Traffic Impact Study

Thunderhead Beach

Steamboat Springs, Colorado

Prepared for:

Majestic Realty Co

Kimley»Horn

T R A F F I C I M P A C T S T U D Y

Thunderhead Beach

Steamboat Springs, Colorado

Prepared for
Majestic Realty Co.
13191 Crossroads Parkway North
Sixth Floor
City of Industry, CA 91746

Prepared by
Kimley-Horn and Associates, Inc.
6200 South Syracuse Way
Suite 300
Greenwood Village, Colorado 80111
(303) 228-2300

June 2024

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1.0 EXECUTIVE SUMMARY

Thunderhead Beach is proposed to be located near the northeast corner of the Ski Time Square Drive and Mt. Werner Circle intersection, specifically at 1965 Ski Time Square Drive in Steamboat Springs, Colorado. The project is proposed to include 107 hotel rooms and 115 condominium units with restaurants, pool, spa/fitness/wellness, and conference space for guests, owners, and visitors. It is expected that Thunderhead Beach will be completed in the next several years. Therefore, analysis was conducted for the 2026 short-term buildout horizon as well as the 2045 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The following intersections were incorporated into this traffic study based on the City of Steamboat Springs requested scope:

- Mt. Werner Road & Pine Grove Road
- Mt Werner Road & Mt. Werner Circle
- Ski Times Square Drive & Mt. Werner Circle
- Ski Time Square Drive & Access

Regional access to Thunderhead Beach will be provided by Lincoln Avenue (US-40). Primary access will be provided by Mt. Werner Circle, Mt. Werner Road, and Pine Grove Road. Direct access is proposed at the existing access along the south side of Ski Time Square Drive that currently serves the T Bar circulating lot and aligns with an access to a residential condominium complex.

Thunderhead Beach is expected to generate approximately 77 trips occurring during the morning peak hour and 89 trips occurring during the afternoon peak hour.

Based on the analysis presented in this report, Kimley-Horn believes Thunderhead Beach will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following conclusions and recommendations:

- With completion of the Thunderhead Beach, the project will access the site from the south leg of the Ski Time Square Drive driveway that currently serves the T Bar circulating lot. However, this access will be reconfigured by straightening the skewed approach to create a tighter turning radius and reduce the crossing distance for pedestrians. The access currently also aligns with an access serving a residential condominium complex. The intersection will continue operating with stop control on the two minor driveway approaches along Ski Time Square Drive.

- If 2045 traffic volume projections materialize, the Mt. Werner Road and Pine Grove Road (#1) intersection may need to be realigned to allow for designated northbound and southbound left turn lanes which would eliminate the need for the existing split phasing at this intersection. If signal control remains at this intersection, the westbound left turn lane may need to be extended from 150 feet to 300 feet by 2045. The realignment of the north leg may be challenging due to encroaching into property on the northwest and southwest corners of this intersection. For this intersection to operate effectively as a traffic signal, the north and south legs would need to be widened and moved to the west allowing for perpendicular alignment of these legs. Therefore, this intersection could also be considered for conversion to roundabout control by the 2045 horizon. If roundabout control is implemented, then it is recommended that the eastbound and westbound approaches provide two approach lanes and two receiving lanes. The westbound left turn lane can be removed at this intersection to accommodate most of the space needed for the second eastbound through lane. Of note, these improvement considerations are for the 2045 horizon and are needed independent of the project based on 2045 background traffic volume projections. Additionally, the project traffic is anticipated to contribute approximately 2.9 percent to the overall traffic volumes at the intersection for the 2045 total conditions.

<u>Alternative Analysis: Vehicle Restriction along Mt. Werner Circle at Steamboat Square</u>

- If the City implements removing through traffic along Mt. Werner Circle near Steamboat Square and the Gondola Transit Center (GTC) to improve safety at the pedestrian crossing, then existing and future traffic will reroute. It is believed that the intersection of Mt. Werner Road & Mt. Werner Circle (#2) would operate with failing movements under stop control as soon as vehicle restrictions were implemented along Mt. Werner Circle adjacent to base village. Therefore, a single lane roundabout or signal could be considered at the Mt. Werner

Road & Mt. Werner Circle (#2) intersection to accommodate projected travel patterns with the removal of through traffic near the pedestrian crosswalks along Mt. Werner Circle at the GTC. Additionally, the project traffic is anticipated to contribute approximately 4.1 percent to the overall traffic volumes at the intersection for the short-term total conditions.

- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of the City of Steamboat Springs and the Manual on Uniform Traffic Control Devices (MUTCD) – 2009 Edition.

2.0 INTRODUCTION

Kimley-Horn and Associates, Inc. has prepared this report to document the results of a Traffic Impact Study for Thunderhead Beach proposed to be located near the northeast corner of the Ski Time Square Drive and Mt. Werner Circle intersection, specifically at 1965 Ski Time Square Drive in Steamboat Springs, Colorado. A vicinity map illustrating the Ski Time Square development location is shown in **Figure 1**. The project is proposed to be a resort that includes 107 hotel rooms and 115 condominium units with support amenities. A conceptual site plan is attached in **Appendix H**. It is expected that Thunderhead Beach will be completed in the next several years; therefore, analysis was conducted for the 2026 short-term buildout horizon as well as the 2045 long-term twenty-year planning horizon.

The purpose of this traffic study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system and to develop the necessary mitigation measures required for the identified traffic impacts. The following intersections were incorporated into this traffic study based on the City of Steamboat Springs requested scope (TIS scope attached in **Appendix A**):

- Mt. Werner Road & Pine Grove Road
- Mt Werner Road & Mt. Werner Circle
- Ski Times Square Drive & Mt. Werner Circle
- Ski Time Square Drive & Access

Regional access to Thunderhead Beach will be provided by Lincoln Avenue (US-40). Primary access will be provided by Mt. Werner Circle, Mt. Werner Road, and Pine Grove Road. Direct access is proposed at the existing access along the south side of Ski Time Square Drive that currently serves the T Bar circulating lot and aligns with an access to a residential condominium complex.

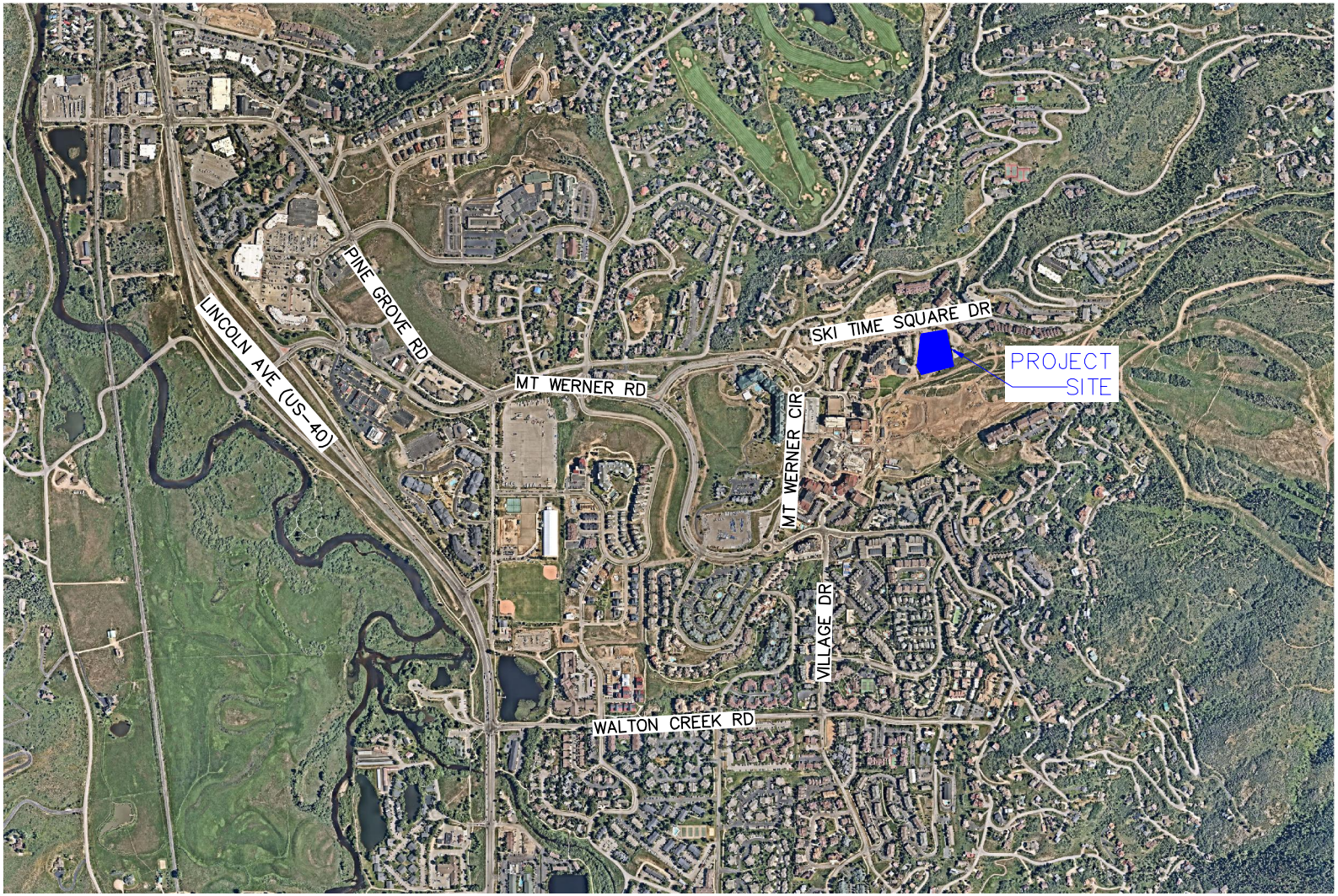

Figure 1
Thunderhead Beach
Steamboat Springs, Colorado
Vicinity Map

3.1 Existing Study Area

The existing site has construction machinery and equipment being stored on the vacant land. The surrounding area to the south consists of lodging, condos, retail, and restaurant uses for the Steamboat Springs Ski Resort. The Steamboat Ski Resort starts approximately is 200 feet south of the site. Surrounding the site immediately to the north, east, and west are condos while residential homes are located in the extended area to the north.

3.2 Existing Roadway Network

Pine Grove Road extends primarily north/south as a two-lane roadway south of Mt. Werner Road and as a three-lane roadway with a two-way left turn center lane north of Mt. Werner Road. The posted speed limit is 30 miles per hour. Discontinuous sidewalk is provided on the west side of Pine Grove Road north of Mt. Werner Road and sidewalk is provided on both sides of the roadway south of Mt. Werner Road. Additionally, on-street bike lanes are provided along both sides of the roadway, north of Mt. Werner Road.

Mt. Werner Road transitions to Mt. Werner Circle east of the north-south orientation of Mt. Werner Circle. Mt. Werner Road has a posted speed limit of 25 miles per hour. The roadway provides two-lanes in each direction west of the Mt. Werner Circle oriented north-south and one lane in each direction east of the Mt. Werner Circle oriented north-south.

Mt. Werner Circle is a two-lane loop roadway with a posted speed limit of 25 miles per hour. Mt. However, Werner Circle is a four-lane roadway from Mt. Werner Road to Burgess Creek Road.

Ski Time Square Drive extends primarily in the east/west direction as a two-lane roadway with a posted speed limit of 15 miles per hour. Sidewalk is provided on both sides of the roadway.

The signalized intersection of Mt. Werner Road and Pine Grove Road (#1) operates with permissive-only left turn phasing on the eastbound Mt. Werner Road approach and protected-permitted left turn phasing on the westbound Mt. Werner Road approach. The northbound and southbound approaches operate with split phasing. The eastbound Mt. Werner Road approach provides a left turn lane, a through lane, and a right turn lane whereas the westbound approach provides a left turn lane, two through lanes, and a right turn lane. The northbound approach of Pine Grove Road provides a shared left/through and a right turn lane and the southbound approach provides a single lane for shared movements. An aerial photo of the existing intersection configuration is below (north is up - typical).

Mt. Werner Road & Pine Grove Road

The Mt. Werner Road/Mt. Werner Circle and Mt. Werner Circle unsignalized intersection (#2) operates with stop control on the southbound Mt. Werner Circle approach. The southbound approach provides a left turn lane and a right turn lane. The right turn movements operate under free conditions and a southbound to westbound acceleration lane is provided. The eastbound approach of Mt. Werner Road provides a left turn lane and a through lane. The westbound Mt. Werner Circle approach provides a through lane and a right turn lane. An aerial photo of the existing intersection configuration is below.

Mt. Werner Road & Mt. Werner Circle

Mt. Werner Circle and Ski Time Square Drive (#3) operates as a single-lane roundabout with yield control on all four approaches. Mt. Werner Circle is the north-south roadway and Ski Time Square Drive is the east leg. The west leg of the roundabout serves as a private driveway to the Steamboat Grand Hotel. An aerial photo of the existing intersection configuration is below.

Mt. Werner Circle & Ski Time Square Drive

The Ski Time Square Drive and Private Road (#4) intersection operates as a single-lane roundabout with yield control on all four approaches. The north leg will serve as the project's access while the south leg is a private roadway. The Ski Time Square Drive roadway is the east-west roadway at the roundabout. An aerial photo of the existing intersection configuration is below.

Ski Time Square Drive & Private Road

The intersection lane configuration and control for the study area intersections are shown in **Figure 2**.

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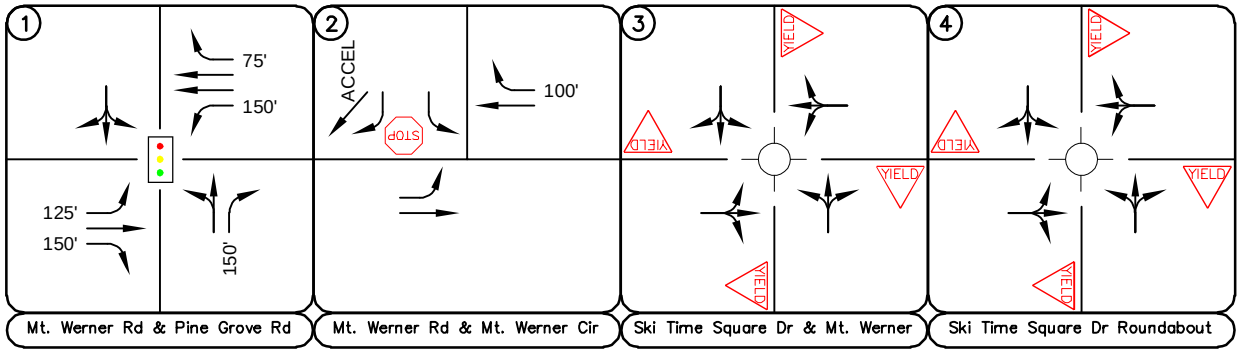

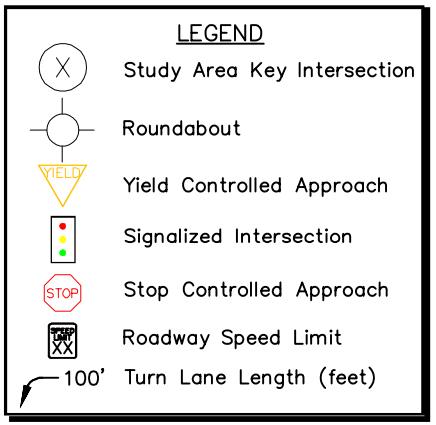

Figure 2
Thunderhead Beach
Steamboat Springs, Colorado
Existing Geometry and Control

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3.3 Existing Traffic Volumes

Existing turning movement counts were conducted at the study intersections on Friday, December 31, 2021 during the weekday morning and afternoon peak hours and were provided by the *Steamboat Resort MDPA Traffic Impact Analysis* completed in April 2022. It was determined to utilize the traffic counts from the *Steamboat Resort MDPA Traffic Impact Analysis* through coordination and the scoping process with City of Steamboat Springs staff as these counts are the most current available that correctly reflect peak season volumes. Therefore, a traffic count seasonal adjustment factor is not necessary. The counts were conducted during the morning and afternoon peak hours of adjacent street traffic in 15-minute intervals from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on this count date. However, recent traffic counts at the Ski Time Square Drive roundabout (#4) are not provided. Therefore, the through east-west volumes were derived from the Mt. Werner Circle & Ski Time Square Drive intersection and the north-south volumes were estimated based on roadway configuration and uses in the area. Of note, a majority of through volumes along Ski Time Square Drive east of Mt. Werner Circle & Ski Time Square Drive intersection will likely drop off to the parking structure prior to the Ski Time Square Drive roundabout (#4). Therefore, the east-west through traffic volumes at the Ski Time Square Drive roundabout (#4) are conservative. The existing intersection traffic volumes from the *Steamboat Resort MDPA Traffic Impact Analysis* are shown in **Figure 3** with count sheets provided in **Appendix B**.

3.4 Unspecified Development Traffic Growth

Per the TIS scoping form with the City, a half percent (0.5%) annual traffic growth rate has been applied to intersections east of Steamboat Boulevard and a two percent (2%) growth rate has been applied to intersections west of Steamboat Boulevard. These annual traffic growth rates are consistent with the *Steamboat Resort MDPA Traffic Impact Analysis.* The adjusted existing (grown from 2021 to 2023) traffic volumes with these annual growth rates are shown in **Figure 4**. The 2026 and 2045 traffic volumes were taken from the short-term and long-term total traffic volumes from the *Steamboat Resort MDPA Traffic Impact Analysis*. Excerpts used from the *Steamboat Resort MDPA Traffic Impact Analysis* are provided in **Appendix C.** Background traffic volumes for 2026 and 2045 are shown in **Figures 5** and **6**, respectively.

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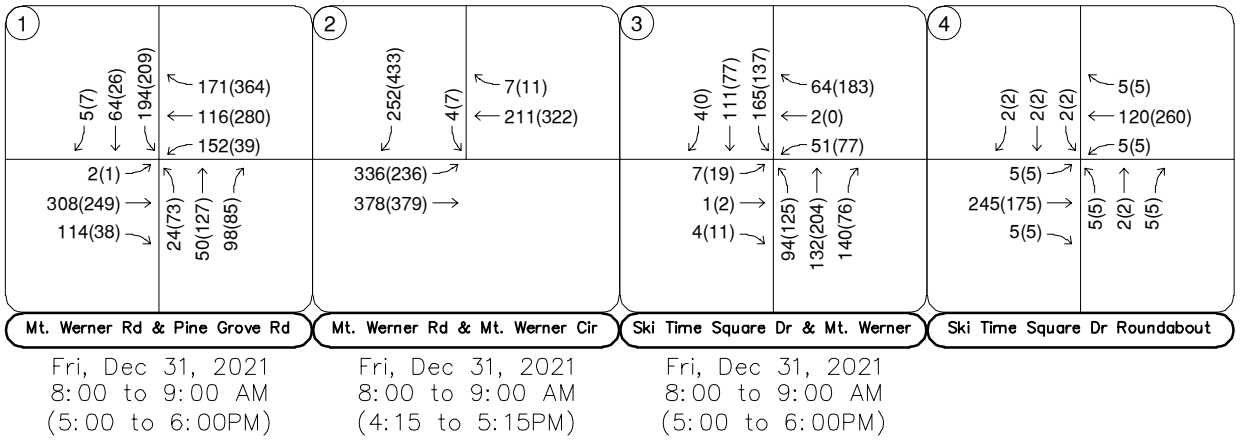
NORTH
NTS 096388014



Fri, Dec 31, 2021
8:00 to 9:00 AM
(5:00 to 6:00PM)

Fri, Dec 31, 2021
8:00 to 9:00 AM
(4:15 to 5:15PM)

Fri, Dec 31, 2021
8:00 to 9:00 AM
(5:00 to 6:00PM)

LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

Figure 3
Thunderhead Beach
Steamboat Springs, Colorado
2021 Existing Traffic Volumes

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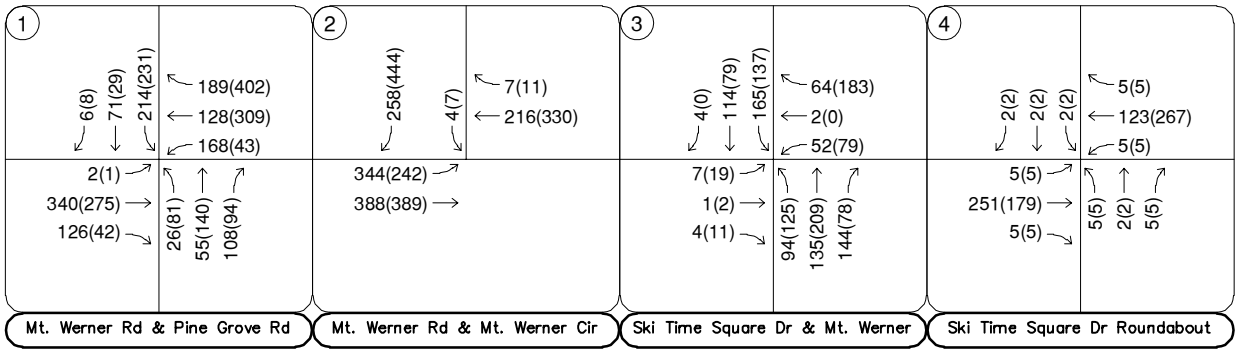

LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

Figure 4
Thunderhead Beach
Steamboat Springs, Colorado
2023 Adjusted Traffic Volumes

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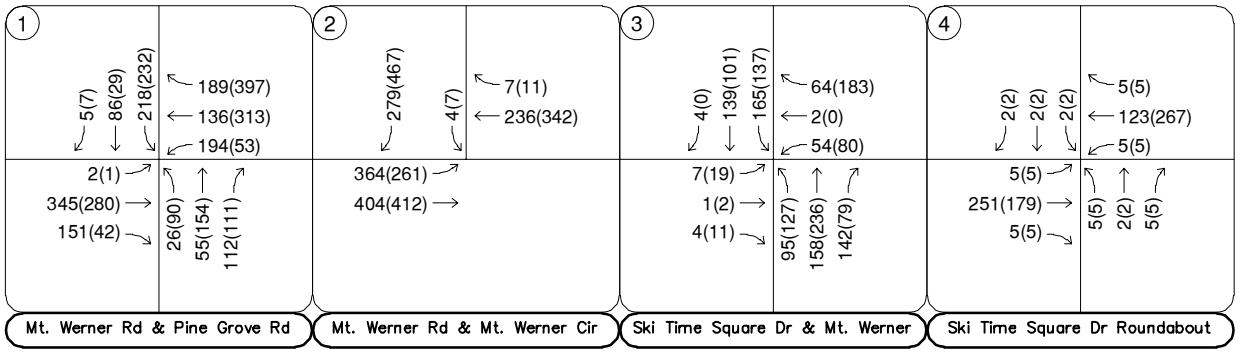

LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

Figure 5
Thunderhead Beach
Steamboat Springs, Colorado
2026 Background Traffic Volumes

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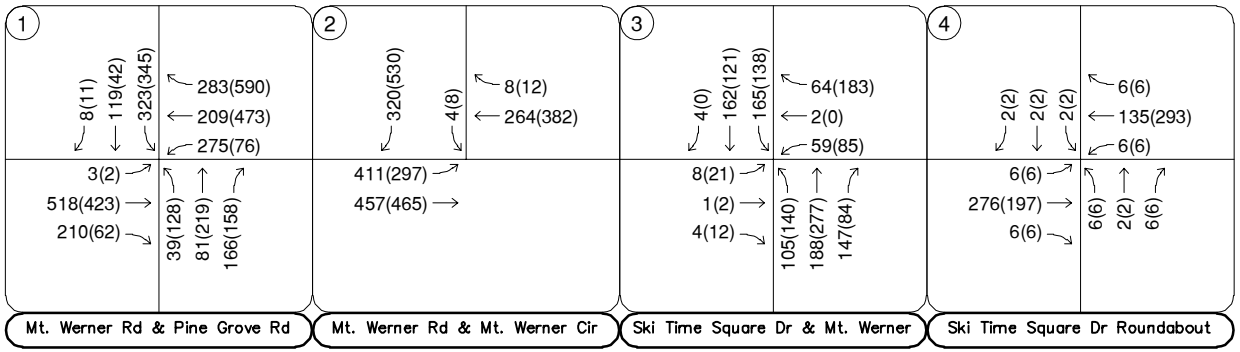

LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

Figure 6
Thunderhead Beach
Steamboat Springs, Colorado
2045 Background Traffic Volumes

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4.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Manual*[1] published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses.

Thunderhead Beach is anticipated to include 107 hotel rooms and 115 condominiums with onsite restaurants, spa/wellness/fitness, retail, pools, and event spaces for hotel guest, condominium owners, or visitors. Therefore, these amenities are ancillary to the hotel and condominiums and are not anticipated to generate trips during the peak hours for visitors. For this study, Kimley-Horn used the ITE Trip Generation Report average rates that apply to Multifamily Mid-Rise Housing (ITE Land Use Code 221) for the condominiums and Resort Hotel (ITE 330) for the 175 hotel rooms.

Thunderhead Beach is expected to generate approximately 77 trips occurring during the morning peak hour and 89 trips occurring during the afternoon peak hour. Calculations were based on the procedure and information provided in the ITE *Trip Generation Manual, 11th Edition – Volume 1: User's Guide and Handbook*, 2021. However, it is believed the ITE trips may have inflated the morning peak hour trips based on the nature of the resort hotel. Check-in and visitation to the resort does not occur during the typical morning peak hour. Further, the surrounding community is multi-modal centric and vehicle travel is reduced; therefore, even the afternoon peak hour trips utilized in this study are considered to be conservative. **Table 1** summarizes the estimated trip generation for Thunderhead Beach. The trip generation worksheets are included in **Appendix D**.

[1] Institute of Transportation Engineers, *Trip Generation Manual*, Eleventh Edition, Washington DC, 2021.

Table 1 – Thunderhead Beach Traffic Generation

Land Use and Size	Weekday Vehicle Trips					
	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Condominiums (ITE 221) – 115 Dwelling Units	10	33	43	27	18	45
Resort Hotel (ITE 312) – 107 Rooms	24	10	34	19	25	44
Total Project Trips	**34**	**43**	**77**	**46**	**43**	**89**

4.2 Trip Distribution

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding demographic and attraction information, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. The project trip distribution for the proposed development is illustrated in **Figure 7**.

However, as identified in the *Steamboat Resort MDPA Traffic Impact Analysis*, the City may consider mitigating the pedestrian crossings and vehicle conflicts along Mt. Werner Circle near the Steamboat Square base area. Passenger vehicles and other shuttle buses will be restricted along Mt. Werner Circle and only Gondola Transit Center (GTC) buses will be allowed. As identified in the Steamboat Resort MDPA Traffic Impact Analysis, the GTC will be restricted to bus through traffic and public pick-up/drop-off is proposed north of the GTC while delivery access is proposed south of the GTC. Therefore, passenger vehicles will reroute through the study intersections with this alternative approach. Of note, this configuration will not affect traffic patterns and volumes at the Mt. Werner Road and Pine Grove Road (#1) intersection. A trip distribution for the project with this alternative route is shown in **Figure 8.**

4.3 Traffic Assignment

Thunderhead Beach traffic assignment was obtained by applying the project trip distribution to the estimated traffic generation of the development shown in **Table 1**. Traffic assignment is shown in **Figure 9** and the alternative analysis with closure to passenger vehicles along Mt. Werner Circle near the Steamboat Square base area is shown in **Figure 10.**

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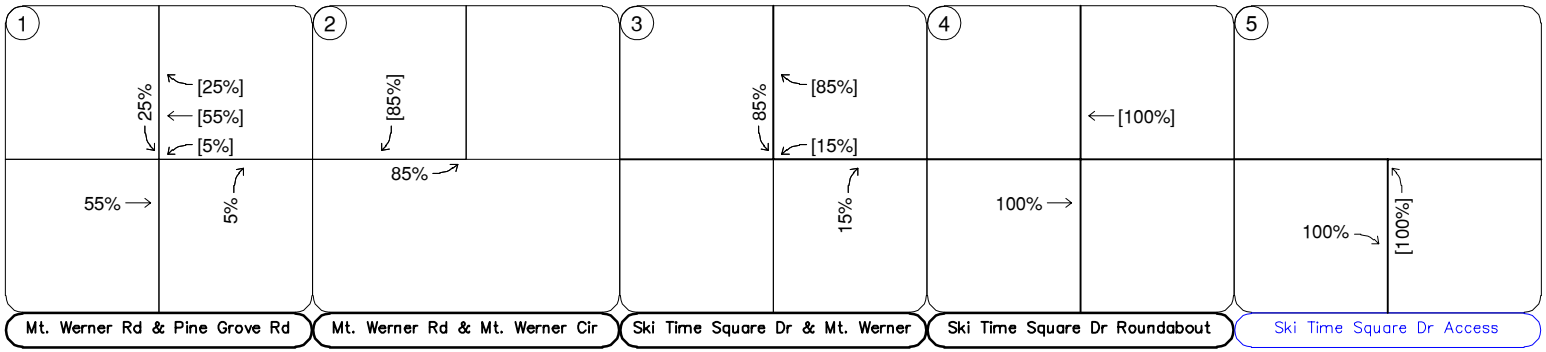
NORTH
NTS 096388014



LEGEND

(X) Study Area Key Intersection

XX% External Trip Distribution Percentage

XX%[XX%] Entering[Exiting] Trip Distribution Percentage

Figure 7
Thunderhead Beach
Steamboat Springs, Colorado
Project Trip Distribution

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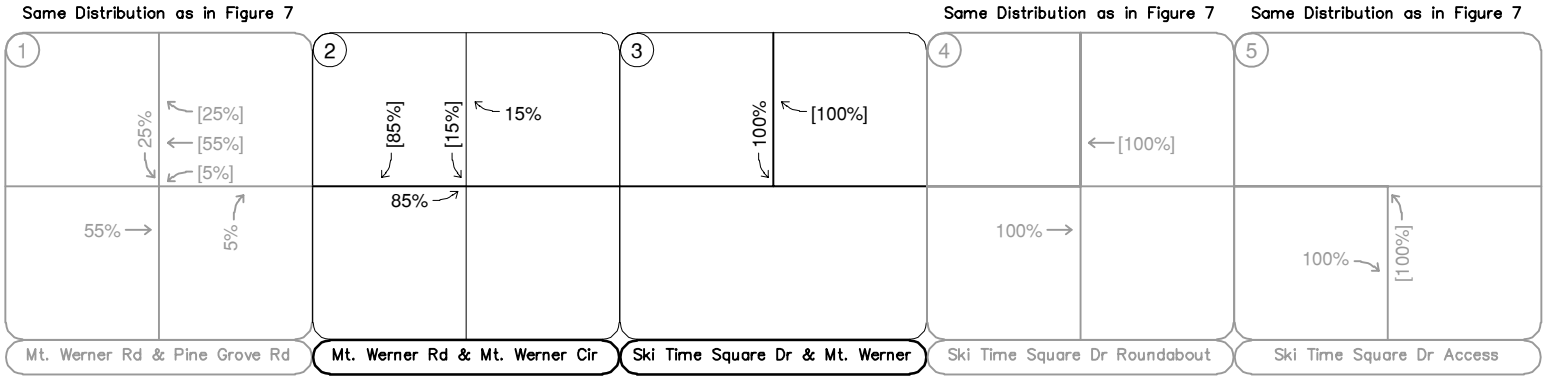

LEGEND

(X) Study Area Key Intersection

XX% External Trip Distribution Percentage

XX%[XX%] Entering[Exiting] Trip Distribution Percentage

Figure 8
Thunderhead Beach
Steamboat Springs, Colorado
Project Trip Distribution (Alternative)

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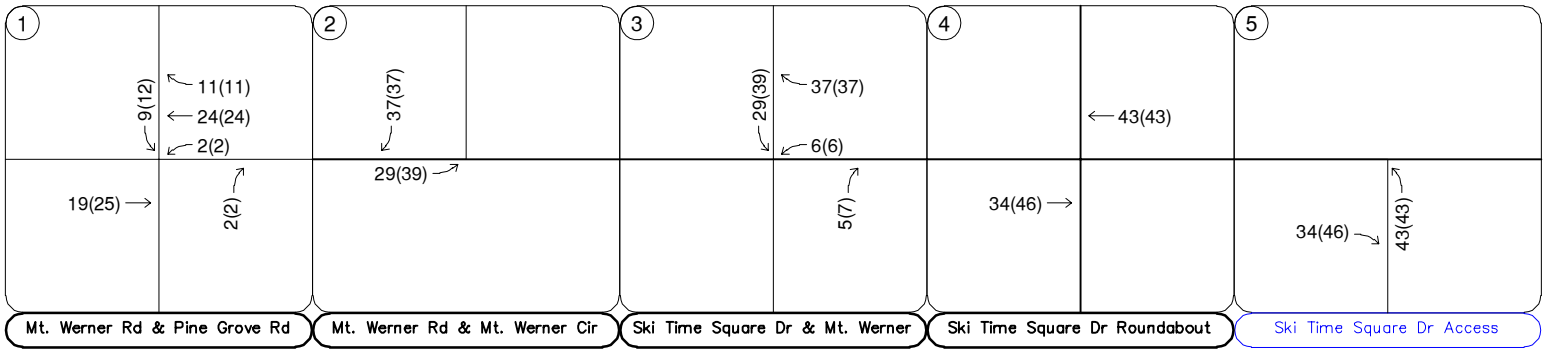

LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

Figure 9
Thunderhead Beach
Steamboat Springs, Colorado
Project Traffic Assignment

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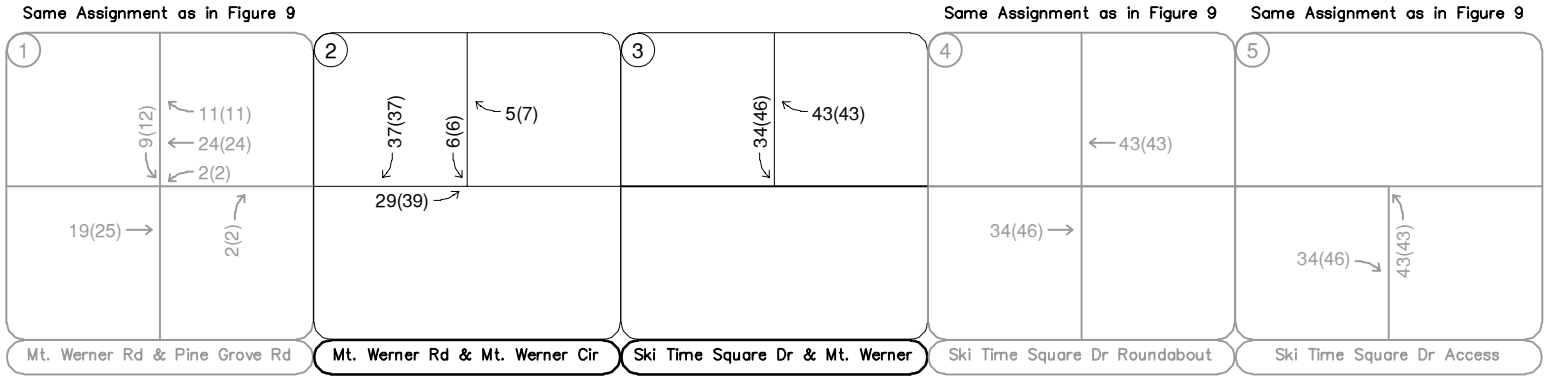

LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

Figure 10
Thunderhead Beach
Steamboat Springs, Colorado
Project Traffic Assignment (Alternative)

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4.4 Total (Background Plus Project) Traffic

Site traffic volumes were added to the background volumes to represent estimated traffic conditions for the short-term 2026 buildout horizon and long-term 2045 twenty-year planning horizon. These total traffic volumes for the study area are illustrated for the 2026 and 2045 horizon years in **Figures 11** and **13**, respectively. The total traffic volumes with the alternative scenario are shown in **Figure 12** and **Figure 14** for the 2026 and 2045 horizon, respectively.

