

APRIL 2022



Mt. Rose CORRIDOR PLAN

FINAL REPORT | VOLUME 2



Parametrix



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Previous Study Assessment Summary



Previous Study Assessment Summary

The following technical memorandum summarizes the review of recently completed studies along the Mount Rose Highway Corridor. The review has been conducted to establish previously identified concerns, solutions, commitments, and overall evaluation of the corridor. This review is part of the existing condition evaluation for the Mount Rose Corridor Study being conducted by NDOT. The study is being performed to identify a long-term transportation vision and potential short-term and long-term improvements and policies in alignment with the identified vision. The study limits are along State Routes 431 and 341 extending from the Geiger Grade roundabout (Veteran's Parkway) on the east to Douglas Fir Drive on the west.

The following provides a summary of previous studies reviewed including:

- Name of study
- Agency responsible for the study
- Date of report
- Brief study description
- Items/suggestions that can be carried forward and considered as part of the current and on-going Mount Rose Corridor Study

1. Road Safety Assessment SR 431 from WA MP 18.694 to WA MP 23.050

1.1 Agency:

NDOT

1.2 Date:

August 2018

1.3 Brief Description

Road Safety Assessment (RSA) performed in July 2018. Focused on intersection improvements to improve safety for uncontrolled left turns, on-and off side streets, updates to signing and striping, and installation of lighting.

1.4 Items/ Suggestions to be carried forward into Mt. Rose Corridor Study

Lighting update/consistency/conformance with current standards. Add DMS warning system package for speed and congestion warning throughout the corridor. Reinstall rumble strips per NDOT standards. Provide access restrictions and use of median islands throughout the corridor. Use of alternative pavement markings for delineation of bike lanes near right turn lanes. Remove emergency signal between Callahan and Bordeaux. Callahan Road channelizing islands. Thomas Creek modifications. Butch Cassidy extension at Thomas.

2. Intersection Control Evaluation – Mt. Rose Highway and Callahan Road

2.1 Agency:

NDOT

2.2 Date:

October 2018

2.3 Brief Description

Intersection Control Evaluation to identify preferred improvements to the Mt. Rose Highway and Callahan Road intersection.

2.4 Items/ Suggestions to be carried forward into Mt. Rose Corridor Study

Zero warrants met for a traffic signal. Reviewed a R-cut, traffic signal, and roundabout. Recommended alternative was a roundabout.

3. Traffic Signal Warrant Study SR431 @ IR580 NB Off-Ramp

3.1 Agency:

NDOT

3.2 Date:

January 2020

3.3 Brief Description

Signal warrant study conducted by NDOT for a signal at SR 431 and IR580 NB off-ramp.

3.4 Items/ Suggestions to be carried forward into Mt. Rose Corridor Study

Two warrants are met justifying the installation of a traffic signal.

4. Mount Rose Scenic Byway Corridor Management Plan

4.1 Agency:

Washoe County

4.2 Date:

2015

4.3 Brief Description

CMP developed for the corridor to create a platform for a coordinated approach between agencies and stakeholders to develop viable solutions and future collaborations.

4.4 Items/ Suggestions to be carried forward into Mt. Rose Corridor Study

Suggested looking at pedestrian crossings at Callahan Ranch Rd, Bordeaux, and Joy Lake. Park and Ride near Joy Lake Road. Reflects many of the existing improvements west of Wedge Parkway. Proposed a collector road from Wedge to Callahan. Scenic Byway signage proposed.

5. South Meadows Multimodal Transportation Study

5.1 Agency:

RTC

5.2 Date:

April 2020

5.3 Brief Description

Multimodal study that evaluated the transportation network in the South Meadows area included along SR 431 from the Geiger Grade roundabout to I-580.

5.4 Items/ Suggestions to be carried forward into Mt. Rose Corridor Study

Potential failure at Virginia/Old 395 and Geiger Grade roundabout in 2040. Proposed ped improvements from Thomas Creek to Virginia). Convert Veterans roundabout into a traffic signal. Triple SB left @ S. Virginia and Veterans. Geiger grade realignment. Widen Veteran's Parkway to six lanes from Geiger to Virginia.

Multimodal Planning Technical Memorandum



Multimodal Planning Memorandum

This corridor planning effort for SR 431/Mount Rose Highway will review existing and planned conditions along the approximate 10-mile segment of Mount Rose Highway from the Geiger Grade roundabout (Veteran’s Parkway) on the east to Douglas Fir Drive on the west to develop a range of prioritized improvements along the corridor. The study is being performed by NDOT to identify a long-term transportation vision and potential short-term and long-term improvements and policies in alignment with the identified vision.

This memo describes the existing and multimodal conditions along the Mount Rose Highway corridor, including existing and planned public transportation, bicycle lanes/paths, and pedestrian facilities.

Public Transportation

RTC regional connector (Express bus – Route 395) is the only public transportation service along Mount Rose Highway, and only operates on Mount Rose for a short segment to serve the Summit Mall at an established park-and-ride. This is an intercity route connecting the RTC 4th Street Station in Reno and Little Lane at NDOT in Carson City. The service operates six times a day (three times in the morning and three times in the afternoon) during weekdays on both directions. There is no service on weekends and holidays.

Tahoe Truckee Area Regional Transportation (TART) is planning to extend a transit line from Lake Tahoe/Truckee Area to Reno-Tahoe International Airport that travels along the Mount Rose Corridor, connecting north via I-580. This project is in the Regional Transportation Plan (RTP) for 2045.

Because of the large amount of recreational traffic traveling between the Reno-Sparks area and Lake Tahoe, “informal” park-and-rides have popped up in various locations, facilitating carpooling, such as at the Galena Junction Shopping Center at Wedge Parkway.

Bicycle Facilities

Because Mount Rose Highway is a designated Scenic Byway, the corridor is attractive to bicyclists. Bicycle facilities vary throughout the corridor:

- A separated, shared use path is located on the north side of the corridor from S. Virginia Street to Wedge Parkway
- Wide shoulders with some bike markings are provided in both directions from Wedge Parkway to Timberline Road.
- From Timberline to Douglas Fir, the corridor narrows with a minimal (approximately two-foot) shoulder.

Bicycle traffic often crosses Mount Rose Highway at Callahan Road, and just east of there. Currently, no expansions or improvements to the bicycle network is planned.

Pedestrian Facilities

There are three main types of pedestrian facilities along the Mount Rose corridor, as described below.

Sidewalks

There are limited sidewalk facilities along most of the Mount Rose Corridor. Pedestrians share a multi-use path with bicyclists on the north side of the corridor between S. Virginia Street and Wedge Parkway. Sidewalks are also provided on both sides of the corridor between Veterans Parkway and S. Virginia Street.

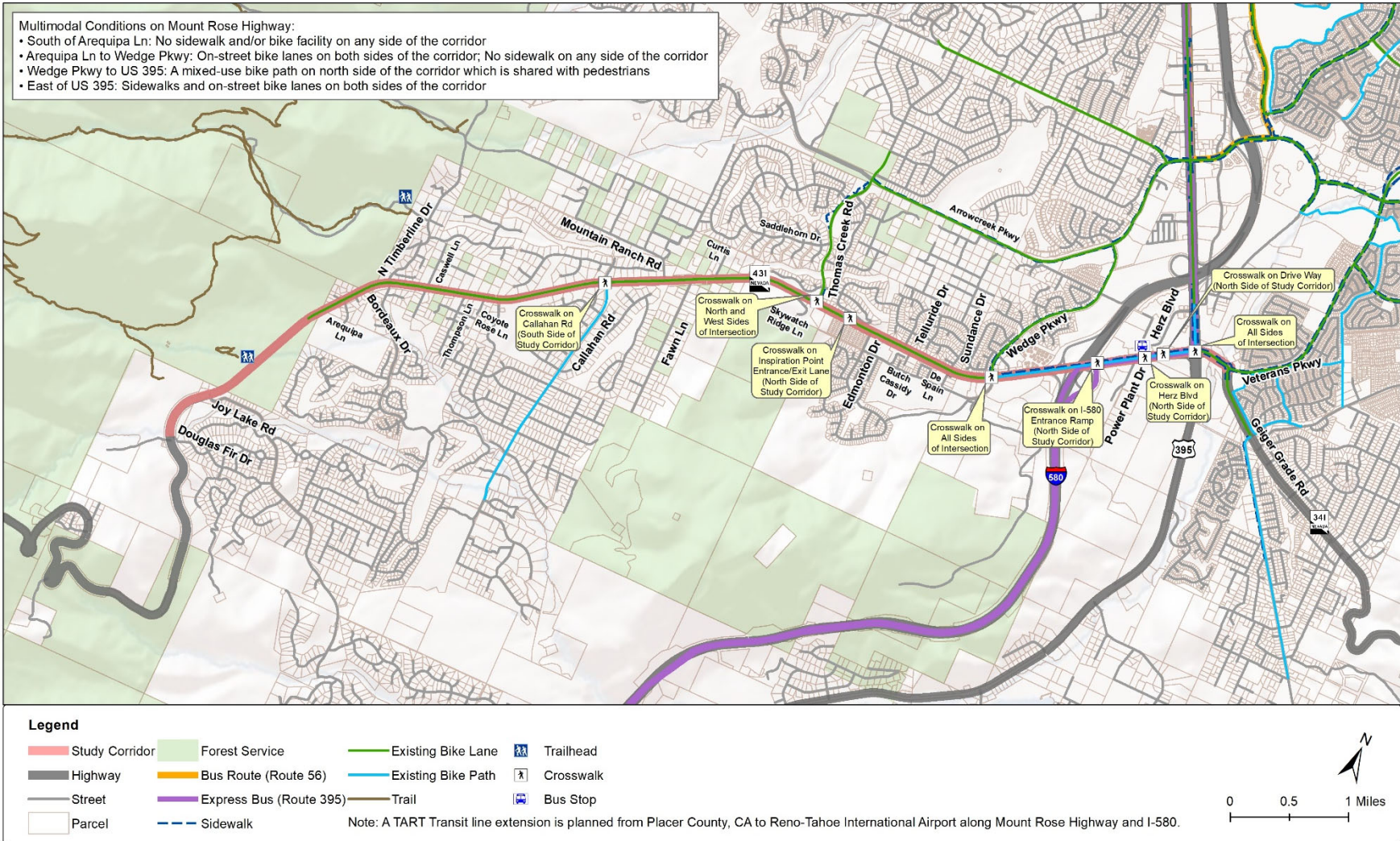
Crosswalks

There are two intersections along Mount Rose Highway in which have fully directional crosswalks: S. Virginia Street and Wedge Parkway. All other crossings are limited, with crosswalks usually provided only on one side of the street.

Trails

There are numerous trails on the north side of Mount Rose Highway. Most are not located directly on the highway, with the exception of the Jones Creek Trailhead located in the vicinity of Galena Creek Visitor Center. There is a desire to have a grade separated crossing near this trailhead, somewhere between Joy Lake Road and Douglas Fir.

Multimodal Features





Land Use Planning Technical Memorandum



Land Use Planning Memorandum

This corridor planning effort for SR 431/Mount Rose Highway will review existing and planned conditions along the approximate 10-mile segment of Mount Rose Highway from the Geiger Grade roundabout (Veteran’s Parkway) on the east to Douglas Fir Drive on the west to develop a range of prioritized improvements along the corridor. The study is being performed by NDOT to identify a long-term transportation vision and potential short-term and long-term improvements and policies in alignment with the identified vision.

This memo describes the existing and planned land use conditions along the Mount Rose Highway corridor, along with any anticipated changes that may impact travel patterns and/or traffic operations. Maps of existing and planned land uses are located at the end of this memo.

Existing Land Use

Land uses along the Mount Rose corridor vary, but are primarily comprised of clusters of residential development, with a mix of both single-family and multi-family housing, commercial development, and large tracts of vacant land. Much of the commercial and office development are located on the northern half of Mount Rose Highway, generally north from Edmonton Drive. Between Edmonton Drive and Douglas Fir Drive, the corridor is much more residential in nature, mixed with parcels of vacant land and Forest Service.

Multi-family residential is scattered throughout the Mount Rose corridor, with a majority of complexes east of Wedge Parkway. Several complexes within the corridor are home consortium projects, which include up to two percent of affordable housing units.

Near the junction with I-580 are two large commercial centers: The Summit Reno outside shopping mall at S. Virginia Street/Veterans Parkway, and the Galena Junction shopping center at Wedge Parkway. The University of Nevada, Reno – Redfield Campus is located south of Mount Rose at Wedge Parkway. To the west are several medical office buildings, including the Summit Surgery Center.

Located just south of Mount Rose Highway and off Butch Cassidy Drive, are Galena High School and Doral Academy Reno, a charter K-8 school. While these are the only schools directly off the corridor, Sage Ridge School – a private grades 3-12 college prep school, Marce Herz Middle School, and Hunsberger Elementary School, are located off Arrowcreek Parkway, parallel to Mount Rose, but connected by Thomas Creek Parkway.

Mount Rose crosses a large tract of the Toiyabe National Forest, with pockets of forest service land crossing both sides of the corridor. The Galena Creek Recreation Area/Galena Creek Regional Park is located at the southern end of the study area, with a trailhead right off the roadway.

Planned Land Use

Planned land uses, as defined in the City of Reno’s ReImagine Reno Master Plan and Washoe County’s Master Plan, including subarea plans, maintain the trends that currently exist: lower density

residential/forest lands to the south, residential and community land uses along the central segment, and a more diverse mix of uses closer to I-580 and US 395.

City of Reno

The study corridor within the City of Reno is the area primarily east of Wedge Parkway, but also includes educational facilities south of Butch Cassidy Drive. Overall, future land uses are not expected to change much from today. This area includes two large retail/commercial centers (northeast and northwest of Mount Rose/I-580), along with educational facilities clustered to the southwest. The University of Nevada, Reno – Redfield Campus’ master plan includes construction of a few additional buildings on campus, but topographic and drainage constraints makes much of the land south of the campus not easily developable.

Anticipated New Development

The biggest potential for new growth and development within the City of Reno is between I-580 and South Virginia Street, south of Mount Rose Highway. This area is part of the Redfield Regional Center zoning overlay, which allows more functional and flexible zoning. A large plot of vacant land exists south of Mount Rose Highway, with recent potential development concepts including a multi-parcel industrial park. Additionally, vacant land south of Ormat Geothermal is in discussion for a future Waste Management Transfer Station.

North of Mount Rose Highway, the potential exists for infill development within the Summit Sierra Mall site, such as an additional hotel, coffee shop, and other shops.

Washoe County

For land use planning purposes, Washoe County divides the community into specific planning areas, for more focused planning and policy development. The Mount Rose corridor is located in three planning areas.

Southeast Truckee Meadows Area Plan: east of US 395 (Washoe County only has planning jurisdiction over areas south of the Mount Rose Study Corridor)

- The vision for this area is to respect the suburban character, provide additional open space, and ensure that infrastructure is coincident with development and appropriate in scale.
- Land uses are expected to be mostly suburban residential.

Southwest Truckee Meadows Area Plan: US 395 to Caswell Lane (north side of Mount Rose); US 395 to approximately Thomas Creek alignment (south side of Mount Rose)

- The overall vision for this area is to remain residential in nature (no commercial development west of Thomas Creek Parkway), provide ample open space and recreational opportunities, and maintain the scenic quality of the Mount Rose Corridor.
- This area is planned to remain mostly suburban in nature, with a mix of rural and suburban residential neighborhoods.
- Trails and bike routes are interspersed within the neighborhoods and along Mount Rose Highway, connecting communities and recreation sites.

Forest Area Plan: Remainder of the study area

- Much like the Southeast Truckee Meadows vision, the vision for the Forest area is prevent the spread of commercial development, provide a range of housing opportunities, and maintain the scenic quality of the Mount Rose Corridor. This area extends nearly to Lake Tahoe, and therefore includes

additional sub-planning areas. The majority of the Mount Rose study area is classified as the Galena-Callahan Suburban Character Management Area and is where most of the area’s development is clustered.

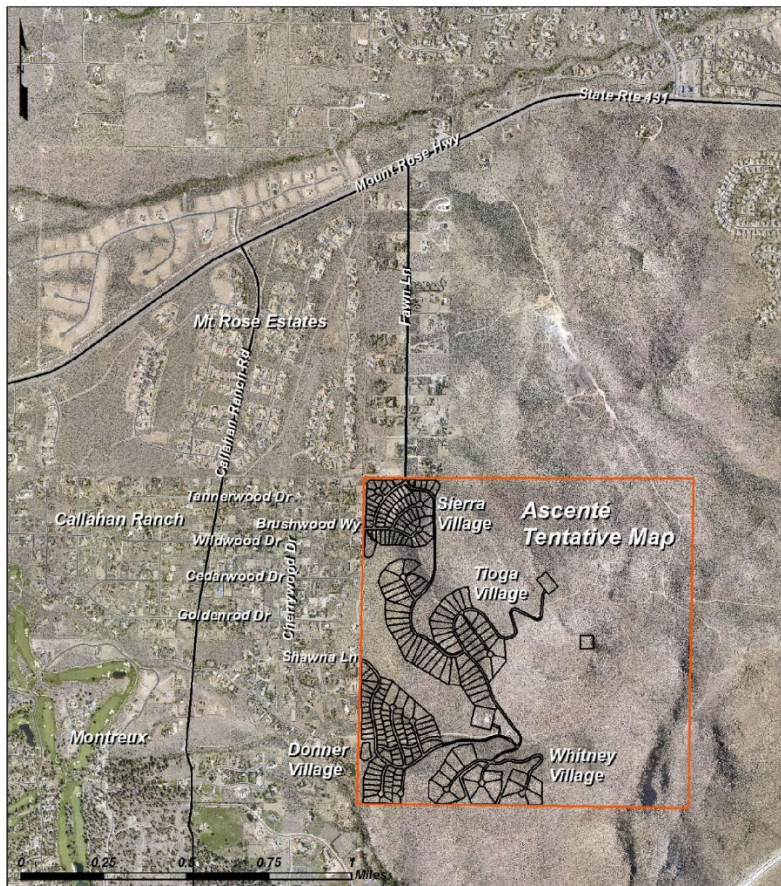
- Existing and planned trails are interspersed within the neighborhoods and along Mount Rose Highway, connecting communities and recreation sites.

Anticipated New Development

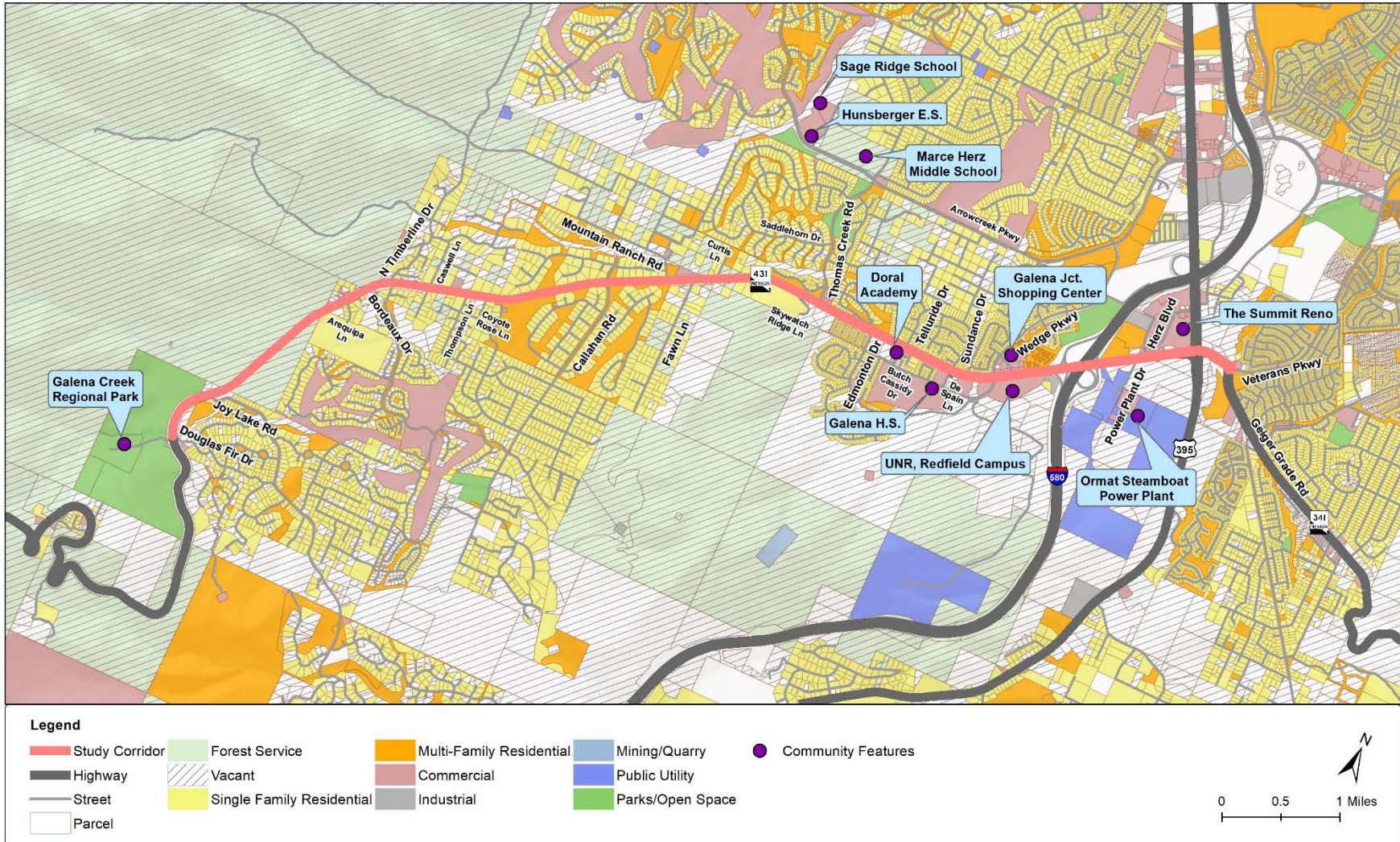
Washoe County has previously approved a new subdivision named Ascente, located south on Fawn Lane, in the Forest area plan. This subdivision is a merge of two parcels that totals 632 acres, with development of 225 single-family homes, including approximately 35 percent of the site to remain in open space. Lots within the subdivision are a mix of low and medium density suburban residential, ranging from one-third of an acre to more than two acres in size, split into four distinct villages.

The primary access to the community would be from a new extension of Fawn Lane south, where it splits from Brushwood Way. The development is projected to generate up to 2,143 average daily trips. Fawn will provide the primary thoroughfare throughout the community, linking the four individual villages and minimizing high traffic volumes on local streets. Additional access is anticipated from Brushwood Way and Shawna Lane, which both filter into Callahan Road. *Traffic studies have indicated acceptable conditions with buildout of the 225 approved lots, however the development approval specifies that future phases – above the 225 lots – will require the construction of a second primary access point to the property to the north (currently through Forest Service land).*

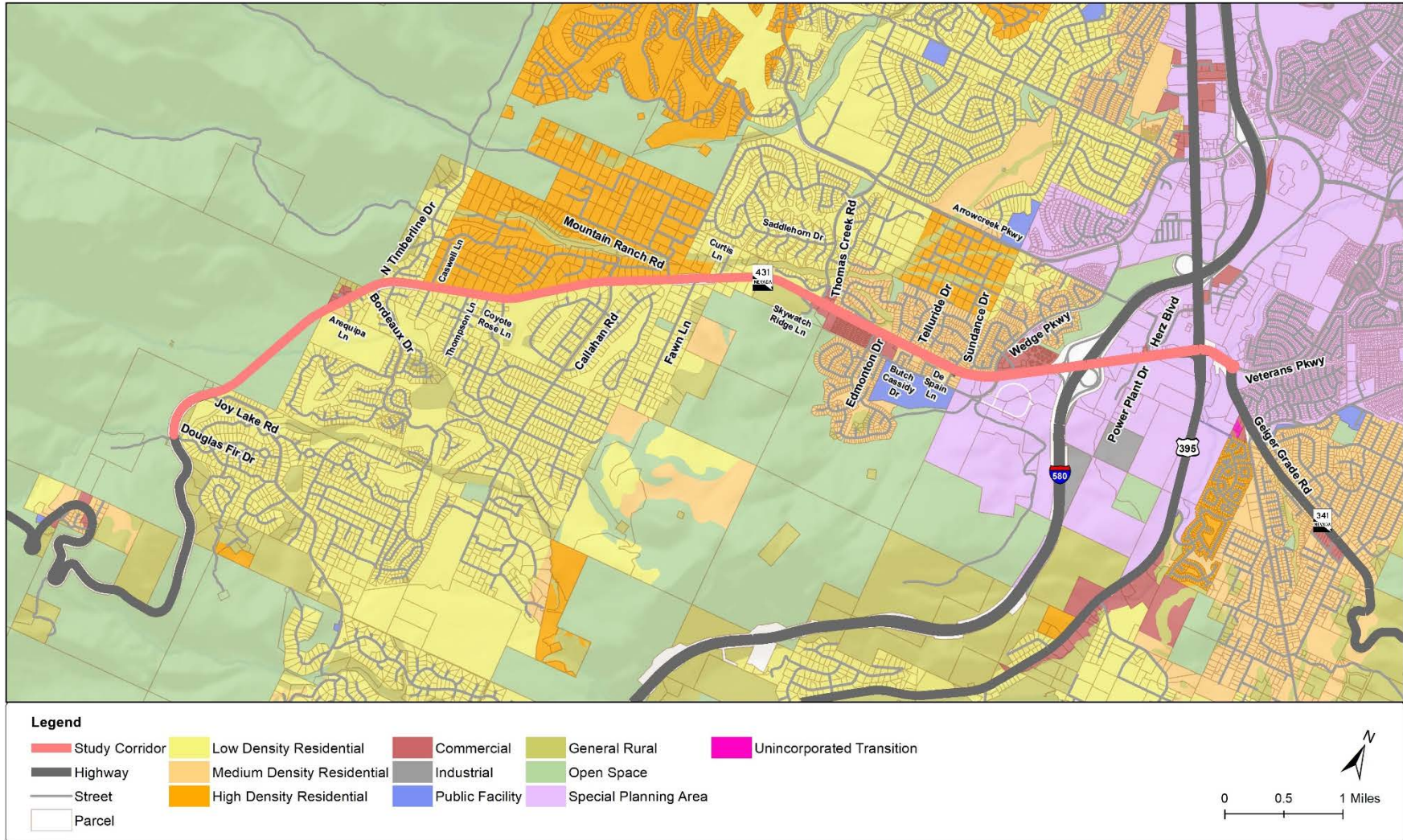
Ascente – Vicinity Map



Existing Land Use and Community Features



Planned Land Use



Crash Data Analysis Technical Memorandum

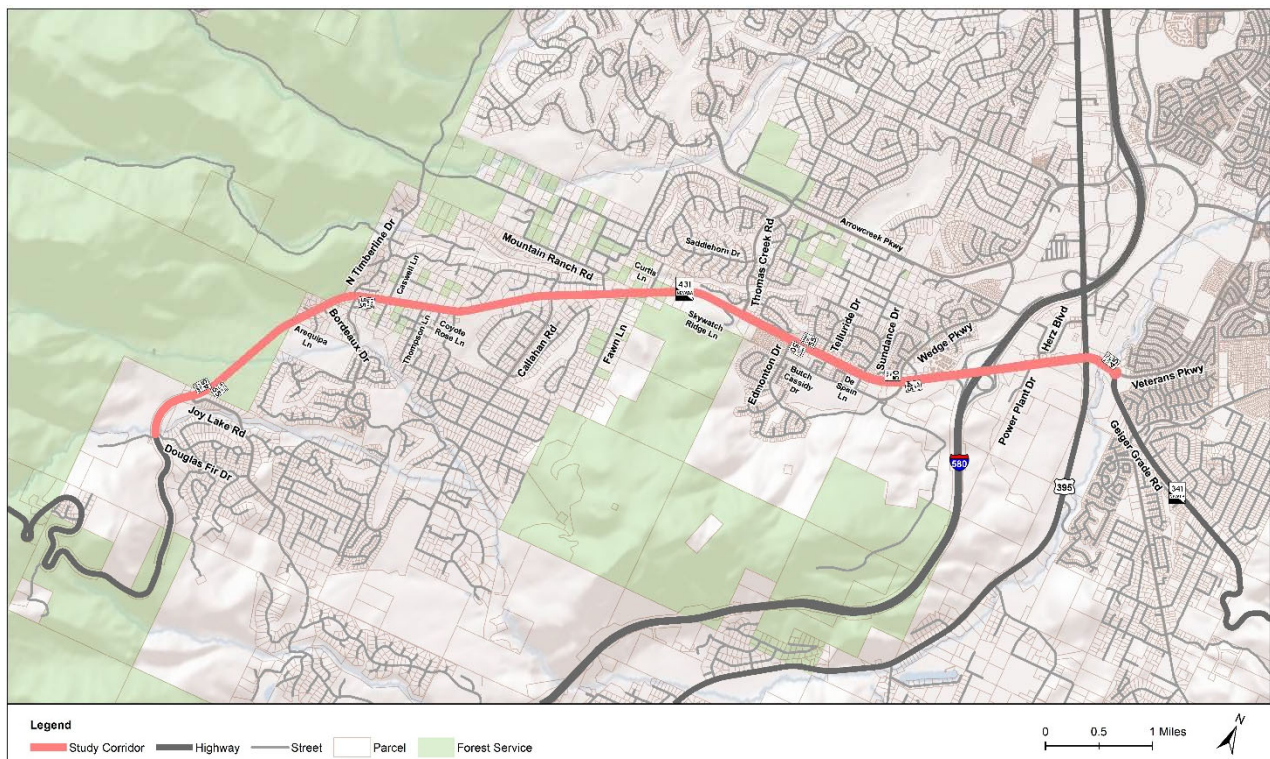
Crash Data Analysis Technical Memorandum

This technical memorandum summarizes the crash data analysis for the Mount Rose Highway Corridor Study. The study is being conducted to develop a long-term vision for the Mount Rose Highway corridor, by identifying potential short-term and long-term improvements and policies in alignment with the identified vision. The study limits are along State Routes (SR) 431 and 341 (Mount Rose Highway) extending from the Geiger Grade roundabout (Veterans Parkway) on the east to Douglas Fir Drive on the west. Over the past five years the corridor has seen an increase in traffic along with two fatal crashes resulting in five deaths within the crash data timeframe of 2015-2019. In addition, a third fatal crash happened in the spring of 2020 resulting in two deaths.

The SR 431/341 corridor consists of two travel lanes in each direction from Geiger Grade to Bordeaux Drive and then reduces to one travel lane in each direction from Bordeaux Drive to Douglas Fir Drive. The corridor includes a service interchange at I-80 and has signalized intersections at:

- South Virginia Street
- Wedge Parkway
- Thomas Creek Road

Figure 1. Mount Rose Highway Corridor Study Project Limits

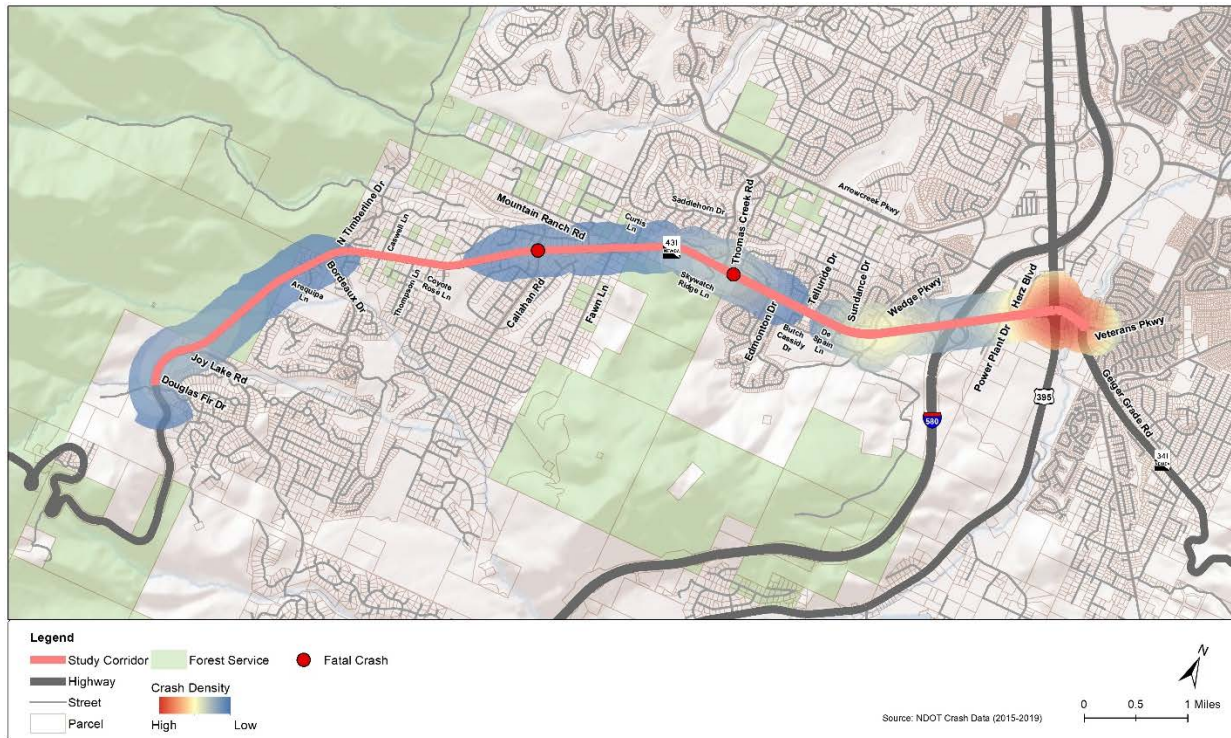


Existing Corridor Crash Data Analysis

The crash analysis was conducted based on crash data obtained from the Nevada Department of Transportation (NDOT) for the five-year period from January 1, 2015 to December 31, 2019. The corridor crash analysis included all crashes along the corridor for the five-year period. The crash data along Mount Rose Highway (SR 341/SR 431) was evaluated and analyzed from Veterans Parkway to just west of Douglas Fir Drive, at the NDOT Maintenance Station.

Figure 2 provides a crash heat map showing frequency of crashes throughout the corridor. Crashes along the study corridor are occurring most frequently between and at the intersections of South Virginia Street and Veterans Parkway. There are also a higher number of crashes occurring around the Wedge Parkway intersection. Both South Virginia Street and Wedge Parkway are signalized intersections while the Veterans Parkway intersection is controlled by a roundabout.

Figure 2. Mount Rose Highway Crash Heat Map



Using the 2018 Function Classification Rates for the Minor Arterial Urban (for the evaluation year), the crash rate for Mount Rose Highway has been compared to other NDOT roadways with the same roadway classification, see **Table 1**. The crash rate was calculated with the following variables:

- R = Crash rate for the corridor expressed as crashes per one million vehicle-miles
- C = Total number of crashes along the corridor in the study time period
- V = Total number of vehicles using the corridor, expressed in Average Annual Daily Traffic AADT
- N = Number of years of data
- L = Length of the corridor in miles

$$R = \frac{1,000,000 \times C}{365 \times N \times V}$$

Table 1. Mount Rose Highway Crash Rates

Highlighted area exceeds statewide average for same Function Classification

Crash Rate	NDOT Minor Arterial Urban (2018)	Mount Rose Hwy. - Veterans Pkwy to Douglas Fir Dr.	Mount Rose Hwy. - Segment 1 - Veterans Pkwy to Wedge Pkwy	Mount Rose Hwy. - Segment 2 - Wedge Pkwy to Thomas Creek Rd.	Mount Rose Hwy. - Segment 3 - Thomas Creek Rd. to Timberline Dr. / Bordeaux Dr.	Mount Rose Hwy. - Segment 4 - Timberline Dr. / Bordeaux Dr. to Douglas Fir Dr.
Fatal	0.0171	0.0099	0.0000	0.0227	0.0126	0.0000
Fatality	0.0180	0.0247	0.0000	0.0680	0.0252	0.0000
Injury	1.4977	0.3897	0.7172	0.8158	0.5038	1.3073
PDO	1.5340	0.8239	0.8827	1.2237	0.8312	1.8629
Total	3.0488	1.2235	1.5998	2.0622	1.3350	3.1701
Serious Injury (Subset of Injury Crashes)	0.619	0.0395	0.0276	0.0000	0.0126	0.0654

Crash rates within the study limits are typically below the statewide average in all the categories except the fatality rate. The fatality rate is above the statewide average due to the high number of fatalities in each of the fatal crashes. When dividing the corridor into working segments, the aforementioned statement holds true for the second and third segments, again due to the number of fatalities in each fatal crash. However, the second segment has a fatal crash rate that is higher than the statewide average in addition to a higher fatality rate. The fourth segment exceeds the statewide average in the following categories: property damage only, crash rate, severe injury crash rate, and the total crash rate.

In the five-year study time period (January 1, 2015 to December 31, 2019), Mount Rose Highway had a total of 248 crashes within the previously defined corridor limits. Of these crashes, there were two fatal crashes with five fatalities (one additional fatal crash occurred after the study time period, which is not included in the presented statistics), six serious injury crashes with eight serious injuries, and 73 injury crashes with 107 injuries. The predominant crash types, descending by the number of crashes, are Non-Collision crashes (112), Rear-End crashes (59), Angle crashes (37), and Sideswipe Same Direction crashes (28). **Table 2** provides the Corridor Crash Analysis and further break down of these crashes.

Table 1. Corridor Crash Analysis

Corridor Crash Analysis	
Overall Crash Data	<ul style="list-style-type: none"> • 248 total crashes during 01/01/2015 through 12/31/2019 <ul style="list-style-type: none"> ○ 2 fatal crashes with 5 fatalities ○ **1 fatal crash with 2 fatalities (occurred after 12/31/2019, not part of the 248 crashes) • 79 injury crashes with 115 injuries <ul style="list-style-type: none"> ○ 7 A injury crashes with 8 A injuries
Predominant Crash Types	<ul style="list-style-type: none"> • 112 Non-Collision crashes • 59 Rear-End crashes • 37 Angle crashes <ul style="list-style-type: none"> ○ 1 fatal crash with 2 fatalities • 28 Sideswipe Same Direction crashes • 1 Head-On crashes <ul style="list-style-type: none"> ○ 1 fatal crash with 3 fatalities
Motorcycle Crashes	<ul style="list-style-type: none"> • 6 Motorcycle crashes
Bus Crashes	<ul style="list-style-type: none"> • 1 Crash involving a bus
Weather Conditions	<ul style="list-style-type: none"> • 137 Clear <ul style="list-style-type: none"> ○ 1 fatal crash with 2 fatalities • 66 Cloudy <ul style="list-style-type: none"> ○ 1 fatal crash with 3 fatalities • 17 Snow • 10 Rain • 8 Fog, Smog, Snow, Other • 5 Blowing Sand, Dirt, Snow • 4 Unknown
Lighting Conditions	<ul style="list-style-type: none"> • 150 Daylight <ul style="list-style-type: none"> ○ 1 fatal crash with 2 fatalities • 28 Dark – No Lighting <ul style="list-style-type: none"> ○ 1 fatal crash with 3 fatality • 26 Dark – Spot Lighting • 21 Unknown • 10 Dawn • 9 Dusk • 2 Dark – Unknown Lighting • 1 Dark – Continuous Lighting
Animal Crashes	<ul style="list-style-type: none"> • 26 Crashes involving Deer • 1 Crash involving Bear • 19 occurring between Thomas Creek and Timberline/Bordeaux

Conclusion

While the Mount Rose Highway corridor does not exceed state averages for most categories of crashes, it is concerning that the corridor exceeds the statewide averages for fatalities. One factor possibly contributing to the severity of accidents is speed. In a recent speed study conducted by NDOT, 85th percentile speeds were between 60-64 miles per hour between Wedge Parkway and Douglas Fir Drive when posted speeds range from 50-55 miles per hour. The other area of concern is the number of crashes between Timberline Drive/Bordeaux Drive and Douglas Fir Drive. Potential safety concerns along here include minimal outside shoulders, speeds, and animal crossings. Finally, while not exceeding statewide averages, the intersection of Mount Rose Highway and South Virginia Street should be evaluated for opportunities to reduce accidents. Approximately two-thirds of the crashes near the intersection are rear-end accidents. Contributing factors could be roadway grade, slippery conditions, and congestion associated with the traffic signal.



Traffic
Technical Memorandum



Traffic Technical Memorandum

1. TRAFFIC OPERATIONS ANALYSIS

Traffic operations analyses were performed using Synchro 11 from existing topography/mapping, field visits, and online resources such as Google Maps/Bing Maps. The various data included:

- Intersection geometry (Number of Right/Through/Left lanes, Turn Pocket Lengths)
- Peak-Hour Volumes (Veh/hr)
- Traffic Signal Timing (City of Reno)
- Roadway Segment Length
- Percent Trucks
- Speed Limit

Traffic operations analysis follows the procedure from the NDOT approved *Traffic Modeling and Operations Methodology Memorandum (December 4, 2020)* included in Appendix A. The measures of effectiveness (MOE) that were considered to evaluate the operations include HCM (6th Edition) intersection delay and level-of-service (LOS). The LOS criteria for the signalized and unsignalized intersections are shown in Tables 1 and 2, respectively. For a Two-Way Stop Controlled (TWSC) intersection, the LOS criteria applies only to minor street approach and movements. Intersection LOS as a whole is not reported for TWSC intersections. Traffic operations analysis was performed for AM and PM peak hours for the 2020 Existing Condition, 2025 No-Action, 2050 No-Action, and 2050 Build Alternatives traffic conditions.

Table 1: LOS Criteria for Signalized Intersection (HCM 6th Edition Exhibit 19-8)

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio ^a	
	≤ 1.0	≥ 1.0
≤ 10	A	F
>10-20	B	F
>20-35	C	F
>35-55	D	F
>55-80	E	F
>80	F	F

Note: For approach-based and intersectionwide assessment, LOS is defined solely by control delay

Table 2: LOS Criteria for Two-Way Stop Controlled Intersection (HCM 6th Edition Exhibit 20-2)

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	v/c ≥ 1.0
0-10	A	F
>10-15	B	F
>15-25	C	F

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio*	
	$v/c \leq 1.0$	$v/c \geq 1.0$
>25-35	D	F
>35-50	E	F
>50	F	F

Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

The 2020 peak-hour volumes, along with the existing signal timings, were used to analyze the 2020 traffic operations. This existing geometry with 2025 and 2050 traffic volumes was used to determine future traffic operations. NDOT approved *Traffic Forecasting Memorandum (May 24, 2021)* has the traffic volumes for the years 2020, 2025, and 2050 (Appendix B). Two design alternatives, Sub-Urban Arterial and the Urban Arterial, were analyzed to evaluate the traffic operations. Various intersections control types were considered for the alternatives. The traffic analyses results are discussed in the following sections.

2. EXISTING CONDITIONS ANALYSIS

The existing conditions Synchro model was developed for 15 project intersections along Mt. Rose Highway. The analyses included 2020 Existing Condition, 2025 No-Action, and 2050 No-Action scenarios. There were eight TWSC intersections: one intersection where the minor movement was yield controlled, five signalized intersections, and one roundabout. The approach delay and LOS for only the stop-controlled approach (es) were reported at stopped-controlled intersections. However, for signalized intersections and roundabout, the overall intersection delay and LOS was used.

2.1 2020 Existing Conditions Results

Table 3 shows the 2020 Existing Condition Synchro analysis results. Six stop-controlled intersections operated with delay less than 20.7 sec/veh with LOS C/better. The southbound approach along Mt Rose Highway and Timberline Drive-Bordeaux Drive operated at capacity with delays around 38.2 sec/veh (LOS E). The southbound stop-controlled approach of Callahan Road failed with a delay of 115.7 sec/veh (LOS F). The signalized intersections operated with an acceptable delay of less than 33 sec/veh with LOS C/better.

Table 3: 2020 Existing Condition Delay (LOS)

Intersection	Control Type	AM	PM
Mt. Rose Hwy/Joy Lake Rd	2-Way Stop	10.0 (A)	15.0 (C)
Mt. Rose Hwy/Timberline Dr-Bordeaux Dr	2-Way Stop	22.4 (C)/26.8 (D)	28.4 (D)/38.2 (E)
Mt. Rose Hwy/Callahan Rd	2-Way Stop	10.8 (B)/25.9 (D)	15.2 (C)/115.7 (F)
Mt. Rose Hwy/Mountain Ranch Rd	2-Way Stop	13.1 (B)	19.1 (C)
Mt. Rose Hwy/Fawn Ln	2-Way Stop	10.2 (B)	12.5 (B)
Mt. Rose Hwy/Thomas Creek Rd	Traffic Signal	10.2 (B)	11.2 (B)
Mt. Rose Hwy/Edmonton Dr	Yield	14.5 (B)	15.0 (C)
Mt. Rose Hwy/Telluride Dr	2-Way Stop	20.7 (C)	17.9 (C)
Mt. Rose Hwy/DeSpain Ln-Sundance Dr	2-Way Stop	11.5 (B)/21.1 (C)	12.9 (B)/28.1 (D)
Mt. Rose Hwy/Wedge Pkwy	Traffic Signal	23.2 (C)	25.1 (C)

Intersection	Control Type	AM	PM
Mt. Rose Hwy/I-580 Southbound Ramps	Traffic Signal	11.3 (B)	13.4 (B)
Mt. Rose Hwy/I-580 Northbound Ramps	2-Way Stop	11.1 (B)	17.7 (C)
Mt. Rose Hwy/Herz Blvd	Traffic Signal	8.3 (A)	10.4 (B)
Mt. Rose Hwy/Virginia St	Traffic Signal	25.1 (C)	32.5 (C)
Mt. Rose Hwy/Geiger Grade-Veterans Pkwy	Roundabout	9.0 (A)	12.1 (B)

At Stop Controlled intersections, the Delay (LOS) refers to minor street approaches

Detailed results for the approach, individual movement, and LOS are included in Tables 4 (a) and 4 (b). The minor street movements at stop-controlled intersections operated with LOS D/better, except at two locations. The southbound through movement at Mt. Rose Highway and Timberline Drive-Bordeaux Drive operated at capacity (LOS E). The northbound left-turn and southbound left-turn and through movements at Mt. Rose Highway and Callahan Road operated with considerably higher delays with LOS F. All approaches at signalized intersections operated with LOS C/better, and the individual movements operated at LOS D/better.

Table 4 (b) shows the detailed 2020 Existing Condition results at the Mt. Rose Highway and Geiger Grade Road roundabout. The roundabout operated with a delay of 12 sec/veh or less with LOS B/better. All approaches and movements at the roundabout operated with LOS B/better. The detailed Synchro output for the 2020 Existing Conditions is included in Appendix C.

2.2 2025 No-Action Results

Table 5 shows the traffic analysis results for the 2025 No-Action. The delay and LOS at all intersections were either slightly higher or similar to that observed in the 2020 Existing Conditions. The stop-controlled southbound approach at the intersection of Mt. Rose Highway and Timberline Drive-Bordeaux Drive operated at capacity (LOS E) with a delay of 48.7 sec/veh in the PM peak analysis. At the intersection of Mt. Rose Highway and Callahan Road, the stop-controlled southbound approach failed with a delay of more than 217 sec/veh in the PM peak analysis.

The detailed results for the 2025 No-Action is shown in Table 6 (a). At the intersection of Mt. Rose Highway and Timberline Drive-Bordeaux Drive, the southbound through movement operated at capacity. At the intersection of Mt. Rose Highway and Callahan Road, all southbound movements, northbound left-turn failed with a delay greater than 112 sec/veh in the PM peak hour analysis. The delay at the TWSC intersections of Timberline Drive-Bordeaux Drive and Callahan Road along Mt. Rose Highway, increased compared to the 2020 Existing Conditions, but the LOS remained the same. All other project intersections operated with LOS D/better.

Table 6 (b) shows the detailed results at the Mt Rose Highway and Geiger Grade Road roundabout. The roundabout operated with a delay of less than 15 sec/veh with LOS B/better. All approaches and movements at the roundabout operated with LOS B/better. The detailed Synchro output is included in Appendix D.

