YELLOWSTONE COUNTY BOARD OF PLANNING

City of Billings and
Yellowstone County, Montana

AGENDA

AUGUST 12, 2025 MEETING TIME: 6:00 p.m.
City Council Chambers, 5th Floor
316 N 26th St, Billings MT

NOTICE TO THE PUBLIC

Citizens are invited to:

- Review the Agenda Packet on the City's website at: https://ci.billings.mt.us/117/Agendas-Minutes
- View the meeting live online at Facebook
- Public comment will be taken only during the Public Comment periods as indicated on the agenda and during the Public Hearings, if any are scheduled, under the Regular agenda. Comments may be sent to the Board via email before 12:00 pm on the meeting date. All emails received prior to this time will be entered into the record for the public hearing. Comments may be submitted by:
- Mail: City/County Planning Division PO Box 1178, Billings MT 59103
- Email: plnonline@billingsmt.gov
- NOTICE: All meetings and official activities of the MPO are held in buildings and locations that comply with accessibility standards according to the Americans with Disabilities Act (ADA). A TTY number for the hearing impaired, 406-657-3079, is available upon request. Special arrangements for participation in the public hearings by individuals with hearing, speech, or vision impairment may be made upon request at least three days prior to the hearing. Please notify Brenda Berns, Planning Clerk at bernsb@billingsmt.gov or call 406-247-8610.

1. **CALL TO ORDER - Planning Board President:** Welcome and Introduction of Board Members and Staff.

2. **APPROVAL OF AGENDA* -** including any additions or deletions to agenda. The agenda for a regular meeting will be closed at 5:00 p.m. three (3) working days prior to the date of the meeting.

3. Approval of Minutes: July 8, 2025

   Attachments
   Minutes of July 8, 2025

4. **PUBLIC COMMENT PERIOD** -- As required (3 minute maximum per person). *Any member of the public may be heard on any subject that is not on the agenda. The Planning Board will not take any action on these items at this time, but could choose to add an item to the next meeting's agenda for discussion.*
   4a) Comments on items not on agenda and requests to add items to future agendas
   4b) Comments on items on the non-public hearing agenda items

5. **DISCLOSURE OF CONFLICT OF INTEREST:**

6. **DISCLOSURE OF EX PARTE COMMUNICATION:**

7. **OLD BUSINESS** (Agenda items that were not discussed or not completed in a previous meeting or items requiring action).

8. **NEW BUSINESS:** (Agenda items new to this meeting).

a. High Sierra 23rd Filing - City Major Subdivision. Presentation and Discussion. Hunter Kelly, Planner

Attachments
Preliminary Plat
Draft Subdivision Improvement Agreement
Findings of Fact
Traffic Impact Study

9. **OTHER BUSINESS:**

a. (Standing Item) Long Range Strategic Issues and an overview of future City and County issues and projects.

10. **ADJOURNMENT**

FUTURE AGENDA ITEMS

a. High Sierra 23rd Filing - City Major Subdivision. Public Hearing and Recommendation.

Date:	08/12/2025
Title:	
Presented by:	
Department:	Planning & Community Services
Presentation:	

Information

RECOMMENDATION
MEETING MINUTES:

BACKGROUND (Consistency with Adopted Plans and Policies, if applicable)

ALTERNATIVES
City Council may:

- Approve; or,
- Not Approve

FISCAL EFFECTS

Attachments

Minutes of July 8, 2025

Billings PLANNING & COMMUNITY SERVICES

BILLINGS - YELLOWSTONE COUNTY MPO METROPOLITAN PLANNING ORGANIZATION

CITY/COUNTY PLANNING BOARD

TUESDAY, JULY 8, 2025 at 6:00pm

	Position	01/14/2025	01/28/2025	02/11/2025	02/25/2025	03/11/2025	03/26520025	04/082025	04/22/2025	05/13/2025	05/28/2025	06/10/2025	06/24/2027	07/08/2025	07/22/2025	08/12/2025	08/26/2025	09/09/2025	09/23/2025	10/14/2025	10/28/2025	11/12/2025	11/26520025	12/09/2025	12/23/2025
Jim Ronquillo	Billings Ward I	1	A	1	1	A	1	1	1	A	1	A	A	A											
Roger Gravgaard **President**	Billings Ward II	1	1	1	1	1	1	1	1	1	1	1	1	V											
Dennie Stephenson	Billings Ward III	1	1	1	1	1	1	1	1	1	1	1	1	1											
John Staley **Vice President**	Billings Ward IV	V	1	1	1	1	1	1	1	1	1	A	1	1											
David Nordel	Billings Ward V	A	V	V	A	V	A	1	V	1	1	1	1	A											
Troy Boucher	YC District 1	A	A	A	A	A	A	A	A	A	A	A	A	A											
Dennis Cook	YC District 2	A	1	1	1	1	1	1	1	1	1	1	1	1											
Vacant	YC District 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vacant	YC District 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Woody Woods	YC District 5	1	1	1	1	1	1	1	A	1	1	1	A	1											
Alexis Bonogofsky	YC District 6	1	1	V	1	V	1	1	1	A	1	1	V	1											
Morgan Tuss	YC District 7	A	A	A	A	A	A	A	A	A	A	A	A	A											
Vacant	YC Cons. District	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scott Reiter	Ex-Officio SD2	A	A	A	A	A	A	A	A	A	A	1	1	A											

Please note: “A” stands for excused absence, “1” stands for present, “V” stands for Zoom participation, “C” stands for Canceled

Call the Meeting to Order: President Gravgaard called the meeting to order at 6:01 p.m.

Introduction of Planning Board Members and Planning Department Staff
President Gravgaard called for introductions of the members of the Planning Board and staff.

Attending Staff: Wyeth Friday, Planning & Community Services Director; Anna Vickers, Planning Division Manager; Lora Mattox, Transportation Planning Coordinator; Brenda Berns, Planning Clerk

Virtual: Roger Gravgaard, Planning Board President

1. Others in Attendance. There were no others in attendance**.**

2. Approval of Agenda

Motion
Motion made by Board member Stephenson, seconded by Board member Cook to approve the agenda as submitted. Motion passed unanimously.

3. Delayed Approval of Minutes: June 24, 2025

4. Public Comment: As required (3 minutes maximum per person). Any member of the public might be heard on any subject that is not on the agenda. The Planning Board will not take any action on these items at this time but could choose to add an item to the next meeting agenda for discussion. There were no comments from the public.

5. Disclosure of Outside (Ex-Parte) Communication – There were no outside communications.

6. Disclosure of Conflicts of Interest – There were no conflicts of interests.

7. Old Business

a. **Presentation and Discussion. FY26 Draft Unified Planning Work Program. Presented by Lora Mattox, Transportation Planning Coordinator.**

Ms. Mattox provided an overview of the 2026 UPWP, noting there was a revision made since the last presentation. She noted an addition was made to Element 302, to support the City of Billings' Transportation Corridor Project. The MPO is proposing to contribute $80,000 toward Phase II of the project, which will include public outreach efforts such as surveys to inform and enhance planning for future arterial roadway improvements.

Recommendation
Staff are requesting the board make a recommendation to approve the FY26 UPWP, to the Policy Coordinating Committee.

Motion
Motion made by Board member John Staley, seconded by Board member Cook to recommend approval of the FY26 Unified Planning Work Program as submitted, to the Policy Coordinating Committee. The motion was carried with a unanimous vote.

8**. New Business**

9. Other Business

UPWP Projects – Updates

Long Range Transportation Plan
Lora Mattox, stated that several current Transportation Plan projects will be coming before the Planning Board in the next few months. One of these is the Long-Range Transportation Plan (LRTP) Project Review & Modification of the 2023 LRTP, which originated from a Federal Highway Administration (FHWA) review conducted a few years ago. She explained that the review identified concerns with the project list and funding components, noting they were difficult to interpret, including some duplicated funding sources. FHWA recommended clarifying the project list to ensure it meets the federal requirement of fiscal constraint—ensuring all listed projects have realistic and identifiable funding sources over the 20-year planning horizon. As part of this effort, staff are currently reviewing and updating the LRTP project list. This initiative also led to the development of a public-facing data dashboard, which will be accessible on the MPO's website. The dashboard will map all transportation projects—categorized by roadway, transit, pedestrian, and bicycles and allow users to click on a project to view its location and detailed information, enhancing transparency and public engagement.

Lora further explained that during the adoption of the 2023 LRTP, the new Census data and urbanized area boundaries were released. These boundaries determine where federal transportation funds—such as those for the upcoming Grand Avenue project—can be allocated. In response to the new data, a boundary amendment was made to include a few additional areas in the MPO planning boundary, which differs from the urbanized boundary. While the team considered delaying LRTP adoption to incorporate the new boundaries, they ultimately chose to adopt the plan as-is, with the understanding that the MPO boundary would be updated afterward. She noted that the current planning boundary "zigzags" on the west end and was designed with anticipated population growth in mind.
The MPO is now working with GIS staff to better reflect these urban changes, with the expectation that by the next Census, the MPO will be known as the Billings/Laurel MPO.

Discussion
The Board discussed the scope of MPO partnerships, with clarification that participation is not limited to established or incorporated communities. Areas in the county, such as Lockwood, are included within the MPO boundary and are eligible for studies and transportation planning support. There was mention of anticipated growth in Lockwood, particularly with the future opening of the Bypass, and the potential impacts on transportation infrastructure and traffic flow. Board members also raised questions about jurisdictional boundaries, suggesting it may be beneficial to adjust them as the MPO area expands to ensure residents are adequately informed of transportation-related changes.
Staff explained that while the MPO boundary originally aligned with the zoning jurisdiction, it has since been amended to reflect growth trends. Concerns were also noted about traffic impacts in developing areas, with interest expressed in exploring additional traffic control measures.

Complete Streets
Ms. Mattox stated that the City's Complete Streets Policy includes a provision for a review every three years to assess its effectiveness based on the policy's core elements. A few months ago, funding was allocated to support an economic analysis of the policy, which will examine factors such as health benefits and other economic impacts.

Mobile Trail Application
She also noted that during updates to the Long-Range Transportation Plan (LRTP) or the Bikeway Plan, the trail map is regularly updated. A mobile app was previously developed to help users easily access and locate trail information.

Safe Streets for All
Staff reported that a federal grant was awarded to implement Safe Routes to School projects, which includes not only construction improvements but also an educational campaign component. The first set of construction projects is expected to be under contract by the end of July. To support the outreach effort, Kinetic Marketing, a local Billings firm, was hired to develop and distribute media ads and educational materials, including TV spots, flyers, and other promotional content to raise awareness and encourage safe travel to and from schools.

Questions
There was a discussion regarding the availability of modeling tools and data overlays. Staff noted that a travel demand model is maintained and will be supported by an updated household travel survey included in FFY26 UPWP. The original survey was conducted via a mobile app, and the data collected is used to inform the model. If needed, consultants can run specific scenarios through the model to support planning efforts.

Questions were raised about the City of Laurel's planning resources and its role within the MPO. It was clarified that while Laurel has planning leadership, it does not currently have a dedicated planner. Upon becoming part of the MPO, Laurel will have representation specific to transportation planning, though

the MPO would not assume responsibility for general city planning. The group also discussed the potential for expanded service agreements between jurisdictions. While there have been conversations around supporting zoning and subdivision review processes, Laurel would remain an independent municipality with its own local government. There is no intent on merging with Billings, though interlocal agreements—such as for Fire or EMS services—could be explored, depending on response requirements and community needs.

The conversation then turned to wastewater treatment capacity. While Billings operates a large sanitation facility that currently serves Lockwood and has ample unused capacity, it was emphasized that capacity must be reserved to avoid losing access to necessary water withdrawals from the river. Laurel, however, operates its own treatment plant, so direct integration is not immediately required.

Mr. Friday reported on the recent Interim Planning Commission meeting, where the consultant team from Orion presented an overview of their data collection process. This included information on population projections, housing demand, and expected business growth. The presentation offered a clear summary of the team's current findings and approach. The consultants are now beginning to review the future land use category map developed for the West End and intend to compare it with land use patterns across other areas of the city, including the Heights. This comparison aims to promote consistency and alignment in long-range planning efforts citywide.

Anna Vickers provided an update on the upcoming stakeholder engagement activities scheduled for August 4th–6th. During this time, the consultant team, Orion, will tour a variety of neighborhoods and key areas to better understand existing land use patterns and identify locations needing more focused planning efforts—such as the Inner Belt Loop, which currently lacks designated land uses and includes a city roadway that traverses county land. These site visits are intended to give consultants on-the-ground context, helping them assess infrastructure needs and development potential. Locations like Shiloh Commons will serve as examples of successful development and will be used to demonstrate the proposed “urban node” concept in the plan.

In addition to the site tours, Orion will conduct meetings with multiple departments and community organizations—including Fire, Police, EMS, Public Works, Billings Realtors, and support services—to gather input on land use issues, infrastructure challenges, and community priorities. The goal of these meetings is to collect meaningful feedback that will inform the direction of the long-range planning effort.

Strawberry Festival on Saturday, July 12th, with multiple departments participating in providing displays and information about city services. As part of the outreach effort, attendees will have the opportunity to sign up to receive updates and information related to the Future Land Use Map.

Commissioner Ostlund's memorial service will be held on Saturday, July 12th at 10:00 a.m. at MetraPark Arena.

10. Future Agenda Items

Mr. Friday advised the board that the Bureau of Mines will be returning for a future presentation, with additional details to be provided as they become available.

ADJOURNMENT: 6:45PM

Brenda J Berns, Planning Clerk

Planning Board

Date:	08/12/2025
Title:	High Sierra Subdivision, 23rd Filing - Preliminary Plat
Presented by:	Hunter Kelly, Planner 1
Department:	Planning & Community Services
Presentation:	Yes

Information

RECOMMENDATION

Staff proposes the Planning Board recommend to City Council that the preliminary plat of High Sierra Subdivision, 23rd Filing be conditionally approved and the Findings of Fact adopted as presented in the staff report.

BACKGROUND (Consistency with Adopted Plans and Policies, if applicable)

On July 1, 2025, Sanbell, on behalf of High Sierra II, Inc., applied for preliminary major plat approval for High Sierra Subdivision, 23rd Filing. The proposed subdivision creates 38 lots for development. The subject property is generally located north of Annadale Road and west of West Bonito Loop. The property is zoned N3 - Suburban Neighborhood Residential. The land is currently vacant.

VARIANCES

No variances are requested.

PROPOSED CONDITIONS OF APPROVAL

1. To minimize the effects on local service prior to final plat approval, the applicant will coordinate with the USPS to determine what type of delivery system is preferred and to locate and provide the correct amount of space for safely delivering the mail to the residents.
2. Minor changes may be made in the SIA and final documents, as requested by the Planning, Legal or Public Works Departments to clarify the documents and bring them into the standard acceptable format.
3. The final plat shall comply with all requirements of the City of Billings Subdivision Regulations, rules, regulations, policies, and resolutions of the City of Billings, and the laws and Administrative Rules of the State of Montana.

PROCEDURAL HISTORY

- Pre-Application Meeting: May 15, 2025
- Preliminary Plat application submitted to Planning Division: July 1, 2025
- Departmental Review Meeting: July 17, 2025
- Preliminary Plat Resubmittal: July 24, 2025
- Planning Board Plat Review: August 12, 2025
- Planning Board Public Hearing: August 26, 2025
- Preliminary Plat to City Council: September 22, 2025
- 60 Working-Day Preliminary Plat Review period ends: September 25, 2025

PLAT INFORMATION

- General Location: north of Annadale Road and west of West Bonito Loop
- Legal Description: Lot 6A-1, Block 19 of the Amended Plat of Lot 1A1-A1, Block 33 of High Sierra Subdivision, 14th Filing & Lot 6A, Block 19 of High Sierra Subdivision, 21st Filing
- Owner/Subdivider: High Sierra II, Inc.
- Engineer/Surveyor: Sanbell
- Existing Zoning: N3 - Suburban Neighborhood Residential
- Existing Land Use: vacant
- Proposed Zoning: N3 - Suburban Neighborhood Residential
- Proposed Land Use: Residential
- Gross & Net Area: 12.41 Acres gross / 9.34 Acres net
- Lot Size:
  - Minimum: 7,023 square feet
  - Maximum: 86,496 square feet
- Parkland Requirements: 0.809 Acres, provided by cash-in-lieu contribution

Traffic Impact Study overview:

A Traffic Impact Study (TIS) was completed for High Sierra Subdivision, 23rd Filing. All required intersection improvement contributions identified therein shall be completed by the Subdivider at the Subdivider's expense. The percent of traffic contributions to the following intersections shall be in accordance with the traffic study:

Intersection	% Contribution
Annandale Road/ Riveroaks Drive	0.79 %
Annandale Road/ St. Andrews Drive	0.88 %
Sierra Granda Boulevard/ High Sierra Boulevard	0.17 %
Sierra Granda Boulevard/ Gleneagle Boulevard	0.61 %
Alkali Creek/ Skyway Drive	0.25 %
Wicks Lane/ Skyway Drive	0.26 %
Wicks Lane/ High Sierra Boulevard	0.17 %
Wicks Lane/ Fantan Street	0.09 %
Wicks Lane/ Governors Boulevard	0.58 %
Wicks Lane/ Lake Hills Drive	0.17 %
Wicks Lane/ St. Andrews Drive	0.70 %

The cash contributions shall be based on the percentage of traffic contributions to the intersections based on the total cost of an intersection as determined. The contributions will be made at the time of final plat, as described in the SIA under heading III.D, Traffic Control Devices.

STAKEHOLDERS

There are no stakeholder responses at this time. Stakeholder input will be received at a public hearing scheduled for this subdivision on August 26, 2025.

ALTERNATIVES

In accordance with state law, the City Council has 60 working days to act upon this major preliminary plat. The 60 working day review period for the proposed plat ends September 25, 2025. State and City subdivision regulations also require that preliminary plat be reviewed using specific criteria, as stated within this report. The City may not unreasonably restrict an owner's ability to develop land if the subdivider provides evidence that any identified adverse effects can be mitigated. Within the 60 working day review period, the City Council is required to:

1. Approve;
2. Conditionally Approve; or
3. Deny the Preliminary Plat

FISCAL EFFECTS

The preliminary plat of this subdivision will have no financial impact on the Planning Division.

SUMMARY

One of the purposes of the City's subdivision review process is to identify potential negative effects of property being subdivided. Negative effects that are identified become the subdivider's responsibility to mitigate. Various City departments, private service/utility providers and the affected school district/s, have reviewed this application and provided input on effects and mitigation. The Findings of Fact, which are presented as an attachment, discuss potential negative impacts of the subdivision and conditions of approval are recommended as measures to further mitigate any impacts. In this case, there were found to be minimal impacts from this proposed subdivision.

Attachments

Preliminary Plat
Draft Subdivision Improvement Agreement
Findings of Fact
Traffic Impact Study

PRELIMINARY PLAT OF

HIGH SIERRA SUBDIVISION 23RD FILING

BEING LOT 6A–1, BLOCK 19 OF AMENDED PLAT OF LOT 1A1–A1, BLOCK 33 HIGH SIERRA SUBDIVISION, 14TH FILING AND LOT 6A, BLOCK 19, HIGH SIERRA SUBDIVISION, 21ST FILING
SITUATED IN THE SW1/4 OF SECTION 9 AND NE1/4, T.1N., R. 26 E., P.M.M.,
CITY OF BILLINGS
YELLOWSTONE COUNTY, MONTANA

JUNE, 2025

BILLINGS, MONTANA

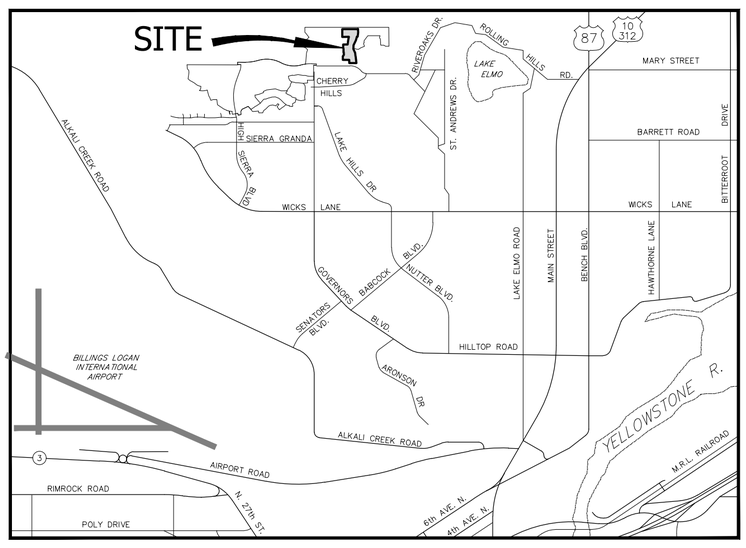
PREPARED FOR : HIGH SIERRA II, INC.

PREPARED BY : sanbell

NORTH

60 30 0 60 120

SCALE:1" = 60'



VICINITY MAP

NOT TO SCALE

PLAT DATA

GROSS AREA	=	12.41 ACRES
NET AREA	=	9.34 ACRES
NUMBER OF LOTS	=	38
MINIMUM LOT SIZE	=	7023 S.F.
MAXIMUM LOT SIZE	=	86,496 S.F.
LINEAL FEET OF STREETS	=	±2631 L.F.
PARKLAND REQUIREMENT	=	0.809 ACRES
PARKLAND DEDICATION	=	CASH IN LIEU
EXISTING ZONING	=	N3
SURROUNDING ZONING:		
NORTH	=	AGRICULTURE
SOUTH	=	N3
EAST	=	N3
WEST	=	N3
EXISTING LAND USE	=	N3
PROPOSED LAND USE	=	N3

ADJACENT OWNERS

1 HIGH SIERRA II INC
175 N 27TH ST STE 940
BILLINGS, MT 59101

2 BUCKNER, ROBERT L CO TRUSTEE
527 MONTECITO AVE
BILLINGS, MT 59105

3 HUTCH, KEMPER & MELANIE
608 CHINO CIR
BILLINGS MT, 59105

4 HOWIE, AUSTIN & MELLISA
602 CHINO CIR
BILLINGS MT, 59105

5 MEYER, STEVE & SANDRA
590 CHINO CIR
BILLINGS MT, 59105

6 GARTON, JOHN & VICKI
584 CHINO CIR
BILLINGS MT, 59105

7 INFINITY HOME LLC
PO BOX 20174
BILLINGS, MT 59104

8 MCCOMBS, DUSTIN & DEIDRA
572 CHINO CIR
BILLINGS MT, 59105

9 KOPSTEIN, JASON
566 CHINO CIR
BILLINGS MT, 59105

10 GIANNINI, SHELBY NICOLE & JAMES JOSEPH
560 CHINO CIR
BILLINGS MT, 59105

11 HELTERBRAN, ALLIE A & RICHARD P JR.
2422 W BONITO LOOP
BILLINGS MT, 59105

12 ALVAREZ, ANDREW & RAMINTA
2414 W BONITO LOOP
BILLINGS MT, 59105

13 WILLIAMS, CARLY
2408 W BONITO LOOP
BILLINGS MT, 59105

14 BORER, KALI J & NATHAN C
2404 W BONITO LOOP
BILLINGS MT, 59105

15 RON S HILL LIVING TRUST
2241 CLUBHOUSE WAY
BILLINGS, MT 59105

16 DEIBELE, TOM
447 BOCA RATON RD
BILLINGS MT, 59105

17 OAKLAND, GARY
175 N 27TH STREET, SUITE 900
BILLINGS, MT 59101

18 DOVER RANCH
P.O. BOX 51389
BILLINGS, MT 59105

TABLE OF CONTENTS

Return to:
Sanbell
1300 North Transtech Way
Billings, MT 59102

SUBDIVISION IMPROVEMENTS AGREEMENT & WAIVER OF RIGHT TO PROTEST FUTURE SPECIAL IMPROVEMENT DISTRICTS HIGH SIERRA SUBDIVISION, TWENTY THIRD FILING

THIS AGREEMENT is made and entered into this _____ day of _____, 20___, by and between **HIGH SIERRA II, INC.**, whose address for the purpose of this agreement is 175 North 27th Street, Suite 900, Billings, MT 59101, hereinafter referred to as "Subdivider," and the **CITY OF BILLINGS**, Billings, Montana, hereinafter referred to as "City."

WITNESSETH:

WHEREAS, at a regular meeting conducted on _____ day of _____, 20__, the Board of Planning recommended conditional approval of a preliminary plat of High Sierra Subdivision, 23rd Filing; and

WHEREAS, at a regular meeting conducted on _____ day of _____, 20__, the City Council conditionally approved a preliminary plat of High Sierra Subdivision, 23rd Filing; and

WHEREAS, a Subdivision Improvements Agreement is required by the City prior to the approval of the final plat.

WHEREAS, the provisions of this agreement shall be effective and applicable to High Sierra Subdivision, 23rd Filing upon the filing of the final plat thereof in the office of the Clerk and Recorder of Yellowstone County, Montana. The Subdivision shall comply with all requirements of the City of Billings Subdivision Regulations, the rules, regulations, policies, and resolutions of the City of Billings, and the laws and administrative rules of the State of Montana.

THEREFORE, THE PARTIES TO THIS AGREEMENT, for and in consideration of the mutual promises herein contained and for other good and valuable consideration, do hereby agree as follows:

I. VARIANCES

A. Subdivider has requested, and the City hereby grants, the following variances by the City Council from the strict interpretation of the City's Subdivision Regulations (Section 23.1401, BMCC):

1. No Variances are requested.

II. PROPERTY CONDITIONS AND INFORMATION FOR LOT PURCHASERS

A. Lot owners will be required to construct that segment of the required sidewalk that fronts their property at the time of lot development. If sidewalk is not constructed within 5 years, the City has the right to construct the sidewalk and assess the property owners.

B. Lot owners should be aware that this subdivision is being built in close proximity to prime deer and antelope habitat, and it is likely that homeowners will experience problems with damage to landscaped shrubs, flowers, and gardens. The Montana Fish, Wildlife, and Parks Department does not provide damage assistance unless there is damage to commercial crops and/or a threat to public health and safety. In addition, this subdivision is being built in close proximity to prime prairie dog habitat and lot owners will be responsible for any costs and damages incurred due to the presence of prairie dogs.

C. No water rights have been transferred to the lot owners. Irrigation ditches that exist on the perimeter of this development are for the benefit of other properties. Perimeter ditches and drains shall remain in place and shall not be altered by the Subdivider or subsequent owners.

D. There is attached hereto a Waiver waiving the right to protest the creation of the special improvement district or districts which by this reference is expressly incorporated herein and made as much a part hereof as though fully and completely set forth herein at this point. The Waiver will be filed with the plat, shall run with the land, and shall constitute the guarantee by the Subdivider, and property owner or owners of the developments

described herein. Said Waiver is effective upon filing and is not conditioned on the completion of the conditions set forth in this Agreement. The Subdivider and owner specifically agree that they are waiving valuable rights and do so voluntarily.

E. Lot owners are advised they will be subject to inclusion in a Parks Maintenance District (PMD) for the operation and maintenance of the parkland dedicated with various filings of High Sierra Subdivision.

F. The Subdivider and subsequent contractors/builders acknowledge that there is a Stormwater Pollution and Prevention Plan (SWPPP) filed with the City and the Montana Department of Environmental Quality (MDEQ). This SWPPP shall be adhered to during all phases of construction and shall be updated as required by MDEQ under the General Permit for Stormwater Discharges Associated with Construction Activity, Chapter 28, BMCC and the Billings Stormwater Management Manual.

G. Individual lot owners should be aware that Best Management Practices for stormwater control shall be required for new construction on lots. Best Management Practices are defined within Chapter 28, BMCC and detailed in the Billings Stormwater Management Manual.

1. The lowest finish floor elevation (which includes the garage) shall be a minimum of 18-inches higher than the top of curb, measured from the highest location along the lot frontage. Home builder and lot owner may find it necessary to raise the finish floor elevation of house or garage above this minimum during on-site building design and/or during on-lot grading.

2. The stormwater runoff from individual lots shall be directed toward the public right-of-way wherever possible. However, due to the existing terrain of the subdivision this is not possible for every lot. Where runoff from lots cannot be directed to public right-of-way because existing terrain is falling away from the public right of way, the stormwater runoff shall be directed to flow to the same location as it has historically. Home builder and lot owners shall consider the effect of potential off-lot run-on waters from lots uphill of the subject lot, and grade around the home to provide positive drainage away from the home. Home builder and lot owners must take necessary measures to

protect the house from surface stormwater flows. Lots shall allow, through on-site building design and on-lot grading, for stormwater to pass through each lot without negatively impacting adjacent lots. The lowest openings on each home (window wells) are to be located outside the designated drainage paths. If this is not possible, the builder and lot owners must take necessary measures to protect these openings from inundating from surface water flows. In any case, the homebuilder shall allow enough space between window wells and property lines to provide sufficient swales and proper storm water drainage away from window wells.

3. Each owner of a completed lot shall be a member of the High Sierra Subdivision Homeowners Association (HOA). Membership shall be appurtenant to and may not be separated from ownership of a lot. The Homeowners Association will be set up to maintain the permanent stormwater detention facilities. The HOA Board of Directors shall have the power, in its discretion, to exclude costs of major repairs or approved capital improvements to the HOA Storm Water System from the regular monthly assessments and, instead, impose special assessments for these expenses, and for emergencies, as they are incurred.

III. TRANSPORTATION

A. Streets

1. Subdivider will enter into a private contract for the construction of all required improvements for those streets within the subdivision, as follows:

   Montecito Avenue, Street 1 (temporary name), Street 2 (temporary name), Street 3 (temporary name), and Street 4 (temporary name) will be constructed within a 56-foot right-of-way using curb and gutter and full-width pavement (34-feet back of curb to back of curb). Curb and Gutter will be installed per the City of Billings Standards in place at time of construction.

   Annadale Road shall be dedicated a minor arterial street and shall be located within an existing 80-foot wide right of way and have a street width of 39-foot back of curb to

back of curb. With this subdivision, Annandale Road will be constructed with curb and gutter on the north side of the street and 30-feet of asphalt. The remaining asphalt and curb and gutter on the south side of Annandale Road will be constructed by others. Annadale Road shall be built to grade with a satisfactory subbase, base course, curb and gutter and asphalt surface. This street shall be built per the City of Billings Standards in place at time of construction.

B. Sidewalks

1. Sidewalk on the internal streets shall be installed at the time of individual lot development. The sidewalk shall consist of a 5-foot-wide boulevard type sidewalk with a minimum 5-foot-wide boulevard.

2. Subdivider will install accessible ramps at the intersections, which shall be completed with the subdivision improvements.

C. Street Lighting

Street lighting is required for this subdivision. It is anticipated that street lighting will be installed by private contract or SID. A Street Light Maintenance District will be created for operation and maintenance of the lighting at a future date and is included in the waiver of right to protest.

D. Traffic Control Devices

The Subdivider shall furnish and install all necessary traffic control devices within and adjacent to the Subdivision in accordance with the plans and specification submitted to and approved by the City Engineer. Traffic control devices shall include all necessary signing, striping, and channelization devices to properly complete the implementation of the proposed street construction.

A traffic accessibility study has been completed for High Sierra Subdivision 23rd Filing. All required intersection improvement contributions identified therein shall be completed by the Subdivider at the Subdivider's expense. The percent of traffic

contributions to the following intersections shall be in accordance with the traffic accessibility study:

Annandale Road/Riveroaks Drive	0.79%
Annandale Road/St. Andrews Drive	0.88%
Sierra Granda Blvd/High Sierra Blvd	0.17%
Sierra Granda Blvd/Gleneagle Blvd	0.61%
Alkali Creek Road/Skyway Drive	0.25%
Wicks Lane/Skyway Drive	0.26%
Wicks Lane/High Sierra Blvd	0.17%
Wicks Lane/Fantan Street	0.09%
Wicks Lane/Governors Blvd	0.58%
Wicks Lane/Lake Hills Drive	0.17%
Wicks Lane/St. Andrews Drive	0.70%

The cash contributions shall be based on the percent of traffic contributions to the intersections based on the total cost of an intersection as determined by Engineering for the year in which the contribution is made.

The cash contribution shall be made prior to final plat approval.

E. Access

Access to the subdivision will be provided by Annandale Road and Montecito Avenue. Access to residential lots will be provided by public right of way (street and alley right of way).

F. Billings Area Bikeway and Trail Master Plan

No trail improvements are required as part of this subdivision.

G. Public Transit

The subdivision does not require improvements to ensure public transit service.

IV. EMERGENCY SERVICE

The City will provide emergency service. Fire hydrants shall be provided at each street intersection and at intermediate locations where distances exceed 500-feet. Appropriate turnarounds will be located on any dead-end street in excess of 150-feet.

Construction of buildings made of combustible materials shall have adequate fire apparatus access roads and fire hydrant(s) in place to allow for fire suppression requirements. Prior to issuance of a building permit for construction using combustible materials (i.e., lumber, plywood, wood trusses, etc.), fire apparatus access roads, and water supply requirements shall be provided in accordance with the International Fire Code as adopted by the City of Billings.
At a minimum, the following is required:

- An unobstructed gravel road or gravel road base must be within 150-feet of the furthest portion of a building under construction as measured along an approved route.
- The access roads are required to support fire apparatus vehicle loading (40 tons) during all weather conditions and shall be a minimum of 20-feet-wide.
- An operational fire hydrant shall be located within 600-feet of the furthest portion of a residence under construction or within 400-feet of the furthest portion of a commercial building under construction as measured along the access roads to the site.
- The above requirements do not alter or effect the current minimum subdivision requirements for fire apparatus access and water supply.

V. STORM DRAINAGE

Storm drainage for the public streets shall be provided by a combination of surface drainage and curbs and gutters, drained to underground storm drains, and with discharge to a stormwater detention facility that is located within an off-site area on Lot 17A, Block 1, High Sierra Subdivision, 12th Filing generally north of previously recorded High Sierra Subdivision, 21st Filing. This detention facility will be sized to accept runoff generated from the High Sierra Subdivision, 23rd Filing. Stormwater management facilities for the subdivision must be able to pass flows generated outside the subdivision area without inundating existing and proposed home sites. All drainage improvements shall comply with the provisions of the *Stormwater Management Manual* and Section 23-706, BMCC, a stormwater management plan shall be submitted to and approved by the Engineering Division prior to filing of the final plat.

The drainage system improvements will be in accordance with the recommendations of the stormwater analysis and report prepared and submitted with the improvement plans and specifications.

Maintenance of the stormwater detention area and associated drainage facilities shall be by the High Sierra Subdivision HOA.

VI. UTILITIES

Water and sanitary sewer lines shall be sized and installed in conformance with the City design standards and specifications, and the rules and regulations of the City of Billings and the County Water District of Billings Heights.

The Subdivision Improvements Agreement does not constitute an approval for extension of or connection to water mains and sanitary sewers. The property owner shall make application for extension/ connection of water mains and sanitary sewers to the Public Works Department – Engineering Division and the County Water District of Billings Heights. The extension/connection of/to water mains and sanitary sewers is subject to the approval of the applications and the conditions of approval. Applications shall be submitted for processing prior to the start of any construction and prior to review and approval of any project plans and specifications.

It is acknowledged that the properties subject to the Subdivision Improvements Agreement shall be subject to the appropriate buy-in fee for the County Water District of Billings Heights in effect at the time of payment. Fees shall be paid as applied for in the extension application and as per the first paragraph above.

The Developer/Owner acknowledges that the Subdivision shall be subject to the applicable System Development Fees in effect at the time new sanitary sewer service connections are made.

The design/installation of sanitary sewers and appurtenances, and water mains and appurtenances (fire hydrants, etc.) shall be in accordance with design standards, specifications, rules, regulations of and as approved by the City of Billings Public Works Department, the County Water District of Billings Heights, Fire Department, and the Montana Department of Environmental Quality.

A. Water

The subdivision will be served by making connections to existing 8” water main stub in Montecito Avenue and an existing 12” water main stub in Annandale Road. 12-inch water main will be installed in Annandale Road. 8-inch water main will be installed in the remaining local interior streets of the subdivision. The

water main within the subdivision will make looped connections whenever possible. Fire hydrants will be provided at all appropriate locations and will be subject to approval by the City of Billings Fire Department. Appropriately sized mains and services in the internal streets will provide service to the individual lots within the subdivision. Each lot shall be provided with its own separate water service. All water construction improvements shall be installed in conformance with the design standards, specifications, and rules and regulations of the County Water District of Billings Heights and Montana Department of Environmental Quality and will be approved by the County Water District of Billings Heights.

B. Sanitary Sewer

The subdivision will be served by making a connection to an existing 10-inch diameter sewer main located in Annandale Road and in the right of way on the west side of Chino Circle. A connection will also be made to an existing 8-inch diameter sewer main located in Montecito Avenue. 10-inch sanitary sewer main will be extended in Annandale Road, Street 1 (temporary name) north of the right of way to Chino Circle, and Montecito Avenue west of Street 1 (temporary name). 8-inch sanitary sewer main will be extended on the remaining streets in the subdivision.

C. Power, Telephone, Gas, and Cable Television

All telephone, gas, electrical power, and cable television lines shall be the responsibility of the Subdivider. Any line located within public right-of-way shall be subject to approval of the City Engineer.

VII. PARKS/OPEN SPACE

Section 76-3-621 of the Montana Subdivision and Platting Act covers the park dedication requirement. Additionally, Section 23-1002. B.1 of the City of Billings municipal code covers parkland dedication of major subdivisions. High Sierra Subdivision, 23rd Filing requires a parkland dedication 0.809 acres. The Subdivider will make a cash-in-lieu contribution for the 0.809 acres in lieu of parkland dedication.

VIII. IRRIGATION

No permanent irrigation ditches, field laterals, or irrigation easements exist on the subdivision.

IX. SOILS/GEOTECHNICAL STUDY

A geotechnical report was performed within the area of this subdivision and submitted with the preliminary plat. The Geotechnical Investigation Report for High Sierra Subdivision 23rd Filing Billings, Montana was completed by Rimrock Engineering Inc. and dated _____.

It is recommended that owners, purchasers, realtors, builders, and developers fully familiarize themselves with the information contained in this report prior to design or construction.

X. FINANCIAL GUARANTEES

Except as otherwise provided, Subdivider shall install, and construct said required improvements with cash or by utilizing the mechanics of a special improvement district or private contracts secured by letters of credit or a letter of commitment to lend funds from a commercial lender. All engineering and legal work in connection with such improvements shall be paid by the contracting parties pursuant to said special improvement district or private contract, and the improvements shall be installed as approved by the City Engineer and Utility Department Manager.

XI. LEGAL PROVISIONS APPLYING TO SUBDIVIDER

A. Subdivider agrees to guarantee all public improvements for a period of two years from the date of final acceptance by the City of Billings.

B. The owners of the properties involved in this proposed Subdivision by signature subscribed herein below agree, consent, and shall be bound by the provisions of this Agreement.

C. The covenants, agreements, and all statements in this Agreement run with the land and apply to and shall be binding on the heirs, personal representatives, successors, assigns and transferees of the respective parties.

D. In the event it becomes necessary for either party to this Agreement to retain an attorney to enforce any of the terms or

conditions of this Agreement or to give any notice required herein, then the prevailing party or the party giving notice shall be entitled to reasonable attorney fees and costs.

E. Any amendments or modifications of this Agreement or any provisions herein shall be made in writing and executed in the same manner as this original document and shall after execution become a part of this Agreement.

F. Subdivider shall comply with all applicable federal, state, and local statutes, ordinances, and administrative regulations during the performance and discharge of its obligations. Subdivider acknowledges and agrees that nothing contained herein shall relieve or exempt it from such compliance.

IN WITNESS WHEREOF, the parties hereto have set their hands and official seals on the date first above written.

"SUBDIVIDER" **HIGH SIERRA II, INC.**

By:_____

Its:_____

STATE OF MONTANA)
: ss
County of Yellowstone)

On this _____ day of _____, 20___, before me, a Notary Public in and for the State of Montana, personally appeared _____, known to me to be the person who executed the foregoing instrument as the _____ of **HIGH SIERRA II, INC.**, and acknowledged to me that he/she executed the same.

_____
Notary Public in and for the State of Montana
Printed Name: _____
Residing at: _____
My commission expires: _____

This agreement is hereby approved and accepted by the City of Billings, this ____ day of _____, 20___.

"CITY" **CITY OF BILLINGS, MONTANA**

By: _____
Mayor

Attest: _____
City Clerk

STATE OF MONTANA)
: ss
County of Yellowstone)

On this ____ day of _____, 20___, before me, a Notary Public in and for the State of Montana, personally appeared _____ _____ and _____, known to me to be the Mayor and City Clerk, respectively, of the City of Billings, Montana, whose names are subscribed to the foregoing instrument in such capacity and acknowledged to me that they executed the same on behalf of the City of Billings, Montana.

_____
Notary Public in and for the State of Montana
Printed Name: _____
Residing at: _____
My commission expires: _____

WAIVER OF RIGHT TO PROTEST
FUTURE SPECIAL IMPROVEMENT DISTRICTS

FOR VALUABLE CONSIDERATION, the undersigned, being the Subdivider and all of the owners of the hereinafter described real property, do hereby waive the right to protest the formation of one or more special improvement district(s) for a period of no more than twenty years from the recording of this waiver, for street light maintenance and energy, and for the construction of streets, street widening, sidewalks, survey monuments, street name signs, curb and gutter, street lights, driveways, traffic signals, and traffic control devices, parks and park maintenance, trails, sanitary sewer lines, water lines, storm drains (either within or outside the area), and other improvements which the City of Billings may require.

This Waiver and Agreement is independent from all other agreements and is supported by sufficient independent consideration to which the undersigned are parties and shall run with the land and shall be binding upon the undersigned, their successors, and assigns, and the same shall be recorded in the office of the County Clerk and Recorder of Yellowstone County, Montana.

This Waiver is in addition to any other recorded waiver related to the property described herein and is not intended to replace, supersede, or invalidate any such waiver.

The real property hereinabove mentioned is more particularly described as follows:

High Sierra Subdivision, 23rd Filing

Signed and dated this _____ day of _____, 20___.

"SUBDIVIDER" **HIGH SIERRA II, INC.**

_____

STATE OF MONTANA)
: ss
County of Yellowstone)

On this ____ day of _____, 20___, before me, a Notary Public in and for the State of Montana, personally appeared _____, known to me to be the _____ of **HIGH SIERRA II, INC.,** the person who executed the forgoing instrument and acknowledged to me that he/she executed the same.

IN WITNESS WHEROF, I have hereunto set my hand and affixed my Notarial Seal the day and year hereinabove written.

_____
Notary Public in and for the State of Montana
Printed Name: _____
Residing at: _____
My commission expires: _____

FINDINGS OF FACT

The Planning staff has prepared the Findings of Fact for the preliminary plat of High Sierra Subdivision, 23rd Filing. These findings are based on the preliminary plat application and supplemental documents and address the review criteria required by the Montana Subdivision and Platting Act (76-3-608, MCA) and the Billings Subdivision Regulations (Section 23-303(H), BMCC).

A. What are the effects on agriculture, local services, the natural environment, wildlife, wildlife habitat, and public health, safety and welfare? [MCA 76-3-608 (3) (a) and BMCC 23-302.H.2.]

1. Effect on agriculture and agricultural water user facilities

The subject property is currently vacant. The subdivision should not affect agricultural water users' facilities.

2. Effect on local services

a. **Utilities** – Water service will be provided by the City of Billings. New individual services will be provided to all the lots, and new fire hydrants will be installed as required by the City Fire Department. The water service for this subdivision comes from an existing 8" water main stub in Montecito Avenue and an existing 12" water main stub in Annandale Road. Any needed extension of those water lines will be installed by the subdivider to meet the requirements of the City of Billings Engineering Department regulations. The subdivider will install all new water lines in the local streets and individual services for each lot in accordance with design standards, specifications, rules and regulations of the City of Billings Engineering/Public Works Department and MDEQ. This is outlined in the SIA under the heading VI Utilities, A, Water.

   Sanitary sewer service will be provided by connecting to the existing City of Billings' sewer mains. There is an existing 10-inch diameter sewer main located in Annandale Road and in the right-of-way on the west side of Chino Circle. All new services shall be installed in accordance with design standards, specifications, rules and regulations of the City of Billings Public Works Department and MDEQ. This is outlined in the SIA under the heading VI Utilities, B, Sanitary Sewer.

   Private Utilities will be provided from existing facilities to the subdivision. The private utilities will be installed within the public right-of-way, subject to the approval of the City Engineer.

   Stormwater – Stormwater drainage for the public streets is proposed to be provided by curb and gutters that discharge into storm water pipes. These and all other drainage improvements shall satisfy the criteria set forth by the *City of Billings Stormwater Management Manual* and will be subject to review and approval by the City Engineering Department.

b. **Solid Waste** – The City of Billings will provide solid waste collection and disposal. The City's landfill has adequate capacity for this waste.

c. **Streets** – The subdivision is accessed by Annandale Road & Montecito Avenue. Montecito Avenue will be constructed within a 56-foot right-of-way using curb and gutter and full-width pavement (34-foot back of curb to back of curb). Annadale Road shall be dedicated as a minor arterial street and shall be located within an existing 80-foot wide right of way and have a street width of 39-foot back of curb to back of curb. All internal roads of the subdivision will be built to current City standards, as described in the SIA. Street improvements are included in the Waiver of Right to Protest Future Special Improvement Districts.

The sidewalks will be installed by the respective lot owners on a lot-by-lot basis, as lots develop. Sidewalks along the street frontage shall be minimum 5-foot-wide and separated with a boulevard width not less than five feet. The developer will also install all ADA required ramps at the intersections within the proposed subdivision. This information is all in the SIA under the heading III, Transportation.

Street lighting is required for this subdivision. It is anticipated that street lighting will be installed by private contract or SID. A Street Light Maintenance District will be created for operation and maintenance of the lighting at a future date and is included in the waiver of right to protest.

Traffic Impact Study overview:

A Traffic Impact Study (TIS) was completed for High Sierra Subdivision, 23rd Filing. All required intersection improvement contributions identified therein shall be completed by the Subdivider at the Subdivider's expense. The percent of traffic contributions to the following intersections shall be in accordance with the Traffic accessibility study:

Intersection	% Contribution
Annandale Road/ Riveroaks Drive	0.79 %
Annandale Road/ St. Andrews Drive	0.88 %
Sierra Granda Boulevard/ High Sierra Boulevard	0.17 %
Sierra Granda Boulevard/ Gleneagle Boulevard	0.61 %
Alkali Creek/ Skyway Drive	0.25 %
Wicks Lane/ Skyway Drive	0.26 %
Wicks Lane/ High Sierra Boulevard	0.17 %
Wicks Lane/ Fantan Street	0.09 %
Wicks Lane/ Governors Boulevard	0.58 %
Wicks Lane/ Lake Hills Drive	0.17 %
Wicks Lane/ St. Andrews Drive	0.70 %

The cash contributions shall be based on the percentage of traffic contributions to the intersections based on the total cost of an intersection as determined. The contributions will be made at the time of final plat, as described in the SIA under heading III.D, Traffic Control Devices.

d. **Emergency Services** – The Billings Police and Fire Departments will respond to emergencies within the proposed subdivision. The nearest fire station, Fire Sation #6, is located at 1601 Saint Andrews Drive. The subdivision is located within the ambulance service area of American Medical Response (AMR).

e. **Schools** –School District #2 provides educational services to elementary through high school students. Schools serving these students are Eagle Cliffs Elementary, Castle Rock Middle School, and Skyview High School. Castle Rock Middle School is currently over capacity, and Eagle Cliffs Elementary & Skyview High School are slightly under capacity.

f. **Parks and Recreation** – This subdivision requires a parkland dedication of 0.809 Acres. The parkland requirements will be met with a cash-in-lieu contribution, to the satisfaction the Parks Department.

g. **Mail Delivery -** The United States Postal Service will provide postal service to the subdivision and has indicated that centralized mailbox units will be required as were installed for the previous filings of this subdivision. The developer will need to coordinate mailbox locations with the postal service. **(Condition #1)**

3. Effect on the natural environment

The subject property is currently vacant land with the proposed use of residential development. The property is not located in a floodplain. During development, storm water pollution prevention best management practices are required to be used and monitored to prevent erosion on exposed ground. Overall, the effect on the natural environment should be minimal.

4. Effect on wildlife and wildlife habitat

There are no known endangered or threatened species on the property. There is a paragraph in the SIA that warns future lot owners of the presence of deer in the area, which may cause damage to their landscaping. This subdivision should have a minimal effect on wildlife and wildlife habitat.

5. Effect on public health, safety and welfare

There will be no significant detrimental impacts to public health, safety and welfare because of this subdivision.

B. Was an Environmental Assessment required? [(MCA 76-3-616 and BMCC 23-302.H.1.]

The proposed subdivision is exempt from the requirement for an Environmental Assessment pursuant to Section 76-3-616, MCA.

C. Does the subdivision conform to the City of Billings 2016 Growth Policy, the 2014 Transportation Plan, and the Billings Area Bikeway and Trail Master Plan? [BMCC 23-302.H.4.]

1. City of Billings 2016 Growth Policy

The proposed subdivision is consistent with the following goals of the Growth Policy:

> **Essential Investments:** Infill development and development near existing City infrastructure may be the most cost effective.
>
> **Strong Neighborhoods (livable, safe, sociable and resilient neighborhoods):** Neighborhoods that are safe and attractive and provide essential services are much desired.
>
> **Home Base (healthy, safe and diverse housing options):** Planning and construction of interconnected sidewalks and trails are important to the economy and livability of Billings.

2. Billings Heights Neighborhood Plan

The Billings Heights Neighborhood Plan, adopted in 2006, identifies this area for low-density residential development. The subdivision meets the following goals of the Heights Neighborhood Plan:

> **Issue: Urban Sprawl**
>
> **Issue:** Residential Development
>
> **Goal:** To provide safe, good quality and affordable housing in the Heights. Develop housing patterns that are compatible with existing neighborhoods. Maintain similar housing in established neighborhoods.
>
> **Objectives:** To encourage infill development and housing development that meets residents' desire to have similar housing within their neighborhood.
>
> *This subdivision provides low-density residential single-family development in a neighborhood with existing low-density single-family development.*

3. 2023 Billings Urban Area Long Range Transportation Plan

The proposed subdivision adheres to the goals and objectives of the 2023 Transportation Plan and preserves the street network and street hierarchy specified in the plan.

4. Billings Area Bikeway and Trail Master Plan (BABTMP)

The proposed subdivision is within the jurisdiction of the Billings Area Bikeways and Trail Master Plan. There are no existing trail improvements in or near this subdivision, nor are additional improvements are anticipated.

D. Does the subdivision conform to the Montana Subdivision and Platting Act and to local subdivision regulations? [MCA 76-3-608 (3) (b) and BMCC 23-302.H.3.a.]

The proposed subdivision satisfies the requirements of the Montana Subdivision and Platting Act and to the design standards specified in the local subdivision regulations. The subdivider and the local government have complied with the subdivision review and approval procedures set forth in the local and state subdivision regulations.

E. Does the proposed subdivision conform to all requirements of the zoning in effect? [BMCC 23-302.H.3.e.]

The subject property is located within N3 zoning. The lot frontages conform to the requirements of this zone. Block length, section, and perimeter requirements have been met. Other building setbacks and structure specific requirements will be reviewed for compliance at the time of building permit review.

F. Does the proposed plat provide easements for the location and installation of any utilities? [MCA 76-3-608 (3) (c) and BMCC 23-302.H.3.b.]

The subdivider will provide utility easements as requested by private utility companies on the face of the plat.

G. Does the proposed plat provide legal and physical access to each parcel within the subdivision and notation of that access on the plat? [MCA 76-3-608 (3) (d) and BMCC 23-302.H.3.c.]

Legal and physical access is provided to the proposed will be from Annandale Road & Montecito Avenue. New internal access will provide circulation to individual lots.

CONCLUSIONS OF FINDINGS OF FACT

- The preliminary plat of High Sierra Subdivision, 23rd Filing does not create any adverse impacts that warrant denial of the subdivision.

- The proposed subdivision conforms to several of the goals and policies of the 2016 Growth Policy and Heights Area Plan and does not conflict with the Transportation or Bikeway/Trail Plans.

- The proposed subdivision complies with state and local subdivision regulations, local zoning, and sanitary requirements and provides legal and physical access to each lot.

- Any potential negative or adverse impacts will be mitigated with the proposed conditions of approval.

RECOMMENDATION

Staff recommends to the Planning Board to recommend to the City Council that the preliminary plat of High Sierra Subdivision, 23rd Filing be conditionally approved and adopt the Findings of Fact as presented in the staff report.

HIGH SIERRA SUBDIVISION 23RD FILING AND FULL BUILDOUT TRAFFIC IMPACT STUDY

82061.159

Dakota Martonen
City of Billings Public Works Department
2224 Montana Avenue
Billings, MT 59101

Intelligent Infrastructure.
Enduring Communities.

JUNE/2025

sanbell

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

This traffic impact study (TIS) assesses the traffic-related impacts associated with the proposed development of the 23rd Filing and the remaining planned filings of the High Sierra Subdivision in Billings, Montana on the surrounding transportation system. This report also provides recommendations to mitigate any such impacts. The methodology and analysis procedures used in this study employ the latest technology and nationally accepted standards in the areas of site development and transportation impact assessment. Recommendations made in this report are based on professional judgment and these principles.

Traffic impacts were originally analyzed for this part of the subdivision masterplan via the *High Sierra Subdivision (5th-12th Filings) Traffic Impact Study* (June 2008). Since the completion of that study, filing update letters have been prepared for subsequent phases through the 22nd Filing. The purpose of this TIS is to provide an updated assessment of the overall master plan. Additional update letters will be developed as future filings are proposed.

SITE LOCATION AND DESCRIPTION

The High Sierra Subdivision is located in northeast Billings, Montana which is known as The Heights. The site is bordered by undeveloped land to the north and west and Lake Hills Golf Course and residential developments to the south and east in the Billings Heights Community. The 23rd Filing is adjacent to Chino Circle and West Bonito Loop to the east and Annandale Road to the south. The remaining planned filings are located to the west of the 23rd Filing and north of Sierra Granda Boulevard. Figure 1 on the following page depicts the designated study area.

SITE DEVELOPMENT PLAN

The site development plan for the High Sierra Subdivision 23rd Filing proposes construction of 37 single-family homes to be constructed by 2029. The remaining planned filings propose the construction of 606 single-family homes. Full buildout of the High Sierra Subdivision is expected to occur over the next 10 years.

Primary access to High Sierra Subdivision 23rd Filing is proposed via one new full-movement approach on Annandale Road and connections to other roads within the subdivision. Primary access to the other future High Sierra Subdivision Filings includes an extension of Annandale Road, High Sierra Boulevard, and other existing roads in the Heights. Sidewalks are proposed to be installed throughout the development. Figure 2 on page three shows the current proposed site plan for the entire High Sierra Subdivision.