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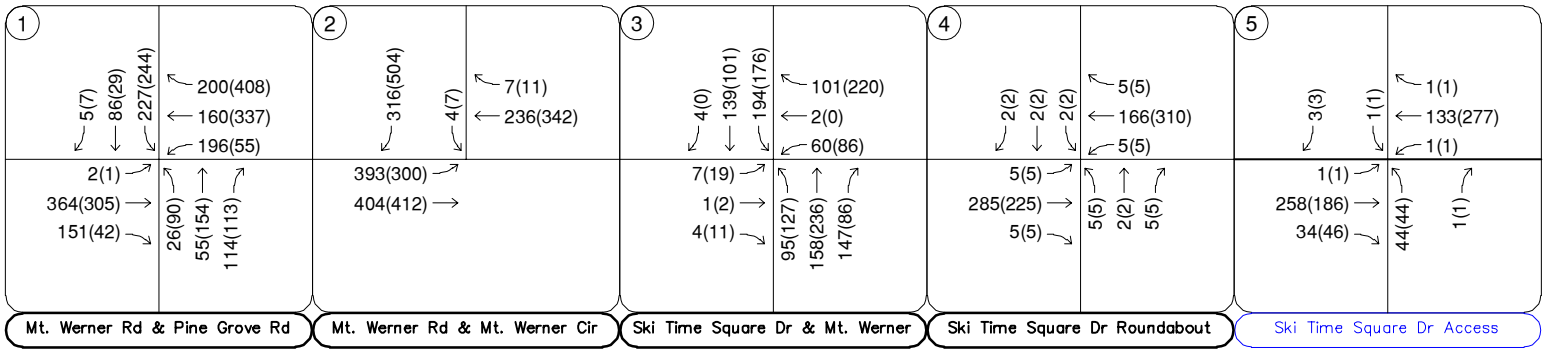

LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

Figure 11
Thunderhead Beach
Steamboat Springs, Colorado
2026 Total Traffic Volumes

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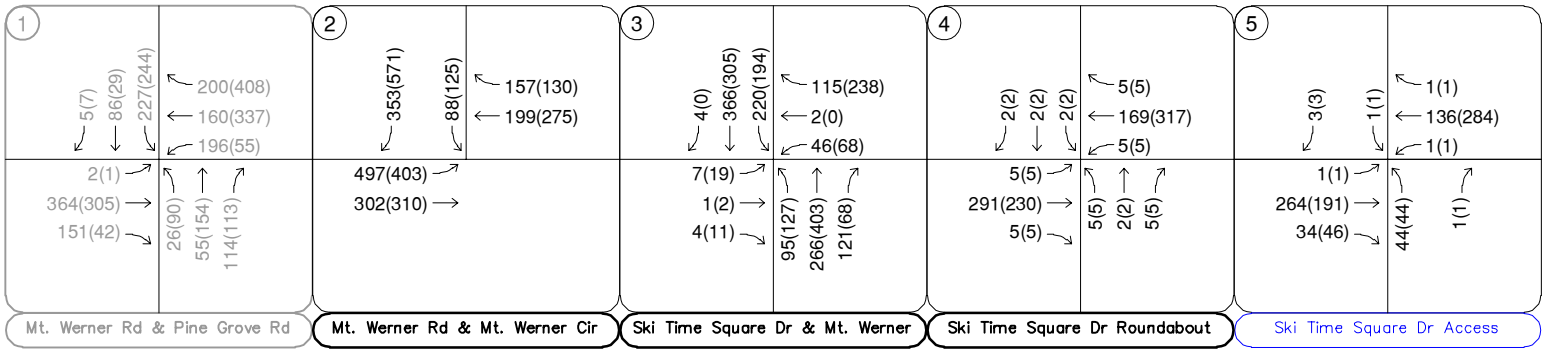
Same Volumes as in Figure 11



LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

Figure 12
Thunderhead Beach
Steamboat Springs, Colorado
2026 Total Traffic Volumes (Alternative)

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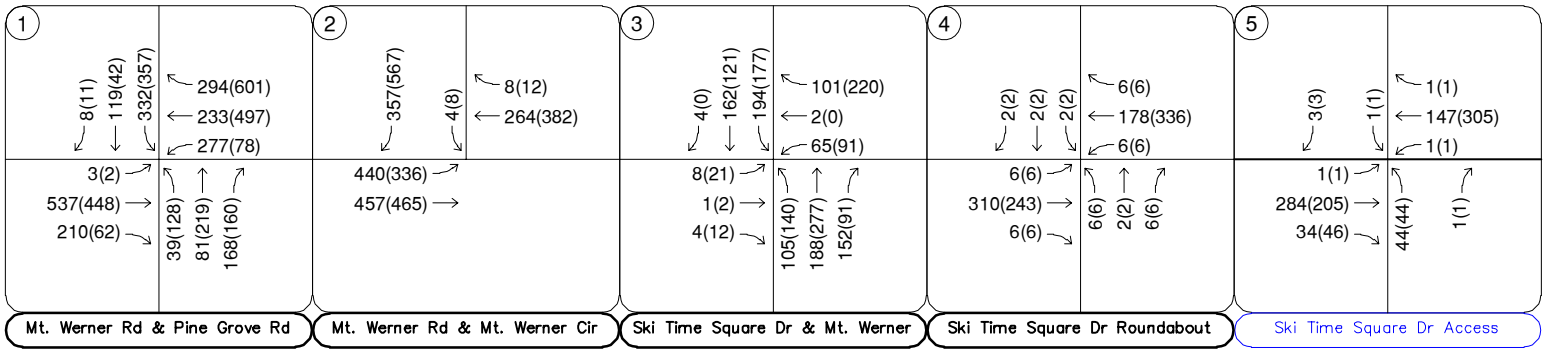

LEGEND

(X) Study Area Key Intersection

XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

Figure 13
Thunderhead Beach
Steamboat Springs, Colorado
2045 Total Traffic Volumes

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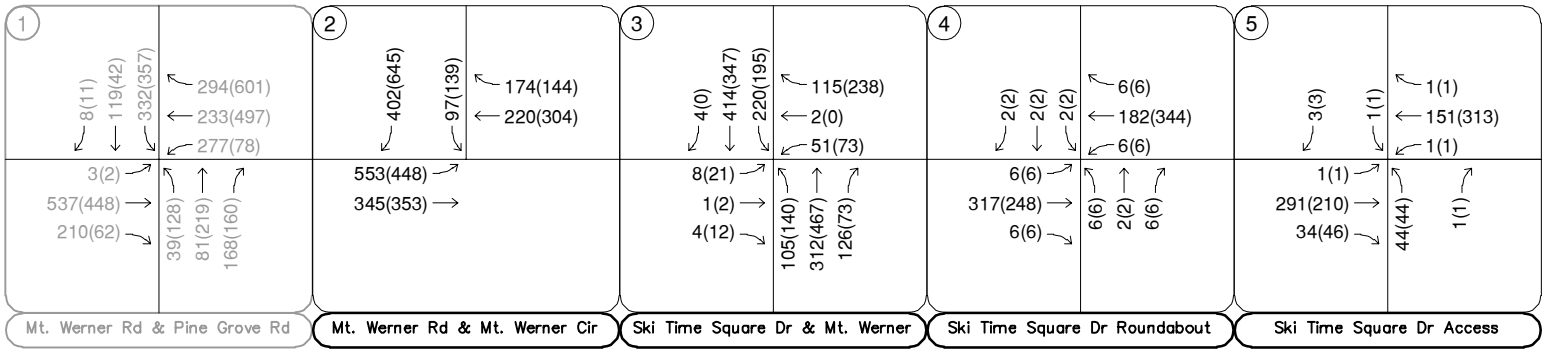
Same Volumes as in Figure 13



LEGEND

(X)	Study Area Key Intersection
XXX(XXX)	Weekday AM(PM) Peak Hour Traffic Volumes
XX,X00	Estimated Daily Traffic Volume

Figure 14
Thunderhead Beach
Steamboat Springs, Colorado
2045 Total Traffic Volumes (Alternative)

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Kimley-Horn's analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2026 and 2045 development horizons at the identified key intersections. The acknowledged source for determining overall capacity is the *Highway Capacity Manual (HCM)*[2].

5.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). For intersections and roadways in this study area, standard traffic engineering practice recommends overall intersection LOS D and movement/approach LOS E as the minimum desirable thresholds for acceptable operations. **Table 2** shows the definition of level of service for signalized and unsignalized intersections.

Table 2 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, the LOS for a two-way stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for signalized, roundabout, and all-way stop controlled intersections are defined for each approach and for the overall intersection.

[2] Transportation Research Board, *Highway Capacity Manual*, Sixth Edition, Washington DC, 2016.

5.2 Key Intersection Operational Analysis

Calculations for the operational level of service at the key intersections for the study area are provided in **Appendix E**. The existing year analysis is based on the lane geometry and intersection control shown in **Figure 2.** The HCM urban standard of 0.92 was used for the analysis. Synchro traffic analysis software was used to analyze the signalized and unsignalized key intersections for HCM level of service. However, Sidra was used to analyze the multi-lane roundabout intersections.

Mt. Werner Road & Pine Grove Road (#1)

The signalized intersection of Mt. Werner Road and Pine Grove Road (#1) operates with permissive-only left turn phasing on the eastbound Mt. Werner Road approach and protected-permitted left turn phasing on the westbound Mt. Werner Road approach. The northbound and southbound approaches operate with split phasing. The intersection operates at LOS C during the morning and afternoon peak hours under existing conditions. With project traffic, all movements are anticipated to continue operating at an acceptable level of service throughout the short-term 2026 horizon.

However, if 2045 volumes are realized, the intersection may operate with an overall LOS F during the morning peak hour and LOS E during the afternoon peak hour. To mitigate the background deficiency, the north leg of the intersection will need to be realigned to come into the intersection perpendicularly instead of skewed. The northbound approach is recommended to convert the shared through/left turn lane to a left turn lane and convert the right turn lane to a shared through/right turn lane. This would allow removal of the split phasing on the north/south approaches and a separate southbound left turn lane can be provided within the existing two-way left turn center lane. With optimization and realignment of the north leg, the intersection is expected to operate with LOS C during the morning peak hour and LOS D during the afternoon peak hour in 2045. The realignment of the north leg may be challenging due to encroaching into property on the northeast corner of this intersection. Therefore, an additional analysis has been completed with converting the signalized intersection into a roundabout. The eastbound and westbound approaches are recommended to provide two approach lanes and two receiving lanes. The westbound left turn lane can be removed to accommodate most of the space needed for the second eastbound through lane. With roundabout control, this intersection is expected to operate

with LOS B during the morning peak hour and afternoon peak hour in 2045. **Table 3** provides the results of the LOS analysis conducted at this intersection.

Table 3 – Mt. Werner Road & Pine Grove Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2023 Existing	31.0	C	30.4	C
2026 Background	33.2	C	30.8	C
2026 Background Plus Project	33.7	C	31.0	C
2045 Background	83.3	F	55.1	E
2045 Background Plus Project	87.8	F	56.7	E
2045 Background Plus Project #	40.6	D	43.4	D
2045 Background Plus Project *Roundabout*	12.9	B	14.9	B

= Realign North Leg, Includes a Separate SBL, Convert Shared NB Left/Through to a NBL and the NBR to a Shared Through/Right and Remove Split Phasing on the N/S Legs

Mt. Werner Road and Mt. Werner Circle (#2)

The Mt. Werner Road/Mt. Werner Circle and Mt. Werner Circle unsignalized intersection (#2) operates with stop control on the southbound Mt. Werner Circle approach. The intersection movements currently operate acceptably at LOS C or better during both peak hours. With project traffic, all movements are anticipated to continue operating at an acceptable level of service throughout the 2045 horizon.

However, as identified in the *Steamboat Resort MDPA Traffic Impact Analysis*, the City may consider removing the pedestrian crossing and vehicle conflicts along Mt. Werner Circle near the Steamboat Square base area. Therefore, vehicles utilizing the parking garages or the hotel resorts on the north side of Steamboat Square will not be allowed to head southbound along Mt. Werner Circle near the GTC and vice versa with northbound vehicles not being able to access the parking garages or the hotel resorts on the north side of Steamboat Square from Mt. Werner Circle near the GTC. With removal of through traffic near the GTC, the southbound left turn movements are expected to significantly increase at this intersection and is anticipated to operate with failing conditions. Therefore, a single lane roundabout or a traffic signal could be implemented at this intersection if the City chooses to remove through traffic near the pedestrian crosswalks along Mt. Werner Circle at the GTC. Both roundabout and signalization are expected to operate with acceptable level of services through the long-term 2045 horizon. The MUTCD four-hour signal warrant analysis worksheet is included in **Appendix F.** Of note, the 2026 horizon meets three out of four hours but could meet the last hour and a shoulder hour outside of the peak period studied. **Table 4** provides the results of the LOS analysis conducted at this intersection. The alternative analysis with restrictions to passenger vehicles near the GTC along Mt. Werner Circle is highlighted in light blue in the table.

Table 4 – Mt. Werner Road & Mt. Werner Circle LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2023 Existing				
Eastbound Left	8.8	A	8.9	A
Southbound Approach	21.6	C	19.1	C
2026 Background				
Eastbound Left	9.0	A	9.0	A
Southbound Approach	22.9	C	20.3	C
2026 Background Plus Project				
Eastbound Left	9..1	A	9.2	A
Southbound Approach	24.4	C	21.9	C
2026 Background Plus Project - Alternative				
Eastbound Left	10.7	B	10.3	A
Southbound Approach	55.7	F	58.8	F
2026 Background Plus Project - Alternative				
Roundabout	9.5	A	7.6	A
2026 Background Plus Project - Alternative				
Signal	5.3	A	5.9	A
2045 Background				
Eastbound Left	9.4	A	9.4	A
Southbound Approach	26.9	D	23.3	C
2045 Background Plus Project				
Eastbound Left	9.6	A	9.7	A
Southbound Approach	28.4	D	25.2	D
2045 Background Plus Project - Alternative				
Eastbound Left	11.7	B	11.1	B
Southbound Approach	99.3	F	113.5	F
2045 Background Plus Project - Alternative				
Roundabout	12.5	B	9.6	A
2045 Background Plus Project - Alternative				
Signal	6.0	A	6.7	A

Mt. Werner Circle and Ski Time Square Drive (#3)

Mt. Werner Circle and Ski Time Square Drive (#3) operates as a single-lane roundabout with yield control on all four approaches. The intersection operates acceptably at LOS A during both peak hours under existing conditions. With project traffic, all movements are anticipated to continue operating at an acceptable level of service throughout the 2045 horizon. Additionally, the roundabout is anticipated to operate acceptably with the rerouted traffic if the City chooses to remove through traffic near the pedestrian crosswalks along Mt. Werner Circle near the GTC. Therefore, no improvements or modifications are anticipated to be needed at this intersection based on the addition of project traffic and this operational level of service analysis. **Table 5** provides the results of the LOS analysis conducted at this intersection. The alternative analysis with restrictions to passenger vehicles near the GTC along Mt. Werner Circle is highlighted in light blue in the table.

Table 5 – Mt. Werner Circle & Ski Time Square Drive LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2023 Existing	6.1	A	6.7	A
2026 Background	6.3	A	7.1	A
2026 Background Plus Project	6.6	A	7.7	A
2026 Background Plus Project - Alternative	9.1	A	10.6	B
2045 Background	6.8	A	7.8	A
2045 Background Plus Project	7.2	A	8.5	A
2045 Background Plus Project - Alternative	10.3	B	12.6	B

Ski Time Square Drive and Private Road Roundabout (#4)

The Ski Time Square Drive and Private Road (#4) intersection operates as a single-lane roundabout with yield control on all four approaches. Under existing conditions, the roundabout operates with LOS A during the morning and afternoon peak hours. The roundabout is anticipated to continue operating with LOS A during both peak hours through 2045 with and without the alternative analysis of removing through traffic near the pedestrian crosswalks along Mt. Werner Circle at the GTC. Therefore, no improvements or modifications are anticipated to be needed at this intersection based on the addition of project traffic and this operational level of service analysis. **Table 6** provides the results of the LOS analysis conducted at this intersection. The alternative analysis with restrictions to the GTC buses along Mt. Werner Circle is highlighted in light blue in the table.

Table 6 – Ski Time Square Drive & Private Road LOS Results

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2023 Existing	4.1	A	4.3	A
2026 Background	4.1	A	4.3	A
2026 Background Plus Project	4.4	A	4.6	A
2026 Background Plus Project - Alternative	4.4	A	4.7	A
2045 Background	4.3	A	4.5	A
2045 Background Plus Project	4.6	A	4.8	A
2045 Background Plus Project - Alternative	4.6	A	4.9	A

Project Access

With completion of the Thunderhead Beach, the project will access the site from the south leg of the Ski Time Square Drive driveway that currently serves the T Bar circulating lot. However, this access will be reconfigured by straightening the skewed approach to create a tighter turning radius and reduce the crossing distance for pedestrians. The access currently also aligns with an access serving a residential condominium complex. The intersection will continue operating with stop control on the two minor driveway approaches along Ski Time Square Drive. **Table 7** provides the results of the level of service for this project access intersection. As shown in the table, the project access intersection is anticipated operate with acceptable LOS A during the peak hours in both the buildout year 2026 and the 2045 long-term horizons under roundabout control.

Table 7 – Project Access Level of Service Results

Intersection	2026 Total				2045 Total			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS
Ski Time Square Access								
Northbound Approach	12.6	B	13.8	B	13.2	B	14.6	B
Eastbound Left	7.5	A	7.9	A	7.5	A	7.9	A
Westbound Left	7.9	A	7.7	A	8.0	A	7.8	A
Southbound Approach	9.7	A	10.6	B	9.9	A	11.0	B

5.3 Vehicle Queuing Analysis

A vehicle queuing analysis was conducted for the study area intersections. The queuing analysis was performed using Synchro presenting the results of the 95th percentile queue lengths. The alternative analysis with restrictions to passenger vehicles near the GTC along Mt. Werner Circle is highlighted in light blue in the table. Results are shown in the following **Table 8** with calculations provided within the level of service operational sheets of **Appendix G** for unsignalized intersections and **Appendix H** for signalized intersections.

Table 8 – Turn Lane Queuing Analysis Results

Intersection Turn Lane	Existing Turn Lane Length (feet)	2026 Calculated Queue (feet)	2026 Recommended Length (feet)	2045 Calculated Queue (feet)	2045 Recommended Length (feet)
Mt. Werner & Pine Grove (#1)					
Eastbound Left	125’	25’	125’	25’	125’
Eastbound Right	150’	47’	150’	70’	150’
Westbound Left	150’	144’	150’	285’	**300’**
Westbound Right	75’	57’	75’	110’	75’
Northbound Right	150’	43’	150’	-	DBE
Northbound Left	DNE	-	DNE	78’	150’
Southbound Left	DNE	-	DNE	344’	**TWLTL**
Mt. Werner Road & Circle (#2)					
Eastbound Left	C	50’	C	50’	C
Southbound Left	C	25’	C	25’	C
Mt. Werner Road & Circle (#2) ***Alternative***					
Eastbound Left	C	277’	C	414’	C
Westbound Right	100’	25’	100’	25’	100’
Southbound Left	C	104’	C	115’	C
Southbound Right	C	125’	C	307’	C

DNE = Does Not Exist; C = Continuous Lane; TWLTL = Two-Way Left Turn Lane; **Blue** Text = Recommendation

The vehicle queues are all anticipated to remain within the existing or recommended turn lane lengths through 2045. If the 2045 volumes are realized and the north leg at the Mt. Werner Road and Pine Grove Road intersection is realigned, then the westbound left turn lane may need to be extended from 150 feet to 300 feet. However, this left turn lane extension by the long-term 2045 horizon would not be necessary if this intersection is ever converted to roundabout control. Additionally, the southbound left turn lane at the Mt. Werner Road and Pine Grove Road intersection can be accommodated within the existing two-way left turn center lane along Pine Grove Road; however, this left turn movement must remain restricted unless the intersection realigns which would allow for acceptable turning radius for both the southbound left turn movements (from a designated left turn lane) and vehicles entering the north leg of this intersection.

5.4 Bicycle, Pedestrian, and Transit Evaluation

On-street bicycle lanes are currently provided on the east and west side of Pine Grove Road, north of Mt. Werner Road. There are no additional on-street bicycle lanes on the study roadways. Sidewalk is provided on the south side of Mt. Werner Road and Mt. Werner Circle. Some sections of Mt. Werner Circle are missing sidewalk and will be planned in the future. The Gondola Transit Center (GTC) is located at the Steamboat Square resort base along Mt. Werner Circle. There are three (3) bus stops along Mt. Werner Road/Mt. Werner Circle at Steamboat Boulevard, Burgess Creek Road, and Gondola Transit Center. These bus stops are provided on the main line that runs through downtown Steamboat to Steamboat Square.

5.5 Improvement Summary

Based on the results of the intersection operational and vehicle queuing analysis, the key intersection recommended improvements and control are shown in **Figure 15** and **Figure 16** for the 2026 and 2045 horizons, respectively. If the City decides to restrict passenger vehicles from traveling north-south near the GTC along Mt. Werner Circle, then the recommended improvements and control for the alternative analysis is shown in **Figure 17** and **Figure 18** for the 2026 and 2045 horizons, respectively**.**

As requested, a project traffic contribution table is provided for the Mt. Werner Road & Pine Grove Road and Mt. Werner Road & Mt. Werner Circle intersection improvements in **Table 9**. As shown in the table, the project traffic contributes at most 2.9 percent to the Mt. Werner Road and Pine Grove Road intersection and at most 4.1 percent to the Mt. Werner Road and Mt. Werner Circle intersection. Of note, the 2045 total traffic volumes were used to estimate the project traffic contribution since the recommendations to the intersections are needed by the long-term horizon at the Mt. Werner Road and Pine Grove Road intersection. Likewise, the 2026 total traffic alternative volumes with restrictions to the GTC buses were used to estimate project traffic contribution since the GTC bus scenario triggers the intersection recommendations in the short-term at the Mt. Werner Road and Mt. Werner Circle intersection.

Table 9 – Project Contribution Table

Intersection Improvements	Total Traffic Volumes AM (PM)	Project Volumes AM (PM)	% Contribution AM (PM)
Mt. Werner & Pine Grove - 2045 Separate NB and SB Left Turn Lanes Or 2 by 1 Roundabout	2045 Total 2,301 (2,605)	67 (76)	2.9% (2.9%)
Mt. Werner Road & Circle – 2026 Alt Signalized Or Roundabout	2026 Total Alt 1,596 (1,814)	66 (37)	4.1% (2.0%)

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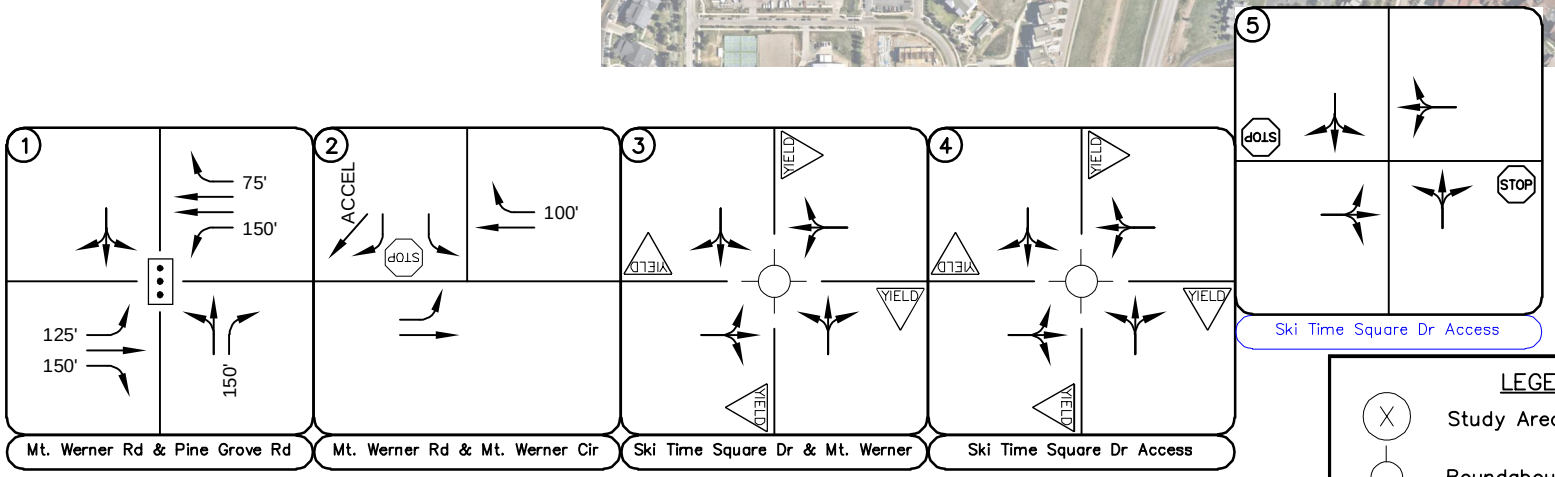


LEGEND

- Study Area Key Intersection
- Roundabout
- Yield Controlled Approach
- Signalized Intersection
- Stop Controlled Approach
- Improvement
- 100' Turn Lane Length (feet)

Figure 15
Thunderhead Beach
Steamboat Springs, Colorado
2026 Recommended Geometry and Control

Kimley»Horn

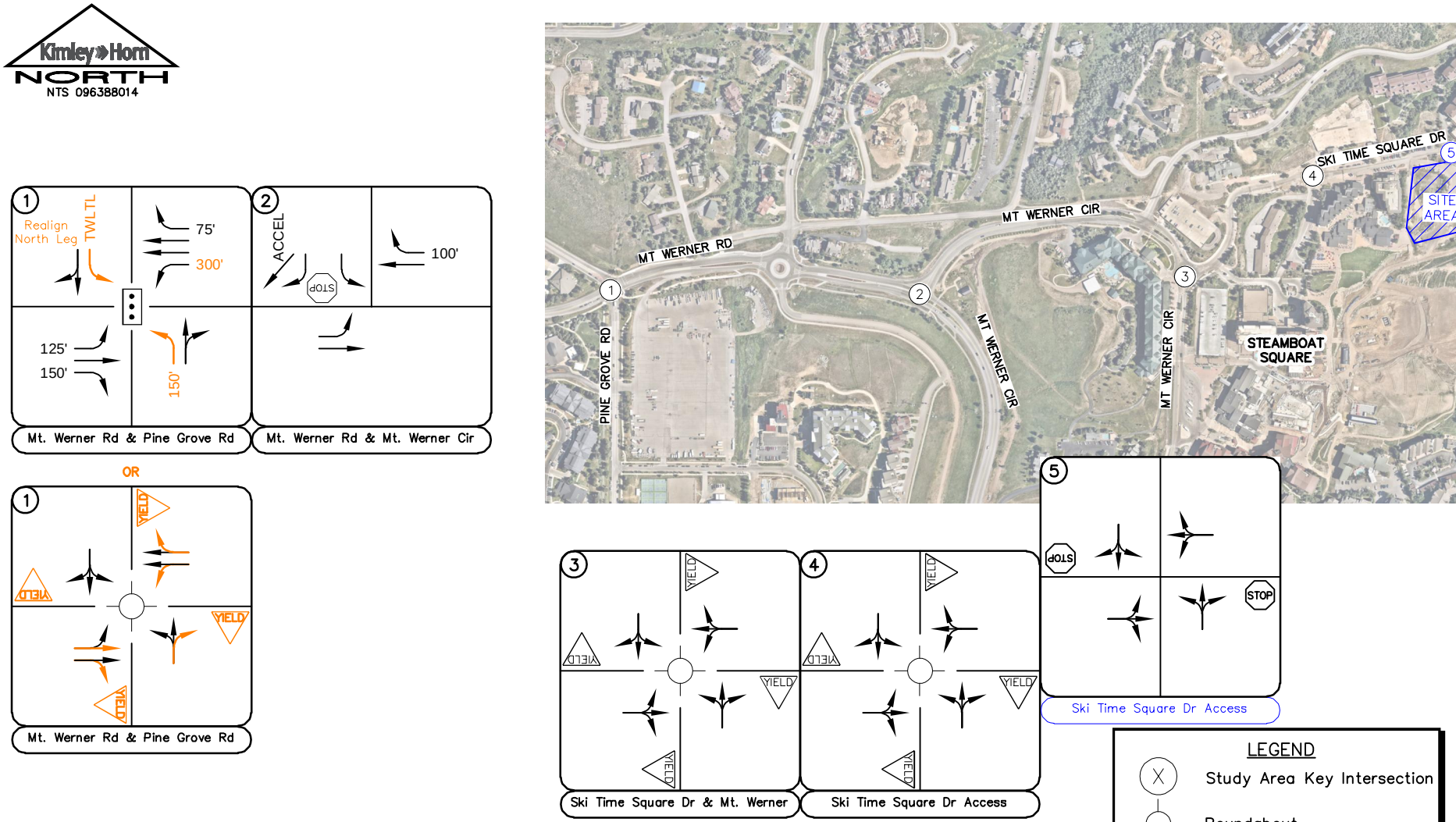
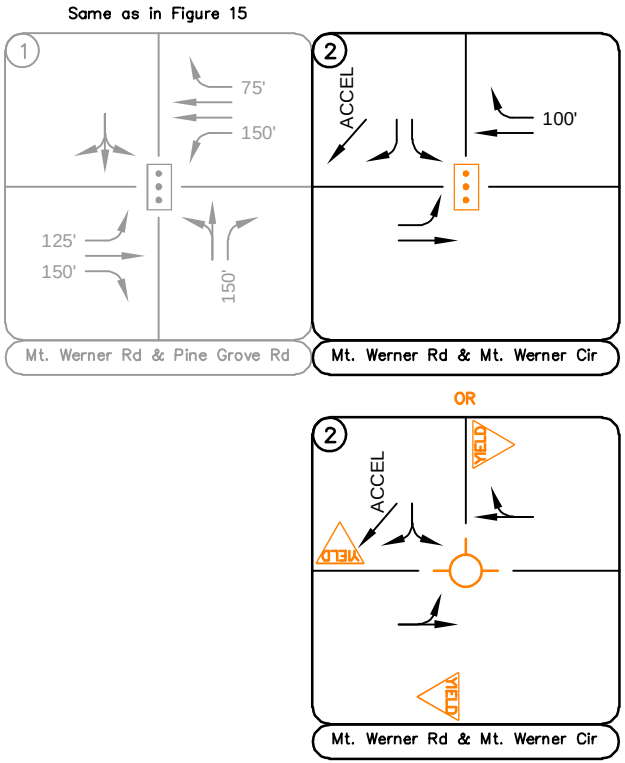
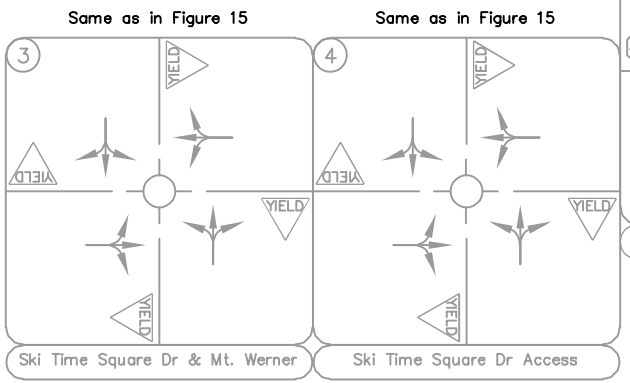


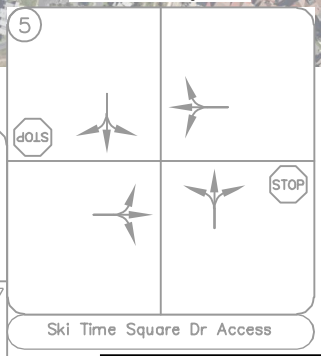
Figure 16
Thunderhead Beach
Steamboat Springs, Colorado
2045 Recommended Geometry and Control

Kimley»Horn

Kimley»Horn
NORTH
NTS 096388014







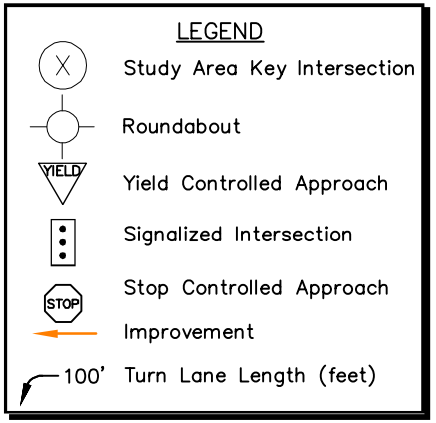
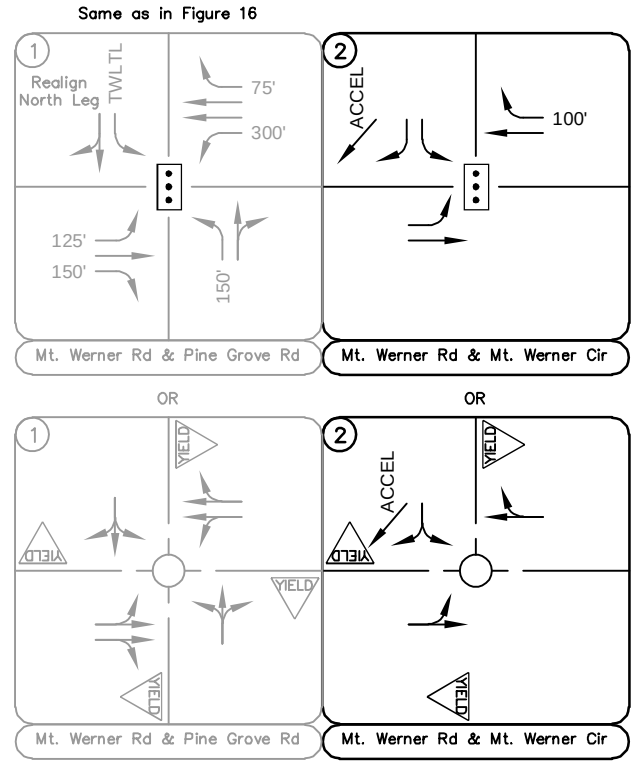
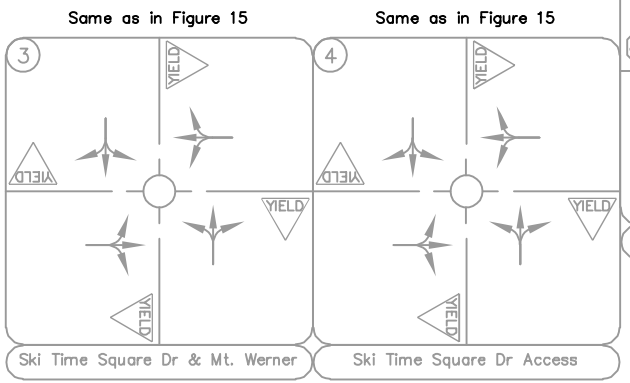
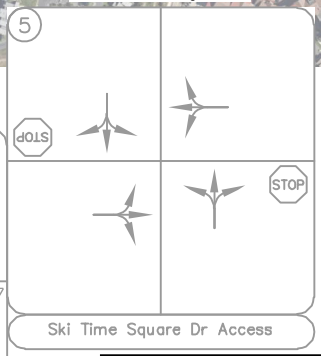


Figure 17
Thunderhead Beach
Steamboat Springs, Colorado
2026 Recommended Geometry and Control (Alternative)

Kimley»Horn







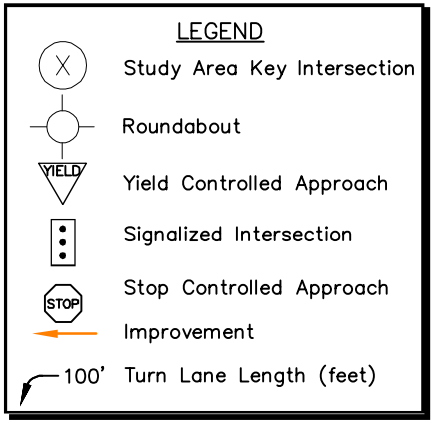


Figure 18
Thunderhead Beach
Steamboat Springs, Colorado
2045 Recommended Geometry and Control (Alternative)

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes Thunderhead Beach will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following conclusions and recommendations:

- With completion of the Thunderhead Beach, the project will access the site from the south leg of the Ski Time Square Drive driveway that currently serves the T Bar circulating lot. However, this access will be reconfigured by straightening the skewed approach to create a tighter turning radius and reduce the crossing distance for pedestrians. The access currently also aligns with an access serving a residential condominium complex. The intersection will continue operating with stop control on the two minor driveway approaches along Ski Time Square Drive.