Table 4 (a): 2020 Existing Condition Detail Results (Delay & LOS)

Intersection		AM Peak-Hour												PM Peak-Hour														
		Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound					
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right			
Mt Rose Hwy and Joy Lake Rd	Approach							10.0 (B)									15.0 (C)											
	Movement				7.7 (A)				15.8 (C)	9.9 (A)					9.0 (A)			0.0 (A)			15.0 (C)							
Mt Rose Hwy and Bordeaux Dr/Timberline Dr	Approach							22.4 (C)			26.8 (D)									28.4 (D)			38.2 (E)					
	Movement	8.2 (A)			8.2 (A)			22.4 (C)			0.0 (A)	26.8 (D)		0.0 (A)	8.2 (A)			9.2 (A)			28.4 (D)			0.0 (A)	39.3 (E)		9.4 (A)	
Mt Rose Hwy and Callahan Rd	Approach							10.8 (B)			25.9 (D)									15.2 (C)			115.7 (F)					
	Movement	8.6 (A)			8.2 (A)			18.0 (C)	10.5 (B)		27.8 (D)	12.2 (B)		8.8 (A)			11.7 (B)			82.5 (F)	13.8 (B)		127.1 (F)	70.2 (F)				
Mt Rose Hwy and Mountain Ranch Rd	Approach										13.1 (B)												19.1 (C)					
	Movement	0.0 (A)									13.1 (B)		9.7 (A)												19.1 (C)			
Mt Rose Hwy and Fawn Ln	Approach							10.2 (B)									12.5 (B)											
	Movement				8.6 (A)			0.0 (A)	10.2 (B)					10.7 (B)					0.0 (A)	12.5 (B)								
Mt Rose Hwy and Thomas Creek Rd*	Intersection	10.2 (B)												11.2 (B)														
	Approach	6.6 (A)			11.3 (B)						15.8 (B)			7.7 (A)			12.5 (B)						18.5 (B)					
	Movement	19.9 (B)	5.1 (A)			11.6 (B)	10.0 (A)					15.6 (B)	16.2 (B)		24.0 (C)	5.9 (A)			12.8 (B)	11.4 (B)					18.0 (B)	19.6 (B)		
Mt Rose Hwy and Edmonton Dr	Approach							14.5 (B)									15.0 (C)											
	Movement				10.1 (B)			14.5 (B)						12.9 (B)					15.0 (C)									
Mt Rose Hwy and Telluride Dr	Approach							20.7 (C)									17.9 (C)											
	Movement	10.0 (A)						22.1 (C)			11.6 (B)		10.3 (B)						22.2 (C)			12.0 (B)						
Mt Rose Hwy and DeSpain Ln/Sundance Dr	Approach							11.5 (B)			21.1 (C)									12.9 (B)			28.1 (D)					
	Movement	0.0 (A)						11.5 (B)			23.0 (C)	11.4 (B)		10.8 (B)						12.9 (B)		29.9 (D)	12.3 (B)					
Mt Rose Hwy and Wedge Pkwy*	Intersection	23.2 (C)												25.1 (C)														
	Approach	20.7 (C)			23.4 (C)			29.2 (C)			26.2 (C)			22.6 (C)			24.7 (C)			33.0 (C)			27.0 (C)					
	Movement	27.8 (C)	19.0 (B)	19.3 (B)	29.4 (C)	21.5 (C)	17.3 (B)	35.8 (D)	26.7 (C)	29.2 (C)	30.4 (C)	19.6 (B)	20.5 (C)	31.0 (C)	21.2 (C)	21.6 (C)	31.3 (C)	24.3 (C)	20.8 (C)	38.0 (D)	28.8 (C)	33.9 (C)	31.6 (C)	18.5 (B)	20.5 (C)			
Mt Rose Hwy and SB I-580 ramps*	Intersection	11.3 (B)												13.4 (B)														
	Approach	11.0 (B)			11.1 (B)						22.0 (C)			13.3 (B)			12.8 (B)						27.2 (C)					
	Movement	11.0 (B)		23.0 (C)	5.0 (A)			22.0 (C)			13.3 (B)		28.2 (C)	4.9 (A)			27.2 (C)											
Mt Rose Hwy and NB I-580 Off-ramp	Approach							11.1 (B)									17.7 (C)											
	Movement				14.0 (B)			9.5 (A)								26.0 (D)		12.8 (B)										
Mt Rose Hwy and Hertz Blvd*	Intersection	8.3 (A)												10.4 (B)														
	Approach	5.4 (A)			9.0 (A)						13.9 (B)			7.4 (A)			11.8 (B)						15.0 (B)					
	Movement	15.9 (B)	3.6 (A)			9.1 (A)	7.6 (A)	13.2 (B)			14.4 (B)		17.3 (B)	5.4 (A)			11.9 (B)	10.1 (B)	13.0 (B)			16.4 (B)						
Mt Rose Hwy and S Virginia St*	Intersection	25.1 (C)												32.5 (C)														
	Approach	25.9 (C)			29.1 (C)			22.0 (C)			23.6 (C)			36.1 (D)			35.4 (D)			33.4 (C)			29.2 (C)					
	Movement	32.2 (C)	22.4 (C)	46.3 (D)		26.2 (C)	33.1 (C)		20.8 (C)	28.7 (C)		14.8 (B)	42.2 (D)		34.5 (C)	47.6 (D)		31.1 (C)	43.8 (D)		31.3 (C)	35.9 (D)		16.9 (B)	0.0 (A)			

* Signalized Intersections

Table 4 (b): 2020 Existing Condition Mt. Rose and Veterans Parkway Roundabout Detail Results (Delay & LOS)














Intersection		AM								PM							
		Eastbound		Westbound		Northbound		Southbound		Eastbound		Westbound		Northbound		Southbound	
																	
Mt. Rose Hwy and Geiger Grade Rd/Veterans Pkwy Roundabout	Intersection	9.0 (A)								12.1 (B)							
	Approach	5.3 (A)		12.6 (B)		8.4 (A)		11.1 (B)		12.5 (B)		10.9 (B)		12.8 (B)		11.4 (B)	
	Movement	5.9 (A)	4.1 (A)	13.0 (B)	12.2 (B)	9.2 (A)	7.5 (A)	11.1 (B)	12.2 (B)	12.7 (B)	11.2 (B)	10.6 (B)	14.5 (B)	10.9 (B)	11.4 (B)		

Table 5: 2025 No-Action Delay (LOS)

Intersection	Control Type	AM	PM
Mt. Rose Hwy/Joy Lake Rd	2-Way Stop	10.2 (B)	16.8 (C)
Mt. Rose Hwy/Timberline Dr-Bordeaux Dr	2-Way Stop	24.6 (C)/27.9 (D)	32.1 (D)/48.7 (E)
Mt. Rose Hwy/Callahan Rd	2-Way Stop	11.1 (B)/30.5 (D)	26.6 (D)/217.2 (F)
Mt. Rose Hwy/Mountain Ranch Rd	2-Way Stop	14.0 (B)	16.3 (C)
Mt. Rose Hwy/Fawn Ln	2-Way Stop	11.2 (B)	15.1 (C)
Mt. Rose Hwy/Thomas Creek Rd	Traffic Signal	10.4 (B)	11.6 (B)
Mt. Rose Hwy/Edmonton Dr	Yield	15.7 (C)	16.2 (C)
Mt. Rose Hwy/Telluride Dr	2-Way Stop	22.9 (C)	19.5 (C)
Mt. Rose Hwy/DeSpain Ln-Sundance Dr	2-Way Stop	11.8 (B)/23.2 (C)	13.4 (B)/32.3 (D)
Mt. Rose Hwy/Wedge Pkwy	Traffic Signal	24.1 (C)	26.4 (C)
Mt. Rose Hwy/I-580 Southbound Ramps	Traffic Signal	11.7 (B)	14.3 (B)
Mt. Rose Hwy/I-580 Northbound Ramps	2-Way Stop	11.6 (B)	20.5 (C)
Mt. Rose Hwy/Herz Blvd	Traffic Signal	8.5 (A)	10.7 (B)
Mt. Rose Hwy/Virginia St	Traffic Signal	25.7 (C)	34.9 (C)
Mt. Rose Hwy/Geiger Grade-Veterans Pkwy	Roundabout	10.2 (B)	14.3 (B)
















At stop-controlled intersections, the Delay (LOS) refers to minor street approaches

Table 6 (a): 2025 No-Action Detail Results (Delay & LOS)

Intersection		AM Peak-Hour												PM Peak-Hour																
		Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound							
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right					
Mt Rose Hwy and Joy Lake Rd	Approach							10.2 (A)									16.8 (C)													
	Movement				7.7 (A)			16.7 (C)	10.1 (B)					9.2 (A)			25.1 (D)			16.2 (C)										
Mt Rose Hwy and Bordeaux Dr/Timberline Dr	Approach							24.6 (C)			27.9 (D)									32.1 (D)			48.7 (E)							
	Movement	8.3 (A)			8.3 (A)			24.6 (C)		0.0 (A)			30.9 (D)	9.6 (A)		8.2 (A)			9.5 (A)			32.1 (D)	0.0 (A)		49.9 (E)	9.5 (A)				
Mt Rose Hwy and Callahan Rd	Approach							11.1 (B)			30.5 (D)									26.6 (D)			217.2 (F)							
	Movement	8.7 (A)			8.3 (A)			19.4 (C)	10.8 (B)		32.7 (D)	12.7 (B)		8.9 (A)			12.6 (B)			112.6 (F)	24.9 (C)		258.5 (F)	76.9 (F)						
Mt Rose Hwy and Mountain Ranch Rd	Approach										14.0 (B)									16.3 (C)										
	Movement	9.0 (A)									14.0 (B)			10.0 (B)									16.3 (C)							
Mt Rose Hwy and Fawn Ln	Approach							11.2 (B)									15.1 (C)													
	Movement				8.7 (A)			14.7 (B)			10.3 (B)					11.2 (B)			23.7 (C)			13.1 (B)								
Mt Rose Hwy and Thomas Creek Rd*	Intersection	10.4 (B)												11.6 (B)																
	Approach	6.7 (A)			11.4 (B)						16.5 (B)			8.1 (A)			12.8 (B)						19.4 (B)							
	Movement	20.5 (C)	5.1 (A)			11.7 (B)	10.0 (A)					16.4 (B)			17.0 (B)	26.1 (C)	6.1 (A)				13.1 (B)	11.5 (B)					18.8 (B)	20.6 (C)		
Mt Rose Hwy and Edmonton Dr	Approach							15.7 (C)									16.2 (C)													
	Movement				10.5 (B)						15.7 (C)						14.0 (B)						16.2 (C)							
Mt Rose Hwy and Telluride Dr	Approach										22.9 (C)									19.5 (C)										
	Movement	10.3 (B)									24.4 (C)			11.9 (B)	10.7 (B)								24.4 (C)			12.4 (B)				
Mt Rose Hwy and DeSpain Ln/Sundance Dr	Approach							11.8 (B)			23.2 (C)									13.4 (B)			32.3 (D)							
	Movement	10.2 (B)									11.8 (B)	25.7 (D)		11.8 (B)		11.2 (B)								13.4 (B)	34.4 (D)		12.7 (B)			
Mt Rose Hwy and Wedge Pkwy*	Intersection	24.1 (C)												26.4 (C)																
	Approach	21.7 (C)			23.8 (C)			31.0 (C)			27.3 (C)			24.0 (C)			25.9 (C)			34.9 (C)			28.3 (C)							
	Movement	29.3 (C)	19.9 (B)	20.2 (C)	29.8 (C)	22.0 (C)	17.4 (B)	36.6 (D)	28.2 (C)	31.4 (C)	31.8 (C)	20.5 (C)	21.4 (C)	33.7 (C)	22.4 (C)	22.8 (C)	33.5 (C)	25.4 (C)	21.5 (C)	39.8 (D)	30.4 (C)	36.0 (D)	33.2 (C)	18.9 (B)	21.2 (C)					
Mt Rose Hwy and SB I-580 Off-ramp*	Intersection	11.7 (B)												14.3 (B)																
	Approach	11.6 (B)			11.5 (B)						22.8 (C)			14.0 (B)			13.8 (B)						29.5 (C)							
	Movement	11.6 (B)	24.0 (C)		5.1 (A)						22.8 (C)			14.0 (B)	30.9 (C)		4.9 (A)						29.5 (C)							
Mt Rose Hwy and NB I-580 Off-ramp	Approach							11.6 (B)									20.5 (C)													
	Movement							14.6 (B)			9.7 (A)								32.2 (D)			13.6 (B)								
Mt Rose Hwy and Hertz Blvd*	Intersection	8.5 (A)												10.7 (B)																
	Approach	5.5 (A)			9.3 (A)						13.9 (B)			7.7 (A)			12.3 (B)						15.2 (B)							
	Movement	15.9 (B)	3.7 (A)			9.4 (A)	7.7 (A)					13.2 (B)			14.4 (B)	17.9 (B)	5.7 (A)				12.4 (B)	10.3 (B)					13.1 (B)	16.6 (B)		
Mt Rose Hwy and S Virginia St*	Intersection	25.7 (C)												34.9 (C)																
	Approach	26.5 (C)			29.3 (C)			23.1 (C)			24.1 (C)			38.0 (D)			36.7 (D)			36.3 (D)			32.2 (C)							
	Movement	33.4 (C)	22.8 (C)			45.2 (D)	26.6 (C)			33.9 (C)	21.9 (C)			29.2 (C)	15.2 (B)			44.6 (D)	36.2 (D)			49.5 (D)	32.1 (C)			46.8 (D)	34.2 (C)			40.0 (D)

* Signalized Intersections

Table 6 (b): 2025 No-Action Mt. Rose and Veterans Parkway Roundabout Detail Results (Delay & LOS)

Intersection		AM								PM							
		Eastbound		Westbound		Northbound		Southbound		Eastbound		Westbound		Northbound		Southbound	
																	
Mt. Rose Hwy and Geiger Grade Rd/Veterans Pkwy Roundabout	Intersection	10.2 (B)															
	Approach	5.5 (A)		14.9 (B)		9.3 (A)		12.7 (B)		14.8 (B)		12.5 (B)		15.3 (C)		13.3 (B)	
	Movement	6.2 (A)	4.2 (A)	15.4 (C)	14.4 (B)	10.3 (B)	8.2 (A)	12.7 (B)	14.3 (B)	15.1 (C)	12.9 (B)	12.2 (B)	17.7 (C)	12.6 (B)	13.3 (B)		

2.3 2050 No-Action Results

The 2050 No-Action delay and LOS results are tabulated in Table 7. The 2050 No-Action results showed multiple stop-controlled approaches operated with LOS E/LOS F, indicating that the minor street approach operates at capacity or fails. All signalized intersections operated at LOS D/better, except one that failed during the PM peak-hour. The roundabout operated at LOS F. Traffic operations were acceptable at only six of the fifteen project intersections.

Table 7: 2050 No-Action Delay (LOS)

Intersection	Control Type	AM	PM
Mt. Rose Hwy/Joy Lake Rd	2-Way Stop	10.8 (B)	22.4 (C)
Mt. Rose Hwy/Timberline Dr-Bordeaux Dr	2-Way Stop	49.6 (E)/109.3 (F)	79.1 (F)/469.6 (F)
Mt. Rose Hwy/Callahan Rd	2-Way Stop	14.3 (B)/166.3 (F)	1794.6 (F)/2111.5 (F)
Mt. Rose Hwy/Mountain Ranch Rd	2-Way Stop	17.7 (C)	22.7 (C)
Mt. Rose Hwy/Fawn Ln	2-Way Stop	13.8 (B)	24.2 (C)
Mt. Rose Hwy/Thomas Creek Rd	Traffic Signal	12.0 (B)	15.7 (B)
Mt. Rose Hwy/Edmonton Dr	Yield	44.3 (E)	37.6 (E)
Mt. Rose Hwy/Telluride Dr	2-Way Stop	47.3 (E)	35.6 (E)
Mt. Rose Hwy/DeSpain Ln-Sundance Dr	2-Way Stop	14.5 (B)/51.6 (F)	18.2 (C)/99.2 (F)
Mt. Rose Hwy/Wedge Pkwy	Traffic Signal	36.7 (D)	46.3 (D)
Mt. Rose Hwy/I-580 Southbound Ramps	Traffic Signal	16.3 (B)	21.9 (C)
Mt. Rose Hwy/I-580 Northbound Ramps	2-Way Stop	15.0 (C)	123.4 (F)
Mt. Rose Hwy/Herz Blvd	Traffic Signal	9.2 (A)	14.5 (B)
Mt. Rose Hwy/Virginia St	Traffic Signal	30.9 (C)	88.5 (F)
Mt. Rose Hwy/Geiger Grade-Veterans Pkwy	Roundabout	46.5 (E)	87.9 (F)

At 2-way stop-controlled intersections, the Delay (LOS) refers to minor street approaches
















The detailed 2050 No-Action results for approach, individual movements, and LOS are shown in Tables 8 (a) and 8 (b). The delays along the minor streets are significantly higher, and most operated at capacity (LOS E) or failed (LOS F). At the TWSC intersections, the minor street operated at capacity (LOS E) or failed (LOS F) except at two locations. Table 8 (b) shows that the roundabout at Mt. Rose Highway and Geiger Grade Road failed (LOS F) during the PM peak-hour. Modifying the roundabout to a signal will have some significant costs for providing operational improvements that is not needed for another 15-20 years. As a mitigation measure to improve the operations at this roundabout and the signalized intersection at South Virginia St. and SR-341/SR-431, RTC Washoe is proposing the Toll Road Extension project. Should the RTC Washoe decide not to implement the Toll Road Extension project, converting the roundabout to a signalized intersection will need to be discussed and considered in the future. However, it is recommended that operational improvements be made to the existing roundabout in the near-term to enhance operations and safety. The detailed Synchro output for 2050 No-Action is included in Appendix E.

Table 8 (a): 2050 No-Action Detail Results (Delay & LOS)

Intersection		AM Peak-Hour												PM Peak-Hour											
		Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Mt Rose Hwy and Joy Lake Rd	Approach							10.8 (B)												22.4 (C)					
	Movement				8.0 (A)			10.8 (B)									11.0 (B)			22.4 (C)					
Mt Rose Hwy and Bordeaux Dr/Timberline Dr	Approach							49.6 (E)			109.3 (F)									79.1 (F)			469.6 (F)		
	Movement	8.9 (A)			9.0 (A)				49.6 (E)	0.0 (A)			130.8 (F)	10.4 (B)	8.9 (A)			11.6 (B)			79.1 (F)	0.0 (A)		488.0 (F)	10.2 (B)
Mt Rose Hwy and Callahan Rd	Approach							14.3 (B)			166.3 (F)									1794.6 (F)			2111.5 (F)		
	Movement	9.7 (A)			9.0 (A)			34.5 (D)	13.5 (B)		186.5 (F)	19.5 (C)	10.1 (B)			29.6 (D)				1794.6 (F)			2111.5 (F)		
Mt Rose Hwy and Mountain Ranch Rd	Approach										17.7 (C)												22.7 (C)		
	Movement	10.3 (B)											17.7 (C)		12.3 (B)									22.7 (C)	
Mt Rose Hwy and Fawn Ln	Approach							13.8 (B)															24.2 (C)		
	Movement				9.7 (A)			19.4 (C)			11.7 (B)						15.5 (C)			44.0 (E)			17.6 (C)		
Mt Rose Hwy and Thomas Creek Rd*	Intersection	12.0 (B)												15.7 (B)											
	Approach	7.7 (A)			12.6 (B)						21.0 (C)			10.3 (B)			16.9 (B)						28.6 (C)		
	Movement	27.4 (C)	5.4 (A)			13.1 (B)	10.2 (A)				20.7 (C)		21.5 (C)	35.6 (D)	7.5 (A)			17.7 (B)	14.0 (B)					27.4 (C)	
Mt Rose Hwy and Edmonton Dr	Approach							44.3 (E)												37.6 (E)					
	Movement				15.2 (C)			44.3 (E)									40.8 (E)			37.6 (E)					
Mt Rose Hwy and Telluride Dr	Approach							47.3 (E)															35.6 (E)		
	Movement	13.0 (B)								51.8 (F)		14.8 (B)	14.1 (B)										49.3 (E)		15.8 (C)
Mt Rose Hwy and DeSpain Ln/Sundance Dr	Approach							14.5 (B)			51.6 (F)									18.2 (C)			99.2 (F)		
	Movement	12.7 (B)								14.5 (B)	58.8 (F)		14.4 (B)	15.1 (C)									18.2 (C)	107.3 (F)	16.5 (C)
Mt Rose Hwy and Wedge Pkwy*	Intersection	36.7 (D)												46.3 (D)											
	Approach	30.7 (C)			34.3 (C)			44.7 (D)			53.1 (D)			36.2 (D)			39.9 (D)			50.1 (D)			73.3 (E)		
	Movement	44.0 (D)	27.6 (C)	28.0 (C)	44.8 (D)	31.3 (C)	20.8 (C)	49.9 (D)	39.7 (D)	46.4 (D)	71.3 (E)	26.2 (C)	27.8 (C)	65.2 (E)	31.5 (C)	32.5 (C)	53.2 (D)	39.8 (D)	27.7 (C)	57.7 (E)	42.4 (D)	52.3 (D)	103.8 (F)	23.7 (C)	27.7 (C)
Mt Rose Hwy and SB I-580 Off-ramp*	Intersection	16.3 (B)												21.9 (C)											
	Approach	16.4 (B)			15.2 (B)						35.5 (D)			20.7 (C)			22.5 (C)						46.7 (D)		
Mt Rose Hwy and NB I-580 Off-ramp	Approach							15.0 (C)												123.4 (F)					
	Movement							22.6 (C)			10.6 (B)									291.3 (F)			25.2 (D)		
Mt Rose Hwy and Hertz Blvd*	Intersection	9.2 (A)												14.5 (B)											
	Approach	6.0 (A)			10.0 (A)						16.7 (B)			11.0 (B)			16.2 (B)						19.7 (B)		
	Movement	18.9 (B)	3.7 (A)			10.1 (B)	7.6 (A)				15.7 (B)		17.5 (B)	25.2 (C)	8.2 (A)			16.4 (B)	12.7 (B)				15.8 (B)		22.0 (C)
Mt Rose Hwy and S Virginia St*	Intersection	30.9 (C)												88.5 (F)											
	Approach	30.5 (C)			32.6 (C)			32.0 (C)			28.6 (C)			44.8 (D)			41.4 (D)			48.4 (D)			141.5 (F)		
	Movement	39.6 (D)	25.5 (C)		46.7 (D)	30.2 (C)		41.4 (D)	31.0 (C)		34.2 (C)	19.2 (B)		53.7 (D)	42.4 (D)		63.8 (E)	33.4 (C)		56.5 (E)	46.8 (D)		204.3 (F)	26.8 (C)	

* Signalized Intersections

Table 8 (b): 2050 No-Action Mt. Rose and Veterans Parkway Roundabout Detail Results (Delay & LOS)

Intersection		AM								PM							
		Eastbound		Westbound		Northbound		Southbound		Eastbound		Westbound		Northbound		Southbound	
																	
Geiger Grade Rd & Veterans Pkwy Roundabout	Intersection	46.5 (E)								87.9 (F)							
	Approach	7.6 (A)		105.7 (F)		23.1 (C)		39.2 (E)		93.8 (F)		60.3 (F)		111.4 (F)		46.9 (E)	
	Movement	8.8 (A)	5.1 (A)	110.6 (F)	101.4 (F)	29.0 (D)	16.5 (C)	39.2 (E)	84.1 (F)	102.4 (F)	62.3 (F)	58.6 (F)	156.0 (F)	61.0 (F)	46.9 (E)		

3. 2025 NEAR-TERM ANALYSIS

The 2025 Near-Term alternative considered minor improvements to three of the project intersections as listed in Table 9. The intersection of Mt. Rose Highway and Callahan Road was considered as a Roundabout, and a traffic signal at Mt. Rose Highway and I-580 Northbound Ramps.

Table 9: 2025 Near-Term Concept Intersection Improvements

Intersection	Improvements
Mt. Rose Hwy/Callahan Rd	Roundabout
Mt. Rose Hwy/Edmonton Dr	Unsignalized High-T with northbound left-turn access
Mt. Rose Hwy/I-580 Northbound Ramps	Signalized Traffic Control

The results of the traffic analysis are shown in Table 10 for the three intersections. The signalized intersection operated with an overall LOS B/better, and the roundabout operated with LOS A. The northbound approach at the unsignalized High-T intersection of Mt. Rose Highway and Edmonton Drive operated at LOS D/better.

Table 10: 2025 Near-Term Concept Delay (LOS)

Intersection	Control Type	AM	PM
Mt. Rose Hwy/Callahan Rd	Roundabout	4.8 (A)	7.4 (A)
Mt. Rose Hwy/Edmonton Dr	Unsig. High-T	17.5 (C)	25.8 (D)
Mt. Rose Hwy/I-580 Northbound Ramps	Traffic Signal	9.0 (A)	19.1 (B)

Unsig. refer to unsignalized intersection

The detailed 2025 Near-Term alternative results for approach, individual movements, and LOS are shown in Table 11. All approaches/movements operated with LOS D/better, except the northbound approach/movements at the intersection of Mt. Rose Highway and I-580 Northbound Ramps. The detailed Synchro output for the 2025 Near-Term alternative is included in Appendix F.

Table 11: 2025 Near-Term Alternative Detail Results (Delay & LOS)

Intersection		AM Peak-Hour												PM Peak-Hour											
		Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Mt Rose Hwy and Callahan Rd	Intersection	4.8 (A)												7.4 (A)											
	Approach	4.3 (A)			4.9 (A)			5.7 (A)			5.1 (A)			8.4 (A)			5.8 (A)			10.2 (B)			6.1 (A)		
	Movement	4.4 (A)	4.2 (A)	4.9 (A)	4.9 (A)	5.7 (A)			5.1 (A)			8.5 (A)	8.4 (A)	5.8 (A)	5.9 (A)	10.2 (B)			6.1 (A)						
Mt Rose Hwy and Edmonton Dr	Approach							17.5 (C)									25.8 (D)								
	Movement							17.5 (C)										25.8 (D)							
Mt Rose Hwy and NB I-580 Off-ramp*	Intersection	9.0 (A)												19.1 (B)											
	Approach	1.2 (A)			1.4 (A)			72.4 (E)						4.0 (A)			4.1 (A)			63.0 (E)					
	Movement		1.2 (A)			1.4 (A)		68.0 (E)		75.9 (E)					4.0 (A)			4.1 (A)		57.6 (E)		67.2 (E)			

* Signalized Intersection

4. 2050 ALTERNATIVE RESULTS

The two design alternatives that were analyzed for the year 2050 were the Sub-Urban and Urban concepts. The intersection control type for each build alternative is listed in Table 12. At signalized intersections, the traffic signal timing splits and offsets were optimized for better coordination along the Mt. Rose Highway corridor. The cycle lengths were maintained at all signalized intersections to provide coordination along the entire corridor. The traffic analysis results for Build Alternatives are discussed in detail in the following sections. As mentioned in Section 1, the intersection delay corresponds to signalized and roundabout, but for a TWSC intersection, the delay and LOS is reported for minor street.

Table 12: Intersection Control Type Comparison

Intersection	Existing Control	Urban Concept	Sub-Urban Concept
Mt. Rose Hwy/Joy Lake Rd	2-Way Stop	2-Way Stop	2-Way Stop
Mt. Rose Hwy/Timberline Dr-Bordeaux Dr	2-Way Stop	EBR, EBL, WBL, WBR, NBR	Roundabout
Mt. Rose Hwy/Callahan Rd	2-Way Stop	Traffic Signal	Roundabout
Mt. Rose Hwy/Mountain Ranch Rd	2-Way Stop	High-T	High-T
Mt. Rose Hwy/Fawn Ln	2-Way Stop	High-T	Roundabout
Mt. Rose Hwy/Thomas Creek Rd	Traffic Signal	Traffic Signal	Roundabout
Mt. Rose Hwy/Edmonton Dr	Yield (northbound)	High-T	Roundabout
Mt. Rose Hwy/Telluride Dr	2-Way Stop	High-T (Unsignalized)	High-T (Unsignalized)
Mt. Rose Hwy/DeSpain Ln-Sundance Dr	2-Way Stop	Rt-In/Rt-Out (north/south leg)	Rt-In/Rt-Out (north/south leg)
Mt. Rose Hwy/Wedge Pkwy	Traffic Signal	Traffic Signal	Traffic Signal
Mt. Rose Hwy/I-580 Southbound Ramps	Traffic Signal	Traffic Signal	Traffic Signal
Mt. Rose Hwy/I-580 Northbound Ramps	2-Way Stop	Traffic Signal	Traffic Signal
Mt. Rose Hwy/Herz Blvd	Traffic Signal	Traffic Signal	Traffic Signal
Mt. Rose Hwy/Virginia St	Traffic Signal	Traffic Signal	Traffic Signal
Mt. Rose Hwy/Geiger Grade-Veterans Pkwy	Roundabout	Roundabout	Roundabout

“Stop” refers to minor street approach

2.4 2050 Urban Concept Analysis Results

Table 13 shows the delay and LOS for the 2050 Urban concept. The Urban concept included three stop-controlled intersections. The minor street approaches at Mt. Rose Highway and Timberline Drive-Bordeaux Drive intersection failed (LOS F). This concept also included four unsignalized High-T intersections. The intersection of Mt. Rose Highway at Edmonton Drive and Telluride Drive operated at capacity with delays over 35.3 sec/veh (LOS E). The signalized intersection at Mt. Rose Highway and Virginia Street, and the roundabout at Mt. Rose Highway and Geiger Grade-Veterans Parkway, had no design changes; hence, the results were similar to the 2050 No-Action analysis. All other signalized intersections operated with delays less than 45 sec/veh (LOS D).

Detailed delay and LOS results for approach and movements for the 2050 Urban concept are shown in Tables 14 (a) and 14 (b). At the intersection of Mt. Rose Highway and Callahan Road, the eastbound left-turn failed with LOS F. The southbound and westbound left-turn operated at capacity (LOS E) with delays close to 56 sec/veh and 79 sec/veh, respectively. In addition, the northbound left-turn at Edmonton Drive and

southbound left-turn at Telluride Drive operated with LOS F. The detailed Synchro output for the 2050 Urban concept is included in Appendix G.

Table 13: 2050 Urban Concept Delay (LOS)

Intersection	Control Type	AM	PM
Mt. Rose Hwy/Joy Lake Rd	2-Way Stop	10.7 (B)	20.0 (C)
Mt. Rose Hwy/Timberline Dr-Bordeaux Dr	2-Way Stop	49.6 (E)/109.3 (F)	79.1 (F)/469.6 (F)
Mt. Rose Hwy/Callahan Rd	Traffic Signal	20.5 (C)	30.2 (C)
Mt. Rose Hwy/Mountain Ranch Rd	Unsig. High-T	17.5 (C)	22.4 (C)
Mt. Rose Hwy/Fawn Ln	Unsig. High-T	13.7 (B)	28.5 (D)
Mt. Rose Hwy/Thomas Creek Rd	Traffic Signal	9.1 (A)	12.1 (B)
Mt. Rose Hwy/Edmonton Dr	Unsig. High-T	29.0 (D)	37.7 (E)
Mt. Rose Hwy/Telluride Dr	Unsig. High-T	45.8 (E)	35.3 (E)
Mt. Rose Hwy/DeSpain Ln-Sundance Dr	2-Way Stop	14.5 (B)/14.4 (B)	18.2 (C)/16.5 (C)
Mt. Rose Hwy/Wedge Pkwy	Traffic Signal	26.5 (C)	30.3 (C)
Mt. Rose Hwy/I-580 Southbound Ramps	Traffic Signal	20.1 (C)	21.9 (C)
Mt. Rose Hwy/I-580 Northbound Ramps	Traffic Signal	42.6 (D)	44.4 (D)
Mt. Rose Hwy/Herz Blvd	Traffic Signal	9.2 (A)	13.7 (B)
Mt. Rose Hwy/Virginia St	Traffic Signal	30.9 (C)	88.5 (F)
Mt. Rose Hwy/Geiger Grade-Veterans Pkwy	Roundabout	49.1 (E)	56.7 (F)

Unsig. refer to unsignalized intersections

Table 14 (a): 2050 Urban Alternative Detail Results (Delay & LOS)

Intersection		AM Peak-Hour											PM Peak-Hour																																																											
		Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound																																																	
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right																																															
Mt Rose Hwy and Joy Lake Rd	Approach							10.7 (B)									20.0 (C)																																																							
	Movement				8.0 (A)			15.3 (C)			10.6 (B)						10.9 (B)			23.4 (C)			19.7 (C)																																																	
Mt Rose Hwy and Bordeaux Dr/Timberline Dr	Approach							49.6 (E)			109.3 (F)									79.1 (F)			469.6 (F)																																																	
	Movement							49.6 (E)			0.0 (A)			130.8 (F)			10.4 (B)						79.1 (F)			0.0 (A)			488.0 (F)			10.2 (B)																																								
Mt Rose Hwy and Callahan Rd	Intersection	20.5 (C)											30.2 (C)																																																											
	Approach	9.0 (A)			14.0 (B)			68.5 (E)			55.1 (E)			25.8 (C)			26.3 (C)			77.4 (E)			53.9 (D)																																																	
Mt Rose Hwy and Mountain Ranch Rd	Approach										17.5 (C)												22.4 (C)																																																	
	Movement										17.5 (C)												22.4 (C)																																																	
Mt Rose Hwy and Fawn Ln	Approach							13.7 (B)												28.5 (D)																																																				
	Movement							13.7 (B)												28.5 (D)																																																				
Mt Rose Hwy and Thomas Creek Rd	Intersection	9.1 (A)											12.1 (B)																																																											
	Approach	5.6 (A)			9.3 (A)						16.9 (B)			7.9 (A)			12.6 (B)						23.7 (C)																																																	
Mt Rose Hwy and Edmonton Dr	Approach							29.0 (D)												37.7 (E)																																																				
	Movement	21.9 (C)			3.7 (A)						9.6 (A)			7.6 (A)			16.7 (B)			17.3 (B)			30.3 (C)			5.4 (A)			13.2 (B)			10.6 (B)			22.8 (C)			25.3 (C)																																		
Mt Rose Hwy and Telluride Dr	Approach							29.0 (D)															37.7 (E)																																																	
	Movement							33.6 (D)			27.8 (D)												72.7 (F)			28.9 (D)																																														
Mt Rose Hwy and DeSpain Ln/Sundance Dr	Approach							45.8 (E)															35.3 (E)																																																	
	Movement							50.1 (F)			14.8 (B)												48.8 (E)			15.8 (C)																																														
Mt Rose Hwy and Wedge Pkwy	Approach							14.5 (B)			14.4 (B)									18.2 (C)			16.5 (C)																																																	
	Movement										14.5 (B)			14.4 (B)									18.2 (C)			16.5 (C)																																														
Mt Rose Hwy and SB I-580 Off-ramp	Intersection	26.5 (C)											30.3 (C)																																																											
	Approach	24.6 (C)			26.4 (C)			33.9 (C)			28.2 (C)			28.6 (C)			29.2 (C)			42.3 (D)			30.2 (C)																																																	
Mt Rose Hwy and NB I-580 Off-ramp	Approach	38.4 (D)			47.4 (D)			10.1 (B)						49.0 (D)			49.9 (D)			9.4 (A)																																																				
	Movement	36.5 (D)			21.8 (C)			22.2 (C)			35.0 (D)			23.7 (C)			16.5 (B)			42.1 (D)			35.4 (D)			31.3 (C)			35.0 (D)			26.6 (C)			13.6 (B)			49.9 (D)			25.2 (C)			25.8 (C)			45.4 (D)			30.9 (C)			7.8 (A)			49.5 (D)			35.0 (D)			44.1 (D)			39.8 (D)			24.7 (C)			15.5 (B)	
Mt Rose Hwy and Hertz Blvd	Intersection	20.1 (C)											21.9 (C)																																																											
	Approach	23.4 (C)			15.2 (B)						35.5 (D)			20.7 (C)			22.5 (C)						46.7 (D)																																																	
Mt Rose Hwy and S Virginia St	Intersection	42.6 (D)											44.4 (D)																																																											
	Approach	38.4 (D)			47.4 (D)			10.1 (B)						49.0 (D)			49.9 (D)			9.4 (A)																																																				
Mt Rose Hwy and Geiger Grade Rd/Veterans Pkwy Roundabout	Approach	38.4 (D)			47.4 (D)			10.1 (B)			0.0 (A)			49.0 (D)			49.9 (D)			9.4 (A)			0.0 (A)																																																	
	Movement	18.9 (B)			3.7 (A)						10.1 (B)			7.6 (A)			15.7 (B)			17.5 (B)			24.1 (C)			7.5 (A)			15.5 (B)			11.9 (B)			16.0 (B)			21.5 (C)																																		
Mt Rose Hwy and S Virginia St	Intersection	9.2 (A)											13.7 (B)																																																											
	Approach	6.0 (A)			10.0 (A)						16.7 (B)			10.3 (B)			15.3 (B)						19.3 (B)																																																	
Mt Rose Hwy and S Virginia St	Approach	30.5 (C)			32.6 (C)			32.0 (C)			28.6 (C)			44.8 (D)			41.4 (D)			48.4 (D)			141.5 (F)																																																	
	Movement	39.6 (D)			25.5 (C)			46.7 (D)			30.2 (C)			41.4 (D)			31.0 (C)			34.2 (C)			19.2 (B)			53.7 (D)			42.4 (D)			63.8 (E)			33.4 (C)			56.5 (E)			46.8 (D)			204.3 (F)			26.8 (C)																									

Table 14 (b): 2050 Urban Alternative Mt. Rose and Veterans Parkway Roundabout Detail Results (Delay & LOS)

Intersection		AM								PM											
		Eastbound		Westbound		Northbound		Southbound		Eastbound		Westbound		Northbound		Southbound					
		↖	↗	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙				
Mt. Rose Hwy and Geiger Grade Rd/Veterans Pkwy Roundabout	Intersection	49.1 (E)								56.7 (F)											
	Approach	5.5 (A)		N/A		105.7 (F)		23.1 (C)		39.2 (E)		14.1 (B)		N/A		60.3 (F)		111.4 (F)		46.9 (E)	
	Movement	5.6 (A)	5.5 (A)	N/A		110.6 (F)	101.4 (F)	29.0 (D)	16.5 (C)	39.2 (E)	13.9 (B)	14.3 (B)	N/A		62.3 (F)	58.6 (F)	156.0 (F)	61.0 (F)	46.9 (E)		

2.5 2050 Suburban Concept Analysis Results

The traffic analysis results for the 2050 Suburban concept are shown in Table 15. All of the stop-controlled intersections minor street operated with a delay of less than 22.4 sec/veh (LOS C/better), except at the Mt. Rose Highway and Telluride Drive intersection. The High-T intersection of Mt. Rose Highway and Telluride Drive did not improve the traffic operations, and operated with a delay higher than 35 sec/veh (LOS E). The stop-controlled intersections that were converted to roundabout in 2050 that showed reduced delay with improved LOS. The roundabouts operated with a delay of less than 17 sec/veh (LOS C/better). All signalized intersections operated with an overall delay of less than 45 sec/veh (LOS D/better). The signalized intersection at Mt. Rose Highway and Virginia Street, and the roundabout at Mt. Rose Highway and Geiger Grade-Veterans Parkway, had no design changes; hence, the results were similar to the 2050 No-Action analysis.

Table 15: 2050 Suburban Delay (LOS)

Intersection	Control Type	AM	PM
Mt. Rose Hwy/Joy Lake Rd	2-Way Stop	10.7 (B)	20.0 (C)
Mt. Rose Hwy/Timberline Dr-Bordeaux Dr	Roundabout	5.7 (A)	14.2 (B)
Mt. Rose Hwy/Callahan Rd	Roundabout	6.2 (A)	13.9 (B)
Mt. Rose Hwy/Mountain Ranch Rd	Unsig. High-T	17.5 (C)	22.4 (C)
Mt. Rose Hwy/Fawn Ln	Roundabout	5.9 (A)	9.6 (A)
Mt. Rose Hwy/Thomas Creek Rd	Roundabout	8.1 (A)	16.9 (C)
Mt. Rose Hwy/Edmonton Dr	Roundabout	12.4 (B)	16.7 (C)
Mt. Rose Hwy/Telluride Dr	Unsig. High-T	45.8 (E)	35.3 (E)
Mt. Rose Hwy/DeSpain Ln-Sundance Dr	2-Way Stop	14.5 (B)/14.4 (B)	18.2 (C)/16.5 (C)
Mt. Rose Hwy/Wedge Pkwy	Traffic Signal	26.5 (C)	29.4 (C)
Mt. Rose Hwy/I-580 Southbound Ramps	Traffic Signal	20.1 (C)	21.9 (C)
Mt. Rose Hwy/I-580 Northbound Ramps	Traffic Signal	42.6 (D)	44.4 (D)
Mt. Rose Hwy/Herz Blvd	Traffic Signal	9.2 (A)	13.7 (B)
Mt. Rose Hwy/Virginia St	Traffic Signal	30.9 (C)	88.5 (F)
Mt. Rose Hwy/Geiger Grade-Veterans Pkwy	Roundabout	49.1 (E)	56.7 (F)

Unsig. refer to unsignalized intersections

Detailed delay and LOS for approach/movements are shown in Tables 16 (a) and 16 (b). All approaches and movements at the stop-controlled intersections operated with LOS C/better. The southbound left-turn at Mt. Rose Highway and Telluride Drive failed during the AM and operated at capacity during PM peak hour. All roundabouts operated with LOS D/better. Mt. Rose Highway and Geiger Grade-Veterans Parkway roundabout results were similar to the 2050 No-Action analysis. At all signalized intersections, the movements operated with LOS D/better. The corresponding approaches operated in LOS D/better during AM and PM peak-hour. The only exception was at the intersection of Mt. Rose Highway and I-580 Southbound Ramps, where the westbound left-turn operated with a delay of 55.9 sec/veh (LOS E). As there was no design change at Mt. Rose Highway and Virginia Street, the operations were similar to the 2050 No-Action. The detailed Synchro output is included in Appendix H.

Table 16 (a): 2050 Sub-Urban Concept Detail Results (Delay & LOS)

Intersection		AM Peak-Hour												PM Peak-Hour											
		Eastbound			Westbound			Northbound			Southbound			Eastbound			Westbound			Northbound			Southbound		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Mt Rose Hwy and Joy Lake Rd	Approach	10.7 (B)												20.0 (C)											
	Movement	8.0 (A)			15.3 (C)			10.6 (B)			10.9 (B)			23.4 (C)			19.7 (C)								
Mt Rose Hwy and Bordeaux Dr/Timberline Dr	Intersection	5.7 (A)												14.2 (B)											
	Approach	7.7 (A)			5.8 (A)			0.3 (A)			6.6 (A)			24.3 (C)			5.4 (A)			0.7 (A)			6.0 (A)		
Mt Rose Hwy and Callahan Rd	Approach	6.2 (A)												13.9 (B)											
	Movement	5.3 (A)	5.2 (A)	6.1 (A)	6.2 (A)	8.3 (A)	7.2 (A)	16.9 (C)	17.2 (C)	7.8 (A)	8.1 (A)	27.8 (D)	9.1 (A)	5.3 (A)	5.2 (A)	6.1 (A)	6.2 (A)	8.3 (A)	7.2 (A)	16.9 (C)	17.2 (C)	7.8 (A)	8.1 (A)	27.8 (D)	9.1 (A)
Mt Rose Hwy and Mountain Ranch Rd	Approach	17.5 (C)												22.4 (C)											
	Movement	17.5 (C)												22.4 (C)											
Mt Rose Hwy and Fawn Ln	Intersection	5.9 (A)												9.6 (A)											
	Approach	5.6 (A)			6.2 (A)			6.2 (A)			10.6 (B)			8.2 (A)			13.0 (B)								
Mt Rose Hwy and Thomas Creek Rd	Approach	8.1 (A)												16.9 (C)											
	Movement	8.2 (A)	8.1 (A)	7.1 (A)	7.2 (A)	11.6 (B)	9.2 (A)	20.3 (C)	21.8 (C)	10.8 (B)	11.2 (B)	23.8 (C)	15.9 (C)	8.2 (A)	7.2 (A)	10.5 (B)	21.1 (C)	11.0 (B)	20.1 (C)						
Mt Rose Hwy and Edmonton Dr	Approach	12.4 (B)												16.7 (C)											
	Movement	9.8 (A)	9.9 (A)	8.9 (A)	9.1 (A)	30.9 (D)	19.6 (C)	21.3 (C)	10.4 (B)	11.0 (B)	32.4 (D)	9.8 (A)	9.9 (A)	8.9 (A)	9.1 (A)	30.9 (D)	19.6 (C)	21.3 (C)	10.4 (B)	11.0 (B)	32.4 (D)				
Mt Rose Hwy and Telluride Dr	Approach	45.8 (E)												35.3 (E)											
	Movement	50.1 (F)			14.8 (B)			48.8 (E)			15.8 (C)			50.1 (F)			14.8 (B)			48.8 (E)			15.8 (C)		
Mt Rose Hwy and DeSpain Ln/Sundance Dr	Approach	14.5 (B)												18.2 (C)											
	Movement	12.7 (B)	14.5 (B)	14.4 (B)	15.1 (C)	18.2 (C)	16.5 (C)	12.7 (B)	14.5 (B)	14.4 (B)	15.1 (C)	18.2 (C)	16.5 (C)												
Mt Rose Hwy and Wedge Pkwy	Intersection	26.5 (C)												29.4 (C)											
	Movement	36.5 (D)	21.8 (C)	22.2 (C)	35.0 (D)	23.7 (C)	16.5 (B)	42.1 (D)	35.4 (D)	31.3 (C)	35.0 (D)	26.6 (C)	13.6 (B)	47.8 (D)	24.2 (C)	24.8 (C)	44.0 (D)	29.6 (C)	7.0 (A)	47.9 (D)	35.1 (D)	43.2 (D)	38.4 (D)	24.7 (C)	14.8 (B)
Mt Rose Hwy and SB I-580 Off-ramp	Approach	20.1 (C)												21.9 (C)											
	Movement	23.4 (C)	15.2 (B)	35.5 (D)	5.0 (A)	35.5 (D)	20.7 (C)	22.5 (C)	46.7 (D)	23.4 (C)	15.2 (B)	35.5 (D)	5.0 (A)	35.5 (D)	20.7 (C)	22.5 (C)	46.7 (D)								
Mt Rose Hwy and NB I-580 Off-ramp	Approach	42.6 (D)												44.4 (D)											
	Movement	38.4 (D)	47.4 (D)	10.1 (B)	0.0 (A)	49.0 (D)	49.9 (D)	9.4 (A)	38.4 (D)	47.4 (D)	10.1 (B)	0.0 (A)	49.0 (D)	49.9 (D)	9.4 (A)										
Mt Rose Hwy and Hertz Blvd	Approach	9.2 (A)												13.7 (B)											
	Movement	18.9 (B)	3.7 (A)	10.1 (B)	7.6 (A)	15.7 (B)	17.5 (B)	24.1 (C)	7.5 (A)	15.5 (B)	11.9 (B)	16.0 (B)	21.5 (C)	6.0 (A)	10.0 (A)	16.7 (B)	10.3 (B)	15.3 (B)	19.3 (B)						
Mt Rose Hwy and S Virginia St	Approach	30.9 (C)												88.5 (F)											
	Movement	39.6 (D)	25.5 (C)	46.7 (D)	30.2 (C)	41.4 (D)	31.0 (C)	34.2 (C)	19.2 (B)	53.7 (D)	42.4 (D)	63.8 (E)	33.4 (C)	56.5 (E)	46.8 (D)	204.3 (F)	26.8 (C)	30.5 (C)	32.6 (C)	32.0 (C)	28.6 (C)	44.8 (D)	41.4 (D)	48.4 (D)	141.5 (F)

Table 16 (b): 2050 Sub-Urban Concept Mt. Rose and Veterans Parkway Roundabout Detail Results (Delay & LOS)

Intersection		AM								PM															
		Eastbound			Westbound			Northbound		Southbound		Eastbound			Westbound			Northbound		Southbound					
		↖	↗	↷	↖	↗	↷	↖	↗	↖	↗	↷	↖	↗	↷	↖	↗	↷	↖	↗					
Mt. Rose Hwy and Geiger Grade Rd/Veterans Pkwy Roundabout	Intersection	49.1 (E)								56.7 (F)															
	Approach	5.5 (A)			N/A			105.7 (F)		23.1 (C)		39.2 (E)		14.1 (B)			N/A			60.3 (F)		111.4 (F)		46.9 (E)	
	Movement	5.6 (A)	5.5 (A)	N/A	110.6 (F)	101.4 (F)	29.0 (D)	16.5 (C)	39.2 (E)	13.9 (B)	14.3 (B)	N/A	62.3 (F)	58.6 (F)	156.0 (F)	61.0 (F)	46.9 (E)								

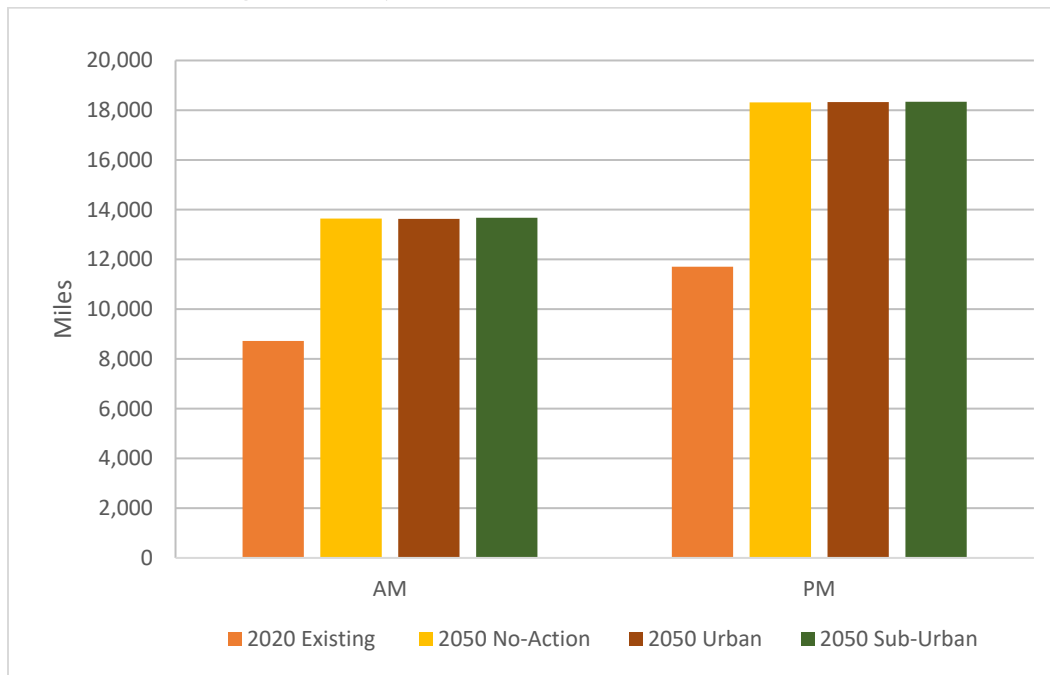
5. OVERALL COMPARISON OF ALTERNATIVES

In addition to the delay and LOS, vehicle miles traveled (VMT), vehicle hours traveled (VHT), and total delay were reported from Synchro. The VMT for all scenarios are presented in Table 17 and a comparison chart is shown in Figure 1. As expected, the VMT increased in the 2050 No-Action compared to the 2020 Existing Conditions due to increase in traffic volumes. The Urban and Sub-Urban alternatives did not show much change in the VMTs compared to No-Action.

