot)	0	1859	1807	0	1603	0
Flt Permitted		0.998			0.962	
Satd. Flow (perm)	0	1859	1807	0	1603	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		640	493		546	
Travel Time (s)		7.9	6.1		6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	129	83	24	41	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	134	107	0	52	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.3%		ICU Level of Service A	
Analysis Period (min) 15			

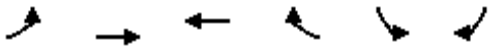
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	5	119	76	22	38	10
Future Vol, veh/h	5	119	76	22	38	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	5	129	83	24	41	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	107	0	-	0	235	95
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	140	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1484	-	-	-	753	962
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	887	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1484	-	-	-	750	962
Mov Cap-2 Maneuver	-	-	-	-	750	-
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	883	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1484	-	-	-	786
HCM Lane V/C Ratio	0.004	-	-	-	0.066
HCM Control Delay (s)	7.4	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	7	143	81	7	12	13
Future Volume (vph)	7	143	81	7	12	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.989		0.930	
Flt Protected		0.998			0.976	
Satd. Flow (prot)	0	1859	1842	0	1691	0
Flt Permitted		0.998			0.976	
Satd. Flow (perm)	0	1859	1842	0	1691	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		493	1158		326	
Travel Time (s)		6.1	14.4		4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	155	88	8	13	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	163	96	0	27	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.2%		ICU Level of Service A	
Analysis Period (min) 15			

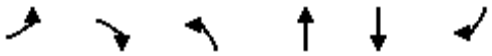
Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	7	143	81	7	12	13
Future Vol, veh/h	7	143	81	7	12	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	8	155	88	8	13	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	96	0	-	0	263	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	171	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1498	-	-	-	726	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	859	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1498	-	-	-	722	965
Mov Cap-2 Maneuver	-	-	-	-	722	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	854	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1498	-	-	-	831
HCM Lane V/C Ratio	0.005	-	-	-	0.033
HCM Control Delay (s)	7.4	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	112	90	382	264	4
Future Volume (vph)	0	112	90	382	264	4
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Storage Length (ft)	0	0	175			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	0.865				0.998	
Flt Protected			0.950			
Satd. Flow (prot)	1484	0	1630	3539	1859	0
Flt Permitted			0.950			
Satd. Flow (perm)	1484	0	1630	3539	1859	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	1158			791	663	
Travel Time (s)	14.4			12.0	10.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	122	98	415	287	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	122	0	98	415	291	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	112	90	382	264	4
Future Vol, veh/h	0	112	90	382	264	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	0	122	98	415	287	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	692	289	291	0	-	0
Stage 1	289	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	394	749	1271	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	364	749	1271	-	-	-
Mov Cap-2 Maneuver	364	-	-	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	594	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1271	-	749	-	-
HCM Lane V/C Ratio	0.077	-	0.163	-	-
HCM Control Delay (s)	8.1	-	10.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	137	37	525	92	12	510
Future Volume (vph)	137	37	525	92	12	510
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	0		0	105	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.978			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1630	1458	3461	0	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1630	1458	3461	0	1630	3539
Link Speed (mph)	55		45			45
Link Distance (ft)	2098		668			791
Travel Time (s)	26.0		10.1			12.0
Confl. Peds. (#/hr)	5	5				
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	40	571	100	13	554
Shared Lane Traffic (%)						
Lane Group Flow (vph)	149	40	671	0	13	554
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		

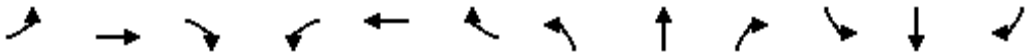
Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	137	37	525	92	12	510
Future Vol, veh/h	137	37	525	92	12	510
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	149	40	571	100	13	554

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	929	340	0	0	676	0
Stage 1	626	-	-	-	-	-
Stage 2	303	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	266	656	-	-	911	-
Stage 1	495	-	-	-	-	-
Stage 2	723	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	261	653	-	-	911	-
Mov Cap-2 Maneuver	261	-	-	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	713	-	-	-	-	-

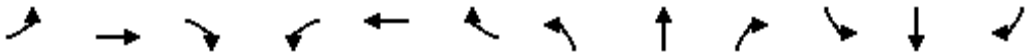
Approach	WB	NB	SB
HCM Control Delay, s	30.3	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	261	653	911	-
HCM Lane V/C Ratio	-	-	0.571	0.062	0.014	-
HCM Control Delay (s)	-	-	35.6	10.9	9	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	3.2	0.2	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	30	16	9	38	2	15	33	26	3	48	33
Future Volume (vph)	1	30	16	9	38	2	15	33	26	3	48	33
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.955			0.995			0.953			0.947	
Flt Protected		0.999			0.991			0.990			0.998	
Satd. Flow (prot)	0	1777	0	0	1837	0	0	1757	0	0	1760	0
Flt Permitted		0.999			0.991			0.990			0.998	
Satd. Flow (perm)	0	1777	0	0	1837	0	0	1757	0	0	1760	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		858			508			1674			1612	
Travel Time (s)		10.6			6.3			20.8			20.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	33	17	10	41	2	16	36	28	3	52	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	51	0	0	53	0	0	80	0	0	91	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	23	0	22	5	596	34	24	494	0
Future Volume (vph)	0	0	0	23	0	22	5	596	34	24	494	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt					0.934			0.992				
Flt Protected					0.975						0.998	
Satd. Flow (prot)	0	1863	0	0	1696	0	0	3511	0	0	3532	0
Flt Permitted					0.975						0.998	
Satd. Flow (perm)	0	1863	0	0	1696	0	0	3511	0	0	3532	0
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		579			1069			1173			668	
Travel Time (s)		7.2			13.3			17.8			10.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	25	0	24	5	648	37	26	537	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	49	0	0	690	0	0	563	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

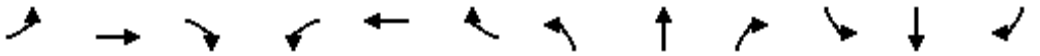
Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	23	0	22	5	596	34	24	494	0
Future Vol, veh/h	0	0	0	23	0	22	5	596	34	24	494	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	25	0	24	5	648	37	26	537	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	924	1285	268	998	1266	342	537	0	0	685	0	0
Stage 1	589	589	-	677	677	-	-	-	-	-	-	-
Stage 2	335	696	-	321	589	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	224	163	730	198	168	654	1027	-	-	904	-	-
Stage 1	461	494	-	409	450	-	-	-	-	-	-	-
Stage 2	653	441	-	665	494	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	208	155	730	191	160	654	1027	-	-	904	-	-
Mov Cap-2 Maneuver	208	155	-	191	160	-	-	-	-	-	-	-
Stage 1	457	474	-	406	446	-	-	-	-	-	-	-
Stage 2	624	437	-	638	474	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	19.8	0.1	0.6
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1027	-	-	-	292	904	-	-
HCM Lane V/C Ratio	0.005	-	-	-	0.168	0.029	-	-
HCM Control Delay (s)	8.5	0	-	0	19.8	9.1	0.2	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.6	0.1	-	-

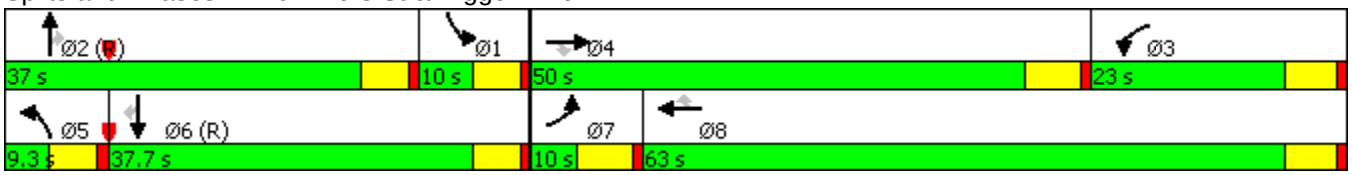


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	250	37	183	436	108	38	209	134	77	278	103
Future Volume (vph)	102	250	37	183	436	108	38	209	134	77	278	103
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		305	305		305	305		305	300		155
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98			0.97			0.97			0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1863	1458	1630	1863	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1863	1414	1630	1863	1411	1630	3539	1411
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169			172			182			182
Link Speed (mph)		55			50			45			45	
Link Distance (ft)		2597			2655			816			2647	
Travel Time (s)		32.2			36.2			12.4			40.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	272	40	199	474	117	41	227	146	84	302	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	272	40	199	474	117	41	227	146	84	302	112
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	38.4	38.4	9.7	38.4	38.4	9.3	35.6	35.6	9.3	35.6	35.6
Total Split (s)	10.0	50.0	50.0	23.0	63.0	63.0	9.3	37.0	37.0	10.0	37.7	37.7
Total Split (%)	8.3%	41.7%	41.7%	19.2%	52.5%	52.5%	7.8%	30.8%	30.8%	8.3%	31.4%	31.4%
Maximum Green (s)	4.0	44.0	44.0	17.3	57.3	57.3	4.0	31.7	31.7	4.7	32.4	32.4
Yellow Time (s)	5.0	5.0	5.0	4.7	4.7	4.7	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-1.7	-1.7	-1.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.4	25.4		25.7	25.7		23.3	23.3		23.3	23.3
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	12.2	25.5	25.5	27.5	40.8	40.8	9.0	37.7	37.7	13.3	44.3	44.3
Actuated g/C Ratio	0.10	0.21	0.21	0.23	0.34	0.34	0.08	0.31	0.31	0.11	0.37	0.37
v/c Ratio	0.67	0.69	0.09	0.53	0.75	0.20	0.34	0.39	0.26	0.47	0.23	0.18
Control Delay	73.9	52.1	0.4	39.6	35.1	1.3	60.5	35.4	3.2	59.9	28.7	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.9	52.1	0.4	39.6	35.1	1.3	60.5	35.4	3.2	59.9	28.7	0.8
LOS	E	D	A	D	D	A	E	D	A	E	C	A
Approach Delay		52.9			31.2			26.5			27.7	
Approach LOS		D			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 117 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 33.8		Intersection LOS: C	
Intersection Capacity Utilization 73.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 16: Akers St & Riggen Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	250	37	183	436	108	38	209	134	77	278	103
Future Volume (veh/h)	102	250	37	183	436	108	38	209	134	77	278	103
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.98	1.00		0.97	1.00		0.96	1.00		0.97
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	111	272	40	199	474	117	41	227	146	84	302	112
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	82	366	280	248	556	422	68	317	239	569	1687	677
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
Prop Arrive On Green	0.05	0.20	0.20	0.15	0.30	0.30	0.04	0.17	0.17	0.35	0.48	0.48
Ln Grp Delay, s/veh	279.0	48.4	27.3	65.0	43.9	4.7	68.7	60.0	57.3	27.0	18.2	18.4
Ln Grp LOS	F	D	C	E	D	A	E	E	E	C	B	B
Approach Vol, veh/h		423			790			414			498	
Approach Delay, s/veh		106.9			43.4			59.9			19.7	
Approach LOS		F			D			E			B	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	2	1	4	3	5	6	7	8
Case No	3.0	2.0	3.0	2.0	2.0	3.0	2.0	3.0
Phs Duration (G+Y+Rc), s	24.4	45.8	27.6	22.2	9.0	61.2	10.0	39.8
Change Period (Y+Rc), s	5.3	5.3	6.0	5.7	5.3	5.3	6.0	5.7
Max Green (Gmax), s	31.7	4.7	44.0	17.3	4.0	32.4	4.0	57.3
Max Allow Headway (MAH), s	4.3	4.2	4.0	4.1	4.2	4.2	4.1	4.1
Max Q Clear (g_c+I1), s	15.8	6.2	18.5	16.1	5.0	7.9	8.0	30.7
Green Ext Time (g_e), s	1.3	0.0	1.0	0.5	0.0	2.0	0.0	3.1
Prob of Phs Call (p_c)	1.00	0.94	1.00	1.00	0.75	1.00	0.98	1.00
Prob of Max Out (p_x)	0.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00

Left-Turn Movement Data								
Assigned Mvmt		1		3	5		7	
Mvmt Sat Flow, veh/h		1634		1634	1634		1634	

Through Movement Data								
Assigned Mvmt		2		4			6	8
Mvmt Sat Flow, veh/h		1863		1863			3539	1863

Right-Turn Movement Data								
Assigned Mvmt		12		14			16	18
Mvmt Sat Flow, veh/h		1402		1427			1419	1414

Left Lane Group Data								
Assigned Mvmt	0	1	0	3	5	0	7	0
Lane Assignment		(Prot)		(Prot)	(Prot)		(Prot)	

Lanes in Grp	0	1	0	1	1	0	1	0
Grp Vol (v), veh/h	0	84	0	199	41	0	111	0
Grp Sat Flow (s), veh/h/ln	0	1634	0	1634	1634	0	1634	0
Q Serve Time (g_s), s	0.0	4.2	0.0	14.1	3.0	0.0	6.0	0.0
Cycle Q Clear Time (g_c), s	0.0	4.2	0.0	14.1	3.0	0.0	6.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	0	569	0	248	68	0	82	0
V/C Ratio (X)	0.00	0.15	0.00	0.80	0.60	0.00	1.36	0.00
Avail Cap (c_a), veh/h	0	569	0	259	72	0	82	0
Upstream Filter (I)	0.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	0.0	26.9	0.0	49.1	56.5	0.0	57.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	15.8	12.1	0.0	222.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	27.0	0.0	65.0	68.7	0.0	279.0	0.0
1st-Term Q (Q1), veh/ln	0.0	1.9	0.0	6.4	1.3	0.0	2.7	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	1.1	0.2	0.0	5.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	0.0	1.9	0.0	7.4	1.6	0.0	7.7	0.0
%ile Storage Ratio (RQ%)	0.00	0.16	0.00	0.62	0.13	0.00	0.64	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	7.3	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0

Middle Lane Group Data								
Assigned Mvmt	2	0	4	0	0	6	0	8
Lane Assignment	T		T			T		T
Lanes in Grp	1	0	1	0	0	2	0	1
Grp Vol (v), veh/h	227	0	272	0	0	302	0	474
Grp Sat Flow (s), veh/h/ln	1863	0	1863	0	0	1770	0	1863
Q Serve Time (g_s), s	13.8	0.0	16.5	0.0	0.0	5.9	0.0	28.7
Cycle Q Clear Time (g_c), s	13.8	0.0	16.5	0.0	0.0	5.9	0.0	28.7
Lane Grp Cap (c), veh/h	317	0	366	0	0	1687	0	556
V/C Ratio (X)	0.72	0.00	0.74	0.00	0.00	0.18	0.00	0.85
Avail Cap (c_a), veh/h	512	0	714	0	0	1687	0	916
Upstream Filter (I)	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	47.0	0.0	45.4	0.0	0.0	18.0	0.0	39.6
Incr Delay (d2), s/veh	13.0	0.0	3.0	0.0	0.0	0.2	0.0	4.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	60.0	0.0	48.4	0.0	0.0	18.2	0.0	43.9
1st-Term Q (Q1), veh/ln	7.1	0.0	8.5	0.0	0.0	2.9	0.0	14.7

2nd-Term Q (Q2), veh/ln	1.1	0.0	0.3	0.0	0.0	0.1	0.0	0.7
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	8.3	0.0	8.8	0.0	0.0	2.9	0.0	15.4
%ile Storage Ratio (RQ%)	0.27	0.00	0.09	0.00	0.00	0.03	0.00	0.15
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	12	0	14	0	0	16	0	18
Lane Assignment	R		R			R		R
Lanes in Grp	1	0	1	0	0	1	0	1
Grp Vol (v), veh/h	146	0	40	0	0	112	0	117
Grp Sat Flow (s), veh/h/ln	1402	0	1427	0	0	1419	0	1414
Q Serve Time (g_s), s	11.6	0.0	2.3	0.0	0.0	5.4	0.0	2.8
Cycle Q Clear Time (g_c), s	11.6	0.0	2.3	0.0	0.0	5.4	0.0	2.8
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Lane Grp Cap (c), veh/h	239	0	280	0	0	677	0	422
V/C Ratio (X)	0.61	0.00	0.14	0.00	0.00	0.17	0.00	0.28
Avail Cap (c_a), veh/h	386	0	547	0	0	677	0	695
Upstream Filter (I)	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	46.1	0.0	27.1	0.0	0.0	17.8	0.0	4.4
Incr Delay (d2), s/veh	11.2	0.0	0.2	0.0	0.0	0.5	0.0	0.4
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	57.3	0.0	27.3	0.0	0.0	18.4	0.0	4.7
1st-Term Q (Q1), veh/ln	4.5	0.0	0.9	0.0	0.0	2.1	0.0	1.1
2nd-Term Q (Q2), veh/ln	0.7	0.0	0.0	0.0	0.0	0.1	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	5.2	0.0	0.9	0.0	0.0	2.2	0.0	1.1
%ile Storage Ratio (RQ%)	0.44	0.00	0.08	0.00	0.00	0.36	0.00	0.09
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	53.7
HCM 2010 LOS	D

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	499	24	41	935	32	45
Future Volume (vph)	499	24	41	935	32	45
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.994				0.921	
Flt Protected				0.998	0.980	
Satd. Flow (prot)	1852	0	0	1859	1549	0
Flt Permitted				0.998	0.980	
Satd. Flow (perm)	1852	0	0	1859	1549	0
Link Speed (mph)	50			50	55	
Link Distance (ft)	2655			2640	1360	
Travel Time (s)	36.2			36.0	16.9	
Confl. Peds. (#/hr)					5	5
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	542	26	45	1016	35	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	568	0	0	1061	84	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		

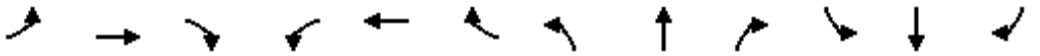
Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	499	24	41	935	32	45
Future Vol, veh/h	499	24	41	935	32	45
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	542	26	45	1016	35	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	573	0	1665	560
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	1105	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1000	-	106	528
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	317	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1000	-	95	526
Mov Cap-2 Maneuver	-	-	-	-	95	-
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	284	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	40.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	182	-	-	1000	-
HCM Lane V/C Ratio	0.46	-	-	0.045	-
HCM Control Delay (s)	40.6	-	-	8.8	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.1	-

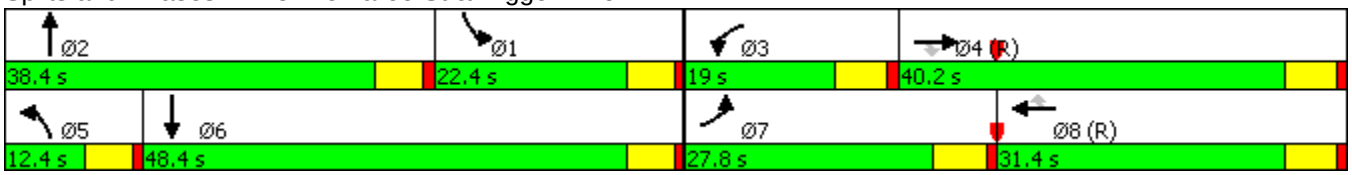


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	345	123	230	427	94	85	423	136	67	586	226
Future Volume (vph)	142	345	123	230	427	94	85	423	136	67	586	226
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		155	155		155	255		0	210		0
Storage Lanes	1		1	2		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	0.99		0.98	1.00	1.00		1.00	0.99	
Frt			0.850			0.850		0.963			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	3162	3539	1458	1630	3393	0	1630	3361	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1623	3539	1427	3136	3539	1427	1626	3393	0	1626	3361	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169			221		36			53	
Link Speed (mph)		50			50			45			45	
Link Distance (ft)		2640			2884			2701			1173	
Travel Time (s)		36.0			39.3			40.9			17.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	154	375	134	250	464	102	92	460	148	73	637	246
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	375	134	250	464	102	92	608	0	73	883	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Detector Phase	7	4	4 5	3	8	8 1	5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.7	27.0	27.0	9.7	28.4	28.4	9.3	38.4		9.3	38.4	
Total Split (s)	27.8	40.2	40.2	19.0	31.4	31.4	12.4	38.4		22.4	48.4	
Total Split (%)	23.2%	33.5%	33.5%	15.8%	26.2%	26.2%	10.3%	32.0%		18.7%	40.3%	
Maximum Green (s)	22.1	34.5	34.5	13.3	25.7	25.7	7.1	33.1		17.1	43.1	
Yellow Time (s)	4.7	4.7	4.7	4.7	4.7	4.7	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.3	-1.3		-1.3	-1.3	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		14.3	14.3		15.7	15.7		26.1			26.1	
Pedestrian Calls (#/hr)		5	5		5	5		5			5	
Act Effct Green (s)	18.1	42.7	42.7	15.3	39.8	39.8	8.4	27.4		18.7	37.7	
Actuated g/C Ratio	0.15	0.36	0.36	0.13	0.33	0.33	0.07	0.23		0.16	0.31	
v/c Ratio	0.63	0.30	0.22	0.62	0.40	0.16	0.81	0.76		0.29	0.81	
Control Delay	64.6	18.9	2.0	56.7	34.2	0.6	83.2	29.5		48.2	41.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	64.6	18.9	2.0	56.7	34.2	0.6	83.2	29.5		48.2	41.6	
LOS	E	B	A	E	C	A	F	C		D	D	
Approach Delay		26.1			36.9			36.6			42.1	
Approach LOS		C			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 36.1		Intersection LOS: D	
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 18: Demaree St & Riggen Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	142	345	123	230	427	94	85	423	136	67	586	226
Future Volume (veh/h)	142	345	123	230	427	94	85	423	136	67	586	226
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	154	375	134	250	464	102	92	460	148	73	637	246
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	202	1378	558	345	1325	537	114	583	186	239	738	285
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
Prop Arrive On Green	0.12	0.39	0.39	0.11	0.37	0.37	0.07	0.22	0.21	0.15	0.30	0.29
Ln Grp Delay, s/veh	56.7	25.5	25.7	57.3	27.8	10.3	82.7	49.0	50.1	46.5	49.5	50.5
Ln Grp LOS	E	C	C	E	C	B	F	D	D	D	D	D
Approach Vol, veh/h		663			816			700			956	
Approach Delay, s/veh		32.8			34.6			53.9			49.7	
Approach LOS		C			C			D			D	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	2	1	3	4	5	6	7	8
Case No	4.0	2.0	2.0	3.0	2.0	4.0	2.0	3.0
Phs Duration (G+Y+Rc), s	30.7	21.6	17.1	50.7	12.4	39.8	18.9	48.9
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green (Gmax), s	33.1	17.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Allow Headway (MAH), s	4.2	4.2	4.1	4.1	4.2	4.2	4.1	4.1
Max Q Clear (g_c+I1), s	22.1	6.8	11.2	10.7	8.7	31.3	12.9	13.3
Green Ext Time (g_e), s	1.9	3.0	0.2	4.7	0.0	3.2	0.3	3.8
Prob of Phs Call (p_c)	1.00	0.91	1.00	1.00	0.95	1.00	0.99	1.00
Prob of Max Out (p_x)	0.11	0.30	1.00	0.00	1.00	0.23	0.02	0.00

Left-Turn Movement Data								
Assigned Mvmt		1	3		5		7	
Mvmt Sat Flow, veh/h		1634	3170		1634		1634	

Through Movement Data								
Assigned Mvmt		2			4		6		8	
Mvmt Sat Flow, veh/h		2626			3539		2473		3539	

Right-Turn Movement Data								
Assigned Mvmt		12			14		16		18	
Mvmt Sat Flow, veh/h		838			1434		955		1433	

Left Lane Group Data								
Assigned Mvmt	0	1	3	0	5	0	7	0
Lane Assignment		(Prot)	(Prot)		(Prot)		(Prot)	

Lanes in Grp	0	1	2	0	1	0	1	0
Grp Vol (v), veh/h	0	73	250	0	92	0	154	0
Grp Sat Flow (s), veh/h/ln	0	1634	1585	0	1634	0	1634	0
Q Serve Time (g_s), s	0.0	4.8	9.2	0.0	6.7	0.0	10.9	0.0
Cycle Q Clear Time (g_c), s	0.0	4.8	9.2	0.0	6.7	0.0	10.9	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	0	239	345	0	114	0	202	0
V/C Ratio (X)	0.00	0.31	0.72	0.00	0.80	0.00	0.76	0.00
Avail Cap (c_a), veh/h	0	251	396	0	114	0	324	0
Upstream Filter (I)	0.00	1.00	1.00	0.00	0.81	0.00	1.00	0.00
Uniform Delay (d1), s/veh	0.0	45.8	51.7	0.0	55.0	0.0	50.9	0.0
Incr Delay (d2), s/veh	0.0	0.7	5.5	0.0	27.7	0.0	5.8	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	46.5	57.3	0.0	82.7	0.0	56.7	0.0
1st-Term Q (Q1), veh/ln	0.0	2.2	4.0	0.0	3.0	0.0	5.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.3	0.0	0.9	0.0	0.3	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	0.0	2.2	4.3	0.0	3.9	0.0	5.3	0.0
%ile Storage Ratio (RQ%)	0.00	0.27	0.70	0.00	0.39	0.00	0.48	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	2	0	0	4	0	6	0	8
Lane Assignment	T			T		T		T
Lanes in Grp	1	0	0	2	0	1	0	2
Grp Vol (v), veh/h	309	0	0	375	0	456	0	464
Grp Sat Flow (s), veh/h/ln	1770	0	0	1770	0	1770	0	1770
Q Serve Time (g_s), s	19.7	0.0	0.0	8.7	0.0	29.2	0.0	11.3
Cycle Q Clear Time (g_c), s	19.7	0.0	0.0	8.7	0.0	29.2	0.0	11.3
Lane Grp Cap (c), veh/h	393	0	0	1378	0	528	0	1325
V/C Ratio (X)	0.79	0.00	0.00	0.27	0.00	0.86	0.00	0.35
Avail Cap (c_a), veh/h	507	0	0	1378	0	655	0	1325
Upstream Filter (I)	0.81	0.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	44.0	0.0	0.0	25.0	0.0	39.8	0.0	27.0
Incr Delay (d2), s/veh	5.0	0.0	0.0	0.5	0.0	9.7	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
Control Delay (d), s/veh	49.0	0.0	0.0	25.5	0.0	49.5	0.0	27.8
1st-Term Q (Q1), veh/ln	9.6	0.0	0.0	4.2	0.0	14.3	0.0	5.5

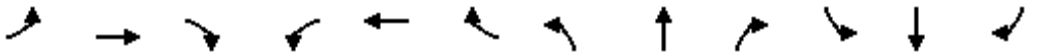
2nd-Term Q (Q2), veh/ln	0.5	0.0	0.0	0.1	0.0	1.4	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	10.2	0.0	0.0	4.3	0.0	15.7	0.0	5.7
%ile Storage Ratio (RQ%)	0.10	0.00	0.00	0.04	0.00	0.37	0.00	0.05
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	12	0	0	14	0	16	0	18
Lane Assignment	T+R			R		T+R		R
Lanes in Grp	1	0	0	1	0	1	0	1
Grp Vol (v), veh/h	299	0	0	134	0	427	0	102
Grp Sat Flow (s), veh/h/ln	1694	0	0	1434	0	1658	0	1433
Q Serve Time (g_s), s	20.1	0.0	0.0	7.6	0.0	29.3	0.0	3.5
Cycle Q Clear Time (g_c), s	20.1	0.0	0.0	7.6	0.0	29.3	0.0	3.5
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.49	0.00	0.00	1.00	0.00	0.58	0.00	1.00
Lane Grp Cap (c), veh/h	376	0	0	558	0	495	0	537
V/C Ratio (X)	0.80	0.00	0.00	0.24	0.00	0.86	0.00	0.19
Avail Cap (c_a), veh/h	486	0	0	558	0	614	0	537
Upstream Filter (I)	0.81	0.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	44.4	0.0	0.0	24.7	0.0	40.2	0.0	9.5
Incr Delay (d2), s/veh	5.7	0.0	0.0	1.0	0.0	10.3	0.0	0.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	50.1	0.0	0.0	25.7	0.0	50.5	0.0	10.3
1st-Term Q (Q1), veh/ln	9.4	0.0	0.0	3.0	0.0	13.4	0.0	1.4
2nd-Term Q (Q2), veh/ln	0.6	0.0	0.0	0.2	0.0	1.4	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	10.0	0.0	0.0	3.1	0.0	14.9	0.0	1.5
%ile Storage Ratio (RQ%)	0.10	0.00	0.00	0.52	0.00	0.35	0.00	0.25
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.1
HCM 2010 LOS	D

Notes

User approved changes to right turn type.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	357	53	39	418	20	91	27	64	41	59	45
Future Volume (vph)	26	357	53	39	418	20	91	27	64	41	59	45
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	250		0	160		0	195		0	130		130
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.980			0.993			0.894				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3468	0	1630	3514	0	1630	3164	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3468	0	1630	3514	0	1630	3164	0	1630	1863	1458
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		2884			7452			1333			1674	
Travel Time (s)		39.3			101.6			16.5			20.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	388	58	42	454	22	99	29	70	45	64	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	446	0	42	476	0	99	99	0	45	64	49
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	15.1
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	26	357	53	0	39	418	20	0	91	27	64
Future Vol, veh/h	0	26	357	53	0	39	418	20	0	91	27	64
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	28	388	58	0	42	454	22	0	99	29	70
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	3
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	3	3	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	3	3	3
HCM Control Delay	15.5	16.8	12.6
HCM LOS	C	C	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	12%	0%	100%	69%	0%	100%	87%	0%	100%
Vol Right, %	0%	0%	88%	0%	0%	31%	0%	0%	13%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	91	18	73	26	238	172	39	279	159	41	59
LT Vol	91	0	0	26	0	0	39	0	0	41	0
Through Vol	0	18	9	0	238	119	0	279	139	0	59
RT Vol	0	0	64	0	0	53	0	0	20	0	0
Lane Flow Rate	99	20	79	28	259	187	42	303	173	45	64
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.232	0.043	0.162	0.06	0.515	0.361	0.089	0.595	0.336	0.106	0.144
Departure Headway (Hd)	8.451	7.951	7.337	7.67	7.17	6.954	7.575	7.075	6.987	8.574	8.074
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	425	451	489	467	504	518	474	512	514	418	444
Service Time	6.196	5.696	5.082	5.408	4.908	4.693	5.313	4.813	4.726	6.32	5.82
HCM Lane V/C Ratio	0.233	0.044	0.162	0.06	0.514	0.361	0.089	0.592	0.337	0.108	0.144
HCM Control Delay	13.7	11.1	11.5	10.9	17.3	13.6	11.1	19.7	13.2	12.3	12.2
HCM Lane LOS	B	B	B	B	C	B	B	C	B	B	B
HCM 95th-tile Q	0.9	0.1	0.6	0.2	2.9	1.6	0.3	3.8	1.5	0.4	0.5

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	41	59	45
Future Vol, veh/h	0	41	59	45
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	45	64	49
Number of Lanes	0	1	1	1

Approach	SB
Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	11.8
HCM LOS	B

Lane	SBLn3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	239	126	63	357	65	173	61	106	67	144	67
Future Volume (vph)	30	239	126	63	357	65	173	61	106	67	144	67
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948			0.977			0.958			0.967	
Flt Protected	0.950			0.950				0.975			0.988	
Satd. Flow (prot)	1630	3355	0	1630	3458	0	0	1740	0	0	1780	0
Flt Permitted	0.950			0.950				0.975			0.988	
Satd. Flow (perm)	1630	3355	0	1630	3458	0	0	1740	0	0	1780	0
Link Speed (mph)		55			45			55			55	
Link Distance (ft)		259			2655			897			1333	
Travel Time (s)		3.2			40.2			11.1			16.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	260	137	68	388	71	188	66	115	73	157	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	397	0	68	459	0	0	369	0	0	303	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	29.5
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	30	239	126	0	63	357	65	0	173	61	106
Future Vol, veh/h	0	30	239	126	0	63	357	65	0	173	61	106
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	33	260	137	0	68	388	71	0	188	66	115
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	18.9	21.3	50.6
HCM LOS	C	C	F

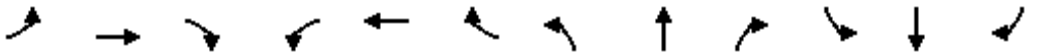
Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	51%	100%	0%	0%	100%	0%	0%	24%
Vol Thru, %	18%	0%	100%	39%	0%	100%	65%	52%
Vol Right, %	31%	0%	0%	61%	0%	0%	35%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	340	30	159	206	63	238	184	278
LT Vol	173	30	0	0	63	0	0	67
Through Vol	61	0	159	80	0	238	119	144
RT Vol	106	0	0	126	0	0	65	67
Lane Flow Rate	370	33	173	224	68	259	200	302
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.889	0.086	0.429	0.526	0.176	0.628	0.471	0.74
Departure Headway (Hd)	8.656	9.454	8.926	8.473	9.262	8.735	8.474	8.814
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	418	378	402	425	386	411	424	411
Service Time	6.423	7.231	6.702	6.249	7.038	6.511	6.25	6.587
HCM Lane V/C Ratio	0.885	0.087	0.43	0.527	0.176	0.63	0.472	0.735
HCM Control Delay	50.6	13.1	18.3	20.3	14	25.3	18.6	33
HCM Lane LOS	F	B	C	C	B	D	C	D
HCM 95th-tile Q	9.2	0.3	2.1	3	0.6	4.2	2.5	5.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	67	144	67
Future Vol, veh/h	0	67	144	67
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	73	157	73
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	33
HCM LOS	D

Lane

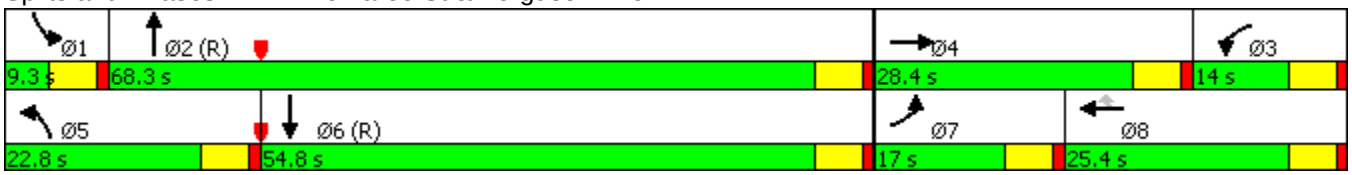


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	104	104	189	195	44	102	693	181	52	781	73
Future Volume (vph)	50	104	104	189	195	44	102	693	181	52	781	73
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	210		0	300		160	200		0	150		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor				0.99		0.96	0.99	1.00				
Frt		0.925				0.850		0.969			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3274	0	1630	1863	1458	1630	3416	0	1630	3493	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3274	0	1621	1863	1401	1618	3416	0	1630	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		113				165		42			10	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2655			1321			2631			2701	
Travel Time (s)		40.2			20.0			39.9			40.9	
Confl. Peds. (#/hr)				5		5	5		5			
Confl. Bikes (#/hr)						2			2			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	113	113	205	212	48	111	753	197	57	849	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	226	0	205	212	48	111	950	0	57	928	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.3	28.4		9.3	22.5	22.5	9.3	37.0		9.3	23.3	
Total Split (s)	17.0	28.4		14.0	25.4	25.4	22.8	68.3		9.3	54.8	
Total Split (%)	14.2%	23.7%		11.7%	21.2%	21.2%	19.0%	56.9%		7.8%	45.7%	
Maximum Green (s)	11.7	23.1		8.7	20.1	20.1	17.5	63.0		4.0	49.5	
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.3	-1.3		-1.3	-1.3	-1.3	-1.3	-1.3		-1.3	-1.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		16.1			0.0	0.0		24.7			0.0	
Pedestrian Calls (#/hr)		5			0	0		5			0	
Act Effct Green (s)	10.6	12.9		28.3	32.7	32.7	14.5	56.1		9.2	48.4	
Actuated g/C Ratio	0.09	0.11		0.24	0.27	0.27	0.12	0.47		0.08	0.40	
v/c Ratio	0.38	0.50		0.54	0.42	0.10	0.57	0.59		0.46	0.66	
Control Delay	58.1	27.5		48.9	42.1	0.4	60.4	24.0		83.8	13.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	58.1	27.5		48.9	42.1	0.4	60.4	24.0		83.8	13.2	
LOS	E	C		D	D	A	E	C		F	B	
Approach Delay		33.4			40.8			27.8			17.3	
Approach LOS		C			D			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 108 (90%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 21: Demaree St & Ferguson Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	104	104	189	195	44	102	693	181	52	781	73
Future Volume (veh/h)	50	104	104	189	195	44	102	693	181	52	781	73
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	54	113	113	205	212	48	111	753	197	57	849	79
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	85	194	174	139	266	203	152	1737	454	72	1895	176
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Prop Arrive On Green	0.05	0.11	0.10	0.09	0.14	0.14	0.09	0.63	0.62	0.01	0.19	0.19
Ln Grp Delay, s/veh	63.3	53.5	55.9	302.0	60.0	46.2	59.6	12.7	12.9	88.9	32.5	32.5
Ln Grp LOS	E	D	E	F	E	D	E	B	B	F	C	C
Approach Vol, veh/h		280			465			1061			985	
Approach Delay, s/veh		56.4			165.3			17.7			35.8	
Approach LOS		E			F			B			D	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	1	2	4	3	5	6	7	8
Case No	2.0	4.0	4.0	2.0	2.0	4.0	2.0	3.0
Phs Duration (G+Y+Rc), s	9.3	79.3	17.2	14.2	15.2	73.5	10.3	21.1
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green (Gmax), s	4.0	63.0	23.1	8.7	17.5	49.5	11.7	20.1
Max Allow Headway (MAH), s	4.2	4.1	4.3	4.2	4.2	4.1	4.2	4.2
Max Q Clear (g_c+I1), s	6.2	18.9	10.2	12.2	9.9	29.5	5.9	15.2
Green Ext Time (g_e), s	0.0	10.2	0.6	0.0	0.2	8.2	0.0	0.6
Prob of Phs Call (p_c)	0.85	1.00	1.00	1.00	0.98	1.00	0.83	1.00
Prob of Max Out (p_x)	1.00	0.06	0.00	1.00	0.05	0.33	0.15	0.75

Left-Turn Movement Data								
Assigned Mvmt	1			3	5		7	
Mvmt Sat Flow, veh/h	1634			1634	1634		1634	

Through Movement Data								
Assigned Mvmt		2	4			6		8
Mvmt Sat Flow, veh/h		2768	1770			3274		1863

Right-Turn Movement Data								
Assigned Mvmt		12	14			16		18
Mvmt Sat Flow, veh/h		724	1583			305		1421

Left Lane Group Data								
Assigned Mvmt	1	0	0	3	5	0	7	0
Lane Assignment	(Prot)			(Prot)	(Prot)		(Prot)	

Lanes in Grp	1	0	0	1	1	0	1	0
Grp Vol (v), veh/h	57	0	0	205	111	0	54	0
Grp Sat Flow (s), veh/h/ln	1634	0	0	1634	1634	0	1634	0
Q Serve Time (g_s), s	4.2	0.0	0.0	10.2	7.9	0.0	3.9	0.0
Cycle Q Clear Time (g_c), s	4.2	0.0	0.0	10.2	7.9	0.0	3.9	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	72	0	0	139	152	0	85	0
V/C Ratio (X)	0.79	0.00	0.00	1.47	0.73	0.00	0.63	0.00
Avail Cap (c_a), veh/h	72	0	0	139	256	0	177	0
Upstream Filter (I)	0.64	0.00	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	58.6	0.0	0.0	54.9	53.0	0.0	55.8	0.0
Incr Delay (d2), s/veh	30.3	0.0	0.0	247.1	6.6	0.0	7.6	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	88.9	0.0	0.0	302.0	59.6	0.0	63.3	0.0
1st-Term Q (Q1), veh/ln	1.9	0.0	0.0	4.6	3.6	0.0	1.8	0.0
2nd-Term Q (Q2), veh/ln	0.6	0.0	0.0	9.6	0.3	0.0	0.2	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	2.5	0.0	0.0	14.2	3.9	0.0	1.9	0.0
%ile Storage Ratio (RQ%)	0.42	0.00	0.00	1.20	0.49	0.00	0.23	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	16.4	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	4	0	0	6	0	8
Lane Assignment		T	T			T		T
Lanes in Grp	0	1	1	0	0	1	0	1
Grp Vol (v), veh/h	0	481	113	0	0	459	0	212
Grp Sat Flow (s), veh/h/ln	0	1770	1770	0	0	1770	0	1863
Q Serve Time (g_s), s	0.0	16.7	7.3	0.0	0.0	27.5	0.0	13.2
Cycle Q Clear Time (g_c), s	0.0	16.7	7.3	0.0	0.0	27.5	0.0	13.2
Lane Grp Cap (c), veh/h	0	1110	194	0	0	1024	0	266
V/C Ratio (X)	0.00	0.43	0.58	0.00	0.00	0.45	0.00	0.80
Avail Cap (c_a), veh/h	0	1110	360	0	0	1024	0	332
Upstream Filter (I)	0.00	1.00	1.00	0.00	0.00	0.64	0.00	1.00
Uniform Delay (d1), s/veh	0.0	11.4	50.8	0.0	0.0	31.6	0.0	49.7
Incr Delay (d2), s/veh	0.0	1.2	2.7	0.0	0.0	0.9	0.0	10.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	12.7	53.5	0.0	0.0	32.5	0.0	60.0
1st-Term Q (Q1), veh/ln	0.0	8.2	3.6	0.0	0.0	13.5	0.0	6.8

2nd-Term Q (Q2), veh/ln	0.0	0.4	0.1	0.0	0.0	0.3	0.0	0.8
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	8.5	3.7	0.0	0.0	13.8	0.0	7.5
%ile Storage Ratio (RQ%)	0.00	0.08	0.04	0.00	0.00	0.14	0.00	0.15
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	14	0	0	16	0	18
Lane Assignment		T+R	T+R			T+R		R
Lanes in Grp	0	1	1	0	0	1	0	1
Grp Vol (v), veh/h	0	469	113	0	0	469	0	48
Grp Sat Flow (s), veh/h/ln	0	1722	1583	0	0	1809	0	1421
Q Serve Time (g_s), s	0.0	16.9	8.2	0.0	0.0	27.5	0.0	3.6
Cycle Q Clear Time (g_c), s	0.0	16.9	8.2	0.0	0.0	27.5	0.0	3.6
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.42	1.00	0.00	0.00	0.17	0.00	1.00
Lane Grp Cap (c), veh/h	0	1081	174	0	0	1047	0	203
V/C Ratio (X)	0.00	0.43	0.65	0.00	0.00	0.45	0.00	0.24
Avail Cap (c_a), veh/h	0	1081	322	0	0	1047	0	253
Upstream Filter (I)	0.00	1.00	1.00	0.00	0.00	0.64	0.00	1.00
Uniform Delay (d1), s/veh	0.0	11.6	51.8	0.0	0.0	31.6	0.0	45.6
Incr Delay (d2), s/veh	0.0	1.3	4.1	0.0	0.0	0.9	0.0	0.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	12.9	55.9	0.0	0.0	32.5	0.0	46.2
1st-Term Q (Q1), veh/ln	0.0	8.0	3.6	0.0	0.0	13.8	0.0	1.4
2nd-Term Q (Q2), veh/ln	0.0	0.4	0.2	0.0	0.0	0.3	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	8.4	3.8	0.0	0.0	14.1	0.0	1.4
%ile Storage Ratio (RQ%)	0.00	0.08	0.04	0.00	0.00	0.14	0.00	0.23
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	52.5
HCM 2010 LOS	D

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	33	2	0	19	1	0
Future Volume (vph)	33	2	0	19	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.865			
Flt Protected	0.950					0.950
Satd. Flow (prot)	0	1611	1611	0	0	1770
Flt Permitted	0.950					0.950
Satd. Flow (perm)	0	1611	1611	0	0	1770
Link Speed (mph)	55		55			55
Link Distance (ft)	402		380			404
Travel Time (s)	5.0		4.7			5.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	2	0	21	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	2	21	0	0	1
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	33	2	0	19	1	0
Future Vol, veh/h	33	2	0	19	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	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	36	2	0	21	1	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	12	10	0	0	21	0
Stage 1	10	-	-	-	-	-
Stage 2	2	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	1008	1071	-	-	1595	-
Stage 1	1013	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1007	1071	-	-	1595	-
Mov Cap-2 Maneuver	1007	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	1020	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1071	1595	-
HCM Lane V/C Ratio	-	-	0.002	0.001	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	70	2	19	40	1	33
Future Volume (vph)	70	2	19	40	1	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.909			
Flt Protected	0.950					0.999
Satd. Flow (prot)	0	1611	1693	0	0	1861
Flt Permitted	0.950					0.999
Satd. Flow (perm)	0	1611	1693	0	0	1861
Link Speed (mph)	55		55			55
Link Distance (ft)	400		574			380
Travel Time (s)	5.0		7.1			4.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	2	21	43	1	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	2	64	0	0	37
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min) 15			

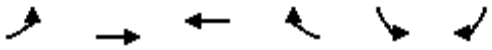
Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	70	2	19	40	1	33
Future Vol, veh/h	70	2	19	40	1	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	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	76	2	21	43	1	36

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	80	42	0	0	64	0
Stage 1	42	-	-	-	-	-
Stage 2	38	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	922	1029	-	-	1538	-
Stage 1	980	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	921	1029	-	-	1538	-
Mov Cap-2 Maneuver	921	-	-	-	-	-
Stage 1	980	-	-	-	-	-
Stage 2	983	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1029	1538	-
HCM Lane V/C Ratio	-	-	0.002	0.001	-
HCM Control Delay (s)	-	-	8.5	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	94	68	16	29	43
Future Volume (vph)	25	94	68	16	29	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.975			0.865
Flt Protected		0.990			0.950	
Satd. Flow (prot)	0	1844	1816	0	0	1611
Flt Permitted		0.990			0.950	
Satd. Flow (perm)	0	1844	1816	0	0	1611
Link Speed (mph)		55	55		55	
Link Distance (ft)		388	640		353	
Travel Time (s)		4.8	7.9		4.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	102	74	17	32	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	129	91	0	32	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization Err%		ICU Level of Service H	
Analysis Period (min) 15			

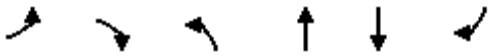
Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	25	94	68	16	29	43
Future Vol, veh/h	25	94	68	16	29	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	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	27	102	74	17	32	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	91	0	-	0	240	83
Stage 1	-	-	-	-	83	-
Stage 2	-	-	-	-	157	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1504	-	-	-	748	976
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	871	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1504	-	-	-	734	976
Mov Cap-2 Maneuver	-	-	-	-	734	-
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	854	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1504	-	-	-	976
HCM Lane V/C Ratio	0.018	-	-	-	0.048
HCM Control Delay (s)	7.4	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	2658			280	1260	
Travel Time (s)	33.0			4.2	19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Free	

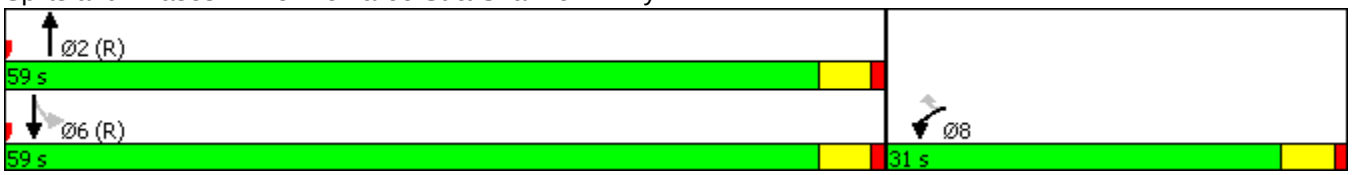
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

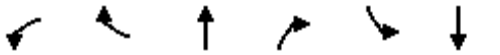
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	137	37	525	92	34	577
Future Volume (vph)	137	37	525	92	34	577
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	0		0	105	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor	0.99	0.98				
Frt		0.850	0.978			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1630	1458	3461	0	1630	3539
Flt Permitted	0.950				0.391	
Satd. Flow (perm)	1618	1428	3461	0	671	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		40	40			
Link Speed (mph)	55		45			45
Link Distance (ft)	2098		668			791
Travel Time (s)	26.0		10.1			12.0
Confl. Peds. (#/hr)	5	5				
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	40	571	100	37	627
Shared Lane Traffic (%)						
Lane Group Flow (vph)	149	40	671	0	37	627
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1		1	1
Detector Template						
Leading Detector (ft)	50	50	50		50	50
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	50	50	50		50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5
Total Split (s)	31.0	31.0	59.0		59.0	59.0
Total Split (%)	34.4%	34.4%	65.6%		65.6%	65.6%
Maximum Green (s)	26.5	26.5	54.5		54.5	54.5
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	13.5	13.5	67.5		67.5	67.5
Actuated g/C Ratio	0.15	0.15	0.75		0.75	0.75
v/c Ratio	0.61	0.16	0.26		0.07	0.24
Control Delay	45.7	11.5	2.9		4.3	4.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	45.7	11.5	2.9		4.3	4.1
LOS	D	B	A		A	A
Approach Delay	38.5		2.9			4.1
Approach LOS	D		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 7.8		Intersection LOS: A	
Intersection Capacity Utilization 41.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 13: Demaree St & Shannon Pkwy

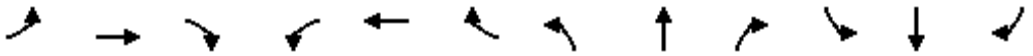




Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	137	37	525	92	34	577
Future Volume (veh/h)	137	37	525	92	34	577
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1716	1863	1750	1716	1863
Adj Flow Rate, veh/h	149	40	571	100	37	627
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	189	169	2363	413	631	2775
Arrive On Green	0.12	0.12	1.00	1.00	0.78	0.78
Sat Flow, veh/h	1634	1458	3106	526	703	3632
Grp Volume(v), veh/h	149	40	335	336	37	627
Grp Sat Flow(s),veh/h/ln	1634	1458	1770	1770	703	1770
Q Serve(g_s), s	8.0	2.2	0.0	0.0	1.1	4.2
Cycle Q Clear(g_c), s	8.0	2.2	0.0	0.0	1.1	4.2
Prop In Lane	1.00	1.00		0.30	1.00	
Lane Grp Cap(c), veh/h	189	169	1388	1388	631	2775
V/C Ratio(X)	0.79	0.24	0.24	0.24	0.06	0.23
Avail Cap(c_a), veh/h	481	429	1388	1388	631	2775
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.98	0.98	1.00	1.00
Uniform Delay (d), s/veh	38.7	36.2	0.0	0.0	2.2	2.5
Incr Delay (d2), s/veh	7.1	0.7	0.4	0.4	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.9	0.2	0.2	0.2	2.1
LnGrp Delay(d),s/veh	45.8	36.9	0.4	0.4	2.4	2.7
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	189		671			664
Approach Delay, s/veh	43.9		0.4			2.7
Approach LOS	D		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		75.1				75.1		14.9
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		54.5				54.5		26.5
Max Q Clear Time (g_c+I1), s		2.0				6.2		10.0
Green Ext Time (p_c), s		6.8				6.8		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	6.8
HCM 2010 LOS	A