- If 2045 traffic volume projections materialize, the Mt. Werner Road and Pine Grove Road (#1) intersection may need to be realigned to allow for designated northbound and southbound left turn lanes which would eliminate the need for the existing split phasing at this intersection. If signal control remains at this intersection, the westbound left turn lane may need to be extended from 150 feet to 300 feet by 2045. The realignment of the north leg may be challenging due to encroaching into property on the northwest and southwest corners of this intersection. For this intersection to operate effectively as a traffic signal, the north and south legs would need to be widened and moved to the west allowing for perpendicular alignment of these legs. Therefore, this intersection could also be considered for conversion to roundabout control by the 2045 horizon. If roundabout control is implemented, then it is recommended that the eastbound and westbound approaches provide two approach lanes and two receiving lanes. The westbound left turn lane can be removed at this intersection to accommodate most of the space needed for the second eastbound through lane. Of note, these improvement considerations are for the 2045 horizon and are needed independent of the project based on 2045 background traffic volume projections. Additionally, the project traffic is anticipated to contribute approximately 2.9 percent to the overall traffic volumes at the intersection for the 2045 total conditions.

Alternative Analysis: Vehicle Restriction along Mt. Werner Circle at Steamboat Square

- If the City implements removing through traffic along Mt. Werner Circle near Steamboat Square and the Gondola Transit Center (GTC) to improve safety at the pedestrian crossing, then existing and future traffic will reroute. It is believed that the intersection of Mt. Werner Road & Mt. Werner Circle (#2) would operate with failing movements under stop control as soon as vehicle restrictions were implemented along Mt. Werner Circle adjacent to base village. Therefore, a single lane roundabout or signal could be considered at the Mt. Werner Road & Mt. Werner Circle (#2) intersection to accommodate projected travel patterns with the removal of through traffic near the pedestrian crosswalks along Mt. Werner Circle at the GTC. Additionally, the project traffic is anticipated to contribute approximately 4.1 percent to the overall traffic volumes at the intersection for the short-term total conditions.

- Any onsite or offsite improvements should be incorporated into the Civil Drawings and conform to standards of the City of Steamboat Springs and the Manual on Uniform Traffic Control Devices (MUTCD) – 2009 Edition.

APPENDICES

APPENDIX A

TIS Scoping Form

Attachment A
TRAFFIC IMPACT STUDY – SCOPE APPROVAL FORM

Prior to starting a traffic impact study, a Scope Approval Form must be submitted for review and signed by the City Public Works Director. It shall be included in every traffic study submittal as Attachment A. This Scope Approval Form is for City requirements only. Consultants must contact CDOT to determine requirements related to access permits and work in CDOT right-of-way.

Project Information

Project Name:	Thunderhead Beach
Project Location:	1965 Ski Time Square Drive
Developer Name/ Contact:	Majestic Realty Co
Traffic Engineer Name/ Contact:	Jeff Planck / jeff.planck@kimley-horn.com / 720-943-9962

Study Parameters

Type of Study Required: ☐ Trip Generation Letter ■ Long-term Traffic Study ☐ Short-term Traffic Study ☐ Trip Evaluation Letter

Traffic Counts

■ Winter Zone ☐ Summer Zone

■ Counts w/in last 2 years are available By: Provided by City Date conducted: Dec 2021

☐ New counts will be collected on _____

■ Existing counts will be estimated based on: annual growth

% growth rate: See Note 1

Seasonal Adjustment Factor applied (ratio): NA

■ Future counts will be estimated based on a Note 1 % growth rate.

Note 1: McDowell Study.
0.5% east of Steamboat Blvd,
2% west of Steamboat Blvd

Peak Hours Analyzed

■ AM Peak Hour ■ PM peak hour ☐ Other _____

Trip Generation Rates

■ From ITE ☐ Other (cite)_____

■ No passby or mode split (typical)

☐ Passby or mode split (describe)_____

Trip Distribution – Attach sketch A-1

Study Parameters

List of Study Area Intersections

1.	Mt Werner Rd & Pine Grove Rd	
2.	Mt Werner Rd & Mr Werner Cir	
3.	Ski Time Square Dr & Mt Werner Cir	
4.	Ski Time Square Roundabout	
5.		
6.		
7.		

Key Analysis items

- ■ Existing + site traffic at study intersections
- ■ Peak Hour LOS at study intersections
- ☐ CDOT Access Permit Required (consult with CDOT prior to approval of scope)
- ■ % Site contribution to intersection/road segment at Mt Werner/Mt Werner & Mt Werner/Pine Grove
- ■ Auxiliary lane evaluation at study area intersections
- ■ Traffic signal warrants at stop controlled intersections with failing movements
- ☐ Four-way stop sign warrants at _____
- ■ Queuing Analysis at study area intersections
- ■ Other bike/ped/transit facility evaluation

Approvals

Jeff Planck, P.E. 09/26/2023

Prepared By: Date

Please note that the approval of this scope approval form shall not be construed as an approval of the proposed use, but rather a methodology for evaluation of the proposed use. During the city development review process, the proposed use will be reviewed by city staff for compliance with code, standards, and community planning documents.

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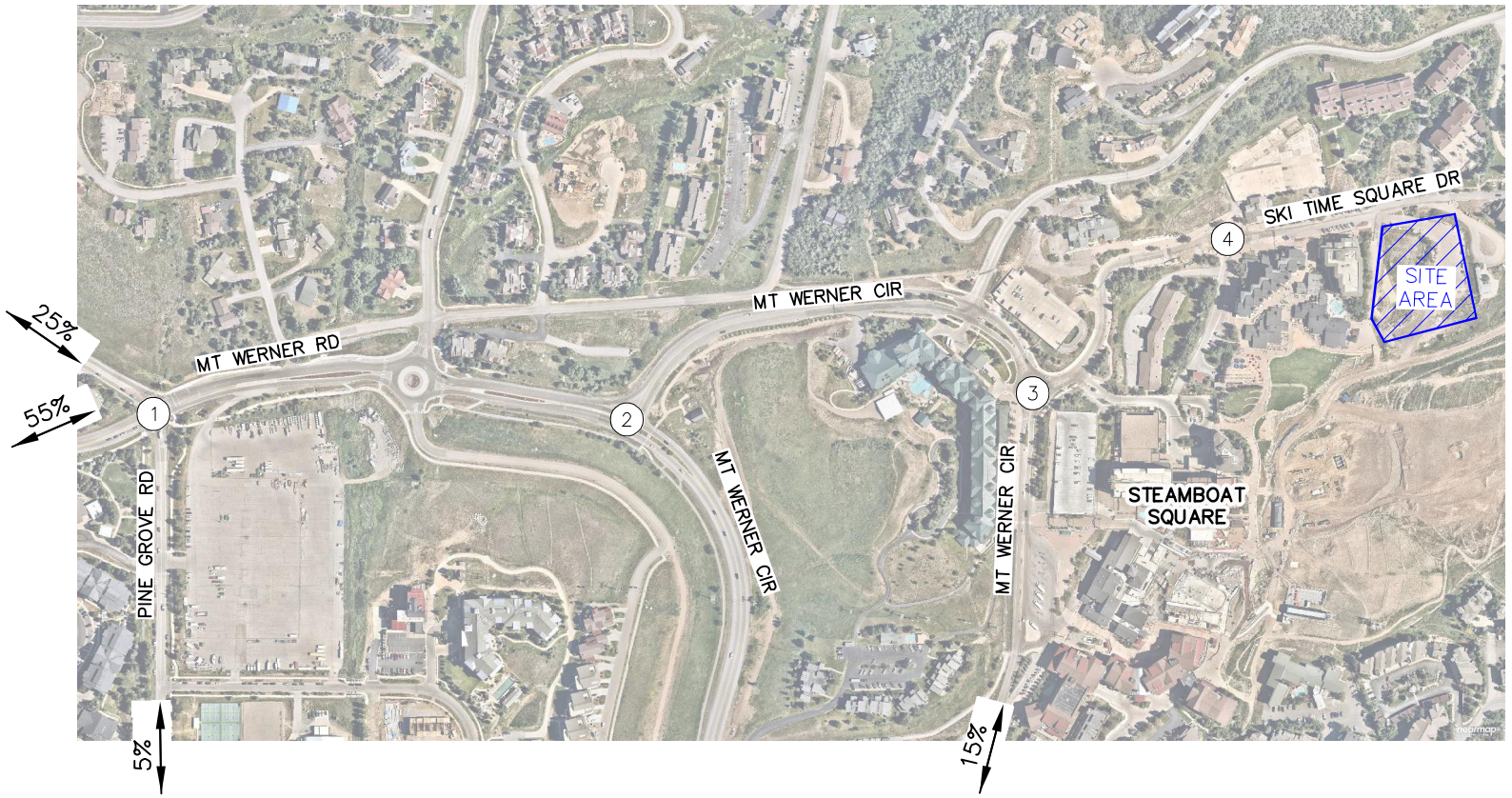


LEGEND

(X) Study Area Key Intersection

XX% External Trip Distribution Percentage

Thunderhead Beach
Steamboat Springs, Colorado
Project Trip Distribution

Kimley»Horn

City of Steamboat Springs

October 12, 2023

Mary Gormley
6200 S Syracuse Way
Greenwood Village, CO 80111

RE: Approval Letter for Preconsultation - Traffic Scope Approval Form or Waiver Request for Thunderhead Beach (PL20230287)

Dear Mary Gormley,

The following are approved:

1. Traffic Impact Study Scope Approval Form (As Noted)

If you have any questions or concerns please contact me at (970) 871-8271 or via email at esoltis@steamboatsprings.net.

Sincerely,

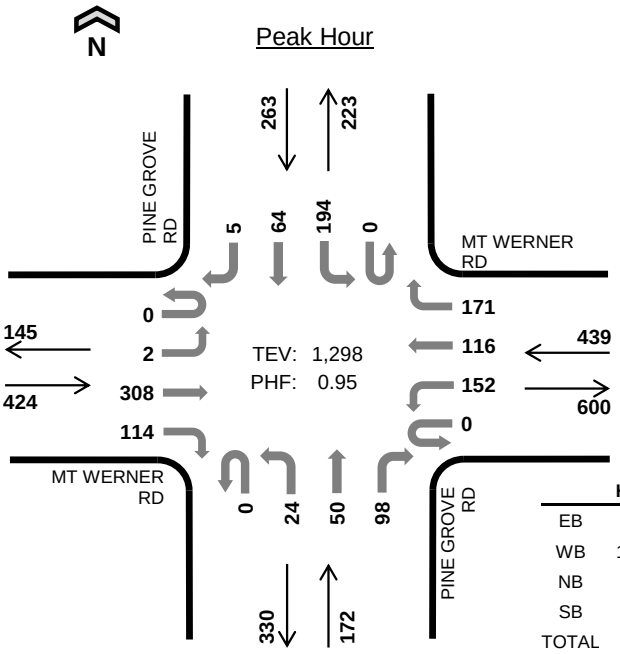
Emrick Soltis, P.E.
Community Development Engineer

APPENDIX B

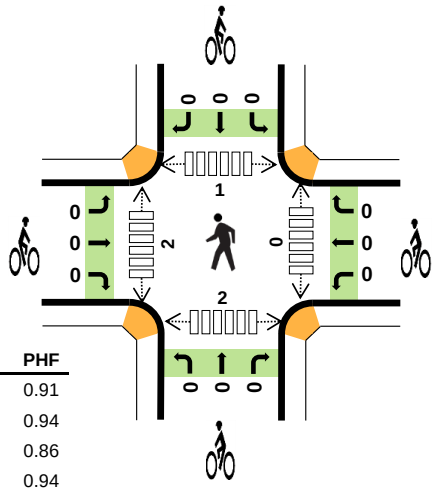
Intersection Count Sheets

PINE GROVE RD
MT WERNER RD

Date: 12/31/2021
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	5.2%	0.91
WB	10.9%	0.94
NB	4.7%	0.86
SB	8.4%	0.94
TOTAL	7.7%	0.95



Two-Hour Count Summaries

Interval Start		MT WERNER RD Eastbound				MT WERNER RD Westbound				PINE GROVE RD Northbound				PINE GROVE RD Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	44	1	0	4	7	11	0	1	4	11	0	23	1	0	107	0
7:15 AM		0	0	69	6	0	4	9	12	0	1	4	12	0	35	4	0	156	0
7:30 AM		0	0	68	5	0	7	12	25	0	2	7	19	0	42	6	3	196	0
7:45 AM		0	1	67	24	0	33	15	28	0	4	9	26	0	53	3	2	265	724
8:00 AM		**0**	**0**	**73**	**42**	**0**	**56**	**16**	**32**	**0**	**2**	**13**	**23**	**0**	**55**	**13**	**2**	**327**	944
8:15 AM		**0**	**2**	**86**	**28**	**0**	**42**	**30**	**39**	**0**	**9**	**12**	**29**	**0**	**46**	**17**	**1**	**341**	1,129
8:30 AM		**0**	**0**	**74**	**23**	**0**	**24**	**31**	**52**	**0**	**2**	**15**	**24**	**0**	**47**	**20**	**0**	**312**	1,245
8:45 AM		**0**	**0**	**75**	**21**	**0**	**30**	**39**	**48**	**0**	**11**	**10**	**22**	**0**	**46**	**14**	**2**	**318**	**1,298**
Count Total		0	3	556	150	0	200	159	247	0	32	74	166	0	347	78	10	2,022	0
Peak Hour	**All**	**0**	**2**	**308**	**114**	**0**	**152**	**116**	**171**	**0**	**24**	**50**	**98**	**0**	**194**	**64**	**5**	**1,298**	**0**
	HV	**0**	**0**	**20**	**2**	**0**	**19**	**13**	**16**	**0**	**0**	**2**	**6**	**0**	**19**	**3**	**0**	**100**	**0**
	HV%	**-**	**0%**	**6%**	**2%**	**-**	**13%**	**11%**	**9%**	**-**	**0%**	**4%**	**6%**	**-**	**10%**	**5%**	**0%**	**8%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	4	1	4	*10*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	3	2	0	3	*8*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	1	5	1	2	*9*	0	0	1	0	*1*	0	1	0	0	*1*
7:45 AM	9	4	0	7	*20*	0	0	0	0	*0*	0	1	0	1	*2*
8:00 AM	**4**	**7**	**5**	**10**	***26***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**1**	**0**	*2*
8:15 AM	**5**	**11**	**1**	**5**	***22***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
8:30 AM	**4**	**12**	**2**	**3**	***21***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**1**	*2*
8:45 AM	**9**	**18**	**0**	**4**	***31***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	36	63	10	38	*147*	0	0	1	0	*1*	0	4	1	3	*8*
Peak Hour	**22**	**48**	**8**	**22**	***100***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**1**	**2**	***5***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	MT WERNER RD Eastbound				MT WERNER RD Westbound				PINE GROVE RD Northbound				PINE GROVE RD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	1	1	2	0	0	0	1	0	4	0	0	10	0
7:15 AM	0	0	3	0	0	1	1	0	0	0	0	0	0	3	0	0	8	0
7:30 AM	0	0	0	1	0	2	2	1	0	0	0	1	0	1	0	1	9	0
7:45 AM	0	1	6	2	0	1	3	0	0	0	0	0	0	7	0	0	20	47
8:00 AM	**0**	**0**	**4**	**0**	**0**	**2**	**3**	**2**	**0**	**0**	**2**	**3**	**0**	**9**	**1**	**0**	**26**	63
8:15 AM	**0**	**0**	**5**	**0**	**0**	**6**	**3**	**2**	**0**	**0**	**0**	**1**	**0**	**3**	**2**	**0**	**22**	77
8:30 AM	**0**	**0**	**3**	**1**	**0**	**5**	**1**	**6**	**0**	**0**	**0**	**2**	**0**	**3**	**0**	**0**	**21**	89
8:45 AM	**0**	**0**	**8**	**1**	**0**	**6**	**6**	**6**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**31**	**100**
Count Total	0	1	30	5	0	24	20	19	0	0	2	8	0	34	3	1	147	0
Peak Hour	**0**	**0**	**20**	**2**	**0**	**19**	**13**	**16**	**0**	**0**	**2**	**6**	**0**	**19**	**3**	**0**	**100**	**0**

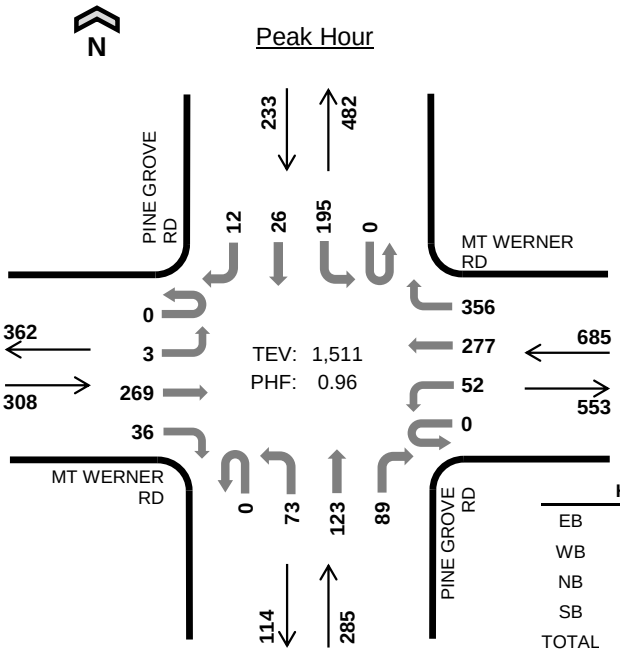
Two-Hour Count Summaries - Bikes

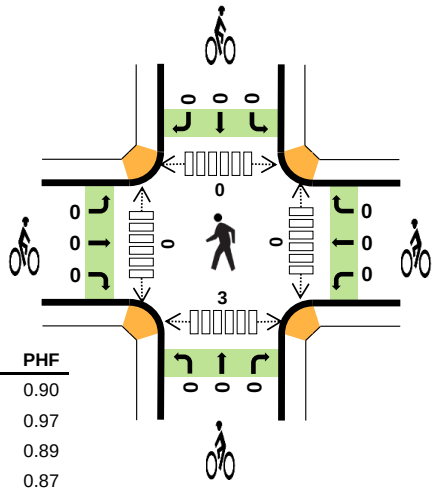
Interval Start	MT WERNER RD Eastbound			MT WERNER RD Westbound			PINE GROVE RD Northbound			PINE GROVE RD Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

PINE GROVE RD
MT WERNER RD

Date: 12/31/2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM





	HV %:	PHF
EB	8.1%	0.90
WB	8.9%	0.97
NB	3.5%	0.89
SB	6.4%	0.87
TOTAL	7.3%	0.96

Two-Hour Count Summaries

Interval Start	MT WERNER RD Eastbound				MT WERNER RD Westbound				PINE GROVE RD Northbound				PINE GROVE RD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	62	10	0	11	66	92	0	16	30	13	0	46	11	1	358	0
4:15 PM	0	0	58	8	0	11	53	105	0	7	27	16	0	49	5	4	343	0
4:30 PM	0	0	55	11	0	7	72	97	0	19	41	28	0	56	4	0	390	0
4:45 PM	0	0	57	12	0	9	63	91	0	16	28	17	0	58	5	3	359	1,450
5:00 PM	**0**	**1**	**72**	**10**	**0**	**13**	**77**	**86**	**0**	**19**	**37**	**24**	**0**	**44**	**10**	**2**	**395**	1,487
5:15 PM	**0**	**0**	**65**	**5**	**0**	**10**	**68**	**90**	**0**	**19**	**21**	**16**	**0**	**51**	**7**	**2**	**354**	1,498
5:30 PM	**0**	**0**	**58**	**11**	**0**	**17**	**74**	**86**	**0**	**15**	**39**	**20**	**0**	**44**	**2**	**4**	**370**	1,478
5:45 PM	**0**	**2**	**74**	**10**	**0**	**12**	**58**	**94**	**0**	**20**	**26**	**29**	**0**	**56**	**7**	**4**	**392**	**1,511**
Count Total	0	3	501	77	0	90	531	741	0	131	249	163	0	404	51	20	2,961	0
Peak Hour All	**0**	**3**	**269**	**36**	**0**	**52**	**277**	**356**	**0**	**73**	**123**	**89**	**0**	**195**	**26**	**12**	**1,511**	**0**
Peak Hour HV	**0**	**0**	**25**	**0**	**0**	**5**	**29**	**27**	**0**	**0**	**3**	**7**	**0**	**13**	**1**	**1**	**111**	**0**
Peak Hour HV%	**-**	**0%**	**9%**	**0%**	**-**	**10%**	**10%**	**8%**	**-**	**0%**	**2%**	**8%**	**-**	**7%**	**4%**	**8%**	**7%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	7	18	2	9	*36*	0	1	0	0	*1*	0	0	0	0	*0*
4:15 PM	7	15	1	6	*29*	0	0	0	0	*0*	0	3	0	0	*3*
4:30 PM	3	21	1	2	*27*	0	0	0	0	*0*	0	0	0	2	*2*
4:45 PM	7	11	3	6	*27*	0	0	0	0	*0*	0	0	0	1	*1*
5:00 PM	**8**	**15**	**3**	**5**	***31***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**9**	**14**	**2**	**2**	***27***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
5:30 PM	**3**	**17**	**3**	**2**	***25***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
5:45 PM	**5**	**15**	**2**	**6**	***28***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	49	126	17	38	*230*	0	1	0	0	*1*	0	3	0	6	*9*
Peak Hour	**25**	**61**	**10**	**15**	***111***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**3**	***3***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	MT WERNER RD Eastbound				MT WERNER RD Westbound				PINE GROVE RD Northbound				PINE GROVE RD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	5	2	0	3	12	3	0	0	1	1	0	7	1	1	36	0
4:15 PM	0	0	7	0	0	2	6	7	0	0	0	1	0	4	0	2	29	0
4:30 PM	0	0	3	0	0	1	12	8	0	0	0	1	0	2	0	0	27	0
4:45 PM	0	0	7	0	0	0	8	3	0	2	0	1	0	5	1	0	27	119
5:00 PM	**0**	**0**	**8**	**0**	**0**	**2**	**8**	**5**	**0**	**0**	**1**	**2**	**0**	**4**	**1**	**0**	**31**	114
5:15 PM	**0**	**0**	**9**	**0**	**0**	**1**	**7**	**6**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**27**	112
5:30 PM	**0**	**0**	**3**	**0**	**0**	**2**	**7**	**8**	**0**	**0**	**1**	**2**	**0**	**2**	**0**	**0**	**25**	110
5:45 PM	**0**	**0**	**5**	**0**	**0**	**0**	**7**	**8**	**0**	**0**	**1**	**1**	**0**	**5**	**0**	**1**	**28**	**111**
Count Total	0	0	47	2	0	11	67	48	0	2	4	11	0	31	3	4	230	0
Peak Hour	**0**	**0**	**25**	**0**	**0**	**5**	**29**	**27**	**0**	**0**	**3**	**7**	**0**	**13**	**1**	**1**	**111**	**0**

Two-Hour Count Summaries - Bikes

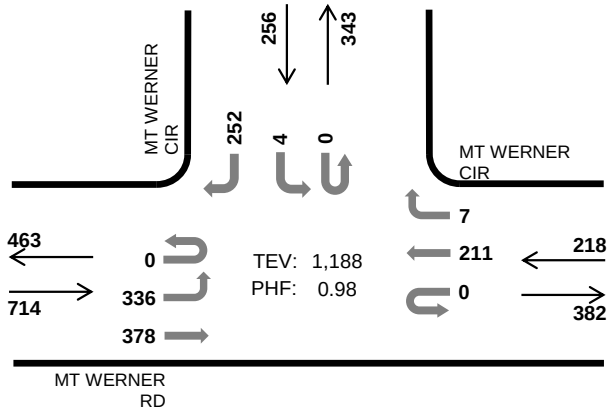
Interval Start	MT WERNER RD Eastbound			MT WERNER RD Westbound			PINE GROVE RD Northbound			PINE GROVE RD Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	1	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

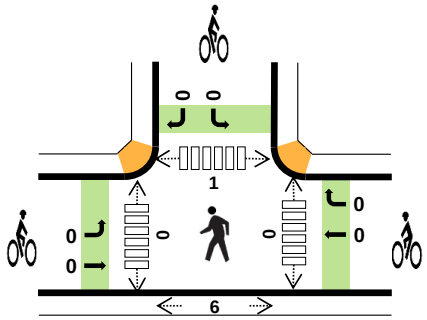
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

MT WERNER CIR
MT WERNER RD

Date: 12/31/2021
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM

Peak Hour





	HV %:	PHF
EB	10.2%	0.91
WB	4.1%	0.72
NB	-	-
SB	18.0%	0.74
TOTAL	10.8%	0.98

Two-Hour Count Summaries

Interval Start	MT WERNER RD Eastbound				MT WERNER CIR Westbound				N/A Northbound				MT WERNER CIR Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	35	49	0	0	0	6	1	0	0	0	0	0	0	0	12	103	0
7:15 AM	0	48	81	0	0	0	11	2	0	0	0	0	0	0	0	20	162	0
7:30 AM	1	48	103	0	0	0	21	1	0	0	0	0	0	0	0	20	194	0
7:45 AM	0	67	104	0	0	0	47	2	0	0	0	0	0	0	0	37	257	716
8:00 AM	**0**	**75**	**99**	**0**	**0**	**0**	**73**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**42**	**292**	905
8:15 AM	**0**	**86**	**110**	**0**	**0**	**0**	**50**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**54**	**303**	1,046
8:30 AM	**0**	**99**	**83**	**0**	**0**	**0**	**46**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**73**	**303**	1,155
8:45 AM	**0**	**76**	**86**	**0**	**0**	**0**	**42**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**83**	**290**	**1,188**
Count Total	1	534	715	0	0	0	296	13	0	0	0	0	0	4	0	341	1,904	0
Peak Hour All	**0**	**336**	**378**	**0**	**0**	**0**	**211**	**7**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**252**	**1,188**	**0**
Peak Hour HV	**0**	**15**	**58**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**45**	**128**	**0**
Peak Hour HV%	**-**	**4%**	**15%**	**-**	**-**	**-**	**4%**	**0%**	**-**	**-**	**-**	**-**	**-**	**25%**	**-**	**18%**	**11%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	5	0	0	1	*6*	0	0	0	0	*0*	0	0	0	2	*2*
7:15 AM	7	2	0	4	*13*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	6	4	0	3	*13*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	16	2	0	7	*25*	0	0	0	0	*0*	0	0	0	2	*2*
8:00 AM	**17**	**2**	**0**	**7**	***26***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
8:15 AM	**17**	**4**	**0**	**7**	***28***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
8:30 AM	**19**	**1**	**0**	**13**	***33***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
8:45 AM	**20**	**2**	**0**	**19**	***41***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**3**	***3***
Count Total	107	17	0	61	*185*	0	0	0	0	*0*	0	0	1	10	*11*
Peak Hr	**73**	**9**	**0**	**46**	***128***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**6**	***7***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	MT WERNER RD				MT WERNER CIR				N/A				MT WERNER CIR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	1	6	0
7:15 AM	0	2	5	0	0	0	0	2	0	0	0	0	0	0	0	4	13	0
7:30 AM	0	1	5	0	0	0	3	1	0	0	0	0	0	0	0	3	13	0
7:45 AM	0	6	10	0	0	0	2	0	0	0	0	0	0	0	0	7	25	57
8:00 AM	**0**	**1**	**16**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**26**	77
8:15 AM	**0**	**4**	**13**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**28**	92
8:30 AM	**0**	**4**	**15**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**33**	112
8:45 AM	**0**	**6**	**14**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**18**	**41**	**128**
Count Total	0	26	81	0	0	0	14	3	0	0	0	0	0	1	0	60	185	0
Peak Hour	**0**	**15**	**58**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**45**	**128**	**0**

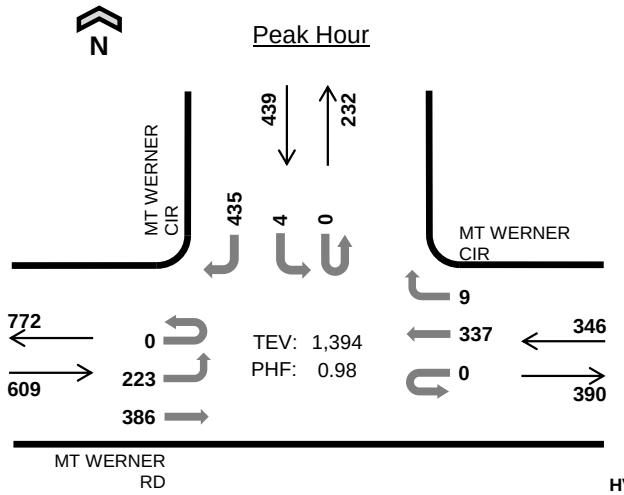
Two-Hour Count Summaries - Bikes

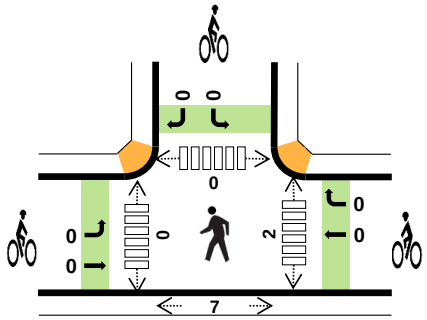
Interval Start	MT WERNER RD			MT WERNER CIR			N/A			MT WERNER CIR			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

MT WERNER CIR
MT WERNER RD

Date: 12/31/2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV %:	PHF
EB	13.1%	0.93
WB	6.1%	0.97
NB	-	-
SB	13.2%	0.96
TOTAL	11.4%	0.98