Table 17: Vehicle Miles Traveled (VMT) in miles

Scenario	AM Peak-Hour	PM Peak-Hour
2020 Existing Conditions	8,719	11,704
2050 No-Action	13,643	18,316
2050 Urban	13,632	18,327
2050 Sub-Urban	13,676	18,340

Figure 1: Comparison of Vehicle Miles Traveled (VMT)

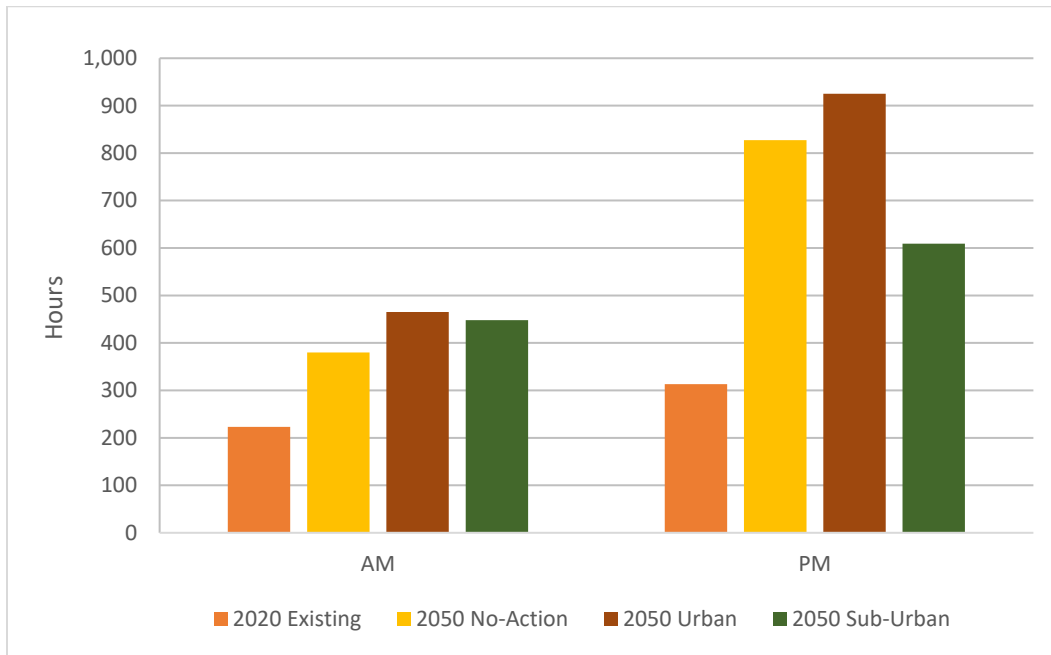


The VHT is tabulated in Table 18, and a comparison chart is provided in Figure 2. The 2050 No-Action is significantly higher than the 2020 Existing Condition due to increased traffic volume. The Build Alternatives showed increased VHT during AM, but in the PM only the Urban alternative showed higher VHT. The 2050 Sub-Urban alternative showed reduced VHT compared to 2050 No-Action.

Table 18: Vehicle Hours Traveled (VHT) in hours

Scenario	AM Peak-Hour	PM Peak-Hour
2020 Existing Conditions	223	313
2050 No-Action	380	827
2050 Urban	465	925
2050 Sub-Urban	448	609

Figure 2: Comparison of Vehicle Hours Traveled (VHT)

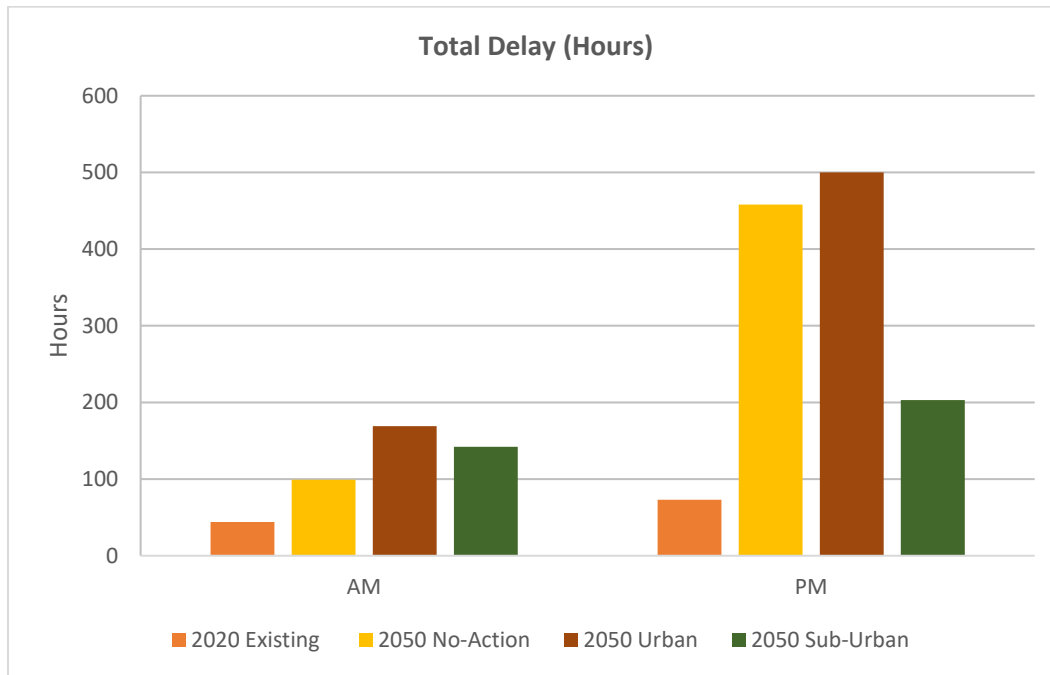


The total delay for all scenarios is shown in Table 19 and Figure 3. The total delay in the 2050 No-Action was extremely high compared to the 2020 Existing Conditions. The Build Alternatives had increased total delay within the network. The increase in delay in the 2050 Urban alternative is due to the proposed two new traffic signals (stop-controlled in 2020 Existing Conditions). In the 2050 Sub-Urban alternative, the total delay increased during AM, but reduced during PM because of the proposed roundabouts at five intersections.

Table 19: Total Delay (Hours)

Scenario	AM Peak-Hour	PM Peak-Hour
2020 Existing Conditions	44	73
2050 No-Action	99	458
2050 Urban	169	500
2050 Sub-Urban	142	203

Figure 3: Comparison of Total Delay



6. SUMMARY AND CONCLUSION

Traffic analysis indicated that all project intersections have higher delays in 2050 No-Action compared to 2020 Existing Conditions, due to the increase in traffic volumes. The network wide MOEs also showed higher VMT, VHT, and total delay for 2050 No-Action. The 2050 Urban alternative considered signaling two stop-controlled intersections that are adding to the total network delay. The additional delay for stopping the vehicles along the major approaches increases the overall network delay, but it provides time for traffic along minor streets to safely enter the network. The 2050 Sub-Urban alternative considered changing four TWSC intersections and one signalized intersection to roundabouts and signaling one of the existing TWSC intersections, which resulted in reduced network delay. The roundabouts help traffic move smoothly and allows for a consistent speed reduction/management opportunity while decreasing the overall network delay.

7. LIST OF APPENDICES

- Appendix A – Traffic Modeling and Operations Analysis Methodology Memorandum
- Appendix B – Traffic Forecasting Memorandum
- Appendix C – 2020 Existing Conditions Synchro Output
- Appendix D – 2025 No-Action Synchro Output
- Appendix E – 2050 No-Action Synchro Output
- Appendix F – 2025 Near-Term Alternative Synchro Output
- Appendix G – 2050 Urban Alternative Synchro Output
- Appendix H – 2050 Sub-Urban Alternative Synchro Output

Appendix A
Traffic Modeling and Operations Analysis
Methodology Memorandum
(Approved by NDOT December 4, 2020)

Technical Memorandum

To: Jae Pullen, NDOT

Date: December 4, 2020

From: Chad Anson, CA Group

Subject: Mt. Rose Hwy Corridor Study: Traffic Modeling/Operation Analysis Methodology Memorandum

Copies: Hoang Hong, Sam Ahiamadi, NDOT; Vinay Virupaksha, CA Group

1. INTRODUCTION AND BACKGROUND

The Nevada Department of Transportation (NDOT) desires to perform a corridor study of the Mount Rose Highway (State Route 431/SR 431). The study will develop a Mount Rose Corridor Action Plan, providing decision makers with a guide that will define future transportation needs along SR 431. The Mount Rose Corridor Action Plan will provide the corridor vision. The study will be assessed for socioeconomic, community, land use, multi-modal, environmental, and monetary impacts of implementing a range of needed projects addressing existing and projected transportation problems.

Mount Rose Highway is a scenic byway officially named “Highway to the Sky”. It connects Lake Tahoe to the City of Reno, starting at the junction of State Route 28 and stretching 24 miles northeast to the S. Virginia Street intersection. From the foothills approaching Reno, the two-lane highway increases to four-lane highway with a center two-way left-turn lane. The functional classification of Mount Rose Highway transitions from a “Rural Minor Arterial” to an “Urban Principle Arterial-Other”. West of I-580 interchange, Mount Rose Highway connects to South Virginia Street and the Veterans Parkway roundabout via Geiger Grade Road (SR 341).

This *memorandum* documents the methodology and assumptions for traffic modeling and operations analysis. A review and approval by NDOT is requested before beginning the macro-level traffic modeling and operation analysis. A completed “Methodology Memorandum Content Checklist” is included at the end of this *memorandum*.

2. GEOGRAPHIC LIMITS OF TRAFFIC ANALYSIS

Mount Rose Highway from Joy Lake Road to Geiger Grade Road roundabout located in Washoe County, Reno, Nevada. Figure 1 shows the geographical project limits for the traffic modeling and operation analysis. The project limits include:

- Mount Rose Highway: Douglas Fir Drive to Geiger Grade Road
- Interchanges: I-580 and Mount Rose Highway
- Intersections:
 1. Mount Rose Highway & Joy Lake Road
 2. Mount Rose Highway & Timberline Drive/Bordeaux Drive
 3. Mount Rose Highway & Callahan Road
 4. Mount Rose Highway & Mountain Ranch Road
 5. Mount Rose Highway & Fawn Lane

6. Mount Rose Highway & Thomas Creek Road
7. Mount Rose Highway & Edmonton Drive
8. Mount Rose Highway & Telluride Drive
9. Mount Rose Highway & Sundance Drive/De Spain Lane
10. Mount Rose Highway & Wedge Parkway
11. Mount Rose Highway & I-580 Southbound Ramps
12. Mount Rose Highway & I-580 Northbound Ramps
13. Mount Rose Highway & Herz Boulevard
14. Mount Rose Highway & Virginia Street
15. Mount Rose Highway/Geiger Grade Road/Veterans Parkway & Whites Creek Lane/Geiger Grade Road



Figure 1: Project Limits for Traffic Operations Analysis

3. TECHNICAL GUIDANCE, STANDARDS AND TOOLS

Synchro 11 will be used for traffic modeling and operations analysis. The following technical references will be used:

- CORSIM Modeling Guidelines, NDOT, 2012
- Highway Capacity Manual 6th Edition, Transportation Research Board, 2016
- Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software, FHWA, 2004

4. TRAFFIC VOLUMES AND MODELING PERIOD

The 2020 AM and PM peak period (7:00 to 9:00 AM; 4:00 to 6:00 PM) traffic counts were collected during the week of November 16, 2020. The traffic counts will be reviewed and adjusted with a COVID correction factor as needed. The 2020 traffic volumes will be reviewed and approved by the NDOT Traffic Information before using them for the traffic analysis. The percent of heavy vehicles/trucks will be obtained from NDOT Traffic Information. The traffic modeling and operations analysis will be performed for AM and PM peak-hours, as well as the results will be reported respectively, for all scenarios. Existing traffic signal timing information will be obtained from City of Reno for the project intersections.

The 2020 traffic volumes, 2050 forecasted volumes and the truck percentage will be included in the Traffic Forecasting Memorandum.

5. ANALYSIS SCENARIOS

Traffic modeling and operations analysis will be completed for the following scenarios:

- Existing Year 2020
- Interim Year 2025 No-Action
- Interim Year 2025 Build Alternatives
- Design Year 2050 No-Action
- Design Year 2050 Build Alternatives

Traffic modeling and operations analysis will be performed for up to two (2) overall corridor scenarios, and up to two (2) various intersection configurations at; Callahan Road, Thomas Creek Road, I-580 ramp termini and Geiger Grade Road.

Methodology Memorandum Content Checklist

Item	Description	Check
Project Description and Background	Brief information about the project (purpose, general study area, etc.)	✓
Technical Guidance and Standards	Standard Manuals along with their version (HCM, MUTCD, NDOT Standards, etc.)	✓
Traffic Analysis Tools	Softwares to be used along with their version (Synchro, HCS etc.)	✓
Analysis Years	Base (2020), Interim (2025) and Design/Horizon (2050)	✓
Analysis Scenarios	Existing, No-Build, Build alternatives	✓
Analysis Periods	AM and PM peak-hour	✓
Existing Conditions	Description of existing conditions and/or how existing analysis will be performed	✓
Data Sources	List of sources of data and relevant information	✓
Traffic Operations Analysis, Calculations and/or Assumptions	Signal timing/phasing, peak-hour factors, etc.	✓
Heavy Vehicles/Truck Percentages	Truck percentage used for existing and future scenarios	✓
Storage Length Calculation Method	How the turn bay lengths will be calculated	✓
Level of Service (LOS) Threshold	LOS standard for each facility type. For intersections, document by movement, by approach, by overall intersection. Source or basis of the selected LOS standard	✓
Coding and Analysis Assumptions	Documentation of support tools (if used) for intersection timing/optimization (such as Synchro)	✓
Additional item(s)	Any unique item(s) that is appropriate to be discussed or approved by NDOT	✓

Appendix B

Traffic Forecasting Memorandum

(Approved by NDOT May 24, 2021)

Technical Memorandum

To: Jae Pullen, NDOT

Date: May 24, 2021

From: Chad Anson, CA Group

Subject: Mt. Rose Hwy Corridor Study: Traffic Forecasting Memorandum

Copies: Mark Wooster, Chris Wright, NDOT; Vinay Virupaksha, CA Group

1. INTRODUCTION AND BACKGROUND

The Nevada Department of Transportation (NDOT) desires to perform a corridor study of the Mount Rose Highway (State Route 431/SR 431). The study will develop a Mount Rose Corridor Action Plan, providing decision makers with a guide that will define future transportation needs along SR 431. The Mount Rose Corridor Action Plan will provide the corridor vision. The study will be assessed for socioeconomic, community, land use, multi-modal, environmental, and monetary impacts of implementing a range of needed projects addressing existing and projected transportation problems.

Mount Rose Highway is a scenic byway officially named “Highway to the Sky”. It connects Lake Tahoe to the City of Reno, starting at the junction of State Route 28 and stretching 24 miles northeast to the S. Virginia Street intersection. From the foothills approaching Reno, the two-lane highway increases to four-lane highway with a center two-way left-turn lane. The functional classification of Mount Rose Highway transitions from a “Rural Minor Arterial” to an “Urban Principle Arterial-Other”. West of I-580 interchange, Mount Rose Highway connects to South Virginia Street and the Veterans Parkway roundabout via Geiger Grade Road (SR 341).

This *memorandum* explains the procedure used for the traffic forecasts. The NDOT approved *Traffic Forecasting Methodology Memorandum* has additional details on the methodology and assumptions. A review and approval by NDOT is requested before beginning the traffic forecasts.

2. PROJECT LIMITS

Mount Rose Highway from Joy Lake Road to Geiger Grade Road roundabout located in Washoe County, Reno, Nevada. Figure 1 shows the project limits and includes:

- Mount Rose Highway: Douglas Fir Drive to Geiger Grade Road
- Interchanges: I-580 and Mount Rose Highway
- Intersections:
 1. Mount Rose Highway & Joy Lake Road
 2. Mount Rose Highway & Timberline Drive/Bordeaux Drive
 3. Mount Rose Highway & Callahan Road
 4. Mount Rose Highway & Mountain Ranch Road
 5. Mount Rose Highway & Fawn Lane
 6. Mount Rose Highway & Thomas Creek Road
 7. Mount Rose Highway & Edmonton Drive

8. Mount Rose Highway & Telluride Drive
9. Mount Rose Highway & Sundance Drive/De Spain Lane
10. Mount Rose Highway & Wedge Parkway
11. Mount Rose Highway & I-580 Southbound Ramps
12. Mount Rose Highway & I-580 Northbound Ramps
13. Mount Rose Highway & Herz Boulevard
14. Mount Rose Highway & Virginia Street
15. Mount Rose Highway/Geiger Grade Road/Veterans Parkway & Whites Creek Lane/Geiger Grade Road



Figure 1: Project Limits for Traffic Forecasting

3. FORECAST SCENARIOS

2020 AM and PM existing traffic counts was collected in November 2020 and adjusted with a COVID correction factor. The percentage of heavy vehicle/truck was calculated from NDOT data and approved by the NDOT Traffic Information. Traffic forecast for AM and PM peak-hour was developed for the following scenarios:

- Existing Year 2020
- Interim Year 2025
- Design Year 2050

The 2020 traffic volumes, 2025 and 2050 forecasted volumes, and the heavy vehicle/truck percentage are included in this Traffic Forecasting Memorandum.

4. COVID CORRECTION FACTOR

The 2020 field counts collected by Silver State Traffic (SST) during the week of November 16, 2020 was reviewed (AM and PM peak period). The 2019 traffic volumes from NDOT TRINA were reviewed at all available NDOT counters within the project limits during the same AM and PM peak periods. The 2020 field counts were compared with the 2019 traffic volumes on the same segment locations. The COVID correction factor was calculated by taking the ratios of the 2019 hourly traffic volumes to the 2020 field counts. Below are the steps for various conditions;

1. If the ratio of 2019/2020 is less than or close to 1.00, the 2020 field counts will be considered as 2019 traffic data and will be applied with an approved growth rate to bring the traffic volumes to the year 2020

- If the ratio of 2019/2020 is greater than 1.00, the ratio will be applied to increase the 2020 field counts to match closer to the 2019 traffic volumes. An approved growth rate will be applied to bring the traffic volumes to the year 2020

Table 1 shows the COVID correction factors calculated for all the NDOT counter locations. Table 2 shows the correction factors applied to the intersection volumes from the specific NDOT counter.

Table 1: COVID Correction Factor

Mt. Rose Highway Corridor Study - COVID Correction Factor								
NDOT Counter	Location	2019 NDOT TRINA		2020 Field Counts		Correction Factor		Notes
		AM	PM	AM	PM	AM	PM	
310368	750 ft E of Joy Lake Rd	1,199	1,382	911	1,050	1.317	1.316	July 2020
317120 (ATR)	0.3 miles W of Callahan	1,381	1,577	1,336	1,405	1.033	1.123	
310930	0.2 miles E of Callahan	2,181	2,811	1,763	1,904	1.237	1.476	August 2020
311091	460 ft W of Sundance	3,019	3,796	2,349	2,939	1.285	1.291	
310019	370 ft W of SB off-ramp	3,603	4,056	3,157	4,077	1.141	0.995	
310136	0.2 miles W of US 395A	1,414	2,167	1,342	2,094	1.054	1.035	
Corridor Average						1.178	1.206	

I-580/Mt. Rose Highway Interchange								
310025	NB on-ramp (loop ramp)	1,138	1,352	997	1,156	1.141	1.170	August 2020 2017
310026	NB on-ramp	130	311	72	312	1.806	0.996	
310176	NB off-ramp	230	792	222	556	1.038	1.424	
310177	SB on-ramp	345	218	202	114	1.706	1.908	
310015/310014	SB off-ramp	1,296	1,607	1,075	1,246	1.205	1.289	
Interchange Average						1.379	1.357	

Peak Period Volumes: AM (7:00 to 9:00) & PM (4:00 to 6:00)
 NDOT TRINA Data is average of 3 weekdays

Table 2: Correction Factors for each Intersection

Intersection	Correction Factor from NDOT Counter
Mt Rose Hwy/Joy Lake Rd	750 ft E of Joy Lake Rd (310368)
Mt Rose Hwy/Timberline Dr-Bourdeaux Dr	
Mt Rose Hwy/Callahan Rd	0.2 miles E of Callahan (310930)
Mt Rose Hwy/Mountain Ranch Rd	
Mt Rose Hwy/Fawn Ln	
Mt Rose Hwy/Thomas Creek Rd	
Mt Rose Hwy/Edmonton Dr	460 ft W of Sundance (311091)
Mt Rose Hwy/Telluride Dr	
Mt Rose Hwy/DeSpain Ln - Sundance Dr	370 ft W of SB off-ramp (310019) for Mt. Rose. All on/off ramp correction factors for respective ramps
Mt Rose Hwy/Wedge Pkwy	
Mt Rose Hwy/I-580 SB Ramps	
Mt Rose Hwy/I-580 NB Ramps	0.2 miles W of US 395A (310136)
Mt Rose Hwy/Herz Blvd	
Mt Rose Hwy/Virginia St	
Mt Rose Hwy/Geiger Grade - Veterans Pkwy	

5. TRAFFIC FORECASTING METHODOLOGY

All traffic forecasts were developed using the methodology and guidance provided in the *NDOT Traffic Forecasting Guidelines* (2012). NDOT TRINA historical traffic data along the corridor was reviewed to determine the annual growth rate. In addition, RTC Washoe travel-demand model (TransCAD) data was reviewed and used to develop the traffic forecasts.

Table 3 shows the historical AADT of all the available NDOT TRINA counters within the project limits. There were six counters on Mount Rose Highway, five ramps at I-580 interchange and two counters on cross streets that were reviewed. In the past 10 years (2010 to 2019), there was some noticeable growth on Mount Rose Highway traffic, some of the I-580 ramps, and minimum growth on cross street traffic. As two of the I-580 ramps had traffic data only for past 5 years, the growth rates for those two ramps were calculated for respective years. Overall, an annual growth rate of 1.3% was determined from the historical AADT data.

Table 3: NDOT TRINA AADT Data

Mt. Rose Highway					
Counter	Location	2010	2015	2019	Annual Growth Rate
310368	750 ft E of Joy Lake Rd	7,300	6,500	9,000	2.1%
317120	0.3 miles W of Callahan	10,500	10,800	11,500	0.9%
310930	0.2 miles E of Callahan	13,000	12,500	15,300	1.6%
311091	460 ft W of Sundance	16,000	16,000	22,700	3.6%
310019	370 ft W of SB off-ramp	17,000	20,900	21,800	2.5%
310136	0.2 miles W of US395A	7,500	7,100	10,200	3.1%
I-580/Mt. Rose Hwy Interchange					
310025	NB on-ramp (loop ramp)	7,300	7,900	8,900	2.0%
310026	NB on-ramp	2,000	1,900	1,950	-0.3%
310176	NB off-ramp	-	1,600	2,500	9.3%
310177	SB on-ramp	-	2,100	1,650	-4.7%
310015	SB off-ramp	640	300	410	-4.4%
Cross Street					
311090	Thomas Creek	3,900	4,100	4,050	0.4%
311003	Wedge Pkwy	5,500	5,300	5,750	0.4%
Annual Overall Growth Rate					
1.3%					

ATR

As mentioned, the RTC Washoe TransCAD data was reviewed for the years 2020 and 2050 to determine the growth rate. Table 4 shows the ADT for each segments on Mount Rose Highway, and I-580 interchange ramps. The growth rates are also include in Table 4. Overall, an annual growth rate of 1.5% was determined from the TransCAD data.

Table 4: RTC Washoe TransCAD ADT Data

From	To	2020	2050	Overall Growth	Annual Growth
West End	Mt. Rose Hwy/Joy Lake Rd	6,629	13,102	98%	2.3%
Mt. Rose Hwy/Joy Lake Rd	Mt. Rose Hwy/Timberline Dr-Bordeaux Dr	10,710	20,096	88%	2.1%
Mt. Rose Hwy/Timberline Dr-Bordeaux Dr	Mt. Rose Hwy/Callahan Rd	10,743	20,165	88%	2.1%
Mt. Rose Hwy/Callahan Rd	Mt. Rose Hwy/Mountain Ranch Rd	14,368	26,095	82%	2.0%
Mt. Rose Hwy/Mountain Ranch Rd	Mt. Rose Hwy/Fawn Ln	19,491	29,276	50%	1.4%
Mt. Rose Hwy/Fawn Ln	Mt. Rose Hwy/Thomas Creek Rd	19,491	29,276	50%	1.4%
Mt. Rose Hwy/Thomas Creek Rd	Mt. Rose Hwy/Edmonton Dr	19,485	29,231	50%	1.4%
Mt. Rose Hwy/Edmonton Dr	Mt. Rose Hwy/Telluride Dr	19,485	29,231	50%	1.4%
Mt. Rose Hwy/Telluride Dr	Mt. Rose Hwy/DeSpain Ln-Sundance Dr	20,623	29,003	41%	1.1%
Mt. Rose Hwy/DeSpain Ln-Sundance Dr	Mt. Rose Hwy/Wedge Pkwy	21,957	31,449	43%	1.2%
Mt. Rose Hwy/Wedge Pkwy	Mt. Rose Hwy/I-580 Southbound Ramps	25,887	36,487	41%	1.2%
Mt. Rose Hwy/I-580 Southbound Ramps	Mt. Rose Hwy/I-580 Northbound Ramps	6,404	9,765	52%	1.4%
Mt. Rose Hwy/I-580 Northbound Ramps	Mt. Rose Hwy/Herz Blvd	7,396	11,990	62%	1.6%
Mt. Rose Hwy/Herz Blvd	Mt. Rose Hwy/Virginia St	12,231	15,504	27%	0.8%
Mt. Rose Hwy/Virginia St	Mt. Rose Hwy/Geiger Grade-Veterans Pkwy	20,649	25,380	23%	0.7%
Mt. Rose Hwy/Geiger Grade-Veterans Pkwy	East End	20,649	25,793	25%	0.7%
I-580/Mt. Rose Hwy Ramp Volumes					
NB on-ramp (loop ramp)		10,282	13,750	34%	1.0%
NB on-ramp		458	1,779	288%	4.6%
NB off-ramp		1,705	3,153	85%	2.1%
SB on-ramp		1,180	1,445	22%	0.7%
SB off-ramp		9,076	12,702	40%	1.1%
Annual Overall Growth Rate					
1.5%					

Based on the above traffic data analysis from NDOT historical data and RTC TransCAD, and coordinating with NDOT Traffic Information and NDOT Traffic Operations, an annual growth rate of 1.5% was recommended to forecast the future traffic volumes.

6. TRAFFIC VOLUMES AND FORECASTS

The 2020 traffic volumes after applying the COVID correction factor and growth rate are shown in Figure 2. Traffic forecast for 2025 and 2050 peak-hour (AM & PM) are shown in Figure 3 and 4, respectively.

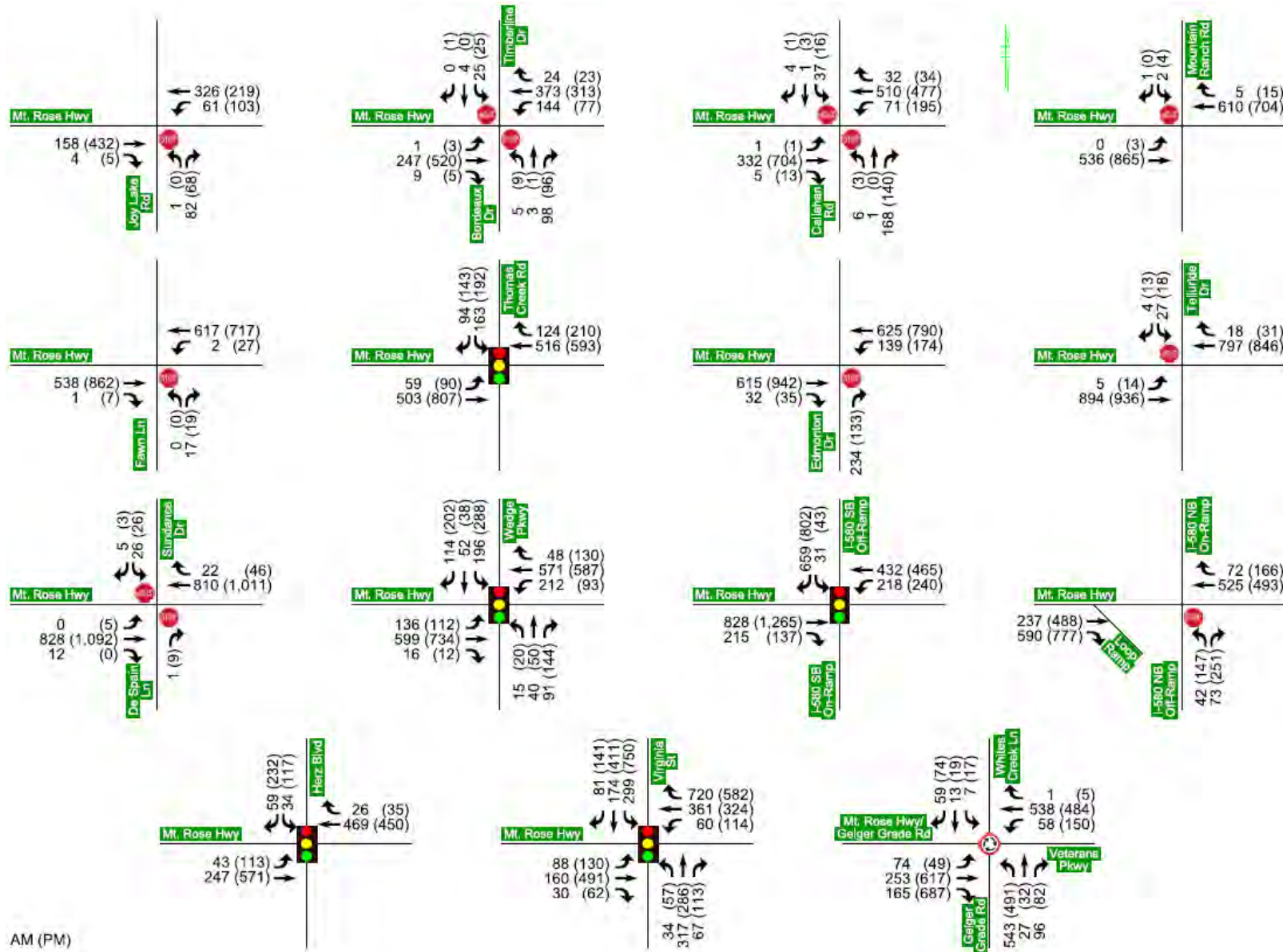


Figure 2: 2020 Peak-Hour Traffic Volumes

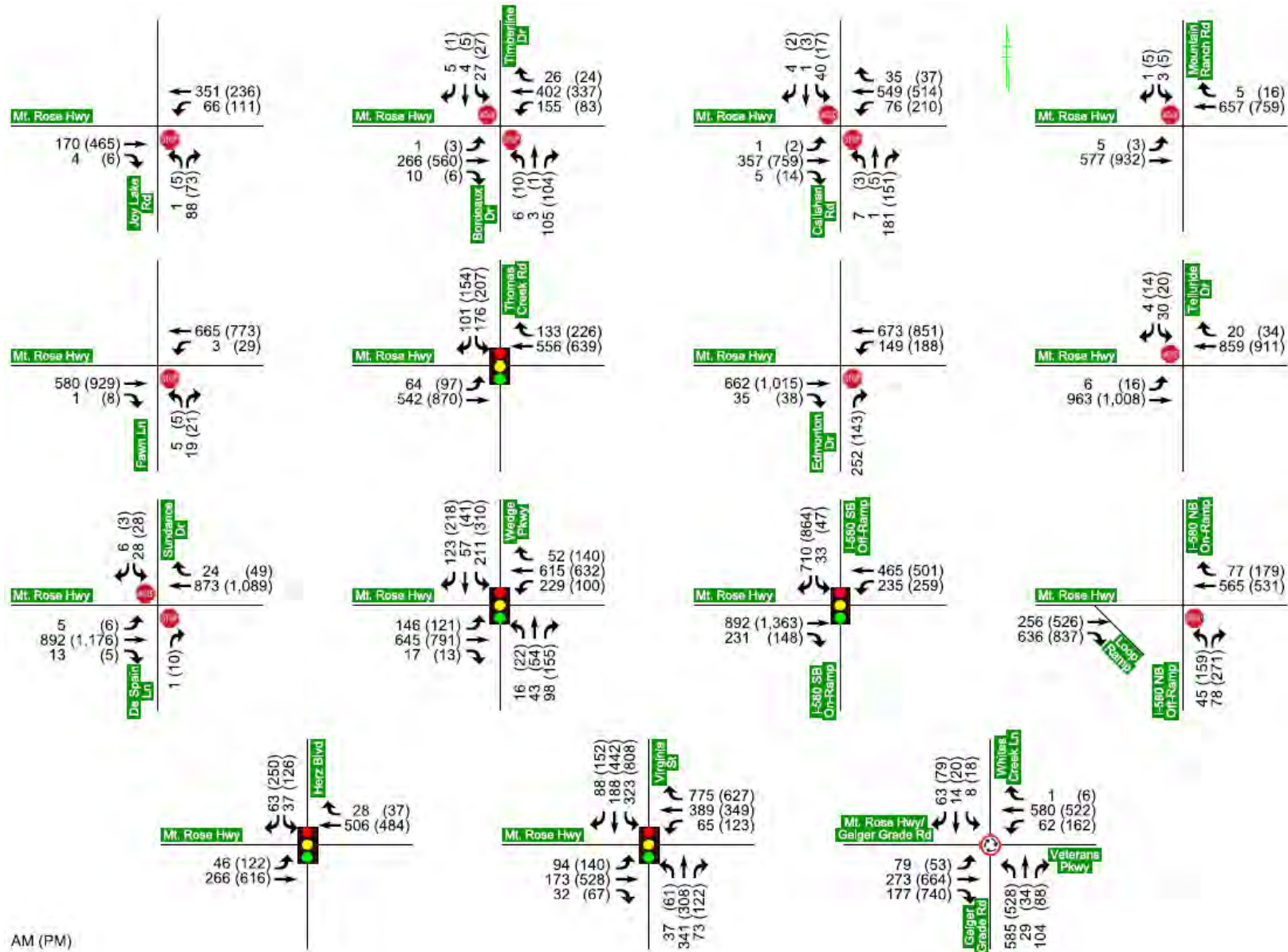


Figure 3: 2025 Peak-Hour Traffic Volumes

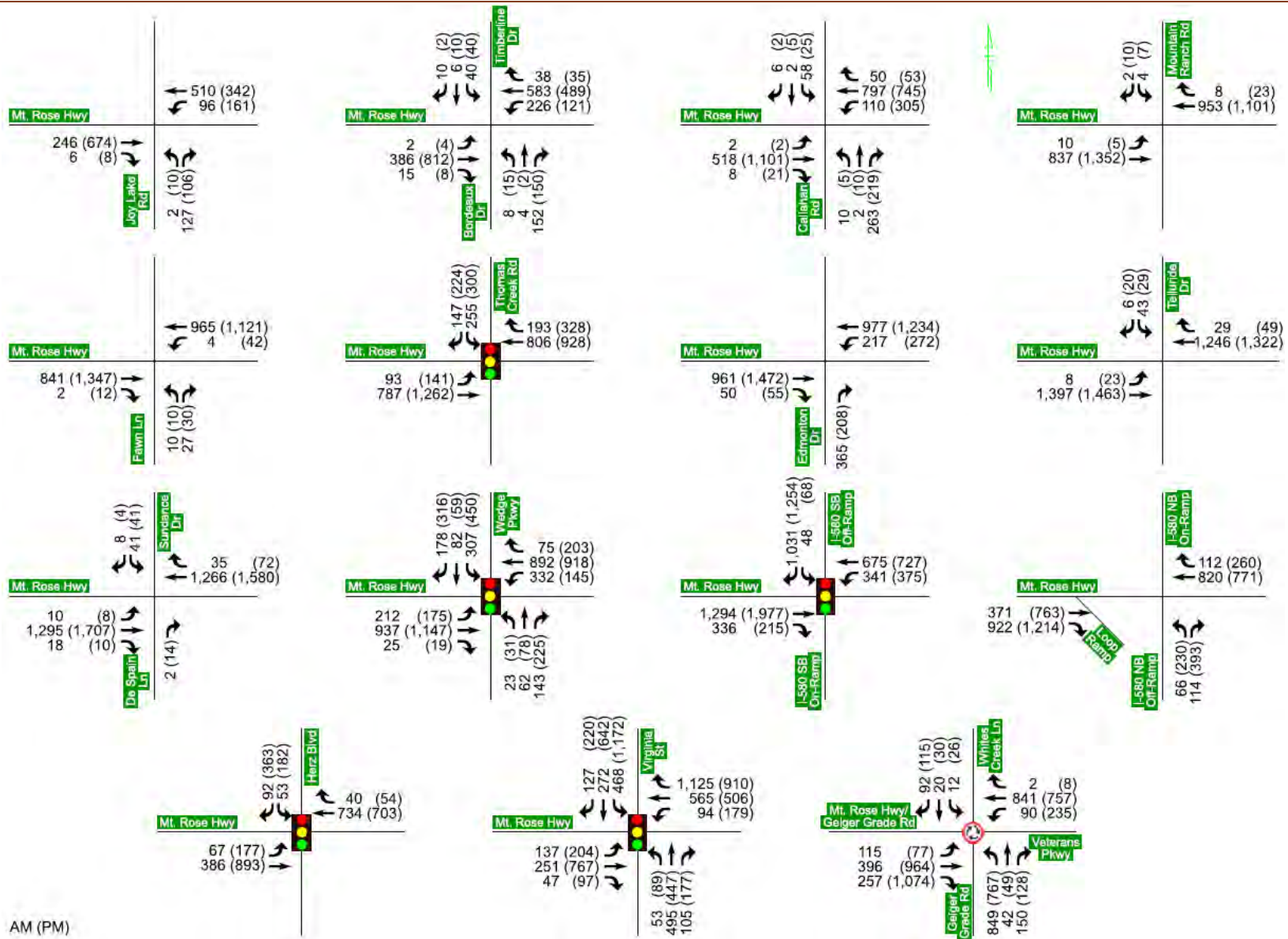


Figure 4: 2050 Peak-Hour Traffic Volumes

7. HEAVY VEHICLE/TRUCK PERCENTAGE

The 2020 field traffic counts had the vehicle classification information. The heavy vehicle/truck percentage at each intersection are shown in Table 6 for both AM and PM peak-hour. The corridor average percentage of heavy vehicle/truck from the 2020 field counts was 2.9% (AM) and 1.3% (PM). In addition, the 2019 NDOT Vehicle Classification Distribution Report was also reviewed to identify the heavy vehicle/truck percentage at/near the close proximity of the project limits. The 2017 was the latest year that the traffic data was available. The average percentage of heavy vehicle/truck from the 2017 NDOT was found to be 1.2%.

Based on the coordination with NDOT Traffic Information, a heavy vehicle/truck percentage of 3.0% was recommended as a conservative approach to be used in the traffic analysis.

Table 5: Heavy Vehicle/Truck Percentage

Intersection	2020 Field Counts		2017 NDOT TRINA	
	AM	PM		
Mt Rose Hwy/Joy Lake Rd	4.0%	1.9%		
Mt Rose Hwy/Timberline Dr-Bourdeaux Dr	3.4%	1.4%		
Mt Rose Hwy/Callahan Rd	3.4%	1.3%		
Mt Rose Hwy/Mountain Ranch Rd	3.6%	1.5%		
Mt Rose Hwy/Fawn Ln	3.9%	1.7%		
Mt Rose Hwy/Thomas Creek Rd	3.6%	1.7%		
Mt Rose Hwy/Edmonton Dr	2.7%	1.7%		
Mt Rose Hwy/Telluride Dr	2.3%	1.6%		
Mt Rose Hwy/DeSpain Ln - Sundance Dr	2.4%	1.1%		
Mt Rose Hwy/Wedge Pkwy	1.9%	0.6%		
Mt Rose Hwy/I-580 SB Ramps	1.6%	0.7%		
Mt Rose Hwy/I-580 NB Ramps	2.1%	1.1%		
Mt Rose Hwy/Herz Blvd	3.0%	1.1%		
Mt Rose Hwy/Virginia St	2.7%	1.3%		
Mt Rose Hwy/Geiger Grade - Veterans Pkwy	2.2%	1.0%		
Mt Rose Hwy (SR 28 and Mt. Rose Ski Resort)	-	-		1.2%
Corridor Average	2.9%	1.3%		1.2%

8. CONCLUSION

This memorandum summarizes the steps used for forecast, assumptions, 2020 traffic volumes, and the traffic forecast for the years 2025 and 2050. This memorandum also documents the Heavy Vehicle/Truck percentages. NDOT Traffic Information review and approval of this traffic forecasting memorandum is requested.