EXISTING CONDITIONS

Streets

Figure 3 on page four shows the City of Billings roadway functional classifications and speed limits on study area streets. Streets without a posted speed limit are presumed to operate at 25-mph per City of Billings statute. Additional conditions of existing streets within the study area are described as follows:

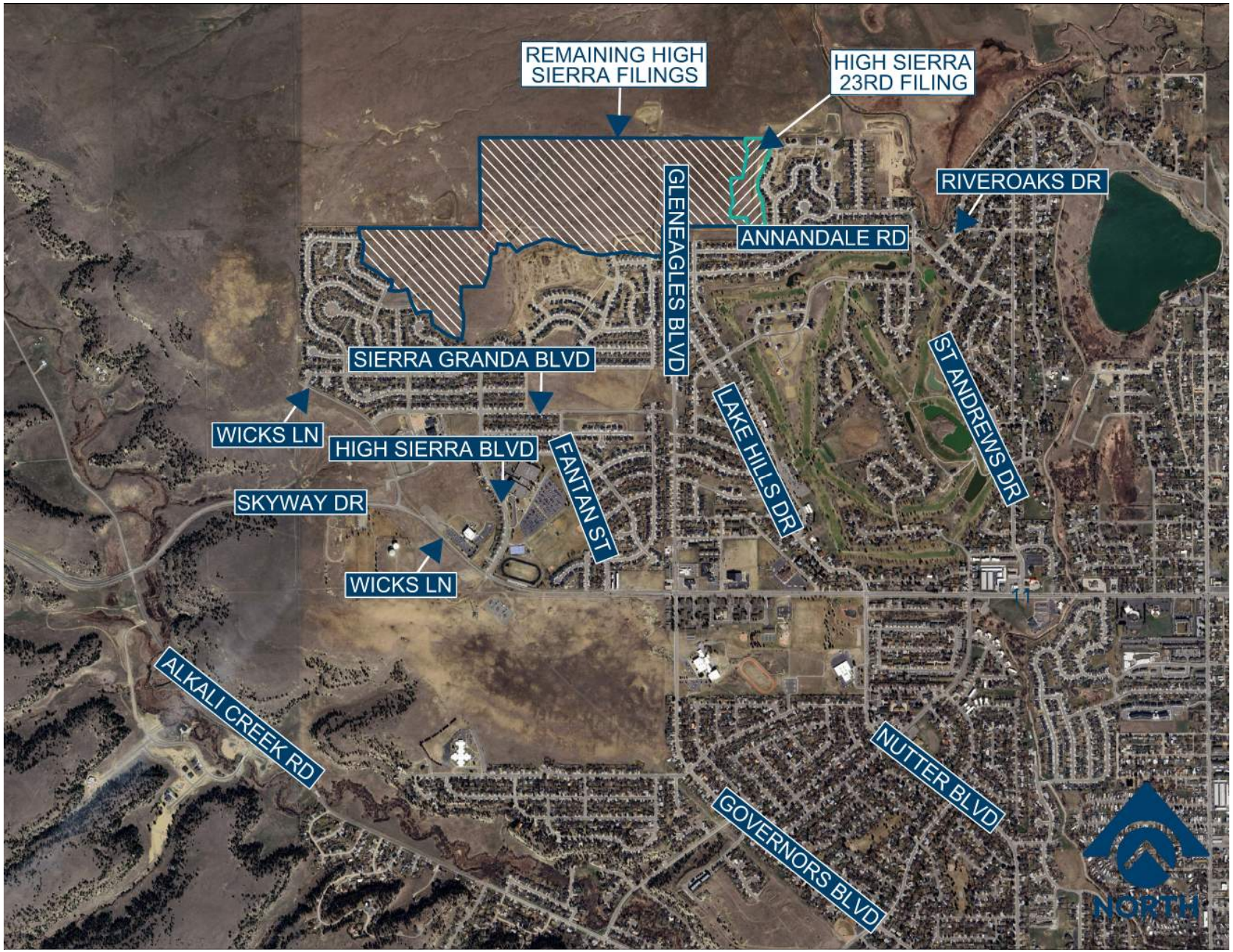


Figure 1: Study Area

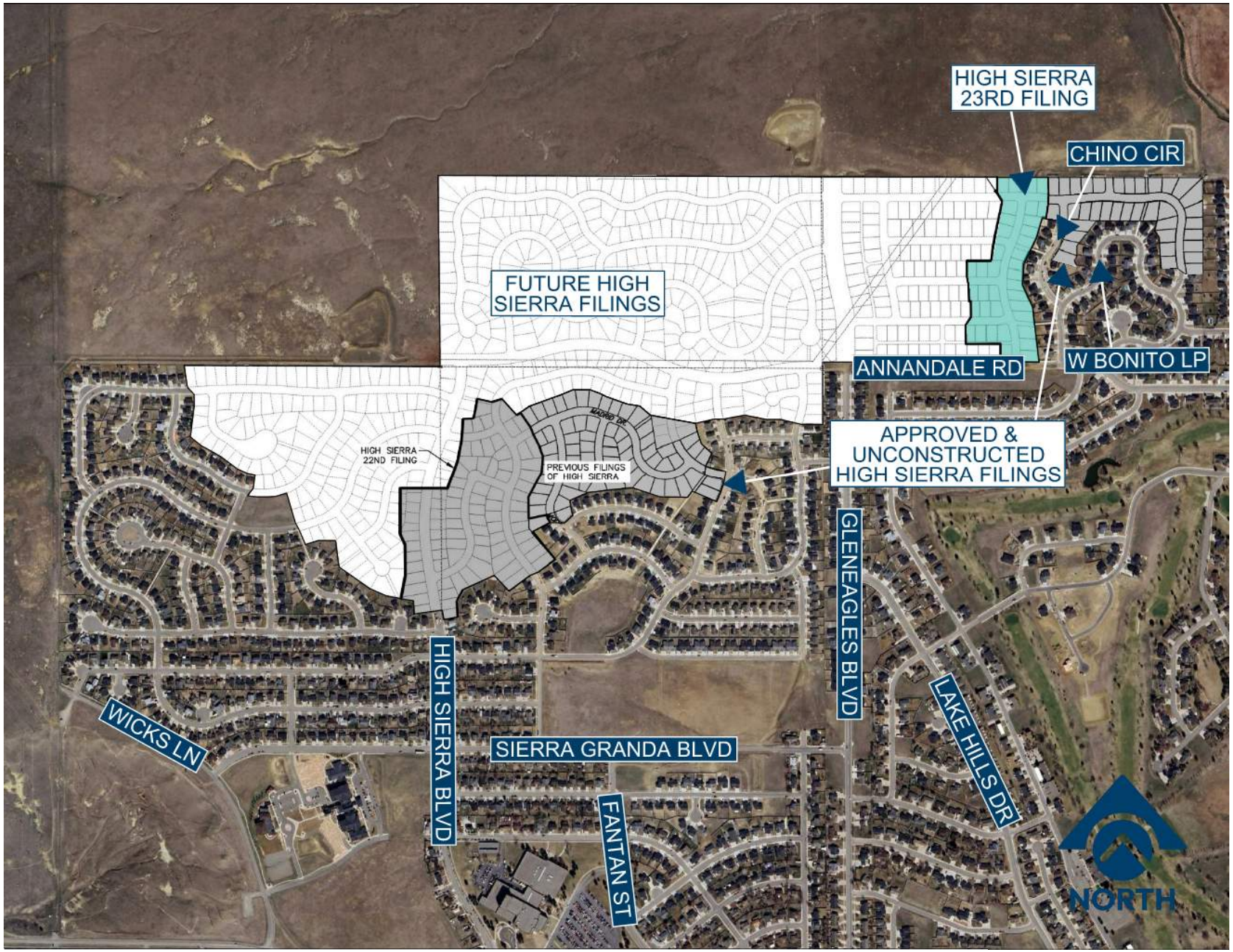


Figure 2: Site Layout

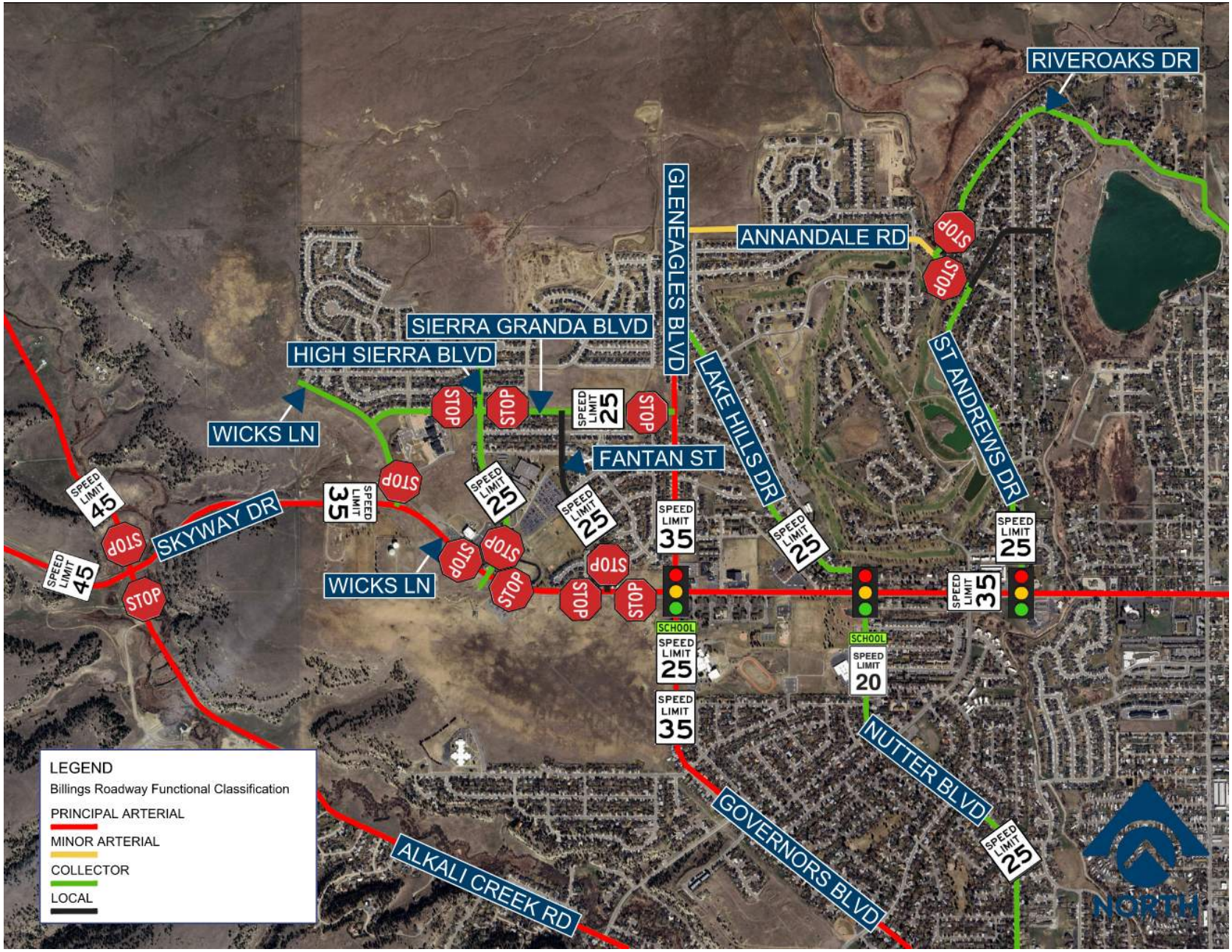


Figure 3: Street and Intersection Characteristics

All study area streets generally have two-lane sections, with one travel lane in each direction with the following exceptions: Wicks Lane has a three-lane section with a center two-way left-turn lane (TWLTL) east of Governors Boulevard; there are two westbound lanes on Wicks Lane starting 300 feet east of Governors Boulevard and terminating as a westbound right-turn only lane at Fantan Street. There is parallel on-street parking on Wicks Lane between Governors Boulevard and St Andrews Drive and on the streets surrounding Skyview High School including High Sierra Boulevard and Fantan Street. When the high school is in session, students have also been observed to park in the grass along Wicks Lane. There is curb and gutter along Gleneagles Boulevard, Governors Boulevard, Wicks Lane east of Governors Boulevard, and along most residential streets in the study area.

Intersections

Figure 3 also shows the traffic control utilized at each study area intersection. Additional intersection characteristics are described below.

The Wicks Lane/Gleneagles Boulevard/Governors Boulevard intersection is signalized and operates with a basic two-phase plan with permissive phasing for all left turns. There are left-turn lanes on all approaches. There is a right-turn lane on the westbound approach.

The Wicks Lane/Lake Hills Drive intersection is signalized and operates with a basic two-phase plan with permissive phasing for all left turns. There are eastbound and westbound left-turn lanes and all approaches except for the southbound leg have a right-turn lane.

The Wicks Lane/St Andrews Drive intersection is signalized and operates with a protected/permissive phase for eastbound left turns and a protected-only phase for southbound left turns. There are southbound and westbound right-turn lanes and southbound and eastbound left-turn lanes.

The Wicks Lane/High Sierra Boulevard and Wicks Lane/Fantan Street intersections are all-way stop controlled. There are westbound right-turn lanes at both intersections. The northbound leg of High Sierra Boulevard is gravel and does not have a stop sign.

At the Wicks Lane/Skyway Drive intersection, there is an eastbound left-turn lane and a westbound right-turn lane. The stop-controlled southbound lane has both right- and left-turn lanes.

The remaining study area intersections are stop-controlled on the minor approaches with one shared lane on each approach.

Bicycle/Pedestrian Facilities

There is a shared use path on the south side of Skyway Drive/Wicks Lane which becomes a sidewalk near the Wicks Lane/Governors Boulevard intersection. All project streets include sidewalks on at least one side, with the exception of approximately 350 feet of Wicks Lane between Skyway Drive and Siesta Avenue, and several segments of Gleneagles Boulevard where sidewalk connections have yet to be constructed.

The signalized intersections of Wicks Lane/Governors Boulvard, Wicks Lane/Lake Hills Drive, and Wicks Lane/St Andrews each have striped crosswalks. There are striped crosswalks across the south leg at the Alkali Creek Road/Skyway Drive intersection, the north and east legs of the High Sierra Boulevard/Wicks Lane intersection, and the west and north legs of the Fantan Street/Wicks Lane intersection. There are striped bicycle lanes along Lake Hills Drive/Nutter Boulevard, Governors Boulevard, and a section of High Sierra Boulevard, starting 500 feet south of Sierra Granda Boulevard.

The Billings MET Transit West Heights Circulator route, which began in October 2023, begins at Lake Elmo Drive and Milton Road, traveling west along Wicks Lane, then looping through High Sierra Boulevard, Sierra Granda Boulevard, and Gleneagles Boulevard, before continuing south along Governors Boulevard. The 2023 Billings Urban Area Long Range Transportation Plan (LRTP) and the 2017 Billings Area Bikeway + Trails Master Plan update recommend construction of shared use paths and/or bike lanes along nearly every street in the study area. The LRTP Safe Routes to School Plan recommends reducing vehicle lanes and adding bike lanes along Wicks Lane starting at Gleneagles Boulevard and spanning east of St Andrews Drive.

Traffic Volumes

Weekday AM and PM peak hour turning movement counts were collected for study area intersections on Tuesday, February 25, 2025. The traffic data was collected using Miovision Scout video-based systems. In general, the weekday AM and PM peak hour periods were found to occur from 7:15 to 8:15 AM and 4:45 to 5:45 PM. Raw count data was adjusted for seasonal variation using City of Billings seasonal adjustment factors. Figure 4 on the following page summarizes the calculated Existing Conditions (2025) peak hour turning movement volumes for the AM and PM peak hours. Detailed traffic count data worksheets are included in Appendix A.

Intersection Capacity

Existing Conditions (2025) intersection capacity calculations were performed for the study area intersections using PTV Vistro 2023 software, which is based on the Highway Capacity Manual, 7th Edition (Transportation Research Board, 2022). Level of service (LOS) is defined as a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS is a qualitative measure of the performance of an intersection with values ranging from LOS A, which indicates good operation and low vehicle delays, to LOS F, which indicates congestion and longer vehicle delays. LOS C is typically considered a minimum acceptable threshold for operations in Montana-based communities, though exceptions are made in certain cases.

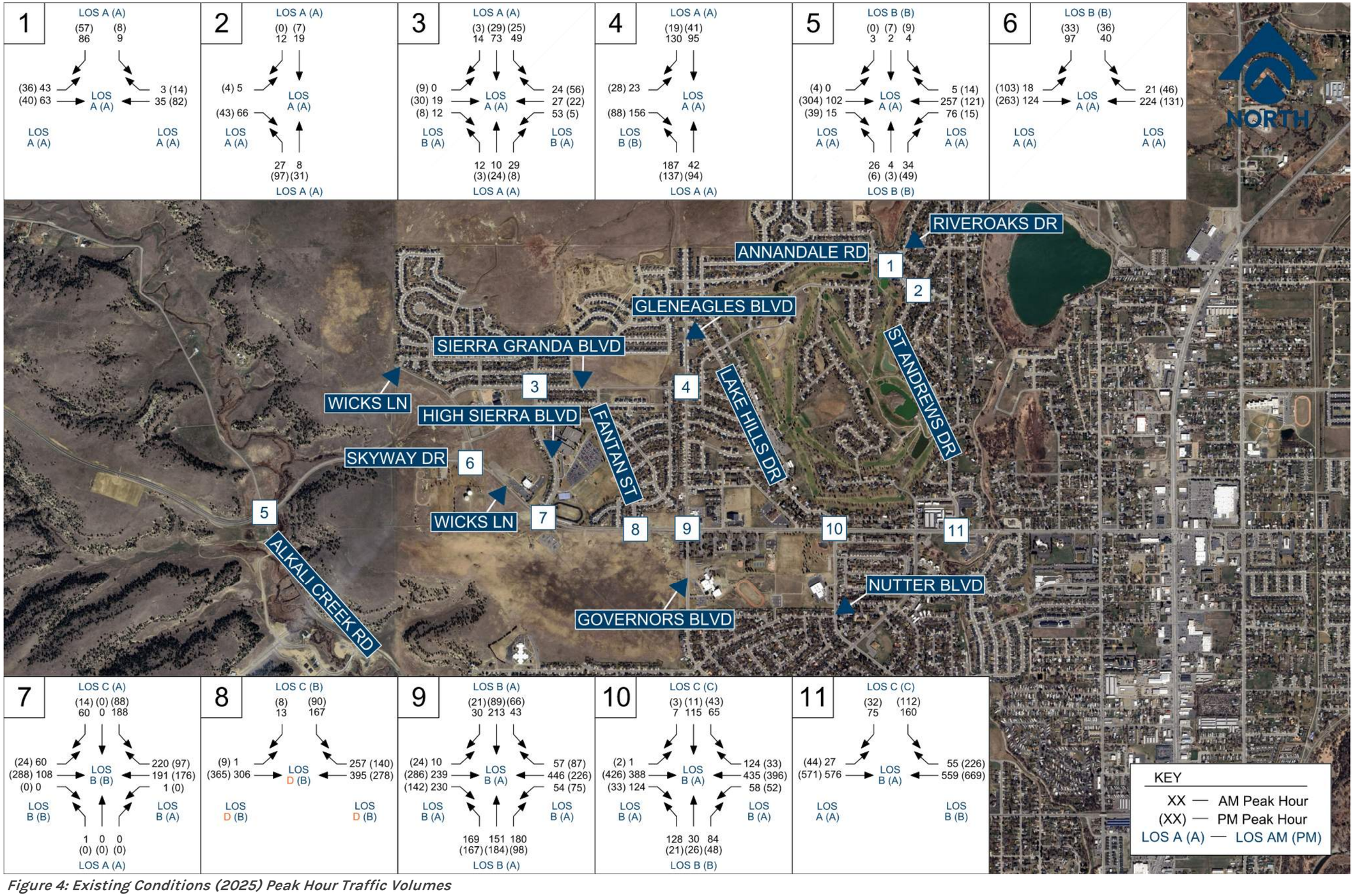


Figure 4: Existing Conditions (2025) Peak Hour Traffic Volumes

The results of the Existing Conditions (2025) intersection capacity calculations showed that all approaches and intersections currently operate at LOS C or better during both peak hours, except for the eastbound and westbound approaches at the Wicks Lane/Fantan Street intersection, which are projected to operate at LOS D during the AM peak hour. The 95th percentile queueing is generally minimal at all study area intersection approaches, with some longer queues at the signalized and all-way stop-controlled intersections in comparison to the one/two-way stop-controlled intersections. Figure 4 also shows the Existing Conditions (2025) LOS results at each intersection. A detailed capacity summary table and capacity calculation worksheets for each of the study area intersections can be found in Appendix B.

Crash History

Historical crash data was obtained from the Montana Department of Transportation (MDT) for the five-year period from January 1, 2019, through December 31, 2023 for all study area intersections. Note that no crashes were reported at the Annandale Road/Riveroaks Drive and Wicks Lane/Skyway Drive intersections. It should also be noted that the west leg of the Alkali Creek Road/Skyway Drive intersection was recently constructed but the crash analysis was performed based on the three-legged configuration that was present during the crash history period. The crash data was analyzed for the purpose of calculating intersection crash and severity rates and evaluating collision type trends. Tables 1 and 2 below and on page nine, respectively, illustrate the results of that analysis.

Table 1: Crash History – Frequency and Severity Statistics

Intersection	2019-2023 DEV[1]	Reported Crashes[2]	Crash Type			Crash Data[3]			HSM Predictions[4]	
			PDO	Injury	Fatality	Average Crash Frequency (Crash/Yr)	Crash Rate (Crash/MVE)	Severity Index	Predicted Average Crash Frequency (Crash/Yr)	Predicted Crash Rate (Crash/MVE)
Annandale Rd/Riveroaks Dr	1517	0	0	0	0	0.00	0.00	0.00	0.19	0.35
Annandale Rd/St Andrews Dr	1017	1	1	0	0	0.20	0.54	1.00	0.16	0.42
Sierra Granda Blvd/High Sierra Blvd	1734	2	2	0	0	0.40	0.63	1.00	0.35	0.55
Sierra Granda Blvd/Gleneagles Blvd	3961	1	0	1	0	0.20	0.14	3.00	0.37	0.25
Alkali Creek Rd/Skyway Dr	1092	1	1	0	0	0.20	0.50	1.00	0.10	0.25
Wicks Ln/Skyway Dr	2531	0	0	0	0	0.00	0.00	0.00	0.18	0.19
Wicks Ln/High Sierra Blvd	4041	4	1	3	0	0.80	0.54	2.50	0.78	0.53
Wicks Ln/Fantan St	6273	7	6	1	0	1.40	0.61	1.29	0.96	0.42
Wicks Ln/Gleneagles Blvd	9759	17	12	5	0	3.40	0.95	1.59	0.89	0.25
Wicks Ln/Lake Hills Dr	9138	16	12	4	0	3.20	0.96	1.50	1.31	0.39
Wicks Ln/St Andrews Dr	12615	22	14	8	0	4.40	0.96	1.73	1.24	0.27

[1] Daily Entering Volume (DEV) estimated from 2025 peak hour counts and 2019-2023 MDT published ADTs
[2] Crashes reported from January 1, 2019 to December 31, 2023
[3] Crash rates expressed as crashes per million vehicles entering (MVE)
[4] Rates calculated using Highway Safety Manual (HSM) 1st Edition predictive methodology

Intersection crash frequency rates were calculated on the basis of crashes per million vehicles entering (MVE). The MVE metric was estimated based on published historical ADT volumes from the MDT website and 2025 peak hour counts. The highest crash rates were 0.95 and 0.96 crashes/MVE at the three signalized intersections along Wicks Lane. The Wicks Lane/St Andrews Drive intersection had the highest number of reported crashes in the study area at 22.

As a means of evaluating the relative significance of the calculated historical crash rates, an expected rate was also calculated using the predictive crash rate formulas in the American Association of State Highway and Transportation Officials (AASHTO) Highway Safety Manual (HSM). The process involves calculating the number of crashes predicted in a year based on traffic demand (AADTs) and various physical and traffic environment-based conditions, such as lane configurations and traffic control. The calculation results in a crashes-per-year prediction. A frequency rate was then back calculated on the basis of MVE for the sake of comparison with the actual historical crash rates. The results of the calculations for this study showed that the historical crash rates were substantially higher than predicted (2.4 to 3.8 times) at the three signalized intersections along Wicks Lane. Historical crash rates were also up to two times higher than predicted at the remaining intersections, which generally had low crash totals and crash rates. Only the Sierra Granda Boulevard/Gleneagles Boulevard intersection had a historical crash rate that was lower than predicted, aside from the intersections with no reported crashes. The HSM rate predictions and five-year crash totals for each intersection are summarized in Table 1 on the previous page.

Severity indices were also calculated for all study area intersections. A severity index gives an indication of relative crash severity for a location based on the number of fatal, injury, and property damage only (PDO) crashes. The severity index was highest (3.00) at the Sierra Granda Boulevard/Gleneagles Boulevard intersection, due to the only reported crash resulting in a possible injury. The severity index was also high (2.50) at the Wicks Lane/High Sierra Boulevard intersection, where three out of four total crashes resulted in reported injuries. Approximately 36 percent of crashes resulted in injury at the Wicks Lane/St Andrews Drive intersection, which had the third highest severity index of 1.73. Severity index calculations are also shown in Table 1.

Collision type was evaluated for the purpose of identifying any significant trends in the crash data. Table 2 below presents the results of that analysis. Rear end crashes were by far the most commonly reported collision type in the study area, with right-angle and sideswipe crashes also prevalent.

Table 2: Crash History – Collision Type

	Collision Type												
	Rear End	Right Angle	LT, OD	LT, SD	SS, OD	SS, SD	Head On	Fixed Object	Parked Vehicle	Pedestrian	Bicycle	Other	Total
Annandale Rd/Riveroaks Dr													0
Annandale Rd/St Andrews Dr									1				1
Sierra Granda Blvd/High Sierra Blvd		1							1				2
Sierra Granda Blvd/Gleneagles Blvd		1											1
Alkali Creek Rd/Skyway Dr								1					1
Wicks Ln/Skyway Dr													0
Wicks Ln/High Sierra Blvd	2				2								4
Wicks Ln/Fantan St	6	1											7
Wicks Ln/Gleneagles Blvd	2	3	1	1	1	3		1	1	3		1	17
Wicks Ln/Lake Hills Dr	10					2		2	1			1	16
Wicks Ln/St Andrews Dr	14	1	1		1	1	2				1	1	22

Rear end collisions accounted for 48 percent of all crashes reported in the study area and occurred at all three signalized intersections and both all-way stop-controlled intersections. Rear end crashes commonly occur at signalized intersections because the signal control is dynamic and thereby requires drivers to

recognize and react to changing conditions in real time. High speeds approaching signalized intersections allow drivers less response time, which creates an opportunity for an increased chance of rear end collisions. Factors that typically contribute to a high occurrence of rear end crashes at signalized intersections include yellow change intervals that are too short for the prevailing operating speeds, or a lack of dedicated turn lanes where high turning movement demands are prevalent. There are turn lanes for most movements at the signalized intersections, but yellow change intervals were found to be inadequate on nearly every approach at the three signalized intersections. A 2016 City of Billings memo found that prevailing operating speeds in Billings were on average 7-mph above the posted speed limit and directed to calculate yellow times based on this data. Therefore, "design" yellow change intervals were calculated using formulas from the Institute of Transportation Engineers (ITE) Traffic Engineering Handbook with assumed speeds of 32-mph and 42-mph instead of 25-mph and 35-mph, respectively. This analysis found that yellow clearance times are inadequate on all approaches at the Wicks Lane/Gleneagles Boulevard intersection and should be increased from 3.0 to 4.1 seconds. At the Wicks Lane/Lake Hills Drive and Wicks Lane/St Andrews Drive intersections, the Wicks Lane approaches should be increased from 3.5 to 4.1 seconds; the Lake Hills Drive and St Andrews Drive approaches should be decreased from 3.5 to 3.4 seconds.

A majority of reported rear end collisions occurred on the eastbound or westbound Wicks Lane approaches at the all-way stop-controlled or signalized intersections. Many also involved three or more vehicles with a mix of poor and dry roadway conditions. At the Wicks Lane/Fantan Street intersection, a secondary two-vehicle collision was reported 45 minutes after a four-vehicle rear end collision. In addition to the impacts of the inadequate yellow change intervals, it is possible that the multi-vehicle collisions are due to queuing along Wicks Lane from signalized intersections and/or speeding vehicles not anticipating queues.

Rear end crashes may also occur at all-way stop-controlled intersections due to driver miscommunications where a vehicle attempts to enter the intersection but stops due to conflicting vehicles, pedestrians, or bicycles, with the following vehicle then hitting the lead vehicle. Other crash types may also occur at all-way stop-controlled intersections due to driver confusion.

Right-angle crashes were reported at five study intersections of all control types and comprised 10 percent of all crashes in the study area. Right-angle collisions typically occur at signalized intersections when there is an increased presence of red light running which may or may not be due to inadequate all-red clearance times. Right-angle crashes typically occur at unsignalized intersections when drivers stop at a stop sign but then proceed when it is unsafe to do so. Often these crashes are caused by sight distance issues, drivers incorrectly detecting speeds of approaching vehicles, and/or high speeds on the main roadway. There do not appear to be any sight distance restrictions at the minor approach stop-controlled intersections with reported right-angle crashes, which also occurred on 25-mph facilities.

Sideswipe, opposite-direction (SS/OD) and sideswipe, same-direction (SS/SD) crashes were reported at the signalized intersections and at Wicks Lane/High Sierra Boulevard, comprising 14 percent of all reported crashes in the study area. These crashes typically occur at intersections where thru vehicles maneuver around turning vehicles, due to other lane changing movements, or on curves. Some sideswipe crashes involved lane changing movements and two involved heavy vehicles. Both SS/OD crashes at the Wicks Lane/High Sierra Boulevard intersection involved eastbound and westbound vehicles, but no other trends could be determined.

Fixed object and parked vehicle collisions were also reported, which often share common causes. These crash types accounted for 11 percent of all reported collisions in the study area and often occur due to alcohol, excessive speeds, inattention, or poor visibility and where objects are too close to the roadway for fixed object collisions specifically. Dark conditions were reported for 63 percent of fixed object and parked vehicle crashes, and 63 percent of drivers in those collisions were reported to have left the scene of the crash.

In total, 17 percent of crashes in the study area occurred with wet, snowy, or icy roadway conditions, 27 percent occurred at dawn, dusk, or in the dark, and 18 percent were reported as hit-and-run crashes. Six percent of reported crashes involved an impaired driver and seven percent involved heavy vehicles.

It is important to note that all of the above evaluations of crash causes are speculative, and more detailed information about individual crashes would be needed to determine exact causes for each collision and identify whether any specific trends are present.

TRIP GENERATION

This study utilized Trip Generation, 11th Edition, published by the Institute of Transportation Engineers (ITE), which is the most widely accepted source in the United States for determining trip generation projections. These projections are used to analyze the impacts of a new development on the surrounding area. For the purposes of this study, Land Use Land Use 210 – Single-Family Detached Housing was utilized to project trip generation for the High Sierra Subdivision 23rd Filing and remaining planned filings. Table 3 below illustrates the results of the trip generation calculations for the site.

Table 3: Trip Generation Summary

Land Use	Independent Variable		Average Weekday			AM Peak Hour			PM Peak Hour		
	Intensity	Units	total	enter	exit	total	enter	exit	total	enter	exit
23rd Filing											
Single-Family Detached Housing[1]	37	Dwelling Units	349	175	174	26	7	19	35	22	13
Remaining Filings											
Single-Family Detached Housing[1]	606	Dwelling Units	5715	2858	2857	424	106	318	570	359	211
Total Buildout New External Trips			**6064**	**3033**	**3031**	**450**	**113**	**337**	**605**	**381**	**224**

(1) Single-Family Detached Housing - Land Use 210* Units = Dwelling Units

Average Weekday: Average Rate = 9.43 (50% entering/50% exiting)

Peak Hour of the Adjacent Street, One Hour between 7 and 9 AM: Average Rate = 0.70 (25% entering/75% exiting)

Peak Hour of the Adjacent Street, One Hour between 4 and 6 PM: Average Rate = 0.94 (63% entering/37% exiting)

* *Trip Generation, 11th Edition*, Institute of Transportation Engineers, 2021

The construction of the High Sierra Subdivision 23rd Filing is projected to generate a total of 349 gross average weekday trips with 26 trips (7 entering/19 exiting) generated during the AM peak hour and 35 trips (22 entering/13 exiting) during the PM peak hour. The remaining planned filings are projected to generate 5,715 gross average weekday trips with 424 trips (106 entering/318 exiting) generated during the AM peak hour and 570 trips (359 entering/211 exiting) during the PM peak hour. Full buildout of the remaining High Sierra Subdivision is projected to generate a total of 6,064 gross average weekday trips.

Trip generation projections provide an estimate of the total number of trips that would be generated by a proposed development. However, to estimate the net number of new trips made by personal vehicles external to the site, adjustments must often be made to account for internal capture trips, pass-by trips, and trips made by alternate modes.

Internal capture (IC) trips are trips that do not have origins or destinations external to a project site. Since IC trips occur internally, they do not have an impact on external traffic operations. IC trips most often occur in mixed-use developments where residential, commercial, and office-related land uses exhibit a high rate of internal trip exchange and were therefore not calculated for this study.

Pass-by trips are trips that are made as intermediate stops on the way from a point of origin to a primary trip destination. Pass-by trips are attracted from traffic "passing by" on an adjacent street that offers direct access to that site. Pass-by trips are primarily attracted by commercial type land uses such as restaurants, convenience markets, and gas stations, and were also not calculated for this study.

Given the close proximity of Billings Skyview High School to the subdivision, it is likely that a percentage of trips could be attributed to bicycle or pedestrian student traffic. The nearest MET Transit bus routes are also adjacent to the school, so transit access is convenient. However, since it would be difficult to estimate an accurate percentage of student and alternate mode trips, and for the purposes of being consistent with previous traffic impact studies for this subdivision, alternate mode trips were considered to be negligible for this study.

TRIP DISTRIBUTION

Trip distribution is an estimate of site-generated trip routing, which can be determined by methods such as computerized travel demand models, calculation of travel time for various available routes, and/or inspection of existing traffic patterns in the project area. For this study, distribution percentages were calculated from reviewing the *Inner Belt Loop Corridor Study*, previous High Sierra Subdivision filings, and existing traffic volumes, with consideration given to the location of the development in relation to the greater Billings area. Figures 5 and 6 on pages 14 and 15 present the trip distribution schemes for the 23rd Filing (2029) and Full Buildout (2035) analysis scenarios, respectively.

TRAFFIC ASSIGNMENT

Traffic assignment is the procedure whereby site-generated vehicle trips are assigned to study area streets, intersections, and site access driveways based on the calculated trip distribution and the physical attributes of the development site. Using this approach, site-generated trips for the High Sierra Subdivision 23rd Filing and remaining planned filings were assigned to the study area intersections for the purposes of projecting future traffic volumes for analysis. The results of the traffic assignment exercise are also illustrated in Figures 5 and 6.

Traffic assignment calculations were also completed for the filings that have been approved but not yet constructed. The results of this assignment are not included in Figures 5 and 6, but the trips are included in the volumes for the two future scenarios.

TRAFFIC IMPACTS

Traffic Volumes

Based on information from the Client, construction of the High Sierra Subdivision 23rd Filing is anticipated to occur within approximately four years. Therefore, a future year of 2029 was utilized for calculating traffic projections for the purpose of this analysis. Full buildout of the High Sierra Subdivision is anticipated to occur within 10 years, so a future year of 2035 was utilized for the full buildout projections. In addition to site-generated trips, background traffic volumes will also likely increase for study area streets and intersections due to general growth and surrounding area developments. To account for that growth, historical MDT traffic data in the area was reviewed and it was determined that an annual background growth rate of 2.0 percent would be appropriate for modeling ambient growth of this region of Billings.

23rd Filing (2029) and Full Buildout (2035) traffic projections for the High Sierra Subdivision 23rd Filing and full buildout were then calculated by combining existing traffic volumes with anticipated background growth, trips from other approved filings, and site-generated traffic assignments. Figures 7 and 8 on pages 16 and 17, respectively, illustrate the resulting AM and PM peak hour 23rd Filing (2029) and Full Buildout (2035) traffic volume projections.

Intersection Capacity

Capacity calculations were performed for the 23rd Filing (2029) and Full Buildout (2035) scenarios based on the AM and PM peak hour traffic volume projections presented in Figures 7 and 8. Peak hour factors (PHFs) for the Wicks Lane/High Sierra Boulevard and Wicks Lane/Fantan Street intersections were kept consistent with Existing Conditions (2025) for all design years. This is due to the influence of nearby Skyview High School, which causes traffic volumes to peak unevenly during school arrival and dismissal times, resulting in similar PHF patterns over time. The PHFs for the remaining intersections for both design years were assumed to be 0.92, per HCM guidelines and common industry practice for future scenarios. The assumed values were utilized to not overestimate future congestion in the study area. Figures 7 and 8 show the 23rd Filing (2029) and Full Buildout (2035) LOS results at each intersection.

23rd Filing (2029) capacity results were similar to Existing Conditions (2025), with all intersections and approaches projected to continue to operate at LOS C or better during both peak hours, except during the AM peak hour in which the southbound approach at the Wicks Lane/High Sierra Boulevard intersection is projected to worsen to LOS D and the eastbound and westbound approaches at the Wicks Lane/Fantan Street intersection are projected to worsen to LOS E and F, respectively. The 95th percentile queueing is projected to remain minimal at the one/two-way stop-controlled intersections with longer queues at the all-way stop-controlled and signalized intersections. The westbound approaches at the signalized intersections and the southbound approach of the Wicks Lane/High Sierra Boulevard intersection are projected to experience queues of up to eight vehicles during the AM peak hour. The westbound approach of the Wicks Lane/St Andrews Drive intersection is projected to experience queues up to 11 vehicles in the PM peak hour. The queues on the eastbound and westbound approaches at the Wicks Lane/Fantan Street intersection are projected to be 13 and 19 vehicles, respectively, during the AM peak hour.

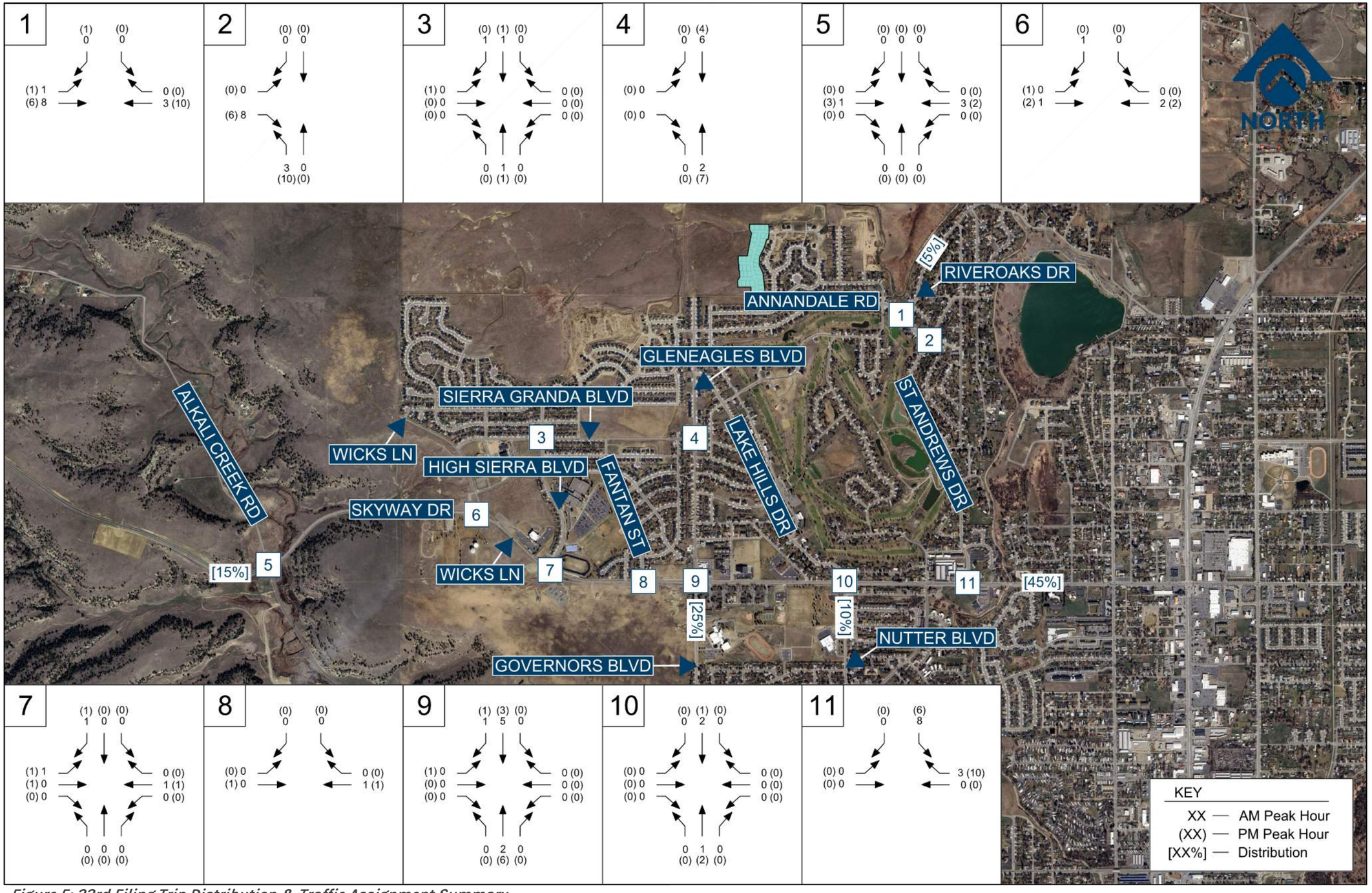


Figure 5: 23rd Filing Trip Distribution & Traffic Assignment Summary

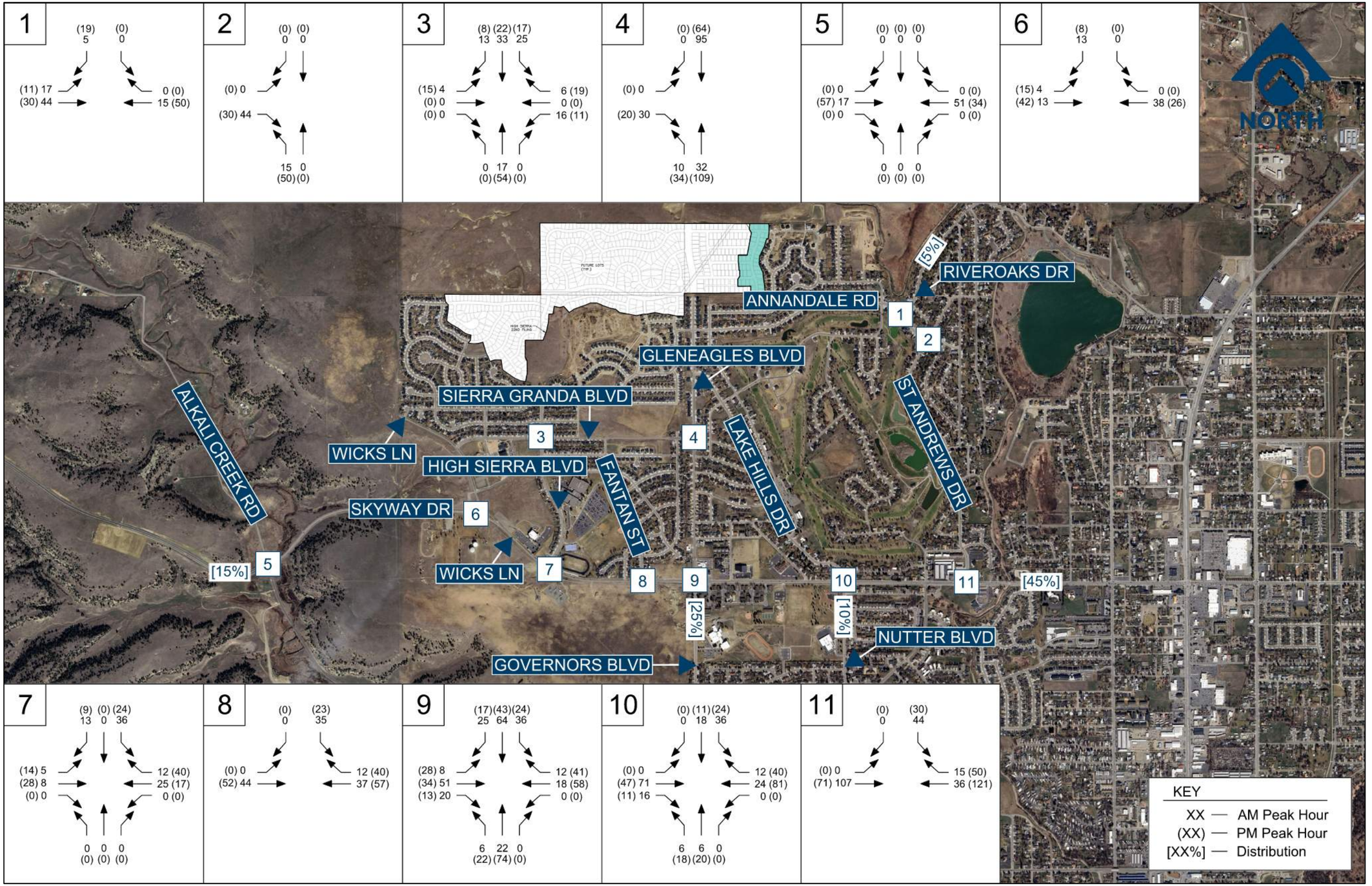


Figure 6: Full Buildout Trip Distribution & Traffic Assignment Summary

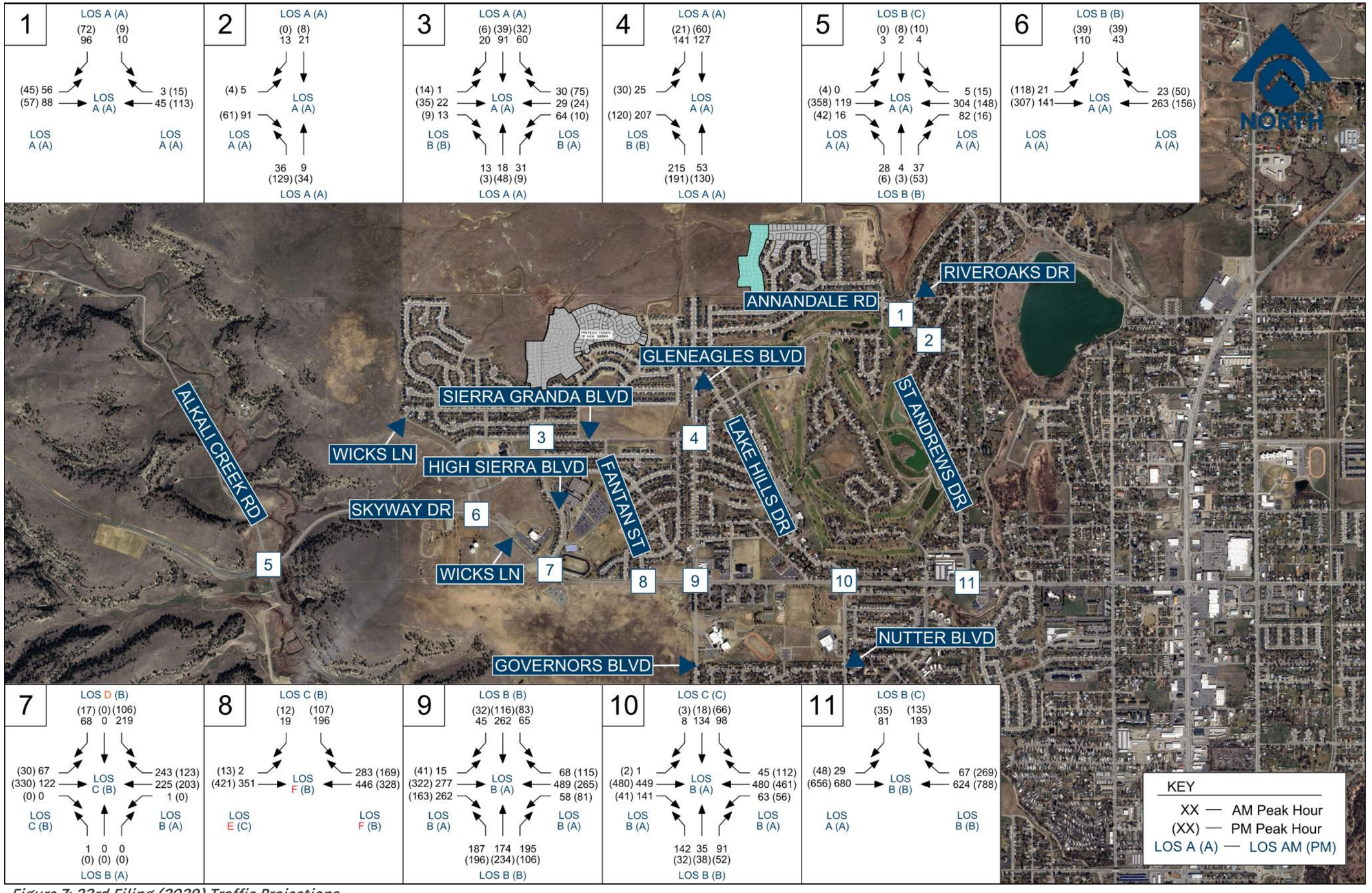


Figure 7: 23rd Filing (2029) Traffic Projections

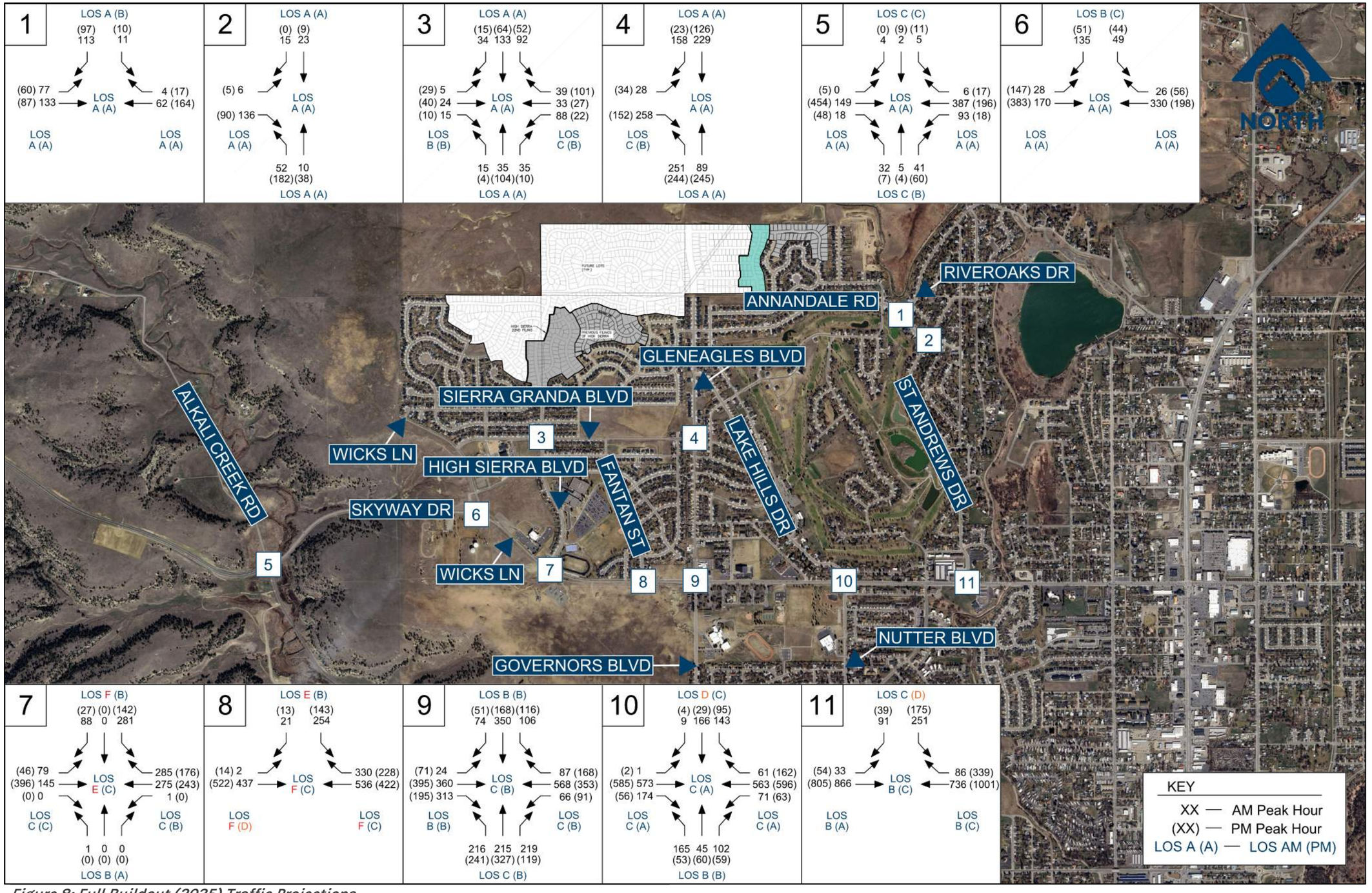


Figure 8: Full Buildout (2035) Traffic Projections

Full Buildout (2035) capacity results show worsening operations from the 23rd Filing (2029) scenario at all study area intersections. In addition to the substandard operations at the all-way stop-controlled intersections, the southbound approaches at the Wicks Lane/Lake Hills Drive and Wicks Lane/St Andrews Drive intersections are projected to operate at LOS D during one peak hour each. There is moderate projected 95th percentile queues of 15 to 19 vehicles on at least one approach at the Wicks Lane/High Sierra Boulevard, Wicks Lane/Governors Boulevard, and Wicks Lane/Lake Hills Drive intersections during the AM peak hour. There are major queues projected up to 26 to 34 vehicles along Wicks Lane at the intersections with Fantan Street and St Andrews Drive during at least one peak hour. Detailed intersection capacity summary tables and capacity calculation worksheets for the 23rd Filing (2029) and Full Buildout (2035) traffic projection scenarios can be found in Appendix C.

Mitigation Alternatives

A variety of potential mitigation improvement options were evaluated to address existing concerns and/or projected impacts for study area streets and intersections. The following sections provide details on that analysis.

Auxiliary Turn Lanes

Auxiliary right- and left-turn lane warrants were evaluated based on the methodology outlined in the MDT Traffic Engineering Manual (November 2007) for the Existing Conditions (2025), 23rd Filing (2029), and Full Buildout (2035) analysis scenarios at the Skyway Drive/Alkali Creek Road intersection.

Skyway Drive/Alkali Creek Road: A westbound left-turn lane is projected to be warranted based on the 23rd Filing (2029) volumes. This lane is projected to have a minimal impact on delay, which is already at LOS C or better in both future scenarios. It should be noted that the right-turn lane warrant is four vehicles from being met on the eastbound approach during the PM peak hour based on the Full Buildout (2035) scenario. This warrant could be met based on the fluctuation of day-to-day traffic. Traffic patterns should be monitored at this intersection as the westbound approach is still relatively new and behaviors may still be normalizing.

The final decision to install any turn lanes should be made by the City of Billings after evaluation of what impacts they may have to other aspects of the intersections or adjacent intersections. Auxiliary turn lane warrant worksheets for the Existing Conditions (2025), 23rd Filing (2029), and Full Buildout (2035) scenarios can be found in Appendix D.

Traffic Signals

Traffic signal warrants were evaluated at the Wicks Lane/High Sierra Boulevard and Wicks Lane/Fantan Street intersections using criteria outlined in the Manual on Uniform Traffic Control Devices (MUTCD), 11th Edition for the Existing Conditions (2025), 23rd Filing (2029), and Full Buildout (2035) analysis scenarios. The MUTCD presents several warrants that can be considered based on traffic volumes, school crossings, crash history, and others.

For the purposes of this analysis, Warrant 9 (Intersection Near a Grade Crossing) was not evaluated because neither intersection is near a railroad crossing. Additionally, satisfaction of the Peak Hour Warrant

alone should not be considered as warranting a signal, as it is primarily meant for application at office complexes, manufacturing plants, or other high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.

It was determined that the Peak Hour Warrant is met at the Wicks Lane/Fantan Street intersection with Existing Conditions (2025) volumes, and at the Wicks Lane/High Sierra Boulevard intersection with 23rd Filing (2029) volumes. Due to their proximity to Skyview High School, both intersections experience short periods of high traffic volume, resulting in longer delays that contribute to meeting the Peak Hour Warrant. The Four-Hour Warrant is projected to be met at the Wicks Lane/Fantan Street intersection under Full Buildout (2035) conditions, and a traffic signal is considered warranted at that time. A sensitivity analysis indicated that the signal warrant at this intersection would be met after the construction of the 23rd Filing and approximately 389 additional homes, before full buildout. No other volume-based signal warrants are expected to be met at these intersections. Currently, pedestrian volumes at both intersections are low. However, as trail connectivity around the school improves and if both High Sierra Boulevard and Fantan Street are extended south of Wicks Lane—as is outlined in the Billings Long Range Transportation Plan (LRTP)—pedestrian activity should be monitored to determine if the Pedestrian Warrant may be met in the future. Traffic signal warrant worksheets for the Existing Conditions (2025), 23rd Filing (2029), and Full Buildout (2035) scenarios are provided in Appendix E.

Improved Intersection Capacity

Wicks Lane/High Sierra Boulevard: An eastbound left-turn lane was analyzed based on the high volume of eastbound left turns during the peak hours. The addition of an eastbound left-turn lane is projected to reduce intersection delay by a few seconds for the Full Buildout (2035) scenario. A southbound left-turn lane was also analyzed based on the high volume of southbound left-turning vehicles during the peak hours. With both eastbound and southbound left-turn lanes, operations are projected to improve to LOS D during the AM peak hour. The installation of a single-lane roundabout or a traffic signal is projected to improve operations to LOS C or better during both peak hours.

Wicks Lane/Fantan Street: A single-lane roundabout or a traffic signal were both found to improve Full Buildout (2035) operations to LOS C or better during both peak hours.

Wicks Lane/Lake Hills Drive: A southbound left-turn lane paired with protected/permitted phasing was found to reduce delay on the southbound approach by almost 20 seconds in the Full Buildout (2035) scenario, which would bring that approach to LOS B during both peak hours.

Wicks Lane/St Andrews Drive: The removal of the eastbound protected/permitted left-turn phase was found to improve all approaches to LOS C or better during both peak hours for the Full Buildout (2035) scenario. It should be noted that this option should only be considered if the addition of the protected/permitted phase was not as a safety treatment.

Detailed intersection capacity summary tables and capacity calculation worksheets for the Full Buildout (2035) traffic projection scenario with improvements can be found in Appendix F.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This report presents an updated analysis of the original master plan for the High Sierra Subdivision, reflecting changes in development phasing and current traffic conditions. The preceding analysis has shown that construction of the High Sierra Subdivision 23rd Filing and remaining planned filings will generate a moderate volume of new traffic demand for area streets and intersections. Through the planned development, it is estimated that approximately 349 gross new vehicle trips could be generated daily after the construction of the 23rd Filing and 5,715 gross new trips are projected after construction of the remaining planned 606 units. Traffic impact update letters will be submitted with future subdivision filings.