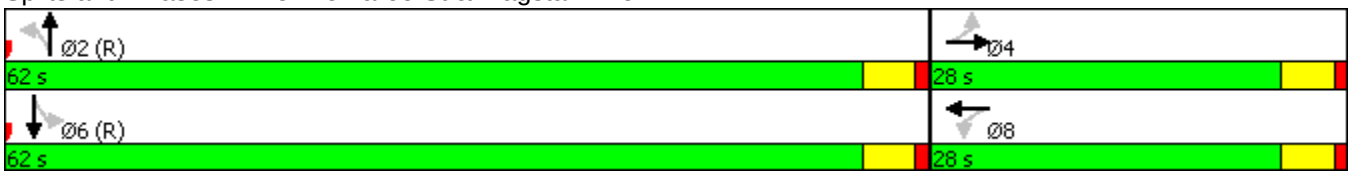


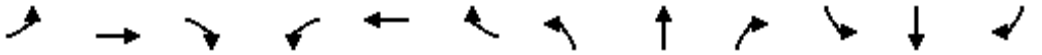
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	23	0	22	5	596	34	24	561	0
Future Volume (vph)	0	0	0	23	0	22	5	596	34	24	561	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt					0.934			0.992				
Flt Protected					0.975						0.998	
Satd. Flow (prot)	0	1863	0	0	1696	0	0	3511	0	0	3532	0
Flt Permitted					0.839			0.952			0.913	
Satd. Flow (perm)	0	1863	0	0	1460	0	0	3342	0	0	3231	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					24			13				
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		579			1069			1173			668	
Travel Time (s)		7.2			13.3			17.8			10.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	25	0	24	5	648	37	26	610	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	49	0	0	690	0	0	636	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	50	50		50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type				Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	28.0	28.0		28.0	28.0		62.0	62.0		62.0	62.0	
Total Split (%)	31.1%	31.1%		31.1%	31.1%		68.9%	68.9%		68.9%	68.9%	
Maximum Green (s)	23.5	23.5		23.5	23.5		57.5	57.5		57.5	57.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)					7.3			79.5			79.5	
Actuated g/C Ratio					0.08			0.88			0.88	
v/c Ratio					0.35			0.23			0.22	
Control Delay					30.4			1.7			1.3	
Queue Delay					0.0			0.0			0.0	
Total Delay					30.4			1.7			1.3	
LOS					C			A			A	
Approach Delay					30.4			1.7			1.3	
Approach LOS					C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 2.6		Intersection LOS: A	
Intersection Capacity Utilization 44.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Demaree St & Flagstaff Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	23	0	22	5	596	34	24	561	0
Future Volume (veh/h)	0	0	0	23	0	22	5	596	34	24	561	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	0	0	0	25	0	24	5	648	37	26	610	0
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
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	0	74	0	90	0	29	46	2859	162	123	2790	0
Arrive On Green	0.00	0.00	0.00	0.04	0.00	0.04	0.86	0.86	0.86	1.00	1.00	0.00
Sat Flow, veh/h	0	1863	0	761	0	730	6	3323	188	93	3327	0
Grp Volume(v), veh/h	0	0	0	49	0	0	364	0	326	331	305	0
Grp Sat Flow(s),veh/h/ln	0	1863	0	1491	0	0	1855	0	1662	1726	1610	0
Q Serve(g_s), s	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	3.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	2.9	0.0	0.0	3.0	0.0	3.1	0.0	0.0	0.0
Prop In Lane	0.00		0.00	0.51		0.49	0.01		0.11	0.08		0.00
Lane Grp Cap(c), veh/h	0	74	0	119	0	0	1637	0	1430	1528	1386	0
V/C Ratio(X)	0.00	0.00	0.00	0.41	0.00	0.00	0.22	0.00	0.23	0.22	0.22	0.00
Avail Cap(c_a), veh/h	0	486	0	450	0	0	1637	0	1430	1528	1386	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.70	0.00	0.70	0.96	0.96	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	42.9	0.0	0.0	1.1	0.0	1.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.3	0.0	0.0	0.2	0.0	0.3	0.3	0.4	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	0.0	0.0	0.0	1.3	0.0	0.0	1.6	0.0	1.5	0.1	0.1	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	45.2	0.0	0.0	1.3	0.0	1.3	0.3	0.4	0.0
LnGrp LOS				D			A		A	A	A	
Approach Vol, veh/h		0			49			690			636	
Approach Delay, s/veh		0.0			45.2			1.3			0.3	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		81.9		8.1		81.9		8.1
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		57.5		23.5		57.5		23.5
Max Q Clear Time (g_c+I1), s		5.1		0.0		2.0		4.9
Green Ext Time (p_c), s		6.0		0.0		6.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	2.4
HCM 2010 LOS	A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	499	24	41	935	32	45
Future Volume (vph)	499	24	41	935	32	45
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.98	
Frt	0.994				0.921	
Flt Protected				0.998	0.980	
Satd. Flow (prot)	1852	0	0	1859	1529	0
Flt Permitted				0.961	0.980	
Satd. Flow (perm)	1852	0	0	1790	1521	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6				49	
Link Speed (mph)	50			50	55	
Link Distance (ft)	2655			2640	1360	
Travel Time (s)	36.2			36.0	16.9	
Confl. Peds. (#/hr)					5	5
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	542	26	45	1016	35	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	568	0	0	1061	84	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	
Detector Template						
Leading Detector (ft)	50		50	50	50	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	50		50	50	50	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	NA		Perm	NA	Prot	
Protected Phases	4			8	2	
Permitted Phases			8			
Detector Phase	4		8	8	2	
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	
Total Split (s)	67.0		67.0	67.0	23.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	74.4%		74.4%	74.4%	25.6%	
Maximum Green (s)	62.5		62.5	62.5	18.5	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.5			4.5	4.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	C-Max	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	61.3			61.3	19.7	
Actuated g/C Ratio	0.68			0.68	0.22	
v/c Ratio	0.45			0.87	0.23	
Control Delay	7.7			20.8	16.7	
Queue Delay	0.0			0.0	0.0	
Total Delay	7.7			20.8	16.7	
LOS	A			C	B	
Approach Delay	7.7			20.8	16.7	
Approach LOS	A			C	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 105.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 17: Linwood St & Riggen Ave

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	499	24	41	935	32	45
Future Volume (veh/h)	499	24	41	935	32	45
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1750	1750	1863	1716	1750
Adj Flow Rate, veh/h	542	26	45	1016	35	49
Adj No. of Lanes	1	0	0	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1103	53	72	1099	171	239
Arrive On Green	0.63	0.63	0.63	0.63	0.27	0.27
Sat Flow, veh/h	1763	85	48	1756	622	871
Grp Volume(v), veh/h	0	568	1061	0	85	0
Grp Sat Flow(s),veh/h/ln	0	1848	1804	0	1511	0
Q Serve(g_s), s	0.0	14.9	27.4	0.0	3.9	0.0
Cycle Q Clear(g_c), s	0.0	14.9	47.7	0.0	3.9	0.0
Prop In Lane		0.05	0.04		0.41	0.58
Lane Grp Cap(c), veh/h	0	1156	1171	0	414	0
V/C Ratio(X)	0.00	0.49	0.91	0.00	0.21	0.00
Avail Cap(c_a), veh/h	0	1283	1292	0	414	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.84	0.88	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	9.1	15.0	0.0	25.1	0.0
Incr Delay (d2), s/veh	0.0	0.3	8.0	0.0	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.7	25.9	0.0	1.8	0.0
LnGrp Delay(d),s/veh	0.0	9.4	22.9	0.0	26.2	0.0
LnGrp LOS		A	C		C	
Approach Vol, veh/h	568			1061	85	
Approach Delay, s/veh	9.4			22.9	26.2	
Approach LOS	A			C	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		29.2		60.8				60.8
Change Period (Y+Rc), s		4.5		4.5				4.5
Max Green Setting (Gmax), s		18.5		62.5				62.5
Max Q Clear Time (g_c+I1), s		5.9		16.9				49.7
Green Ext Time (p_c), s		0.2		10.6				6.6

Intersection Summary	
HCM 2010 Ctrl Delay	18.6
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	132	24	35	38	35	62
Future Volume (vph)	132	24	35	38	35	62
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979				0.914	
Flt Protected				0.977	0.982	
Satd. Flow (prot)	1824	0	0	1820	1540	0
Flt Permitted				0.977	0.982	
Satd. Flow (perm)	1824	0	0	1820	1540	0
Link Speed (mph)	55			55	45	
Link Distance (ft)	1617			5265	2625	
Travel Time (s)	20.0			65.3	39.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	143	26	38	41	38	67
Shared Lane Traffic (%)						
Lane Group Flow (vph)	169	0	0	79	105	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.6%		ICU Level of Service A	
Analysis Period (min) 15			

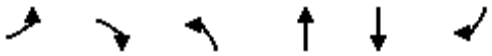
Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	132	24	35	38	35	62
Future Vol, veh/h	132	24	35	38	35	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	143	26	38	41	38	67

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	170	0	274	157
Stage 1	-	-	-	-	157	-
Stage 2	-	-	-	-	117	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1407	-	716	889
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	908	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1407	-	696	889
Mov Cap-2 Maneuver	-	-	-	-	696	-
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	883	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.7	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	808	-	-	1407	-
HCM Lane V/C Ratio	0.13	-	-	0.027	-
HCM Control Delay (s)	10.1	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	53	110	33	255	249	27
Future Volume (vph)	53	110	33	255	249	27
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.909				0.987	
Flt Protected	0.984			0.994		
Satd. Flow (prot)	1535	0	0	1852	1839	0
Flt Permitted	0.984			0.994		
Satd. Flow (perm)	1535	0	0	1852	1839	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	5265			1260	5250	
Travel Time (s)	65.3			19.1	79.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	120	36	277	271	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	178	0	0	313	300	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	53	110	33	255	249	27
Future Vol, veh/h	53	110	33	255	249	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	58	120	36	277	271	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	634	285	300	0	-	0
Stage 1	285	-	-	-	-	-
Stage 2	349	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	443	754	1261	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	428	754	1261	-	-	-
Mov Cap-2 Maneuver	428	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	690	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1261	-	604	-	-
HCM Lane V/C Ratio	0.028	-	0.293	-	-
HCM Control Delay (s)	7.9	0	13.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.2	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	703			2658	404	
Travel Time (s)	8.7			33.0	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

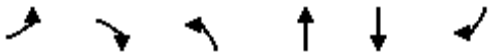
Intersection	
Int Delay, s/veh	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	657			433	280	
Travel Time (s)	8.1			6.6	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	0	0	0	0	-	0
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	28	22	286	121	65	365
Future Volume (vph)	28	22	286	121	65	365
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	200	200		350	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					0.992
Satd. Flow (prot)	1630	1458	1863	1458	0	1848
Flt Permitted	0.950					0.992
Satd. Flow (perm)	1630	1458	1863	1458	0	1848
Link Speed (mph)	55		45			45
Link Distance (ft)	2907		663			433
Travel Time (s)	36.0		10.0			6.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	24	311	132	71	397
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	24	311	132	0	468
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	28	22	286	121	65	365
Future Vol, veh/h	28	22	286	121	65	365
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	30	24	311	132	71	397

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	849	311	0	0	311	0
Stage 1	311	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	331	729	-	-	1249	-
Stage 1	743	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	307	729	-	-	1249	-
Mov Cap-2 Maneuver	307	-	-	-	-	-
Stage 1	743	-	-	-	-	-
Stage 2	542	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	307	729	1249	-
HCM Lane V/C Ratio	-	-	0.099	0.033	0.057	-
HCM Control Delay (s)	-	-	18	10.1	8.1	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	0.2	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	87	14	5	53	15	10
Future Volume (vph)	87	14	5	53	15	10
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Storage Length (ft)		0	125		235	235
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.982					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1829	0	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1829	0	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2907			2297	1612	
Travel Time (s)	36.0			28.5	20.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	15	5	58	16	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	0	5	58	16	11
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.4%	ICU Level of Service	A
Analysis Period (min)	15		

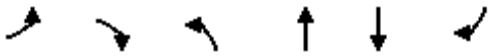
Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	87	14	5	53	15	10
Future Vol, veh/h	87	14	5	53	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	95	15	5	58	16	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	110	0	170	102
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	68	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1480	-	820	953
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1480	-	817	953
Mov Cap-2 Maneuver	-	-	-	-	817	-
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	952	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	817	953	-	-	1480	-
HCM Lane V/C Ratio	0.02	0.011	-	-	0.004	-
HCM Control Delay (s)	9.5	8.8	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	90	58	0	0	0
Future Volume (vph)	0	90	58	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected				0.950		
Satd. Flow (prot)	1484	0	0	1770	1863	0
Flt Permitted				0.950		
Satd. Flow (perm)	1484	0	0	1770	1863	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2297			627	473	
Travel Time (s)	28.5			7.8	5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	98	63	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	98	0	0	63	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.2%		ICU Level of Service A	
Analysis Period (min) 15			

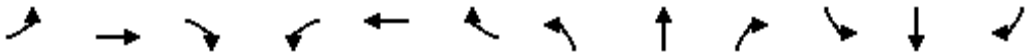
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	90	58	0	0	0
Future Vol, veh/h	0	90	58	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	98	63	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	98	0	224	0
Stage 1	-	-	-	-	126	-
Stage 2	-	-	-	-	98	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	675	-
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	117	0	0	87	0
Future Volume (vph)	0	0	0	0	0	0	0	117	0	0	87	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		341			2586			2647			2625	
Travel Time (s)		4.2			32.1			40.1			39.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	127	0	0	95	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	127	0	0	95	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 9.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	117	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	117	0
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
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	127	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	0	0	7.7
HCM LOS	-	-	A

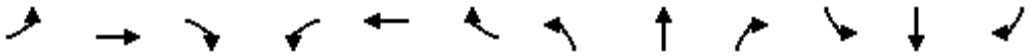
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	117	0	0	87
LT Vol	0	0	0	0
Through Vol	117	0	0	87
RT Vol	0	0	0	0
Lane Flow Rate	127	0	0	95
Geometry Grp	1	1	1	1
Degree of Util (X)	0.141	0	0	0.106
Departure Headway (Hd)	4.004	4.312	4.312	4.028
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	897	0	0	890
Service Time	2.022	2.406	2.406	2.051
HCM Lane V/C Ratio	0.142	0	0	0.107
HCM Control Delay	7.7	7.4	7.4	7.5
HCM Lane LOS	A	N	N	A
HCM 95th-tile Q	0.5	0	0	0.4

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	87	0
Future Vol, veh/h	0	0	87	0
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	0	95	0
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	7.5
HCM LOS	A

Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	1863	0	0	1863	0	0	1863	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2586			388			731			574	
Travel Time (s)		32.1			4.8			9.1			7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

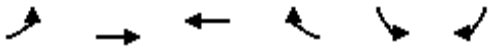
Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	0	0	0	0	0	0	0	0	0	0	0	0
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

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)	-	-	-	-	-	-	-	-
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)	-	-	-	-	-	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1	1	5	9	0
Future Volume (vph)	0	1	1	5	9	0
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.887			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1652	0	1630	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1863	1652	0	1630	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		640	493		546	
Travel Time (s)		7.9	6.1		6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1	1	5	10	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1	6	0	10	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.3%		ICU Level of Service A	
Analysis Period (min) 15			

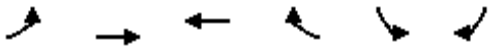
Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	1	1	5	9	0
Future Vol, veh/h	0	1	1	5	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	1	1	5	10	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	7	0	-	0	5	4
Stage 1	-	-	-	-	4	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1614	-	-	-	1017	1080
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1614	-	-	-	1017	1080
Mov Cap-2 Maneuver	-	-	-	-	1017	-
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1614	-	-	-	1017
HCM Lane V/C Ratio	-	-	-	-	0.01
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	1863	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	1863	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		493	1158		326	
Travel Time (s)		6.1	14.4		4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

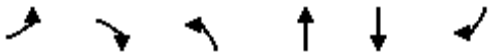
Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	-	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	24	45	364	365	6
Future Volume (vph)	0	24	45	364	365	6
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Storage Length (ft)	0	0	175			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	0.865				0.998	
Flt Protected			0.950			
Satd. Flow (prot)	1484	0	1630	3539	1859	0
Flt Permitted			0.950			
Satd. Flow (perm)	1484	0	1630	3539	1859	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	1158			791	663	
Travel Time (s)	14.4			12.0	10.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	26	49	396	397	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	49	396	404	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	24	45	364	365	6
Future Vol, veh/h	0	24	45	364	365	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	0	26	49	396	397	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	696	400	403	0	-	0
Stage 1	400	-	-	-	-	-
Stage 2	296	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	391	649	1156	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	729	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	374	649	1156	-	-	-
Mov Cap-2 Maneuver	374	-	-	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	698	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1156	-	649	-	-
HCM Lane V/C Ratio	0.042	-	0.04	-	-
HCM Control Delay (s)	8.3	-	10.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	103	6	525	223	19	493
Future Volume (vph)	103	6	525	223	19	493
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	0		0	105	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.955			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1630	1458	3380	0	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1630	1458	3380	0	1630	3539
Link Speed (mph)	55		45			45
Link Distance (ft)	2098		668			791
Travel Time (s)	26.0		10.1			12.0
Confl. Peds. (#/hr)	5	5				
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	112	7	571	242	21	536
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	7	813	0	21	536
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		

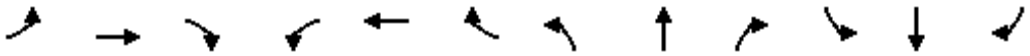
Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	103	6	525	223	19	493
Future Vol, veh/h	103	6	525	223	19	493
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
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	112	7	571	242	21	536

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1006	412	0	0	818	0
Stage 1	697	-	-	-	-	-
Stage 2	309	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	238	589	-	-	806	-
Stage 1	455	-	-	-	-	-
Stage 2	718	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	231	587	-	-	806	-
Mov Cap-2 Maneuver	231	-	-	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	699	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.1	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	231	587	806	-
HCM Lane V/C Ratio	-	-	0.485	0.011	0.026	-
HCM Control Delay (s)	-	-	34.4	11.2	9.6	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	2.4	0	0.1	-



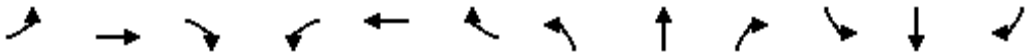
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	70	27	18	64	10	14	77	82	7	35	23
Future Volume (vph)	6	70	27	18	64	10	14	77	82	7	35	23
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.965			0.985			0.936			0.952	
Flt Protected		0.997			0.990			0.996			0.994	
Satd. Flow (prot)	0	1792	0	0	1816	0	0	1737	0	0	1763	0
Flt Permitted		0.997			0.990			0.996			0.994	
Satd. Flow (perm)	0	1792	0	0	1816	0	0	1737	0	0	1763	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		858			508			1674			1612	
Travel Time (s)		10.6			6.3			20.8			20.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	76	29	20	70	11	15	84	89	8	38	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	112	0	0	101	0	0	188	0	0	71	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	30.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	4.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	112	101	188	71
Demand Flow Rate, veh/h	115	102	192	73
Vehicles Circulating, veh/h	67	108	93	106
Vehicles Exiting, veh/h	111	177	89	104
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.5	4.5	5.3	4.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	115	102	192	73
Cap Entry Lane, veh/h	1057	1014	1030	1016
Entry HV Adj Factor	0.978	0.986	0.981	0.976
Flow Entry, veh/h	112	101	188	71
Cap Entry, veh/h	1033	1000	1009	991
V/C Ratio	0.109	0.101	0.187	0.072
Control Delay, s/veh	4.5	4.5	5.3	4.3
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	44	0	27	4	563	34	47	530	0
Future Volume (vph)	0	0	0	44	0	27	4	563	34	47	530	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt					0.949			0.992				
Flt Protected					0.970						0.996	
Satd. Flow (prot)	0	1863	0	0	1715	0	0	3511	0	0	3525	0
Flt Permitted					0.970						0.996	
Satd. Flow (perm)	0	1863	0	0	1715	0	0	3511	0	0	3525	0
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		579			1069			1173			668	
Travel Time (s)		7.2			13.3			17.8			10.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	48	0	29	4	612	37	51	576	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	77	0	0	653	0	0	627	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

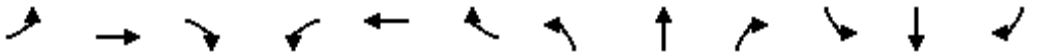
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	44	0	27	4	563	34	47	530	0
Future Vol, veh/h	0	0	0	44	0	27	4	563	34	47	530	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	48	0	29	4	612	37	51	576	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	993	1336	288	1029	1317	324	576	0	0	649	0	0
Stage 1	678	678	-	639	639	-	-	-	-	-	-	-
Stage 2	315	658	-	390	678	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	200	152	709	188	156	672	993	-	-	933	-	-
Stage 1	408	450	-	431	469	-	-	-	-	-	-	-
Stage 2	671	459	-	606	450	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	179	139	709	176	143	672	993	-	-	933	-	-
Mov Cap-2 Maneuver	179	139	-	176	143	-	-	-	-	-	-	-
Stage 1	406	414	-	428	466	-	-	-	-	-	-	-
Stage 2	638	456	-	558	414	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	26.3	0.1	1
HCM LOS	A	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	993	-	-	-	245	933	-	-
HCM Lane V/C Ratio	0.004	-	-	-	0.315	0.055	-	-
HCM Control Delay (s)	8.6	0	-	0	26.3	9.1	0.3	-
HCM Lane LOS	A	A	-	A	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	1.3	0.2	-	-

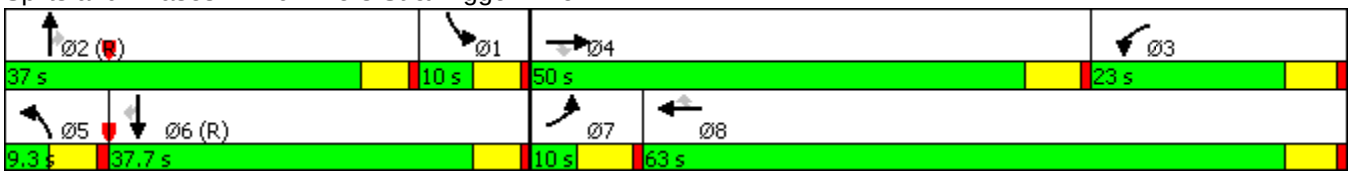


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	540	78	183	315	25	43	99	215	33	68	20
Future Volume (vph)	16	540	78	183	315	25	43	99	215	33	68	20
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		305	305		305	305		305	300		155
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98			0.97			0.97			0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1863	1458	1630	1863	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1863	1414	1630	1863	1411	1630	3539	1411
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169			172			234			182
Link Speed (mph)		55			50			45			45	
Link Distance (ft)		2597			2655			816			2647	
Travel Time (s)		32.2			36.2			12.4			40.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	587	85	199	342	27	47	108	234	36	74	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	587	85	199	342	27	47	108	234	36	74	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	38.4	38.4	9.7	38.4	38.4	9.3	35.6	35.6	9.3	35.6	35.6
Total Split (s)	10.0	50.0	50.0	23.0	63.0	63.0	9.3	37.0	37.0	10.0	37.7	37.7
Total Split (%)	8.3%	41.7%	41.7%	19.2%	52.5%	52.5%	7.8%	30.8%	30.8%	8.3%	31.4%	31.4%
Maximum Green (s)	4.0	44.0	44.0	17.3	57.3	57.3	4.0	31.7	31.7	4.7	32.4	32.4
Yellow Time (s)	5.0	5.0	5.0	4.7	4.7	4.7	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-1.7	-1.7	-1.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.4	25.4		25.7	25.7		23.3	23.3		23.3	23.3
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	7.9	43.4	43.4	20.1	62.7	62.7	8.3	36.7	36.7	8.4	34.5	34.5
Actuated g/C Ratio	0.07	0.36	0.36	0.17	0.52	0.52	0.07	0.31	0.31	0.07	0.29	0.29
v/c Ratio	0.16	0.87	0.14	0.73	0.35	0.03	0.42	0.19	0.39	0.32	0.07	0.04
Control Delay	56.9	50.3	0.4	55.3	16.1	0.1	65.6	36.4	6.9	60.5	35.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.9	50.3	0.4	55.3	16.1	0.1	65.6	36.4	6.9	60.5	35.3	0.1
LOS	E	D	A	E	B	A	E	D	A	E	D	A
Approach Delay		44.3			29.1			22.2			36.3	
Approach LOS		D			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 117 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 34.0		Intersection LOS: C	
Intersection Capacity Utilization 74.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 16: Akers St & Riggen Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	540	78	183	315	25	43	99	215	33	68	20
Future Volume (veh/h)	16	540	78	183	315	25	43	99	215	33	68	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	17	587	85	199	342	27	47	108	234	36	74	22
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	51	645	496	247	868	661	72	382	289	268	1151	460
Arrive On Green	0.03	0.35	0.35	0.15	0.47	0.47	0.04	0.21	0.21	0.16	0.33	0.33
Sat Flow, veh/h	1634	1863	1433	1634	1863	1419	1634	1863	1407	1634	3539	1415
Grp Volume(v), veh/h	17	587	85	199	342	27	47	108	234	36	74	22
Grp Sat Flow(s),veh/h/ln	1634	1863	1433	1634	1863	1419	1634	1863	1407	1634	1770	1415
Q Serve(g_s), s	1.2	36.1	3.9	14.1	14.4	0.6	3.4	5.9	19.0	2.3	1.7	1.3
Cycle Q Clear(g_c), s	1.2	36.1	3.9	14.1	14.4	0.6	3.4	5.9	19.0	2.3	1.7	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	51	645	496	247	868	661	72	382	289	268	1151	460
V/C Ratio(X)	0.33	0.91	0.17	0.81	0.39	0.04	0.65	0.28	0.81	0.13	0.06	0.05
Avail Cap(c_a), veh/h	82	714	549	259	916	698	72	512	387	268	1151	460
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	56.9	37.4	16.6	49.3	20.9	4.6	56.4	40.2	45.5	42.9	27.9	27.7
Incr Delay (d2), s/veh	3.8	14.9	0.2	16.4	0.3	0.0	18.8	1.8	21.3	0.2	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	21.3	1.5	7.5	7.5	0.3	1.9	3.2	9.1	1.0	0.9	0.5
LnGrp Delay(d),s/veh	60.7	52.3	16.7	65.6	21.2	4.6	75.3	42.1	66.8	43.1	28.0	27.9
LnGrp LOS	E	D	B	E	C	A	E	D	E	D	C	C
Approach Vol, veh/h		689			568			389			132	
Approach Delay, s/veh		48.1			36.0			60.9			32.1	
Approach LOS		D			D			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.7	28.6	22.1	45.6	9.3	43.0	7.7	59.9
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	4.3	21.0	16.1	38.1	5.4	3.7	3.2	16.4
Green Ext Time (p_c), s	0.0	1.0	0.3	1.5	0.0	0.5	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	45.9
HCM 2010 LOS	D

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	803	44	46	699	20	48
Future Volume (vph)	803	44	46	699	20	48
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.993				0.905	
Flt Protected				0.997	0.985	
Satd. Flow (prot)	1850	0	0	1857	1529	0
Flt Permitted				0.997	0.985	
Satd. Flow (perm)	1850	0	0	1857	1529	0
Link Speed (mph)	50			50	55	
Link Distance (ft)	2655			2640	1360	
Travel Time (s)	36.2			36.0	16.9	
Confl. Peds. (#/hr)					5	5
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	873	48	50	760	22	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	921	0	0	810	74	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

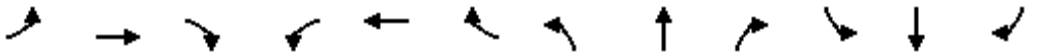
Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	803	44	46	699	20	48
Future Vol, veh/h	803	44	46	699	20	48
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	873	48	50	760	22	52

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	926	0	1762	902
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	860	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	738	-	93	336
Stage 1	-	-	-	-	396	-
Stage 2	-	-	-	-	414	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	738	-	82	335
Mov Cap-2 Maneuver	-	-	-	-	82	-
Stage 1	-	-	-	-	394	-
Stage 2	-	-	-	-	366	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	39.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	176	-	-	738	-
HCM Lane V/C Ratio	0.42	-	-	0.068	-
HCM Control Delay (s)	39.5	-	-	10.2	0
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	1.9	-	-	0.2	-

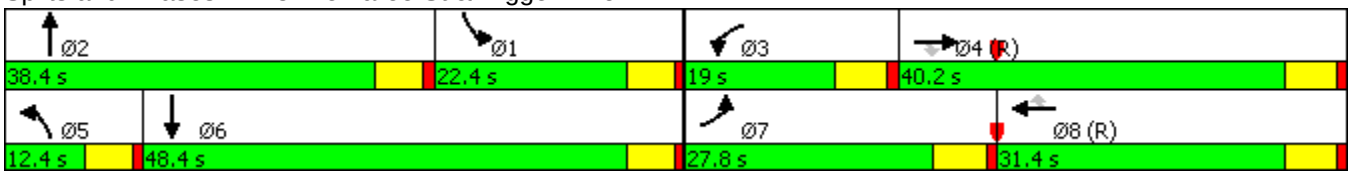


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	537	131	385	365	25	92	546	226	88	518	136
Future Volume (vph)	192	537	131	385	365	25	92	546	226	88	518	136
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		155	155		155	255		0	210		0
Storage Lanes	1		1	2		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	0.99		0.98	1.00	0.99		1.00	0.99	
Frt			0.850			0.850		0.956			0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	3162	3539	1458	1630	3365	0	1630	3407	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1622	3539	1427	3142	3539	1427	1624	3365	0	1627	3407	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169			221		53			31	
Link Speed (mph)		50			50			45			45	
Link Distance (ft)		2640			2884			2701			1173	
Travel Time (s)		36.0			39.3			40.9			17.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	209	584	142	418	397	27	100	593	246	96	563	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	209	584	142	418	397	27	100	839	0	96	711	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Detector Phase	7	4	4 5	3	8	8 1	5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.7	27.0	27.0	9.7	28.4	28.4	9.3	38.4		9.3	38.4	
Total Split (s)	27.8	40.2	40.2	19.0	31.4	31.4	12.4	38.4		22.4	48.4	
Total Split (%)	23.2%	33.5%	33.5%	15.8%	26.2%	26.2%	10.3%	32.0%		18.7%	40.3%	
Maximum Green (s)	22.1	34.5	34.5	13.3	25.7	25.7	7.1	33.1		17.1	43.1	
Yellow Time (s)	4.7	4.7	4.7	4.7	4.7	4.7	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.3	-1.3		-1.3	-1.3	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		14.3	14.3		15.7	15.7		26.1			26.1	
Pedestrian Calls (#/hr)		5	5		5	5		5			5	
Act Effct Green (s)	21.0	37.2	37.2	20.4	36.5	36.5	8.4	32.8		13.6	38.0	
Actuated g/C Ratio	0.18	0.31	0.31	0.17	0.30	0.30	0.07	0.27		0.11	0.32	
v/c Ratio	0.73	0.53	0.25	0.78	0.37	0.05	0.88	0.88		0.52	0.65	
Control Delay	61.3	24.2	2.7	59.6	36.1	0.2	109.0	38.0		59.4	35.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	61.3	24.2	2.7	59.6	36.1	0.2	109.0	38.0		59.4	35.9	
LOS	E	C	A	E	D	A	F	D		E	D	
Approach Delay		29.2			46.6			45.6			38.7	
Approach LOS		C			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 39.9		Intersection LOS: D	
Intersection Capacity Utilization 72.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 18: Demaree St & Riggen Ave



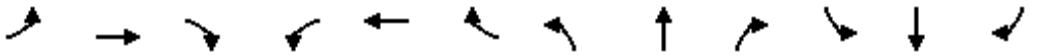
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	537	131	385	365	25	92	546	226	88	518	136
Future Volume (veh/h)	192	537	131	385	365	25	92	546	226	88	518	136
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	209	584	142	418	397	27	100	593	246	96	563	148
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	256	1294	524	396	1181	478	114	674	279	161	844	221
Arrive On Green	0.16	0.37	0.37	0.13	0.33	0.33	0.02	0.09	0.09	0.10	0.31	0.30
Sat Flow, veh/h	1634	3539	1433	3170	3539	1432	1634	2427	1005	1634	2756	722
Grp Volume(v), veh/h	209	584	142	418	397	27	100	432	407	96	361	350
Grp Sat Flow(s),veh/h/ln	1634	1770	1433	1585	1770	1432	1634	1770	1662	1634	1770	1708
Q Serve(g_s), s	14.8	15.0	8.4	15.0	10.1	1.1	7.3	29.0	29.0	6.8	21.3	21.5
Cycle Q Clear(g_c), s	14.8	15.0	8.4	15.0	10.1	1.1	7.3	29.0	29.0	6.8	21.3	21.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.60	1.00		0.42
Lane Grp Cap(c), veh/h	256	1294	524	396	1181	478	114	492	462	161	542	523
V/C Ratio(X)	0.82	0.45	0.27	1.05	0.34	0.06	0.87	0.88	0.88	0.60	0.67	0.67
Avail Cap(c_a), veh/h	324	1294	524	396	1181	478	114	507	477	251	655	632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.57	0.57	0.57	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	28.9	26.8	52.5	30.0	13.7	58.1	52.5	52.7	51.8	36.3	36.6
Incr Delay (d2), s/veh	12.0	1.1	1.3	60.4	0.8	0.2	31.8	9.8	10.5	3.5	1.9	2.1
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	7.5	7.6	3.5	9.9	5.0	0.5	4.3	15.5	14.7	3.2	10.7	10.4
LnGrp Delay(d),s/veh	60.9	30.1	28.1	112.9	30.8	13.9	89.9	62.3	63.1	55.4	38.2	38.7
LnGrp LOS	E	C	C	F	C	B	F	E	E	E	D	D
Approach Vol, veh/h		935			842			939			807	
Approach Delay, s/veh		36.7			71.0			65.6			40.4	
Approach LOS		D			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	37.3	19.0	47.9	12.4	40.7	22.8	44.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	10.5	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	8.8	31.0	17.0	17.0	9.3	23.5	16.8	12.1
Green Ext Time (p_c), s	2.2	0.8	0.0	4.7	0.0	3.1	0.3	4.3

Intersection Summary	
HCM 2010 Ctrl Delay	53.4
HCM 2010 LOS	D

Notes

User approved changes to right turn type.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	609	107	97	466	58	65	68	82	36	78	45
Future Volume (vph)	51	609	107	97	466	58	65	68	82	36	78	45
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	250		0	160		0	195		0	130		130
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.978			0.983			0.918				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3461	0	1630	3479	0	1630	3249	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3461	0	1630	3479	0	1630	3249	0	1630	1863	1458
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		2884			7452			1333			1674	
Travel Time (s)		39.3			101.6			16.5			20.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	662	116	105	507	63	71	74	89	39	85	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	778	0	105	570	0	71	163	0	39	85	49
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	35.3
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	51	609	107	0	97	466	58	0	65	68	82
Future Vol, veh/h	0	51	609	107	0	97	466	58	0	65	68	82
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	55	662	116	0	105	507	63	0	71	74	89
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	3
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	3	3	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	3	3	3
HCM Control Delay	51	28	15.4
HCM LOS	F	D	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	22%	0%	100%	65%	0%	100%	73%	0%	100%
Vol Right, %	0%	0%	78%	0%	0%	35%	0%	0%	27%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	45	105	51	406	310	97	311	213	36	78
LT Vol	65	0	0	51	0	0	97	0	0	36	0
Through Vol	0	45	23	0	406	203	0	311	155	0	78
RT Vol	0	0	82	0	0	107	0	0	58	0	0
Lane Flow Rate	71	49	114	55	441	337	105	338	232	39	85
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.202	0.134	0.293	0.134	1	0.737	0.263	0.796	0.534	0.114	0.236
Departure Headway (Hd)	10.313	9.813	9.264	8.713	8.213	8.013	8.983	8.483	8.293	10.515	10.015
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	349	366	388	412	441	455	400	425	434	342	359
Service Time	8.036	7.551	7.019	6.455	5.955	5.713	6.747	6.255	6.067	8.235	7.751
HCM Lane V/C Ratio	0.203	0.134	0.294	0.133	1	0.741	0.263	0.795	0.535	0.114	0.237
HCM Control Delay	15.6	14.1	15.8	12.8	71.9	30	14.9	37.3	20.3	14.6	15.8
HCM Lane LOS	C	B	C	B	F	D	B	E	C	B	C
HCM 95th-tile Q	0.7	0.5	1.2	0.5	12.8	6	1	7.1	3.1	0.4	0.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	36	78	45
Future Vol, veh/h	0	36	78	45
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	39	85	49
Number of Lanes	0	1	1	1

Approach	SB
Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	14.8
HCM LOS	B

Lane	SBLn3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	340	146	32	194	39	78	54	19	22	75	36
Future Volume (vph)	65	340	146	32	194	39	78	54	19	22	75	36
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.955			0.975			0.983			0.964	
Flt Protected	0.950			0.950				0.975			0.992	
Satd. Flow (prot)	1630	3380	0	1630	3451	0	0	1785	0	0	1781	0
Flt Permitted	0.950			0.950				0.975			0.992	
Satd. Flow (perm)	1630	3380	0	1630	3451	0	0	1785	0	0	1781	0
Link Speed (mph)		55			45			55			55	
Link Distance (ft)		259			2655			897			1333	
Travel Time (s)		3.2			40.2			11.1			16.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	370	159	35	211	42	85	59	21	24	82	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	529	0	35	253	0	0	165	0	0	145	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	65	340	146	0	32	194	39	0	78	54	19
Future Vol, veh/h	0	65	340	146	0	32	194	39	0	78	54	19
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	71	370	159	0	35	211	42	0	85	59	21
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	12.8	11	13.3
HCM LOS	B	B	B

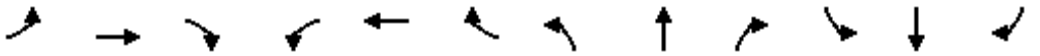
Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	52%	100%	0%	0%	100%	0%	0%	17%
Vol Thru, %	36%	0%	100%	44%	0%	100%	62%	56%
Vol Right, %	13%	0%	0%	56%	0%	0%	38%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	151	65	227	259	32	129	104	133
LT Vol	78	65	0	0	32	0	0	22
Through Vol	54	0	227	113	0	129	65	75
RT Vol	19	0	0	146	0	0	39	36
Lane Flow Rate	164	71	246	282	35	141	113	145
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.325	0.13	0.418	0.447	0.068	0.254	0.195	0.278
Departure Headway (Hd)	7.13	6.616	6.106	5.705	7.011	6.5	6.231	6.915
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	502	540	586	629	509	550	572	516
Service Time	4.91	4.381	3.871	3.47	4.788	4.277	4.008	4.696
HCM Lane V/C Ratio	0.327	0.131	0.42	0.448	0.069	0.256	0.198	0.281
HCM Control Delay	13.3	10.4	13.2	13	10.3	11.5	10.5	12.4
HCM Lane LOS	B	B	B	B	B	B	B	B
HCM 95th-tile Q	1.4	0.4	2.1	2.3	0.2	1	0.7	1.1

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	22	75	36
Future Vol, veh/h	0	22	75	36
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	24	82	39
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	12.4
HCM LOS	B

Lane

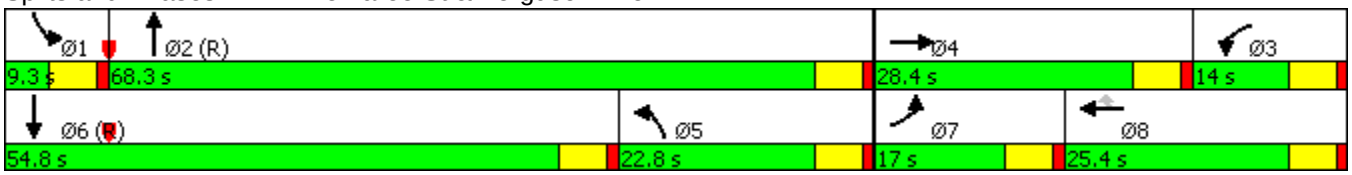


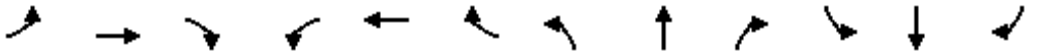
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	193	63	122	114	34	100	1081	313	41	771	46
Future Volume (vph)	70	193	63	122	114	34	100	1081	313	41	771	46
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	210		0	300		160	200		0	150		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor				0.99		0.96	0.99	1.00				
Frt		0.963				0.850		0.966			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3408	0	1630	1863	1458	1630	3405	0	1630	3511	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3408	0	1621	1863	1401	1618	3405	0	1630	3511	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33				165		48			6	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2655			1321			2631			2701	
Travel Time (s)		40.2			20.0			39.9			40.9	
Confl. Peds. (#/hr)				5		5	5		5			
Confl. Bikes (#/hr)						2			2			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	210	68	133	124	37	109	1175	340	45	838	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	278	0	133	124	37	109	1515	0	45	888	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.3	28.4		9.3	22.5	22.5	9.3	37.0		9.3	23.3	
Total Split (s)	17.0	28.4		14.0	25.4	25.4	22.8	68.3		9.3	54.8	
Total Split (%)	14.2%	23.7%		11.7%	21.2%	21.2%	19.0%	56.9%		7.8%	45.7%	
Maximum Green (s)	11.7	23.1		8.7	20.1	20.1	17.5	63.0		4.0	49.5	
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.3	-1.3		-1.3	-1.3	-1.3	-1.3	-1.3		-1.3	-1.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		16.1			0.0	0.0		24.7			0.0	
Pedestrian Calls (#/hr)		5			0	0		5			0	
Act Effct Green (s)	11.3	16.3		16.0	23.4	23.4	24.5	67.0		6.9	47.1	
Actuated g/C Ratio	0.09	0.14		0.13	0.20	0.20	0.20	0.56		0.06	0.39	
v/c Ratio	0.50	0.57		0.61	0.34	0.09	0.33	0.79		0.48	0.64	
Control Delay	62.6	46.4		62.6	45.9	0.4	42.9	25.0		71.7	25.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	62.6	46.4		62.6	45.9	0.4	42.9	25.0		71.7	25.2	
LOS	E	D		E	D	A	D	C		E	C	
Approach Delay		49.9			47.7			26.2			27.5	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 108 (90%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 31.2		Intersection LOS: C	
Intersection Capacity Utilization 71.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 21: Demaree St & Ferguson Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	193	63	122	114	34	100	1081	313	41	771	46
Future Volume (veh/h)	70	193	63	122	114	34	100	1081	313	41	771	46
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	76	210	68	133	124	37	109	1175	340	45	838	50
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	112	316	100	136	250	191	598	1680	478	72	1012	60
Arrive On Green	0.07	0.12	0.11	0.08	0.13	0.13	0.37	0.62	0.61	0.01	0.10	0.09
Sat Flow, veh/h	1634	2650	835	1634	1863	1420	1634	2711	772	1634	3394	202
Grp Volume(v), veh/h	76	138	140	133	124	37	109	760	755	45	437	451
Grp Sat Flow(s),veh/h/ln	1634	1770	1715	1634	1863	1420	1634	1770	1713	1634	1770	1827
Q Serve(g_s), s	5.5	9.0	9.4	9.7	7.4	2.8	5.4	34.4	36.2	3.3	29.1	29.1
Cycle Q Clear(g_c), s	5.5	9.0	9.4	9.7	7.4	2.8	5.4	34.4	36.2	3.3	29.1	29.1
Prop In Lane	1.00		0.49	1.00		1.00	1.00		0.45	1.00		0.11
Lane Grp Cap(c), veh/h	112	211	205	136	250	191	598	1097	1061	72	527	545
V/C Ratio(X)	0.68	0.65	0.68	0.98	0.50	0.19	0.18	0.69	0.71	0.62	0.83	0.83
Avail Cap(c_a), veh/h	177	360	349	136	332	253	598	1097	1061	72	749	773
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.72	0.72
Uniform Delay (d), s/veh	54.6	50.5	51.0	54.9	48.2	46.2	25.8	15.2	15.8	58.1	51.1	51.1
Incr Delay (d2), s/veh	7.0	3.4	4.0	69.8	1.5	0.5	0.1	3.6	4.0	11.4	10.4	10.1
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	2.7	4.6	4.7	7.0	3.9	1.1	2.5	17.8	18.2	1.7	15.8	16.3
LnGrp Delay(d),s/veh	61.6	53.9	54.9	124.7	49.7	46.7	26.0	18.8	19.8	69.5	61.5	61.2
LnGrp LOS	E	D	D	F	D	D	C	B	B	E	E	E
Approach Vol, veh/h		354			294			1624			933	
Approach Delay, s/veh		56.0			83.2			19.8			61.8	
Approach LOS		E			F			B			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	78.4	14.0	18.3	47.9	39.8	12.2	20.1
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	5.3	38.2	11.7	11.4	7.4	31.1	7.5	9.4
Green Ext Time (p_c), s	0.0	8.5	0.0	0.7	5.4	3.4	0.1	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	41.8
HCM 2010 LOS	D

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	1863
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	1863
Link Speed (mph)	55		55			55
Link Distance (ft)	402		380			404
Travel Time (s)	5.0		4.7			5.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	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	0	0	0	0	0	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	1863
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	1863
Link Speed (mph)	55		55			55
Link Distance (ft)	400		574			380
Travel Time (s)	5.0		7.1			4.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

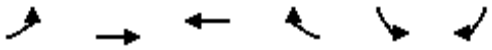
Intersection	
Int Delay, s/veh	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	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	0	0	0	0	0	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	0	0	0	0	0	0
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	1863
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	1863
Link Speed (mph)		55	55		55	
Link Distance (ft)		388	640		353	
Travel Time (s)		4.8	7.9		4.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

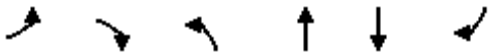
Intersection	
Int Delay, s/veh	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	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	0	0	0	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	-	0	0	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

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



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	2658			280	1260	
Travel Time (s)	33.0			4.2	19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Free	

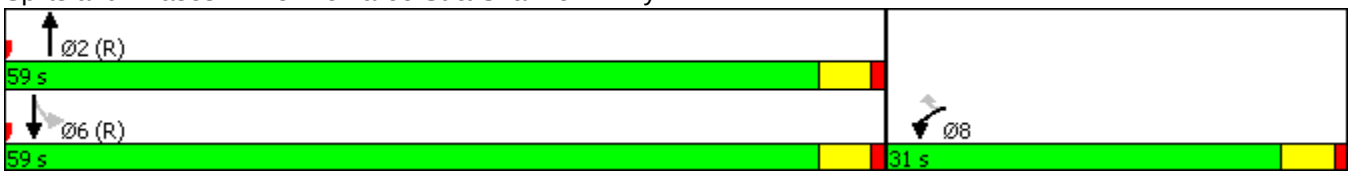
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

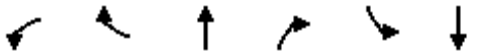
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	103	35	738	223	43	665
Future Volume (vph)	103	35	738	223	43	665
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	0		0	105	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor	0.99	0.98				
Frt		0.850	0.965			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1630	1458	3415	0	1630	3539
Flt Permitted	0.950				0.259	
Satd. Flow (perm)	1618	1428	3415	0	444	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		38	80			
Link Speed (mph)	55		45			45
Link Distance (ft)	2098		668			791
Travel Time (s)	26.0		10.1			12.0
Confl. Peds. (#/hr)	5	5				
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	112	38	802	242	47	723
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	38	1044	0	47	723
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1		1	1
Detector Template						
Leading Detector (ft)	50	50	50		50	50
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	50	50	50		50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5
Total Split (s)	31.0	31.0	59.0		59.0	59.0
Total Split (%)	34.4%	34.4%	65.6%		65.6%	65.6%
Maximum Green (s)	26.5	26.5	54.5		54.5	54.5
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	11.5	11.5	72.7		72.7	72.7
Actuated g/C Ratio	0.13	0.13	0.81		0.81	0.81
v/c Ratio	0.54	0.18	0.38		0.13	0.25
Control Delay	45.6	12.8	2.6		4.3	3.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	45.6	12.8	2.6		4.3	3.3
LOS	D	B	A		A	A
Approach Delay	37.3		2.6			3.3
Approach LOS	D		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 5.5		Intersection LOS: A	
Intersection Capacity Utilization 49.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 13: Demaree St & Shannon Pkwy

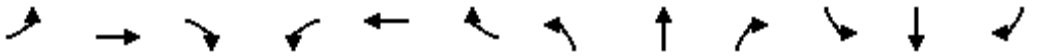




Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	103	35	738	223	43	665
Future Volume (veh/h)	103	35	738	223	43	665
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1716	1863	1750	1716	1863
Adj Flow Rate, veh/h	112	38	802	242	47	723
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	150	133	2167	654	481	2861
Arrive On Green	0.09	0.09	1.00	1.00	0.81	0.81
Sat Flow, veh/h	1634	1458	2774	809	496	3632
Grp Volume(v), veh/h	112	38	529	515	47	723
Grp Sat Flow(s),veh/h/ln	1634	1458	1770	1720	496	1770
Q Serve(g_s), s	6.0	2.2	0.0	0.0	1.8	4.4
Cycle Q Clear(g_c), s	6.0	2.2	0.0	0.0	1.8	4.4
Prop In Lane	1.00	1.00		0.47	1.00	
Lane Grp Cap(c), veh/h	150	133	1431	1391	481	2861
V/C Ratio(X)	0.75	0.28	0.37	0.37	0.10	0.25
Avail Cap(c_a), veh/h	481	429	1431	1391	481	2861
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	1.00	1.00
Uniform Delay (d), s/veh	39.9	38.1	0.0	0.0	1.8	2.1
Incr Delay (d2), s/veh	7.3	1.2	0.7	0.7	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.9	0.3	0.3	0.3	2.2
LnGrp Delay(d),s/veh	47.2	39.3	0.7	0.7	2.2	2.3
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	150		1044			770
Approach Delay, s/veh	45.2		0.7			2.3
Approach LOS	D		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		77.3				77.3		12.7
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		54.5				54.5		26.5
Max Q Clear Time (g_c+I1), s		2.0				6.4		8.0
Green Ext Time (p_c), s		11.4				11.3		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	4.7
HCM 2010 LOS	A

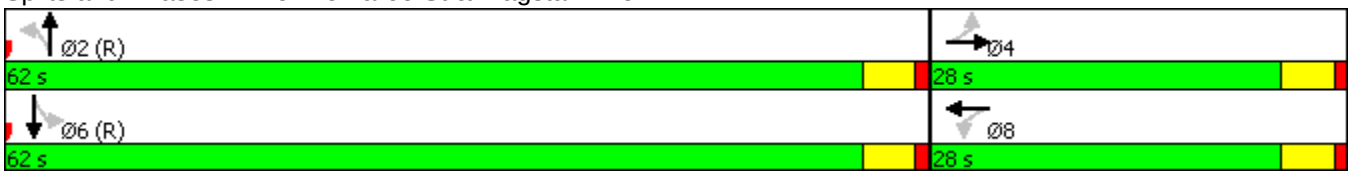


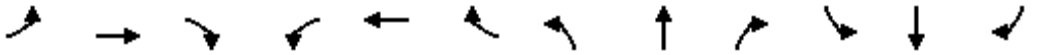
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	44	0	27	4	776	34	47	702	0
Future Volume (vph)	0	0	0	44	0	27	4	776	34	47	702	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt					0.949			0.994				
Flt Protected					0.970						0.997	
Satd. Flow (prot)	0	1863	0	0	1715	0	0	3518	0	0	3529	0
Flt Permitted					0.810			0.953			0.846	
Satd. Flow (perm)	0	1863	0	0	1432	0	0	3353	0	0	2994	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					29			10				
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		579			1069			1173			668	
Travel Time (s)		7.2			13.3			17.8			10.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	48	0	29	4	843	37	51	763	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	77	0	0	884	0	0	814	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	50	50		50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type				Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	28.0	28.0		28.0	28.0		62.0	62.0		62.0	62.0	
Total Split (%)	31.1%	31.1%		31.1%	31.1%		68.9%	68.9%		68.9%	68.9%	
Maximum Green (s)	23.5	23.5		23.5	23.5		57.5	57.5		57.5	57.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)					8.6			75.3			75.3	
Actuated g/C Ratio					0.10			0.84			0.84	
v/c Ratio					0.47			0.32			0.33	
Control Delay					35.0			2.7			2.2	
Queue Delay					0.0			0.0			0.0	
Total Delay					35.0			2.7			2.2	
LOS					C			A			A	
Approach Delay					35.0			2.7			2.2	
Approach LOS					C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 3.8		Intersection LOS: A	
Intersection Capacity Utilization 58.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 15: Demaree St & Flagstaff Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	44	0	27	4	776	34	47	702	0
Future Volume (veh/h)	0	0	0	44	0	27	4	776	34	47	702	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	0	0	0	48	0	29	4	843	37	51	763	0
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
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	0	120	0	122	2	36	43	2822	123	174	2519	0
Arrive On Green	0.00	0.00	0.00	0.06	0.00	0.06	0.84	0.84	0.84	1.00	1.00	0.00
Sat Flow, veh/h	0	1863	0	885	39	558	3	3377	148	155	3099	0
Grp Volume(v), veh/h	0	0	0	77	0	0	466	0	418	402	412	0
Grp Sat Flow(s),veh/h/ln	0	1863	0	1482	0	0	1858	0	1669	1559	1610	0
Q Serve(g_s), s	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	4.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	4.6	0.0	0.0	4.9	0.0	4.9	0.0	0.0	0.0
Prop In Lane	0.00		0.00	0.62		0.38	0.01		0.09	0.13		0.00
Lane Grp Cap(c), veh/h	0	120	0	160	0	0	1593	0	1395	1348	1346	0
V/C Ratio(X)	0.00	0.00	0.00	0.48	0.00	0.00	0.29	0.00	0.30	0.30	0.31	0.00
Avail Cap(c_a), veh/h	0	486	0	450	0	0	1593	0	1395	1348	1346	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.46	0.00	0.46	0.97	0.97	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	41.5	0.0	0.0	1.6	0.0	1.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.2	0.0	0.0	0.2	0.0	0.3	0.5	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.0	0.0	0.0	2.6	0.0	2.3	0.2	0.2	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	43.8	0.0	0.0	1.8	0.0	1.9	0.5	0.6	0.0
LnGrp LOS				D			A		A	A	A	
Approach Vol, veh/h		0			77			884			814	
Approach Delay, s/veh		0.0			43.8			1.9			0.6	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		79.7		10.3		79.7		10.3
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		57.5		23.5		57.5		23.5
Max Q Clear Time (g_c+I1), s		6.9		0.0		2.0		6.6
Green Ext Time (p_c), s		9.0		0.0		9.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	3.1
HCM 2010 LOS	A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	840	44	49	728	20	51
Future Volume (vph)	840	44	49	728	20	51
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.98	
Frt	0.993				0.904	
Flt Protected				0.997	0.986	
Satd. Flow (prot)	1850	0	0	1857	1506	0
Flt Permitted				0.732	0.986	
Satd. Flow (perm)	1850	0	0	1364	1500	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7				55	
Link Speed (mph)	50			50	55	
Link Distance (ft)	2655			2640	1360	
Travel Time (s)	36.2			36.0	16.9	
Confl. Peds. (#/hr)					5	5
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	913	48	53	791	22	55
Shared Lane Traffic (%)						
Lane Group Flow (vph)	961	0	0	844	77	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	
Detector Template						
Leading Detector (ft)	50		50	50	50	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	50		50	50	50	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	NA		Perm	NA	Prot	
Protected Phases	4			8	2	
Permitted Phases			8			
Detector Phase	4		8	8	2	
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	
Total Split (s)	67.0		67.0	67.0	23.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	74.4%		74.4%	74.4%	25.6%	
Maximum Green (s)	62.5		62.5	62.5	18.5	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.5			4.5	4.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	C-Max	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	60.7			60.7	20.3	
Actuated g/C Ratio	0.67			0.67	0.23	
v/c Ratio	0.77			0.92	0.20	
Control Delay	14.7			29.2	14.1	
Queue Delay	0.0			0.0	0.0	
Total Delay	14.7			29.2	14.1	
LOS	B			C	B	
Approach Delay	14.7			29.2	14.1	
Approach LOS	B			C	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 101.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 17: Linwood St & Riggen Ave