Appendix C

2020 Existing Conditions Synchro Output

HCM 6th TWSC
 1: Joy Lake Rd & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	158	4	61	326	1	82
Future Vol, veh/h	158	4	61	326	1	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	15	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	166	4	64	343	1	86

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	170	0	637
Stage 1	-	-	-	-	166
Stage 2	-	-	-	-	471
Critical Hdwy	-	-	4.13	-	9.43
Critical Hdwy Stg 1	-	-	-	-	8.43
Critical Hdwy Stg 2	-	-	-	-	8.43
Follow-up Hdwy	-	-	2.227	-	3.527
Pot Cap-1 Maneuver	-	-	1401	-	259
Stage 1	-	-	-	-	750
Stage 2	-	-	-	-	423
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1401	-	247
Mov Cap-2 Maneuver	-	-	-	-	335
Stage 1	-	-	-	-	750
Stage 2	-	-	-	-	404

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	335	817	-	-	1401	-
HCM Lane V/C Ratio	0.003	0.106	-	-	0.046	-
HCM Control Delay (s)	15.8	9.9	-	-	7.7	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	0	0.4	-	-	0.1	-

HCM 6th TWSC
 2: Bordeaux Dr/Timberline Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑↑	↗		↑	↗		↖	↗
Traffic Vol, veh/h	1	247	9	144	373	24	5	3	98	25	4	0
Future Vol, veh/h	1	247	9	144	373	24	5	3	98	25	4	0
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	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	300	-	600	350	-	150	-	-	25	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	266	10	155	401	26	5	3	105	27	4	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	427	0	0	266	0	0	781	1005	-	981	979	201
Stage 1	-	-	-	-	-	-	268	268	-	711	711	-
Stage 2	-	-	-	-	-	-	513	737	-	270	268	-
Critical Hdwy	4.145	-	-	4.145	-	-	7.345	6.545	-	7.345	6.545	6.945
Critical Hdwy Stg 1	-	-	-	-	-	-	6.145	5.545	-	6.545	5.545	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.545	5.545	-	6.145	5.545	-
Follow-up Hdwy	2.2285	-	-	2.2285	-	-	3.5285	4.0285	-	3.5285	4.0285	3.3285
Pot Cap-1 Maneuver	1124	-	-	1290	-	-	297	239	0	215	248	804
Stage 1	-	-	-	-	-	-	734	685	0	389	433	-
Stage 2	-	-	-	-	-	-	511	422	0	732	685	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1124	-	-	1290	-	-	266	210	-	193	218	804
Mov Cap-2 Maneuver	-	-	-	-	-	-	266	210	-	193	218	-
Stage 1	-	-	-	-	-	-	733	684	-	389	381	-
Stage 2	-	-	-	-	-	-	445	371	-	728	684	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.2			22.4			26.8		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	210	-	1124	-	-	1290	-	-	196	-
HCM Lane V/C Ratio	0.015	-	0.001	-	-	0.12	-	-	0.159	-
HCM Control Delay (s)	22.4	0	8.2	-	-	8.2	-	-	26.8	0
HCM Lane LOS		C	A	A	-	A	-	-	D	A
HCM 95th %tile Q(veh)	0	-	0	-	-	0.4	-	-	0.6	-

HCM 6th TWSC
 3: Callahan Rd & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖	↖	↖	↖	↖
Traffic Vol, veh/h	1	332	5	71	510	32	6	1	168	37	1	4
Future Vol, veh/h	1	332	5	71	510	32	6	1	168	37	1	4
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	300	-	100	300	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-5	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	339	5	72	520	33	6	1	171	38	1	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	553	0	0	344	0	0	746	1038	170	836	1010	260
Stage 1	-	-	-	-	-	-	341	341	-	664	664	-
Stage 2	-	-	-	-	-	-	405	697	-	172	346	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	1006	-	-	1205	-	-	300	228	841	258	237	736
Stage 1	-	-	-	-	-	-	645	635	-	414	454	-
Stage 2	-	-	-	-	-	-	591	438	-	810	631	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1006	-	-	1205	-	-	284	214	841	195	223	736
Mov Cap-2 Maneuver	-	-	-	-	-	-	284	214	-	195	223	-
Stage 1	-	-	-	-	-	-	644	634	-	414	427	-
Stage 2	-	-	-	-	-	-	551	412	-	643	630	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.9			10.8			25.9		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	284	827	1006	-	-	1205	-	-	195	504
HCM Lane V/C Ratio	0.022	0.209	0.001	-	-	0.06	-	-	0.194	0.01
HCM Control Delay (s)	18	10.5	8.6	-	-	8.2	-	-	27.8	12.2
HCM Lane LOS	C	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0.8	0	-	-	0.2	-	-	0.7	0

HCM 6th TWSC
 4: Mt. Rose Hwy & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↵	↑↑	↑↑		↵	
Traffic Vol, veh/h	0	536	610	5	2	1
Future Vol, veh/h	0	536	610	5	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	553	629	5	2	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	634	0	-	0	909
Stage 1	-	-	-	-	632
Stage 2	-	-	-	-	277
Critical Hdwy	4.16	-	-	-	6.86
Critical Hdwy Stg 1	-	-	-	-	5.86
Critical Hdwy Stg 2	-	-	-	-	5.86
Follow-up Hdwy	2.23	-	-	-	3.53
Pot Cap-1 Maneuver	938	-	-	-	273
Stage 1	-	-	-	-	489
Stage 2	-	-	-	-	742
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	938	-	-	-	273
Mov Cap-2 Maneuver	-	-	-	-	384
Stage 1	-	-	-	-	489
Stage 2	-	-	-	-	742

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	938	-	-	-	449
HCM Lane V/C Ratio	-	-	-	-	0.007
HCM Control Delay (s)	0	-	-	-	13.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC
5: Fawn Ln & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Vol, veh/h	538	1	2	617	0	17
Future Vol, veh/h	538	1	2	617	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-5	-	-	5	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	555	1	2	636	0	18

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	556	0	878 278
Stage 1	-	-	-	-	556 -
Stage 2	-	-	-	-	322 -
Critical Hdwy	-	-	4.16	-	6.86 6.96
Critical Hdwy Stg 1	-	-	-	-	5.86 -
Critical Hdwy Stg 2	-	-	-	-	5.86 -
Follow-up Hdwy	-	-	2.23	-	3.53 3.33
Pot Cap-1 Maneuver	-	-	1004	-	285 716
Stage 1	-	-	-	-	535 -
Stage 2	-	-	-	-	704 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1004	-	284 716
Mov Cap-2 Maneuver	-	-	-	-	403 -
Stage 1	-	-	-	-	535 -
Stage 2	-	-	-	-	703 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	716	-	-	1004	-
HCM Lane V/C Ratio	-	0.024	-	-	0.002	-
HCM Control Delay (s)	0	10.2	-	-	8.6	-
HCM Lane LOS	A	B	-	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-

HCM 6th Signalized Intersection Summary
 6: Mt. Rose Hwy & Thomas Creek Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↘	↑↑	↑↑	↗	↘↗	↗	
Traffic Volume (veh/h)	59	503	516	124	163	94	
Future Volume (veh/h)	59	503	516	124	163	94	
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	2052	2052	1567	1567	1856	1856	
Adj Flow Rate, veh/h	61	524	538	97	170	73	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	123	2010	908	405	424	194	
Arrive On Green	0.06	0.52	0.30	0.30	0.12	0.12	
Sat Flow, veh/h	1954	4001	3056	1328	3428	1572	
Grp Volume(v), veh/h	61	524	538	97	170	73	
Grp Sat Flow(s),veh/h/ln	1954	1949	1489	1328	1714	1572	
Q Serve(g_s), s	1.1	2.8	5.7	2.0	1.7	1.6	
Cycle Q Clear(g_c), s	1.1	2.8	5.7	2.0	1.7	1.6	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	123	2010	908	405	424	194	
V/C Ratio(X)	0.50	0.26	0.59	0.24	0.40	0.38	
Avail Cap(c_a), veh/h	1551	8624	3782	1687	4097	1879	
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	1.00	
Uniform Delay (d), s/veh	16.8	5.0	11.0	9.7	15.0	15.0	
Incr Delay (d2), s/veh	3.1	0.1	0.6	0.3	0.6	1.2	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.5	0.3	1.1	0.4	0.6	1.5	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	19.9	5.1	11.6	10.0	15.6	16.2	
LnGrp LOS	B	A	B	A	B	B	
Approach Vol, veh/h		585	635		243		
Approach Delay, s/veh		6.6	11.3		15.8		
Approach LOS		A	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				27.0	10.2	7.8	19.1
Change Period (Y+Rc), s				7.8	5.6	5.5	7.8
Max Green Setting (Gmax), s				82.2	44.4	29.5	47.2
Max Q Clear Time (g_c+I1), s				4.8	3.7	3.1	7.7
Green Ext Time (p_c), s				3.3	0.9	0.1	3.6
Intersection Summary							
HCM 6th Ctrl Delay			10.2				
HCM 6th LOS			B				

HCM 6th TWSC
7: Edmonton Dr & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	2.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑		↑
Traffic Vol, veh/h	615	32	139	625	0	234
Future Vol, veh/h	615	32	139	625	0	234
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	650	300	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-7	-	-	7	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	699	36	158	710	0	266

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	735	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.16	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.23	-	-
Pot Cap-1 Maneuver	-	-	860	-	0
Stage 1	-	-	-	-	0
Stage 2	-	-	-	-	0
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	860	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	643	-	-	860	-
HCM Lane V/C Ratio	0.414	-	-	0.184	-
HCM Control Delay (s)	14.5	-	-	10.1	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	2	-	-	0.7	-

HCM 6th TWSC
 8: Mt. Rose Hwy & Telluride Dr

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗↗	↗↗	↘	↘	↘
Traffic Vol, veh/h	5	894	797	18	27	4
Future Vol, veh/h	5	894	797	18	27	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	25	0	25
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	88	80	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	1118	906	20	31	5

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	926	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.16	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.23	-	-
Pot Cap-1 Maneuver	728	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	728	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	728	-	-	-	241	551
HCM Lane V/C Ratio	0.008	-	-	-	0.127	0.008
HCM Control Delay (s)	10	-	-	-	22.1	11.6
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↗		↗↗	↗				↗	↘	↗
Traffic Vol, veh/h	0	828	12	0	810	22	0	0	1	26	0	5
Future Vol, veh/h	0	828	12	0	810	22	0	0	1	26	0	5
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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	300	-	1000	-	-	50	-	-	0	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	890	13	0	871	24	0	0	1	28	0	5

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	895	0	-	-	-	0	-	-	445	1316	-	436
Stage 1	-	-	-	-	-	-	-	-	-	871	-	-
Stage 2	-	-	-	-	-	-	-	-	-	445	-	-
Critical Hdwy	4.16	-	-	-	-	-	-	-	6.96	7.56	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.56	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.56	-	-
Follow-up Hdwy	2.23	-	-	-	-	-	-	-	3.33	3.53	-	3.33
Pot Cap-1 Maneuver	748	-	0	0	-	-	0	0	558	114	0	565
Stage 1	-	-	0	0	-	-	0	0	-	310	0	-
Stage 2	-	-	0	0	-	-	0	0	-	559	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	748	-	-	-	-	-	-	-	558	114	-	565
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	228	-	-
Stage 1	-	-	-	-	-	-	-	-	-	310	-	-
Stage 2	-	-	-	-	-	-	-	-	-	558	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		0		11.5		21.1	
HCM LOS					B		C	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	558	748	-	-	-	228	565
HCM Lane V/C Ratio	0.002	-	-	-	-	0.123	0.01
HCM Control Delay (s)	11.5	0	-	-	-	23	11.4
HCM Lane LOS		B	A	-	-	C	B
HCM 95th %tile Q(veh)		0	0	-	-	0.4	0

HCM 6th Signalized Intersection Summary

10: Wedge Pkwy & Mt. Rose Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↔		↔↔	↑↑	↔	↔	↑	↔	↔	↑	↔
Traffic Volume (veh/h)	136	599	16	212	571	48	15	40	91	196	52	114
Future Volume (veh/h)	136	599	16	212	571	48	15	40	91	196	52	114
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	149	658	16	233	627	40	16	44	75	215	57	93
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	332	1497	36	340	907	405	41	178	151	272	408	346
Arrive On Green	0.09	0.27	0.27	0.10	0.26	0.26	0.02	0.10	0.10	0.15	0.22	0.22
Sat Flow, veh/h	3718	5517	134	3330	3425	1528	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	149	436	238	233	627	40	16	44	75	215	57	93
Grp Sat Flow(s),veh/h/ln	1859	1831	1988	1665	1712	1528	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	2.4	6.1	6.1	4.2	10.2	1.2	0.6	1.4	2.8	7.3	1.5	3.0
Cycle Q Clear(g_c), s	2.4	6.1	6.1	4.2	10.2	1.2	0.6	1.4	2.8	7.3	1.5	3.0
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	332	994	540	340	907	405	41	178	151	272	408	346
V/C Ratio(X)	0.45	0.44	0.44	0.69	0.69	0.10	0.39	0.25	0.50	0.79	0.14	0.27
Avail Cap(c_a), veh/h	461	2188	1188	531	2184	974	657	1318	1117	726	1395	1183
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	18.7	18.7	26.9	20.5	17.2	29.9	26.0	26.6	25.3	19.5	20.1
Incr Delay (d2), s/veh	1.0	0.3	0.6	2.5	1.0	0.1	5.9	0.7	2.5	5.1	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.2	2.5	1.6	3.6	0.4	0.3	0.6	1.1	3.2	0.6	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.8	19.0	19.3	29.4	21.5	17.3	35.8	26.7	29.2	30.4	19.6	20.5
LnGrp LOS	C	B	B	C	C	B	D	C	C	C	B	C
Approach Vol, veh/h		823			900			135			365	
Approach Delay, s/veh		20.7			23.4			29.2			26.2	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.1	11.9	11.4	24.8	6.3	19.6	11.8	24.3				
Change Period (Y+Rc), s	4.5	5.9	5.1	7.9	4.9	* 5.9	6.3	* 7.9				
Max Green Setting (Gmax), s	25.5	44.1	9.9	37.1	23.1	* 47	7.7	* 40				
Max Q Clear Time (g_c+I1), s	9.3	4.8	6.2	8.1	2.6	5.0	4.4	12.2				
Green Ext Time (p_c), s	0.5	0.5	0.3	4.0	0.0	0.6	0.1	4.2				
Intersection Summary												
HCM 6th Ctrl Delay			23.2									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↘↘
Traffic Volume (vph)	0	237	0	218	432	0	0	0	0	31	0	659
Future Volume (vph)	0	237	0	218	432	0	0	0	0	31	0	659
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Flt		1.00		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	269	0	248	491	0	0	0	0	35	0	749
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	269	0	248	491	0	0	0	0	35	0	749
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		15.3		13.9	36.7					8.9		59.2
Effective Green, g (s)		15.3		13.9	36.7					8.9		59.2
Actuated g/C Ratio		0.26		0.23	0.62					0.15		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		919		405	2140					263		2760
v/s Ratio Prot		0.08		c0.14	0.14					0.02		
v/s Ratio Perm												c0.27
v/c Ratio		0.29		0.61	0.23					0.13		0.27
Uniform Delay, d1		17.6		20.2	5.0					21.8		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d2		0.2		2.7	0.1					0.2		0.2
Delay (s)		17.8		23.0	5.0					22.0		0.2
Level of Service		B		C	A					C		A
Approach Delay (s)		17.8			11.1			0.0			1.2	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			7.8			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			59.2			Sum of lost time (s)			21.1			
Intersection Capacity Utilization			36.2%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑		
Traffic Volume (vph)	0	590	0	0	0	0	0	0	0	0	218	0	
Future Volume (vph)	0	590	0	0	0	0	0	0	0	0	218	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Grade (%)		-3%			0%			0%			0%		
Total Lost time (s)		6.9									4.0		
Lane Util. Factor		0.95									1.00		
Frt		1.00									1.00		
Flt Protected		1.00									1.00		
Satd. Flow (prot)		3557									1845		
Flt Permitted		1.00									1.00		
Satd. Flow (perm)		3557									1845		
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	
Adj. Flow (vph)	0	670	0	0	0	0	0	0	0	0	248	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	670	0	0	0	0	0	0	0	0	248	0	
Turn Type		NA									NA		
Protected Phases		4 6!									Free!		
Permitted Phases													
Actuated Green, G (s)		31.1									59.2		
Effective Green, g (s)		31.1									59.2		
Actuated g/C Ratio		0.53									1.00		
Clearance Time (s)													
Vehicle Extension (s)													
Lane Grp Cap (vph)		1868									1845		
v/s Ratio Prot		c0.19									0.13		
v/s Ratio Perm													
v/c Ratio		0.36									0.13		
Uniform Delay, d1		8.2									0.0		
Progression Factor		1.00									1.00		
Incremental Delay, d2		0.1									0.1		
Delay (s)		8.3									0.1		
Level of Service		A									A		
Approach Delay (s)		8.3			0.0			0.0			0.1		
Approach LOS		A			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			6.1									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.37										
Actuated Cycle Length (s)			59.2									Sum of lost time (s)	21.1
Intersection Capacity Utilization			36.9%									ICU Level of Service	A
Analysis Period (min)			15										
! Phase conflict between lane groups.													
c Critical Lane Group													

HCM 6th TWSC

13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑		↑			
Traffic Vol, veh/h	0	264	0	0	525	72	42	0	73	0	0	0
Future Vol, veh/h	0	264	0	0	525	72	42	0	73	0	0	0
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	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	500	-	0	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	287	0	0	571	78	46	0	79	0	0	0

Major/Minor	Major1		Major2		Minor1				
Conflicting Flow All	-	0	-	-	0	573	-	144	
Stage 1	-	-	-	-	-	287	-	-	
Stage 2	-	-	-	-	-	286	-	-	
Critical Hdwy	-	-	-	-	-	6.86	-	6.96	
Critical Hdwy Stg 1	-	-	-	-	-	5.86	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	5.86	-	-	
Follow-up Hdwy	-	-	-	-	-	3.53	-	3.33	
Pot Cap-1 Maneuver	0	-	0	0	-	0	447	0	874
Stage 1	0	-	0	0	-	0	733	0	-
Stage 2	0	-	0	0	-	0	734	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	447	0	874
Mov Cap-2 Maneuver	-	-	-	-	-	-	447	0	-
Stage 1	-	-	-	-	-	-	733	0	-
Stage 2	-	-	-	-	-	-	734	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	447	874	-	-
HCM Lane V/C Ratio	0.102	0.091	-	-
HCM Control Delay (s)	14	9.5	-	-
HCM Lane LOS	B	A	-	-
HCM 95th %tile Q(veh)	0.3	0.3	-	-

HCM 6th Signalized Intersection Summary
 14: Mt Rose Highway/Mt. Rose Hwy & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↖↗	↑↑	↑↑	↖	↖↗	↖	
Traffic Volume (veh/h)	43	247	469	26	34	59	
Future Volume (veh/h)	43	247	469	26	34	59	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	45	260	494	21	36	46	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	150	2029	1052	469	333	153	
Arrive On Green	0.04	0.54	0.31	0.31	0.10	0.10	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	45	260	494	21	36	46	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	0.4	1.1	3.8	0.3	0.3	0.9	
Cycle Q Clear(g_c), s	0.4	1.1	3.8	0.3	0.3	0.9	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	150	2029	1052	469	333	153	
V/C Ratio(X)	0.30	0.13	0.47	0.04	0.11	0.30	
Avail Cap(c_a), veh/h	2762	10961	6745	3008	3827	1755	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	14.8	3.6	8.8	7.6	13.1	13.4	
Incr Delay (d2), s/veh	1.1	0.0	0.3	0.0	0.1	1.1	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.8	0.0	0.1	0.0	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	15.9	3.6	9.1	7.6	13.2	14.4	
LnGrp LOS	B	A	A	A	B	B	
Approach Vol, veh/h		305	515		82		
Approach Delay, s/veh		5.4	9.0		13.9		
Approach LOS		A	A		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				24.2	7.6	7.2	17.0
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				3.1	2.9	2.4	5.8
Green Ext Time (p_c), s				1.6	0.2	0.1	3.4
Intersection Summary							
HCM 6th Ctrl Delay			8.3				
HCM 6th LOS			A				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt. Rose Hwy/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↖	↖	↕	↖	↖↗	↕	↖	↖↗	↕	↖
Traffic Volume (veh/h)	88	160	30	60	361	720	34	317	67	299	174	81
Future Volume (veh/h)	88	160	30	60	361	720	34	317	67	299	174	81
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	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	96	174	0	65	392	0	37	345	0	325	189	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	188	737		82	592		103	1167		468	1722	
Arrive On Green	0.05	0.19	0.00	0.05	0.18	0.00	0.03	0.23	0.00	0.14	0.34	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	96	174	0	65	392	0	37	345	0	325	189	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	1.6	2.5	0.0	2.5	7.1	0.0	0.7	3.7	0.0	5.9	1.7	0.0
Cycle Q Clear(g_c), s	1.6	2.5	0.0	2.5	7.1	0.0	0.7	3.7	0.0	5.9	1.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	737		82	592		103	1167		468	1722	
V/C Ratio(X)	0.51	0.24		0.79	0.66		0.36	0.30		0.69	0.11	
Avail Cap(c_a), veh/h	1085	2238		513	2015		1001	2155		1517	2949	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.1	22.2	0.0	30.6	25.0	0.0	31.0	20.7	0.0	26.8	14.7	0.0
Incr Delay (d2), s/veh	2.1	0.2	0.0	15.7	1.3	0.0	2.1	0.1	0.0	1.9	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	0.7	1.0	0.0	1.3	2.6	0.0	0.3	1.3	0.0	2.2	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	22.4	0.0	46.3	26.2	0.0	33.1	20.8	0.0	28.7	14.8	0.0
LnGrp LOS	C	C		D	C		C	C		C	B	
Approach Vol, veh/h		270	A		457	A		382	A		514	A
Approach Delay, s/veh		25.9			29.1			22.0			23.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.1	22.3	8.3	19.4	8.0	29.4	9.3	18.4				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	7.9	5.7	4.5	4.5	2.7	3.7	3.6	9.1				
Green Ext Time (p_c), s	1.0	1.9	0.1	1.0	0.1	1.1	0.2	2.4				
Intersection Summary												
HCM 6th Ctrl Delay			25.1									
HCM 6th LOS			C									

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	9.0							
Intersection LOS	A							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	560		678		757		90	
Demand Flow Rate, veh/h	578		698		780		92	
Vehicles Circulating, veh/h	91		755		392		1333	
Vehicles Exiting, veh/h	1334		417		277		120	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	5.3		12.6		8.4		11.1	
Approach LOS	A		B		A		B	
Lane	Left	Right	Left	Right	Left	Right	Left	
Designated Moves	LTR	R	LT	TR	L	LTR	LTR	
Assumed Moves	LT	R	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.664	0.336	0.470	0.530	0.529	0.471	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	384	194	328	370	413	367	92	
Cap Entry Lane, veh/h	1241	1314	674	747	941	1018	457	
Entry HV Adj Factor	0.970	0.969	0.971	0.971	0.972	0.970	0.974	
Flow Entry, veh/h	372	188	319	359	401	356	90	
Cap Entry, veh/h	1204	1274	655	726	914	987	445	
V/C Ratio	0.309	0.148	0.487	0.495	0.439	0.361	0.201	
Control Delay, s/veh	5.9	4.1	13.0	12.2	9.2	7.5	11.1	
LOS	A	A	B	B	A	A	B	
95th %tile Queue, veh	1	1	3	3	2	2	1	

HCM 6th TWSC
 1: Joy Lake Rd & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	432	5	103	219	0	68
Future Vol, veh/h	432	5	103	219	0	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	15	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	527	6	126	267	0	83

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	533	0	1046 527
Stage 1	-	-	-	-	527 -
Stage 2	-	-	-	-	519 -
Critical Hdwy	-	-	4.13	-	9.43 7.73
Critical Hdwy Stg 1	-	-	-	-	8.43 -
Critical Hdwy Stg 2	-	-	-	-	8.43 -
Follow-up Hdwy	-	-	2.227	-	3.527 3.327
Pot Cap-1 Maneuver	-	-	1030	-	105 441
Stage 1	-	-	-	-	380 -
Stage 2	-	-	-	-	386 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1030	-	92 441
Mov Cap-2 Maneuver	-	-	-	-	205 -
Stage 1	-	-	-	-	380 -
Stage 2	-	-	-	-	339 -

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	441	-	-	1030	-
HCM Lane V/C Ratio	-	0.188	-	-	0.122	-
HCM Control Delay (s)	0	15	-	-	9	-
HCM Lane LOS	A	C	-	-	A	-
HCM 95th %tile Q(veh)	-	0.7	-	-	0.4	-

HCM 6th TWSC
 2: Bordeaux Dr/Timberline Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑↑	↗		↑	↗		↖	↗
Traffic Vol, veh/h	3	520	5	77	313	23	9	1	96	25	0	1
Future Vol, veh/h	3	520	5	77	313	23	9	1	96	25	0	1
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	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	300	-	600	350	-	150	-	-	25	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	634	6	94	382	28	11	1	117	30	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	410	0	0	634	0	0	1021	1240	-	1213	1212	191
Stage 1	-	-	-	-	-	-	642	642	-	570	570	-
Stage 2	-	-	-	-	-	-	379	598	-	643	642	-
Critical Hdwy	4.145	-	-	4.145	-	-	7.345	6.545	-	7.345	6.545	6.945
Critical Hdwy Stg 1	-	-	-	-	-	-	6.145	5.545	-	6.545	5.545	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.545	5.545	-	6.145	5.545	-
Follow-up Hdwy	2.2285	-	-	2.2285	-	-	3.5285	4.0285	-	3.5285	4.0285	3.3285
Pot Cap-1 Maneuver	1141	-	-	941	-	-	201	173	0	147	180	816
Stage 1	-	-	-	-	-	-	459	466	0	472	502	-
Stage 2	-	-	-	-	-	-	613	488	0	459	466	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1141	-	-	941	-	-	185	155	-	135	161	816
Mov Cap-2 Maneuver	-	-	-	-	-	-	185	155	-	135	161	-
Stage 1	-	-	-	-	-	-	457	464	-	470	452	-
Stage 2	-	-	-	-	-	-	551	439	-	456	464	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.7			28.4			38.2		
HCM LOS							D			E		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	155	-	1141	-	-	941	-	-	135	816
HCM Lane V/C Ratio	0.008	-	0.003	-	-	0.1	-	-	0.226	0.001
HCM Control Delay (s)	28.4	0	8.2	-	-	9.2	-	-	39.3	9.4
HCM Lane LOS		D	A	A	-	A	-	-	E	A
HCM 95th %tile Q(veh)	0	-	0	-	-	0.3	-	-	0.8	0

HCM 6th TWSC
 3: Callahan Rd & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖	↖	↖	↖	↖
Traffic Vol, veh/h	1	704	13	195	477	34	3	0	140	16	3	1
Future Vol, veh/h	1	704	13	195	477	34	3	0	140	16	3	1
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	300	-	100	300	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-5	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	848	16	235	575	41	4	0	169	19	4	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	616	0	0	864	0	0	1610	1936	424	1471	1911	288
Stage 1	-	-	-	-	-	-	850	850	-	1045	1045	-
Stage 2	-	-	-	-	-	-	760	1086	-	426	866	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	953	-	-	768	-	-	69	64	576	88	67	706
Stage 1	-	-	-	-	-	-	319	373	-	243	302	-
Stage 2	-	-	-	-	-	-	362	288	-	574	366	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	953	-	-	768	-	-	50	44	576	47	46	706
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	44	-	47	46	-
Stage 1	-	-	-	-	-	-	319	373	-	243	210	-
Stage 2	-	-	-	-	-	-	246	200	-	405	366	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.2			15.2			115.7		
HCM LOS							C			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	50	576	953	-	-	768	-	-	47	60
HCM Lane V/C Ratio	0.072	0.293	0.001	-	-	0.306	-	-	0.41	0.08
HCM Control Delay (s)	82.5	13.8	8.8	-	-	11.7	-	-	127.1	70.2
HCM Lane LOS	F	B	A	-	-	B	-	-	F	F
HCM 95th %tile Q(veh)	0.2	1.2	0	-	-	1.3	-	-	1.5	0.3

HCM 6th TWSC
 4: Mt. Rose Hwy & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑		↘	
Traffic Vol, veh/h	3	865	704	15	4	0
Future Vol, veh/h	3	865	704	15	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	4	1042	848	18	5	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	866	0	-	0	1386 433
Stage 1	-	-	-	-	857 -
Stage 2	-	-	-	-	529 -
Critical Hdwy	4.16	-	-	-	6.86 6.96
Critical Hdwy Stg 1	-	-	-	-	5.86 -
Critical Hdwy Stg 2	-	-	-	-	5.86 -
Follow-up Hdwy	2.23	-	-	-	3.53 3.33
Pot Cap-1 Maneuver	767	-	-	-	133 568
Stage 1	-	-	-	-	374 -
Stage 2	-	-	-	-	553 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	767	-	-	-	132 568
Mov Cap-2 Maneuver	-	-	-	-	260 -
Stage 1	-	-	-	-	372 -
Stage 2	-	-	-	-	553 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	767	-	-	-	260
HCM Lane V/C Ratio	0.005	-	-	-	0.019
HCM Control Delay (s)	9.7	-	-	-	19.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC
5: Fawn Ln & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Vol, veh/h	862	7	27	717	0	19
Future Vol, veh/h	862	7	27	717	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-5	-	-	5	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1026	8	32	854	0	23

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1034	0	1521
Stage 1	-	-	-	-	1030
Stage 2	-	-	-	-	491
Critical Hdwy	-	-	4.16	-	6.86
Critical Hdwy Stg 1	-	-	-	-	5.86
Critical Hdwy Stg 2	-	-	-	-	5.86
Follow-up Hdwy	-	-	2.23	-	3.53
Pot Cap-1 Maneuver	-	-	662	-	108
Stage 1	-	-	-	-	303
Stage 2	-	-	-	-	578
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	662	-	103
Mov Cap-2 Maneuver	-	-	-	-	220
Stage 1	-	-	-	-	303
Stage 2	-	-	-	-	550

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	501	-	-	662	-
HCM Lane V/C Ratio	-	0.045	-	-	0.049	-
HCM Control Delay (s)	0	12.5	-	-	10.7	-
HCM Lane LOS	A	B	-	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-	-	0.2	-

HCM 6th Signalized Intersection Summary

6: Mt. Rose Hwy & Thomas Creek Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↖	↑↑	↑↑	↗	↖↗	↖	
Traffic Volume (veh/h)	90	807	593	210	192	143	
Future Volume (veh/h)	90	807	593	210	192	143	
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	2052	2052	1567	1567	1856	1856	
Adj Flow Rate, veh/h	102	917	674	179	218	121	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	158	2159	1037	463	489	224	
Arrive On Green	0.08	0.55	0.35	0.35	0.14	0.14	
Sat Flow, veh/h	1954	4001	3056	1328	3428	1572	
Grp Volume(v), veh/h	102	917	674	179	218	121	
Grp Sat Flow(s),veh/h/ln	1954	1949	1489	1328	1714	1572	
Q Serve(g_s), s	2.2	6.1	8.4	4.5	2.6	3.2	
Cycle Q Clear(g_c), s	2.2	6.1	8.4	4.5	2.6	3.2	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	158	2159	1037	463	489	224	
V/C Ratio(X)	0.65	0.42	0.65	0.39	0.45	0.54	
Avail Cap(c_a), veh/h	1306	7259	3184	1420	3448	1582	
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	1.00	
Uniform Delay (d), s/veh	19.7	5.7	12.1	10.8	17.3	17.6	
Incr Delay (d2), s/veh	4.4	0.1	0.7	0.5	0.6	2.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.0	0.9	1.8	0.9	1.0	0.1	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	24.0	5.9	12.8	11.4	18.0	19.6	
LnGrp LOS	C	A	B	B	B	B	
Approach Vol, veh/h		1019	853		339		
Approach Delay, s/veh		7.7	12.5		18.5		
Approach LOS		A	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				32.2	11.9	9.1	23.2
Change Period (Y+Rc), s				7.8	5.6	5.5	7.8
Max Green Setting (Gmax), s				82.2	44.4	29.5	47.2
Max Q Clear Time (g_c+I1), s				8.1	5.2	4.2	10.4
Green Ext Time (p_c), s				6.6	1.2	0.2	5.0
Intersection Summary							
HCM 6th Ctrl Delay			11.2				
HCM 6th LOS			B				

HCM 6th TWSC
7: Edmonton Dr & Mt. Rose Hwy

Intersection

Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		↑
Traffic Vol, veh/h	942	35	174	790	0	133
Future Vol, veh/h	942	35	174	790	0	133
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	650	300	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-7	-	-	7	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1024	38	189	859	0	145

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1062	0	- 512
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.16	-	- 6.96
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.23	-	- 3.33
Pot Cap-1 Maneuver	-	-	646	-	0 504
Stage 1	-	-	-	-	0 -
Stage 2	-	-	-	-	0 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	646	-	- 504
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	504	-	-	646	-
HCM Lane V/C Ratio	0.287	-	-	0.293	-
HCM Control Delay (s)	15	-	-	12.9	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	1.2	-	-	1.2	-

HCM 6th TWSC
 8: Mt. Rose Hwy & Telluride Dr

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗↗	↗↗	↘	↘	↘
Traffic Vol, veh/h	14	936	846	31	18	13
Future Vol, veh/h	14	936	846	31	18	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	25	0	25
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	16	1052	951	35	20	15

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	986	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.16	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.23	-	-
Pot Cap-1 Maneuver	690	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	690	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	17.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	690	-	-	-	230	532
HCM Lane V/C Ratio	0.023	-	-	-	0.088	0.027
HCM Control Delay (s)	10.3	-	-	-	22.2	12
HCM Lane LOS	B	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3	0.1

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗		↑↑	↗				↗	↘	↗
Traffic Vol, veh/h	5	1092	0	0	1011	46	0	0	9	26	0	3
Future Vol, veh/h	5	1092	0	0	1011	46	0	0	9	26	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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	300	-	1000	-	-	50	-	-	0	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	1126	0	0	1042	47	0	0	9	27	0	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1089	0	-	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.16	-	-	6.96
Critical Hdwy Stg 1	-	-	-	6.56
Critical Hdwy Stg 2	-	-	-	6.56
Follow-up Hdwy	2.23	-	-	3.33
Pot Cap-1 Maneuver	631	0	0	467
Stage 1	-	0	0	244
Stage 2	-	0	0	469
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	631	-	-	467
Mov Cap-2 Maneuver	-	-	-	171
Stage 1	-	-	-	242
Stage 2	-	-	-	456

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	12.9	28.1
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	467	631	-	-	-	171	498
HCM Lane V/C Ratio	0.02	0.008	-	-	-	0.157	0.006
HCM Control Delay (s)	12.9	10.8	-	-	-	29.9	12.3
HCM Lane LOS	B	B	-	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0	-	-	-	0.5	0

HCM 6th Signalized Intersection Summary
 10: Wedge Pkwy & Mt. Rose Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕↔		↔↔	↕↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	112	734	12	93	587	130	20	50	144	288	38	202
Future Volume (veh/h)	112	734	12	93	587	130	20	50	144	288	38	202
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	117	765	11	97	611	101	21	52	113	300	40	157
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	290	1537	22	245	868	387	51	199	169	357	510	433
Arrive On Green	0.08	0.28	0.28	0.07	0.25	0.25	0.03	0.11	0.11	0.20	0.28	0.28
Sat Flow, veh/h	3718	5580	80	3330	3425	1528	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	117	502	274	97	611	101	21	52	113	300	40	157
Grp Sat Flow(s),veh/h/ln	1859	1831	1998	1665	1712	1528	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	2.1	7.9	7.9	1.9	11.1	3.6	0.8	1.8	4.7	11.2	1.1	5.5
Cycle Q Clear(g_c), s	2.1	7.9	7.9	1.9	11.1	3.6	0.8	1.8	4.7	11.2	1.1	5.5
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	1009	550	245	868	387	51	199	169	357	510	433
V/C Ratio(X)	0.40	0.50	0.50	0.40	0.70	0.26	0.41	0.26	0.67	0.84	0.08	0.36
Avail Cap(c_a), veh/h	363	1714	935	675	1977	882	595	1193	1011	683	1290	1093
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	20.9	20.9	30.3	23.3	20.5	32.7	28.1	29.4	26.3	18.4	20.0
Incr Delay (d2), s/veh	0.9	0.4	0.7	1.0	1.1	0.4	5.2	0.7	4.5	5.3	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	3.0	3.3	0.7	4.1	1.2	0.4	0.8	1.8	4.9	0.4	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.0	21.2	21.6	31.3	24.3	20.8	38.0	28.8	33.9	31.6	18.5	20.5
LnGrp LOS	C	C	C	C	C	C	D	C	C	C	B	C
Approach Vol, veh/h		893			809			186			497	
Approach Delay, s/veh		22.6			24.7			33.0			27.0	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.4	13.3	10.2	26.8	6.9	24.8	11.7	25.3				
Change Period (Y+Rc), s	4.5	5.9	5.1	7.9	4.9	* 5.9	6.3	* 7.9				
Max Green Setting (Gmax), s	26.5	44.1	13.9	32.1	23.1	* 48	6.7	* 40				
Max Q Clear Time (g_c+I1), s	13.2	6.7	3.9	9.9	2.8	7.5	4.1	13.1				
Green Ext Time (p_c), s	0.7	0.6	0.2	4.4	0.0	0.7	0.1	4.3				
Intersection Summary												
HCM 6th Ctrl Delay			25.1									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↘↘
Traffic Volume (vph)	0	488	0	240	465	0	0	0	0	43	0	802
Future Volume (vph)	0	488	0	240	465	0	0	0	0	43	0	802
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Flt		1.00		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	536	0	264	511	0	0	0	0	47	0	881
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	536	0	264	511	0	0	0	0	47	0	881
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		23.1		17.1	47.7					10.7		72.0
Effective Green, g (s)		23.1		17.1	47.7					10.7		72.0
Actuated g/C Ratio		0.32		0.24	0.66					0.15		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		1141		409	2286					260		2760
v/s Ratio Prot		c0.15		c0.15	0.15					0.03		
v/s Ratio Perm												c0.32
v/c Ratio		0.47		0.65	0.22					0.18		0.32
Uniform Delay, d1		19.6		24.7	4.8					26.8		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d2		0.3		3.5	0.0					0.3		0.3
Delay (s)		19.9		28.2	4.9					27.2		0.3
Level of Service		B		C	A					C		A
Approach Delay (s)		19.9			12.8			0.0			1.7	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.9									A
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			72.0							21.1		
Intersection Capacity Utilization			44.2%									A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	777	0	0	0	0	0	0	0	0	240	0
Future Volume (vph)	0	777	0	0	0	0	0	0	0	0	240	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%				0%
Total Lost time (s)		6.9										4.0
Lane Util. Factor		0.95										1.00
Frt		1.00										1.00
Flt Protected		1.00										1.00
Satd. Flow (prot)		3557										1845
Flt Permitted		1.00										1.00
Satd. Flow (perm)		3557										1845
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	854	0	0	0	0	0	0	0	0	264	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	854	0	0	0	0	0	0	0	0	264	0
Turn Type		NA										NA
Protected Phases		4 6!										Free!
Permitted Phases												
Actuated Green, G (s)		40.7										72.0
Effective Green, g (s)		40.7										72.0
Actuated g/C Ratio		0.57										1.00
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2010										1845
v/s Ratio Prot		c0.24										0.14
v/s Ratio Perm												
v/c Ratio		0.42										0.14
Uniform Delay, d1		9.0										0.0
Progression Factor		1.00										1.00
Incremental Delay, d2		0.1										0.2
Delay (s)		9.1										0.2
Level of Service		A										A
Approach Delay (s)		9.1			0.0			0.0				0.2
Approach LOS		A			A			A				A
Intersection Summary												
HCM 2000 Control Delay			7.0				HCM 2000 Level of Service					A
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			72.0				Sum of lost time (s)			21.1		
Intersection Capacity Utilization			43.2%				ICU Level of Service					A
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM 6th TWSC

13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑		↑			
Traffic Vol, veh/h	0	531	0	0	493	166	147	0	251	0	0	0
Future Vol, veh/h	0	531	0	0	493	166	147	0	251	0	0	0
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	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	500	-	0	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	547	0	0	508	171	152	0	259	0	0	0

Major/Minor	Major1		Major2		Minor1				
Conflicting Flow All	-	0	-	-	-	0	801	-	274
Stage 1	-	-	-	-	-	-	547	-	-
Stage 2	-	-	-	-	-	-	254	-	-
Critical Hdwy	-	-	-	-	-	-	6.86	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	5.86	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.86	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.53	-	3.33
Pot Cap-1 Maneuver	0	-	0	0	-	0	320	0	721
Stage 1	0	-	0	0	-	0	541	0	-
Stage 2	0	-	0	0	-	0	762	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	320	0	721
Mov Cap-2 Maneuver	-	-	-	-	-	-	320	0	-
Stage 1	-	-	-	-	-	-	541	0	-
Stage 2	-	-	-	-	-	-	762	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	320	721	-	-
HCM Lane V/C Ratio	0.474	0.359	-	-
HCM Control Delay (s)	26	12.8	-	-
HCM Lane LOS	D	B	-	-
HCM 95th %tile Q(veh)	2.4	1.6	-	-

HCM 6th Signalized Intersection Summary
 14: Mt Rose Highway/Mt. Rose Hwy & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↔↔	↑↑	↑↑	↔	↔↔	↔	
Traffic Volume (veh/h)	113	571	450	35	117	232	
Future Volume (veh/h)	113	571	450	35	117	232	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	119	601	474	28	123	183	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	278	1899	906	404	624	286	
Arrive On Green	0.08	0.51	0.27	0.27	0.18	0.18	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	119	601	474	28	123	183	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	1.2	3.5	4.4	0.5	1.1	4.0	
Cycle Q Clear(g_c), s	1.2	3.5	4.4	0.5	1.1	4.0	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	278	1899	906	404	624	286	
V/C Ratio(X)	0.43	0.32	0.52	0.07	0.20	0.64	
Avail Cap(c_a), veh/h	2378	9436	5806	2590	3294	1511	
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	1.00	
Uniform Delay (d), s/veh	16.3	5.4	11.4	10.0	12.8	14.0	
Incr Delay (d2), s/veh	1.0	0.1	0.5	0.1	0.2	2.4	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.4	0.6	1.1	0.0	0.4	0.2	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	17.3	5.4	11.9	10.1	13.0	16.4	
LnGrp LOS	B	A	B	B	B	B	
Approach Vol, veh/h		720	502		306		
Approach Delay, s/veh		7.4	11.8		15.0		
Approach LOS		A	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				25.7	11.2	8.7	17.0
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				5.5	6.0	3.2	6.4
Green Ext Time (p_c), s				4.2	1.1	0.3	3.2
Intersection Summary							
HCM 6th Ctrl Delay			10.4				
HCM 6th LOS			B				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt. Rose Hwy/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	130	491	62	114	324	582	57	286	113	750	411	141
Future Volume (veh/h)	130	491	62	114	324	582	57	286	113	750	411	141
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	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	133	501	0	116	331	0	58	292	0	765	419	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	220	698		147	671		120	884		888	2031	
Arrive On Green	0.06	0.18	0.00	0.09	0.20	0.00	0.03	0.17	0.00	0.26	0.40	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	133	501	0	116	331	0	58	292	0	765	419	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	3.0	10.6	0.0	5.8	7.5	0.0	1.4	4.3	0.0	18.3	4.6	0.0
Cycle Q Clear(g_c), s	3.0	10.6	0.0	5.8	7.5	0.0	1.4	4.3	0.0	18.3	4.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	220	698		147	671		120	884		888	2031	
V/C Ratio(X)	0.61	0.72		0.79	0.49		0.49	0.33		0.86	0.21	
Avail Cap(c_a), veh/h	822	1694		388	1526		758	1632		1148	2233	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.5	33.1	0.0	38.5	30.5	0.0	40.7	31.1	0.0	30.4	16.8	0.0
Incr Delay (d2), s/veh	2.7	1.4	0.0	9.1	0.6	0.0	3.0	0.2	0.0	5.5	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	1.4	4.7	0.0	2.6	2.9	0.0	0.6	1.7	0.0	7.5	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.2	34.5	0.0	47.6	31.1	0.0	43.8	31.3	0.0	35.9	16.9	0.0
LnGrp LOS	D	C		D	C		D	C		D	B	
Approach Vol, veh/h		634	A		447	A		350	A		1184	A
Approach Delay, s/veh		36.1			35.4			33.4			29.2	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.5	22.3	12.6	22.6	9.0	41.8	11.1	24.1				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	20.3	6.3	7.8	12.6	3.4	6.6	5.0	9.5				
Green Ext Time (p_c), s	2.0	1.6	0.2	3.1	0.1	2.6	0.3	2.0				
Intersection Summary												
HCM 6th Ctrl Delay			32.5									
HCM 6th LOS			C									

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	12.1							
Intersection LOS	B							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	1471		694		658		119	
Demand Flow Rate, veh/h	1515		715		678		123	
Vehicles Circulating, veh/h	209		641		765		1260	
Vehicles Exiting, veh/h	1174		802		959		96	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	12.5		10.9		12.8		11.4	
Approach LOS	B		B		B		B	
Lane	Left	Right	Left	Right	Left	Right	Left	Right
Designated Moves	LTR	R	LT	TR	L	LTR	LTR	
Assumed Moves	LTR	R	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.470	0.530	0.470	0.530	0.529	0.471	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	712	803	336	379	359	319	123	
Cap Entry Lane, veh/h	1114	1189	749	823	668	741	487	
Entry HV Adj Factor	0.971	0.971	0.971	0.971	0.971	0.969	0.970	
Flow Entry, veh/h	691	780	326	368	349	309	119	
Cap Entry, veh/h	1081	1154	727	799	649	718	472	
V/C Ratio	0.639	0.675	0.449	0.460	0.538	0.430	0.253	
Control Delay, s/veh	12.2	12.7	11.2	10.6	14.5	10.9	11.4	
LOS	B	B	B	B	B	B	B	
95th %tile Queue, veh	5	6	2	2	3	2	1	

Appendix D

2025 No-Action Synchro Output

HCM 6th TWSC
 1: Joy Lake Rd & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	2.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	170	4	66	351	1	88
Future Vol, veh/h	170	4	66	351	1	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	15	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	179	4	69	369	1	93

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	183	0	686
Stage 1	-	-	-	-	179
Stage 2	-	-	-	-	507
Critical Hdwy	-	-	4.13	-	9.43
Critical Hdwy Stg 1	-	-	-	-	8.43
Critical Hdwy Stg 2	-	-	-	-	8.43
Follow-up Hdwy	-	-	2.227	-	3.527
Pot Cap-1 Maneuver	-	-	1386	-	232
Stage 1	-	-	-	-	732
Stage 2	-	-	-	-	395
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1386	-	220
Mov Cap-2 Maneuver	-	-	-	-	309
Stage 1	-	-	-	-	732
Stage 2	-	-	-	-	375

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	309	799	-	-	1386	-
HCM Lane V/C Ratio	0.003	0.116	-	-	0.05	-
HCM Control Delay (s)	16.7	10.1	-	-	7.7	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0	0.4	-	-	0.2	-

HCM 6th TWSC
 2: Bordeaux Dr/Timberline Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↑↑	↗		↑	↗		↘	↗
Traffic Vol, veh/h	1	266	10	155	402	26	6	3	105	27	4	5
Future Vol, veh/h	1	266	10	155	402	26	6	3	105	27	4	5
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	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	300	-	600	350	-	150	-	-	25	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	286	11	167	432	28	6	3	113	29	4	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	460	0	0	286	0	0	840	1082	-	1056	1054	216
Stage 1	-	-	-	-	-	-	288	288	-	766	766	-
Stage 2	-	-	-	-	-	-	552	794	-	290	288	-
Critical Hdwy	4.145	-	-	4.145	-	-	7.345	6.545	-	7.345	6.545	6.945
Critical Hdwy Stg 1	-	-	-	-	-	-	6.145	5.545	-	6.545	5.545	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.545	5.545	-	6.145	5.545	-
Follow-up Hdwy	2.2285	-	-	2.2285	-	-	3.5285	4.0285	-	3.5285	4.0285	3.3285
Pot Cap-1 Maneuver	1093	-	-	1268	-	-	270	216	0	190	224	787
Stage 1	-	-	-	-	-	-	716	671	0	360	409	-
Stage 2	-	-	-	-	-	-	484	397	0	714	671	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1093	-	-	1268	-	-	237	187	-	169	194	787
Mov Cap-2 Maneuver	-	-	-	-	-	-	237	187	-	169	194	-
Stage 1	-	-	-	-	-	-	715	670	-	360	355	-
Stage 2	-	-	-	-	-	-	412	345	-	710	670	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.2			24.6			27.9		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	187	-	1093	-	-	1268	-	-	172	787
HCM Lane V/C Ratio	0.017	-	0.001	-	-	0.131	-	-	0.194	0.007
HCM Control Delay (s)	24.6	0	8.3	-	-	8.3	-	-	30.9	9.6
HCM Lane LOS	C	A	A	-	-	A	-	-	D	A
HCM 95th %tile Q(veh)	0.1	-	0	-	-	0.5	-	-	0.7	0

HCM 6th TWSC
 3: Callahan Rd & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕	↔	↔	↕↕	↔	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	1	357	5	76	549	35	7	1	181	40	1	4
Future Vol, veh/h	1	357	5	76	549	35	7	1	181	40	1	4
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	300	-	100	300	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-5	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	364	5	78	560	36	7	1	185	41	1	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	596	0	0	369	0	0	803	1118	182	901	1087	280
Stage 1	-	-	-	-	-	-	366	366	-	716	716	-
Stage 2	-	-	-	-	-	-	437	752	-	185	371	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	970	-	-	1179	-	-	273	204	826	232	213	714
Stage 1	-	-	-	-	-	-	623	619	-	385	430	-
Stage 2	-	-	-	-	-	-	565	414	-	796	615	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	970	-	-	1179	-	-	257	190	826	170	199	714
Mov Cap-2 Maneuver	-	-	-	-	-	-	257	190	-	170	199	-
Stage 1	-	-	-	-	-	-	622	618	-	385	402	-
Stage 2	-	-	-	-	-	-	523	387	-	616	614	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1			11.1			30.5		
HCM LOS							B			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	257	811	970	-	-	1179	-	-	170	470
HCM Lane V/C Ratio	0.028	0.229	0.001	-	-	0.066	-	-	0.24	0.011
HCM Control Delay (s)	19.4	10.8	8.7	-	-	8.3	-	-	32.7	12.7
HCM Lane LOS	C	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0.9	0	-	-	0.2	-	-	0.9	0

HCM 6th TWSC
 4: Mt. Rose Hwy & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	577	657	5	3	1
Future Vol, veh/h	5	577	657	5	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	5	595	677	5	3	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	682	0	-	0	988 341
Stage 1	-	-	-	-	680 -
Stage 2	-	-	-	-	308 -
Critical Hdwy	4.16	-	-	-	6.86 6.96
Critical Hdwy Stg 1	-	-	-	-	5.86 -
Critical Hdwy Stg 2	-	-	-	-	5.86 -
Follow-up Hdwy	2.23	-	-	-	3.53 3.33
Pot Cap-1 Maneuver	900	-	-	-	242 652
Stage 1	-	-	-	-	462 -
Stage 2	-	-	-	-	716 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	900	-	-	-	241 652
Mov Cap-2 Maneuver	-	-	-	-	356 -
Stage 1	-	-	-	-	459 -
Stage 2	-	-	-	-	716 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	900	-	-	-	402
HCM Lane V/C Ratio	0.006	-	-	-	0.01
HCM Control Delay (s)	9	-	-	-	14
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC
5: Fawn Ln & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↘
Traffic Vol, veh/h	580	1	3	665	5	19
Future Vol, veh/h	580	1	3	665	5	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-5	-	-	5	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	598	1	3	686	5	20

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	599	0	948 300
Stage 1	-	-	-	-	599 -
Stage 2	-	-	-	-	349 -
Critical Hdwy	-	-	4.16	-	6.86 6.96
Critical Hdwy Stg 1	-	-	-	-	5.86 -
Critical Hdwy Stg 2	-	-	-	-	5.86 -
Follow-up Hdwy	-	-	2.23	-	3.53 3.33
Pot Cap-1 Maneuver	-	-	967	-	257 693
Stage 1	-	-	-	-	509 -
Stage 2	-	-	-	-	682 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	967	-	256 693
Mov Cap-2 Maneuver	-	-	-	-	378 -
Stage 1	-	-	-	-	509 -
Stage 2	-	-	-	-	680 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	378	693	-	-	967	-
HCM Lane V/C Ratio	0.014	0.028	-	-	0.003	-
HCM Control Delay (s)	14.7	10.3	-	-	8.7	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-

HCM 6th Signalized Intersection Summary
 6: Mt. Rose Hwy & Thomas Creek Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↘	↑↑	↑↑	↗	↘↗	↗	
Traffic Volume (veh/h)	64	542	556	133	176	101	
Future Volume (veh/h)	64	542	556	133	176	101	
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	2052	2052	1567	1567	1856	1856	
Adj Flow Rate, veh/h	67	565	579	105	183	79	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	130	2062	951	424	419	192	
Arrive On Green	0.07	0.53	0.32	0.32	0.12	0.12	
Sat Flow, veh/h	1954	4001	3056	1328	3428	1572	
Grp Volume(v), veh/h	67	565	579	105	183	79	
Grp Sat Flow(s),veh/h/ln	1954	1949	1489	1328	1714	1572	
Q Serve(g_s), s	1.3	3.1	6.3	2.2	1.9	1.8	
Cycle Q Clear(g_c), s	1.3	3.1	6.3	2.2	1.9	1.8	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	130	2062	951	424	419	192	
V/C Ratio(X)	0.52	0.27	0.61	0.25	0.44	0.41	
Avail Cap(c_a), veh/h	1500	8340	3658	1631	3962	1817	
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	1.00	
Uniform Delay (d), s/veh	17.3	5.0	11.0	9.7	15.6	15.6	
Incr Delay (d2), s/veh	3.1	0.1	0.6	0.3	0.7	1.4	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.5	0.3	1.2	0.4	0.7	0.1	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	20.5	5.1	11.7	10.0	16.4	17.0	
LnGrp LOS	C	A	B	A	B	B	
Approach Vol, veh/h		632	684		262		
Approach Delay, s/veh		6.7	11.4		16.5		
Approach LOS		A	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				28.1	10.3	8.1	20.1
Change Period (Y+Rc), s				7.8	5.6	5.5	7.8
Max Green Setting (Gmax), s				82.2	44.4	29.5	47.2
Max Q Clear Time (g_c+I1), s				5.1	3.9	3.3	8.3
Green Ext Time (p_c), s				3.6	0.9	0.1	4.0
Intersection Summary							
HCM 6th Ctrl Delay			10.4				
HCM 6th LOS			B				