An evaluation of Existing Conditions (2025) intersection capacity showed that all intersections and approaches currently operate at LOS C or better during both peak hours, except for two approaches at the Wicks Lane/Fantan Street intersection. Queues are generally minimal at all study area intersection approaches, with some longer queues at the signalized and all-way stop-controlled intersections.

A crash history analysis showed that rear end, right-angle, and sideswipe crashes were the most common collision types in the study area. Historical crash rates were higher than predicted at all study intersections with reported crashes but one, and by a factor of up to 3.8 times at the Wicks Lane/Gleneagles Boulevard intersection. The other two signalized intersections also had historical rates that were much higher than predicted. It is recommended that yellow clearance times be updated at all three signalized intersections to be based on prevailing speed data within the City of Billings. It is also possible that excessive queuing along Wicks Lane may be leading to an increased prevalence of rear end collisions. Increased enforcement of red light running and reevaluation of all-red clearance times should be considered to address right-angle crashes.

23rd Filing (2029) intersection capacity results showed that all intersections are projected to continue to operate at LOS C or better with the exception of the Wicks Lane/High Sierra Boulevard intersection which is expected to degrade to LOS D on the southbound approach during the AM peak hour and the Wicks Lane/Fantan Street intersection which is projected to degrade to LOS F during the AM peak hour. Full Buildout (2035) intersection capacity results were similar to 23rd Filing (2029) capacity results with the exception of the Wicks Lane/Lake Hills Drive and Wicks Lane/St Andrews Drive intersections which both have one approach that is projected to worsen to LOS D during one peak hour.

Auxiliary turn lane warrants were evaluated based on the application of MDT Traffic Engineering Manual criteria. A westbound left-turn lane was found to be warranted at the Skyway Drive/Alkali Creek Road intersection with 23rd Filing (2029) volumes.

Traffic signal warrants were evaluated at the Wicks Lane/High Sierra Boulevard and Wicks Lane/Fantan Street intersections for the Existing Conditions (2025), 23rd Filing (2029), and Full Buildout (2035) scenarios. A traffic signal is considered warranted at the Wicks Lane/Fantan Street intersection based on the Full Buildout (2035) scenario.

Recommendations

The following list of recommendations is based on the analysis results from this study and the professional judgment of the author:

- Yellow clearance times should be updated as follows:
    - Wicks Lane/Gleneagles Boulevard intersection: increase to 4.1 seconds on all approaches.
    - Wicks Lane/Lake Hills Drive and Wicks Lane/St Andrews Drive intersections: increase to 4.1 seconds on the eastbound/westbound approaches and decrease to 3.4 seconds on the northbound and southbound approaches.
- Traffic signal warrants should continue to be monitored at the Wicks Lane/High Sierra Boulevard and Wicks Lane/Fantan Street intersections to determine if and when installation of a signal at either intersection should be considered. The signal warrant at the Wicks Lane/Fantan Street intersection is projected to be met after the construction of the 23rd Filing and approximately 389 additional homes. If Fantan Street and High Sierra Boulevard are extended south of Wicks Lane, traffic signal warrants should be reevaluated, as changes in traffic and pedestrian volumes may warrant signalization.

Any proposed improvements should be coordinated with LRTP and other area projects and all transportation-related improvements shall be designed in accordance with City of Billings and/or MDT standards (where applicable) and the Manual on Uniform Traffic Control Devices (MUTCD).

FINANCIAL CONTRIBUTION CALCULATIONS

The City of Billings calculates financial contributions toward improvement costs at impacted intersections based on the developer's contribution of entering traffic to the total entering volume at failing capacity for the intersection. The proposed contributions for this study were calculated based on the sum of critical lane volumes generated by both the 23rd Filing and the remaining units planned for this development compared to the capacity thresholds specified by the City. This development's portion of the critical volumes for impacted intersections are as follows for the 23rd Filing / remaining planned units, respectively:

- Annandale Road & Riveroaks Drive – 0.79 percent / 4.39 percent
- Annandale Road & St Andrews Drive – 0.88 percent / 3.51 percent
- Sierra Granda Boulevard & High Sierra Boulevard – 0.17 percent / 6.25 percent
- Sierra Granda Boulevard & Gleneagles Boulevard – 0.61 percent / 8.95 percent
- Alkali Creek Road & Skyway Drive – 0.25 percent / 4.50 percent

- Wicks Lane & Skyway Drive – 0.26 percent / 3.51 percent
- Wicks Lane & High Sierra Boulevard – 0.17 percent / 5.33 percent
- Wicks Lane & Fantan Street – 0.09 percent / 6.93 percent
- Wicks Lane & Governors Boulevard – 0.58 percent / 14.75 percent
- Wicks Lane & Lake Hills Drive – 0.17 percent / 10.25 percent
- Wicks Lane & St Andrews Drive – 0.70 percent / 12.72 percent

The conversion of these percentages into dollar figures should be calculated based on the current City of Billings intersection cost participation value, which is $450,000.00 as of July 1, 2024. The final contribution amount will be determined by the City. Detailed financial contribution calculation worksheets are included in Appendix G.

TRAFFIC VOLUME DATA

APPENDIX A

Intelligent Infrastructure.
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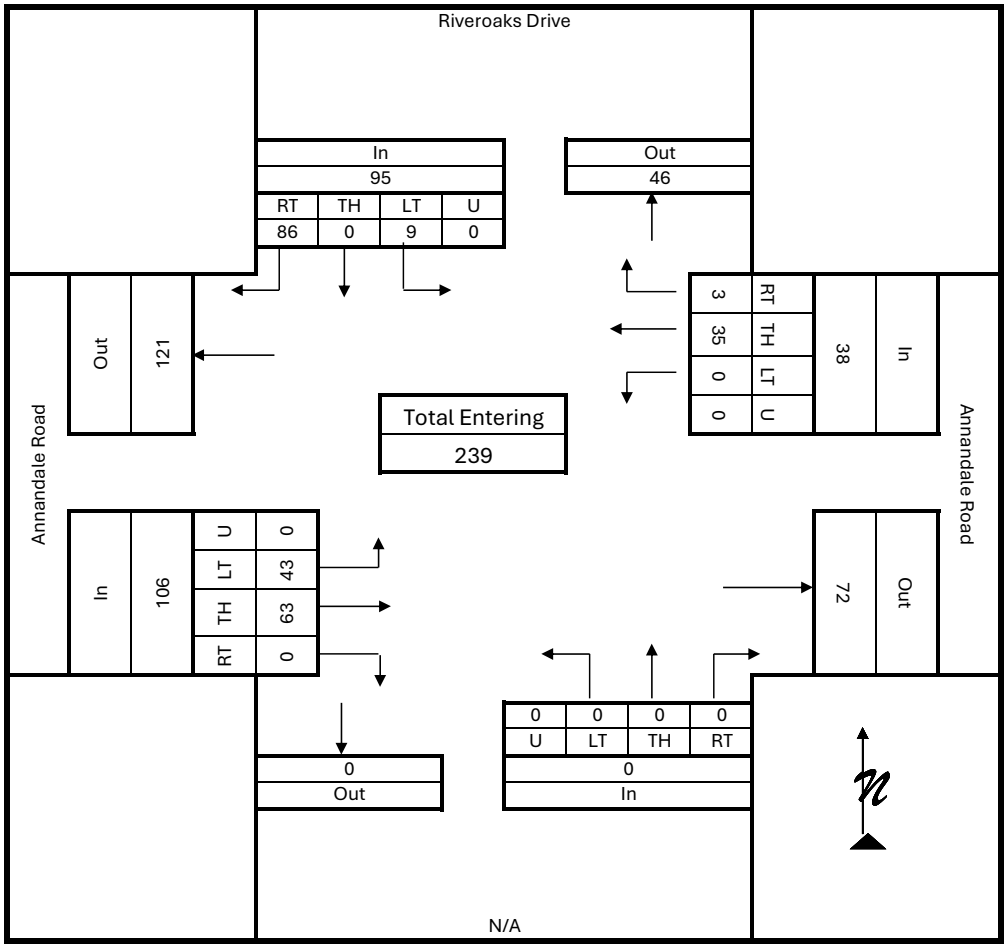
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Riveroaks Dr & Annandale Rd
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Riveroaks Drive	East/West Street:	Annandale Road

Vehicle Volumes and Adjustments

	Riveroaks Drive Southbound					N/A Northbound					Annandale Road Eastbound					Annandale Road Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
7:15 AM	22	0	4	0	26	0	0	0	0	0	0	18	6	0	24	0	3	0	0	3	53
7:30 AM	32	0	2	0	34	0	0	0	0	0	0	16	9	0	25	0	20	0	0	20	79
7:45 AM	26	0	1	0	27	0	0	0	0	0	0	16	13	0	29	1	10	0	0	11	67
8:00 AM	6	0	2	0	8	0	0	0	0	0	0	13	15	0	28	2	2	0	0	4	40
Grand Total	86	0	9	0	95	0	0	0	0	0	0	63	43	0	106	3	35	0	0	38	239
Medium Truck %	1.2	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	1.2	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	
Total %	36.0	0.0	3.8	0.0	39.7	0.0	0.0	0.0	0.0	0.0	0.0	26.4	18.0	0.0	44.4	1.3	14.6	0.0	0.0	15.9	100.0
PHF	0.70	0.70	0.70			1.00	1.00	1.00			1.00	1.00	1.00			0.47	0.47	0.47			0.76



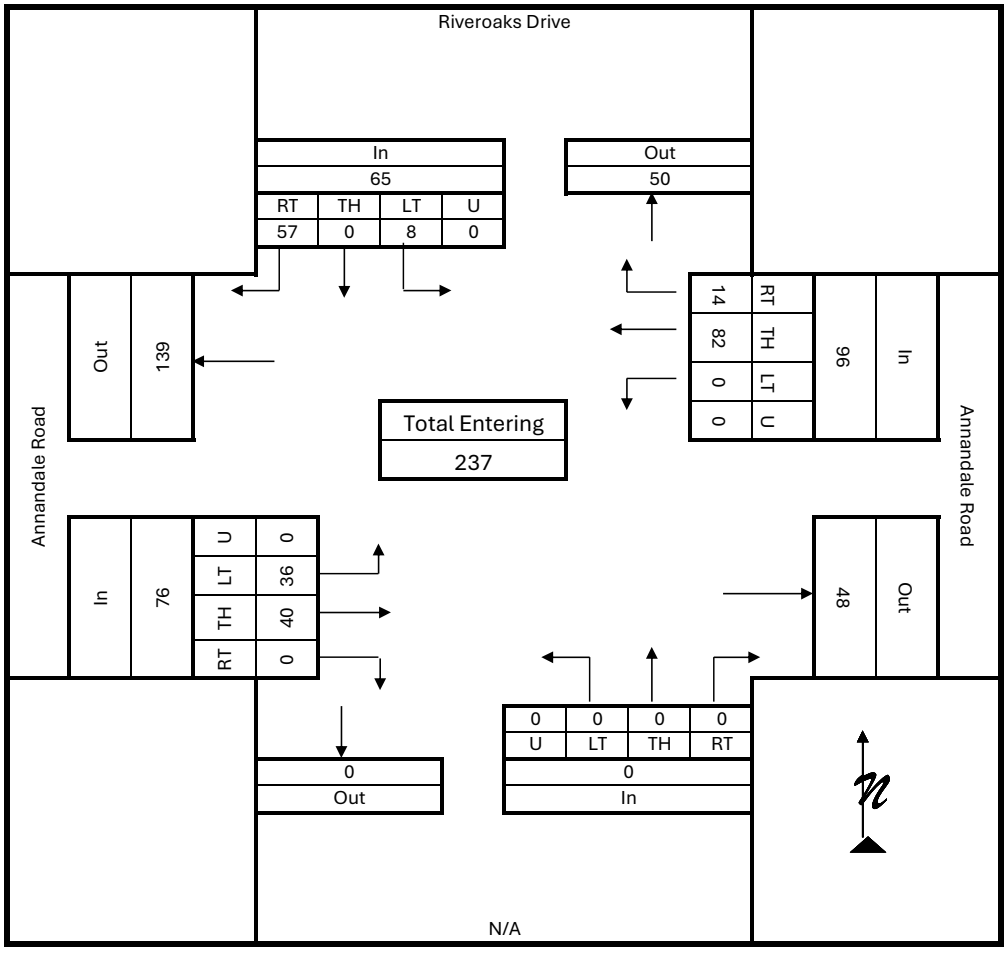
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Riveroaks Dr & Annandale Rd
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Riveroaks Drive	East/West Street:	Annandale Road

Vehicle Volumes and Adjustments

	Riveroaks Drive Southbound					N/A Northbound					Annandale Road Eastbound					Annandale Road Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
4:45 PM	15	0	2	0	17	0	0	0	0	0	0	14	4	0	18	3	14	0	0	17	52
5:00 PM	10	0	2	0	12	0	0	0	0	0	0	7	12	0	19	1	22	0	0	23	54
5:15 PM	16	0	1	0	17	0	0	0	0	0	0	10	15	0	25	5	18	0	0	23	65
5:30 PM	16	0	3	0	19	0	0	0	0	0	0	9	5	0	14	5	28	0	0	33	66
Grand Total	57	0	8	0	65	0	0	0	0	0	0	40	36	0	76	14	82	0	0	96	237
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total %	24.1	0.0	3.4	0.0	27.4	0.0	0.0	0.0	0.0	0.0	0.0	16.9	15.2	0.0	32.1	5.9	34.6	0.0	0.0	40.5	100.0
PHF	0.85	0.85	0.85			1.00	1.00	1.00			1.00	1.00	1.00			0.73	0.73	0.73			0.90



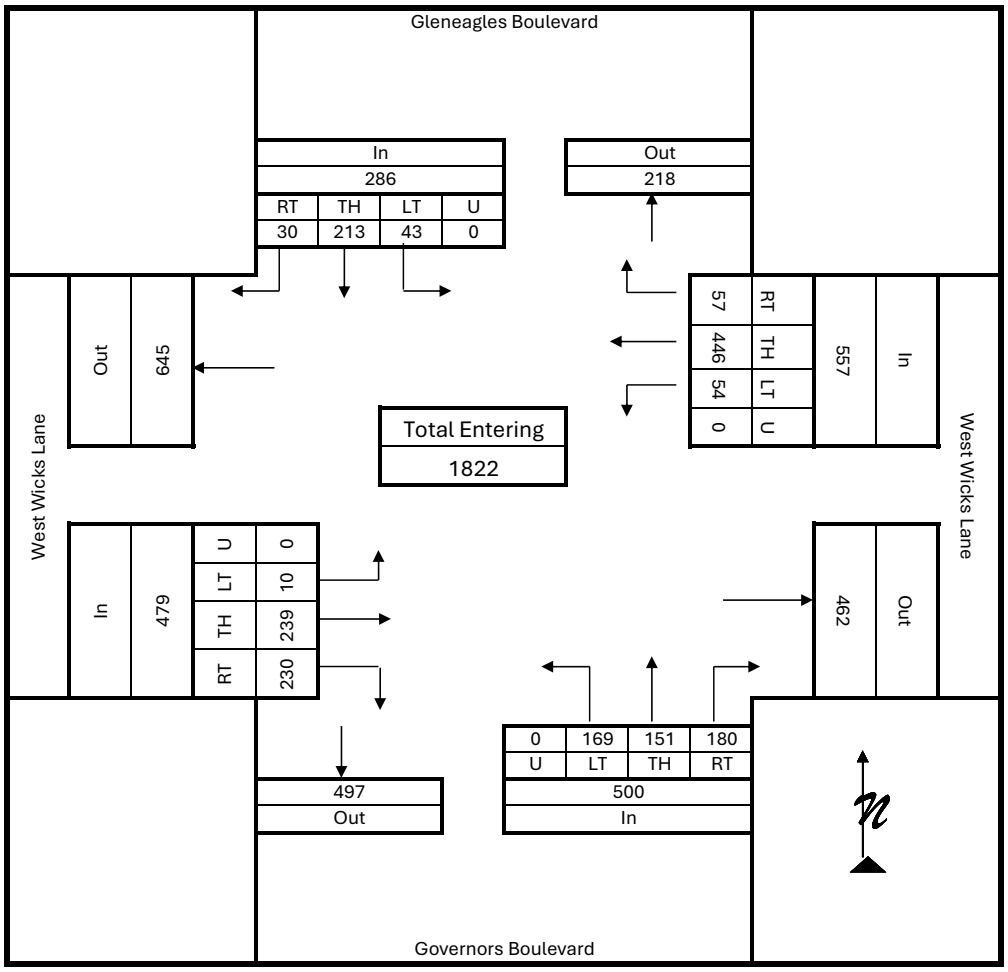
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Governors Blvd/Gleneagles Blvd & W Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Gleneagles Boulevard/Governors Boulevard	East/West Street:	West Wicks Lane

Vehicle Volumes and Adjustments

	Gleneagles Boulevard Southbound					Governors Boulevard Northbound					West Wicks Lane Eastbound					West Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
7:15 AM	15	47	11	0	73	13	21	32	0	66	34	24	3	0	61	19	112	12	0	143	343
7:30 AM	7	82	12	0	101	35	35	46	0	116	78	72	2	0	152	15	150	16	0	181	550
7:45 AM	3	62	13	0	78	90	50	46	0	186	76	100	1	0	177	10	141	13	0	164	605
8:00 AM	5	22	7	0	34	42	45	45	0	132	42	43	4	0	89	13	43	13	0	69	324
Grand Total	30	213	43	0	286	180	151	169	0	500	230	239	10	0	479	57	446	54	0	557	1822
Medium Truck %	3.3	1.9	0.0	0.0	1.7	2.2	1.3	0.0	0.0	1.2	0.4	2.9	0.0	0.0	1.7	0.0	1.6	3.7	0.0	1.6	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	
Total Truck %	3.3	1.9	0.0	0.0	1.7	2.2	1.3	0.0	0.0	1.2	0.4	2.9	0.0	0.0	1.7	0.0	1.8	3.7	0.0	1.8	
Total %	1.6	11.7	2.4	0.0	15.7	9.9	8.3	9.3	0.0	27.4	12.6	13.1	0.5	0.0	26.3	3.1	24.5	3.0	0.0	30.6	100.0
PHF	0.92	0.92	0.92			0.67	0.67	0.67			0.68	0.68	0.68			0.85	0.85	0.85			0.75



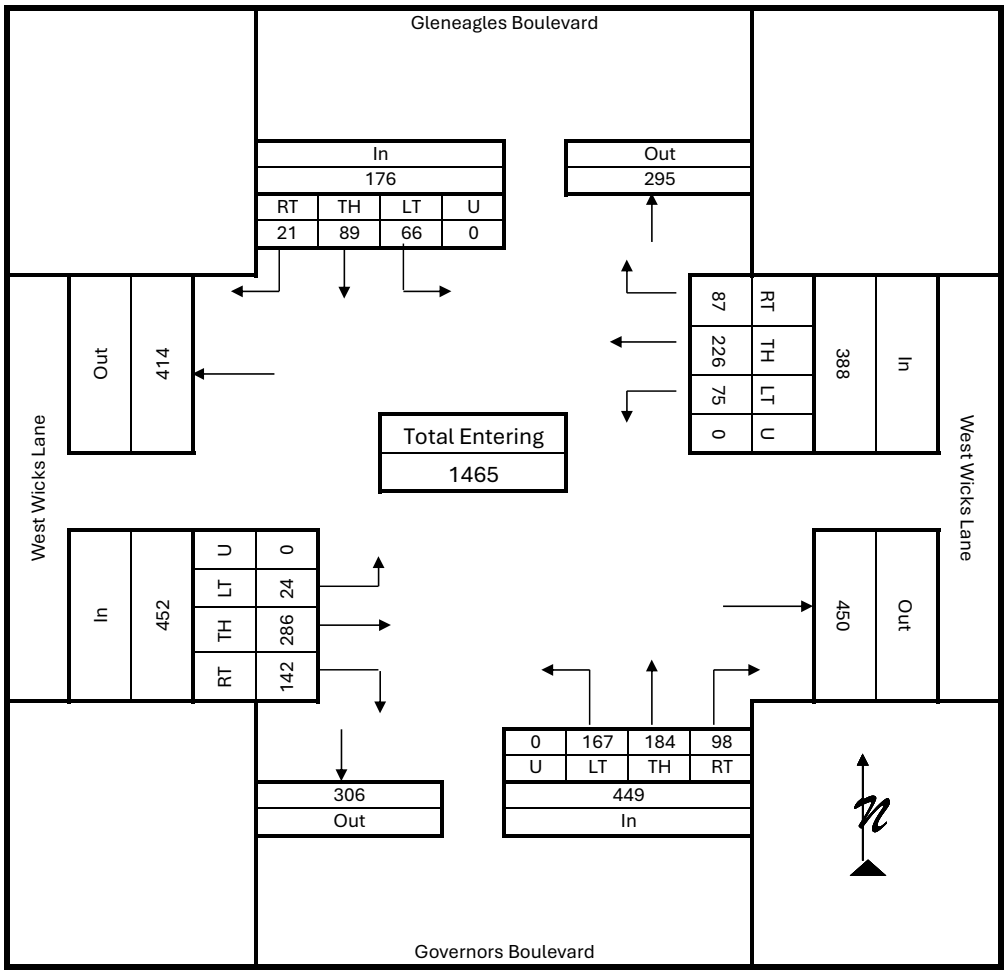
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Governors Blvd/Gleneagles Blvd & W Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Gleneagles Boulevard/Governors Boulevard	East/West Street:	West Wicks Lane

Vehicle Volumes and Adjustments

	Gleneagles Boulevard Southbound					Governors Boulevard Northbound					West Wicks Lane Eastbound					West Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
4:45 PM	5	32	21	0	58	14	41	34	0	89	36	52	3	0	91	16	48	32	0	96	334
5:00 PM	1	28	16	0	45	54	60	68	0	182	32	72	13	0	117	27	59	20	0	106	450
5:15 PM	9	15	12	0	36	13	46	40	0	99	41	87	4	0	132	20	63	12	0	95	362
5:30 PM	6	14	17	0	37	17	37	25	0	79	33	75	4	0	112	24	56	11	0	91	319
Grand Total	21	89	66	0	176	98	184	167	0	449	142	286	24	0	452	87	226	75	0	388	1465
Medium Truck %	0.0	2.2	1.5	0.0	1.7	0.0	0.0	2.4	0.0	0.9	0.0	0.7	0.0	0.0	0.4	0.0	0.9	0.0	0.0	0.5	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	2.2	1.5	0.0	1.7	0.0	0.0	2.4	0.0	0.9	0.0	0.7	0.0	0.0	0.4	0.0	0.9	0.0	0.0	0.5	
Total %	1.4	6.1	4.5	0.0	12.0	6.7	12.6	11.4	0.0	30.6	9.7	19.5	1.6	0.0	30.9	5.9	15.4	5.1	0.0	26.5	100.0
PHF	0.98	0.98	0.98			0.62	0.62	0.62			0.97	0.97	0.97			0.91	0.91	0.91			0.81



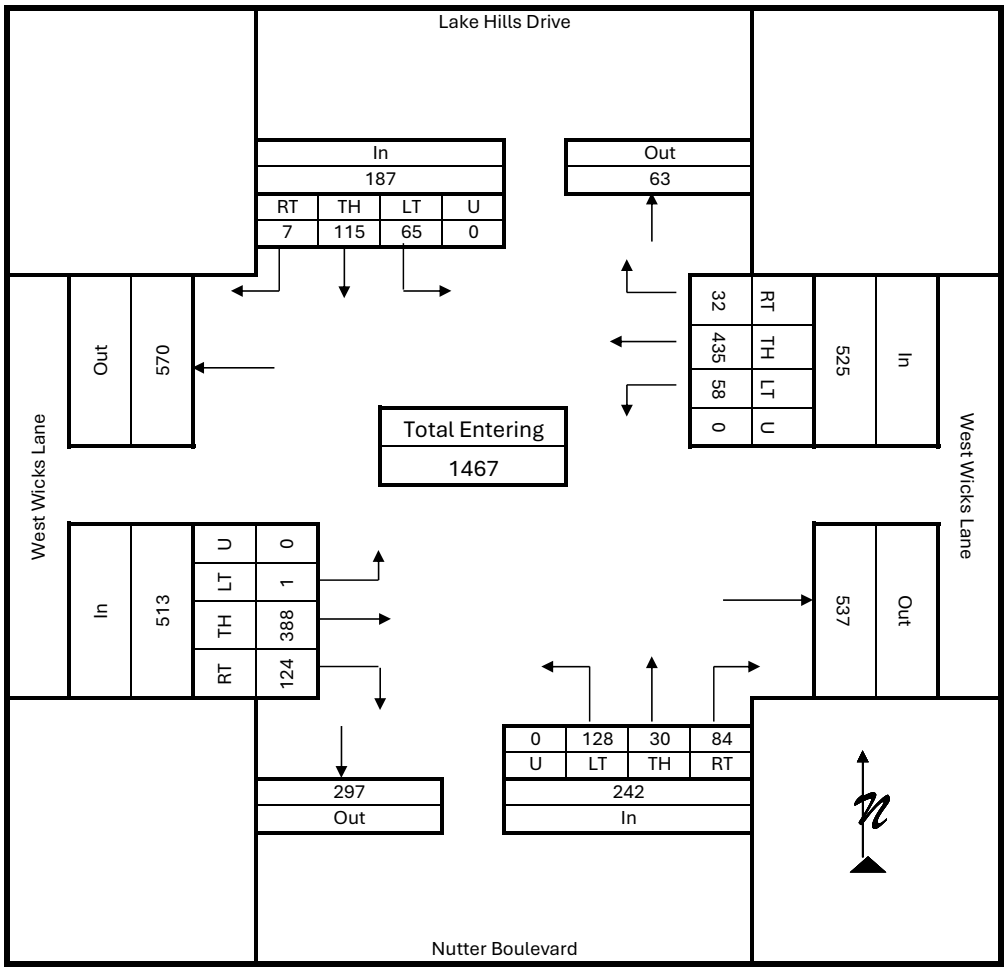
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Lake Hills Dr/Nutter Blvd & W Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Lake Hills Drive/Nutter Boulevard	East/West Street:	West Wicks Lane

Vehicle Volumes and Adjustments

	Lake Hills Drive Southbound					Nutter Boulevard Northbound					West Wicks Lane Eastbound					West Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
7:15 AM	1	5	17	0	23	16	4	32	0	52	4	52	0	0	56	10	111	10	0	131	262
7:30 AM	5	25	14	0	44	11	5	46	0	62	30	83	1	0	114	7	141	20	0	168	388
7:45 AM	0	52	21	0	73	21	9	35	0	65	71	157	0	0	228	10	124	13	0	147	513
8:00 AM	1	33	13	0	47	36	12	15	0	63	19	96	0	0	115	5	59	15	0	79	304
Grand Total	7	115	65	0	187	84	30	128	0	242	124	388	1	0	513	32	435	58	0	525	1467
Medium Truck %	0.0	0.0	3.1	0.0	1.1	3.6	0.0	2.3	0.0	2.5	1.6	2.1	0.0	0.0	1.9	0.0	1.4	0.0	0.0	1.1	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.2	
Total Truck %	0.0	0.0	3.1	0.0	1.1	3.6	0.0	2.3	0.0	2.5	1.6	2.3	0.0	0.0	2.1	0.0	1.6	0.0	0.0	1.3	
Total %	0.5	7.8	4.4	0.0	12.7	5.7	2.0	8.7	0.0	16.5	8.5	26.4	0.1	0.0	35.0	2.2	29.7	4.0	0.0	35.8	100.0
PHF	0.64	0.64	0.64			0.93	0.93	0.93			0.56	0.56	0.56			0.90	0.90	0.90			0.72



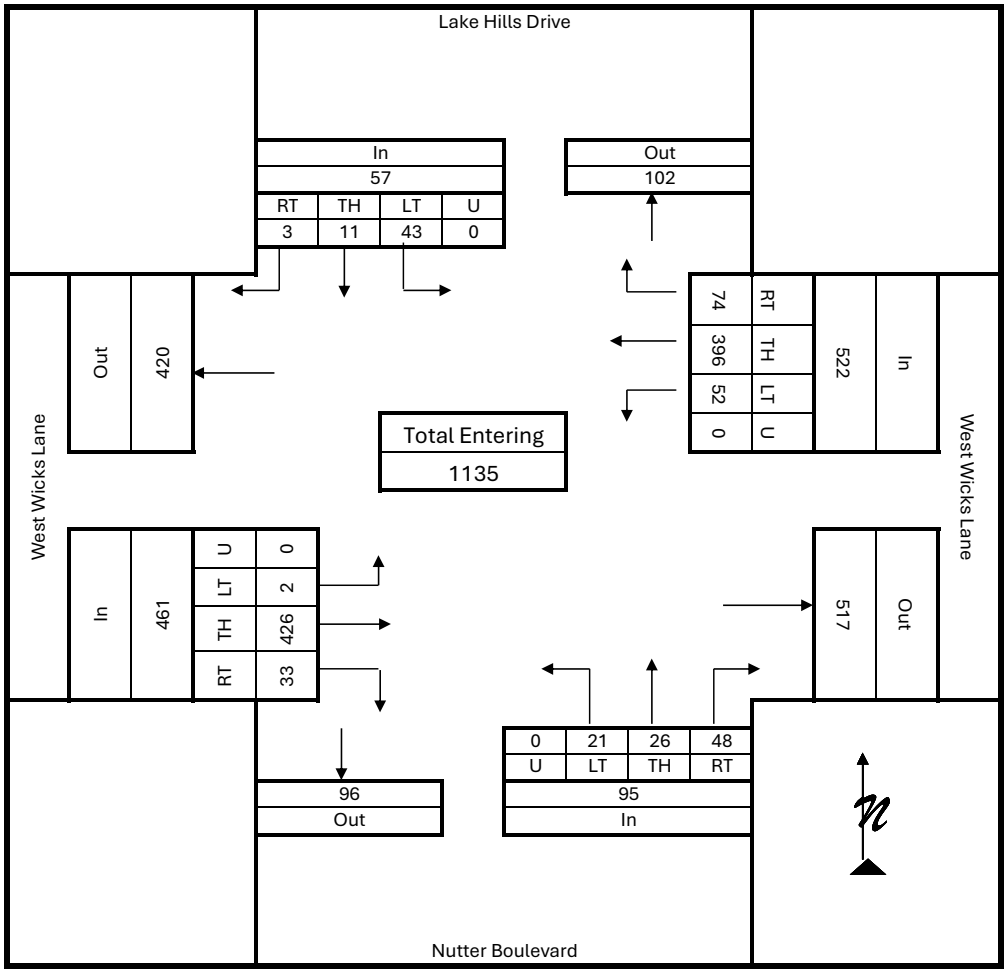
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Lake Hills Dr/Nutter Blvd & W Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Lake Hills Drive/Nutter Boulevard	East/West Street:	West Wicks Lane

Vehicle Volumes and Adjustments

	Lake Hills Drive Southbound					Nutter Boulevard Northbound					West Wicks Lane Eastbound					West Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
4:45 PM	1	3	6	0	10	11	3	4	0	18	3	94	0	0	97	22	104	13	0	139	264
5:00 PM	1	3	13	0	17	15	6	5	0	26	14	127	2	0	143	13	113	10	0	136	322
5:15 PM	1	3	14	0	18	15	13	2	0	30	6	113	0	0	119	20	90	12	0	122	289
5:30 PM	0	2	10	0	12	7	4	10	0	21	10	92	0	0	102	19	89	17	0	125	260
Grand Total	3	11	43	0	57	48	26	21	0	95	33	426	2	0	461	74	396	52	0	522	1135
Medium Truck %	0.0	9.1	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.1	0.0	1.0	0.0	0.0	0.8	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	9.1	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.1	0.0	1.0	0.0	0.0	0.8	
Total %	0.3	1.0	3.8	0.0	5.0	4.2	2.3	1.9	0.0	8.4	2.9	37.5	0.2	0.0	40.6	6.5	34.9	4.6	0.0	46.0	100.0
PHF	0.84	0.84	0.84			0.90	0.90	0.90			0.81	0.81	0.81			0.96	0.96	0.96			0.88



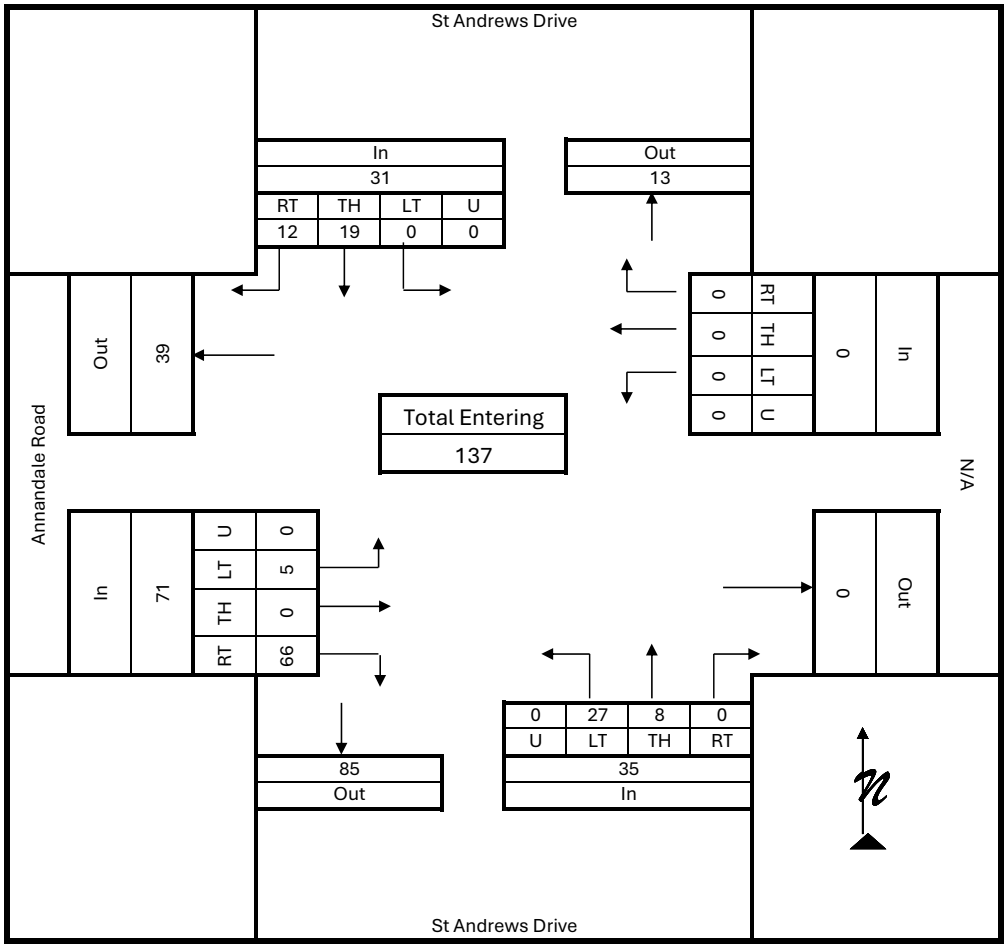
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	St Andrews Dr & Annandale Rd
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	St Andrews Drive	East/West Street:	Annandale Road

Vehicle Volumes and Adjustments

	St Andrews Drive Southbound					St Andrews Drive Northbound					Annandale Road Eastbound					N/A Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
7:15 AM	2	6	0	0	8	0	2	3	0	5	19	0	3	0	22	0	0	0	0	0	35
7:30 AM	6	7	0	0	13	0	1	13	0	14	18	0	0	0	18	0	0	0	0	0	45
7:45 AM	4	2	0	0	6	0	4	6	0	10	16	0	1	0	17	0	0	0	0	0	33
8:00 AM	0	4	0	0	4	0	1	5	0	6	13	0	1	0	14	0	0	0	0	0	24
Grand Total	12	19	0	0	31	0	8	27	0	35	66	0	5	0	71	0	0	0	0	0	137
Medium Truck %	0.0	10.5	0.0	0.0	6.5	0.0	12.5	0.0	0.0	2.9	0.0	0.0	20.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	10.5	0.0	0.0	6.5	0.0	12.5	0.0	0.0	2.9	0.0	0.0	20.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	
Total %	8.8	13.9	0.0	0.0	22.6	0.0	5.8	19.7	0.0	25.5	48.2	0.0	3.6	0.0	51.8	0.0	0.0	0.0	0.0	0.0	100.0
PHF	0.60	0.60	0.60			0.65	0.65	0.65			0.99	0.99	0.99			1.00	1.00	1.00			0.77



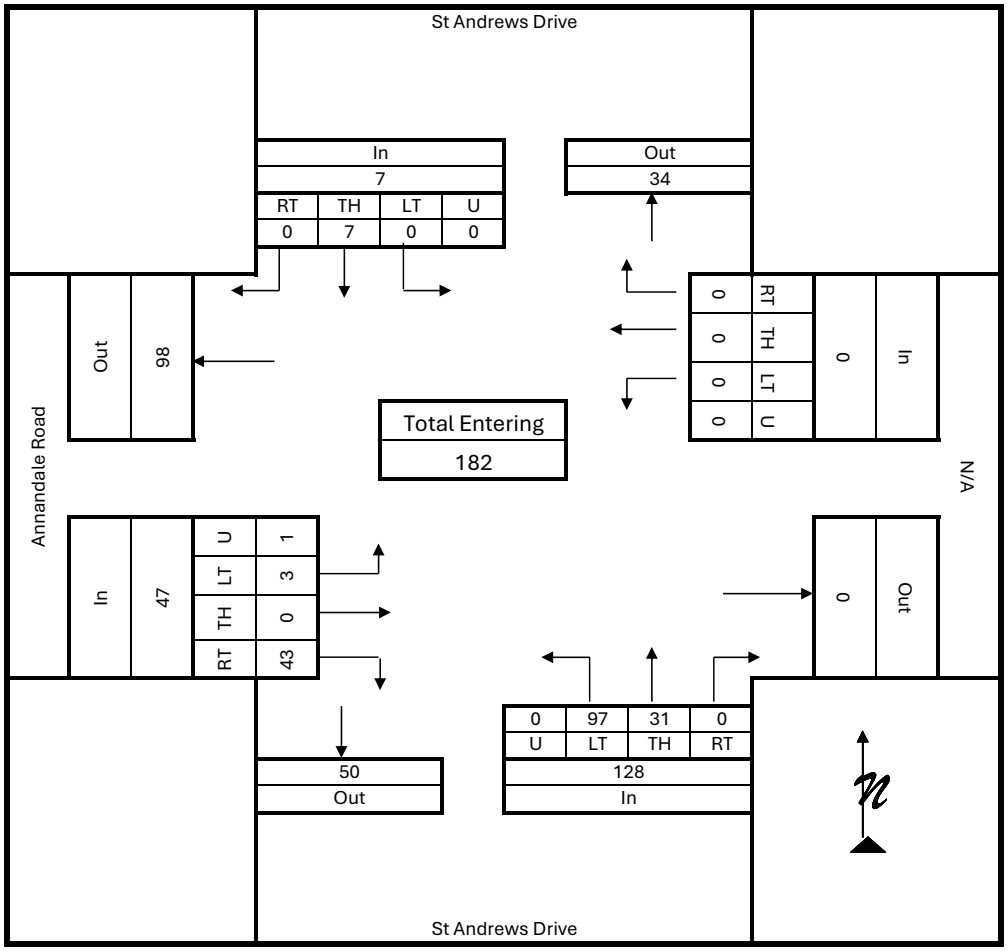
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	St Andrews Dr & Annandale Rd
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	St Andrews Drive	East/West Street:	Annandale Road

Vehicle Volumes and Adjustments

	St Andrews Drive Southbound					St Andrews Drive Northbound					Annandale Road Eastbound					N/A Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
4:45 PM	0	3	0	0	3	0	10	18	0	28	14	0	1	0	15	0	0	0	0	0	46
5:00 PM	0	2	0	0	2	0	7	22	0	29	7	0	1	0	8	0	0	0	0	0	39
5:15 PM	0	1	0	0	1	0	7	25	0	32	10	0	1	0	11	0	0	0	0	0	44
5:30 PM	0	1	0	0	1	0	7	32	0	39	12	0	0	1	13	0	0	0	0	0	53
Grand Total	0	7	0	0	7	0	31	97	0	128	43	0	3	1	47	0	0	0	0	0	182
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total %	0.0	3.8	0.0	0.0	3.8	0.0	17.0	53.3	0.0	70.3	23.6	0.0	1.6	0.5	25.8	0.0	0.0	0.0	0.0	0.0	100.0
PHF	1.00	1.00	1.00			0.82	0.82	0.82			0.92	0.92	0.92			1.00	1.00	1.00			0.86



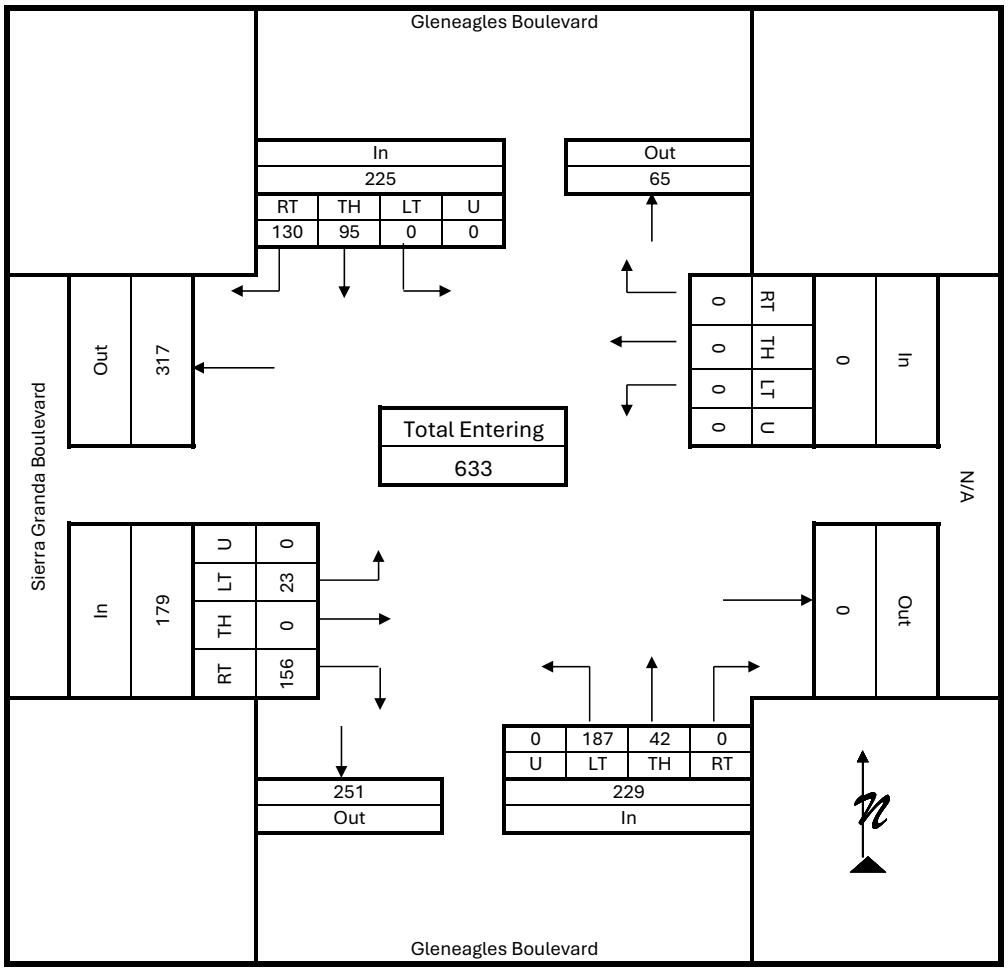
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Gleneagles Blvd & Sierra Granda Blvd
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Gleneagles Boulevard	East/West Street:	Sierra Granda Boulevard

Vehicle Volumes and Adjustments

	Gleneagles Boulevard Southbound					Gleneagles Boulevard Northbound					Sierra Granda Boulevard Eastbound					N/A Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
7:15 AM	22	24	0	0	46	0	9	26	0	35	29	0	3	0	32	0	0	0	0	0	113
7:30 AM	54	43	0	0	97	0	4	55	0	59	54	0	6	0	60	0	0	0	0	0	216
7:45 AM	44	22	0	0	66	0	15	67	0	82	58	0	9	0	67	0	0	0	0	0	215
8:00 AM	10	6	0	0	16	0	14	39	0	53	15	0	5	0	20	0	0	0	0	0	89
Grand Total	130	95	0	0	225	0	42	187	0	229	156	0	23	0	179	0	0	0	0	0	633
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.9	2.6	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.9	2.6	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	
Total %	20.5	15.0	0.0	0.0	35.5	0.0	6.6	29.5	0.0	36.2	24.6	0.0	3.6	0.0	28.3	0.0	0.0	0.0	0.0	0.0	100.0
PHF	0.85	0.85	0.85			0.69	0.69	0.69			0.67	0.67	0.67			1.00	1.00	1.00			0.73



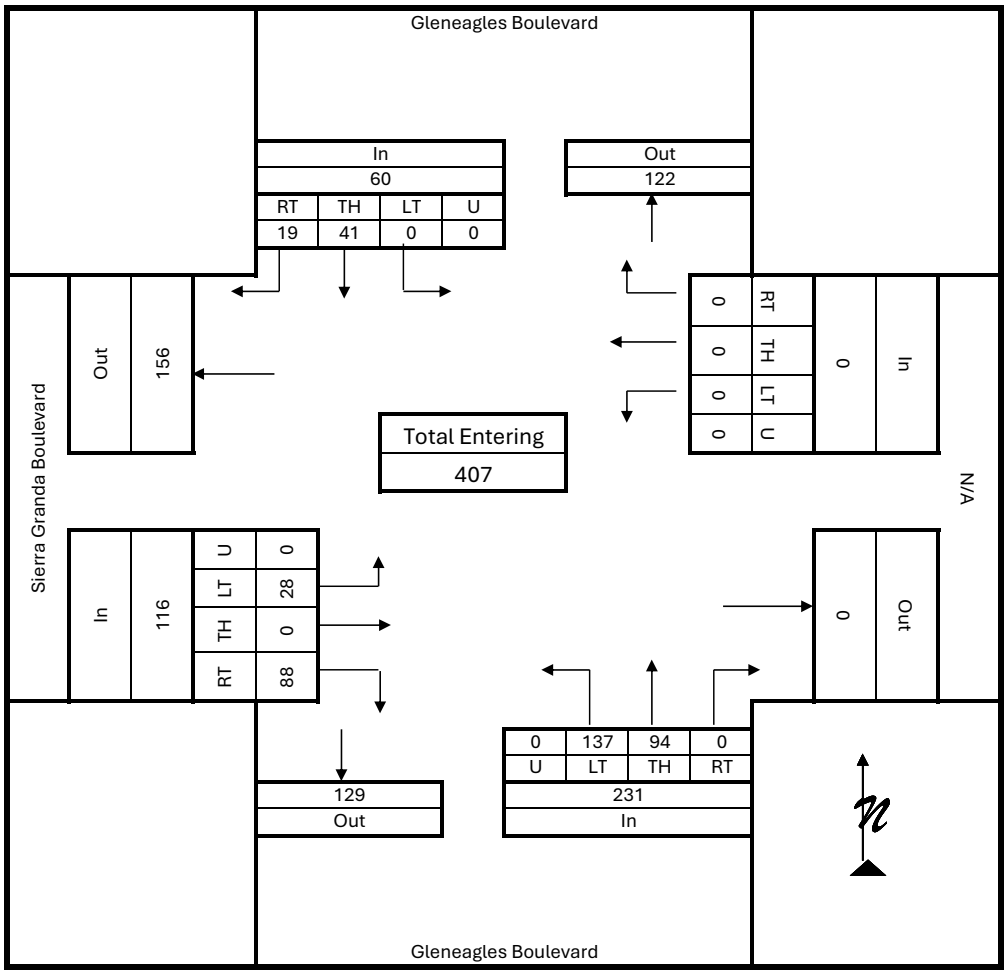
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Gleneagles Blvd & Sierra Granda Blvd
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Gleneagles Boulevard	East/West Street:	Sierra Granda Boulevard

Vehicle Volumes and Adjustments

	Gleneagles Boulevard Southbound					Gleneagles Boulevard Northbound					Sierra Granda Boulevard Eastbound					N/A Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
4:45 PM	4	11	0	0	15	0	12	27	0	39	30	0	4	0	34	0	0	0	0	0	88
5:00 PM	6	13	0	0	19	0	34	46	0	80	22	0	13	0	35	0	0	0	0	0	134
5:15 PM	7	7	0	0	14	0	26	31	0	57	18	0	6	0	24	0	0	0	0	0	95
5:30 PM	2	10	0	0	12	0	22	33	0	55	18	0	5	0	23	0	0	0	0	0	90
Grand Total	19	41	0	0	60	0	94	137	0	231	88	0	28	0	116	0	0	0	0	0	407
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	
Total %	4.7	10.1	0.0	0.0	14.7	0.0	23.1	33.7	0.0	56.8	21.6	0.0	6.9	0.0	28.5	0.0	0.0	0.0	0.0	0.0	100.0
PHF	0.79	0.79	0.79			0.72	0.72	0.72			0.83	0.83	0.83			1.00	1.00	1.00			0.76



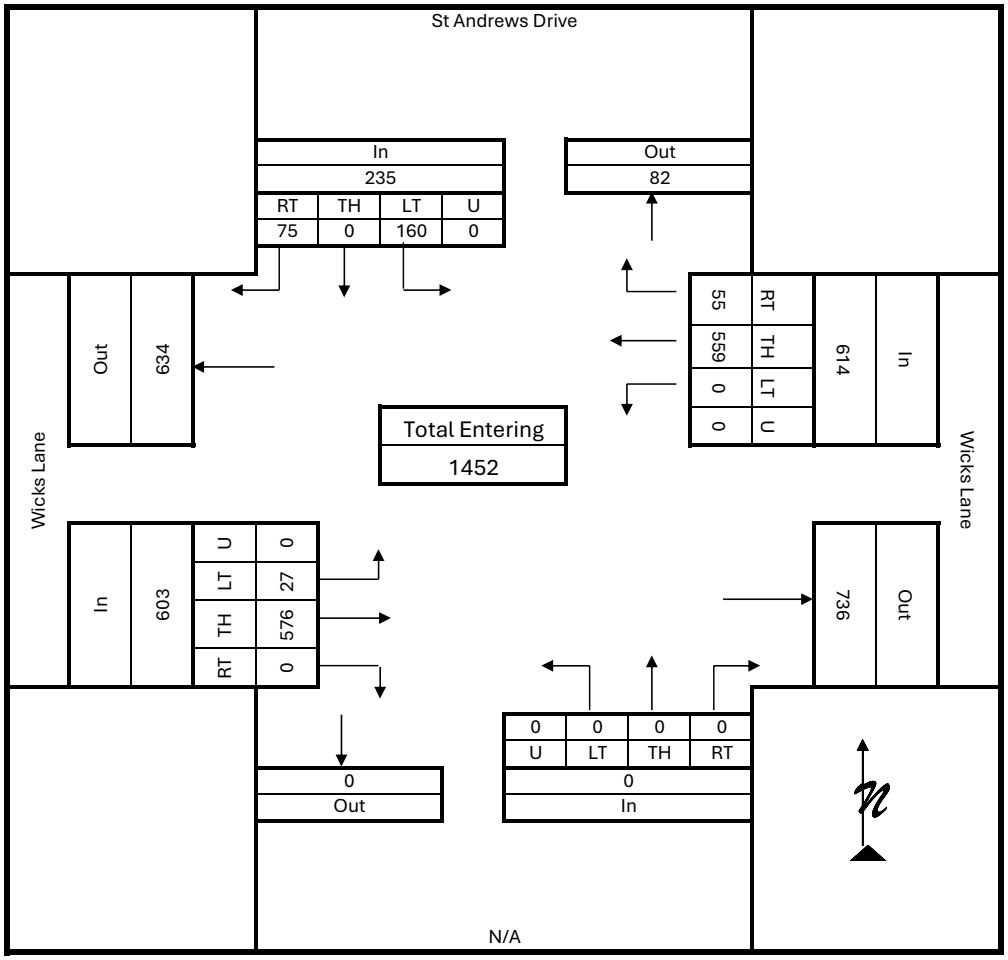
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	St Andrews Dr & Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	St Andrews Drive	East/West Street:	Wicks Lane

Vehicle Volumes and Adjustments

	St Andrews Drive Southbound					N/A Northbound					Wicks Lane Eastbound					Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
7:15 AM	13	0	39	0	52	0	0	0	0	0	0	107	2	0	109	14	132	0	0	146	307
7:30 AM	24	0	55	0	79	0	0	0	0	0	0	127	4	0	131	16	203	0	0	219	429
7:45 AM	20	0	33	0	53	0	0	0	0	0	0	200	6	0	206	15	147	0	0	162	421
8:00 AM	18	0	33	0	51	0	0	0	0	0	0	142	15	0	157	10	77	0	0	87	295
Grand Total	75	0	160	0	235	0	0	0	0	0	0	576	27	0	603	55	559	0	0	614	1452
Medium Truck %	2.7	0.0	1.9	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	2.3	11.1	0.0	2.7	3.6	1.8	0.0	0.0	2.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.3	
Total Truck %	2.7	0.0	1.9	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	2.3	11.1	0.0	2.7	3.6	2.1	0.0	0.0	2.3	
Total %	5.2	0.0	11.0	0.0	16.2	0.0	0.0	0.0	0.0	0.0	0.0	39.7	1.9	0.0	41.5	3.8	38.5	0.0	0.0	42.3	100.0
PHF	0.75	0.75	0.75			1.00	1.00	1.00			1.00	1.00	1.00			0.70	0.70	0.70			0.85



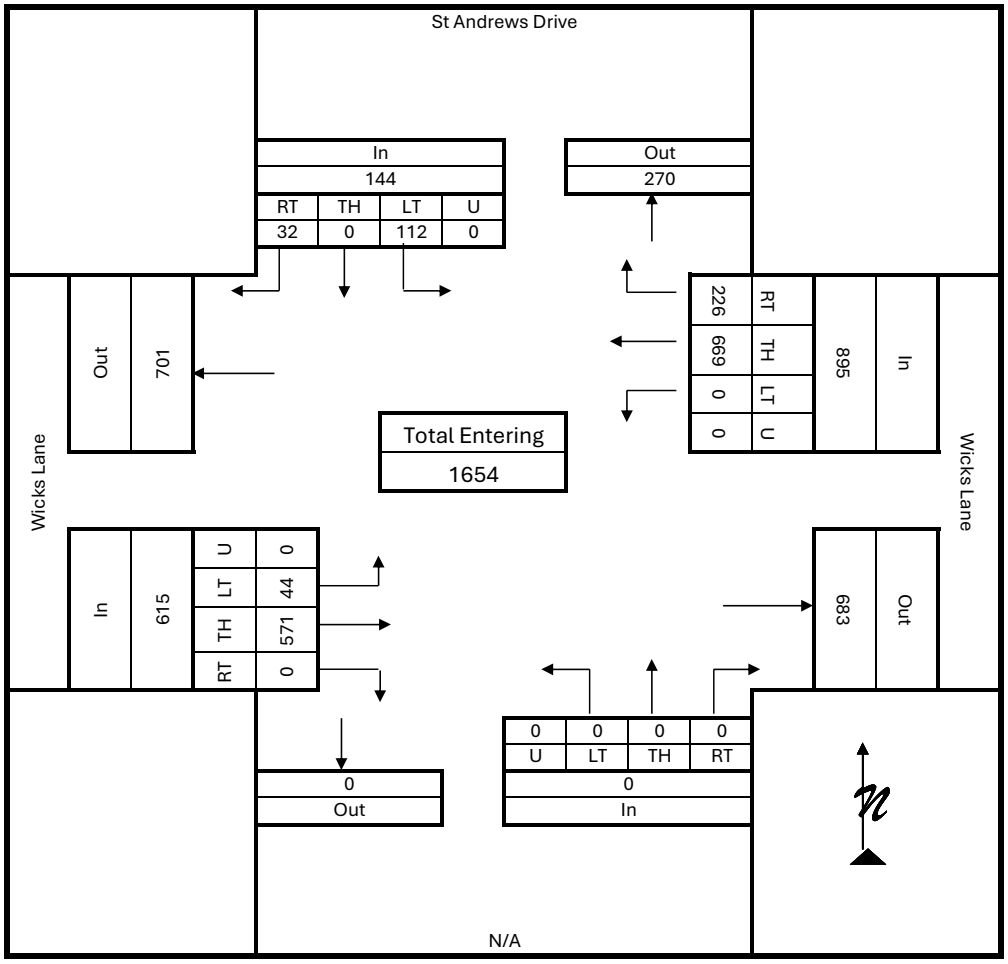
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	St Andrews Dr & Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	St Andrews Drive	East/West Street:	Wicks Lane