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	840	44	49	728	20	51
Future Volume (veh/h)	840	44	49	728	20	51
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1750	1750	1863	1716	1750
Adj Flow Rate, veh/h	913	48	53	791	22	55
Adj No. of Lanes	1	0	0	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1171	62	74	873	97	244
Arrive On Green	0.67	0.67	0.67	0.67	0.23	0.23
Sat Flow, veh/h	1754	92	47	1309	419	1047
Grp Volume(v), veh/h	0	961	844	0	78	0
Grp Sat Flow(s),veh/h/ln	0	1846	1356	0	1485	0
Q Serve(g_s), s	0.0	32.5	20.6	0.0	3.8	0.0
Cycle Q Clear(g_c), s	0.0	32.5	53.1	0.0	3.8	0.0
Prop In Lane		0.05	0.06		0.28	0.71
Lane Grp Cap(c), veh/h	0	1232	947	0	346	0
V/C Ratio(X)	0.00	0.78	0.89	0.00	0.23	0.00
Avail Cap(c_a), veh/h	0	1282	992	0	346	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.61	0.83	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	10.4	13.0	0.0	28.0	0.0
Incr Delay (d2), s/veh	0.0	1.9	8.4	0.0	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.9	21.4	0.0	1.7	0.0
LnGrp Delay(d),s/veh	0.0	12.3	21.4	0.0	29.5	0.0
LnGrp LOS		B	C		C	
Approach Vol, veh/h	961			844	78	
Approach Delay, s/veh	12.3			21.4	29.5	
Approach LOS	B			C	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		25.4		64.6				64.6
Change Period (Y+Rc), s		4.5		4.5				4.5
Max Green Setting (Gmax), s		18.5		62.5				62.5
Max Q Clear Time (g_c+I1), s		5.8		34.5				55.1
Green Ext Time (p_c), s		0.2		11.1				4.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	81	38	101	141	47	58
Future Volume (vph)	81	38	101	141	47	58
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.957				0.925	
Flt Protected				0.980	0.978	
Satd. Flow (prot)	1783	0	0	1825	1552	0
Flt Permitted				0.980	0.978	
Satd. Flow (perm)	1783	0	0	1825	1552	0
Link Speed (mph)	55			55	45	
Link Distance (ft)	1617			5265	2625	
Travel Time (s)	20.0			65.3	39.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	41	110	153	51	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	0	263	114	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.0%		ICU Level of Service A	
Analysis Period (min) 15			

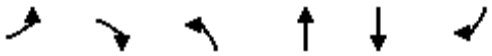
Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	81	38	101	141	47	58
Future Vol, veh/h	81	38	101	141	47	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	88	41	110	153	51	63

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	129	0	482	109
Stage 1	-	-	-	-	109	-
Stage 2	-	-	-	-	373	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1457	-	543	945
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	696	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1457	-	498	945
Mov Cap-2 Maneuver	-	-	-	-	498	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	638	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	674	-	-	1457	-
HCM Lane V/C Ratio	0.169	-	-	0.075	-
HCM Control Delay (s)	11.4	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	56	104	409	225	94
Future Volume (vph)	43	56	104	409	225	94
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.924				0.960	
Flt Protected	0.979			0.990		
Satd. Flow (prot)	1552	0	0	1844	1788	0
Flt Permitted	0.979			0.990		
Satd. Flow (perm)	1552	0	0	1844	1788	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	5265			1260	5250	
Travel Time (s)	65.3			19.1	79.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	61	113	445	245	102
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	0	0	558	347	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.2%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	43	56	104	409	225	94
Future Vol, veh/h	43	56	104	409	225	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	47	61	113	445	245	102

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	967	296	347	0	-	0
Stage 1	296	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	282	743	1212	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	247	743	1212	-	-	-
Mov Cap-2 Maneuver	247	-	-	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	445	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.4	1.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1212	-	397	-	-
HCM Lane V/C Ratio	0.093	-	0.271	-	-
HCM Control Delay (s)	8.3	0	17.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	1.1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	1	0	0	2
Future Volume (vph)	0	0	1	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1863	0	0	1770	1611	0
Flt Permitted				0.950		
Satd. Flow (perm)	1863	0	0	1770	1611	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	703			2658	404	
Travel Time (s)	8.7			33.0	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	1	0	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.3%		ICU Level of Service A	
Analysis Period (min) 15			

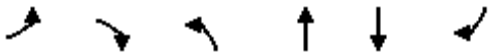
Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	1	0	0	2
Future Vol, veh/h	0	0	1	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	1	0	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	2	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	2	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	1021	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	1021	-
Mov Cap-2 Maneuver	-	-	-	-	1021	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1021	-

Approach	EB	WB	NB
HCM Control Delay, s	0		
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	36	20	3	1	1
Future Volume (vph)	2	36	20	3	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.872				0.932	
Flt Protected	0.998			0.958		
Satd. Flow (prot)	1621	0	0	1785	1736	0
Flt Permitted	0.998			0.958		
Satd. Flow (perm)	1621	0	0	1785	1736	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	657			433	280	
Travel Time (s)	8.1			6.6	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	39	22	3	1	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	0	0	25	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	2	36	20	3	1	1
Future Vol, veh/h	2	36	20	3	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	2	39	22	3	1	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	49	2	2	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	47	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	960	1082	1620	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	975	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	947	1082	1620	-	-	-
Mov Cap-2 Maneuver	947	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	961	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	6.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1620	-	1074	-	-
HCM Lane V/C Ratio	0.013	-	0.038	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	53	71	504	55	50	389
Future Volume (vph)	53	71	504	55	50	389
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	200	200		350	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					0.994
Satd. Flow (prot)	1630	1458	1863	1458	0	1852
Flt Permitted	0.950					0.994
Satd. Flow (perm)	1630	1458	1863	1458	0	1852
Link Speed (mph)	55		45			45
Link Distance (ft)	2907		663			433
Travel Time (s)	36.0		10.0			6.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	77	548	60	54	423
Shared Lane Traffic (%)						
Lane Group Flow (vph)	58	77	548	60	0	477
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	53	71	504	55	50	389
Future Vol, veh/h	53	71	504	55	50	389
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	58	77	548	60	54	423

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1080	548	0	0	548	0
Stage 1	548	-	-	-	-	-
Stage 2	532	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	241	536	-	-	1021	-
Stage 1	579	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	224	536	-	-	1021	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	579	-	-	-	-	-
Stage 2	548	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.7	0	1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	224	536	1021	-
HCM Lane V/C Ratio	-	-	0.257	0.144	0.053	-
HCM Control Delay (s)	-	-	26.5	12.8	8.7	0
HCM Lane LOS	-	-	D	B	A	A
HCM 95th %tile Q(veh)	-	-	1	0.5	0.2	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	74	14	1	57	42	6
Future Volume (vph)	74	14	1	57	42	6
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Storage Length (ft)		0	125		235	235
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1824	0	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1824	0	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2907			2297	1612	
Travel Time (s)	36.0			28.5	20.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	15	1	62	46	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	1	62	46	7
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

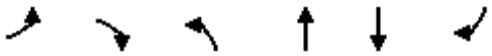
Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	74	14	1	57	42	6
Future Vol, veh/h	74	14	1	57	42	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	80	15	1	62	46	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	96	0	152	88
Stage 1	-	-	-	-	88	-
Stage 2	-	-	-	-	64	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1498	-	840	970
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	959	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1498	-	839	970
Mov Cap-2 Maneuver	-	-	-	-	839	-
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	958	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	839	970	-	-	1498	-
HCM Lane V/C Ratio	0.054	0.007	-	-	0.001	-
HCM Control Delay (s)	9.5	8.7	-	-	7.4	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	69	56	0	0	0
Future Volume (vph)	0	69	56	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected				0.950		
Satd. Flow (prot)	1484	0	0	1770	1863	0
Flt Permitted				0.950		
Satd. Flow (perm)	1484	0	0	1770	1863	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2297			627	473	
Travel Time (s)	28.5			7.8	5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	75	61	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	0	0	61	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.7%		ICU Level of Service A	
Analysis Period (min) 15			

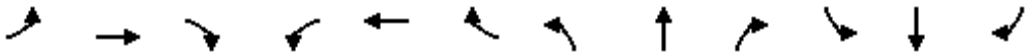
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	69	56	0	0	0
Future Vol, veh/h	0	69	56	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	75	61	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	75	0	197	0
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	75	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	699	-
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	78	0	9	1	172	46	6	210	0
Future Volume (vph)	0	0	0	78	0	9	1	172	46	6	210	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.986			0.972				
Flt Protected					0.957						0.999	
Satd. Flow (prot)	0	1863	0	0	1758	0	0	1811	0	0	1861	0
Flt Permitted					0.957						0.999	
Satd. Flow (perm)	0	1863	0	0	1758	0	0	1811	0	0	1861	0
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		341			2586			2647			2625	
Travel Time (s)		4.2			32.1			40.1			39.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	85	0	10	1	187	50	7	228	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	95	0	0	238	0	0	235	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	0	0	0	78	0	9	0	1	172	46
Future Vol, veh/h	0	0	0	0	0	78	0	9	0	1	172	46
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	85	0	10	0	1	187	50
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	0	8.9	9
HCM LOS	-	A	A

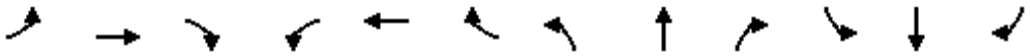
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	90%	3%
Vol Thru, %	79%	100%	0%	97%
Vol Right, %	21%	0%	10%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	219	0	87	216
LT Vol	1	0	78	6
Through Vol	172	0	0	210
RT Vol	46	0	9	0
Lane Flow Rate	238	0	95	235
Geometry Grp	1	1	1	1
Degree of Util (X)	0.285	0	0.134	0.289
Departure Headway (Hd)	4.307	5.115	5.084	4.434
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	836	0	705	810
Service Time	2.33	3.158	3.117	2.458
HCM Lane V/C Ratio	0.285	0	0.135	0.29
HCM Control Delay	9	8.2	8.9	9.3
HCM Lane LOS	A	N	A	A
HCM 95th-tile Q	1.2	0	0.5	1.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	6	210	0
Future Vol, veh/h	0	6	210	0
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	7	228	0
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	9.3
HCM LOS	A

Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	37	0	0	65	46	0	0	0	82	0	22
Future Volume (vph)	12	37	0	0	65	46	0	0	0	82	0	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.944						0.971	
Flt Protected		0.988									0.962	
Satd. Flow (prot)	0	1840	0	0	1758	0	0	1863	0	0	1740	0
Flt Permitted		0.988									0.962	
Satd. Flow (perm)	0	1840	0	0	1758	0	0	1863	0	0	1740	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2586			388			731			574	
Travel Time (s)		32.1			4.8			9.1			7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	40	0	0	71	50	0	0	0	89	0	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	53	0	0	121	0	0	0	0	0	113	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.8%		ICU Level of Service A	
Analysis Period (min) 15			

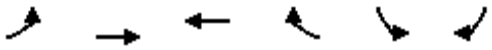
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	12	37	0	0	65	46	0	0	0	82	0	22
Future Vol, veh/h	12	37	0	0	65	46	0	0	0	82	0	22
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	13	40	0	0	71	50	0	0	0	89	0	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	250	190	12	210	202	0	24	0	0	0	0	0
Stage 1	190	190	-	0	0	-	-	-	-	-	-	-
Stage 2	60	0	-	210	202	-	-	-	-	-	-	-
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	703	705	1069	747	694	-	1591	-	-	-	-	-
Stage 1	812	743	-	-	-	-	-	-	-	-	-	-
Stage 2	951	-	-	792	734	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	705	1069	714	694	-	1591	-	-	-	-	-
Mov Cap-2 Maneuver	-	705	-	714	694	-	-	-	-	-	-	-
Stage 1	812	743	-	-	-	-	-	-	-	-	-	-
Stage 2	951	-	-	749	734	-	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1591	-	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	-	-	-	-
HCM Lane LOS	A	-	-	-	-	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	120	77	23	40	11
Future Volume (vph)	5	120	77	23	40	11
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.969		0.971	
Flt Protected		0.998			0.962	
Satd. Flow (prot)	0	1859	1805	0	1603	0
Flt Permitted		0.998			0.962	
Satd. Flow (perm)	0	1859	1805	0	1603	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		640	493		546	
Travel Time (s)		7.9	6.1		6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	130	84	25	43	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	135	109	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.4%		ICU Level of Service A	
Analysis Period (min) 15			

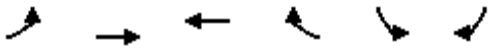
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	5	120	77	23	40	11
Future Vol, veh/h	5	120	77	23	40	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	5	130	84	25	43	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	109	0	-	0	237	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	141	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1481	-	-	-	751	960
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	886	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1481	-	-	-	748	960
Mov Cap-2 Maneuver	-	-	-	-	748	-
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	882	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1481	-	-	-	785
HCM Lane V/C Ratio	0.004	-	-	-	0.071
HCM Control Delay (s)	7.4	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	7	143	81	7	12	13
Future Volume (vph)	7	143	81	7	12	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.989		0.930	
Flt Protected		0.998			0.976	
Satd. Flow (prot)	0	1859	1842	0	1691	0
Flt Permitted		0.998			0.976	
Satd. Flow (perm)	0	1859	1842	0	1691	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		493	1158		326	
Travel Time (s)		6.1	14.4		4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	155	88	8	13	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	163	96	0	27	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.2%		ICU Level of Service A	
Analysis Period (min) 15			

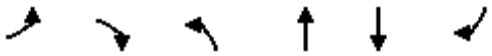
Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	7	143	81	7	12	13
Future Vol, veh/h	7	143	81	7	12	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	8	155	88	8	13	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	96	0	-	0	263	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	171	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1498	-	-	-	726	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	859	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1498	-	-	-	722	965
Mov Cap-2 Maneuver	-	-	-	-	722	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	854	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1498	-	-	-	831
HCM Lane V/C Ratio	0.005	-	-	-	0.033
HCM Control Delay (s)	7.4	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	123	93	559	368	5
Future Volume (vph)	0	123	93	559	368	5
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Storage Length (ft)	0	0	175			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	0.865				0.998	
Flt Protected			0.950			
Satd. Flow (prot)	1484	0	1630	3539	1859	0
Flt Permitted			0.950			
Satd. Flow (perm)	1484	0	1630	3539	1859	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	1158			791	663	
Travel Time (s)	14.4			12.0	10.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	134	101	608	400	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	134	0	101	608	405	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

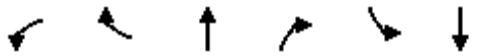
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	123	93	559	368	5
Future Vol, veh/h	0	123	93	559	368	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	0	134	101	608	400	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	909	403	405	0	-	0
Stage 1	403	-	-	-	-	-
Stage 2	506	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	289	647	1154	-	-	-
Stage 1	674	-	-	-	-	-
Stage 2	571	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	264	647	1154	-	-	-
Mov Cap-2 Maneuver	264	-	-	-	-	-
Stage 1	674	-	-	-	-	-
Stage 2	521	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1154	-	647	-	-
HCM Lane V/C Ratio	0.088	-	0.207	-	-
HCM Control Delay (s)	8.4	-	12	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.8	-	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	160	41	843	158	18	714
Future Volume (vph)	160	41	843	158	18	714
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	0		0	105	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.976			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1630	1458	3454	0	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1630	1458	3454	0	1630	3539
Link Speed (mph)	55		45			45
Link Distance (ft)	2098		668			791
Travel Time (s)	26.0		10.1			12.0
Confl. Peds. (#/hr)	5	5				
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	45	916	172	20	776
Shared Lane Traffic (%)						
Lane Group Flow (vph)	174	45	1088	0	20	776
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	25.5

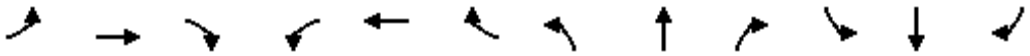
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	160	41	843	158	18	714
Future Vol, veh/h	160	41	843	158	18	714
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	174	45	916	172	20	776

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1434	549	0	0	1093	0
Stage 1	1007	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 125	480	-	-	634	-
Stage 1	314	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 121	478	-	-	634	-
Mov Cap-2 Maneuver	~ 121	-	-	-	-	-
Stage 1	313	-	-	-	-	-
Stage 2	606	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	244.1	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	121	478	634	-
HCM Lane V/C Ratio	-	-	1.437	0.093	0.031	-
HCM Control Delay (s)	-	-	$ 303.2	13.3	10.9	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	12	0.3	0.1	-

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



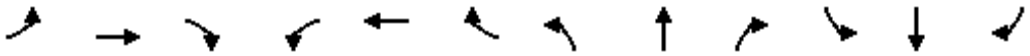
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	36	19	9	41	2	28	66	50	6	80	55
Future Volume (vph)	1	36	19	9	41	2	28	66	50	6	80	55
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.954			0.995			0.953			0.947	
Flt Protected		0.999			0.991			0.990			0.998	
Satd. Flow (prot)	0	1775	0	0	1837	0	0	1757	0	0	1760	0
Flt Permitted		0.999			0.991			0.990			0.998	
Satd. Flow (perm)	0	1775	0	0	1837	0	0	1757	0	0	1760	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		858			508			1674			1612	
Travel Time (s)		10.6			6.3			20.8			20.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	39	21	10	45	2	30	72	54	7	87	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	61	0	0	57	0	0	156	0	0	154	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	4.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	61	57	156	154
Demand Flow Rate, veh/h	62	58	159	157
Vehicles Circulating, veh/h	106	105	48	87
Vehicles Exiting, veh/h	138	102	120	76
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	4.1	4.1	4.7	4.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	62	58	159	157
Cap Entry Lane, veh/h	1016	1017	1077	1036
Entry HV Adj Factor	0.987	0.984	0.978	0.983
Flow Entry, veh/h	61	57	156	154
Cap Entry, veh/h	1003	1001	1053	1017
V/C Ratio	0.061	0.057	0.148	0.152
Control Delay, s/veh	4.1	4.1	4.7	4.9
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	31	0	29	7	771	45	33	700	0
Future Volume (vph)	0	0	0	31	0	29	7	771	45	33	700	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt					0.935			0.992				
Flt Protected					0.975						0.998	
Satd. Flow (prot)	0	1863	0	0	1698	0	0	3511	0	0	3532	0
Flt Permitted					0.975						0.998	
Satd. Flow (perm)	0	1863	0	0	1698	0	0	3511	0	0	3532	0
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		579			1069			1173			668	
Travel Time (s)		7.2			13.3			17.8			10.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	34	0	32	8	838	49	36	761	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	66	0	0	895	0	0	797	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.9%		ICU Level of Service A	
Analysis Period (min) 15			

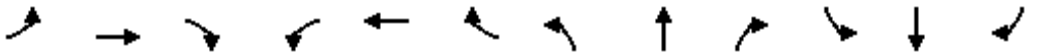
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	31	0	29	7	771	45	33	700	0
Future Vol, veh/h	0	0	0	31	0	29	7	771	45	33	700	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	34	0	32	8	838	49	36	761	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1267	1735	380	1330	1711	443	761	0	0	887	0	0
Stage 1	833	833	-	878	878	-	-	-	-	-	-	-
Stage 2	434	902	-	452	833	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	126	87	618	113	90	562	847	-	-	759	-	-
Stage 1	329	382	-	309	364	-	-	-	-	-	-	-
Stage 2	570	355	-	557	382	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	110	78	618	104	81	562	847	-	-	759	-	-
Mov Cap-2 Maneuver	110	78	-	104	81	-	-	-	-	-	-	-
Stage 1	323	351	-	303	357	-	-	-	-	-	-	-
Stage 2	528	348	-	511	351	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	38.2	0.2	0.8
HCM LOS	A	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	847	-	-	-	172	759	-	-
HCM Lane V/C Ratio	0.009	-	-	-	0.379	0.047	-	-
HCM Control Delay (s)	9.3	0.1	-	0	38.2	10	0.4	-
HCM Lane LOS	A	A	-	A	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	1.6	0.1	-	-

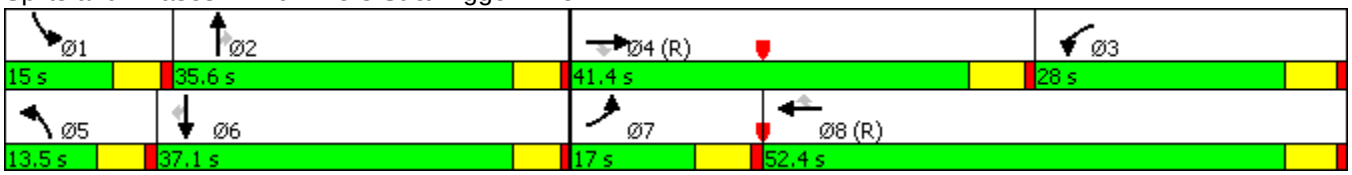


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	287	43	220	526	131	44	235	153	92	320	118
Future Volume (vph)	116	287	43	220	526	131	44	235	153	92	320	118
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		305	305		305	305		305	300		155
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98			0.97			0.97			0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1863	1458	1630	1863	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1863	1413	1630	1863	1411	1630	3539	1411
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121			142			182			182
Link Speed (mph)		55			50			45			45	
Link Distance (ft)		2597			2655			816			2647	
Travel Time (s)		32.2			36.2			12.4			40.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	126	312	47	239	572	142	48	255	166	100	348	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	126	312	47	239	572	142	48	255	166	100	348	128
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	38.4	38.4	9.7	38.4	38.4	9.3	35.6	35.6	9.3	35.6	35.6
Total Split (s)	17.0	41.4	41.4	28.0	52.4	52.4	13.5	35.6	35.6	15.0	37.1	37.1
Total Split (%)	14.2%	34.5%	34.5%	23.3%	43.7%	43.7%	11.3%	29.7%	29.7%	12.5%	30.9%	30.9%
Maximum Green (s)	11.0	35.4	35.4	22.3	46.7	46.7	8.2	30.3	30.3	9.7	31.8	31.8
Yellow Time (s)	5.0	5.0	5.0	4.7	4.7	4.7	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-1.7	-1.7	-1.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.4	25.4		25.7	25.7		23.3	23.3		23.3	23.3
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	15.0	46.1	46.1	24.0	55.1	55.1	8.8	23.3	23.3	10.7	27.3	27.3
Actuated g/C Ratio	0.12	0.38	0.38	0.20	0.46	0.46	0.07	0.19	0.19	0.09	0.23	0.23
v/c Ratio	0.62	0.44	0.08	0.73	0.67	0.20	0.40	0.71	0.40	0.69	0.43	0.28
Control Delay	63.8	31.4	0.2	52.7	27.6	4.4	63.0	55.3	6.8	77.6	41.3	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	31.4	0.2	52.7	27.6	4.4	63.0	55.3	6.8	77.6	41.3	2.8
LOS	E	C	A	D	C	A	E	E	A	E	D	A
Approach Delay		36.8			30.4			38.9			39.1	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 43.3 (36%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 35.3		Intersection LOS: D	
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 16: Akers St & Riggen Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	287	43	220	526	131	44	235	153	92	320	118
Future Volume (veh/h)	116	287	43	220	526	131	44	235	153	92	320	118
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	126	312	47	239	572	142	48	255	166	100	348	128
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	174	581	446	451	896	683	77	362	273	138	820	327
Arrive On Green	0.11	0.31	0.31	0.28	0.48	0.48	0.05	0.19	0.19	0.08	0.23	0.23
Sat Flow, veh/h	1634	1863	1432	1634	1863	1420	1634	1863	1405	1634	3539	1409
Grp Volume(v), veh/h	126	312	47	239	572	142	48	255	166	100	348	128
Grp Sat Flow(s),veh/h/ln	1634	1863	1432	1634	1863	1420	1634	1863	1405	1634	1770	1409
Q Serve(g_s), s	9.0	16.6	2.2	14.9	27.6	6.9	3.5	15.3	7.1	7.2	10.1	9.2
Cycle Q Clear(g_c), s	9.0	16.6	2.2	14.9	27.6	6.9	3.5	15.3	7.1	7.2	10.1	9.2
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	174	581	446	451	896	683	77	362	273	138	820	327
V/C Ratio(X)	0.72	0.54	0.11	0.53	0.64	0.21	0.62	0.70	0.61	0.72	0.42	0.39
Avail Cap(c_a), veh/h	177	581	446	451	896	683	129	491	370	150	976	389
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	51.9	34.1	18.2	36.8	23.3	18.0	56.1	45.1	13.2	53.6	39.3	39.0
Incr Delay (d2), s/veh	13.4	3.5	0.5	1.2	3.5	0.7	7.9	2.9	2.2	14.6	0.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	9.2	0.9	6.9	15.0	2.8	1.7	8.2	2.9	3.8	5.0	3.7
LnGrp Delay(d),s/veh	65.3	37.7	18.6	38.0	26.8	18.6	64.0	48.0	15.4	68.2	39.6	39.7
LnGrp LOS	E	D	B	D	C	B	E	D	B	E	D	D
Approach Vol, veh/h		485			953			469			576	
Approach Delay, s/veh		43.0			28.4			38.1			44.6	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	27.3	37.1	41.4	9.7	31.8	16.8	61.7
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	8.7	30.3	22.3	35.4	8.2	31.8	11.0	46.7
Max Q Clear Time (g_c+I1), s	9.2	17.3	16.9	18.6	5.5	12.1	11.0	29.6
Green Ext Time (p_c), s	0.0	3.2	2.0	1.1	0.0	3.6	0.0	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	36.8
HCM 2010 LOS	D

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	602	29	65	1518	57	80
Future Volume (vph)	602	29	65	1518	57	80
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.994				0.921	
Flt Protected				0.998	0.980	
Satd. Flow (prot)	1852	0	0	1859	1549	0
Flt Permitted				0.998	0.980	
Satd. Flow (perm)	1852	0	0	1859	1549	0
Link Speed (mph)	50			50	55	
Link Distance (ft)	2655			2640	1360	
Travel Time (s)	36.2			36.0	16.9	
Confl. Peds. (#/hr)					5	5
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	654	32	71	1650	62	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	686	0	0	1721	149	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	136.7%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	838.5

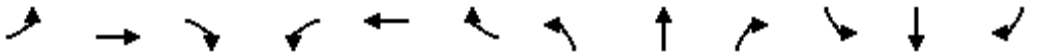
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	602	29	65	1518	57	80
Future Vol, veh/h	602	29	65	1518	57	80
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	654	32	71	1650	62	87

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	691	0	2466	675
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	1791	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	904	-	~ 33	454
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	146	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	904	-	~ 2	452
Mov Cap-2 Maneuver	-	-	-	-	~ 2	-
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	~ 8	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	$ 14383.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	5	-	-	904	-
HCM Lane V/C Ratio	29.783	-	-	0.078	-
HCM Control Delay (s)	$ 14383.7	-	-	9.3	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	20.7	-	-	0.3	-

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

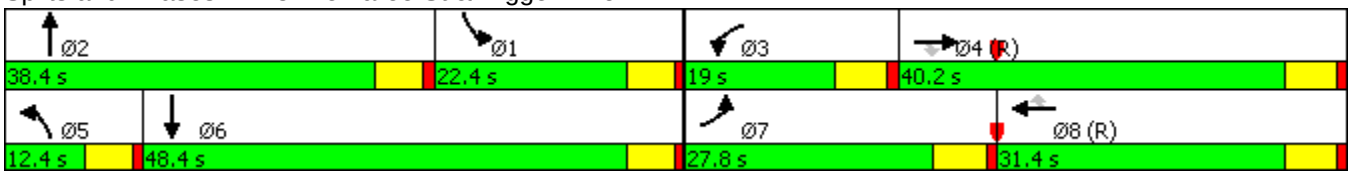


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	418	202	280	518	103	111	548	178	170	987	369
Future Volume (vph)	169	418	202	280	518	103	111	548	178	170	987	369
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		155	155		155	255		0	210		0
Storage Lanes	1		1	2		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	0.99		0.98	1.00	1.00		1.00	0.99	
Frt			0.850			0.850		0.963			0.959	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	3162	3539	1458	1630	3393	0	1630	3366	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1624	3539	1427	3138	3539	1427	1628	3393	0	1627	3366	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169			221		37			51	
Link Speed (mph)		50			50			45			45	
Link Distance (ft)		2640			2884			2701			1173	
Travel Time (s)		36.0			39.3			40.9			17.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	184	454	220	304	563	112	121	596	193	185	1073	401
Shared Lane Traffic (%)												
Lane Group Flow (vph)	184	454	220	304	563	112	121	789	0	185	1474	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Detector Phase	7	4	4 5	3	8	8 1	5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.7	27.0	27.0	9.7	28.4	28.4	9.3	38.4		9.3	38.4	
Total Split (s)	27.8	40.2	40.2	19.0	31.4	31.4	12.4	38.4		22.4	48.4	
Total Split (%)	23.2%	33.5%	33.5%	15.8%	26.2%	26.2%	10.3%	32.0%		18.7%	40.3%	
Maximum Green (s)	22.1	34.5	34.5	13.3	25.7	25.7	7.1	33.1		17.1	43.1	
Yellow Time (s)	4.7	4.7	4.7	4.7	4.7	4.7	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.3	-1.3		-1.3	-1.3	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		14.3	14.3		15.7	15.7		26.1			26.1	
Pedestrian Calls (#/hr)		5	5		5	5		5			5	
Act Effct Green (s)	19.7	36.4	36.4	14.8	31.5	31.5	8.4	32.0		20.8	44.4	
Actuated g/C Ratio	0.16	0.30	0.30	0.12	0.26	0.26	0.07	0.27		0.17	0.37	
v/c Ratio	0.69	0.42	0.40	0.78	0.61	0.21	1.06	0.85		0.66	1.15	
Control Delay	52.3	32.4	10.4	65.5	42.9	0.9	146.6	38.5		59.5	112.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	52.3	32.4	10.4	65.5	42.9	0.9	146.6	38.5		59.5	112.9	
LOS	D	C	B	E	D	A	F	D		E	F	
Approach Delay		31.0			45.1			52.9			107.0	
Approach LOS		C			D			D			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 67.3		Intersection LOS: E	
Intersection Capacity Utilization 88.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 18: Demaree St & Riggen Ave



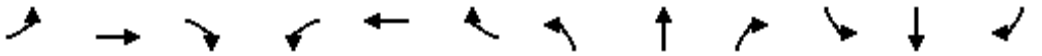
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	169	418	202	280	518	103	111	548	178	170	987	369
Future Volume (veh/h)	169	418	202	280	518	103	111	548	178	170	987	369
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	184	454	220	304	563	112	121	596	193	185	1073	401
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	232	1071	433	393	1007	407	114	700	226	282	931	341
Arrive On Green	0.14	0.30	0.30	0.12	0.28	0.28	0.02	0.09	0.08	0.17	0.37	0.36
Sat Flow, veh/h	1634	3539	1432	3170	3539	1431	1634	2618	846	1634	2516	922
Grp Volume(v), veh/h	184	454	220	304	563	112	121	402	387	185	748	726
Grp Sat Flow(s),veh/h/ln	1634	1770	1432	1585	1770	1431	1634	1770	1694	1634	1770	1668
Q Serve(g_s), s	13.1	12.3	15.2	11.2	16.2	4.6	8.4	26.9	27.0	12.7	44.4	44.4
Cycle Q Clear(g_c), s	13.1	12.3	15.2	11.2	16.2	4.6	8.4	26.9	27.0	12.7	44.4	44.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.50	1.00		0.55
Lane Grp Cap(c), veh/h	232	1071	433	393	1007	407	114	473	453	282	655	617
V/C Ratio(X)	0.79	0.42	0.51	0.77	0.56	0.28	1.06	0.85	0.85	0.66	1.14	1.18
Avail Cap(c_a), veh/h	324	1071	433	396	1007	407	114	507	486	282	655	617
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.43	0.43	0.43	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.8	33.5	34.5	50.9	36.5	13.1	58.6	52.3	52.5	46.3	37.8	38.2
Incr Delay (d2), s/veh	8.7	1.2	4.2	9.1	2.2	1.7	71.5	5.8	6.2	5.4	81.7	95.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	6.2	6.5	5.4	8.2	2.0	6.1	14.0	13.5	6.1	36.5	36.7
LnGrp Delay(d),s/veh	58.5	34.7	38.7	60.1	38.8	14.7	130.4	58.2	58.7	51.7	119.5	133.4
LnGrp LOS	E	C	D	E	D	B	F	E	E	D	F	F
Approach Vol, veh/h		858			979			910			1659	
Approach Delay, s/veh		40.8			42.6			68.0			118.0	
Approach LOS		D			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.7	36.1	18.9	40.3	12.4	48.4	21.0	38.2
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	17.1	33.1	13.3	34.5	7.1	43.1	22.1	25.7
Max Q Clear Time (g_c+I1), s	14.7	29.0	13.2	17.2	10.4	46.4	15.1	18.2
Green Ext Time (p_c), s	1.7	1.3	0.0	5.6	0.0	0.0	0.3	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	75.9
HCM 2010 LOS	E

Notes

User approved changes to right turn type.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	425	58	46	489	24	102	31	74	50	72	54
Future Volume (vph)	31	425	58	46	489	24	102	31	74	50	72	54
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	250		0	160		0	195		0	130		130
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.982			0.993			0.895				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3476	0	1630	3514	0	1630	3168	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3476	0	1630	3514	0	1630	3168	0	1630	1863	1458
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		2884			7452			1333			1674	
Travel Time (s)		39.3			101.6			16.5			20.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	462	63	50	532	26	111	34	80	54	78	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	525	0	50	558	0	111	114	0	54	78	59
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	20.2
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	31	425	58	0	46	489	24	0	102	31	74
Future Vol, veh/h	0	31	425	58	0	46	489	24	0	102	31	74
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	34	462	63	0	50	532	26	0	111	34	80
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	3
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	3	3	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	3	3	3
HCM Control Delay	20.8	24.2	14.2
HCM LOS	C	C	B

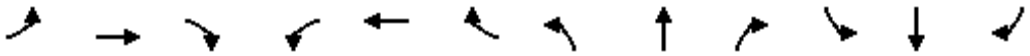
Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	12%	0%	100%	71%	0%	100%	87%	0%	100%
Vol Right, %	0%	0%	88%	0%	0%	29%	0%	0%	13%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	102	21	84	31	283	200	46	326	187	50	72
LT Vol	102	0	0	31	0	0	46	0	0	50	0
Through Vol	0	21	10	0	283	142	0	326	163	0	72
RT Vol	0	0	74	0	0	58	0	0	24	0	0
Lane Flow Rate	111	22	92	34	308	217	50	354	203	54	78
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.283	0.054	0.206	0.077	0.665	0.456	0.113	0.755	0.428	0.141	0.192
Departure Headway (Hd)	9.197	8.697	8.083	8.27	7.77	7.567	8.167	7.667	7.577	9.311	8.811
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	390	411	443	432	465	475	438	471	474	384	406
Service Time	6.976	6.476	5.862	6.038	5.538	5.334	5.932	5.432	5.342	7.091	6.591
HCM Lane V/C Ratio	0.285	0.054	0.208	0.079	0.662	0.457	0.114	0.752	0.428	0.141	0.192
HCM Control Delay	15.6	12	13	11.7	24.8	16.6	12	30.6	15.9	13.6	13.7
HCM Lane LOS	C	B	B	B	C	C	B	D	C	B	B
HCM 95th-tile Q	1.1	0.2	0.8	0.2	4.8	2.3	0.4	6.4	2.1	0.5	0.7

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	50	72	54
Future Vol, veh/h	0	50	72	54
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	54	78	59
Number of Lanes	0	1	1	1

Approach	SB
Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	13.2
HCM LOS	B

Lane	SBLn3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	319	170	85	477	87	233	82	143	90	193	90
Future Volume (vph)	40	319	170	85	477	87	233	82	143	90	193	90
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.948			0.977			0.958			0.967	
Flt Protected	0.950			0.950				0.975			0.988	
Satd. Flow (prot)	1630	3355	0	1630	3458	0	0	1740	0	0	1780	0
Flt Permitted	0.950			0.950				0.975			0.988	
Satd. Flow (perm)	1630	3355	0	1630	3458	0	0	1740	0	0	1780	0
Link Speed (mph)		55			45			55			55	
Link Distance (ft)		259			2655			897			1333	
Travel Time (s)		3.2			40.2			11.1			16.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	347	185	92	518	95	253	89	155	98	210	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	532	0	92	613	0	0	497	0	0	406	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	54.5
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	40	319	170	0	85	477	87	0	233	82	143
Future Vol, veh/h	0	40	319	170	0	85	477	87	0	233	82	143
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	43	347	185	0	92	518	95	0	253	89	155
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	31.4	42.3	78.9
HCM LOS	D	E	F

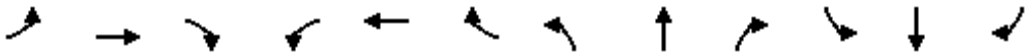
Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	51%	100%	0%	0%	100%	0%	0%	24%
Vol Thru, %	18%	0%	100%	38%	0%	100%	65%	52%
Vol Right, %	31%	0%	0%	62%	0%	0%	35%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	458	40	213	276	85	318	246	373
LT Vol	233	40	0	0	85	0	0	90
Through Vol	82	0	213	106	0	318	159	193
RT Vol	143	0	0	170	0	0	87	90
Lane Flow Rate	498	43	231	300	92	346	267	405
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	1	0.123	0.621	0.771	0.257	0.914	0.689	1
Departure Headway (Hd)	9.806	10.174	9.675	9.245	10.019	9.52	9.273	9.723
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	373	353	374	390	358	380	390	377
Service Time	7.506	7.921	7.422	6.992	7.773	7.274	7.027	7.423
HCM Lane V/C Ratio	1.335	0.122	0.618	0.769	0.257	0.911	0.685	1.074
HCM Control Delay	78.9	14.3	27.1	37.1	16.2	58.6	30.3	78.6
HCM Lane LOS	F	B	D	E	C	F	D	F
HCM 95th-tile Q	11.7	0.4	4	6.4	1	9.5	5	11.8

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	90	193	90
Future Vol, veh/h	0	90	193	90
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	98	210	98
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	78.6
HCM LOS	F

Lane

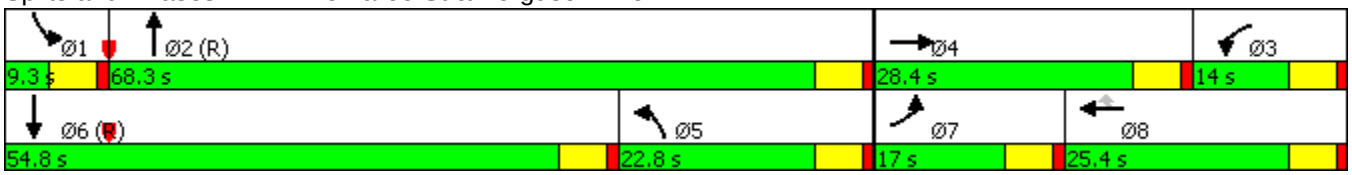


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	120	120	217	224	50	176	1136	313	65	1017	93
Future Volume (vph)	56	120	120	217	224	50	176	1136	313	65	1017	93
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	210		0	300		160	200		0	150		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor				0.99		0.96	1.00	1.00				
Frt		0.925				0.850		0.968			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3274	0	1630	1863	1458	1630	3412	0	1630	3493	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3274	0	1621	1863	1401	1622	3412	0	1630	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		130				165		45			10	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2655			1321			2631			2701	
Travel Time (s)		40.2			20.0			39.9			40.9	
Confl. Peds. (#/hr)				5		5	5		5			
Confl. Bikes (#/hr)						2			2			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	130	130	236	243	54	191	1235	340	71	1105	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	260	0	236	243	54	191	1575	0	71	1206	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.3	28.4		9.3	22.5	22.5	9.3	37.0		9.3	23.3	
Total Split (s)	17.0	28.4		14.0	25.4	25.4	22.8	68.3		9.3	54.8	
Total Split (%)	14.2%	23.7%		11.7%	21.2%	21.2%	19.0%	56.9%		7.8%	45.7%	
Maximum Green (s)	11.7	23.1		8.7	20.1	20.1	17.5	63.0		4.0	49.5	
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.3	-1.3		-1.3	-1.3	-1.3	-1.3	-1.3		-1.3	-1.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		16.1			0.0	0.0		24.7			0.0	
Pedestrian Calls (#/hr)		5			0	0		5			0	
Act Effct Green (s)	10.7	13.3		23.1	27.9	27.9	19.8	62.3		5.3	47.8	
Actuated g/C Ratio	0.09	0.11		0.19	0.23	0.23	0.16	0.52		0.04	0.40	
v/c Ratio	0.42	0.54		0.75	0.56	0.12	0.71	0.88		1.00	0.86	
Control Delay	59.9	28.1		63.4	49.1	0.5	63.3	31.4		120.4	15.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	59.9	28.1		63.4	49.1	0.5	63.3	31.4		120.4	15.0	
LOS	E	C		E	D	A	E	C		F	B	
Approach Delay		34.1			50.5			34.8			20.9	
Approach LOS		C			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 108 (90%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 32.3		Intersection LOS: C	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 21: Demaree St & Ferguson Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	120	120	217	224	50	176	1136	313	65	1017	93
Future Volume (veh/h)	56	120	120	217	224	50	176	1136	313	65	1017	93
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	61	130	130	236	243	54	191	1235	340	71	1105	101
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	94	212	190	154	292	223	451	1670	451	72	1233	113
Arrive On Green	0.06	0.12	0.11	0.09	0.16	0.16	0.28	0.61	0.60	0.04	0.38	0.37
Sat Flow, veh/h	1634	1770	1583	1634	1863	1423	1634	2746	742	1634	3280	300
Grp Volume(v), veh/h	61	130	130	236	243	54	191	787	788	71	596	610
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1863	1423	1634	1770	1718	1634	1770	1810
Q Serve(g_s), s	4.4	8.4	9.5	11.3	15.2	4.0	11.5	37.7	40.0	5.2	38.0	38.1
Cycle Q Clear(g_c), s	4.4	8.4	9.5	11.3	15.2	4.0	11.5	37.7	40.0	5.2	38.0	38.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.43	1.00		0.17
Lane Grp Cap(c), veh/h	94	212	190	154	292	223	451	1076	1045	72	665	680
V/C Ratio(X)	0.65	0.61	0.69	1.53	0.83	0.24	0.42	0.73	0.75	0.98	0.90	0.90
Avail Cap(c_a), veh/h	177	360	322	154	332	254	451	1076	1045	72	749	766
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	0.09	0.09	0.09
Uniform Delay (d), s/veh	55.4	50.2	51.3	54.3	49.0	44.3	35.6	16.6	17.3	57.3	35.2	35.4
Incr Delay (d2), s/veh	7.3	2.9	4.3	267.4	14.7	0.6	0.6	4.4	5.0	27.7	2.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	4.3	4.4	16.6	9.0	1.6	5.3	19.7	20.3	2.9	18.9	19.4
LnGrp Delay(d),s/veh	62.7	53.0	55.6	321.7	63.7	44.9	36.2	21.0	22.3	85.0	37.2	37.3
LnGrp LOS	E	D	E	F	E	D	D	C	C	F	D	D
Approach Vol, veh/h		321			533			1766			1277	
Approach Delay, s/veh		55.9			176.1			23.2			39.9	
Approach LOS		E			F			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	77.0	15.3	18.4	37.2	49.1	10.9	22.8
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	63.0	8.7	23.1	17.5	49.5	11.7	20.1
Max Q Clear Time (g_c+I1), s	7.2	42.0	13.3	11.5	13.5	40.1	6.4	17.2
Green Ext Time (p_c), s	0.0	8.9	0.0	0.7	2.8	3.7	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	52.3
HCM 2010 LOS	D

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	33	2	0	19	1	0
Future Volume (vph)	33	2	0	19	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.865			
Flt Protected	0.950					0.950
Satd. Flow (prot)	0	1611	1611	0	0	1770
Flt Permitted	0.950					0.950
Satd. Flow (perm)	0	1611	1611	0	0	1770
Link Speed (mph)	55		55			55
Link Distance (ft)	402		380			404
Travel Time (s)	5.0		4.7			5.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	2	0	21	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	2	21	0	0	1
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	33	2	0	19	1	0
Future Vol, veh/h	33	2	0	19	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	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	36	2	0	21	1	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	12	10	0	0	21	0
Stage 1	10	-	-	-	-	-
Stage 2	2	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	1008	1071	-	-	1595	-
Stage 1	1013	-	-	-	-	-
Stage 2	1021	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1007	1071	-	-	1595	-
Mov Cap-2 Maneuver	1007	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	1020	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1071	1595	-
HCM Lane V/C Ratio	-	-	0.002	0.001	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	70	2	19	40	1	33
Future Volume (vph)	70	2	19	40	1	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.909			
Flt Protected	0.950					0.999
Satd. Flow (prot)	0	1611	1693	0	0	1861
Flt Permitted	0.950					0.999
Satd. Flow (perm)	0	1611	1693	0	0	1861
Link Speed (mph)	55		55			55
Link Distance (ft)	400		574			380
Travel Time (s)	5.0		7.1			4.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	2	21	43	1	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	2	64	0	0	37
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min) 15			

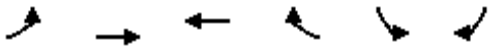
Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	70	2	19	40	1	33
Future Vol, veh/h	70	2	19	40	1	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	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	76	2	21	43	1	36

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	80	42	0	0	64	0
Stage 1	42	-	-	-	-	-
Stage 2	38	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	922	1029	-	-	1538	-
Stage 1	980	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	921	1029	-	-	1538	-
Mov Cap-2 Maneuver	921	-	-	-	-	-
Stage 1	980	-	-	-	-	-
Stage 2	983	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1029	1538	-
HCM Lane V/C Ratio	-	-	0.002	0.001	-
HCM Control Delay (s)	-	-	8.5	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	94	68	16	29	43
Future Volume (vph)	25	94	68	16	29	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.975			0.865
Flt Protected		0.990			0.950	
Satd. Flow (prot)	0	1844	1816	0	0	1611
Flt Permitted		0.990			0.950	
Satd. Flow (perm)	0	1844	1816	0	0	1611
Link Speed (mph)		55	55		55	
Link Distance (ft)		388	640		353	
Travel Time (s)		4.8	7.9		4.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	102	74	17	32	47
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	129	91	0	32	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min) 15			

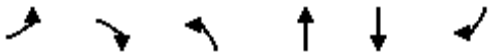
Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	25	94	68	16	29	43
Future Vol, veh/h	25	94	68	16	29	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	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	27	102	74	17	32	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	91	0	-	0	240	83
Stage 1	-	-	-	-	83	-
Stage 2	-	-	-	-	157	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1504	-	-	-	748	976
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	871	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1504	-	-	-	734	976
Mov Cap-2 Maneuver	-	-	-	-	734	-
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	854	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1504	-	-	-	976
HCM Lane V/C Ratio	0.018	-	-	-	0.048
HCM Control Delay (s)	7.4	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	2658			280	1260	
Travel Time (s)	33.0			4.2	19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Free	

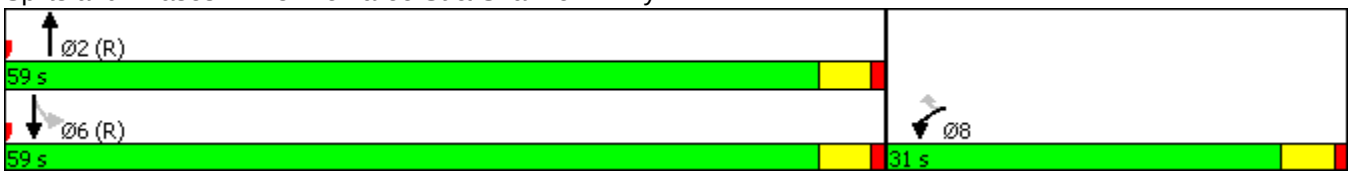
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

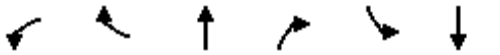
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	160	41	843	158	40	781
Future Volume (vph)	160	41	843	158	40	781
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	0		0	105	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor	0.99	0.98				
Frt		0.850	0.976			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1630	1458	3454	0	1630	3539
Flt Permitted	0.950				0.236	
Satd. Flow (perm)	1618	1428	3454	0	405	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		45	43			
Link Speed (mph)	55		45			45
Link Distance (ft)	2098		668			791
Travel Time (s)	26.0		10.1			12.0
Confl. Peds. (#/hr)	5	5				
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	45	916	172	43	849
Shared Lane Traffic (%)						
Lane Group Flow (vph)	174	45	1088	0	43	849
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1		1	1
Detector Template						
Leading Detector (ft)	50	50	50		50	50
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	50	50	50		50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5
Total Split (s)	31.0	31.0	59.0		59.0	59.0
Total Split (%)	34.4%	34.4%	65.6%		65.6%	65.6%
Maximum Green (s)	26.5	26.5	54.5		54.5	54.5
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	14.9	14.9	66.1		66.1	66.1
Actuated g/C Ratio	0.17	0.17	0.73		0.73	0.73
v/c Ratio	0.65	0.16	0.43		0.14	0.33
Control Delay	45.6	10.5	4.1		6.0	5.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	45.6	10.5	4.1		6.0	5.0
LOS	D	B	A		A	A
Approach Delay	38.4		4.1			5.1
Approach LOS	D		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 53.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 13: Demaree St & Shannon Pkwy





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	160	41	843	158	40	781
Future Volume (veh/h)	160	41	843	158	40	781
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1716	1863	1750	1716	1863
Adj Flow Rate, veh/h	174	45	916	172	43	849
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	216	192	2285	429	445	2718
Arrive On Green	0.13	0.13	1.00	1.00	0.77	0.77
Sat Flow, veh/h	1634	1458	3068	558	476	3632
Grp Volume(v), veh/h	174	45	545	543	43	849
Grp Sat Flow(s),veh/h/ln	1634	1458	1770	1764	476	1770
Q Serve(g_s), s	9.3	2.5	0.0	0.0	2.1	6.6
Cycle Q Clear(g_c), s	9.3	2.5	0.0	0.0	2.1	6.6
Prop In Lane	1.00	1.00		0.32	1.00	
Lane Grp Cap(c), veh/h	216	192	1359	1355	445	2718
V/C Ratio(X)	0.81	0.23	0.40	0.40	0.10	0.31
Avail Cap(c_a), veh/h	481	429	1359	1355	445	2718
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	1.00	1.00
Uniform Delay (d), s/veh	37.9	35.0	0.0	0.0	2.7	3.2
Incr Delay (d2), s/veh	7.0	0.6	0.8	0.8	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	1.0	0.3	0.3	0.3	3.3
LnGrp Delay(d),s/veh	44.9	35.6	0.8	0.8	3.1	3.5
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	219		1088			892
Approach Delay, s/veh	43.0		0.8			3.5
Approach LOS	D		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		73.6				73.6		16.4
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		54.5				54.5		26.5
Max Q Clear Time (g_c+I1), s		2.0				8.6		11.3
Green Ext Time (p_c), s		13.1				12.9		0.6

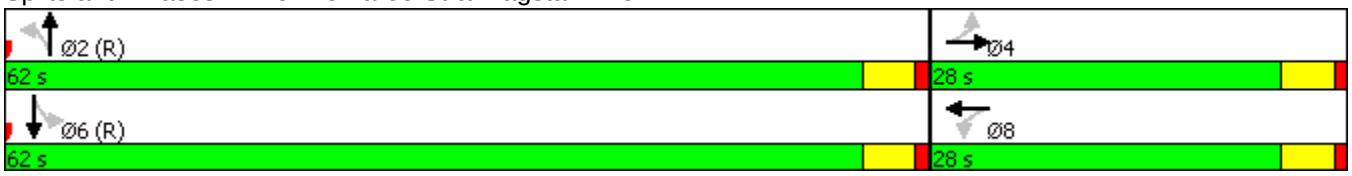
Intersection Summary	
HCM 2010 Ctrl Delay	6.1
HCM 2010 LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	31	0	29	7	771	45	33	700	0
Future Volume (vph)	0	0	0	31	0	29	7	771	45	33	700	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt					0.935			0.992				
Flt Protected					0.975						0.998	
Satd. Flow (prot)	0	1863	0	0	1698	0	0	3511	0	0	3532	0
Flt Permitted					0.838			0.949			0.883	
Satd. Flow (perm)	0	1863	0	0	1460	0	0	3332	0	0	3125	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					32			13				
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		579			1069			1173			668	
Travel Time (s)		7.2			13.3			17.8			10.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	34	0	32	8	838	49	36	761	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	66	0	0	895	0	0	797	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	50	50		50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type				Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	28.0	28.0		28.0	28.0		62.0	62.0		62.0	62.0	
Total Split (%)	31.1%	31.1%		31.1%	31.1%		68.9%	68.9%		68.9%	68.9%	
Maximum Green (s)	23.5	23.5		23.5	23.5		57.5	57.5		57.5	57.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)					7.8			76.1			76.1	
Actuated g/C Ratio					0.09			0.85			0.85	
v/c Ratio					0.42			0.32			0.30	
Control Delay					31.3			2.4			1.7	
Queue Delay					0.0			0.0			0.0	
Total Delay					31.3			2.4			1.7	
LOS					C			A			A	
Approach Delay					31.3			2.4			1.7	
Approach LOS					C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 3.2		Intersection LOS: A	
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Demaree St & Flagstaff Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	31	0	29	7	771	45	33	700	0
Future Volume (veh/h)	0	0	0	31	0	29	7	771	45	33	700	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	0	0	0	34	0	32	8	838	49	36	761	0
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
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	0	101	0	100	2	40	48	2799	163	131	2675	0
Arrive On Green	0.00	0.00	0.00	0.05	0.00	0.05	0.85	0.85	0.85	1.00	1.00	0.00
Sat Flow, veh/h	0	1863	0	729	45	728	8	3310	192	104	3248	0
Grp Volume(v), veh/h	0	0	0	66	0	0	472	0	423	405	392	0
Grp Sat Flow(s),veh/h/ln	0	1863	0	1501	0	0	1849	0	1661	1657	1610	0
Q Serve(g_s), s	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.9	0.0	0.0	4.7	0.0	4.8	0.0	0.0	0.0
Prop In Lane	0.00		0.00	0.52		0.48	0.02		0.12	0.09		0.00
Lane Grp Cap(c), veh/h	0	101	0	142	0	0	1604	0	1405	1445	1362	0
V/C Ratio(X)	0.00	0.00	0.00	0.46	0.00	0.00	0.29	0.00	0.30	0.28	0.29	0.00
Avail Cap(c_a), veh/h	0	486	0	450	0	0	1604	0	1405	1445	1362	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50	0.93	0.93	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	42.1	0.0	0.0	1.4	0.0	1.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.4	0.0	0.0	0.2	0.0	0.3	0.5	0.5	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	0.0	0.0	0.0	1.7	0.0	0.0	2.5	0.0	2.2	0.2	0.2	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	44.4	0.0	0.0	1.7	0.0	1.7	0.5	0.5	0.0
LnGrp LOS				D			A		A	A	A	
Approach Vol, veh/h		0			66			895			797	
Approach Delay, s/veh		0.0			44.4			1.7			0.5	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		80.6		9.4		80.6		9.4
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		57.5		23.5		57.5		23.5
Max Q Clear Time (g_c+I1), s		6.8		0.0		2.0		5.9
Green Ext Time (p_c), s		8.8		0.0		8.9		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	2.7
HCM 2010 LOS	A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	602	29	65	1518	57	80
Future Volume (vph)	602	29	65	1518	57	80
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.98	0.98
Frt	0.994					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1852	0	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1852	0	1630	1863	1603	1422
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	4					87
Link Speed (mph)	50			50	55	
Link Distance (ft)	2655			2640	1360	
Travel Time (s)	36.2			36.0	16.9	
Confl. Peds. (#/hr)					5	5
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	654	32	71	1650	62	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	686	0	71	1650	62	87
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	36			36	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	50		50	50	50	50
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	50		50	50	50	50
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases						2
Detector Phase	4		3	8	2	2
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	22.5		8.5	22.5	22.5	22.5
Total Split (s)	81.8		15.7	97.5	22.5	22.5