HCM 6th TWSC
 7: Edmonton Dr & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	3.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑		↑
Traffic Vol, veh/h	662	35	149	673	0	252
Future Vol, veh/h	662	35	149	673	0	252
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	650	300	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-7	-	-	7	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	752	40	169	765	0	286

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	792	0	- 376
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.16	-	- 6.96
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.23	-	- 3.33
Pot Cap-1 Maneuver	-	-	818	-	0 619
Stage 1	-	-	-	-	0 -
Stage 2	-	-	-	-	0 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	818	-	- 619
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	15.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	619	-	-	818	-
HCM Lane V/C Ratio	0.463	-	-	0.207	-
HCM Control Delay (s)	15.7	-	-	10.5	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	2.4	-	-	0.8	-

HCM 6th TWSC
 8: Mt. Rose Hwy & Telluride Dr

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↗
Traffic Vol, veh/h	6	963	859	20	30	4
Future Vol, veh/h	6	963	859	20	30	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	25	0	25
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	88	80	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	7	1204	976	23	34	5

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	999	0	-	0	1592 488
Stage 1	-	-	-	-	976 -
Stage 2	-	-	-	-	616 -
Critical Hdwy	4.16	-	-	-	6.86 6.96
Critical Hdwy Stg 1	-	-	-	-	5.86 -
Critical Hdwy Stg 2	-	-	-	-	5.86 -
Follow-up Hdwy	2.23	-	-	-	3.53 3.33
Pot Cap-1 Maneuver	683	-	-	-	97 523
Stage 1	-	-	-	-	324 -
Stage 2	-	-	-	-	498 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	683	-	-	-	96 523
Mov Cap-2 Maneuver	-	-	-	-	219 -
Stage 1	-	-	-	-	321 -
Stage 2	-	-	-	-	498 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	22.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	683	-	-	-	219	523
HCM Lane V/C Ratio	0.01	-	-	-	0.156	0.009
HCM Control Delay (s)	10.3	-	-	-	24.4	11.9
HCM Lane LOS	B	-	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5	0

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗	↗		↗	↗			↗	↘		↗
Traffic Vol, veh/h	5	892	13	0	873	24	0	0	1	28	0	6
Future Vol, veh/h	5	892	13	0	873	24	0	0	1	28	0	6
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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	300	-	1000	-	-	50	-	-	0	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	959	14	0	939	26	0	0	1	30	0	6

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	965	0	-	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.16	-	-	6.96
Critical Hdwy Stg 1	-	-	-	6.56
Critical Hdwy Stg 2	-	-	-	6.56
Follow-up Hdwy	2.23	-	-	3.33
Pot Cap-1 Maneuver	703	0	0	529
Stage 1	-	0	0	282
Stage 2	-	0	0	526
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	703	-	-	529
Mov Cap-2 Maneuver	-	-	-	204
Stage 1	-	-	-	280
Stage 2	-	-	-	521

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	11.8	23.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	529	703	-	-	-	204	537
HCM Lane V/C Ratio	0.002	0.008	-	-	-	0.148	0.012
HCM Control Delay (s)	11.8	10.2	-	-	-	25.7	11.8
HCM Lane LOS		B	B	-	-	D	B
HCM 95th %tile Q(veh)		0	0	-	-	0.5	0

HCM 6th Signalized Intersection Summary
 10: Wedge Pkwy & Mt. Rose Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕↔		↔↔	↕↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	146	645	17	229	615	52	16	43	98	211	57	123
Future Volume (veh/h)	146	645	17	229	615	52	16	43	98	211	57	123
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	160	709	17	252	676	43	18	47	81	232	63	101
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	325	1509	36	371	955	426	45	171	145	285	412	349
Arrive On Green	0.09	0.27	0.27	0.11	0.28	0.28	0.03	0.09	0.09	0.16	0.22	0.22
Sat Flow, veh/h	3718	5519	132	3330	3425	1528	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	160	470	256	252	676	43	18	47	81	232	63	101
Grp Sat Flow(s),veh/h/ln	1859	1831	1989	1665	1712	1528	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	2.7	6.9	6.9	4.7	11.5	1.4	0.6	1.5	3.2	8.2	1.8	3.5
Cycle Q Clear(g_c), s	2.7	6.9	6.9	4.7	11.5	1.4	0.6	1.5	3.2	8.2	1.8	3.5
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	325	1001	544	371	955	426	45	171	145	285	412	349
V/C Ratio(X)	0.49	0.47	0.47	0.68	0.71	0.10	0.40	0.27	0.56	0.81	0.15	0.29
Avail Cap(c_a), veh/h	844	2099	1140	869	2095	934	412	1264	1071	505	1367	1159
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	19.6	19.6	27.7	21.0	17.3	31.0	27.4	28.1	26.2	20.3	20.9
Incr Delay (d2), s/veh	1.2	0.3	0.6	2.2	1.0	0.1	5.5	0.9	3.3	5.6	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.5	2.8	1.8	4.1	0.4	0.3	0.7	1.2	3.6	0.7	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.3	19.9	20.2	29.8	22.0	17.4	36.6	28.2	31.4	31.8	20.5	21.4
LnGrp LOS	C	B	C	C	C	B	D	C	C	C	C	C
Approach Vol, veh/h		886			971			146			396	
Approach Delay, s/veh		21.7			23.8			31.0			27.3	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.9	11.9	12.3	25.6	6.6	20.3	12.0	25.9				
Change Period (Y+Rc), s	4.5	5.9	5.1	7.9	4.9	* 5.9	6.3	* 7.9				
Max Green Setting (Gmax), s	18.5	44.1	16.9	37.1	15.1	* 48	14.7	* 40				
Max Q Clear Time (g_c+I1), s	10.2	5.2	6.7	8.9	2.6	5.5	4.7	13.5				
Green Ext Time (p_c), s	0.4	0.5	0.6	4.3	0.0	0.7	0.3	4.6				
Intersection Summary												
HCM 6th Ctrl Delay			24.1									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↘↘
Traffic Volume (vph)	0	256	0	235	465	0	0	0	0	33	0	710
Future Volume (vph)	0	256	0	235	465	0	0	0	0	33	0	710
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Fr _t		1.00		1.00	1.00					1.00		0.85
Fl _t Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Fl _t Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	291	0	267	528	0	0	0	0	38	0	807
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	291	0	267	528	0	0	0	0	38	0	807
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		16.0		14.9	38.4					9.4		61.4
Effective Green, g (s)		16.0		14.9	38.4					9.4		61.4
Actuated g/C Ratio		0.26		0.24	0.63					0.15		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		926		418	2158					268		2760
v/s Ratio Prot		0.08		c0.15	0.15					0.02		
v/s Ratio Perm												c0.29
v/c Ratio		0.31		0.64	0.24					0.14		0.29
Uniform Delay, d ₁		18.3		20.8	5.1					22.5		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d ₂		0.2		3.2	0.1					0.2		0.3
Delay (s)		18.5		24.0	5.1					22.8		0.3
Level of Service		B		C	A					C		A
Approach Delay (s)		18.5			11.5			0.0			1.3	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			8.1									A
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			61.4							21.1		
Intersection Capacity Utilization			37.5%									A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑									↑			
Traffic Volume (vph)	0	636	0	0	0	0	0	0	0	0	235	0		
Future Volume (vph)	0	636	0	0	0	0	0	0	0	0	235	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Grade (%)		-3%			0%			0%			0%			
Total Lost time (s)		6.9									4.0			
Lane Util. Factor		0.95									1.00			
Frt		1.00									1.00			
Flt Protected		1.00									1.00			
Satd. Flow (prot)		3557									1845			
Flt Permitted		1.00									1.00			
Satd. Flow (perm)		3557									1845			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88		
Adj. Flow (vph)	0	723	0	0	0	0	0	0	0	0	267	0		
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0		
Lane Group Flow (vph)	0	723	0	0	0	0	0	0	0	0	267	0		
Turn Type		NA									NA			
Protected Phases		4 6!									Free!			
Permitted Phases														
Actuated Green, G (s)		32.3									61.4			
Effective Green, g (s)		32.3									61.4			
Actuated g/C Ratio		0.53									1.00			
Clearance Time (s)														
Vehicle Extension (s)														
Lane Grp Cap (vph)		1871									1845			
v/s Ratio Prot		c0.20									0.14			
v/s Ratio Perm														
v/c Ratio		0.39									0.14			
Uniform Delay, d1		8.7									0.0			
Progression Factor		1.00									1.00			
Incremental Delay, d2		0.1									0.2			
Delay (s)		8.8									0.2			
Level of Service		A									A			
Approach Delay (s)		8.8			0.0			0.0			0.2			
Approach LOS		A			A			A			A			
Intersection Summary														
HCM 2000 Control Delay			6.5									HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio			0.39											
Actuated Cycle Length (s)			61.4								21.1			
Intersection Capacity Utilization			39.0%										ICU Level of Service	A
Analysis Period (min)			15											
! Phase conflict between lane groups.														
c Critical Lane Group														

HCM 6th TWSC
 13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑		↑			
Traffic Vol, veh/h	0	289	0	0	565	77	45	0	78	0	0	0
Future Vol, veh/h	0	289	0	0	565	77	45	0	78	0	0	0
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	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	500	-	0	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	314	0	0	614	84	49	0	85	0	0	0

Major/Minor	Major1		Major2		Minor1				
Conflicting Flow All	-	0	-	-	-	0	621	-	157
Stage 1	-	-	-	-	-	-	314	-	-
Stage 2	-	-	-	-	-	-	307	-	-
Critical Hdwy	-	-	-	-	-	-	6.86	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	5.86	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.86	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.53	-	3.33
Pot Cap-1 Maneuver	0	-	0	0	-	0	417	0	857
Stage 1	0	-	0	0	-	0	711	0	-
Stage 2	0	-	0	0	-	0	717	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	417	0	857
Mov Cap-2 Maneuver	-	-	-	-	-	-	417	0	-
Stage 1	-	-	-	-	-	-	711	0	-
Stage 2	-	-	-	-	-	-	717	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	417	857	-	-
HCM Lane V/C Ratio	0.117	0.099	-	-
HCM Control Delay (s)	14.8	9.7	-	-
HCM Lane LOS	B	A	-	-
HCM 95th %tile Q(veh)	0.4	0.3	-	-

HCM 6th Signalized Intersection Summary
 14: Mt Rose Highway/Mt. Rose Hwy & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↔↔	↑↑	↑↑	↔	↔↔	↔	
Traffic Volume (veh/h)	46	266	506	28	37	63	
Future Volume (veh/h)	46	266	506	28	37	63	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	48	280	533	22	39	49	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	158	2022	1044	466	349	160	
Arrive On Green	0.04	0.54	0.31	0.31	0.10	0.10	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	48	280	533	22	39	49	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	0.4	1.2	4.2	0.3	0.3	0.9	
Cycle Q Clear(g_c), s	0.4	1.2	4.2	0.3	0.3	0.9	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	158	2022	1044	466	349	160	
V/C Ratio(X)	0.30	0.14	0.51	0.05	0.11	0.31	
Avail Cap(c_a), veh/h	2741	10877	6693	2985	3797	1742	
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	1.00	
Uniform Delay (d), s/veh	14.9	3.7	9.0	7.7	13.1	13.3	
Incr Delay (d2), s/veh	1.1	0.0	0.4	0.0	0.1	1.1	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.9	0.0	0.1	0.0	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	15.9	3.7	9.4	7.7	13.2	14.4	
LnGrp LOS	B	A	A	A	B	B	
Approach Vol, veh/h		328	555		88		
Approach Delay, s/veh		5.5	9.3		13.9		
Approach LOS		A	A		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				24.3	7.8	7.3	17.0
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				3.2	2.9	2.4	6.2
Green Ext Time (p_c), s				1.8	0.3	0.1	3.7
Intersection Summary							
HCM 6th Ctrl Delay			8.5				
HCM 6th LOS			A				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt. Rose Hwy/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	94	173	32	65	389	775	37	341	73	323	188	88
Future Volume (veh/h)	94	173	32	65	389	775	37	341	73	323	188	88
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	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	102	188	0	71	423	0	40	371	0	351	204	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	189	755		90	625		107	1135		493	1720	
Arrive On Green	0.05	0.20	0.00	0.05	0.19	0.00	0.03	0.22	0.00	0.14	0.34	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	102	188	0	71	423	0	40	371	0	351	204	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	1.8	2.8	0.0	2.8	7.9	0.0	0.8	4.1	0.0	6.5	1.9	0.0
Cycle Q Clear(g_c), s	1.8	2.8	0.0	2.8	7.9	0.0	0.8	4.1	0.0	6.5	1.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	189	755		90	625		107	1135		493	1720	
V/C Ratio(X)	0.54	0.25		0.79	0.68		0.37	0.33		0.71	0.12	
Avail Cap(c_a), veh/h	1055	2176		499	1960		973	2096		1475	2868	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.0	22.7	0.0	31.3	25.3	0.0	31.8	21.7	0.0	27.3	15.2	0.0
Incr Delay (d2), s/veh	2.4	0.2	0.0	13.9	1.3	0.0	2.1	0.2	0.0	1.9	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	0.8	1.1	0.0	1.4	2.9	0.0	0.3	1.4	0.0	2.5	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.4	22.8	0.0	45.2	26.6	0.0	33.9	21.9	0.0	29.2	15.2	0.0
LnGrp LOS	C	C		D	C		C	C		C	B	
Approach Vol, veh/h		290	A		494	A		411	A		555	A
Approach Delay, s/veh		26.5			29.3			23.1			24.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.8	22.3	8.7	20.1	8.1	30.0	9.4	19.4				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	8.5	6.1	4.8	4.8	2.8	3.9	3.8	9.9				
Green Ext Time (p_c), s	1.1	2.1	0.1	1.1	0.1	1.2	0.2	2.6				
Intersection Summary												
HCM 6th Ctrl Delay			25.7									
HCM 6th LOS			C									

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	10.2							
Intersection LOS	B							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	601		730		816		97	
Demand Flow Rate, veh/h	619		752		841		99	
Vehicles Circulating, veh/h	97		812		421		1436	
Vehicles Exiting, veh/h	1438		450		295		128	
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		14.9		9.3		12.7	
Approach LOS	A		B		A		B	
Lane	Left	Right	Left	Right	Left	Right	Left	
Designated Moves	LTR	R	LT	TR	L	LTR	LTR	
Assumed Moves	LT	R	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.666	0.334	0.469	0.531	0.530	0.470	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	412	207	353	399	446	395	99	
Cap Entry Lane, veh/h	1235	1308	640	712	916	993	419	
Entry HV Adj Factor	0.970	0.971	0.972	0.970	0.970	0.971	0.975	
Flow Entry, veh/h	400	201	343	387	432	384	97	
Cap Entry, veh/h	1198	1270	622	691	889	964	408	
V/C Ratio	0.334	0.158	0.552	0.560	0.487	0.398	0.236	
Control Delay, s/veh	6.2	4.2	15.4	14.4	10.3	8.2	12.7	
LOS	A	A	C	B	B	A	B	
95th %tile Queue, veh	1	1	3	4	3	2	1	

HCM 6th TWSC
 1: Joy Lake Rd & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	465	6	111	236	5	73
Future Vol, veh/h	465	6	111	236	5	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	15	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	567	7	135	288	6	89

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	574	0	1125
Stage 1	-	-	-	-	567
Stage 2	-	-	-	-	558
Critical Hdwy	-	-	4.13	-	9.43
Critical Hdwy Stg 1	-	-	-	-	8.43
Critical Hdwy Stg 2	-	-	-	-	8.43
Follow-up Hdwy	-	-	2.227	-	3.527
Pot Cap-1 Maneuver	-	-	994	-	88
Stage 1	-	-	-	-	353
Stage 2	-	-	-	-	359
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	994	-	76
Mov Cap-2 Maneuver	-	-	-	-	185
Stage 1	-	-	-	-	353
Stage 2	-	-	-	-	310

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	16.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	185	411	-	-	994	-
HCM Lane V/C Ratio	0.033	0.217	-	-	0.136	-
HCM Control Delay (s)	25.1	16.2	-	-	9.2	-
HCM Lane LOS	D	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.8	-	-	0.5	-

HCM 6th TWSC
 2: Bordeaux Dr/Timberline Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑↑	↗		↑	↗		↖	↗
Traffic Vol, veh/h	3	560	6	83	337	24	10	1	104	27	5	1
Future Vol, veh/h	3	560	6	83	337	24	10	1	104	27	5	1
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	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	300	-	600	350	-	150	-	-	25	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	683	7	101	411	29	12	1	127	33	6	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	440	0	0	683	0	0	1102	1333	-	1305	1304	206
Stage 1	-	-	-	-	-	-	691	691	-	613	613	-
Stage 2	-	-	-	-	-	-	411	642	-	692	691	-
Critical Hdwy	4.145	-	-	4.145	-	-	7.345	6.545	-	7.345	6.545	6.945
Critical Hdwy Stg 1	-	-	-	-	-	-	6.145	5.545	-	6.545	5.545	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.545	5.545	-	6.145	5.545	-
Follow-up Hdwy	2.2285	-	-	2.2285	-	-	3.5285	4.0285	-	3.5285	4.0285	3.3285
Pot Cap-1 Maneuver	1112	-	-	902	-	-	176	152	0	126	159	798
Stage 1	-	-	-	-	-	-	432	443	0	445	480	-
Stage 2	-	-	-	-	-	-	587	466	0	431	443	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1112	-	-	902	-	-	155	134	-	114	141	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	155	134	-	114	141	-
Stage 1	-	-	-	-	-	-	430	441	-	443	426	-
Stage 2	-	-	-	-	-	-	513	414	-	428	441	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.8			32.1			48.7		
HCM LOS							D			E		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	134	-	1112	-	-	902	-	-	118	798
HCM Lane V/C Ratio	0.009	-	0.003	-	-	0.112	-	-	0.331	0.002
HCM Control Delay (s)	32.1	0	8.2	-	-	9.5	-	-	49.9	9.5
HCM Lane LOS		D	A	A	-	A	-	-	E	A
HCM 95th %tile Q(veh)	0	-	0	-	-	0.4	-	-	1.3	0

HCM 6th TWSC
 3: Callahan Rd & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	6.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑	↔	↔	↑↑	↔	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	2	759	14	210	514	37	3	5	151	17	3	2
Future Vol, veh/h	2	759	14	210	514	37	3	5	151	17	3	2
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	300	-	100	300	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-5	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	914	17	253	619	45	4	6	182	20	4	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	664	0	0	931	0	0	1736	2088	457	1589	2060	310
Stage 1	-	-	-	-	-	-	918	918	-	1125	1125	-
Stage 2	-	-	-	-	-	-	818	1170	-	464	935	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	914	-	-	724	-	-	55	51	548	72	54	683
Stage 1	-	-	-	-	-	-	290	346	-	217	276	-
Stage 2	-	-	-	-	-	-	334	263	-	545	340	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	914	-	-	724	-	-	37	33	548	30	35	683
Mov Cap-2 Maneuver	-	-	-	-	-	-	37	33	-	30	35	-
Stage 1	-	-	-	-	-	-	289	345	-	217	180	-
Stage 2	-	-	-	-	-	-	212	171	-	357	339	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.5			26.6			217.2		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	37	365	914	-	-	724	-	-	30	56
HCM Lane V/C Ratio	0.098	0.515	0.003	-	-	0.349	-	-	0.683	0.108
HCM Control Delay (s)	112.6	24.9	8.9	-	-	12.6	-	-	258.5	76.9
HCM Lane LOS	F	C	A	-	-	B	-	-	F	F
HCM 95th %tile Q(veh)	0.3	2.8	0	-	-	1.6	-	-	2.2	0.3

HCM 6th TWSC
 4: Mt. Rose Hwy & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	932	759	16	5	5
Future Vol, veh/h	3	932	759	16	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	4	1123	914	19	6	6

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	933	0	0	1494	467
Stage 1	-	-	-	924	-
Stage 2	-	-	-	570	-
Critical Hdwy	4.16	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	5.86	-
Follow-up Hdwy	2.23	-	-	3.53	3.33
Pot Cap-1 Maneuver	723	-	-	113	540
Stage 1	-	-	-	345	-
Stage 2	-	-	-	526	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	723	-	-	112	540
Mov Cap-2 Maneuver	-	-	-	238	-
Stage 1	-	-	-	343	-
Stage 2	-	-	-	526	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	723	-	-	-	330
HCM Lane V/C Ratio	0.005	-	-	-	0.037
HCM Control Delay (s)	10	-	-	-	16.3
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC
5: Fawn Ln & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↘
Traffic Vol, veh/h	929	8	29	773	5	21
Future Vol, veh/h	929	8	29	773	5	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-5	-	-	5	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1106	10	35	920	6	25

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1116	0	1641
Stage 1	-	-	-	-	1111
Stage 2	-	-	-	-	530
Critical Hdwy	-	-	4.16	-	6.86
Critical Hdwy Stg 1	-	-	-	-	5.86
Critical Hdwy Stg 2	-	-	-	-	5.86
Follow-up Hdwy	-	-	2.23	-	3.53
Pot Cap-1 Maneuver	-	-	616	-	90
Stage 1	-	-	-	-	274
Stage 2	-	-	-	-	552
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	616	-	85
Mov Cap-2 Maneuver	-	-	-	-	198
Stage 1	-	-	-	-	274
Stage 2	-	-	-	-	521

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	15.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	198	471	-	-	616	-
HCM Lane V/C Ratio	0.03	0.053	-	-	0.056	-
HCM Control Delay (s)	23.7	13.1	-	-	11.2	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0.2	-

HCM 6th Signalized Intersection Summary
 6: Mt. Rose Hwy & Thomas Creek Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↘	↑↑	↑↑	↘	↘↗	↘	
Traffic Volume (veh/h)	97	870	639	226	207	154	
Future Volume (veh/h)	97	870	639	226	207	154	
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	2052	2052	1567	1567	1856	1856	
Adj Flow Rate, veh/h	110	989	726	192	235	131	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	159	2200	1086	484	507	233	
Arrive On Green	0.08	0.56	0.36	0.36	0.15	0.15	
Sat Flow, veh/h	1954	4001	3056	1328	3428	1572	
Grp Volume(v), veh/h	110	989	726	192	235	131	
Grp Sat Flow(s),veh/h/ln	1954	1949	1489	1328	1714	1572	
Q Serve(g_s), s	2.6	6.9	9.5	5.0	2.9	3.6	
Cycle Q Clear(g_c), s	2.6	6.9	9.5	5.0	2.9	3.6	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	159	2200	1086	484	507	233	
V/C Ratio(X)	0.69	0.45	0.67	0.40	0.46	0.56	
Avail Cap(c_a), veh/h	1238	6883	3019	1346	3270	1500	
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	1.00	
Uniform Delay (d), s/veh	20.8	5.9	12.4	11.0	18.1	18.4	
Incr Delay (d2), s/veh	5.3	0.1	0.7	0.5	0.7	2.1	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.1	1.1	2.1	1.0	1.1	3.3	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	26.1	6.1	13.1	11.5	18.8	20.6	
LnGrp LOS	C	A	B	B	B	C	
Approach Vol, veh/h		1099	918		366		
Approach Delay, s/veh		8.1	12.8		19.4		
Approach LOS		A	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				34.1	12.5	9.3	24.8
Change Period (Y+Rc), s				7.8	5.6	5.5	7.8
Max Green Setting (Gmax), s				82.2	44.4	29.5	47.2
Max Q Clear Time (g_c+I1), s				8.9	5.6	4.6	11.5
Green Ext Time (p_c), s				7.4	1.3	0.2	5.4
Intersection Summary							
HCM 6th Ctrl Delay			11.6				
HCM 6th LOS			B				

HCM 6th TWSC
7: Edmonton Dr & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↘	↑↑		↗
Traffic Vol, veh/h	1015	38	188	851	0	143
Future Vol, veh/h	1015	38	188	851	0	143
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	650	300	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-7	-	-	7	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1103	41	204	925	0	155

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1144	0	- 552
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.16	-	- 6.96
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.23	-	- 3.33
Pot Cap-1 Maneuver	-	-	601	-	0 475
Stage 1	-	-	-	-	0 -
Stage 2	-	-	-	-	0 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	601	-	- 475
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	475	-	-	601	-
HCM Lane V/C Ratio	0.327	-	-	0.34	-
HCM Control Delay (s)	16.2	-	-	14	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	1.4	-	-	1.5	-

HCM 6th TWSC
 8: Mt. Rose Hwy & Telluride Dr

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↗
Traffic Vol, veh/h	16	1008	911	34	20	14
Future Vol, veh/h	16	1008	911	34	20	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	25	0	25
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	18	1133	1024	38	22	16

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1062	0	-	0	1627 512
Stage 1	-	-	-	-	1024 -
Stage 2	-	-	-	-	603 -
Critical Hdwy	4.16	-	-	-	6.86 6.96
Critical Hdwy Stg 1	-	-	-	-	5.86 -
Critical Hdwy Stg 2	-	-	-	-	5.86 -
Follow-up Hdwy	2.23	-	-	-	3.53 3.33
Pot Cap-1 Maneuver	646	-	-	-	92 504
Stage 1	-	-	-	-	305 -
Stage 2	-	-	-	-	506 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	646	-	-	-	89 504
Mov Cap-2 Maneuver	-	-	-	-	208 -
Stage 1	-	-	-	-	296 -
Stage 2	-	-	-	-	506 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	19.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	646	-	-	-	208	504
HCM Lane V/C Ratio	0.028	-	-	-	0.108	0.031
HCM Control Delay (s)	10.7	-	-	-	24.4	12.4
HCM Lane LOS	B	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.1

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗	↗		↗	↗				↘	↘	↗
Traffic Vol, veh/h	6	1176	5	0	1089	49	0	0	10	28	0	3
Future Vol, veh/h	6	1176	5	0	1089	49	0	0	10	28	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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	300	-	1000	-	-	50	-	-	0	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	1212	5	0	1123	51	0	0	10	29	0	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1174	0	-	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.16	-	-	6.96
Critical Hdwy Stg 1	-	-	-	6.56
Critical Hdwy Stg 2	-	-	-	6.56
Follow-up Hdwy	2.23	-	-	3.33
Pot Cap-1 Maneuver	585	0	0	438
Stage 1	-	0	0	217
Stage 2	-	0	0	441
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	585	-	-	438
Mov Cap-2 Maneuver	-	-	-	151
Stage 1	-	-	-	215
Stage 2	-	-	-	426

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	13.4	32.3
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	438	585	-	-	-	151	468
HCM Lane V/C Ratio	0.024	0.011	-	-	-	0.191	0.007
HCM Control Delay (s)	13.4	11.2	-	-	-	34.4	12.7
HCM Lane LOS	B	B	-	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0	-	-	-	0.7	0

HCM 6th Signalized Intersection Summary

10: Wedge Pkwy & Mt. Rose Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕↔		↔↔	↕↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	121	791	13	100	632	140	22	54	155	310	41	218
Future Volume (veh/h)	121	791	13	100	632	140	22	54	155	310	41	218
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	126	824	12	104	658	110	23	56	120	323	43	170
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	269	1573	23	241	910	406	54	205	174	377	534	452
Arrive On Green	0.07	0.28	0.28	0.07	0.27	0.27	0.03	0.11	0.11	0.21	0.29	0.29
Sat Flow, veh/h	3718	5579	81	3330	3425	1528	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	126	541	295	104	658	110	23	56	120	323	43	170
Grp Sat Flow(s),veh/h/ln	1859	1831	1998	1665	1712	1528	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	2.4	9.0	9.1	2.2	12.7	4.1	0.9	2.0	5.3	12.8	1.2	6.3
Cycle Q Clear(g_c), s	2.4	9.0	9.1	2.2	12.7	4.1	0.9	2.0	5.3	12.8	1.2	6.3
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	269	1032	563	241	910	406	54	205	174	377	534	452
V/C Ratio(X)	0.47	0.52	0.52	0.43	0.72	0.27	0.42	0.27	0.69	0.86	0.08	0.38
Avail Cap(c_a), veh/h	343	1617	882	637	1865	832	561	1125	954	644	1217	1031
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.4	22.0	22.0	32.3	24.3	21.1	34.6	29.7	31.2	27.5	18.9	20.7
Incr Delay (d2), s/veh	1.3	0.4	0.8	1.2	1.1	0.4	5.2	0.7	4.8	5.7	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	3.5	3.8	0.9	4.7	1.4	0.5	0.9	2.1	5.6	0.5	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.7	22.4	22.8	33.5	25.4	21.5	39.8	30.4	36.0	33.2	18.9	21.2
LnGrp LOS	C	C	C	C	C	C	D	C	D	C	B	C
Approach Vol, veh/h		962			872			199			536	
Approach Delay, s/veh		24.0			25.9			34.9			28.3	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	13.9	10.4	28.4	7.1	26.8	11.6	27.2				
Change Period (Y+Rc), s	4.5	5.9	5.1	7.9	4.9	* 5.9	6.3	* 7.9				
Max Green Setting (Gmax), s	26.5	44.1	13.9	32.1	23.1	* 48	6.7	* 40				
Max Q Clear Time (g_c+I1), s	14.8	7.3	4.2	11.1	2.9	8.3	4.4	14.7				
Green Ext Time (p_c), s	0.8	0.7	0.2	4.8	0.0	0.8	0.1	4.6				
Intersection Summary												
HCM 6th Ctrl Delay			26.4									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↘↘
Traffic Volume (vph)	0	526	0	259	501	0	0	0	0	47	0	864
Future Volume (vph)	0	526	0	259	501	0	0	0	0	47	0	864
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Flt		1.00		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	578	0	285	551	0	0	0	0	52	0	949
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	578	0	285	551	0	0	0	0	52	0	949
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		26.2		19.1	52.8					11.6		78.0
Effective Green, g (s)		26.2		19.1	52.8					11.6		78.0
Actuated g/C Ratio		0.34		0.24	0.68					0.15		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		1194		422	2336					260		2760
v/s Ratio Prot		c0.16		c0.17	0.16					0.03		
v/s Ratio Perm												c0.34
v/c Ratio		0.48		0.68	0.24					0.20		0.34
Uniform Delay, d1		20.5		26.6	4.8					29.1		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d2		0.3		4.2	0.1					0.4		0.3
Delay (s)		20.9		30.9	4.9					29.5		0.3
Level of Service		C		C	A					C		A
Approach Delay (s)		20.9			13.8			0.0			1.9	
Approach LOS		C			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			78.0			Sum of lost time (s)			21.1			
Intersection Capacity Utilization			46.3%			ICU Level of Service				A		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	837	0	0	0	0	0	0	0	0	259	0
Future Volume (vph)	0	837	0	0	0	0	0	0	0	0	259	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		6.9									4.0	
Lane Util. Factor		0.95									1.00	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3557									1845	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3557									1845	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	920	0	0	0	0	0	0	0	0	285	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	920	0	0	0	0	0	0	0	0	285	0
Turn Type		NA									NA	
Protected Phases		4 6!									Free!	
Permitted Phases												
Actuated Green, G (s)		44.7									78.0	
Effective Green, g (s)		44.7									78.0	
Actuated g/C Ratio		0.57									1.00	
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2038									1845	
v/s Ratio Prot		c0.26									0.15	
v/s Ratio Perm												
v/c Ratio		0.45									0.15	
Uniform Delay, d1		9.6									0.0	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.2									0.2	
Delay (s)		9.7									0.2	
Level of Service		A									A	
Approach Delay (s)		9.7			0.0			0.0			0.2	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			7.5								HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			78.0								Sum of lost time (s)	21.1
Intersection Capacity Utilization			45.9%								ICU Level of Service	A
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM 6th TWSC
 13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑		↑			
Traffic Vol, veh/h	0	573	0	0	531	179	159	0	271	0	0	0
Future Vol, veh/h	0	573	0	0	531	179	159	0	271	0	0	0
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	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	500	-	0	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	591	0	0	547	185	164	0	279	0	0	0

Major/Minor	Major1		Major2		Minor1				
Conflicting Flow All	-	0	-	-	-	0	865	-	296
Stage 1	-	-	-	-	-	-	591	-	-
Stage 2	-	-	-	-	-	-	274	-	-
Critical Hdwy	-	-	-	-	-	-	6.86	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	5.86	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.86	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.53	-	3.33
Pot Cap-1 Maneuver	0	-	0	0	-	0	291	0	697
Stage 1	0	-	0	0	-	0	513	0	-
Stage 2	0	-	0	0	-	0	744	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	291	0	697
Mov Cap-2 Maneuver	-	-	-	-	-	-	291	0	-
Stage 1	-	-	-	-	-	-	513	0	-
Stage 2	-	-	-	-	-	-	744	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	291	697	-	-
HCM Lane V/C Ratio	0.563	0.401	-	-
HCM Control Delay (s)	32.2	13.6	-	-
HCM Lane LOS	D	B	-	-
HCM 95th %tile Q(veh)	3.2	1.9	-	-

HCM 6th Signalized Intersection Summary
 14: Mt Rose Highway/Mt. Rose Hwy & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↔↔	↑↑	↑↑	↔	↔↔	↔	
Traffic Volume (veh/h)	122	616	484	37	126	250	
Future Volume (veh/h)	122	616	484	37	126	250	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	128	648	509	30	133	197	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	284	1900	918	410	658	302	
Arrive On Green	0.08	0.51	0.27	0.27	0.19	0.19	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	128	648	509	30	133	197	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	1.3	3.9	5.0	0.6	1.2	4.4	
Cycle Q Clear(g_c), s	1.3	3.9	5.0	0.6	1.2	4.4	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	284	1900	918	410	658	302	
V/C Ratio(X)	0.45	0.34	0.55	0.07	0.20	0.65	
Avail Cap(c_a), veh/h	2301	9133	5620	2507	3188	1462	
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	1.00	
Uniform Delay (d), s/veh	16.8	5.6	11.9	10.3	13.0	14.2	
Incr Delay (d2), s/veh	1.1	0.1	0.5	0.1	0.1	2.4	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.5	0.7	1.3	0.6	0.4	4.0	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	17.9	5.7	12.4	10.3	13.1	16.6	
LnGrp LOS	B	A	B	B	B	B	
Approach Vol, veh/h		776	539		330		
Approach Delay, s/veh		7.7	12.3		15.2		
Approach LOS		A	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				26.3	11.8	8.9	17.5
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				5.9	6.4	3.3	7.0
Green Ext Time (p_c), s				4.6	1.1	0.3	3.5
Intersection Summary							
HCM 6th Ctrl Delay			10.7				
HCM 6th LOS			B				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt. Rose Hwy/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	140	528	67	123	349	627	61	308	122	808	442	152
Future Volume (veh/h)	140	528	67	123	349	627	61	308	122	808	442	152
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	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	143	539	0	126	356	0	62	314	0	824	451	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	228	731		157	715		119	833		930	2042	
Arrive On Green	0.06	0.19	0.00	0.09	0.21	0.00	0.03	0.16	0.00	0.27	0.40	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	143	539	0	126	356	0	62	314	0	824	451	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	3.4	12.1	0.0	6.7	8.5	0.0	1.6	5.0	0.0	21.0	5.3	0.0
Cycle Q Clear(g_c), s	3.4	12.1	0.0	6.7	8.5	0.0	1.6	5.0	0.0	21.0	5.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	731		157	715		119	833		930	2042	
V/C Ratio(X)	0.63	0.74		0.80	0.50		0.52	0.38		0.89	0.22	
Avail Cap(c_a), veh/h	774	1597		366	1438		714	1538		1082	2105	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.8	34.7	0.0	40.5	31.6	0.0	43.3	33.9	0.0	31.9	17.8	0.0
Incr Delay (d2), s/veh	2.8	1.5	0.0	9.0	0.5	0.0	3.5	0.3	0.0	8.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	5.5	0.0	3.0	3.3	0.0	0.7	2.0	0.0	9.0	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.6	36.2	0.0	49.5	32.1	0.0	46.8	34.2	0.0	40.0	17.9	0.0
LnGrp LOS	D	D		D	C		D	C		D	B	
Approach Vol, veh/h		682	A		482	A		376	A		1275	A
Approach Delay, s/veh		38.0			36.7			36.3			32.2	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.9	22.3	13.7	24.3	9.2	44.1	11.6	26.4				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	23.0	7.0	8.7	14.1	3.6	7.3	5.4	10.5				
Green Ext Time (p_c), s	1.7	1.7	0.2	3.3	0.1	2.8	0.3	2.2				
Intersection Summary												
HCM 6th Ctrl Delay			34.9									
HCM 6th LOS			C									

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	14.3							
Intersection LOS	B							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	1584		750		707		128	
Demand Flow Rate, veh/h	1632		772		728		133	
Vehicles Circulating, veh/h	225		689		825		1356	
Vehicles Exiting, veh/h	1264		864		1032		105	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	14.8		12.5		15.3		13.3	
Approach LOS	B		B		C		B	
Lane	Left	Right	Left	Right	Left	Right	Left	
Designated Moves	LTR	R	LT	TR	L	LTR	LTR	
Assumed Moves	LTR	R	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.470	0.530	0.470	0.530	0.530	0.470	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	767	865	363	409	386	342	133	
Cap Entry Lane, veh/h	1097	1173	716	791	632	704	448	
Entry HV Adj Factor	0.971	0.971	0.971	0.972	0.971	0.971	0.965	
Flow Entry, veh/h	745	840	352	397	375	332	128	
Cap Entry, veh/h	1065	1139	695	768	613	684	433	
V/C Ratio	0.699	0.738	0.507	0.517	0.611	0.486	0.297	
Control Delay, s/veh	14.3	15.1	12.9	12.2	17.7	12.6	13.3	
LOS	B	C	B	B	C	B	B	
95th %tile Queue, veh	6	7	3	3	4	3	1	

Appendix E

2050 No-Action Synchro Output

HCM 6th TWSC
 1: Joy Lake Rd & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	246	6	96	510	2	127
Future Vol, veh/h	246	6	96	510	2	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	15	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	259	6	101	537	2	134

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	265	0	998
Stage 1	-	-	-	-	259
Stage 2	-	-	-	-	739
Critical Hdwy	-	-	4.13	-	9.43
Critical Hdwy Stg 1	-	-	-	-	8.43
Critical Hdwy Stg 2	-	-	-	-	8.43
Follow-up Hdwy	-	-	2.227	-	3.527
Pot Cap-1 Maneuver	-	-	1293	-	117
Stage 1	-	-	-	-	630
Stage 2	-	-	-	-	254
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1293	-	108
Mov Cap-2 Maneuver	-	-	-	-	191
Stage 1	-	-	-	-	630
Stage 2	-	-	-	-	234

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	698	-	-	1293	-
HCM Lane V/C Ratio	0.011	0.192	-	-	0.078	-
HCM Control Delay (s)	24.1	11.4	-	-	8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0	0.7	-	-	0.3	-

HCM 6th TWSC
 2: Bordeaux Dr/Timberline Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	6.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↑↑	↗		↑	↗		↘	↗
Traffic Vol, veh/h	2	386	15	226	583	38	8	4	152	40	6	10
Future Vol, veh/h	2	386	15	226	583	38	8	4	152	40	6	10
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	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	300	-	600	350	-	150	-	-	25	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	415	16	243	627	41	9	4	163	43	6	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	668	0	0	415	0	0	1222	1573	-	1534	1532	314
Stage 1	-	-	-	-	-	-	419	419	-	1113	1113	-
Stage 2	-	-	-	-	-	-	803	1154	-	421	419	-
Critical Hdwy	4.145	-	-	4.145	-	-	7.345	6.545	-	7.345	6.545	6.945
Critical Hdwy Stg 1	-	-	-	-	-	-	6.145	5.545	-	6.545	5.545	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.545	5.545	-	6.145	5.545	-
Follow-up Hdwy	2.2285	-	-	2.2285	-	-	3.5285	4.0285	-	3.5285	4.0285	3.3285
Pot Cap-1 Maneuver	914	-	-	1136	-	-	145	109	0	86	115	680
Stage 1	-	-	-	-	-	-	608	587	0	222	281	-
Stage 2	-	-	-	-	-	-	342	269	0	607	587	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	914	-	-	1136	-	-	113	85	-	69	90	680
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	85	-	69	90	-
Stage 1	-	-	-	-	-	-	607	586	-	222	221	-
Stage 2	-	-	-	-	-	-	257	211	-	601	586	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.4			49.6			109.3		
HCM LOS							E			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	85	-	914	-	-	1136	-	-	71	680
HCM Lane V/C Ratio	0.051	-	0.002	-	-	0.214	-	-	0.697	0.016
HCM Control Delay (s)	49.6	0	8.9	-	-	9	-	-	130.8	10.4
HCM Lane LOS	E	A	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.8	-	-	3.2	0

HCM 6th TWSC
 3: Callahan Rd & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	8.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Vol, veh/h	2	518	8	110	797	50	10	2	263	58	2	6
Future Vol, veh/h	2	518	8	110	797	50	10	2	263	58	2	6
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	300	-	100	300	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-5	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	529	8	112	813	51	10	2	268	59	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	864	0	0	537	0	0	1165	1621	265	1307	1578	407
Stage 1	-	-	-	-	-	-	533	533	-	1037	1037	-
Stage 2	-	-	-	-	-	-	632	1088	-	270	541	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	768	-	-	1020	-	-	148	101	730	116	107	591
Stage 1	-	-	-	-	-	-	496	521	-	246	304	-
Stage 2	-	-	-	-	-	-	433	288	-	710	516	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	768	-	-	1020	-	-	132	90	730	66	95	591
Mov Cap-2 Maneuver	-	-	-	-	-	-	132	90	-	66	95	-
Stage 1	-	-	-	-	-	-	495	519	-	245	271	-
Stage 2	-	-	-	-	-	-	379	256	-	446	514	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1			14.3			166.3		
HCM LOS							B			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	132	693	768	-	-	1020	-	-	66	256
HCM Lane V/C Ratio	0.077	0.39	0.003	-	-	0.11	-	-	0.897	0.032
HCM Control Delay (s)	34.5	13.5	9.7	-	-	9	-	-	186.5	19.5
HCM Lane LOS	D	B	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	0.2	1.9	0	-	-	0.4	-	-	4.3	0.1

HCM 6th TWSC
 4: Mt. Rose Hwy & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	837	953	8	4	2
Future Vol, veh/h	10	837	953	8	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	863	982	8	4	2

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	990	0	-	0	1438 495
Stage 1	-	-	-	-	986 -
Stage 2	-	-	-	-	452 -
Critical Hdwy	4.16	-	-	-	6.86 6.96
Critical Hdwy Stg 1	-	-	-	-	5.86 -
Critical Hdwy Stg 2	-	-	-	-	5.86 -
Follow-up Hdwy	2.23	-	-	-	3.53 3.33
Pot Cap-1 Maneuver	688	-	-	-	123 517
Stage 1	-	-	-	-	320 -
Stage 2	-	-	-	-	605 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	688	-	-	-	121 517
Mov Cap-2 Maneuver	-	-	-	-	237 -
Stage 1	-	-	-	-	315 -
Stage 2	-	-	-	-	605 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	17.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	688	-	-	-	289
HCM Lane V/C Ratio	0.015	-	-	-	0.021
HCM Control Delay (s)	10.3	-	-	-	17.7
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC
5: Fawn Ln & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Vol, veh/h	841	2	4	965	10	27
Future Vol, veh/h	841	2	4	965	10	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-5	-	-	5	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	867	2	4	995	10	28

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	869	0	1374 435
Stage 1	-	-	-	-	868 -
Stage 2	-	-	-	-	506 -
Critical Hdwy	-	-	4.16	-	6.86 6.96
Critical Hdwy Stg 1	-	-	-	-	5.86 -
Critical Hdwy Stg 2	-	-	-	-	5.86 -
Follow-up Hdwy	-	-	2.23	-	3.53 3.33
Pot Cap-1 Maneuver	-	-	765	-	135 566
Stage 1	-	-	-	-	369 -
Stage 2	-	-	-	-	568 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	765	-	134 566
Mov Cap-2 Maneuver	-	-	-	-	261 -
Stage 1	-	-	-	-	369 -
Stage 2	-	-	-	-	565 -

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

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	261	566	-	-	765	-
HCM Lane V/C Ratio	0.039	0.049	-	-	0.005	-
HCM Control Delay (s)	19.4	11.7	-	-	9.7	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-

HCM 6th Signalized Intersection Summary

6: Mt. Rose Hwy & Thomas Creek Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↘	↑↑	↑↑	↗	↘↗	↗	
Traffic Volume (veh/h)	93	787	806	193	255	147	
Future Volume (veh/h)	93	787	806	193	255	147	
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	2052	2052	1567	1567	1856	1856	
Adj Flow Rate, veh/h	97	820	840	151	266	114	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	146	2291	1196	533	482	221	
Arrive On Green	0.07	0.59	0.40	0.40	0.14	0.14	
Sat Flow, veh/h	1954	4001	3056	1328	3428	1572	
Grp Volume(v), veh/h	97	820	840	151	266	114	
Grp Sat Flow(s),veh/h/ln	1954	1949	1489	1328	1714	1572	
Q Serve(g_s), s	2.4	5.4	11.6	3.8	3.6	3.3	
Cycle Q Clear(g_c), s	2.4	5.4	11.6	3.8	3.6	3.3	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	146	2291	1196	533	482	221	
V/C Ratio(X)	0.67	0.36	0.70	0.28	0.55	0.52	
Avail Cap(c_a), veh/h	1169	6498	2850	1271	3087	1416	
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	1.00	
Uniform Delay (d), s/veh	22.2	5.3	12.3	10.0	19.7	19.6	
Incr Delay (d2), s/veh	5.1	0.1	0.8	0.3	1.0	1.9	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.1	0.9	2.6	0.8	1.4	0.1	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	27.4	5.4	13.1	10.2	20.7	21.5	
LnGrp LOS	C	A	B	B	C	C	
Approach Vol, veh/h		917	991		380		
Approach Delay, s/veh		7.7	12.6		21.0		
Approach LOS		A	B		C		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				36.8	12.5	9.2	27.6
Change Period (Y+Rc), s				7.8	5.6	5.5	7.8
Max Green Setting (Gmax), s				82.2	44.4	29.5	47.2
Max Q Clear Time (g_c+I1), s				7.4	5.6	4.4	13.6
Green Ext Time (p_c), s				5.7	1.4	0.2	6.2
Intersection Summary							
HCM 6th Ctrl Delay			12.0				
HCM 6th LOS			B				

HCM 6th TWSC
7: Edmonton Dr & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	7.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑		↑
Traffic Vol, veh/h	961	50	217	977	0	365
Future Vol, veh/h	961	50	217	977	0	365
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	650	300	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-7	-	-	7	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1092	57	247	1110	0	415

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1149	0	- 546
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.16	-	- 6.96
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.23	-	- 3.33
Pot Cap-1 Maneuver	-	-	598	-	0 479
Stage 1	-	-	-	-	0 -
Stage 2	-	-	-	-	0 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	598	-	- 479
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	44.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	479	-	-	598	-
HCM Lane V/C Ratio	0.866	-	-	0.412	-
HCM Control Delay (s)	44.3	-	-	15.2	-
HCM Lane LOS	E	-	-	C	-
HCM 95th %tile Q(veh)	9.1	-	-	2	-

HCM 6th TWSC
 8: Mt. Rose Hwy & Telluride Dr

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↗
Traffic Vol, veh/h	8	1397	1246	29	43	6
Future Vol, veh/h	8	1397	1246	29	43	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	25	0	25
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	88	80	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	9	1746	1416	33	49	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1449	0	0 2307 708
Stage 1	-	-	- 1416 -
Stage 2	-	-	- 891 -
Critical Hdwy	4.16	-	- 6.86 6.96
Critical Hdwy Stg 1	-	-	- 5.86 -
Critical Hdwy Stg 2	-	-	- 5.86 -
Follow-up Hdwy	2.23	-	- 3.53 3.33
Pot Cap-1 Maneuver	458	-	- ~ 32 375
Stage 1	-	-	- 188 -
Stage 2	-	-	- 359 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	458	-	- ~ 31 375
Mov Cap-2 Maneuver	-	-	- 124 -
Stage 1	-	-	- 184 -
Stage 2	-	-	- 359 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	47.3
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	458	-	-	-	124	375
HCM Lane V/C Ratio	0.02	-	-	-	0.394	0.018
HCM Control Delay (s)	13	-	-	-	51.8	14.8
HCM Lane LOS	B	-	-	-	F	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.7	0.1

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

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗		↑↑	↗				↗	↘	↗
Traffic Vol, veh/h	10	1295	18	0	1266	35	0	0	2	41	0	8
Future Vol, veh/h	10	1295	18	0	1266	35	0	0	2	41	0	8
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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	300	-	1000	-	-	50	-	-	0	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	1392	19	0	1361	38	0	0	2	44	0	9