Vehicle Volumes and Adjustments

	St Andrews Drive Southbound					N/A Northbound					Wicks Lane Eastbound					Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
4:45 PM	5	0	25	0	30	0	0	0	0	0	0	121	12	0	133	44	174	0	0	218	381
5:00 PM	11	0	28	0	39	0	0	0	0	0	0	164	9	0	173	60	153	0	0	213	425
5:15 PM	9	0	24	0	33	0	0	0	0	0	0	154	13	0	167	64	183	0	0	247	447
5:30 PM	7	0	35	0	42	0	0	0	0	0	0	132	10	0	142	58	159	0	0	217	401
Grand Total	32	0	112	0	144	0	0	0	0	0	0	571	44	0	615	226	669	0	0	895	1654
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.7	0.0	0.0	0.6	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.7	0.0	0.0	0.6	
Total %	1.9	0.0	6.8	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0	34.5	2.7	0.0	37.2	13.7	40.4	0.0	0.0	54.1	100.0
PHF	1.00	1.00	1.00			1.00	1.00	1.00			0.92	0.92	0.92			0.91	0.91	0.91			0.93



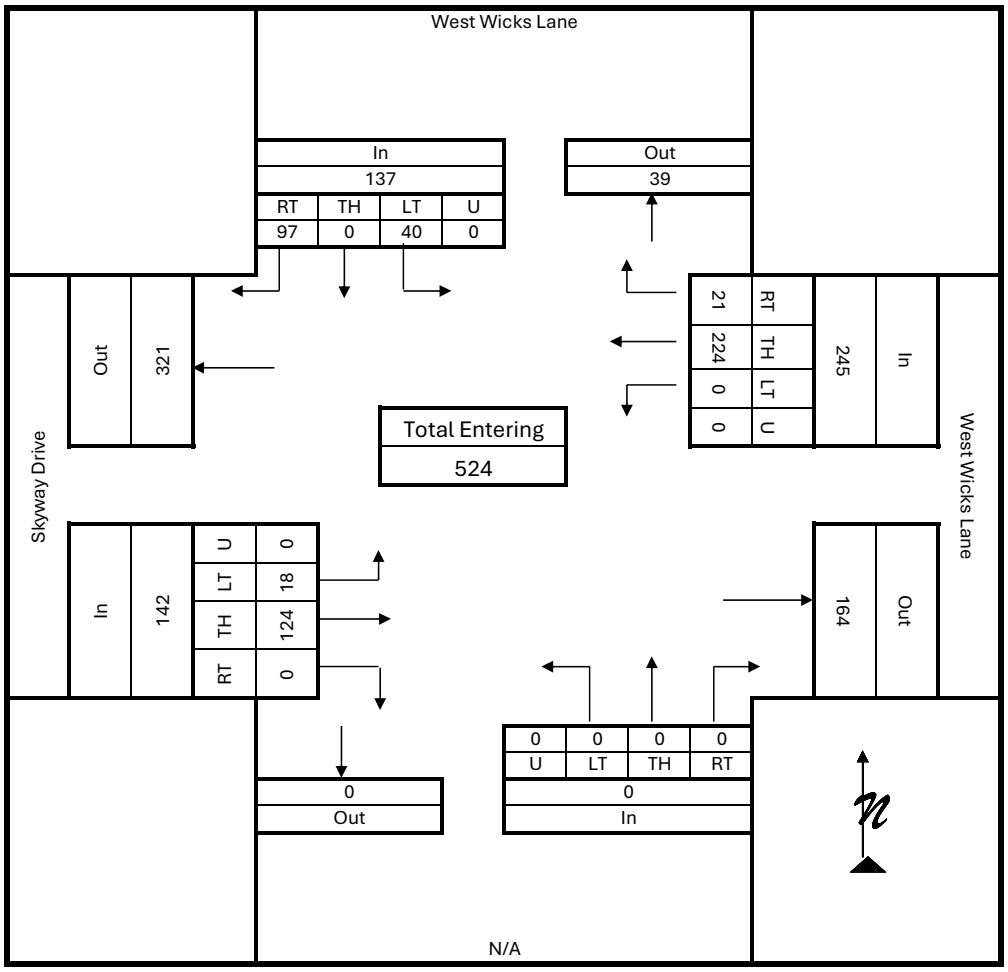
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Skyway Ln & W Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	West Wicks Lane	East/West Street:	West Wicks Lane/Skyway Drive

Vehicle Volumes and Adjustments

	West Wicks Lane Southbound					N/A Northbound					Skyway Drive Eastbound					West Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
7:15 AM	31	0	7	0	38	0	0	0	0	0	0	26	7	0	33	2	62	0	0	64	135
7:30 AM	22	0	12	0	34	0	0	0	0	0	0	39	2	0	41	5	50	0	0	55	130
7:45 AM	22	0	17	0	39	0	0	0	0	0	0	44	3	0	47	2	63	0	0	65	151
8:00 AM	22	0	4	0	26	0	0	0	0	0	0	15	6	0	21	12	49	0	0	61	108
Grand Total	97	0	40	0	137	0	0	0	0	0	0	124	18	0	142	21	224	0	0	245	524
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	
Total %	18.5	0.0	7.6	0.0	26.1	0.0	0.0	0.0	0.0	0.0	0.0	23.7	3.4	0.0	27.1	4.0	42.7	0.0	0.0	46.8	100.0
PHF	0.88	0.88	0.88			1.00	1.00	1.00			0.76	0.76	0.76			0.94	0.94	0.94			0.87



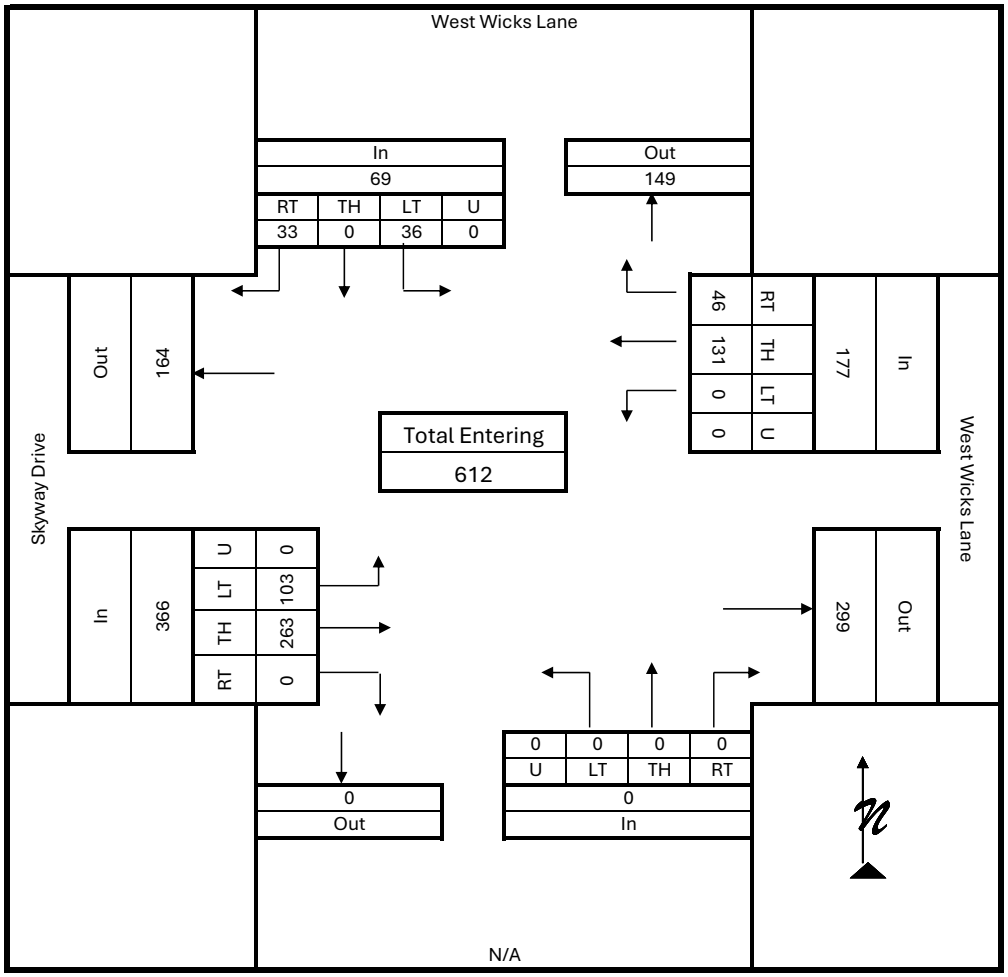
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Skyway Ln & W Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	West Wicks Lane	East/West Street:	West Wicks Lane/Skyway Drive

Vehicle Volumes and Adjustments

	West Wicks Lane Southbound					N/A Northbound					Skyway Drive Eastbound					West Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
4:45 PM	5	0	11	0	16	0	0	0	0	0	0	57	28	0	85	13	30	0	0	43	144
5:00 PM	12	0	11	0	23	0	0	0	0	0	0	58	17	0	75	14	33	0	0	47	145
5:15 PM	7	0	5	0	12	0	0	0	0	0	0	80	31	0	111	7	29	0	0	36	159
5:30 PM	9	0	9	0	18	0	0	0	0	0	0	68	27	0	95	12	39	0	0	51	164
Grand Total	33	0	36	0	69	0	0	0	0	0	0	263	103	0	366	46	131	0	0	177	612
Medium Truck %	0.0	0.0	2.8	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.5	0.0	1.5	0.0	0.0	1.1	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	2.8	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.5	0.0	1.5	0.0	0.0	1.1	
Total %	5.4	0.0	5.9	0.0	11.3	0.0	0.0	0.0	0.0	0.0	0.0	43.0	16.8	0.0	59.8	7.5	21.4	0.0	0.0	28.9	100.0
PHF	1.00	1.00	1.00			1.00	1.00	1.00			0.96	0.96	0.96			0.88	0.88	0.88			0.94



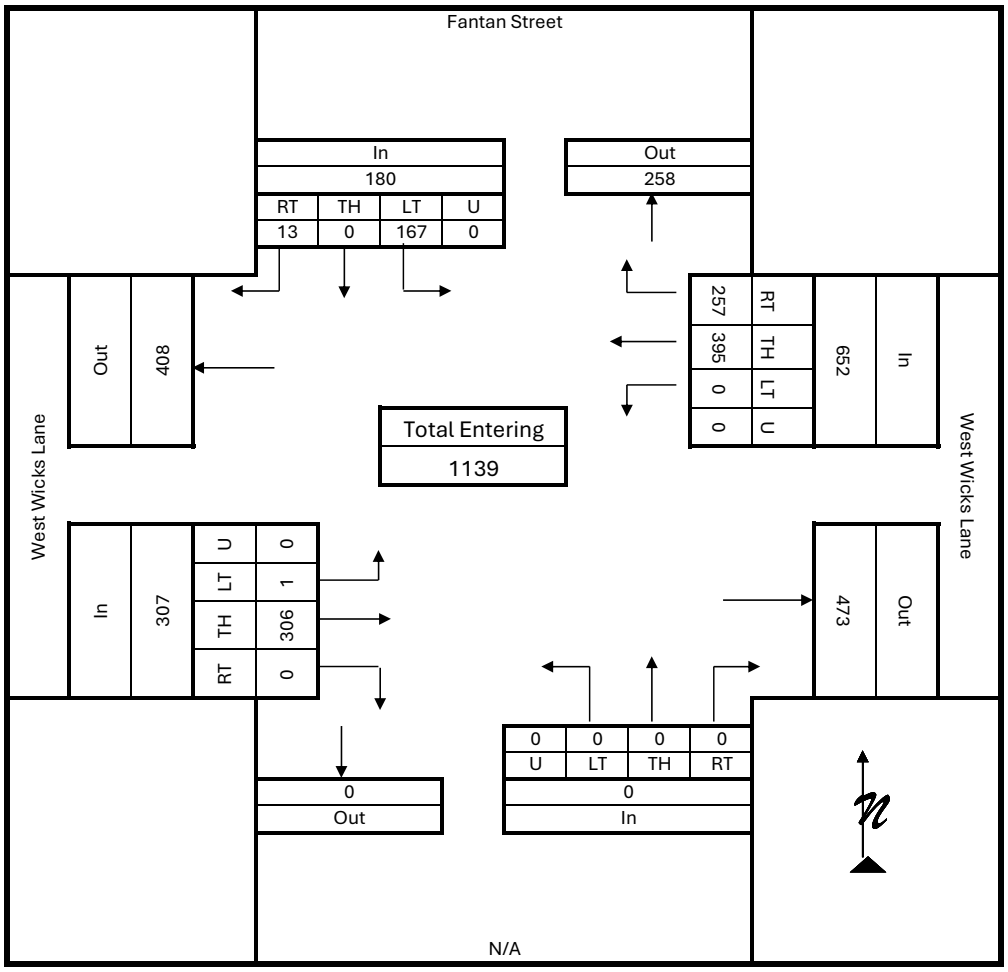
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Fantan St & W Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Fantan Street	East/West Street:	West Wicks Lane

Vehicle Volumes and Adjustments

	Fantan Street Southbound					N/A Northbound					West Wicks Lane Eastbound					West Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
7:15 AM	4	0	17	0	21	0	0	0	0	0	0	46	0	0	46	63	96	0	0	159	226
7:30 AM	5	0	58	0	63	0	0	0	0	0	0	96	1	0	97	74	113	0	0	187	347
7:45 AM	1	0	67	0	68	0	0	0	0	0	0	117	0	0	117	96	119	0	0	215	400
8:00 AM	3	0	25	0	28	0	0	0	0	0	0	47	0	0	47	24	67	0	0	91	166
Grand Total	13	0	167	0	180	0	0	0	0	0	0	306	1	0	307	257	395	0	0	652	1139
Medium Truck %	0.0	0.0	3.6	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.7	1.2	1.3	0.0	0.0	1.2	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	
Total Truck %	0.0	0.0	3.6	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.7	1.2	1.5	0.0	0.0	1.4	
Total %	1.1	0.0	14.7	0.0	15.8	0.0	0.0	0.0	0.0	0.0	0.0	26.9	0.1	0.0	27.0	22.6	34.7	0.0	0.0	57.2	100.0
PHF	0.66	0.66	0.66			1.00	1.00	1.00			0.66	0.66	0.66			0.76	0.76	0.76			0.71



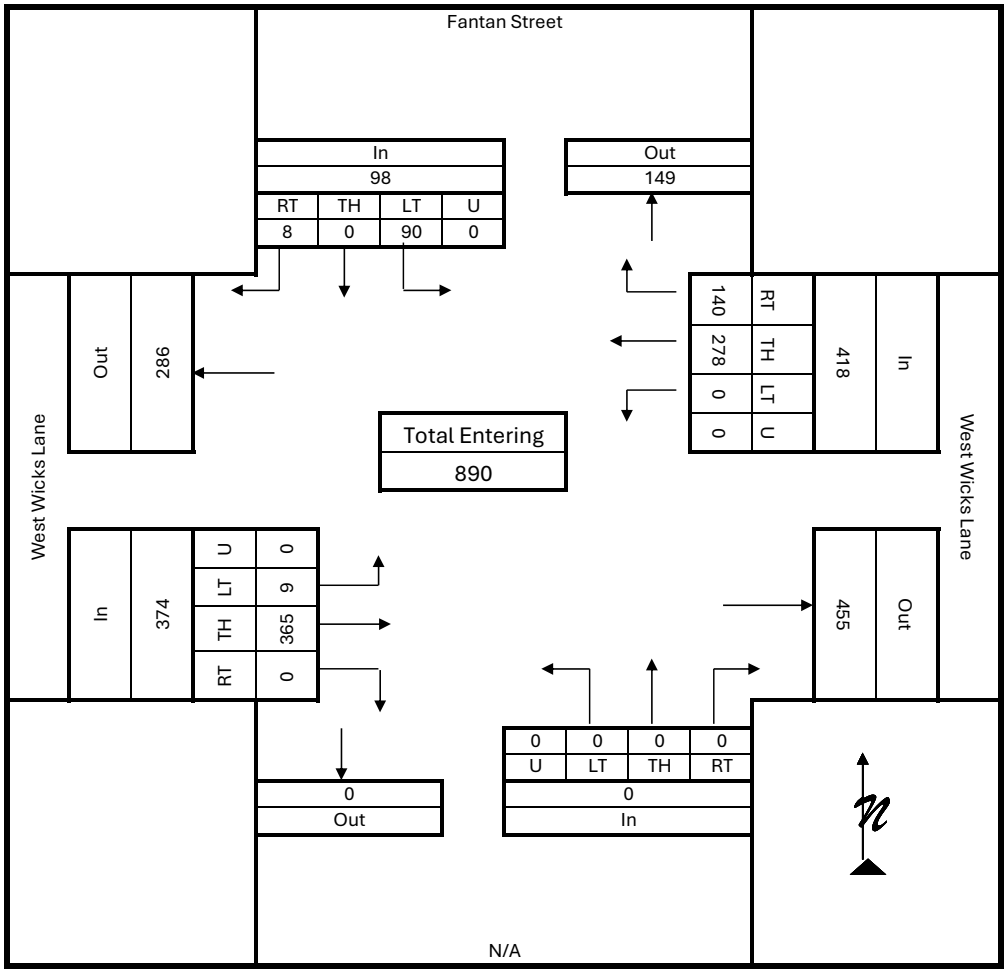
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Fantan St & W Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Fantan Street	East/West Street:	West Wicks Lane

Vehicle Volumes and Adjustments

	Fantan Street Southbound					N/A Northbound					West Wicks Lane Eastbound					West Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
4:45 PM	2	0	25	0	27	0	0	0	0	0	0	67	2	0	69	30	59	0	0	89	185
5:00 PM	1	0	24	0	25	0	0	0	0	0	0	95	1	0	96	50	76	0	0	126	247
5:15 PM	1	0	24	0	25	0	0	0	0	0	0	107	3	0	110	40	72	0	0	112	247
5:30 PM	4	0	17	0	21	0	0	0	0	0	0	96	3	0	99	20	71	0	0	91	211
Grand Total	8	0	90	0	98	0	0	0	0	0	0	365	9	0	374	140	278	0	0	418	890
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.8	1.4	1.4	0.0	0.0	1.4	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.8	1.4	1.4	0.0	0.0	1.4	
Total %	0.9	0.0	10.1	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	41.0	1.0	0.0	42.0	15.7	31.2	0.0	0.0	47.0	100.0
PHF	0.99	0.99	0.99			1.00	1.00	1.00			0.98	0.98	0.98			0.83	0.83	0.83			0.90



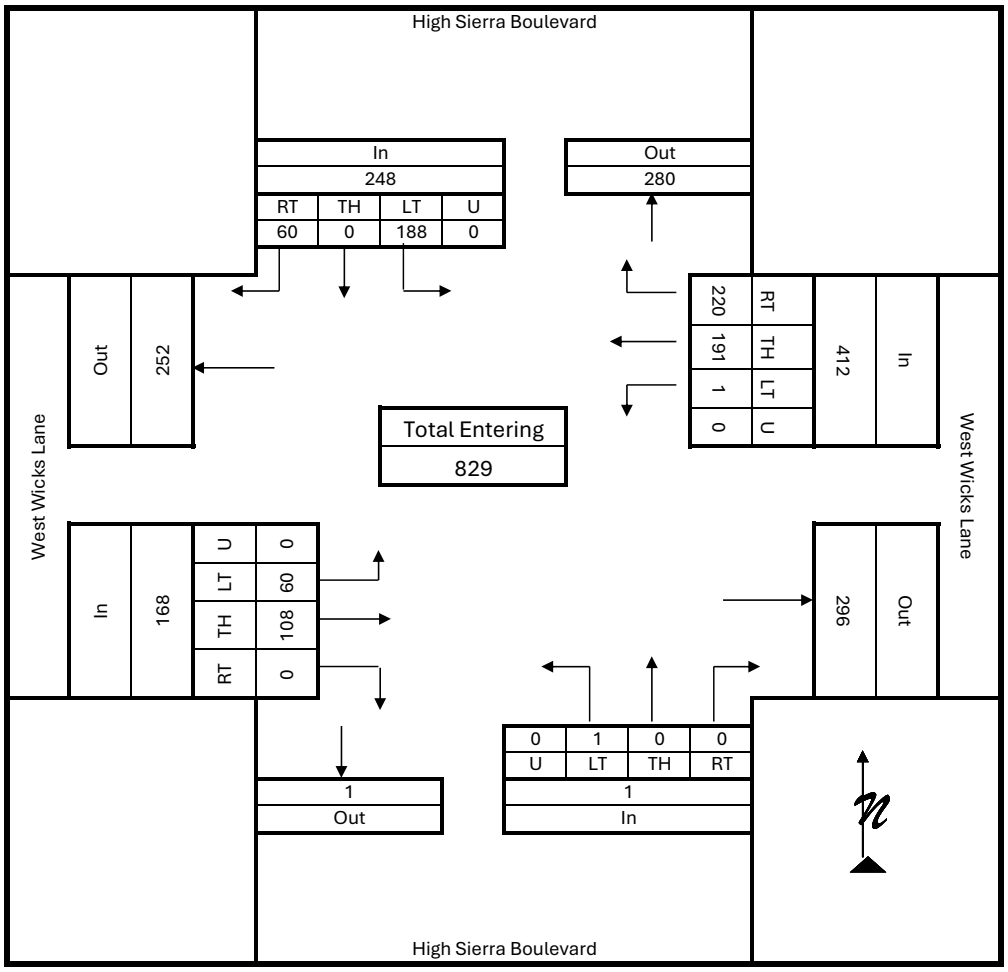
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	High Sierra Blvd & W Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	High Sierra Boulevard	East/West Street:	West Wicks Lane

Vehicle Volumes and Adjustments

	High Sierra Boulevard Southbound					High Sierra Boulevard Northbound					West Wicks Lane Eastbound					West Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
7:15 AM	12	0	28	0	40	0	0	0	0	0	0	22	14	0	36	50	51	0	0	101	177
7:30 AM	14	0	59	0	73	0	0	0	0	0	0	36	17	0	53	80	45	0	0	125	251
7:45 AM	29	0	75	0	104	0	0	0	0	0	0	34	26	0	60	76	39	1	0	116	280
8:00 AM	5	0	26	0	31	0	0	1	0	1	0	16	3	0	19	14	56	0	0	70	121
Grand Total	60	0	188	0	248	0	0	1	0	1	0	108	60	0	168	220	191	1	0	412	829
Medium Truck %	0.0	0.0	1.1	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.6	2.3	0.0	0.0	0.0	1.2	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.2	
Total Truck %	0.0	0.0	1.1	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.6	2.7	0.0	0.0	0.0	1.5	
Total %	7.2	0.0	22.7	0.0	29.9	0.0	0.0	0.1	0.0	0.1	0.0	13.0	7.2	0.0	20.3	26.5	23.0	0.1	0.0	49.7	100.0
PHF	0.60	0.60	0.60			1.00	1.00	1.00			0.71	0.71	0.71			0.89	0.89	0.89			0.74



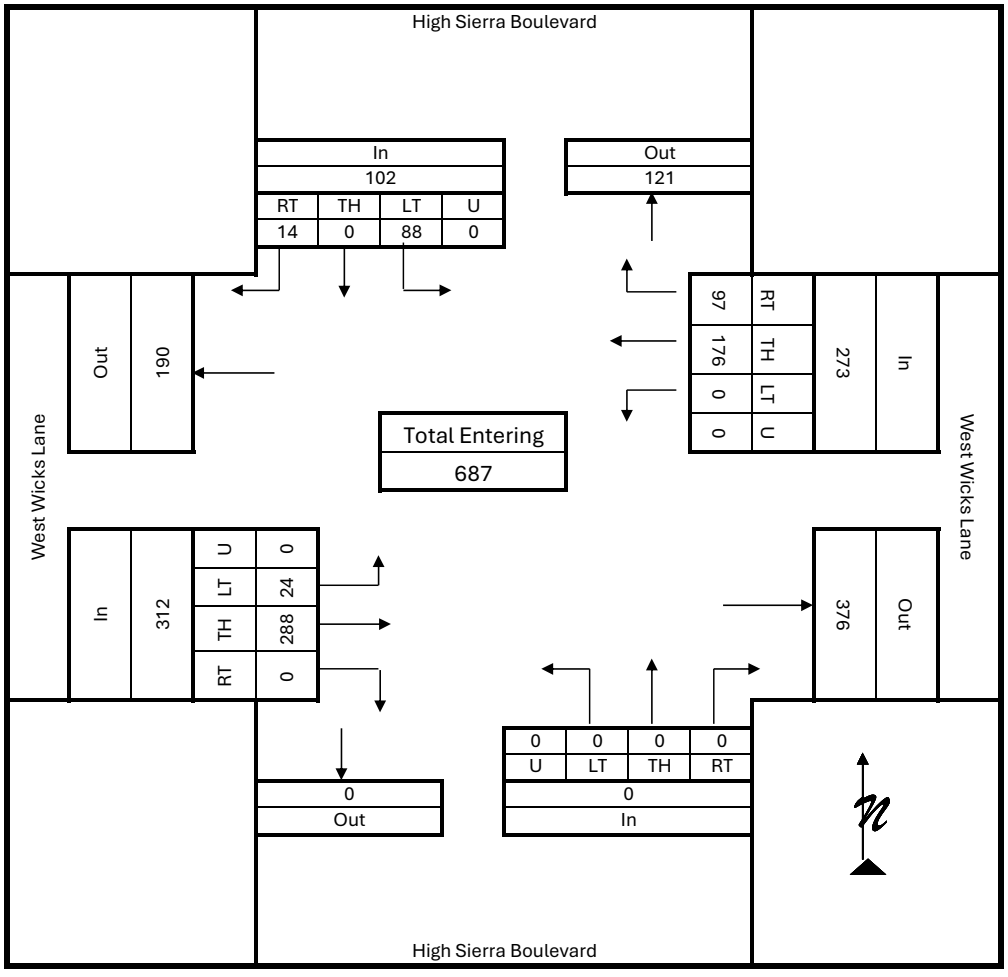
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	High Sierra Blvd & W Wicks Ln
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	High Sierra Boulevard	East/West Street:	West Wicks Lane

Vehicle Volumes and Adjustments

	High Sierra Boulevard Southbound					High Sierra Boulevard Northbound					West Wicks Lane Eastbound					West Wicks Lane Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
4:45 PM	1	0	12	0	13	0	0	0	0	0	0	61	7	0	68	16	40	0	0	56	137
5:00 PM	5	0	25	0	30	0	0	0	0	0	0	73	2	0	75	34	42	0	0	76	181
5:15 PM	5	0	30	0	35	0	0	0	0	0	0	81	6	0	87	31	39	0	0	70	192
5:30 PM	3	0	21	0	24	0	0	0	0	0	0	73	9	0	82	16	55	0	0	71	177
Grand Total	14	0	88	0	102	0	0	0	0	0	0	288	24	0	312	97	176	0	0	273	687
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	2.1	1.1	0.0	0.0	1.5	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	2.1	1.1	0.0	0.0	1.5	
Total %	2.0	0.0	12.8	0.0	14.8	0.0	0.0	0.0	0.0	0.0	0.0	41.9	3.5	0.0	45.4	14.1	25.6	0.0	0.0	39.7	100.0
PHF	0.73	0.73	0.73			1.00	1.00	1.00			0.89	0.89	0.89			0.98	0.98	0.98			0.89



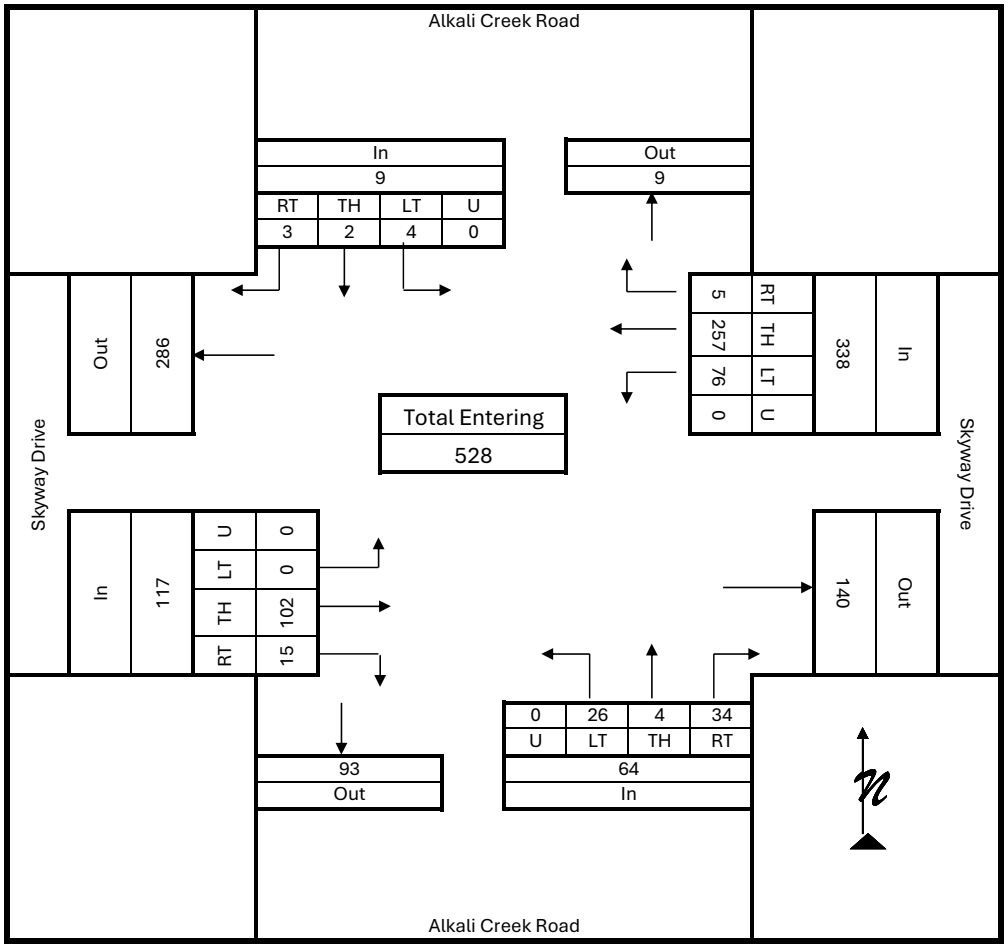
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Skyway Dr & Alkali Creek Rd
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Alkali Creek Road	East/West Street:	Skyway Drive

Vehicle Volumes and Adjustments

	Alkali Creek Road Southbound					Alkali Creek Road Northbound					Skyway Drive Eastbound					Skyway Drive Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
7:15 AM	1	0	1	0	2	3	0	2	0	5	1	27	0	0	28	1	86	10	0	97	132
7:30 AM	0	0	3	0	3	7	1	9	0	17	5	32	0	0	37	1	58	18	0	77	134
7:45 AM	1	1	0	0	2	20	1	10	0	31	6	25	0	0	31	2	59	33	0	94	158
8:00 AM	1	1	0	0	2	4	2	5	0	11	3	18	0	0	21	1	54	15	0	70	104
Grand Total	3	2	4	0	9	34	4	26	0	64	15	102	0	0	117	5	257	76	0	338	528
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	1.0	0.0	0.0	2.6	0.0	0.0	1.3	0.0	0.3	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	1.0	0.0	0.0	2.6	0.0	0.0	1.3	0.0	0.3	
Total %	0.6	0.4	0.8	0.0	1.7	6.4	0.8	4.9	0.0	12.1	2.8	19.3	0.0	0.0	22.2	0.9	48.7	14.4	0.0	64.0	100.0
PHF	1.00	1.00	1.00			0.53	0.53	0.53			0.95	0.95	0.95			0.89	0.89	0.89			0.84



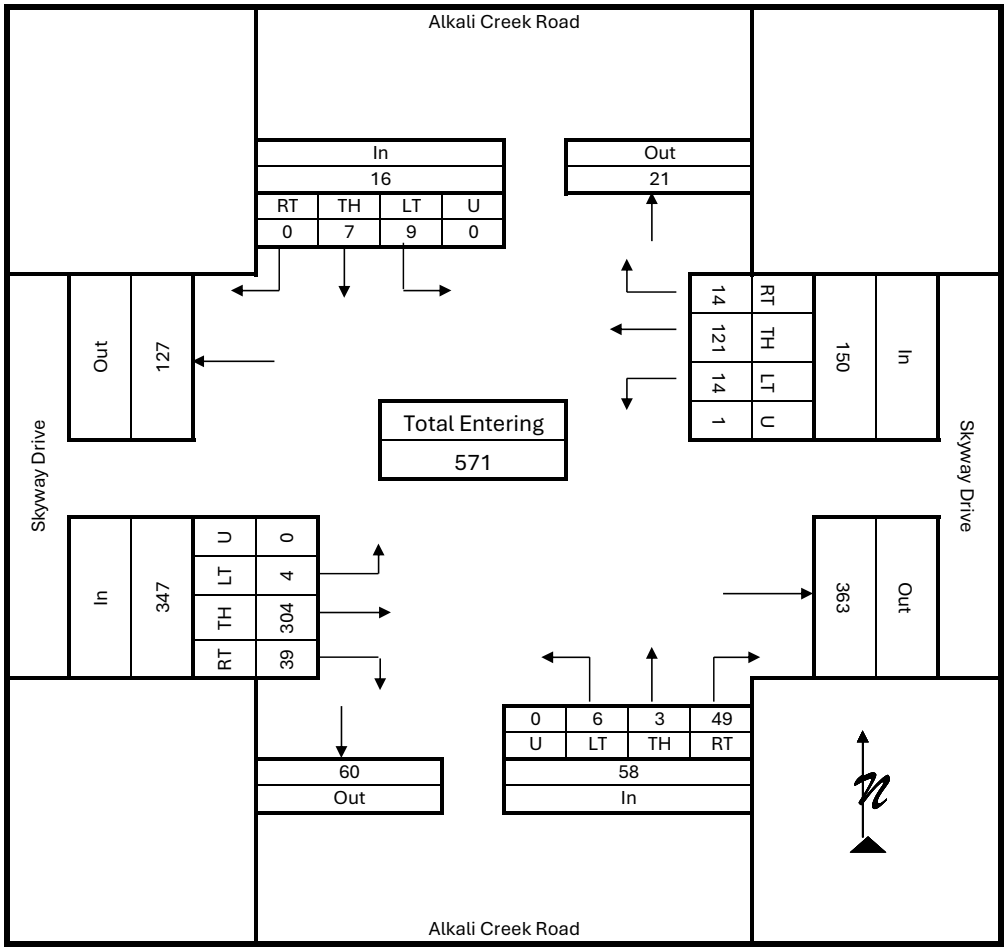
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	Skyway Dr & Alkali Creek Rd
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	Alkali Creek Road	East/West Street:	Skyway Drive

Vehicle Volumes and Adjustments

	Alkali Creek Road Southbound					Alkali Creek Road Northbound					Skyway Drive Eastbound					Skyway Drive Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
4:45 PM	0	4	3	0	7	16	0	0	0	16	11	64	0	0	75	2	27	2	0	31	129
5:00 PM	0	1	1	0	2	12	1	1	0	14	9	64	2	0	75	5	42	2	0	49	140
5:15 PM	0	0	3	0	3	14	1	3	0	18	10	85	1	0	96	5	19	6	1	31	148
5:30 PM	0	2	2	0	4	7	1	2	0	10	9	91	1	0	101	2	33	4	0	39	154
Grand Total	0	7	9	0	16	49	3	6	0	58	39	304	4	0	347	14	121	14	1	150	571
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3	7.1	0.0	0.0	0.0	0.7	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3	7.1	0.0	0.0	0.0	0.7	
Total %	0.0	1.2	1.6	0.0	2.8	8.6	0.5	1.1	0.0	10.2	6.8	53.2	0.7	0.0	60.8	2.5	21.2	2.5	0.2	26.3	100.0
PHF	1.00	1.00	1.00			1.00	1.00	1.00			0.86	0.86	0.86			0.96	0.96	0.96			0.92



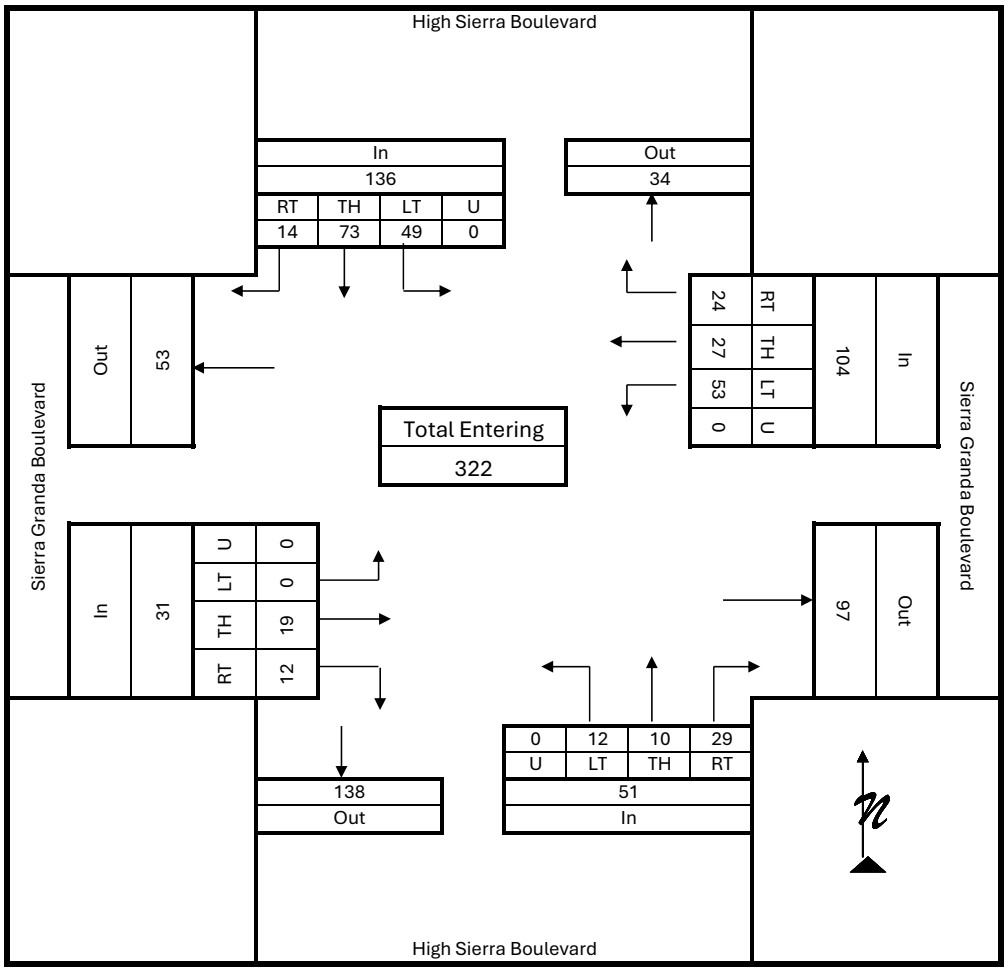
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	High Sierra Blvd & Sierra Granda Blvd
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	High Sierra Boulevard	East/West Street:	Sierra Granda Boulevard

Vehicle Volumes and Adjustments

	High Sierra Boulevard Southbound					High Sierra Boulevard Northbound					Sierra Granda Boulevard Eastbound					Sierra Granda Boulevard Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
7:15 AM	1	16	11	0	28	1	0	2	0	3	2	6	0	0	8	4	7	7	0	18	57
7:30 AM	5	21	21	0	47	10	4	5	0	19	5	10	0	0	15	2	5	13	0	20	101
7:45 AM	4	27	15	0	46	15	2	4	0	21	4	1	0	0	5	6	5	32	0	43	115
8:00 AM	4	9	2	0	15	3	4	1	0	8	1	2	0	0	3	12	10	1	0	23	49
Grand Total	14	73	49	0	136	29	10	12	0	51	12	19	0	0	31	24	27	53	0	104	322
Medium Truck %	0.0	1.4	4.1	0.0	2.2	6.9	10.0	0.0	0.0	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	1.4	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	2.7	4.1	0.0	2.9	6.9	10.0	0.0	0.0	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total %	4.3	22.7	15.2	0.0	42.2	9.0	3.1	3.7	0.0	15.8	3.7	5.9	0.0	0.0	9.6	7.5	8.4	16.5	0.0	32.3	100.0
PHF	0.74	0.74	0.74			0.61	0.61	0.61			1.00	1.00	1.00			0.60	0.60	0.60			0.70



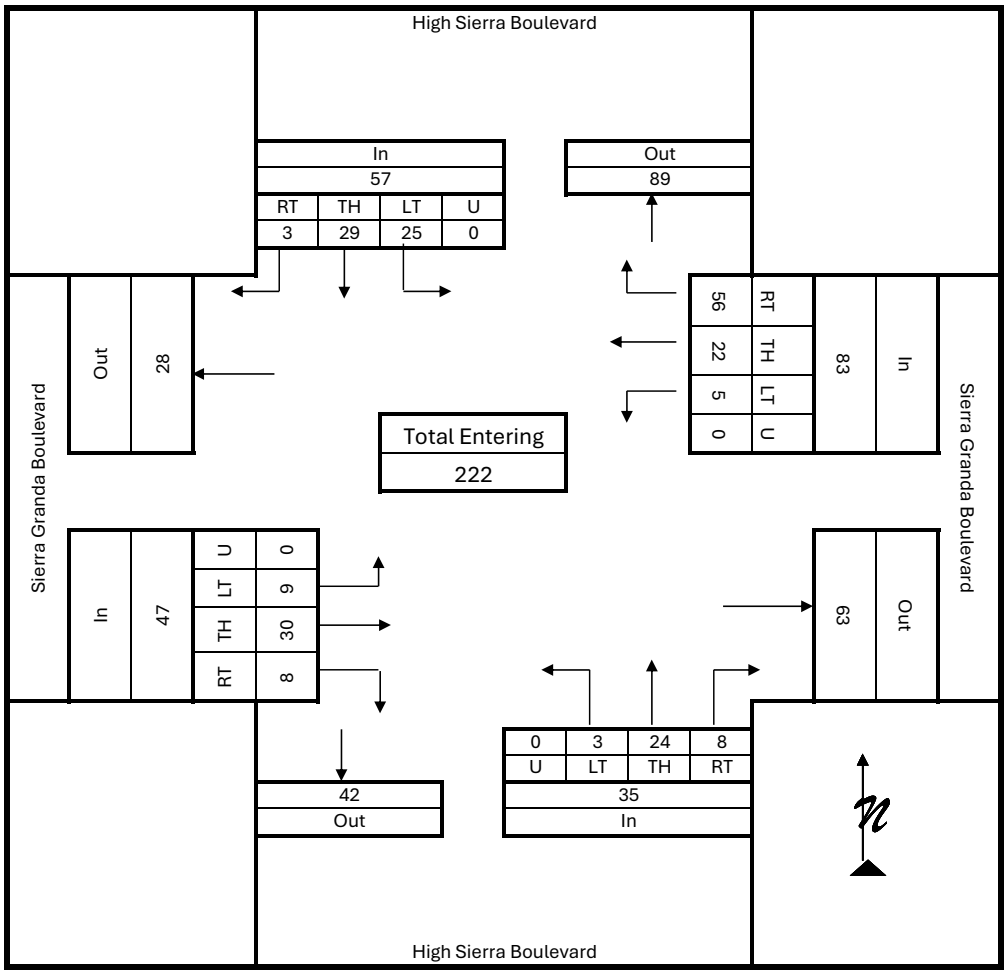
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Stormy Waggoner	Intersection:	High Sierra Blvd & Sierra Granda Blvd
Agency/Company:	Sanbell		
Date Performed:	Tuesday, February 25, 2025	Jurisdiction:	Billings, MT / MDT
Count Time Period:	PM Peak Hour (4:45 - 5:45 PM)		
Project Number:	82061.159	Project Description:	High Sierra 23rd and 24th Filings TIS
North/South Street:	High Sierra Boulevard	East/West Street:	Sierra Granda Boulevard

Vehicle Volumes and Adjustments

	High Sierra Boulevard Southbound					High Sierra Boulevard Northbound					Sierra Granda Boulevard Eastbound					Sierra Granda Boulevard Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		1.07	1.07	1.07	1.07		
4:45 PM	1	7	12	0	20	3	4	1	0	8	3	6	5	0	14	14	1	1	0	16	58
5:00 PM	1	6	6	0	13	3	5	1	0	9	2	5	0	0	7	17	10	3	0	30	59
5:15 PM	1	7	3	0	11	1	6	1	0	8	2	12	1	0	15	12	6	0	0	18	52
5:30 PM	0	9	4	0	13	1	9	0	0	10	1	7	3	0	11	13	5	1	0	19	53
Grand Total	3	29	25	0	57	8	24	3	0	35	8	30	9	0	47	56	22	5	0	83	222
Medium Truck %	0.0	0.0	0.0	0.0	0.0	12.5	0.0	33.3	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	12.5	0.0	33.3	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total %	1.4	13.1	11.3	0.0	25.7	3.6	10.8	1.4	0.0	15.8	3.6	13.5	4.1	0.0	21.2	25.2	9.9	2.3	0.0	37.4	100.0
PHF	1.00	1.00	1.00			0.94	0.94	0.94			1.00	1.00	1.00			0.70	0.70	0.70			0.93



CAPACITY CALCULATIONS – EXISTING CONDITIONS (2025)

APPENDIX B

Intelligent Infrastructure.
Enduring Communities.

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Intersection	Approach	Existing (2025)					
		AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop-Control (SB)*					
Annandale Rd & Riveroaks Dr	SB	9.4	A	1	9.3	A	1
	EB	3.0	A	1	3.6	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	5.0	A	--	3.5	A	--
Intersection Control		*One-Way Stop-Control (EB)*					
Annandale Rd & St Andrews Dr	NB	5.7	A	1	5.6	A	1
	SB	0.0	A	0	0.0	A	0
	EB	8.8	A	1	8.7	A	1
	Intersection	5.3	A	--	6.1	A	--
Intersection Control		*Two-Way Stop-Control (EB/WB)*					
Sierra Granda Blvd & High Sierra Blvd	NB	1.8	A	1	0.6	A	1
	SB	2.7	A	1	3.2	A	1
	EB	10.8	B	1	9.9	A	1
	WB	13.0	B	2	9.4	A	1
	Intersection	6.8	A	--	6.8	A	--
Intersection Control		*One-Way Stop-Control (EB)*					
Sierra Granda Blvd & Gleneagles Blvd	NB	6.7	A	1	4.5	A	1
	SB	0.0	A	0	0.0	A	0
	EB	13.7	B	2	10.9	B	1
	Intersection	6.8	A	--	5.5	A	--
Intersection Control		*Two-Way Stop-Control (NB/SB)*					
Alkali Creek Rd & Skyway Dr	NB	13.0	B	1	11.4	B	1
	SB	13.4	B	1	14.3	B	1
	EB	0.0	A	0	0.1	A	1
	WB	1.7	A	1	0.1	A	1
	Intersection	3.7	A	--	1.7	A	--
Intersection Control		*One-Way Stop-Control (SB)*					
Wicks Ln & Skyway Dr	SB	10.7	B	1	12.1	B	1
	EB	1.0	A	1	2.2	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	3.1	A	--	2.6	A	--
Intersection Control		*All-Way Stop-Control*					
Wicks Ln & High Sierra Blvd	NB	9.8	A	1	0.0	A	0
	SB	18.6	C	5	9.9	A	1
	EB	13.0	B	2	11.8	B	3
	WB	12.0	B	2	9.1	A	2
	Intersection	14.6	B	--	10.5	B	--
Intersection Control		*All-Way Stop-Control*					
Wicks Ln & Fantan St	SB	17.4	C	4	10.1	B	1
	EB	27.4	D	8	12.8	B	3
	WB	31.4	D	11	11.2	B	3
	Intersection	27.8	D	--	11.7	B	1
Intersection Control		*Signalized*					
Wicks Ln & Governors Blvd	NB	13.2	B	5	9.9	A	3
	SB	10.5	B	3	9.3	A	1
	EB	11.5	B	5	9.4	A	3
	WB	14.7	B	8	10.0	A	2
	Intersection	12.8	B	--	9.7	A	--
Intersection Control		*Signalized*					
Wicks Ln & Lake Hills Dr	NB	17.8	B	4	17.8	B	1
	SB	25.0	C	9	20.8	C	2
	EB	15.4	B	13	3.1	A	1
	WB	14.1	B	9	3.1	A	1
	Intersection	16.7	B	--	5.0	A	--
Intersection Control		*Signalized*					
Wicks Ln & St Andrews Dr	SB	22.9	C	5	22.4	C	3
	EB	5.7	A	4	4.2	A	2
	WB	14.8	B	11	10.3	B	7
	Intersection	12.8	B	--	8.8	A	--

Intersection Level Of Service Report
Intersection 1: Riveroaks Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Base Volume Input [veh/h]	9	86	43	63	35	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	0.00	1.60	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	86	43	63	35	3
Peak Hour Factor	0.7000	0.7000	1.0000	1.0000	0.4700	0.4700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	31	11	16	19	2
Total Analysis Volume [veh/h]	13	123	43	63	74	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.12	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.46	9.27	7.40	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.49	0.49	0.07	0.07	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.37	12.37	1.83	1.83	0.00	0.00
d_A, Approach Delay [s/veh]	9.39		3.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.95					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: St Andrews Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Base Volume Input [veh/h]	27	8	19	12	5	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	8	19	12	5	66
Peak Hour Factor	0.6500	0.6500	0.6000	0.6000	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	3	8	5	1	17
Total Analysis Volume [veh/h]	42	12	32	20	5	67
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.01	0.06
d_M, Delay for Movement [s/veh]	7.35	0.00	0.00	0.00	9.60	8.75
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.00	0.00	0.23	0.23
95th-Percentile Queue Length [ft/ln]	1.79	1.79	0.00	0.00	5.70	5.70
d_A, Approach Delay [s/veh]	5.71		0.00		8.81	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	5.30					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 11: High Sierra Blvd & Sierra Granda Blvd

Control Type:	Two-way stop	Delay (sec / veh):	13.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.081

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Base Volume Input [veh/h]	12	10	29	49	73	14	0	19	12	53	27	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	5.00	4.10	2.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	10	29	49	73	14	0	19	12	53	27	24
Peak Hour Factor	0.6100	0.6100	0.6100	0.7400	0.7400	0.7400	1.0000	1.0000	1.0000	0.6000	0.6000	0.6000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	4	12	17	25	5	0	5	3	22	11	10
Total Analysis Volume [veh/h]	20	16	48	66	99	19	0	19	12	88	45	40
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.03	0.01	0.16	0.08	0.04
d_M, Delay for Movement [s/veh]	7.46	0.00	0.00	7.44	0.00	0.00	12.50	11.86	9.06	13.65	13.66	10.67
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	B
95th-Percentile Queue Length [veh/ln]	0.04	0.04	0.04	0.12	0.12	0.12	0.15	0.15	0.15	1.13	1.13	1.13
95th-Percentile Queue Length [ft/ln]	0.97	0.97	0.97	2.95	2.95	2.95	3.72	3.72	3.72	28.18	28.18	28.18
d_A, Approach Delay [s/veh]	1.78			2.67			10.77			12.96		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	6.81											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 16: Sierra Granda Blvd & Gleneagles Blvd

Control Type:	Two-way stop	Delay (sec / veh):	21.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.120

Intersection Setup

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Base Volume Input [veh/h]	187	42	95	130	23	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.10	0.00	0.00	0.00	0.00	2.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	42	95	130	23	156
Peak Hour Factor	0.6900	0.6900	0.8500	0.8500	0.6700	0.6700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	15	28	38	9	58
Total Analysis Volume [veh/h]	271	61	112	153	34	233
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.00	0.00	0.00	0.12	0.27
d_M, Delay for Movement [s/veh]	8.26	0.00	0.00	0.00	21.10	12.63
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.64	0.64	0.00	0.00	1.88	1.88
95th-Percentile Queue Length [ft/ln]	15.91	15.91	0.00	0.00	46.94	46.94
d_A, Approach Delay [s/veh]	6.74		0.00		13.71	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	6.82					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 19: Alkali Creek Rd & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	15.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.124

Intersection Setup

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Base Volume Input [veh/h]	26	4	34	4	2	3	0	102	15	76	257	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	1.30	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	4	34	4	2	3	0	102	15	76	257	5
Peak Hour Factor	0.5300	0.5300	0.5300	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	2	16	1	1	1	0	27	4	21	72	1
Total Analysis Volume [veh/h]	49	8	64	4	2	3	0	107	16	85	289	6
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.02	0.07	0.01	0.01	0.00	0.00	0.00	0.00	0.06	0.00	0.00
d_M, Delay for Movement [s/veh]	15.78	15.71	10.50	15.55	14.26	9.96	7.82	0.00	0.00	7.55	0.00	0.00
Movement LOS	C	C	B	C	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.79	0.79	0.79	0.06	0.06	0.06	0.00	0.00	0.00	0.15	0.15	0.15
95th-Percentile Queue Length [ft/ln]	19.86	19.86	19.86	1.57	1.57	1.57	0.00	0.00	0.00	3.73	3.73	3.73
d_A, Approach Delay [s/veh]	12.98			13.40			0.00			1.69		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	3.69											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 24: Wicks Ln & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	12.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.080

Intersection Setup

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Base Volume Input [veh/h]	40	97	18	124	224	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.80	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	97	18	124	224	21
Peak Hour Factor	0.8800	0.8800	0.7600	0.7600	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	28	6	41	60	6
Total Analysis Volume [veh/h]	45	110	24	163	238	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.14	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.98	10.17	7.79	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.26	0.47	0.06	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.51	11.79	1.39	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.70		1.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.06					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 29: Wicks Ln & High Sierra Blvd

Control Type:	All-way stop	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.650

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	1	0	0	188	0	60	60	108	0	1	191	220
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.10	0.00	0.00	1.70	0.00	0.00	0.00	0.00	2.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	0	188	0	60	60	108	0	1	191	220
Peak Hour Factor	1.0000	1.0000	1.0000	0.6000	0.6000	0.6000	0.7100	0.7100	0.7100	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	78	0	25	21	38	0	0	54	62
Total Analysis Volume [veh/h]	1	0	0	313	0	100	85	152	0	1	215	247
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	528	635	596	584	654
Degree of Utilization, x	0.00	0.65	0.40	0.37	0.38

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.01	4.76	1.90	1.70	1.76
95th-Percentile Queue Length [ft]	0.14	119.05	47.48	42.54	44.01
Approach Delay [s/veh]	9.84	18.58	12.97	11.95	
Approach LOS	A	C	B	B	
Intersection Delay [s/veh]	14.62				
Intersection LOS	B				

Intersection Level Of Service Report
Intersection 33: Wicks Ln & Fantan St

Control Type:	All-way stop	Delay (sec / veh):	27.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.906

Intersection Setup

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Base Volume Input [veh/h]	167	13	1	306	395	257
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.60	0.00	0.00	0.70	1.50	1.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	167	13	1	306	395	257
Peak Hour Factor	0.6600	0.6600	0.6600	0.6600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	5	0	116	130	85
Total Analysis Volume [veh/h]	253	20	2	464	520	338
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	519	596	574	649
Degree of Utilization, x	0.53	0.78	0.91	0.52

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.03	7.41	10.99	3.03
95th-Percentile Queue Length [ft]	75.72	185.34	274.66	75.75
Approach Delay [s/veh]	17.37	27.40	31.38	
Approach LOS	C	D	D	
Intersection Delay [s/veh]	27.82			
Intersection LOS	D			

Intersection Level Of Service Report
Intersection 37: Wicks Ln & Gleneagles/Governors Blvd

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.525

Intersection Setup

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	169	151	180	43	213	30	10	239	230	54	446	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.30	2.20	0.00	1.90	3.30	0.00	2.90	0.40	3.70	1.80	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	90	0	0	15	0	0	115	0	0	29
Total Hourly Volume [veh/h]	169	151	90	43	213	15	10	239	115	54	446	28
Peak Hour Factor	0.6700	0.6700	0.6700	0.9200	0.9200	0.9200	0.6800	0.6800	0.6800	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	56	34	12	58	4	4	88	42	16	131	8
Total Analysis Volume [veh/h]	252	225	134	47	232	16	15	351	169	64	525	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	40	0	0	40	0	0	40	0	0	40	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	47	47	47	47	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	20	20	20	20	18	18	18	18	18	18
g / C, Green / Cycle	0.42	0.42	0.42	0.42	0.39	0.39	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.05	0.15	0.02	0.21	0.11	0.07	0.30	0.02
s, saturation flow rate [veh/h]	1150	1625	1039	1704	865	1710	1483	869	1725	1488
c, Capacity [veh/h]	474	684	372	718	227	665	577	324	671	579
d1, Uniform Delay [s]	15.73	10.20	15.41	9.30	20.11	11.14	9.99	16.48	12.72	9.05
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.93	0.63	0.15	0.29	0.12	0.65	0.28	0.30	2.04	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.52	0.13	0.35	0.07	0.53	0.29	0.20	0.78	0.06
d, Delay for Lane Group [s/veh]	16.66	10.82	15.56	9.58	20.24	11.79	10.27	16.77	14.76	9.09
Lane Group LOS	B	B	B	A	C	B	B	B	B	A
Critical Lane Group	No	Yes	No	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.32	2.40	0.37	1.36	0.14	2.30	0.99	0.54	4.11	0.17
50th-Percentile Queue Length [ft/ln]	58.03	60.07	9.32	34.11	3.59	57.56	24.68	13.55	102.71	4.33
95th-Percentile Queue Length [veh/ln]	4.18	4.33	0.67	2.46	0.26	4.14	1.78	0.98	7.40	0.31
95th-Percentile Queue Length [ft/ln]	104.45	108.13	16.77	61.39	6.47	103.60	44.42	24.40	184.88	7.80