Two-Hour Count Summaries

Interval Start	MT WERNER RD Eastbound				MT WERNER CIR Westbound				N/A Northbound				MT WERNER CIR Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	40	96	0	0	0	79	4	0	0	0	0	0	0	0	115	334	0
4:15 PM	**0**	**53**	**98**	**0**	**0**	**0**	**88**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**113**	**354**	0
4:30 PM	**0**	**55**	**108**	**0**	**0**	**0**	**81**	**6**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**105**	**356**	0
4:45 PM	**0**	**55**	**86**	**0**	**0**	**0**	**82**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**104**	**329**	1,373
5:00 PM	**0**	**60**	**94**	**0**	**0**	**0**	**86**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**113**	**355**	**1,394**
5:15 PM	0	66	91	0	0	0	73	3	0	0	0	0	0	4	0	111	348	1,388
5:30 PM	0	53	80	0	0	0	87	5	0	0	0	0	0	2	0	107	334	1,366
5:45 PM	0	79	92	0	0	0	90	3	0	0	0	0	0	2	0	89	355	1,392
Count Total	0	461	745	0	0	0	666	24	0	0	0	0	0	12	0	857	2,765	0
Peak Hour All	**0**	**223**	**386**	**0**	**0**	**0**	**337**	**9**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**435**	**1,394**	**0**
Peak Hour HV	**0**	**10**	**70**	**0**	**0**	**0**	**20**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**58**	**159**	**0**
Peak Hour HV%	**-**	**4%**	**18%**	**-**	**-**	**-**	**6%**	**11%**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**13%**	**11%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	18	9	0	13	*40*	0	1	0	0	*1*	0	0	0	0	*0*
4:15 PM	**24**	**5**	**0**	**18**	***47***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
4:30 PM	**20**	**10**	**0**	**17**	***47***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**5**	*7*
4:45 PM	**19**	**3**	**0**	**11**	***33***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**17**	**3**	**0**	**12**	***32***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	***1***
5:15 PM	20	4	0	15	*39*	0	0	0	0	*0*	0	0	0	1	*1*
5:30 PM	12	3	0	14	*29*	0	0	0	0	*0*	0	0	0	3	*3*
5:45 PM	18	3	0	15	*36*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	148	40	0	115	*303*	0	1	0	0	*1*	2	0	0	11	*13*
Peak Hr	**80**	**21**	**0**	**58**	***159***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**7**	***9***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	MT WERNER RD				MT WERNER CIR				N/A				MT WERNER CIR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	2	16	0	0	0	8	1	0	0	0	0	0	0	0	13	40	0
4:15 PM	**0**	**2**	**22**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**18**	**47**	0
4:30 PM	**0**	**5**	**15**	**0**	**0**	**0**	**9**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**47**	0
4:45 PM	**0**	**1**	**18**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**33**	167
5:00 PM	**0**	**2**	**15**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**32**	**159**
5:15 PM	0	3	17	0	0	0	4	0	0	0	0	0	0	0	0	15	39	151
5:30 PM	0	1	11	0	0	0	2	1	0	0	0	0	0	0	0	14	29	133
5:45 PM	0	4	14	0	0	0	3	0	0	0	0	0	0	0	0	15	36	136
Count Total	0	20	128	0	0	0	37	3	0	0	0	0	0	0	0	115	303	0
Peak Hour	**0**	**10**	**70**	**0**	**0**	**0**	**20**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**58**	**159**	**0**

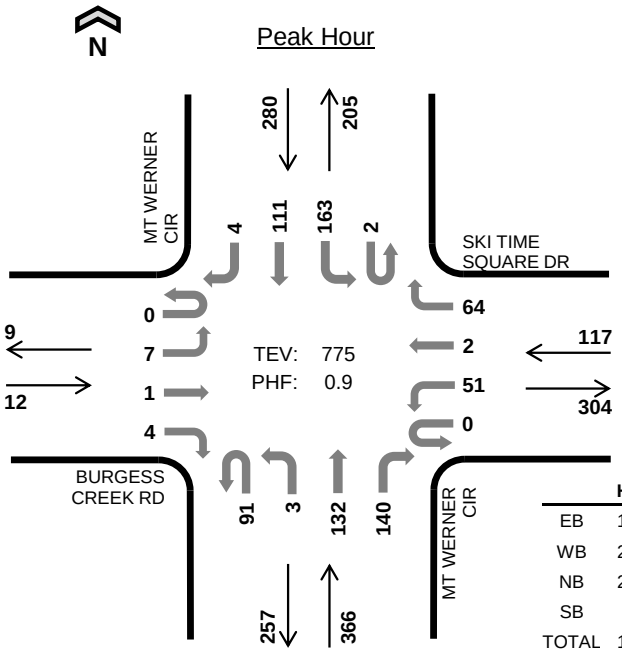
Two-Hour Count Summaries - Bikes

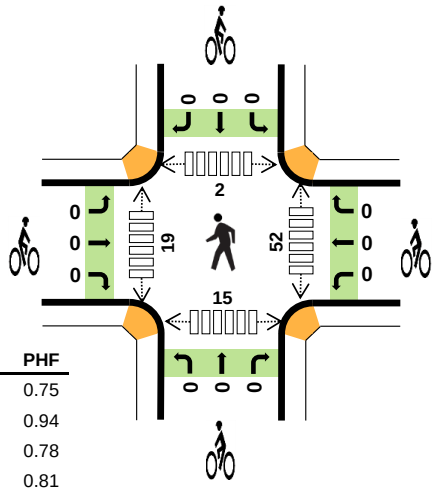
Interval Start	MT WERNER RD			MT WERNER CIR			N/A			MT WERNER CIR			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

MT WERNER CIR
SKI TIME SQUARE DR

Date: 12/31/2021
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV %:	PHF
EB	16.7%	0.75
WB	24.8%	0.94
NB	25.7%	0.78
SB	6.1%	0.81
TOTAL	18.3%	0.90

Two-Hour Count Summaries

Interval Start		BURGESS CREEK RD Eastbound				SKI TIME SQUARE DR Westbound				MT WERNER CIR Northbound				MT WERNER CIR Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	0	2	0	5	0	4	0	2	6	8	0	24	8	2	61	0
7:15 AM		0	3	0	0	0	7	0	9	3	1	9	11	0	18	16	1	78	0
7:30 AM		0	2	0	0	0	2	0	8	6	1	13	12	0	18	18	2	82	0
7:45 AM		0	1	0	4	0	4	0	12	9	3	19	19	0	34	22	1	128	349
8:00 AM		**0**	**1**	**0**	**3**	**0**	**13**	**0**	**13**	**15**	**0**	**23**	**29**	**1**	**35**	**23**	**1**	**157**	445
8:15 AM		**0**	**2**	**1**	**0**	**0**	**10**	**1**	**19**	**24**	**2**	**35**	**26**	**0**	**43**	**32**	**0**	**195**	562
8:30 AM		**0**	**3**	**0**	**1**	**0**	**14**	**1**	**16**	**25**	**0**	**32**	**38**	**1**	**53**	**30**	**2**	**216**	696
8:45 AM		**0**	**1**	**0**	**0**	**0**	**14**	**0**	**16**	**27**	**1**	**42**	**47**	**0**	**32**	**26**	**1**	**207**	**775**
Count Total		0	13	1	10	0	69	2	97	109	10	179	190	2	257	175	10	1,124	0
Peak Hour	**All**	**0**	**7**	**1**	**4**	**0**	**51**	**2**	**64**	**91**	**3**	**132**	**140**	**2**	**163**	**111**	**4**	**775**	**0**
	HV	**0**	**1**	**0**	**1**	**0**	**18**	**0**	**11**	**39**	**0**	**39**	**16**	**0**	**9**	**8**	**0**	**142**	**0**
	HV%	**-**	**14%**	**0%**	**25%**	**-**	**35%**	**0%**	**17%**	**43%**	**0%**	**30%**	**11%**	**0%**	**6%**	**7%**	**0%**	**18%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	1	3	1	2	*7*	0	0	0	0	*0*	0	0	0	1	*1*
7:15 AM	1	5	8	2	*16*	0	0	0	0	*0*	2	0	0	0	*2*
7:30 AM	0	1	4	1	*6*	0	0	0	0	*0*	7	1	1	2	*11*
7:45 AM	2	5	11	3	*21*	0	0	0	0	*0*	6	1	0	0	*7*
8:00 AM	**1**	**7**	**12**	**4**	***24***	**0**	**0**	**0**	**0**	***0***	**12**	**9**	**0**	**4**	*25*
8:15 AM	**0**	**5**	**22**	**3**	***30***	**0**	**0**	**0**	**0**	***0***	**6**	**0**	**0**	**2**	*8*
8:30 AM	**1**	**6**	**27**	**5**	***39***	**0**	**0**	**0**	**0**	***0***	**24**	**8**	**2**	**8**	*42*
8:45 AM	**0**	**11**	**33**	**5**	***49***	**0**	**0**	**0**	**0**	***0***	**10**	**2**	**0**	**1**	***13***
Count Total	6	43	118	25	*192*	0	0	0	0	*0*	67	21	3	18	*109*
Peak Hour	**2**	**29**	**94**	**17**	***142***	**0**	**0**	**0**	**0**	***0***	**52**	**19**	**2**	**15**	***88***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	BURGESS CREEK RD				SKI TIME SQUARE DR				MT WERNER CIR				MT WERNER CIR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	2	0	1	0	0	1	0	0	1	1	0	7	0
7:15 AM	0	1	0	0	0	4	0	1	1	0	4	3	0	2	0	0	16	0
7:30 AM	0	0	0	0	0	1	0	0	2	0	2	0	0	1	0	0	6	0
7:45 AM	0	1	0	1	0	2	0	3	5	0	4	2	0	3	0	0	21	50
8:00 AM	**0**	**0**	**0**	**1**	**0**	**5**	**0**	**2**	**5**	**0**	**4**	**3**	**0**	**3**	**1**	**0**	**24**	67
8:15 AM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**2**	**12**	**0**	**8**	**2**	**0**	**1**	**2**	**0**	**30**	81
8:30 AM	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**2**	**11**	**0**	**11**	**5**	**0**	**2**	**3**	**0**	**39**	114
8:45 AM	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**5**	**11**	**0**	**16**	**6**	**0**	**3**	**2**	**0**	**49**	**142**
Count Total	0	3	0	3	0	27	0	16	47	0	50	21	0	16	9	0	192	0
Peak Hour	**0**	**1**	**0**	**1**	**0**	**18**	**0**	**11**	**39**	**0**	**39**	**16**	**0**	**9**	**8**	**0**	**142**	**0**

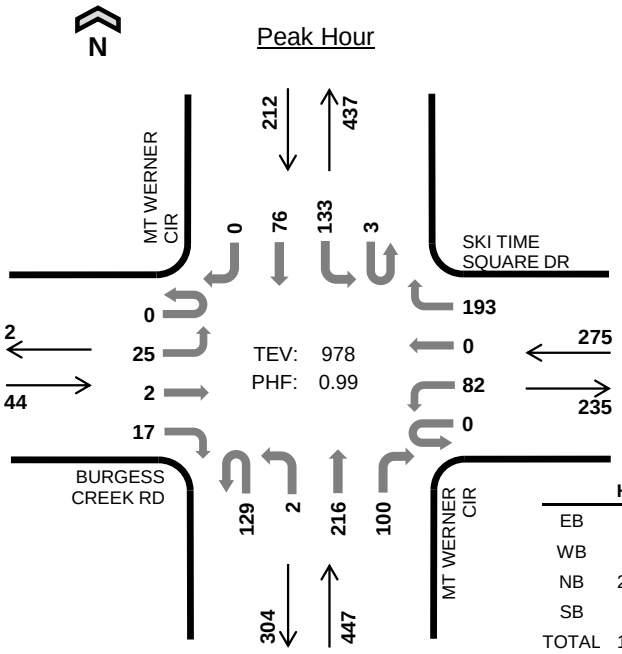
Two-Hour Count Summaries - Bikes

Interval Start	BURGESS CREEK RD			SKI TIME SQUARE DR			MT WERNER CIR			MT WERNER CIR			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

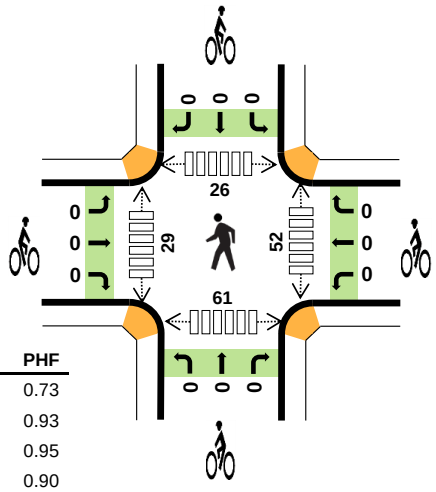
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

MT WERNER CIR
SKI TIME SQUARE DR

Date: 12/31/2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	9.1%	0.73
WB	9.5%	0.93
NB	26.2%	0.95
SB	8.0%	0.90
TOTAL	16.8%	0.99



Two-Hour Count Summaries

Interval Start		BURGESS CREEK RD Eastbound				SKI TIME SQUARE DR Westbound				MT WERNER CIR Northbound				MT WERNER CIR Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	4	0	3	0	18	0	43	20	0	51	20	0	18	16	1	194	0
4:15 PM		0	10	0	3	0	19	0	48	31	0	48	19	1	36	10	0	225	0
4:30 PM		0	4	0	2	0	19	0	38	26	0	52	15	2	37	18	0	213	0
4:45 PM		0	4	1	1	0	16	0	44	32	0	42	16	1	29	26	0	212	844
5:00 PM		**0**	**5**	**1**	**4**	**0**	**22**	**0**	**52**	**34**	**2**	**58**	**22**	**0**	**27**	**17**	**0**	**244**	894
5:15 PM		**0**	**6**	**0**	**4**	**0**	**20**	**0**	**49**	**31**	**0**	**52**	**23**	**2**	**39**	**16**	**0**	**242**	911
5:30 PM		**0**	**6**	**1**	**2**	**0**	**19**	**0**	**47**	**37**	**0**	**58**	**23**	**0**	**31**	**21**	**0**	**245**	943
5:45 PM		**0**	**8**	**0**	**7**	**0**	**21**	**0**	**45**	**27**	**0**	**48**	**32**	**1**	**36**	**22**	**0**	**247**	**978**
Count Total		0	47	3	26	0	154	0	366	238	2	409	170	7	253	146	1	1,822	0
Peak Hour	**All**	**0**	**25**	**2**	**17**	**0**	**82**	**0**	**193**	**129**	**2**	**216**	**100**	**3**	**133**	**76**	**0**	**978**	**0**
	HV	**0**	**0**	**1**	**3**	**0**	**14**	**0**	**12**	**53**	**0**	**46**	**18**	**0**	**7**	**10**	**0**	**164**	**0**
	HV%	**-**	**0%**	**50%**	**18%**	**-**	**17%**	**-**	**6%**	**41%**	**0%**	**21%**	**18%**	**0%**	**5%**	**13%**	**-**	**17%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	8	25	5	*38*	0	0	0	0	*0*	12	8	3	3	*26*
4:15 PM	0	6	26	5	*37*	0	0	0	0	*0*	10	2	2	6	*20*
4:30 PM	1	8	23	9	*41*	0	0	0	0	*0*	15	3	1	14	*33*
4:45 PM	0	2	30	4	*36*	0	0	0	1	*1*	21	3	4	8	*36*
5:00 PM	**1**	**6**	**30**	**4**	***41***	**0**	**0**	**0**	**0**	***0***	**13**	**8**	**4**	**8**	*33*
5:15 PM	**2**	**7**	**31**	**5**	***45***	**0**	**0**	**0**	**0**	***0***	**12**	**6**	**2**	**23**	*43*
5:30 PM	**0**	**7**	**33**	**4**	***44***	**0**	**0**	**0**	**0**	***0***	**24**	**4**	**9**	**11**	*48*
5:45 PM	**1**	**6**	**23**	**4**	***34***	**0**	**0**	**0**	**0**	***0***	**3**	**11**	**11**	**19**	***44***
Count Total	5	50	221	40	*316*	0	0	0	1	*1*	110	45	36	92	*283*
Peak Hour	**4**	**26**	**117**	**17**	***164***	**0**	**0**	**0**	**0**	***0***	**52**	**29**	**26**	**61**	***168***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	BURGESS CREEK RD				SKI TIME SQUARE DR				MT WERNER CIR				MT WERNER CIR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	4	0	4	11	0	11	3	0	2	3	0	38	0
4:15 PM	0	0	0	0	0	3	0	3	7	0	13	6	1	1	3	0	37	0
4:30 PM	0	0	0	1	0	5	0	3	10	0	10	3	2	2	5	0	41	0
4:45 PM	0	0	0	0	0	1	0	1	15	0	12	3	0	2	2	0	36	152
5:00 PM	**0**	**0**	**1**	**0**	**0**	**5**	**0**	**1**	**15**	**0**	**11**	**4**	**0**	**1**	**3**	**0**	**41**	155
5:15 PM	**0**	**0**	**0**	**2**	**0**	**4**	**0**	**3**	**14**	**0**	**11**	**6**	**0**	**3**	**2**	**0**	**45**	163
5:30 PM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	**16**	**0**	**14**	**3**	**0**	**1**	**3**	**0**	**44**	166
5:45 PM	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**4**	**8**	**0**	**10**	**5**	**0**	**2**	**2**	**0**	**34**	**164**
Count Total	0	0	1	4	0	27	0	23	96	0	92	33	3	14	23	0	316	0
Peak Hour	**0**	**0**	**1**	**3**	**0**	**14**	**0**	**12**	**53**	**0**	**46**	**18**	**0**	**7**	**10**	**0**	**164**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	BURGESS CREEK RD			SKI TIME SQUARE DR			MT WERNER CIR			MT WERNER CIR			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

APPENDIX C

Steamboat Resort MDPA TIA Excerpts

Comprehensive Transportation Impact Analysis
Steamboat Resort Master Development Plan Amendment

Steamboat Springs, Colorado

September 16, 2021
Revised April 4, 2022

PREPARED FOR:
Steamboat Ski & Resort Corporation
2305 Mt. Werner Circle
Steamboat Springs, CO 80487
970.871.5381
Contact: Jim Schneider

PREPARED BY:
McDowell Engineering, LLC
PO Box 4259
Eagle, CO 81631
970.623.0788
Contact: Kari J. McDowell Schroeder, PE, PTOE
Project Number: M1529

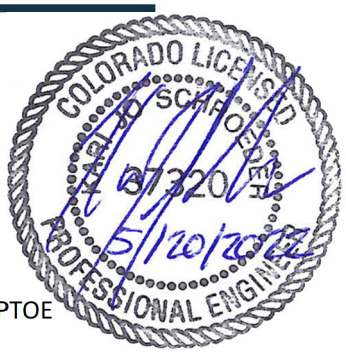
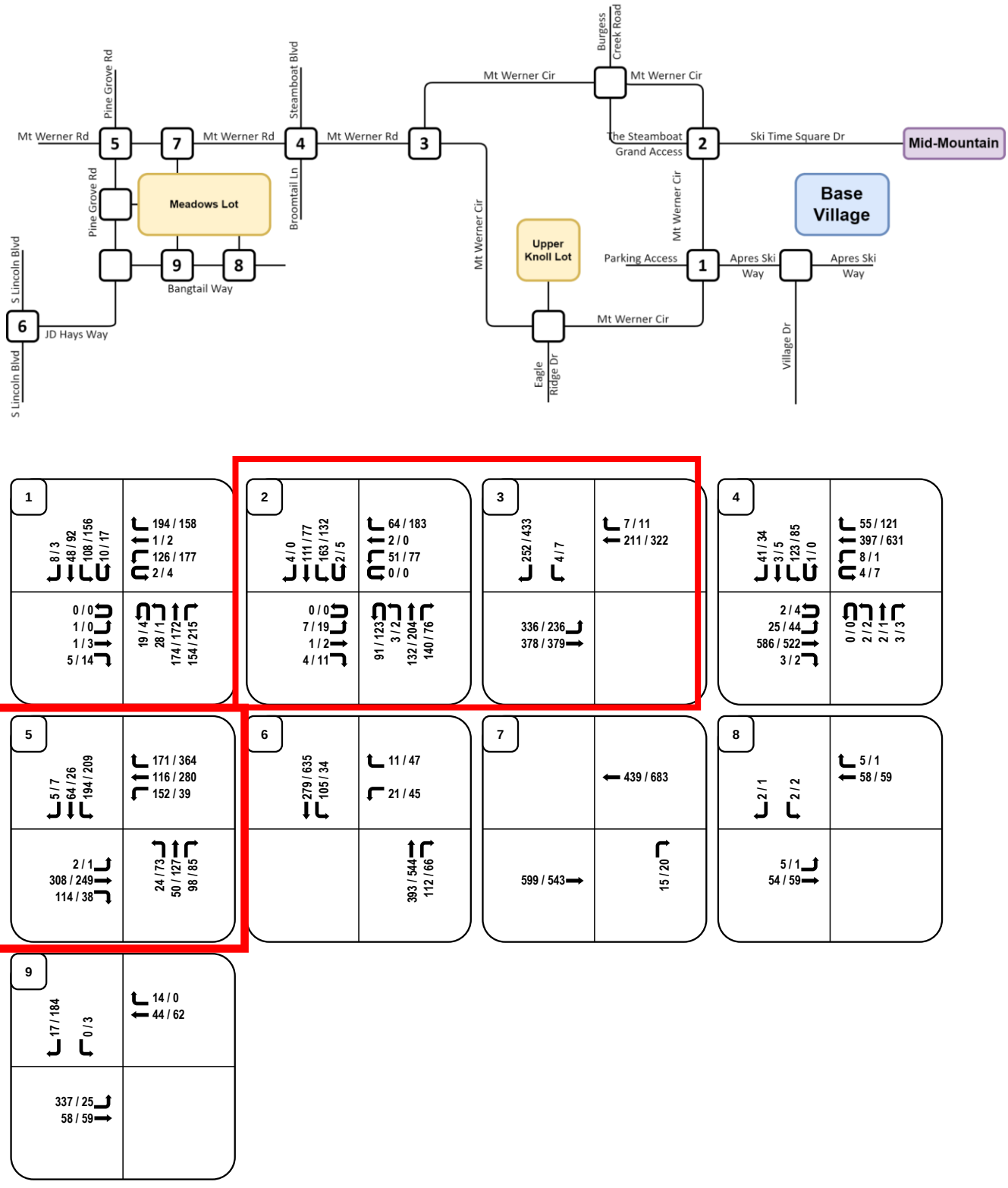


Figure 11: Year 2021 Existing Traffic



LEGEND:
Directional Distribution = Inbound% (Outbound %)
AM/PM Volumes = XX/XX VPH (in PCEs)
Turning Movements

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TRANSPORTATION ENGINEERING CONSULTANTS

Project Number M1529
Prepared By GWS
3/31/2022

4.4 Directional Distribution

The distribution of project-generated vehicular traffic on adjacent roadways is influenced by several factors including the following:

- The location of the site relative to other related facilities
- The configuration of the existing and proposed adjacent roadway network
- The relative location of neighboring population centers
- The circulation of transit routes

The directional distribution for the proposed projects associated with the Steamboat Resort expansion were directly correlated to current travel patterns on the roadway network. This directional distribution was generalized to apply to all vehicle types and both the morning and evening hours of analysis. The directional distribution is depicted in **Figure 18.**

4.5 Alternate Scenario for GTC Improvements

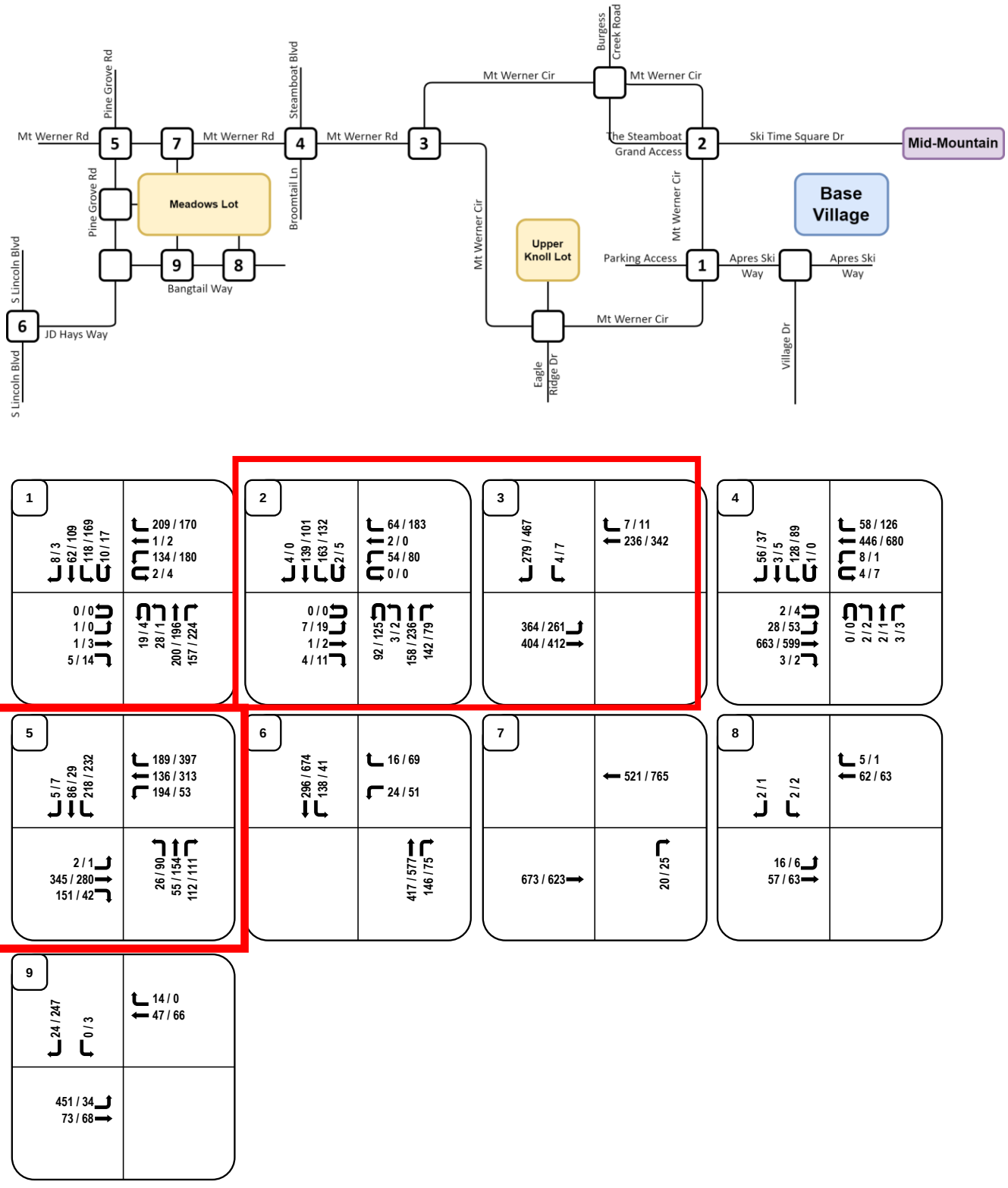
The City of Steamboat Springs is currently working on a *Mountain Area Master Plan*[4] (*MAMP*[4]) to guide policy and future development of the Mountain Area. This plan is still in the public approval process.

The *GTC Data Collection*[3] identified that the high conflict volume at the at-grade pedestrian crossings and Mt. Werner Circle was unsafe. This report recommended removing the conflict from this high traffic area. As such, the draft *MAMP*[4] identified restrictions of the traffic at this pedestrian crossing. Traffic at this pedestrian crossing would be restricted to City buses and emergency services. Other buses and shuttles would utilize a loop south of the crossing to circulate to the GTC. Passenger cars would be restricted within the GTC. Public skier pick up and drop off would be accommodated north of the pedestrian crossing. General concepts that have been recommended in the *MAMP*[4] are illustrated in **Figure 19**.

The total traffic conditions have been analyzed with two scenarios - with and without the GTC improvements. A secondary directional distribution was prepared for the project-generated traffic. Refer to **Figure 20**.

Similarly, background traffic was shifted to accommodate the alternate scenario. An overview of the background traffic shifts is shown in **Figure 21**. Detailed traffic volume shifts and modified background traffic forecasts are included in the **Appendix**.

Figure 26: Year 2024 Total Traffic

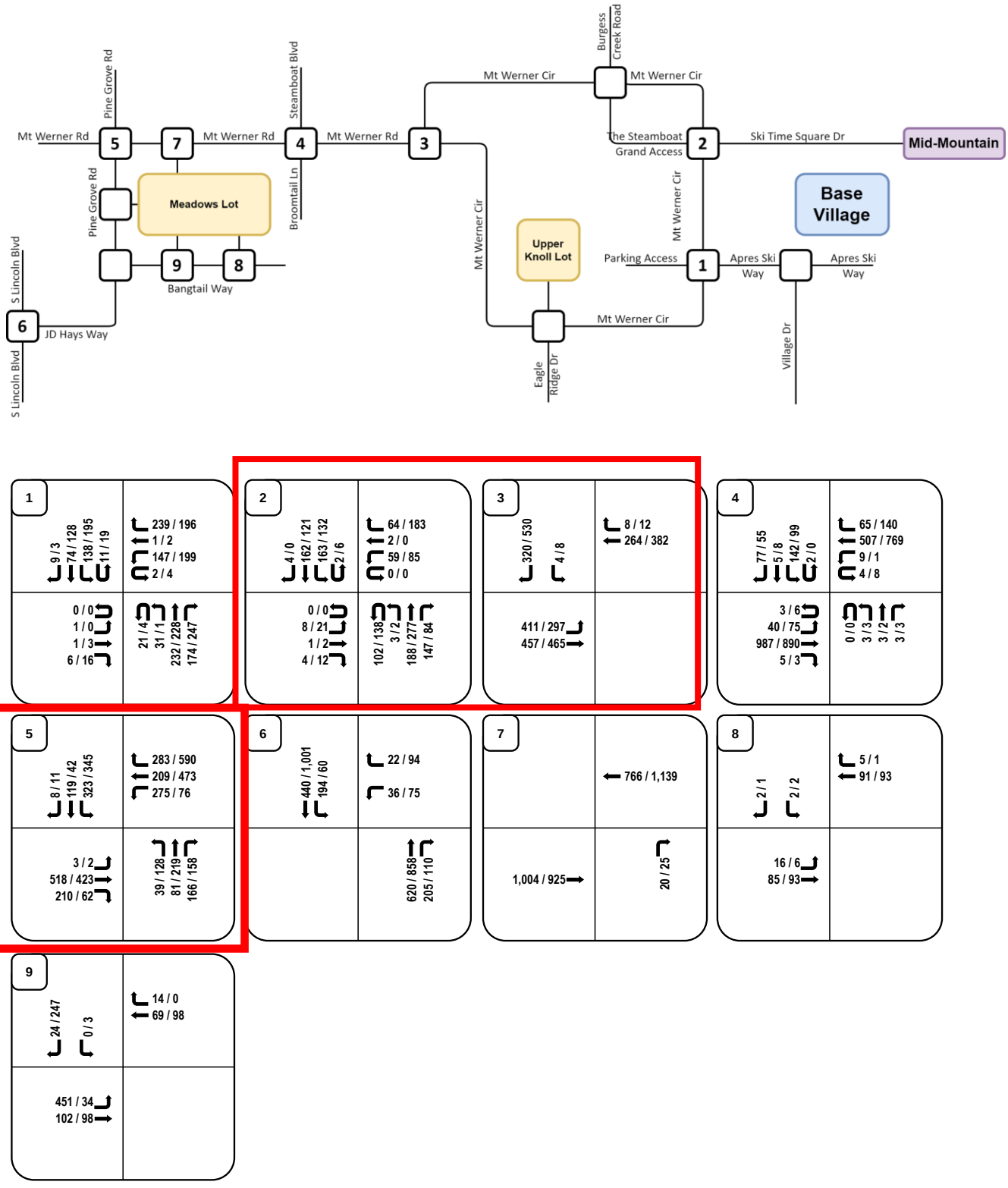


LEGEND:
Directional Distribution = Inbound% (Outbound %)
AM/PM Volumes = XX/XX VPH (in PCEs)
Turning Movements

McDOWELL ENGINEERING LLC
TRANSPORTATION ENGINEERING CONSULTANTS

Project Number M1529
Prepared By GWS
3/31/2022

Figure 28: Year 2044 Total Traffic



LEGEND:
Directional Distribution = Inbound% (Outbound %)
AM/PM Volumes = XX/XX VPH (in PCEs)
Turning Movements

McDOWELL ENGINEERING LLC
TRANSPORTATION ENGINEERING CONSULTANTS

Project Number M1529
Prepared By GWS
3/31/2022

Figure 19: General GTC Improvements Recommended in the MAMP[3]