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1399	0	-	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.16	-	-	6.96
Critical Hdwy Stg 1	-	-	-	6.56
Critical Hdwy Stg 2	-	-	-	6.56
Follow-up Hdwy	2.23	-	-	3.33
Pot Cap-1 Maneuver	479	0	0	382
Stage 1	-	0	0	155
Stage 2	-	0	0	384
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	479	-	-	382
Mov Cap-2 Maneuver	-	-	-	109
Stage 1	-	-	-	151
Stage 2	-	-	-	373

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	14.5	51.6
HCM LOS			B	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	382	479	-	-	-	109	391
HCM Lane V/C Ratio	0.006	0.022	-	-	-	0.404	0.022
HCM Control Delay (s)	14.5	12.7	-	-	-	58.8	14.4
HCM Lane LOS	B	B	-	-	-	F	B
HCM 95th %tile Q(veh)	0	0.1	-	-	-	1.7	0.1

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

HCM 6th Signalized Intersection Summary

10: Wedge Pkwy & Mt. Rose Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕↔		↔↔	↕↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	212	937	25	332	892	75	23	62	143	307	82	178
Future Volume (veh/h)	212	937	25	332	892	75	23	62	143	307	82	178
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	233	1030	24	365	980	61	25	68	117	337	90	147
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	323	1706	40	448	1177	525	54	189	160	355	496	421
Arrive On Green	0.09	0.31	0.31	0.13	0.34	0.34	0.03	0.10	0.10	0.20	0.27	0.27
Sat Flow, veh/h	3718	5523	129	3330	3425	1528	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	233	683	371	365	980	61	25	68	117	337	90	147
Grp Sat Flow(s),veh/h/ln	1859	1831	1989	1665	1712	1528	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	5.6	14.6	14.6	9.8	24.3	2.5	1.3	3.1	6.7	17.4	3.4	7.0
Cycle Q Clear(g_c), s	5.6	14.6	14.6	9.8	24.3	2.5	1.3	3.1	6.7	17.4	3.4	7.0
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	323	1131	614	448	1177	525	54	189	160	355	496	421
V/C Ratio(X)	0.72	0.60	0.60	0.81	0.83	0.12	0.46	0.36	0.73	0.95	0.18	0.35
Avail Cap(c_a), veh/h	593	1474	801	611	1471	656	290	888	752	355	960	814
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	27.1	27.1	38.8	27.8	20.7	43.9	38.6	40.2	36.4	26.0	27.3
Incr Delay (d2), s/veh	3.0	0.5	1.0	6.1	3.5	0.1	5.9	1.2	6.2	34.9	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	5.9	6.5	4.2	9.7	0.9	0.6	1.5	2.7	10.7	1.5	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.0	27.6	28.0	44.8	31.3	20.8	49.9	39.7	46.4	71.3	26.2	27.8
LnGrp LOS	D	C	C	D	C	C	D	D	D	E	C	C
Approach Vol, veh/h		1287			1406			210			574	
Approach Delay, s/veh		30.7			34.3			44.7			53.1	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.0	15.3	17.5	36.4	7.7	30.6	14.3	39.6				
Change Period (Y+Rc), s	4.5	5.9	5.1	7.9	4.9	* 5.9	6.3	* 7.9				
Max Green Setting (Gmax), s	18.5	44.1	16.9	37.1	15.1	* 48	14.7	* 40				
Max Q Clear Time (g_c+I1), s	19.4	8.7	11.8	16.6	3.3	9.0	7.6	26.3				
Green Ext Time (p_c), s	0.0	0.7	0.6	6.2	0.0	1.0	0.4	5.4				
Intersection Summary												
HCM 6th Ctrl Delay			36.7									
HCM 6th LOS			D									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↘↘
Traffic Volume (vph)	0	371	0	341	675	0	0	0	0	48	0	1031
Future Volume (vph)	0	371	0	341	675	0	0	0	0	48	0	1031
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Flt		1.00		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	422	0	388	767	0	0	0	0	55	0	1172
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	422	0	388	767	0	0	0	0	55	0	1172
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		30.5		27.3	65.3					12.8		91.7
Effective Green, g (s)		30.5		27.3	65.3					12.8		91.7
Actuated g/C Ratio		0.33		0.30	0.71					0.14		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		1183		513	2458					244		2760
v/s Ratio Prot		0.12		c0.22	0.22					0.03		
v/s Ratio Perm												c0.42
v/c Ratio		0.36		0.76	0.31					0.23		0.42
Uniform Delay, d1		23.2		29.2	4.9					35.0		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d2		0.2		6.3	0.1					0.5		0.5
Delay (s)		23.4		35.5	5.0					35.5		0.5
Level of Service		C		D	A					D		A
Approach Delay (s)		23.4			15.2			0.0			2.1	
Approach LOS		C			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			91.7			Sum of lost time (s)			21.1			
Intersection Capacity Utilization			46.6%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑		
Traffic Volume (vph)	0	922	0	0	0	0	0	0	0	0	341	0	
Future Volume (vph)	0	922	0	0	0	0	0	0	0	0	341	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Grade (%)		-3%			0%			0%				0%	
Total Lost time (s)		6.9										4.0	
Lane Util. Factor		0.95										1.00	
Frt		1.00										1.00	
Flt Protected		1.00										1.00	
Satd. Flow (prot)		3557										1845	
Flt Permitted		1.00										1.00	
Satd. Flow (perm)		3557										1845	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	
Adj. Flow (vph)	0	1048	0	0	0	0	0	0	0	0	388	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	1048	0	0	0	0	0	0	0	0	388	0	
Turn Type		NA										NA	
Protected Phases		4 6!										Free!	
Permitted Phases													
Actuated Green, G (s)		50.2										91.7	
Effective Green, g (s)		50.2										91.7	
Actuated g/C Ratio		0.55										1.00	
Clearance Time (s)													
Vehicle Extension (s)													
Lane Grp Cap (vph)		1947										1845	
v/s Ratio Prot		c0.29										0.21	
v/s Ratio Perm													
v/c Ratio		0.54										0.21	
Uniform Delay, d1		13.3										0.0	
Progression Factor		1.00										1.00	
Incremental Delay, d2		0.3										0.2	
Delay (s)		13.6										0.2	
Level of Service		B										A	
Approach Delay (s)		13.6			0.0			0.0				0.2	
Approach LOS		B			A			A				A	
Intersection Summary													
HCM 2000 Control Delay			10.0									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.48										
Actuated Cycle Length (s)			91.7									Sum of lost time (s)	21.1
Intersection Capacity Utilization			52.5%									ICU Level of Service	A
Analysis Period (min)			15										
! Phase conflict between lane groups.													
c Critical Lane Group													

HCM 6th TWSC
 13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑		↑			
Traffic Vol, veh/h	0	419	0	0	820	112	66	0	114	0	0	0
Future Vol, veh/h	0	419	0	0	820	112	66	0	114	0	0	0
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	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	500	-	0	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	455	0	0	891	122	72	0	124	0	0	0

Major/Minor	Major1		Major2			Minor1			
Conflicting Flow All	-	0	-	-	-	0	901	-	228
Stage 1	-	-	-	-	-	-	455	-	-
Stage 2	-	-	-	-	-	-	446	-	-
Critical Hdwy	-	-	-	-	-	-	6.86	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	5.86	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.86	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.53	-	3.33
Pot Cap-1 Maneuver	0	-	0	0	-	0	276	0	772
Stage 1	0	-	0	0	-	0	603	0	-
Stage 2	0	-	0	0	-	0	609	0	-
Platoon blocked, %		-				-			
Mov Cap-1 Maneuver	-	-	-	-	-	-	276	0	772
Mov Cap-2 Maneuver	-	-	-	-	-	-	276	0	-
Stage 1	-	-	-	-	-	-	603	0	-
Stage 2	-	-	-	-	-	-	609	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	276	772	-	-
HCM Lane V/C Ratio	0.26	0.161	-	-
HCM Control Delay (s)	22.6	10.6	-	-
HCM Lane LOS	C	B	-	-
HCM 95th %tile Q(veh)	1	0.6	-	-

HCM 6th Signalized Intersection Summary
 14: Mt Rose Highway/Mt. Rose Hwy & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↕↕	↑↑	↑↑	↕	↕↕	↕	
Traffic Volume (veh/h)	67	386	734	40	53	92	
Future Volume (veh/h)	67	386	734	40	53	92	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	71	406	773	31	56	73	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	200	2212	1286	574	397	182	
Arrive On Green	0.05	0.59	0.38	0.38	0.12	0.12	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	71	406	773	31	56	73	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	0.7	1.9	7.2	0.5	0.6	1.7	
Cycle Q Clear(g_c), s	0.7	1.9	7.2	0.5	0.6	1.7	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	200	2212	1286	574	397	182	
V/C Ratio(X)	0.35	0.18	0.60	0.05	0.14	0.40	
Avail Cap(c_a), veh/h	2247	8917	5487	2447	3113	1428	
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	1.00	
Uniform Delay (d), s/veh	17.8	3.7	9.6	7.6	15.5	16.0	
Incr Delay (d2), s/veh	1.1	0.0	0.5	0.0	0.2	1.4	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.3	0.2	1.6	0.5	0.2	1.6	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	18.9	3.7	10.1	7.6	15.7	17.5	
LnGrp LOS	B	A	B	A	B	B	
Approach Vol, veh/h		477	804		129		
Approach Delay, s/veh		6.0	10.0		16.7		
Approach LOS		A	A		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				30.1	9.0	8.0	22.0
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				3.9	3.7	2.7	9.2
Green Ext Time (p_c), s				2.6	0.4	0.2	5.8
Intersection Summary							
HCM 6th Ctrl Delay			9.2				
HCM 6th LOS			A				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt. Rose Hwy/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	137	251	47	94	565	1125	53	495	105	468	272	127
Future Volume (veh/h)	137	251	47	94	565	1125	53	495	105	468	272	127
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	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	149	273	0	102	614	0	58	538	0	509	296	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	243	920		130	809		123	931		637	1702	
Arrive On Green	0.07	0.24	0.00	0.08	0.24	0.00	0.04	0.18	0.00	0.19	0.34	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	149	273	0	102	614	0	58	538	0	509	296	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	3.2	4.8	0.0	4.9	13.9	0.0	1.4	7.9	0.0	11.6	3.4	0.0
Cycle Q Clear(g_c), s	3.2	4.8	0.0	4.9	13.9	0.0	1.4	7.9	0.0	11.6	3.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	243	920		130	809		123	931		637	1702	
V/C Ratio(X)	0.61	0.30		0.78	0.76		0.47	0.58		0.80	0.17	
Avail Cap(c_a), veh/h	865	1784		409	1607		798	1719		1209	2351	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.1	25.4	0.0	37.0	28.7	0.0	38.6	30.4	0.0	31.8	19.1	0.0
Incr Delay (d2), s/veh	2.5	0.2	0.0	9.8	1.5	0.0	2.8	0.6	0.0	2.4	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	1.5	2.0	0.0	2.2	5.3	0.0	0.6	3.0	0.0	4.6	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	25.5	0.0	46.7	30.2	0.0	41.4	31.0	0.0	34.2	19.2	0.0
LnGrp LOS	D	C		D	C		D	C		C	B	
Approach Vol, veh/h		422	A		716	A		596	A		805	A
Approach Delay, s/veh		30.5			32.6			32.0			28.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.4	22.3	11.4	26.5	8.9	34.7	11.3	26.6				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	13.6	9.9	6.9	6.8	3.4	5.4	5.2	15.9				
Green Ext Time (p_c), s	1.6	3.0	0.2	1.6	0.1	1.8	0.3	3.8				
Intersection Summary												
HCM 6th Ctrl Delay			30.9									
HCM 6th LOS			C									

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	46.5							
Intersection LOS	E							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	873		1060		1183		142	
Demand Flow Rate, veh/h	900		1092		1218		146	
Vehicles Circulating, veh/h	143		1178		613		2084	
Vehicles Exiting, veh/h	2087		653		430		186	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	7.6		105.7		23.1		39.2	
Approach LOS	A		F		C		E	
Lane	Left	Right	Left	Right	Left	Right	Left	
Designated Moves	LTR	R	LT	TR	L	LTR	LTR	
Assumed Moves	LT	R	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.666	0.334	0.470	0.530	0.530	0.470	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	599	301	513	579	646	572	146	
Cap Entry Lane, veh/h	1183	1258	457	522	768	843	241	
Entry HV Adj Factor	0.971	0.970	0.971	0.971	0.970	0.972	0.975	
Flow Entry, veh/h	581	292	498	562	627	556	142	
Cap Entry, veh/h	1149	1220	444	506	745	819	235	
V/C Ratio	0.506	0.239	1.123	1.110	0.841	0.678	0.605	
Control Delay, s/veh	8.8	5.1	110.6	101.4	29.0	16.5	39.2	
LOS	A	A	F	F	D	C	E	
95th %tile Queue, veh	3	1	18	18	10	5	4	

HCM 6th TWSC
 1: Joy Lake Rd & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	4.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	674	8	161	342	10	106
Future Vol, veh/h	674	8	161	342	10	106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	15	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	822	10	196	417	12	129

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	832	0	1631
Stage 1	-	-	-	-	822
Stage 2	-	-	-	-	809
Critical Hdwy	-	-	4.13	-	9.43
Critical Hdwy Stg 1	-	-	-	-	8.43
Critical Hdwy Stg 2	-	-	-	-	8.43
Follow-up Hdwy	-	-	2.227	-	3.527
Pot Cap-1 Maneuver	-	-	796	-	29
Stage 1	-	-	-	-	217
Stage 2	-	-	-	-	222
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	796	-	22
Mov Cap-2 Maneuver	-	-	-	-	96
Stage 1	-	-	-	-	217
Stage 2	-	-	-	-	167

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	32.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	96	264	-	-	796	-
HCM Lane V/C Ratio	0.127	0.49	-	-	0.247	-
HCM Control Delay (s)	47.9	31	-	-	11	-
HCM Lane LOS	E	D	-	-	B	-
HCM 95th %tile Q(veh)	0.4	2.5	-	-	1	-

HCM 6th TWSC
 2: Bordeaux Dr/Timberline Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	17.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↑↑	↗		↑	↗		↘	↗
Traffic Vol, veh/h	4	812	8	121	489	35	15	2	150	40	10	2
Future Vol, veh/h	4	812	8	121	489	35	15	2	150	40	10	2
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	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	300	-	600	350	-	150	-	-	25	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	990	10	148	596	43	18	2	183	49	12	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	639	0	0	990	0	0	1600	1935	-	1893	1892	298
Stage 1	-	-	-	-	-	-	1000	1000	-	892	892	-
Stage 2	-	-	-	-	-	-	600	935	-	1001	1000	-
Critical Hdwy	4.145	-	-	4.145	-	-	7.345	6.545	-	7.345	6.545	6.945
Critical Hdwy Stg 1	-	-	-	-	-	-	6.145	5.545	-	6.545	5.545	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.545	5.545	-	6.145	5.545	-
Follow-up Hdwy	2.2285	-	-	2.2285	-	-	3.5285	4.0285	-	3.5285	4.0285	3.3285
Pot Cap-1 Maneuver	937	-	-	691	-	-	77	65	0	~ 47	69	696
Stage 1	-	-	-	-	-	-	290	318	0	302	358	-
Stage 2	-	-	-	-	-	-	453	341	0	290	318	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	937	-	-	691	-	-	53	51	-	~ 38	54	696
Mov Cap-2 Maneuver	-	-	-	-	-	-	53	51	-	~ 38	54	-
Stage 1	-	-	-	-	-	-	289	316	-	300	281	-
Stage 2	-	-	-	-	-	-	339	268	-	286	316	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.2			79.1			\$ 469.6		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	51	-	937	-	-	691	-	-	40	696
HCM Lane V/C Ratio	0.048	-	0.005	-	-	0.214	-	-	1.524	0.004
HCM Control Delay (s)	79.1	0	8.9	-	-	11.6	-	-	\$ 488	10.2
HCM Lane LOS	F	A	A	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	0.1	-	0	-	-	0.8	-	-	6.3	0

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

HCM 6th TWSC
 3: Callahan Rd & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑	↗	↖	↑↑	↗	↖	↗		↖	↗	
Traffic Vol, veh/h	2	1101	21	305	745	53	5	10	219	25	5	2
Future Vol, veh/h	2	1101	21	305	745	53	5	10	219	25	5	2
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	300	-	100	300	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-5	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	1327	25	367	898	64	6	12	264	30	6	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	962	0	0	1352	0	0	2517	3027	664	2306	2988	449
Stage 1	-	-	-	-	-	-	1331	1331	-	1632	1632	-
Stage 2	-	-	-	-	-	-	1186	1696	-	674	1356	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	2.23	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	705	-	-	500	-	-	14	13	401	~ 20	13	555
Stage 1	-	-	-	-	-	-	162	220	-	104	156	-
Stage 2	-	-	-	-	-	-	199	145	-	408	214	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	705	-	-	500	-	-	-	~ 3	401	-	~ 3	555
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 3	-	-	~ 3	-
Stage 1	-	-	-	-	-	-	162	219	-	104	41	-
Stage 2	-	-	-	-	-	-	45	39	-	131	213	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	8.2		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	59	705	-	-	500	-	-	-	4
HCM Lane V/C Ratio	-	4.676	0.003	-	-	0.735	-	-	-	2.108
HCM Control Delay (s)		\$ 1794.6	10.1	-	-	29.6	-	-		\$ 2111.5
HCM Lane LOS		-	F	B	-	-	D	-	-	F
HCM 95th %tile Q(veh)		-	30.5	0	-	-	6.1	-	-	2.1

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

HCM 6th TWSC
 4: Mt. Rose Hwy & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	1352	1101	23	7	10
Future Vol, veh/h	5	1352	1101	23	7	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	1629	1327	28	8	12

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1355	0	0 2168 678
Stage 1	-	-	- 1341 -
Stage 2	-	-	- 827 -
Critical Hdwy	4.16	-	- 6.86 6.96
Critical Hdwy Stg 1	-	-	- 5.86 -
Critical Hdwy Stg 2	-	-	- 5.86 -
Follow-up Hdwy	2.23	-	- 3.53 3.33
Pot Cap-1 Maneuver	498	-	- 40 392
Stage 1	-	-	- 207 -
Stage 2	-	-	- 387 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	498	-	- 40 392
Mov Cap-2 Maneuver	-	-	- 139 -
Stage 1	-	-	- 205 -
Stage 2	-	-	- 387 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	22.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	498	-	-	-	224
HCM Lane V/C Ratio	0.012	-	-	-	0.091
HCM Control Delay (s)	12.3	-	-	-	22.7
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

HCM 6th TWSC
5: Fawn Ln & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↘
Traffic Vol, veh/h	1347	12	42	1121	10	30
Future Vol, veh/h	1347	12	42	1121	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-5	-	-	5	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1604	14	50	1335	12	36

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1618	0	2379
Stage 1	-	-	-	-	1611
Stage 2	-	-	-	-	768
Critical Hdwy	-	-	4.16	-	6.86
Critical Hdwy Stg 1	-	-	-	-	5.86
Critical Hdwy Stg 2	-	-	-	-	5.86
Follow-up Hdwy	-	-	2.23	-	3.53
Pot Cap-1 Maneuver	-	-	394	-	28
Stage 1	-	-	-	-	147
Stage 2	-	-	-	-	416
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	394	-	24
Mov Cap-2 Maneuver	-	-	-	-	104
Stage 1	-	-	-	-	147
Stage 2	-	-	-	-	363

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	24.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	104	321	-	-	394	-
HCM Lane V/C Ratio	0.114	0.111	-	-	0.127	-
HCM Control Delay (s)	44	17.6	-	-	15.5	-
HCM Lane LOS	E	C	-	-	C	-
HCM 95th %tile Q(veh)	0.4	0.4	-	-	0.4	-

HCM 6th Signalized Intersection Summary
 6: Mt. Rose Hwy & Thomas Creek Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↖	↑↑	↑↑	↗	↖↗	↖	
Traffic Volume (veh/h)	141	1262	928	328	300	224	
Future Volume (veh/h)	141	1262	928	328	300	224	
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	2052	2052	1567	1567	1856	1856	
Adj Flow Rate, veh/h	160	1434	1055	280	341	191	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	212	2478	1335	595	589	270	
Arrive On Green	0.11	0.64	0.45	0.45	0.17	0.17	
Sat Flow, veh/h	1954	4001	3056	1328	3428	1572	
Grp Volume(v), veh/h	160	1434	1055	280	341	191	
Grp Sat Flow(s),veh/h/ln	1954	1949	1489	1328	1714	1572	
Q Serve(g_s), s	5.5	14.8	21.1	10.3	6.4	8.0	
Cycle Q Clear(g_c), s	5.5	14.8	21.1	10.3	6.4	8.0	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	212	2478	1335	595	589	270	
V/C Ratio(X)	0.76	0.58	0.79	0.47	0.58	0.71	
Avail Cap(c_a), veh/h	827	4598	2017	899	2184	1002	
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	1.00	
Uniform Delay (d), s/veh	30.2	7.3	16.4	13.4	26.5	27.2	
Incr Delay (d2), s/veh	5.4	0.2	1.3	0.6	0.9	3.4	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	2.6	3.5	5.7	2.5	2.6	7.0	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	35.6	7.5	17.7	14.0	27.4	30.6	
LnGrp LOS	D	A	B	B	C	C	
Approach Vol, veh/h		1594	1335		532		
Approach Delay, s/veh		10.3	16.9		28.6		
Approach LOS		B	B		C		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				52.1	17.6	13.1	39.0
Change Period (Y+Rc), s				7.8	5.6	5.5	7.8
Max Green Setting (Gmax), s				82.2	44.4	29.5	47.2
Max Q Clear Time (g_c+I1), s				16.8	10.0	7.5	23.1
Green Ext Time (p_c), s				13.6	2.0	0.4	8.2
Intersection Summary							
HCM 6th Ctrl Delay			15.7				
HCM 6th LOS			B				

HCM 6th TWSC
 7: Edmonton Dr & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	5.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		↑
Traffic Vol, veh/h	1472	55	272	1234	0	208
Future Vol, veh/h	1472	55	272	1234	0	208
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	650	300	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-7	-	-	7	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1600	60	296	1341	0	226

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1660	0	800
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.16	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.23	-	3.33
Pot Cap-1 Maneuver	-	-	380	-	326
Stage 1	-	-	-	-	0
Stage 2	-	-	-	-	0
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	380	-	326
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.4	37.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	326	-	-	380	-
HCM Lane V/C Ratio	0.694	-	-	0.778	-
HCM Control Delay (s)	37.6	-	-	40.8	-
HCM Lane LOS	E	-	-	E	-
HCM 95th %tile Q(veh)	4.9	-	-	6.5	-

HCM 6th TWSC
 8: Mt. Rose Hwy & Telluride Dr

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↗
Traffic Vol, veh/h	23	1463	1322	49	29	20
Future Vol, veh/h	23	1463	1322	49	29	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	25	0	25
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	26	1644	1485	55	33	22

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1540	0	-	0	2359 743
Stage 1	-	-	-	-	1485 -
Stage 2	-	-	-	-	874 -
Critical Hdwy	4.16	-	-	-	6.86 6.96
Critical Hdwy Stg 1	-	-	-	-	5.86 -
Critical Hdwy Stg 2	-	-	-	-	5.86 -
Follow-up Hdwy	2.23	-	-	-	3.53 3.33
Pot Cap-1 Maneuver	423	-	-	-	~ 29 355
Stage 1	-	-	-	-	173 -
Stage 2	-	-	-	-	366 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	423	-	-	-	~ 27 355
Mov Cap-2 Maneuver	-	-	-	-	113 -
Stage 1	-	-	-	-	162 -
Stage 2	-	-	-	-	366 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	35.6
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	423	-	-	-	113	355
HCM Lane V/C Ratio	0.061	-	-	-	0.288	0.063
HCM Control Delay (s)	14.1	-	-	-	49.3	15.8
HCM Lane LOS	B	-	-	-	E	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.1	0.2

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

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗		↑↑	↗				↗	↘	↗
Traffic Vol, veh/h	8	1707	10	0	1580	72	0	0	14	41	0	4
Future Vol, veh/h	8	1707	10	0	1580	72	0	0	14	41	0	4
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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	300	-	1000	-	-	50	-	-	0	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	1760	10	0	1629	74	0	0	14	42	0	4

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1703	0	-	880
Stage 1	-	-	-	1629
Stage 2	-	-	-	896
Critical Hdwy	4.16	-	-	6.96
Critical Hdwy Stg 1	-	-	-	6.56
Critical Hdwy Stg 2	-	-	-	6.56
Follow-up Hdwy	2.23	-	-	3.33
Pot Cap-1 Maneuver	365	0	0	288
Stage 1	-	0	0	105
Stage 2	-	0	0	299
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	365	-	-	288
Mov Cap-2 Maneuver	-	-	-	73
Stage 1	-	-	-	103
Stage 2	-	-	-	278

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	18.2	99.2
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	288	365	-	-	-	73	318
HCM Lane V/C Ratio	0.05	0.023	-	-	-	0.579	0.013
HCM Control Delay (s)	18.2	15.1	-	-	-	107.3	16.5
HCM Lane LOS	C	C	-	-	-	F	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	-	2.5	0

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

HCM 6th Signalized Intersection Summary

10: Wedge Pkwy & Mt. Rose Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↔		↔↔	↑↑	↔	↔	↑	↔	↔	↑	↔
Traffic Volume (veh/h)	175	1147	19	145	918	203	31	78	225	450	59	316
Future Volume (veh/h)	175	1147	19	145	918	203	31	78	225	450	59	316
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	182	1195	18	151	956	158	32	81	176	469	61	247
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	233	1853	28	215	1106	493	61	254	215	438	643	545
Arrive On Green	0.06	0.33	0.33	0.06	0.32	0.32	0.03	0.14	0.14	0.25	0.35	0.35
Sat Flow, veh/h	3718	5576	84	3330	3425	1528	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	182	785	428	151	956	158	32	81	176	469	61	247
Grp Sat Flow(s),veh/h/ln	1859	1831	1997	1665	1712	1528	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	5.2	19.5	19.5	4.8	28.1	8.4	1.9	4.2	11.6	26.5	2.4	13.0
Cycle Q Clear(g_c), s	5.2	19.5	19.5	4.8	28.1	8.4	1.9	4.2	11.6	26.5	2.4	13.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	233	1217	664	215	1106	493	61	254	215	438	643	545
V/C Ratio(X)	0.78	0.64	0.65	0.70	0.86	0.32	0.53	0.32	0.82	1.07	0.09	0.45
Avail Cap(c_a), veh/h	233	1217	664	433	1267	565	381	765	648	438	827	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.4	30.4	30.4	49.1	34.0	27.4	50.8	41.7	44.9	40.3	23.6	27.1
Incr Delay (d2), s/veh	15.7	1.2	2.2	4.1	5.8	0.4	6.9	0.7	7.4	63.5	0.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	8.2	9.1	2.0	11.9	3.0	1.0	2.0	4.8	18.9	1.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.2	31.5	32.5	53.2	39.8	27.7	57.7	42.4	52.3	103.8	23.7	27.7
LnGrp LOS	E	C	C	D	D	C	E	D	D	F	C	C
Approach Vol, veh/h		1395			1265			289			777	
Approach Delay, s/veh		36.2			39.9			50.1			73.3	
Approach LOS		D			D			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.0	20.6	12.0	43.5	8.6	43.0	13.0	42.5				
Change Period (Y+Rc), s	4.5	5.9	5.1	7.9	4.9	* 5.9	6.3	* 7.9				
Max Green Setting (Gmax), s	26.5	44.1	13.9	32.1	23.1	* 48	6.7	* 40				
Max Q Clear Time (g_c+I1), s	28.5	13.6	6.8	21.5	3.9	15.0	7.2	30.1				
Green Ext Time (p_c), s	0.0	1.0	0.2	5.2	0.0	1.2	0.0	4.5				
Intersection Summary												
HCM 6th Ctrl Delay			46.3									
HCM 6th LOS			D									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↘↘
Traffic Volume (vph)	0	763	0	375	727	0	0	0	0	68	0	1254
Future Volume (vph)	0	763	0	375	727	0	0	0	0	68	0	1254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Flt		1.00		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	838	0	412	799	0	0	0	0	75	0	1378
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	838	0	412	799	0	0	0	0	75	0	1378
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		48.5		33.5	89.5					17.6		120.7
Effective Green, g (s)		48.5		33.5	89.5					17.6		120.7
Actuated g/C Ratio		0.40		0.28	0.74					0.15		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		1429		479	2559					255		2760
v/s Ratio Prot		c0.24		c0.24	0.23					0.04		
v/s Ratio Perm												c0.50
v/c Ratio		0.59		0.86	0.31					0.29		0.50
Uniform Delay, d1		28.3		41.4	5.2					46.0		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d2		0.6		14.6	0.1					0.6		0.6
Delay (s)		28.9		55.9	5.3					46.7		0.6
Level of Service		C		E	A					D		A
Approach Delay (s)		28.9			22.5			0.0			3.0	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			16.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			120.7			Sum of lost time (s)			21.1			
Intersection Capacity Utilization			59.7%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1214	0	0	0	0	0	0	0	0	375	0
Future Volume (vph)	0	1214	0	0	0	0	0	0	0	0	375	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		6.9									4.0	
Lane Util. Factor		0.95									1.00	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3557									1845	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3557									1845	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	1334	0	0	0	0	0	0	0	0	412	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1334	0	0	0	0	0	0	0	0	412	0
Turn Type		NA									NA	
Protected Phases		4 6!									Free!	
Permitted Phases												
Actuated Green, G (s)		73.0									120.7	
Effective Green, g (s)		73.0									120.7	
Actuated g/C Ratio		0.60									1.00	
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2151									1845	
v/s Ratio Prot		c0.37									0.22	
v/s Ratio Perm												
v/c Ratio		0.62									0.22	
Uniform Delay, d1		15.1									0.0	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.6									0.1	
Delay (s)		15.6									0.1	
Level of Service		B									A	
Approach Delay (s)		15.6			0.0			0.0			0.1	
Approach LOS		B			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			12.0				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			120.7				Sum of lost time (s)			21.1		
Intersection Capacity Utilization			62.4%				ICU Level of Service			B		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM 6th TWSC
 13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Intersection												
Int Delay, s/veh	34.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑		↑			
Traffic Vol, veh/h	0	831	0	0	771	260	230	0	393	0	0	0
Future Vol, veh/h	0	831	0	0	771	260	230	0	393	0	0	0
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	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	500	-	0	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	857	0	0	795	268	237	0	405	0	0	0

Major/Minor	Major1		Major2		Minor1				
Conflicting Flow All	-	0	-	-	-	0	1255	-	429
Stage 1	-	-	-	-	-	-	857	-	-
Stage 2	-	-	-	-	-	-	398	-	-
Critical Hdwy	-	-	-	-	-	-	6.86	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	5.86	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.86	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.53	-	3.33
Pot Cap-1 Maneuver	0	-	0	0	-	0	~ 162	0	571
Stage 1	0	-	0	0	-	0	374	0	-
Stage 2	0	-	0	0	-	0	644	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	~ 162	0	571
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 162	0	-
Stage 1	-	-	-	-	-	-	374	0	-
Stage 2	-	-	-	-	-	-	644	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	123.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	162	571	-	-
HCM Lane V/C Ratio	1.464	0.71	-	-
HCM Control Delay (s)	291.3	25.2	-	-
HCM Lane LOS	F	D	-	-
HCM 95th %tile Q(veh)	15.2	5.7	-	-

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

HCM 6th Signalized Intersection Summary
 14: Mt Rose Highway/Mt. Rose Hwy & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↔↔	↑↑	↑↑	↔	↔↔	↔	
Traffic Volume (veh/h)	177	893	703	54	182	363	
Future Volume (veh/h)	177	893	703	54	182	363	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	186	940	740	48	192	321	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	327	1979	1102	492	891	409	
Arrive On Green	0.09	0.53	0.33	0.33	0.26	0.26	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	186	940	740	48	192	321	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	2.7	8.6	10.3	1.2	2.4	10.3	
Cycle Q Clear(g_c), s	2.7	8.6	10.3	1.2	2.4	10.3	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	327	1979	1102	492	891	409	
V/C Ratio(X)	0.57	0.48	0.67	0.10	0.22	0.79	
Avail Cap(c_a), veh/h	1620	6429	3956	1764	2244	1029	
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	1.00	
Uniform Delay (d), s/veh	23.7	8.1	15.7	12.6	15.7	18.7	
Incr Delay (d2), s/veh	1.6	0.2	0.7	0.1	0.1	3.4	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.1	2.3	3.2	0.0	0.9	0.4	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	25.2	8.2	16.4	12.7	15.8	22.0	
LnGrp LOS	C	A	B	B	B	C	
Approach Vol, veh/h		1126	788		513		
Approach Delay, s/veh		11.0	16.2		19.7		
Approach LOS		B	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				35.6	18.6	10.8	24.9
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				10.6	12.3	4.7	12.3
Green Ext Time (p_c), s				7.5	1.8	0.5	5.5
Intersection Summary							
HCM 6th Ctrl Delay			14.5				
HCM 6th LOS			B				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt. Rose Hwy/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	204	767	97	179	506	910	89	447	177	1172	642	220
Future Volume (veh/h)	204	767	97	179	506	910	89	447	177	1172	642	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	208	783	0	183	516	0	91	456	0	1196	655	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	286	955		212	975		147	684		889	1788	
Arrive On Green	0.08	0.25	0.00	0.13	0.29	0.00	0.04	0.13	0.00	0.26	0.35	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	208	783	0	183	516	0	91	456	0	1196	655	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	6.1	21.5	0.0	11.9	14.4	0.0	2.9	9.5	0.0	28.8	10.7	0.0
Cycle Q Clear(g_c), s	6.1	21.5	0.0	11.9	14.4	0.0	2.9	9.5	0.0	28.8	10.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	286	955		212	975		147	684		889	1788	
V/C Ratio(X)	0.73	0.82		0.86	0.53		0.62	0.67		1.35	0.37	
Avail Cap(c_a), veh/h	636	1311		300	1181		586	1263		889	1788	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.2	39.3	0.0	47.6	33.0	0.0	52.3	45.7	0.0	41.2	26.7	0.0
Incr Delay (d2), s/veh	3.6	3.0	0.0	16.3	0.4	0.0	4.2	1.1	0.0	163.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	10.0	0.0	5.8	5.6	0.0	1.3	3.9	0.0	31.6	4.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.7	42.4	0.0	63.8	33.4	0.0	56.5	46.8	0.0	204.3	26.8	0.0
LnGrp LOS	D	D		E	C		E	D		F	C	
Approach Vol, veh/h		991	A		699	A		547	A		1851	A
Approach Delay, s/veh		44.8			41.4			48.4			141.5	
Approach LOS		D			D			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	22.3	19.2	34.7	10.8	46.5	14.5	39.3				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	30.8	11.5	13.9	23.5	4.9	12.7	8.1	16.4				
Green Ext Time (p_c), s	0.0	2.4	0.2	4.3	0.2	4.1	0.5	3.1				
Intersection Summary												
HCM 6th Ctrl Delay			88.5									
HCM 6th LOS			F									

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	87.9							
Intersection LOS	F							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	2299		1087		1026		186	
Demand Flow Rate, veh/h	2368		1120		1057		192	
Vehicles Circulating, veh/h	326		1001		1195		1970	
Vehicles Exiting, veh/h	1836		1251		1499		151	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	93.8		60.3		111.4		46.9	
Approach LOS	F		F		F		E	
Lane	Left	Right	Left	Right	Left	Right	Left	
Designated Moves	LTR	R	LT	TR	L	LTR	LTR	
Assumed Moves	LTR	R	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.470	0.530	0.470	0.530	0.530	0.470	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	1113	1255	526	594	560	497	192	
Cap Entry Lane, veh/h	1000	1076	538	606	450	514	266	
Entry HV Adj Factor	0.971	0.971	0.972	0.970	0.971	0.971	0.969	
Flow Entry, veh/h	1080	1218	511	576	544	482	186	
Cap Entry, veh/h	971	1045	522	588	437	499	258	
V/C Ratio	1.113	1.166	0.979	0.980	1.245	0.967	0.722	
Control Delay, s/veh	84.1	102.4	62.3	58.6	156.0	61.0	46.9	
LOS	F	F	F	F	F	F	E	
95th %tile Queue, veh	28	35	13	14	22	12	5	

Appendix F

2025 Near-Term Alternative Synchro Output

HCM 6th TWSC
 1: Joy Lake Rd & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	2.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	170	4	66	351	1	88
Future Vol, veh/h	170	4	66	351	1	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	15	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	179	4	69	369	1	93

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	183	0	686
Stage 1	-	-	-	-	179
Stage 2	-	-	-	-	507
Critical Hdwy	-	-	4.13	-	9.43
Critical Hdwy Stg 1	-	-	-	-	8.43
Critical Hdwy Stg 2	-	-	-	-	8.43
Follow-up Hdwy	-	-	2.227	-	3.527
Pot Cap-1 Maneuver	-	-	1386	-	232
Stage 1	-	-	-	-	732
Stage 2	-	-	-	-	395
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1386	-	220
Mov Cap-2 Maneuver	-	-	-	-	309
Stage 1	-	-	-	-	732
Stage 2	-	-	-	-	375

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	309	799	-	-	1386	-
HCM Lane V/C Ratio	0.003	0.116	-	-	0.05	-
HCM Control Delay (s)	16.7	10.1	-	-	7.7	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0	0.4	-	-	0.2	-

HCM 6th TWSC
 2: Bordeaux Dr/Timberline Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑↑	↗		↑	↗		↖	↗
Traffic Vol, veh/h	1	266	10	155	402	26	6	3	105	27	4	5
Future Vol, veh/h	1	266	10	155	402	26	6	3	105	27	4	5
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	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	300	-	600	350	-	150	-	-	25	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	286	11	167	432	28	6	3	113	29	4	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	460	0	0	286	0	0	840	1082	-	1056	1054	216
Stage 1	-	-	-	-	-	-	288	288	-	766	766	-
Stage 2	-	-	-	-	-	-	552	794	-	290	288	-
Critical Hdwy	4.145	-	-	4.145	-	-	7.345	6.545	-	7.345	6.545	6.945
Critical Hdwy Stg 1	-	-	-	-	-	-	6.145	5.545	-	6.545	5.545	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.545	5.545	-	6.145	5.545	-
Follow-up Hdwy	2.2285	-	-	2.2285	-	-	3.5285	4.0285	-	3.5285	4.0285	3.3285
Pot Cap-1 Maneuver	1093	-	-	1268	-	-	270	216	0	190	224	787
Stage 1	-	-	-	-	-	-	716	671	0	360	409	-
Stage 2	-	-	-	-	-	-	484	397	0	714	671	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1093	-	-	1268	-	-	237	187	-	169	194	787
Mov Cap-2 Maneuver	-	-	-	-	-	-	237	187	-	169	194	-
Stage 1	-	-	-	-	-	-	715	670	-	360	355	-
Stage 2	-	-	-	-	-	-	412	345	-	710	670	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.2			24.6			27.9		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	187	-	1093	-	-	1268	-	-	172	787
HCM Lane V/C Ratio	0.017	-	0.001	-	-	0.131	-	-	0.194	0.007
HCM Control Delay (s)	24.6	0	8.3	-	-	8.3	-	-	30.9	9.6
HCM Lane LOS	C	A	A	-	-	A	-	-	D	A
HCM 95th %tile Q(veh)	0.1	-	0	-	-	0.5	-	-	0.7	0

HCM 6th Roundabout
3: Callahan Rd & Mt. Rose Hwy

Intersection							
Intersection Delay, s/veh	4.8						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	2		2		2		2
Adj Approach Flow, veh/h	370		674		193		46
Demand Flow Rate, veh/h	381		694		199		47
Vehicles Circulating, veh/h	123		9		418		664
Vehicles Exiting, veh/h	588		608		86		39
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		5.7		5.1
Approach LOS	A		A		A		A
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328	
Entry Flow, veh/h	179	202	326	368	199	47	
Cap Entry Lane, veh/h	1205	1279	1339	1409	995	808	
Entry HV Adj Factor	0.972	0.971	0.972	0.971	0.970	0.978	
Flow Entry, veh/h	174	196	317	357	193	46	
Cap Entry, veh/h	1171	1242	1301	1368	965	790	
V/C Ratio	0.148	0.158	0.244	0.261	0.200	0.058	
Control Delay, s/veh	4.4	4.2	4.9	4.9	5.7	5.1	
LOS	A	A	A	A	A	A	
95th %tile Queue, veh	1	1	1	1	1	0	

HCM 6th TWSC
 4: Mt. Rose Hwy & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑		↘	
Traffic Vol, veh/h	5	577	657	5	3	1
Future Vol, veh/h	5	577	657	5	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	5	595	677	5	3	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	682	0	0	988	341
Stage 1	-	-	-	680	-
Stage 2	-	-	-	308	-
Critical Hdwy	4.16	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	5.86	-
Follow-up Hdwy	2.23	-	-	3.53	3.33
Pot Cap-1 Maneuver	900	-	-	242	652
Stage 1	-	-	-	462	-
Stage 2	-	-	-	716	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	900	-	-	241	652
Mov Cap-2 Maneuver	-	-	-	356	-
Stage 1	-	-	-	459	-
Stage 2	-	-	-	716	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	900	-	-	-	402
HCM Lane V/C Ratio	0.006	-	-	-	0.01
HCM Control Delay (s)	9	-	-	-	14
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC
 5: Fawn Ln & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Vol, veh/h	580	1	3	665	5	19
Future Vol, veh/h	580	1	3	665	5	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-5	-	-	5	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	598	1	3	686	5	20

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	599	0	948
Stage 1	-	-	-	-	599
Stage 2	-	-	-	-	349
Critical Hdwy	-	-	4.16	-	6.86
Critical Hdwy Stg 1	-	-	-	-	5.86
Critical Hdwy Stg 2	-	-	-	-	5.86
Follow-up Hdwy	-	-	2.23	-	3.53
Pot Cap-1 Maneuver	-	-	967	-	257
Stage 1	-	-	-	-	509
Stage 2	-	-	-	-	682
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	967	-	256
Mov Cap-2 Maneuver	-	-	-	-	378
Stage 1	-	-	-	-	509
Stage 2	-	-	-	-	680

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	378	693	-	-	967	-
HCM Lane V/C Ratio	0.014	0.028	-	-	0.003	-
HCM Control Delay (s)	14.7	10.3	-	-	8.7	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-

HCM 6th Signalized Intersection Summary

6: Mt. Rose Hwy & Thomas Creek Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↘	↑↑	↑↑	↘	↘↗	↘	
Traffic Volume (veh/h)	64	542	556	133	176	101	
Future Volume (veh/h)	64	542	556	133	176	101	
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	2052	2052	1567	1567	1856	1856	
Adj Flow Rate, veh/h	67	565	579	105	183	79	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	130	2062	951	424	419	192	
Arrive On Green	0.07	0.53	0.32	0.32	0.12	0.12	
Sat Flow, veh/h	1954	4001	3056	1328	3428	1572	
Grp Volume(v), veh/h	67	565	579	105	183	79	
Grp Sat Flow(s),veh/h/ln	1954	1949	1489	1328	1714	1572	
Q Serve(g_s), s	1.3	3.1	6.3	2.2	1.9	1.8	
Cycle Q Clear(g_c), s	1.3	3.1	6.3	2.2	1.9	1.8	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	130	2062	951	424	419	192	
V/C Ratio(X)	0.52	0.27	0.61	0.25	0.44	0.41	
Avail Cap(c_a), veh/h	1500	8340	3658	1631	3962	1817	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	17.3	5.0	11.0	9.7	15.6	15.6	
Incr Delay (d2), s/veh	3.1	0.1	0.6	0.3	0.7	1.4	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.5	0.3	1.2	0.4	0.7	0.1	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	20.5	5.1	11.7	10.0	16.4	17.0	
LnGrp LOS	C	A	B	A	B	B	
Approach Vol, veh/h		632	684		262		
Approach Delay, s/veh		6.7	11.4		16.5		
Approach LOS		A	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				28.1	10.3	8.1	20.1
Change Period (Y+Rc), s				7.8	5.6	5.5	7.8
Max Green Setting (Gmax), s				82.2	44.4	29.5	47.2
Max Q Clear Time (g_c+I1), s				5.1	3.9	3.3	8.3
Green Ext Time (p_c), s				3.6	0.9	0.1	4.0
Intersection Summary							
HCM 6th Ctrl Delay			10.4				
HCM 6th LOS			B				

HCM 6th TWSC
7: Edmonton Dr & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑		↑	↑
Traffic Vol, veh/h	662	35	149	0	50	201
Future Vol, veh/h	662	35	149	0	50	201
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	650	-	-	270	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-7	-	-	7	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	752	40	169	0	57	228

Major/Minor	Major1		Minor1	
Conflicting Flow All	0	0	752	-
Stage 1	-	-	752	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	6.86	-
Critical Hdwy Stg 1	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.53	-
Pot Cap-1 Maneuver	-	-	344	0
Stage 1	-	-	424	0
Stage 2	-	-	-	0
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	344	-
Mov Cap-2 Maneuver	-	-	344	-
Stage 1	-	-	424	-
Stage 2	-	-	-	-

Approach	EB	NB
HCM Control Delay, s	0	17.5
HCM LOS		C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR
Capacity (veh/h)	344	-	-	-
HCM Lane V/C Ratio	0.165	-	-	-
HCM Control Delay (s)	17.5	0	-	-
HCM Lane LOS	C	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	-

HCM 6th TWSC
 8: Mt. Rose Hwy & Telluride Dr

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↗
Traffic Vol, veh/h	6	963	859	20	30	4
Future Vol, veh/h	6	963	859	20	30	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	25	0	25
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	88	80	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	7	1204	976	23	34	5

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	999	0	-	0	1592 488
Stage 1	-	-	-	-	976 -
Stage 2	-	-	-	-	616 -
Critical Hdwy	4.16	-	-	-	6.86 6.96
Critical Hdwy Stg 1	-	-	-	-	5.86 -
Critical Hdwy Stg 2	-	-	-	-	5.86 -
Follow-up Hdwy	2.23	-	-	-	3.53 3.33
Pot Cap-1 Maneuver	683	-	-	-	97 523
Stage 1	-	-	-	-	324 -
Stage 2	-	-	-	-	498 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	683	-	-	-	96 523
Mov Cap-2 Maneuver	-	-	-	-	219 -
Stage 1	-	-	-	-	321 -
Stage 2	-	-	-	-	498 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	22.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	683	-	-	-	219	523
HCM Lane V/C Ratio	0.01	-	-	-	0.156	0.009
HCM Control Delay (s)	10.3	-	-	-	24.4	11.9
HCM Lane LOS	B	-	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5	0

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↗		↗↗	↗				↗	↘	↗
Traffic Vol, veh/h	5	892	13	0	873	24	0	0	1	28	0	6
Future Vol, veh/h	5	892	13	0	873	24	0	0	1	28	0	6
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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	300	-	1000	-	-	50	-	-	0	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	959	14	0	939	26	0	0	1	30	0	6

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	965	0	-	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.16	-	-	6.96
Critical Hdwy Stg 1	-	-	-	6.56
Critical Hdwy Stg 2	-	-	-	6.56
Follow-up Hdwy	2.23	-	-	3.33
Pot Cap-1 Maneuver	703	0	0	529
Stage 1	-	0	0	282
Stage 2	-	0	0	526
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	703	-	-	529
Mov Cap-2 Maneuver	-	-	-	204
Stage 1	-	-	-	280
Stage 2	-	-	-	521

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	11.8	23.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	529	703	-	-	-	204	537
HCM Lane V/C Ratio	0.002	0.008	-	-	-	0.148	0.012
HCM Control Delay (s)	11.8	10.2	-	-	-	25.7	11.8
HCM Lane LOS		B	B	-	-	D	B
HCM 95th %tile Q(veh)		0	0	-	-	0.5	0