Movement, Approach, & Intersection Results

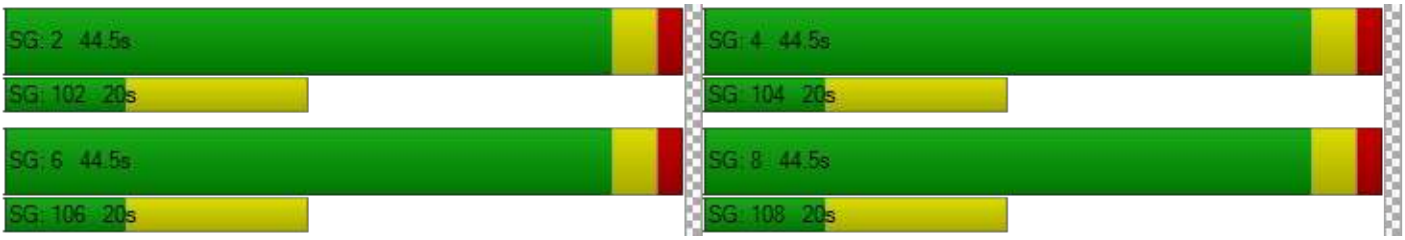
d_M, Delay for Movement [s/veh]	16.66	10.82	10.82	15.56	9.58	9.58	20.24	11.79	10.27	16.77	14.76	9.09
Movement LOS	B	B	B	B	A	A	C	B	B	B	B	A
d_A, Approach Delay [s/veh]	13.23			10.53			11.54			14.67		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	12.84											
Intersection LOS	B											
Intersection V/C	0.525											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	13.22	13.22	13.22	13.22
l_p,int, Pedestrian LOS Score for Intersectio	2.467	2.176	3.029	2.562
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1688	1688	1688	1688
d_b, Bicycle Delay [s]	0.58	0.58	0.58	0.58
l_b,int, Bicycle LOS Score for Intersection	2.716	2.071	2.632	2.634
Bicycle LOS	B	B	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 41: Wicks Ln & Lake Hills Dr/Nutter Blvd

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

Intersection Setup

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	128	30	84	65	115	7	1	388	124	58	435	32
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	0.00	3.60	3.10	0.00	0.00	0.00	2.30	1.60	0.00	1.60	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	42	0	0	4	0	0	62	0	0	16
Total Hourly Volume [veh/h]	128	30	42	65	115	3	1	388	62	58	435	16
Peak Hour Factor	0.9300	0.9300	0.9300	0.6400	0.6400	0.6400	0.5600	0.5600	0.5600	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	8	11	25	45	1	0	173	28	16	121	4
Total Analysis Volume [veh/h]	138	32	45	102	180	5	2	693	111	64	483	18
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	15	0	0	15	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			Yes			Yes	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	69	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	25	25	25	35	35	35	35	35	35
g / C, Green / Cycle	0.36	0.36	0.36	0.50	0.50	0.50	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.22	0.03	0.31	0.00	0.40	0.08	0.09	0.28	0.01
s, saturation flow rate [veh/h]	780	1445	931	911	1718	1469	688	1728	1488
c, Capacity [veh/h]	376	520	406	360	864	739	199	869	748
d1, Uniform Delay [s]	17.73	14.52	22.75	17.87	14.22	9.18	28.21	11.78	8.59
k, delay calibration	0.11	0.11	0.11	0.11	0.13	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.85	0.07	2.27	0.01	2.11	0.09	0.92	0.56	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.09	0.71	0.01	0.80	0.15	0.32	0.56	0.02
d, Delay for Lane Group [s/veh]	18.58	14.60	25.02	17.88	16.33	9.27	29.13	12.34	8.60
Lane Group LOS	B	B	C	B	B	A	C	B	A
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.21	0.47	4.61	0.02	7.94	0.79	1.00	4.43	0.12
50th-Percentile Queue Length [ft/ln]	55.24	11.64	115.14	0.55	198.61	19.70	24.90	110.69	2.98
95th-Percentile Queue Length [veh/ln]	3.98	0.84	8.13	0.04	12.57	1.42	1.79	7.88	0.21
95th-Percentile Queue Length [ft/ln]	99.43	20.96	203.13	0.99	314.17	35.46	44.81	196.96	5.37

Movement, Approach, & Intersection Results

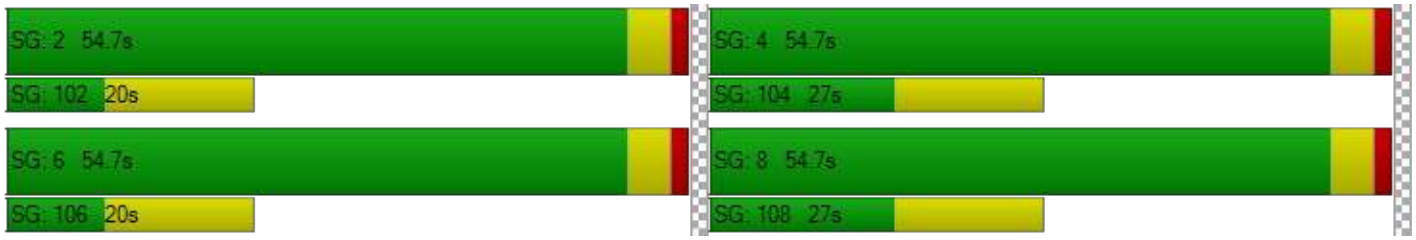
d_M, Delay for Movement [s/veh]	18.58	18.58	14.60	25.02	25.02	25.02	17.88	16.33	9.27	29.13	12.34	8.60
Movement LOS	B	B	B	C	C	C	B	B	A	C	B	A
d_A, Approach Delay [s/veh]	17.75			25.02			15.37			14.12		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	16.74											
Intersection LOS	B											
Intersection V/C	0.712											

Other Modes

g_Walk,mi, Effective Walk Time [s]	19.0	19.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	18.08	18.08	23.50	23.50
l_p,int, Pedestrian LOS Score for Intersectio	2.210	1.843	2.825	2.699
Crosswalk LOS	B	A	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1451	1451	1451	1451
d_b, Bicycle Delay [s]	2.60	2.60	2.60	2.60
l_b,int, Bicycle LOS Score for Intersection	1.984	2.040	2.992	2.518
Bicycle LOS	A	B	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Wicks Ln & St Andrews Dr

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.602

Intersection Setup

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Base Volume Input [veh/h]	160	75	27	576	559	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.90	2.70	5.00	2.30	2.10	3.60
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	38	0	0	0	28
Total Hourly Volume [veh/h]	160	37	27	576	559	27
Peak Hour Factor	0.7500	0.7500	1.0000	1.0000	0.7000	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	12	7	144	200	10
Total Analysis Volume [veh/h]	213	49	27	576	799	39
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	7	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	3	0	3	20	20	0
Maximum Green [s]	50	0	12	50	50	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.5	0.0	1.5	1.5	1.5	0.0
Split [s]	14	0	9	14	14	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	5	5	8	0
Pedestrian Clearance [s]	16	0	10	10	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	3.0	3.0	0.0
Minimum Recall	No		No	Yes	Yes	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	50	50	50	50	50	50
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	9	9	32	32	26	26
g / C, Green / Cycle	0.17	0.17	0.63	0.63	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.13	0.03	0.04	0.34	0.46	0.03
s, saturation flow rate [veh/h]	1642	1456	759	1718	1721	1445
c, Capacity [veh/h]	283	251	414	1082	881	740
d1, Uniform Delay [s]	19.87	17.90	8.23	5.21	11.24	6.19
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.04	0.38	0.07	0.41	3.95	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.20	0.07	0.53	0.91	0.05
d, Delay for Lane Group [s/veh]	23.91	18.27	8.30	5.62	15.19	6.22
Lane Group LOS	C	B	A	A	B	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.50	0.48	0.06	1.92	6.53	0.16
50th-Percentile Queue Length [ft/ln]	62.58	11.98	1.61	48.07	163.22	3.89
95th-Percentile Queue Length [veh/ln]	4.51	0.86	0.12	3.46	10.72	0.28
95th-Percentile Queue Length [ft/ln]	112.65	21.56	2.91	86.52	267.98	7.00

Movement, Approach, & Intersection Results

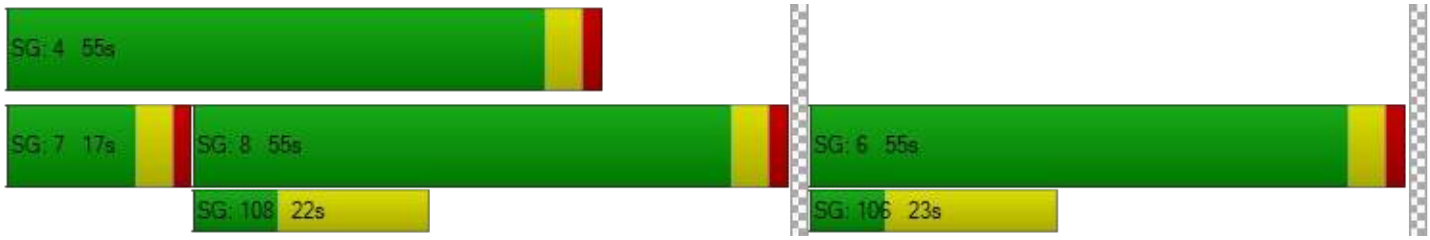
d_M, Delay for Movement [s/veh]	23.91	18.27	8.30	5.62	15.19	6.22
Movement LOS	C	B	A	A	B	A
d_A, Approach Delay [s/veh]	22.85		5.74		14.77	
Approach LOS	C		A		B	
d_I, Intersection Delay [s/veh]	12.82					
Intersection LOS	B					
Intersection V/C	0.602					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	14.63	15.40	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.087	2.472	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1984	1984	1984
d_b, Bicycle Delay [s]	0.00	0.00	0.00
l_b,int, Bicycle LOS Score for Intersection	1.560	2.555	2.989
Bicycle LOS	A	B	C

Sequence

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Riveroaks Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Base Volume Input [veh/h]	8	57	36	40	82	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	57	36	40	82	14
Peak Hour Factor	0.8500	0.8500	1.0000	1.0000	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	17	9	10	28	5
Total Analysis Volume [veh/h]	9	67	36	40	112	19
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.07	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.23	9.21	7.50	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.27	0.27	0.06	0.06	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.84	6.84	1.53	1.53	0.00	0.00
d_A, Approach Delay [s/veh]	9.33		3.55		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.46					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: St Andrews Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Base Volume Input [veh/h]	97	31	7	0	4	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	31	7	0	4	43
Peak Hour Factor	0.8200	0.8200	1.0000	1.0000	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	9	2	0	1	12
Total Analysis Volume [veh/h]	118	38	7	0	4	47
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.00	0.00	0.01	0.04
d_M, Delay for Movement [s/veh]	7.35	0.00	0.00	0.00	10.63	8.51
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.21	0.21	0.00	0.00	0.16	0.16
95th-Percentile Queue Length [ft/ln]	5.26	5.26	0.00	0.00	3.90	3.90
d_A, Approach Delay [s/veh]	5.56		0.00		8.68	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.12					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 11: High Sierra Blvd & Sierra Granda Blvd

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.013

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Base Volume Input [veh/h]	3	24	8	25	29	3	9	30	8	5	22	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	24	8	25	29	3	9	30	8	5	22	56
Peak Hour Factor	0.9400	0.9400	0.9400	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.7000	0.7000	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	6	2	6	7	1	2	8	2	2	8	20
Total Analysis Volume [veh/h]	3	26	9	25	29	3	9	30	8	7	31	80
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.04	0.01	0.01	0.04	0.08
d_M, Delay for Movement [s/veh]	7.31	0.00	0.00	7.29	0.00	0.00	10.49	10.04	8.72	10.13	10.28	8.98
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.04	0.04	0.04	0.19	0.19	0.19	0.43	0.43	0.43
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.13	1.08	1.08	1.08	4.79	4.79	4.79	10.75	10.75	10.75
d_A, Approach Delay [s/veh]	0.58			3.20			9.90			9.39		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	6.84											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 16: Sierra Granda Blvd & Gleneagles Blvd

Control Type:	Two-way stop	Delay (sec / veh):	14.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.081

Intersection Setup

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Base Volume Input [veh/h]	137	94	41	19	28	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	137	94	41	19	28	88
Peak Hour Factor	0.7200	0.7200	0.7900	0.7900	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	33	13	6	8	27
Total Analysis Volume [veh/h]	190	131	52	24	34	106
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.00	0.00	0.00	0.08	0.11
d_M, Delay for Movement [s/veh]	7.58	0.00	0.00	0.00	14.71	9.71
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.35	0.35	0.00	0.00	0.69	0.69
95th-Percentile Queue Length [ft/ln]	8.84	8.84	0.00	0.00	17.13	17.13
d_A, Approach Delay [s/veh]	4.49		0.00		10.92	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	5.53					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 19: Alkali Creek Rd & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Base Volume Input [veh/h]	6	3	49	9	7	0	4	304	39	15	121	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	7.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	3	49	9	7	0	4	304	39	15	121	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.8600	0.8600	0.8600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	12	2	2	0	1	88	11	4	32	4
Total Analysis Volume [veh/h]	6	3	49	9	7	0	5	353	45	16	126	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.07	0.02	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	13.97	13.93	10.93	14.62	13.86	9.28	7.48	0.00	0.00	8.09	0.00	0.00
Movement LOS	B	B	B	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.31	0.31	0.31	0.12	0.12	0.12	0.01	0.01	0.01	0.03	0.03	0.03
95th-Percentile Queue Length [ft/ln]	7.70	7.70	7.70	3.09	3.09	3.09	0.21	0.21	0.21	0.69	0.69	0.69
d_A, Approach Delay [s/veh]	11.40			14.29			0.09			0.82		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	1.67											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 24: Wicks Ln & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	14.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.089

Intersection Setup

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Base Volume Input [veh/h]	36	33	103	263	131	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	0.00	0.00	0.80	1.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	33	103	263	131	46
Peak Hour Factor	1.0000	1.0000	0.9600	0.9600	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	8	27	68	37	13
Total Analysis Volume [veh/h]	36	33	107	274	149	52
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.04	0.08	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	14.73	9.14	7.82	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.29	0.11	0.25	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	7.25	2.84	6.28	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.05		2.20		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.56					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 29: Wicks Ln & High Sierra Blvd

Control Type:	All-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.464

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	0	0	0	88	0	14	24	288	0	0	176	97
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.10	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	88	0	14	24	288	0	0	176	97
Peak Hour Factor	1.0000	1.0000	1.0000	0.7300	0.7300	0.7300	0.8900	0.8900	0.8900	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	30	0	5	7	81	0	0	45	25
Total Analysis Volume [veh/h]	0	0	0	121	0	19	27	324	0	0	180	99
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	641	664	756	687	790
Degree of Utilization, x	0.00	0.21	0.46	0.26	0.13

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.00	0.79	2.48	1.05	0.43
95th-Percentile Queue Length [ft]	0.00	19.79	61.96	26.23	10.69
Approach Delay [s/veh]	0.00	9.86	11.82	9.13	
Approach LOS	A	A	B	A	
Intersection Delay [s/veh]	10.49				
Intersection LOS	B				

Intersection Level Of Service Report
Intersection 33: Wicks Ln & Fantan St

Control Type:	All-way stop	Delay (sec / veh):	11.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.513

Intersection Setup

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Base Volume Input [veh/h]	90	8	9	365	278	140
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.80	1.40	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	8	9	365	278	140
Peak Hour Factor	0.9900	0.9900	0.9800	0.9800	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	2	2	93	84	42
Total Analysis Volume [veh/h]	91	8	9	372	335	169
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	608	742	696	806
Degree of Utilization, x	0.16	0.51	0.48	0.21

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.58	2.97	2.63	0.79
95th-Percentile Queue Length [ft]	14.45	74.17	65.74	19.70
Approach Delay [s/veh]	10.07	12.84	11.16	
Approach LOS	B	B	B	
Intersection Delay [s/veh]	11.70			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 37: Wicks Ln & Gleneagles/Governors Blvd

Control Type:	Signalized	Delay (sec / veh):	9.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.392

Intersection Setup

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	167	184	98	66	89	21	24	286	142	75	226	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	0.00	0.00	1.50	2.20	0.00	0.00	0.70	0.00	0.00	0.90	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	49	0	0	11	0	0	71	0	0	44
Total Hourly Volume [veh/h]	167	184	49	66	89	10	24	286	71	75	226	43
Peak Hour Factor	0.6200	0.6200	0.6200	0.9800	0.9800	0.9800	0.9700	0.9700	0.9700	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	74	20	17	23	3	6	74	18	21	62	12
Total Analysis Volume [veh/h]	269	297	79	67	91	10	25	295	73	82	248	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	40	0	0	40	0	0	40	0	0	40	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	34	34	34	34	34	34	34	34	34	34
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	13	13	13	13	12	12	12	12	12	12
g / C, Green / Cycle	0.39	0.39	0.39	0.39	0.34	0.34	0.34	0.34	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.21	0.22	0.07	0.06	0.02	0.17	0.05	0.08	0.14	0.03
s, saturation flow rate [veh/h]	1289	1687	1010	1690	1101	1740	1488	1030	1738	1488
c, Capacity [veh/h]	590	665	374	666	399	597	510	361	596	510
d1, Uniform Delay [s]	10.76	8.08	12.88	6.68	12.04	8.90	7.77	13.55	8.62	7.63
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.55	0.76	0.23	0.10	0.07	0.64	0.13	0.32	0.46	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.57	0.18	0.15	0.06	0.49	0.14	0.23	0.42	0.09
d, Delay for Lane Group [s/veh]	11.32	8.84	13.11	6.79	12.10	9.53	7.90	13.86	9.08	7.71
Lane Group LOS	B	A	B	A	B	A	A	B	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.47	1.65	0.37	0.31	0.13	1.22	0.26	0.48	0.98	0.16
50th-Percentile Queue Length [ft/ln]	36.83	41.25	9.34	7.65	3.23	30.42	6.46	11.92	24.56	4.07
95th-Percentile Queue Length [veh/ln]	2.65	2.97	0.67	0.55	0.23	2.19	0.46	0.86	1.77	0.29
95th-Percentile Queue Length [ft/ln]	66.29	74.24	16.82	13.77	5.81	54.76	11.62	21.46	44.20	7.33

Movement, Approach, & Intersection Results

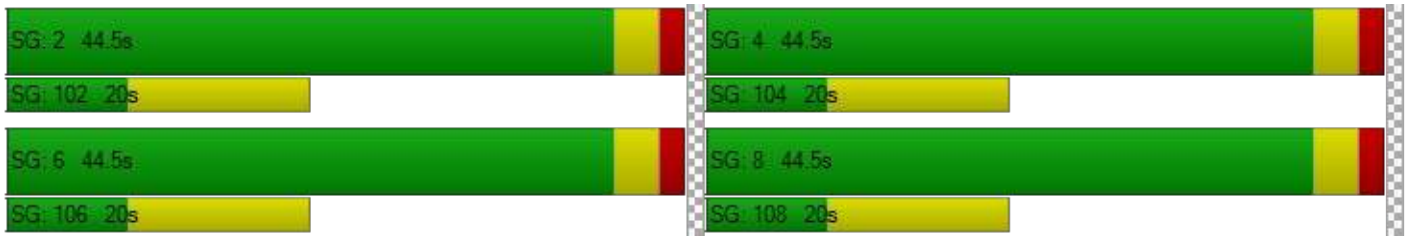
d_M, Delay for Movement [s/veh]	11.32	8.84	8.84	13.11	6.79	6.79	12.10	9.53	7.90	13.86	9.08	7.71
Movement LOS	B	A	A	B	A	A	B	A	A	B	A	A
d_A, Approach Delay [s/veh]	9.87			9.31			9.39			9.95		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	9.71											
Intersection LOS	A											
Intersection V/C	0.392											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	7.24	7.24	7.24	7.24
l_p,int, Pedestrian LOS Score for Intersectio	2.337	2.153	2.836	2.485
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2334	2334	2334	2334
d_b, Bicycle Delay [s]	0.48	0.48	0.48	0.48
l_b,int, Bicycle LOS Score for Intersection	2.705	1.855	2.325	2.254
Bicycle LOS	B	A	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 41: Wicks Ln & Lake Hills Dr/Nutter Blvd

Control Type:	Signalized	Delay (sec / veh):	5.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.499

Intersection Setup

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	21	26	48	43	11	3	2	426	33	52	396	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	5.00	0.00	0.00	1.20	0.00	0.00	1.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	24	0	0	2	0	0	17	0	0	37
Total Hourly Volume [veh/h]	21	26	24	43	11	1	2	426	16	52	396	37
Peak Hour Factor	0.9000	0.9000	0.9000	0.8400	0.8400	0.8400	0.8100	0.8100	0.8100	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	7	7	13	3	0	1	131	5	14	103	10
Total Analysis Volume [veh/h]	23	29	27	51	13	1	2	526	20	54	413	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	15	0	0	15	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			Yes			Yes	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	40	40	40	40	40	40	40	40	40
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	3	3	3	27	27	27	27	27	27
g / C, Green / Cycle	0.08	0.08	0.08	0.68	0.68	0.68	0.68	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.20	0.00	0.30	0.01	0.06	0.24	0.03
s, saturation flow rate [veh/h]	1697	1488	332	954	1733	1488	874	1736	1488
c, Capacity [veh/h]	270	123	189	689	1182	1014	608	1183	1014
d1, Uniform Delay [s]	17.30	17.09	19.76	4.35	2.90	2.05	5.55	2.65	2.07
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.34	0.89	1.08	0.00	0.26	0.01	0.06	0.18	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.22	0.34	0.00	0.45	0.02	0.09	0.35	0.04
d, Delay for Lane Group [s/veh]	17.64	17.98	20.84	4.35	3.16	2.06	5.61	2.83	2.09
Lane Group LOS	B	B	C	A	A	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.44	0.24	0.61	0.00	0.41	0.01	0.16	0.29	0.02
50th-Percentile Queue Length [ft/ln]	10.97	6.05	15.35	0.11	10.15	0.27	3.94	7.18	0.53
95th-Percentile Queue Length [veh/ln]	0.79	0.44	1.11	0.01	0.73	0.02	0.28	0.52	0.04
95th-Percentile Queue Length [ft/ln]	19.74	10.90	27.63	0.20	18.27	0.48	7.10	12.92	0.96

Movement, Approach, & Intersection Results

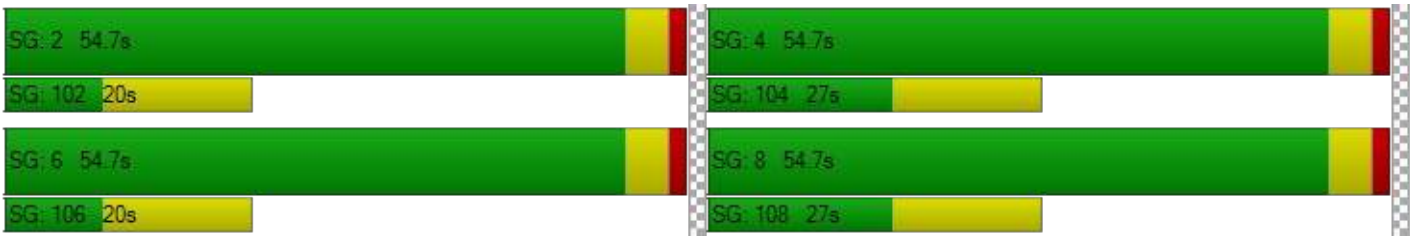
d_M, Delay for Movement [s/veh]	17.64	17.64	17.98	20.84	20.84	20.84	4.35	3.16	2.06	5.61	2.83	2.09
Movement LOS	B	B	B	C	C	C	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	17.75			20.84			3.13			3.07		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	5.03											
Intersection LOS	A											
Intersection V/C	0.499											

Other Modes

g_Walk,mi, Effective Walk Time [s]	19.0	19.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	5.44	5.44	9.71	9.71
l_p,int, Pedestrian LOS Score for Intersectio	2.021	1.716	2.422	2.538
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2512	2512	2512	2512
d_b, Bicycle Delay [s]	1.31	1.31	1.31	1.31
l_b,int, Bicycle LOS Score for Intersection	1.730	1.670	2.492	2.456
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: Wicks Ln & St Andrews Dr

Control Type:	Signalized	Delay (sec / veh):	8.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.502

Intersection Setup

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Base Volume Input [veh/h]	112	32	44	571	669	226
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.50	0.70	0.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	16	0	0	0	113
Total Hourly Volume [veh/h]	112	16	44	571	669	113
Peak Hour Factor	1.0000	1.0000	0.9200	0.9200	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	4	12	155	184	31
Total Analysis Volume [veh/h]	112	16	48	621	735	124
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	7	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	3	0	3	20	20	0
Maximum Green [s]	50	0	12	50	50	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.5	0.0	1.5	1.5	1.5	0.0
Split [s]	14	0	9	14	14	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	5	5	8	0
Pedestrian Clearance [s]	16	0	10	10	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	3.0	0.0	3.0	3.0	3.0	0.0
Minimum Recall	No		No	Yes	Yes	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	40	40	40	40	40	40
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	4	4	26	26	20	20
g / C, Green / Cycle	0.09	0.09	0.66	0.66	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.07	0.01	0.06	0.36	0.42	0.08
s, saturation flow rate [veh/h]	1667	1488	818	1743	1740	1488
c, Capacity [veh/h]	159	142	559	1143	870	744
d1, Uniform Delay [s]	17.64	16.63	5.36	3.70	8.71	5.49
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.57	0.35	0.07	0.40	2.36	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.11	0.09	0.54	0.84	0.17
d, Delay for Lane Group [s/veh]	23.20	16.98	5.42	4.10	11.06	5.59
Lane Group LOS	C	B	A	A	B	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.14	0.13	0.05	0.82	3.70	0.35
50th-Percentile Queue Length [ft/ln]	28.45	3.35	1.14	20.57	92.44	8.86
95th-Percentile Queue Length [veh/ln]	2.05	0.24	0.08	1.48	6.66	0.64
95th-Percentile Queue Length [ft/ln]	51.21	6.02	2.06	37.03	166.40	15.94

Movement, Approach, & Intersection Results

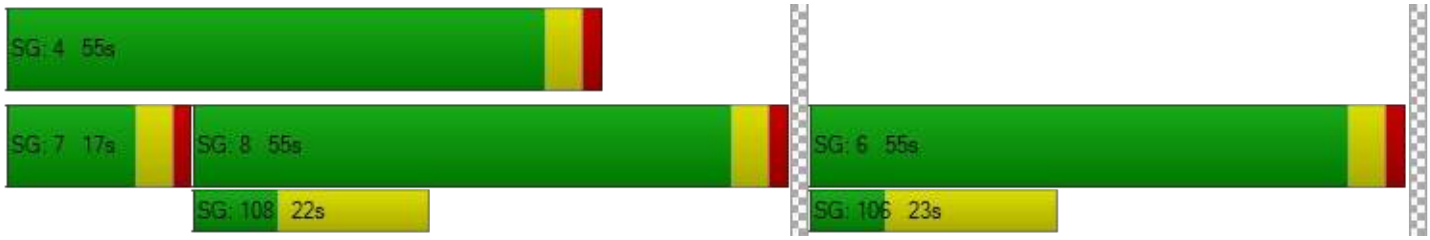
d_M, Delay for Movement [s/veh]	23.20	16.98	5.42	4.10	11.06	5.59
Movement LOS	C	B	A	A	B	A
d_A, Approach Delay [s/veh]	22.43		4.20		10.27	
Approach LOS	C		A		B	
d_I, Intersection Delay [s/veh]	8.76					
Intersection LOS	A					
Intersection V/C	0.502					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	9.85	10.56	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.066	2.437	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2494	2494	2494
d_b, Bicycle Delay [s]	1.22	1.22	1.22
l_b,int, Bicycle LOS Score for Intersection	1.560	2.663	3.163
Bicycle LOS	A	B	C

Sequence

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



CAPACITY CALCULATIONS – 23RD FILING (2029) AND FULL BUILDOUT (2035)

APPENDIX C

Intelligent Infrastructure.
Enduring Communities.

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Intersection	Approach	23rd Filing (2029)					
		AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop-Control (SB)*					
Annadale Rd & Riveroaks Dr	SB	9.2	A	1	9.5	A	1
	EB	2.9	A	1	3.3	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	4.7	A	--	3.6	A	--
Intersection Control		*One-Way Stop-Control (EB)*					
Annandale Rd & St Andrews Dr	NB	5.8	A	1	5.8	A	1
	SB	0.0	A	0	0.0	A	0
	EB	8.9	A	1	8.7	A	1
	Intersection	6.4	A	--	6.4	A	--
Intersection Control		*Two-Way Stop-Control (EB/WB)*					
Sierra Granda Blvd & High Sierra Blvd	NB	1.5	A	1	0.3	A	1
	SB	2.6	A	1	3.1	A	1
	EB	10.8	B	1	10.5	B	1
	WB	12.2	B	1	9.7	A	1
	Intersection	6.2	A	--	6.3	A	--
Intersection Control		*One-Way Stop-Control (EB)*					
Sierra Granda Blvd & Gleneagles Blvd	NB	6.6	A	1	4.6	A	1
	SB	0.0	A	0	0.0	A	0
	EB	13.0	B	2	11.2	B	1
	Intersection	6.2	A	--	5.7	A	--
Intersection Control		*Two-Way Stop-Control (NB/SB)*					
Alkali Creek Rd & Skyway Dr	NB	12.9	B	1	12.0	B	1
	SB	14.0	B	1	15.7	C	1
	EB	0.0	A	0	0.1	A	1
	WB	1.6	A	1	0.7	A	1
	Intersection	2.7	A	--	1.8	A	--
Intersection Control		*One-Way Stop-Control (SB)*					
Wicks Ln & Skyway Dr	SB	11.1	B	1	13.2	B	1
	EB	1.0	A	1	2.2	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	3.1	A	--	2.8	A	--
Intersection Control		*All-Way Stop-Control*					
Wicks Ln & High Sierra Blvd	NB	10.5	B	1	0.0	A	0
	SB	27.9	D	8	10.8	B	2
	EB	15.3	C	3	14.0	B	4
	WB	14.1	B	3	9.8	A	2
	Intersection	19.5	C	--	11.9	B	--
Intersection Control		*All-Way Stop-Control*					
Wicks Ln & Fantan St	SB	21.9	C	5	10.9	B	1
	EB	48.2	E	13	16.0	C	5
	WB	64.0	F	19	13.2	B	4
	Intersection	51.8	F	--	14.1	B	--
Intersection Control		*Signalized*					
Wicks Ln & Governors Blvd	NB	13.2	B	4	10.7	B	3
	SB	11.1	B	4	10.2	B	1
	EB	11.1	B	4	9.1	A	3
	WB	14.4	B	8	9.5	A	3
	Intersection	12.7	B	--	9.9	A	--
Intersection Control		*Signalized*					
Wicks Ln & Lake Hills Dr	NB	14.6	B	4	16.9	B	2
	SB	20.3	C	6	20.9	C	2
	EB	11.3	B	7	3.9	A	2
	WB	12.7	B	8	4.0	A	2
	Intersection	13.6	B	--	6.1	A	--
Intersection Control		*Signalized*					
Wicks Ln & St Andrews Dr	SB	19.7	B	4	25.3	C	4
	EB	7.2	A	5	5.1	A	4
	WB	13.1	B	8	12.5	B	11
	Intersection	11.5	B	--	10.7	B	--

Intersection Level Of Service Report
Intersection 1: Riveroaks Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

Intersection Setup

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Base Volume Input [veh/h]	10	96	56	88	45	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	0.00	1.60	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	96	56	88	45	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	26	15	24	12	1
Total Analysis Volume [veh/h]	11	104	61	96	49	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.10	0.04	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.67	9.02	7.37	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.40	0.40	0.11	0.11	0.00	0.00
95th-Percentile Queue Length [ft/ln]	9.98	9.98	2.63	2.63	0.00	0.00
d_A, Approach Delay [s/veh]	9.18		2.86		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.65					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: St Andrews Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Base Volume Input [veh/h]	36	9	21	13	5	91
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	9	21	13	5	91
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	2	6	4	1	25
Total Analysis Volume [veh/h]	39	10	23	14	5	99
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.01	0.09
d_M, Delay for Movement [s/veh]	7.31	0.00	0.00	0.00	9.59	8.81
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.00	0.00	0.33	0.33
95th-Percentile Queue Length [ft/ln]	1.66	1.66	0.00	0.00	8.32	8.32
d_A, Approach Delay [s/veh]	5.82		0.00		8.85	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.35					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 11: High Sierra Blvd & Sierra Granda Blvd

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.124

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Base Volume Input [veh/h]	13	18	31	60	91	20	1	22	13	64	29	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	5.00	4.10	2.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	18	31	60	91	20	1	22	13	64	29	30
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	5	8	16	25	5	0	6	4	17	8	8
Total Analysis Volume [veh/h]	14	20	34	65	99	22	1	24	14	70	32	33
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.04	0.01	0.12	0.06	0.03
d_M, Delay for Movement [s/veh]	7.45	0.00	0.00	7.42	0.00	0.00	12.04	11.70	9.14	12.87	12.82	9.97
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.03	0.12	0.12	0.12	0.19	0.19	0.19	0.79	0.79	0.79
95th-Percentile Queue Length [ft/ln]	0.66	0.66	0.66	2.91	2.91	2.91	4.69	4.69	4.69	19.87	19.87	19.87
d_A, Approach Delay [s/veh]	1.53			2.59			10.79			12.15		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	6.19											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 16: Sierra Granda Blvd & Gleneagles Blvd

Control Type:	Two-way stop	Delay (sec / veh):	19.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.086

Intersection Setup

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Base Volume Input [veh/h]	215	53	127	141	25	207
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.10	0.00	0.00	0.00	0.00	2.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	215	53	127	141	25	207
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	14	35	38	7	56
Total Analysis Volume [veh/h]	234	58	138	153	27	225
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.00	0.00	0.00	0.09	0.27
d_M, Delay for Movement [s/veh]	8.24	0.00	0.00	0.00	19.33	12.22
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.54	0.54	0.00	0.00	1.63	1.63
95th-Percentile Queue Length [ft/ln]	13.39	13.39	0.00	0.00	40.85	40.85
d_A, Approach Delay [s/veh]	6.60		0.00		12.98	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	6.23					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 19: Alkali Creek Rd & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	16.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.085

Intersection Setup

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Base Volume Input [veh/h]	28	4	37	4	2	3	0	119	16	82	304	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	1.30	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	4	37	4	2	3	0	119	16	82	304	5
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	1	10	1	1	1	0	32	4	22	83	1
Total Analysis Volume [veh/h]	30	4	40	4	2	3	0	129	17	89	330	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.01	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.06	0.00	0.00
d_M, Delay for Movement [s/veh]	16.33	16.08	10.03	16.22	15.25	10.24	7.91	0.00	0.00	7.60	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.48	0.48	0.48	0.07	0.07	0.07	0.00	0.00	0.00	0.16	0.16	0.16
95th-Percentile Queue Length [ft/ln]	12.10	12.10	12.10	1.69	1.69	1.69	0.00	0.00	0.00	3.91	3.91	3.91
d_A, Approach Delay [s/veh]	12.91			14.01			0.00			1.60		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	2.69											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 24: Wicks Ln & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.088

Intersection Setup

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Base Volume Input [veh/h]	43	110	21	141	263	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.80	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	110	21	141	263	23
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	30	6	38	71	6
Total Analysis Volume [veh/h]	47	120	23	153	286	25
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.16	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.38	10.64	7.91	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.29	0.56	0.06	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	7.19	14.01	1.39	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.13		1.03		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.12					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 29: Wicks Ln & High Sierra Blvd

Control Type:	All-way stop	Delay (sec / veh):	19.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.792

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	1	0	0	219	0	68	67	122	0	1	225	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.10	0.00	0.00	1.70	0.00	0.00	0.00	0.00	2.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	0	219	0	68	67	122	0	1	225	243
Peak Hour Factor	1.0000	1.0000	1.0000	0.6000	0.6000	0.6000	0.7100	0.7100	0.7100	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	91	0	28	24	43	0	0	63	68
Total Analysis Volume [veh/h]	1	0	0	365	0	113	94	172	0	1	253	273
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	482	604	555	546	608
Degree of Utilization, x	0.00	0.79	0.48	0.47	0.45

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.01	7.68	2.58	2.45	2.32
95th-Percentile Queue Length [ft]	0.16	191.88	64.45	61.15	57.97
Approach Delay [s/veh]	10.49	27.88	15.32	14.11	
Approach LOS	B	D	C	B	
Intersection Delay [s/veh]	19.53				
Intersection LOS	C				

Intersection Level Of Service Report
Intersection 33: Wicks Ln & Fantan St

Control Type:	All-way stop	Delay (sec / veh):	51.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.098

Intersection Setup

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Base Volume Input [veh/h]	196	19	2	351	446	283
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.60	0.00	0.00	0.70	1.50	1.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	196	19	2	351	446	283
Peak Hour Factor	0.6600	0.6600	0.6600	0.6600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	7	1	133	147	93
Total Analysis Volume [veh/h]	297	29	3	532	587	372
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	508	572	587	599
Degree of Utilization, x	0.64	0.94	1.10	0.62

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.49	12.03	18.45	4.27
95th-Percentile Queue Length [ft]	112.18	300.81	461.32	106.78
Approach Delay [s/veh]	21.91	48.18	63.98	
Approach LOS	C	E	F	
Intersection Delay [s/veh]	51.80			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 37: Wicks Ln & Gleneagles/Governors Blvd

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.495

Intersection Setup

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	187	174	195	65	262	45	15	277	262	58	489	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.30	2.20	0.00	1.90	3.30	0.00	2.90	0.40	3.70	1.80	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	98	0	0	23	0	0	131	0	0	34
Total Hourly Volume [veh/h]	187	174	97	65	262	22	15	277	131	58	489	34
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	47	26	18	71	6	4	75	36	16	133	9
Total Analysis Volume [veh/h]	203	189	105	71	285	24	16	301	142	63	532	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	40	0	0	40	0	0	40	0	0	40	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	47	47	47	47	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	20	20	20	20	19	19	19	19	19	19
g / C, Green / Cycle	0.42	0.42	0.42	0.42	0.39	0.39	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.19	0.18	0.06	0.18	0.02	0.18	0.10	0.07	0.31	0.02
s, saturation flow rate [veh/h]	1087	1629	1102	1700	856	1710	1483	933	1725	1488
c, Capacity [veh/h]	420	681	425	710	225	672	583	366	678	584
d1, Uniform Delay [s]	16.55	9.83	14.34	9.84	20.24	10.63	9.68	15.13	12.66	8.98
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.86	0.43	0.18	0.42	0.13	0.47	0.22	0.22	2.05	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.43	0.17	0.44	0.07	0.45	0.24	0.17	0.78	0.06
d, Delay for Lane Group [s/veh]	17.41	10.26	14.52	10.26	20.37	11.10	9.90	15.35	14.71	9.02
Lane Group LOS	B	B	B	B	C	B	A	B	B	A
Critical Lane Group	Yes	No	No	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.91	1.88	0.54	1.80	0.15	1.87	0.80	0.50	4.14	0.19
50th-Percentile Queue Length [ft/ln]	47.75	46.90	13.41	45.02	3.85	46.77	20.04	12.45	103.54	4.81
95th-Percentile Queue Length [veh/ln]	3.44	3.38	0.97	3.24	0.28	3.37	1.44	0.90	7.45	0.35
95th-Percentile Queue Length [ft/ln]	85.96	84.43	24.13	81.03	6.93	84.19	36.07	22.42	186.37	8.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.41	10.26	10.26	14.52	10.26	10.26	20.37	11.10	9.90	15.35	14.71	9.02
Movement LOS	B	B	B	B	B	B	C	B	A	B	B	A
d_A, Approach Delay [s/veh]	13.18			11.06			11.05			14.44		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	12.68											
Intersection LOS	B											
Intersection V/C	0.495											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	13.19	13.19	13.19	13.19
l_p,int, Pedestrian LOS Score for Intersectio	2.459	2.214	2.957	2.594
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1690	1690	1690	1690
d_b, Bicycle Delay [s]	0.57	0.57	0.57	0.57
l_b,int, Bicycle LOS Score for Intersection	2.541	2.225	2.533	2.659
Bicycle LOS	B	B	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 41: Wicks Ln & Lake Hills Dr/Nutter Blvd

Control Type:	Signalized	Delay (sec / veh):	13.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	142	35	91	98	134	8	1	449	141	63	480	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	0.00	3.60	3.10	0.00	0.00	0.00	2.30	1.60	0.00	1.60	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	46	0	0	4	0	0	71	0	0	23
Total Hourly Volume [veh/h]	142	35	45	98	134	4	1	449	70	63	480	22
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	10	12	27	36	1	0	122	19	17	130	6
Total Analysis Volume [veh/h]	154	38	49	107	146	4	1	488	76	68	522	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	15	0	0	15	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			Yes			Yes	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	57	57	57	57	57	57	57	57	57
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	21	21	21	27	27	27	27	27	27
g / C, Green / Cycle	0.36	0.36	0.36	0.47	0.47	0.47	0.47	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.22	0.03	0.29	0.00	0.28	0.05	0.08	0.30	0.02
s, saturation flow rate [veh/h]	890	1445	875	874	1718	1469	860	1728	1488
c, Capacity [veh/h]	436	522	406	316	814	696	329	819	705
d1, Uniform Delay [s]	14.55	12.03	18.59	17.48	11.02	8.32	18.07	11.31	8.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.70	0.08	1.64	0.00	0.71	0.07	0.31	0.83	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.09	0.63	0.00	0.60	0.11	0.21	0.64	0.03
d, Delay for Lane Group [s/veh]	15.26	12.11	20.23	17.48	11.73	8.39	18.38	12.14	8.04
Lane Group LOS	B	B	C	B	B	A	B	B	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.95	0.40	3.25	0.01	3.71	0.43	0.69	4.08	0.13
50th-Percentile Queue Length [ft/ln]	48.65	10.02	81.17	0.24	92.72	10.76	17.26	102.06	3.27
95th-Percentile Queue Length [veh/ln]	3.50	0.72	5.84	0.02	6.68	0.77	1.24	7.35	0.24
95th-Percentile Queue Length [ft/ln]	87.56	18.03	146.10	0.43	166.89	19.37	31.08	183.70	5.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.26	15.26	12.11	20.23	20.23	20.23	17.48	11.73	8.39	18.38	12.14	8.04
Movement LOS	B	B	B	C	C	C	B	B	A	B	B	A
d_A, Approach Delay [s/veh]	14.62			20.23			11.29			12.67		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	13.64											
Intersection LOS	B											
Intersection V/C	0.596											

Other Modes

g_Walk,mi, Effective Walk Time [s]	19.0	19.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	12.64	12.64	17.73	17.73
l_p,int, Pedestrian LOS Score for Intersectio	2.202	1.822	2.799	2.666
Crosswalk LOS	B	A	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1756	1756	1756	1756
d_b, Bicycle Delay [s]	0.42	0.42	0.42	0.42
l_b,int, Bicycle LOS Score for Intersection	2.033	1.990	2.609	2.611
Bicycle LOS	B	A	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 45: Wicks Ln & St Andrews Dr

Control Type:	Signalized	Delay (sec / veh):	11.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

Intersection Setup

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Base Volume Input [veh/h]	193	81	29	680	624	67
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.90	2.70	5.00	2.30	2.10	3.60
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	41	0	0	0	34
Total Hourly Volume [veh/h]	193	40	29	680	624	33
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	11	8	185	170	9
Total Analysis Volume [veh/h]	210	43	32	739	678	36
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	7	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	3	0	3	20	20	0
Maximum Green [s]	50	0	12	50	50	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.5	0.0	1.5	1.5	1.5	0.0
Split [s]	14	0	9	14	14	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	5	5	8	0
Pedestrian Clearance [s]	16	0	10	10	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	3.0	3.0	0.0
Minimum Recall	No		No	Yes	Yes	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	44	44	44	44	44	44
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	8	8	26	26	20	20
g / C, Green / Cycle	0.17	0.17	0.60	0.60	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.13	0.03	0.04	0.43	0.39	0.02
s, saturation flow rate [veh/h]	1642	1456	853	1718	1721	1445
c, Capacity [veh/h]	289	256	493	1024	790	664
d1, Uniform Delay [s]	17.07	15.34	6.49	6.28	10.58	6.58
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.48	0.31	0.05	0.98	2.85	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.17	0.06	0.72	0.86	0.05
d, Delay for Lane Group [s/veh]	20.55	15.64	6.55	7.26	13.43	6.61
Lane Group LOS	C	B	A	A	B	A
Critical Lane Group	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.05	0.35	0.07	2.60	4.48	0.13
50th-Percentile Queue Length [ft/ln]	51.27	8.69	1.65	64.90	112.09	3.34
95th-Percentile Queue Length [veh/ln]	3.69	0.63	0.12	4.67	7.96	0.24
95th-Percentile Queue Length [ft/ln]	92.28	15.64	2.96	116.82	198.90	6.01

Movement, Approach, & Intersection Results

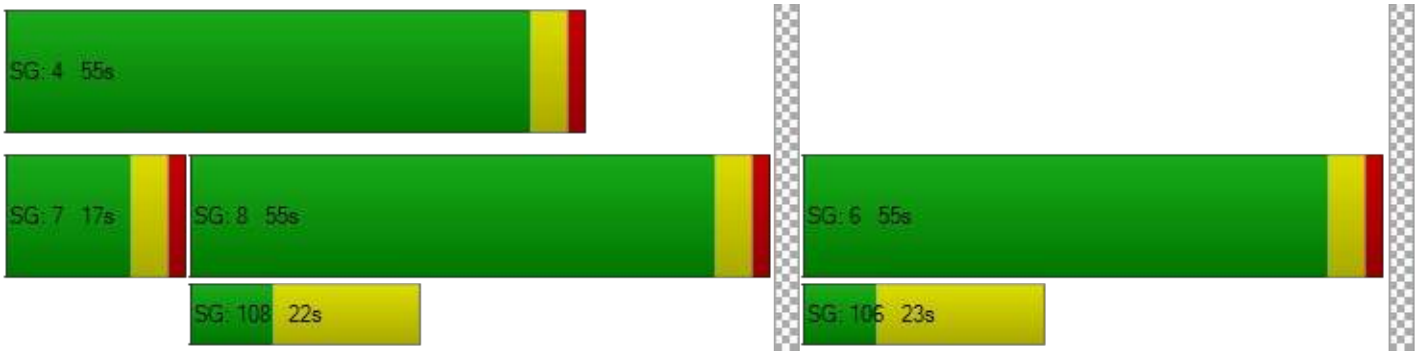
d_M, Delay for Movement [s/veh]	20.55	15.64	6.55	7.26	13.43	6.61
Movement LOS	C	B	A	A	B	A
d_A, Approach Delay [s/veh]	19.72		7.23		13.08	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	11.45					
Intersection LOS	B					
Intersection V/C	0.558					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	11.49	12.22	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.084	2.479	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2289	2289	2289
d_b, Bicycle Delay [s]	0.46	0.46	0.46
l_b,int, Bicycle LOS Score for Intersection	1.560	2.832	2.794
Bicycle LOS	A	C	C

Sequence

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Riveroaks Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.015

Intersection Setup

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Base Volume Input [veh/h]	9	72	45	57	113	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	72	45	57	113	15
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	20	12	15	31	4
Total Analysis Volume [veh/h]	10	78	49	62	123	16
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.08	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.74	9.34	7.53	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.33	0.33	0.08	0.08	0.00	0.00
95th-Percentile Queue Length [ft/ln]	8.23	8.23	2.10	2.10	0.00	0.00
d_A, Approach Delay [s/veh]	9.50		3.32		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.57					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: St Andrews Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Base Volume Input [veh/h]	129	34	8	0	4	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	129	34	8	0	4	61
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	9	2	0	1	17
Total Analysis Volume [veh/h]	140	37	9	0	4	66
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.00	0.00	0.00	0.01	0.06
d_M, Delay for Movement [s/veh]	7.39	0.00	0.00	0.00	11.12	8.59
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.25	0.25	0.00	0.00	0.22	0.22
95th-Percentile Queue Length [ft/ln]	6.32	6.32	0.00	0.00	5.44	5.44
d_A, Approach Delay [s/veh]	5.84		0.00		8.74	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.43					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 11: High Sierra Blvd & Sierra Granda Blvd

Control Type:	Two-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Base Volume Input [veh/h]	3	48	9	32	39	6	14	35	9	10	24	75
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	48	9	32	39	6	14	35	9	10	24	75
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	13	2	9	11	2	4	10	2	3	7	20
Total Analysis Volume [veh/h]	3	52	10	35	42	7	15	38	10	11	26	82
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.05	0.01	0.02	0.04	0.08
d_M, Delay for Movement [s/veh]	7.34	0.00	0.00	7.36	0.00	0.00	11.23	10.66	8.98	10.81	10.79	9.17
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.06	0.06	0.06	0.29	0.29	0.29	0.46	0.46	0.46
95th-Percentile Queue Length [ft/ln]	0.13	0.13	0.13	1.53	1.53	1.53	7.23	7.23	7.23	11.54	11.54	11.54
d_A, Approach Delay [s/veh]	0.34			3.07			10.53			9.68		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	6.33											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 16: Sierra Granda Blvd & Gleneagles Blvd

Control Type:	Two-way stop	Delay (sec / veh):	15.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.087

Intersection Setup

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Base Volume Input [veh/h]	191	130	60	21	30	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	191	130	60	21	30	120
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	35	16	6	8	33
Total Analysis Volume [veh/h]	208	141	65	23	33	130
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.00	0.00	0.00	0.09	0.13
d_M, Delay for Movement [s/veh]	7.63	0.00	0.00	0.00	15.81	10.01
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.39	0.39	0.00	0.00	0.83	0.83
95th-Percentile Queue Length [ft/ln]	9.78	9.78	0.00	0.00	20.78	20.78
d_A, Approach Delay [s/veh]	4.55		0.00		11.18	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	5.68					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 19: Alkali Creek Rd & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	16.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.032

Intersection Setup

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Base Volume Input [veh/h]	6	3	53	10	8	0	4	358	42	16	148	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	7.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	3	53	10	8	0	4	358	42	16	148	15
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	14	3	2	0	1	97	11	4	40	4
Total Analysis Volume [veh/h]	7	3	58	11	9	0	4	389	46	17	161	16
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.09	0.03	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	15.24	14.97	11.39	16.22	14.95	9.68	7.56	0.00	0.00	8.19	0.00	0.00
Movement LOS	C	B	B	C	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.39	0.39	0.39	0.18	0.18	0.18	0.01	0.01	0.01	0.03	0.03	0.03
95th-Percentile Queue Length [ft/ln]	9.78	9.78	9.78	4.42	4.42	4.42	0.17	0.17	0.17	0.73	0.73	0.73
d_A, Approach Delay [s/veh]	11.95			15.65			0.07			0.72		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	1.80											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 24: Wicks Ln & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	17.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.124

Intersection Setup

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Base Volume Input [veh/h]	39	39	118	307	156	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	0.00	0.00	0.80	1.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	39	118	307	156	50
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	11	32	83	42	14
Total Analysis Volume [veh/h]	42	42	128	334	170	54
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.05	0.09	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	17.17	9.30	7.93	0.00	0.00	0.00
Movement LOS	C	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.42	0.15	0.31	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	10.54	3.76	7.80	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.24		2.20		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.76					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 29: Wicks Ln & High Sierra Blvd

Control Type:	All-way stop	Delay (sec / veh):	11.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.557

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	0	0	0	106	0	17	30	330	0	0	203	123
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.10	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	106	0	17	30	330	0	0	203	123
Peak Hour Factor	1.0000	1.0000	1.0000	0.7300	0.7300	0.7300	0.8900	0.8900	0.8900	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	36	0	6	8	93	0	0	52	31
Total Analysis Volume [veh/h]	0	0	0	145	0	23	34	371	0	0	207	126
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	599	632	727	661	757
Degree of Utilization, x	0.00	0.27	0.56	0.31	0.17

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.00	1.07	3.48	1.34	0.59
95th-Percentile Queue Length [ft]	0.00	26.68	86.94	33.42	14.87
Approach Delay [s/veh]	0.00	10.75	14.01	9.78	
Approach LOS	A	B	B	A	
Intersection Delay [s/veh]	11.85				
Intersection LOS	B				

Intersection Level Of Service Report
Intersection 33: Wicks Ln & Fantan St

Control Type:	All-way stop	Delay (sec / veh):	14.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

Intersection Setup

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Base Volume Input [veh/h]	107	12	13	421	328	169
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.80	1.40	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	12	13	421	328	169
Peak Hour Factor	0.9900	0.9900	0.9800	0.9800	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	3	3	107	99	51
Total Analysis Volume [veh/h]	108	12	13	430	395	204
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	577	713	672	774
Degree of Utilization, x	0.21	0.62	0.59	0.26

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.78	4.37	3.85	1.06
95th-Percentile Queue Length [ft]	19.46	109.23	96.31	26.46
Approach Delay [s/veh]	10.88	16.00	13.23	
Approach LOS	B	C	B	
Intersection Delay [s/veh]	14.05			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 37: Wicks Ln & Gleneagles/Governors Blvd

Control Type:	Signalized	Delay (sec / veh):	9.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.385

Intersection Setup

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	196	234	106	83	116	32	41	322	163	81	265	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	0.00	0.00	1.50	2.20	0.00	0.00	0.70	0.00	0.00	0.90	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	53	0	0	16	0	0	82	0	0	58
Total Hourly Volume [veh/h]	196	234	53	83	116	16	41	322	81	81	265	57
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	64	14	23	32	4	11	88	22	22	72	15
Total Analysis Volume [veh/h]	213	254	58	90	126	17	45	350	88	88	288	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	40	0	0	40	0	0	40	0	0	40	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	35	35	35	35	35	35	35	35	35	35
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	13	13	13	13	14	14	14	14	14	14
g / C, Green / Cycle	0.37	0.37	0.37	0.37	0.38	0.38	0.38	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.17	0.18	0.08	0.08	0.04	0.20	0.06	0.09	0.17	0.04
s, saturation flow rate [veh/h]	1241	1694	1072	1684	1047	1740	1488	966	1738	1488
c, Capacity [veh/h]	511	619	380	615	410	662	566	362	661	566
d1, Uniform Delay [s]	12.09	8.74	13.48	7.80	11.93	8.50	7.22	13.60	8.14	7.09
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.54	0.64	0.32	0.19	0.12	0.66	0.13	0.34	0.45	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.50	0.24	0.23	0.11	0.53	0.16	0.24	0.44	0.11
d, Delay for Lane Group [s/veh]	12.64	9.38	13.80	7.99	12.05	9.16	7.35	13.95	8.60	7.17
Lane Group LOS	B	A	B	A	B	A	A	B	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.30	1.49	0.54	0.52	0.24	1.43	0.30	0.53	1.11	0.21
50th-Percentile Queue Length [ft/ln]	32.50	37.17	13.41	13.12	5.97	35.74	7.48	13.25	27.86	5.16
95th-Percentile Queue Length [veh/ln]	2.34	2.68	0.97	0.94	0.43	2.57	0.54	0.95	2.01	0.37
95th-Percentile Queue Length [ft/ln]	58.50	66.90	24.14	23.61	10.74	64.32	13.47	23.84	50.15	9.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.64	9.38	9.38	13.80	7.99	7.99	12.05	9.16	7.35	13.95	8.60	7.17
Movement LOS	B	A	A	B	A	A	B	A	A	B	A	A
d_A, Approach Delay [s/veh]	10.70			10.23			9.10			9.47		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	9.85											
Intersection LOS	A											
Intersection V/C	0.385											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	7.77	7.77	7.77	7.77
l_p,int, Pedestrian LOS Score for Intersectio	2.341	2.220	2.803	2.579
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2254	2254	2254	2254
d_b, Bicycle Delay [s]	0.29	0.29	0.29	0.29
l_b,int, Bicycle LOS Score for Intersection	2.513	1.970	2.492	2.378
Bicycle LOS	B	A	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 41: Wicks Ln & Lake Hills Dr/Nutter Blvd

Control Type:	Signalized	Delay (sec / veh):	6.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.483