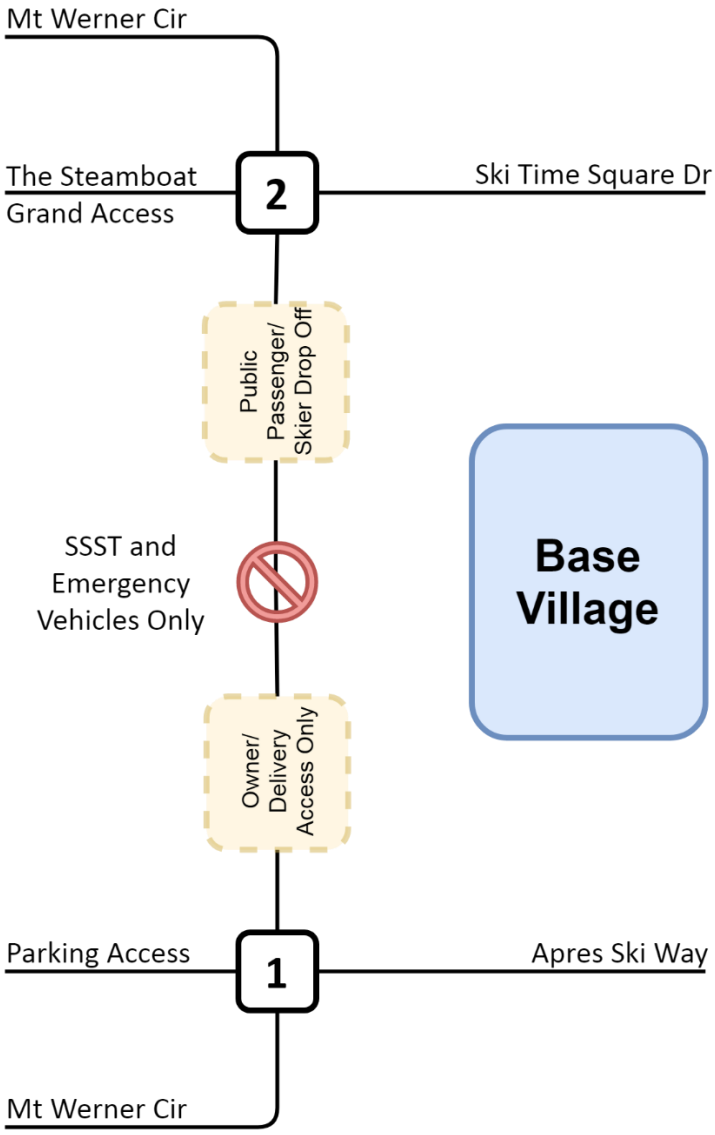
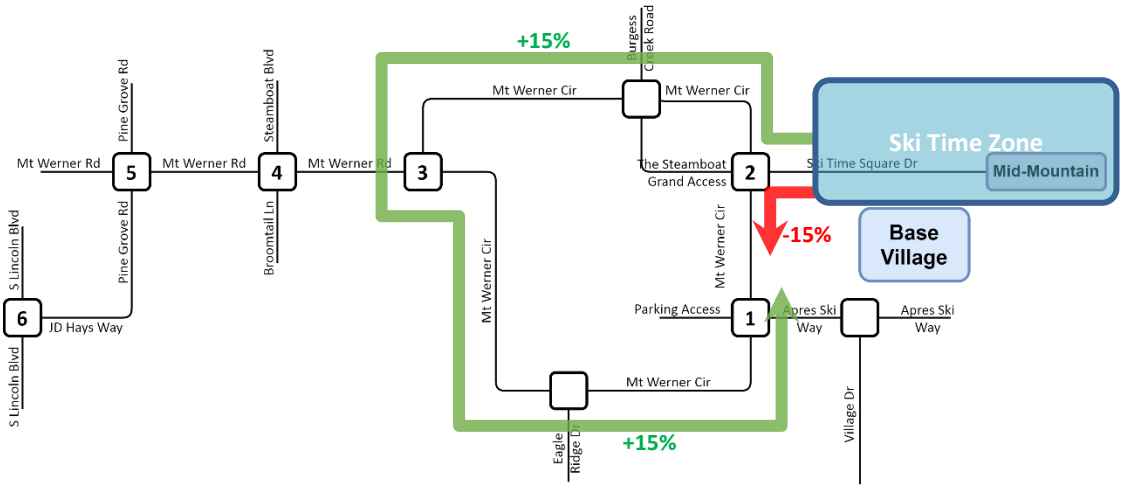
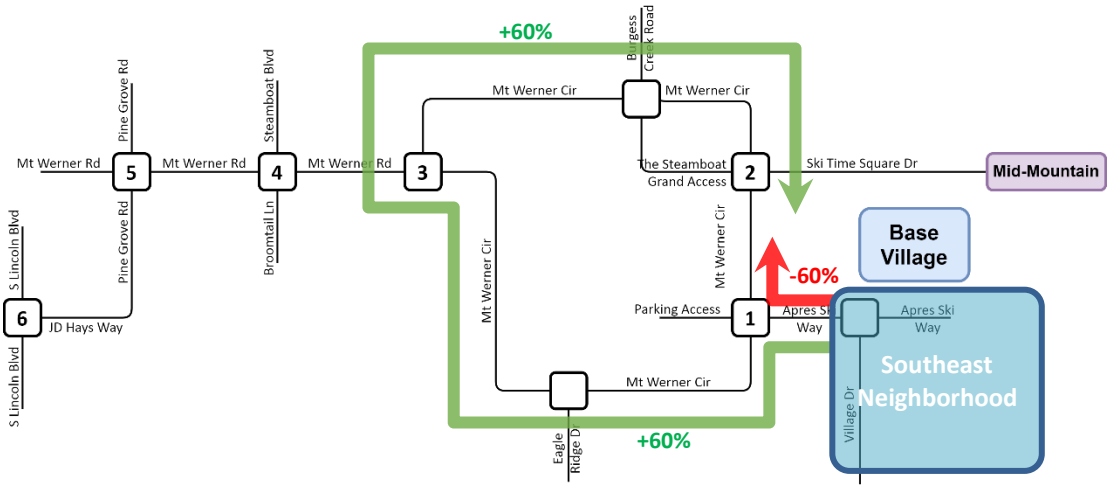


Figure 21: Background Traffic Shifts for Alternate GTC Improvements





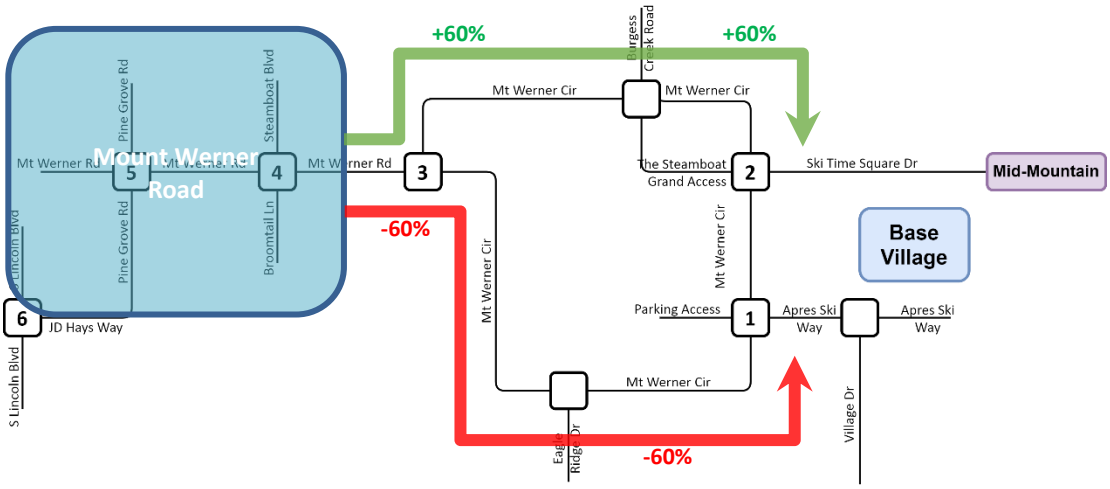
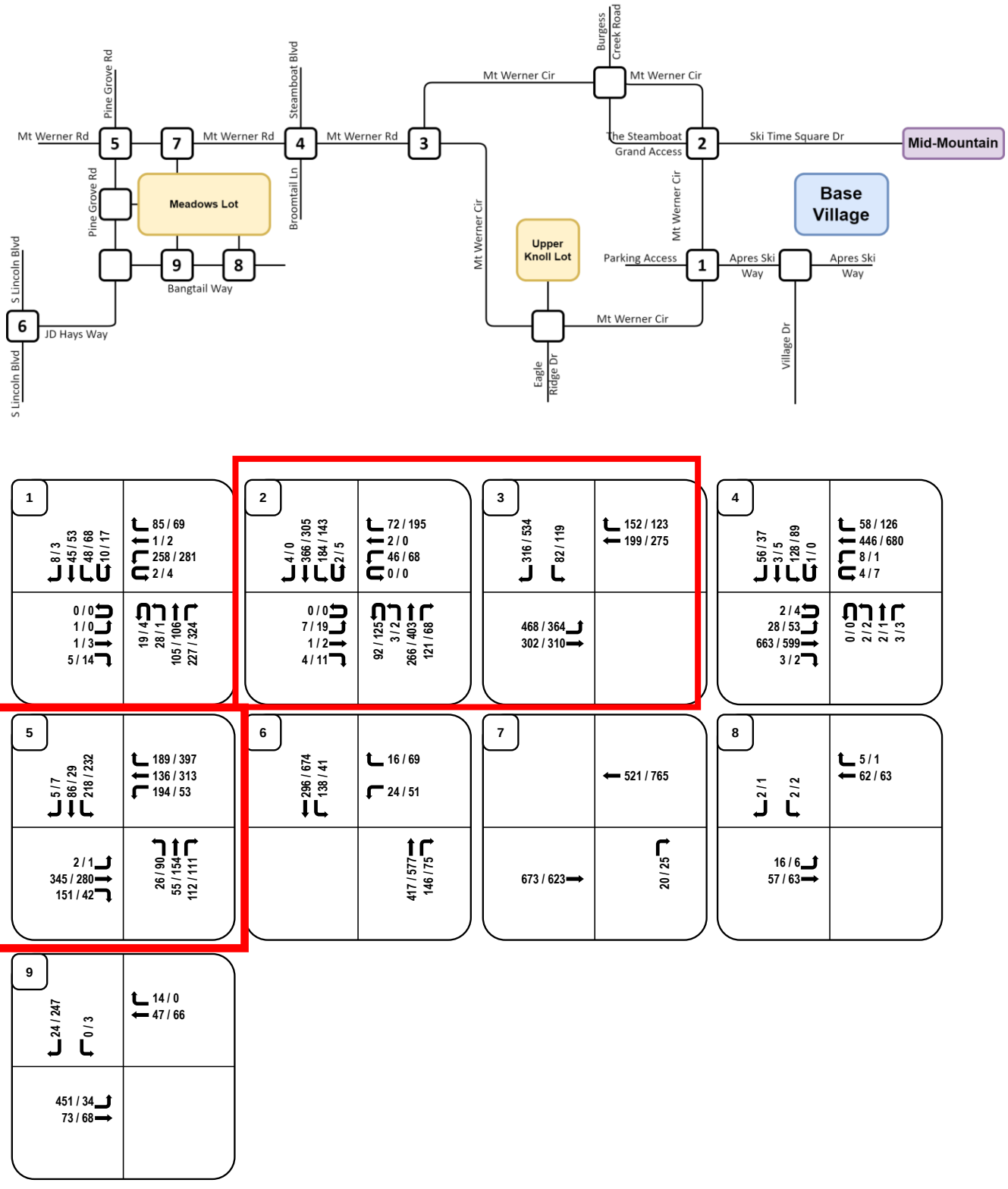


Figure 27: Year 2024 Total Traffic with GTC Alternate Improvements

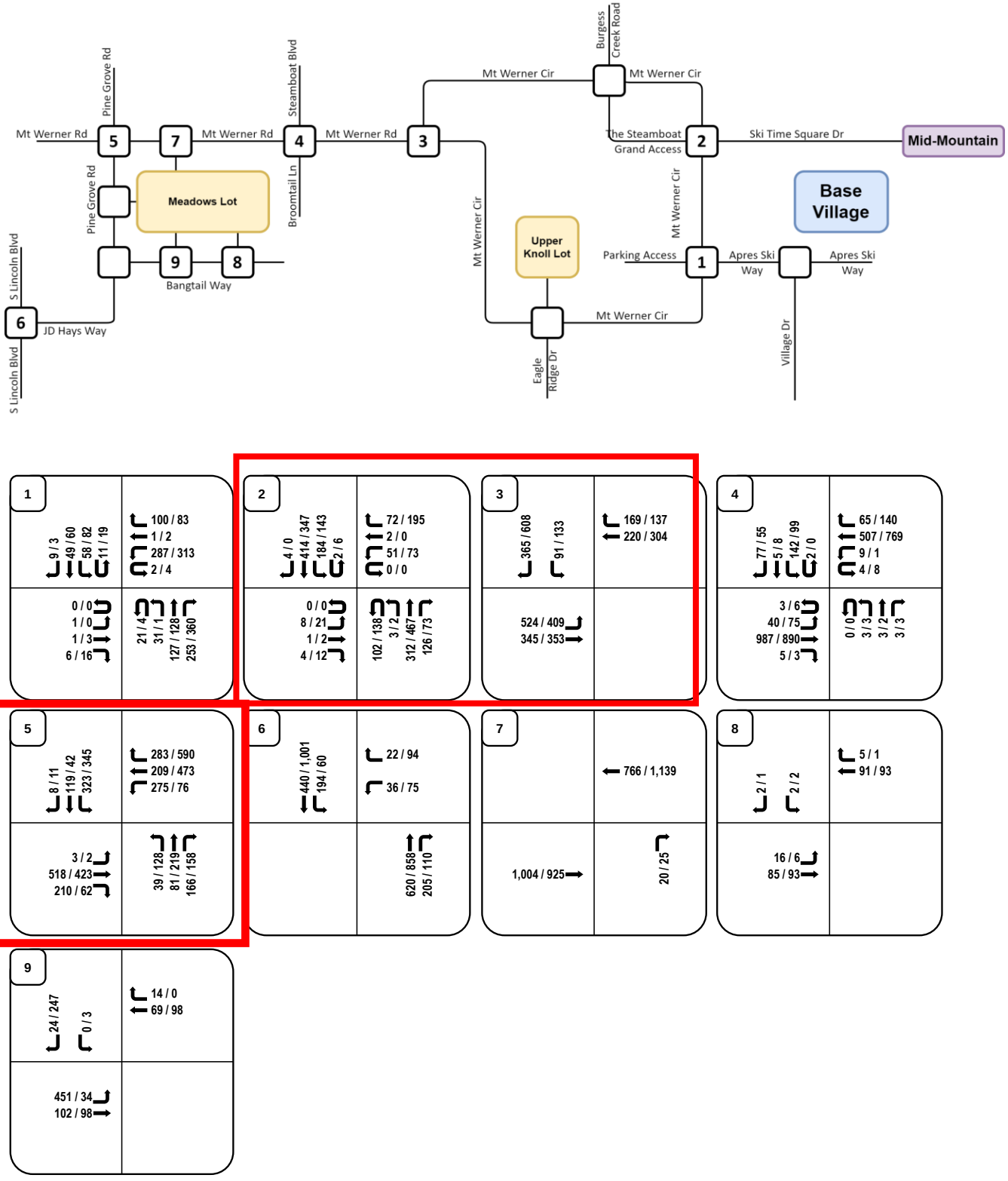


LEGEND:
Directional Distribution = Inbound% (Outbound %)
AM/PM Volumes = XX/XX VPH (in PCEs)
Turning Movements

McDOWELL ENGINEERING LLC
TRANSPORTATION ENGINEERING CONSULTANTS

Project Number M1529
Prepared By GWS
3/31/2022

Figure 29: Year 2044 Total Traffic with GTC Alternate Improvements



LEGEND:
Directional Distribution = Inbound% (Outbound %)
AM/PM Volumes = XX/XX VPH (in PCEs)
Turning Movements

McDOWELL ENGINEERING LLC
TRANSPORTATION ENGINEERING CONSULTANTS

Project Number M1529
Prepared By GWS
3/31/2022

Steamboat Resort
Steamboat Springs, CO

APPENDIX D

Trip Generation Worksheets

Kimley»Horn

Project	Thunderhead Beach				
Subject	Trip Generation for Multifamily Housing (Mid-Rise)				
Designed by	MAG	*Date*	September 27, 2023	*Job No.*	096388014
Checked by		*Date*		*Sheet No.*	of

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 11th Edition, Average Rate Equations

Land Use Code - Multifamily Housing (Mid-Rise) (221)

Independent Variable - Dwelling Units (X)

X = 115
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (200 Series Page 275)

Average Weekday — Directional Distribution: 23% ent. 77% exit.
(T) = 0.37 (X) — T = 43 Average Vehicle Trip Ends
(T) = 0.37 * (115.0) — 10 entering 33 exiting

10 + 33 = 43

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (200 Series Page 276)

Average Weekday — Directional Distribution: 61% ent. 39% exit.
(T) = 0.39(X) — T = 45 Average Vehicle Trip Ends
(T) = 0.39 * (115.0) — 27 entering 18 exiting

27 + 18 = 45

Weekday (200 Series Page 274)

Average Weekday — Directional Distribution: 50% entering, 50% exiting
(T) = 4.54 (X) — T = 524 Average Vehicle Trip Ends
(T) = 4.54 * (115.0) — 262 entering 262 exiting

262 + 262 = 524

Kimley»Horn

Project	Thunderhead Beach				
Subject	Trip Generation for Resort Hotel				
Designed by	MAG	*Date*	September 27, 2023	*Job No.*	096388014
Checked by				*Sheet No.*	1 *of* 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 11th Edition, Average Rate Equations

Land Use Code - Resort Hotel (330)

Independent Variable - Rooms (X)

X = 107
T = Average Vehicle Trip Ends

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (Page 593)

Directional Distribution: 72% ent. 28% exit.

(T) = 0.32(X)
(T) = 0.32 * (107.0)

T = 34 Average Vehicle Trip Ends
24 entering 10 exiting

24 + 10 = 34

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (Page 594)

Directional Distribution: 43% ent. 57% exit.

T = 0.41 X
T = 0.41 * 107

T = 44 Average Vehicle Trip Ends
19 entering 25 exiting

19 + 25 = 44

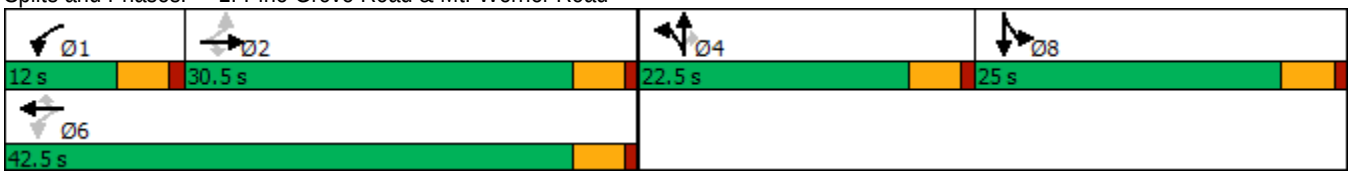
APPENDIX E

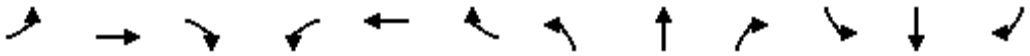
Intersection Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	2	340	126	168	128	189	55	108	71
Future Volume (vph)	2	340	126	168	128	189	55	108	71
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		4		8
Permitted Phases	2		2	6		6		4	
Detector Phase	2	2	2	1	6	6	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	30.5	30.5	30.5	12.0	42.5	42.5	22.5	22.5	25.0
Total Split (%)	33.9%	33.9%	33.9%	13.3%	47.2%	47.2%	25.0%	25.0%	27.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	Max	Max	Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	26.0	26.0	26.0	38.0	38.0	38.0	18.0	18.0	20.5
Actuated g/C Ratio	0.29	0.29	0.29	0.42	0.42	0.42	0.20	0.20	0.23
v/c Ratio	0.01	0.69	0.25	0.60	0.09	0.26	0.24	0.28	0.78
Control Delay	23.0	36.1	5.8	26.3	15.9	3.4	32.3	7.0	47.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	36.1	5.8	26.3	15.9	3.4	32.3	7.0	47.3
LOS	C	D	A	C	B	A	C	A	D
Approach Delay		27.9			14.6		17.9		47.3
Approach LOS		C			B		B		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 26.0	Intersection LOS: C
Intersection Capacity Utilization 61.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	340	126	168	128	189	26	55	108	214	71	6
Future Volume (veh/h)	2	340	126	168	128	189	26	55	108	214	71	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2	370	137	183	139	205	28	60	117	233	77	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	379	540	458	330	1500	669	117	251	317	301	99	9
Arrive On Green	0.29	0.29	0.29	0.08	0.42	0.42	0.20	0.20	0.20	0.23	0.23	0.23
Sat Flow, veh/h	1037	1870	1585	1781	3554	1585	586	1255	1585	1321	437	40
Grp Volume(v), veh/h	2	370	137	183	139	205	88	0	117	317	0	0
Grp Sat Flow(s),veh/h/ln	1037	1870	1585	1781	1777	1585	1841	0	1585	1797	0	0
Q Serve(g_s), s	0.1	15.8	6.1	6.2	2.1	7.7	3.6	0.0	5.7	14.9	0.0	0.0
Cycle Q Clear(g_c), s	0.1	15.8	6.1	6.2	2.1	7.7	3.6	0.0	5.7	14.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.32		1.00	0.74		0.02
Lane Grp Cap(c), veh/h	379	540	458	330	1500	669	368	0	317	409	0	0
V/C Ratio(X)	0.01	0.68	0.30	0.55	0.09	0.31	0.24	0.00	0.37	0.77	0.00	0.00
Avail Cap(c_a), veh/h	379	540	458	330	1500	669	368	0	317	409	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.8	28.4	24.9	20.6	15.6	17.3	30.2	0.0	31.1	32.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	6.9	1.7	2.0	0.1	1.2	1.5	0.0	3.3	13.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.9	2.4	2.7	0.9	2.9	1.7	0.0	2.5	7.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	35.3	26.6	22.6	15.8	18.4	31.8	0.0	34.4	45.9	0.0	0.0
LnGrp LOS	C	D	C	C	B	B	C	A	C	D	A	A
Approach Vol, veh/h		509			527			205			317	
Approach Delay, s/veh		32.9			19.2			33.3			45.9	
Approach LOS		C			B			C			D	

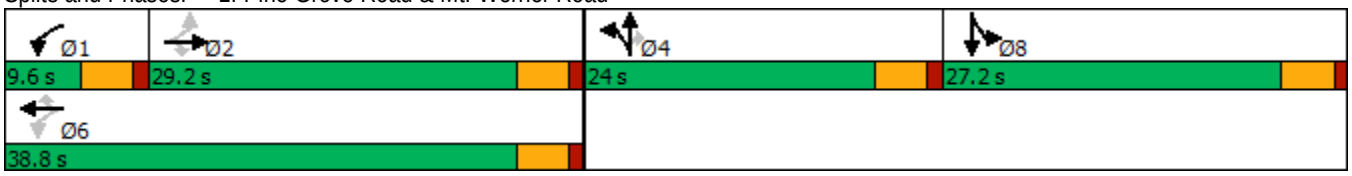
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.0	30.5		22.5		42.5		25.0				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	7.5	26.0		18.0		38.0		20.5				
Max Q Clear Time (g_c+I1), s	8.2	17.8		7.7		9.7		16.9				
Green Ext Time (p_c), s	0.0	1.8		0.6		1.6		0.6				

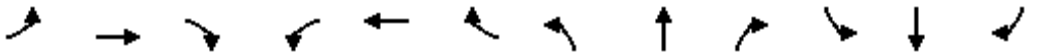
Intersection Summary												
HCM 6th Ctrl Delay			31.0									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	1	275	42	43	309	402	140	94	29
Future Volume (vph)	1	275	42	43	309	402	140	94	29
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		4		8
Permitted Phases	2		2	6		6		4	
Detector Phase	2	2	2	1	6	6	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	29.2	29.2	29.2	9.6	38.8	38.8	24.0	24.0	27.2
Total Split (%)	32.4%	32.4%	32.4%	10.7%	43.1%	43.1%	26.7%	26.7%	30.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	Max	Max	Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	28.5	28.5	28.5	34.3	34.3	34.3	19.5	19.5	22.7
Actuated g/C Ratio	0.32	0.32	0.32	0.38	0.38	0.38	0.22	0.22	0.25
v/c Ratio	0.00	0.51	0.08	0.15	0.25	0.50	0.61	0.23	0.65
Control Delay	24.0	30.0	0.3	19.0	19.7	4.2	39.2	4.9	37.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	30.0	0.3	19.0	19.7	4.2	39.2	4.9	37.7
LOS	C	C	A	B	B	A	D	A	D
Approach Delay		26.0			11.4		29.0		37.7
Approach LOS		C			B		C		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 21.8	Intersection LOS: C
Intersection Capacity Utilization 60.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	275	42	43	309	402	81	140	94	231	29	8
Future Volume (veh/h)	1	275	42	43	309	402	81	140	94	231	29	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	299	46	47	336	437	88	152	102	251	32	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	547	464	312	1354	604	146	252	343	387	49	14
Arrive On Green	0.29	0.29	0.29	0.04	0.38	0.38	0.22	0.22	0.22	0.25	0.25	0.25
Sat Flow, veh/h	697	1870	1585	1781	3554	1585	673	1163	1585	1533	195	55
Grp Volume(v), veh/h	1	299	46	47	336	437	240	0	102	292	0	0
Grp Sat Flow(s),veh/h/ln	697	1870	1585	1781	1777	1585	1837	0	1585	1784	0	0
Q Serve(g_s), s	0.1	12.1	1.9	1.6	5.8	21.2	10.6	0.0	4.8	13.2	0.0	0.0
Cycle Q Clear(g_c), s	0.1	12.1	1.9	1.6	5.8	21.2	10.6	0.0	4.8	13.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.37		1.00	0.86		0.03
Lane Grp Cap(c), veh/h	284	547	464	312	1354	604	398	0	343	450	0	0
V/C Ratio(X)	0.00	0.55	0.10	0.15	0.25	0.72	0.60	0.00	0.30	0.65	0.00	0.00
Avail Cap(c_a), veh/h	284	547	464	345	1354	604	398	0	343	450	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.5	26.8	23.2	20.5	19.0	23.8	31.8	0.0	29.5	30.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	3.9	0.4	0.2	0.4	7.4	6.6	0.0	2.2	7.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.9	0.8	0.7	2.4	8.8	5.3	0.0	2.0	6.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.6	30.7	23.6	20.7	19.5	31.2	38.4	0.0	31.7	37.2	0.0	0.0
LnGrp LOS	C	C	C	C	B	C	D	A	C	D	A	A
Approach Vol, veh/h		346			820			342			292	
Approach Delay, s/veh		29.7			25.8			36.4			37.2	
Approach LOS		C			C			D			D	

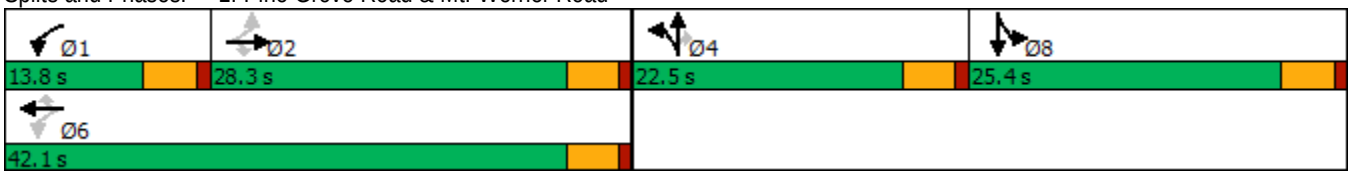
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.0	30.8		24.0		38.8		27.2				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	5.1	24.7		19.5		34.3		22.7				
Max Q Clear Time (g_c+I1), s	3.6	14.1		12.6		23.2		15.2				
Green Ext Time (p_c), s	0.0	1.4		1.0		3.0		1.0				

Intersection Summary												
HCM 6th Ctrl Delay			30.4									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	2	345	151	194	136	189	55	112	86
Future Volume (vph)	2	345	151	194	136	189	55	112	86
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		4		8
Permitted Phases	2		2	6		6		4	
Detector Phase	2	2	2	1	6	6	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	28.3	28.3	28.3	13.8	42.1	42.1	22.5	22.5	25.4
Total Split (%)	31.4%	31.4%	31.4%	15.3%	46.8%	46.8%	25.0%	25.0%	28.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	Max	Max	Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	23.9	23.9	23.9	37.6	37.6	37.6	18.0	18.0	20.9
Actuated g/C Ratio	0.27	0.27	0.27	0.42	0.42	0.42	0.20	0.20	0.23
v/c Ratio	0.01	0.76	0.30	0.70	0.10	0.26	0.24	0.29	0.80
Control Delay	24.5	41.9	6.1	31.3	16.2	3.4	32.3	7.6	48.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	41.9	6.1	31.3	16.2	3.4	32.3	7.6	48.9
LOS	C	D	A	C	B	A	C	A	D
Approach Delay		31.0			17.2		17.9		48.9
Approach LOS		C			B		B		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 28.3	Intersection LOS: C
Intersection Capacity Utilization 63.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	345	151	194	136	189	26	55	112	218	86	5
Future Volume (veh/h)	2	345	151	194	136	189	26	55	112	218	86	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2	375	164	211	148	205	28	60	122	237	93	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	352	495	419	333	1485	662	117	251	317	296	116	6
Arrive On Green	0.26	0.26	0.26	0.10	0.42	0.42	0.20	0.20	0.20	0.23	0.23	0.23
Sat Flow, veh/h	1028	1870	1585	1781	3554	1585	586	1255	1585	1275	500	27
Grp Volume(v), veh/h	2	375	164	211	148	205	88	0	122	335	0	0
Grp Sat Flow(s),veh/h/ln	1028	1870	1585	1781	1777	1585	1841	0	1585	1802	0	0
Q Serve(g_s), s	0.1	16.6	7.6	7.4	2.3	7.8	3.6	0.0	6.0	15.8	0.0	0.0
Cycle Q Clear(g_c), s	0.1	16.6	7.6	7.4	2.3	7.8	3.6	0.0	6.0	15.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.32		1.00	0.71		0.01
Lane Grp Cap(c), veh/h	352	495	419	333	1485	662	368	0	317	418	0	0
V/C Ratio(X)	0.01	0.76	0.39	0.63	0.10	0.31	0.24	0.00	0.38	0.80	0.00	0.00
Avail Cap(c_a), veh/h	352	495	419	333	1485	662	368	0	317	418	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.4	30.5	27.2	21.5	15.9	17.5	30.2	0.0	31.2	32.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	10.4	2.7	3.9	0.1	1.2	1.5	0.0	3.5	14.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.7	3.2	3.3	0.9	3.0	1.7	0.0	2.6	8.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.4	40.9	29.9	25.4	16.1	18.7	31.8	0.0	34.7	47.4	0.0	0.0
LnGrp LOS	C	D	C	C	B	B	C	A	C	D	A	A
Approach Vol, veh/h		541			564			210			335	
Approach Delay, s/veh		37.5			20.5			33.5			47.4	
Approach LOS		D			C			C			D	

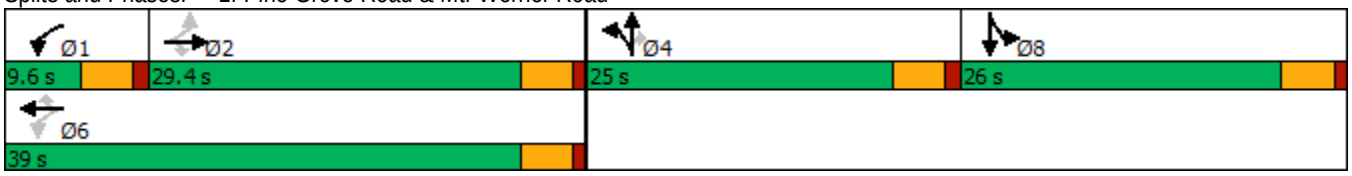
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	13.8	28.3		22.5		42.1		25.4				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	9.3	23.8		18.0		37.6		20.9				
Max Q Clear Time (g_c+I1), s	9.4	18.6		8.0		9.8		17.8				
Green Ext Time (p_c), s	0.0	1.3		0.6		1.6		0.6				

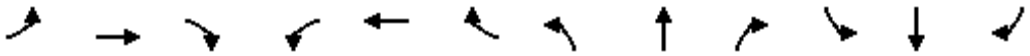
Intersection Summary			
HCM 6th Ctrl Delay		33.2	
HCM 6th LOS		C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	1	280	42	53	313	397	154	111	29
Future Volume (vph)	1	280	42	53	313	397	154	111	29
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		4		8
Permitted Phases	2		2	6		6		4	
Detector Phase	2	2	2	1	6	6	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	29.4	29.4	29.4	9.6	39.0	39.0	25.0	25.0	26.0
Total Split (%)	32.7%	32.7%	32.7%	10.7%	43.3%	43.3%	27.8%	27.8%	28.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	Max	Max	Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	26.8	26.8	26.8	34.5	34.5	34.5	20.5	20.5	21.5
Actuated g/C Ratio	0.30	0.30	0.30	0.38	0.38	0.38	0.23	0.23	0.24
v/c Ratio	0.00	0.55	0.08	0.19	0.25	0.49	0.64	0.26	0.69
Control Delay	24.0	31.9	0.3	19.4	19.6	4.2	39.3	6.7	40.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	31.9	0.3	19.4	19.6	4.2	39.3	6.7	40.6
LOS	C	C	A	B	B	A	D	A	D
Approach Delay		27.7			11.5		29.1		40.6
Approach LOS		C			B		C		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 22.8	Intersection LOS: C
Intersection Capacity Utilization 61.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	280	42	53	313	397	90	154	111	232	29	7
Future Volume (veh/h)	1	280	42	53	313	397	90	154	111	232	29	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	304	46	58	340	432	98	167	121	252	32	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	544	461	314	1362	608	155	264	361	368	47	12
Arrive On Green	0.29	0.29	0.29	0.04	0.38	0.38	0.23	0.23	0.23	0.24	0.24	0.24
Sat Flow, veh/h	698	1870	1585	1781	3554	1585	679	1157	1585	1540	196	49
Grp Volume(v), veh/h	1	304	46	58	340	432	265	0	121	292	0	0
Grp Sat Flow(s),veh/h/ln	698	1870	1585	1781	1777	1585	1836	0	1585	1785	0	0
Q Serve(g_s), s	0.1	12.4	1.9	2.0	5.9	20.8	11.7	0.0	5.7	13.4	0.0	0.0
Cycle Q Clear(g_c), s	0.1	12.4	1.9	2.0	5.9	20.8	11.7	0.0	5.7	13.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.37		1.00	0.86		0.03
Lane Grp Cap(c), veh/h	283	544	461	314	1362	608	418	0	361	426	0	0
V/C Ratio(X)	0.00	0.56	0.10	0.18	0.25	0.71	0.63	0.00	0.34	0.68	0.00	0.00
Avail Cap(c_a), veh/h	283	544	461	339	1362	608	418	0	361	426	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.7	27.0	23.3	20.5	18.9	23.5	31.4	0.0	29.1	31.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.1	0.4	0.3	0.4	6.9	7.1	0.0	2.5	8.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.0	0.8	0.8	2.4	8.6	5.9	0.0	2.4	6.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.7	31.1	23.7	20.8	19.4	30.4	38.5	0.0	31.5	39.8	0.0	0.0
LnGrp LOS	C	C	C	C	B	C	D	A	C	D	A	A
Approach Vol, veh/h		351			830			386			292	
Approach Delay, s/veh		30.1			25.2			36.3			39.8	
Approach LOS		C			C			D			D	

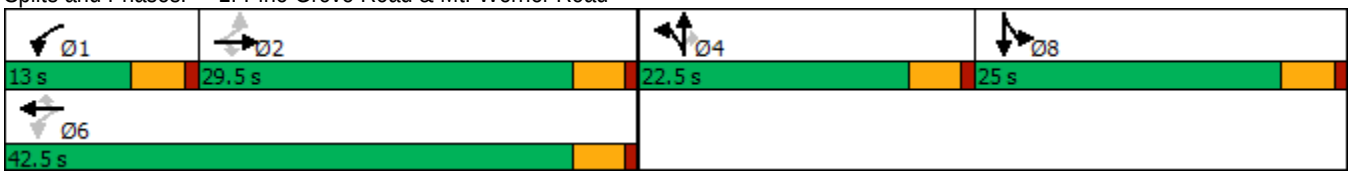
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.3	30.7		25.0		39.0		26.0				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	5.1	24.9		20.5		34.5		21.5				
Max Q Clear Time (g_c+I1), s	4.0	14.4		13.7		22.8		15.4				
Green Ext Time (p_c), s	0.0	1.4		1.1		3.1		0.9				