HCM 6th Signalized Intersection Summary

10: Wedge Pkwy & Mt. Rose Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕↔		↔↔	↕↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	146	645	17	229	615	52	16	43	98	211	57	123
Future Volume (veh/h)	146	645	17	229	615	52	16	43	98	211	57	123
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	160	709	17	252	676	43	18	47	81	232	63	101
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	325	1509	36	371	955	426	45	171	145	285	412	349
Arrive On Green	0.09	0.27	0.27	0.11	0.28	0.28	0.03	0.09	0.09	0.16	0.22	0.22
Sat Flow, veh/h	3718	5519	132	3330	3425	1528	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	160	470	256	252	676	43	18	47	81	232	63	101
Grp Sat Flow(s),veh/h/ln	1859	1831	1989	1665	1712	1528	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	2.7	6.9	6.9	4.7	11.5	1.4	0.6	1.5	3.2	8.2	1.8	3.5
Cycle Q Clear(g_c), s	2.7	6.9	6.9	4.7	11.5	1.4	0.6	1.5	3.2	8.2	1.8	3.5
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	325	1001	544	371	955	426	45	171	145	285	412	349
V/C Ratio(X)	0.49	0.47	0.47	0.68	0.71	0.10	0.40	0.27	0.56	0.81	0.15	0.29
Avail Cap(c_a), veh/h	844	2099	1140	869	2095	934	412	1264	1071	505	1367	1159
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	19.6	19.6	27.7	21.0	17.3	31.0	27.4	28.1	26.2	20.3	20.9
Incr Delay (d2), s/veh	1.2	0.3	0.6	2.2	1.0	0.1	5.5	0.9	3.3	5.6	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.5	2.8	1.8	4.1	0.4	0.3	0.7	1.2	3.6	0.7	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.3	19.9	20.2	29.8	22.0	17.4	36.6	28.2	31.4	31.8	20.5	21.4
LnGrp LOS	C	B	C	C	C	B	D	C	C	C	C	C
Approach Vol, veh/h		886			971			146				396
Approach Delay, s/veh		21.7			23.8			31.0				27.3
Approach LOS		C			C			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.9	11.9	12.3	25.6	6.6	20.3	12.0	25.9				
Change Period (Y+Rc), s	4.5	5.9	5.1	7.9	4.9	* 5.9	6.3	* 7.9				
Max Green Setting (Gmax), s	18.5	44.1	16.9	37.1	15.1	* 48	14.7	* 40				
Max Q Clear Time (g_c+I1), s	10.2	5.2	6.7	8.9	2.6	5.5	4.7	13.5				
Green Ext Time (p_c), s	0.4	0.5	0.6	4.3	0.0	0.7	0.3	4.6				
Intersection Summary												
HCM 6th Ctrl Delay			24.1									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↘↘
Traffic Volume (vph)	0	256	0	235	465	0	0	0	0	33	0	710
Future Volume (vph)	0	256	0	235	465	0	0	0	0	33	0	710
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Fr _t		1.00		1.00	1.00					1.00		0.85
Fl _t Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Fl _t Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	291	0	267	528	0	0	0	0	38	0	807
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	291	0	267	528	0	0	0	0	38	0	807
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		16.0		14.9	38.4					9.4		61.4
Effective Green, g (s)		16.0		14.9	38.4					9.4		61.4
Actuated g/C Ratio		0.26		0.24	0.63					0.15		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		926		418	2158					268		2760
v/s Ratio Prot		0.08		c0.15	0.15					0.02		
v/s Ratio Perm												c0.29
v/c Ratio		0.31		0.64	0.24					0.14		0.29
Uniform Delay, d ₁		18.3		20.8	5.1					22.5		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d ₂		0.2		3.2	0.1					0.2		0.3
Delay (s)		18.5		24.0	5.1					22.8		0.3
Level of Service		B		C	A					C		A
Approach Delay (s)		18.5			11.5			0.0			1.3	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			8.1			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			61.4			Sum of lost time (s)			21.1			
Intersection Capacity Utilization			37.5%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	636	0	0	0	0	0	0	0	0	235	0
Future Volume (vph)	0	636	0	0	0	0	0	0	0	0	235	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		6.9									4.0	
Lane Util. Factor		0.95									1.00	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3557									1845	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3557									1845	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	723	0	0	0	0	0	0	0	0	267	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	723	0	0	0	0	0	0	0	0	267	0
Turn Type		NA									NA	
Protected Phases		4 6!									Free!	
Permitted Phases												
Actuated Green, G (s)		32.3									61.4	
Effective Green, g (s)		32.3									61.4	
Actuated g/C Ratio		0.53									1.00	
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		1871									1845	
v/s Ratio Prot		c0.20									0.14	
v/s Ratio Perm												
v/c Ratio		0.39									0.14	
Uniform Delay, d1		8.7									0.0	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.1									0.2	
Delay (s)		8.8									0.2	
Level of Service		A									A	
Approach Delay (s)		8.8			0.0			0.0			0.2	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.5				HCM 2000 Level of Service				A	
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			61.4				Sum of lost time (s)			21.1		
Intersection Capacity Utilization			39.0%				ICU Level of Service			A		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
 13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↓		↑			
Traffic Volume (veh/h)	0	289	0	0	565	77	45	0	78	0	0	0
Future Volume (veh/h)	0	289	0	0	565	77	45	0	78	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1973	0	0	1803	1803	1856	0	1856			
Adj Flow Rate, veh/h	0	314	0	0	614	0	49	0	64			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	3	0	0	3	3	3	0	3			
Cap, veh/h	0	3298	0	0	3013		99	0	88			
Arrive On Green	0.00	0.88	0.00	0.00	0.88	0.00	0.06	0.00	0.06			
Sat Flow, veh/h	0	3946	0	0	3515	1528	1767	0	1572			
Grp Volume(v), veh/h	0	314	0	0	614	0	49	0	64			
Grp Sat Flow(s),veh/h/ln	0	1874	0	0	1712	1528	1767	0	1572			
Q Serve(g_s), s	0.0	1.5	0.0	0.0	3.7	0.0	3.8	0.0	5.6			
Cycle Q Clear(g_c), s	0.0	1.5	0.0	0.0	3.7	0.0	3.8	0.0	5.6			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	3298	0	0	3013		99	0	88			
V/C Ratio(X)	0.00	0.10	0.00	0.00	0.20		0.50	0.00	0.73			
Avail Cap(c_a), veh/h	0	3298	0	0	3013		499	0	444			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.96	0.00	0.00	0.98	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	1.1	0.0	0.0	1.2	0.0	64.2	0.0	65.0			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0	3.8	0.0	10.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	0.0	0.5	0.0	1.8	0.0	2.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.2	0.0	0.0	1.4	0.0	68.0	0.0	75.9			
LnGrp LOS	A	A	A	A	A		E	A	E			
Approach Vol, veh/h		314			614	A			113			
Approach Delay, s/veh		1.2			1.4				72.4			
Approach LOS		A			A				E			
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		12.3		127.7				127.7				
Change Period (Y+Rc), s		4.5		4.5				4.5				
Max Green Setting (Gmax), s		39.5		91.5				91.5				
Max Q Clear Time (g_c+I1), s		7.6		3.5				5.7				
Green Ext Time (p_c), s		0.3		2.0				4.3				
Intersection Summary												
HCM 6th Ctrl Delay				9.0								
HCM 6th LOS				A								

HCM 6th Signalized Intersection Summary
 14: Mt Rose Highway/Mt. Rose Hwy & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↖↗	↑↑	↑↑	↖	↖↗	↖	
Traffic Volume (veh/h)	46	266	506	28	37	63	
Future Volume (veh/h)	46	266	506	28	37	63	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	48	280	533	22	39	49	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	158	2022	1044	466	349	160	
Arrive On Green	0.04	0.54	0.31	0.31	0.10	0.10	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	48	280	533	22	39	49	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	0.4	1.2	4.2	0.3	0.3	0.9	
Cycle Q Clear(g_c), s	0.4	1.2	4.2	0.3	0.3	0.9	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	158	2022	1044	466	349	160	
V/C Ratio(X)	0.30	0.14	0.51	0.05	0.11	0.31	
Avail Cap(c_a), veh/h	2741	10877	6693	2985	3797	1742	
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	1.00	
Uniform Delay (d), s/veh	14.9	3.7	9.0	7.7	13.1	13.3	
Incr Delay (d2), s/veh	1.1	0.0	0.4	0.0	0.1	1.1	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.9	0.0	0.1	0.0	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	15.9	3.7	9.4	7.7	13.2	14.4	
LnGrp LOS	B	A	A	A	B	B	
Approach Vol, veh/h		328	555		88		
Approach Delay, s/veh		5.5	9.3		13.9		
Approach LOS		A	A		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				24.3	7.8	7.3	17.0
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				3.2	2.9	2.4	6.2
Green Ext Time (p_c), s				1.8	0.3	0.1	3.7
Intersection Summary							
HCM 6th Ctrl Delay			8.5				
HCM 6th LOS			A				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt. Rose Hwy/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	94	173	32	65	389	775	37	341	73	323	188	88
Future Volume (veh/h)	94	173	32	65	389	775	37	341	73	323	188	88
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	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	102	188	0	71	423	0	40	371	0	351	204	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	189	755		90	625		107	1135		493	1720	
Arrive On Green	0.05	0.20	0.00	0.05	0.19	0.00	0.03	0.22	0.00	0.14	0.34	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	102	188	0	71	423	0	40	371	0	351	204	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	1.8	2.8	0.0	2.8	7.9	0.0	0.8	4.1	0.0	6.5	1.9	0.0
Cycle Q Clear(g_c), s	1.8	2.8	0.0	2.8	7.9	0.0	0.8	4.1	0.0	6.5	1.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	189	755		90	625		107	1135		493	1720	
V/C Ratio(X)	0.54	0.25		0.79	0.68		0.37	0.33		0.71	0.12	
Avail Cap(c_a), veh/h	1055	2176		499	1960		973	2096		1475	2868	
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(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.0	22.7	0.0	31.3	25.3	0.0	31.8	21.7	0.0	27.3	15.2	0.0
Incr Delay (d2), s/veh	2.4	0.2	0.0	13.9	1.3	0.0	2.1	0.2	0.0	1.9	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	0.8	1.1	0.0	1.4	2.9	0.0	0.3	1.4	0.0	2.5	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.4	22.8	0.0	45.2	26.6	0.0	33.9	21.9	0.0	29.2	15.2	0.0
LnGrp LOS	C	C		D	C		C	C		C	B	
Approach Vol, veh/h		290	A		494	A		411	A		555	A
Approach Delay, s/veh		26.5			29.3			23.1			24.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.8	22.3	8.7	20.1	8.1	30.0	9.4	19.4				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	8.5	6.1	4.8	4.8	2.8	3.9	3.8	9.9				
Green Ext Time (p_c), s	1.1	2.1	0.1	1.1	0.1	1.2	0.2	2.6				
Intersection Summary												
HCM 6th Ctrl Delay			25.7									
HCM 6th LOS			C									

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	10.4							
Intersection LOS	B							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	440		730		816		97	
Demand Flow Rate, veh/h	453		752		841		99	
Vehicles Circulating, veh/h	97		812		421		1436	
Vehicles Exiting, veh/h	1438		450		129		128	
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		14.9		9.3		12.7	
Approach LOS	A		B		A		B	
Lane	Left	Right	Left	Right	Left	Right	Left	
Designated Moves	LT	TR	LT	TR	L	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.470	0.530	0.469	0.531	0.530	0.470	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	213	240	353	399	446	395	99	
Cap Entry Lane, veh/h	1235	1308	640	712	916	993	419	
Entry HV Adj Factor	0.970	0.971	0.972	0.970	0.970	0.971	0.975	
Flow Entry, veh/h	207	233	343	387	432	384	97	
Cap Entry, veh/h	1198	1270	622	691	889	964	408	
V/C Ratio	0.173	0.184	0.552	0.560	0.487	0.398	0.236	
Control Delay, s/veh	4.5	4.4	15.4	14.4	10.3	8.2	12.7	
LOS	A	A	C	B	B	A	B	
95th %tile Queue, veh	1	1	3	4	3	2	1	

HCM 6th TWSC
 1: Joy Lake Rd & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	465	6	111	236	5	73
Future Vol, veh/h	465	6	111	236	5	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	15	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	567	7	135	288	6	89

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	574
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.13
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.227
Pot Cap-1 Maneuver	-	-	994
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	994
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	16.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	185	411	-	-	994	-
HCM Lane V/C Ratio	0.033	0.217	-	-	0.136	-
HCM Control Delay (s)	25.1	16.2	-	-	9.2	-
HCM Lane LOS	D	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.8	-	-	0.5	-

HCM 6th TWSC
 2: Bordeaux Dr/Timberline Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑↑	↗		↑	↗		↖	↗
Traffic Vol, veh/h	3	560	6	83	337	24	10	1	104	27	5	1
Future Vol, veh/h	3	560	6	83	337	24	10	1	104	27	5	1
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	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	300	-	600	350	-	150	-	-	25	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	683	7	101	411	29	12	1	127	33	6	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	440	0	0	683	0	0	1102	1333	-	1305	1304	206
Stage 1	-	-	-	-	-	-	691	691	-	613	613	-
Stage 2	-	-	-	-	-	-	411	642	-	692	691	-
Critical Hdwy	4.145	-	-	4.145	-	-	7.345	6.545	-	7.345	6.545	6.945
Critical Hdwy Stg 1	-	-	-	-	-	-	6.145	5.545	-	6.545	5.545	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.545	5.545	-	6.145	5.545	-
Follow-up Hdwy	2.2285	-	-	2.2285	-	-	3.5285	4.0285	-	3.5285	4.0285	3.3285
Pot Cap-1 Maneuver	1112	-	-	902	-	-	176	152	0	126	159	798
Stage 1	-	-	-	-	-	-	432	443	0	445	480	-
Stage 2	-	-	-	-	-	-	587	466	0	431	443	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1112	-	-	902	-	-	155	134	-	114	141	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	155	134	-	114	141	-
Stage 1	-	-	-	-	-	-	430	441	-	443	426	-
Stage 2	-	-	-	-	-	-	513	414	-	428	441	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.8			32.1			48.7		
HCM LOS							D			E		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	134	-	1112	-	-	902	-	-	118	798
HCM Lane V/C Ratio	0.009	-	0.003	-	-	0.112	-	-	0.331	0.002
HCM Control Delay (s)	32.1	0	8.2	-	-	9.5	-	-	49.9	9.5
HCM Lane LOS		D	A	A	-	A	-	-	E	A
HCM 95th %tile Q(veh)	0	-	0	-	-	0.4	-	-	1.3	0

HCM 6th Roundabout
3: Callahan Rd & Mt. Rose Hwy

Intersection							
Intersection Delay, s/veh	7.4						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	2		2		2		2
Adj Approach Flow, veh/h	933		917		192		26
Demand Flow Rate, veh/h	961		945		197		27
Vehicles Circulating, veh/h	286		12		964		903
Vehicles Exiting, veh/h	644		1149		283		54
Ped Vol Crossing Leg, #/h	0		0		0		0
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	8.4		5.8		10.2		6.1
Approach LOS	A		A		B		A
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328	
Entry Flow, veh/h	452	509	444	501	197	27	
Cap Entry Lane, veh/h	1038	1114	1335	1406	626	659	
Entry HV Adj Factor	0.970	0.971	0.971	0.971	0.974	0.959	
Flow Entry, veh/h	438	494	431	486	192	26	
Cap Entry, veh/h	1006	1081	1296	1364	609	632	
V/C Ratio	0.436	0.457	0.333	0.356	0.315	0.041	
Control Delay, s/veh	8.5	8.4	5.8	5.9	10.2	6.1	
LOS	A	A	A	A	B	A	
95th %tile Queue, veh	2	2	1	2	1	0	

HCM 6th TWSC
 4: Mt. Rose Hwy & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	932	759	16	5	5
Future Vol, veh/h	3	932	759	16	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	4	1123	914	19	6	6

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	933	0	0	1494	467
Stage 1	-	-	-	924	-
Stage 2	-	-	-	570	-
Critical Hdwy	4.16	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	5.86	-
Follow-up Hdwy	2.23	-	-	3.53	3.33
Pot Cap-1 Maneuver	723	-	-	113	540
Stage 1	-	-	-	345	-
Stage 2	-	-	-	526	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	723	-	-	112	540
Mov Cap-2 Maneuver	-	-	-	238	-
Stage 1	-	-	-	343	-
Stage 2	-	-	-	526	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	723	-	-	-	330
HCM Lane V/C Ratio	0.005	-	-	-	0.037
HCM Control Delay (s)	10	-	-	-	16.3
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC
 5: Fawn Ln & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↘
Traffic Vol, veh/h	929	8	29	773	5	21
Future Vol, veh/h	929	8	29	773	5	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-5	-	-	5	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1106	10	35	920	6	25

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	1116	558
Stage 1	-	-	-	1111
Stage 2	-	-	-	530
Critical Hdwy	-	-	4.16	6.86
Critical Hdwy Stg 1	-	-	-	5.86
Critical Hdwy Stg 2	-	-	-	5.86
Follow-up Hdwy	-	-	2.23	3.53
Pot Cap-1 Maneuver	-	-	616	471
Stage 1	-	-	-	274
Stage 2	-	-	-	552
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	616	471
Mov Cap-2 Maneuver	-	-	-	198
Stage 1	-	-	-	274
Stage 2	-	-	-	521

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	15.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	198	471	-	-	616	-
HCM Lane V/C Ratio	0.03	0.053	-	-	0.056	-
HCM Control Delay (s)	23.7	13.1	-	-	11.2	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0.2	-

HCM 6th Signalized Intersection Summary

6: Mt. Rose Hwy & Thomas Creek Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↘	↑↑	↑↑	↗	↘↗	↗	
Traffic Volume (veh/h)	97	870	639	226	207	154	
Future Volume (veh/h)	97	870	639	226	207	154	
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	2052	2052	1567	1567	1856	1856	
Adj Flow Rate, veh/h	110	989	726	192	235	131	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	159	2200	1086	484	507	233	
Arrive On Green	0.08	0.56	0.36	0.36	0.15	0.15	
Sat Flow, veh/h	1954	4001	3056	1328	3428	1572	
Grp Volume(v), veh/h	110	989	726	192	235	131	
Grp Sat Flow(s),veh/h/ln	1954	1949	1489	1328	1714	1572	
Q Serve(g_s), s	2.6	6.9	9.5	5.0	2.9	3.6	
Cycle Q Clear(g_c), s	2.6	6.9	9.5	5.0	2.9	3.6	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	159	2200	1086	484	507	233	
V/C Ratio(X)	0.69	0.45	0.67	0.40	0.46	0.56	
Avail Cap(c_a), veh/h	1238	6883	3019	1346	3270	1500	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	20.8	5.9	12.4	11.0	18.1	18.4	
Incr Delay (d2), s/veh	5.3	0.1	0.7	0.5	0.7	2.1	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.1	1.1	2.1	1.0	1.1	3.3	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	26.1	6.1	13.1	11.5	18.8	20.6	
LnGrp LOS	C	A	B	B	B	C	
Approach Vol, veh/h		1099	918		366		
Approach Delay, s/veh		8.1	12.8		19.4		
Approach LOS		A	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				34.1	12.5	9.3	24.8
Change Period (Y+Rc), s				7.8	5.6	5.5	7.8
Max Green Setting (Gmax), s				82.2	44.4	29.5	47.2
Max Q Clear Time (g_c+I1), s				8.9	5.6	4.6	11.5
Green Ext Time (p_c), s				7.4	1.3	0.2	5.4
Intersection Summary							
HCM 6th Ctrl Delay			11.6				
HCM 6th LOS			B				

HCM 6th TWSC
 7: Edmonton Dr & Mt. Rose Hwy

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑		↑	↑
Traffic Vol, veh/h	1015	38	188	0	29	114
Future Vol, veh/h	1015	38	188	0	29	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	650	-	-	270	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-7	-	-	7	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1103	41	204	0	32	124

Major/Minor	Major1		Minor1	
Conflicting Flow All	0	0	1103	-
Stage 1	-	-	1103	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	6.86	-
Critical Hdwy Stg 1	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.53	-
Pot Cap-1 Maneuver	-	-	204	0
Stage 1	-	-	277	0
Stage 2	-	-	-	0
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	204	-
Mov Cap-2 Maneuver	-	-	204	-
Stage 1	-	-	277	-
Stage 2	-	-	-	-

Approach	EB	NB
HCM Control Delay, s	0	25.8
HCM LOS		D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR
Capacity (veh/h)	204	-	-	-
HCM Lane V/C Ratio	0.155	-	-	-
HCM Control Delay (s)	25.8	0	-	-
HCM Lane LOS	D	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-

HCM 6th TWSC
 8: Mt. Rose Hwy & Telluride Dr

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗↗	↗↗	↘	↘	↘
Traffic Vol, veh/h	16	1008	911	34	20	14
Future Vol, veh/h	16	1008	911	34	20	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	25	0	25
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	18	1133	1024	38	22	16

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1062	0	-	0	1627 512
Stage 1	-	-	-	-	1024 -
Stage 2	-	-	-	-	603 -
Critical Hdwy	4.16	-	-	-	6.86 6.96
Critical Hdwy Stg 1	-	-	-	-	5.86 -
Critical Hdwy Stg 2	-	-	-	-	5.86 -
Follow-up Hdwy	2.23	-	-	-	3.53 3.33
Pot Cap-1 Maneuver	646	-	-	-	92 504
Stage 1	-	-	-	-	305 -
Stage 2	-	-	-	-	506 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	646	-	-	-	89 504
Mov Cap-2 Maneuver	-	-	-	-	208 -
Stage 1	-	-	-	-	296 -
Stage 2	-	-	-	-	506 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	19.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	646	-	-	-	208	504
HCM Lane V/C Ratio	0.028	-	-	-	0.108	0.031
HCM Control Delay (s)	10.7	-	-	-	24.4	12.4
HCM Lane LOS	B	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.1

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt. Rose Hwy

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗		↑↑	↗				↗	↘	↗
Traffic Vol, veh/h	6	1176	5	0	1089	49	0	0	10	28	0	3
Future Vol, veh/h	6	1176	5	0	1089	49	0	0	10	28	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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	300	-	1000	-	-	50	-	-	0	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	1212	5	0	1123	51	0	0	10	29	0	3

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	1174	0	-	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.16	-	-	6.96
Critical Hdwy Stg 1	-	-	-	6.56
Critical Hdwy Stg 2	-	-	-	6.56
Follow-up Hdwy	2.23	-	-	3.33
Pot Cap-1 Maneuver	585	0	0	438
Stage 1	-	0	0	217
Stage 2	-	0	0	441
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	585	-	-	438
Mov Cap-2 Maneuver	-	-	-	151
Stage 1	-	-	-	215
Stage 2	-	-	-	426

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	13.4	32.3
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	438	585	-	-	-	151	468
HCM Lane V/C Ratio	0.024	0.011	-	-	-	0.191	0.007
HCM Control Delay (s)	13.4	11.2	-	-	-	34.4	12.7
HCM Lane LOS	B	B	-	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0	-	-	-	0.7	0

HCM 6th Signalized Intersection Summary

10: Wedge Pkwy & Mt. Rose Hwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕↔		↔↔	↕↕	↔	↔	↕	↕	↔	↔	↔
Traffic Volume (veh/h)	121	791	13	100	632	140	22	54	155	310	41	218
Future Volume (veh/h)	121	791	13	100	632	140	22	54	155	310	41	218
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	126	824	12	104	658	110	23	56	120	323	43	170
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	269	1573	23	241	910	406	54	205	174	377	534	452
Arrive On Green	0.07	0.28	0.28	0.07	0.27	0.27	0.03	0.11	0.11	0.21	0.29	0.29
Sat Flow, veh/h	3718	5579	81	3330	3425	1528	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	126	541	295	104	658	110	23	56	120	323	43	170
Grp Sat Flow(s),veh/h/ln	1859	1831	1998	1665	1712	1528	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	2.4	9.0	9.1	2.2	12.7	4.1	0.9	2.0	5.3	12.8	1.2	6.3
Cycle Q Clear(g_c), s	2.4	9.0	9.1	2.2	12.7	4.1	0.9	2.0	5.3	12.8	1.2	6.3
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	269	1032	563	241	910	406	54	205	174	377	534	452
V/C Ratio(X)	0.47	0.52	0.52	0.43	0.72	0.27	0.42	0.27	0.69	0.86	0.08	0.38
Avail Cap(c_a), veh/h	343	1617	882	637	1865	832	561	1125	954	644	1217	1031
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.4	22.0	22.0	32.3	24.3	21.1	34.6	29.7	31.2	27.5	18.9	20.7
Incr Delay (d2), s/veh	1.3	0.4	0.8	1.2	1.1	0.4	5.2	0.7	4.8	5.7	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	3.5	3.8	0.9	4.7	1.4	0.5	0.9	2.1	5.6	0.5	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.7	22.4	22.8	33.5	25.4	21.5	39.8	30.4	36.0	33.2	18.9	21.2
LnGrp LOS	C	C	C	C	C	C	D	C	D	C	B	C
Approach Vol, veh/h		962			872			199				536
Approach Delay, s/veh		24.0			25.9			34.9				28.3
Approach LOS		C			C			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	13.9	10.4	28.4	7.1	26.8	11.6	27.2				
Change Period (Y+Rc), s	4.5	5.9	5.1	7.9	4.9	* 5.9	6.3	* 7.9				
Max Green Setting (Gmax), s	26.5	44.1	13.9	32.1	23.1	* 48	6.7	* 40				
Max Q Clear Time (g_c+I1), s	14.8	7.3	4.2	11.1	2.9	8.3	4.4	14.7				
Green Ext Time (p_c), s	0.8	0.7	0.2	4.8	0.0	0.8	0.1	4.6				
Intersection Summary												
HCM 6th Ctrl Delay			26.4									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↘↘
Traffic Volume (vph)	0	526	0	259	501	0	0	0	0	47	0	864
Future Volume (vph)	0	526	0	259	501	0	0	0	0	47	0	864
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Flt		1.00		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	578	0	285	551	0	0	0	0	52	0	949
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	578	0	285	551	0	0	0	0	52	0	949
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		26.2		19.1	52.8					11.6		78.0
Effective Green, g (s)		26.2		19.1	52.8					11.6		78.0
Actuated g/C Ratio		0.34		0.24	0.68					0.15		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		1194		422	2336					260		2760
v/s Ratio Prot		c0.16		c0.17	0.16					0.03		
v/s Ratio Perm												c0.34
v/c Ratio		0.48		0.68	0.24					0.20		0.34
Uniform Delay, d1		20.5		26.6	4.8					29.1		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d2		0.3		4.2	0.1					0.4		0.3
Delay (s)		20.9		30.9	4.9					29.5		0.3
Level of Service		C		C	A					C		A
Approach Delay (s)		20.9			13.8			0.0			1.9	
Approach LOS		C			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			78.0			Sum of lost time (s)			21.1			
Intersection Capacity Utilization			46.3%			ICU Level of Service			A			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	837	0	0	0	0	0	0	0	0	259	0
Future Volume (vph)	0	837	0	0	0	0	0	0	0	0	259	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		6.9									4.0	
Lane Util. Factor		0.95									1.00	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3557									1845	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3557									1845	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	920	0	0	0	0	0	0	0	0	285	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	920	0	0	0	0	0	0	0	0	285	0
Turn Type		NA									NA	
Protected Phases		4 6!									Free!	
Permitted Phases												
Actuated Green, G (s)		44.7									78.0	
Effective Green, g (s)		44.7									78.0	
Actuated g/C Ratio		0.57									1.00	
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2038									1845	
v/s Ratio Prot		c0.26									0.15	
v/s Ratio Perm												
v/c Ratio		0.45									0.15	
Uniform Delay, d1		9.6									0.0	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.2									0.2	
Delay (s)		9.7									0.2	
Level of Service		A									A	
Approach Delay (s)		9.7			0.0			0.0			0.2	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			7.5				HCM 2000 Level of Service				A	
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			78.0				Sum of lost time (s)			21.1		
Intersection Capacity Utilization			45.9%				ICU Level of Service			A		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
 13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗	↘		↗			
Traffic Volume (veh/h)	0	573	0	0	531	179	159	0	271	0	0	0
Future Volume (veh/h)	0	573	0	0	531	179	159	0	271	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1973	0	0	1803	1803	1856	0	1856			
Adj Flow Rate, veh/h	0	591	0	0	547	0	164	0	209			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	3	0	0	3	3	3	0	3			
Cap, veh/h	0	2934	0	0	2681		270	0	240			
Arrive On Green	0.00	0.78	0.00	0.00	0.78	0.00	0.15	0.00	0.15			
Sat Flow, veh/h	0	3946	0	0	3515	1528	1767	0	1572			
Grp Volume(v), veh/h	0	591	0	0	547	0	164	0	209			
Grp Sat Flow(s),veh/h/ln	0	1874	0	0	1712	1528	1767	0	1572			
Q Serve(g_s), s	0.0	5.7	0.0	0.0	5.8	0.0	12.1	0.0	18.2			
Cycle Q Clear(g_c), s	0.0	5.7	0.0	0.0	5.8	0.0	12.1	0.0	18.2			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2934	0	0	2681		270	0	240			
V/C Ratio(X)	0.00	0.20	0.00	0.00	0.20		0.61	0.00	0.87			
Avail Cap(c_a), veh/h	0	2934	0	0	2681		827	0	736			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.00	0.88	0.00	0.00	0.87	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	3.9	0.0	0.0	3.9	0.0	55.4	0.0	57.9			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0	2.2	0.0	9.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.8	0.0	0.0	1.7	0.0	5.6	0.0	7.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	4.1	0.0	0.0	4.1	0.0	57.6	0.0	67.2			
LnGrp LOS	A	A	A	A	A		E	A	E			
Approach Vol, veh/h		591			547	A		373				
Approach Delay, s/veh		4.1			4.1			63.0				
Approach LOS		A			A			E				
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		25.9		114.1				114.1				
Change Period (Y+Rc), s		4.5		4.5				4.5				
Max Green Setting (Gmax), s		65.5		65.5				65.5				
Max Q Clear Time (g_c+I1), s		20.2		7.7				7.8				
Green Ext Time (p_c), s		1.2		4.1				3.7				
Intersection Summary												
HCM 6th Ctrl Delay				18.6								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary
 14: Mt Rose Highway/Mt. Rose Hwy & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↔↔	↑↑	↑↑	↔	↔↔	↔	
Traffic Volume (veh/h)	122	616	484	37	126	250	
Future Volume (veh/h)	122	616	484	37	126	250	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	128	648	509	30	133	197	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	284	1900	918	410	658	302	
Arrive On Green	0.08	0.51	0.27	0.27	0.19	0.19	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	128	648	509	30	133	197	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	1.3	3.9	5.0	0.6	1.2	4.4	
Cycle Q Clear(g_c), s	1.3	3.9	5.0	0.6	1.2	4.4	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	284	1900	918	410	658	302	
V/C Ratio(X)	0.45	0.34	0.55	0.07	0.20	0.65	
Avail Cap(c_a), veh/h	2301	9133	5620	2507	3188	1462	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	16.8	5.6	11.9	10.3	13.0	14.2	
Incr Delay (d2), s/veh	1.1	0.1	0.5	0.1	0.1	2.4	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.5	0.7	1.3	0.6	0.4	4.0	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	17.9	5.7	12.4	10.3	13.1	16.6	
LnGrp LOS	B	A	B	B	B	B	
Approach Vol, veh/h		776	539		330		
Approach Delay, s/veh		7.7	12.3		15.2		
Approach LOS		A	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				26.3	11.8	8.9	17.5
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				5.9	6.4	3.3	7.0
Green Ext Time (p_c), s				4.6	1.1	0.3	3.5
Intersection Summary							
HCM 6th Ctrl Delay			10.7				
HCM 6th LOS			B				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt. Rose Hwy/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	140	528	67	123	349	627	61	308	122	808	442	152
Future Volume (veh/h)	140	528	67	123	349	627	61	308	122	808	442	152
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	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	143	539	0	126	356	0	62	314	0	824	451	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	228	731		157	715		119	833		930	2042	
Arrive On Green	0.06	0.19	0.00	0.09	0.21	0.00	0.03	0.16	0.00	0.27	0.40	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	143	539	0	126	356	0	62	314	0	824	451	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	3.4	12.1	0.0	6.7	8.5	0.0	1.6	5.0	0.0	21.0	5.3	0.0
Cycle Q Clear(g_c), s	3.4	12.1	0.0	6.7	8.5	0.0	1.6	5.0	0.0	21.0	5.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	731		157	715		119	833		930	2042	
V/C Ratio(X)	0.63	0.74		0.80	0.50		0.52	0.38		0.89	0.22	
Avail Cap(c_a), veh/h	774	1597		366	1438		714	1538		1082	2105	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.8	34.7	0.0	40.5	31.6	0.0	43.3	33.9	0.0	31.9	17.8	0.0
Incr Delay (d2), s/veh	2.8	1.5	0.0	9.0	0.5	0.0	3.5	0.3	0.0	8.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	5.5	0.0	3.0	3.3	0.0	0.7	2.0	0.0	9.0	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.6	36.2	0.0	49.5	32.1	0.0	46.8	34.2	0.0	40.0	17.9	0.0
LnGrp LOS	D	D		D	C		D	C		D	B	
Approach Vol, veh/h		682	A		482	A		376	A		1275	A
Approach Delay, s/veh		38.0			36.7			36.3			32.2	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.9	22.3	13.7	24.3	9.2	44.1	11.6	26.4				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	23.0	7.0	8.7	14.1	3.6	7.3	5.4	10.5				
Green Ext Time (p_c), s	1.7	1.7	0.2	3.3	0.1	2.8	0.3	2.2				
Intersection Summary												
HCM 6th Ctrl Delay			34.9									
HCM 6th LOS			C									

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	11.6							
Intersection LOS	B							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	941		750		707		128	
Demand Flow Rate, veh/h	970		772		728		133	
Vehicles Circulating, veh/h	225		689		825		1356	
Vehicles Exiting, veh/h	1264		864		370		105	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	7.8		12.5		15.3		13.3	
Approach LOS	A		B		C		B	
Lane	Left	Right	Left	Right	Left	Right	Left	
Designated Moves	LT	TR	LT	TR	L	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.470	0.530	0.470	0.530	0.530	0.470	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	456	514	363	409	386	342	133	
Cap Entry Lane, veh/h	1097	1173	716	791	632	704	448	
Entry HV Adj Factor	0.970	0.971	0.971	0.972	0.971	0.971	0.965	
Flow Entry, veh/h	442	499	352	397	375	332	128	
Cap Entry, veh/h	1065	1138	695	768	613	684	433	
V/C Ratio	0.415	0.438	0.507	0.517	0.611	0.486	0.297	
Control Delay, s/veh	7.8	7.8	12.9	12.2	17.7	12.6	13.3	
LOS	A	A	B	B	C	B	B	
95th %tile Queue, veh	2	2	3	3	4	3	1	

Appendix G

2050 Urban Alternative Synchro Output

HCM 6th TWSC
 1: Joy Lake Rd & Mt Rose Highway

Intersection

Int Delay, s/veh 2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	246	6	96	510	2	127
Future Vol, veh/h	246	6	96	510	2	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	259	6	101	537	2	134

Major/Minor

	Major1	Major2	Minor1		
Conflicting Flow All	0	-	259	0	998
Stage 1	-	-	-	-	259
Stage 2	-	-	-	-	739
Critical Hdwy	-	-	4.13	-	6.43
Critical Hdwy Stg 1	-	-	-	-	5.43
Critical Hdwy Stg 2	-	-	-	-	5.43
Follow-up Hdwy	-	-	2.227	-	3.527
Pot Cap-1 Maneuver	-	0	1300	-	269
Stage 1	-	0	-	-	782
Stage 2	-	0	-	-	471
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1300	-	248
Mov Cap-2 Maneuver	-	-	-	-	352
Stage 1	-	-	-	-	782
Stage 2	-	-	-	-	434

Approach

	EB	WB	NB
HCM Control Delay, s	0	1.3	10.7
HCM LOS			B

Minor Lane/Major Mvmt

	NBLn1	NBLn2	EBT	WBL	WBT
Capacity (veh/h)	352	777	-	1300	-
HCM Lane V/C Ratio	0.006	0.172	-	0.078	-
HCM Control Delay (s)	15.3	10.6	-	8	-
HCM Lane LOS	C	B	-	A	-
HCM 95th %tile Q(veh)	0	0.6	-	0.3	-

HCM 6th TWSC
 2: Bordeaux Dr/Timberline Dr & Mt Rose Highway

Intersection												
Int Delay, s/veh	6.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↑↑	↗		↑	↗		↘	↗
Traffic Vol, veh/h	2	386	15	226	583	38	8	4	152	40	6	10
Future Vol, veh/h	2	386	15	226	583	38	8	4	152	40	6	10
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	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	300	-	600	350	-	150	-	-	150	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	415	16	243	627	41	9	4	163	43	6	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	668	0	0	415	0	0	1222	1573	-	1534	1532	314
Stage 1	-	-	-	-	-	-	419	419	-	1113	1113	-
Stage 2	-	-	-	-	-	-	803	1154	-	421	419	-
Critical Hdwy	4.145	-	-	4.145	-	-	7.345	6.545	-	7.345	6.545	6.945
Critical Hdwy Stg 1	-	-	-	-	-	-	6.145	5.545	-	6.545	5.545	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.545	5.545	-	6.145	5.545	-
Follow-up Hdwy	2.2285	-	-	2.2285	-	-	3.5285	4.0285	-	3.5285	4.0285	3.3285
Pot Cap-1 Maneuver	914	-	-	1136	-	-	145	109	0	86	115	680
Stage 1	-	-	-	-	-	-	608	587	0	222	281	-
Stage 2	-	-	-	-	-	-	342	269	0	607	587	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	914	-	-	1136	-	-	113	85	-	69	90	680
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	85	-	69	90	-
Stage 1	-	-	-	-	-	-	607	586	-	222	221	-
Stage 2	-	-	-	-	-	-	257	211	-	601	586	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.4			49.6			109.3		
HCM LOS							E			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	85	-	914	-	-	1136	-	-	71	680
HCM Lane V/C Ratio	0.051	-	0.002	-	-	0.214	-	-	0.697	0.016
HCM Control Delay (s)	49.6	0	8.9	-	-	9	-	-	130.8	10.4
HCM Lane LOS	E	A	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.8	-	-	3.2	0

HCM 6th Signalized Intersection Summary 3: Callahan Rd & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↖	↘	↖	↗	↘
Traffic Volume (veh/h)	2	518	8	110	797	50	10	2	263	58	2	6
Future Volume (veh/h)	2	518	8	110	797	50	10	2	263	58	2	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	2052	2052	2052	1708	1708	1708	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	2	529	6	112	813	38	10	2	201	59	2	4
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	5	2636	1176	134	2455	1095	219	40	227	213	80	160
Arrive On Green	0.00	0.68	0.68	0.08	0.76	0.76	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1954	3898	1739	1627	3246	1448	1189	275	1572	1170	552	1104
Grp Volume(v), veh/h	2	529	6	112	813	38	12	0	201	59	0	6
Grp Sat Flow(s),veh/h/ln	1954	1949	1739	1627	1623	1448	1464	0	1572	1170	0	1657
Q Serve(g_s), s	0.1	7.1	0.2	9.5	11.4	0.9	0.5	0.0	17.6	6.4	0.0	0.4
Cycle Q Clear(g_c), s	0.1	7.1	0.2	9.5	11.4	0.9	0.9	0.0	17.6	7.3	0.0	0.4
Prop In Lane	1.00		1.00	1.00		1.00	0.83		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	5	2636	1176	134	2455	1095	259	0	227	213	0	240
V/C Ratio(X)	0.38	0.20	0.01	0.83	0.33	0.03	0.05	0.00	0.88	0.28	0.00	0.03
Avail Cap(c_a), veh/h	119	2636	1176	331	2455	1095	522	0	511	424	0	538
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	69.7	8.5	7.4	63.3	5.5	4.3	51.6	0.0	58.7	54.8	0.0	51.4
Incr Delay (d2), s/veh	40.4	0.2	0.0	12.4	0.4	0.1	0.1	0.0	10.8	0.7	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(95%),veh/ln	0.2	5.0	0.1	7.7	5.8	0.4	0.7	0.0	12.0	3.5	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.1	8.7	7.4	75.7	5.9	4.3	51.7	0.0	69.5	55.5	0.0	51.4
LnGrp LOS	F	A	A	E	A	A	D	A	E	E	A	D
Approach Vol, veh/h		537			963			213				65
Approach Delay, s/veh		9.0			14.0			68.5				55.1
Approach LOS		A			B			E				E
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		24.7	16.1	99.2		24.7	4.9	110.4				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		45.5	28.5	52.5		45.5	8.5	72.5				
Max Q Clear Time (g_c+I1), s		19.6	11.5	9.1		9.3	2.1	13.4				
Green Ext Time (p_c), s		0.7	0.2	3.4		0.2	0.0	6.0				
Intersection Summary												
HCM 6th Ctrl Delay			20.5									
HCM 6th LOS			C									

HCM 6th TWSC
 4: Mt Rose Highway & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖		↕		↗	
Traffic Vol, veh/h	10	0	953	8	4	2
Future Vol, veh/h	10	0	953	8	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	0	982	8	4	2

Major/Minor	Major2	Minor2		
Conflicting Flow All	-	0	986	495
Stage 1	-	-	986	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	243	517
Stage 1	-	-	320	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	243	517
Mov Cap-2 Maneuver	-	-	243	-
Stage 1	-	-	320	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	17.5
HCM LOS		C

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	295
HCM Lane V/C Ratio	-	-	0.021
HCM Control Delay (s)	-	-	17.5
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.1

HCM 6th TWSC
 5: Fawn Ln & Mt Rose Highway

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑		↑↑	
Traffic Vol, veh/h	841	2	4	0	10	27
Future Vol, veh/h	841	2	4	0	10	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-5	-	-	5	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	867	2	4	0	10	28

Major/Minor	Major1		Minor1	
Conflicting Flow All	0	0	868	435
Stage 1	-	-	868	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	290	566
Stage 1	-	-	369	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	290	566
Mov Cap-2 Maneuver	-	-	290	-
Stage 1	-	-	369	-
Stage 2	-	-	-	-

Approach	EB	NB
HCM Control Delay, s	0	13.7
HCM LOS		B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	450	-	-
HCM Lane V/C Ratio	0.085	-	-
HCM Control Delay (s)	13.7	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-

HCM 6th Signalized Intersection Summary

6: Mt Rose Highway & Thomas Creek Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↘	↑↑	↑↑	↘	↘↗	↘	
Traffic Volume (veh/h)	93	787	806	193	255	147	
Future Volume (veh/h)	93	787	806	193	255	147	
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	2052	2052	1567	1567	1856	1856	
Adj Flow Rate, veh/h	97	820	840	151	266	114	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	159	2448	1300	580	522	240	
Arrive On Green	0.08	0.63	0.44	0.44	0.15	0.15	
Sat Flow, veh/h	1954	4001	3056	1328	3428	1572	
Grp Volume(v), veh/h	97	820	840	151	266	114	
Grp Sat Flow(s),veh/h/ln	1954	1949	1489	1328	1714	1572	
Q Serve(g_s), s	2.0	4.1	9.1	3.0	2.9	2.7	
Cycle Q Clear(g_c), s	2.0	4.1	9.1	3.0	2.9	2.7	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	159	2448	1300	580	522	240	
V/C Ratio(X)	0.61	0.33	0.65	0.26	0.51	0.48	
Avail Cap(c_a), veh/h	1454	8132	3668	1636	3806	1746	
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	1.00	
Uniform Delay (d), s/veh	18.2	3.6	9.1	7.3	16.0	15.9	
Incr Delay (d2), s/veh	3.7	0.1	0.5	0.2	0.8	1.5	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	1.5	0.5	3.2	0.9	1.9	4.5	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	21.9	3.7	9.6	7.6	16.7	17.3	
LnGrp LOS	C	A	A	A	B	B	
Approach Vol, veh/h		917	991		380		
Approach Delay, s/veh		5.6	9.3		16.9		
Approach LOS		A	A		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				30.2	10.7	7.8	22.4
Change Period (Y+Rc), s				4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s				85.5	45.5	30.5	50.5
Max Q Clear Time (g_c+I1), s				6.1	4.9	4.0	11.1
Green Ext Time (p_c), s				5.9	1.4	0.2	6.8
Intersection Summary							
HCM 6th Ctrl Delay			9.1				
HCM 6th LOS			A				

HCM 6th TWSC
 7: Edmonton Dr & Mt Rose Highway

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓		↓	↑
Traffic Vol, veh/h	961	50	217	0	73	292
Future Vol, veh/h	961	50	217	0	73	292
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	600	-	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-7	-	-	7	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1092	57	247	0	83	332

Major/Minor	Major1		Minor1	
Conflicting Flow All	0	0	1092	-
Stage 1	-	-	1092	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	6.86	-
Critical Hdwy Stg 1	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.53	-
Pot Cap-1 Maneuver	-	-	207	0
Stage 1	-	-	281	0
Stage 2	-	-	-	0
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	207	-
Mov Cap-2 Maneuver	-	-	207	-
Stage 1	-	-	281	-
Stage 2	-	-	-	-

Approach	EB	NB
HCM Control Delay, s	0	33.6
HCM LOS		D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR
Capacity (veh/h)	207	-	-	-
HCM Lane V/C Ratio	0.401	-	-	-
HCM Control Delay (s)	33.6	0	-	-
HCM Lane LOS	D	A	-	-
HCM 95th %tile Q(veh)	1.8	-	-	-

HCM 6th TWSC
 8: Mt Rose Highway & Telluride Dr

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘		↕	↗	↘	↗
Traffic Vol, veh/h	8	0	1246	29	43	6
Future Vol, veh/h	8	0	1246	29	43	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	25	0	25
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	88	80	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	9	0	1416	33	49	7

Major/Minor

	Major2	Minor2
Conflicting Flow All	-	0 1416 708
Stage 1	-	- 1416 -
Stage 2	-	- 0 -
Critical Hdwy	-	- 6.86 6.96
Critical Hdwy Stg 1	-	- 5.86 -
Critical Hdwy Stg 2	-	- - -
Follow-up Hdwy	-	- 3.53 3.33
Pot Cap-1 Maneuver	-	- 127 375
Stage 1	-	- 188 -
Stage 2	-	- - -
Platoon blocked, %	-	- -
Mov Cap-1 Maneuver	-	- 127 375
Mov Cap-2 Maneuver	-	- 127 -
Stage 1	-	- 188 -
Stage 2	-	- - -

Approach

	WB	SB
HCM Control Delay, s	0	45.8
HCM LOS		E

Minor Lane/Major Mvmt

	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	127	375
HCM Lane V/C Ratio	-	-	0.385	0.018
HCM Control Delay (s)	-	-	50.1	14.8
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	1.6	0.1

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt Rose Highway

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Vol, veh/h	0	1295	18	0	1266	35	0	0	2	0	0	8
Future Vol, veh/h	0	1295	18	0	1266	35	0	0	2	0	0	8
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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	800	-	-	50	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	1392	19	0	1361	38	0	0	2	0	0	9