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	68.2%		13.1%	81.3%	18.8%	18.8%
Maximum Green (s)	77.3		11.2	93.0	18.0	18.0
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Max		None	C-Max	Max	Max
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	81.0		9.6	93.0	18.0	18.0
Actuated g/C Ratio	0.68		0.08	0.78	0.15	0.15
v/c Ratio	0.55		0.55	1.14	0.25	0.30
Control Delay	19.3		68.3	90.3	48.2	12.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	19.3		68.3	90.3	48.2	12.3
LOS	B		E	F	D	B
Approach Delay	19.3			89.4	27.2	
Approach LOS	B			F	C	

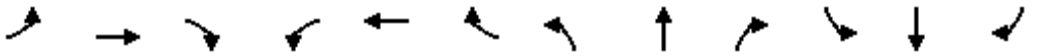
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 66.9		Intersection LOS: E	
Intersection Capacity Utilization 102.4%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 17: Linwood St & Riggen Ave

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	602	29	65	1518	57	80
Future Volume (veh/h)	602	29	65	1518	57	80
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1750	1716	1863	1716	1716
Adj Flow Rate, veh/h	654	32	71	1650	62	87
Adj No. of Lanes	1	0	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1203	59	89	1444	245	219
Arrive On Green	0.46	0.46	0.05	0.77	0.15	0.15
Sat Flow, veh/h	1761	86	1634	1863	1634	1458
Grp Volume(v), veh/h	0	686	71	1650	62	87
Grp Sat Flow(s),veh/h/ln	0	1848	1634	1863	1634	1458
Q Serve(g_s), s	0.0	32.2	5.2	93.0	4.0	6.5
Cycle Q Clear(g_c), s	0.0	32.2	5.2	93.0	4.0	6.5
Prop In Lane		0.05	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1262	89	1444	245	219
V/C Ratio(X)	0.00	0.54	0.80	1.14	0.25	0.40
Avail Cap(c_a), veh/h	0	1262	153	1444	245	219
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.80	0.55	0.55	1.00	1.00
Uniform Delay (d), s/veh	0.0	19.0	56.1	13.5	45.1	46.1
Incr Delay (d2), s/veh	0.0	1.4	8.8	69.4	2.5	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.8	2.5	74.4	2.0	2.9
LnGrp Delay(d),s/veh	0.0	20.4	64.8	82.9	47.5	51.4
LnGrp LOS		C	E	F	D	D
Approach Vol, veh/h	686			1721	149	
Approach Delay, s/veh	20.4			82.2	49.8	
Approach LOS	C			F	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		22.5	11.0	86.5				97.5
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		18.0	11.2	77.3				93.0
Max Q Clear Time (g_c+I1), s		8.5	7.2	34.2				95.0
Green Ext Time (p_c), s		0.3	0.0	29.1				0.0

Intersection Summary	
HCM 2010 Ctrl Delay	63.7
HCM 2010 LOS	E

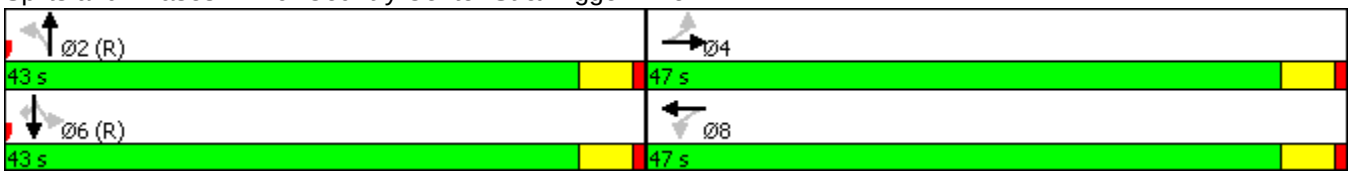


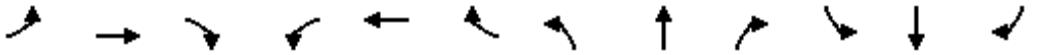
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	425	58	46	489	24	102	31	74	50	72	54
Future Volume (vph)	31	425	58	46	489	24	102	31	74	50	72	54
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	250		0	160		0	195		0	130		130
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99	1.00		0.99	0.99		0.99		0.98
Frt		0.982			0.993			0.895				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3461	0	1630	3509	0	1630	3122	0	1630	1863	1458
Flt Permitted	0.245			0.274			0.706			0.680		
Satd. Flow (perm)	418	3461	0	468	3509	0	1203	3122	0	1159	1863	1429
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			7			80				59
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		2884			7452			1333			1674	
Travel Time (s)		39.3			101.6			16.5			20.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	462	63	50	532	26	111	34	80	54	78	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	525	0	50	558	0	111	114	0	54	78	59
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	50	50		50	50		50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	22.5
Total Split (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	43.0
Total Split (%)	52.2%	52.2%		52.2%	52.2%		47.8%	47.8%		47.8%	47.8%	47.8%
Maximum Green (s)	42.5	42.5		42.5	42.5		38.5	38.5		38.5	38.5	38.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	0
Act Effct Green (s)	20.3	20.3		20.3	20.3		60.7	60.7		60.7	60.7	60.7
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.67	0.67		0.67	0.67	0.67
v/c Ratio	0.36	0.66		0.48	0.70		0.14	0.05		0.07	0.06	0.06
Control Delay	39.3	34.0		44.4	36.2		6.7	2.5		6.4	6.1	2.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	39.3	34.0		44.4	36.2		6.7	2.5		6.4	6.1	2.1
LOS	D	C		D	D		A	A		A	A	A
Approach Delay		34.3			36.9			4.6			5.0	
Approach LOS		C			D			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 27.5		Intersection LOS: C	
Intersection Capacity Utilization 46.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 19: Country Center St & Riggen Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	425	58	46	489	24	102	31	74	50	72	54
Future Volume (veh/h)	31	425	58	46	489	24	102	31	74	50	72	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	34	462	63	50	532	26	111	34	80	54	78	59
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	1	1
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	179	818	111	187	899	44	793	1129	995	804	1188	916
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	779	3118	423	803	3429	167	1147	1770	1560	1171	1863	1436
Grp Volume(v), veh/h	34	261	264	50	274	284	111	34	80	54	78	59
Grp Sat Flow(s),veh/h/ln	779	1770	1772	803	1770	1827	1147	1770	1560	1171	1863	1436
Q Serve(g_s), s	3.6	11.5	11.6	5.2	12.2	12.2	3.6	0.6	1.8	1.7	1.4	1.4
Cycle Q Clear(g_c), s	15.8	11.5	11.6	16.8	12.2	12.2	5.1	0.6	1.8	3.4	1.4	1.4
Prop In Lane	1.00		0.24	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	179	464	465	187	464	479	793	1129	995	804	1188	916
V/C Ratio(X)	0.19	0.56	0.57	0.27	0.59	0.59	0.14	0.03	0.08	0.07	0.07	0.06
Avail Cap(c_a), veh/h	342	836	837	356	836	863	793	1129	995	804	1188	916
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.54	0.54	0.54	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	28.7	28.8	36.1	29.0	29.0	7.1	6.0	6.2	6.9	6.2	6.2
Incr Delay (d2), s/veh	0.3	0.6	0.6	0.8	1.2	1.2	0.4	0.0	0.2	0.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.7	5.7	1.2	6.1	6.3	1.2	0.3	0.8	0.6	0.8	0.6
LnGrp Delay(d),s/veh	36.2	29.3	29.4	36.8	30.2	30.2	7.5	6.1	6.4	7.0	6.3	6.3
LnGrp LOS	D	C	C	D	C	C	A	A	A	A	A	A
Approach Vol, veh/h		559			608			225			191	
Approach Delay, s/veh		29.8			30.7			6.9			6.5	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		61.9		28.1		61.9		28.1
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		38.5		42.5		38.5		42.5
Max Q Clear Time (g_c+I1), s		7.1		17.8		5.4		18.8
Green Ext Time (p_c), s		1.7		4.8		1.7		4.8

Intersection Summary	
HCM 2010 Ctrl Delay	24.1
HCM 2010 LOS	C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	184	45	47	55	57	83
Future Volume (vph)	184	45	47	55	57	83
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973				0.920	
Flt Protected				0.978	0.980	
Satd. Flow (prot)	1812	0	0	1822	1547	0
Flt Permitted				0.978	0.980	
Satd. Flow (perm)	1812	0	0	1822	1547	0
Link Speed (mph)	55			55	45	
Link Distance (ft)	1617			5265	2625	
Travel Time (s)	20.0			65.3	39.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	49	51	60	62	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	249	0	0	111	152	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.9%		ICU Level of Service A	
Analysis Period (min) 15			

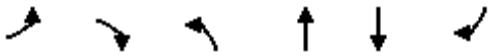
Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	184	45	47	55	57	83
Future Vol, veh/h	184	45	47	55	57	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	200	49	51	60	62	90

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	249	0	386	224
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	162	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1317	-	617	815
Stage 1	-	-	-	-	813	-
Stage 2	-	-	-	-	867	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1317	-	592	815
Mov Cap-2 Maneuver	-	-	-	-	592	-
Stage 1	-	-	-	-	813	-
Stage 2	-	-	-	-	832	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	707	-	-	1317	-
HCM Lane V/C Ratio	0.215	-	-	0.039	-
HCM Control Delay (s)	11.5	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	59	129	46	331	269	29
Future Volume (vph)	59	129	46	331	269	29
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.907				0.987	
Flt Protected	0.985			0.994		
Satd. Flow (prot)	1533	0	0	1852	1839	0
Flt Permitted	0.985			0.994		
Satd. Flow (perm)	1533	0	0	1852	1839	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	5265			1260	5250	
Travel Time (s)	65.3			19.1	79.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	140	50	360	292	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	204	0	0	410	324	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.0%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	59	129	46	331	269	29
Future Vol, veh/h	59	129	46	331	269	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	64	140	50	360	292	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	768	308	324	0	-	0
Stage 1	308	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	370	732	1236	-	-	-
Stage 1	745	-	-	-	-	-
Stage 2	636	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	351	732	1236	-	-	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	745	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.5	1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1236	-	546	-	-
HCM Lane V/C Ratio	0.04	-	0.374	-	-
HCM Control Delay (s)	8	0	15.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.7	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	2	0	0	2
Future Volume (vph)	0	0	2	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected				0.950		
Satd. Flow (prot)	1863	0	0	1770	1611	0
Flt Permitted				0.950		
Satd. Flow (perm)	1863	0	0	1770	1611	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	703			2658	404	
Travel Time (s)	8.7			33.0	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	2	0	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2	2	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.3%		ICU Level of Service A	
Analysis Period (min) 15			

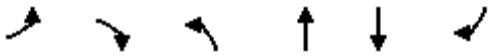
Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	2	0	0	2
Future Vol, veh/h	0	0	2	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	0	2	0	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	4	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	4	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	1018	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	1018	-
Mov Cap-2 Maneuver	-	-	-	-	1018	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1019	-

Approach	EB	WB	NB
HCM Control Delay, s	0		
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	2	40	49	0	3	2
Future Volume (vph)	2	40	49	0	3	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.871				0.946	
Flt Protected	0.998			0.950		
Satd. Flow (prot)	1619	0	0	1770	1762	0
Flt Permitted	0.998			0.950		
Satd. Flow (perm)	1619	0	0	1770	1762	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	657			433	280	
Travel Time (s)	8.1			6.6	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	43	53	0	3	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	45	0	0	53	5	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	2	40	49	0	3	2
Future Vol, veh/h	2	40	49	0	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	2	43	53	0	3	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	111	4	5	0	-	0
Stage 1	4	-	-	-	-	-
Stage 2	107	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	886	1080	1616	-	-	-
Stage 1	1019	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	857	1080	1616	-	-	-
Mov Cap-2 Maneuver	857	-	-	-	-	-
Stage 1	1019	-	-	-	-	-
Stage 2	887	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	7.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1616	-	1067	-	-
HCM Lane V/C Ratio	0.033	-	0.043	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	29	35	440	170	94	509
Future Volume (vph)	29	35	440	170	94	509
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	200	200		350	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					0.992
Satd. Flow (prot)	1630	1458	1863	1458	0	1848
Flt Permitted	0.950					0.992
Satd. Flow (perm)	1630	1458	1863	1458	0	1848
Link Speed (mph)	55		45			45
Link Distance (ft)	2907		663			433
Travel Time (s)	36.0		10.0			6.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	38	478	185	102	553
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	38	478	185	0	655
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	29	35	440	170	94	509
Future Vol, veh/h	29	35	440	170	94	509
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	350	-	-
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	32	38	478	185	102	553

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1236	478	0	0	478	0
Stage 1	478	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	195	587	-	-	1084	-
Stage 1	624	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	168	587	-	-	1084	-
Mov Cap-2 Maneuver	168	-	-	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	400	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.5	0	1.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	168	587	1084	-
HCM Lane V/C Ratio	-	-	0.188	0.065	0.094	-
HCM Control Delay (s)	-	-	31.3	11.6	8.7	0
HCM Lane LOS	-	-	D	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.2	0.3	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	103	18	6	64	28	17
Future Volume (vph)	103	18	6	64	28	17
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Storage Length (ft)		0	125		235	235
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.980					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1825	0	1630	1863	1630	1458
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1825	0	1630	1863	1630	1458
Link Speed (mph)	55			55	55	
Link Distance (ft)	2907			2297	1612	
Travel Time (s)	36.0			28.5	20.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	112	20	7	70	30	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	7	70	30	18
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

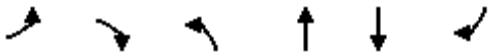
Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	103	18	6	64	28	17
Future Vol, veh/h	103	18	6	64	28	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	235	-
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	112	20	7	70	30	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	132	0	205	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	83	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1453	-	783	929
Stage 1	-	-	-	-	903	-
Stage 2	-	-	-	-	940	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1453	-	779	929
Mov Cap-2 Maneuver	-	-	-	-	779	-
Stage 1	-	-	-	-	903	-
Stage 2	-	-	-	-	935	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	779	929	-	-	1453	-
HCM Lane V/C Ratio	0.039	0.02	-	-	0.004	-
HCM Control Delay (s)	9.8	9	-	-	7.5	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	102	69	0	0	0
Future Volume (vph)	0	102	69	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected				0.950		
Satd. Flow (prot)	1484	0	0	1770	1863	0
Flt Permitted				0.950		
Satd. Flow (perm)	1484	0	0	1770	1863	0
Link Speed (mph)	55			55	55	
Link Distance (ft)	2297			627	473	
Travel Time (s)	28.5			7.8	5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	111	75	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	111	0	0	75	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.7%		ICU Level of Service A	
Analysis Period (min) 15			

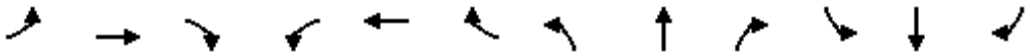
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	102	69	0	0	0
Future Vol, veh/h	0	102	69	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	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	0	111	75	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	0	0	111	0	261	0
Stage 1	-	-	-	-	150	-
Stage 2	-	-	-	-	111	-
Critical Hdwy	4.12	-	-	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	4.018	3.318
Pot Cap-1 Maneuver	-	-	-	-	644	-
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	-
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBL	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	-	0
HCM Lane LOS	-	-	A	-	A
HCM 95th %tile Q(veh)	-	-	-	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	86	0	10	0	157	108	12	117	0
Future Volume (vph)	0	0	0	86	0	10	0	157	108	12	117	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.986			0.945				
Flt Protected					0.957						0.995	
Satd. Flow (prot)	0	1863	0	0	1758	0	0	1760	0	0	1853	0
Flt Permitted					0.957						0.995	
Satd. Flow (perm)	0	1863	0	0	1758	0	0	1760	0	0	1853	0
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		341			2586			2647			2625	
Travel Time (s)		4.2			32.1			40.1			39.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	93	0	11	0	171	117	13	127	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	104	0	0	288	0	0	140	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	0	0	0	86	0	10	0	0	157	108
Future Vol, veh/h	0	0	0	0	0	86	0	10	0	0	157	108
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	93	0	11	0	0	171	117
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	0	8.8	9.1
HCM LOS	-	A	A

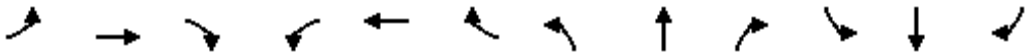
Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	90%	9%
Vol Thru, %	59%	100%	0%	91%
Vol Right, %	41%	0%	10%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	265	0	96	129
LT Vol	0	0	86	12
Through Vol	157	0	0	117
RT Vol	108	0	10	0
Lane Flow Rate	288	0	104	140
Geometry Grp	1	1	1	1
Degree of Util (X)	0.329	0	0.144	0.176
Departure Headway (Hd)	4.112	5.007	4.97	4.509
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	876	0	722	796
Service Time	2.13	3.044	2.999	2.531
HCM Lane V/C Ratio	0.329	0	0.144	0.176
HCM Control Delay	9.1	8	8.8	8.5
HCM Lane LOS	A	N	A	A
HCM 95th-tile Q	1.4	0	0.5	0.6

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	12	117	0
Future Vol, veh/h	0	12	117	0
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	13	127	0
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.5
HCM LOS	A

Lane



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	90	0	0	72	110	0	0	0	90	0	24
Future Volume (vph)	30	90	0	0	72	110	0	0	0	90	0	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.918						0.972	
Flt Protected		0.988									0.962	
Satd. Flow (prot)	0	1840	0	0	1710	0	0	1863	0	0	1742	0
Flt Permitted		0.988									0.962	
Satd. Flow (perm)	0	1840	0	0	1710	0	0	1863	0	0	1742	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		2586			388			731			574	
Travel Time (s)		32.1			4.8			9.1			7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	98	0	0	78	120	0	0	0	98	0	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	131	0	0	198	0	0	0	0	0	124	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min)	15		

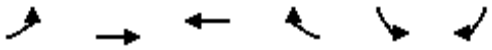
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	30	90	0	0	72	110	0	0	0	90	0	24
Future Vol, veh/h	30	90	0	0	72	110	0	0	0	90	0	24
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	33	98	0	0	78	120	0	0	0	98	0	26

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	308	209	13	258	222	0	26	0	0	0	0	0
Stage 1	209	209	-	0	0	-	-	-	-	-	-	-
Stage 2	99	0	-	258	222	-	-	-	-	-	-	-
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	644	688	1067	695	677	-	1588	-	-	-	-	-
Stage 1	793	729	-	-	-	-	-	-	-	-	-	-
Stage 2	907	-	-	747	720	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	688	1067	619	677	-	1588	-	-	-	-	-
Mov Cap-2 Maneuver	-	688	-	619	677	-	-	-	-	-	-	-
Stage 1	793	729	-	-	-	-	-	-	-	-	-	-
Stage 2	907	-	-	647	720	-	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1588	-	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	-	-	-	-
HCM Lane LOS	A	-	-	-	-	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	141	166	52	49	10
Future Volume (vph)	13	141	166	52	49	10
Ideal Flow (vphpl)	1750	1900	1900	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.968		0.977	
Flt Protected		0.996			0.960	
Satd. Flow (prot)	0	1855	1803	0	1609	0
Flt Permitted		0.996			0.960	
Satd. Flow (perm)	0	1855	1803	0	1609	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		640	493		546	
Travel Time (s)		7.9	6.1		6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	153	180	57	53	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	167	237	0	64	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.00	1.00	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.5%		ICU Level of Service A	
Analysis Period (min) 15			

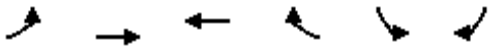
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	13	141	166	52	49	10
Future Vol, veh/h	13	141	166	52	49	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	14	153	180	57	53	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	237	0	-	0	391	209
Stage 1	-	-	-	-	209	-
Stage 2	-	-	-	-	182	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1330	-	-	-	613	831
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	849	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1330	-	-	-	606	831
Mov Cap-2 Maneuver	-	-	-	-	606	-
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	839	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1330	-	-	-	635
HCM Lane V/C Ratio	0.011	-	-	-	0.101
HCM Control Delay (s)	7.7	0	-	-	11.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	158	195	16	13	14
Future Volume (vph)	17	158	195	16	13	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.990		0.930	
Flt Protected		0.995			0.976	
Satd. Flow (prot)	0	1853	1844	0	1691	0
Flt Permitted		0.995			0.976	
Satd. Flow (perm)	0	1853	1844	0	1691	0
Link Speed (mph)		55	55		55	
Link Distance (ft)		493	1158		326	
Travel Time (s)		6.1	14.4		4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	172	212	17	14	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	190	229	0	29	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.5%		ICU Level of Service A	
Analysis Period (min) 15			

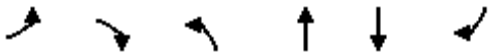
Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	17	158	195	16	13	14
Future Vol, veh/h	17	158	195	16	13	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	18	172	212	17	14	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	229	0	-	0	430	221
Stage 1	-	-	-	-	221	-
Stage 2	-	-	-	-	209	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1339	-	-	-	582	819
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	826	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1339	-	-	-	573	819
Mov Cap-2 Maneuver	-	-	-	-	573	-
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	814	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1339	-	-	-	679
HCM Lane V/C Ratio	0.014	-	-	-	0.043
HCM Control Delay (s)	7.7	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	204	274	579	544	11
Future Volume (vph)	0	204	274	579	544	11
Ideal Flow (vphpl)	1750	1750	1750	1900	1900	1750
Storage Length (ft)	0	0	175			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt	0.865				0.997	
Flt Protected			0.950			
Satd. Flow (prot)	1484	0	1630	3539	1857	0
Flt Permitted			0.950			
Satd. Flow (perm)	1484	0	1630	3539	1857	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	1158			791	663	
Travel Time (s)	14.4			12.0	10.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	222	298	629	591	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	222	0	298	629	603	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.00	1.00	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	204	274	579	544	11
Future Vol, veh/h	0	204	274	579	544	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	175	-	-	-
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	0	222	298	629	591	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1507	597	603	0	-	0
Stage 1	597	-	-	-	-	-
Stage 2	910	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.218	-	-	-
Pot Cap-1 Maneuver	122	502	975	-	-	-
Stage 1	549	-	-	-	-	-
Stage 2	354	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	85	502	975	-	-	-
Mov Cap-2 Maneuver	85	-	-	-	-	-
Stage 1	549	-	-	-	-	-
Stage 2	246	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.7	3.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	975	-	502	-	-
HCM Lane V/C Ratio	0.305	-	0.442	-	-
HCM Control Delay (s)	10.3	-	17.7	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	1.3	-	2.2	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	120	36	1120	385	59	905
Future Volume (vph)	120	36	1120	385	59	905
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	0		0	105	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.962			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1630	1458	3405	0	1630	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1630	1458	3405	0	1630	3539
Link Speed (mph)	55		45			45
Link Distance (ft)	2098		668			791
Travel Time (s)	26.0		10.1			12.0
Confl. Peds. (#/hr)	5	5				
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	39	1217	418	64	984
Shared Lane Traffic (%)						
Lane Group Flow (vph)	130	39	1635	0	64	984
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	56.8

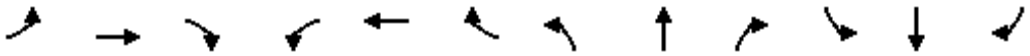
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	120	36	1120	385	59	905
Future Vol, veh/h	120	36	1120	385	59	905
Conflicting Peds, #/hr	5	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	105	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	130	39	1217	418	64	984

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2052	823	0	0	1641	0
Stage 1	1432	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 48	317	-	-	391	-
Stage 1	186	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 40	316	-	-	391	-
Mov Cap-2 Maneuver	~ 40	-	-	-	-	-
Stage 1	185	-	-	-	-	-
Stage 2	417	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 949.5	0	1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	40	316	391	-
HCM Lane V/C Ratio	-	-	3.261	0.124	0.164	-
HCM Control Delay (s)	-	$	1228.9	18	16	-
HCM Lane LOS	-	-	F	C	C	-
HCM 95th %tile Q(veh)	-	-	14.6	0.4	0.6	-

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



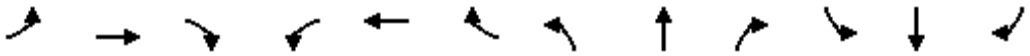
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	97	34	20	89	11	30	150	162	11	58	39
Future Volume (vph)	7	97	34	20	89	11	30	150	162	11	58	39
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.967			0.988			0.936			0.952	
Flt Protected		0.997			0.992			0.996			0.995	
Satd. Flow (prot)	0	1796	0	0	1826	0	0	1737	0	0	1764	0
Flt Permitted		0.997			0.992			0.996			0.995	
Satd. Flow (perm)	0	1796	0	0	1826	0	0	1737	0	0	1764	0
Link Speed (mph)		55			55			55			55	
Link Distance (ft)		858			508			1674			1612	
Travel Time (s)		10.6			6.3			20.8			20.0	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	105	37	22	97	12	33	163	176	12	63	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	150	0	0	131	0	0	372	0	0	117	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	6.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	150	131	372	117
Demand Flow Rate, veh/h	153	133	380	119
Vehicles Circulating, veh/h	98	208	127	155
Vehicles Exiting, veh/h	176	299	124	186
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	5.0	5.4	7.9	4.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	153	133	380	119
Cap Entry Lane, veh/h	1024	918	995	968
Entry HV Adj Factor	0.980	0.985	0.978	0.981
Flow Entry, veh/h	150	131	372	117
Cap Entry, veh/h	1003	904	973	949
V/C Ratio	0.149	0.145	0.382	0.123
Control Delay, s/veh	5.0	5.4	7.9	4.9
LOS	A	A	A	A
95th %tile Queue, veh	1	1	2	0



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	60	0	36	5	970	45	63	884	0
Future Volume (vph)	0	0	0	60	0	36	5	970	45	63	884	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt					0.949			0.993				
Flt Protected					0.970						0.997	
Satd. Flow (prot)	0	1863	0	0	1715	0	0	3514	0	0	3529	0
Flt Permitted					0.970						0.997	
Satd. Flow (perm)	0	1863	0	0	1715	0	0	3514	0	0	3529	0
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		579			1069			1173			668	
Travel Time (s)		7.2			13.3			17.8			10.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	65	0	39	5	1054	49	68	961	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	104	0	0	1108	0	0	1029	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	17.8

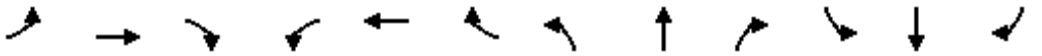
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	0	60	0	36	5	970	45	63	884	0
Future Vol, veh/h	0	0	0	60	0	36	5	970	45	63	884	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	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	65	0	39	5	1054	49	68	961	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1636	2212	480	1707	2188	552	961	0	0	1103	0	0
Stage 1	1098	1098	-	1090	1090	-	-	-	-	-	-	-
Stage 2	538	1114	-	617	1098	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
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	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	67	43	532	~ 59	45	477	712	-	-	629	-	-
Stage 1	227	287	-	230	289	-	-	-	-	-	-	-
Stage 2	495	282	-	444	287	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	50	32	532	~ 48	34	477	712	-	-	629	-	-
Mov Cap-2 Maneuver	50	32	-	~ 48	34	-	-	-	-	-	-	-
Stage 1	223	220	-	226	284	-	-	-	-	-	-	-
Stage 2	446	277	-	341	220	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	$ 363	0.1	1.9
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	712	-	-	-	72	629	-	-
HCM Lane V/C Ratio	0.008	-	-	-	1.449	0.109	-	-
HCM Control Delay (s)	10.1	0.1	-	0	$ 363	11.4	1.2	-
HCM Lane LOS	B	A	-	A	F	B	A	-
HCM 95th %tile Q(veh)	0	-	-	-	8.6	0.4	-	-

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

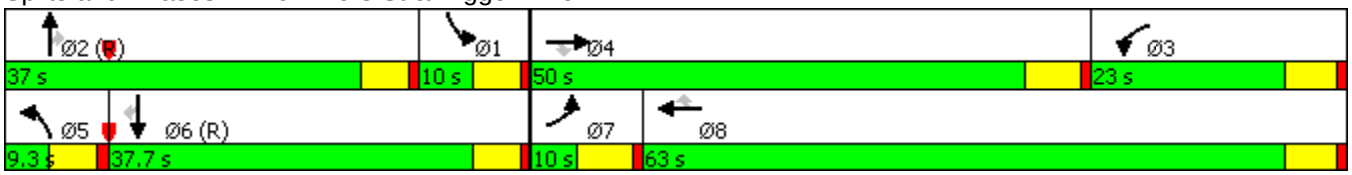


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	650	90	231	403	31	49	193	259	40	143	47
Future Volume (vph)	48	650	90	231	403	31	49	193	259	40	143	47
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	305		305	305		305	305		305	300		155
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Ped Bike Factor			0.98			0.97			0.97			0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	1863	1458	1630	1863	1458	1630	1863	1458	1630	3539	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	1863	1431	1630	1863	1414	1630	1863	1411	1630	3539	1411
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169			172			282			182
Link Speed (mph)		55			50			45			45	
Link Distance (ft)		2597			2655			816			2647	
Travel Time (s)		32.2			36.2			12.4			40.1	
Confl. Peds. (#/hr)			5			5			5			5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	707	98	251	438	34	53	210	282	43	155	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	707	98	251	438	34	53	210	282	43	155	51
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1	1	1	1	1
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	50	50	50	50	50	50	50	50	50	50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	38.4	38.4	9.7	38.4	38.4	9.3	35.6	35.6	9.3	35.6	35.6
Total Split (s)	10.0	50.0	50.0	23.0	63.0	63.0	9.3	37.0	37.0	10.0	37.7	37.7
Total Split (%)	8.3%	41.7%	41.7%	19.2%	52.5%	52.5%	7.8%	30.8%	30.8%	8.3%	31.4%	31.4%
Maximum Green (s)	4.0	44.0	44.0	17.3	57.3	57.3	4.0	31.7	31.7	4.7	32.4	32.4
Yellow Time (s)	5.0	5.0	5.0	4.7	4.7	4.7	4.3	4.3	4.3	4.3	4.3	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-1.7	-1.7	-1.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		25.4	25.4		25.7	25.7		23.3	23.3		23.3	23.3
Pedestrian Calls (#/hr)		5	5		5	5		5	5		5	5
Act Effct Green (s)	9.3	50.9	50.9	21.0	65.0	65.0	5.8	25.4	25.4	8.8	28.6	28.6
Actuated g/C Ratio	0.08	0.42	0.42	0.18	0.54	0.54	0.05	0.21	0.21	0.07	0.24	0.24
v/c Ratio	0.41	0.89	0.14	0.88	0.43	0.04	0.68	0.53	0.54	0.36	0.18	0.11
Control Delay	63.5	47.9	0.4	81.5	23.9	0.1	96.2	48.0	8.4	61.6	37.0	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.5	47.9	0.4	81.5	23.9	0.1	96.2	48.0	8.4	61.6	37.0	0.4
LOS	E	D	A	F	C	A	F	D	A	E	D	A
Approach Delay		43.4			42.8			32.2			33.7	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 117 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 39.6		Intersection LOS: D	
Intersection Capacity Utilization 90.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 16: Akers St & Riggen Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	650	90	231	403	31	49	193	259	40	143	47
Future Volume (veh/h)	48	650	90	231	403	31	49	193	259	40	143	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1716	1716	1863	1716
Adj Flow Rate, veh/h	52	707	98	251	438	34	53	210	282	43	155	51
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	2	1
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	82	714	550	259	916	698	72	436	330	148	994	397
Arrive On Green	0.05	0.38	0.38	0.16	0.49	0.49	0.04	0.23	0.23	0.09	0.28	0.28
Sat Flow, veh/h	1634	1863	1434	1634	1863	1420	1634	1863	1409	1634	3539	1413
Grp Volume(v), veh/h	52	707	98	251	438	34	53	210	282	43	155	51
Grp Sat Flow(s),veh/h/ln	1634	1863	1434	1634	1863	1420	1634	1863	1409	1634	1770	1413
Q Serve(g_s), s	3.7	45.3	4.2	18.3	18.8	0.9	3.8	11.7	23.0	2.9	4.0	3.2
Cycle Q Clear(g_c), s	3.7	45.3	4.2	18.3	18.8	0.9	3.8	11.7	23.0	2.9	4.0	3.2
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	82	714	550	259	916	698	72	436	330	148	994	397
V/C Ratio(X)	0.64	0.99	0.18	0.97	0.48	0.05	0.73	0.48	0.85	0.29	0.16	0.13
Avail Cap(c_a), veh/h	82	714	550	259	916	698	72	512	388	148	994	397
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.9	36.8	14.4	50.2	20.3	6.4	56.7	39.7	44.0	50.9	32.5	32.2
Incr Delay (d2), s/veh	15.2	31.1	0.2	47.5	0.4	0.0	31.8	3.8	23.5	1.1	0.3	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	2.0	29.3	1.7	11.7	9.7	0.4	2.4	6.5	11.1	1.4	2.0	1.3
LnGrp Delay(d),s/veh	71.1	67.9	14.5	97.7	20.7	6.4	88.4	43.4	67.5	52.0	32.8	32.9
LnGrp LOS	E	E	B	F	C	A	F	D	E	D	C	C
Approach Vol, veh/h		857			723			545			249	
Approach Delay, s/veh		62.0			46.7			60.3			36.1	
Approach LOS		E			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	32.1	23.0	50.0	9.3	37.7	10.0	63.0
Change Period (Y+Rc), s	5.3	5.3	5.7	6.0	5.3	5.3	6.0	5.7
Max Green Setting (Gmax), s	4.7	31.7	17.3	44.0	4.0	32.4	4.0	57.3
Max Q Clear Time (g_c+I1), s	4.9	25.0	20.3	47.3	5.8	6.0	5.7	20.8
Green Ext Time (p_c), s	0.0	1.2	0.0	0.0	0.0	1.0	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	54.2
HCM 2010 LOS	D

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1011	53	78	1177	35	88
Future Volume (vph)	1011	53	78	1177	35	88
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.993				0.903	
Flt Protected				0.997	0.986	
Satd. Flow (prot)	1850	0	0	1857	1528	0
Flt Permitted				0.997	0.986	
Satd. Flow (perm)	1850	0	0	1857	1528	0
Link Speed (mph)	50			50	55	
Link Distance (ft)	2655			2640	1360	
Travel Time (s)	36.2			36.0	16.9	
Confl. Peds. (#/hr)					5	5
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1099	58	85	1279	38	96
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1157	0	0	1364	134	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	141.7%	ICU Level of Service	H
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	58.2

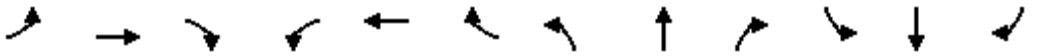
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	1011	53	78	1177	35	88
Future Vol, veh/h	1011	53	78	1177	35	88
Conflicting Peds, #/hr	0	0	0	0	5	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1099	58	85	1279	38	96

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1162	0	2582	1133
Stage 1	-	-	-	-	1133	-
Stage 2	-	-	-	-	1449	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	601	-	~ 28	247
Stage 1	-	-	-	-	307	-
Stage 2	-	-	-	-	216	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	601	-	~ 14	246
Mov Cap-2 Maneuver	-	-	-	-	~ 14	-
Stage 1	-	-	-	-	306	-
Stage 2	-	-	-	-	110	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	$ 1148.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	43	-	-	601	-
HCM Lane V/C Ratio	3.109	-	-	0.141	-
HCM Control Delay (s)	$ 1148.4	-	-	12	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	14.7	-	-	0.5	-

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

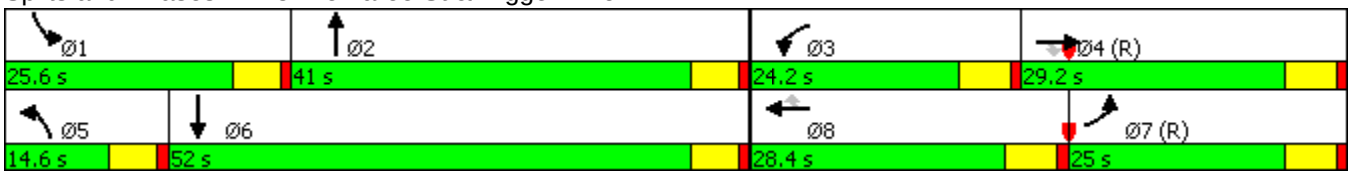


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	272	652	216	466	443	148	120	764	296	247	934	268
Future Volume (vph)	272	652	216	466	443	148	120	764	296	247	934	268
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	280		155	155		155	255		0	210		0
Storage Lanes	1		1	2		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	0.99		0.98	1.00	0.99		1.00	0.99	
Frt			0.850			0.850		0.958			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3539	1458	3162	3539	1458	1630	3373	0	1630	3399	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1623	3539	1426	3145	3539	1426	1627	3373	0	1628	3399	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172			169		49			37	
Link Speed (mph)		50			50			45			45	
Link Distance (ft)		2640			2884			2701			1173	
Travel Time (s)		36.0			39.3			40.9			17.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	296	709	235	507	482	161	130	830	322	268	1015	291
Shared Lane Traffic (%)												
Lane Group Flow (vph)	296	709	235	507	482	161	130	1152	0	268	1306	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Detector Phase	7	4	4 5	3	8	8 1	5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.7	27.0	27.0	9.7	28.4	28.4	9.3	38.4		9.3	38.4	
Total Split (s)	25.0	29.2	29.2	24.2	28.4	28.4	14.6	41.0		25.6	52.0	
Total Split (%)	20.8%	24.3%	24.3%	20.2%	23.7%	23.7%	12.2%	34.2%		21.3%	43.3%	
Maximum Green (s)	19.3	23.5	23.5	18.5	22.7	22.7	9.3	35.7		20.3	46.7	
Yellow Time (s)	4.7	4.7	4.7	4.7	4.7	4.7	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.3	-1.3		-1.3	-1.3	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	None	None	None	Min		None	Min	
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		14.3	14.3		15.7	15.7		26.1			26.1	
Pedestrian Calls (#/hr)		5	5		5	5		5			5	
Act Effct Green (s)	23.2	25.2	25.2	20.2	22.2	22.2	10.6	37.1		21.5	48.0	
Actuated g/C Ratio	0.19	0.21	0.21	0.17	0.18	0.18	0.09	0.31		0.18	0.40	
v/c Ratio	0.94	0.95	0.54	0.95	0.74	0.40	0.91	1.07		0.92	0.95	
Control Delay	92.3	78.5	29.8	78.7	53.2	8.4	108.9	86.4		84.9	48.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	92.3	78.5	29.8	78.7	53.2	8.4	108.9	86.4		84.9	48.5	
LOS	F	E	C	E	D	A	F	F		F	D	
Approach Delay		72.5			58.2			88.7			54.7	
Approach LOS		E			E			F			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 80.4 (67%), Referenced to phase 4:EBT and 7:EBL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 68.0		Intersection LOS: E	
Intersection Capacity Utilization 91.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 18: Demaree St & Riggen Ave



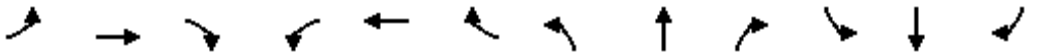
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	272	652	216	466	443	148	120	764	296	247	934	268
Future Volume (veh/h)	272	652	216	466	443	148	120	764	296	247	934	268
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1716	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	296	709	235	507	482	161	130	830	322	268	1015	291
Adj No. of Lanes	1	2	1	2	2	1	1	2	0	1	2	0
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	330	743	300	534	625	252	144	765	296	294	1080	308
Arrive On Green	0.20	0.21	0.21	0.17	0.18	0.18	0.09	0.31	0.30	0.18	0.40	0.39
Sat Flow, veh/h	1634	3539	1428	3170	3539	1425	1634	2481	960	1634	2701	769
Grp Volume(v), veh/h	296	709	235	507	482	161	130	591	561	268	663	643
Grp Sat Flow(s),veh/h/ln	1634	1770	1428	1585	1770	1425	1634	1770	1672	1634	1770	1701
Q Serve(g_s), s	21.2	23.7	18.7	19.0	15.6	8.4	9.5	37.0	37.0	19.3	43.1	43.8
Cycle Q Clear(g_c), s	21.2	23.7	18.7	19.0	15.6	8.4	9.5	37.0	37.0	19.3	43.1	43.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.57	1.00		0.45
Lane Grp Cap(c), veh/h	330	743	300	534	625	252	144	546	516	294	708	680
V/C Ratio(X)	0.90	0.95	0.78	0.95	0.77	0.64	0.90	1.08	1.09	0.91	0.94	0.95
Avail Cap(c_a), veh/h	330	743	300	534	720	290	144	546	516	294	708	680
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.7	46.8	44.8	49.4	47.1	20.3	54.2	41.5	41.9	48.3	34.5	35.0
Incr Delay (d2), s/veh	25.9	23.5	18.3	26.9	4.5	3.8	7.4	41.2	43.0	30.6	19.8	22.1
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	11.9	14.0	8.9	10.3	8.0	3.6	4.6	24.3	23.2	11.2	24.9	24.7
LnGrp Delay(d),s/veh	72.6	70.3	63.1	76.3	51.6	24.1	61.6	82.7	84.8	78.9	54.4	57.2
LnGrp LOS	E	E	E	E	D	C	E	F	F	E	D	E
Approach Vol, veh/h		1240			1150			1282			1574	
Approach Delay, s/veh		69.5			58.6			81.5			59.7	
Approach LOS		E			E			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.6	41.0	24.2	29.2	14.6	52.0	28.2	25.2
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	20.3	35.7	18.5	23.5	9.3	46.7	19.3	22.7
Max Q Clear Time (g_c+I1), s	21.2	39.0	21.0	25.7	11.5	45.8	23.2	17.6
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.8	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	67.1
HCM 2010 LOS	E

Notes

User approved changes to right turn type.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	785	167	114	608	68	121	79	95	44	94	63
Future Volume (vph)	70	785	167	114	608	68	121	79	95	44	94	63
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	250		0	160		0	195		0	130		130
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.974			0.985			0.918				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3447	0	1630	3486	0	1630	3249	0	1630	1863	1458
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3447	0	1630	3486	0	1630	3249	0	1630	1863	1458
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		2884			7452			1333			1674	
Travel Time (s)		39.3			101.6			16.5			20.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	853	182	124	661	74	132	86	103	48	102	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	1035	0	124	735	0	132	189	0	48	102	68
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	56.6
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	70	785	167	0	114	608	68	0	121	79	95
Future Vol, veh/h	0	70	785	167	0	114	608	68	0	121	79	95
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	76	853	182	0	124	661	74	0	132	86	103
Number of Lanes	0	1	2	0	0	1	2	0	0	1	2	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	3
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	3	3	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	3	3	3
HCM Control Delay	73.8	57.3	21.2
HCM LOS	F	F	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	100%	22%	0%	100%	61%	0%	100%	75%	0%	100%
Vol Right, %	0%	0%	78%	0%	0%	39%	0%	0%	25%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	121	53	121	70	523	429	114	405	271	44	94
LT Vol	121	0	0	70	0	0	114	0	0	44	0
Through Vol	0	53	26	0	523	262	0	405	203	0	94
RT Vol	0	0	95	0	0	167	0	0	68	0	0
Lane Flow Rate	132	57	132	76	569	466	124	441	294	48	102
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.435	0.182	0.399	0.214	1	1	0.356	1	0.789	0.163	0.334
Departure Headway (Hd)	11.917	11.422	10.88	10.123	9.633	9.366	10.329	9.834	9.66	12.265	11.772
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	303	314	331	354	381	387	348	370	374	292	306
Service Time	9.694	9.199	8.657	7.913	7.424	7.157	8.097	7.602	7.428	10.04	9.546
HCM Lane V/C Ratio	0.436	0.182	0.399	0.215	1.493	1.204	0.356	1.192	0.786	0.164	0.333
HCM Control Delay	23.6	16.7	20.7	15.7	78.6	77.4	18.7	79.4	40.5	17.4	20.4
HCM Lane LOS	C	C	C	C	F	F	C	F	E	C	C
HCM 95th-tile Q	2.1	0.7	1.9	0.8	11.8	11.9	1.6	11.7	6.7	0.6	1.4

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	44	94	63
Future Vol, veh/h	0	44	94	63
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	48	102	68
Number of Lanes	0	1	1	1

Approach	SB
Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	18.6
HCM LOS	C

Lane	SBLn3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	470	197	43	270	52	105	75	25	29	104	49
Future Volume (vph)	87	470	197	43	270	52	105	75	25	29	104	49
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956			0.976			0.984			0.964	
Flt Protected	0.950			0.950				0.975			0.992	
Satd. Flow (prot)	1630	3383	0	1630	3454	0	0	1787	0	0	1781	0
Flt Permitted	0.950			0.950				0.975			0.992	
Satd. Flow (perm)	1630	3383	0	1630	3454	0	0	1787	0	0	1781	0
Link Speed (mph)		55			45			55			55	
Link Distance (ft)		259			2655			897			1333	
Travel Time (s)		3.2			40.2			11.1			16.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	511	214	47	293	57	114	82	27	32	113	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	725	0	47	350	0	0	223	0	0	198	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	20.1
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	87	470	197	0	43	270	52	0	105	75	25
Future Vol, veh/h	0	87	470	197	0	43	270	52	0	105	75	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	95	511	214	0	47	293	57	0	114	82	27
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	23.4	14.7	19.9
HCM LOS	C	B	C

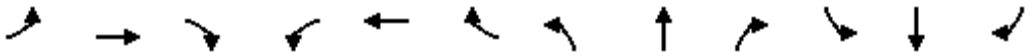
Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	51%	100%	0%	0%	100%	0%	0%	16%
Vol Thru, %	37%	0%	100%	44%	0%	100%	63%	57%
Vol Right, %	12%	0%	0%	56%	0%	0%	37%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	205	87	313	354	43	180	142	182
LT Vol	105	87	0	0	43	0	0	29
Through Vol	75	0	313	157	0	180	90	104
RT Vol	25	0	0	197	0	0	52	49
Lane Flow Rate	223	95	341	384	47	196	154	198
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.518	0.202	0.68	0.725	0.108	0.422	0.322	0.45
Departure Headway (Hd)	8.367	7.707	7.19	6.788	8.286	7.768	7.502	8.19
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	430	464	501	531	431	462	478	439
Service Time	6.136	5.471	4.954	4.551	6.057	5.538	5.272	5.96
HCM Lane V/C Ratio	0.519	0.205	0.681	0.723	0.109	0.424	0.322	0.451
HCM Control Delay	19.9	12.4	24	25.5	12.1	16.1	13.8	17.5
HCM Lane LOS	C	B	C	D	B	C	B	C
HCM 95th-tile Q	2.9	0.7	5.1	5.9	0.4	2.1	1.4	2.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	29	104	49
Future Vol, veh/h	0	29	104	49
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	32	113	53
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	17.5
HCM LOS	C

Lane

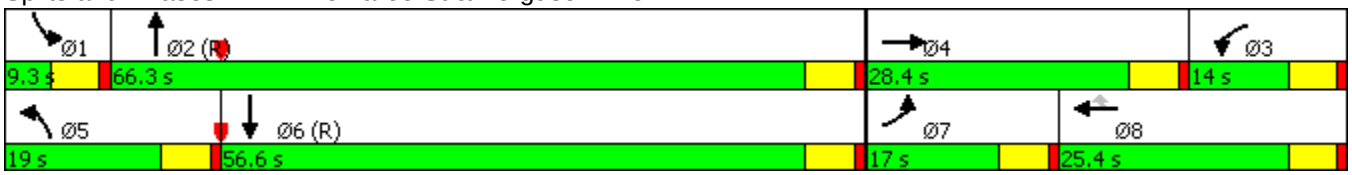


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	221	72	140	130	50	173	1803	540	61	1027	70
Future Volume (vph)	93	221	72	140	130	50	173	1803	540	61	1027	70
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	210		0	300		160	200		0	150		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor				1.00		0.96	1.00	1.00				
Frt		0.963				0.850		0.965			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3408	0	1630	1863	1458	1630	3401	0	1630	3504	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1630	3408	0	1622	1863	1401	1622	3401	0	1630	3504	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34				168		50			8	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2655			1321			2631			2701	
Travel Time (s)		40.2			20.0			39.9			40.9	
Confl. Peds. (#/hr)				5		5	5		5			
Confl. Bikes (#/hr)						2			2			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	240	78	152	141	54	188	1960	587	66	1116	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	318	0	152	141	54	188	2547	0	66	1192	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50		50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Detector Phase	7	4		3	8	8	5	2		1	6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	9.3	28.4		9.3	22.5	22.5	9.3	37.0		9.3	23.3	
Total Split (s)	17.0	28.4		14.0	25.4	25.4	19.0	66.3		9.3	56.6	
Total Split (%)	14.4%	24.1%		11.9%	21.5%	21.5%	16.1%	56.2%		7.9%	48.0%	
Maximum Green (s)	11.7	23.1		8.7	20.1	20.1	13.7	61.0		4.0	51.3	
Yellow Time (s)	4.3	4.3		4.3	4.3	4.3	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.3	-1.3		-1.3	-1.3	-1.3	-1.3	-1.3		-1.3	-1.3	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	
Flash Dont Walk (s)		16.1			0.0	0.0		24.7			0.0	
Pedestrian Calls (#/hr)		5			0	0		5			0	
Act Effct Green (s)	11.9	17.2		17.1	22.4	22.4	15.1	62.3		5.4	52.6	
Actuated g/C Ratio	0.10	0.15		0.14	0.19	0.19	0.13	0.53		0.05	0.45	
v/c Ratio	0.62	0.60		0.64	0.40	0.13	0.90	1.40		0.89	0.76	
Control Delay	66.9	46.4		62.5	46.4	0.7	92.6	209.5		132.9	31.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	66.9	46.4		62.5	46.4	0.7	92.6	209.5		132.9	31.2	
LOS	E	D		E	D	A	F	F		F	C	
Approach Delay		51.4			46.3			201.5			36.5	
Approach LOS		D			D			F			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 118			
Actuated Cycle Length: 118			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.40			
Intersection Signal Delay: 133.4		Intersection LOS: F	
Intersection Capacity Utilization 101.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 21: Demaree St & Ferguson Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	221	72	140	130	50	173	1803	540	61	1027	70
Future Volume (veh/h)	93	221	72	140	130	50	173	1803	540	61	1027	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		0.97	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
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1716	1716	1863	1750	1716	1863	1750
Adj Flow Rate, veh/h	101	240	78	152	141	54	188	1960	587	66	1116	76
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
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	140	346	110	138	242	184	208	1638	465	73	1754	119
Arrive On Green	0.09	0.13	0.12	0.08	0.13	0.13	0.13	0.60	0.59	0.04	0.52	0.51
Sat Flow, veh/h	1634	2645	839	1634	1863	1419	1634	2713	770	1634	3363	229
Grp Volume(v), veh/h	101	159	159	152	141	54	188	1241	1306	66	587	605
Grp Sat Flow(s),veh/h/ln	1634	1770	1715	1634	1863	1419	1634	1770	1713	1634	1770	1822
Q Serve(g_s), s	7.1	10.1	10.5	10.0	8.4	4.1	13.4	71.3	71.3	4.7	28.0	28.1
Cycle Q Clear(g_c), s	7.1	10.1	10.5	10.0	8.4	4.1	13.4	71.3	71.3	4.7	28.0	28.1
Prop In Lane	1.00		0.49	1.00		1.00	1.00		0.45	1.00		0.13
Lane Grp Cap(c), veh/h	140	232	224	138	242	184	208	1069	1034	73	923	951
V/C Ratio(X)	0.72	0.68	0.71	1.10	0.58	0.29	0.91	1.16	1.26	0.90	0.64	0.64
Avail Cap(c_a), veh/h	180	366	355	138	338	257	208	1069	1034	73	923	951
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	0.31	0.31	0.31
Uniform Delay (d), s/veh	52.6	49.0	49.4	54.0	48.3	46.4	50.8	23.4	23.7	56.1	20.2	20.3
Incr Delay (d2), s/veh	9.6	3.6	4.1	105.1	2.2	0.9	37.5	83.1	126.1	33.2	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	5.2	5.3	8.5	4.5	1.6	8.2	59.1	69.6	2.8	14.0	14.4
LnGrp Delay(d),s/veh	62.1	52.5	53.6	159.1	50.6	47.3	88.3	106.5	149.8	89.3	21.3	21.3
LnGrp LOS	E	D	D	F	D	D	F	F	F	F	C	C
Approach Vol, veh/h		419			347			2735			1258	
Approach Delay, s/veh		55.2			97.6			125.9			24.8	
Approach LOS		E			F			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	75.3	14.0	19.4	19.0	65.6	14.1	19.3
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	4.0	61.0	8.7	23.1	13.7	51.3	11.7	20.1
Max Q Clear Time (g_c+I1), s	6.7	73.3	12.0	12.5	15.4	30.1	9.1	10.4
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8	0.0	19.3	0.1	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	90.9
HCM 2010 LOS	F