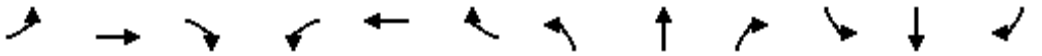
Intersection Summary												
HCM 6th Ctrl Delay			30.8									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	2	364	151	196	160	200	55	114	86
Future Volume (vph)	2	364	151	196	160	200	55	114	86
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		4		8
Permitted Phases	2		2	6		6		4	
Detector Phase	2	2	2	1	6	6	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	29.5	29.5	29.5	13.0	42.5	42.5	22.5	22.5	25.0
Total Split (%)	32.8%	32.8%	32.8%	14.4%	47.2%	47.2%	25.0%	25.0%	27.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	Max	Max	Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	25.0	25.0	25.0	38.0	38.0	38.0	18.0	18.0	20.5
Actuated g/C Ratio	0.28	0.28	0.28	0.42	0.42	0.42	0.20	0.20	0.23
v/c Ratio	0.01	0.77	0.29	0.74	0.12	0.27	0.24	0.30	0.84
Control Delay	23.5	41.2	6.1	34.8	16.1	3.4	32.3	7.7	53.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	41.2	6.1	34.8	16.1	3.4	32.3	7.7	53.3
LOS	C	D	A	C	B	A	C	A	D
Approach Delay		30.9			18.1		17.9		53.3
Approach LOS		C			B		B		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 29.3	Intersection LOS: C
Intersection Capacity Utilization 65.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	364	151	196	160	200	26	55	114	227	86	5
Future Volume (veh/h)	2	364	151	196	160	200	26	55	114	227	86	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2	396	164	213	174	217	28	60	124	247	93	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	356	520	440	319	1500	669	117	251	317	294	111	6
Arrive On Green	0.28	0.28	0.28	0.09	0.42	0.42	0.20	0.20	0.20	0.23	0.23	0.23
Sat Flow, veh/h	993	1870	1585	1781	3554	1585	586	1255	1585	1290	486	26
Grp Volume(v), veh/h	2	396	164	213	174	217	88	0	124	345	0	0
Grp Sat Flow(s),veh/h/ln	993	1870	1585	1781	1777	1585	1841	0	1585	1801	0	0
Q Serve(g_s), s	0.1	17.5	7.5	7.4	2.7	8.2	3.6	0.0	6.1	16.5	0.0	0.0
Cycle Q Clear(g_c), s	0.1	17.5	7.5	7.4	2.7	8.2	3.6	0.0	6.1	16.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.32		1.00	0.72		0.01
Lane Grp Cap(c), veh/h	356	520	440	319	1500	669	368	0	317	410	0	0
V/C Ratio(X)	0.01	0.76	0.37	0.67	0.12	0.32	0.24	0.00	0.39	0.84	0.00	0.00
Avail Cap(c_a), veh/h	356	520	440	319	1500	669	368	0	317	410	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.5	29.8	26.2	21.5	15.8	17.4	30.2	0.0	31.2	33.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	10.1	2.4	5.2	0.2	1.3	1.5	0.0	3.6	18.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.1	3.1	3.4	1.1	3.1	1.7	0.0	2.6	9.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.5	39.9	28.6	26.8	16.0	18.7	31.8	0.0	34.8	51.6	0.0	0.0
LnGrp LOS	C	D	C	C	B	B	C	A	C	D	A	A
Approach Vol, veh/h		562			604			212			345	
Approach Delay, s/veh		36.6			20.7			33.6			51.6	
Approach LOS		D			C			C			D	

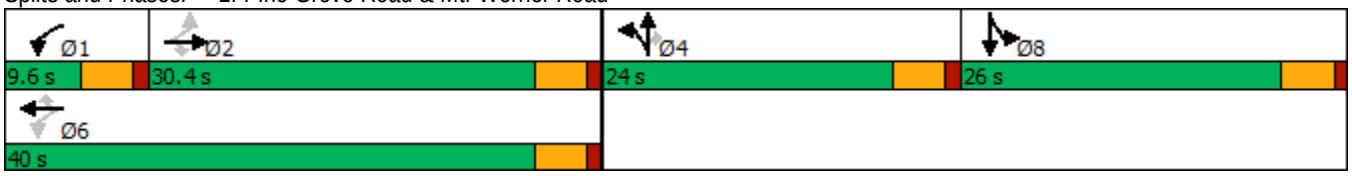
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	13.0	29.5		22.5		42.5		25.0				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	8.5	25.0		18.0		38.0		20.5				
Max Q Clear Time (g_c+I1), s	9.4	19.5		8.1		10.2		18.5				
Green Ext Time (p_c), s	0.0	1.5		0.6		1.9		0.4				

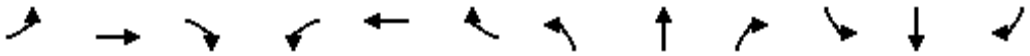
Intersection Summary												
HCM 6th Ctrl Delay			33.7									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	1	305	42	55	337	408	154	113	29
Future Volume (vph)	1	305	42	55	337	408	154	113	29
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		4		8
Permitted Phases	2		2	6		6		4	
Detector Phase	2	2	2	1	6	6	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	30.4	30.4	30.4	9.6	40.0	40.0	24.0	24.0	26.0
Total Split (%)	33.8%	33.8%	33.8%	10.7%	44.4%	44.4%	26.7%	26.7%	28.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	Max	Max	Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	27.8	27.8	27.8	35.5	35.5	35.5	19.5	19.5	21.5
Actuated g/C Ratio	0.31	0.31	0.31	0.39	0.39	0.39	0.22	0.22	0.24
v/c Ratio	0.00	0.58	0.08	0.20	0.26	0.50	0.67	0.28	0.72
Control Delay	23.0	31.8	0.3	18.9	19.0	4.0	41.7	7.2	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	31.8	0.3	18.9	19.0	4.0	41.7	7.2	42.3
LOS	C	C	A	B	B	A	D	A	D
Approach Delay		28.0			11.4		30.8		42.3
Approach LOS		C			B		C		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 23.4	Intersection LOS: C
Intersection Capacity Utilization 63.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	305	42	55	337	408	90	154	113	244	29	7
Future Volume (veh/h)	1	305	42	55	337	408	90	154	113	244	29	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	332	46	60	366	443	98	167	123	265	32	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	564	478	308	1402	625	147	251	343	370	45	11
Arrive On Green	0.30	0.30	0.30	0.04	0.39	0.39	0.22	0.22	0.22	0.24	0.24	0.24
Sat Flow, veh/h	674	1870	1585	1781	3554	1585	679	1157	1585	1550	187	47
Grp Volume(v), veh/h	1	332	46	60	366	443	265	0	123	305	0	0
Grp Sat Flow(s),veh/h/ln	674	1870	1585	1781	1777	1585	1836	0	1585	1784	0	0
Q Serve(g_s), s	0.1	13.6	1.9	2.0	6.3	21.1	11.9	0.0	5.9	14.1	0.0	0.0
Cycle Q Clear(g_c), s	0.1	13.6	1.9	2.0	6.3	21.1	11.9	0.0	5.9	14.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.37		1.00	0.87		0.03
Lane Grp Cap(c), veh/h	283	564	478	308	1402	625	398	0	343	426	0	0
V/C Ratio(X)	0.00	0.59	0.10	0.19	0.26	0.71	0.67	0.00	0.36	0.72	0.00	0.00
Avail Cap(c_a), veh/h	283	564	478	332	1402	625	398	0	343	426	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.0	26.7	22.6	20.1	18.4	22.9	32.3	0.0	29.9	31.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.5	0.4	0.3	0.5	6.7	8.5	0.0	2.9	9.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.6	0.7	0.8	2.6	8.7	6.1	0.0	2.5	7.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	31.2	23.0	20.4	18.8	29.6	40.8	0.0	32.8	41.3	0.0	0.0
LnGrp LOS	C	C	C	C	B	C	D	A	C	D	A	A
Approach Vol, veh/h		379			869			388			305	
Approach Delay, s/veh		30.2			24.4			38.3			41.3	
Approach LOS		C			C			D			D	

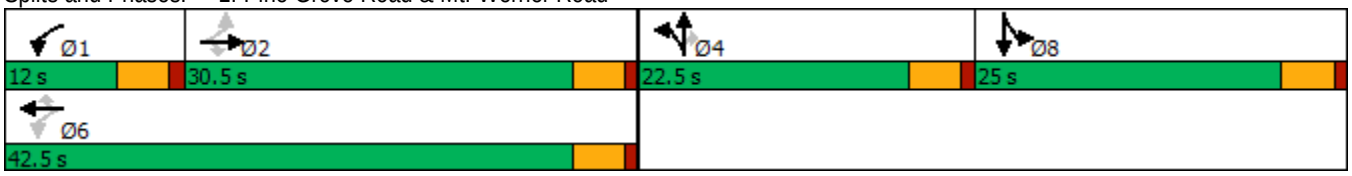
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.4	31.6		24.0		40.0		26.0				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	5.1	25.9		19.5		35.5		21.5				
Max Q Clear Time (g_c+I1), s	4.0	15.6		13.9		23.1		16.1				
Green Ext Time (p_c), s	0.0	1.5		1.0		3.4		0.8				

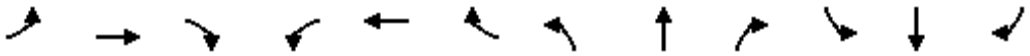
Intersection Summary												
HCM 6th Ctrl Delay			31.0									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	3	518	210	275	209	283	81	166	119
Future Volume (vph)	3	518	210	275	209	283	81	166	119
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		4		8
Permitted Phases	2		2	6		6		4	
Detector Phase	2	2	2	1	6	6	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	30.5	30.5	30.5	12.0	42.5	42.5	22.5	22.5	25.0
Total Split (%)	33.9%	33.9%	33.9%	13.3%	47.2%	47.2%	25.0%	25.0%	27.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	Max	Max	Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	26.0	26.0	26.0	38.0	38.0	38.0	18.0	18.0	20.5
Actuated g/C Ratio	0.29	0.29	0.29	0.42	0.42	0.42	0.20	0.20	0.23
v/c Ratio	0.01	1.05	0.40	1.30	0.15	0.36	0.36	0.39	1.20
Control Delay	23.0	84.7	10.9	185.6	16.4	3.4	34.3	7.8	142.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	84.7	10.9	185.6	16.4	3.4	34.3	7.8	142.7
LOS	C	F	B	F	B	A	C	A	F
Approach Delay		63.3			72.2		18.9		142.7
Approach LOS		E			E		B		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.30	
Intersection Signal Delay: 76.7	Intersection LOS: E
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	518	210	275	209	283	39	81	166	323	119	8
Future Volume (veh/h)	3	518	210	275	209	283	39	81	166	323	119	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	563	228	299	227	308	42	88	180	351	129	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	331	540	458	228	1500	669	119	249	317	294	108	8
Arrive On Green	0.29	0.29	0.29	0.08	0.42	0.42	0.20	0.20	0.20	0.23	0.23	0.23
Sat Flow, veh/h	870	1870	1585	1781	3554	1585	595	1246	1585	1292	475	33
Grp Volume(v), veh/h	3	563	228	299	227	308	130	0	180	489	0	0
Grp Sat Flow(s),veh/h/ln	870	1870	1585	1781	1777	1585	1841	0	1585	1800	0	0
Q Serve(g_s), s	0.2	26.0	10.8	7.5	3.5	12.5	5.5	0.0	9.2	20.5	0.0	0.0
Cycle Q Clear(g_c), s	0.2	26.0	10.8	7.5	3.5	12.5	5.5	0.0	9.2	20.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.32		1.00	0.72		0.02
Lane Grp Cap(c), veh/h	331	540	458	228	1500	669	368	0	317	410	0	0
V/C Ratio(X)	0.01	1.04	0.50	1.31	0.15	0.46	0.35	0.00	0.57	1.19	0.00	0.00
Avail Cap(c_a), veh/h	331	540	458	228	1500	669	368	0	317	410	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.8	32.0	26.6	24.4	16.0	18.6	31.0	0.0	32.5	34.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	50.1	3.8	166.8	0.2	2.3	2.6	0.0	7.2	108.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	18.8	4.5	13.8	1.4	4.8	2.7	0.0	4.1	21.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	82.1	30.4	191.2	16.3	20.9	33.6	0.0	39.7	143.2	0.0	0.0
LnGrp LOS	C	F	C	F	B	C	C	A	D	F	A	A
Approach Vol, veh/h		794			834			310			489	
Approach Delay, s/veh		67.0			80.7			37.1			143.2	
Approach LOS		E			F			D			F	

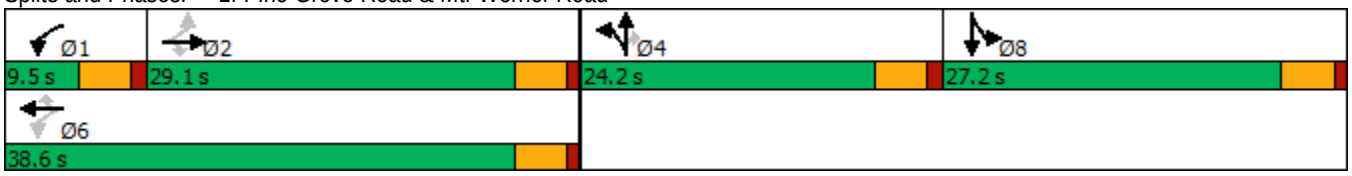
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.0	30.5		22.5		42.5		25.0				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	7.5	26.0		18.0		38.0		20.5				
Max Q Clear Time (g_c+I1), s	9.5	28.0		11.2		14.5		22.5				
Green Ext Time (p_c), s	0.0	0.0		0.7		2.6		0.0				

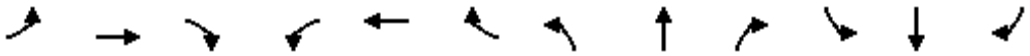
Intersection Summary												
HCM 6th Ctrl Delay			83.3									
HCM 6th LOS			F									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	2	423	62	76	473	590	219	158	42
Future Volume (vph)	2	423	62	76	473	590	219	158	42
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		4		8
Permitted Phases	2		2	6		6		4	
Detector Phase	2	2	2	1	6	6	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	29.1	29.1	29.1	9.5	38.6	38.6	24.2	24.2	27.2
Total Split (%)	32.3%	32.3%	32.3%	10.6%	42.9%	42.9%	26.9%	26.9%	30.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	Max	Max	Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	26.5	26.5	26.5	34.1	34.1	34.1	19.7	19.7	22.7
Actuated g/C Ratio	0.29	0.29	0.29	0.38	0.38	0.38	0.22	0.22	0.25
v/c Ratio	0.01	0.84	0.12	0.45	0.38	0.66	0.94	0.36	0.96
Control Delay	24.0	46.5	0.9	26.4	21.4	6.0	69.1	8.1	69.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	46.5	0.9	26.4	21.4	6.0	69.1	8.1	69.5
LOS	C	D	A	C	C	A	E	A	E
Approach Delay		40.7			13.8		50.0		69.5
Approach LOS		D			B		D		E

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 35.0	Intersection LOS: C
Intersection Capacity Utilization 82.1%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	423	62	76	473	590	128	219	158	345	42	11
Future Volume (veh/h)	2	423	62	76	473	590	128	219	158	345	42	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2	460	67	83	514	641	139	238	172	375	46	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	213	524	444	206	1346	601	148	254	347	390	48	12
Arrive On Green	0.28	0.28	0.28	0.05	0.38	0.38	0.22	0.22	0.22	0.25	0.25	0.25
Sat Flow, veh/h	487	1870	1585	1781	3554	1585	677	1159	1585	1545	190	49
Grp Volume(v), veh/h	2	460	67	83	514	641	377	0	172	433	0	0
Grp Sat Flow(s),veh/h/ln	487	1870	1585	1781	1777	1585	1837	0	1585	1784	0	0
Q Serve(g_s), s	0.3	21.1	2.9	2.9	9.5	34.1	18.2	0.0	8.6	21.6	0.0	0.0
Cycle Q Clear(g_c), s	0.9	21.1	2.9	2.9	9.5	34.1	18.2	0.0	8.6	21.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.37		1.00	0.87		0.03
Lane Grp Cap(c), veh/h	213	524	444	206	1346	601	402	0	347	450	0	0
V/C Ratio(X)	0.01	0.88	0.15	0.40	0.38	1.07	0.94	0.00	0.50	0.96	0.00	0.00
Avail Cap(c_a), veh/h	213	524	444	219	1346	601	402	0	347	450	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.8	30.9	24.3	23.2	20.3	28.0	34.5	0.0	30.8	33.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	18.4	0.7	1.3	0.8	56.0	31.7	0.0	5.0	34.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.9	1.1	1.2	3.9	21.6	11.4	0.0	3.7	13.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.9	49.3	25.1	24.4	21.1	84.0	66.2	0.0	35.8	67.2	0.0	0.0
LnGrp LOS	C	D	C	C	C	F	E	A	D	E	A	A
Approach Vol, veh/h		529			1238			549			433	
Approach Delay, s/veh		46.2			53.9			56.7			67.2	
Approach LOS		D			D			E			E	

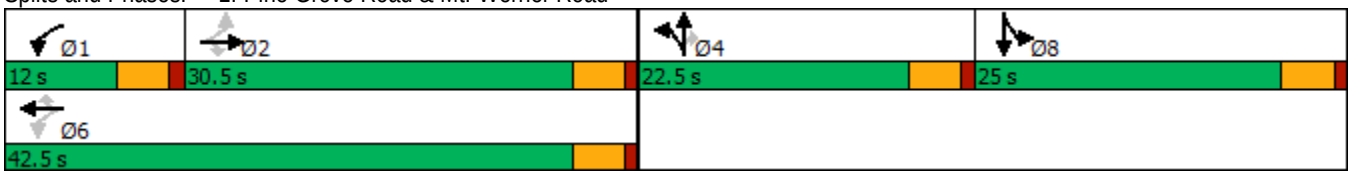
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.9	29.7		24.2		38.6		27.2				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	5.0	24.6		19.7		34.1		22.7				
Max Q Clear Time (g_c+I1), s	4.9	23.1		20.2		36.1		23.6				
Green Ext Time (p_c), s	0.0	0.5		0.0		0.0		0.0				

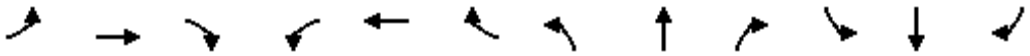
Intersection Summary												
HCM 6th Ctrl Delay			55.1									
HCM 6th LOS			E									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	3	537	210	277	233	294	81	168	119
Future Volume (vph)	3	537	210	277	233	294	81	168	119
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		4		8
Permitted Phases	2		2	6		6		4	
Detector Phase	2	2	2	1	6	6	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	30.5	30.5	30.5	12.0	42.5	42.5	22.5	22.5	25.0
Total Split (%)	33.9%	33.9%	33.9%	13.3%	47.2%	47.2%	25.0%	25.0%	27.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	Max	Max	Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	26.0	26.0	26.0	38.0	38.0	38.0	18.0	18.0	20.5
Actuated g/C Ratio	0.29	0.29	0.29	0.42	0.42	0.42	0.20	0.20	0.23
v/c Ratio	0.01	1.09	0.40	1.31	0.17	0.38	0.36	0.40	1.22
Control Delay	23.0	96.6	11.4	189.1	16.6	3.4	34.3	7.7	151.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	96.6	11.4	189.1	16.6	3.4	34.3	7.7	151.9
LOS	C	F	B	F	B	A	C	A	F
Approach Delay		72.5			71.1		18.8		151.9
Approach LOS		E			E		B		F

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.31	
Intersection Signal Delay: 81.1	Intersection LOS: F
Intersection Capacity Utilization 86.7%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	537	210	277	233	294	39	81	168	332	119	8
Future Volume (veh/h)	3	537	210	277	233	294	39	81	168	332	119	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	584	228	301	253	320	42	88	183	361	129	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	323	540	458	228	1500	669	119	249	317	297	106	7
Arrive On Green	0.29	0.29	0.29	0.08	0.42	0.42	0.20	0.20	0.20	0.23	0.23	0.23
Sat Flow, veh/h	839	1870	1585	1781	3554	1585	595	1246	1585	1302	465	32
Grp Volume(v), veh/h	3	584	228	301	253	320	130	0	183	499	0	0
Grp Sat Flow(s),veh/h/ln	839	1870	1585	1781	1777	1585	1841	0	1585	1799	0	0
Q Serve(g_s), s	0.2	26.0	10.8	7.5	4.0	13.2	5.5	0.0	9.4	20.5	0.0	0.0
Cycle Q Clear(g_c), s	0.2	26.0	10.8	7.5	4.0	13.2	5.5	0.0	9.4	20.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.32		1.00	0.72		0.02
Lane Grp Cap(c), veh/h	323	540	458	228	1500	669	368	0	317	410	0	0
V/C Ratio(X)	0.01	1.08	0.50	1.32	0.17	0.48	0.35	0.00	0.58	1.22	0.00	0.00
Avail Cap(c_a), veh/h	323	540	458	228	1500	669	368	0	317	410	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.8	32.0	26.6	24.4	16.2	18.8	31.0	0.0	32.6	34.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	62.4	3.8	170.4	0.2	2.4	2.6	0.0	7.5	118.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	20.7	4.5	14.0	1.6	5.1	2.7	0.0	4.2	22.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	94.4	30.4	194.7	16.4	21.3	33.6	0.0	40.0	153.0	0.0	0.0
LnGrp LOS	C	F	C	F	B	C	C	A	D	F	A	A
Approach Vol, veh/h		815			874			313			499	
Approach Delay, s/veh		76.2			79.6			37.4			153.0	
Approach LOS		E			E			D			F	

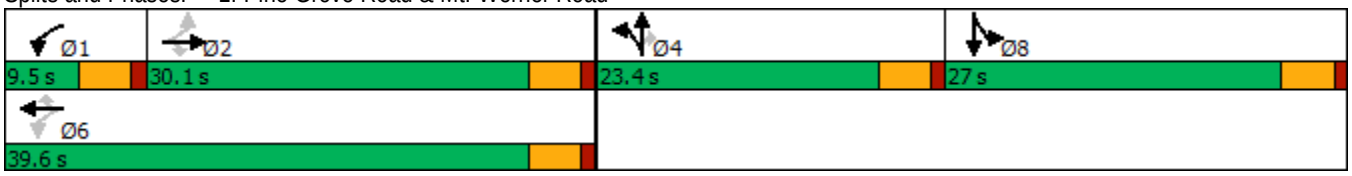
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	12.0	30.5		22.5		42.5		25.0				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	7.5	26.0		18.0		38.0		20.5				
Max Q Clear Time (g_c+I1), s	9.5	28.0		11.4		15.2		22.5				
Green Ext Time (p_c), s	0.0	0.0		0.7		2.8		0.0				

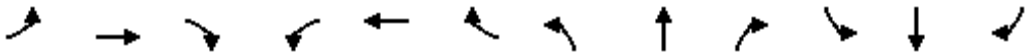
Intersection Summary												
HCM 6th Ctrl Delay			87.8									
HCM 6th LOS			F									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	2	448	62	78	497	601	219	160	42
Future Volume (vph)	2	448	62	78	497	601	219	160	42
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		2		1	6		4		8
Permitted Phases	2		2	6		6		4	
Detector Phase	2	2	2	1	6	6	4	4	8
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	30.1	30.1	30.1	9.5	39.6	39.6	23.4	23.4	27.0
Total Split (%)	33.4%	33.4%	33.4%	10.6%	44.0%	44.0%	26.0%	26.0%	30.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	Max	Max	Max	None	Max	Max	Max	Max	Max
Act Effct Green (s)	27.5	27.5	27.5	35.1	35.1	35.1	18.9	18.9	22.5
Actuated g/C Ratio	0.31	0.31	0.31	0.39	0.39	0.39	0.21	0.21	0.25
v/c Ratio	0.01	0.86	0.12	0.48	0.39	0.66	0.98	0.38	1.00
Control Delay	23.5	47.2	0.8	26.9	20.8	6.4	79.1	8.6	78.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	47.2	0.8	26.9	20.8	6.4	79.1	8.6	78.9
LOS	C	D	A	C	C	A	E	A	E
Approach Delay		41.6			13.8		56.8		78.9
Approach LOS		D			B		E		E

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 37.9	Intersection LOS: D
Intersection Capacity Utilization 84.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	448	62	78	497	601	128	219	160	357	42	11
Future Volume (veh/h)	2	448	62	78	497	601	128	219	160	357	42	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2	487	67	85	540	653	139	238	174	388	46	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	212	544	461	203	1386	618	142	243	333	388	46	12
Arrive On Green	0.29	0.29	0.29	0.05	0.39	0.39	0.21	0.21	0.21	0.25	0.25	0.25
Sat Flow, veh/h	469	1870	1585	1781	3554	1585	677	1159	1585	1552	184	48
Grp Volume(v), veh/h	2	487	67	85	540	653	377	0	174	446	0	0
Grp Sat Flow(s),veh/h/ln	469	1870	1585	1781	1777	1585	1837	0	1585	1784	0	0
Q Serve(g_s), s	0.3	22.5	2.8	2.9	9.8	35.1	18.4	0.0	8.8	22.5	0.0	0.0
Cycle Q Clear(g_c), s	1.2	22.5	2.8	2.9	9.8	35.1	18.4	0.0	8.8	22.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.37		1.00	0.87		0.03
Lane Grp Cap(c), veh/h	212	544	461	203	1386	618	386	0	333	446	0	0
V/C Ratio(X)	0.01	0.89	0.15	0.42	0.39	1.06	0.98	0.00	0.52	1.00	0.00	0.00
Avail Cap(c_a), veh/h	212	544	461	214	1386	618	386	0	333	446	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.4	30.6	23.6	22.9	19.7	27.5	35.3	0.0	31.5	33.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	19.8	0.7	1.4	0.8	52.0	40.5	0.0	5.8	42.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.8	1.1	1.2	4.1	21.4	12.3	0.0	3.8	14.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.5	50.4	24.3	24.3	20.6	79.4	75.9	0.0	37.3	76.3	0.0	0.0
LnGrp LOS	C	D	C	C	C	F	E	A	D	E	A	A
Approach Vol, veh/h		556			1278			551			446	
Approach Delay, s/veh		47.1			50.9			63.7			76.3	
Approach LOS		D			D			E			E	

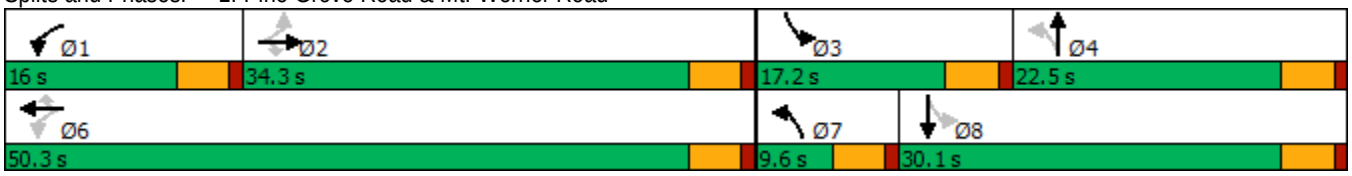
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.9	30.7		23.4		39.6		27.0				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	5.0	25.6		18.9		35.1		22.5				
Max Q Clear Time (g_c+I1), s	4.9	24.5		20.4		37.1		24.5				
Green Ext Time (p_c), s	0.0	0.4		0.0		0.0		0.0				

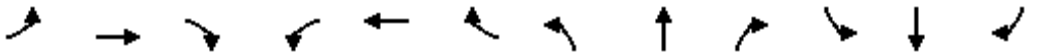
Intersection Summary												
HCM 6th Ctrl Delay			56.7									
HCM 6th LOS			E									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	3	537	210	277	233	294	39	81	332	119
Future Volume (vph)	3	537	210	277	233	294	39	81	332	119
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		2		1	6		7	4	3	8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	1	6	6	7	4	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	34.3	34.3	34.3	16.0	50.3	50.3	9.6	22.5	17.2	30.1
Total Split (%)	38.1%	38.1%	38.1%	17.8%	55.9%	55.9%	10.7%	25.0%	19.1%	33.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	None	Max	Max	None	Max	None	Max
Act Effct Green (s)	29.8	29.8	29.8	45.8	45.8	45.8	23.1	18.0	35.2	29.4
Actuated g/C Ratio	0.33	0.33	0.33	0.51	0.51	0.51	0.26	0.20	0.39	0.33
v/c Ratio	0.01	0.95	0.35	0.97	0.14	0.33	0.12	0.65	0.95	0.23
Control Delay	20.3	56.5	7.5	68.9	12.0	2.5	18.9	28.2	60.1	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	56.5	7.5	68.9	12.0	2.5	18.9	28.2	60.1	24.2
LOS	C	E	A	E	B	A	B	C	E	C
Approach Delay		42.7			28.1			27.0		50.2
Approach LOS		D			C			C		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 37.1	Intersection LOS: D
Intersection Capacity Utilization 91.6%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	537	210	277	233	294	39	81	168	332	119	8
Future Volume (veh/h)	3	537	210	277	233	294	39	81	168	332	119	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	584	228	301	253	320	42	88	183	361	129	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	358	619	525	326	1808	807	395	108	225	381	527	37
Arrive On Green	0.33	0.33	0.33	0.13	0.51	0.51	0.04	0.20	0.20	0.14	0.30	0.30
Sat Flow, veh/h	839	1870	1585	1781	3554	1585	1781	542	1126	1781	1728	121
Grp Volume(v), veh/h	3	584	228	301	253	320	42	0	271	361	0	138
Grp Sat Flow(s),veh/h/ln	839	1870	1585	1781	1777	1585	1781	0	1668	1781	0	1849
Q Serve(g_s), s	0.2	27.3	10.1	10.0	3.4	11.2	1.7	0.0	14.0	12.7	0.0	5.0
Cycle Q Clear(g_c), s	0.2	27.3	10.1	10.0	3.4	11.2	1.7	0.0	14.0	12.7	0.0	5.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.68	1.00		0.07
Lane Grp Cap(c), veh/h	358	619	525	326	1808	807	395	0	334	381	0	564
V/C Ratio(X)	0.01	0.94	0.43	0.92	0.14	0.40	0.11	0.00	0.81	0.95	0.00	0.24
Avail Cap(c_a), veh/h	358	619	525	326	1808	807	431	0	334	381	0	564
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.2	29.3	23.5	21.6	11.7	13.6	26.9	0.0	34.4	26.4	0.0	23.5
Incr Delay (d2), s/veh	0.0	24.6	2.6	30.8	0.2	1.5	0.1	0.0	19.1	32.8	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.0	4.1	6.7	1.3	4.1	0.7	0.0	7.3	9.3	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	53.8	26.1	52.4	11.8	15.1	27.0	0.0	53.5	59.2	0.0	24.5
LnGrp LOS	C	D	C	D	B	B	C	A	D	E	A	C
Approach Vol, veh/h		815			874			313			499	
Approach Delay, s/veh		46.0			27.0			49.9			49.6	
Approach LOS		D			C			D			D	

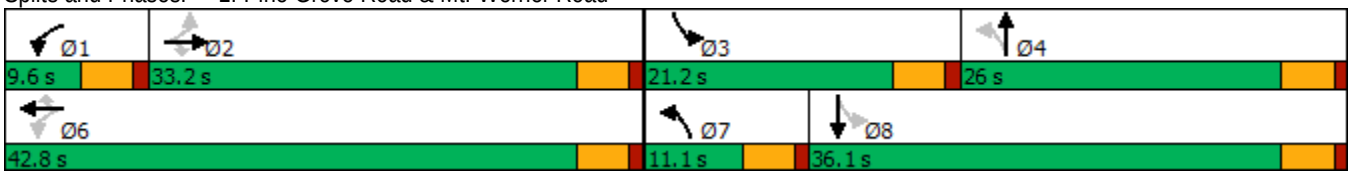
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	16.0	34.3	17.2	22.5		50.3	7.8	31.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s	11.5	29.8	12.7	18.0		45.8	5.1	25.6				
Max Q Clear Time (g_c+I1), s	12.0	29.3	14.7	16.0		13.2	3.7	7.0				
Green Ext Time (p_c), s	0.0	0.2	0.0	0.3		2.9	0.0	0.6				

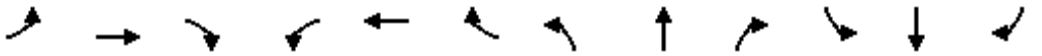
Intersection Summary												
HCM 6th Ctrl Delay			40.6									
HCM 6th LOS			D									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	2	448	62	78	497	601	128	219	357	42
Future Volume (vph)	2	448	62	78	497	601	128	219	357	42
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		2		1	6		7	4	3	8
Permitted Phases	2		2	6		6	4		8	
Detector Phase	2	2	2	1	6	6	7	4	3	8
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	33.2	33.2	33.2	9.6	42.8	42.8	11.1	26.0	21.2	36.1
Total Split (%)	36.9%	36.9%	36.9%	10.7%	47.6%	47.6%	12.3%	28.9%	23.6%	40.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	None	Max	Max	None	Max	None	Max
Act Effct Green (s)	30.6	30.6	30.6	38.3	38.3	38.3	28.1	21.5	42.7	31.6
Actuated g/C Ratio	0.34	0.34	0.34	0.43	0.43	0.43	0.31	0.24	0.47	0.35
v/c Ratio	0.01	0.77	0.10	0.38	0.36	0.65	0.31	0.93	0.94	0.09
Control Delay	21.0	37.3	0.3	20.9	18.4	6.1	17.2	59.8	56.4	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	37.3	0.3	20.9	18.4	6.1	17.2	59.8	56.4	16.8
LOS	C	D	A	C	B	A	B	E	E	B
Approach Delay		32.8			12.3			49.0		51.3
Approach LOS		C			B			D		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 29.6	Intersection LOS: C
Intersection Capacity Utilization 84.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Pine Grove Road & Mt. Werner Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	448	62	78	497	601	128	219	160	357	42	11
Future Volume (veh/h)	2	448	62	78	497	601	128	219	160	357	42	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2	487	67	85	540	653	139	238	174	388	46	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	611	518	244	1512	675	532	240	175	413	502	131
Arrive On Green	0.33	0.33	0.33	0.05	0.43	0.43	0.07	0.24	0.24	0.19	0.35	0.35
Sat Flow, veh/h	469	1870	1585	1781	3554	1585	1781	1004	734	1781	1430	373
Grp Volume(v), veh/h	2	487	67	85	540	653	139	0	412	388	0	58
Grp Sat Flow(s),veh/h/ln	469	1870	1585	1781	1777	1585	1781	0	1738	1781	0	1803
Q Serve(g_s), s	0.3	21.3	2.7	2.7	9.3	36.2	5.2	0.0	21.3	15.1	0.0	1.9
Cycle Q Clear(g_c), s	0.6	21.3	2.7	2.7	9.3	36.2	5.2	0.0	21.3	15.1	0.0	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.42	1.00		0.21
Lane Grp Cap(c), veh/h	231	611	518	244	1512	675	532	0	415	413	0	633
V/C Ratio(X)	0.01	0.80	0.13	0.35	0.36	0.97	0.26	0.00	0.99	0.94	0.00	0.09
Avail Cap(c_a), veh/h	231	611	518	257	1512	675	532	0	415	413	0	633
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.7	27.6	21.3	20.5	17.5	25.3	23.1	0.0	34.2	23.8	0.0	19.6
Incr Delay (d2), s/veh	0.1	10.4	0.5	0.9	0.7	27.7	0.3	0.0	42.3	29.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.0	1.0	1.1	3.8	17.9	2.2	0.0	13.6	9.4	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.8	38.0	21.8	21.3	18.2	52.9	23.3	0.0	76.4	53.3	0.0	19.9
LnGrp LOS	C	D	C	C	B	D	C	A	E	D	A	B
Approach Vol, veh/h		556			1278			551			446	
Approach Delay, s/veh		36.0			36.1			63.0			48.9	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	8.9	33.9	21.2	26.0		42.8	11.1	36.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.1	28.7	16.7	21.5		38.3	6.6	31.6				
Max Q Clear Time (g_c+I1), s	4.7	23.3	17.1	23.3		38.2	7.2	3.9				
Green Ext Time (p_c), s	0.0	1.6	0.0	0.0		0.1	0.0	0.2				