Intersection Setup

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	32	38	52	66	18	3	2	480	41	56	461	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	5.00	0.00	0.00	1.20	0.00	0.00	1.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	26	0	0	2	0	0	21	0	0	56
Total Hourly Volume [veh/h]	32	38	26	66	18	1	2	480	20	56	461	56
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	10	7	18	5	0	1	130	5	15	125	15
Total Analysis Volume [veh/h]	35	41	28	72	20	1	2	522	22	61	501	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	15	0	0	15	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			Yes			Yes	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	42	42	42	42	42	42	42	42	42
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	5	5	5	27	27	27	27	27	27
g / C, Green / Cycle	0.13	0.13	0.13	0.65	0.65	0.65	0.65	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.04	0.02	0.18	0.00	0.30	0.01	0.07	0.29	0.04
s, saturation flow rate [veh/h]	1718	1488	511	862	1733	1488	876	1736	1488
c, Capacity [veh/h]	341	185	217	572	1126	966	571	1128	966
d1, Uniform Delay [s]	16.67	16.25	19.55	6.02	3.66	2.59	6.66	3.59	2.67
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	0.37	1.33	0.00	0.30	0.01	0.08	0.28	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.15	0.43	0.00	0.46	0.02	0.11	0.44	0.06
d, Delay for Lane Group [s/veh]	16.99	16.62	20.89	6.02	3.96	2.60	6.75	3.87	2.69
Lane Group LOS	B	B	C	A	A	A	A	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.64	0.24	0.91	0.01	0.81	0.02	0.22	0.76	0.07
50th-Percentile Queue Length [ft/ln]	16.03	5.96	22.86	0.17	20.30	0.60	5.60	19.10	1.71
95th-Percentile Queue Length [veh/ln]	1.15	0.43	1.65	0.01	1.46	0.04	0.40	1.38	0.12
95th-Percentile Queue Length [ft/ln]	28.86	10.73	41.15	0.30	36.54	1.08	10.08	34.38	3.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.99	16.99	16.62	20.89	20.89	20.89	6.02	3.96	2.60	6.75	3.87	2.69
Movement LOS	B	B	B	C	C	C	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	16.89			20.89			3.91			4.04		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	6.11											
Intersection LOS	A											
Intersection V/C	0.483											

Other Modes

g_Walk,mi, Effective Walk Time [s]	19.0	19.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	6.17	6.17	10.56	10.56
l_p,int, Pedestrian LOS Score for Intersectio	2.049	1.754	2.477	2.642
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2400	2400	2400	2400
d_b, Bicycle Delay [s]	0.83	0.83	0.83	0.83
l_b,int, Bicycle LOS Score for Intersection	1.774	1.716	2.495	2.680
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 45: Wicks Ln & St Andrews Dr

Control Type:	Signalized	Delay (sec / veh):	10.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.594

Intersection Setup

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Base Volume Input [veh/h]	135	35	48	656	788	269
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.50	0.70	0.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	18	0	0	0	135
Total Hourly Volume [veh/h]	135	17	48	656	788	134
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	5	13	178	214	36
Total Analysis Volume [veh/h]	147	18	52	713	857	146
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	7	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	3	0	3	20	20	0
Maximum Green [s]	50	0	12	50	50	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.5	0.0	1.5	1.5	1.5	0.0
Split [s]	14	0	9	14	14	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	5	5	8	0
Pedestrian Clearance [s]	16	0	10	10	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	3.0	3.0	0.0
Minimum Recall	No		No	Yes	Yes	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	49	49	49	49	49	49
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	6	6	33	33	27	27
g / C, Green / Cycle	0.12	0.12	0.68	0.68	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.09	0.01	0.07	0.41	0.49	0.10
s, saturation flow rate [veh/h]	1667	1488	719	1743	1740	1488
c, Capacity [veh/h]	201	180	448	1180	948	810
d1, Uniform Delay [s]	20.97	19.35	7.95	4.36	10.10	5.68
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.03	0.24	0.11	0.50	3.57	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.10	0.12	0.60	0.90	0.18
d, Delay for Lane Group [s/veh]	26.00	19.59	8.06	4.87	13.67	5.79
Lane Group LOS	C	B	A	A	B	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.80	0.18	0.08	1.75	6.23	0.53
50th-Percentile Queue Length [ft/ln]	44.89	4.58	2.12	43.84	155.76	13.28
95th-Percentile Queue Length [veh/ln]	3.23	0.33	0.15	3.16	10.32	0.96
95th-Percentile Queue Length [ft/ln]	80.81	8.24	3.82	78.92	258.09	23.90

Movement, Approach, & Intersection Results

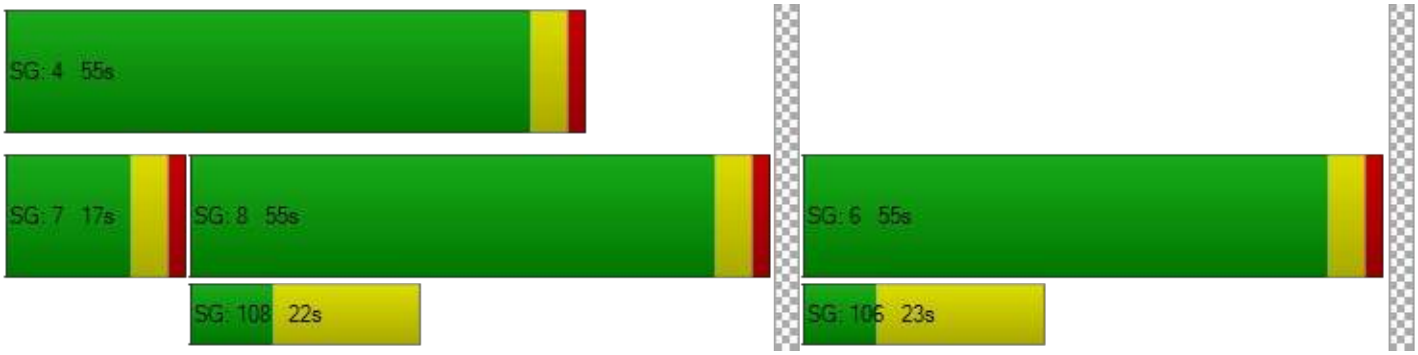
d_M, Delay for Movement [s/veh]	26.00	19.59	8.06	4.87	13.67	5.79
Movement LOS	C	B	A	A	B	A
d_A, Approach Delay [s/veh]	25.30		5.08		12.52	
Approach LOS	C		A		B	
d_I, Intersection Delay [s/veh]	10.67					
Intersection LOS	B					
Intersection V/C	0.594					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	14.13	14.89	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.112	2.534	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2027	2027	2027
d_b, Bicycle Delay [s]	0.00	0.00	0.00
l_b,int, Bicycle LOS Score for Intersection	1.560	2.822	3.437
Bicycle LOS	A	C	C

Sequence

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection	Approach	Full Buildout (2035)					
		AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop-Control (SB)*					
Annadale Rd & Riveroaks Dr	SB	9.5	A	1	10.1	B	1
	EB	2.7	A	1	3.1	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	4.4	A	--	3.5	A	--
Intersection Control		*One-Way Stop-Control (EB)*					
Annandale Rd & St Andrews Dr	NB	6.2	A	1	6.2	A	1
	SB	0.0	A	0	0.0	A	0
	EB	9.1	A	1	8.9	A	1
	Intersection	6.9	A	--	6.8	A	--
Intersection Control		*Two-Way Stop-Control (EB/WB)*					
Sierra Granda Blvd & High Sierra Blvd	NB	1.3	A	1	0.2	A	1
	SB	2.7	A	1	3.0	A	1
	EB	12.4	B	1	12.7	B	1
	WB	15.8	C	2	11.0	B	1
	Intersection	7.1	A	--	6.4	A	--
Intersection Control		*One-Way Stop-Control (EB)*					
Sierra Granda Blvd & Gleneagles Blvd	NB	6.4	A	1	3.9	A	1
	SB	0.0	A	0	0.0	A	0
	EB	18.4	C	4	14.4	B	2
	Intersection	7.3	A	--	5.6	A	--
Intersection Control		*Two-Way Stop-Control (NB/SB)*					
Alkali Creek Rd & Skyway Dr	NB	15.4	C	1	13.7	B	1
	SB	16.3	C	1	19.4	C	1
	EB	0.0	A	0	0.1	A	1
	WB	1.5	A	1	0.7	A	1
	Intersection	2.8	A	--	1.9	A	--
Intersection Control		*One-Way Stop-Control (SB)*					
Wicks Ln & Skyway Dr	SB	12.3	B	1	15.7	C	1
	EB	1.1	A	1	2.3	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	3.4	A	--	3.1	A	--
Intersection Control		*All-Way Stop-Control*					
Wicks Ln & High Sierra Blvd	NB	11.3	B	1	0.0	A	0
	SB	88.2	F	19	13.2	B	2
	EB	20.1	C	5	22.2	C	7
	WB	18.9	C	5	11.4	B	2
	Intersection	46.4	E	--	16.4	C	--
Intersection Control		*All-Way Stop-Control*					
Wicks Ln & Fantan St	SB	36.2	E	9	12.7	B	2
	EB	147.6	F	26	28.8	D	9
	WB	144.6	F	34	22.0	C	9
	Intersection	125.2	F	--	23.5	C	--
Intersection Control		*Signalized*					
Wicks Ln & Governors Blvd	NB	21.0	C	8	14.2	B	6
	SB	17.0	B	9	13.9	B	3
	EB	18.1	B	9	12.5	B	6
	WB	26.4	C	16	12.8	B	5
	Intersection	21.1	C	--	13.3	B	--
Intersection Control		*Signalized*					
Wicks Ln & Lake Hills Dr	NB	19.1	B	7	15.7	B	2
	SB	35.0	D	12	20.5	C	3
	EB	20.5	C	16	6.6	A	5
	WB	22.4	C	15	6.9	A	5
	Intersection	23.4	C	--	8.6	A	--
Intersection Control		*Signalized*					
Wicks Ln & St Andrews Dr	SB	24.9	C	7	37.8	D	7
	EB	13.5	B	12	8.3	A	10
	WB	16.8	B	13	30.5	C	28
	Intersection	16.5	B	--	22.5	C	--

Intersection Level Of Service Report
Intersection 1: Riveroaks Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.020

Intersection Setup

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Base Volume Input [veh/h]	11	113	77	133	62	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	0.00	1.60	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	113	77	133	62	4
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	31	21	36	17	1
Total Analysis Volume [veh/h]	12	123	84	145	67	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.12	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.77	9.26	7.43	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.50	0.50	0.15	0.15	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.54	12.54	3.67	3.67	0.00	0.00
d_A, Approach Delay [s/veh]	9.48		2.73		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.38					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: St Andrews Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Base Volume Input [veh/h]	52	10	23	15	6	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	10	23	15	6	136
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	3	6	4	2	37
Total Analysis Volume [veh/h]	57	11	25	16	7	148
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.01	0.14
d_M, Delay for Movement [s/veh]	7.34	0.00	0.00	0.00	10.10	9.06
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.10	0.10	0.00	0.00	0.53	0.53
95th-Percentile Queue Length [ft/ln]	2.45	2.45	0.00	0.00	13.19	13.19
d_A, Approach Delay [s/veh]	6.15		0.00		9.10	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.93					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 11: High Sierra Blvd & Sierra Granda Blvd

Control Type:	Two-way stop	Delay (sec / veh):	17.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.224

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Base Volume Input [veh/h]	15	35	35	92	133	34	5	24	15	88	33	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	5.00	4.10	2.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	35	35	92	133	34	5	24	15	88	33	39
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	10	10	25	36	9	1	7	4	24	9	11
Total Analysis Volume [veh/h]	16	38	38	100	145	37	5	26	16	96	36	42
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.07	0.00	0.00	0.01	0.06	0.02	0.22	0.08	0.04
d_M, Delay for Movement [s/veh]	7.58	0.00	0.00	7.51	0.00	0.00	14.68	13.62	9.71	17.09	16.67	12.25
Movement LOS	A	A	A	A	A	A	B	B	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.03	0.18	0.18	0.18	0.29	0.29	0.29	1.52	1.52	1.52
95th-Percentile Queue Length [ft/ln]	0.74	0.74	0.74	4.60	4.60	4.60	7.22	7.22	7.22	38.06	38.06	38.06
d_A, Approach Delay [s/veh]	1.32			2.66			12.41			15.84		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	7.08											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 16: Sierra Granda Blvd & Gleneagles Blvd

Control Type:	Two-way stop	Delay (sec / veh):	29.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.143

Intersection Setup

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Base Volume Input [veh/h]	251	89	229	158	28	258
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.10	0.00	0.00	0.00	0.00	2.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	251	89	229	158	28	258
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	24	62	43	8	70
Total Analysis Volume [veh/h]	273	97	249	172	30	280
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.24	0.00	0.00	0.00	0.14	0.40
d_M, Delay for Movement [s/veh]	8.71	0.00	0.00	0.00	29.31	17.22
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.68	0.68	0.00	0.00	3.21	3.21
95th-Percentile Queue Length [ft/ln]	17.09	17.09	0.00	0.00	80.27	80.27
d_A, Approach Delay [s/veh]	6.43		0.00		18.39	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	7.34					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 19: Alkali Creek Rd & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	20.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.128

Intersection Setup

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Base Volume Input [veh/h]	32	5	41	5	2	4	0	149	18	93	387	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	1.30	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	5	41	5	2	4	0	149	18	93	387	6
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	1	11	1	1	1	0	40	5	25	105	2
Total Analysis Volume [veh/h]	35	5	45	5	2	4	0	162	20	101	421	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.02	0.05	0.02	0.01	0.01	0.00	0.00	0.00	0.07	0.00	0.00
d_M, Delay for Movement [s/veh]	20.25	19.48	11.14	19.84	17.93	11.06	8.15	0.00	0.00	7.70	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.72	0.72	0.72	0.10	0.10	0.10	0.00	0.00	0.00	0.18	0.18	0.18
95th-Percentile Queue Length [ft/ln]	18.11	18.11	18.11	2.58	2.58	2.58	0.00	0.00	0.00	4.47	4.47	4.47
d_A, Approach Delay [s/veh]	15.39			16.30			0.00			1.47		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	2.81											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 24: Wicks Ln & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	14.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.117

Intersection Setup

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Base Volume Input [veh/h]	49	135	28	170	330	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.80	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	135	28	170	330	26
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	37	8	46	90	7
Total Analysis Volume [veh/h]	53	147	30	185	359	28
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.21	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	14.00	11.63	8.12	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.39	0.80	0.08	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	9.86	20.07	1.95	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.25		1.13		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.36					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 29: Wicks Ln & High Sierra Blvd

Control Type:	All-way stop	Delay (sec / veh):	46.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.087

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	1	0	0	281	0	88	79	145	0	1	275	285
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.10	0.00	0.00	1.70	0.00	0.00	0.00	0.00	2.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	0	281	0	88	79	145	0	1	275	285
Peak Hour Factor	1.0000	1.0000	1.0000	0.6000	0.6000	0.6000	0.7100	0.7100	0.7100	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	117	0	37	28	51	0	0	77	80
Total Analysis Volume [veh/h]	1	0	0	468	0	147	111	204	0	1	309	320
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	433	615	519	507	558
Degree of Utilization, x	0.00	1.09	0.61	0.61	0.57

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.01	18.58	4.02	4.06	3.60
95th-Percentile Queue Length [ft]	0.17	464.52	100.39	101.59	90.08
Approach Delay [s/veh]	11.34	88.15	20.13	18.92	
Approach LOS	B	F	C	C	
Intersection Delay [s/veh]	46.43				
Intersection LOS	E				

Intersection Level Of Service Report
Intersection 33: Wicks Ln & Fantan St

Control Type:	All-way stop	Delay (sec / veh):	125.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.409

Intersection Setup

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Base Volume Input [veh/h]	254	21	2	437	536	330
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.60	0.00	0.00	0.70	1.50	1.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	254	21	2	437	536	330
Peak Hour Factor	0.6600	0.6600	0.6600	0.6600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	96	8	1	166	176	109
Total Analysis Volume [veh/h]	385	32	3	662	705	434
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	503	665	705	555
Degree of Utilization, x	0.83	1.25	1.41	0.78

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.25	25.98	33.47	7.27
95th-Percentile Queue Length [ft]	206.31	649.59	836.73	181.69
Approach Delay [s/veh]	36.21	147.63	144.58	
Approach LOS	E	F	F	
Intersection Delay [s/veh]	125.15			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 37: Wicks Ln & Gleneagles/Governors Blvd

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.605

Intersection Setup

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	216	215	219	106	350	74	24	360	313	66	568	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.30	2.20	0.00	1.90	3.30	0.00	2.90	0.40	3.70	1.80	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	110	0	0	37	0	0	157	0	0	44
Total Hourly Volume [veh/h]	216	215	109	106	350	37	24	360	156	66	568	43
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	58	30	29	95	10	7	98	42	18	154	12
Total Analysis Volume [veh/h]	235	234	118	115	380	40	26	391	170	72	617	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	40	0	0	40	0	0	40	0	0	40	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	79	79	79	79	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	37	37	37	37	33	33	33	33	33	33
g / C, Green / Cycle	0.47	0.47	0.47	0.47	0.42	0.42	0.42	0.42	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.24	0.22	0.11	0.25	0.03	0.23	0.11	0.09	0.36	0.03
s, saturation flow rate [veh/h]	982	1635	1045	1695	784	1710	1483	837	1725	1488
c, Capacity [veh/h]	352	765	400	793	147	717	622	277	723	623
d1, Uniform Delay [s]	28.13	14.37	22.15	14.99	35.47	17.41	15.17	26.27	20.90	13.87
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.24	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.18	0.43	0.39	0.55	0.57	0.65	0.24	0.49	6.37	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.46	0.29	0.53	0.18	0.55	0.27	0.26	0.85	0.08
d, Delay for Lane Group [s/veh]	30.31	14.80	22.54	15.54	36.04	18.06	15.40	26.76	27.27	13.92
Lane Group LOS	C	B	C	B	D	B	B	C	C	B
Critical Lane Group	No	No	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.40	4.17	1.65	4.95	0.49	5.06	1.91	1.14	10.61	0.48
50th-Percentile Queue Length [ft/ln]	109.90	104.29	41.26	123.66	12.28	126.40	47.67	28.62	265.37	12.01
95th-Percentile Queue Length [veh/ln]	7.83	7.51	2.97	8.59	0.88	8.74	3.43	2.06	15.96	0.86
95th-Percentile Queue Length [ft/ln]	195.86	187.72	74.26	214.85	22.10	218.59	85.81	51.51	398.95	21.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.31	14.80	14.80	22.54	15.54	15.54	36.04	18.06	15.40	26.76	27.27	13.92
Movement LOS	C	B	B	C	B	B	D	B	B	C	C	B
d_A, Approach Delay [s/veh]	21.01			17.04			18.08			26.37		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	21.05											
Intersection LOS	C											
Intersection V/C	0.605											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.65	28.65	28.65	28.65
l_p,int, Pedestrian LOS Score for Intersectio	2.591	2.372	3.156	2.780
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1006	1006	1006	1006
d_b, Bicycle Delay [s]	9.81	9.81	9.81	9.81
l_b,int, Bicycle LOS Score for Intersection	2.710	2.503	2.787	2.847
Bicycle LOS	B	B	C	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 41: Wicks Ln & Lake Hills Dr/Nutter Blvd

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

Intersection Setup

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	165	45	102	143	166	9	1	573	174	71	563	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	0.00	3.60	3.10	0.00	0.00	0.00	2.30	1.60	0.00	1.60	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	51	0	0	5	0	0	87	0	0	31
Total Hourly Volume [veh/h]	165	45	51	143	166	4	1	573	87	71	563	30
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	12	14	39	45	1	0	156	24	19	153	8
Total Analysis Volume [veh/h]	179	49	55	155	180	4	1	623	95	77	612	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	15	0	0	15	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			Yes			Yes	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	87	87	87	87	87	87	87	87	87
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	37	37	37	41	41	41	41	41	41
g / C, Green / Cycle	0.42	0.42	0.42	0.47	0.47	0.47	0.47	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.24	0.04	0.38	0.00	0.36	0.06	0.10	0.35	0.02
s, saturation flow rate [veh/h]	935	1445	898	798	1718	1469	745	1728	1488
c, Capacity [veh/h]	466	607	437	203	811	693	187	816	702
d1, Uniform Delay [s]	19.17	15.22	29.50	31.43	19.01	12.96	35.92	18.76	12.39
k, delay calibration	0.11	0.11	0.20	0.11	0.19	0.11	0.11	0.17	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.79	0.06	5.52	0.01	2.65	0.09	1.45	2.26	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.09	0.78	0.00	0.77	0.14	0.41	0.75	0.05
d, Delay for Lane Group [s/veh]	19.97	15.28	35.02	31.44	21.66	13.04	37.37	21.03	12.42
Lane Group LOS	B	B	D	C	C	B	D	C	B
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	3.60	0.67	7.45	0.02	10.05	1.00	1.60	9.68	0.33
50th-Percentile Queue Length [ft/ln]	89.88	16.87	186.20	0.45	251.24	24.98	39.90	241.94	8.29
95th-Percentile Queue Length [veh/ln]	6.47	1.21	11.92	0.03	15.25	1.80	2.87	14.78	0.60
95th-Percentile Queue Length [ft/ln]	161.79	30.36	298.09	0.81	381.21	44.97	71.82	369.48	14.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.97	19.97	15.28	35.02	35.02	35.02	31.44	21.66	13.04	37.37	21.03	12.42
Movement LOS	B	B	B	D	D	D	C	C	B	D	C	B
d_A, Approach Delay [s/veh]	19.06			35.02			20.54			22.38		
Approach LOS	B			D			C			C		
d_I, Intersection Delay [s/veh]	23.36											
Intersection LOS	C											
Intersection V/C	0.740											

Other Modes

g_Walk,mi, Effective Walk Time [s]	19.0	19.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.66	26.66	32.41	32.41
l_p,int, Pedestrian LOS Score for Intersectio	2.279	1.898	2.963	2.858
Crosswalk LOS	B	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1147	1147	1147	1147
d_b, Bicycle Delay [s]	7.93	7.93	7.93	7.93
l_b,int, Bicycle LOS Score for Intersection	2.111	2.127	2.890	2.802
Bicycle LOS	B	B	C	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 45: Wicks Ln & St Andrews Dr

Control Type:	Signalized	Delay (sec / veh):	16.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.714

Intersection Setup

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Base Volume Input [veh/h]	251	91	33	866	736	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.90	2.70	5.00	2.30	2.10	3.60
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	46	0	0	0	43
Total Hourly Volume [veh/h]	251	45	33	866	736	43
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	12	9	235	200	12
Total Analysis Volume [veh/h]	273	49	36	941	800	47
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	7	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	3	0	3	20	20	0
Maximum Green [s]	50	0	12	50	50	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.5	0.0	1.5	1.5	1.5	0.0
Split [s]	14	0	9	14	14	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	5	5	8	0
Pedestrian Clearance [s]	16	0	10	10	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	3.0	3.0	0.0
Minimum Recall	No		No	Yes	Yes	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	57	57	57	57	57	57
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	12	12	35	35	29	29
g / C, Green / Cycle	0.21	0.21	0.62	0.62	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.17	0.03	0.05	0.55	0.46	0.03
s, saturation flow rate [veh/h]	1642	1456	753	1718	1721	1445
c, Capacity [veh/h]	340	302	375	1061	873	733
d1, Uniform Delay [s]	21.53	18.58	9.82	9.23	12.97	7.17
k, delay calibration	0.11	0.11	0.11	0.18	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.42	0.25	0.11	4.37	4.42	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.16	0.10	0.89	0.92	0.06
d, Delay for Lane Group [s/veh]	25.95	18.83	9.93	13.60	17.39	7.21
Lane Group LOS	C	B	A	B	B	A
Critical Lane Group	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.66	0.52	0.12	7.42	8.10	0.24
50th-Percentile Queue Length [ft/ln]	91.45	13.07	3.00	185.42	202.38	5.89
95th-Percentile Queue Length [veh/ln]	6.58	0.94	0.22	11.88	12.76	0.42
95th-Percentile Queue Length [ft/ln]	164.62	23.52	5.40	297.07	319.03	10.60

Movement, Approach, & Intersection Results

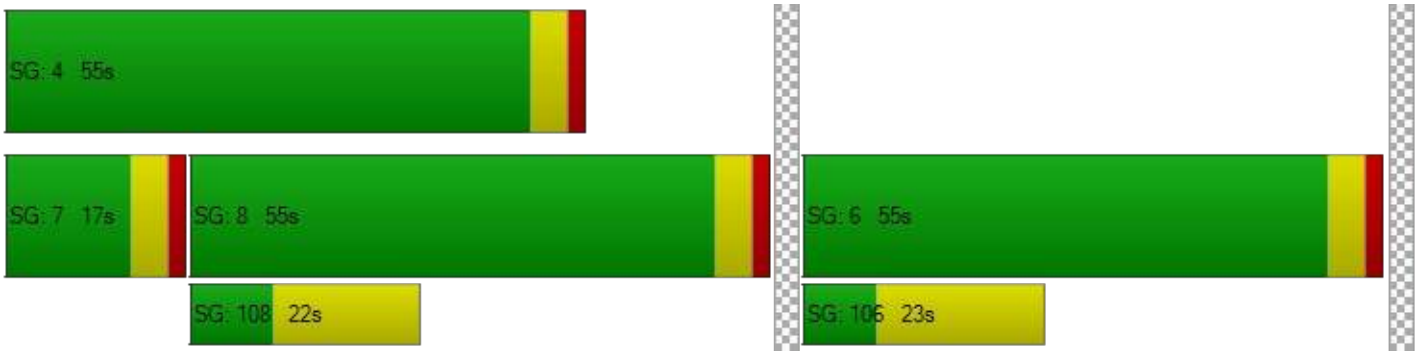
d_M, Delay for Movement [s/veh]	25.95	18.83	9.93	13.60	17.39	7.21
Movement LOS	C	B	A	B	B	A
d_A, Approach Delay [s/veh]	24.86		13.47		16.82	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	16.50					
Intersection LOS	B					
Intersection V/C	0.714					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	17.76	18.56	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.140	2.624	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1754	1754	1754
d_b, Bicycle Delay [s]	0.43	0.43	0.43
l_b,int, Bicycle LOS Score for Intersection	1.560	3.172	3.028
Bicycle LOS	A	C	C

Sequence

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Riveroaks Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	12.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

Intersection Setup

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Riveroaks Drive		Annandale Road		Annandale Road	
Base Volume Input [veh/h]	10	97	60	87	164	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	97	60	87	164	17
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	26	16	24	45	5
Total Analysis Volume [veh/h]	11	105	65	95	178	18
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.12	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.03	9.91	7.67	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.49	0.49	0.11	0.11	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.28	12.28	2.81	2.81	0.00	0.00
d_A, Approach Delay [s/veh]	10.11		3.11		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.54					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: St Andrews Dr & Annandale Rd

Control Type:	Two-way stop	Delay (sec / veh):	12.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	St Andrews Drive		St Andrews Drive		Annandale Road	
Base Volume Input [veh/h]	182	38	9	0	5	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	182	38	9	0	5	90
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	10	2	0	1	24
Total Analysis Volume [veh/h]	198	41	10	0	5	98
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.00	0.00	0.00	0.01	0.09
d_M, Delay for Movement [s/veh]	7.47	0.00	0.00	0.00	12.58	8.74
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.37	0.37	0.00	0.00	0.34	0.34
95th-Percentile Queue Length [ft/ln]	9.25	9.25	0.00	0.00	8.40	8.40
d_A, Approach Delay [s/veh]	6.18		0.00		8.92	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.81					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 11: High Sierra Blvd & Sierra Granda Blvd

Control Type:	Two-way stop	Delay (sec / veh):	14.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			Sierra Granda Boulevard			Sierra Granda Boulevard		
Base Volume Input [veh/h]	4	104	10	52	64	15	29	40	10	22	27	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	104	10	52	64	15	29	40	10	22	27	101
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	28	3	14	17	4	8	11	3	6	7	27
Total Analysis Volume [veh/h]	4	113	11	57	70	16	32	43	11	24	29	110
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.07	0.08	0.01	0.04	0.05	0.12
d_M, Delay for Movement [s/veh]	7.42	0.00	0.00	7.51	0.00	0.00	14.00	12.50	9.84	12.96	12.59	10.10
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.10	0.10	0.10	0.55	0.55	0.55	0.80	0.80	0.80
95th-Percentile Queue Length [ft/ln]	0.17	0.17	0.17	2.55	2.55	2.55	13.71	13.71	13.71	20.06	20.06	20.06
d_A, Approach Delay [s/veh]	0.23			2.99			12.72			10.96		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	6.42											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 16: Sierra Granda Blvd & Gleneagles Blvd

Control Type:	Two-way stop	Delay (sec / veh):	23.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.161

Intersection Setup

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gleneagles Boulevard		Gleneagles Boulevard		Sierra Granda Boulevard	
Base Volume Input [veh/h]	244	245	126	23	34	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	244	245	126	23	34	152
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	67	34	6	9	41
Total Analysis Volume [veh/h]	265	266	137	25	37	165
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.19	0.00	0.00	0.00	0.16	0.18
d_M, Delay for Movement [s/veh]	7.86	0.00	0.00	0.00	23.93	12.23
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.52	0.52	0.00	0.00	1.53	1.53
95th-Percentile Queue Length [ft/ln]	12.91	12.91	0.00	0.00	38.37	38.37
d_A, Approach Delay [s/veh]	3.92		0.00		14.38	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	5.57					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 19: Alkali Creek Rd & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	20.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.048

Intersection Setup

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Alkali Creek Road			Alkali Creek Road			Skyway Drive			Skyway Drive		
Base Volume Input [veh/h]	7	4	60	11	9	0	5	454	48	18	196	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	7.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	4	60	11	9	0	5	454	48	18	196	17
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	16	3	2	0	1	123	13	5	53	5
Total Analysis Volume [veh/h]	8	4	65	12	10	0	5	493	52	20	213	18
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.01	0.12	0.05	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	18.79	17.90	12.77	20.60	17.98	10.54	7.68	0.00	0.00	8.50	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.55	0.55	0.55	0.26	0.26	0.26	0.01	0.01	0.01	0.03	0.03	0.03
95th-Percentile Queue Length [ft/ln]	13.76	13.76	13.76	6.55	6.55	6.55	0.21	0.21	0.21	0.86	0.86	0.86
d_A, Approach Delay [s/veh]	13.66			19.41			0.07			0.68		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	1.87											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 24: Wicks Ln & Skyway Dr

Control Type:	Two-way stop	Delay (sec / veh):	22.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.191

Intersection Setup

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	West Wicks Lane		Skyway Drive		West Wicks Lane	
Base Volume Input [veh/h]	44	51	147	383	198	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	0.00	0.00	0.80	1.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	51	147	383	198	56
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	14	40	104	54	15
Total Analysis Volume [veh/h]	48	55	160	416	215	61
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.19	0.07	0.12	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	22.63	9.65	8.16	0.00	0.00	0.00
Movement LOS	C	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.69	0.21	0.42	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	17.19	5.31	10.51	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	15.69		2.27		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.06					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 29: Wicks Ln & High Sierra Blvd

Control Type:	All-way stop	Delay (sec / veh):	16.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

Intersection Setup

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	0	0	0	142	0	27	46	396	0	0	243	176
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.10	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	142	0	27	46	396	0	0	243	176
Peak Hour Factor	1.0000	1.0000	1.0000	0.7300	0.7300	0.7300	0.8900	0.8900	0.8900	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	49	0	9	13	111	0	0	62	45
Total Analysis Volume [veh/h]	0	0	0	195	0	37	52	445	0	0	248	180
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	528	583	669	610	690
Degree of Utilization, x	0.00	0.40	0.74	0.41	0.26

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.00	1.90	6.61	1.97	1.04
95th-Percentile Queue Length [ft]	0.00	47.50	165.26	49.34	26.03
Approach Delay [s/veh]	0.00	13.19	22.20	11.40	
Approach LOS	A	B	C	B	
Intersection Delay [s/veh]	16.40				
Intersection LOS	C				

Intersection Level Of Service Report
Intersection 33: Wicks Ln & Fantan St

Control Type:	All-way stop	Delay (sec / veh):	23.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Base Volume Input [veh/h]	143	13	14	522	422	228
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.80	1.40	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	143	13	14	522	422	228
Peak Hour Factor	0.9900	0.9900	0.9800	0.9800	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	3	4	133	127	69
Total Analysis Volume [veh/h]	144	13	14	533	508	275
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	527	663	629	718
Degree of Utilization, x	0.30	0.83	0.81	0.38

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.24	8.81	8.18	1.80
95th-Percentile Queue Length [ft]	30.98	220.28	204.62	45.12
Approach Delay [s/veh]	12.70	28.82	22.00	
Approach LOS	B	D	C	
Intersection Delay [s/veh]	23.52			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 37: Wicks Ln & Gleneagles/Governors Blvd

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.492

Intersection Setup

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Governors Boulevard			Gleneagles Boulevard			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	241	327	119	116	168	51	71	395	195	91	353	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	0.00	0.00	1.50	2.20	0.00	0.00	0.70	0.00	0.00	0.90	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	60	0	0	26	0	0	98	0	0	84
Total Hourly Volume [veh/h]	241	327	59	116	168	25	71	395	97	91	353	84
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	89	16	32	46	7	19	107	26	25	96	23
Total Analysis Volume [veh/h]	262	355	64	126	183	27	77	429	105	99	384	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	40	0	0	40	0	0	40	0	0	40	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	50	50	50	50	50	50	50	50	50	50
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	20	20	20	20	20	20	20	20	20	20
g / C, Green / Cycle	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.22	0.25	0.13	0.12	0.08	0.25	0.07	0.11	0.22	0.06
s, saturation flow rate [veh/h]	1168	1704	971	1681	934	1740	1488	884	1738	1488
c, Capacity [veh/h]	485	698	320	689	335	713	610	302	712	610
d1, Uniform Delay [s]	16.13	11.52	19.22	9.93	17.19	11.52	9.34	18.96	11.15	9.25
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.94	0.83	0.79	0.25	0.35	0.82	0.13	0.63	0.64	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.60	0.39	0.30	0.23	0.60	0.17	0.33	0.54	0.15
d, Delay for Lane Group [s/veh]	17.06	12.35	20.01	10.18	17.53	12.34	9.48	19.58	11.78	9.36
Lane Group LOS	B	B	C	B	B	B	A	B	B	A
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.53	3.21	1.26	1.26	0.69	3.03	0.59	0.97	2.61	0.51
50th-Percentile Queue Length [ft/ln]	63.35	80.34	31.46	31.43	17.33	75.74	14.79	24.29	65.21	12.68
95th-Percentile Queue Length [veh/ln]	4.56	5.78	2.27	2.26	1.25	5.45	1.06	1.75	4.70	0.91
95th-Percentile Queue Length [ft/ln]	114.03	144.62	56.64	56.57	31.20	136.33	26.61	43.72	117.38	22.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.06	12.35	12.35	20.01	10.18	10.18	17.53	12.34	9.48	19.58	11.78	9.36
Movement LOS	B	B	B	C	B	B	B	B	A	B	B	A
d_A, Approach Delay [s/veh]	14.17			13.86			12.50			12.75		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	13.29											
Intersection LOS	B											
Intersection V/C	0.492											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	14.29	14.29	14.29	14.29
l_p,int, Pedestrian LOS Score for Intersectio	2.462	2.418	3.008	2.774
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1610	1610	1610	1610
d_b, Bicycle Delay [s]	0.94	0.94	0.94	0.94
l_b,int, Bicycle LOS Score for Intersection	2.782	2.157	2.729	2.645
Bicycle LOS	C	B	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 41: Wicks Ln & Lake Hills Dr/Nutter Blvd

Control Type:	Signalized	Delay (sec / veh):	8.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Base Volume Input [veh/h]	53	60	59	95	29	4	2	585	56	63	596	162
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	5.00	0.00	0.00	1.20	0.00	0.00	1.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	30	0	0	2	0	0	28	0	0	81
Total Hourly Volume [veh/h]	53	60	29	95	29	2	2	585	28	63	596	81
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	16	8	26	8	1	1	159	8	17	162	22
Total Analysis Volume [veh/h]	58	65	32	103	32	2	2	636	30	68	648	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	50	0	0	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0
Split [s]	0	14	0	0	14	0	0	14	0	0	14	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	15	0	0	15	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0	0.0	2.7	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			Yes			Yes	
Detector Location [ft]	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 Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	46	46	46	46	46	46	46	46	46
L, Total Lost Time per Cycle [s]	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	9	9	9	27	27	27	27	27	27
g / C, Green / Cycle	0.21	0.21	0.21	0.59	0.59	0.59	0.59	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.08	0.02	0.18	0.00	0.37	0.02	0.09	0.37	0.06
s, saturation flow rate [veh/h]	1608	1488	750	733	1733	1488	782	1736	1488
c, Capacity [veh/h]	445	305	291	386	1023	878	406	1025	878
d1, Uniform Delay [s]	15.61	14.82	19.30	10.88	6.09	3.93	11.66	6.15	4.09
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	0.15	1.18	0.01	0.62	0.02	0.19	0.65	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.10	0.47	0.01	0.62	0.03	0.17	0.63	0.10
d, Delay for Lane Group [s/veh]	15.94	14.97	20.48	10.89	6.71	3.95	11.86	6.80	4.14
Lane Group LOS	B	B	C	B	A	A	B	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.06	0.26	1.41	0.01	2.31	0.07	0.44	2.38	0.21
50th-Percentile Queue Length [ft/ln]	26.47	6.60	35.26	0.30	57.85	1.72	10.95	59.61	5.27
95th-Percentile Queue Length [veh/ln]	1.91	0.48	2.54	0.02	4.16	0.12	0.79	4.29	0.38
95th-Percentile Queue Length [ft/ln]	47.64	11.89	63.47	0.54	104.12	3.10	19.70	107.30	9.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.94	15.94	14.97	20.48	20.48	20.48	10.89	6.71	3.95	11.86	6.80	4.14
Movement LOS	B	B	B	C	C	C	B	A	A	B	A	A
d_A, Approach Delay [s/veh]	15.74			20.48			6.60			6.93		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	8.63											
Intersection LOS	A											
Intersection V/C	0.556											

Other Modes

g_Walk,mi, Effective Walk Time [s]	19.0	19.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	7.88	7.88	12.52	12.52
l_p,int, Pedestrian LOS Score for Intersectio	2.094	1.813	2.612	2.831
Crosswalk LOS	B	A	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2179	2179	2179	2179
d_b, Bicycle Delay [s]	0.18	0.18	0.18	0.18
l_b,int, Bicycle LOS Score for Intersection	1.865	1.789	2.708	3.020
Bicycle LOS	A	A	B	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 45: Wicks Ln & St Andrews Dr

Control Type:	Signalized	Delay (sec / veh):	22.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Base Volume Input [veh/h]	175	39	54	805	1001	339
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.50	0.70	0.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	20	0	0	0	170
Total Hourly Volume [veh/h]	175	19	54	805	1001	169
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	5	15	219	272	46
Total Analysis Volume [veh/h]	190	21	59	875	1088	184
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	0	7	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	3	0	3	20	20	0
Maximum Green [s]	50	0	12	50	50	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.5	0.0	1.5	1.5	1.5	0.0
Split [s]	14	0	9	14	14	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	5	5	8	0
Pedestrian Clearance [s]	16	0	10	10	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	3.0	3.0	0.0
Minimum Recall	No		No	Yes	Yes	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	11	11	57	57	50	50
g / C, Green / Cycle	0.14	0.14	0.73	0.73	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.11	0.01	0.11	0.50	0.63	0.12
s, saturation flow rate [veh/h]	1667	1488	554	1743	1740	1488
c, Capacity [veh/h]	237	211	269	1272	1110	949
d1, Uniform Delay [s]	32.43	29.14	19.30	5.72	13.66	5.84
k, delay calibration	0.11	0.11	0.11	0.30	0.44	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.26	0.20	0.40	1.82	20.95	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.10	0.22	0.69	0.98	0.19
d, Delay for Lane Group [s/veh]	38.69	29.35	19.70	7.54	34.61	5.94
Lane Group LOS	D	C	B	A	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.83	0.35	0.20	5.45	20.18	1.02
50th-Percentile Queue Length [ft/ln]	95.63	8.78	4.94	136.17	504.60	25.47
95th-Percentile Queue Length [veh/ln]	6.89	0.63	0.36	9.27	27.55	1.83
95th-Percentile Queue Length [ft/ln]	172.13	15.80	8.89	231.85	688.80	45.84

Movement, Approach, & Intersection Results

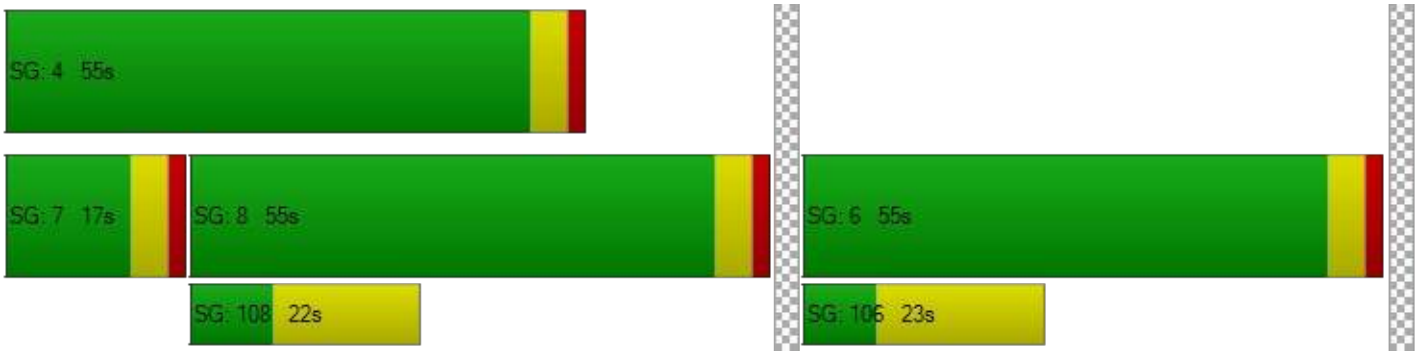
d_M, Delay for Movement [s/veh]	38.69	29.35	19.70	7.54	34.61	5.94
Movement LOS	D	C	B	A	C	A
d_A, Approach Delay [s/veh]	37.76		8.30		30.46	
Approach LOS	D		A		C	
d_I, Intersection Delay [s/veh]	22.54					
Intersection LOS	C					
Intersection V/C	0.751					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.88	28.74	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.190	2.714	0.000
Crosswalk LOS	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1283	1283	1283
d_b, Bicycle Delay [s]	5.00	5.00	5.00
l_b,int, Bicycle LOS Score for Intersection	1.560	3.101	3.939
Bicycle LOS	A	C	D

Sequence

Ring 1	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



AUXILIARY TURN LANE WARRANT WORKSHEETS

APPENDIX D

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TURN LANE WARRANTS		Skyway Drive & Alkali Creek Road	
		AM	PM
2025	NB Right-Turn Lane		
	NB Left-Turn Lane		
	SB Right-Turn Lane		
	SB Left-Turn Lane		
	EB Right-Turn Lane	NO	NO
	EB Left-Turn Lane	NO	NO
	WB Right-Turn Lane	NO	NO
	WB Left-Turn Lane	NO	NO
2029	NB Right-Turn Lane		
	NB Left-Turn Lane		
	SB Right-Turn Lane		
	SB Left-Turn Lane		
	EB Right-Turn Lane	NO	NO
	EB Left-Turn Lane	NO	NO
	WB Right-Turn Lane	NO	NO
	WB Left-Turn Lane	YES	NO
2035	NB Right-Turn Lane		
	NB Left-Turn Lane		
	SB Right-Turn Lane		
	SB Left-Turn Lane		
	EB Right-Turn Lane	NO	NO
	EB Left-Turn Lane	NO	NO
	WB Right-Turn Lane	NO	NO
	WB Left-Turn Lane	YES	NO

Existing Traffic Volumes (2025) - Right-Turn Lanes at Unsignalized Intersections on 2-Lane Highways

Approach	Time	Total DHV (veh/hr)	Right-Turn Volume During DHV (veh/hr, one direction)	Required Right-Turn Volume for Warranted Lane	Warranted Right-Turn Lane? (Y/N)	Speed Limit at Approach	Adjustment
Skyway Drive & Alkali Creek Road EB	AM weekday	117	15	104	N	45	0
	PM weekday	347	39	74	N	45	0
Skyway Drive & Alkali Creek Road WB	AM weekday	338	5	75	N	35	0
	PM weekday	150	14	100	N	35	0

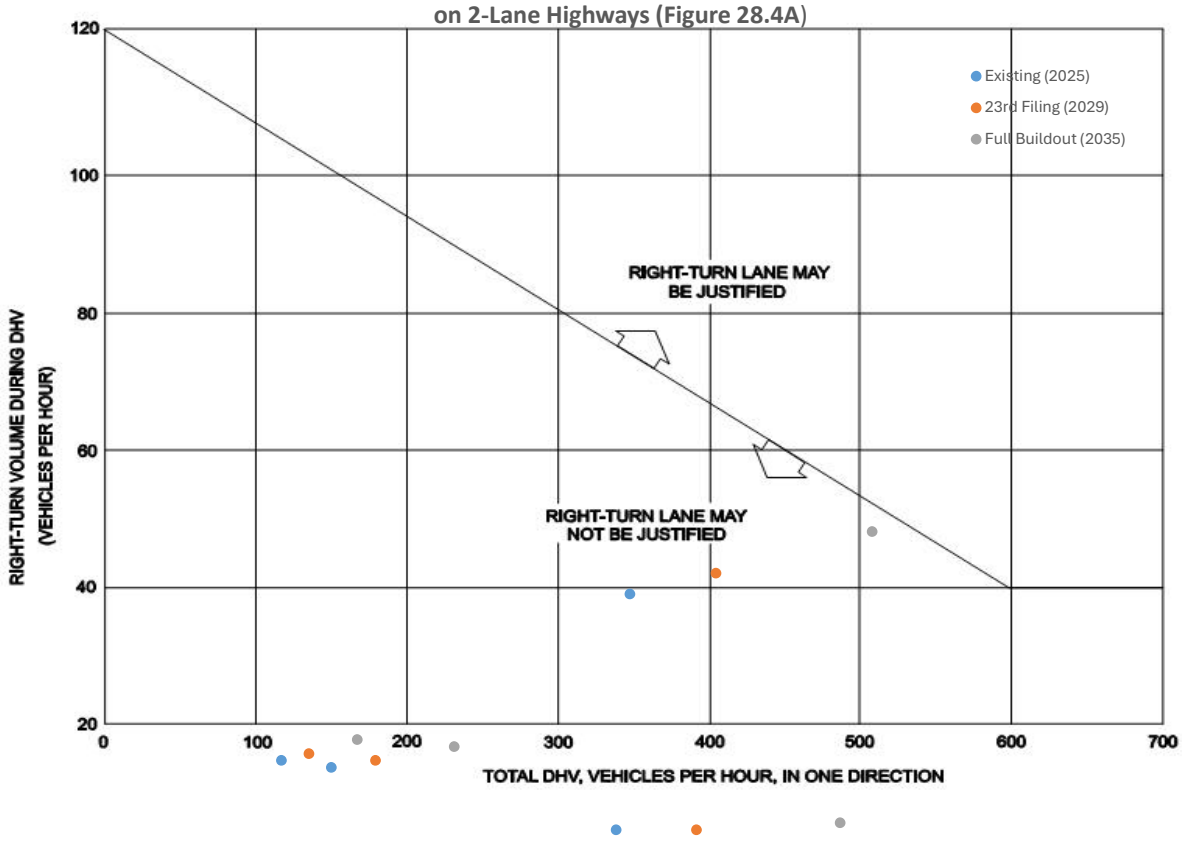
23rd Filing Traffic Volumes (2029) - Right-Turn Lanes at Unsignalized Intersections on 2-Lane Highways

Approach	Time	Total DHV (veh/hr)	Right-Turn Volume During DHV (veh/hr, one direction)	Required Right-Turn Volume for Warranted Lane	Warranted Right-Turn Lane? (Y/N)	Speed Limit at Approach	Adjustment
Skyway Drive & Alkali Creek Road EB	AM weekday	135	16	102	N	45	0
	PM weekday	404	42	66	N	45	0
Skyway Drive & Alkali Creek Road WB	AM weekday	391	5	68	N	35	0
	PM weekday	179	15	96	N	35	0

Full Buildout Traffic Volumes (2035) - Right-Turn Lanes at Unsignalized Intersections on 2-Lane Highways

Approach	Time	Total DHV (veh/hr)	Right-Turn Volume During DHV (veh/hr, one direction)	Required Right-Turn Volume for Warranted Lane	Warranted Right-Turn Lane? (Y/N)	Speed Limit at Approach	Adjustment
Skyway Drive & Alkali Creek Road EB	AM weekday	167	18	98	N	45	0
	PM weekday	507	48	52	N	45	0
Skyway Drive & Alkali Creek Road WB	AM weekday	486	6	55	N	35	0
	PM weekday	231	17	89	N	35	0

Guidelines for Right-Turn Lanes at Unsignalized Intersections on 2-Lane Highways (Figure 28.4A)



Existing Traffic Volumes (2025) - Left-Turn Lanes at Unsignalized Intersections on 2-Lane Highways

Approach	Time	Va = Total advancing traffic volume	Val = Total left-turn volume in advancing traffic	Percent left-turns in Va	Vo = Total opposing traffic volume	Warranted Left-Turn Lane? (Y/N)	Speed Limit at Approach
Skyway Drive & Alkali Creek Road EB	AM weekday	117	0	0.0%	338	N	45
	PM weekday	347	4	1.2%	150	N	45
Skyway Drive & Alkali Creek Road WB	AM weekday	338	76	22.5%	117	N	35
	PM weekday	150	15	10.0%	347	N	35

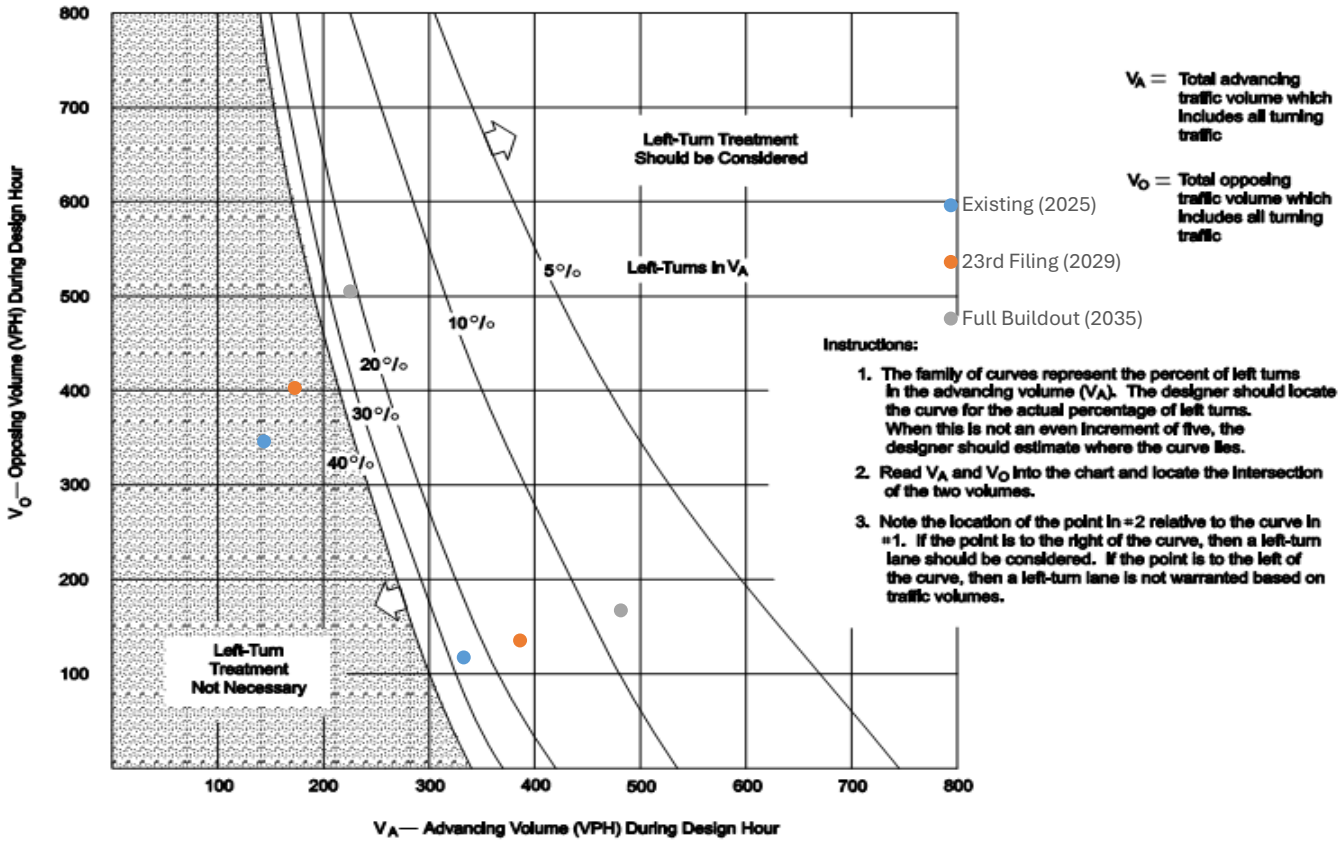
23rd Filing Traffic Volumes (2029) - Left-Turn Lanes at Unsignalized Intersections on 2-Lane Highways

Approach	Time	Va = Total advancing traffic volume	Val = Total left-turn volume in advancing traffic	Percent left-turns in Va	Vo = Total opposing traffic volume	Warranted Left-Turn Lane? (Y/N)	Speed Limit at Approach
Skyway Drive &	AM weekday	135	0	0.0%	391	N	45
Alkali Creek Road EB	PM weekday	404	4	1.0%	179	N	45
Skyway Drive &	AM weekday	391	82	21.0%	135	Y	35
Alkali Creek Road WB	PM weekday	179	16	8.9%	404	N	35

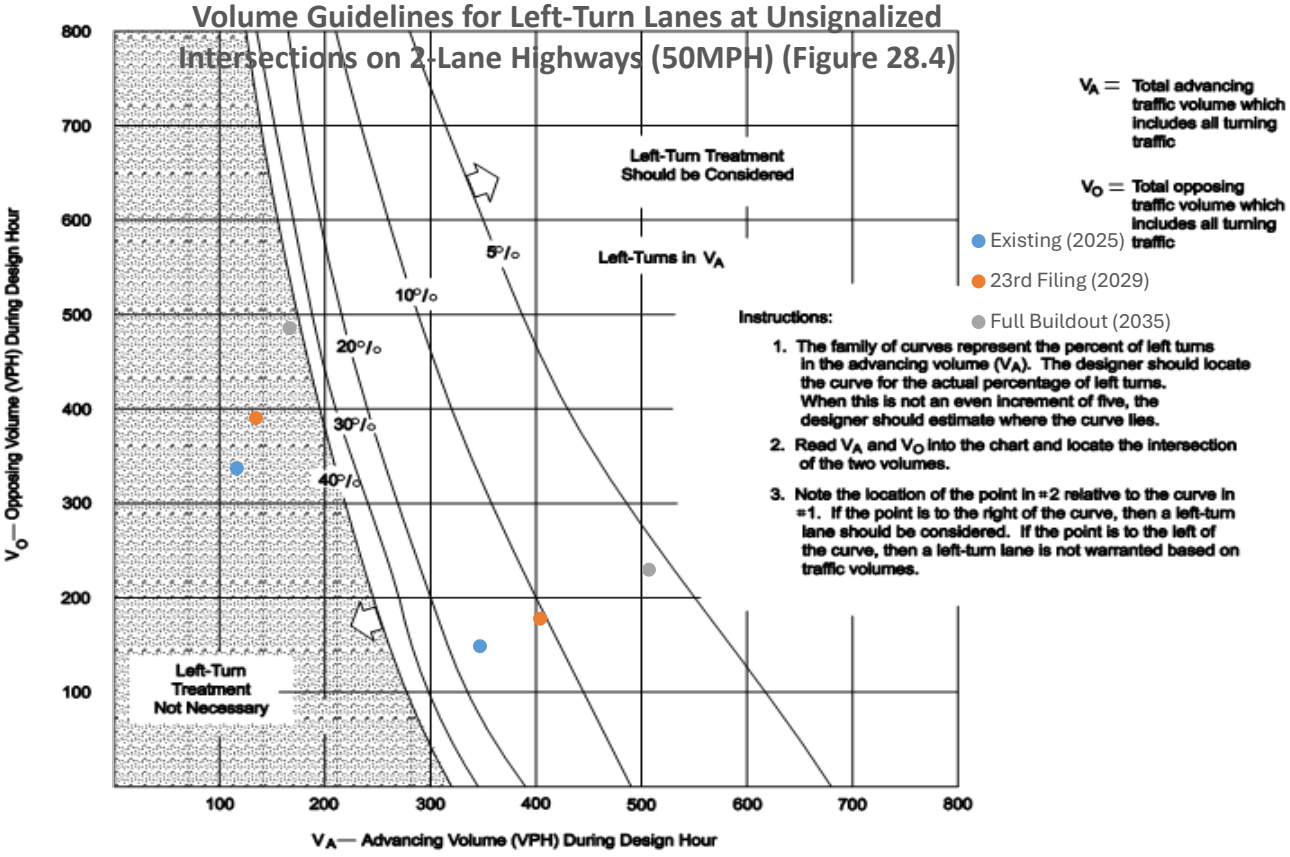
Full Buildout Traffic Volumes (2035) - Left-Turn Lanes at Unsignalized Intersections on 2-Lane Highways