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	36	2	0	44	2	0
Future Volume (vph)	36	2	0	44	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.865			
Flt Protected	0.950					0.950
Satd. Flow (prot)	0	1611	1611	0	0	1770
Flt Permitted	0.950					0.950
Satd. Flow (perm)	0	1611	1611	0	0	1770
Link Speed (mph)	55		55			55
Link Distance (ft)	402		380			404
Travel Time (s)	5.0		4.7			5.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	2	0	48	2	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	39	2	48	0	0	2
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	36	2	0	44	2	0
Future Vol, veh/h	36	2	0	44	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	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	39	2	0	48	2	0

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	28	24	0	0	48	0
Stage 1	24	-	-	-	-	-
Stage 2	4	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	987	1052	-	-	1559	-
Stage 1	999	-	-	-	-	-
Stage 2	1019	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	986	1052	-	-	1559	-
Mov Cap-2 Maneuver	986	-	-	-	-	-
Stage 1	999	-	-	-	-	-
Stage 2	1018	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1052	1559	-
HCM Lane V/C Ratio	-	-	0.002	0.001	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	78	2	44	96	3	36
Future Volume (vph)	78	2	44	96	3	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.908			
Flt Protected	0.950					0.996
Satd. Flow (prot)	0	1611	1691	0	0	1855
Flt Permitted	0.950					0.996
Satd. Flow (perm)	0	1611	1691	0	0	1855
Link Speed (mph)	55		55			55
Link Distance (ft)	400		574			380
Travel Time (s)	5.0		7.1			4.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	2	48	104	3	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	2	152	0	0	42
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

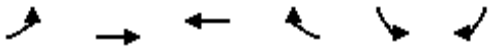
Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	78	2	44	96	3	36
Future Vol, veh/h	78	2	44	96	3	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	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	85	2	48	104	3	39

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	146	100	0	0	152	0
Stage 1	100	-	-	-	-	-
Stage 2	46	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	846	956	-	-	1429	-
Stage 1	924	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	844	956	-	-	1429	-
Mov Cap-2 Maneuver	844	-	-	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	974	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	956	1429	-
HCM Lane V/C Ratio	-	-	0.002	0.002	-
HCM Control Delay (s)	-	-	8.8	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	120	134	40	32	48
Future Volume (vph)	60	120	134	40	32	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.969			0.865
Flt Protected		0.984			0.950	
Satd. Flow (prot)	0	1833	1805	0	0	1611
Flt Permitted		0.984			0.950	
Satd. Flow (perm)	0	1833	1805	0	0	1611
Link Speed (mph)		55	55		55	
Link Distance (ft)		388	640		353	
Travel Time (s)		4.8	7.9		4.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	130	146	43	35	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	195	189	0	35	52
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min) 15			

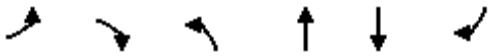
Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	60	120	134	40	32	48
Future Vol, veh/h	60	120	134	40	32	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	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	65	130	146	43	35	52

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	189	0	-	0	428	167
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	261	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1385	-	-	-	584	877
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	783	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1385	-	-	-	554	877
Mov Cap-2 Maneuver	-	-	-	-	554	-
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	743	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1385	-	-	-	877
HCM Lane V/C Ratio	0.047	-	-	-	0.059
HCM Control Delay (s)	7.7	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	55			45	45	
Link Distance (ft)	2658			280	1260	
Travel Time (s)	33.0			4.2	19.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Free	

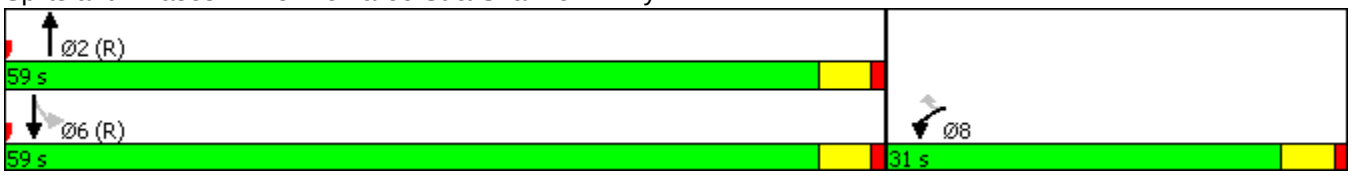
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 0.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	120	36	1120	385	53	905
Future Volume (vph)	120	36	1120	385	53	905
Ideal Flow (vphpl)	1750	1750	1900	1750	1750	1900
Storage Length (ft)	0	0		0	105	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor	0.99	0.98				
Frt		0.850	0.962			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1630	1458	3405	0	1630	3539
Flt Permitted	0.950				0.118	
Satd. Flow (perm)	1618	1428	3405	0	202	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		39	96			
Link Speed (mph)	55		45			45
Link Distance (ft)	2098		668			791
Travel Time (s)	26.0		10.1			12.0
Confl. Peds. (#/hr)	5	5				
Confl. Bikes (#/hr)		2				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	39	1217	418	58	984
Shared Lane Traffic (%)						
Lane Group Flow (vph)	130	39	1635	0	58	984
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.00	1.11	1.11	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1		1	1
Detector Template						
Leading Detector (ft)	50	50	50		50	50
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	50	50	50		50	50
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.5	22.5	22.5		22.5	22.5
Total Split (s)	31.0	31.0	59.0		59.0	59.0
Total Split (%)	34.4%	34.4%	65.6%		65.6%	65.6%
Maximum Green (s)	26.5	26.5	54.5		54.5	54.5
Yellow Time (s)	3.5	3.5	3.5		3.5	3.5
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	12.5	12.5	68.5		68.5	68.5
Actuated g/C Ratio	0.14	0.14	0.76		0.76	0.76
v/c Ratio	0.58	0.17	0.63		0.38	0.37
Control Delay	45.7	12.3	4.7		13.4	4.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	45.7	12.3	4.7		13.4	4.4
LOS	D	B	A		B	A
Approach Delay	38.0		4.7			4.9
Approach LOS	D		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 63.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: Demaree St & Shannon Pkwy



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	120	36	1120	385	53	905
Future Volume (veh/h)	120	36	1120	385	53	905
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1716	1863	1750	1716	1863
Adj Flow Rate, veh/h	130	39	1217	418	58	984
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	169	151	2076	695	304	2819
Arrive On Green	0.10	0.10	1.00	1.00	0.80	0.80
Sat Flow, veh/h	1634	1458	2700	872	282	3632
Grp Volume(v), veh/h	130	39	816	819	58	984
Grp Sat Flow(s),veh/h/ln	1634	1458	1770	1709	282	1770
Q Serve(g_s), s	7.0	2.2	0.0	0.0	4.7	7.1
Cycle Q Clear(g_c), s	7.0	2.2	0.0	0.0	4.7	7.1
Prop In Lane	1.00	1.00		0.51	1.00	
Lane Grp Cap(c), veh/h	169	151	1410	1361	304	2819
V/C Ratio(X)	0.77	0.26	0.58	0.60	0.19	0.35
Avail Cap(c_a), veh/h	481	429	1410	1361	304	2819
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.92	0.92	1.00	1.00
Uniform Delay (d), s/veh	39.3	37.2	0.0	0.0	2.3	2.6
Incr Delay (d2), s/veh	7.2	0.9	1.6	1.8	1.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.9	0.6	0.7	0.5	3.6
LnGrp Delay(d),s/veh	46.5	38.1	1.6	1.8	3.7	2.9
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	169		1635			1042
Approach Delay, s/veh	44.5		1.7			3.0
Approach LOS	D		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		76.2				76.2		13.8
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		54.5				54.5		26.5
Max Q Clear Time (g_c+I1), s		2.0				9.1		9.0
Green Ext Time (p_c), s		25.5				23.9		0.5

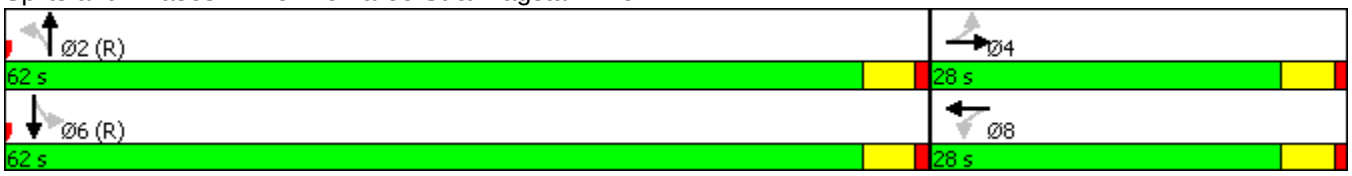
Intersection Summary	
HCM 2010 Ctrl Delay	4.7
HCM 2010 LOS	A

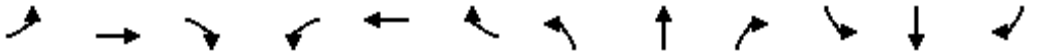
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	60	0	36	5	970	45	63	884	0
Future Volume (vph)	0	0	0	60	0	36	5	970	45	63	884	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt					0.949			0.993				
Flt Protected					0.970						0.997	
Satd. Flow (prot)	0	1863	0	0	1715	0	0	3514	0	0	3529	0
Flt Permitted					0.810			0.952			0.791	
Satd. Flow (perm)	0	1863	0	0	1432	0	0	3346	0	0	2800	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					32			10				
Link Speed (mph)		55			55			45			45	
Link Distance (ft)		579			1069			1173			668	
Travel Time (s)		7.2			13.3			17.8			10.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	65	0	39	5	1054	49	68	961	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	104	0	0	1108	0	0	1029	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	50	50		50	50		50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type				Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	28.0	28.0		28.0	28.0		62.0	62.0		62.0	62.0	
Total Split (%)	31.1%	31.1%		31.1%	31.1%		68.9%	68.9%		68.9%	68.9%	
Maximum Green (s)	23.5	23.5		23.5	23.5		57.5	57.5		57.5	57.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)					10.0			73.9			73.9	
Actuated g/C Ratio					0.11			0.82			0.82	
v/c Ratio					0.56			0.40			0.45	
Control Delay					37.3			3.6			2.9	
Queue Delay					0.0			0.0			0.0	
Total Delay					37.3			3.6			2.9	
LOS					D			A			A	
Approach Delay					37.3			3.6			2.9	
Approach LOS					D			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 4.8		Intersection LOS: A	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 15: Demaree St & Flagstaff Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	60	0	36	5	970	45	63	884	0
Future Volume (veh/h)	0	0	0	60	0	36	5	970	45	63	884	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	0	0	0	65	0	39	5	1054	49	68	961	0
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
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	0	161	0	140	5	48	43	2737	127	174	2356	0
Arrive On Green	0.00	0.00	0.00	0.09	0.00	0.09	0.81	0.81	0.81	1.00	1.00	0.00
Sat Flow, veh/h	0	1863	0	870	59	557	3	3364	156	158	2981	0
Grp Volume(v), veh/h	0	0	0	104	0	0	584	0	524	488	541	0
Grp Sat Flow(s),veh/h/ln	0	1863	0	1486	0	0	1856	0	1668	1444	1610	0
Q Serve(g_s), s	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0	7.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.2	0.0	0.0	7.7	0.0	7.7	0.0	0.0	0.0
Prop In Lane	0.00		0.00	0.62		0.37	0.01		0.09	0.14		0.00
Lane Grp Cap(c), veh/h	0	161	0	193	0	0	1550	0	1357	1220	1310	0
V/C Ratio(X)	0.00	0.00	0.00	0.54	0.00	0.00	0.38	0.00	0.39	0.40	0.41	0.00
Avail Cap(c_a), veh/h	0	486	0	451	0	0	1550	0	1357	1220	1310	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.29	0.00	0.29	0.93	0.93	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	40.3	0.0	0.0	2.3	0.0	2.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.3	0.0	0.0	0.2	0.0	0.2	0.9	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.7	0.0	0.0	4.0	0.0	3.6	0.3	0.3	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	42.6	0.0	0.0	2.5	0.0	2.5	0.9	0.9	0.0
LnGrp LOS				D			A		A	A	A	
Approach Vol, veh/h		0			104			1108			1029	
Approach Delay, s/veh		0.0			42.6			2.5			0.9	
Approach LOS					D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		77.7		12.3		77.7		12.3
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		57.5		23.5		57.5		23.5
Max Q Clear Time (g_c+I1), s		9.7		0.0		2.0		8.2
Green Ext Time (p_c), s		13.9		0.0		14.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	3.6
HCM 2010 LOS	A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1011	53	78	1177	35	88
Future Volume (vph)	1011	53	78	1177	35	88
Ideal Flow (vphpl)	1900	1750	1750	1900	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					0.98	
Frt	0.993				0.903	
Flt Protected				0.997	0.986	
Satd. Flow (prot)	1850	0	0	1857	1501	0
Flt Permitted				0.578	0.986	
Satd. Flow (perm)	1850	0	0	1077	1493	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7				89	
Link Speed (mph)	50			50	55	
Link Distance (ft)	2655			2640	1360	
Travel Time (s)	36.2			36.0	16.9	
Confl. Peds. (#/hr)					5	5
Confl. Bikes (#/hr)						2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1099	58	85	1279	38	96
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1157	0	0	1364	134	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.11	1.11	1.00	1.11	1.11
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	
Detector Template						
Leading Detector (ft)	50		50	50	50	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	50		50	50	50	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	NA		Perm	NA	Prot	
Protected Phases	4			8	2	
Permitted Phases			8			
Detector Phase	4		8	8	2	
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	
Total Split (s)	97.5		97.5	97.5	22.5	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	81.3%		81.3%	81.3%	18.8%	
Maximum Green (s)	93.0		93.0	93.0	18.0	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.5			4.5	4.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Max		C-Max	C-Max	Max	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	93.0			93.0	18.0	
Actuated g/C Ratio	0.78			0.78	0.15	
v/c Ratio	0.81			1.64	0.45	
Control Delay	19.3			314.6	22.8	
Queue Delay	0.0			0.0	0.0	
Total Delay	19.3			314.6	22.8	
LOS	B			F	C	
Approach Delay	19.3			314.6	22.8	
Approach LOS	B			F	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.64			
Intersection Signal Delay: 171.2		Intersection LOS: F	
Intersection Capacity Utilization 148.4%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 17: Linwood St & Riggen Ave

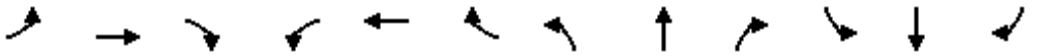
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1011	53	78	1177	35	88
Future Volume (veh/h)	1011	53	78	1177	35	88
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1750	1750	1863	1716	1750
Adj Flow Rate, veh/h	1099	58	85	1279	38	96
Adj No. of Lanes	1	0	0	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1359	72	71	834	62	158
Arrive On Green	0.77	0.77	0.77	0.77	0.15	0.15
Sat Flow, veh/h	1754	93	51	1076	416	1051
Grp Volume(v), veh/h	0	1157	1364	0	135	0
Grp Sat Flow(s),veh/h/ln	0	1846	1127	0	1478	0
Q Serve(g_s), s	0.0	45.3	47.7	0.0	10.3	0.0
Cycle Q Clear(g_c), s	0.0	45.3	93.0	0.0	10.3	0.0
Prop In Lane		0.05	0.06		0.28	0.71
Lane Grp Cap(c), veh/h	0	1431	905	0	222	0
V/C Ratio(X)	0.00	0.81	1.51	0.00	0.61	0.00
Avail Cap(c_a), veh/h	0	1431	905	0	222	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.54	0.74	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	8.1	20.4	0.0	47.7	0.0
Incr Delay (d2), s/veh	0.0	2.8	232.5	0.0	11.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	23.6	88.4	0.0	4.9	0.0
LnGrp Delay(d),s/veh	0.0	10.9	253.0	0.0	59.6	0.0
LnGrp LOS		B	F		E	
Approach Vol, veh/h	1157			1364	135	
Approach Delay, s/veh	10.9			253.0	59.6	
Approach LOS	B			F	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		22.5		97.5				97.5
Change Period (Y+Rc), s		4.5		4.5				4.5
Max Green Setting (Gmax), s		18.0		93.0				93.0
Max Q Clear Time (g_c+I1), s		12.3		47.3				95.0
Green Ext Time (p_c), s		0.2		28.9				0.0

Intersection Summary	
HCM 2010 Ctrl Delay	137.7
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

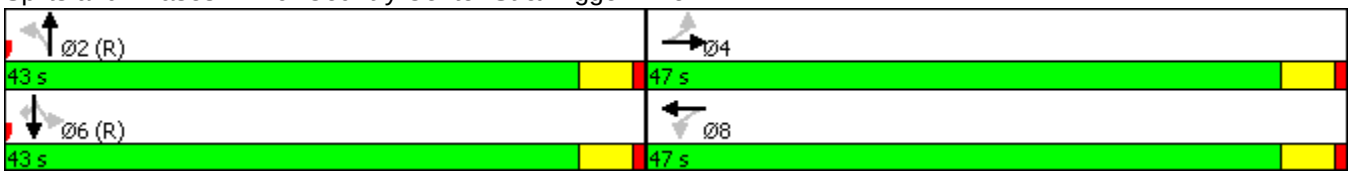


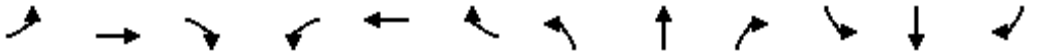
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	785	167	114	608	68	121	79	95	44	94	63
Future Volume (vph)	70	785	167	114	608	68	121	79	95	44	94	63
Ideal Flow (vphpl)	1750	1900	1750	1750	1900	1750	1750	1900	1750	1750	1900	1750
Storage Length (ft)	250		0	160		0	195		0	130		130
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		0.99	0.99		0.99		0.98
Frt		0.974			0.985			0.918				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1630	3427	0	1630	3474	0	1630	3213	0	1630	1863	1458
Flt Permitted	0.285			0.155			0.691			0.633		
Satd. Flow (perm)	487	3427	0	265	3474	0	1178	3213	0	1080	1863	1429
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			18			96				68
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		2884			7452			1333			1674	
Travel Time (s)		39.3			101.6			16.5			20.8	
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Confl. Bikes (#/hr)			2			2			2			2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	853	182	124	661	74	132	86	103	48	102	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	1035	0	124	735	0	132	189	0	48	102	68
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11	1.11	1.00	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	1
Detector Template												
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	50	50		50	50		50	50		50	50	50
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	22.5
Total Split (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	43.0
Total Split (%)	52.2%	52.2%		52.2%	52.2%		47.8%	47.8%		47.8%	47.8%	47.8%
Maximum Green (s)	42.5	42.5		42.5	42.5		38.5	38.5		38.5	38.5	38.5
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	0
Act Effct Green (s)	39.6	39.6		39.6	39.6		41.4	41.4		41.4	41.4	41.4
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.46	0.46		0.46	0.46	0.46
v/c Ratio	0.36	0.68		1.06	0.48		0.24	0.12		0.10	0.12	0.10
Control Delay	20.9	21.4		129.9	18.1		17.8	8.1		16.2	15.9	4.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	20.9	21.4		129.9	18.1		17.8	8.1		16.2	15.9	4.5
LOS	C	C		F	B		B	A		B	B	A
Approach Delay		21.4			34.2			12.1			12.4	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 23.8		Intersection LOS: C	
Intersection Capacity Utilization 71.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 19: Country Center St & Riggen Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	785	167	114	608	68	121	79	95	44	94	63
Future Volume (veh/h)	70	785	167	114	608	68	121	79	95	44	94	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1750	1716	1863	1716
Adj Flow Rate, veh/h	76	853	182	124	661	74	132	86	103	48	102	68
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	1	1
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	302	1364	291	205	1511	169	519	757	666	503	797	614
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	662	2888	616	500	3200	358	1112	1770	1557	1093	1863	1434
Grp Volume(v), veh/h	76	523	512	124	365	370	132	86	103	48	102	68
Grp Sat Flow(s),veh/h/ln	662	1770	1734	500	1770	1788	1112	1770	1557	1093	1863	1434
Q Serve(g_s), s	7.8	19.9	19.9	22.2	12.3	12.4	7.3	2.6	3.6	2.5	3.0	2.6
Cycle Q Clear(g_c), s	20.2	19.9	19.9	42.2	12.3	12.4	10.3	2.6	3.6	6.2	3.0	2.6
Prop In Lane	1.00		0.36	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	302	836	819	205	836	844	519	757	666	503	797	614
V/C Ratio(X)	0.25	0.63	0.63	0.60	0.44	0.44	0.25	0.11	0.15	0.10	0.13	0.11
Avail Cap(c_a), veh/h	302	836	819	205	836	844	519	757	666	503	797	614
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.17	0.17	0.17	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	17.8	17.8	33.6	15.8	15.8	18.7	15.5	15.8	17.7	15.6	15.5
Incr Delay (d2), s/veh	0.1	0.3	0.3	4.9	0.4	0.4	1.2	0.3	0.5	0.4	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	9.6	9.5	3.3	6.1	6.1	2.4	1.4	1.7	0.8	1.6	1.1
LnGrp Delay(d),s/veh	22.6	18.0	18.0	38.5	16.2	16.2	19.9	15.8	16.3	18.0	15.9	15.8
LnGrp LOS	C	B	B	D	B	B	B	B	B	B	B	B
Approach Vol, veh/h		1111			859			321			218	
Approach Delay, s/veh		18.4			19.4			17.6			16.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		43.0		47.0		43.0		47.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		38.5		42.5		38.5		42.5
Max Q Clear Time (g_c+I1), s		12.3		22.2		8.2		44.2
Green Ext Time (p_c), s		2.1		10.0		2.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

SIGNAL WARRANTS
COUNT DATA

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

24 Hour Count Report

Prepared For: **Ruettgers & Schuler Civil Engineers**
1800 30th St, Ste 260
Bakersfield, CA 93301

STREET Ave 320 **LATITUDE** 36.37097408

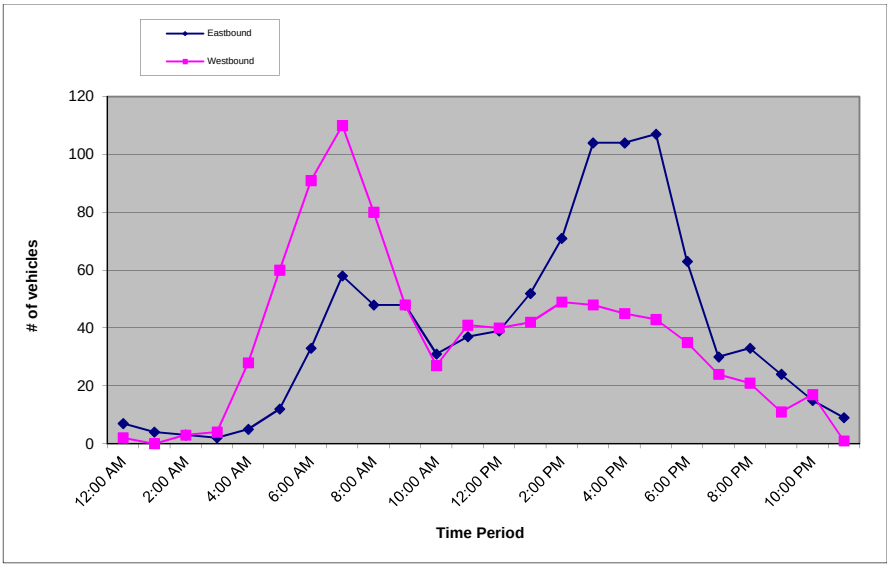
SEGMENT West of Akers St **LONGITUDE** -119.3500257

COLLECTION DATE Thursday, March 24, 2022 **WEATHER** Clear

NUMBER OF LANES 2

	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	**Total**	1st	2nd	3rd	4th	**Total**	**Totals**
12:00 AM	2	2	2	1	**7**	1	1	0	0	**2**	**9**
1:00 AM	2	0	0	2	**4**	0	0	0	0	**0**	**4**
2:00 AM	1	0	1	1	**3**	0	0	2	1	**3**	**6**
3:00 AM	0	1	1	0	**2**	1	2	1	0	**4**	**6**
4:00 AM	1	0	3	1	**5**	4	2	11	11	**28**	**33**
5:00 AM	2	2	4	4	**12**	9	15	15	21	**60**	**72**
6:00 AM	8	5	10	10	**33**	16	21	25	29	**91**	**124**
7:00 AM	16	9	13	20	**58**	26	29	32	23	**110**	**168**
8:00 AM	14	16	11	7	**48**	19	16	25	20	**80**	**128**
9:00 AM	11	12	16	9	**48**	9	12	10	17	**48**	**96**
10:00 AM	5	6	10	10	**31**	6	6	11	4	**27**	**58**
11:00 AM	6	14	11	6	**37**	11	10	10	10	**41**	**78**
12:00 PM	8	9	13	9	**39**	11	12	11	6	**40**	**79**
1:00 PM	8	15	13	16	**52**	11	12	13	6	**42**	**94**
2:00 PM	18	16	13	24	**71**	9	12	15	13	**49**	**120**
3:00 PM	15	30	32	27	**104**	17	7	11	13	**48**	**152**
4:00 PM	25	33	25	21	**104**	10	16	9	10	**45**	**149**
5:00 PM	22	33	29	23	**107**	10	12	13	8	**43**	**150**
6:00 PM	18	12	19	14	**63**	6	10	12	7	**35**	**98**
7:00 PM	8	10	7	5	**30**	6	4	5	9	**24**	**54**
8:00 PM	10	10	6	7	**33**	6	7	3	5	**21**	**54**
9:00 PM	2	5	7	10	**24**	3	2	4	2	**11**	**35**
10:00 PM	6	3	4	2	**15**	5	5	3	4	**17**	**32**
11:00 PM	2	2	2	3	**9**	0	1	0	0	**1**	**10**
Total	**51.9%**				**939**	**48.1%**				**870**	
	1809										

AM%	**43.2%**	**AM Peak**	**168**	**7:00 am to 8:00 am**	**AM P.H.F.**	**0.93**
PM%	**56.8%**	**PM Peak**	**167**	**3:30 pm to 4:30 pm**	**PM P.H.F.**	**0.85**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

24 Hour Count Report

Prepared For: **Ruettgers & Schuler Civil Engineers**
1800 30th St, Ste 260
Bakersfield, CA 93301

STREET Ave 320 **LATITUDE** 36.37097451

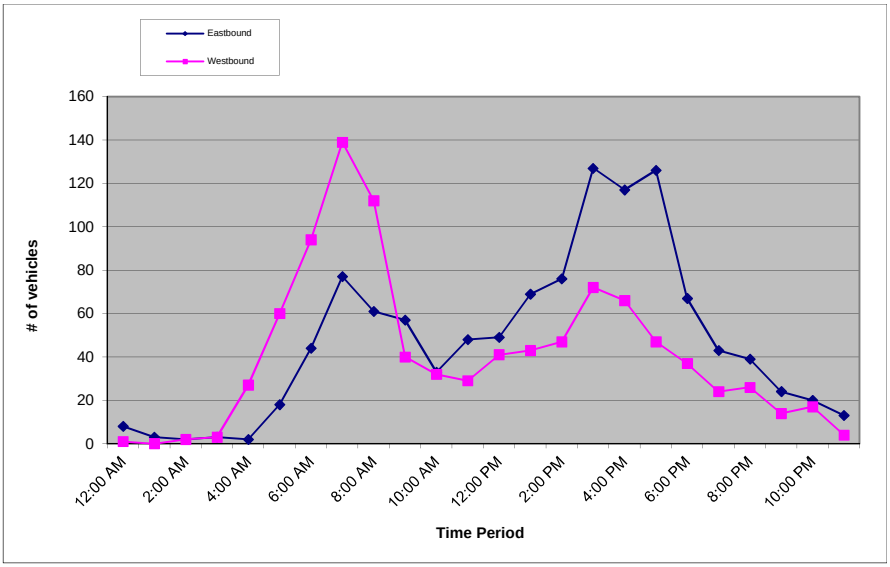
SEGMENT West of Demaree St **LONGITUDE** -119.3322195

COLLECTION DATE Thursday, March 24, 2022 **WEATHER** Clear

NUMBER OF LANES 2

	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	**Total**	1st	2nd	3rd	4th	**Total**	**Totals**
12:00 AM	3	3	1	1	**8**	1	0	0	0	**1**	**9**
1:00 AM	1	0	0	2	**3**	0	0	0	0	**0**	**3**
2:00 AM	1	0	1	0	**2**	0	0	1	1	**2**	**4**
3:00 AM	1	1	0	1	**3**	0	1	1	1	**3**	**6**
4:00 AM	0	1	1	0	**2**	4	4	9	10	**27**	**29**
5:00 AM	1	4	6	7	**18**	11	11	15	23	**60**	**78**
6:00 AM	10	9	13	12	**44**	14	23	32	25	**94**	**138**
7:00 AM	18	11	23	25	**77**	23	31	42	43	**139**	**216**
8:00 AM	20	19	10	12	**61**	40	23	26	23	**112**	**173**
9:00 AM	11	14	15	17	**57**	8	10	9	13	**40**	**97**
10:00 AM	7	4	11	11	**33**	12	10	5	5	**32**	**65**
11:00 AM	8	14	16	10	**48**	8	7	8	6	**29**	**77**
12:00 PM	12	11	18	8	**49**	8	13	11	9	**41**	**90**
1:00 PM	16	14	19	20	**69**	11	15	10	7	**43**	**112**
2:00 PM	21	15	16	24	**76**	11	10	13	13	**47**	**123**
3:00 PM	15	47	29	36	**127**	28	20	18	6	**72**	**199**
4:00 PM	25	38	27	27	**117**	16	22	11	17	**66**	**183**
5:00 PM	32	41	30	23	**126**	10	16	13	8	**47**	**173**
6:00 PM	18	16	15	18	**67**	4	9	11	13	**37**	**104**
7:00 PM	13	12	8	10	**43**	7	4	7	6	**24**	**67**
8:00 PM	13	9	9	8	**39**	5	10	6	5	**26**	**65**
9:00 PM	4	5	6	9	**24**	5	4	3	2	**14**	**38**
10:00 PM	8	5	5	2	**20**	6	6	1	4	**17**	**37**
11:00 PM	3	1	4	5	**13**	3	1	0	0	**4**	**17**
Total	**53.5%**				**1126**	**46.5%**				**977**	
	2103										

AM%	**42.6%**	**AM Peak**	**235**	**7:30 am to 8:30 am**	**AM P.H.F.**	**0.86**
PM%	**57.4%**	**PM Peak**	**199**	**3:00 pm to 4:00 pm**	**PM P.H.F.**	**0.74**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

24 Hour Count Report

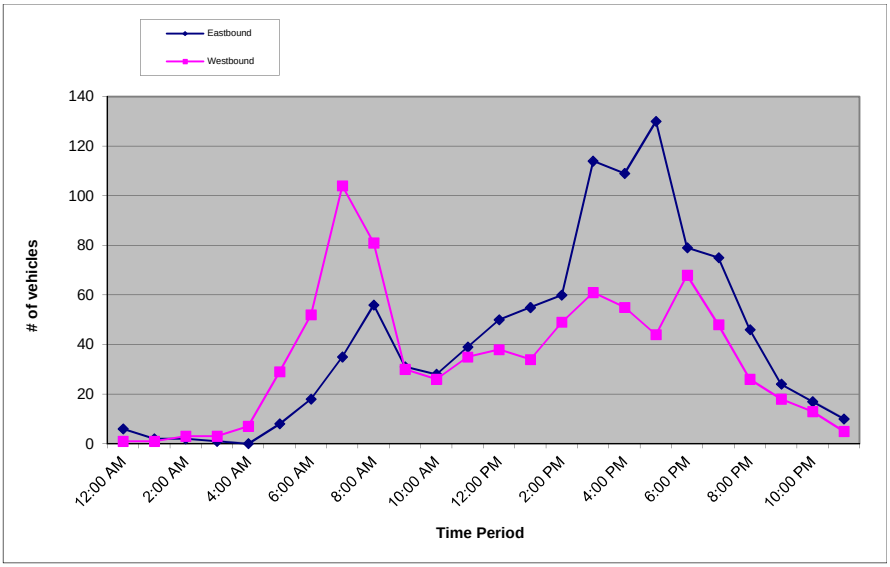
Prepared For: **Ruettgers & Schuler Civil Engineers**
1800 30th St, Ste 260
Bakersfield, CA 93301

STREET Pratt Rd
SEGMENT East of Demaree St
COLLECTION DATE Thursday, March 24, 2022
NUMBER OF LANES 2

LATITUDE 36.3655526
LONGITUDE -119.3321271
WEATHER Clear

	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	**Total**	1st	2nd	3rd	4th	**Total**	**Totals**
12:00 AM	3	2	0	1	**6**	1	0	0	0	**1**	**7**
1:00 AM	0	1	1	0	**2**	0	0	1	0	**1**	**3**
2:00 AM	1	1	0	0	**2**	0	0	2	1	**3**	**5**
3:00 AM	1	0	0	0	**1**	1	0	1	1	**3**	**4**
4:00 AM	0	0	0	0	**0**	1	2	3	1	**7**	**7**
5:00 AM	1	2	3	2	**8**	3	6	7	13	**29**	**37**
6:00 AM	0	3	6	9	**18**	11	14	17	10	**52**	**70**
7:00 AM	5	6	12	12	**35**	15	21	26	42	**104**	**139**
8:00 AM	21	15	14	6	**56**	40	16	13	12	**81**	**137**
9:00 AM	8	6	9	8	**31**	11	4	5	10	**30**	**61**
10:00 AM	3	7	9	9	**28**	6	6	8	6	**26**	**54**
11:00 AM	6	10	14	9	**39**	12	5	9	9	**35**	**74**
12:00 PM	15	8	15	12	**50**	6	10	10	12	**38**	**88**
1:00 PM	16	11	13	15	**55**	11	7	7	9	**34**	**89**
2:00 PM	17	13	11	19	**60**	7	15	15	12	**49**	**109**
3:00 PM	20	25	26	43	**114**	19	13	17	12	**61**	**175**
4:00 PM	20	36	28	25	**109**	11	19	11	14	**55**	**164**
5:00 PM	33	35	23	39	**130**	11	15	11	7	**44**	**174**
6:00 PM	24	24	15	16	**79**	18	13	18	19	**68**	**147**
7:00 PM	26	15	11	23	**75**	16	5	9	18	**48**	**123**
8:00 PM	13	13	8	12	**46**	8	10	5	3	**26**	**72**
9:00 PM	2	7	7	8	**24**	4	8	5	1	**18**	**42**
10:00 PM	8	4	4	1	**17**	6	4	1	2	**13**	**30**
11:00 PM	3	1	4	2	**10**	1	2	2	0	**5**	**15**
Total	**54.5%**				**995**	**45.5%**				**831**	
	1826										

AM%	**32.7%**	**AM Peak**	**184**	**7:30 am to 8:30 am**	**AM P.H.F.**	**0.75**
PM%	**67.3%**	**PM Peak**	**184**	**3:30 pm to 4:30 pm**	**PM P.H.F.**	**0.84**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

24 Hour Count Report

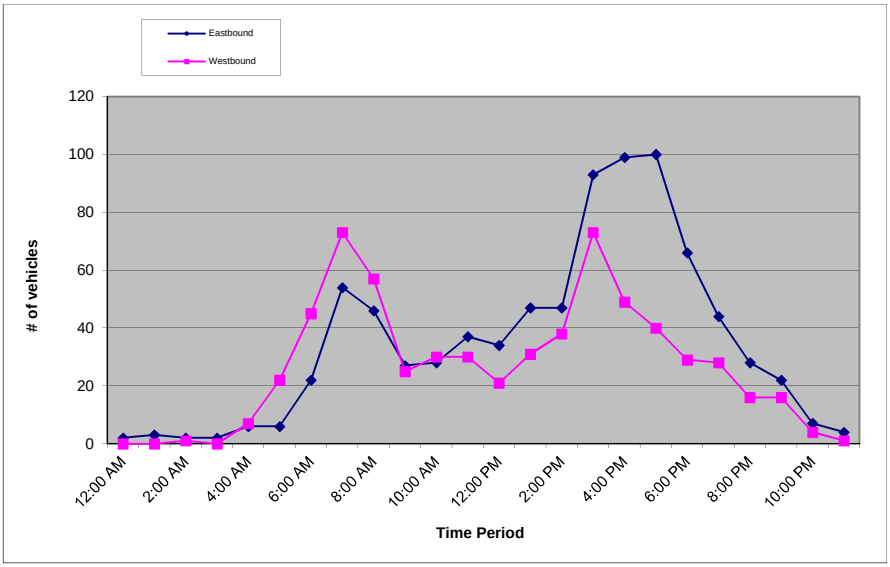
Prepared For: **Ruettgers & Schuler Civil Engineers**
1800 30th St, Ste 260
Bakersfield, CA 93301

STREET Pratt Rd
SEGMENT West of County Center St
COLLECTION DATE Tuesday, May 10, 2022
NUMBER OF LANES 2

LATITUDE 36.3655148
LONGITUDE -119.3226879
WEATHER Clear

	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	**Total**	1st	2nd	3rd	4th	**Total**	**Totals**
12:00 AM	0	0	0	2	**2**	0	0	0	0	**0**	**2**
1:00 AM	1	1	1	0	**3**	0	0	0	0	**0**	**3**
2:00 AM	0	2	0	0	**2**	0	0	0	1	**1**	**3**
3:00 AM	0	0	0	2	**2**	0	0	0	0	**0**	**2**
4:00 AM	0	1	2	3	**6**	1	0	0	6	**7**	**13**
5:00 AM	0	3	1	2	**6**	5	3	7	7	**22**	**28**
6:00 AM	2	3	6	11	**22**	10	7	14	14	**45**	**67**
7:00 AM	6	14	12	22	**54**	14	16	20	23	**73**	**127**
8:00 AM	19	12	10	5	**46**	28	15	8	6	**57**	**103**
9:00 AM	7	8	5	7	**27**	4	6	11	4	**25**	**52**
10:00 AM	3	11	2	12	**28**	10	11	5	4	**30**	**58**
11:00 AM	9	11	7	10	**37**	5	8	3	14	**30**	**67**
12:00 PM	11	4	6	13	**34**	5	5	5	6	**21**	**55**
1:00 PM	9	12	12	14	**47**	8	8	6	9	**31**	**78**
2:00 PM	10	7	16	14	**47**	6	7	13	12	**38**	**85**
3:00 PM	18	27	27	21	**93**	31	18	11	13	**73**	**166**
4:00 PM	23	28	20	28	**99**	10	10	13	16	**49**	**148**
5:00 PM	14	23	30	33	**100**	9	10	11	10	**40**	**140**
6:00 PM	16	17	14	19	**66**	6	9	8	6	**29**	**95**
7:00 PM	11	13	8	12	**44**	7	4	4	13	**28**	**72**
8:00 PM	11	8	6	3	**28**	7	3	4	2	**16**	**44**
9:00 PM	7	5	5	5	**22**	4	4	4	4	**16**	**38**
10:00 PM	1	2	2	2	**7**	3	1	0	0	**4**	**11**
11:00 PM	2	0	2	0	**4**	0	0	0	1	**1**	**5**
Total	**56.5%**				**826**	**43.5%**				**636**	
	1462										

AM%	**35.9%**	**AM Peak**	**154**	**7:15 am to 8:15 am**	**AM P.H.F.**	**0.82**
PM%	**64.1%**	**PM Peak**	**166**	**3:00 pm to 4:00 pm**	**PM P.H.F.**	**0.85**



National Data & Surveying Services Intersection Turning Movement Count

Location: N Demaree St & Shannon Pkwy
City: Visalia
Control: 2-Way Stop (EB/WB)

Project ID: 21-060003-064
Date: 4/13/2021

Data - Totals

NS/EW Streets: N Demaree St | N Demaree St | Shannon Pkwy | Shannon Pkwy

AM

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	1	2	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	56	9	0	0	50	0	0	0	0	0	0	21	0	2	1	139
7:15 AM	0	61	6	0	5	47	0	0	0	0	0	0	33	0	8	0	160
7:30 AM	0	59	15	0	0	65	0	1	0	0	0	0	34	0	7	0	181
7:45 AM	0	74	18	0	2	69	0	0	0	0	0	0	28	0	4	0	195
8:00 AM	0	52	18	0	1	63	0	0	0	0	0	0	32	0	3	0	169
8:15 AM	0	61	19	0	1	53	0	0	0	0	0	0	28	0	2	0	164
8:30 AM	0	48	9	0	1	46	0	0	0	0	0	0	11	0	1	0	116
8:45 AM	0	41	9	0	0	40	0	0	0	0	0	0	9	0	0	0	99
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	452	103	0	10	433	0	1	0	0	0	0	196	0	27	1	1223
APPROACH %'s :	0.00%	81.44%	18.56%	0.00%	2.25%	97.52%	0.00%	0.23%					87.50%	0.00%	12.05%	0.45%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	246	70	0	4	250	0	1	0	0	0	0	122	0	16	0	709
PEAK HR FACTOR :	0.000	0.831	0.921	0.000	0.500	0.906	0.000	0.250	0.000	0.000	0.000	0.000	0.897	0.000	0.571	0.000	0.909
		0.859				0.898								0.841			

NOON

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	1	2	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	0	48	16	0	0	42	0	0	0	0	0	0	29	0	3	0	138
11:15 AM	0	70	16	0	5	51	0	0	0	0	0	0	25	0	4	0	171
11:30 AM	0	46	21	1	1	55	0	0	0	0	0	0	13	0	2	0	139
11:45 AM	0	59	14	1	1	43	0	0	0	0	0	0	18	0	1	0	137
12:00 PM	0	56	13	0	0	51	0	0	0	0	0	0	20	0	1	0	141
12:15 PM	0	54	17	2	1	55	0	0	0	0	0	0	25	0	2	0	156
12:30 PM	0	48	17	0	1	45	0	0	0	0	0	0	15	0	3	0	129
12:45 PM	0	55	8	0	0	47	0	0	0	0	0	0	19	0	0	0	129
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	436	122	4	9	389	0	0	0	0	0	0	164	0	16	0	1140
APPROACH %'s :	0.00%	77.58%	21.71%	0.71%	2.26%	97.74%	0.00%	0.00%					91.11%	0.00%	8.89%	0.00%	
PEAK HR :	11:15 AM - 12:15 PM																TOTAL
PEAK HR VOL :	0	231	64	2	7	200	0	0	0	0	0	0	76	0	8	0	588
PEAK HR FACTOR :	0.000	0.825	0.762	0.500	0.350	0.909	0.000	0.000	0.000	0.000	0.000	0.000	0.760	0.000	0.500	0.000	0.860
		0.863				0.924								0.724			

PM

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	1	2	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	47	9	0	0	48	0	0	0	0	0	0	15	0	2	0	121
2:15 PM	0	44	14	1	0	60	0	0	0	0	0	0	13	0	1	1	134
2:30 PM	0	61	13	0	3	46	0	0	0	0	0	0	24	0	0	0	147
2:45 PM	0	64	15	0	2	66	0	0	0	0	0	0	13	0	0	0	160
3:00 PM	0	58	20	0	4	63	0	0	0	0	0	0	11	0	0	0	156
3:15 PM	0	80	21	0	3	73	0	0	0	0	0	0	20	0	1	0	198
3:30 PM	0	51	30	0	1	85	0	0	0	0	0	0	11	0	4	0	182
3:45 PM	0	62	30	0	4	103	0	0	0	0	0	0	22	0	1	0	222
4:00 PM	0	67	30	0	4	87	0	0	0	0	0	0	18	0	2	0	208
4:15 PM	0	78	22	0	2	85	0	0	0	0	0	0	25	0	1	0	213
4:30 PM	0	71	38	0	2	75	0	0	0	0	0	0	20	0	2	0	208
4:45 PM	0	76	33	0	3	70	0	0	0	0	0	0	22	0	2	0	206
5:00 PM	0	63	30	0	3	72	0	0	0	0	0	0	13	0	0	0	181
5:15 PM	0	82	29	0	3	64	0	0	0	0	0	0	23	0	2	0	203
5:30 PM	0	59	32	0	3	66	0	0	0	0	0	0	26	0	1	0	187
5:45 PM	0	63	20	0	3	47	0	0	0	0	0	0	16	0	1	0	150
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1026	386	1	40	1110	0	0	0	0	0	0	292	0	20	1	2876
APPROACH %'s :	0.00%	72.61%	27.32%	0.07%	3.48%	96.52%	0.00%	0.00%					93.29%	0.00%	6.39%	0.32%	
PEAK HR :	03:45 PM - 04:45 PM																TOTAL
PEAK HR VOL :	0	278	120	0	12	350	0	0	0	0	0	0	85	0	6	0	851
PEAK HR FACTOR :	0.000	0.891	0.789	0.000	0.750	0.850	0.000	0.000	0.000	0.000	0.000	0.000	0.850	0.000	0.750	0.000	0.958
		0.913				0.846								0.875			

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

24 Hour Count Report

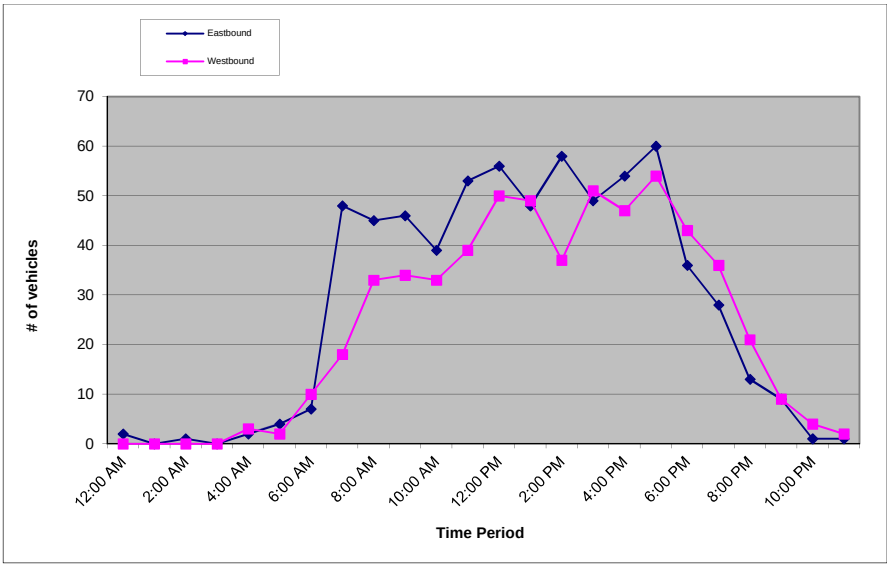
Prepared For: **Ruettgers & Schuler Civil Engineers**
1800 30th St, Ste 260
Bakersfield, CA 93301

STREET Flagstaff Ave
SEGMENT East of Demaree St
COLLECTION DATE Tuesday, May 10, 2022
NUMBER OF LANES 2

LATITUDE 36.35922007
LONGITUDE -119.3317922
WEATHER Clear

	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	**Total**	1st	2nd	3rd	4th	**Total**	**Totals**
12:00 AM	0	2	0	0	**2**	0	0	0	0	**0**	**2**
1:00 AM	0	0	0	0	**0**	0	0	0	0	**0**	**0**
2:00 AM	0	1	0	0	**1**	0	0	0	0	**0**	**1**
3:00 AM	0	0	0	0	**0**	0	0	0	0	**0**	**0**
4:00 AM	0	0	1	1	**2**	0	2	1	0	**3**	**5**
5:00 AM	2	0	1	1	**4**	0	0	1	1	**2**	**6**
6:00 AM	0	1	2	4	**7**	4	2	2	2	**10**	**17**
7:00 AM	8	12	13	15	**48**	3	7	4	4	**18**	**66**
8:00 AM	11	11	9	14	**45**	11	9	3	10	**33**	**78**
9:00 AM	13	13	9	11	**46**	6	13	11	4	**34**	**80**
10:00 AM	13	7	11	8	**39**	8	9	6	10	**33**	**72**
11:00 AM	12	11	12	18	**53**	5	11	10	13	**39**	**92**
12:00 PM	12	18	14	12	**56**	14	7	16	13	**50**	**106**
1:00 PM	15	12	13	8	**48**	10	12	15	12	**49**	**97**
2:00 PM	10	19	13	16	**58**	8	12	11	6	**37**	**95**
3:00 PM	12	9	13	15	**49**	9	11	17	14	**51**	**100**
4:00 PM	13	9	13	19	**54**	11	13	9	14	**47**	**101**
5:00 PM	17	17	17	9	**60**	14	16	8	16	**54**	**114**
6:00 PM	7	13	8	8	**36**	13	12	10	8	**43**	**79**
7:00 PM	6	5	14	3	**28**	5	10	13	8	**36**	**64**
8:00 PM	3	4	4	2	**13**	5	1	10	5	**21**	**34**
9:00 PM	3	3	1	2	**9**	2	2	4	1	**9**	**18**
10:00 PM	0	0	1	0	**1**	2	1	1	0	**4**	**5**
11:00 PM	1	0	0	0	**1**	2	0	0	0	**2**	**3**
Total	**53.4%**				**660**	**46.6%**				**575**	
	1235										

AM%	**33.9%**	**AM Peak**	**92**	**11:00 am to 12:00 pm**	**AM P.H.F.**	**0.74**
PM%	**66.1%**	**PM Peak**	**122**	**4:45 pm to 5:45 pm**	**PM P.H.F.**	**0.92**



National Data & Surveying Services Intersection Turning Movement Count

Location: Linwood St/Rd 104 & W Riggin Ave/Ave 312
City: Visalia
Control: 1-Way Stop (NB)

Project ID: 21-060003-075
Date: 4/13/2021

Data - Totals

NS/EW Streets:	Linwood St/Rd 104					Linwood St/Rd 104					W Riggin Ave/Ave 312					W Riggin Ave/Ave 312					
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					
	0	1	0	0		0	0	0	0		0	1	0	0		0	1	0	0		
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
7:00 AM	2	0	2	0	4	0	0	0	0	0	0	49	1	0	50	2	91	0	0	93	201
7:15 AM	2	0	2	0	4	0	0	0	0	0	0	60	3	0	63	2	115	0	0	117	251
7:30 AM	5	0	1	0	6	0	0	0	0	0	0	87	0	0	87	1	139	0	0	140	326
7:45 AM	2	0	5	0	7	0	0	0	0	0	0	81	4	0	85	4	136	0	0	140	324
8:00 AM	4	0	11	0	15	0	0	0	0	0	0	99	10	0	109	6	140	0	0	146	394
8:15 AM	4	0	3	0	7	0	0	0	0	0	0	120	10	0	130	5	102	0	0	107	381
8:30 AM	2	0	3	0	5	0	0	0	0	0	0	60	2	0	62	3	85	0	0	88	222
8:45 AM	3	0	3	0	6	0	0	0	0	0	0	52	2	0	54	1	76	0	0	77	197
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
TOTAL VOLUMES :	24	0	30	0		0	0	0	0		0	608	32	0		24	884	0	0		2296
APPROACH %'s :	44.44%	0.00%	55.56%	0.00%							0.00%	95.00%	5.00%	0.00%		2.64%	97.36%	0.00%	0.00%		
PEAK HR :	07:30 AM - 08:30 AM																				TOTAL
PEAK HR VOL :	15	0	20	0		0	0	0	0		0	387	24	0		16	517	0	0		979
PEAK HR FACTOR :	0.750	0.000	0.455	0.000		0.000	0.000	0.000	0.000		0.000	0.806	0.600	0.000		0.667	0.923	0.000	0.000		0.621
	0.583											0.790					0.913				

NOON	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					
	0	1	0	0		0	0	0	0		0	1	0	0		0	1	0	0		
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
11:00 AM	7	0	4	0	11	0	0	0	0	0	0	120	5	0	125	5	94	0	0	99	371
11:15 AM	4	0	10	0	14	0	0	0	0	0	0	103	4	0	107	6	97	0	0	103	345
11:30 AM	2	0	6	0	8	0	0	0	0	0	0	91	2	0	93	4	76	0	0	80	282
11:45 AM	5	0	7	0	12	0	0	0	0	0	0	110	4	0	114	7	90	0	0	97	349
12:00 PM	9	0	5	0	14	0	0	0	0	0	0	141	6	0	147	6	136	0	0	142	464
12:15 PM	4	0	7	0	11	0	0	0	0	0	0	138	6	0	144	9	118	0	0	127	437
12:30 PM	2	0	5	0	7	0	0	0	0	0	0	94	3	0	97	4	87	0	0	91	299
12:45 PM	1	0	4	0	5	0	0	0	0	0	0	76	1	0	77	8	91	0	0	99	263
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
TOTAL VOLUMES :	34	0	48	0		0	0	0	0		0	873	31	0		49	789	0	0		2810
APPROACH %'s :	41.46%	0.00%	58.54%	0.00%							0.00%	96.57%	3.43%	0.00%		5.85%	94.15%	0.00%	0.00%		
PEAK HR :	11:45 AM - 12:45 PM																				TOTAL
PEAK HR VOL :	20	0	24	0		0	0	0	0		0	483	19	0		26	431	0	0		1003
PEAK HR FACTOR :	0.556	0.000	0.857	0.000		0.000	0.000	0.000	0.000		0.000	0.856	0.792	0.000		0.722	0.792	0.000	0.000		0.540
	0.786											0.854					0.805				

PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					
	0	1	0	0		0	0	0	0		0	1	0	0		0	1	0	0		
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
2:00 PM	1	0	1	0	2	0	0	0	0	0	0	74	3	0	77	2	89	0	0	91	249
2:15 PM	2	0	4	0	6	0	0	0	0	0	0	86	2	0	88	3	74	0	0	77	265
2:30 PM	2	0	3	0	5	0	0	0	0	0	0	114	5	0	119	4	96	0	0	100	348
2:45 PM	3	0	4	0	7	0	0	0	0	0	0	70	5	0	75	2	106	0	0	108	272
3:00 PM	5	0	8	0	13	0	0	0	0	0	0	147	5	0	152	8	99	0	0	107	437
3:15 PM	5	0	9	0	14	0	0	0	0	0	0	170	6	0	176	10	111	0	0	121	501
3:30 PM	2	0	7	0	9	0	0	0	0	0	0	139	4	0	143	6	103	0	0	109	413
3:45 PM	2	0	6	0	8	0	0	0	0	0	0	146	2	0	148	12	109	0	0	121	433
4:00 PM	1	0	9	0	10	0	0	0	0	0	0	178	8	0	186	7	88	0	0	95	487
4:15 PM	6	0	4	0	10	0	0	0	0	0	0	151	3	0	154	7	102	0	0	109	437
4:30 PM	5	0	4	0	9	0	0	0	0	0	0	170	7	0	177	1	115	0	0	116	488
4:45 PM	0	0	8	0	8	0	0	0	0	0	0	112	9	0	121	5	72	0	0	77	335
5:00 PM	2	0	9	0	11	0	0	0	0	0	0	169	8	0	177	5	106	0	0	111	487
5:15 PM	2	0	5	0	7	0	0	0	0	0	0	132	7	0	139	3	94	0	0	97	389
5:30 PM	1	0	6	0	7	0	0	0	0	0	0	149	3	0	152	3	105	0	0	108	426
5:45 PM	5	0	3	0	8	0	0	0	0	0	0	97	3	0	100	7	86	0	0	93	309
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
TOTAL VOLUMES :	44	0	90	0		0	0	0	0		0	2104	80	0		85	1555	0	0		6276
APPROACH %'s :	32.84%	0.00%	67.16%	0.00%							0.00%	96.34%	3.66%	0.00%		5.18%	94.82%	0.00%	0.00%		
PEAK HR :	03:45 PM - 04:45 PM																				TOTAL
PEAK HR VOL :	14	0	23	0		0	0	0	0		0	645	20	0		27	414	0	0		1143
PEAK HR FACTOR :	0.583	0.000	0.639	0.000		0.000	0.000	0.000	0.000		0.000	0.906	0.625	0.000		0.563	0.900	0.000	0.000		0.586
	0.925											0.894					0.911				

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

24 Hour Count Report

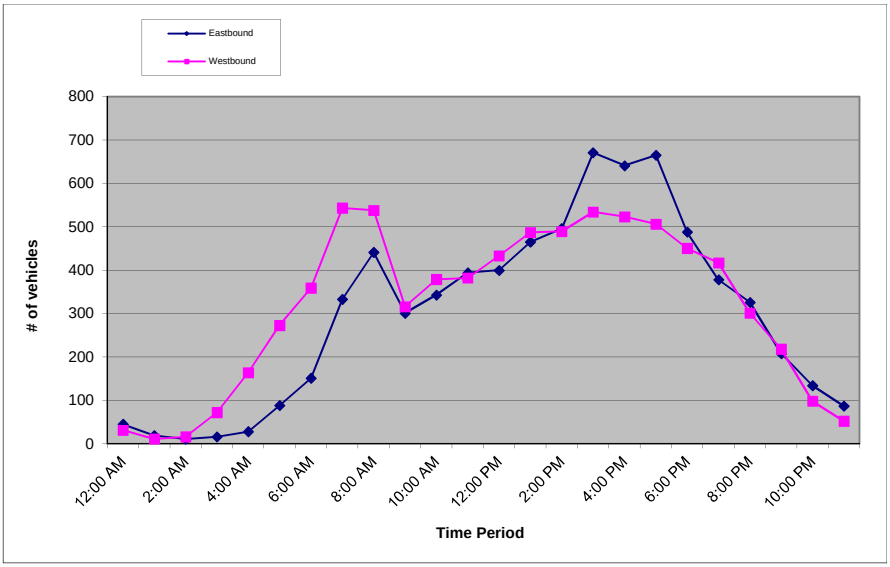
Prepared For: **Ruettgers & Schuler Civil Engineers**
1800 30th St, Ste 260
Bakersfield, CA 93301

STREET Riggin Ave
SEGMENT West of County Center St
COLLECTION DATE Tuesday, May 10, 2022
NUMBER OF LANES 4

LATITUDE 36.35642557
LONGITUDE -119.3229038
WEATHER Clear

	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	**Total**	1st	2nd	3rd	4th	**Total**	**Totals**
12:00 AM	19	9	14	3	**45**	15	5	6	5	**31**	**76**
1:00 AM	2	3	8	6	**19**	1	3	6	1	**11**	**30**
2:00 AM	0	2	4	5	**11**	2	4	6	4	**16**	**27**
3:00 AM	6	3	3	4	**16**	7	11	26	28	**72**	**88**
4:00 AM	3	5	5	15	**28**	11	30	67	56	**164**	**192**
5:00 AM	17	18	28	25	**88**	50	66	84	73	**273**	**361**
6:00 AM	21	28	46	56	**151**	77	80	96	106	**359**	**510**
7:00 AM	70	65	91	107	**333**	132	109	155	147	**543**	**876**
8:00 AM	133	140	82	86	**441**	181	126	116	115	**538**	**979**
9:00 AM	73	71	81	76	**301**	69	93	69	85	**316**	**617**
10:00 AM	75	90	84	94	**343**	89	103	105	82	**379**	**722**
11:00 AM	99	96	91	108	**394**	88	96	80	118	**382**	**776**
12:00 PM	109	112	80	99	**400**	103	109	108	113	**433**	**833**
1:00 PM	94	116	137	118	**465**	107	137	125	118	**487**	**952**
2:00 PM	110	112	135	139	**496**	113	134	108	134	**489**	**985**
3:00 PM	137	187	188	159	**671**	143	139	122	130	**534**	**1205**
4:00 PM	159	165	170	147	**641**	132	140	131	120	**523**	**1164**
5:00 PM	152	156	182	175	**665**	116	136	132	122	**506**	**1171**
6:00 PM	142	141	100	105	**488**	121	126	112	91	**450**	**938**
7:00 PM	96	98	92	92	**378**	98	102	107	110	**417**	**795**
8:00 PM	93	86	79	68	**326**	91	75	70	65	**301**	**627**
9:00 PM	56	50	58	44	**208**	75	61	44	38	**218**	**426**
10:00 PM	50	26	27	31	**134**	31	26	24	17	**98**	**232**
11:00 PM	39	20	14	14	**87**	10	12	11	19	**52**	**139**
Total	**48.4%**				**7129**	**51.6%**				**7592**	
	14721										

AM%	**35.7%**	**AM Peak**	**1080**	**7:30 am to 8:30 am**	**AM P.H.F.**	**0.86**
PM%	**64.3%**	**PM Peak**	**1216**	**3:15 pm to 4:15 pm**	**PM P.H.F.**	**0.93**



National Data & Surveying Services

Intersection Turning Movement Count

Location: Linwood St & W Ferguson Ave
City: Visalia
Control: 4-Way Stop

Project ID: 20-02003-106
Date: 2/13/2020

Total

NS/EW Streets:	Linwood St					Linwood St					W Ferguson Ave					W Ferguson Ave					
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					
	0	1	0	0		0	1	0	0		1	2	0	0		1	2	0	0		
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
7:00 AM	11	6	2	0	19	3	11	5	0	19	3	26	6	0	35	3	16	3	0	22	168
7:15 AM	8	5	2	0	15	10	21	4	0	35	0	31	12	0	43	9	49	9	0	67	253
7:30 AM	18	7	6	0	31	10	12	13	0	35	6	32	19	0	57	6	52	4	0	62	308
7:45 AM	31	2	9	0	42	23	27	7	1	58	3	39	15	0	57	2	77	9	0	88	402
8:00 AM	29	6	20	0	55	31	22	12	0	65	3	41	28	0	72	9	60	25	0	94	478
8:15 AM	22	5	25	0	52	10	14	5	1	30	6	40	26	0	72	7	46	18	0	71	379
8:30 AM	11	11	3	0	25	6	5	6	0	17	4	11	6	0	21	2	27	1	0	30	156
8:45 AM	5	3	3	0	11	4	5	9	0	18	2	20	6	0	28	3	27	5	0	35	149
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
TOTAL VOLUMES :	135	45	70	0		97	117	61	2		27	240	118	0		41	354	74	0		1381
APPROACH %'s :	54.00%	18.00%	28.00%	0.00%		35.02%	42.24%	22.02%	0.72%		7.01%	62.34%	30.65%	0.00%		8.74%	75.48%	15.78%	0.00%		
PEAK HR :	07:15 AM - 08:15 AM																				TOTAL
PEAK HR VOL :	86	20	37	0		74	82	36	1		12	143	74	0		26	238	47	0		876
PEAK HR FACTOR :	0.694	0.714	0.463	0.000		0.597	0.759	0.692	0.250		0.500	0.872	0.661	0.000		0.722	0.773	0.470	0.000		0.458
	0.650					0.742					0.795					0.827					

NOON	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					
	0	1	0	0		0	1	0	0		1	2	0	0		1	2	0	0		
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
11:00 AM	7	3	2	0	12	4	6	2	0	12	5	27	11	0	43	5	17	4	0	26	160
11:15 AM	13	5	2	0	20	2	9	3	0	14	3	18	9	0	30	1	20	5	0	26	154
11:30 AM	11	3	2	0	16	6	2	3	0	11	4	20	11	0	35	2	16	4	0	22	146
11:45 AM	11	1	2	0	14	5	3	5	0	13	6	26	14	0	46	3	22	2	0	27	173
12:00 PM	10	10	2	0	22	5	5	2	0	12	4	31	11	0	46	3	30	4	0	37	197
12:15 PM	7	3	2	0	12	1	8	3	0	12	2	32	6	0	40	4	22	5	0	31	159
12:30 PM	7	4	1	0	12	5	6	5	0	16	2	23	11	1	37	0	27	3	0	30	160
12:45 PM	10	5	3	0	18	6	11	2	0	19	2	22	14	0	38	2	21	9	0	32	182
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
TOTAL VOLUMES :	76	34	16	0		34	50	25	0		28	199	87	1		20	175	36	0		781
APPROACH %'s :	60.32%	26.98%	12.70%	0.00%		31.19%	45.87%	22.94%	0.00%		8.89%	63.17%	27.62%	0.32%		8.66%	75.76%	15.58%	0.00%		
PEAK HR :	11:45 AM - 12:45 PM																				TOTAL
PEAK HR VOL :	35	18	7	0		16	22	15	0		14	112	42	1		10	101	14	0		407
PEAK HR FACTOR :	0.795	0.450	0.875	0.000		0.800	0.688	0.750	0.000		0.583	0.875	0.750	0.250		0.625	0.842	0.700	0.000		0.516
	0.682					0.828					0.918					0.845					

PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					
	0	1	0	0		0	1	0	0		1	2	0	0		1	2	0	0		
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
2:00 PM	13	5	8	0	26	10	7	7	0	24	1	35	11	0	47	11	24	9	0	44	238
2:15 PM	11	11	14	0	36	3	9	1	0	13	10	42	22	0	74	8	30	11	0	49	295
2:30 PM	10	6	1	0	17	6	7	3	0	16	0	36	16	0	52	3	19	11	0	33	203
2:45 PM	15	5	3	0	23	11	7	4	0	22	2	38	18	0	58	6	30	8	0	44	250
3:00 PM	13	14	13	1	41	10	15	5	0	30	7	37	23	0	67	8	31	15	0	54	330
3:15 PM	10	4	3	0	17	7	12	10	0	29	4	51	24	0	79	15	43	13	0	71	321
3:30 PM	14	8	5	0	27	2	5	4	0	11	7	56	26	0	89	7	33	9	0	49	303
3:45 PM	11	12	6	0	29	5	7	4	0	16	9	40	27	0	76	9	30	11	0	50	292
4:00 PM	13	8	3	0	24	6	10	2	0	18	7	49	22	0	78	3	25	7	0	35	275
4:15 PM	16	1	6	0	23	3	4	6	0	13	13	43	20	0	76	5	36	10	0	51	275
4:30 PM	11	7	4	0	22	7	12	4	0	23	7	44	27	0	78	6	32	8	0	46	292
4:45 PM	17	11	8	0	36	3	7	7	0	17	9	54	23	0	86	9	29	5	0	43	321
5:00 PM	13	8	2	0	23	4	6	6	0	16	10	63	31	0	104	4	34	7	0	45	331
5:15 PM	12	4	4	0	20	4	12	3	0	19	16	59	37	0	112	5	45	10	0	60	362
5:30 PM	20	11	11	0	42	2	12	2	0	16	10	66	32	0	108	5	43	7	0	55	387
5:45 PM	15	14	5	0	34	7	24	5	0	36	12	63	30	0	105	4	32	7	0	43	393
	NL	NT	NR	NU		SL	ST	SR	SU		EL	ET	ER	EU		WL	WT	WR	WU		TOTAL
TOTAL VOLUMES :	214	129	96	1		90	156	73	0		124	776	389	0		108	516	148	0		2820
APPROACH %'s :	48.64%	29.32%	21.82%	0.23%		28.21%	48.90%	22.88%	0.00%		9.62%	60.20%	30.18%	0.00%		13.99%	66.84%	19.17%	0.00%		
PEAK HR :	05:00 PM - 06:00 PM																				TOTAL
PEAK HR VOL :	60	37	22	0		17	54	16	0		48	251	130	0		18	154	31	0		838
PEAK HR FACTOR :	0.750	0.661	0.500	0.000		0.607	0.563	0.667	0.000		0.750	0.951	0.878	0.000		0.900	0.856	0.775	0.000		0.533
	0.708					0.604					0.958					0.846					

Location ID: 1
North/South: N Country Center St
East/West: W Riggin Ave

Date: 8/5/2021
City: Visalia, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
7:00	8	12	1	1	72	6	8	8	8	2	43	2	149
7:15	8	8	7	5	77	9	18	5	8	8	53	6	184
7:30	10	17	14	6	94	14	23	1	26	1	51	5	228
7:45	12	14	9	5	99	7	14	7	18	5	61	5	221
8:00	3	8	5	3	74	5	10	8	5	5	74	1	174
8:15	9	10	6	3	67	7	8	7	13	5	74	5	185
8:30	7	10	6	6	69	3	5	13	17	7	70	3	188
8:45	13	7	8	5	76	10	12	3	10	5	79	7	204
Total Volume:	61	75	48	29	546	53	85	45	92	32	438	29	1533
Approach %	33%	41%	26%	5%	87%	8%	38%	20%	41%	6%	88%	6%	

Peak Hr Begin:	7:30												
PHV	30	43	29	15	290	28	48	20	54	13	225	13	808
PHF	0.708			0.841			0.693			0.872			0.886

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	6	7	3	9	92	14	15	10	7	14	114	17	268
16:15	6	15	8	8	100	21	10	10	16	9	110	9	281
16:30	6	18	18	3	101	15	13	12	17	20	125	10	312
16:45	9	10	8	8	101	18	15	8	18	23	133	10	316
17:00	10	16	3	13	109	21	18	15	14	25	128	16	338
17:15	10	12	13	16	85	21	14	22	9	17	114	9	297
17:30	8	26	6	12	100	22	24	14	15	23	127	7	333
17:45	3	8	12	9	81	20	14	8	12	18	121	15	278
Total Volume:	51	98	62	68	669	131	107	86	94	130	845	82	2423
Approach %	24%	46%	29%	8%	77%	15%	37%	30%	33%	12%	80%	8%	

Peak Hr Begin:	16:45												
PHV	33	56	26	42	344	71	62	51	49	77	436	37	1284
PHF	0.821			0.921			0.880			0.935			0.950

Location ID: 2
North/South: N Country Center St
East/West: Shannon Pkwy

Date: 8/5/2021
City: Visalia, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
7:00	2	3	1	0	7	0	1	7	2	2	1	0	24
7:15	7	5	0	0	5	1	2	6	0	1	8	0	30
7:30	6	8	1	0	10	3	2	2	3	2	2	1	37
7:45	3	10	1	0	6	2	1	5	1	2	12	0	38
8:00	6	8	0	2	9	2	3	5	1	5	3	0	39
8:15	5	3	0	0	3	1	7	5	2	5	9	0	35
8:30	1	7	0	1	7	2	7	2	0	0	3	0	27
8:45	3	5	1	0	8	3	5	3	2	2	9	0	37
Total Volume:	29	43	4	3	48	14	25	30	11	17	42	1	267
Approach %	38%	57%	5%	5%	74%	22%	38%	45%	17%	28%	70%	2%	
Peak Hr Begin:	7:30												
PHV	17	26	2	2	25	8	12	14	7	12	23	1	149
PHF	0.865			0.729			0.688			0.750			0.955

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	3	5	2	0	12	3	10	0	3	1	15	5	52
16:15	5	1	1	0	13	8	2	8	1	1	18	5	55
16:30	1	7	1	1	16	12	3	5	0	3	13	0	54
16:45	0	6	0	0	16	1	6	2	1	5	14	5	48
17:00	6	7	2	3	13	7	9	12	2	2	9	3	66
17:15	2	2	1	2	13	7	12	13	2	5	15	0	64
17:30	1	9	1	2	20	3	12	8	0	10	15	1	72
17:45	5	3	0	2	13	0	9	6	3	6	21	1	60
Total Volume:	20	35	8	10	99	36	55	46	12	29	104	17	471
Approach %	32%	56%	13%	7%	68%	25%	49%	41%	11%	19%	69%	11%	
Peak Hr Begin:	17:00												
PHV	12	19	4	9	50	15	36	33	7	20	52	5	262
PHF	0.673			0.841			0.826			0.802			0.910

Location ID: 3
North/South: N Country Center St
East/West: Pratt Rd

Date: 8/5/2021
City: Visalia, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
7:00	0	0	0	0	12	2	8	0	3	1	8	0	30
7:15	0	0	0	0	10	0	1	0	3	0	7	0	19
7:30	0	0	0	0	13	0	0	0	3	5	13	0	29
7:45	0	0	0	0	14	0	1	0	7	2	13	0	32
8:00	0	0	0	0	12	0	0	0	2	1	15	0	26
8:15	0	0	0	0	9	1	1	0	3	2	14	0	27
8:30	0	0	0	0	16	0	0	0	0	2	7	0	22
8:45	0	0	0	0	7	2	0	0	2	0	14	0	22
Total Volume:	0	0	0	0	80	5	10	0	22	12	78	0	207
Approach %	0%	0%	0%	0%	94%	6%	31%	0%	69%	13%	87%	0%	

Peak Hr Begin:	7:30												
PHV	0	0	0	0	41	1	2	0	14	9	47	0	114
PHF	0.000			0.875			0.571			0.933			0.891

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	0	0	0	0	10	2	2	0	0	6	21	0	36
16:15	0	0	0	0	15	0	0	0	2	3	17	0	33
16:30	0	0	0	0	9	1	1	0	1	3	20	0	31
16:45	0	0	0	0	6	0	1	0	2	1	12	0	19
17:00	0	0	0	0	16	3	2	0	2	6	20	0	43
17:15	0	0	0	0	10	0	2	0	5	3	20	0	35
17:30	0	0	0	0	14	0	1	0	2	3	20	0	35
17:45	0	0	0	0	10	2	1	0	0	1	18	0	29
Total Volume:	0	0	0	0	79	8	10	0	13	24	127	0	261
Approach %	0%	0%	0%	0%	91%	9%	43%	0%	57%	16%	84%	0%	

Peak Hr Begin:	17:00												
PHV	0	0	0	0	44	5	6	0	8	12	67	0	142
PHF	0.000			0.721			0.583			0.898			0.826

Location ID: 4
North/South: Mooney Blvd
East/West: Pratt Rd

Date: 8/5/2021
City: Visalia, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
7:00	0	0	0	0	0	0	0	0	15	17	0	0	28
7:15	0	0	0	0	0	0	0	0	9	8	0	0	15
7:30	0	0	0	0	0	0	0	0	14	12	0	0	22
7:45	0	0	0	0	0	0	0	0	14	13	0	0	23
8:00	0	0	0	0	0	0	0	0	12	16	0	0	24
8:15	0	0	0	0	0	0	0	0	8	15	0	0	20
8:30	0	0	0	0	0	0	0	0	15	6	0	0	18
8:45	0	0	0	0	0	0	0	0	12	14	0	0	22
Total Volume:	0	0	0	0	0	0	0	0	85	87	0	0	172
Approach %	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	

Peak Hr Begin:	7:30												
PHV	0	0	0	0	0	0	0	0	41	48	0	0	89
PHF	0.000			0.000			0.854			0.857			0.927

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	0	0	0	0	0	0	0	0	16	23	0	0	34
16:15	0	1	0	0	0	0	0	0	12	18	0	1	28
16:30	0	0	0	0	0	0	0	0	13	18	0	0	27
16:45	0	0	0	0	0	0	0	0	7	13	0	0	17
17:00	0	0	0	0	0	0	0	0	20	22	0	0	36
17:15	0	0	0	0	0	0	0	0	10	21	0	0	27
17:30	0	0	0	0	0	0	0	0	12	22	0	0	29
17:45	0	0	0	0	0	0	0	0	13	20	0	0	28
Total Volume:	0	1	0	0	0	0	0	0	88	136	0	1	226
Approach %	0%	0%	0%	0%	0%	0%	0%	0%	100%	99%	0%	1%	

Peak Hr Begin:	17:00												
PHV	0	0	0	0	0	0	0	0	47	73	0	0	120
PHF	0.000			0.000			0.691			0.961			0.833

Location ID: 5
North/South: N Demaree St
East/West: River Way Dr

Date: 8/5/2021
City: Visalia, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
7:00	2	49	0	0	0	0	0	54	1	1	0	0	94
7:15	0	38	0	0	0	0	0	83	2	7	0	2	115
7:30	0	59	0	0	0	0	0	77	0	7	0	0	124
7:45	0	61	0	0	0	0	0	69	0	14	0	2	127
8:00	0	44	0	0	0	0	0	52	2	3	0	0	88
8:15	0	41	0	0	0	0	0	46	3	3	0	0	82
8:30	0	48	0	0	0	0	0	48	3	9	0	0	95
8:45	0	43	0	0	0	0	0	35	1	5	0	0	72
Total Volume:	2	333	0	0	0	0	0	403	12	43	0	4	797
Approach %	1%	99%	0%	0%	0%	0%	0%	97%	3%	91%	0%	9%	

Peak Hr Begin:	7:00												
PHV	2	180	0	0	0	0	0	246	3	25	0	4	460
PHF	0.858			0.000			0.841			0.518			0.906

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	2	49	0	0	0	0	0	54	1	1	0	0	166
16:15	0	38	0	0	0	0	0	83	2	7	0	2	130
16:30	0	59	0	0	0	0	0	77	0	7	0	0	122
16:45	0	61	0	0	0	0	0	69	0	14	0	2	130
17:00	0	44	0	0	0	0	0	52	2	3	0	0	161
17:15	0	41	0	0	0	0	0	46	3	3	0	0	127
17:30	0	48	0	0	0	0	0	48	3	9	0	0	143
17:45	0	43	0	0	0	0	0	35	1	5	0	0	126
Total Volume:	5	528	0	0	0	0	0	462	59	45	0	6	1105
Approach %	1%	99%	0%	0%	0%	0%	0%	89%	11%	88%	0%	12%	

Peak Hr Begin:	16:45												
PHV	4	259	0	0	0	0	0	245	30	18	0	5	561
PHF	0.843			0.000			0.917			0.719			0.871

Location ID: 6
North/South: N Chinowith St
East/West: River Way Dr

Date: 8/5/2021
City: Visalia, CA

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
7:00	0	0	0	1	0	0	0	0	0	0	0	0	1
7:15	0	0	1	1	0	0	0	0	0	0	0	0	2
7:30	0	0	1	0	0	0	0	0	0	0	0	0	1
7:45	0	0	3	0	0	0	0	0	0	0	0	0	3
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	1	1	0	0	0	0	0	0	0	2
8:30	1	0	1	1	0	0	0	0	0	0	1	0	4
8:45	0	0	0	0	1	0	0	0	0	0	1	0	2
Total Volume:	1	0	6	4	2	0	0	0	0	0	2	0	15
Approach %	14%	0%	86%	67%	33%	0%	0%	0%	0%	0%	100%	0%	
Peak Hr Begin:	7:45												
PHV	1	0	4	2	1	0	0	0	0	0	1	0	9
PHF	0.417			0.375			0.000			0.250			0.563

	Southbound			Westbound			Northbound			Eastbound			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Lanes:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	0	0	1	3	0	0	0	0	0	0	0	0	4
16:15	0	0	3	1	0	0	0	0	0	0	0	0	4
16:30	0	0	0	1	0	0	0	0	0	0	0	0	1
16:45	0	0	0	2	0	0	0	0	0	0	0	0	2
17:00	0	0	2	0	0	0	0	0	0	0	0	0	2
17:15	0	0	0	2	0	0	0	0	0	0	0	0	2
17:30	0	0	3	1	1	0	0	0	0	0	1	0	6
17:45	0	0	2	1	0	0	0	0	0	0	0	0	3
Total Volume:	0	0	11	11	1	0	0	0	0	0	1	0	24
Approach %	0%	0%	100%	92%	8%	0%	0%	0%	0%	0%	100%	0%	
Peak Hr Begin:	17:00												
PHV	0	0	7	4	1	0	0	0	0	0	1	0	13
PHF	0.583			0.625			0.000			0.250			0.542

Metro Traffic Data Inc.
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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

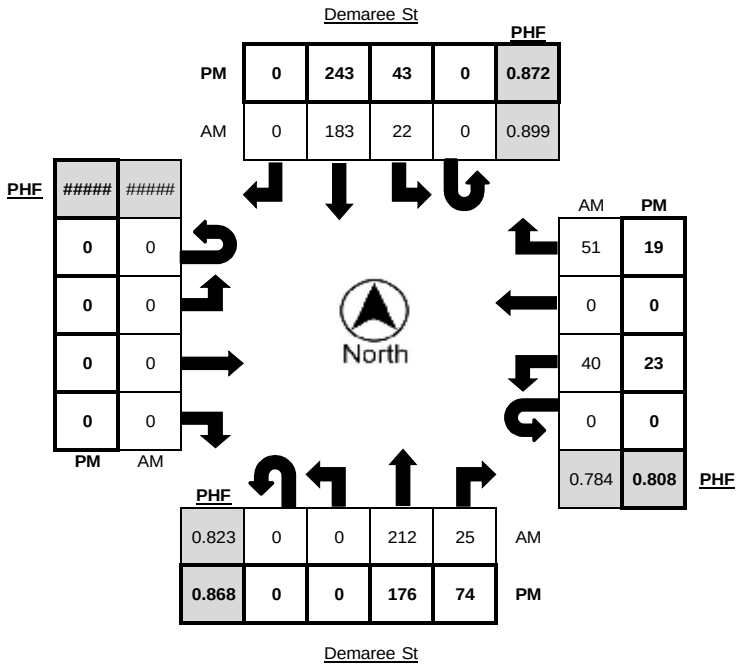
LOCATION Demaree St @ Pratt Rd
LATITUDE 36.3656
COUNTY Tulare
LONGITUDE -119.3321
COLLECTION DATE Wednesday, June 02, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	0	65	8	1	0	4	35	0	3	0	0	0	0	0	0	6	0	8	2
7:15 AM - 7:30 AM	0	0	68	4	0	0	7	59	0	3	0	0	0	0	0	0	9	0	14	1
7:30 AM - 7:45 AM	0	0	76	8	1	0	7	45	0	3	0	0	0	0	0	0	13	0	7	1
7:45 AM - 8:00 AM	0	0	67	12	1	0	7	54	0	2	0	0	0	0	0	0	12	0	22	1
8:00 AM - 8:15 AM	0	0	35	4	0	0	4	55	0	2	0	0	0	0	0	0	13	0	16	0
8:15 AM - 8:30 AM	0	0	53	6	1	0	7	35	0	3	0	0	0	0	0	0	6	0	6	2
8:30 AM - 8:45 AM	0	0	41	7	2	0	1	45	0	0	0	0	0	0	0	0	8	0	4	1
8:45 AM - 9:00 AM	0	0	44	6	2	0	6	53	0	2	0	0	0	0	0	0	3	0	8	0
TOTAL	**0**	**0**	**386**	**48**	**8**	**0**	**38**	**327**	**0**	**18**	**0**	**0**	**0**	**0**	**0**	**0**	**60**	**0**	**74**	**8**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	0	49	24	2	0	14	69	0	1	0	0	0	0	0	0	6	0	4	1
4:15 PM - 4:30 PM	0	0	57	18	1	0	4	64	0	2	0	0	0	0	0	0	7	0	8	0
4:30 PM - 4:45 PM	0	0	60	23	0	0	14	70	0	0	0	0	0	0	0	0	9	0	6	0
4:45 PM - 5:00 PM	0	0	37	21	0	0	18	78	0	3	0	0	0	0	0	0	4	0	3	0
5:00 PM - 5:15 PM	0	0	44	18	1	0	6	71	0	0	0	0	0	0	0	0	4	0	8	0
5:15 PM - 5:30 PM	0	0	55	18	2	0	11	53	0	0	0	0	0	0	0	0	18	0	3	0
5:30 PM - 5:45 PM	0	0	57	25	0	0	7	46	0	0	0	0	0	0	0	0	9	0	9	0
5:45 PM - 6:00 PM	0	0	55	22	1	0	12	59	0	0	0	0	0	0	0	0	4	0	4	0
TOTAL	**0**	**0**	**357**	**145**	**7**	**0**	**73**	**441**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**54**	**0**	**41**	**1**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	0	0	212	25	2	0	22	183	0	10	0	0	0	0	0	0	40	0	51	3
4:00 PM - 5:00 PM	0	0	176	74	3	0	43	243	0	6	0	0	0	0	0	0	23	0	19	1

	PHF	Trucks
AM	0.894	2.8%
PM	0.915	1.7%



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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

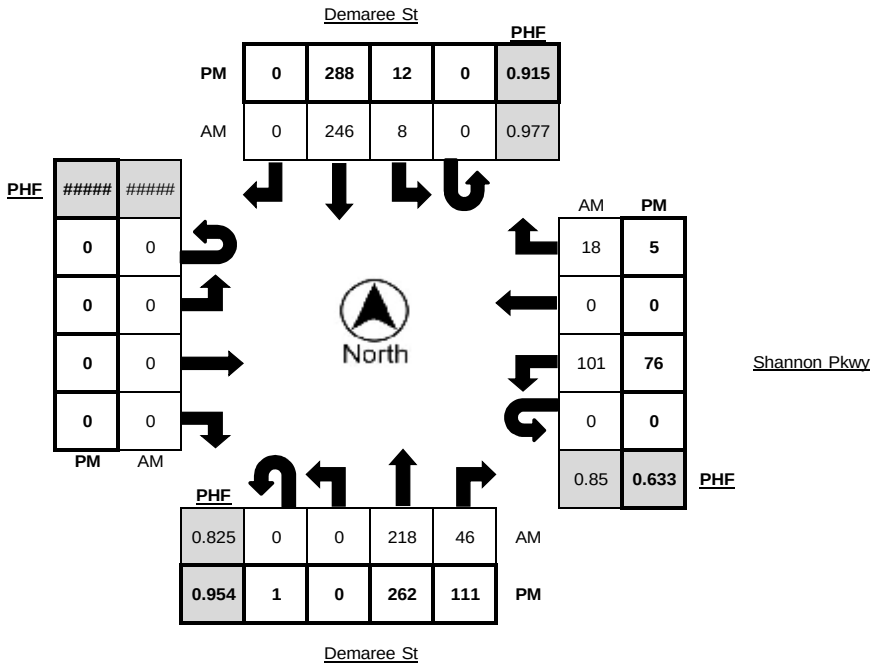
LOCATION Demaree St @ Shannon Pkwy
LATITUDE 36.3616
COUNTY Tulare
LONGITUDE -119.3321
COLLECTION DATE Wednesday, June 02, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	0	69	7	1	0	1	42	0	4	0	0	0	0	0	0	23	0	2	0
7:15 AM - 7:30 AM	0	0	64	4	0	0	4	68	0	3	0	0	0	0	0	0	34	0	7	1
7:30 AM - 7:45 AM	0	0	76	18	1	0	1	74	0	3	0	0	0	0	0	0	29	0	6	0
7:45 AM - 8:00 AM	0	0	71	16	2	0	1	70	0	1	0	0	0	0	0	0	25	0	6	0
8:00 AM - 8:15 AM	0	0	42	15	0	0	2	71	0	2	0	0	0	0	0	0	29	0	2	0
8:15 AM - 8:30 AM	0	0	60	13	1	0	0	50	0	1	0	0	0	0	0	0	25	0	2	1
8:30 AM - 8:45 AM	0	0	46	6	2	0	4	57	0	1	0	0	0	0	0	0	26	0	1	0
8:45 AM - 9:00 AM	0	0	47	16	2	0	2	64	0	1	0	0	0	0	0	0	22	0	2	0
TOTAL	**0**	**0**	**411**	**82**	**9**	**0**	**15**	**430**	**0**	**16**	**0**	**0**	**0**	**0**	**0**	**0**	**185**	**0**	**25**	**2**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	1	0	83	24	2	0	3	91	0	3	0	0	0	0	0	0	37	0	0	0
4:15 PM - 4:30 PM	0	0	76	35	1	0	1	71	0	2	0	0	0	0	0	0	15	0	2	0
4:30 PM - 4:45 PM	0	0	81	33	0	0	7	82	0	0	0	0	0	0	0	0	14	0	2	0
4:45 PM - 5:00 PM	0	0	64	37	0	0	2	88	0	3	0	0	0	0	0	0	22	0	1	0
5:00 PM - 5:15 PM	0	0	69	43	0	0	0	83	0	0	0	0	0	0	0	0	25	0	0	0
5:15 PM - 5:30 PM	0	0	83	30	1	0	1	71	0	0	0	0	0	0	0	0	22	0	2	0
5:30 PM - 5:45 PM	0	0	89	33	0	0	2	57	0	0	0	0	0	0	0	0	21	0	2	0
5:45 PM - 6:00 PM	0	0	71	30	1	0	3	71	0	0	0	0	0	0	0	0	21	0	1	0
TOTAL	**1**	**0**	**533**	**228**	**5**	**0**	**18**	**533**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**153**	**0**	**10**	**0**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	0	0	218	46	3	0	8	246	0	9	0	0	0	0	0	0	101	0	18	1
4:00 PM - 5:00 PM	1	0	262	111	3	0	12	288	0	8	0	0	0	0	0	0	76	0	5	0

	PHF	Trucks
AM	0.910	2.0%
PM	0.907	1.5%



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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

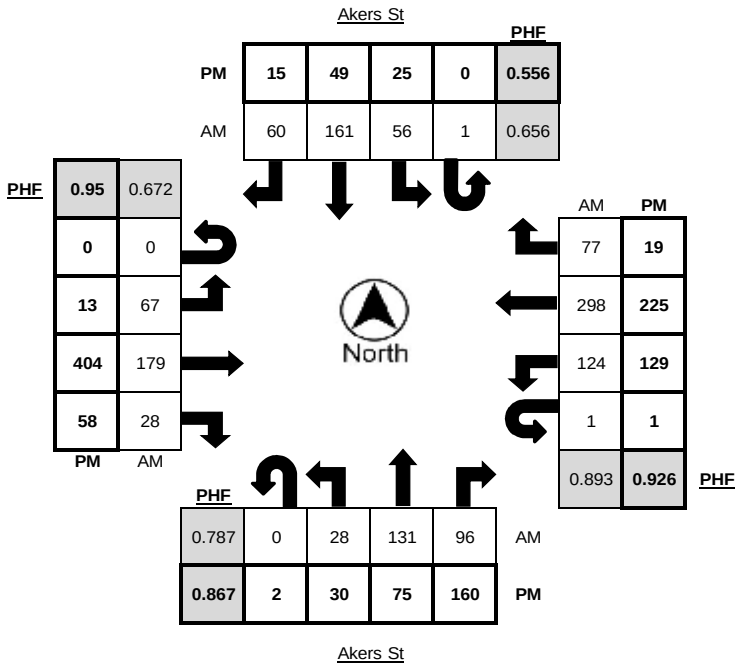
LOCATION Riggin Ave @ Akers St
LATITUDE 36.3566
COUNTY Tulare
LONGITUDE -119.3500
COLLECTION DATE Thursday, May 27, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	1	18	14	13	1	0	3	15	4	1	0	2	29	1	3	0	24	89	2	3
7:15 AM - 7:30 AM	0	8	15	13	1	0	4	23	4	1	0	7	43	2	4	0	27	71	9	1
7:30 AM - 7:45 AM	0	7	22	23	2	0	3	29	8	4	0	13	42	4	7	0	46	85	9	1
7:45 AM - 8:00 AM	0	12	33	33	1	0	3	45	11	0	0	8	42	6	2	0	42	97	16	0
8:00 AM - 8:15 AM	0	11	64	20	2	1	29	43	26	1	0	43	61	14	8	0	30	87	45	3
8:15 AM - 8:30 AM	0	3	34	36	1	0	29	69	24	0	0	14	62	8	6	1	25	76	19	4
8:30 AM - 8:45 AM	0	9	21	18	2	0	2	15	1	0	0	2	46	6	0	0	30	61	6	4
8:45 AM - 9:00 AM	0	6	9	21	2	0	1	13	2	4	0	0	47	9	2	0	27	45	3	0
TOTAL	**1**	**63**	**182**	**151**	**12**	**1**	**66**	**218**	**71**	**11**	**0**	**77**	**322**	**44**	**29**	**1**	**219**	**529**	**95**	**16**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	6	25	42	1	0	19	24	3	0	0	4	124	16	2	1	35	68	13	2
4:15 PM - 4:30 PM	0	7	15	53	0	0	3	13	6	0	0	8	113	16	1	0	37	71	2	2
4:30 PM - 4:45 PM	0	14	22	54	0	0	3	6	7	0	0	1	117	21	1	0	36	67	4	2
4:45 PM - 5:00 PM	2	8	24	38	0	0	3	14	1	0	0	1	113	14	0	0	42	54	2	2
5:00 PM - 5:15 PM	1	11	20	47	1	0	3	7	4	0	0	3	140	19	1	0	34	62	1	1
5:15 PM - 5:30 PM	1	9	25	42	0	0	8	12	2	0	0	3	129	12	1	0	37	65	6	0
5:30 PM - 5:45 PM	1	16	26	37	1	0	1	13	3	0	0	3	105	22	0	2	26	69	8	0
5:45 PM - 6:00 PM	1	20	16	24	0	1	2	7	4	0	0	1	99	35	0	0	36	74	7	1
TOTAL	**6**	**78**	**151**	**290**	**3**	**1**	**38**	**82**	**28**	**0**	**0**	**23**	**813**	**133**	**6**	**3**	**244**	**459**	**38**	**10**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	0	28	131	96	6	1	56	161	60	5	0	67	179	28	20	1	124	298	77	8
4:00 PM - 5:00 PM	2	30	75	160	1	0	25	49	15	0	0	13	404	58	4	1	129	225	19	8

	PHF	Trucks
AM	0.799	3.0%
PM	0.916	1.1%



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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

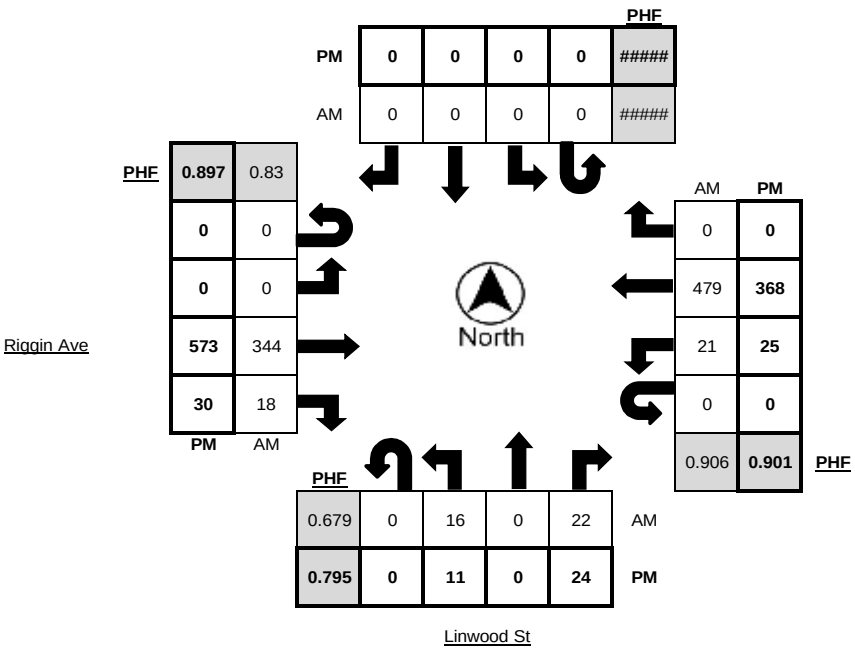
LOCATION Riggin Ave @ Linwood St
LATITUDE 36.3565
COUNTY Tulare
LONGITUDE -119.3410
COLLECTION DATE Thursday, May 27, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	3	0	1	0	0	0	0	0	0	0	0	44	1	6	0	4	111	0	0
7:15 AM - 7:30 AM	0	6	0	3	0	0	0	0	0	0	0	0	61	3	3	0	4	113	0	2
7:30 AM - 7:45 AM	0	6	0	7	0	0	0	0	0	0	0	0	76	1	7	0	3	147	0	2
7:45 AM - 8:00 AM	0	1	0	3	0	0	0	0	0	0	0	0	83	12	0	0	3	156	0	4
8:00 AM - 8:15 AM	0	7	0	9	0	0	0	0	0	0	0	0	118	3	7	0	9	137	0	6
8:15 AM - 8:30 AM	0	4	0	6	0	0	0	0	0	0	0	0	122	4	7	0	8	114	0	4
8:30 AM - 8:45 AM	0	6	0	7	0	0	0	0	0	0	0	0	69	2	0	0	1	83	0	3
8:45 AM - 9:00 AM	0	2	0	3	0	0	0	0	0	0	0	0	72	0	6	0	2	71	0	0
TOTAL	**0**	**31**	**0**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**558**	**24**	**31**	**0**	**32**	**807**	**0**	**20**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	4	0	8	0	0	0	0	0	0	0	0	184	11	3	0	8	118	0	2
4:15 PM - 4:30 PM	0	2	0	8	0	0	0	0	0	0	0	0	160	7	0	0	4	110	0	2
4:30 PM - 4:45 PM	0	3	0	4	0	0	0	0	0	0	0	0	165	7	2	0	7	110	0	3
4:45 PM - 5:00 PM	0	2	0	7	0	0	0	0	0	0	0	0	153	11	0	0	9	88	0	1
5:00 PM - 5:15 PM	0	1	0	4	0	0	0	0	0	0	0	0	194	4	2	0	2	103	0	1
5:15 PM - 5:30 PM	0	4	0	15	0	0	0	0	0	0	0	0	166	12	1	0	6	107	0	0
5:30 PM - 5:45 PM	0	6	0	8	0	0	0	0	0	0	0	0	150	3	0	0	6	106	0	1
5:45 PM - 6:00 PM	0	6	0	7	0	0	0	0	0	0	0	0	123	14	0	0	6	112	0	0
TOTAL	**0**	**26**	**0**	**54**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1121**	**59**	**8**	**0**	**42**	**739**	**0**	**10**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	0	16	0	22	0	0	0	0	0	0	0	0	344	18	18	0	21	479	0	15
4:00 PM - 5:00 PM	0	11	0	24	0	0	0	0	0	0	0	0	573	30	5	0	25	368	0	8

	PHF	Trucks
AM	0.918	3.7%
PM	0.895	1.3%



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Bakersfield, CA 93301

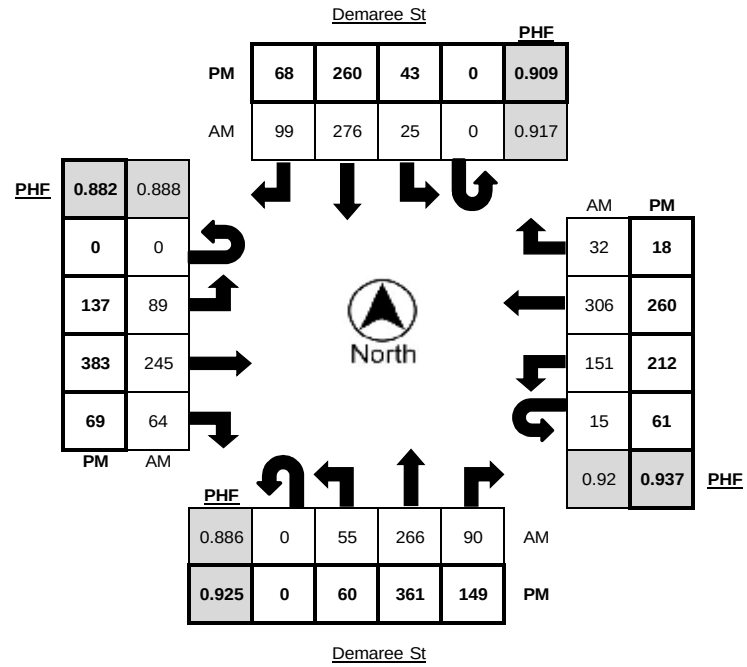
LOCATION Riggin Ave @ Demaree St
LATITUDE 36.3565
COUNTY Tulare
LONGITUDE -119.3320
COLLECTION DATE Thursday, May 27, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	7	66	9	0	0	3	48	26	0	0	8	25	14	3	1	27	72	4	3
7:15 AM - 7:30 AM	0	13	66	14	6	0	7	50	24	1	1	13	38	16	2	3	47	78	8	1
7:30 AM - 7:45 AM	0	13	83	19	6	0	7	85	33	3	0	33	54	20	7	4	42	89	14	3
7:45 AM - 8:00 AM	0	18	76	29	1	0	4	96	25	1	0	24	61	18	0	4	38	108	7	0
8:00 AM - 8:15 AM	0	19	60	26	3	0	9	76	30	3	0	23	78	22	7	4	39	83	9	4
8:15 AM - 8:30 AM	0	15	89	30	3	0	8	62	26	2	0	23	91	15	7	3	56	72	7	4
8:30 AM - 8:45 AM	0	8	47	16	2	0	6	44	16	2	0	21	43	14	0	12	45	53	7	7
8:45 AM - 9:00 AM	0	8	54	15	4	0	4	59	15	1	0	20	50	15	6	7	38	44	2	0
TOTAL	**0**	**86**	**467**	**137**	**23**	**0**	**43**	**451**	**170**	**13**	**1**	**142**	**381**	**115**	**28**	**35**	**288**	**519**	**51**	**21**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	16	101	37	1	0	21	70	21	1	0	46	112	20	1	1	59	83	7	1
4:15 PM - 4:30 PM	0	13	120	37	3	0	13	79	18	2	0	42	103	21	2	19	48	90	8	2
4:30 PM - 4:45 PM	0	15	80	39	2	0	12	79	20	1	0	36	113	19	1	16	71	80	9	2
4:45 PM - 5:00 PM	0	16	95	38	2	0	13	65	15	2	0	43	105	19	0	14	65	69	7	1
5:00 PM - 5:15 PM	0	21	100	58	1	0	12	69	21	0	0	47	124	22	2	15	56	74	2	1
5:15 PM - 5:30 PM	0	15	108	32	2	0	12	82	24	0	0	43	125	24	1	19	65	77	6	1
5:30 PM - 5:45 PM	0	18	114	45	3	0	14	84	19	1	0	25	89	15	0	23	60	81	6	1
5:45 PM - 6:00 PM	0	13	85	32	3	0	16	49	30	0	0	44	84	16	0	14	42	84	12	1
TOTAL	**0**	**109**	**695**	**274**	**17**	**0**	**96**	**500**	**144**	**7**	**0**	**282**	**740**	**134**	**7**	**104**	**403**	**552**	**49**	**10**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	0	55	266	90	12	0	25	276	99	9	0	89	245	64	18	15	151	306	32	11
4:45 PM - 5:45 PM	0	60	361	149	8	0	43	260	68	3	0	137	383	69	3	61	212	260	18	4

	PHF	Trucks
AM	0.973	2.9%
PM	0.955	0.9%



Metro Traffic Data Inc.
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Hanford, CA 93230

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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

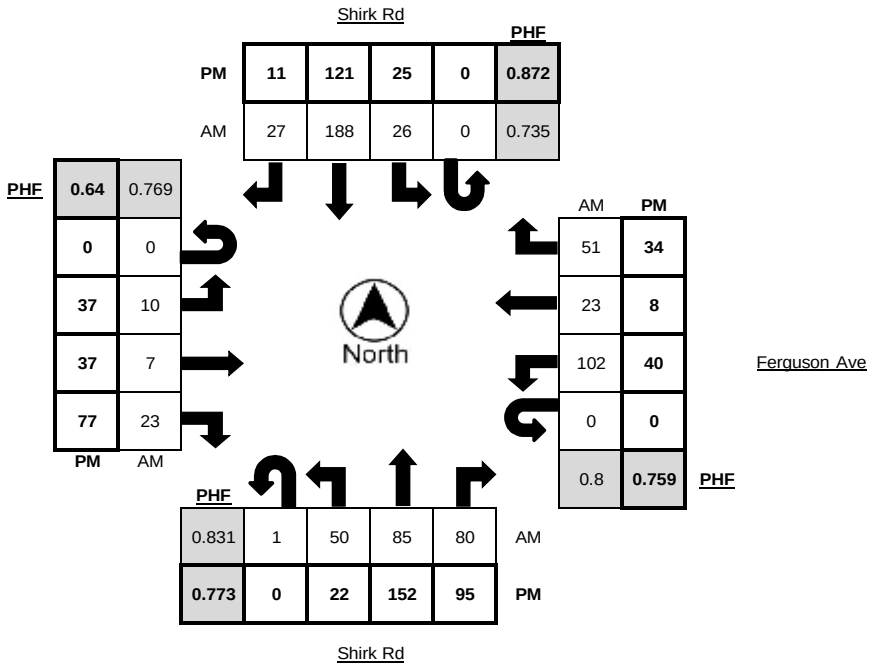
LOCATION Ferguson Ave @ Shirk Rd
LATITUDE 36.3510
COUNTY Tulare
LONGITUDE -119.3678
COLLECTION DATE Thursday, May 27, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	11	14	8	4	0	3	32	11	4	0	1	1	8	3	0	30	6	12	2
7:15 AM - 7:30 AM	0	10	21	17	3	0	1	35	7	4	0	0	0	2	1	0	39	1	11	0
7:30 AM - 7:45 AM	0	11	18	14	6	0	9	55	7	4	0	2	2	10	4	0	29	6	9	0
7:45 AM - 8:00 AM	0	19	23	30	4	0	2	77	11	4	0	2	0	2	3	0	34	10	17	0
8:00 AM - 8:15 AM	0	10	30	22	6	0	8	47	8	6	0	1	3	8	3	0	29	6	13	3
8:15 AM - 8:30 AM	1	15	23	22	3	0	10	28	4	4	0	6	2	6	7	0	21	4	18	2
8:30 AM - 8:45 AM	0	8	26	20	8	0	7	24	7	3	0	2	2	6	1	0	17	3	9	1
8:45 AM - 9:00 AM	0	15	24	9	10	0	9	26	6	6	0	4	0	7	4	0	18	6	13	0
TOTAL	**1**	**90**	**163**	**128**	**40**	**0**	**44**	**295**	**54**	**33**	**0**	**17**	**10**	**43**	**25**	**0**	**195**	**37**	**92**	**8**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	12	52	32	4	0	7	37	6	1	0	13	10	19	6	0	20	2	8	2
4:15 PM - 4:30 PM	0	4	30	21	2	0	8	19	4	3	0	7	9	22	1	0	9	2	10	0
4:30 PM - 4:45 PM	0	6	52	32	1	0	9	35	0	0	0	12	15	37	1	0	11	4	12	0
4:45 PM - 5:00 PM	0	2	34	20	0	0	4	42	2	2	0	9	7	7	2	0	4	0	8	0
5:00 PM - 5:15 PM	0	1	55	30	1	0	12	18	0	0	0	11	12	30	0	0	9	1	7	0
5:15 PM - 5:30 PM	0	3	45	20	2	0	7	23	1	1	0	4	7	2	0	0	10	1	11	0
5:30 PM - 5:45 PM	0	2	53	30	1	0	7	26	1	0	0	10	1	17	0	0	14	0	8	0
5:45 PM - 6:00 PM	0	1	30	28	1	0	7	22	7	2	0	4	1	9	1	0	13	2	7	0
TOTAL	**0**	**29**	**318**	**192**	**12**	**0**	**54**	**202**	**19**	**9**	**0**	**64**	**56**	**129**	**10**	**0**	**82**	**12**	**63**	**2**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	1	50	85	80	17	0	26	188	27	17	0	10	7	23	16	0	102	23	51	5
4:00 PM - 5:00 PM	0	22	152	95	7	0	25	121	11	6	0	37	37	77	9	0	40	8	34	2

	PHF	Trucks
AM	0.817	8.2%
PM	0.804	3.6%



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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