Intersection Summary												
HCM 6th Ctrl Delay			43.4									
HCM 6th LOS			D									

MOVEMENT SUMMARY

Site: 1 [2045 Total AM - Roundabout (Site Folder: General)]

Mt. Werner Road & Pine Grove Road
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Pine Grove Road														
3	L2	39	3.0	42	3.0	0.276	10.1	LOS B	1.0	26.7	0.67	0.68	0.69	32.0
8	T1	81	3.0	88	3.0	0.276	10.1	LOS B	1.0	26.7	0.67	0.68	0.69	31.9
18	R2	168	3.0	183	3.0	0.276	10.1	LOS B	1.0	26.7	0.67	0.68	0.69	31.4
Approach		288	3.0	313	3.0	0.276	10.1	LOS B	1.0	26.7	0.67	0.68	0.69	31.6
East: Mt. Werner Road														
1	L2	277	3.0	301	3.0	0.359	6.4	LOS A	1.9	49.0	0.34	0.21	0.34	32.7
6	T1	233	3.0	253	3.0	0.359	6.4	LOS A	1.9	49.0	0.34	0.21	0.34	33.4
16	R2	294	3.0	320	3.0	0.359	6.4	LOS A	1.9	49.0	0.34	0.21	0.34	33.3
Approach		804	3.0	874	3.0	0.359	6.4	LOS A	1.9	49.0	0.34	0.21	0.34	33.1
North: Pine Grove Road														
7	L2	332	3.0	361	3.0	0.697	19.2	LOS C	7.2	184.1	0.85	1.13	1.64	27.6
4	T1	119	3.0	129	3.0	0.697	19.2	LOS C	7.2	184.1	0.85	1.13	1.64	27.6
14	R2	8	3.0	9	3.0	0.697	19.2	LOS C	7.2	184.1	0.85	1.13	1.64	26.9
Approach		459	3.0	499	3.0	0.697	19.2	LOS C	7.2	184.1	0.85	1.13	1.64	27.6
West: Mt. Werner Road														
5	L2	3	3.0	3	3.0	0.621	17.1	LOS C	4.5	116.4	0.79	0.99	1.42	29.7
2	T1	537	3.0	584	3.0	0.621	17.1	LOS C	4.5	116.4	0.79	0.99	1.42	29.6
12	R2	210	3.0	228	3.0	0.621	17.1	LOS C	4.5	116.4	0.79	0.99	1.42	28.7
Approach		750	3.0	815	3.0	0.621	17.1	LOS C	4.5	116.4	0.79	0.99	1.42	29.4
All Vehicles		2301	3.0	2501	3.0	0.697	12.9	LOS B	7.2	184.1	0.63	0.71	1.00	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [2045 Total PM - Roundabout (Site Folder: General)]

Mt. Werner Road & Pine Grove Road
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Pine Grove Road														
3	L2	128	3.0	139	3.0	0.623	18.3	LOS C	4.3	110.0	0.80	1.00	1.45	28.5
8	T1	219	3.0	238	3.0	0.623	18.3	LOS C	4.3	110.0	0.80	1.00	1.45	28.5
18	R2	160	3.0	174	3.0	0.287	9.8	LOS A	1.1	28.5	0.67	0.67	0.69	31.6
Approach		507	3.0	551	3.0	0.623	15.6	LOS C	4.3	110.0	0.76	0.90	1.21	29.4
East: Mt. Werner Road														
1	L2	78	3.0	85	3.0	0.647	13.5	LOS B	7.4	188.7	0.74	0.89	1.22	30.9
6	T1	497	3.0	540	3.0	0.647	13.5	LOS B	7.4	188.7	0.74	0.89	1.22	30.8
16	R2	601	3.0	653	3.0	0.676	14.5	LOS B	8.5	217.5	0.76	0.95	1.33	29.6
Approach		1176	3.0	1278	3.0	0.676	14.0	LOS B	8.5	217.5	0.75	0.92	1.28	30.2
North: Pine Grove Road														
7	L2	357	3.0	388	3.0	0.742	25.0	LOS C	7.2	183.6	0.88	1.20	1.89	25.6
4	T1	42	3.0	46	3.0	0.742	25.0	LOS C	7.2	183.6	0.88	1.20	1.89	25.6
14	R2	11	3.0	12	3.0	0.742	25.0	LOS C	7.2	183.6	0.88	1.20	1.89	25.0
Approach		410	3.0	446	3.0	0.742	25.0	LOS C	7.2	183.6	0.88	1.20	1.89	25.6
West: Mt. Werner Road														
5	L2	2	3.0	2	3.0	0.328	7.9	LOS A	1.4	36.8	0.59	0.57	0.59	33.8
2	T1	448	3.0	487	3.0	0.328	7.9	LOS A	1.4	36.8	0.59	0.57	0.59	33.7
12	R2	62	3.0	67	3.0	0.328	7.9	LOS A	1.4	36.8	0.59	0.57	0.59	32.6
Approach		512	3.0	557	3.0	0.328	7.9	LOS A	1.4	36.8	0.59	0.57	0.59	33.5
All Vehicles		2605	3.0	2832	3.0	0.742	14.9	LOS B	8.5	217.5	0.74	0.89	1.23	29.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	344	388	216	7	4	258
Future Vol, veh/h	344	388	216	7	4	258
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	374	422	235	8	4	280

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	243	0	-	0	1405	-
Stage 1	-	-	-	-	235	-
Stage 2	-	-	-	-	1170	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1323	-	-	-	154	0
Stage 1	-	-	-	-	804	0
Stage 2	-	-	-	-	295	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1323	-	-	-	110	-
Mov Cap-2 Maneuver	-	-	-	-	221	-
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	295	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	21.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1323	-	-	-	221	-
HCM Lane V/C Ratio	0.283	-	-	-	0.02	-
HCM Control Delay (s)	8.8	-	-	-	21.6	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	1.2	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	242	389	330	11	7	444
Future Vol, veh/h	242	389	330	11	7	444
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	263	423	359	12	8	483

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	371	0	-	0	1308	-
Stage 1	-	-	-	-	359	-
Stage 2	-	-	-	-	949	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1188	-	-	-	176	0
Stage 1	-	-	-	-	707	0
Stage 2	-	-	-	-	376	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1188	-	-	-	137	-
Mov Cap-2 Maneuver	-	-	-	-	263	-
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	376	-

Approach	EB	WB	SB
HCM Control Delay, s	3.4	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1188	-	-	-	263	-
HCM Lane V/C Ratio	0.221	-	-	-	0.029	-
HCM Control Delay (s)	8.9	-	-	-	19.1	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.8	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	364	404	236	7	4	279
Future Vol, veh/h	364	404	236	7	4	279
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	396	439	257	8	4	303

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	265	0	-	0	1488	-
Stage 1	-	-	-	-	257	-
Stage 2	-	-	-	-	1231	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1299	-	-	-	137	0
Stage 1	-	-	-	-	786	0
Stage 2	-	-	-	-	276	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1299	-	-	-	95	-
Mov Cap-2 Maneuver	-	-	-	-	205	-
Stage 1	-	-	-	-	546	-
Stage 2	-	-	-	-	276	-

Approach	EB	WB	SB
HCM Control Delay, s	4.3	0	22.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1299	-	-	-	205	-
HCM Lane V/C Ratio	0.305	-	-	-	0.021	-
HCM Control Delay (s)	9	-	-	-	22.9	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	1.3	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	261	412	342	11	7	467
Future Vol, veh/h	261	412	342	11	7	467
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	284	448	372	12	8	508

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	384	0	-	0	1388	-
Stage 1	-	-	-	-	372	-
Stage 2	-	-	-	-	1016	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1174	-	-	-	157	0
Stage 1	-	-	-	-	697	0
Stage 2	-	-	-	-	350	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1174	-	-	-	119	-
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	350	-

Approach	EB	WB	SB
HCM Control Delay, s	3.5	0	20.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1174	-	-	-	243	-
HCM Lane V/C Ratio	0.242	-	-	-	0.031	-
HCM Control Delay (s)	9	-	-	-	20.3	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.9	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	393	404	236	7	4	316
Future Vol, veh/h	393	404	236	7	4	316
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	427	439	257	8	4	343

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	265	0	-	0	1550	-
Stage 1	-	-	-	-	257	-
Stage 2	-	-	-	-	1293	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1299	-	-	-	125	0
Stage 1	-	-	-	-	786	0
Stage 2	-	-	-	-	257	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1299	-	-	-	84	-
Mov Cap-2 Maneuver	-	-	-	-	190	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	257	-

Approach	EB	WB	SB
HCM Control Delay, s	4.5	0	24.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1299	-	-	-	190	-
HCM Lane V/C Ratio	0.329	-	-	-	0.023	-
HCM Control Delay (s)	9.1	-	-	-	24.4	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	1.5	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	300	412	342	11	7	504
Future Vol, veh/h	300	412	342	11	7	504
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	326	448	372	12	8	548

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	384	0	-	0	1472	-
Stage 1	-	-	-	-	372	-
Stage 2	-	-	-	-	1100	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1174	-	-	-	140	0
Stage 1	-	-	-	-	697	0
Stage 2	-	-	-	-	319	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1174	-	-	-	101	-
Mov Cap-2 Maneuver	-	-	-	-	221	-
Stage 1	-	-	-	-	503	-
Stage 2	-	-	-	-	319	-

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	21.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1174	-	-	-	221	-
HCM Lane V/C Ratio	0.278	-	-	-	0.034	-
HCM Control Delay (s)	9.2	-	-	-	21.9	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	1.1	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	497	302	199	157	88	353
Future Vol, veh/h	497	302	199	157	88	353
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	540	328	216	171	96	384

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	387	0	-	0	1624	-
Stage 1	-	-	-	-	216	-
Stage 2	-	-	-	-	1408	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1171	-	-	-	113	0
Stage 1	-	-	-	-	820	0
Stage 2	-	-	-	-	226	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1171	-	-	-	~ 61	-
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	442	-
Stage 2	-	-	-	-	226	-

Approach	EB	WB	SB
HCM Control Delay, s	6.6	0	55.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1171	-	-	-	161	-
HCM Lane V/C Ratio	0.461	-	-	-	0.594	-
HCM Control Delay (s)	10.7	-	-	-	55.7	0
HCM Lane LOS	B	-	-	-	F	A
HCM 95th %tile Q(veh)	2.5	-	-	-	3.2	-

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

Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	403	310	275	130	125	571
Future Vol, veh/h	403	310	275	130	125	571
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	438	337	299	141	136	621

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	440	0	-	0	1512	-
Stage 1	-	-	-	-	299	-
Stage 2	-	-	-	-	1213	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1120	-	-	-	~ 132	0
Stage 1	-	-	-	-	752	0
Stage 2	-	-	-	-	281	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1120	-	-	-	~ 80	-
Mov Cap-2 Maneuver	-	-	-	-	193	-
Stage 1	-	-	-	-	458	-
Stage 2	-	-	-	-	281	-

Approach	EB	WB	SB
HCM Control Delay, s	5.8	0	58.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1120	-	-	-	193	-
HCM Lane V/C Ratio	0.391	-	-	-	0.704	-
HCM Control Delay (s)	10.3	-	-	-	58.8	0
HCM Lane LOS	B	-	-	-	F	A
HCM 95th %tile Q(veh)	1.9	-	-	-	4.4	-

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

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	868	387	480
Demand Flow Rate, veh/h	886	394	490
Vehicles Circulating, veh/h	98	551	220
Vehicles Exiting, veh/h	220	433	725
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	13.3	11.8	0.8
Approach LOS	B	B	A

Lane	Left	Left	Left	Bypass
Designated Moves	LT	TR	L	R
Assumed Moves	LT	TR	L	R
RT Channelized				Free
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	392
Entry Flow, veh/h	886	394	98	1938
Cap Entry Lane, veh/h	1249	787	1103	0.980
Entry HV Adj Factor	0.980	0.981	0.980	384
Flow Entry, veh/h	868	387	96	1900
Cap Entry, veh/h	1224	772	1080	0.202
V/C Ratio	0.710	0.501	0.089	0.0
Control Delay, s/veh	13.3	11.8	4.1	A
LOS	B	B	A	1
95th %tile Queue, veh	6	3	0	

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

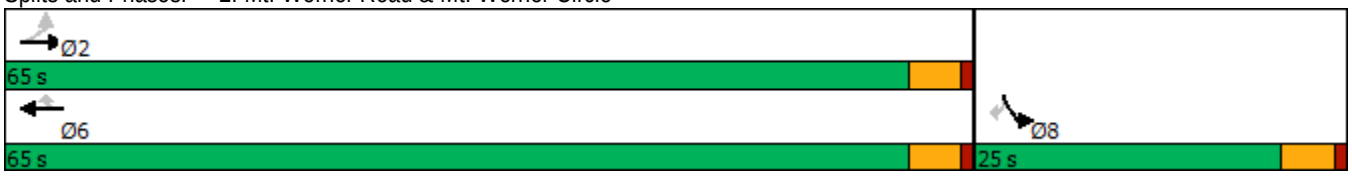
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	775	440	757
Demand Flow Rate, veh/h	791	449	772
Vehicles Circulating, veh/h	139	447	305
Vehicles Exiting, veh/h	305	483	591
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	12.1	11.1	0.9
Approach LOS	B	B	A

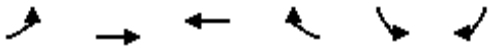
Lane	Left	Left	Left	Bypass
Designated Moves	LT	TR	L	R
Assumed Moves	LT	TR	L	R
RT Channelized				Free
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	633
Entry Flow, veh/h	791	449	139	1938
Cap Entry Lane, veh/h	1197	875	1011	0.980
Entry HV Adj Factor	0.980	0.980	0.978	621
Flow Entry, veh/h	775	440	136	1900
Cap Entry, veh/h	1174	857	989	0.327
V/C Ratio	0.661	0.513	0.137	0.0
Control Delay, s/veh	12.1	11.1	4.9	A
LOS	B	B	A	1
95th %tile Queue, veh	5	3	0	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	497	302	199	157	88	353
Future Volume (vph)	497	302	199	157	88	353
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases	2			6		8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	65.0	65.0	65.0	65.0	25.0	25.0
Total Split (%)	72.2%	72.2%	72.2%	72.2%	27.8%	27.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	None	None
Act Effct Green (s)	30.3	30.3	30.3	30.3	9.6	9.6
Actuated g/C Ratio	0.60	0.60	0.60	0.60	0.19	0.19
v/c Ratio	0.77	0.29	0.19	0.17	0.28	0.63
Control Delay	15.7	5.1	4.6	1.2	24.5	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	5.1	4.6	1.2	24.5	8.5
LOS	B	A	A	A	C	A
Approach Delay		11.7	3.1		11.7	
Approach LOS		B	A		B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 50.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 9.8	Intersection LOS: A
Intersection Capacity Utilization 54.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Mt. Werner Road & Mt. Werner Circle





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	497	302	199	157	88	353
Future Volume (veh/h)	497	302	199	157	88	353
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	540	328	216	171	96	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	825	1269	1269	1075	150	
Arrive On Green	0.68	0.68	0.68	0.68	0.08	0.00
Sat Flow, veh/h	997	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	540	328	216	171	96	0
Grp Sat Flow(s),veh/h/ln	997	1870	1870	1585	1781	1585
Q Serve(g_s), s	16.2	2.6	1.6	1.5	2.0	0.0
Cycle Q Clear(g_c), s	17.8	2.6	1.6	1.5	2.0	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	825	1269	1269	1075	150	
V/C Ratio(X)	0.65	0.26	0.17	0.16	0.64	
Avail Cap(c_a), veh/h	1742	2989	2989	2533	964	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	5.4	2.4	2.2	2.2	16.8	0.0
Incr Delay (d2), s/veh	0.9	0.1	0.1	0.1	4.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.2	0.1	0.1	0.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.3	2.5	2.3	2.3	21.3	0.0
LnGrp LOS	A	A	A	A	C	
Approach Vol, veh/h		868	387		96	
Approach Delay, s/veh		4.9	2.3		21.3	
Approach LOS		A	A		C	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		30.2				30.2	7.7
Change Period (Y+Rc), s		4.5				4.5	4.5
Max Green Setting (Gmax), s		60.5				60.5	20.5
Max Q Clear Time (g_c+I1), s		19.8				3.6	4.0
Green Ext Time (p_c), s		5.9				2.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	5.3
HCM 6th LOS	A

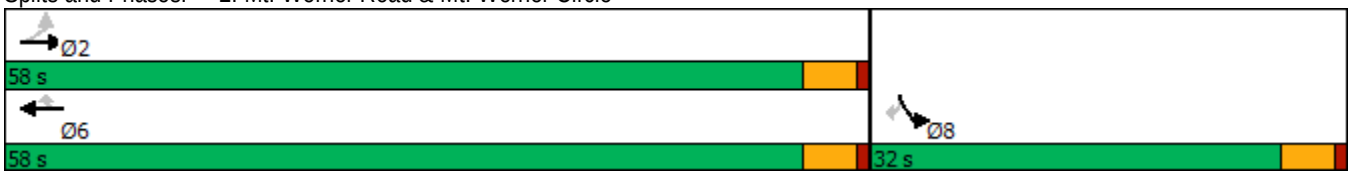
Notes

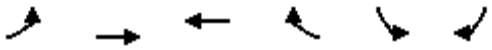
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	403	310	275	130	125	571
Future Volume (vph)	403	310	275	130	125	571
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases	2			6		8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	58.0	58.0	58.0	58.0	32.0	32.0
Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%	35.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	None	None
Act Effct Green (s)	28.5	28.5	28.5	28.5	12.8	12.8
Actuated g/C Ratio	0.55	0.55	0.55	0.55	0.25	0.25
v/c Ratio	0.74	0.33	0.29	0.15	0.31	0.76
Control Delay	18.3	7.6	7.3	1.9	21.2	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.3	7.6	7.3	1.9	21.2	10.1
LOS	B	A	A	A	C	B
Approach Delay		13.7	5.6		12.1	
Approach LOS		B	A		B	

Intersection Summary		
Cycle Length: 90		
Actuated Cycle Length: 52		
Natural Cycle: 60		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.76		
Intersection Signal Delay: 11.2	Intersection LOS: B	
Intersection Capacity Utilization 57.3%	ICU Level of Service B	
Analysis Period (min) 15		

Splits and Phases: 2: Mt. Werner Road & Mt. Werner Circle





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	403	310	275	130	125	571
Future Volume (veh/h)	403	310	275	130	125	571
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	438	337	299	141	136	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	747	1198	1198	1015	186	
Arrive On Green	0.64	0.64	0.64	0.64	0.10	0.00
Sat Flow, veh/h	949	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	438	337	299	141	136	0
Grp Sat Flow(s),veh/h/ln	949	1870	1870	1585	1781	1585
Q Serve(g_s), s	12.9	2.8	2.4	1.2	2.6	0.0
Cycle Q Clear(g_c), s	15.3	2.8	2.4	1.2	2.6	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	747	1198	1198	1015	186	
V/C Ratio(X)	0.59	0.28	0.25	0.14	0.73	
Avail Cap(c_a), veh/h	1579	2837	2837	2404	1389	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.0	2.8	2.7	2.5	15.3	0.0
Incr Delay (d2), s/veh	0.7	0.1	0.1	0.1	5.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.3	0.3	0.1	1.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.7	2.9	2.8	2.6	20.8	0.0
LnGrp LOS	A	A	A	A	C	
Approach Vol, veh/h		775	440		136	
Approach Delay, s/veh		5.1	2.7		20.8	
Approach LOS		A	A		C	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		27.1				27.1	8.2
Change Period (Y+Rc), s		4.5				4.5	4.5
Max Green Setting (Gmax), s		53.5				53.5	27.5
Max Q Clear Time (g_c+I1), s		17.3				4.4	4.6
Green Ext Time (p_c), s		5.3				2.4	0.3

Intersection Summary	
HCM 6th Ctrl Delay	5.9
HCM 6th LOS	A

Notes

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

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	411	457	264	8	4	320
Future Vol, veh/h	411	457	264	8	4	320
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	447	497	287	9	4	348

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	296	0	-	0	1678	-
Stage 1	-	-	-	-	287	-
Stage 2	-	-	-	-	1391	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1265	-	-	-	104	0
Stage 1	-	-	-	-	762	0
Stage 2	-	-	-	-	231	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1265	-	-	-	67	-
Mov Cap-2 Maneuver	-	-	-	-	169	-
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	231	-

Approach	EB	WB	SB
HCM Control Delay, s	4.4	0	26.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1265	-	-	-	169	-
HCM Lane V/C Ratio	0.353	-	-	-	0.026	-
HCM Control Delay (s)	9.4	-	-	-	26.9	0
HCM Lane LOS	A	-	-	-	D	A
HCM 95th %tile Q(veh)	1.6	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	297	465	382	12	8	530
Future Vol, veh/h	297	465	382	12	8	530
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	323	505	415	13	9	576

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	428	0	-	0	1566	-
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	1151	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1131	-	-	-	122	0
Stage 1	-	-	-	-	666	0
Stage 2	-	-	-	-	301	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1131	-	-	-	87	-
Mov Cap-2 Maneuver	-	-	-	-	205	-
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	301	-

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	23.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1131	-	-	-	205	-
HCM Lane V/C Ratio	0.285	-	-	-	0.042	-
HCM Control Delay (s)	9.4	-	-	-	23.3	0
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	1.2	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	440	457	264	8	4	357
Future Vol, veh/h	440	457	264	8	4	357
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	478	497	287	9	4	388

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	296	0	-	0	1740	-
Stage 1	-	-	-	-	287	-
Stage 2	-	-	-	-	1453	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1265	-	-	-	96	0
Stage 1	-	-	-	-	762	0
Stage 2	-	-	-	-	215	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1265	-	-	-	60	-
Mov Cap-2 Maneuver	-	-	-	-	158	-
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	215	-

Approach	EB	WB	SB
HCM Control Delay, s	4.7	0	28.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1265	-	-	-	158	-
HCM Lane V/C Ratio	0.378	-	-	-	0.028	-
HCM Control Delay (s)	9.6	-	-	-	28.4	0
HCM Lane LOS	A	-	-	-	D	A
HCM 95th %tile Q(veh)	1.8	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	336	465	382	12	8	567
Future Vol, veh/h	336	465	382	12	8	567
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	365	505	415	13	9	616

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	428	0	-	0	1650	-
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	1235	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1131	-	-	-	109	0
Stage 1	-	-	-	-	666	0
Stage 2	-	-	-	-	274	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1131	-	-	-	74	-
Mov Cap-2 Maneuver	-	-	-	-	187	-
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	274	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	25.2
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1131	-	-	-	187	-
HCM Lane V/C Ratio	0.323	-	-	-	0.047	-
HCM Control Delay (s)	9.7	-	-	-	25.2	0
HCM Lane LOS	A	-	-	-	D	A
HCM 95th %tile Q(veh)	1.4	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	553	345	220	174	97	402
Future Vol, veh/h	553	345	220	174	97	402
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	601	375	239	189	105	437

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	428	0	-	0	1816	-
Stage 1	-	-	-	-	239	-
Stage 2	-	-	-	-	1577	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1131	-	-	-	~ 86	0
Stage 1	-	-	-	-	801	0
Stage 2	-	-	-	-	187	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1131	-	-	-	~ 40	-
Mov Cap-2 Maneuver	-	-	-	-	130	-
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	187	-

Approach	EB	WB	SB
HCM Control Delay, s	7.2	0	99.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1131	-	-	-	130	-
HCM Lane V/C Ratio	0.531	-	-	-	0.811	-
HCM Control Delay (s)	11.7	-	-	-	99.3	0
HCM Lane LOS	B	-	-	-	F	A
HCM 95th %tile Q(veh)	3.2	-	-	-	4.9	-

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

Intersection	
Int Delay, s/veh	14.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	448	353	304	144	139	645
Future Vol, veh/h	448	353	304	144	139	645
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	487	384	330	157	151	701

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	487	0	-	0	1688	-
Stage 1	-	-	-	-	330	-
Stage 2	-	-	-	-	1358	-
Critical Hdwy	4.12	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	-
Pot Cap-1 Maneuver	1076	-	-	-	~ 103	0
Stage 1	-	-	-	-	728	0
Stage 2	-	-	-	-	239	0
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1076	-	-	-	~ 56	-
Mov Cap-2 Maneuver	-	-	-	-	160	-
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	239	-

Approach	EB	WB	SB
HCM Control Delay, s	6.2	0	113.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1076	-	-	-	160	-
HCM Lane V/C Ratio	0.453	-	-	-	0.944	-
HCM Control Delay (s)	11.1	-	-	-	113.5	0
HCM Lane LOS	B	-	-	-	F	A
HCM 95th %tile Q(veh)	2.4	-	-	-	7	-

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

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	976	428	542
Demand Flow Rate, veh/h	995	437	553
Vehicles Circulating, veh/h	107	613	244
Vehicles Exiting, veh/h	244	489	806
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	17.8	14.9	0.8
Approach LOS	C	B	A

Lane	Left	Left	Left	Bypass
Designated Moves	LT	TR	L	R
Assumed Moves	LT	TR	L	R
RT Channelized				Free
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	446
Entry Flow, veh/h	995	437	107	1938
Cap Entry Lane, veh/h	1237	738	1076	0.980
Entry HV Adj Factor	0.980	0.980	0.981	437
Flow Entry, veh/h	976	428	105	1900
Cap Entry, veh/h	1213	724	1056	0.230
V/C Ratio	0.804	0.592	0.099	0.0
Control Delay, s/veh	17.8	14.9	4.3	A
LOS	C	B	A	1
95th %tile Queue, veh	9	4	0	

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

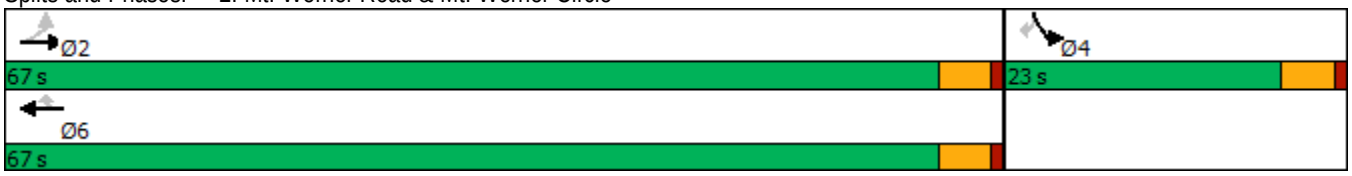
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	871	487	852
Demand Flow Rate, veh/h	889	497	869
Vehicles Circulating, veh/h	154	497	337
Vehicles Exiting, veh/h	337	546	657
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	15.7	13.8	0.9
Approach LOS	C	B	A

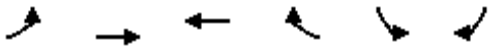
Lane	Left	Left	Left	Bypass
Designated Moves	LT	TR	L	R
Assumed Moves	LT	TR	L	R
RT Channelized				Free
Lane Util	1.000	1.000	1.000	
Follow-Up Headway, s	2.609	2.609	2.609	
Critical Headway, s	4.976	4.976	4.976	715
Entry Flow, veh/h	889	497	154	1938
Cap Entry Lane, veh/h	1179	831	979	0.980
Entry HV Adj Factor	0.980	0.981	0.981	701
Flow Entry, veh/h	871	487	151	1900
Cap Entry, veh/h	1156	815	959	0.369
V/C Ratio	0.754	0.598	0.157	0.0
Control Delay, s/veh	15.7	13.8	5.2	A
LOS	C	B	A	2
95th %tile Queue, veh	8	4	1	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	553	345	220	174	97	402
Future Volume (vph)	553	345	220	174	97	402
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	67.0	67.0	67.0	67.0	23.0	23.0
Total Split (%)	74.4%	74.4%	74.4%	74.4%	25.6%	25.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	None	None
Act Effct Green (s)	36.1	36.1	36.1	36.1	10.3	10.3
Actuated g/C Ratio	0.64	0.64	0.64	0.64	0.18	0.18
v/c Ratio	0.83	0.32	0.20	0.18	0.33	0.68
Control Delay	19.4	5.2	4.5	1.1	28.0	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	5.2	4.5	1.1	28.0	9.3
LOS	B	A	A	A	C	A
Approach Delay		13.9	3.0		12.9	
Approach LOS		B	A		B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 56.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 11.2	Intersection LOS: B
Intersection Capacity Utilization 58.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Mt. Werner Road & Mt. Werner Circle





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	553	345	220	174	97	402
Future Volume (veh/h)	553	345	220	174	97	402
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	601	375	239	189	105	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	821	1370	1370	1161	141	
Arrive On Green	0.73	0.73	0.73	0.73	0.08	0.00
Sat Flow, veh/h	960	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	601	375	239	189	105	0
Grp Sat Flow(s),veh/h/ln	960	1870	1870	1585	1781	1585
Q Serve(g_s), s	24.1	3.2	1.9	1.7	2.8	0.0
Cycle Q Clear(g_c), s	25.8	3.2	1.9	1.7	2.8	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	821	1370	1370	1161	141	
V/C Ratio(X)	0.73	0.27	0.17	0.16	0.75	
Avail Cap(c_a), veh/h	1373	2446	2446	2073	690	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	5.8	2.1	2.0	1.9	21.5	0.0
Incr Delay (d2), s/veh	1.3	0.1	0.1	0.1	7.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.4	0.2	0.2	1.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.1	2.2	2.0	2.0	29.1	0.0
LnGrp LOS	A	A	A	A	C	
Approach Vol, veh/h		976	428		105	
Approach Delay, s/veh		5.2	2.0		29.1	
Approach LOS		A	A		C	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		39.4		8.3		39.4
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		62.5		18.5		62.5
Max Q Clear Time (g_c+I1), s		27.8		4.8		3.9
Green Ext Time (p_c), s		7.1		0.2		2.2

Intersection Summary	
HCM 6th Ctrl Delay	6.0
HCM 6th LOS	A

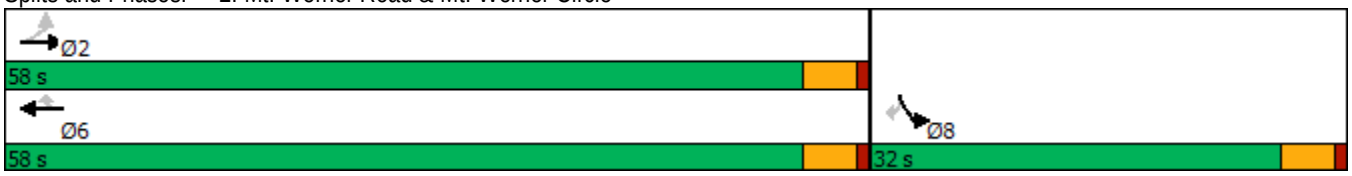
Notes

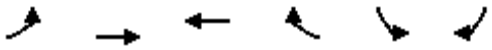
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	448	353	304	144	139	645
Future Volume (vph)	448	353	304	144	139	645
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases	2			6		8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	58.0	58.0	58.0	58.0	32.0	32.0
Total Split (%)	64.4%	64.4%	64.4%	64.4%	35.6%	35.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	None	None
Act Effct Green (s)	39.4	39.4	39.4	39.4	17.8	17.8
Actuated g/C Ratio	0.58	0.58	0.58	0.58	0.26	0.26
v/c Ratio	0.83	0.35	0.30	0.16	0.32	0.86
Control Delay	27.3	9.1	8.7	1.9	24.6	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	9.1	8.7	1.9	24.6	19.4
LOS	C	A	A	A	C	B
Approach Delay		19.3	6.5		20.3	
Approach LOS		B	A		C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 67.6	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 16.9	Intersection LOS: B
Intersection Capacity Utilization 63.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Mt. Werner Road & Mt. Werner Circle





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	448	353	304	144	139	645
Future Volume (veh/h)	448	353	304	144	139	645
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	487	384	330	157	151	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	722	1284	1284	1088	204	
Arrive On Green	0.69	0.69	0.69	0.69	0.11	0.00
Sat Flow, veh/h	909	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	487	384	330	157	151	0
Grp Sat Flow(s),veh/h/ln	909	1870	1870	1585	1781	1585
Q Serve(g_s), s	19.8	3.7	3.0	1.6	3.7	0.0
Cycle Q Clear(g_c), s	22.9	3.7	3.0	1.6	3.7	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	722	1284	1284	1088	204	
V/C Ratio(X)	0.67	0.30	0.26	0.14	0.74	
Avail Cap(c_a), veh/h	1174	2213	2213	1876	1084	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.0	2.8	2.7	2.5	19.4	0.0
Incr Delay (d2), s/veh	1.1	0.1	0.1	0.1	5.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.5	0.5	0.2	1.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.2	2.9	2.8	2.5	24.6	0.0
LnGrp LOS	A	A	A	A	C	
Approach Vol, veh/h		871	487		151	
Approach Delay, s/veh		5.8	2.7		24.6	
Approach LOS		A	A		C	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		35.5				35.5	9.7
Change Period (Y+Rc), s		4.5				4.5	4.5
Max Green Setting (Gmax), s		53.5				53.5	27.5
Max Q Clear Time (g_c+I1), s		24.9				5.0	5.7
Green Ext Time (p_c), s		6.2				2.7	0.4