Approach	Time	Va = Total advancing traffic volume	Val = Total left-turn volume in advancing traffic	Percent left-turns in Va	Vo = Total opposing traffic volume	Warranted Left-Turn Lane? (Y/N)	Speed Limit at Approach
Skyway Drive &	AM weekday	167	0	0.0%	486	N	45
Alkali Creek Road EB	PM weekday	507	5	1.0%	231	N	45
Skyway Drive &	AM weekday	486	93	19.1%	167	Y	35
Alkali Creek Road WB	PM weekday	231	18	7.8%	507	N	35

Volume Guidelines for Left-Turn Lanes at Unsignalized Intersections on 2-Lane Highways (45MPH) (Figure 28.4F)



Volume Guidelines for Left-Turn Lanes at Unsignalized Intersections on 2-Lane Highways (50MPH) (Figure 28.4)



TRAFFIC SIGNAL WARRANT WORKSHEETS

APPENDIX E

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TRAFFIC SIGNAL WARRANTS		Existing Volumes (2025)		23rd Filing Volumes (2029)		Full Buildout Volumes (2035)	
		Wicks Lane & High Sierra Boulevard	Wicks Lane & Fantan Street	Wicks Lane & High Sierra Boulevard	Wicks Lane & Fantan Street	Wicks Lane & High Sierra Boulevard	Wicks Lane & Fantan Street
1. Eight-Hour Vehicular Volume		x	x	x	x	x	x
2. Four-Hour Vehicular Volume		x	x	x	x	x	✓
3. Peak Hour		x	✓	✓	✓	✓	✓
4. Pedestrian Volume		x	x	x	x	x	x
5. School Crossing		x	x	x	x	x	x
6. Coordinated Signal System		x	x	x	x	x	x
7. Crash History		x	x	x	x	x	x
8. Roadway Network		x	x	x	x	x	x
9. Intersection Near a Grade Crossing		--	--	--	--	--	--
Signals Warranted	**Yes**						✓
	No	**x**	**x**	**x**	**x**	**x**	

Warrant 1: Eight-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	6	3	0	0	9	0
1:00	1	3	0	1	4	1
2:00	3	3	0	3	6	3
3:00	2	3	0	3	5	3
4:00	4	12	0	3	16	3
5:00	24	24	0	11	48	11
6:00	59	118	0	43	177	43
7:00	181	397	0	244	578	244
8:00	113	240	1	63	353	63
9:00	87	137	1	37	224	37
10:00	103	126	0	58	229	58
11:00	137	248	1	127	385	127
12:00	121	186	2	44	307	44
13:00	159	148	0	59	307	59
14:00	229	223	3	90	452	90
15:00	226	266	0	231	492	231
16:00	243	245	1	66	488	66
17:00	309	272	1	103	581	103
18:00	215	339	0	86	554	86
19:00	90	119	0	54	209	54
20:00	167	79	0	248	246	248
21:00	65	37	0	6	102	6
22:00	24	16	0	4	40	4
23:00	17	12	0	0	29	0
TOTAL	**2585**	**3256**	**10**	**1584**	**5841**	**1584**

		Hrs
Condition A - Minimum Vehicular Volume (100% Columns):		
Major Street Total > 500 and Higher Minor Street Total > 150 for 8 hours?	**No**	**1**
Condition B - Interruption of Continuous Traffic (100% Columns):		
Major Street Total > 750 and Higher Minor Street Total > 75 for 8 hours?	**No**	**0**
Combination of Conditions A & B (80% Columns):		
Major Street Total > 400 and Higher Minor Street Total > 120 for 8 hours?	**No**	**2**
Major Street Total > 600 and Higher Minor Street Total > 60 for 8 hours?	**No**	**0**
Warrant 1 Satisfied?	**No**	

Warrant 1: Eight-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	7	3	0	0	10	0
1:00	1	3	0	1	4	1
2:00	3	3	0	4	6	4
3:00	2	3	0	4	5	4
4:00	5	13	0	4	18	4
5:00	25	26	0	12	51	12
6:00	63	128	0	47	191	47
7:00	193	431	0	267	624	267
8:00	121	260	1	69	381	69
9:00	93	149	1	41	242	41
10:00	110	137	0	63	247	63
11:00	146	269	1	139	415	139
12:00	129	202	2	48	331	48
13:00	170	160	0	64	330	64
14:00	245	241	3	98	486	98
15:00	241	289	0	253	530	253
16:00	260	266	1	73	526	73
17:00	331	295	1	112	626	112
18:00	230	368	0	94	598	94
19:00	96	129	0	59	225	59
20:00	178	86	0	272	264	272
21:00	70	41	0	7	111	7
22:00	25	17	0	5	42	5
23:00	18	13	0	0	31	0
TOTAL	**2762**	**3532**	**10**	**1736**	**6294**	**1736**

Condition A - Minimum Vehicular Volume (100% Columns):		**Hrs**
Major Street Total > 500 and Higher Minor Street Total > 150 for 8 hours?	**No**	**2**
Condition B - Interruption of Continuous Traffic (100% Columns):		
Major Street Total > 750 and Higher Minor Street Total > 75 for 8 hours?	**No**	**0**
Combination of Conditions A & B (80% Columns):		
Major Street Total > 400 and Higher Minor Street Total > 120 for 8 hours?	**No**	**3**
Major Street Total > 600 and Higher Minor Street Total > 60 for 8 hours?	**No**	**2**
Warrant 1 Satisfied?	**No**	

Warrant 1: Eight-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	8	4	0	0	12	0
1:00	1	4	0	2	5	2
2:00	4	4	0	5	8	5
3:00	3	4	0	5	7	5
4:00	6	16	0	5	22	5
5:00	31	31	0	15	62	15
6:00	76	157	0	61	233	61
7:00	234	531	0	350	765	350
8:00	147	320	1	91	467	91
9:00	112	183	1	54	295	54
10:00	133	169	0	83	302	83
11:00	178	332	1	183	510	183
12:00	157	249	2	63	406	63
13:00	207	197	0	85	404	85
14:00	297	298	3	129	595	129
15:00	293	356	0	332	649	332
16:00	315	328	1	95	643	95
17:00	401	363	1	148	764	148
18:00	279	454	0	123	733	123
19:00	117	159	0	77	276	77
20:00	216	106	0	357	322	357
21:00	85	50	0	9	135	9
22:00	31	21	0	6	52	6
23:00	22	16	0	0	38	0
TOTAL	**3353**	**4352**	**10**	**2278**	**7705**	**2278**

		Hrs
Condition A - Minimum Vehicular Volume (100% Columns):		
Major Street Total > 500 and Higher Minor Street Total > 150 for 8 hours?	**No**	**3**
Condition B - Interruption of Continuous Traffic (100% Columns):		
Major Street Total > 750 and Higher Minor Street Total > 75 for 8 hours?	**No**	**2**
Combination of Conditions A & B (80% Columns):		
Major Street Total > 400 and Higher Minor Street Total > 120 for 8 hours?	**No**	**6**
Major Street Total > 600 and Higher Minor Street Total > 60 for 8 hours?	**No**	**5**
Warrant 1 Satisfied?	**No**	

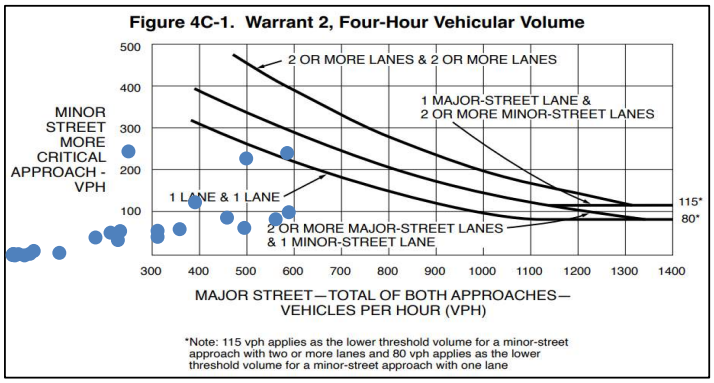
Warrant 2: Four-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	6	3	0	0	9	0
1:00	1	3	0	1	4	1
2:00	3	3	0	3	6	3
3:00	2	3	0	3	5	3
4:00	4	12	0	3	16	3
5:00	24	24	0	11	48	11
6:00	59	118	0	43	177	43
7:00	181	397	0	244	578	244
8:00	113	240	1	63	353	63
9:00	87	137	1	37	224	37
10:00	103	126	0	58	229	58
11:00	137	248	1	127	385	127
12:00	121	186	2	44	307	44
13:00	159	148	0	59	307	59
14:00	229	223	3	90	452	90
15:00	226	266	0	231	492	231
16:00	243	245	1	66	488	66
17:00	309	272	1	103	581	103
18:00	215	339	0	86	554	86
19:00	90	119	0	54	209	54
20:00	167	79	0	248	246	248
21:00	65	37	0	6	102	6
22:00	24	16	0	4	40	4
23:00	17	12	0	0	29	0
TOTAL	**2585**	**3256**	**10**	**1584**	**5841**	**1584**

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Meets warrant criteria on graph for minimum of 4 hours (100% thresholds)? **No (1 hr)**

Warrant 2 Satisfied? **No**

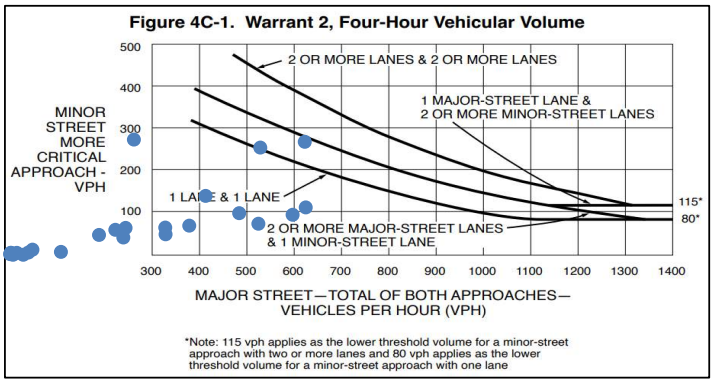
Warrant 2: Four-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	7	3	0	0	10	0
1:00	1	3	0	1	4	1
2:00	3	3	0	4	6	4
3:00	2	3	0	4	5	4
4:00	5	13	0	4	18	4
5:00	25	26	0	12	51	12
6:00	63	128	0	47	191	47
7:00	193	431	0	267	624	267
8:00	121	260	1	69	381	69
9:00	93	149	1	41	242	41
10:00	110	137	0	63	247	63
11:00	146	269	1	139	415	139
12:00	129	202	2	48	331	48
13:00	170	160	0	64	330	64
14:00	245	241	3	98	486	98
15:00	241	289	0	253	530	253
16:00	260	266	1	73	526	73
17:00	331	295	1	112	626	112
18:00	230	368	0	94	598	94
19:00	96	129	0	59	225	59
20:00	178	86	0	272	264	272
21:00	70	41	0	7	111	7
22:00	25	17	0	5	42	5
23:00	18	13	0	0	31	0
TOTAL	**2762**	**3532**	**10**	**1736**	**6294**	**1736**

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Meets warrant criteria on graph for minimum of 4 hours (100% thresholds)? **No (2 hrs)**

Warrant 2 Satisfied? **No**

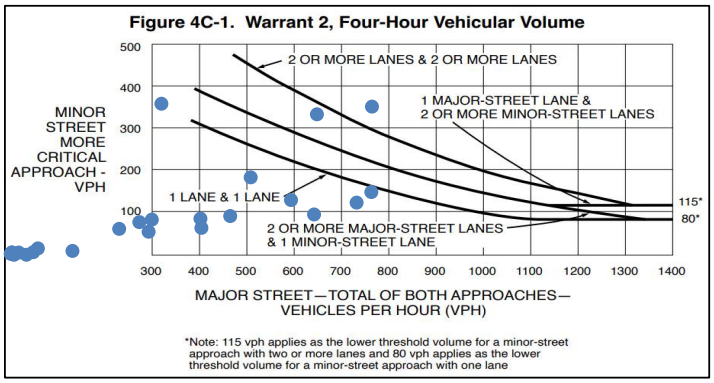
Warrant 2: Four-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	8	4	0	0	12	0
1:00	1	4	0	2	5	2
2:00	4	4	0	5	8	5
3:00	3	4	0	5	7	5
4:00	6	16	0	5	22	5
5:00	31	31	0	15	62	15
6:00	76	157	0	61	233	61
7:00	234	531	0	350	765	350
8:00	147	320	1	91	467	91
9:00	112	183	1	54	295	54
10:00	133	169	0	83	302	83
11:00	178	332	1	183	510	183
12:00	157	249	2	63	406	63
13:00	207	197	0	85	404	85
14:00	297	298	3	129	595	129
15:00	293	356	0	332	649	332
16:00	315	328	1	95	643	95
17:00	401	363	1	148	764	148
18:00	279	454	0	123	733	123
19:00	117	159	0	77	276	77
20:00	216	106	0	357	322	357
21:00	85	50	0	9	135	9
22:00	31	21	0	6	52	6
23:00	22	16	0	0	38	0
TOTAL	**3353**	**4352**	**10**	**2278**	**7705**	**2278**

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Meets warrant criteria on graph for minimum of 4 hours (100% thresholds)? **No (3 hrs)**

Warrant 2 Satisfied? **No**

Warrant 3: Peak Hour

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

AM Peak Hour	**7:15 - 8:15 AM**
High Minor Total Stopped Time Delay (hrs)	**3.15**
Total Volume of Major Approaches (vehs)	**580**
High Minor Approach Volume (vehs)	**248**
Total Entering Volume (vehs)	**829**

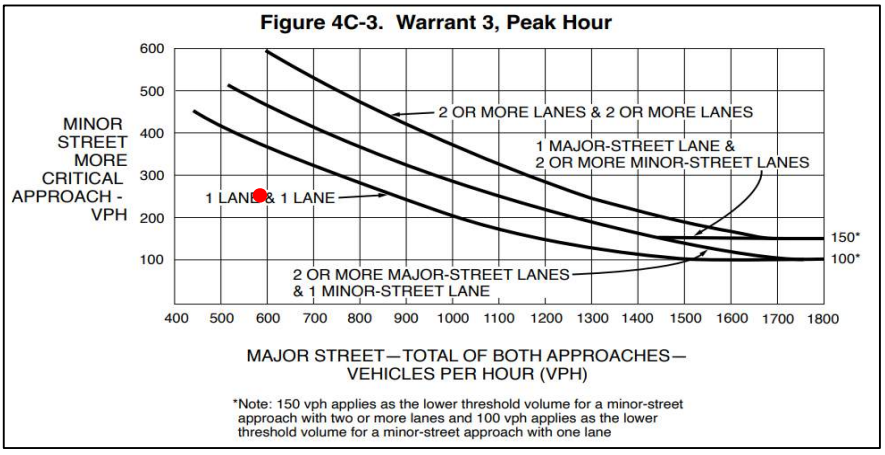
PM Peak Hour	**4:45 - 5:45 PM**
High Minor Total Stopped Time Delay (hrs)	**0.46**
Total Volume of Major Approaches (vehs)	**585**
High Minor Approach Volume (vehs)	**102**
Total Entering Volume (vehs)	**687**

Category A: Peak Period: AM

Total stopped time delay for minor approach > 4 veh-hrs?	**No (3.15)**
High minor approach volume > 100 for peak hour?	**Yes (248)**
Total entering volume > 800 for peak hour?	**Yes (829)**
Category A warrant satisfied?	**No**

Category B:

Figure 4C-3. Warrant 3, Peak Hour



Meets warrant criteria on graph for minimum of one hour (100% thresholds)?	**No**
Warrant 3 Satisfied?	**No**

Warrant 3: Peak Hour

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

AM Peak Hour	**7:15 - 8:15 AM**
High Minor Total Stopped Time Delay (hrs)	**9.62**
Total Volume of Major Approaches (vehs)	**658**
High Minor Approach Volume (vehs)	**287**
Total Entering Volume (vehs)	**946**

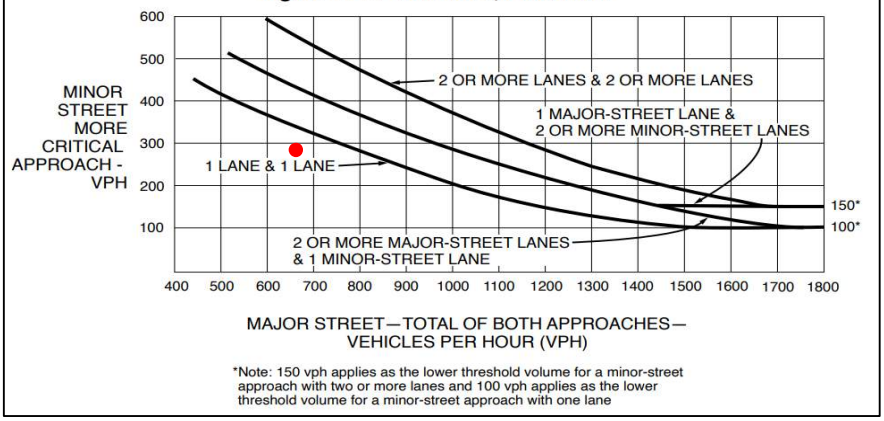
PM Peak Hour	**4:45 - 5:45 PM**
High Minor Total Stopped Time Delay (hrs)	**0.69**
Total Volume of Major Approaches (vehs)	**686**
High Minor Approach Volume (vehs)	**123**
Total Entering Volume (vehs)	**809**

Category A: Peak Period: AM

Total stopped time delay for minor approach > 4 veh-hrs?	**Yes (9.62)**
High minor approach volume > 100 for peak hour?	**Yes (287)**
Total entering volume > 800 for peak hour?	**Yes (946)**
Category A warrant satisfied?	**Yes**

Category B:

Figure 4C-3. Warrant 3, Peak Hour



Meets warrant criteria on graph for minimum of one hour (100% thresholds)?	**No**
Warrant 3 Satisfied?	**Yes**

Warrant 3: Peak Hour

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

AM Peak Hour	**7:15 - 8:15 AM**
High Minor Total Stopped Time Delay (hrs)	**41.13**
Total Volume of Major Approaches (vehs)	**785**
High Minor Approach Volume (vehs)	**369**
Total Entering Volume (vehs)	**1155**

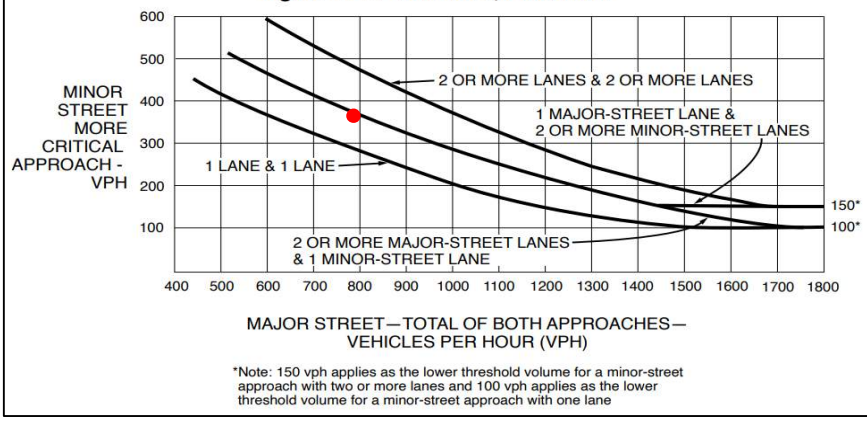
PM Peak Hour	**4:45 - 5:45 PM**
High Minor Total Stopped Time Delay (hrs)	**1.91**
Total Volume of Major Approaches (vehs)	**861**
High Minor Approach Volume (vehs)	**169**
Total Entering Volume (vehs)	**1030**

Category A: Peak Period: AM

Total stopped time delay for minor approach > 4 veh-hrs?	**Yes (41.13)**
High minor approach volume > 100 for peak hour?	**Yes (369)**
Total entering volume > 800 for peak hour?	**Yes (1155)**
Category A warrant satisfied?	**Yes**

Category B:

Figure 4C-3. Warrant 3, Peak Hour



Meets warrant criteria on graph for minimum of one hour (100% thresholds)?	**Yes**
Warrant 3 Satisfied?	**Yes**

Warrant 4: Pedestrian Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Hour Begin	Major Street Total Traffic	Pedestrian Volume Crossing Major Street
0:00	9	0
1:00	4	0
2:00	6	0
3:00	5	0
4:00	16	0
5:00	48	0
6:00	177	0
7:00	578	0
8:00	353	0
9:00	224	1
10:00	229	0
11:00	385	0
12:00	307	2
13:00	307	0
14:00	452	1
15:00	492	4
16:00	488	3
17:00	581	0
18:00	554	0
19:00	209	0
20:00	246	0
21:00	102	0
22:00	40	0
23:00	29	0
TOTAL	**5,841**	**11**

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume

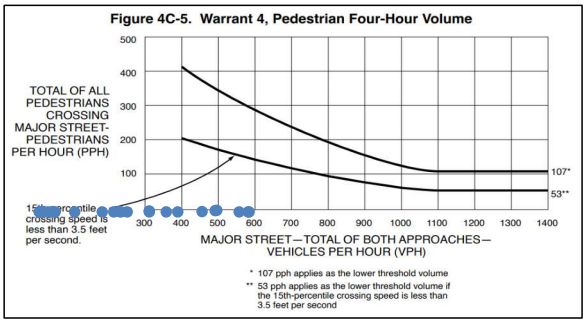
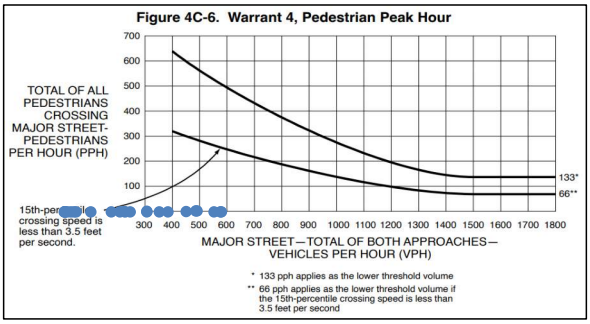


Figure 4C-6. Warrant 4, Pedestrian Peak Hour



For each of any 4 hours of an average day, do the plotted points representing the vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-5? **No**

For 1 hour of an average day, does the plotted point representing vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-6? **No**

Warrant 4 Satisfied? **No**

Warrant 4: Pedestrian Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Hour Begin	Major Street Total Traffic	Pedestrian Volume Crossing Major Street
0:00	10	0
1:00	4	0
2:00	6	0
3:00	5	0
4:00	18	0
5:00	51	0
6:00	191	0
7:00	624	0
8:00	381	0
9:00	242	1
10:00	247	0
11:00	415	0
12:00	331	2
13:00	330	0
14:00	486	1
15:00	530	4
16:00	526	3
17:00	626	0
18:00	598	0
19:00	225	0
20:00	264	0
21:00	111	0
22:00	42	0
23:00	31	0
TOTAL	**6,294**	**11**

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume

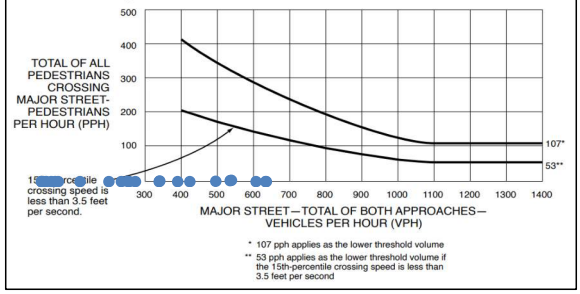
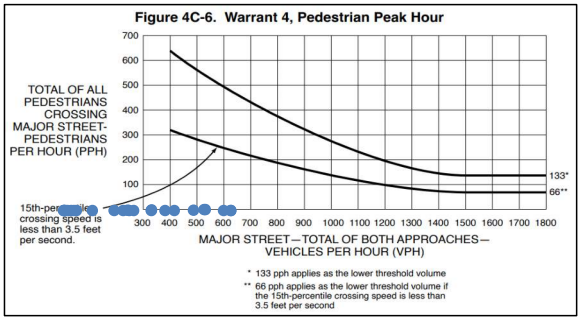


Figure 4C-6. Warrant 4, Pedestrian Peak Hour



For each of any 4 hours of an average day, do the plotted points representing the vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-5? **No**

For 1 hour of an average day, does the plotted point representing vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-6? **No**

Warrant 4 Satisfied? **No**

Warrant 4: Pedestrian Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Hour Begin	Major Street Total Traffic	Pedestrian Volume Crossing Major Street
0:00	12	0
1:00	5	0
2:00	8	0
3:00	7	0
4:00	22	0
5:00	62	0
6:00	233	0
7:00	765	0
8:00	467	0
9:00	295	1
10:00	302	0
11:00	510	0
12:00	406	2
13:00	404	0
14:00	595	1
15:00	649	4
16:00	643	3
17:00	764	0
18:00	733	0
19:00	276	0
20:00	322	0
21:00	135	0
22:00	52	0
23:00	38	0
TOTAL	**7,705**	**11**

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume

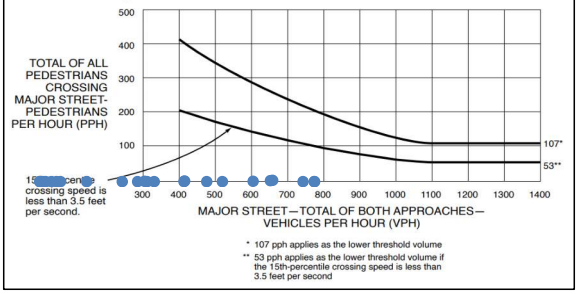
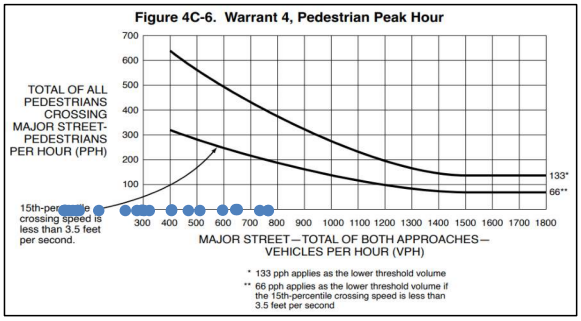


Figure 4C-6. Warrant 4, Pedestrian Peak Hour



For each of any 4 hours of an average day, do the plotted points representing the vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-5? **No**

For 1 hour of an average day, does the plotted point representing vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-6? **No**

Warrant 4 Satisfied? **No**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

Warrant 5: School Crossing

This warrant is intended for application where the fact that school children (elementary through high school students) cross the major street is the principle reason to consider installing a traffic signal. This warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 feet, unless it can be shown that the proposed traffic signal would not restrict the progressive movement of traffic.

Is the number of adequate gaps in the major crossing traffic steam during the primary crossing period less than the number of minutes in that crossing period? **N/A**

Do 20 or more students cross at this location during the highest crossing hour? **No**

Warrant 5 Satisfied? **No**

Warrant 6: Coordinated Signal System

This warrant is intended for application where installation of a traffic signal would help to provide proper platooning of vehicles and therefore provide progressive movement in a coordinated signal system.

Are any adjacent traffic signals located so far away that they do not provide a necessary degree of platooning and/or progressive operation? **No**

Warrant 6 Satisfied? **No**

Warrant 7: Crash Experience

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal

Have adequate trials of alternatives failed to reduce the crash frequency? **N/A**

Have at least one of the following conditions apply to the reported crash history:

1. Do the number of reported angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total angle crashes and pedestrian crashes?
2. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total fatal-and-injury angle crashes and pedestrian crashes?
3. Do the number of reported angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total angle crashes and pedestrian crashes?
4. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total fatal-and-injury angle crashes and pedestrian crashes?

No

Is Condition A criterion met for 80% columns of Warrant 1 met? **No**

Is Condition B criterion met for 80% columns of Warrant 1 met? **No**

Are observed pedestrian volumes equal to or greater than 80% of what is required for Warrant 4? **No**

Warrant 7 Satisfied? **No**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

Warrant 5: School Crossing

This warrant is intended for application where the fact that school children (elementary through high school students) cross the major street is the principle reason to consider installing a traffic signal. This warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 feet, unless it can be shown that the proposed traffic signal would not restrict the progressive movement of traffic.

Is the number of adequate gaps in the major crossing traffic steam during the primary crossing period less than the number of minutes in that crossing period? **N/A**

Do 20 or more students cross at this location during the highest crossing hour? **No**

Warrant 5 Satisfied? **No**

Warrant 6: Coordinated Signal System

This warrant is intended for application where installation of a traffic signal would help to provide proper platooning of vehicles and therefore provide progressive movement in a coordinated signal system.

Are any adjacent traffic signals located so far away that they do not provide a necessary degree of platooning and/or progressive operation? **No**

Warrant 6 Satisfied? **No**

Warrant 7: Crash Experience

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal

Have adequate trials of alternatives failed to reduce the crash frequency? **N/A**

Have at least one of the following conditions apply to the reported crash history:

1. Do the number of reported angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total angle crashes and pedestrian crashes?
2. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total fatal-and-injury angle crashes and pedestrian crashes?
3. Do the number of reported angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total angle crashes and pedestrian crashes?
4. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total fatal-and-injury angle crashes and pedestrian crashes?

No

Is Condition A criterion met for 80% columns of Warrant 1 met? **No**

Is Condition B criterion met for 80% columns of Warrant 1 met? **No**

Are observed pedestrian volumes equal to or greater than 80% of what is required for Warrant 4? **No**

Warrant 7 Satisfied? **No**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

Warrant 5: School Crossing

This warrant is intended for application where the fact that school children (elementary through high school students) cross the major street is the principle reason to consider installing a traffic signal. This warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 feet, unless it can be shown that the proposed traffic signal would not restrict the progressive movement of traffic.

Is the number of adequate gaps in the major crossing traffic steam during the primary crossing period less than the number of minutes in that crossing period? **N/A**

Do 20 or more students cross at this location during the highest crossing hour? **No**

Warrant 5 Satisfied? **No**

Warrant 6: Coordinated Signal System

This warrant is intended for application where installation of a traffic signal would help to provide proper platooning of vehicles and therefore provide progressive movement in a coordinated signal system.

Are any adjacent traffic signals located so far away that they do not provide a necessary degree of platooning and/or progressive operation? **No**

Warrant 6 Satisfied? **No**

Warrant 7: Crash Experience

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal

Have adequate trials of alternatives failed to reduce the crash frequency? **N/A**

Have at least one of the following conditions apply to the reported crash history:

1. Do the number of reported angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total angle crashes and pedestrian crashes?
2. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total fatal-and-injury angle crashes and pedestrian crashes?
3. Do the number of reported angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total angle crashes and pedestrian crashes?
4. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total fatal-and-injury angle crashes and pedestrian crashes?

No

Is Condition A criterion met for 80% columns of Warrant 1 met? **No**

Is Condition B criterion met for 80% columns of Warrant 1 met? **No**

Are observed pedestrian volumes equal to or greater than 80% of what is required for Warrant 4? **No**

Warrant 7 Satisfied? **No**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

Warrant 8: Roadway Network

This warrant is intended for application where installation of a traffic signal could be justified in order to encourage concentration and organization of traffic flow on a roadway network

Do two or more of the intersecting routes at this location have at least one of the following characteristics:

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow; or
B. It includes rural or suburban highways outside, entering, or traversing a City; or
C. It appears as a major route on an official plan.

No

Does this intersection have an existing or immediately projected total entering volume of a least 1000 vehicles during a weekday typical peak hour and have a 5-year projected traffic volume that meets one or more of Warrants 1, 2, and 3 during an average weekday? **No**

Does this intersection have an existing or immediately projected total entering volume of at least 1000 vph for each of any 5 hours of a Saturday or Sunday? **N/A**

Warrant 8 Satisfied? **No**

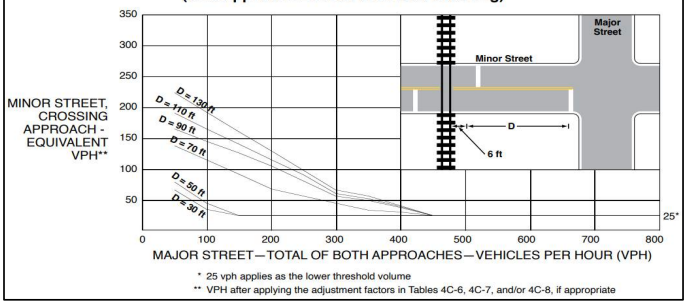
Warrant 9: Intersection Near a Grade Crossing

This warrant is intended for application where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic signal.

Does a grade crossing exist on an approach controlled by a STOP or YIELD sign whereby the center of the track nearest to the intersection is within 140 feet of the stop or yield line?

No

Figure 4C-9. Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)



During the highest traffic volume hour during which the rail traffic uses the crossing, does the plotted point representing vehicles per hour on the major street and the corresponding vehicles per hour on the minor-street approach that crosses the track fall above the applicable curve in Figure 4C-9 or 4C-10 (whichever is applicable) for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance? **N/A**

Warrant 9 Satisfied? **N/A**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

Warrant 8: Roadway Network

This warrant is intended for application where installation of a traffic signal could be justified in order to encourage concentration and organization of traffic flow on a roadway network

Do two or more of the intersecting routes at this location have at least one of the following characteristics:

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow; or
B. It includes rural or suburban highways outside, entering, or traversing a City; or
C. It appears as a major route on an official plan.

No

Does this intersection have an existing or immediately projected total entering volume of a least 1000 vehicles during a weekday typical peak hour and have a 5-year projected traffic volume that meets one or more of Warrants 1, 2, and 3 during an average weekday? **No**

Does this intersection have an existing or immediately projected total entering volume of at least 1000 vph for each of any 5 hours of a Saturday or Sunday? **N/A**

Warrant 8 Satisfied? **No**

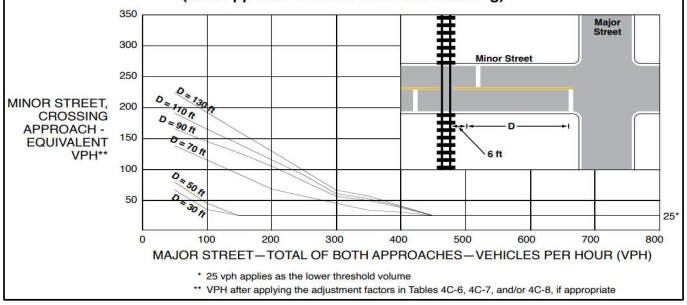
Warrant 9: Intersection Near a Grade Crossing

This warrant is intended for application where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic signal.

Does a grade crossing exist on an approach controlled by a STOP or YIELD sign whereby the center of the track nearest to the intersection is within 140 feet of the stop or yield line?

No

Figure 4C-9. Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)



During the highest traffic volume hour during which the rail traffic uses the crossing, does the plotted point representing vehicles per hour on the major street and the corresponding vehicles per hour on the minor-street approach that crosses the track fall above the applicable curve in Figure 4C-9 or 4C-10 (whichever is applicable) for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance? **N/A**

Warrant 9 Satisfied? **N/A**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

Warrant 8: Roadway Network

This warrant is intended for application where installation of a traffic signal could be justified in order to encourage concentration and organization of traffic flow on a roadway network

Do two or more of the intersecting routes at this location have at least one of the following characteristics:

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow; or
B. It includes rural or suburban highways outside, entering, or traversing a City; or
C. It appears as a major route on an official plan.

No

Does this intersection have an existing or immediately projected total entering volume of a least 1000 vehicles during a weekday typical peak hour and have a 5-year projected traffic volume that meets one or more of Warrants 1, 2, and 3 during an average weekday? **Yes**

Does this intersection have an existing or immediately projected total entering volume of at least 1000 vph for each of any 5 hours of a Saturday or Sunday? **N/A**

Warrant 8 Satisfied? **No**

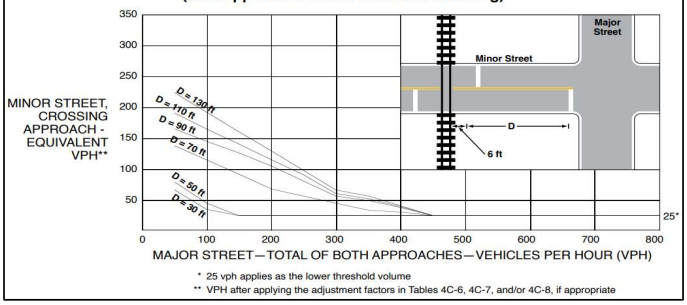
Warrant 9: Intersection Near a Grade Crossing

This warrant is intended for application where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic signal.

Does a grade crossing exist on an approach controlled by a STOP or YIELD sign whereby the center of the track nearest to the intersection is within 140 feet of the stop or yield line?

No

Figure 4C-9. Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)



During the highest traffic volume hour during which the rail traffic uses the crossing, does the plotted point representing vehicles per hour on the major street and the corresponding vehicles per hour on the minor-street approach that crosses the track fall above the applicable curve in Figure 4C-9 or 4C-10 (whichever is applicable) for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance? **N/A**

Warrant 9 Satisfied? **N/A**

Warrant 1: Eight-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	7	5	0	0	12	0
1:00	1	5	0	2	6	2
2:00	7	3	0	0	10	0
3:00	5	5	0	2	10	2
4:00	9	12	0	11	21	11
5:00	35	26	0	20	61	20
6:00	90	183	0	56	273	56
7:00	312	637	0	186	949	186
8:00	166	321	0	72	487	72
9:00	127	168	0	45	295	45
10:00	129	163	0	55	292	55
11:00	224	388	0	142	612	142
12:00	162	231	0	36	393	36
13:00	207	184	0	55	391	55
14:00	281	306	0	82	587	82
15:00	388	350	0	238	738	238
16:00	288	362	0	100	650	100
17:00	371	401	0	79	772	79
18:00	256	447	0	50	703	50
19:00	119	172	0	42	291	42
20:00	355	117	0	112	472	112
21:00	75	48	0	13	123	13
22:00	29	27	0	1	56	1
23:00	17	22	0	1	39	1
TOTAL	**3660**	**4583**	**0**	**1400**	**8243**	**1400**

		Hrs
Condition A - Minimum Vehicular Volume (100% Columns):		
Major Street Total > 500 and Higher Minor Street Total > 150 for 8 hours?	**No**	**2**
Condition B - Interruption of Continuous Traffic (100% Columns):		
Major Street Total > 750 and Higher Minor Street Total > 75 for 8 hours?	**No**	**2**
Combination of Conditions A & B (80% Columns):		
Major Street Total > 400 and Higher Minor Street Total > 120 for 8 hours?	**No**	**3**
Major Street Total > 600 and Higher Minor Street Total > 60 for 8 hours?	**No**	**5**
Warrant 1 Satisfied?	**No**	

Warrant 1: Eight-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	8	6	0	0	14	0
1:00	1	6	0	2	7	2
2:00	8	3	0	0	11	0
3:00	6	6	0	2	12	2
4:00	9	13	0	12	22	12
5:00	38	27	0	23	65	23
6:00	97	196	0	62	293	62
7:00	337	682	0	209	1019	209
8:00	179	344	0	80	523	80
9:00	138	180	0	50	318	50
10:00	140	174	0	61	314	61
11:00	242	416	0	160	658	160
12:00	175	247	0	41	422	41
13:00	223	197	0	61	420	61
14:00	304	328	0	93	632	93
15:00	420	375	0	267	795	267
16:00	311	387	0	112	698	112
17:00	401	430	0	89	831	89
18:00	276	479	0	56	755	56
19:00	128	184	0	47	312	47
20:00	384	125	0	126	509	126
21:00	81	52	0	14	133	14
22:00	31	29	0	1	60	1
23:00	18	24	0	1	42	1
TOTAL	**3955**	**4910**	**0**	**1569**	**8865**	**1569**

Condition A - Minimum Vehicular Volume (100% Columns):		**Hrs**
Major Street Total > 500 and Higher Minor Street Total > 150 for 8 hours?	**No**	**3**
Condition B - Interruption of Continuous Traffic (100% Columns):		
Major Street Total > 750 and Higher Minor Street Total > 75 for 8 hours?	**No**	**3**
Combination of Conditions A & B (80% Columns):		
Major Street Total > 400 and Higher Minor Street Total > 120 for 8 hours?	**No**	**4**
Major Street Total > 600 and Higher Minor Street Total > 60 for 8 hours?	**No**	**6**
Warrant 1 Satisfied?	**No**	

Warrant 1: Eight-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	10	7	0	0	17	0
1:00	1	7	0	3	8	3
2:00	10	4	0	0	14	0
3:00	7	7	0	3	14	3
4:00	11	16	0	16	27	16
5:00	47	34	0	29	81	29
6:00	120	242	0	81	362	81
7:00	418	843	0	270	1261	270
8:00	222	425	0	104	647	104
9:00	170	222	0	65	392	65
10:00	173	215	0	79	388	79
11:00	299	514	0	206	813	206
12:00	216	306	0	53	522	53
13:00	276	244	0	79	520	79
14:00	377	405	0	119	782	119
15:00	520	463	0	344	983	344
16:00	385	479	0	144	864	144
17:00	497	531	0	115	1028	115
18:00	342	592	0	73	934	73
19:00	159	228	0	60	387	60
20:00	475	154	0	163	629	163
21:00	100	64	0	19	164	19
22:00	39	35	0	2	74	2
23:00	23	30	0	2	53	2
TOTAL	**4897**	**6067**	**0**	**2029**	**10964**	**2029**

		Hrs
Condition A - Minimum Vehicular Volume (100% Columns):		
Major Street Total > 500 and Higher Minor Street Total > 150 for 8 hours?	**No**	**4**
Condition B - Interruption of Continuous Traffic (100% Columns):		
Major Street Total > 750 and Higher Minor Street Total > 75 for 8 hours?	**No**	**6**
Combination of Conditions A & B (80% Columns):		
Major Street Total > 400 and Higher Minor Street Total > 120 for 8 hours?	**No**	**5**
Major Street Total > 600 and Higher Minor Street Total > 60 for 8 hours?	**Yes**	**9**
Warrant 1 Satisfied?	**No**	

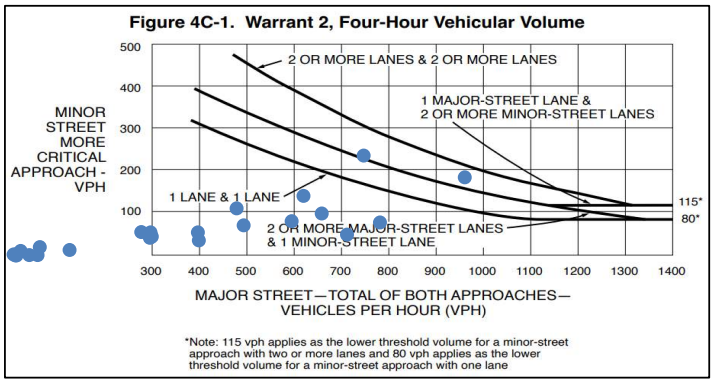
Warrant 2: Four-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	7	5	0	0	12	0
1:00	1	5	0	2	6	2
2:00	7	3	0	0	10	0
3:00	5	5	0	2	10	2
4:00	9	12	0	11	21	11
5:00	35	26	0	20	61	20
6:00	90	183	0	56	273	56
7:00	312	637	0	186	949	186
8:00	166	321	0	72	487	72
9:00	127	168	0	45	295	45
10:00	129	163	0	55	292	55
11:00	224	388	0	142	612	142
12:00	162	231	0	36	393	36
13:00	207	184	0	55	391	55
14:00	281	306	0	82	587	82
15:00	388	350	0	238	738	238
16:00	288	362	0	100	650	100
17:00	371	401	0	79	772	79
18:00	256	447	0	50	703	50
19:00	119	172	0	42	291	42
20:00	355	117	0	112	472	112
21:00	75	48	0	13	123	13
22:00	29	27	0	1	56	1
23:00	17	22	0	1	39	1
TOTAL	**3660**	**4583**	**0**	**1400**	**8243**	**1400**

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Meets warrant criteria on graph for minimum of 4 hours (100% thresholds)? **No (2 hrs)**

Warrant 2 Satisfied? **No**

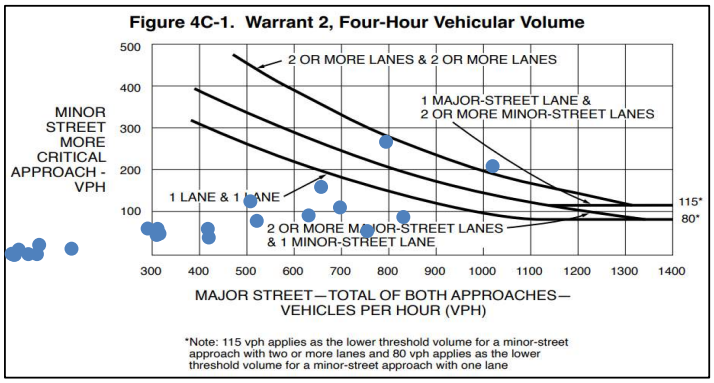
Warrant 2: Four-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	8	6	0	0	14	0
1:00	1	6	0	2	7	2
2:00	8	3	0	0	11	0
3:00	6	6	0	2	12	2
4:00	9	13	0	12	22	12
5:00	38	27	0	23	65	23
6:00	97	196	0	62	293	62
7:00	337	682	0	209	1019	209
8:00	179	344	0	80	523	80
9:00	138	180	0	50	318	50
10:00	140	174	0	61	314	61
11:00	242	416	0	160	658	160
12:00	175	247	0	41	422	41
13:00	223	197	0	61	420	61
14:00	304	328	0	93	632	93
15:00	420	375	0	267	795	267
16:00	311	387	0	112	698	112
17:00	401	430	0	89	831	89
18:00	276	479	0	56	755	56
19:00	128	184	0	47	312	47
20:00	384	125	0	126	509	126
21:00	81	52	0	14	133	14
22:00	31	29	0	1	60	1
23:00	18	24	0	1	42	1
TOTAL	**3955**	**4910**	**0**	**1569**	**8865**	**1569**

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Meets warrant criteria on graph for minimum of 4 hours (100% thresholds)? **No (2 hrs)**

Warrant 2 Satisfied? **No**

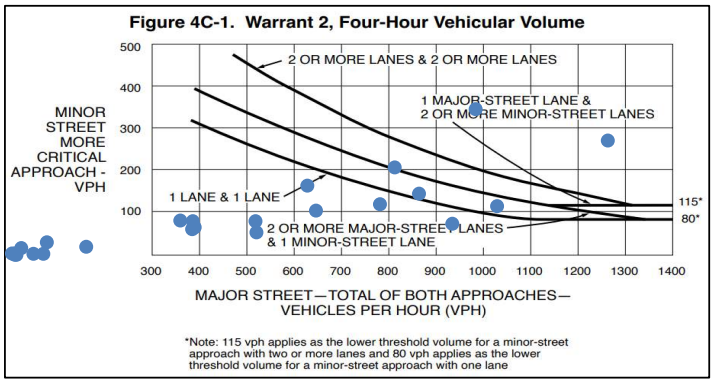
Warrant 2: Four-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	EB	WB	NB	SB		
0:00	10	7	0	0	17	0
1:00	1	7	0	3	8	3
2:00	10	4	0	0	14	0
3:00	7	7	0	3	14	3
4:00	11	16	0	16	27	16
5:00	47	34	0	29	81	29
6:00	120	242	0	81	362	81
7:00	418	843	0	270	1261	270
8:00	222	425	0	104	647	104
9:00	170	222	0	65	392	65
10:00	173	215	0	79	388	79
11:00	299	514	0	206	813	206
12:00	216	306	0	53	522	53
13:00	276	244	0	79	520	79
14:00	377	405	0	119	782	119
15:00	520	463	0	344	983	344
16:00	385	479	0	144	864	144
17:00	497	531	0	115	1028	115
18:00	342	592	0	73	934	73
19:00	159	228	0	60	387	60
20:00	475	154	0	163	629	163
21:00	100	64	0	19	164	19
22:00	39	35	0	2	74	2
23:00	23	30	0	2	53	2
TOTAL	**4897**	**6067**	**0**	**2029**	**10964**	**2029**

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Meets warrant criteria on graph for minimum of 4 hours (100% thresholds)? **Yes (5 hrs)**

Warrant 2 Satisfied? **Yes**

Warrant 3: Peak Hour

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

AM Peak Hour	**7:15 - 8:15 AM**
High Minor Total Stopped Time Delay (hrs)	**4.28**
Total Volume of Major Approaches (vehs)	**959**
High Minor Approach Volume (vehs)	**180**
Total Entering Volume (vehs)	**1139**

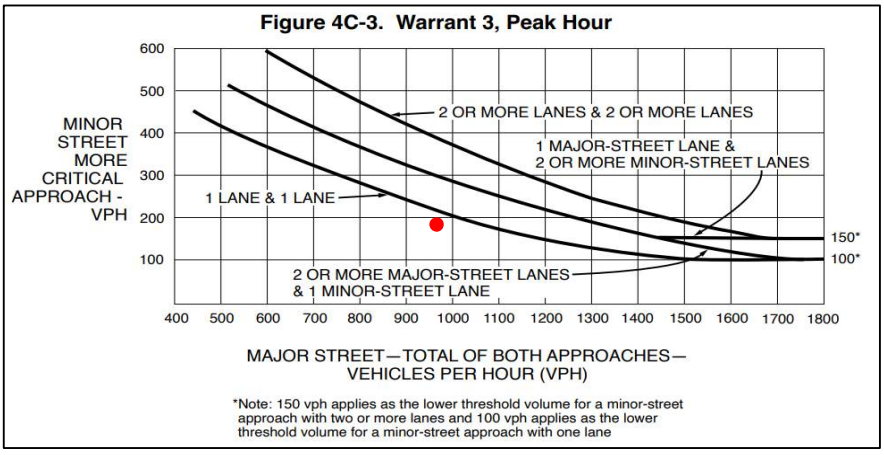
PM Peak Hour	**4:45 - 5:45 PM**
High Minor Total Stopped Time Delay (hrs)	**0.46**
Total Volume of Major Approaches (vehs)	**792**
High Minor Approach Volume (vehs)	**98**
Total Entering Volume (vehs)	**890**

Category A: Peak Period: AM

Total stopped time delay for minor approach > 4 veh-hrs?	**Yes (4.28)**
High minor approach volume > 100 for peak hour?	**Yes (180)**
Total entering volume > 800 for peak hour?	**Yes (1139)**
Category A warrant satisfied?	**Yes**

Category B:

Figure 4C-3. Warrant 3, Peak Hour



Meets warrant criteria on graph for minimum of one hour (100% thresholds)?	**No**
Warrant 3 Satisfied?	**Yes**

Warrant 3: Peak Hour

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

AM Peak Hour	**7:15 - 8:15 AM**
High Minor Total Stopped Time Delay (hrs)	**14.13**
Total Volume of Major Approaches (vehs)	**1082**
High Minor Approach Volume (vehs)	**215**
Total Entering Volume (vehs)	**1297**

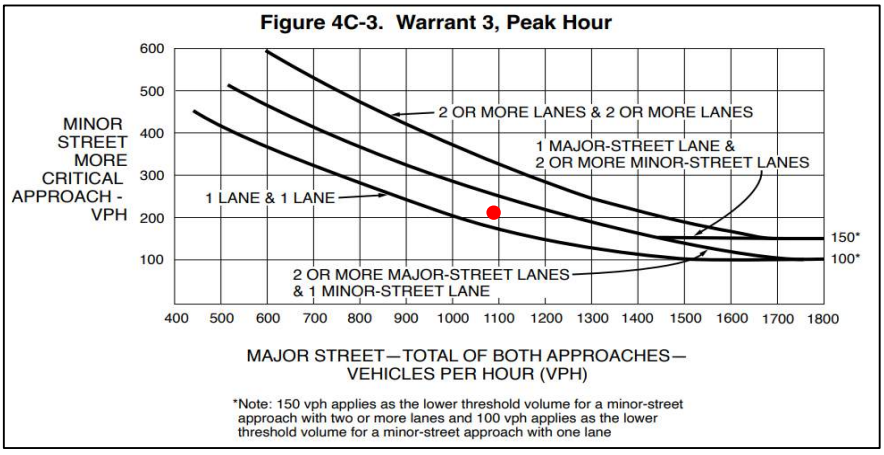
PM Peak Hour	**4:45 - 5:45 PM**
High Minor Total Stopped Time Delay (hrs)	**0.69**
Total Volume of Major Approaches (vehs)	**931**
High Minor Approach Volume (vehs)	**119**
Total Entering Volume (vehs)	**1050**

Category A: Peak Period: AM

Total stopped time delay for minor approach > 4 veh-hrs?	**Yes (14.13)**
High minor approach volume > 100 for peak hour?	**Yes (215)**
Total entering volume > 800 for peak hour?	**Yes (1297)**
Category A warrant satisfied?	**Yes**

Category B:

Figure 4C-3. Warrant 3, Peak Hour



Meets warrant criteria on graph for minimum of one hour (100% thresholds)?	**Yes**
Warrant 3 Satisfied?	**Yes**

Warrant 3: Peak Hour

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

AM Peak Hour	**7:15 - 8:15 AM**
High Minor Total Stopped Time Delay (hrs)	**56.46**
Total Volume of Major Approaches (vehs)	**1305**
High Minor Approach Volume (vehs)	**275**
Total Entering Volume (vehs)	**1580**

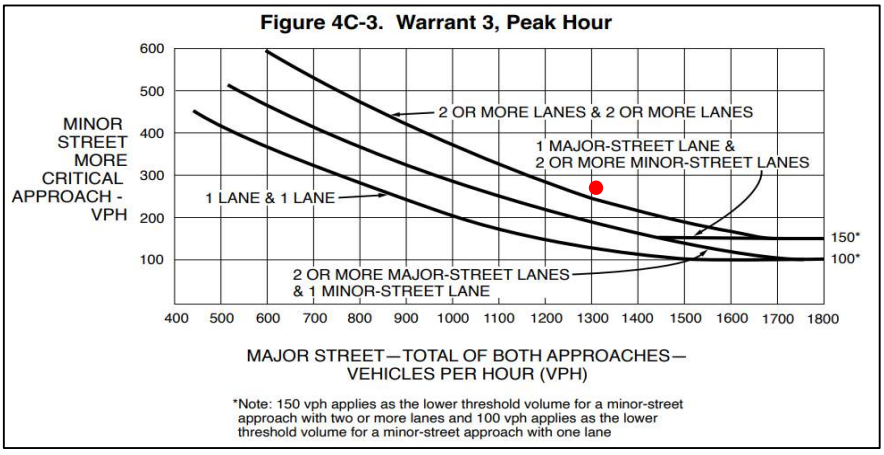
PM Peak Hour	**4:45 - 5:45 PM**
High Minor Total Stopped Time Delay (hrs)	**1.73**
Total Volume of Major Approaches (vehs)	**1186**
High Minor Approach Volume (vehs)	**156**
Total Entering Volume (vehs)	**1342**

Category A: Peak Period: AM

Total stopped time delay for minor approach > 4 veh-hrs?	**Yes (56.46)**
High minor approach volume > 100 for peak hour?	**Yes (275)**
Total entering volume > 800 for peak hour?	**Yes (1580)**
Category A warrant satisfied?	**Yes**

Category B:

Figure 4C-3. Warrant 3, Peak Hour



Meets warrant criteria on graph for minimum of one hour (100% thresholds)?	**Yes**
Warrant 3 Satisfied?	**Yes**

Warrant 4: Pedestrian Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Hour Begin	Major Street Total Traffic	Pedestrian Volume Crossing Major Street
0:00	12	0
1:00	6	0
2:00	10	0
3:00	10	0
4:00	21	0
5:00	61	0
6:00	273	0
7:00	949	3
8:00	487	0
9:00	295	0
10:00	292	0
11:00	612	0
12:00	393	2
13:00	391	0
14:00	587	2
15:00	738	10
16:00	650	0
17:00	772	0
18:00	703	0
19:00	291	0
20:00	472	0
21:00	123	0
22:00	56	0
23:00	39	0
TOTAL	**8,243**	**17**

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume

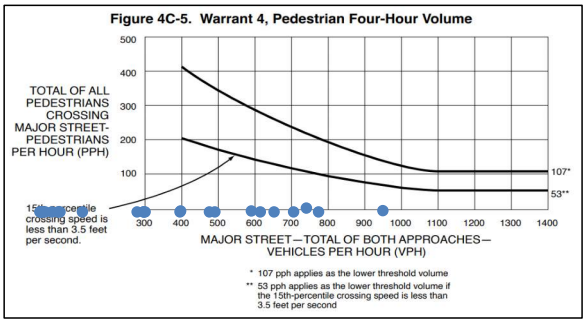
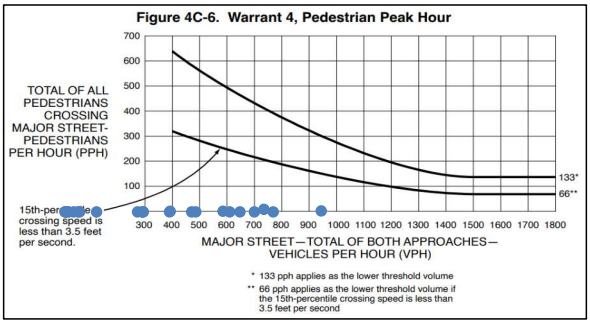


Figure 4C-6. Warrant 4, Pedestrian Peak Hour



For each of any 4 hours of an average day, do the plotted points representing the vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-5? **No**

For 1 hour of an average day, does the plotted point representing vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-6? **No**

Warrant 4 Satisfied? **No**

Warrant 4: Pedestrian Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Hour Begin	Major Street Total Traffic	Pedestrian Volume Crossing Major Street
0:00	14	0
1:00	7	0
2:00	11	0
3:00	12	0
4:00	22	0
5:00	65	0
6:00	293	0
7:00	1019	3
8:00	523	0
9:00	318	0
10:00	314	0
11:00	658	0
12:00	422	2
13:00	420	0
14:00	632	2
15:00	795	10
16:00	698	0
17:00	831	0
18:00	755	0
19:00	312	0
20:00	509	0
21:00	133	0
22:00	60	0
23:00	42	0
TOTAL	**8,865**	**17**

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume

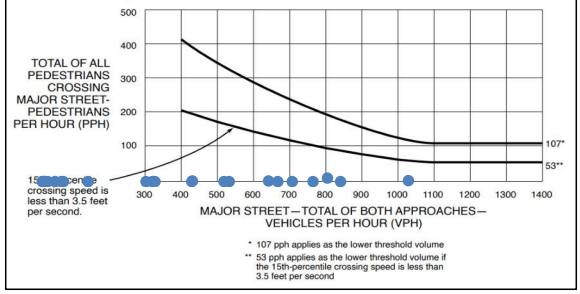
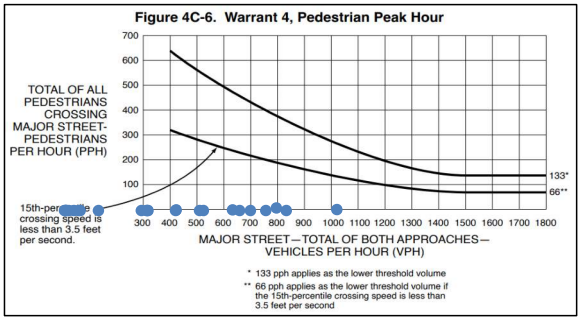


Figure 4C-6. Warrant 4, Pedestrian Peak Hour



For each of any 4 hours of an average day, do the plotted points representing the vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-5? **No**

For 1 hour of an average day, does the plotted point representing vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-6? **No**

Warrant 4 Satisfied? **No**

Warrant 4: Pedestrian Volume

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Hour Begin	Major Street Total Traffic	Pedestrian Volume Crossing Major Street
0:00	17	0
1:00	8	0
2:00	14	0
3:00	14	0
4:00	27	0
5:00	81	0
6:00	362	0
7:00	1261	3
8:00	647	0
9:00	392	0
10:00	388	0
11:00	813	0
12:00	522	2
13:00	520	0
14:00	782	2
15:00	983	10
16:00	864	0
17:00	1028	0
18:00	934	0
19:00	387	0
20:00	629	0
21:00	164	0
22:00	74	0
23:00	53	0
TOTAL	**10,964**	**17**

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume

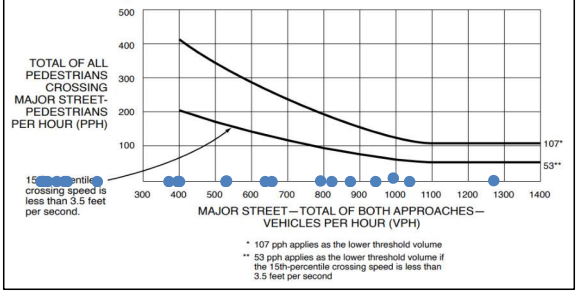
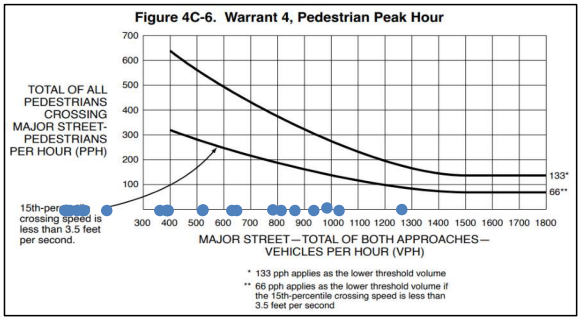


Figure 4C-6. Warrant 4, Pedestrian Peak Hour



For each of any 4 hours of an average day, do the plotted points representing the vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-5? **No**

For 1 hour of an average day, does the plotted point representing vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-6? **No**

Warrant 4 Satisfied? **No**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

Warrant 5: School Crossing

This warrant is intended for application where the fact that school children (elementary through high school students) cross the major street is the principle reason to consider installing a traffic signal. This warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 feet, unless it can be shown that the proposed traffic signal would not restrict the progressive movement of traffic.