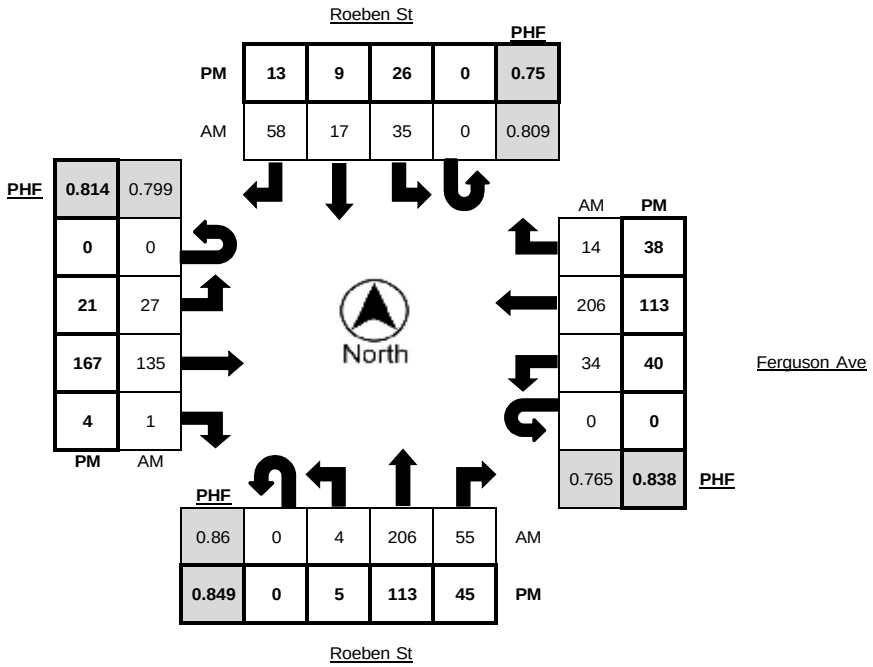
LOCATION Ferguson Ave @ Roeben St
LATITUDE 36.3511
COUNTY Tulare
LONGITUDE -119.3589
COLLECTION DATE Thursday, May 27, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	3	30	9	1	0	8	4	8	2	0	2	19	3	1	0	9	30	4	1
7:15 AM - 7:30 AM	0	2	37	13	0	0	6	0	6	0	0	2	18	2	0	0	9	37	2	1
7:30 AM - 7:45 AM	0	1	44	17	0	0	11	4	10	1	0	3	36	0	2	0	4	44	2	0
7:45 AM - 8:00 AM	0	0	68	13	0	0	13	7	11	0	0	4	23	1	1	0	15	68	8	0
8:00 AM - 8:15 AM	0	2	62	21	1	0	8	3	26	1	0	11	44	0	2	0	9	62	4	0
8:15 AM - 8:30 AM	0	1	53	10	0	0	7	4	17	1	0	11	45	0	2	0	9	53	1	2
8:30 AM - 8:45 AM	0	1	22	8	0	0	6	0	6	0	0	6	28	3	0	0	6	22	4	0
8:45 AM - 9:00 AM	0	0	31	14	2	0	4	2	3	0	0	1	15	0	3	0	9	31	1	0
TOTAL	**0**	**10**	**315**	**95**	**4**	**0**	**56**	**23**	**78**	**5**	**0**	**37**	**207**	**9**	**11**	**0**	**63**	**315**	**25**	**4**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	1	34	18	1	0	7	2	6	1	0	6	59	0	0	0	15	34	13	0
4:15 PM - 4:30 PM	0	0	37	13	0	0	10	2	6	0	0	4	42	1	0	0	8	37	7	0
4:30 PM - 4:45 PM	0	2	34	13	0	0	9	3	2	0	0	7	54	3	0	0	12	34	9	1
4:45 PM - 5:00 PM	0	2	19	6	0	0	3	2	1	0	0	7	29	0	0	0	9	19	13	1
5:00 PM - 5:15 PM	0	0	34	15	0	0	7	7	4	0	0	6	44	1	0	0	13	34	12	0
5:15 PM - 5:30 PM	0	0	30	6	0	0	6	7	4	0	0	7	32	1	1	0	19	30	8	0
5:30 PM - 5:45 PM	0	0	31	13	0	0	7	10	1	0	0	3	39	7	0	0	13	31	10	0
5:45 PM - 6:00 PM	0	1	21	14	0	0	7	6	7	0	0	6	32	0	0	0	12	21	9	0
TOTAL	**0**	**6**	**218**	**89**	**1**	**0**	**49**	**35**	**28**	**1**	**0**	**40**	**300**	**12**	**1**	**0**	**92**	**218**	**73**	**2**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	0	4	206	55	1	0	35	17	58	3	0	27	135	1	7	0	34	206	14	2
4:00 PM - 5:00 PM	0	5	113	45	1	0	26	9	13	1	0	21	167	4	0	0	40	113	38	2

	PHF	Trucks
AM	0.865	1.6%
PM	0.839	0.7%



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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

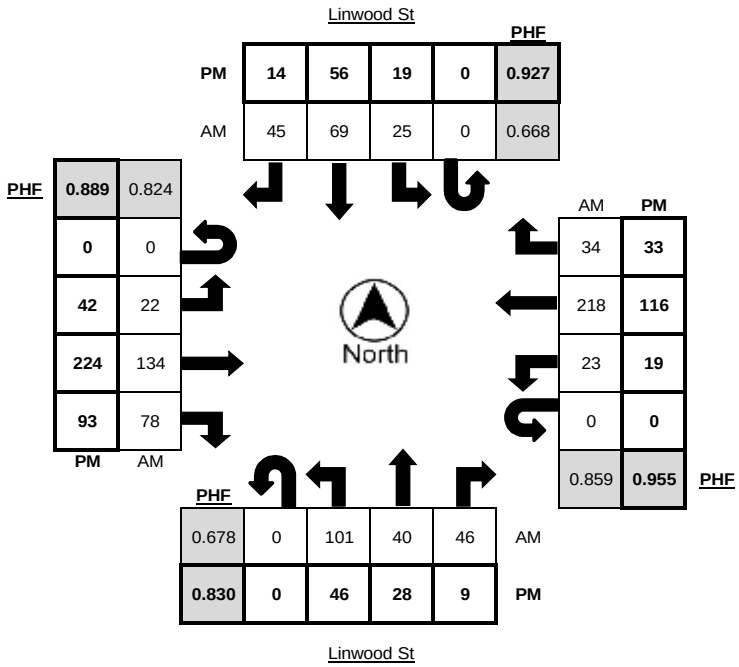
LOCATION Ferguson Ave @ Linwood St
LATITUDE 36.3490
COUNTY Tulare
LONGITUDE -119.3410
COLLECTION DATE Thursday, May 27, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	12	1	1	0	0	7	12	6	0	0	1	15	15	0	0	3	33	3	0
7:15 AM - 7:30 AM	0	20	2	1	1	0	4	12	8	1	1	3	29	16	1	0	3	41	2	0
7:30 AM - 7:45 AM	0	18	11	1	0	0	1	9	18	2	0	3	33	8	2	0	1	58	2	0
7:45 AM - 8:00 AM	0	27	3	15	0	0	11	20	20	0	0	2	46	20	1	0	4	83	4	0
8:00 AM - 8:15 AM	0	39	16	24	1	0	15	37	8	0	0	4	46	32	0	0	12	58	20	0
8:15 AM - 8:30 AM	0	33	16	13	0	0	2	14	7	1	0	15	30	32	3	0	9	54	13	0
8:30 AM - 8:45 AM	0	11	6	2	1	0	1	6	4	0	0	2	24	9	0	0	0	21	3	0
8:45 AM - 9:00 AM	0	14	3	0	0	0	1	9	4	0	0	2	27	9	1	0	3	41	3	0
TOTAL	**0**	**149**	**51**	**50**	**3**	**0**	**37**	**102**	**65**	**4**	**1**	**30**	**217**	**121**	**8**	**0**	**32**	**334**	**45**	**0**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	16	9	3	0	0	9	12	8	0	0	11	58	32	0	0	3	53	9	0
4:15 PM - 4:30 PM	0	13	3	4	0	0	2	14	7	0	0	18	61	20	0	0	7	35	8	0
4:30 PM - 4:45 PM	0	20	2	6	0	0	6	24	4	0	0	14	62	24	1	0	0	44	4	1
4:45 PM - 5:00 PM	0	21	11	0	0	0	4	8	6	0	0	13	48	25	0	0	3	30	4	1
5:00 PM - 5:15 PM	0	13	8	2	0	0	3	15	8	0	0	8	82	26	1	0	6	30	13	0
5:15 PM - 5:30 PM	0	16	9	1	0	0	3	16	2	0	0	15	66	21	0	0	1	32	13	0
5:30 PM - 5:45 PM	0	14	11	4	0	0	8	15	3	0	0	18	53	36	0	0	6	39	4	0
5:45 PM - 6:00 PM	0	11	4	2	0	0	7	19	2	0	0	8	59	24	0	0	9	34	8	0
TOTAL	**0**	**106**	**50**	**21**	**0**	**0**	**38**	**106**	**36**	**0**	**0**	**89**	**423**	**180**	**2**	**0**	**31**	**255**	**56**	**2**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	0	101	40	46	1	0	25	69	45	3	0	22	134	78	6	0	23	218	34	0
5:00 PM - 6:00 PM	0	46	28	9	0	0	19	56	14	0	0	42	224	93	1	0	19	116	33	0

	PHF	Trucks
AM	0.776	1.2%
PM	0.940	0.1%



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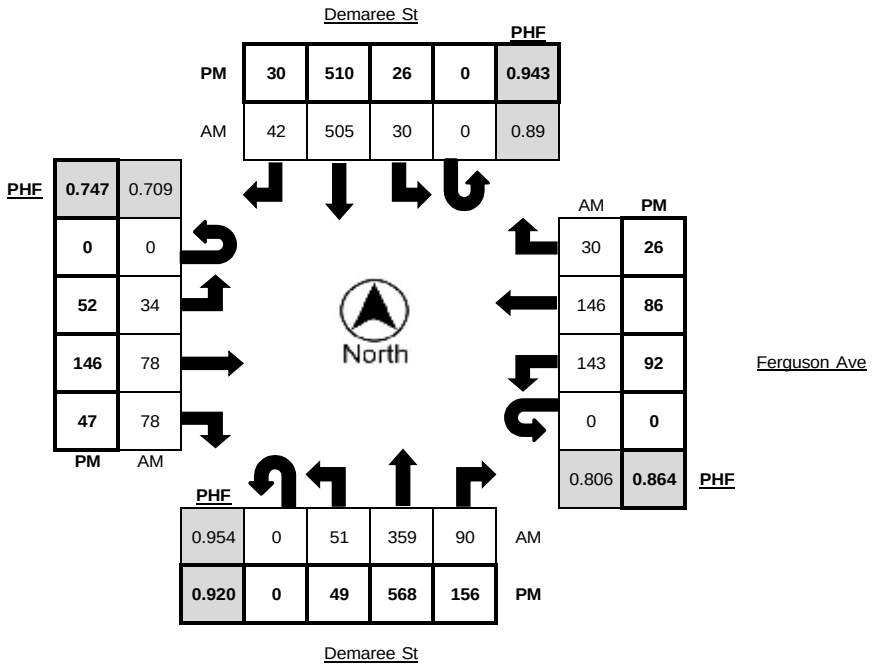
LOCATION Ferguson Ave @ Demaree St
LATITUDE 36.3491
COUNTY Tulare
LONGITUDE -119.3319
COLLECTION DATE Thursday, May 27, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	4	81	18	0	0	3	97	7	2	0	7	8	4	0	0	34	23	1	0
7:15 AM - 7:30 AM	0	7	77	13	4	0	2	118	6	0	0	8	20	12	0	0	47	32	7	0
7:30 AM - 7:45 AM	0	14	99	19	4	0	7	148	12	3	0	7	15	11	1	0	46	43	8	0
7:45 AM - 8:00 AM	0	14	107	24	1	0	8	170	9	0	0	8	33	12	0	0	46	65	3	0
8:00 AM - 8:15 AM	0	16	102	33	3	0	15	129	15	3	0	15	22	41	0	0	43	33	13	0
8:15 AM - 8:30 AM	0	15	107	29	3	0	4	137	13	3	0	9	21	27	2	0	30	29	11	0
8:30 AM - 8:45 AM	0	3	72	18	3	0	2	112	4	7	0	3	14	9	0	0	32	16	3	0
8:45 AM - 9:00 AM	0	9	66	18	4	0	0	107	6	1	0	6	13	9	1	0	18	26	3	0
TOTAL	**0**	**72**	**615**	**146**	**22**	**0**	**37**	**881**	**62**	**18**	**0**	**55**	**125**	**108**	**4**	**0**	**255**	**230**	**43**	**0**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	12	142	37	1	0	6	142	4	2	0	14	39	18	0	0	34	47	3	0
4:15 PM - 4:30 PM	0	15	162	39	3	0	8	123	11	2	0	12	46	7	0	0	27	20	1	0
4:30 PM - 4:45 PM	0	14	141	30	2	0	3	159	6	3	0	14	47	19	1	0	30	36	6	1
4:45 PM - 5:00 PM	0	8	151	38	2	0	6	141	7	2	0	12	36	16	0	0	32	23	8	0
5:00 PM - 5:15 PM	0	18	171	47	1	0	6	140	8	2	0	21	62	12	0	0	25	21	9	0
5:15 PM - 5:30 PM	0	21	170	53	2	0	11	156	7	2	0	15	43	18	0	0	26	16	7	0
5:30 PM - 5:45 PM	0	11	164	43	3	0	8	152	13	1	0	13	27	9	0	0	23	39	6	1
5:45 PM - 6:00 PM	0	14	135	25	2	0	3	106	12	2	0	14	43	9	0	0	27	21	4	0
TOTAL	**0**	**96**	**1070**	**270**	**16**	**0**	**44**	**968**	**58**	**16**	**0**	**98**	**298**	**92**	**1**	**0**	**195**	**193**	**39**	**2**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	0	51	359	90	11	0	30	505	42	9	0	34	78	78	3	0	143	146	30	0
4:45 PM - 5:45 PM	0	49	568	156	8	0	26	510	30	7	0	52	146	47	0	0	92	86	26	1

	PHF	Trucks
AM	0.918	1.5%
PM	0.955	0.9%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

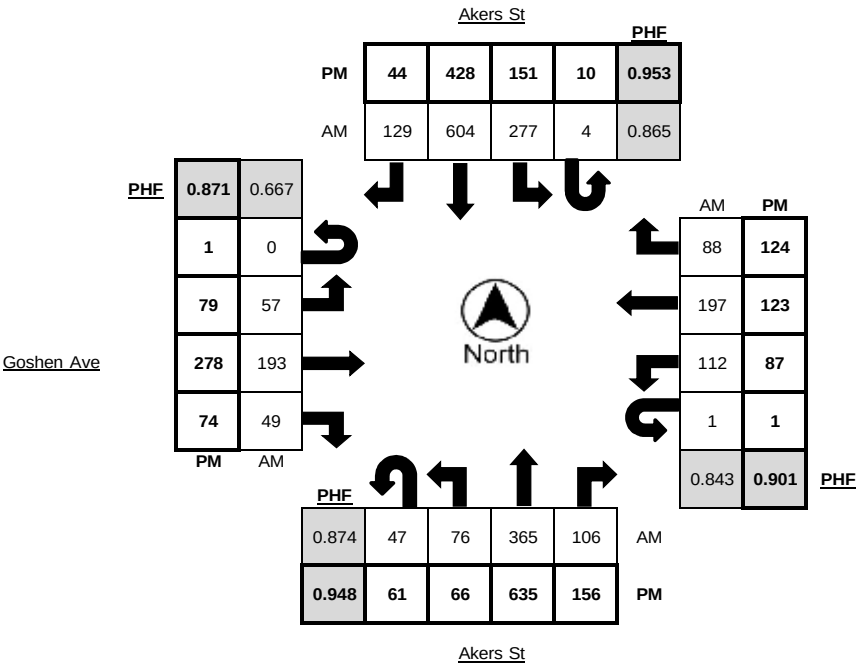
LOCATION Goshen Ave @ Akers St
LATITUDE 36.3418
COUNTY Tulare
LONGITUDE -119.3499
COLLECTION DATE Thursday, May 27, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	12	14	59	15	6	1	57	88	8	2	0	4	31	3	3	0	11	34	11	1
7:15 AM - 7:30 AM	20	24	59	13	0	1	44	105	21	0	0	11	37	9	0	0	25	41	12	3
7:30 AM - 7:45 AM	26	17	77	11	4	1	77	165	37	1	0	10	31	11	1	0	23	51	14	6
7:45 AM - 8:00 AM	14	24	90	32	3	1	81	189	51	1	0	11	47	15	0	1	34	68	26	3
8:00 AM - 8:15 AM	1	33	110	31	4	1	85	152	39	4	0	25	81	17	0	0	29	52	26	4
8:15 AM - 8:30 AM	10	10	124	43	4	1	62	158	15	0	0	17	53	11	0	0	37	46	30	4
8:30 AM - 8:45 AM	14	19	75	28	4	2	31	106	8	2	0	7	40	14	2	1	20	24	13	4
8:45 AM - 9:00 AM	10	23	73	22	2	1	44	105	9	8	0	8	37	8	1	0	19	30	15	2
TOTAL	**98**	**149**	**607**	**177**	**26**	**9**	**437**	**970**	**170**	**17**	**0**	**84**	**325**	**80**	**7**	**2**	**180**	**314**	**135**	**26**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	15	20	185	46	2	4	52	109	13	2	0	17	89	31	1	0	24	34	31	2
4:15 PM - 4:30 PM	22	19	173	48	1	3	34	129	17	0	1	24	58	20	2	0	25	37	40	2
4:30 PM - 4:45 PM	19	14	176	41	2	0	41	121	7	0	0	23	90	19	0	1	23	42	34	2
4:45 PM - 5:00 PM	11	20	165	36	0	3	40	112	12	3	0	23	68	12	0	0	23	22	32	0
5:00 PM - 5:15 PM	22	15	185	37	1	4	41	83	9	0	0	21	99	21	0	0	24	26	46	1
5:15 PM - 5:30 PM	12	20	189	46	0	6	44	90	10	1	0	23	85	12	0	1	30	32	53	1
5:30 PM - 5:45 PM	14	11	190	33	1	4	52	92	4	1	0	30	89	19	0	0	12	42	36	0
5:45 PM - 6:00 PM	14	8	149	26	0	2	42	80	7	1	0	21	91	20	0	0	28	29	40	0
TOTAL	**118**	**115**	**1283**	**286**	**7**	**25**	**313**	**742**	**71**	**8**	**1**	**165**	**609**	**139**	**3**	**2**	**172**	**240**	**283**	**8**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	47	76	365	106	15	4	277	604	129	6	0	57	193	49	1	1	112	197	88	16
4:00 PM - 5:00 PM	61	66	635	156	5	10	151	428	44	5	1	79	278	74	3	1	87	123	124	6

	PHF	Trucks
AM	0.923	1.6%
PM	0.952	0.8%



Metro Traffic Data Inc.
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Hanford, CA 93230

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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

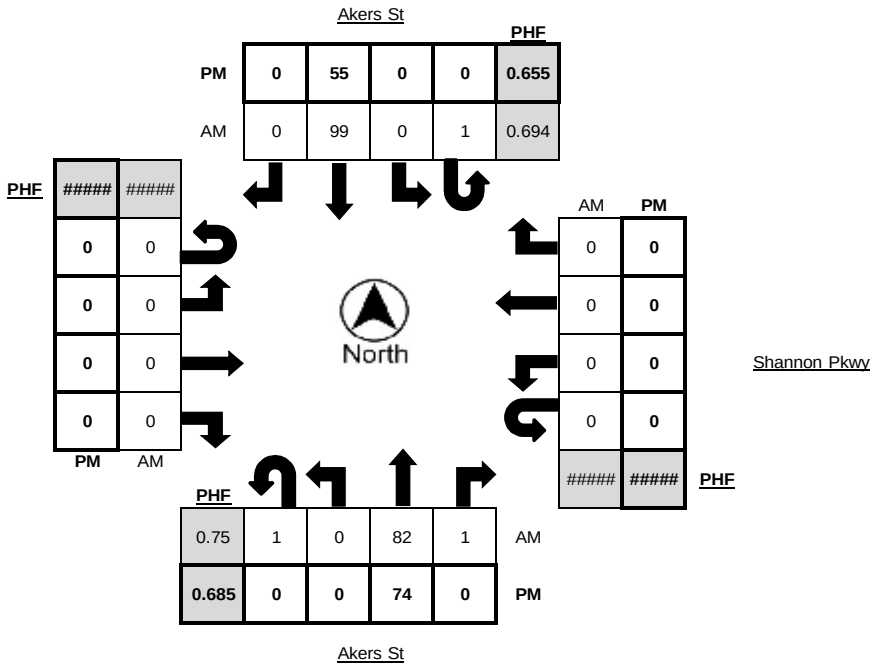
LOCATION Akers St @ Shannon Pkwy
LATITUDE 36.3619
COUNTY Tulare
LONGITUDE -119.3500
COLLECTION DATE Tuesday, September 14, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	0	16	1	0	0	0	14	0	0	0	0	0	0	0	0	1	0	0	0
7:15 AM - 7:30 AM	0	0	32	1	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	15	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	1	0	25	0	0	1	0	41	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	23	0	3	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	13	0	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	12	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	13	0	1	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**1**	**0**	**128**	**2**	**4**	**1**	**0**	**141**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	0	14	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	19	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	18	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	16	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	32	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	21	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	12	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	19	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**128**	**0**	**0**	**0**	**0**	**83**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	1	0	82	1	3	1	0	99	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 5:30 PM	0	0	74	0	0	0	0	55	0	0	0	0	0	0	0	0	0	0	0	0

	PHF	Trucks
AM	0.780	1.6%
PM	0.872	0.0%



Metro Traffic Data Inc.
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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

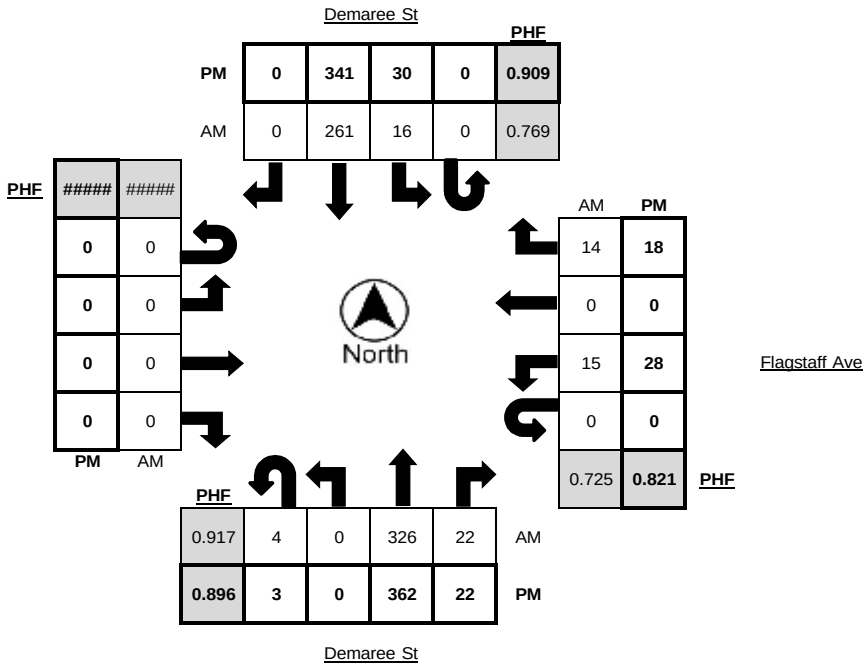
LOCATION Demaree St @ Flagstaff Ave
LATITUDE 36.3592
COUNTY Tulare
LONGITUDE -119.3321
COLLECTION DATE Tuesday, September 14, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	0	61	3	0	0	3	55	0	0	0	0	0	0	0	0	2	0	1	0
7:15 AM - 7:30 AM	1	0	91	9	4	0	1	62	0	0	0	0	0	0	0	0	2	0	2	0
7:30 AM - 7:45 AM	0	0	96	2	3	0	3	71	0	3	0	0	0	0	0	0	2	0	6	1
7:45 AM - 8:00 AM	2	0	102	7	1	0	6	99	0	3	0	0	0	0	0	0	6	0	2	0
8:00 AM - 8:15 AM	1	0	81	12	3	0	2	71	0	0	0	0	0	0	0	0	3	0	2	0
8:15 AM - 8:30 AM	1	0	99	4	1	0	7	60	0	0	0	0	0	0	0	0	6	0	6	1
8:30 AM - 8:45 AM	1	0	70	7	2	0	1	55	0	0	0	0	0	0	0	0	2	0	1	0
8:45 AM - 9:00 AM	0	0	54	11	4	0	3	60	0	2	0	0	0	0	0	0	6	0	4	0
TOTAL	**6**	**0**	**565**	**48**	**18**	**0**	**24**	**461**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**26**	**0**	**22**	**2**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	0	97	13	0	0	7	81	0	1	0	0	0	0	0	0	12	0	4	0
4:15 PM - 4:30 PM	0	0	70	4	1	0	3	100	0	1	0	0	0	0	0	0	4	0	6	0
4:30 PM - 4:45 PM	0	0	87	8	1	0	6	91	0	0	0	0	0	0	0	0	8	0	7	0
4:45 PM - 5:00 PM	0	0	95	6	0	0	11	100	0	0	0	0	0	0	0	0	7	0	8	0
5:00 PM - 5:15 PM	1	0	102	4	0	0	9	108	0	2	0	0	0	0	0	0	6	0	2	0
5:15 PM - 5:30 PM	0	0	106	8	0	0	8	95	0	0	0	0	0	0	0	0	8	0	6	0
5:30 PM - 5:45 PM	2	0	116	7	2	0	7	91	0	0	0	0	0	0	0	0	12	0	4	0
5:45 PM - 6:00 PM	1	0	100	7	0	0	1	83	0	1	0	0	0	0	0	0	9	0	2	0
TOTAL	**4**	**0**	**668**	**50**	**4**	**0**	**45**	**648**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**57**	**0**	**35**	**0**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	4	0	326	22	8	0	16	261	0	6	0	0	0	0	0	0	15	0	14	2
4:45 PM - 5:45 PM	3	0	362	22	2	0	30	341	0	2	0	0	0	0	0	0	28	0	18	0

	PHF	Trucks
AM	0.852	2.4%
PM	0.971	0.5%



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www.metrotrafficdata.com

Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

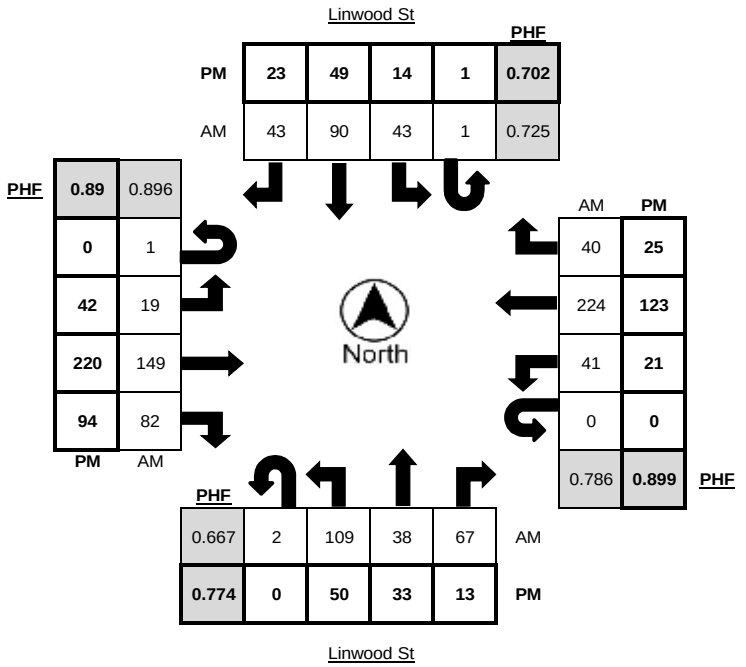
LOCATION Linwood St @ Ferguson Ave
LATITUDE 36.3491
COUNTY Tulare
LONGITUDE -119.3410
COLLECTION DATE Tuesday, September 14, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	15	9	3	0	0	4	7	6	2	0	3	23	14	2	0	3	32	3	2
7:15 AM - 7:30 AM	0	20	8	2	2	0	7	12	8	0	0	4	43	12	0	0	9	46	11	0
7:30 AM - 7:45 AM	0	43	6	12	0	0	8	30	15	1	1	2	32	24	0	0	4	57	8	0
7:45 AM - 8:00 AM	0	33	8	18	1	1	16	33	21	1	0	3	54	20	0	0	13	80	11	1
8:00 AM - 8:15 AM	1	36	20	37	0	0	23	35	8	0	0	8	41	25	2	0	21	74	18	0
8:15 AM - 8:30 AM	1	15	11	12	0	0	2	7	6	0	0	8	47	25	3	0	9	48	11	1
8:30 AM - 8:45 AM	0	11	8	3	1	0	6	8	9	0	0	8	24	14	1	0	2	30	6	0
8:45 AM - 9:00 AM	0	13	4	1	0	0	7	4	3	0	0	8	20	13	1	0	0	35	3	0
TOTAL	**2**	**159**	**64**	**76**	**4**	**1**	**64**	**117**	**66**	**4**	**1**	**40**	**244**	**127**	**9**	**0**	**54**	**347**	**60**	**4**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	21	19	8	0	0	6	12	0	0	0	8	62	25	1	0	6	36	8	0
4:15 PM - 4:30 PM	0	18	7	1	0	0	3	6	6	0	0	9	49	15	0	0	6	34	3	0
4:30 PM - 4:45 PM	0	9	11	6	0	0	2	13	6	0	0	8	62	26	3	0	7	42	6	0
4:45 PM - 5:00 PM	0	9	12	3	1	0	6	9	6	1	0	9	60	18	1	0	6	32	9	1
5:00 PM - 5:15 PM	0	18	6	2	0	0	4	25	6	1	0	9	72	30	0	0	3	37	6	0
5:15 PM - 5:30 PM	0	22	11	3	0	1	3	9	9	0	0	22	59	35	0	0	8	33	8	0
5:30 PM - 5:45 PM	0	24	8	2	0	0	2	12	1	0	0	9	54	24	0	0	8	34	9	0
5:45 PM - 6:00 PM	0	13	9	1	0	0	1	12	7	0	0	11	55	24	0	0	1	37	14	0
TOTAL	**0**	**115**	**70**	**24**	**1**	**1**	**25**	**84**	**35**	**2**	**0**	**74**	**410**	**171**	**5**	**0**	**39**	**244**	**55**	**1**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	2	109	38	67	1	1	43	90	43	2	1	19	149	82	5	0	41	224	40	2
4:30 PM - 5:30 PM	0	50	33	13	1	1	14	49	23	2	0	42	220	94	4	0	21	123	25	1

	PHF	Trucks
AM	0.793	1.1%
PM	0.917	1.1%



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www.metrotrafficdata.com

Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

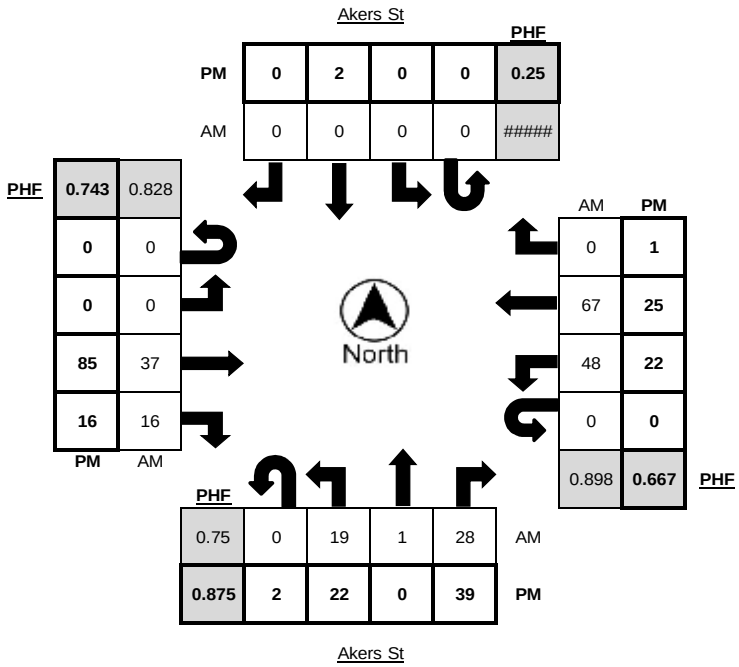
LOCATION Ave 320 @ Akers St
LATITUDE 36.3710
COUNTY Tulare
LONGITUDE -119.3500
COLLECTION DATE Wednesday, June 02, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	8	0	7	0	0	0	1	0	1	0	0	7	2	2	0	2	8	0	1
7:15 AM - 7:30 AM	0	8	1	9	0	0	0	0	0	0	0	0	8	1	1	0	16	19	0	2
7:30 AM - 7:45 AM	0	4	0	6	1	0	0	0	0	0	0	0	14	2	1	0	12	23	0	2
7:45 AM - 8:00 AM	0	3	0	8	0	0	0	0	0	0	0	0	9	9	1	0	12	25	0	1
8:00 AM - 8:15 AM	0	6	0	9	2	0	0	0	0	0	0	0	12	6	3	0	16	11	0	1
8:15 AM - 8:30 AM	0	8	0	12	1	0	0	0	0	0	0	0	7	6	2	0	8	11	0	1
8:30 AM - 8:45 AM	0	7	0	4	1	0	0	0	0	0	0	1	8	2	1	0	8	12	0	0
8:45 AM - 9:00 AM	0	6	3	3	0	0	1	0	0	1	0	0	14	4	1	0	1	7	1	1
TOTAL	**0**	**44**	**4**	**51**	**5**	**0**	**1**	**1**	**0**	**2**	**0**	**1**	**68**	**29**	**12**	**0**	**65**	**99**	**1**	**9**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	1	9	0	11	0	0	0	0	0	0	0	0	23	6	1	0	7	7	0	3
4:15 PM - 4:30 PM	1	4	0	12	0	0	0	2	0	0	0	0	15	4	0	0	6	8	1	1
4:30 PM - 4:45 PM	0	4	0	14	0	0	0	0	0	0	0	0	27	1	0	0	12	9	0	0
4:45 PM - 5:00 PM	0	7	0	9	0	0	0	0	0	0	0	0	33	7	1	0	1	4	0	0
5:00 PM - 5:15 PM	0	8	0	19	0	0	0	0	0	0	0	0	13	2	0	0	7	6	0	0
5:15 PM - 5:30 PM	0	6	0	8	0	0	0	0	0	0	0	0	12	8	0	0	6	9	0	0
5:30 PM - 5:45 PM	0	8	0	9	0	0	0	0	0	0	0	0	16	9	0	0	6	4	0	0
5:45 PM - 6:00 PM	0	2	0	6	0	0	0	0	0	0	0	0	24	2	0	0	2	3	0	0
TOTAL	**2**	**43**	**0**	**75**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**141**	**35**	**2**	**0**	**40**	**45**	**1**	**4**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	0	19	1	28	3	0	0	0	0	0	0	0	37	16	6	0	48	67	0	6
4:00 PM - 5:00 PM	2	22	0	39	0	0	0	2	0	0	0	0	85	16	2	0	22	25	1	4

	PHF	Trucks
AM	0.931	6.9%
PM	0.907	2.8%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

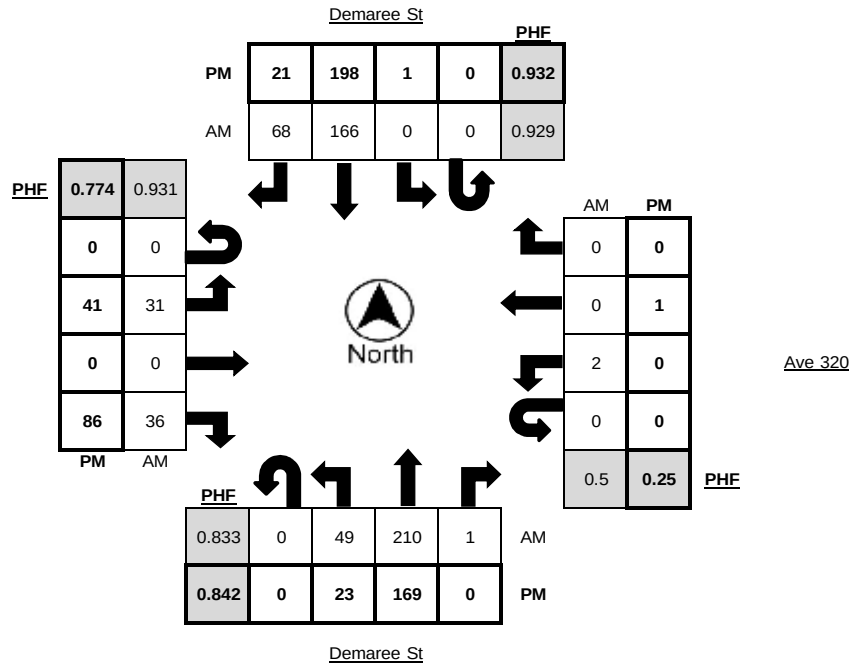
LOCATION Ave 320 @ Demaree St
LATITUDE 36.3710
COUNTY Tulare
LONGITUDE -119.3322
COLLECTION DATE Wednesday, June 02, 2021
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	12	60	0	2	0	0	32	6	2	0	8	0	8	2	0	1	0	0	0
7:15 AM - 7:30 AM	0	15	65	1	2	0	0	55	19	2	0	9	0	8	1	0	1	0	0	0
7:30 AM - 7:45 AM	0	13	67	0	3	0	0	44	21	2	0	8	0	12	1	0	0	0	0	0
7:45 AM - 8:00 AM	0	18	72	0	2	0	0	47	20	3	0	9	0	11	1	0	1	0	0	0
8:00 AM - 8:15 AM	0	12	38	0	0	0	0	46	20	3	0	9	0	12	3	0	0	0	0	0
8:15 AM - 8:30 AM	0	11	46	0	3	0	1	38	8	2	0	15	0	6	2	0	1	0	0	0
8:30 AM - 8:45 AM	0	9	36	0	2	0	0	42	8	3	0	7	0	6	0	0	0	0	1	0
8:45 AM - 9:00 AM	0	7	42	0	3	0	0	43	4	0	0	6	0	11	1	0	0	0	0	0
TOTAL	**0**	**82**	**369**	**1**	**17**	**0**	**1**	**299**	**91**	**17**	**0**	**62**	**0**	**62**	**11**	**0**	**4**	**0**	**1**	**0**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	4	46	0	1	0	1	61	6	2	0	11	0	23	1	0	0	1	0	1
4:15 PM - 4:30 PM	0	9	56	0	1	0	0	56	6	3	0	12	0	16	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	9	57	0	0	0	0	55	11	1	0	16	0	22	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	3	37	0	0	0	0	58	2	2	0	9	0	38	1	0	0	0	0	0
5:00 PM - 5:15 PM	0	6	45	0	1	0	0	59	7	1	0	13	0	13	0	0	1	0	0	0
5:15 PM - 5:30 PM	0	7	47	0	1	0	0	47	8	1	0	13	0	13	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	4	61	0	0	0	0	39	4	0	0	12	0	13	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	6	50	1	1	0	0	49	1	0	0	4	1	24	0	0	0	0	0	0
TOTAL	**0**	**43**	**346**	**1**	**5**	**0**	**1**	**367**	**39**	**10**	**0**	**77**	**1**	**140**	**2**	**0**	**1**	**1**	**0**	**1**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	0	49	210	1	7	0	0	166	68	10	0	31	0	36	6	0	2	0	0	0
4:00 PM - 5:00 PM	0	23	169	0	2	0	1	198	21	8	0	41	0	86	2	0	0	1	0	1

	PHF	Trucks
AM	0.914	4.1%
PM	0.925	2.4%



Appendix F

Sewer Calculations

July 25, 2023 – Revision 1

City of Visalia, Community Development Department
Paul Bernal, Director
315 E. Acequia Ave.
Visalia, CA 93291

Re: Crandell Subdivision – Biochemical Oxygen Demand and Total Suspended Solids Calculations

Mr. Bernal,

We have prepared the calculations below using the best available standards and practices that were able to find. Our Calculations reference a report prepared by Provost and Prichard titled Local Discharge Limits Development, that was prepared for the City of Visalia in March 2012, see Appendix A. We have also utilized the City of Visalia's Sewer Master Plan, December 2005, to calculate an assumed volume of effluent for the proposed project. See below for the equation that will be utilized to calculate the assumed BOD and TSS that will be generated by the proposed project.

Equation 1 – AHL based on WDR limits

$$AHL_{wdr} = \frac{(8.34)(C_{wdr})(Q_{wwtf})}{(1-R_{wwtf})}$$

Where:

AHL_{wdr} = AHL based on WDR limit, lb/day
C_{wdr} = WDR permit limit, mg/L
Q_{wwtf} = WWTF average flow rate, MGD
R_{wwtf} = Plant removal efficiency, as decimal
8.34 = Conversion factor

Table 3-2 shows the allowable headworks loading for the POCs based upon the limitations contained in the WDR.

Table 3-2: WDR Based AHLs

Pollutant	WWTF Flow (MGD) (Qwwtf)	WDR Limit (mg/l) (Cwdr)	Select Removal Efficiency (from list)	Removal Efficiency (%) (Rwwtf)	Allowable Headworks (lbs/day)
Lead	12.18	0.05	User Entered	62.19	13.434
Ammonia	12.18	25	User Entered	43.89	4525.7652
BOD	12.18	30	User Entered	98.81	256354.5218
TSS	12.18	30	User Entered	98.65	226555.1037

The Crandell Subdivision is a new project being proposed by Wathen Castanos Homes. The project is Located on Demaree Street, North of Riverway Drive. The project is proposing to develop 17.4 Gross Acres of Low Density Residential, 25.4 Gross Acres of Medium Density Residential, and 7.6 Gross Acres of High Density

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Residential. Using table 3.4 from the City of Visalia's Sewer Master Plan, the expected flow rates can be calculated using the Adjusted Flow Coefficients that have been provided.

Table 3.4 Average Sewer Flow Coefficients
Sewer System Master Plan
City of Visalia

Land Use Designation	Land Use Code	Urban Development Boundary [1,2] (ga)	Existing Sewered Service Area [3,4] (ga)	% of Total Service Area (%)	1994 Flow Coeff [5] (gpd/ga)	Calculated Flows (gpd)	Adjusted Flow Coefficient (gpd/ga)	2003 ADWF Balance (gpd)	% of Total ADWF (%)
Residential									
Rural	RA	1,007	413	2%	500	206,390	400	165,112	1%
Low Density	RLD	14,138	8,423	43%	1,000	8,422,750	800	6,738,200	55%
Medium Density	RMD	879	536	3%	1,800	964,296	1,300	696,436	6%
High Density	RHD	315	165	1%	2,500	413,200	2,000	330,560	3%

Land Use	Acreage	Adjusted Flow Coefficient	Expected Flow (GPD)
Low Density	17.4	800	13,920
Medium Density	25.4	1300	33,020
High Density	7.6	2000	15,200
		Total Expected Flow:	62,140 GPD

Utilizing the equation and coefficients previously provided, we can calculate BOD as Follows:

$$AHL_{wdr} = \frac{(8.34)(C_{wdr})(Q_{wwtf})}{(1 - R_{wwtf})}$$

Where:

$$C_{wdr} = 30$$
$$Q_{wwtf} = .062\ MGD$$
$$R_{wwtf} = .9881$$

$$\boldsymbol{BOD = 1303.56\ Lb/Day}$$

Utilizing the equation and coefficients previously provided, we can calculate TSS as Follows

$$AHL_{wdr} = \frac{(8.34)(C_{wdr})(Q_{wwtf})}{(1 - R_{wwtf})}$$

Where:

$$C_{wdr} = 30$$
$$Q_{wwtf} = .062\ MGD$$
$$R_{wwtf} = .9865$$

$$\boldsymbol{TSS = 1149.07\ Lb/Day}$$

Please review the calculations provided and if there are any additional questions or information needed, please feel free to contact me at (559)802-3052.

Steven J. Macias, PE
Civil Engineer

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Appendix A

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Local Discharge Limits Development

Visalia, California

DRAFT

March 16, 2011

Prepared for:

City of Visalia

Prepared by:

Provost & Pritchard Consulting Group
Clovis, California

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ABBREVIATIONS

ACGIH..... American Conference of Governmental Industrial Hygienists
AHL ..... Allowable Headworks Loading
BOD ..... Biochemical Oxygen Demand
CFR.....Code of Federal Regulations
CTR..... California Toxics Rule
EPA.....United States Environmental Protection Agency
FOG ..... Fats, Oils, and Grease
GPD ..... Gallons Per Day
IPP ..... Industrial Pretreatment Program
IU.....Industrial User
MAHL .....Maximum Allowable Headworks Loading
MAIL..... Maximum Allowable Industrial Loading
MGD..... Million Gallons per Day
NIOSH..... National Institute for Occupational Safety and Health
OSHA..... Occupational Safety and Health Administration
POC .....Pollutant of Concern
PPB.....Parts Per Billion
RWQCB ..... Regional Water Quality Control Board
SIU .....Significant Industrial User
STEL .....Short Term Exposure Limit
TSS ..... Total Suspended Solids
TWA-TLV ..... Threshold Limit Value – Time Weighted Average
WDR.....Waste Discharge Requirements
WQ ..... Water Quality
WQS.....Water Quality Standard
WWTF .....Wastewater Treatment Facility
*..... Multiplication

EXECUTIVE SUMMARY

The City of Visalia has an approved Industrial Pretreatment Program. As such, the City is required to maintain and enforce local limits on the significant industrial users that discharge to the City's wastewater treatment facility. The existing local limits were developed in 1992. The Regional Water Quality Control Board is requiring the City to re-evaluate their local limits.

A list of potential pollutants of concern was developed based on available sampling and treatment facility data. A sampling plan was developed and implemented to collect additional data necessary to perform the local limits evaluation. Using the information collected, the local limits were evaluated. The results of this evaluation are summarized in Table ES-1.

Table ES-1: Local Limits Summary

Pollutant	Existing Local Limit	Calculated Local Limit	Allocation Method	Proposed Local Limit
Arsenic	0.05 mg/L	0.05 mg/L	Uniform	0.05 mg/L
Boron	1.60 mg/L	Not needed		None
Cadmium	0.02 mg/L	0.08 mg/L	IU Specific	0.02 mg/L
Chromium	3.44 mg/L	5.59 mg/L	Uniform	3.44 mg/L
Copper	1.97 mg/L	2.14 mg/L	IU Specific	1.97 mg/L
Cyanide	0.16 mg/L	36.97 mg/L	IU Specific	0.16 mg/L
Lead	0.30 mg/L	0.48 mg/L	IU Specific	0.30 mg/L
Mercury	0.02 mg/L	0.04 mg/L	IU Specific	0.02 mg/L
Nickel	2.86 mg/L	5.53 mg/L	IU Specific	2.86 mg/L
Silver	0.76 mg/L	12.40 mg/L	IU Specific	0.76 mg/L
Zinc	0.64 mg/L	9.12 mg/L	IU Specific	0.64 mg/L
Pentachlorophenol	0.15 mg/L	Not needed		None
Oil & Grease	200 mg/L	609 mg/L	Uniform	200 mg/L
BOD_5	18,161 lb/day	89,538 lb/day[1]	Not applicable	18,161 lb/day
TSS	41,633 lb/day	41,633 lb/day[1]	Not applicable	41,633 lb/day
[1]Plant design capacity				

1 INTRODUCTION

The City of Visalia operates a wastewater treatment facility (WWTF) that collects the municipal wastewater generated from the City of Visalia and the Goshen Community Services District. The WWTF treats typical domestic wastes as well as waste generated from commercial and industrial users. Several of the industrial users served by the WWTF meet the definition of a Significant Industrial Users (SIUs) as defined by the United States Environmental Protection Agency (EPA) in 40 CFR 403.3. SIUs are defined as:

- Industries subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N;
- Any industry discharging an average of 25,000 gallons per day (gpd) or more of process wastewater;
- Any industry that contributes a waste stream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the WWTF; or
- Any industry designated by the Control Authority to have a reasonable potential to adversely affect the WWTF's operation.

Table 1-1 lists the current SIUs and the reason they are considered SIUs.

Table 1-1: Current SIUs

SIU Name	SIU Reason	SIU Name	SIU Reason
Advanced Food Products	Discharge volume	Mission Uniform	Discharge volume
Basic Chemical Solutions	Categorical – 40 CFR 442	Pregis Innovative Packaging	Potential to impact WWTF
California Dairies	Discharge volume	Provisions Food	Discharge volume
ATC Plastics (previously Heller Performance Polymers)	Potential to impact WWTF	Visalia Custom Chrome	Categorical – 40 CFR 433
JM Eagle	Potential to impact WWTF	Voltage Multipliers Inc.	Categorical – 40 CFR 469
Josten's Print. And Pub.	Potential to impact WWTF	Western Milling	Potential to impact WWTF
Kawneer Company	Categorical – 40 CFR 433		

Due to the fact that there are SIUs discharging to the WWTF, the City of Visalia is required to have an approved Industrial Pretreatment Program (IPP). The City's IPP was approved by the Regional Water Quality Control Board (RWQCB) on May 5, 1983.

Part of the IPP requirements is the development and implementation of local limits. Local limits are designed to protect the operations of the WWTF and to ensure that its discharges, whether liquid, solid, or air, comply with State and Federal requirements. The EPA published the *Local Limits Development Guidance* document in July 2004. This document outlines the procedures to develop local limits. In developing local limits the following factors may need to be considered:

- the WWTF's efficiency in treating and removing pollutants;
- the WWTF's history of complying with the Waste Discharge Requirements;
- sludge disposal methods; and
- worker health and safety concerns.

The current local limits were developed in 1992. The purpose of this project is to re-evaluate those local limits and investigate the need for stricter or additional local limits.

1.1 WWTF Information

The WWTF treats sewage from the City of Visalia and the community of Goshen. The combined population is approximately 125,000 with a service area of 30 square miles. The WWTF has a design capacity of 22 million gallons per day (MGD). The average flow for the period of January 2007 to August 2010 was 12.18 MGD, with a maximum one day flow of 14.79 MGD.

Sewage from the main trunklines enters two wet wells prior to entering the headworks of the WWTF. The headworks consists of bar screens. From the headworks, the flow goes to a set of four primary sedimentation basins. From the primary basins, the wastewater is sent to one of four plastic media filled trickling filters. From the trickling filters the water is sent to the aeration basins. The aeration basins precede the secondary sedimentation basins. After the sedimentation basins, the water is chlorinated prior to discharge. The WWTF has the ability to discharge to Mill Creek, agricultural lands, and to onsite percolation ponds. A majority of the flow is discharged to Mill Creek, with the onsite percolation ponds being the discharge point when Mill Creek is not used.

Sludge collected from the primary and secondary treatment processes is thickened in a pair of gravity belt thickeners. After thickening, the sludge is fed to one of six anaerobic digesters. After digestion, liquid from the digesters is discharged to one of two sludge pits for settling of solids. Supernatant from the sludge pits is pumped back to the headworks. The solids from the digesters are pumped to thirty unlined sludge drying

beds. After 60 to 90 days, the sludge is transferred to an onsite stockpile area. Once per year the stockpiled sludge is land applied to farmland in Merced County.

There are several streams from within the plant that are sent back to the wet wells prior to the headworks for treatment. These recycle streams are gravity thickener filtrate, secondary clarifier scum, supernatant from the sludge pits, decant from the sludge drying beds, and septage waste and chemical toilet waste. The samples obtained for the plant influent include these flows.

The WWTF accepts septage from licensed haulers. The waste from the septage haulers is discharged at a point prior to the headworks to assure treatment by the entire WWTF process. The WWTF accepts approximately 11,599 gallons per day of septage from haulers.

The processes employed in the treatment process will affect certain pollutant local limits due to inhibition levels that can disrupt the treatment process. Additionally, the ability of the WWTF to remove pollutants will affect the local limits. The interference and inhibition values are detailed in Section 2.4.3. The WWTF removal efficiencies are detailed in Section 3.1.

2 POLLUTANTS OF CONCERN

Pollutants of Concern (POCs) are those pollutants that need to be controlled to protect the WWTF, its workers, and the disposal of the treated wastewater effluent and biosolids. POCs are pollutants that may cause pass through or interference at the WWTF, cause problems in the collection system, or cause problems with the WWTF's ability to dispose of the generated biosolids.

The following sections discuss the various reasons a pollutant may be included in the list of POCs. There may be numerous reasons to consider a pollutant a POC. The fact that a pollutant is a POC does not mean that a local limit must be developed for it. Whether a local limit is needed for a POC is discussed in Section 4. If a pollutant is determined to be a POC, data must be collected for it and a detailed evaluation of the POC must be performed.

2.1 EPA POCs

The EPA has established 15 pollutants that are often found in treatment plant effluent and biosolids. The EPA considers these 15 pollutants to be POCs and need to be evaluated as part of any local limits evaluation. These pollutants are listed in Table 2-1.

Table 2-1: EPA POCs

EPA POCs	
Arsenic	Cadmium
Chromium	Copper
Cyanide	Lead
Mercury	Nickel
Silver	Zinc
Molybdenum	Selenium
BOD_5	Total Suspended Solids
Ammonia	

2.2 Existing Local Limits

The City of Visalia has established local limits for several pollutants. These pollutants are also considered POCs. Table 2-2 lists the pollutants that the City of Visalia currently regulates through a local limit.

Table 2-2: Existing Local Limits POCs

Local Limits POCs	
Arsenic	Boron

Cadmium	Chromium
Copper	Cyanide
Lead	Mercury
Nickel	Silver
Zinc	Pentachlorophenol
Oil & Grease	

2.3 Waste Discharge Requirement POCs

On September 21, 2006, the RWQCB issued Waste Discharge Requirements (WDR) for the City of Visalia WWTF. The WDR contains pollutant limitations that the WWTF must comply with on the discharge to Mill Creek, the Use Area (agricultural lands), or to the onsite disposal ponds. The pollutants that are regulated on the effluent are considered POCs. Table 2-3 lists the pollutants that have limitations listed in the WDR.