Intersection Summary	
HCM 6th Ctrl Delay	6.7
HCM 6th LOS	A

Notes

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

Intersection	
Intersection Delay, s/veh	6.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	13	129	406	307
Demand Flow Rate, veh/h	13	131	414	313
Vehicles Circulating, veh/h	367	262	192	164
Vehicles Exiting, veh/h	110	344	188	229
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.9	4.6	6.9	5.6
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	13	131	414	313
Cap Entry Lane, veh/h	949	1056	1134	1167
Entry HV Adj Factor	0.998	0.984	0.981	0.979
Flow Entry, veh/h	13	129	406	307
Cap Entry, veh/h	948	1040	1113	1143
V/C Ratio	0.014	0.124	0.365	0.268
Control Delay, s/veh	3.9	4.6	6.9	5.6
LOS	A	A	A	A
95th %tile Queue, veh	0	0	2	1

Intersection	
Intersection Delay, s/veh	6.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	35	285	448	235
Demand Flow Rate, veh/h	35	291	458	240
Vehicles Circulating, veh/h	328	392	175	227
Vehicles Exiting, veh/h	139	241	188	456
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.0	7.4	7.2	5.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	35	291	458	240
Cap Entry Lane, veh/h	988	925	1154	1095
Entry HV Adj Factor	0.999	0.979	0.979	0.980
Flow Entry, veh/h	35	285	448	235
Cap Entry, veh/h	986	906	1130	1073
V/C Ratio	0.035	0.315	0.397	0.219
Control Delay, s/veh	4.0	7.4	7.2	5.4
LOS	A	A	A	A
95th %tile Queue, veh	0	1	2	1

Intersection	
Intersection Delay, s/veh	6.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	13	131	429	334
Demand Flow Rate, veh/h	13	133	437	341
Vehicles Circulating, veh/h	397	288	192	167
Vehicles Exiting, veh/h	111	341	218	254
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.0	4.7	7.2	5.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	13	133	437	341
Cap Entry Lane, veh/h	920	1029	1134	1164
Entry HV Adj Factor	0.998	0.985	0.981	0.979
Flow Entry, veh/h	13	131	429	334
Cap Entry, veh/h	919	1013	1113	1140
V/C Ratio	0.014	0.129	0.385	0.293
Control Delay, s/veh	4.0	4.7	7.2	5.9
LOS	A	A	A	A
95th %tile Queue, veh	0	0	2	1

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	35	286	481	259
Demand Flow Rate, veh/h	35	292	491	264
Vehicles Circulating, veh/h	353	424	175	230
Vehicles Exiting, veh/h	141	242	213	486
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.1	7.7	7.6	5.6
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	35	292	491	264
Cap Entry Lane, veh/h	963	895	1154	1091
Entry HV Adj Factor	0.999	0.979	0.979	0.980
Flow Entry, veh/h	35	286	481	259
Cap Entry, veh/h	962	877	1130	1070
V/C Ratio	0.036	0.326	0.425	0.242
Control Delay, s/veh	4.1	7.7	7.6	5.6
LOS	A	A	A	A
95th %tile Queue, veh	0	1	2	1

Intersection	
Intersection Delay, s/veh	6.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	13	177	435	366
Demand Flow Rate, veh/h	13	180	443	373
Vehicles Circulating, veh/h	435	288	224	173
Vehicles Exiting, veh/h	111	379	224	295
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.2	5.2	7.6	6.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	13	180	443	373
Cap Entry Lane, veh/h	885	1029	1098	1157
Entry HV Adj Factor	0.998	0.983	0.981	0.981
Flow Entry, veh/h	13	177	435	366
Cap Entry, veh/h	884	1011	1077	1135
V/C Ratio	0.015	0.175	0.403	0.322
Control Delay, s/veh	4.2	5.2	7.6	6.3
LOS	A	A	A	A
95th %tile Queue, veh	0	1	2	1

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	35	332	488	301
Demand Flow Rate, veh/h	35	339	498	307
Vehicles Circulating, veh/h	402	424	218	236
Vehicles Exiting, veh/h	141	292	219	527
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.3	8.5	8.3	6.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	35	339	498	307
Cap Entry Lane, veh/h	916	895	1105	1085
Entry HV Adj Factor	0.999	0.979	0.980	0.980
Flow Entry, veh/h	35	332	488	301
Cap Entry, veh/h	915	877	1082	1063
V/C Ratio	0.038	0.379	0.451	0.283
Control Delay, s/veh	4.3	8.5	8.3	6.1
LOS	A	A	A	A
95th %tile Queue, veh	0	2	2	1

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	13	177	524	641
Demand Flow Rate, veh/h	13	181	535	654
Vehicles Circulating, veh/h	701	408	253	158
Vehicles Exiting, veh/h	111	380	461	430
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.5	6.0	9.4	9.8
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	13	181	535	654
Cap Entry Lane, veh/h	675	910	1066	1174
Entry HV Adj Factor	0.998	0.978	0.980	0.980
Flow Entry, veh/h	13	177	524	641
Cap Entry, veh/h	674	890	1045	1151
V/C Ratio	0.019	0.199	0.502	0.557
Control Delay, s/veh	5.5	6.0	9.4	9.8
LOS	A	A	A	A
95th %tile Queue, veh	0	1	3	4

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	35	333	650	543
Demand Flow Rate, veh/h	35	339	663	554
Vehicles Circulating, veh/h	629	609	238	216
Vehicles Exiting, veh/h	141	292	426	732
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.5	11.3	11.7	9.1
Approach LOS	A	B	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	35	339	663	554
Cap Entry Lane, veh/h	726	741	1082	1107
Entry HV Adj Factor	0.999	0.982	0.981	0.981
Flow Entry, veh/h	35	333	650	543
Cap Entry, veh/h	726	728	1062	1086
V/C Ratio	0.048	0.457	0.612	0.500
Control Delay, s/veh	5.5	11.3	11.7	9.1
LOS	A	B	B	A
95th %tile Queue, veh	0	2	4	3

Intersection	
Intersection Delay, s/veh	6.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	14	136	478	359
Demand Flow Rate, veh/h	14	138	487	367
Vehicles Circulating, veh/h	428	333	193	183
Vehicles Exiting, veh/h	122	347	249	288
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.2	5.0	7.8	6.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	14	138	487	367
Cap Entry Lane, veh/h	892	983	1133	1145
Entry HV Adj Factor	0.999	0.985	0.981	0.979
Flow Entry, veh/h	14	136	478	359
Cap Entry, veh/h	891	968	1112	1121
V/C Ratio	0.016	0.140	0.430	0.321
Control Delay, s/veh	4.2	5.0	7.8	6.3
LOS	A	A	A	A
95th %tile Queue, veh	0	0	2	1

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	38	291	544	282
Demand Flow Rate, veh/h	38	297	555	288
Vehicles Circulating, veh/h	382	485	178	249
Vehicles Exiting, veh/h	155	248	242	533
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.2	8.5	8.5	6.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	38	297	555	288
Cap Entry Lane, veh/h	935	841	1151	1070
Entry HV Adj Factor	0.999	0.980	0.980	0.980
Flow Entry, veh/h	38	291	544	282
Cap Entry, veh/h	934	824	1128	1049
V/C Ratio	0.041	0.353	0.482	0.269
Control Delay, s/veh	4.2	8.5	8.5	6.0
LOS	A	A	A	A
95th %tile Queue, veh	0	2	3	1

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	14	183	483	391
Demand Flow Rate, veh/h	14	186	492	399
Vehicles Circulating, veh/h	467	333	225	190
Vehicles Exiting, veh/h	122	384	256	329
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.4	5.5	8.3	6.7
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	14	186	492	399
Cap Entry Lane, veh/h	857	983	1097	1137
Entry HV Adj Factor	0.999	0.984	0.982	0.981
Flow Entry, veh/h	14	183	483	391
Cap Entry, veh/h	856	966	1077	1115
V/C Ratio	0.016	0.189	0.449	0.351
Control Delay, s/veh	4.4	5.5	8.3	6.7
LOS	A	A	A	A
95th %tile Queue, veh	0	1	2	2

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	38	338	552	324
Demand Flow Rate, veh/h	38	345	563	331
Vehicles Circulating, veh/h	432	485	221	256
Vehicles Exiting, veh/h	155	299	249	574
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.5	9.4	9.3	6.6
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	38	345	563	331
Cap Entry Lane, veh/h	888	841	1101	1063
Entry HV Adj Factor	0.999	0.980	0.980	0.980
Flow Entry, veh/h	38	338	552	324
Cap Entry, veh/h	887	824	1080	1041
V/C Ratio	0.043	0.410	0.511	0.311
Control Delay, s/veh	4.5	9.4	9.3	6.6
LOS	A	A	A	A
95th %tile Queue, veh	0	2	3	1

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	14	182	590	693
Demand Flow Rate, veh/h	14	186	602	707
Vehicles Circulating, veh/h	759	471	254	174
Vehicles Exiting, veh/h	122	385	519	482
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.9	6.6	10.7	11.1
Approach LOS	A	A	B	B

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	14	186	602	707
Cap Entry Lane, veh/h	636	854	1065	1155
Entry HV Adj Factor	0.999	0.978	0.980	0.980
Flow Entry, veh/h	14	182	590	693
Cap Entry, veh/h	635	835	1044	1133
V/C Ratio	0.022	0.218	0.565	0.612
Control Delay, s/veh	5.9	6.6	10.7	11.1
LOS	A	A	B	B
95th %tile Queue, veh	0	1	4	4

Intersection	
Intersection Delay, s/veh	12.6
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	38	338	739	589
Demand Flow Rate, veh/h	38	345	754	601
Vehicles Circulating, veh/h	682	696	241	236
Vehicles Exiting, veh/h	155	299	479	805
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.8	13.4	14.4	10.3
Approach LOS	A	B	B	B

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	38	345	754	601
Cap Entry Lane, veh/h	688	679	1079	1085
Entry HV Adj Factor	0.999	0.980	0.980	0.981
Flow Entry, veh/h	38	338	739	589
Cap Entry, veh/h	688	665	1057	1064
V/C Ratio	0.055	0.508	0.699	0.554
Control Delay, s/veh	5.8	13.4	14.4	10.3
LOS	A	B	B	B
95th %tile Queue, veh	0	3	6	4

Intersection	
Intersection Delay, s/veh	4.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	283	144	12	6
Demand Flow Rate, veh/h	288	147	12	6
Vehicles Circulating, veh/h	9	12	285	147
Vehicles Exiting, veh/h	144	285	12	12
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.5	3.6	3.6	3.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	288	147	12	6
Cap Entry Lane, veh/h	1367	1363	1032	1188
Entry HV Adj Factor	0.981	0.982	0.997	0.993
Flow Entry, veh/h	283	144	12	6
Cap Entry, veh/h	1341	1338	1028	1180
V/C Ratio	0.211	0.108	0.012	0.005
Control Delay, s/veh	4.5	3.6	3.6	3.1
LOS	A	A	A	A
95th %tile Queue, veh	1	0	0	0

Intersection	
Intersection Delay, s/veh	4.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	205	300	12	6
Demand Flow Rate, veh/h	209	306	12	6
Vehicles Circulating, veh/h	9	12	206	306
Vehicles Exiting, veh/h	303	206	12	12
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.9	4.6	3.3	3.6
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	209	306	12	6
Cap Entry Lane, veh/h	1367	1363	1118	1010
Entry HV Adj Factor	0.981	0.981	0.997	0.993
Flow Entry, veh/h	205	300	12	6
Cap Entry, veh/h	1342	1337	1115	1003
V/C Ratio	0.153	0.224	0.011	0.006
Control Delay, s/veh	3.9	4.6	3.3	3.6
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	4.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	283	144	12	6
Demand Flow Rate, veh/h	288	147	12	6
Vehicles Circulating, veh/h	9	12	285	147
Vehicles Exiting, veh/h	144	285	12	12
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.5	3.6	3.6	3.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	288	147	12	6
Cap Entry Lane, veh/h	1367	1363	1032	1188
Entry HV Adj Factor	0.981	0.982	0.997	0.993
Flow Entry, veh/h	283	144	12	6
Cap Entry, veh/h	1341	1338	1028	1180
V/C Ratio	0.211	0.108	0.012	0.005
Control Delay, s/veh	4.5	3.6	3.6	3.1
LOS	A	A	A	A
95th %tile Queue, veh	1	0	0	0

Intersection	
Intersection Delay, s/veh	4.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	205	300	12	6
Demand Flow Rate, veh/h	209	306	12	6
Vehicles Circulating, veh/h	9	12	206	306
Vehicles Exiting, veh/h	303	206	12	12
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.9	4.6	3.3	3.6
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	209	306	12	6
Cap Entry Lane, veh/h	1367	1363	1118	1010
Entry HV Adj Factor	0.981	0.981	0.997	0.993
Flow Entry, veh/h	205	300	12	6
Cap Entry, veh/h	1342	1337	1115	1003
V/C Ratio	0.153	0.224	0.011	0.006
Control Delay, s/veh	3.9	4.6	3.3	3.6
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	4.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	320	190	12	6
Demand Flow Rate, veh/h	326	194	12	6
Vehicles Circulating, veh/h	9	12	323	194
Vehicles Exiting, veh/h	191	323	12	12
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.7	3.8	3.7	3.2
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	326	194	12	6
Cap Entry Lane, veh/h	1367	1363	993	1132
Entry HV Adj Factor	0.981	0.981	0.997	0.993
Flow Entry, veh/h	320	190	12	6
Cap Entry, veh/h	1341	1338	989	1125
V/C Ratio	0.238	0.142	0.012	0.005
Control Delay, s/veh	4.7	3.8	3.7	3.2
LOS	A	A	A	A
95th %tile Queue, veh	1	0	0	0

Intersection	
Intersection Delay, s/veh	4.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	255	347	12	6
Demand Flow Rate, veh/h	260	354	12	6
Vehicles Circulating, veh/h	9	12	257	354
Vehicles Exiting, veh/h	351	257	12	12
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.3	4.9	3.5	3.8
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	260	354	12	6
Cap Entry Lane, veh/h	1367	1363	1062	962
Entry HV Adj Factor	0.981	0.981	0.997	0.993
Flow Entry, veh/h	255	347	12	6
Cap Entry, veh/h	1341	1337	1058	955
V/C Ratio	0.190	0.260	0.011	0.006
Control Delay, s/veh	4.3	4.9	3.5	3.8
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	4.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	326	194	12	6
Demand Flow Rate, veh/h	332	198	12	6
Vehicles Circulating, veh/h	9	12	329	198
Vehicles Exiting, veh/h	195	329	12	12
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.8	3.9	3.8	3.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	332	198	12	6
Cap Entry Lane, veh/h	1367	1363	987	1128
Entry HV Adj Factor	0.981	0.981	0.997	0.993
Flow Entry, veh/h	326	194	12	6
Cap Entry, veh/h	1341	1338	983	1120
V/C Ratio	0.243	0.145	0.012	0.005
Control Delay, s/veh	4.8	3.9	3.8	3.3
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	4.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	260	355	12	6
Demand Flow Rate, veh/h	265	362	12	6
Vehicles Circulating, veh/h	9	12	262	362
Vehicles Exiting, veh/h	359	262	12	12
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.3	5.0	3.5	3.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	265	362	12	6
Cap Entry Lane, veh/h	1367	1363	1056	954
Entry HV Adj Factor	0.981	0.981	0.997	0.993
Flow Entry, veh/h	260	355	12	6
Cap Entry, veh/h	1341	1337	1053	948
V/C Ratio	0.194	0.266	0.011	0.006
Control Delay, s/veh	4.3	5.0	3.5	3.9
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	4.3
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	314	161	16	6
Demand Flow Rate, veh/h	320	164	16	6
Vehicles Circulating, veh/h	11	16	315	164
Vehicles Exiting, veh/h	159	315	16	16
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.7	3.7	3.7	3.1
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	320	164	16	6
Cap Entry Lane, veh/h	1364	1358	1001	1167
Entry HV Adj Factor	0.981	0.982	0.998	0.993
Flow Entry, veh/h	314	161	16	6
Cap Entry, veh/h	1339	1333	998	1160
V/C Ratio	0.235	0.121	0.016	0.005
Control Delay, s/veh	4.7	3.7	3.7	3.1
LOS	A	A	A	A
95th %tile Queue, veh	1	0	0	0

Intersection	
Intersection Delay, s/veh	4.5
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	228	332	16	6
Demand Flow Rate, veh/h	232	338	16	6
Vehicles Circulating, veh/h	11	16	227	338
Vehicles Exiting, veh/h	333	227	16	16
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.1	4.8	3.4	3.8
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	232	338	16	6
Cap Entry Lane, veh/h	1364	1358	1095	978
Entry HV Adj Factor	0.982	0.981	0.998	0.993
Flow Entry, veh/h	228	332	16	6
Cap Entry, veh/h	1339	1332	1092	971
V/C Ratio	0.170	0.249	0.015	0.006
Control Delay, s/veh	4.1	4.8	3.4	3.8
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	4.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	351	207	16	6
Demand Flow Rate, veh/h	358	211	16	6
Vehicles Circulating, veh/h	11	16	353	211
Vehicles Exiting, veh/h	206	353	16	16
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.0	4.0	3.9	3.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	358	211	16	6
Cap Entry Lane, veh/h	1364	1358	963	1113
Entry HV Adj Factor	0.981	0.982	0.998	0.993
Flow Entry, veh/h	351	207	16	6
Cap Entry, veh/h	1339	1333	960	1105
V/C Ratio	0.262	0.155	0.017	0.005
Control Delay, s/veh	5.0	4.0	3.9	3.3
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	4.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	278	379	16	6
Demand Flow Rate, veh/h	283	386	16	6
Vehicles Circulating, veh/h	11	16	278	386
Vehicles Exiting, veh/h	381	278	16	16
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.4	5.2	3.6	4.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	283	386	16	6
Cap Entry Lane, veh/h	1364	1358	1039	931
Entry HV Adj Factor	0.981	0.981	0.998	0.993
Flow Entry, veh/h	278	379	16	6
Cap Entry, veh/h	1339	1332	1037	925
V/C Ratio	0.207	0.284	0.015	0.006
Control Delay, s/veh	4.4	5.2	3.6	4.0
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	4.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	359	212	16	6
Demand Flow Rate, veh/h	366	216	16	6
Vehicles Circulating, veh/h	11	16	361	216
Vehicles Exiting, veh/h	211	361	16	16
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.0	4.0	3.9	3.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	366	216	16	6
Cap Entry Lane, veh/h	1364	1358	955	1107
Entry HV Adj Factor	0.981	0.982	0.998	0.993
Flow Entry, veh/h	359	212	16	6
Cap Entry, veh/h	1339	1333	953	1100
V/C Ratio	0.268	0.159	0.017	0.005
Control Delay, s/veh	5.0	4.0	3.9	3.3
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	4.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	284	388	16	6
Demand Flow Rate, veh/h	289	395	16	6
Vehicles Circulating, veh/h	11	16	284	395
Vehicles Exiting, veh/h	390	284	16	16
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.5	5.3	3.6	4.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	289	395	16	6
Cap Entry Lane, veh/h	1364	1358	1033	922
Entry HV Adj Factor	0.981	0.981	0.998	0.993
Flow Entry, veh/h	284	388	16	6
Cap Entry, veh/h	1339	1332	1030	916
V/C Ratio	0.212	0.291	0.015	0.007
Control Delay, s/veh	4.5	5.3	3.6	4.0
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	258	34	1	133	1	44	0	1	1	0	3
Future Vol, veh/h	1	258	34	1	133	1	44	0	1	1	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	280	37	1	145	1	48	0	1	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	146	0	0	317	0	0	450	449	299	449	467	146
Stage 1	-	-	-	-	-	-	301	301	-	148	148	-
Stage 2	-	-	-	-	-	-	149	148	-	301	319	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1436	-	-	1243	-	-	519	505	741	520	493	901
Stage 1	-	-	-	-	-	-	708	665	-	855	775	-
Stage 2	-	-	-	-	-	-	854	775	-	708	653	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1436	-	-	1243	-	-	516	504	741	518	492	901
Mov Cap-2 Maneuver	-	-	-	-	-	-	516	504	-	518	492	-
Stage 1	-	-	-	-	-	-	707	664	-	854	774	-
Stage 2	-	-	-	-	-	-	850	774	-	706	652	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	12.6	9.8
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	520	1436	-	-	1243	-	-	760
HCM Lane V/C Ratio	0.094	0.001	-	-	0.001	-	-	0.006
HCM Control Delay (s)	12.6	7.5	0	-	7.9	0	-	9.8
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	186	46	1	277	1	44	0	1	1	0	3
Future Vol, veh/h	1	186	46	1	277	1	44	0	1	1	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	202	50	1	301	1	48	0	1	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	302	0	0	252	0	0	534	533	227	534	558	302
Stage 1	-	-	-	-	-	-	229	229	-	304	304	-
Stage 2	-	-	-	-	-	-	305	304	-	230	254	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1259	-	-	1313	-	-	457	453	812	457	438	738
Stage 1	-	-	-	-	-	-	774	715	-	705	663	-
Stage 2	-	-	-	-	-	-	705	663	-	773	697	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1259	-	-	1313	-	-	454	452	812	456	437	738
Mov Cap-2 Maneuver	-	-	-	-	-	-	454	452	-	456	437	-
Stage 1	-	-	-	-	-	-	773	714	-	704	662	-
Stage 2	-	-	-	-	-	-	701	662	-	771	696	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	13.8	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	458	1259	-	-	1313	-	-	639
HCM Lane V/C Ratio	0.107	0.001	-	-	0.001	-	-	0.007
HCM Control Delay (s)	13.8	7.9	0	-	7.7	0	-	10.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	284	34	1	147	1	44	0	1	1	0	3
Future Vol, veh/h	1	284	34	1	147	1	44	0	1	1	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	309	37	1	160	1	48	0	1	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	161	0	0	346	0	0	494	493	328	493	511	161
Stage 1	-	-	-	-	-	-	330	330	-	163	163	-
Stage 2	-	-	-	-	-	-	164	163	-	330	348	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1418	-	-	1213	-	-	486	477	713	486	466	884
Stage 1	-	-	-	-	-	-	683	646	-	839	763	-
Stage 2	-	-	-	-	-	-	838	763	-	683	634	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1418	-	-	1213	-	-	484	476	713	485	465	884
Mov Cap-2 Maneuver	-	-	-	-	-	-	484	476	-	485	465	-
Stage 1	-	-	-	-	-	-	682	645	-	838	762	-
Stage 2	-	-	-	-	-	-	834	762	-	681	633	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	13.2	9.9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	487	1418	-	-	1213	-	-	733
HCM Lane V/C Ratio	0.1	0.001	-	-	0.001	-	-	0.006
HCM Control Delay (s)	13.2	7.5	0	-	8	0	-	9.9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	205	46	1	305	1	44	0	1	1	0	3
Future Vol, veh/h	1	205	46	1	305	1	44	0	1	1	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	223	50	1	332	1	48	0	1	1	0	3

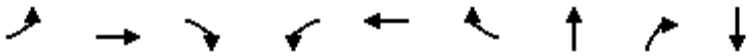
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	333	0	0	273	0	0	586	585	248	586	610	333
Stage 1	-	-	-	-	-	-	250	250	-	335	335	-
Stage 2	-	-	-	-	-	-	336	335	-	251	275	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1226	-	-	1290	-	-	422	423	791	422	409	709
Stage 1	-	-	-	-	-	-	754	700	-	679	643	-
Stage 2	-	-	-	-	-	-	678	643	-	753	683	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1226	-	-	1290	-	-	419	422	791	421	408	709
Mov Cap-2 Maneuver	-	-	-	-	-	-	419	422	-	421	408	-
Stage 1	-	-	-	-	-	-	753	699	-	678	642	-
Stage 2	-	-	-	-	-	-	674	642	-	751	682	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	14.6	11
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	423	1226	-	-	1290	-	-	605
HCM Lane V/C Ratio	0.116	0.001	-	-	0.001	-	-	0.007
HCM Control Delay (s)	14.6	7.9	0	-	7.8	0	-	11
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0

APPENDIX F

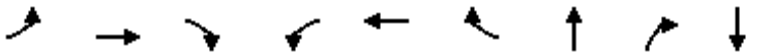
Queue Analysis Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	2	396	164	213	174	217	88	124	345
v/c Ratio	0.01	0.77	0.29	0.74	0.12	0.27	0.24	0.30	0.84
Control Delay	23.5	41.2	6.1	34.8	16.1	3.4	32.3	7.7	53.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	41.2	6.1	34.8	16.1	3.4	32.3	7.7	53.3
Queue Length 50th (ft)	1	206	1	77	30	0	42	0	188
Queue Length 95th (ft)	6	#340	47	#144	51	40	84	43	#335
Internal Link Dist (ft)		109			1490		304		239
Turn Bay Length (ft)	125		150	125		75		150	
Base Capacity (vph)	332	517	556	289	1494	793	366	418	409
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.77	0.29	0.74	0.12	0.27	0.24	0.30	0.84

Intersection Summary

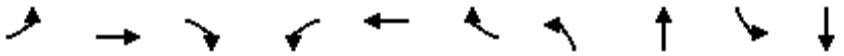
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	1	332	46	60	366	443	265	123	305
v/c Ratio	0.00	0.58	0.08	0.20	0.26	0.50	0.67	0.28	0.72
Control Delay	23.0	31.8	0.3	18.9	19.0	4.0	41.7	7.2	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	31.8	0.3	18.9	19.0	4.0	41.7	7.2	42.3
Queue Length 50th (ft)	0	163	0	21	72	0	139	0	159
Queue Length 95th (ft)	4	254	0	46	105	57	223	41	#269
Internal Link Dist (ft)		109			1490		304		239
Turn Bay Length (ft)	125		150	125		75		150	
Base Capacity (vph)	307	576	577	297	1395	892	396	442	425
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.58	0.08	0.20	0.26	0.50	0.67	0.28	0.72

Intersection Summary

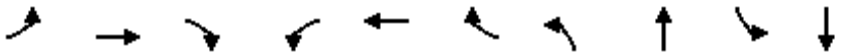
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	3	584	228	301	253	320	42	271	361	138
v/c Ratio	0.01	0.95	0.35	0.97	0.14	0.33	0.12	0.65	0.95	0.23
Control Delay	20.3	56.5	7.5	68.9	12.0	2.5	18.9	28.2	60.1	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	56.5	7.5	68.9	12.0	2.5	18.9	28.2	60.1	24.2
Queue Length 50th (ft)	1	320	18	120	37	0	15	86	154	59
Queue Length 95th (ft)	7	#530	70	#285	58	39	35	171	#291	107
Internal Link Dist (ft)		109			1490			304		239
Turn Bay Length (ft)	125		150	125		75				
Base Capacity (vph)	366	616	645	309	1800	962	349	418	380	605
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.95	0.35	0.97	0.14	0.33	0.12	0.65	0.95	0.23

Intersection Summary

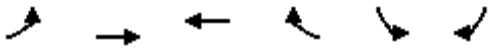
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	2	487	67	85	540	653	139	412	388	58
v/c Ratio	0.01	0.77	0.10	0.38	0.36	0.65	0.31	0.93	0.94	0.09
Control Delay	21.0	37.3	0.3	20.9	18.4	6.1	17.2	59.8	56.4	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	37.3	0.3	20.9	18.4	6.1	17.2	59.8	56.4	16.8
Queue Length 50th (ft)	1	253	0	28	106	23	43	211	166	17
Queue Length 95th (ft)	6	#416	0	57	146	110	78	#389	#344	43
Internal Link Dist (ft)		109			1490			304		239
Turn Bay Length (ft)	125		150	125		75				
Base Capacity (vph)	285	634	658	221	1506	1009	449	445	411	641
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.77	0.10	0.38	0.36	0.65	0.31	0.93	0.94	0.09

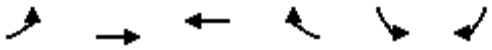
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



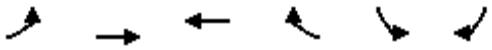
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	540	328	216	171	96	384
v/c Ratio	0.77	0.29	0.19	0.17	0.28	0.63
Control Delay	15.7	5.1	4.6	1.2	24.5	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	5.1	4.6	1.2	24.5	8.5
Queue Length 50th (ft)	79	31	19	0	21	0
Queue Length 95th (ft)	258	89	58	16	88	74
Internal Link Dist (ft)		1490	470		359	
Turn Bay Length (ft)						
Base Capacity (vph)	1089	1749	1749	1497	828	945
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.19	0.12	0.11	0.12	0.41

Intersection Summary



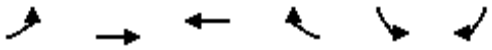
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	438	337	299	141	136	621
v/c Ratio	0.74	0.33	0.29	0.15	0.31	0.76
Control Delay	18.3	7.6	7.3	1.9	21.2	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.3	7.6	7.3	1.9	21.2	10.1
Queue Length 50th (ft)	70	39	34	0	30	10
Queue Length 95th (ft)	277	135	119	22	104	125
Internal Link Dist (ft)		1490	470		359	
Turn Bay Length (ft)						
Base Capacity (vph)	963	1665	1665	1430	1105	1203
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.20	0.18	0.10	0.12	0.52

Intersection Summary



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	601	375	239	189	105	437
v/c Ratio	0.83	0.32	0.20	0.18	0.33	0.68
Control Delay	19.4	5.2	4.5	1.1	28.0	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	5.2	4.5	1.1	28.0	9.3
Queue Length 50th (ft)	106	39	23	0	29	0
Queue Length 95th (ft)	358	107	67	18	97	81
Internal Link Dist (ft)		1490	470		359	
Turn Bay Length (ft)						
Base Capacity (vph)	1050	1722	1722	1478	658	863
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.22	0.14	0.13	0.16	0.51

Intersection Summary



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	487	384	330	157	151	701
v/c Ratio	0.83	0.35	0.30	0.16	0.32	0.86
Control Delay	27.3	9.1	8.7	1.9	24.6	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	9.1	8.7	1.9	24.6	19.4
Queue Length 50th (ft)	150	77	64	0	54	61
Queue Length 95th (ft)	#414	156	132	23	115	#307
Internal Link Dist (ft)		1490	470		359	
Turn Bay Length (ft)						
Base Capacity (vph)	788	1459	1459	1274	828	1025
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.26	0.23	0.12	0.18	0.68

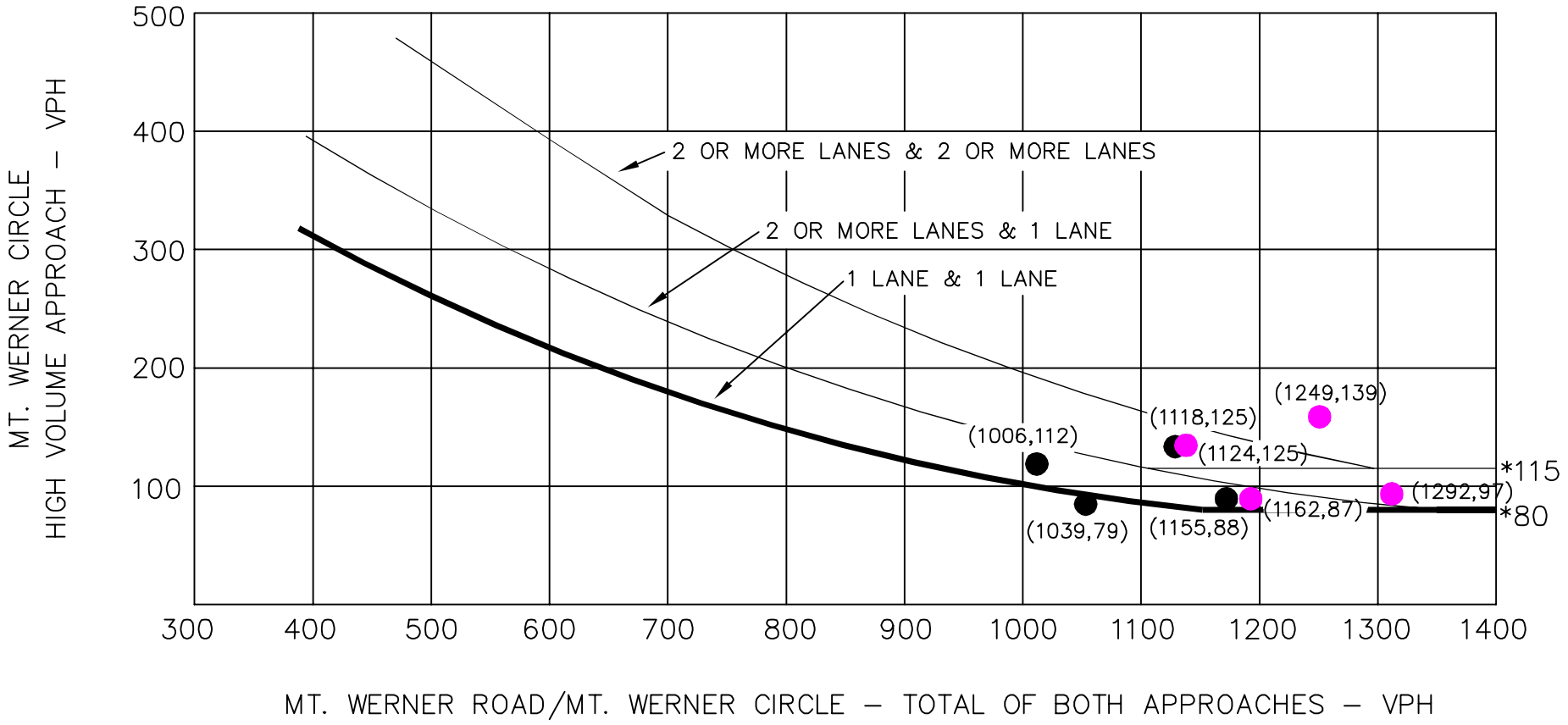
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

APPENDIX G

Signal Warrant Analysis Worksheets

WARRANT 2 - FOUR HOUR VEHICULAR VOLUME



* NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

MT. WERNER RD & MT. WERNER CIR
SIGNAL WARRANT ANALYSIS
FOUR HOUR VOLUME WARRANT

● 2026 TOTAL (ALTERNATIVE) TRAFFIC DATA POINT
● 2045 TOTAL (ALTERNATIVE) TRAFFIC DATA POINT

Source: Manual of Uniform Traffic Control Devices 2009

Kimley»Horn

APPENDIX H

Conceptual Site Plan


+72.00
+82.00
WL83.0
WL81.50
WL81.50
WL83.0
WL83.0
+74.92
+64.50
+65.46
+68.00
2.0%
3.0%
2%