Is the number of adequate gaps in the major crossing traffic steam during the primary crossing period less than the number of minutes in that crossing period? **N/A**

Do 20 or more students cross at this location during the highest crossing hour? **No**

Warrant 5 Satisfied? **No**

Warrant 6: Coordinated Signal System

This warrant is intended for application where installation of a traffic signal would help to provide proper platooning of vehicles and therefore provide progressive movement in a coordinated signal system.

Are any adjacent traffic signals located so far away that they do not provide a necessary degree of platooning and/or progressive operation? **No**

Warrant 6 Satisfied? **No**

Warrant 7: Crash Experience

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal

Have adequate trials of alternatives failed to reduce the crash frequency? **N/A**

Have at least one of the following conditions apply to the reported crash history:

1. Do the number of reported angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total angle crashes and pedestrian crashes?
2. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total fatal-and-injury angle crashes and pedestrian crashes?
3. Do the number of reported angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total angle crashes and pedestrian crashes?
4. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total fatal-and-injury angle crashes and pedestrian crashes?

No

Is Condition A criterion met for 80% columns of Warrant 1 met? **No**

Is Condition B criterion met for 80% columns of Warrant 1 met? **No**

Are observed pedestrian volumes equal to or greater than 80% of what is required for Warrant 4? **No**

Warrant 7 Satisfied? **No**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

Warrant 5: School Crossing

This warrant is intended for application where the fact that school children (elementary through high school students) cross the major street is the principle reason to consider installing a traffic signal. This warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 feet, unless it can be shown that the proposed traffic signal would not restrict the progressive movement of traffic.

Is the number of adequate gaps in the major crossing traffic steam during the primary crossing period less than the number of minutes in that crossing period? **N/A**

Do 20 or more students cross at this location during the highest crossing hour? **No**

Warrant 5 Satisfied? **No**

Warrant 6: Coordinated Signal System

This warrant is intended for application where installation of a traffic signal would help to provide proper platooning of vehicles and therefore provide progressive movement in a coordinated signal system.

Are any adjacent traffic signals located so far away that they do not provide a necessary degree of platooning and/or progressive operation? **No**

Warrant 6 Satisfied? **No**

Warrant 7: Crash Experience

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal

Have adequate trials of alternatives failed to reduce the crash frequency? **N/A**

Have at least one of the following conditions apply to the reported crash history:

1. Do the number of reported angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total angle crashes and pedestrian crashes?
2. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total fatal-and-injury angle crashes and pedestrian crashes?
3. Do the number of reported angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total angle crashes and pedestrian crashes?
4. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total fatal-and-injury angle crashes and pedestrian crashes?

No

Is Condition A criterion met for 80% columns of Warrant 1 met? **No**

Is Condition B criterion met for 80% columns of Warrant 1 met? **No**

Are observed pedestrian volumes equal to or greater than 80% of what is required for Warrant 4? **No**

Warrant 7 Satisfied? **No**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

Warrant 5: School Crossing

This warrant is intended for application where the fact that school children (elementary through high school students) cross the major street is the principle reason to consider installing a traffic signal. This warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 feet, unless it can be shown that the proposed traffic signal would not restrict the progressive movement of traffic.

Is the number of adequate gaps in the major crossing traffic steam during the primary crossing period less than the number of minutes in that crossing period? **N/A**

Do 20 or more students cross at this location during the highest crossing hour? **No**

Warrant 5 Satisfied? **No**

Warrant 6: Coordinated Signal System

This warrant is intended for application where installation of a traffic signal would help to provide proper platooning of vehicles and therefore provide progressive movement in a coordinated signal system.

Are any adjacent traffic signals located so far away that they do not provide a necessary degree of platooning and/or progressive operation? **No**

Warrant 6 Satisfied? **No**

Warrant 7: Crash Experience

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal

Have adequate trials of alternatives failed to reduce the crash frequency? **N/A**

Have at least one of the following conditions apply to the reported crash history:

1. Do the number of reported angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total angle crashes and pedestrian crashes?
2. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total fatal-and-injury angle crashes and pedestrian crashes?
3. Do the number of reported angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total angle crashes and pedestrian crashes?
4. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total fatal-and-injury angle crashes and pedestrian crashes?

No

Is Condition A criterion met for 80% columns of Warrant 1 met? **No**

Is Condition B criterion met for 80% columns of Warrant 1 met? **Yes**

Are observed pedestrian volumes equal to or greater than 80% of what is required for Warrant 4? **No**

Warrant 7 Satisfied? **No**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Existing (2025)

Warrant 8: Roadway Network

This warrant is intended for application where installation of a traffic signal could be justified in order to encourage concentration and organization of traffic flow on a roadway network

Do two or more of the intersecting routes at this location have at least one of the following characteristics:

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow; or
B. It includes rural or suburban highways outside, entering, or traversing a City; or
C. It appears as a major route on an official plan.

No

Does this intersection have an existing or immediately projected total entering volume of a least 1000 vehicles during a weekday typical peak hour and have a 5-year projected traffic volume that meets one or more of Warrants 1, 2, and 3 during an average weekday? **Yes**

Does this intersection have an existing or immediately projected total entering volume of at least 1000 vph for each of any 5 hours of a Saturday or Sunday? **N/A**

Warrant 8 Satisfied? **No**

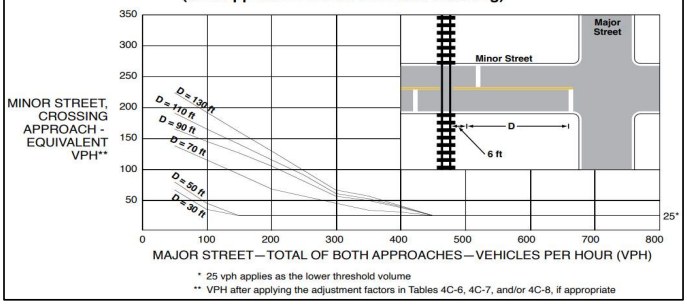
Warrant 9: Intersection Near a Grade Crossing

This warrant is intended for application where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic signal.

Does a grade crossing exist on an approach controlled by a STOP or YIELD sign whereby the center of the track nearest to the intersection is within 140 feet of the stop or yield line?

No

Figure 4C-9. Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)



During the highest traffic volume hour during which the rail traffic uses the crossing, does the plotted point representing vehicles per hour on the major street and the corresponding vehicles per hour on the minor-street approach that crosses the track fall above the applicable curve in Figure 4C-9 or 4C-10 (whichever is applicable) for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance? **N/A**

Warrant 9 Satisfied? **N/A**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	23rd Filing (2029)

Warrant 8: Roadway Network

This warrant is intended for application where installation of a traffic signal could be justified in order to encourage concentration and organization of traffic flow on a roadway network

Do two or more of the intersecting routes at this location have at least one of the following characteristics:

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow; or
B. It includes rural or suburban highways outside, entering, or traversing a City; or
C. It appears as a major route on an official plan.

No

Does this intersection have an existing or immediately projected total entering volume of a least 1000 vehicles during a weekday typical peak hour and have a 5-year projected traffic volume that meets one or more of Warrants 1, 2, and 3 during an average weekday? **Yes**

Does this intersection have an existing or immediately projected total entering volume of at least 1000 vph for each of any 5 hours of a Saturday or Sunday? **N/A**

Warrant 8 Satisfied? **No**

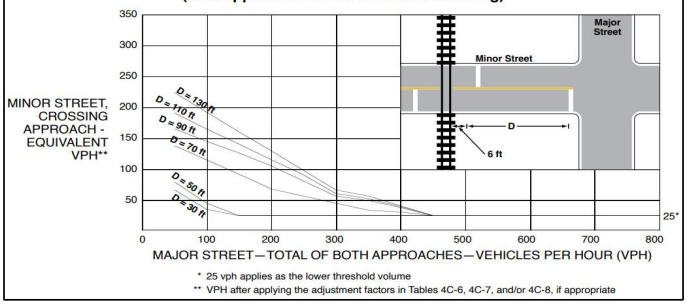
Warrant 9: Intersection Near a Grade Crossing

This warrant is intended for application where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic signal.

Does a grade crossing exist on an approach controlled by a STOP or YIELD sign whereby the center of the track nearest to the intersection is within 140 feet of the stop or yield line?

No

Figure 4C-9. Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)



During the highest traffic volume hour during which the rail traffic uses the crossing, does the plotted point representing vehicles per hour on the major street and the corresponding vehicles per hour on the minor-street approach that crosses the track fall above the applicable curve in Figure 4C-9 or 4C-10 (whichever is applicable) for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance? **N/A**

Warrant 9 Satisfied? **N/A**

General Information

Agency/Company:	Sanbell
Date:	5/23/2025
Project Number:	82061.159
Project Description:	High Sierra Subdivision 23rd Filing and Full Buildout
Jurisdiction:	City of Billings
Major Street Speed Limit:	35
Major Street (Approach Lanes):	Wicks Lane (1 lane)
Minor Street (Approach Lanes):	High Sierra Boulevard (1 lane)
Analysis Year/Case:	Full Buildout (2035)

Warrant 8: Roadway Network

This warrant is intended for application where installation of a traffic signal could be justified in order to encourage concentration and organization of traffic flow on a roadway network

Do two or more of the intersecting routes at this location have at least one of the following characteristics:

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow; or
B. It includes rural or suburban highways outside, entering, or traversing a City; or
C. It appears as a major route on an official plan.

No

Does this intersection have an existing or immediately projected total entering volume of a least 1000 vehicles during a weekday typical peak hour and have a 5-year projected traffic volume that meets one or more of Warrants 1, 2, and 3 during an average weekday? **Yes**

Does this intersection have an existing or immediately projected total entering volume of at least 1000 vph for each of any 5 hours of a Saturday or Sunday? **N/A**

Warrant 8 Satisfied? **No**

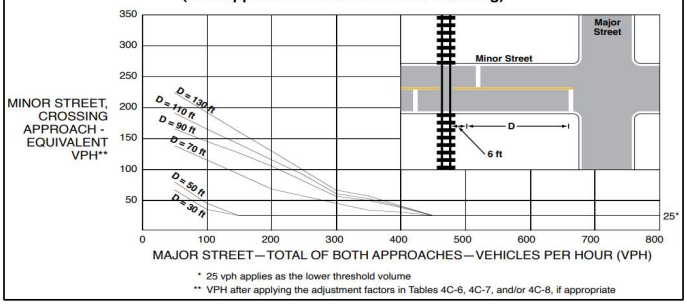
Warrant 9: Intersection Near a Grade Crossing

This warrant is intended for application where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic signal.

Does a grade crossing exist on an approach controlled by a STOP or YIELD sign whereby the center of the track nearest to the intersection is within 140 feet of the stop or yield line?

No

Figure 4C-9. Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)



During the highest traffic volume hour during which the rail traffic uses the crossing, does the plotted point representing vehicles per hour on the major street and the corresponding vehicles per hour on the minor-street approach that crosses the track fall above the applicable curve in Figure 4C-9 or 4C-10 (whichever is applicable) for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance? **N/A**

Warrant 9 Satisfied? **N/A**

CAPACITY CALCULATIONS – IMPROVEMENTS

APPENDIX F

Intelligent Infrastructure.
Enduring Communities.

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Intersection	Approach	Full Buildout with Improvements (2035)					
		AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*All-Way Stop-Control w/ EB LT Lane*					
Wicks Ln & High Sierra Blvd	NB	11.1	B	1	0.0	A	0
	SB	80.3	F	18	13.1	B	2
	EB	14.6	B	3	20.9	C	7
	WB	18.6	C	4	11.5	B	2
	Intersection	42.1	E	--	15.9	C	--
Intersection Control		*All-Way Stop-Control w/ SB LT Lane*					
Wicks Ln & High Sierra Blvd	NB	12.1	B	1	0.0	A	0
	SB	56.0	F	14	14.0	B	2
	EB	23.1	C	5	30.7	D	9
	WB	19.8	C	5	11.8	B	3
	Intersection	34.7	D	--	20.4	C	--
Intersection Control		*All-Way Stop-Control w/ EB and SB LT Lanes*					
Wicks Ln & High Sierra Blvd	NB	11.8	B	1	0.0	A	0
	SB	53.5	F	13	13.7	B	2
	EB	15.5	C	3	21.6	C	7
	WB	20.2	C	5	11.7	B	3
	Intersection	32.4	D	--	16.4	C	--
Intersection Control		*Single-Lane Roundabout*					
Wicks Ln & High Sierra Blvd	NB	5.9	A	0	5.3	A	0
	SB	12.3	B	5	5.4	A	1
	EB	8.6	A	2	8.0	A	3
	WB	8.7	A	4	5.8	A	2
	Intersection	10.1	B	--	6.7	A	--
Intersection Control		*Signalized*					
Wicks Ln & High Sierra Blvd	NB	11.1	B	1	0.0	A	0
	SB	24.6	C	14	15.0	B	4
	EB	23.9	C	9	15.5	B	9
	WB	14.3	B	6	10.1	B	4
	Intersection	20.8	C	--	13.7	B	--
Intersection Control		*Single-Lane Roundabout*					
Wicks Ln & Fantan St	SB	18.5	C	5	6.4	A	1
	EB	17.4	C	7	8.0	A	3
	WB	18.8	C	12	9.3	A	4
	Intersection	18.3	C	--	8.5	A	--
Intersection Control		*Signalized*					
Wicks Ln & Fantan St	SB	18.5	C	5	15.5	B	3
	EB	17.4	C	7	14.3	B	9
	WB	18.8	C	12	12.9	B	9
	Intersection	18.3	C	--	13.8	B	--
Intersection Control		*Signalized - SB LT Lane w/ Prot/Perm Phase*					
Wicks Ln & Lake Hills Dr	NB	30.7	C	8	21.0	B	3
	SB	18.6	B	4	13.7	B	2
	EB	18.8	B	14	10.7	B	8
	WB	20.5	C	14	11.3	B	8
	Intersection	21.0	C	--	12.1	B	--
Intersection Control		*Signalized - Removed EB LT Prot/Perm Phase*					
Wicks Ln & St Andrews Dr	SB	22.2	C	6	32.2	C	6
	EB	14.3	B	12	8.6	A	9
	WB	9.0	A	8	12.9	B	15
	Intersection	13.4	B	--	12.9	B	--

Option 3: Roundabout

Number	33					
Intersection	Wicks Ln & Fantan St					
Control Type	Roundabout					
Analysis Method	HCM 7th Edition					
Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Base Volume Input [veh/h]	254	21	2	437	536	330
Total Analysis Volume [veh/h]	385	32	3	662	705	434

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	716		399		3	
Exiting Flow Rate [veh/h]	442		748		1065	
Demand Flow Rate [veh/h]	254	21	2	437	536	330
Adjusted Demand Flow Rate [veh/h]	385	32	3	662	705	434

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102
HV Adjustment Factor	0.97	0.99	0.99
Entry Flow Rate [veh/h]	431	670	1155
Capacity of Entry and Bypass Lanes [veh/h]	666	919	1376
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	644	913	1357
X, volume / capacity	0.65	0.73	0.84

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	18.52	17.41	18.75
Lane LOS	C	C	C
95th-Percentile Queue Length [veh]	4.73	6.64	11.13
95th-Percentile Queue Length [ft]	118.20	165.98	278.24
Approach Delay [s/veh]	18.52	17.41	18.75
Approach LOS	C	C	C
Intersection Delay [s/veh]	18.31		
Intersection LOS	C		

Option 4: Signalized

Number	33					
Intersection	Wicks Ln & Fantan St					
Control Type	Signalized					
Analysis Method	HCM 7th Edition					
Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Base Volume Input [veh/h]	254	21	2	437	536	330
Total Analysis Volume [veh/h]	385	15	3	662	705	217

Intersection Settings

Cycle Length [s]	70					
Active Pattern	Pattern 1					
Coordination Type	Time of Day Pattern Coordinated					
Actuation Type	Fully actuated					
Lost time [s]	0.00					
Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	7	0	0	2	6	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	10	10	0
Maximum Green [s]	31	0	0	31	31	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	35	0	0	35	35	0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	7	0	0	10	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

g / C, Green / Cycle	0.30	0.59	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.27	0.43	0.45	0.16
so, Base Saturation Flow per Lane [pc/h/ln]	1750	1750	1750	1750
Arrival type	3	3	3	
s, saturation flow rate [veh/h]	1493	1558	1556	1326
c, Capacity [veh/h]	446	966	914	778
X, volume / capacity	0.90	0.69	0.77	0.28
d, Delay for Lane Group [s/veh]	32.93	14.37	17.19	8.03

Lane Group LOS	C	B	B	A
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.18	6.73	7.91	1.46
50th-Percentile Queue Length [ft/ln]	179.41	168.36	197.64	36.59
95th-Percentile Queue Length [veh/ln]	11.57	10.99	12.52	2.63
95th-Percentile Queue Length [ft/ln]	289.25	274.76	312.93	65.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.93	32.93	14.37	14.37	17.19	8.03
Movement LOS	C	C	B	B	B	A
Critical Movement	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	32.93		14.37		15.03	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	18.41					
Intersection LOS	B					
Intersection V/C	0.721					

Option 2: AWSC EB LT Lane

Number	29											
Intersection	Wicks Ln & High Sierra Blvd											
Control Type	All-way stop											
Analysis Method	HCM 7th Edition											
Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	1	0	0	281	0	88	79	145	0	1	275	285
Total Analysis Volume [veh/h]	1	0	0	468	0	147	111	204	0	1	309	320

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	445	615	453	485	510	562

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	11.11	80.34	13.22	15.42	20.08	17.23
95th-Percentile Queue Length [veh]	0.01	17.70	0.95	2.06	4.00	3.55
95th-Percentile Queue Length [ft]	0.17	442.51	23.84	51.48	100.11	88.71
Approach Delay [s/veh]	11.11	80.34	14.64		18.63	
Approach LOS	B	F	B		C	
Intersection Delay [s/veh]	42.13					
Intersection LOS	E					

Option 3: AWSC EB and SB LT Lanes

Number	29											
Intersection	Wicks Ln & High Sierra Blvd											
Control Type	All-way stop											
Analysis Method	HCM 7th Edition											
Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	1	0	0	281	0	88	79	145	0	1	275	285
Total Analysis Volume [veh/h]	1	0	0	468	0	147	111	204	0	1	309	320

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	409	472	563	433	463	490	540

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	11.84	66.73	11.34	13.87	16.45	21.82	18.61
95th-Percentile Queue Length [veh]	0.01	12.99	1.04	1.01	2.21	4.33	3.83
95th-Percentile Queue Length [ft]	0.18	324.85	25.99	25.25	55.28	108.16	95.79
Approach Delay [s/veh]	11.84	53.49		15.54		20.19	
Approach LOS	B	F		C		C	
Intersection Delay [s/veh]	32.37						
Intersection LOS	D						

Option 4: Roundabout

Number	29											
Intersection	Wicks Ln & High Sierra Blvd											
Control Type	Roundabout											
Analysis Method	HCM 7th Edition											
Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	1	0	0	281	0	88	79	145	0	1	275	285
Total Analysis Volume [veh/h]	1	0	0	468	0	147	111	204	0	1	309	320

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	790			311			474			114		
Exiting Flow Rate [veh/h]	1			442			457			677		
Demand Flow Rate [veh/h]	1	0	0	281	0	88	79	145	0	1	275	285
Adjusted Demand Flow Rate [veh/h]	1	0	0	468	0	147	111	204	0	1	309	320

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	1.00	0.99	0.99	0.99
Entry Flow Rate [veh/h]	1	621	317	639
Capacity of Entry and Bypass Lanes [veh/h]	617	1005	851	1229
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	617	997	846	1213
X, volume / capacity	0.00	0.62	0.37	0.52

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	5.86	12.34	8.62	8.74
Lane LOS	A	B	A	A
95th-Percentile Queue Length [veh]	0.00	4.42	1.73	3.11
95th-Percentile Queue Length [ft]	0.12	110.62	43.37	77.82
Approach Delay [s/veh]	5.86	12.34	8.62	8.74
Approach LOS	A	B	A	A
Intersection Delay [s/veh]	10.13			
Intersection LOS	B			

Option 5: Signalized

Number	29											
Intersection	Wicks Ln & High Sierra Blvd											
Control Type	Signalized											
Analysis Method	HCM 7th Edition											
Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	1	0	0	281	0	88	79	145	0	1	275	285
Total Analysis Volume [veh/h]	1	0	0	468	0	73	111	204	0	1	309	160

Intersection Settings

Cycle Length [s]	70											
Active Pattern	Pattern 1											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Fully actuated											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	7	4	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	5	10	0	5	10	0	0	10	0
Maximum Green [s]	0	15	0	10	28	0	10	24	0	0	24	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	42	0	22	42	0	9	28	0	0	28	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	7	0	0	10	0
Delayed Vehicle Green [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
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.44	0.44	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.00	0.41	0.33	0.20	0.12
so, Base Saturation Flow per Lane [pc/h/ln]	1750	1750	1750	1750	1750
Arrival type	3	3	3	3	
s, saturation flow rate [veh/h]	1357	1316	952	1575	1310
c, Capacity [veh/h]	695	671	497	759	588
X, volume / capacity	0.00	0.81	0.63	0.41	0.27
d, Delay for Lane Group [s/veh]	11.11	24.56	23.89	14.85	13.23

Lane Group LOS	B	C	C	B	B
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.01	8.68	4.86	3.28	1.57
50th-Percentile Queue Length [ft/ln]	0.21	216.99	121.52	81.95	39.30
95th-Percentile Queue Length [veh/ln]	0.02	13.51	8.48	5.90	2.83
95th-Percentile Queue Length [ft/ln]	0.38	337.78	211.91	147.52	70.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.11	11.11	11.11	24.56	24.56	24.56	23.89	23.89	23.89	14.85	14.85	13.23
Movement LOS	B	B	B	C	C	C	C	C	C	B	B	B
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	11.11			24.56			23.89			14.30		
Approach LOS	B			C			C			B		
d_I, Intersection Delay [s/veh]	20.76											
Intersection LOS	C											
Intersection V/C	0.742											

Option 6: SB LT Lane

Number	29											
Intersection	Wicks Ln & High Sierra Blvd											
Control Type	All-way stop											
Analysis Method	HCM 7th Edition											
Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	1	0	0	281	0	88	79	145	0	1	275	285
Total Analysis Volume [veh/h]	1	0	0	468	0	147	111	204	0	1	309	320

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	399	468	557	485	496	545

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	12.05	70.04	11.48	23.14	21.28	18.26
95th-Percentile Queue Length [veh]	0.01	13.33	1.06	4.57	4.23	3.76
95th-Percentile Queue Length [ft]	0.19	333.22	26.38	114.30	105.72	94.05
Approach Delay [s/veh]	12.05	56.04		23.14	19.75	
Approach LOS	B	F		C	C	
Intersection Delay [s/veh]	34.73					
Intersection LOS	D					

Option 1: SB LT Lane w/ Prot/Perm Phase

Number	41											
Intersection	Wicks Ln & Lake Hills Dr/Nutter Blvd											
Control Type	Signalized											
Analysis Method	HCM 7th Edition											
Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	165	45	102	143	166	9	1	573	174	71	563	61
Total Analysis Volume [veh/h]	179	49	55	155	180	4	1	623	95	77	612	33

Intersection Settings

Cycle Length [s]	90											
Active Pattern	Free Running											
Coordination Type	*Free Running*											
Actuation Type	*Fully actuated*											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	0	50	0	6	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.5	0.0	3.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.0	1.2	0.0	1.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0
Split [s]	0	45	0	9	55	0	0	14	0	0	14	0
Walk [s]	0	8	0	0	8	0	0	15	0	0	15	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			Yes			Yes	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.41	0.41	0.41	0.41	0.47	0.47	0.47	0.47	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.22	0.04	0.12	0.11	0.00	0.36	0.06	0.10	0.35	0.02
so, Base Saturation Flow per Lane [pc/h/ln]	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Arrival type	3		3		3			3		
s, saturation flow rate [veh/h]	1024	1445	1279	1743	798	1718	1469	745	1728	1488
c, Capacity [veh/h]	501	591	284	713	218	810	692	202	815	701
X, volume / capacity	0.46	0.09	0.55	0.26	0.00	0.77	0.14	0.38	0.75	0.05
d, Delay for Lane Group [s/veh]	22.20	14.33	33.88	15.53	27.84	19.23	11.81	32.97	18.68	11.24

Lane Group LOS	C	B	C	B	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	3.51	0.61	2.93	2.14	0.02	8.70	0.87	1.40	8.38	0.29
50th-Percentile Queue Length [ft/ln]	87.72	15.23	73.21	53.59	0.39	217.47	21.84	34.92	209.45	7.25
95th-Percentile Queue Length [veh/ln]	6.32	1.10	5.27	3.86	0.03	13.54	1.57	2.51	13.12	0.52
95th-Percentile Queue Length [ft/ln]	157.90	27.42	131.77	96.46	0.71	338.39	39.32	62.85	328.12	13.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.20	22.20	14.33	33.88	15.53	15.53	27.84	19.23	11.81	32.97	18.68	11.24
Movement LOS	C	C	B	C	B	B	C	B	B	C	B	B
Critical Movement	No	No	No	Yes	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	20.67			23.92			18.26			19.87		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	20.08											
Intersection LOS	C											
Intersection V/C	0.585											

Option 3: Roundabout

Number	33					
Intersection	Wicks Ln & Fantan St					
Control Type	Roundabout					
Analysis Method	HCM 7th Edition					
Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Base Volume Input [veh/h]	143	13	14	522	422	228
Total Analysis Volume [veh/h]	144	13	14	533	508	275

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	515		144		14	
Exiting Flow Rate [veh/h]	293		528		681	
Demand Flow Rate [veh/h]	143	13	14	522	422	228
Adjusted Demand Flow Rate [veh/h]	144	13	14	533	508	275

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102
HV Adjustment Factor	1.00	0.99	0.99
Entry Flow Rate [veh/h]	157	552	794
Capacity of Entry and Bypass Lanes [veh/h]	817	1192	1361
Pedestrian Impedance	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	817	1183	1342
X, volume / capacity	0.19	0.46	0.58

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	6.42	7.95	9.29
Lane LOS	A	A	A
95th-Percentile Queue Length [veh]	0.71	2.50	3.98
95th-Percentile Queue Length [ft]	17.72	62.60	99.45
Approach Delay [s/veh]	6.42	7.95	9.29
Approach LOS	A	A	A
Intersection Delay [s/veh]	8.49		
Intersection LOS	A		

Option 4: Signalized

Number	33					
Intersection	Wicks Ln & Fantan St					
Control Type	Signalized					
Analysis Method	HCM 7th Edition					
Name	Fantan Street		West Wicks Lane		West Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Base Volume Input [veh/h]	143	13	14	522	422	228
Total Analysis Volume [veh/h]	144	6	14	533	508	137

Intersection Settings

Cycle Length [s]	60					
Active Pattern	Pattern 1					
Coordination Type	Time of Day Pattern Coordinated					
Actuation Type	Fixed time					
Lost time [s]	0.00					
Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	7	0	0	2	6	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	10	10	0
Maximum Green [s]	21	0	0	31	31	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	25	0	0	35	35	0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	7	0	0	10	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

g / C, Green / Cycle	0.35	0.52	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.10	0.35	0.33	0.10
so, Base Saturation Flow per Lane [pc/h/ln]	1750	1750	1750	1750
Arrival type	3	3	3	
s, saturation flow rate [veh/h]	1493	1549	1558	1324
c, Capacity [veh/h]	522	862	805	684
X, volume / capacity	0.29	0.63	0.63	0.20
d, Delay for Lane Group [s/veh]	15.47	14.33	14.14	8.48

Lane Group LOS	B	B	B	A
Critical Lane Group	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.56	5.01	4.56	0.88
50th-Percentile Queue Length [ft/ln]	39.09	125.23	114.12	22.02
95th-Percentile Queue Length [veh/ln]	2.81	8.68	8.07	1.59
95th-Percentile Queue Length [ft/ln]	70.37	216.99	201.72	39.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.47	15.47	14.33	14.33	14.14	8.48
Movement LOS	B	B	B	B	B	A
Critical Movement	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	15.47		14.33		12.94	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	13.79					
Intersection LOS	B					
Intersection V/C	0.454					

Option 2: AWSC w/ EB LT Lane

Number	29											
Intersection	Wicks Ln & High Sierra Blvd											
Control Type	All-way stop											
Analysis Method	HCM 7th Edition											
Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	142	0	27	46	396	0	0	243	176
Total Analysis Volume [veh/h]	0	0	0	195	0	37	52	445	0	0	248	180

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	534	587	568	616	605	684

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	9.74	13.08	9.67	22.26	12.75	9.84
95th-Percentile Queue Length [veh]	0.00	1.88	0.30	6.08	2.00	1.05
95th-Percentile Queue Length [ft]	0.00	47.00	7.52	152.01	49.98	26.36
Approach Delay [s/veh]	0.00	13.08	20.94		11.52	
Approach LOS	A	B	C		B	
Intersection Delay [s/veh]	15.88					
Intersection LOS	C					

Option 3: AWSC EB and SB LT Lanes

Number	29											
Intersection	Wicks Ln & High Sierra Blvd											
Control Type	All-way stop											
Analysis Method	HCM 7th Edition											
Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	142	0	27	46	396	0	0	243	176
Total Analysis Volume [veh/h]	0	0	0	195	0	37	52	445	0	0	248	180

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	490	497	595	562	609	597	674

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	10.36	14.57	9.15	9.76	23.01	12.96	9.98
95th-Percentile Queue Length [veh]	0.00	1.85	0.20	0.30	6.25	2.04	1.07
95th-Percentile Queue Length [ft]	0.00	46.28	4.96	7.61	156.36	50.98	26.87
Approach Delay [s/veh]	0.00	13.71		21.63		11.71	
Approach LOS	A	B		C		B	
Intersection Delay [s/veh]	16.37						
Intersection LOS	C						

Option 4: Roundabout

Number	29											
Intersection	Wicks Ln & High Sierra Blvd											
Control Type	Roundabout											
Analysis Method	HCM 7th Edition											
Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	142	0	27	46	396	0	0	243	176
Total Analysis Volume [veh/h]	0	0	0	195	0	37	52	445	0	0	248	180

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	696			251			195			52		
Exiting Flow Rate [veh/h]	0			236			288			644		
Demand Flow Rate [veh/h]	0	0	0	142	0	27	46	396	0	0	243	176
Adjusted Demand Flow Rate [veh/h]	0	0	0	195	0	37	52	445	0	0	248	180

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	1.00	1.00	0.99	0.99
Entry Flow Rate [veh/h]	0	232	502	435
Capacity of Entry and Bypass Lanes [veh/h]	679	1069	1132	1309
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	679	1069	1122	1290
X, volume / capacity	0.00	0.22	0.44	0.33

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	5.31	5.39	7.96	5.83
Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.83	2.32	1.47
95th-Percentile Queue Length [ft]	0.00	20.64	58.00	36.77
Approach Delay [s/veh]	5.31	5.39	7.96	5.83
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	6.66			
Intersection LOS	A			

Option 5: Signalized

Number	29											
Intersection	Wicks Ln & High Sierra Blvd											
Control Type	Signalized											
Analysis Method	HCM 7th Edition											
Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	142	0	27	46	396	0	0	243	176
Total Analysis Volume [veh/h]	0	0	0	195	0	18	52	445	0	0	248	90

Intersection Settings

Cycle Length [s]	60											
Active Pattern	Pattern 1											
Coordination Type	Time of Day Pattern Coordinated											
Actuation Type	Fixed time											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	23	0	0	23	0	0	29	0	0	29	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	27	0	0	27	0	0	33	0	0	33	0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	7	0	0	10	0
Delayed Vehicle Green [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
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.38	0.38	0.48	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.00	0.16	0.33	0.16	0.07
so, Base Saturation Flow per Lane [pc/h/ln]	1750	1750	1750	1750	1750
Arrival type	3	3	3	3	
s, saturation flow rate [veh/h]	1575	1318	1501	1561	1317
c, Capacity [veh/h]	664	620	792	815	636
X, volume / capacity	0.00	0.34	0.63	0.30	0.14
d, Delay for Lane Group [s/veh]	0.00	14.96	15.51	10.48	9.06

Lane Group LOS	A	B	B	B	A
Critical Lane Group	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.00	2.18	4.83	1.84	0.61
50th-Percentile Queue Length [ft/ln]	0.00	54.46	120.82	46.00	15.34
95th-Percentile Queue Length [veh/ln]	0.00	3.92	8.44	3.31	1.10
95th-Percentile Queue Length [ft/ln]	0.00	98.03	210.96	82.79	27.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	14.96	14.96	14.96	15.51	15.51	15.51	10.48	10.48	9.06
Movement LOS	A	A	A	B	B	B	B	B	B	B	B	A
Critical Movement	No	No	No	No	No	No	No	Yes	No	No	No	No
d_A, Approach Delay [s/veh]	0.00			14.96			15.51			10.11		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	13.65											
Intersection LOS	B											
Intersection V/C	0.493											

Option 6: SB LT Lane

Number	29											
Intersection	Wicks Ln & High Sierra Blvd											
Control Type	All-way stop											
Analysis Method	HCM 7th Edition											
Name	High Sierra Boulevard			High Sierra Boulevard			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	142	0	27	46	396	0	0	243	176
Total Analysis Volume [veh/h]	0	0	0	195	0	37	52	445	0	0	248	180

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	471	487	583	604	592	669

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	10.65	14.94	9.29	30.65	13.09	10.06
95th-Percentile Queue Length [veh]	0.00	1.90	0.20	8.50	2.06	1.09
95th-Percentile Queue Length [ft]	0.00	47.61	5.07	212.58	51.57	27.15
Approach Delay [s/veh]	0.00	14.04		30.65	11.81	
Approach LOS	A	B		D	B	
Intersection Delay [s/veh]	20.35					
Intersection LOS	C					

Option 1: Removed EB LT Prot/Perm Phase

Number	45					
Intersection	Wicks Ln & St Andrews Dr					
Control Type	Signalized					
Analysis Method	HCM 7th Edition					
Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Base Volume Input [veh/h]	251	91	33	866	736	86
Total Analysis Volume [veh/h]	273	49	36	941	800	47

Intersection Settings

Cycle Length [s]	90					
Active Pattern	Free Running					
Coordination Type	*Free Running*					
Actuation Type	*Fully actuated*					
Lost time [s]	0.00					
Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	7	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	3	0	3	20	20	0
Maximum Green [s]	50	0	12	50	50	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.5	0.0	1.5	1.5	1.5	0.0
Split [s]	14	0	9	14	14	0
Walk [s]	7	0	5	5	8	0
Pedestrian Clearance [s]	16	0	10	10	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No			Yes	Yes	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

g / C, Green / Cycle	0.21	0.21	0.59	0.59	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.17	0.03	0.06	0.55	0.46	0.03
so, Base Saturation Flow per Lane [pc/h/ln]	1750	1750	1750	1750	1750	1750
Arrival type	3		3		3	
s, saturation flow rate [veh/h]	1642	1456	635	1718	1721	1445
c, Capacity [veh/h]	347	307	270	1022	1023	859
X, volume / capacity	0.79	0.16	0.13	0.92	0.78	0.05
d, Delay for Lane Group [s/veh]	23.20	16.81	17.49	14.18	9.25	4.40

Lane Group LOS	C	B	B	B	A	A
Critical Lane Group	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.20	0.46	0.33	6.93	4.38	0.14
50th-Percentile Queue Length [ft/ln]	79.95	11.41	8.29	173.37	109.54	3.41
95th-Percentile Queue Length [veh/ln]	5.76	0.82	0.60	11.25	7.81	0.25
95th-Percentile Queue Length [ft/ln]	143.92	20.53	14.92	281.33	195.37	6.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.20	16.81	17.49	14.18	9.25	4.40
Movement LOS	C	B	B	B	A	A
Critical Movement	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	22.23		14.30		8.98	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	13.39					
Intersection LOS	B					
Intersection V/C	0.714					

Option 1: SB LT Lane w/ Prot/Perm Phasing

Number	41											
Intersection	Wicks Ln & Lake Hills Dr/Nutter Blvd											
Control Type	Signalized											
Analysis Method	HCM 7th Edition											
Name	Nutter Boulevard			Lake Hills Drive			West Wicks Lane			West Wicks Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	53	60	59	95	29	4	2	585	56	63	596	162
Total Analysis Volume [veh/h]	58	65	32	103	32	2	2	636	30	68	648	88

Intersection Settings

Cycle Length [s]	90											
Active Pattern	Free Running											
Coordination Type	*Free Running*											
Actuation Type	*Fully actuated*											
Lost time [s]	0.00											
Control Type	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	0	50	0	5	50	0	0	50	0	0	50	0
Amber [s]	0.0	3.5	0.0	3.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.0	1.2	0.0	1.0	1.2	0.0	0.0	1.2	0.0	0.0	1.2	0.0
Split [s]	0	14	0	9	14	0	0	14	0	0	14	0
Walk [s]	0	8	0	0	8	0	0	15	0	0	15	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [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
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No		No	No			Yes			Yes	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			Yes			Yes	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.16	0.16	0.31	0.31	0.51	0.51	0.51	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.09	0.02	0.07	0.02	0.00	0.37	0.02	0.09	0.37	0.06
so, Base Saturation Flow per Lane [pc/h/ln]	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Arrival type	3		3		3			3		
s, saturation flow rate [veh/h]	1446	1488	1446	1664	733	1733	1488	782	1736	1488
c, Capacity [veh/h]	305	233	540	512	277	892	765	293	893	765
X, volume / capacity	0.40	0.14	0.19	0.07	0.01	0.71	0.04	0.23	0.73	0.11
d, Delay for Lane Group [s/veh]	21.44	19.43	13.89	12.98	17.28	10.90	6.37	18.90	11.07	6.68

Lane Group LOS	C	B	B	B	B	B	A	B	B	A
Critical Lane Group	No	Yes	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.42	0.34	0.85	0.27	0.02	4.28	0.13	0.67	4.41	0.39
50th-Percentile Queue Length [ft/ln]	35.44	8.52	21.32	6.68	0.46	106.95	3.17	16.83	110.29	9.69
95th-Percentile Queue Length [veh/ln]	2.55	0.61	1.54	0.48	0.03	7.67	0.23	1.21	7.86	0.70
95th-Percentile Queue Length [ft/ln]	63.79	15.34	38.38	12.02	0.82	191.75	5.70	30.30	196.40	17.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.44	21.44	19.43	13.89	12.98	12.98	17.28	10.90	6.37	18.90	11.07	6.68
Movement LOS	C	C	B	B	B	B	B	B	A	B	B	A
Critical Movement	No	Yes	No	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	21.02			13.66			10.72			11.25		
Approach LOS	C			B			B			B		
d_I, Intersection Delay [s/veh]	12.10											
Intersection LOS	B											
Intersection V/C	0.445											

Option 1: Removed EB LT Prot/Perm Phasing

Number	45					
Intersection	Wicks Ln & St Andrews Dr					
Control Type	Signalized					
Analysis Method	HCM 7th Edition					
Name	St Andrews Drive		West Wicks Lane		Wicks Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Base Volume Input [veh/h]	175	39	54	805	1001	339
Total Analysis Volume [veh/h]	190	21	59	875	1088	184

Intersection Settings

Cycle Length [s]	90					
Active Pattern	Free Running					
Coordination Type	*Free Running*					
Actuation Type	*Fully actuated*					
Lost time [s]	0.00					
Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	7	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	3	20	20	0
Maximum Green [s]	50	0	12	50	50	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.5	0.0	1.5	1.5	1.5	0.0
Split [s]	54	0	9	14	14	0
Walk [s]	7	0	5	5	8	0
Pedestrian Clearance [s]	16	0	10	10	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No			Yes	Yes	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

g / C, Green / Cycle	0.15	0.15	0.70	0.70	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.11	0.01	0.13	0.50	0.63	0.12
so, Base Saturation Flow per Lane [pc/h/ln]	1750	1750	1750	1750	1750	1750
Arrival type	3		3		3	
s, saturation flow rate [veh/h]	1667	1488	442	1743	1740	1488
c, Capacity [veh/h]	242	216	189	1228	1226	1048
X, volume / capacity	0.78	0.10	0.31	0.71	0.89	0.18
d, Delay for Lane Group [s/veh]	33.01	24.90	26.66	7.36	14.54	3.40

Lane Group LOS	C	C	C	A	B	A
Critical Lane Group	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.19	0.29	0.87	4.65	9.14	0.52
50th-Percentile Queue Length [ft/ln]	79.82	7.30	21.70	116.29	228.48	12.93
95th-Percentile Queue Length [veh/ln]	5.75	0.53	1.56	8.19	14.10	0.93
95th-Percentile Queue Length [ft/ln]	143.67	13.13	39.07	204.72	352.42	23.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.01	24.90	26.66	7.36	14.54	3.40
Movement LOS	C	C	C	A	B	A
Critical Movement	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	32.20		8.58		12.93	
Approach LOS	C		A		B	
d_I, Intersection Delay [s/veh]	12.93					
Intersection LOS	B					
Intersection V/C	0.739					

FINANCIAL CONTRIBUTION CALCULATIONS

APPENDIX G

Intelligent Infrastructure.
Enduring Communities.

sanbell

23rd Filing - Intersection: Annandale Road & Riveroaks Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	0
	L		0		0	0
SB	T		0		0	0
	L		0		0	1
EB	T	8	8	6	6	1
	L	1	1	1	1	1
WB	T	3	3	8	8	1
	L		0		0	0
Critical Lane Sum Increase:			**8**		**9**	
Critical Lane Sum:			**1140**		**1140**	
Peak Hour %:			**0.70%**		**0.79%**	
Highest %:			**0.79%**			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

23rd Filing - Intersection: Annandale Road & St Andrews Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	1
	L	3	3	10	10	1
SB	T		0		0	1
	L		0		0	0
EB	T		0		0	0
	L		0		0	1
WB	T		0		0	0
	L		0		0	0
Critical Lane Sum Increase:			3		10	
Critical Lane Sum:			1140		1140	
Peak Hour %:			0.26%		0.88%	
Highest %:			0.88%			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

23rd Filing - Intersection: Sierra Granda Boulevard & High Sierra Boulevard

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T	1	1	1	1	1
	L		0		0	1
SB	T	1	1	1	1	1
	L		0		0	1
EB	T		0		0	1
	L	0	0	1	1	1
WB	T		0		0	1
	L		0		0	1
Critical Lane Sum Increase:			1		2	
Critical Lane Sum:			1200		1200	
Peak Hour %:			0.08%		0.17%	
Highest %:			0.17%			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

23rd Filing - Intersection: Sierra Granda Boulevard & Gleneagles Boulevard

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T	2	2	7	7	1
	L		0		0	1
SB	T	6	6	4	4	1
	L		0		0	0
EB	T		0		0	0
	L		0		0	1
WB	T		0		0	0
	L		0		0	0
Critical Lane Sum Increase:			6		7	
Critical Lane Sum:			1140		1140	
Peak Hour %:			0.53%		0.61%	
Highest %:			0.61%			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

23rd Filing - Intersection: Alkali Creek Road & Skyway Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	1
	L		0		0	1
SB	T		0		0	1
	L		0		0	1
EB	T	1	1	3	3	1
	L		0		0	1
WB	T	3	3	2	2	1
	L		0		0	1
Critical Lane Sum Increase:			3		3	
Critical Lane Sum:			1200		1200	
Peak Hour %:			0.25%		0.25%	
Highest %:			0.25%			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

23rd Filing - Intersection: Wicks Lane & Skyway Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	0
	L		0		0	0
SB	T		0		0	0
	L		0		0	1
EB	T	1	1	2	2	1
	L	0	0	1	1	1
WB	T	2	2	2	2	1
	L		0		0	0
Critical Lane Sum Increase:			2		3	
Critical Lane Sum:			1140		1140	
Peak Hour %:			0.18%		0.26%	
Highest %:			0.26%			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

23rd Filing - Intersection: Wicks Lane & High Sierra Boulevard

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	1
	L		0		0	1
SB	T		0		0	1
	L		0		0	1
EB	T	0	0	1	1	1
	L	1	1	1	1	1
WB	T	1	1	1	1	1
	L		0		0	1
Critical Lane Sum Increase:			2	2		
Critical Lane Sum:			1200	1200		<--- 1200 for 4-leg intersection, 1140 for 3-leg intersection
Peak Hour %:			0.17%	0.17%		
Highest %:			0.17%			

23rd Filing - Intersection: Wicks Lane & Fantan Street

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	0
	L		0		0	0
SB	T		0		0	0
	L		0		0	1
EB	T	0	0	1	1	1
	L		0		0	1
WB	T	1	1	1	1	1
	L		0		0	0
Critical Lane Sum Increase:			1		1	
Critical Lane Sum:			1140		1140	
Peak Hour %:			0.09%		0.09%	
Highest %:			0.09%			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

23rd Filing - Intersection: Wicks Lane & Governors Boulevard

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T	2	2	6	6	1
	L		0		0	1
SB	T	5	5	3	3	1
	L		0		0	1
EB	T		0		0	1
	L	0	0	1	1	1
WB	T		0		0	1
	L		0		0	1
Critical Lane Sum Increase:			5		7	
Critical Lane Sum:			1200		1200	
Peak Hour %:			0.42%		0.58%	
Highest %:			0.58%			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

23rd Filing - Intersection: Wicks Lane & Lake Hills Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T	1	1	2	2	1
	L		0		0	1
SB	T	2	2	1	1	1
	L		0		0	1
EB	T		0		0	1
	L		0		0	1
WB	T		0		0	1
	L		0		0	1
Critical Lane Sum Increase:			2		2	
Critical Lane Sum:			1200		1200	
Peak Hour %:			0.17%		0.17%	
Highest %:			0.17%			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

23rd Filing - Intersection: Wicks Lane & St Andrews Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	0
	L		0		0	0
SB	T		0		0	0
	L	8	8	6	6	1
EB	T		0		0	1
	L		0		0	1
WB	T		0		0	1
	L		0		0	0
Critical Lane Sum Increase:			**8**		**6**	
Critical Lane Sum:			**1140**		**1140**	
Peak Hour %:			**0.70%**		**0.53%**	
Highest %:			**0.70%**			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Full Buildout - Intersection: Annandale Road & Riveroaks Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	0
	L		0		0	0
SB	T		0		0	0
	L		0		0	1
EB	T	36	36	24	24	1
	L	16	16	10	10	1
WB	T	12	12	40	40	1
	L		0		0	0
Critical Lane Sum Increase:			**36**		**50**	
Critical Lane Sum:			**1140**		**1140**	
Peak Hour %:			**3.16%**		**4.39%**	
Highest %:			**4.39%**			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Full Buildout - Intersection: Annandale Road & St Andrews Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	1
	L	12	12	40	40	1
SB	T		0		0	1
	L		0		0	0
EB	T		0		0	0
	L		0		0	1
WB	T		0		0	0
	L		0		0	0
Critical Lane Sum Increase:			12		40	
Critical Lane Sum:			1140		1140	
Peak Hour %:			1.05%		3.51%	
Highest %:			3.51%			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Full Buildout - Intersection: Sierra Granda Boulevard & High Sierra Boulevard

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T	16	16	53	53	1
	L		0		0	1
SB	T	32	32	21	21	1
	L	12	12	8	8	1
EB	T		0		0	1
	L	4	4	14	14	1
WB	T		0		0	1
	L	16	16	11	11	1
Critical Lane Sum Increase:			**48**	**75**		
Critical Lane Sum:			**1200**	**1200**		
Peak Hour %:			**4.00%**	**6.25%**		
Highest %:			**6.25%**			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Full Buildout - Intersection: Sierra Granda Boulevard & Gleneagles Boulevard

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T	30	30	102	102	1
	L	10	10	34	34	1
SB	T	89	89	60	60	1
	L		0		0	0
EB	T		0		0	0
	L		0		0	1
WB	T		0		0	0
	L		0		0	0
Critical Lane Sum Increase:			99		102	
Critical Lane Sum:			1140		1140	
Peak Hour %:			8.68%		8.95%	
Highest %:			8.95%			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Full Buildout - Intersection: Alkali Creek Road & Skyway Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	1
	L		0		0	1
SB	T		0		0	1
	L		0		0	1
EB	T	16	16	54	54	1
	L		0		0	1
WB	T	48	48	32	32	1
	L		0		0	1
Critical Lane Sum Increase:			**48**		**54**	
Critical Lane Sum:			**1200**		**1200**	
Peak Hour %:			**4.00%**		**4.50%**	
Highest %:			**4.50%**			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Full Buildout - Intersection: Wicks Lane & Skyway Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	0
	L		0		0	0
SB	T		0		0	0
	L		0		0	1
EB	T	12	12	40	40	1
	L	4	4	14	14	1
WB	T	36	36	24	24	1
	L		0		0	0
Critical Lane Sum Increase:			**40**		**40**	
Critical Lane Sum:			**1140**		**1140**	
Peak Hour %:			**3.51%**		**3.51%**	
Highest %:			**3.51%**			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Full Buildout - Intersection: Wicks Lane & High Sierra Boulevard

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	1
	L		0		0	1
SB	T		0		0	1
	L	36	36	24	24	1
EB	T	8	8	27	27	1
	L	4	4	13	13	1
WB	T	24	24	16	16	1
	L		0		0	1
Critical Lane Sum Increase:			**64**	**53**		
Critical Lane Sum:			**1200**	**1200**		<--- 1200 for 4-leg intersection, 1140 for 3-leg intersection
Peak Hour %:			**5.33%**	**4.42%**		
Highest %:			**5.33%**			

Full Buildout - Intersection: Wicks Lane & Fantan Street

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	0
	L		0		0	0
SB	T		0		0	0
	L	35	35	23	23	1
EB	T	44	44	51	51	1
	L		0		0	1
WB	T	36	36	56	56	1
	L		0		0	0
Critical Lane Sum Increase:			**79**		**79**	
Critical Lane Sum:			**1140**		**1140**	
Peak Hour %:			**6.93%**		**6.93%**	
Highest %:			**6.93%**			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Full Buildout - Intersection: Wicks Lane & Governors Boulevard

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T	20	20	68	68	1
	L	6	6	22	22	1
SB	T	59	59	40	40	1
	L	36	36	24	24	1
EB	T	51	51	34	34	1
	L	8	8	27	27	1
WB	T	18	18	58	58	1
	L		0		0	1
Critical Lane Sum Increase:			**116**	**177**		
Critical Lane Sum:			**1200**	**1200**		<--- 1200 for 4-leg intersection, 1140 for 3-leg intersection
Peak Hour %:			**9.67%**	**14.75%**		
Highest %:			**14.75%**			

Full Buildout - Intersection: Wicks Lane & Lake Hills Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T	5	5	18	18	1
	L	6	6	18	18	1
SB	T	16	16	10	10	1
	L	36	36	24	24	1
EB	T	71	71	47	47	1
	L		0		0	1
WB	T	24	24	81	81	1
	L		0		0	1
Critical Lane Sum Increase:			112	123		
Critical Lane Sum:			1200	1200		
Peak Hour %:			9.33%	10.25%		
Highest %:			10.25%			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

Full Buildout - Intersection: Wicks Lane & St Andrews Drive

Approach		AM Peak		PM Peak		
		Mvmt Vol.	Lane Vol.	Mvmt Vol.	Lane Vol.	Number of Lanes
NB	T		0		0	0
	L		0		0	0
SB	T		0		0	0
	L	36	36	24	24	1
EB	T	107	107	71	71	1
	L		0		0	1
WB	T	36	36	121	121	1
	L		0		0	0
Critical Lane Sum Increase:			**143**		**145**	
Critical Lane Sum:			**1140**		**1140**	
Peak Hour %:			**12.54%**		**12.72%**	
Highest %:			**12.72%**			

<--- 1200 for 4-leg intersection,
1140 for 3-leg intersection

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