Table 2-3: WDR POCs

WDR POCs	
BOD5	TSS
Oil & Grease	Chlorides
Lead	Ammonia

2.4 Other Reasons for POCs

There are several other reasons that a pollutant may be included on the POC list according to the EPA Guidance Manual, including: water quality criteria, biosolid land application restrictions, and treatment plant inhibitions. There are numerous pollutants that are listed under these criteria. However, to be considered a POC at least one of the following conditions must be met:

- The maximum pollutant concentration in the plant effluent is more than one-half the allowable effluent concentration required to meet a water quality criteria limit;
- The maximum pollutant concentration in the sludge is more than one-half the applicable biosolids residual disposal limit;
- The maximum pollutant concentration in a plant influent grab sample is more than one-half the inhibition threshold; or
- The maximum pollutant concentration in a plant influent grab composite sample is more than one-fourth the inhibition threshold.

2.4.1 Water Quality Criteria

In the WDR for the WWTF, the RWQCB stated that Mill Creek's beneficial uses are warm freshwater habitat, water contact recreation, and human health protection (consumption of aquatic organisms only). There is normally no flow in Mill Creek upstream of the WWTF, so the discharge from the WWTF constitutes the flow in Mill Creek. Therefore, there is no dilution of the WWTF effluent in Mill Creek. There are numerous constituents that have limitations based on the beneficial uses in Mill Creek.

Additionally, the State of California has limitations for water used for agricultural uses. There are numerous constituents that have limitations based on the potential agricultural use of the treated effluent.

For both the beneficial and agricultural use protection, only pollutants in concentrations that are greater than 50% of the water quality standard are considered POCs.

2.4.2 Biosolids Land Application Criteria

The City of Visalia disposes of biosolids by land application. The WWTF must prohibit industrial users from discharging pollutants that could cause a violation of applicable sludge disposal regulations. The national sludge standards are contained in 40 CFR 503. These limitations are based on human health and environmental risks and include numerical pollutant limits, operational standards, management practices, and requirements for sampling, record keeping, and reporting. The State of California has adopted the federal standards in 40 CFR 503. Additionally, the State of California has land application standards set forth in Title 22. The pollutants contained in the 503 and Title 22 regulations are considered for evaluation as a POC. In order to be considered a POC, the maximum pollutant concentration in the sludge must be more than one-half the applicable biosolids residual disposal limit.

2.4.3 Interference and Inhibition Criteria

The pretreatment regulations set forth by the EPA in 40 CFR 403.5(a) state that there must be prohibitions against the discharge of pollutants from an industrial user that may cause interference at the WWTF. Interference, as defined by the EPA, means a discharge that inhibits or disrupts a treatment plant and causes a violation of the WWTF's WDR or biosolids sludge requirements. The EPA recommends that pollutants be considered POCs if they have caused interference in the past. Based on the City of Visalia WWTF historical data, there have been no pollutants that have caused interference at the plant in the past.

There are certain pollutants that may not cause an effluent discharge or biosolids disposal violation but that may cause disruptions to the WWTF operations. The EPA *Local Limits Development Guidance* document contains a list of pollutants and inhibition concentrations for various treatment plant processes. The pollutants that have inhibition concentrations are considered POCs if the following criteria have been met:

- The maximum pollutant concentration in a plant influent grab sample is more than one-half the inhibition threshold; or

- The maximum pollutant concentration in a plant influent grab composite sample is more than one-fourth the inhibition threshold.

2.4.4 Protection of Treatment Works, Collection System, and Workers

Explosive and flammable pollutants can threaten the integrity of the collection system and the health and safety of the WWTF workers. Under the right conditions, the accumulation of such pollutants can produce explosions or fires. Local limits may be needed if these pollutants are expected to be discharged from industrial users.

The fume toxicity levels of certain pollutants indicate the likelihood that a WWTF worker will suffer adverse health effects when the level is approached or exceeded. Volatile organic compound vapors are the major concern because they can be toxic and carcinogenic, and may produce chronic health affects after various periods of exposure. The EPA *Local Limits Development Guidance* document list the concentrations for the various exposure levels set forth by the National Institute for Occupational Safety and Health (NIOSH), Occupational Health and Safety Administration (OSHA), and American Conference of Governmental Industrial Hygienists (ACGIH). Local limits may be needed if these pollutants are expected to be discharged from industrial users at concentrations that may pose a risk to WWTF workers.

2.5 Summary of Controlling Limits

Based on the criteria discussed in Section 2, several potential pollutants of concern and their associated controlling limit and inhibition limit were tabulated and summarized in Table 2-4.

Table 2-4: Summary of Controlling Limits

Primary Compound Name	Controlling Limit (ppb)	Source	Inhibition Criteria (ppb)	Treatment Process
Ammonia	3,500	Fresh Water Aquatic 4-day average (USEPA)	480,000[4]	Activated Sludge
Arsenic	100	Agricultural WQ Limit	100[1,2,3]	Activated Sludge
Boron	700	Agricultural WQ Limit		
Cadmium	0.27	Fresh Water Aquatic 4-day average (USEPA)	1,000[2,3]	Activated Sludge
Chloride	106,000	Agricultural WQ Limit		
Chromium VI			1,000[2,3]	Activated Sludge

Copper	9.3	Fresh Water Aquatic 4-day average (CTR)	1,000[1,2,3]	Activated Sludge
Cyanide (total)	5.2	Fresh Water Aquatic 4-day average (CTR)	100[1,2,3]	Activated Sludge
Lead	3.2	Fresh Water Aquatic 4-day average (CTR)	1,000[3]	Activated Sludge
Mercury			100[2,3]	Activated Sludge
Molybdenum	10	Agricultural WQ Limit		
Nickel	52	Fresh Water Aquatic 4-day average (CTR)	1,000[2,3]	Activated Sludge
Oil and Grease	10,000	Waste Discharge Requirements		
Selenium	5.0	Fresh Water Aquatic 4-day average (CTR)		
Silver	3.8	Fresh Water Aquatic Instantaneous Max (USEPA)	13,000[3]	Anaerobic Digestion
Sodium	69,000	Agricultural WQ Limit		
Zinc	120	Fresh Water Aquatic 4-day average (CTR)	300[3]	Activated Sludge
Biochemical Oxygen Demand (BOD)	30,000	Waste Discharge Requirements		
Primary Compound Name	**Controlling Limit (ppb)**	**Source**	**Inhibition Criteria (ppb)**	**Treatment Process**
Total Suspended Solids (TSS)	30,000	Waste Discharge Requirements		
Chloroform	60	Exposure Limits	1,000[2]	Anaerobic Digestion
Ethylbenzene	1,659	Exposure Limits	200,000[3]	Activated Sludge
Toluene	2,075	Exposure Limits	200,000[3]	Activated Sludge

1) Jenkins, D.I., and Associates. 1984. *Impact of Toxics on Treatment Literature Review*.
2) Russell, L.L., C.B. Cain, and D.I. Jenkins. 1984. *Impacts of Priority Pollutants on Publicly Owned Treated Works Processes: A Literature Review*. 1984 Purdue Industrial Waste Conference.
3) Anthony, R.M., and L.H. Briemburst. 1981. *Determining Maximum Influent Concentrations of Priority Pollutants for Treatment Plants*. Journal Water Pollution Control Federation 53(10):1457-1468.
4) U.S. EPA. 1986. *Working Document; Interferences at Publicly Owned Treatment Works*. September 1986.

2.6 Evaluation of Existing Data

The City of Visalia provided the following data for the local limits evaluation:

- Daily WWTF flow and influent/effluent sampling

- WWTF Priority Pollutant scans
- Biosolids sampling
- SIU sampling
- Septage sampling

The sampling data provided above was for the period of January 2007 to September 2010. This data is shown in Appendices A, B, C, and F.

The existing data was compared to the values in Table 2-4 and the criteria in Section 2.5. Table 2-5 lists the pollutants of concern and the reason the pollutant is being considered a POC.

Table 2-5: Pollutants of Concern

Pollutant	Effluent concentration more than half of effluent standard	Sludge concentration more than half of sludge disposal standard	Influent concentration more than 25% of inhibition concentration	Required by EPA	Existing local limit
BOD				X	X
TSS				X	X
Ammonia				X	
FOG					X
Arsenic				X	X
Boron					X
Cadmium				X	X
Chromium			X	X	X
Copper	X			X	X
Lead	X			X	X
Mercury				X	X
Molybdenum	X	X		X	
Nickel				X	X
Selenium	X			X	
Silver	X			X	X
Sodium	X				
Zinc		X	X	X	X
Chloride	X				
Cyanide	X		X	X	X
Bis (2-ethylhexyl) phthalate	X				
Pentachlorophenol					X
Tetrachloroethene	X				
Edosulfan II	X				
Endrin	X				
Heptachlor	X				
Bromodichloromethane	X				
Bromoform	X				
4,4' DDE	X				

2.7 Sampling Plan

A review of the existing City of Visalia information showed there was additional information needed to complete the local limits evaluation.

The City of Visalia has no recent (last five years) monitoring data for residential or commercial users. A sampling plan was needed to address additional information needed for the evaluation. The residential samples were taken to cover every day of the week over at least a two week period (Week 1 – Monday, Wednesday, Friday, Sunday, Week 2 – Tuesday, Thursday, Saturday). The exact dates were adjusted as needed to fit into existing staff work schedules and the availability of the laboratory to perform the required tests. For the sampling at the WWTF, samples were obtained covering at least two different days. No sampling was performed within 48 hours of a measurable precipitation event. Commercial sampling required only one day of sampling. Table 2-6 lists the pollutants that should be monitored, the location, number of samples, test methods, and the preferred detection limit. Test methods listed are EPA test methods except those beginning with SM, which are Standard Methods test procedures.

Residential Sampling

The residential sampling was conducted to cover geographically diverse areas of the City. Based on the layout of the wastewater collection system the following locations were sampled to provide the residential sampling information:

- Comstock
- Hillsdale
- Evergreen
- Mary and County Center

Commercial Sampling

A majority of the commercial establishments within the City are restaurants. The sampling for the commercial loading was conducted at a commercial shopping area that includes some restaurants. The following location was sampled to represent commercial loading:

- Linwood
- Alley off Court

Treatment Plant

Samples and estimates of flow for the following processes were obtained:

- Plant influent
- Primary effluent
- Secondary effluent prior to chlorination
- Feed to anaerobic digesters

- Plant final effluent

Treatment Plant Influent Return Flows

Samples and estimates of flow for the following processes were obtained:

- Scum funnels
- GBT Filtrate
- Supernatant Pit
- SRS (Septage) Station

In addition to the sampling information, the basis-of-design for the treatment plant is needed to ascertain the design loadings for the non-conservative pollutants (ammonia, BOD, and TSS).

Table 2-6: Sampling Plan Information

Pollutant	Residential (seven sampling events)	Commercial (one sampling event)	Treatment Plant (two sampling events)	Treatment Plant influent return flow streams (two sampling events)	Test Method	Preferred Detection Limit
BOD	X	X	X	X	SM 5210B	2 mg/L
TSS	X	X	X	X	SM 2540D	1 mg/L
Ammonia	X	X	X	X	350.1	1 mg/L
FOG (HEM)	X	X	X	X	1664	10 mg/L
Arsenic	X		X	X	200.8	1 ug/L
Boron	X		X	X	200.7	0.05 mg/L
Cadmium	X		X	X	200.8	0.05 ug/L
Chromium	X		X	X	200.8	1 ug/L
Copper	X		X	X	200.8	2 ug/L
Lead	X		X	X	200.8	0.5 ug/L
Mercury	X	X	X	X	1631	0.5 ng/L
Molybdenum	X		X	X	200.8	1 ug/L
Nickel	X		X	X	200.8	1 ug/L
Selenium	X		X	X	200.8	1 ug/L
Silver	X		X	X	200.8	1 ug/L
Pollutant	Residential (seven sampling events)	Commercial (one sampling event)	Treatment Plant (two sampling	Treatment Plant influent return flow streams	Test Method	Preferred Detection Limit

			events)	(two sampling events)		
Sodium	X		X	X	200.7	1 mg/L
Zinc	X		X	X	200.8	5 ug/L
Chloride	X	X	X	X	300.0	2.0 mg/L
Cyanide	X		X	X	SM4500	5 ug/L
Bis (2-ethylhexyl) phthalate	X		X	X	625	5 ug/L
Pentachlorophenol	X		X	X	625	10 ug/L
Tetrachloroethene	X		X	X	624	0.5 ug/L
Endosulfan II	X		X	X	608	0.05 ug/L
Endrin	X		X	X	608	0.05 ug/L
Heptachlor	X		X	X	608	0.05 ug/L
Bromodichloromethane	X		X	X	624	0.5 ug/L
Bromoform	X		X	X	624	0.5 ug/L
4,4' DDE	X		X	X	608	0.05 ug/L

3 MAXIMUM ALLOWABLE HEADWORKS LOADINGS

After determining the POCs (Table 2-5) and gathering the additional sampling data, the maximum allowable headworks loadings (MAHLs) can be calculated. The MAHL is the estimated upper limit of a particular pollutant loading to the WWTF intended to prevent pass through or interference. The MAHL for each POC is calculated by the following steps:

1. Calculation of WWTF removal efficiency for the POC;

2. Calculate the allowable headworks loading (AHLs) for the various environmental criteria (such as WDR limits, water quality limits, sludge disposal limits, inhibition values);

3. Designate the MAHL as the most stringent allowable headworks loading for the POC.

3.1 WWTF Removal Efficiencies

Based on the sampling data collected from the City of Visalia WWTF, the removal efficiencies for the POCs were calculated. The removal efficiencies shown in Table 3-1 are the average removal percentages for each POC. The detailed data used to calculate the removal efficiencies is contained in Appendix A. For purposes of calculating the removal efficiencies, any reported concentration that was below the detection limit was assumed to be half the detection limit. Any negative removal efficiencies were assumed to be zero.

Table 3-1: Summary of WWTF Removal Efficiencies

POC	Removal Efficiency	Number of Samples
BOD	98.81%	567
TSS	98.65%	919
Ammonia	44%	88
FOG	96%	4
Arsenic	29%	4
Boron	2%	6
Cadmium	67%[1]	6
Chromium	20%	6
Copper	88%	6
Lead	62%	6

POC	Removal Efficiency	Number of Samples
Mercury	95%	5
Molybdenum	35%	4
Nickel	37%	6
Selenium	40%	6
Silver	40%	6
Sodium	3%	5
Zinc	79%	6
Chloride	0%	5
Cyanide	69%[1]	5
Bis (2-ethylhexyl) phthalate	83%	6
Pentachlorophenol	0%[2]	6
Tetrachloroethene	0%[2]	6
Endosulfan II	0%[2]	4
Endrin	0%[2]	5
Heptachlor	0%[2]	5
Bromodichloromethane	0%[2]	6
Bromoform	0%[2]	6
4,4’ DDE	0%[2]	6

[1]EPA median removal percentage used since most results were below detection limit.

[2]Influent and Effluent samples were all below detection limit.

The sampling plan results showed that for all samples, pentachlorophenol, tetrachloroethene, endosulfan II, endrin, heptachlor, bromodichloromethane, bromoform, and 4,4’ DDE were not present in the influent or effluent of the WWTF. Therefore, these pollutants were removed from consideration as POCs.

Bis (2-ethylhexyl) phthalate was detected above the detection limit in some of the regular monthly WWTF effluent samples. However, the field blanks obtained during those sampling events showed concentrations greater than the effluent sample values. This data is shown in Appendix B. Based on this information, the effluent concentrations for bis (2-ethylhexyl) phthalate are considered to be below the detection limit. Therefore, bis (2-ethylhexyl) phthalate was removed from consideration as a POC.

The sampling plan results also showed that the return of WWTF recycle flows to the headworks had a minimal impact on the headworks loading to the WWTF. The return flows are from the scum funnels, GBT filtrate, supernatant pit and the septage receiving station. These flows are estimated to make up approximately 2% of the headworks flow.

3.2 Discharge Permit and Water Quality AHLs

The RWQCB issued the WWTF Waste Discharge Requirements (WDR) that regulates the discharge from the plant. The AHL for POCs with WDR limitations is shown in Equation 1.

Equation 1 – AHL based on WDR limits

$$AHL_{wdr} = \frac{(8.34)(C_{wdr})(Q_{wwtf})}{(1-R_{wwtf})}$$

Where:

AHL_{wdr} = AHL based on WDR limit, lb/day
C_{wdr} = WDR permit limit, mg/L
Q_{wwtf} = WWTF average flow rate, MGD
R_{wwtf} = Plant removal efficiency, as decimal
8.34 = Conversion factor

Table 3-2 shows the allowable headworks loading for the POCs based upon the limitations contained in the WDR.

Table 3-2: WDR Based AHLs

Pollutant	WWTF Flow (MGD) (Qwwtf)	WDR Limit (mg/l) (Cwdr)	Select Removal Efficiency (from list)	Removal Efficiency (%) (Rwwtf)	Allowable Headworks (lbs/day)
Lead	12.18	0.05	User Entered	62.19	13.434
Ammonia	12.18	25	User Entered	43.89	4525.7652
BOD	12.18	30	User Entered	98.81	256354.5218
TSS	12.18	30	User Entered	98.65	226555.1037

The WDR issued does not contain limitations for all the POCs mentioned in Table 2-5. For the pollutants without limitation in the WDR, the EPA guidance recommends using AHLs based on State or Federal Water Quality Standards. The water quality standards can be based upon short term aquatic life affects (acute) or long term affects (chronic). Water quality standards can also be based upon human health effects. The human health effects can be from drinking of the water, recreational use of the water, or consumption of aquatic life. According to the WDR, the discharge to Mill Creek is

protected for agricultural water supply, water contact and noncontact water recreation, warm freshwater habitat, and groundwater recharge. The criteria used for this comparison is discussed in Section 2.4. The AHL for POCs that have water quality standards is shown in Equation 2.

Equation 2 – AHL based on Water Quality limits

$$AHL_{wq} = \frac{(8.34)[(C_{wq})*(Q_{str}+Q_{wwtf}) - (C_{str}*Q_{str})]}{(1-R_{wwtf})}$$

Where:

AHL_{wq} = AHL based on water quality criteria, lb/day
C_{wq} = State or Federal water quality standard, mg/L
C_{str} = Receiving stream background concentration, mg/L
Q_{wwtf} = WWTF average flow rate, MGD
Q_{str} = Receiving stream (upstream) flow rate, MGD
R_{wwtf} = Plant removal efficiency, as decimal
8.34 = Conversion factor

The equation allows for instantaneous mixing of the discharge with the receiving stream. Since there is normally no flow in Mill Creek upstream of the WWTF discharge, the receiving stream concentration and receiving stream flow were considered to be zero.

Table 3-3 shows the allowable headworks loading for the POCs based upon the water quality standards.

Table 3-3: Water Quality (Chronic) Based AHLs

Pollutant	WWTF Flow (MGD) (Qwwtf)	Receiving Stream Flow (MGD) (Qstr1)	Receiving Stream Concentration (mg/l) (Cstr)	Chronic WQS (mg/l) (Cwq)	Removal Efficiency (%) (Rwwtf)	Allowable Headworks (lbs/day)
Arsenic	12.18	0.00	0	0.15000	28.98	21.4539
Cadmium	12.18	0.00	0	0.00027	67.00	0.0831
Copper	12.18	0.00	0	0.00930	88.14	7.9671
Cyanide	12.18	0.00	0	0.00520	69.00	1.7039
Lead	12.18	0.00	0	0.00320	62.19	0.8598
Mercury	12.18	0.00	0	0.00077	95.17	1.6183
Nickel	12.18	0.00	0	0.05200	37.22	8.4145
Selenium	12.18	0.00	0	0.00500	40.26	0.8501
Zinc	12.18	0.00	0	0.12000	79.37	59.0870
Ammonia	12.18	0.00	0	25.00000	43.89	4525.7652
Chloride	12.18	0.00	0	230.00000	0.00	23363.676

Table 3-4 shows the allowable headworks loading for the POCs based upon the agricultural water supply standards.

Table 3-4: Water Quality (Agricultural Water Supply) Based AHLs

Pollutant	WWTF Flow (MGD) (Qwwtf)	Receiving Stream Flow (MGD) (Qstr2)	Receiving Stream Conc (mg/l) (Cstr)	Agricultural WQS (mg/l) (Cwq)	Removal Efficiency (%) (Rwwtf)	Allowable Headworks (lbs/day)
Arsenic	12.18	0.00	0	0.10000	28.98	14.3026
Molybdenum	12.18	0.00	0	0.01000	35.00	1.5628
Boron	12.18	0.00	0	0.70000	1.85	72.4485
Chloride	12.18	0.00	0	106.00000	0.00	10767.6072

Table 3-5 shows a summary of the water quality based AHLs. The most restrictive (lowest) loading for each POC has been highlighted.

Table 3-5: Summary of Water Quality Based AHLs

Pollutant	Allowable Headworks (NPDES) (lbs/day)	Allowable Headworks (CHRONIC) (lbs/day)	Allowable Headworks (ACUTE) (lbs/day)	Allowable Headworks (WATER QUALITY) (lbs/day)
Arsenic	-	23.4539	14.3026	14.3026
Cadmium	-	0.0831	-	0.0831
Copper	-	7.9671	-	7.9671
Cyanide	-	1.7039	-	1.7039
Lead	13.4337	0.8598	-	0.8598
Mercury	-	1.6183	-	1.6183
Molybdenum	-	-	1.5628	1.5628
Nickel	-	8.4145	-	8.4145
Selenium	-	0.8501	-	0.8501
Zinc	-	59.0870	-	59.0870
Ammonia	4525.7652	4525.7652	-	4525.7652
BOD	256354.5218	-	-	256354.5218
TSS	226555.1037	-	-	226555.1037
Boron	-	-	72.4485	72.4485
Chloride	-	23363.6760	10767.6072	10767.6072
FOG	22573.6000	-	-	22573.6000

3.3 Biosolids Disposal Based AHLs

The biosolids produced at the treatment plant are eventually land applied. The Federal sludge disposal regulations, 40 CFR Part 503, establish limitations for certain metals that are normally seen in industrial discharges. Additionally, California Title 22 contains additional pollutant limitations on the land application of biosolids. These limitations are converted to AHLs for the POCs using Equation 3.

Equation 3 – AHL based on Biosolids Disposal limits

$$AHL_{bsol} = \frac{(0.0022)(C_{bsol})(Q_{bsol})}{(1-R_{wwtf})}$$

Where:

AHL_{bsol} = AHL based on biosolids disposal limit, lb/day
C_{bsol} = Biosolids limitation, mg/kg dry sludge
Q_{bsol} = Total sludge flow to disposal, dry metric tons per day
R_{wwtf} = Plant removal efficiency, as decimal
0.0022 = Conversion factor

Table 3-6 shows a summary of the biosolids disposal based AHLs. Where a limitation existed for a pollutant in both 503 and Title 22, the most stringent (lowest) limit is used in the table. Details of the Title 22 land application calculations are contained in Appendix C.

Table 3-6: Summary of Biosolids Disposal Based AHLs

Pollutant	WWTF Flow (MGD) (Qwwtf)	Sludge Flow to Disposal (MTD) (Qbsol)	Land Application Standard (mg/kg) (Cbsol)	Removal Efficiency (%) (Rwwtf)	Allowable Headworks (lbs/day) (Lhw)
Arsenic	12.18	4.358636364	41(1)	28.98	1.3568
Cadmium	12.18	4.358636364	17.86074(2)	67.00	0.2556
Chromium	12.18	4.358636364	2833.905(2)	20.41	133.173
Copper	12.18	4.358636364	1500(1)	88.14	16.3185
Lead	12.18	4.358636364	300(1)	62.19	4.6255
Mercury	12.18	4.358636364	17(1)	95.17	0.1713
Molybdenum	12.18	4.358636364	18(1)	35.00	0.4931
Nickel	12.18	4.358636364	420(1)	37.22	10.8190
Selenium	12.18	4.358636364	35.21127(2)	40.26	0.8387
Silver	12.18	4.358636364	566.781(2)	40.42	13.4456
Zinc	12.18	4.358636364	2800(1)	79.37	33.8280

(1)Based on 40 CFR Part 503 regulations.(2)Based on California Title 22 calculations.

3.4 Inhibition Based AHLs

Certain pollutant concentrations in wastewater or sludge can cause operational problems for biological treatment processes. The City of Visalia WWTF operates the following biological processes that may be subject to inhibition issues: activated sludge, trickling filters, and anaerobic sludge digestion. The WWTF has not had historical issues with pollutants causing upsets of the biological processes. The EPA guidance document contains inhibition values for pollutants that have the potential to upset biological treatment processes. These inhibition limitations are converted to AHLs for the POCs using Equation 4, Equation 5, and Equation 6.

Equation 4 – AHL based on Activated Sludge Inhibition Values

$$AHL_{act} = \frac{(8.34)(C_{act})(Q_{wwtf})}{(1-R_{prim})}$$

Where:

AHL_{act} = AHL based on activated sludge inhibition, lb/day
C_{act} = Inhibition criterion for activated sludge, mg/L
Q_{wwtf} = WWTF average flow rate, MGD
R_{prim} = Removal efficiency from headworks to primary treatment effluent, as decimal (assumed using EPA removal values)
8.34 = Conversion factor

Table 3-7 shows the calculated AHLs based on activated sludge inhibition values.

Table 3-7: Activated Sludge Inhibition Based AHLs

Pollutant	WWTF Flow (MGD) (Qwwtf	Activated Sludge Inhibition Level (mg/l) (Cact)	Removal Efficiency (%) (Rprim)	Allowable Headworks (lbs/day) (Lhw)	User Entered Removal Efficiency (%)
Arsenic	12.18	0.1	91.90	125.4089	91.90
Cadmium	12.18	1	90.00	1015.812	90.00
Chromium	12.18	1	49.30	200.3574	49.30
Copper	12.18	1	96.10	2604.646	96.10
Cyanide	12.18	0.1	90.00	101.5812	90.00
Lead	12.18	1	80.00	507.9060	80.00
Mercury	12.18	0.1	93.20	149.3841	93.20
Nickel	12.18	1	55.20	226.7438	55.20
Zinc	12.18	0.3	96.00	761.8590	96.00
Ammonia	12.18	480	0.00	48758.98	0.00

Equation 5 – AHL based on Trickling Filter Inhibition Values

$$AHL_{tric} = \frac{(8.34)(C_{tric})(Q_{wwtf})}{(1-R_{prim})}$$

Where:

AHL_{tric} = AHL based on trickling filter inhibition, lb/day
C_{tric} = Inhibition criterion for trickling filters, mg/L
Q_{wwtf} = WWTF average flow rate, MGD
R_{prim} = Removal efficiency from headworks to primary treatment effluent, as decimal (assumed using EPA removal values)
8.34 = Conversion factor

Table 3-8 shows the calculated AHLs based on trickling filter inhibition values.

Table 3-8: Trickling Filter Inhibition Based AHLs

Pollutant	WWTF Flow (MGD) (Qwwtf)	Trickling Filter Inhibition Level (mg/l) (Ctric)	Select Removal Efficiency (from list)	Removal Efficiency (%) (Rprim)	Allowable Headworks (lbs/day) (Lhw)	EPA Guidance Removal Efficiency (%)
Chromium	12.18	3.5	Default (Through Trick. Fil.)	55.00	790.076	55.00
Cyanide	12.18	30	Default (Through Trick. Fil.)	59.00	7432.77	59.00

Equation 6 – AHL based on Anaerobic Digestion Inhibition Values (Conservative Pollutants)

$$AHL_{dig} = \frac{(8.34)(C_{diginb})(Q_{dig})}{R_{wwtf}}$$

Where:

AHL_{dig} = AHL based on anaerobic digestion inhibition, lb/day
C_{diginb} = Inhibition criterion for sludge digester, mg/L
Q_{dig} = Sludge flow rate to digester, MGD
R_{wwtf} = Plant removal efficiency, as decimal
8.34 = Conversion factor

Table 3-9 shows the calculated AHLs based on anaerobic digester inhibition values for conservative pollutants.

Table 3-9: Anaerobic Digester Inhibition (Conservative Pollutants) Based AHLs

Pollutant	WWTF Flow (MGD) (Qwwtf)	Sludge Flow to Digester (MGD) (Qdig)	Anaerobic Digester Inhibition Level (mg/l) (Ccrit)	Removal Efficiency (%) (Rwwtf)	Allowable Headworks (lbs/day) (Lhw)
Arsenic	12.18	0.03833	1.6	28.98	1.7651
Cadmium	12.18	0.03833	20	67.00	9.5425
Chromium	12.18	0.03833	130	20.41	203.661
Copper	12.18	0.03833	40	88.14	14.5071
Lead	12.18	0.03833	340	62.19	174.764
Nickel	12.18	0.03833	10	37.22	8.5876
Silver	12.18	0.03833	13	40.42	10.2811
Zinc	12.18	0.03833	400	79.37	161.1051

Equation 7 – AHL based on Anaerobic Digestion Inhibition Values (Non-Conservative Pollutants)

$$AHL_{dig} = \frac{(C_{diginb}) * L_{inf}}{(C_{dig})}$$

Where:

AHL_{dig} = AHL based on anaerobic digestion inhibition, lb/day
C_{diginb} = Inhibition criterion for sludge digester, mg/L
C_{dig} = Existing pollutant level in sludge, mg/L
L_{inf} = WWTF influent loading, lb/day

Table 3-10 shows the calculated AHLs based on anaerobic digester inhibition values for non-conservative pollutants.

Table 3-10: Anaerobic Digester Inhibition (Non-Conservative Pollutants) Based AHLs

Pollutant	WWTF Flow (MGD) (Qwwtf)	Average Influent Conc (mg/l)	Average Influent Load (lbs/day) (Linf)	Digester Pollutant Conc (mg/l) (Cdig)	Anaerobic Digester Inhibition Level (mg/l) (Cdiginb)	Allowable Headworks (lbs/day) (Lhw)
Cyanide	12.18	2.50	253.9530	3.73	1	68.0839
Ammonia	12.18	95.50	9701.0046	4214.25	1500	3452.929

Table 3-11 shows a summary of the inhibition based AHLs. The most restrictive (lowest) loading for each POC has been highlighted.

Table 3-11: Summary Inhibition Based AHLs

Pollutant	Allowable Headworks (ACT. SLUDGE) (lbs/day)	Allowable Headworks (TRICK. FILTER) (lbs/day)	Allowable Headworks (DIG. - CONSERV.) (lbs/day)	Allowable Headworks (DIG. - NON-CONS.) (lbs/day)	Allowable Headworks (INHIB) (lbs/day)
Arsenic	125.4089	-	1.7651	-	1.7651
Cadmium	1015.812	-	9.5425	-	9.5425
Chromium	200.3574	790.0760	203.6605	-	200.3574
Copper	2604.646	-	14.5071	-	14.5071
Cyanide	101.5812	7432.770	-	68.0839	68.0839
Lead	507.9060	-	174.7642	-	174.7642
Mercury	149.3841	-	-	-	149.384
Nickel	226.7438	-	8.5876	-	8.5876
Silver	-	-	10.2811	-	10.2811
Zinc	761.8590	-	161.1051	-	161.1051
Ammonia	48758.97	-	-	3452.9292	3452.92

3.5 POC Maximum Allowable Headworks Loadings

The maximum allowable headworks loading is the lowest of the AHLs calculated for each POC. Influent loadings below the MAHL will lead to compliance with the AHLs based on all environmental and treatment plant criteria. Table 3-12 shows a summary of AHLs as well as the MAHL for each POC.

Table 3-12: Maximum Allowable Headworks Loadings

Pollutant	Allowable Headworks (WATER QUALITY) (lbs/day)	Allowable Headworks (INHIBITION) (lbs/d)	Allowable Headworks (SLUDGE) (lbs/d)	Maximum Allowable Headworks (MAHL - lbs/d)
Arsenic	14.3026	1.7651	1.3568	1.3568
Cadmium	0.0831	9.5425	0.2556	0.0831
Chromium	-	200.3574	133.1733	133.1733
Copper	7.9671	14.5071	16.3185	7.9671
Cyanide	1.7039	68.0839	-	1.7039
Lead	0.8598	174.7642	4.6255	0.8598
Mercury	1.6183	149.3841	0.1713	0.1713
Molybdenum	1.5628	-	0.4931	0.4931
Nickel	8.4145	8.5876	10.8190	8.4145
Selenium	0.8501	-	0.8387	0.8387
Silver	-	10.2811	13.4456	10.2811
Zinc	59.0870	161.1051	33.8280	33.8280
Ammonia	4525.7652	3452.9292	-	3452.9292
BOD	256354.5218	-	-	256354.5218
TSS	226555.1037	-	-	226555.1037
Boron	72.4485	-	-	72.4485
Chloride	10767.61	-	-	10767.61
FOG	22573.6000	-	-	22573.6000

4 DESIGNATING LOCAL LIMITS

After the calculation of the maximum allowable headworks loadings for the POCs, the POCs that require a local limit must be determined. The EPA guidance document recommends developing local limits for those POCs where the average influent loading exceeds 60% of the MAHL. Table 4-1 shows a comparison of MAHLs with the average headworks loadings for each POC. The highlighted POCs are those whose average influent loadings exceed 60% of the MAHL and will be evaluated for local limits.

Table 4-1: Comparison of MAHLs with Average Headworks Loadings

Pollutant	Maximum Allowable Headworks (MAHL - lbs/d)	Average Influent Loading (lbs/day)	Average Percent Loaded (%)
Arsenic	1.3568	1.0959	80.7732
Cadmium	0.0831	0.1060	127.5781
Chromium	133.1733	0.4472	0.3358
Copper	7.9671	4.0814	51.2283
Cyanide	1.7039	0.2541	14.9108
Lead	0.8598	0.4302	50.0408
Mercury	0.1713	0.0058	3.3700
Molybdenum	0.4931	0.2642	53.5811
Nickel	8.4145	0.5098	6.0590
Selenium	0.8387	0.0825	9.8349
Silver	10.2811	0.7183	6.9870
Zinc	33.8280	15.8541	46.8668
Ammonia	3452.9292	2471.1932	71.5680
BOD	256354.5218	33233.2884	12.9638
TSS	226555.1037	35048.0272	15.4700
Boron	72.4485	0.1075	0.1483
Chloride	10767.6072	5447.2961	50.5897
FOG	22573.6000	5793.2500	25.6638

Based on the information shown in Table 4-1, there is no local limit necessary for molybdenum, selenium, boron, and chloride. No local limit is necessary for ammonia since a review SIU data for ammonia shows little or no ammonia in the industrial discharge and the influent loading is 71.6% of the MAHL for ammonia.

4.1 Residential and Background Loadings

There are many other sources of wastewater to the WWTF besides the regulated industrial user flows. These other sources include domestic (residential) waste, storm water, inflow and infiltration, and commercial dischargers. Because the WWTF does not control the discharges from these sources, the loading contributed from these uncontrolled sources must be deducted from the MAHL to determine the loading available for industrial dischargers.

The City of Visalia has a separated sewer system so storm water is conveyed via a dedicated piping system to minimize the volume of storm water entering the sewer collection system and the WWTF. Additionally, the collection system does not have significant volumes of inflow and infiltration. Therefore, the loadings from storm water and inflow and infiltration to the WWTF are considered to be negligible.

The City of Visalia has performed sampling in residential and commercial areas to determine the expected loadings from these sources. This sampling data is contained in Appendix D. The loading from these sources is calculated by Equation 8.

Equation 8 – Residential and Background Loading Calculation

$$L_{unc} = (C_{unc}) * (Q_{unc}) * 8.34$$

Where:

L_{unc} = Uncontrolled loading, lb/day
C_{unc} = Uncontrolled pollutant concentration, mg/L
Q_{unc} = Uncontrolled flow rate, MGD
8.34 = Unit conversion factor

4.2 Septage Loadings

The City of Visalia WWTF accepts septage waste from licensed haulers. Since the septage haulers are not subject to local limits like industrial users, the loading the WWTF receives from septage haulers needs to be subtracted from the MAHLs when determining the loadings available for industrial users. The City of Visalia samples some septage discharges and records the volume of septage received. This septage hauler information is shown in Appendix E. Equation 9 is used to calculate the loading from septage haulers.

Equation 9 – Septage Loading Calculation

$$L_{sep} = (C_{sep}) * (Q_{sep}) * 8.34$$

Where:

L_{sep} = Septage loading, lb/day
C_{sep} = Septage pollutant concentration, mg/L
Q_{sep} = Septage flow rate, MGD
8.34 = Unit conversion factor

4.3 Maximum Allowable Industrial Loadings

Maximum Allowable Industrial Loadings (MAILs) are the amount of pollutant loadings that the WWTF can receive from controlled sources (permitted industrial users). The MAIL for each pollutant is calculated by Equation 10.

Equation 10 – MAIL Calculation

$$MAIL = MAHL\ (1\text{-}SF) – (L_{unc}+SW+GA)$$

Where:

MAIL = Maximum allowable industrial loading, lb/day
MAHL = Maximum allowable headworks loading, lb/day
SF = Safety factor, decimal
L_{unc} = Loadings from uncontrolled sources, lb/day
SW = Loadings from septage waste, lb/day
GA = Growth allowance, lb/day

4.3.1 Safety Factor and Growth Allowance

The safety factor is a percentage of the MAHL set aside to account for variability in the data analyzed and other uncertainties. The EPA recommends at least a 10 percent safety factor be used. For the purposes of this local limits study, a 10 percent safety factor will be used for all pollutants.

Growth allowance is a part of the MAHL that can be held reserve to allow for potential growth or expansion within the service area. The growth allowance is normally used for those pollutants that the WWTF was designed to remove, such as BOD, TSS, and ammonia. The City of Visalia does not know of any major growth or expansions to the wastewater collection system. However, five percent will be set aside to allow for any growth that may occur during the life of the local limits. Setting aside the five percent will allow some growth without the need to revise the local limits.

4.4 Local Limits Allocations

There are two common approaches to allocating the available MAIL to the significant industrial users. The two common methods are uniform allocation and Industrial User specific allocation. Different allocation methods can be used for each pollutant.

4.4.1 Uniform Allocation

The uniform allocation method yields one limit per pollutant that will apply to all SIUs. This allocation method requires that the MAIL for the pollutant be divided by the total flow from all SIUs, even those that do not discharge the pollutant. This method can be overly stringent because some IUs that do not discharge a pollutant will be given an allocation of the MAIL that they may not need. Equation 11 shows the method to calculate a local limit using the uniform allocation method.

Equation 11 – Uniform Allocation Calculation

$$C_{lim} = \quad MAIL \ / \ [(Q_{siu}) * 8.34]$$

Where:

C_{lim} = Uniform concentration limit, mg/L
MAIL = Maximum allowable industrial loading, lb/day
Q_{siu} = Total flow rate from SIUs, MGD
8.34 = Unit conversion factor

4.4.2 IU Specific Allocation

There are two methods to divide the MAIL for each pollutant among only the SIUs that discharge that particular pollutant. These methods develop SIU-specific discharge limits. Any SIU that discharges at or below the background level is given a background allocation.

The SIU Contributory Flow method is similar to the Uniform Allocation method except that the portion of the MAILs above the background level is divided by the flow rate from those SIUs discharging the pollutant above background. Equation 12 shows the SIU Contributory Flow Allocation calculation.

Equation 12 – SIU Contributory Flow Allocation Calculation

$$C_{lim} = \quad [MAIL - L_{back}] \ / \ [(Q_{siupol}) * 8.34]$$

Where:

C_{lim} = Uniform concentration limit, mg/L
MAIL = Maximum allowable industrial loading, lb/day
L_{back} = Background loading allocation for SIUs for which no contributory flow limit is being established for that pollutant, lb/day
Q_{siupol} = Total flow rate from SIUs discharging the pollutant, MGD
8.34 = Unit conversion factor

4.4.3 The Mass Proportion Allocation

The mass proportion allocation method allocates the MAIL to each SIU in proportion to the SIU's loading of that pollutant. To calculate the allowable loading for a SIU the portion of the MAIL above background is multiplied by the ratio of the current loading from SIU X to the current total loading of a pollutant from all SIUs. This calculation is shown in Equation 13.

Equation 14 shows the conversion of the mass allocation to a concentration.

Equation 13 – Mass Proportion Allocation Calculation

$$L_{allX} = [L_{currX} / L_{currT}] * [MAIL - L_{back}]$$

Where:

L_{allX} = Allowable loading allocated to SIU X, lb/day
L_{currX} = Current loading from SIU X, lb/day
MAIL = Maximum allowable industrial loading, lb/day
L_{back} = Background loading allocation for SIUs for which no contributory flow limit is being established for that pollutant, lb/day

Equation 14 – Mass Proportion Conversion to Concentration Limit

$$C_{limX} = L_{allX} / [(Q_X) * 8.34]$$

Where:

C_{limX} = Discharge limit for SIU X, mg/L
L_{allX} = Allowable loading allocated to SIU X, lb/day
Q_X = Flow rate from SIU X, MGD
8.34 = Unit conversion factor

4.5 Uniform Allocation of Local Limits

Table 4-2 is a summary of the collected information and the proposed local limits based on the uniform allocation method. The details of the calculations in Table 4-2 are shown in Appendix F.

Table 4-2: Uniform Allocation of Local Limits

Pollutant	Maximum Allowable Headworks (MAHL - lbs/d)	Safety Factor (%) (SF)	Growth Allowance (%) (GA)	Nonindustrial Concentration (mg/l) (Cdom)	Nonindustrial Flow (MGD) (Qdom)	Nonindustrial Loading (lbs/day) (Ldom)	Hauled Waste Concentration (mg/l) (Chw)	Hauled Waste Flow (MGD) (Qhw)	Hauled Waste Loading (lbs/day) (Lhw)	Allowable Industrial Loading (MAIL - lbs/day)	Local Limit (mg/l) (Cind)	Basis of Limitation
Arsenic	1.3568	10	10	0.0012	9.887966	0.0998	0.1587	0.011434	0.0151	0.9705	0.0510	Sludge
Cadmium	0.0831	10	10	0.0001	9.887966	0.0058	0.0383	0.011434	0.0036	0.0571	0.0030	Water Quality
Chromium	133.1733	10	10	0.0033	9.887966	0.2730	0.2521	0.011434	0.0240	106.2416	5.5857	Sludge
Copper	7.9671	10	10	0.0320	9.887966	2.6389	4.2631	0.011434	0.4065	3.3282	0.1750	Water Quality
Cyanide	1.7039	10	10	0.0009	9.887966	0.0709	0.0000	0.011434	0.0000	1.2922	0.0679	Water Quality
Lead	0.8598	10	10	0.0014	9.887966	0.1130	0.5129	0.011434	0.0489	0.5259	0.0277	Water Quality
Mercury	0.1713	10	10	0.0000	9.887966	0.0004	0.0118	0.011434	0.0011	0.1355	0.0071	Sludge
Molybdenum	0.4931	10	10	0.0010	9.887966	0.0825	0.0805	0.011434	0.0077	0.3044	0.0160	Sludge
Nickel	8.4145	10	10	0.0037	9.887966	0.3059	0.2572	0.011434	0.0245	6.4011	0.3365	Water Quality
Selenium	0.8387	10	10	0.0006	9.887966	0.0495	0.0390	0.011434	0.0037	0.6178	0.0325	Sludge
Silver	10.2811	10	10	0.0001	9.887966	0.0049	0.0035	0.011434	0.0003	8.2196	0.4322	Inhibition
Zinc	33.8280	10	10	0.1678	9.887966	13.8386	28.7321	0.011434	2.7399	10.4839	0.5512	Sludge
Ammonia	3452.9292	10	10	28.4300	9.887966	2344.4980	890.0000	0.011434	84.8700	332.9753	17.5064	Inhibition
BOD	256354.5218	10	10	305.68	9.887966	25208.0957	-	0.011434	0.0000	179875.5217	9457.0764	Water Quality
TSS	226555.1037	10	10	299.5	9.887966	24698.4581	-	0.011434	0.0000	156545.6248	8230.4914	Water Quality
Boron	72.4485	10	10	0.24	9.887966	19.7918	0.0005	0.011434	0.0000	38.1670	2.0067	Water Quality
Chloride	10767.6072	10	10	56.26	9.887966	4639.5167	650.0000	0.011434	61.9837	3912.5853	205.7068	Water Quality
FOG	22573.6000	10	10	76.52	9.887966	6310.2705	1650.0000	0.011434	157.3433	11591.2662	609.4186	Water Quality

4.6 IU Specific Allocation of Local Limits

Based on the uniform allocation method, the proposed local limits for some pollutants are significantly lower than the existing local limits. These pollutants are: cadmium, copper, cyanide, lead, mercury, nickel, silver and zinc. The proposed local limits for these pollutants are also significantly lower than the concentrations seen in the discharge from the SIUs. Sampling data for the SIUs is in Appendix G.

The City currently imposes silver local limits for Josten's Printing and Publishing and Voltage Multipliers of 4.0 mg/L and 1.0 mg/L, respectively. The mass loading associated with these two SIUs was subtracted from the MAIL before it was distributed amongst the remaining silver contributing SIUs.

IU Specific Allocated local limits are meant to be applied to all industrial users regulated by the IPP. In order to provide additional protection, only 80% of the MAIL will be allocated via the IU Specific Allocation method. This will allow an additional amount of safety in the case where an industry that has not historically discharged a pollutant may discharge that pollutant above background concentrations.

Table 4-3 is a summary of the collected information and the proposed local limits based on the IU Specific Allocation method. Details of the IU Specific Allocation calculations are in Appendix H.

Table 4-3: IU Specific Allocation of Local Limits

Pollutant	MAIL (lb/day)	Uncontrolled Discharge Conc (mg/L)	Total IU flow below Uncontrolled Conc (MGD)	Lback (lb/day) [Unc Conc x IU flow below Unc Conc]	Total IU flow above Uncontrolled Conc (MGD)	IU Specific Allocation Local Limit (mg/L)
Cadmium	0.0571	0.0001	2.2166	0.00129	0.0643	0.08
Copper	3.3282	0.032	2.164	0.5775	0.1166	2.14
Cyanide	1.2922	0.0009	2.2773	0.0163	0.0033	36.97
Lead	0.5259	0.0014	2.182	0.0249	0.0986	0.48
Mercury	0.1355	4.76×10^{-6}	1.9236	7.64×10^{-5}	0.357	0.04
Nickel	6.4011	0.0037	2.171	0.067	0.1096	5.53
Silver	8.2196	0.0001	2.1763	0.0011	0.0563	12.40
Zinc	10.484	0.1678	2.211	3.0944	0.0696	9.12

4.7 Comparison of Proposed and Existing Limits

Table 4-4 shows a comparison of the proposed local limits to the existing local limits and calculated local limits. Existing local limits for boron and pentachloropenol have been eliminated. Proposed local limits that are greater than the existing local limits are recommended to remain at the existing local limit value to prevent any lessening of local limits. Table 4-4 shows the recommended local limits based upon this evaluation.

Table 4-4: Comparison of Existing and Proposed Local Limits

Pollutant	Existing Local Limit	Calculated Local Limit	Allocation Method	Proposed Local Limit
Arsenic	0.05 mg/L	0.05 mg/L	Uniform	0.05 mg/L
Boron	1.60 mg/L	Not needed		None
Cadmium	0.02 mg/L	0.08 mg/L	IU Specific	0.02 mg/L
Chromium	3.44 mg/L	5.59 mg/L	Uniform	3.44 mg/L
Copper	1.97 mg/L	2.14 mg/L	IU Specific	1.97 mg/L
Cyanide	0.16 mg/L	36.97 mg/L	IU Specific	0.16 mg/L
Lead	0.30 mg/L	0.48 mg/L	IU Specific	0.30 mg/L
Mercury	0.02 mg/L	0.04 mg/L	IU Specific	0.02 mg/L
Nickel	2.86 mg/L	5.53 mg/L	IU Specific	2.86 mg/L
Silver[1]	0.76 mg/L	12.40 mg/L	IU Specific	0.76 mg/L
Zinc	0.64 mg/L	9.12 mg/L	IU Specific	0.64 mg/L
Pentachlorophenol	0.15 mg/L	Not needed		None
Oil & Grease	200 mg/L	609 mg/L	Uniform	200 mg/L
BOD_5	18,161 lb/day	89,538 lb/day[2]	Not applicable	18,161 lb/day
TSS	41,633 lb/day	41,633 lb/day[2]	Not applicable	41,633 lb/day

[1] Josten's Printing and Voltage Multipliers retain silver limits of 4.0 mg/L and 1.0 mg/L, respectively.
[2] Plant design capacity.

4.8 Protection of the Treatment Works, Collection System, and Workers

4.8.1 Fume Toxicity

There are certain pollutants that can cause a fire or explosion, corrosive structural damage at the treatment plant, obstruction of flow, inhibition of biological activity due to heat, or discharges that cause the formation of toxic gases, vapors, or fumes.

Explosive and flammable pollutants discharged to a WWTF can threaten the integrity of the collection system and the health and safety of the workers. Under the right conditions, the accumulation of such pollutants in treatment works can produce explosions or fires. There are no POCs listed in Table 2-5 that are listed in the EPA Guidance Manual as being potentially explosive.

The fume toxicity level of a pollutant discharged to a WWTF indicates the likelihood that a WWTF worker will suffer an adverse health effect when the level is approached or exceeded. This level can be measured by the time weighted average threshold limit value (TWA-TLV), which is the concentration to which a worker can be exposed for eight hours per day, 40 hours per week and not have any acute or chronic adverse health effects. Similarly, short-term exposure limits (STELs) are concentrations to which a worker should not be exposed for longer than 15 minutes or more than four times per day (with at least one hour between each exposure).

There were three POCs identified in Table 2-4 that have fume toxicity exposure limits that indicate they may create a toxicity exposure issue for collection system workers. The three POCs were chloroform, ethylbenzene, and toluene. The fume toxicity discharge screening level can be calculated using Equation 15. The discharge screening level is the concentration in the treatment works above which a local limit may be necessary.

Equation 15 – Calculation of Discharge Screening Level

$$C_{lvl} = C_{vap} / H$$

Where:

C_{lvl} = Discharge screening level, mg/L
C_{vap} = Exposure limit at 1 atm and 25^{o}C, mg/m^3
H = Henry's Law Constant, (mg/m^3)/(mg/L)

Table 4-5: Fume Toxicity Discharge Screening Levels

Pollutant	Exposure limit (mg/m^3)	Henry's Law Constant (mg/m^3)/(mg/L)	Discharge Screening Level (mg/L)	Maximum Concentration Sampled (mg/L)
Chloroform	9.76	163.5	0.06	0.028

Ethylbenzene	542.50	327.0	1.659	<0.0005
Toluene	565.50	272.5	2.075	0.0019

Based on the maximum concentrations sampled in the treatment works and the fume toxicity discharge screening levels, no local limits are needed for chloroform, ethylbenzene or toluene based upon the protection of the treatment works, collection system and workers.

4.8.2 Oil and Grease

Based on the uniform allocation of the oil and grease maximum allowable industrial loading, the local limit would be 669 mg/L. This local limit is based upon protecting the WWTFs ability to meet the WDR oil and grease limitation.

However, by its very nature, grease will adhere to many types of surfaces with sewers especially vulnerable to grease build-up. The cool internal surfaces of sewers provide ideal locations on which thin layers of grease can build up. Over a period of time, clumps of grease will build up to the point that the sewer can be completely choked. Grease also accumulates due to cooling and dilution of surfactants, that allows the grease to separate and collect on all sewer system surfaces, including wetwells at pump stations, where controls can become fouled and prevent pumps from operating properly.

Based on the residential (background loading) monitoring data, the average background oil and grease concentration is 76.5 mg/L. The average SIU concentration for oil and grease is 133 mg/L. The average oil and grease concentration into the WWTF is 57 mg/L.

The most commonly used local limit for oil & grease is 100 mg/L. The City currently has a limit of 200 mg/L. The 100 mg/L limit is not based upon any empirical evidence but rather on general correlations and an industry consensus that this level limits the build up of oil and grease in the collection system. The federal pretreatment regulations, 40 CFR 403.5(b)(6), prohibit “petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through.” In most municipalities, oil and grease limits of 100 mg/L to 300 mg/L are protective of the collection system. Limits may need to vary depending on different factors, such as the number of wet wells, type of sewers, slope of sewers, flow in sewers, maintenance of the sewers, and history of grease related clogs.

Based upon the concentrations of oil and grease from residential and industrial sources and the history of grease, the current local limit of 200 mg/L is protective of the collection system and should remain.

4.9 Public Participation

The EPA General Pretreatment Regulations encourages public participation by requiring public notices or hearings for local limits development. The City of Visalia must publish a notice (including a notice for a public hearing) in a newspaper of general

circulation within the jurisdiction served by the WWTF. All comments regarding the proposed local limits as well as any request for a public hearing must be filed with the Approval Authority (the RWQCB) within 30 days. The Approval Authority is required to account for all comments received when deciding whether to approve or deny the proposed local limits. The decision is then provided to the City and other interested parties, and published in the newspaper. All comments received are made available to the public for inspection and copying.

The City should notify the existing SIUs and other interested parties, individually, of the proposed limits and announce a public comment period in the local newspaper. This public comment period can be open while the proposed limits are submitted to the Approval Authority for initial review. During the comment period, the public may present technical challenges to the rationale for a particular local limit.

4.10 Implementation

Upon approval from the RWQCB, the approved limits need to be added to the existing sewer use ordinance. Once integrated in the sewer use ordinance, the approved local limits can be included into the permits issued to the SIUs.

5 BIBLIOGRAPHY/REFERENCES

United States. Environmental Protection Agency. Local Limits Development Guidance. Washington, D.C., July 2004.

APPENDIX A – WWTF Sampling Data

APPENDIX B – Bis (2-ethylhexyl) Phthalate Sampling Data

APPENDIX C – WWTF Biosolids Data

APPENDIX D – Residential Background Sampling Data

APPENDIX E – Septage Hauler Sampling Data

APPENDIX F – Local Limits Calculations (Uniform Allocation)

APPENDIX G – SIU Sampling Data

APPENDIX H – Local Limits Calculations (IU Specific Allocation)