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	-	0	-	-	-	0	-	-	696	-	-	681
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.96	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.33	-	-	3.33
Pot Cap-1 Maneuver	0	-	0	0	-	-	0	0	382	0	0	391
Stage 1	0	-	0	0	-	-	0	0	-	0	0	-
Stage 2	0	-	0	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	382	-	-	391
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	14.5	14.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	382	-	-	-	391
HCM Lane V/C Ratio	0.006	-	-	-	0.022
HCM Control Delay (s)	14.5	-	-	-	14.4
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th Signalized Intersection Summary
 10: Wedge Pkwy & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↔		↔↔	↑↑	↔	↔	↑	↔	↔↔	↑	↔
Traffic Volume (veh/h)	212	937	25	332	892	75	23	62	143	307	82	178
Future Volume (veh/h)	212	937	25	332	892	75	23	62	143	307	82	178
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	233	1030	24	365	980	61	25	68	117	337	90	147
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	341	1822	42	469	1241	553	57	160	135	449	367	311
Arrive On Green	0.09	0.33	0.33	0.14	0.36	0.36	0.03	0.09	0.09	0.13	0.20	0.20
Sat Flow, veh/h	3718	5523	129	3330	3425	1528	1767	1856	1572	3428	1856	1572
Grp Volume(v), veh/h	233	683	371	365	980	61	25	68	117	337	90	147
Grp Sat Flow(s),veh/h/ln	1859	1831	1989	1665	1712	1528	1767	1856	1572	1714	1856	1572
Q Serve(g_s), s	4.7	11.9	11.9	8.2	19.8	2.1	1.1	2.7	3.9	7.3	3.2	4.3
Cycle Q Clear(g_c), s	4.7	11.9	11.9	8.2	19.8	2.1	1.1	2.7	3.9	7.3	3.2	4.3
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	341	1208	656	469	1241	553	57	160	135	449	367	311
V/C Ratio(X)	0.68	0.57	0.57	0.78	0.79	0.11	0.44	0.43	0.86	0.75	0.25	0.47
Avail Cap(c_a), veh/h	705	1753	952	726	1750	781	344	1056	895	818	1142	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	21.4	21.4	32.1	22.1	16.4	36.8	33.6	16.7	32.5	26.2	12.5
Incr Delay (d2), s/veh	2.4	0.4	0.8	2.9	1.7	0.1	5.2	1.8	14.7	2.6	0.3	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	8.1	8.8	5.8	11.7	1.2	1.0	2.2	4.6	5.5	2.5	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.5	21.8	22.2	35.0	23.7	16.5	42.1	35.4	31.3	35.0	26.6	13.6
LnGrp LOS	D	C	C	D	C	B	D	D	C	D	C	B
Approach Vol, veh/h		1287			1406			210			574	
Approach Delay, s/veh		24.6			26.4			33.9			28.2	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.4	12.6	16.0	33.5	7.4	20.6	15.0	34.5				
Change Period (Y+Rc), s	5.3	* 5.9	5.1	7.9	4.9	* 5.3	7.9	* 6.4				
Max Green Setting (Gmax), s	18.5	* 44	16.9	37.1	15.1	* 48	14.7	* 40				
Max Q Clear Time (g_c+I1), s	9.3	5.9	10.2	13.9	3.1	6.3	6.7	21.8				
Green Ext Time (p_c), s	0.8	0.7	0.7	6.7	0.0	1.0	0.4	6.3				
Intersection Summary												
HCM 6th Ctrl Delay			26.5									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↘↘
Traffic Volume (vph)	0	371	0	341	675	0	0	0	0	48	0	1031
Future Volume (vph)	0	371	0	341	675	0	0	0	0	48	0	1031
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Flt		1.00		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	422	0	388	767	0	0	0	0	55	0	1172
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	422	0	388	767	0	0	0	0	55	0	1172
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		30.5		27.3	65.3					12.8		91.7
Effective Green, g (s)		30.5		27.3	65.3					12.8		91.7
Actuated g/C Ratio		0.33		0.30	0.71					0.14		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		1183		513	2458					244		2760
v/s Ratio Prot		0.12		c0.22	0.22					0.03		
v/s Ratio Perm												c0.42
v/c Ratio		0.36		0.76	0.31					0.23		0.42
Uniform Delay, d1		23.2		29.2	4.9					35.0		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d2		0.2		6.3	0.1					0.5		0.5
Delay (s)		23.4		35.5	5.0					35.5		0.5
Level of Service		C		D	A					D		A
Approach Delay (s)		23.4			15.2			0.0			2.1	
Approach LOS		C			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			91.7			Sum of lost time (s)			21.1			
Intersection Capacity Utilization			46.6%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑		
Traffic Volume (vph)	0	922	0	0	0	0	0	0	0	0	341	0	
Future Volume (vph)	0	922	0	0	0	0	0	0	0	0	341	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Grade (%)		-3%			0%			0%				0%	
Total Lost time (s)		6.9										4.0	
Lane Util. Factor		0.95										1.00	
Frt		1.00										1.00	
Flt Protected		1.00										1.00	
Satd. Flow (prot)		3557										1845	
Flt Permitted		1.00										1.00	
Satd. Flow (perm)		3557										1845	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	
Adj. Flow (vph)	0	1048	0	0	0	0	0	0	0	0	388	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	1048	0	0	0	0	0	0	0	0	388	0	
Turn Type		NA										NA	
Protected Phases		4 6!										Free!	
Permitted Phases													
Actuated Green, G (s)		50.2										91.7	
Effective Green, g (s)		50.2										91.7	
Actuated g/C Ratio		0.55										1.00	
Clearance Time (s)													
Vehicle Extension (s)													
Lane Grp Cap (vph)		1947										1845	
v/s Ratio Prot		c0.29										0.21	
v/s Ratio Perm													
v/c Ratio		0.54										0.21	
Uniform Delay, d1		13.3										0.0	
Progression Factor		1.00										1.00	
Incremental Delay, d2		0.3										0.2	
Delay (s)		13.6										0.2	
Level of Service		B										A	
Approach Delay (s)		13.6			0.0			0.0				0.2	
Approach LOS		B			A			A				A	
Intersection Summary													
HCM 2000 Control Delay			10.0									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.48										
Actuated Cycle Length (s)			91.7									Sum of lost time (s)	21.1
Intersection Capacity Utilization			52.5%									ICU Level of Service	A
Analysis Period (min)			15										
! Phase conflict between lane groups.													
c Critical Lane Group													

HCM 6th Signalized Intersection Summary
 13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗	↘		↗			
Traffic Volume (veh/h)	0	419	0	0	820	112	66	0	114	0	0	0
Future Volume (veh/h)	0	419	0	0	820	112	66	0	114	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1973	0	0	1803	1803	1856	0	1856			
Adj Flow Rate, veh/h	0	455	0	0	891	0	72	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	3	0	0	3	3	3	0	3			
Cap, veh/h	0	1152	0	0	1052		1111	0				
Arrive On Green	0.00	0.31	0.00	0.00	0.31	0.00	0.63	0.00	0.00			
Sat Flow, veh/h	0	3946	0	0	3515	1528	1767	0	1572			
Grp Volume(v), veh/h	0	455	0	0	891	0	72	0	0			
Grp Sat Flow(s),veh/h/ln	0	1874	0	0	1712	1528	1767	0	1572			
Q Serve(g_s), s	0.0	13.4	0.0	0.0	34.1	0.0	2.2	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	13.4	0.0	0.0	34.1	0.0	2.2	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1152	0	0	1052		1111	0				
V/C Ratio(X)	0.00	0.40	0.00	0.00	0.85		0.06	0.00				
Avail Cap(c_a), veh/h	0	2691	0	0	2459		1111	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.95	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	38.2	0.0	0.0	45.4	0.0	10.1	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	2.0	0.0	0.0	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			
%ile BackOfQ(95%),veh/ln	0.0	10.0	0.0	0.0	20.6	0.0	1.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	38.4	0.0	0.0	47.4	0.0	10.1	0.0	0.0			
LnGrp LOS	A	D	A	A	D		B	A				
Approach Vol, veh/h		455			891	A		72	A			
Approach Delay, s/veh		38.4			47.4			10.1				
Approach LOS		D			D			B				
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		92.5		47.5				47.5				
Change Period (Y+Rc), s		4.5		4.5				4.5				
Max Green Setting (Gmax), s		30.5		100.5				100.5				
Max Q Clear Time (g_c+I1), s		4.2		15.4				36.1				
Green Ext Time (p_c), s		0.2		3.0				6.9				
Intersection Summary												
HCM 6th Ctrl Delay					42.6							
HCM 6th LOS					D							

HCM 6th Signalized Intersection Summary
 14: Mt Rose Highway & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↖↗	↕	↖↗	↖	↖↗	↖	
Traffic Volume (veh/h)	67	386	734	40	53	92	
Future Volume (veh/h)	67	386	734	40	53	92	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	71	406	773	31	56	73	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	200	2212	1286	574	397	182	
Arrive On Green	0.05	0.59	0.38	0.38	0.12	0.12	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	71	406	773	31	56	73	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	0.7	1.9	7.2	0.5	0.6	1.7	
Cycle Q Clear(g_c), s	0.7	1.9	7.2	0.5	0.6	1.7	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	200	2212	1286	574	397	182	
V/C Ratio(X)	0.35	0.18	0.60	0.05	0.14	0.40	
Avail Cap(c_a), veh/h	2247	8917	5487	2447	3113	1428	
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	1.00	
Uniform Delay (d), s/veh	17.8	3.7	9.6	7.6	15.5	16.0	
Incr Delay (d2), s/veh	1.1	0.0	0.5	0.0	0.2	1.4	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	0.5	0.4	3.0	1.0	0.4	2.8	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	18.9	3.7	10.1	7.6	15.7	17.5	
LnGrp LOS	B	A	B	A	B	B	
Approach Vol, veh/h		477	804		129		
Approach Delay, s/veh		6.0	10.0		16.7		
Approach LOS		A	A		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				30.1	9.0	8.0	22.0
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				3.9	3.7	2.7	9.2
Green Ext Time (p_c), s				2.6	0.4	0.2	5.8
Intersection Summary							
HCM 6th Ctrl Delay			9.2				
HCM 6th LOS			A				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt Rose Highway/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	137	251	47	94	565	1125	53	495	105	468	272	127
Future Volume (veh/h)	137	251	47	94	565	1125	53	495	105	468	272	127
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	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	149	273	0	102	614	0	58	538	0	509	296	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	243	920		130	809		123	931		637	1702	
Arrive On Green	0.07	0.24	0.00	0.08	0.24	0.00	0.04	0.18	0.00	0.19	0.34	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	149	273	0	102	614	0	58	538	0	509	296	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	3.2	4.8	0.0	4.9	13.9	0.0	1.4	7.9	0.0	11.6	3.4	0.0
Cycle Q Clear(g_c), s	3.2	4.8	0.0	4.9	13.9	0.0	1.4	7.9	0.0	11.6	3.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	243	920		130	809		123	931		637	1702	
V/C Ratio(X)	0.61	0.30		0.78	0.76		0.47	0.58		0.80	0.17	
Avail Cap(c_a), veh/h	865	1784		409	1607		798	1719		1209	2351	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.1	25.4	0.0	37.0	28.7	0.0	38.6	30.4	0.0	31.8	19.1	0.0
Incr Delay (d2), s/veh	2.5	0.2	0.0	9.8	1.5	0.0	2.8	0.6	0.0	2.4	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(95%),veh/ln	2.6	3.7	0.0	4.0	9.1	0.0	1.0	5.4	0.0	8.1	2.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	25.5	0.0	46.7	30.2	0.0	41.4	31.0	0.0	34.2	19.2	0.0
LnGrp LOS	D	C		D	C		D	C		C	B	
Approach Vol, veh/h		422	A		716	A		596	A		805	A
Approach Delay, s/veh		30.5			32.6			32.0			28.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.4	22.3	11.4	26.5	8.9	34.7	11.3	26.6				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	13.6	9.9	6.9	6.8	3.4	5.4	5.2	15.9				
Green Ext Time (p_c), s	1.6	3.0	0.2	1.6	0.1	1.8	0.3	3.8				
Intersection Summary												
HCM 6th Ctrl Delay			30.9									
HCM 6th LOS			C									

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	49.1							
Intersection LOS	E							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	639		1060		1183		142	
Demand Flow Rate, veh/h	659		1092		1218		146	
Vehicles Circulating, veh/h	143		1178		613		2084	
Vehicles Exiting, veh/h	2087		653		189		186	
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		105.7		23.1		39.2	
Approach LOS	A		F		C		E	
Lane	Left	Right	Left	Right	Left	Right	Left	
Designated Moves	LT	TR	LT	TR	L	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.470	0.530	0.470	0.530	0.530	0.470	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	310	349	513	579	646	572	146	
Cap Entry Lane, veh/h	1183	1258	457	522	768	843	241	
Entry HV Adj Factor	0.970	0.971	0.971	0.971	0.970	0.972	0.975	
Flow Entry, veh/h	301	339	498	562	627	556	142	
Cap Entry, veh/h	1147	1221	444	506	745	819	235	
V/C Ratio	0.262	0.278	1.123	1.110	0.841	0.678	0.605	
Control Delay, s/veh	5.6	5.5	110.6	101.4	29.0	16.5	39.2	
LOS	A	A	F	F	D	C	E	
95th %tile Queue, veh	1	1	18	18	10	5	4	

HCM 6th TWSC
 1: Joy Lake Rd & Mt Rose Highway

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	674	8	161	342	10	106
Future Vol, veh/h	674	8	161	342	10	106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	822	10	196	417	12	129

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	822	0	1631 822
Stage 1	-	-	-	-	822 -
Stage 2	-	-	-	-	809 -
Critical Hdwy	-	-	4.13	-	6.43 6.23
Critical Hdwy Stg 1	-	-	-	-	5.43 -
Critical Hdwy Stg 2	-	-	-	-	5.43 -
Follow-up Hdwy	-	-	2.227	-	3.527 3.327
Pot Cap-1 Maneuver	-	0	803	-	111 372
Stage 1	-	0	-	-	430 -
Stage 2	-	0	-	-	436 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	803	-	84 372
Mov Cap-2 Maneuver	-	-	-	-	208 -
Stage 1	-	-	-	-	430 -
Stage 2	-	-	-	-	330 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	20
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBL	WBT
Capacity (veh/h)	208	372	-	803	-
HCM Lane V/C Ratio	0.059	0.347	-	0.245	-
HCM Control Delay (s)	23.4	19.7	-	10.9	-
HCM Lane LOS	C	C	-	B	-
HCM 95th %tile Q(veh)	0.2	1.5	-	1	-

HCM 6th TWSC
 2: Bordeaux Dr/Timberline Dr & Mt Rose Highway

Intersection												
Int Delay, s/veh	17.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑↑	↗		↑	↗		↖	↗
Traffic Vol, veh/h	4	812	8	121	489	35	15	2	150	40	10	2
Future Vol, veh/h	4	812	8	121	489	35	15	2	150	40	10	2
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	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	300	-	600	350	-	150	-	-	150	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-4	-	-	5	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	990	10	148	596	43	18	2	183	49	12	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	639	0	0	990	0	0	1600	1935	-	1893	1892	298
Stage 1	-	-	-	-	-	-	1000	1000	-	892	892	-
Stage 2	-	-	-	-	-	-	600	935	-	1001	1000	-
Critical Hdwy	4.145	-	-	4.145	-	-	7.345	6.545	-	7.345	6.545	6.945
Critical Hdwy Stg 1	-	-	-	-	-	-	6.145	5.545	-	6.545	5.545	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.545	5.545	-	6.145	5.545	-
Follow-up Hdwy	2.2285	-	-	2.2285	-	-	3.5285	4.0285	-	3.5285	4.0285	3.3285
Pot Cap-1 Maneuver	937	-	-	691	-	-	77	65	0	~ 47	69	696
Stage 1	-	-	-	-	-	-	290	318	0	302	358	-
Stage 2	-	-	-	-	-	-	453	341	0	290	318	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	937	-	-	691	-	-	53	51	-	~ 38	54	696
Mov Cap-2 Maneuver	-	-	-	-	-	-	53	51	-	~ 38	54	-
Stage 1	-	-	-	-	-	-	289	316	-	300	281	-
Stage 2	-	-	-	-	-	-	339	268	-	286	316	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.2			79.1			\$ 469.6		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	51	-	937	-	-	691	-	-	40	696
HCM Lane V/C Ratio	0.048	-	0.005	-	-	0.214	-	-	1.524	0.004
HCM Control Delay (s)	79.1	0	8.9	-	-	11.6	-	-	\$ 488	10.2
HCM Lane LOS	F	A	A	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	0.1	-	0	-	-	0.8	-	-	6.3	0

HCM 6th Signalized Intersection Summary 3: Callahan Rd & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗		↘	↗	↘	↗	
Traffic Volume (veh/h)	2	1101	21	305	745	53	5	10	219	25	5	2
Future Volume (veh/h)	2	1101	21	305	745	53	5	10	219	25	5	2
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	2052	2052	2052	1708	1708	1708	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	2	1327	19	367	898	48	6	12	198	30	6	2
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	5	2038	909	390	2466	1100	97	178	222	206	188	63
Arrive On Green	0.00	0.52	0.52	0.24	0.76	0.76	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1954	3898	1739	1627	3246	1448	447	1262	1572	1162	1332	444
Grp Volume(v), veh/h	2	1327	19	367	898	48	18	0	198	30	0	8
Grp Sat Flow(s),veh/h/ln	1954	1949	1739	1627	1623	1448	1709	0	1572	1162	0	1776
Q Serve(g_s), s	0.1	34.5	0.7	31.0	12.9	1.2	0.0	0.0	17.3	3.2	0.0	0.5
Cycle Q Clear(g_c), s	0.1	34.5	0.7	31.0	12.9	1.2	1.2	0.0	17.3	4.4	0.0	0.5
Prop In Lane	1.00		1.00	1.00		1.00	0.33		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	5	2038	909	390	2466	1100	275	0	222	206	0	251
V/C Ratio(X)	0.38	0.65	0.02	0.94	0.36	0.04	0.07	0.00	0.89	0.15	0.00	0.03
Avail Cap(c_a), veh/h	77	2038	909	447	2466	1100	368	0	309	270	0	349
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	69.7	24.2	16.1	52.3	5.6	4.2	52.1	0.0	59.1	54.1	0.0	51.9
Incr Delay (d2), s/veh	40.4	1.6	0.0	26.5	0.4	0.1	0.1	0.0	20.6	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	21.8	0.5	21.5	6.5	0.5	1.0	0.0	12.6	1.7	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.1	25.8	16.2	78.8	6.0	4.3	52.2	0.0	79.7	54.4	0.0	51.9
LnGrp LOS	F	C	B	E	A	A	D	A	E	D	A	D
Approach Vol, veh/h		1348			1313			216				38
Approach Delay, s/veh		25.8			26.3			77.4				53.9
Approach LOS		C			C			E				D
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		24.3	38.1	77.7		24.3	4.9	110.9				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		27.5	38.5	60.5		27.5	5.5	93.5				
Max Q Clear Time (g_c+I1), s		19.3	33.0	36.5		6.4	2.1	14.9				
Green Ext Time (p_c), s		0.4	0.5	9.8		0.1	0.0	6.9				
Intersection Summary												
HCM 6th Ctrl Delay			30.2									
HCM 6th LOS			C									

HCM 6th TWSC
 4: Mt Rose Highway & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙		↑↑		↘	
Traffic Vol, veh/h	5	0	1101	23	7	10
Future Vol, veh/h	5	0	1101	23	7	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	0	1327	28	8	12

Major/Minor	Major2	Minor2
Conflicting Flow All	-	0 1341 678
Stage 1	-	- 1341 -
Stage 2	-	- 0 -
Critical Hdwy	-	- 6.86 6.96
Critical Hdwy Stg 1	-	- 5.86 -
Critical Hdwy Stg 2	-	- - -
Follow-up Hdwy	-	- 3.53 3.33
Pot Cap-1 Maneuver	-	- 142 392
Stage 1	-	- 207 -
Stage 2	-	- - -
Platoon blocked, %	-	- -
Mov Cap-1 Maneuver	-	- 142 392
Mov Cap-2 Maneuver	-	- 142 -
Stage 1	-	- 207 -
Stage 2	-	- - -

Approach	WB	SB
HCM Control Delay, s	0	22.4
HCM LOS		C

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	227
HCM Lane V/C Ratio	-	-	0.09
HCM Control Delay (s)	-	-	22.4
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.3

HCM 6th TWSC
 5: Fawn Ln & Mt Rose Highway

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵		↵	
Traffic Vol, veh/h	1347	12	42	0	10	30
Future Vol, veh/h	1347	12	42	0	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-5	-	-	5	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1604	14	50	0	12	36

Major/Minor	Major1		Minor1	
Conflicting Flow All	0	0	1611	809
Stage 1	-	-	1611	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	94	321
Stage 1	-	-	147	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	94	321
Mov Cap-2 Maneuver	-	-	94	-
Stage 1	-	-	147	-
Stage 2	-	-	-	-

Approach	EB	NB
HCM Control Delay, s	0	28.5
HCM LOS		D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	200	-	-
HCM Lane V/C Ratio	0.238	-	-
HCM Control Delay (s)	28.5	-	-
HCM Lane LOS	D	-	-
HCM 95th %tile Q(veh)	0.9	-	-

HCM 6th Signalized Intersection Summary

6: Mt Rose Highway & Thomas Creek Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↖	↑↑	↑↑	↗	↖↗	↖	
Traffic Volume (veh/h)	141	1262	928	328	300	224	
Future Volume (veh/h)	141	1262	928	328	300	224	
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	2052	2052	1567	1567	1856	1856	
Adj Flow Rate, veh/h	160	1434	1055	280	341	191	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	217	2599	1428	637	621	285	
Arrive On Green	0.11	0.67	0.48	0.48	0.18	0.18	
Sat Flow, veh/h	1954	4001	3056	1328	3428	1572	
Grp Volume(v), veh/h	160	1434	1055	280	341	191	
Grp Sat Flow(s),veh/h/ln	1954	1949	1489	1328	1714	1572	
Q Serve(g_s), s	4.7	11.5	16.9	8.2	5.3	6.7	
Cycle Q Clear(g_c), s	4.7	11.5	16.9	8.2	5.3	6.7	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	217	2599	1428	637	621	285	
V/C Ratio(X)	0.74	0.55	0.74	0.44	0.55	0.67	
Avail Cap(c_a), veh/h	1008	5638	2543	1134	2639	1210	
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	1.00	
Uniform Delay (d), s/veh	25.4	5.2	12.4	10.1	22.0	22.6	
Incr Delay (d2), s/veh	4.8	0.2	0.8	0.5	0.8	2.7	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	3.9	3.6	7.6	3.3	3.8	0.4	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	30.3	5.4	13.2	10.6	22.8	25.3	
LnGrp LOS	C	A	B	B	C	C	
Approach Vol, veh/h		1594	1335		532		
Approach Delay, s/veh		7.9	12.6		23.7		
Approach LOS		A	B		C		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				43.9	15.2	11.1	32.9
Change Period (Y+Rc), s				4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s				85.5	45.5	30.5	50.5
Max Q Clear Time (g_c+I1), s				13.5	8.7	6.7	18.9
Green Ext Time (p_c), s				14.4	2.0	0.4	9.5
Intersection Summary							
HCM 6th Ctrl Delay			12.1				
HCM 6th LOS			B				

HCM 6th TWSC
 7: Edmonton Dr & Mt Rose Highway

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓		↓	↑
Traffic Vol, veh/h	1472	55	272	0	42	166
Future Vol, veh/h	1472	55	272	0	42	166
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Free
Storage Length	-	600	-	-	150	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-7	-	-	7	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1600	60	296	0	46	180

Major/Minor	Major1		Minor1	
Conflicting Flow All	0	0	1600	-
Stage 1	-	-	1600	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	6.86	-
Critical Hdwy Stg 1	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.53	-
Pot Cap-1 Maneuver	-	-	96	0
Stage 1	-	-	149	0
Stage 2	-	-	-	0
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	96	-
Mov Cap-2 Maneuver	-	-	96	-
Stage 1	-	-	149	-
Stage 2	-	-	-	-

Approach	EB	NB
HCM Control Delay, s	0	72.7
HCM LOS		F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR
Capacity (veh/h)	96	-	-	-
HCM Lane V/C Ratio	0.476	-	-	-
HCM Control Delay (s)	72.7	0	-	-
HCM Lane LOS	F	A	-	-
HCM 95th %tile Q(veh)	2.1	-	-	-

HCM 6th TWSC
 8: Mt Rose Highway & Telluride Dr

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘		↕	↘	↘	↘
Traffic Vol, veh/h	23	0	1322	49	29	20
Future Vol, veh/h	23	0	1322	49	29	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	25	0	25
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	26	0	1485	55	33	22

Major/Minor	Major2	Minor2
Conflicting Flow All	-	0 1485 743
Stage 1	-	- 1485 -
Stage 2	-	- - 0 -
Critical Hdwy	-	- - 6.86 6.96
Critical Hdwy Stg 1	-	- - 5.86 -
Critical Hdwy Stg 2	-	- - - -
Follow-up Hdwy	-	- - 3.53 3.33
Pot Cap-1 Maneuver	-	- - 114 355
Stage 1	-	- - 173 -
Stage 2	-	- - - -
Platoon blocked, %	-	- -
Mov Cap-1 Maneuver	-	- - 114 355
Mov Cap-2 Maneuver	-	- - 114 -
Stage 1	-	- - 173 -
Stage 2	-	- - - -

Approach	WB	SB
HCM Control Delay, s	0	35.3
HCM LOS		E

Minor Lane/Major Mvmt	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	114	355
HCM Lane V/C Ratio	-	-	0.286	0.063
HCM Control Delay (s)	-	-	48.8	15.8
HCM Lane LOS	-	-	E	C
HCM 95th %tile Q(veh)	-	-	1.1	0.2

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt Rose Highway

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑				↑		↑
Traffic Vol, veh/h	0	1707	10	0	1580	72	0	0	14	0	0	4
Future Vol, veh/h	0	1707	10	0	1580	72	0	0	14	0	0	4
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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	800	-	-	50	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	1760	10	0	1629	74	0	0	14	0	0	4

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	-	0	-	-	-	0	-	-	880	-	-	815
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.96	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.33	-	-	3.33
Pot Cap-1 Maneuver	0	-	0	0	-	-	0	0	288	0	0	318
Stage 1	0	-	0	0	-	-	0	0	-	0	0	-
Stage 2	0	-	0	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-				-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	288	-	-	318
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	18.2	16.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	288	-	-	-	318
HCM Lane V/C Ratio	0.05	-	-	-	0.013
HCM Control Delay (s)	18.2	-	-	-	16.5
HCM Lane LOS	C	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0

HCM 6th Signalized Intersection Summary

10: Wedge Pkwy & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↔		↔↔	↑↑	↔	↔	↑	↔	↔↔	↑	↔
Traffic Volume (veh/h)	175	1147	19	145	918	203	31	78	225	450	59	316
Future Volume (veh/h)	175	1147	19	145	918	203	31	78	225	450	59	316
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	182	1195	17	151	956	191	32	81	197	469	61	282
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	257	1985	28	225	1165	520	64	287	243	578	524	444
Arrive On Green	0.07	0.36	0.36	0.07	0.34	0.34	0.04	0.15	0.15	0.17	0.28	0.28
Sat Flow, veh/h	3718	5581	79	3330	3425	1528	1767	1856	1572	3428	1856	1572
Grp Volume(v), veh/h	182	784	428	151	956	191	32	81	197	469	61	282
Grp Sat Flow(s),veh/h/ln	1859	1831	1998	1665	1712	1528	1767	1856	1572	1714	1856	1572
Q Serve(g_s), s	4.4	16.2	16.2	4.1	23.6	4.9	1.6	3.6	11.2	12.2	2.3	10.1
Cycle Q Clear(g_c), s	4.4	16.2	16.2	4.1	23.6	4.9	1.6	3.6	11.2	12.2	2.3	10.1
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	257	1303	711	225	1165	520	64	287	243	578	524	444
V/C Ratio(X)	0.71	0.60	0.60	0.67	0.82	0.37	0.50	0.28	0.81	0.81	0.12	0.64
Avail Cap(c_a), veh/h	270	1303	711	574	1470	656	442	887	752	985	959	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.0	24.4	24.4	42.0	27.9	7.3	43.6	34.5	37.7	37.0	24.6	14.0
Incr Delay (d2), s/veh	7.9	0.8	1.4	3.4	3.1	0.4	5.8	0.5	6.4	2.8	0.1	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.0	10.8	11.8	3.1	14.4	5.0	1.5	2.9	8.0	8.9	1.8	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.9	25.2	25.8	45.4	30.9	7.8	49.5	35.0	44.1	39.8	24.7	15.5
LnGrp LOS	D	C	C	D	C	A	D	D	D	D	C	B
Approach Vol, veh/h		1394			1298			310			812	
Approach Delay, s/veh		28.6			29.2			42.3			30.2	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	20.2	11.3	40.7	8.3	32.0	14.3	37.8				
Change Period (Y+Rc), s	4.5	5.9	5.1	7.9	4.9	* 5.9	7.9	* 6.4				
Max Green Setting (Gmax), s	26.5	44.1	15.9	30.1	23.1	* 48	6.7	* 40				
Max Q Clear Time (g_c+I1), s	14.2	13.2	6.1	18.2	3.6	12.1	6.4	25.6				
Green Ext Time (p_c), s	1.4	1.1	0.3	5.7	0.0	1.3	0.0	5.8				
Intersection Summary												
HCM 6th Ctrl Delay			30.3									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↘↘
Traffic Volume (vph)	0	763	0	375	727	0	0	0	0	68	0	1254
Future Volume (vph)	0	763	0	375	727	0	0	0	0	68	0	1254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Flt		1.00		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	838	0	412	799	0	0	0	0	75	0	1378
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	838	0	412	799	0	0	0	0	75	0	1378
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		48.5		33.5	89.5					17.6		120.7
Effective Green, g (s)		48.5		33.5	89.5					17.6		120.7
Actuated g/C Ratio		0.40		0.28	0.74					0.15		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		1429		479	2559					255		2760
v/s Ratio Prot		c0.24		c0.24	0.23					0.04		
v/s Ratio Perm												c0.50
v/c Ratio		0.59		0.86	0.31					0.29		0.50
Uniform Delay, d1		28.3		41.4	5.2					46.0		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d2		0.6		14.6	0.1					0.6		0.6
Delay (s)		28.9		55.9	5.3					46.7		0.6
Level of Service		C		E	A					D		A
Approach Delay (s)		28.9			22.5			0.0			3.0	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			16.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			120.7			Sum of lost time (s)			21.1			
Intersection Capacity Utilization			59.7%			ICU Level of Service				B		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1214	0	0	0	0	0	0	0	0	375	0
Future Volume (vph)	0	1214	0	0	0	0	0	0	0	0	375	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		6.9									4.0	
Lane Util. Factor		0.95									1.00	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3557									1845	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3557									1845	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	1334	0	0	0	0	0	0	0	0	412	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1334	0	0	0	0	0	0	0	0	412	0
Turn Type		NA									NA	
Protected Phases		4 6!									Free!	
Permitted Phases												
Actuated Green, G (s)		73.0									120.7	
Effective Green, g (s)		73.0									120.7	
Actuated g/C Ratio		0.60									1.00	
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2151									1845	
v/s Ratio Prot		c0.37									0.22	
v/s Ratio Perm												
v/c Ratio		0.62									0.22	
Uniform Delay, d1		15.1									0.0	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.6									0.1	
Delay (s)		15.6									0.1	
Level of Service		B									A	
Approach Delay (s)		15.6			0.0			0.0			0.1	
Approach LOS		B			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			12.0				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			120.7				Sum of lost time (s)			21.1		
Intersection Capacity Utilization			62.4%				ICU Level of Service			B		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗	↘		↗			
Traffic Volume (veh/h)	0	831	0	0	771	260	230	0	393	0	0	0
Future Volume (veh/h)	0	831	0	0	771	260	230	0	393	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1973	0	0	1803	1803	1856	0	1856			
Adj Flow Rate, veh/h	0	857	0	0	795	0	237	0	0			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	3	0	0	3	3	3	0	3			
Cap, veh/h	0	1034	0	0	944		1166	0				
Arrive On Green	0.00	0.28	0.00	0.00	0.28	0.00	0.66	0.00	0.00			
Sat Flow, veh/h	0	3946	0	0	3515	1528	1767	0	1572			
Grp Volume(v), veh/h	0	857	0	0	795	0	237	0	0			
Grp Sat Flow(s),veh/h/ln	0	1874	0	0	1712	1528	1767	0	1572			
Q Serve(g_s), s	0.0	30.0	0.0	0.0	30.7	0.0	7.4	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	30.0	0.0	0.0	30.7	0.0	7.4	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1034	0	0	944		1166	0				
V/C Ratio(X)	0.00	0.83	0.00	0.00	0.84		0.20	0.00				
Avail Cap(c_a), veh/h	0	2691	0	0	2459		1166	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.80	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	47.6	0.0	0.0	47.8	0.0	9.3	0.0	0.0			
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.0	2.1	0.0	0.1	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			
%ile BackOfQ(95%),veh/ln	0.0	19.3	0.0	0.0	18.9	0.0	5.1	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	49.0	0.0	0.0	49.9	0.0	9.4	0.0	0.0			
LnGrp LOS	A	D	A	A	D		A	A				
Approach Vol, veh/h		857			795	A		237	A			
Approach Delay, s/veh		49.0			49.9			9.4				
Approach LOS		D			D			A				
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		96.9		43.1				43.1				
Change Period (Y+Rc), s		4.5		4.5				4.5				
Max Green Setting (Gmax), s		30.5		100.5				100.5				
Max Q Clear Time (g_c+I1), s		9.4		32.0				32.7				
Green Ext Time (p_c), s		0.7		6.6				5.9				
Intersection Summary												
HCM 6th Ctrl Delay					44.4							
HCM 6th LOS					D							

HCM 6th Signalized Intersection Summary

14: Mt Rose Highway & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↔↔	↑↑	↑↑	↔	↔↔	↔	
Traffic Volume (veh/h)	177	893	703	54	182	363	
Future Volume (veh/h)	177	893	703	54	182	363	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	186	940	740	42	192	286	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	332	2019	1117	498	822	377	
Arrive On Green	0.09	0.54	0.33	0.33	0.24	0.24	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	186	940	740	42	192	286	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	2.5	8.0	9.8	1.0	2.3	8.8	
Cycle Q Clear(g_c), s	2.5	8.0	9.8	1.0	2.3	8.8	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	332	2019	1117	498	822	377	
V/C Ratio(X)	0.56	0.47	0.66	0.08	0.23	0.76	
Avail Cap(c_a), veh/h	1693	6719	4134	1844	2346	1076	
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	1.00	
Uniform Delay (d), s/veh	22.6	7.4	14.8	11.8	15.9	18.3	
Incr Delay (d2), s/veh	1.5	0.2	0.7	0.1	0.1	3.1	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	1.8	3.6	5.3	1.8	1.5	12.1	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	24.1	7.5	15.5	11.9	16.0	21.5	
LnGrp LOS	C	A	B	B	B	C	
Approach Vol, veh/h		1126	782		478		
Approach Delay, s/veh		10.3	15.3		19.3		
Approach LOS		B	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				34.9	16.9	10.6	24.3
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				10.0	10.8	4.5	11.8
Green Ext Time (p_c), s				7.5	1.7	0.5	5.5
Intersection Summary							
HCM 6th Ctrl Delay			13.7				
HCM 6th LOS			B				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt Rose Highway/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	204	767	97	179	506	910	89	447	177	1172	642	220
Future Volume (veh/h)	204	767	97	179	506	910	89	447	177	1172	642	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	208	783	0	183	516	0	91	456	0	1196	655	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	286	955		212	975		147	684		889	1788	
Arrive On Green	0.08	0.25	0.00	0.13	0.29	0.00	0.04	0.13	0.00	0.26	0.35	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	208	783	0	183	516	0	91	456	0	1196	655	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	6.1	21.5	0.0	11.9	14.4	0.0	2.9	9.5	0.0	28.8	10.7	0.0
Cycle Q Clear(g_c), s	6.1	21.5	0.0	11.9	14.4	0.0	2.9	9.5	0.0	28.8	10.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	286	955		212	975		147	684		889	1788	
V/C Ratio(X)	0.73	0.82		0.86	0.53		0.62	0.67		1.35	0.37	
Avail Cap(c_a), veh/h	636	1311		300	1181		586	1263		889	1788	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.2	39.3	0.0	47.6	33.0	0.0	52.3	45.7	0.0	41.2	26.7	0.0
Incr Delay (d2), s/veh	3.6	3.0	0.0	16.3	0.4	0.0	4.2	1.1	0.0	163.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	15.2	0.0	9.7	9.5	0.0	2.3	7.0	0.0	47.6	7.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.7	42.4	0.0	63.8	33.4	0.0	56.5	46.8	0.0	204.3	26.8	0.0
LnGrp LOS	D	D		E	C		E	D		F	C	
Approach Vol, veh/h		991	A		699	A		547	A		1851	A
Approach Delay, s/veh		44.8			41.4			48.4			141.5	
Approach LOS		D			D			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	22.3	19.2	34.7	10.8	46.5	14.5	39.3				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	30.8	11.5	13.9	23.5	4.9	12.7	8.1	16.4				
Green Ext Time (p_c), s	0.0	2.4	0.2	4.3	0.2	4.1	0.5	3.1				
Intersection Summary												
HCM 6th Ctrl Delay			88.5									
HCM 6th LOS			F									

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	56.7							
Intersection LOS	F							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	1366		1087		1026		186	
Demand Flow Rate, veh/h	1407		1120		1057		192	
Vehicles Circulating, veh/h	326		1001		1195		1970	
Vehicles Exiting, veh/h	1836		1251		538		151	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	14.1		60.3		111.4		46.9	
Approach LOS	B		F		F		E	
Lane	Left	Right	Left	Right	Left	Right	Left	
Designated Moves	LT	TR	LT	TR	L	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.470	0.530	0.470	0.530	0.530	0.470	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	661	746	526	594	560	497	192	
Cap Entry Lane, veh/h	1000	1076	538	606	450	514	266	
Entry HV Adj Factor	0.971	0.970	0.972	0.970	0.971	0.971	0.969	
Flow Entry, veh/h	642	724	511	576	544	482	186	
Cap Entry, veh/h	971	1044	522	588	437	499	258	
V/C Ratio	0.661	0.693	0.979	0.980	1.245	0.967	0.722	
Control Delay, s/veh	13.9	14.3	62.3	58.6	156.0	61.0	46.9	
LOS	B	B	F	F	F	F	E	
95th %tile Queue, veh	5	6	13	14	22	12	5	

Appendix H

2050 Sub-Urban Alternative Synchro Output

HCM 6th TWSC
 1: Joy Lake Rd & Mt Rose Highway

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	246	6	96	510	2	127
Future Vol, veh/h	246	6	96	510	2	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	259	6	101	537	2	134

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	-	259	0	998	259
Stage 1	-	-	-	-	259	-
Stage 2	-	-	-	-	739	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	0	1300	-	269	777
Stage 1	-	0	-	-	782	-
Stage 2	-	0	-	-	471	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1300	-	248	777
Mov Cap-2 Maneuver	-	-	-	-	352	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	434	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBL	WBT
Capacity (veh/h)	352	777	-	1300	-
HCM Lane V/C Ratio	0.006	0.172	-	0.078	-
HCM Control Delay (s)	15.3	10.6	-	8	-
HCM Lane LOS	C	B	-	A	-
HCM 95th %tile Q(veh)	0	0.6	-	0.3	-

HCM 6th Roundabout
 2: Bordeaux Dr/Timberline Dr & Mt Rose Highway

Intersection						
Intersection Delay, s/veh	5.7					
Intersection LOS	A					
Approach	EB	WB		NB	SB	
Entry Lanes	1	2		1	1	
Conflicting Circle Lanes	2	2		2	2	
Adj Approach Flow, veh/h	433	911		176	60	
Demand Flow Rate, veh/h	445	938		181	61	
Vehicles Circulating, veh/h	300	15		473	905	
Vehicles Exiting, veh/h	666	471		272	48	
Ped Vol Crossing Leg, #/h	0	0		0	0	
Ped Cap Adj	1.000	1.000		1.000	1.000	
Approach Delay, s/veh	7.7	5.8		0.3	6.6	
Approach LOS	A	A		A	A	
Lane	Left	Left	Right	Left	Bypass	Left
Designated Moves	LTR	LT	TR	LT	R	LTR
Assumed Moves	LTR	LT	TR	LT	R	LTR
RT Channelized					Free	
Lane Util	1.000	0.470	0.530	1.000		1.000
Follow-Up Headway, s	2.535	2.667	2.535	2.535		2.535
Critical Headway, s	4.328	4.645	4.328	4.328	168	4.328
Entry Flow, veh/h	445	441	497	13	1957	61
Cap Entry Lane, veh/h	1100	1331	1402	950	0.971	658
Entry HV Adj Factor	0.972	0.971	0.972	0.991	163	0.981
Flow Entry, veh/h	433	428	483	13	1900	60
Cap Entry, veh/h	1070	1293	1362	941	0.086	645
V/C Ratio	0.404	0.331	0.354	0.014	0.0	0.093
Control Delay, s/veh	7.7	5.8	5.9	3.9	A	6.6
LOS	A	A	A	A	0	A
95th %tile Queue, veh	2	1	2	0		0

HCM 6th Roundabout
3: Callahan Rd & Mt Rose Highway

Intersection							
Intersection Delay, s/veh	6.2						
Intersection LOS	A						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	2		2		2		2
Adj Approach Flow, veh/h	539		976		280		67
Demand Flow Rate, veh/h	555		1005		288		69
Vehicles Circulating, veh/h	178		14		608		962
Vehicles Exiting, veh/h	853		882		125		57
Ped Vol Crossing Leg, #/h	0		0		0		0
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	5.3		6.1		8.3		7.2
Approach LOS	A		A		A		A
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328	
Entry Flow, veh/h	261	294	472	533	288	69	
Cap Entry Lane, veh/h	1146	1221	1333	1403	847	627	
Entry HV Adj Factor	0.971	0.972	0.971	0.970	0.972	0.970	
Flow Entry, veh/h	253	286	459	517	280	67	
Cap Entry, veh/h	1113	1186	1295	1361	823	608	
V/C Ratio	0.228	0.241	0.354	0.380	0.340	0.110	
Control Delay, s/veh	5.3	5.2	6.1	6.2	8.3	7.2	
LOS	A	A	A	A	A	A	
95th %tile Queue, veh	1	1	2	2	2	0	

HCM 6th TWSC
 4: Mt Rose Highway & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	0	953	8	4	2
Future Vol, veh/h	10	0	953	8	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	0	982	8	4	2

Major/Minor	Major2	Minor2		
Conflicting Flow All	-	0	986	495
Stage 1	-	-	986	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	243	517
Stage 1	-	-	320	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	243	517
Mov Cap-2 Maneuver	-	-	243	-
Stage 1	-	-	320	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	17.5
HCM LOS		C

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	295
HCM Lane V/C Ratio	-	-	0.021
HCM Control Delay (s)	-	-	17.5
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.1

HCM 6th Roundabout
5: Fawn Ln & Mt Rose Highway

Intersection					
Intersection Delay, s/veh	5.9				
Intersection LOS	A				
Approach	EB		WB		NB
Entry Lanes	2		2		1
Conflicting Circle Lanes	2		2		2
Adj Approach Flow, veh/h	869		999		38
Demand Flow Rate, veh/h	895		1029		39
Vehicles Circulating, veh/h	4		10		893
Vehicles Exiting, veh/h	1035		922		6
Ped Vol Crossing Leg, #/h	0		0		0
Ped Cap Adj	1.000		1.000		1.000
Approach Delay, s/veh	5.6		6.2		6.2
Approach LOS	A		A		A
Lane	Left	Right	Left	Right	Left
Designated Moves	LT	TR	LT	TR	LR
Assumed Moves	LT	TR	LT	TR	LR
RT Channelized					
Lane Util	0.470	0.530	0.470	0.530	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328
Entry Flow, veh/h	421	474	484	545	39
Cap Entry Lane, veh/h	1345	1415	1337	1408	665
Entry HV Adj Factor	0.970	0.972	0.970	0.972	0.974
Flow Entry, veh/h	408	461	470	530	38
Cap Entry, veh/h	1305	1375	1298	1368	648
V/C Ratio	0.313	0.335	0.362	0.387	0.059
Control Delay, s/veh	5.6	5.6	6.1	6.2	6.2
LOS	A	A	A	A	A
95th %tile Queue, veh	1	1	2	2	0

HCM 6th Roundabout
6: Mt Rose Highway & Thomas Creek Rd

Intersection						
Intersection Delay, s/veh	8.1					
Intersection LOS	A					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	917		1041		419	
Demand Flow Rate, veh/h	945		1072		432	
Vehicles Circulating, veh/h	274		100		865	
Vehicles Exiting, veh/h	1023		1119		307	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	8.2		7.2		10.5	
Approach LOS	A		A		B	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	LTR
Assumed Moves	LT	TR	LT	TR	L	LTR
RT Channelized						
Lane Util	0.470	0.530	0.470	0.530	0.530	0.470
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	444	501	504	568	229	203
Cap Entry Lane, veh/h	1049	1125	1231	1304	609	681
Entry HV Adj Factor	0.971	0.970	0.971	0.971	0.970	0.970
Flow Entry, veh/h	431	486	489	552	222	197
Cap Entry, veh/h	1019	1092	1195	1267	591	660
V/C Ratio	0.423	0.445	0.409	0.435	0.376	0.298
Control Delay, s/veh	8.2	8.1	7.1	7.2	11.6	9.2
LOS	A	A	A	A	B	A
95th %tile Queue, veh	2	2	2	2	2	1

HCM 6th Roundabout
7: Edmonton Dr & Mt Rose Highway

Intersection					
Intersection Delay, s/veh	12.4				
Intersection LOS	B				
Approach	EB		WB		NB
Entry Lanes	2		2		1
Conflicting Circle Lanes	2		2		2
Adj Approach Flow, veh/h	1149		1357		415
Demand Flow Rate, veh/h	1184		1397		427
Vehicles Circulating, veh/h	254		85		1125
Vehicles Exiting, veh/h	1228		1467		313
Ped Vol Crossing Leg, #/h	0		0		0
Ped Cap Adj	1.000		1.000		1.000
Approach Delay, s/veh	9.8		9.0		30.9
Approach LOS	A		A		D
Lane	Left	Right	Left	Right	Left
Designated Moves	LT	TR	LT	TR	LR
Assumed Moves	LT	TR	LT	TR	LR
RT Channelized					
Lane Util	0.470	0.530	0.470	0.530	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328
Entry Flow, veh/h	556	628	657	740	427
Cap Entry Lane, veh/h	1069	1144	1248	1321	546
Entry HV Adj Factor	0.971	0.970	0.971	0.972	0.972
Flow Entry, veh/h	540	609	638	719	415
Cap Entry, veh/h	1038	1110	1212	1284	530
V/C Ratio	0.520	0.549	0.526	0.560	0.782
Control Delay, s/veh	9.8	9.9	8.9	9.1	30.9
LOS	A	A	A	A	D
95th %tile Queue, veh	3	3	3	4	7

HCM 6th TWSC
 8: Mt Rose Highway & Telluride Dr

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘		↕	↘	↘	↘
Traffic Vol, veh/h	8	0	1246	29	43	6
Future Vol, veh/h	8	0	1246	29	43	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	25	0	25
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	88	80	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	9	0	1416	33	49	7

Major/Minor

	Major2	Minor2
Conflicting Flow All	-	0 1416 708
Stage 1	-	- 1416 -
Stage 2	-	- - 0 -
Critical Hdwy	-	- - 6.86 6.96
Critical Hdwy Stg 1	-	- - 5.86 -
Critical Hdwy Stg 2	-	- - - -
Follow-up Hdwy	-	- - 3.53 3.33
Pot Cap-1 Maneuver	-	- - 127 375
Stage 1	-	- - 188 -
Stage 2	-	- - - -
Platoon blocked, %	-	- -
Mov Cap-1 Maneuver	-	- - 127 375
Mov Cap-2 Maneuver	-	- - 127 -
Stage 1	-	- - 188 -
Stage 2	-	- - - -

Approach

	WB	SB
HCM Control Delay, s	0	45.8
HCM LOS		E

Minor Lane/Major Mvmt

	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	127	375
HCM Lane V/C Ratio	-	-	0.385	0.018
HCM Control Delay (s)	-	-	50.1	14.8
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	1.6	0.1

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt Rose Highway

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Vol, veh/h	0	1295	18	0	1266	35	0	0	2	0	0	8
Future Vol, veh/h	0	1295	18	0	1266	35	0	0	2	0	0	8
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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	800	-	-	50	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	1392	19	0	1361	38	0	0	2	0	0	9

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	-	0	-	-	-	0	-	-	696	-	-	681
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.96	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.33	-	-	3.33
Pot Cap-1 Maneuver	0	-	0	0	-	-	0	0	382	0	0	391
Stage 1	0	-	0	0	-	-	0	0	-	0	0	-
Stage 2	0	-	0	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	382	-	-	391
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	14.5	14.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	382	-	-	-	391
HCM Lane V/C Ratio	0.006	-	-	-	0.022
HCM Control Delay (s)	14.5	-	-	-	14.4
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th Signalized Intersection Summary

10: Wedge Pkwy & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↔		↔↔	↑↑	↔	↔	↑	↔	↔↔	↑	↔
Traffic Volume (veh/h)	212	937	25	332	892	75	23	62	143	307	82	178
Future Volume (veh/h)	212	937	25	332	892	75	23	62	143	307	82	178
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	233	1030	24	365	980	61	25	68	117	337	90	147
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	341	1822	42	469	1241	553	57	160	135	449	367	311
Arrive On Green	0.09	0.33	0.33	0.14	0.36	0.36	0.03	0.09	0.09	0.13	0.20	0.20
Sat Flow, veh/h	3718	5523	129	3330	3425	1528	1767	1856	1572	3428	1856	1572
Grp Volume(v), veh/h	233	683	371	365	980	61	25	68	117	337	90	147
Grp Sat Flow(s),veh/h/ln	1859	1831	1989	1665	1712	1528	1767	1856	1572	1714	1856	1572
Q Serve(g_s), s	4.7	11.9	11.9	8.2	19.8	2.1	1.1	2.7	3.9	7.3	3.2	4.3
Cycle Q Clear(g_c), s	4.7	11.9	11.9	8.2	19.8	2.1	1.1	2.7	3.9	7.3	3.2	4.3
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	341	1208	656	469	1241	553	57	160	135	449	367	311
V/C Ratio(X)	0.68	0.57	0.57	0.78	0.79	0.11	0.44	0.43	0.86	0.75	0.25	0.47
Avail Cap(c_a), veh/h	705	1753	952	726	1750	781	344	1056	895	818	1142	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	21.4	21.4	32.1	22.1	16.4	36.8	33.6	16.7	32.5	26.2	12.5
Incr Delay (d2), s/veh	2.4	0.4	0.8	2.9	1.7	0.1	5.2	1.8	14.7	2.6	0.3	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	8.1	8.8	5.8	11.7	1.2	1.0	2.2	4.6	5.5	2.5	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.5	21.8	22.2	35.0	23.7	16.5	42.1	35.4	31.3	35.0	26.6	13.6
LnGrp LOS	D	C	C	D	C	B	D	D	C	D	C	B
Approach Vol, veh/h		1287			1406			210			574	
Approach Delay, s/veh		24.6			26.4			33.9			28.2	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.4	12.6	16.0	33.5	7.4	20.6	15.0	34.5				
Change Period (Y+Rc), s	5.3	* 5.9	5.1	7.9	4.9	* 5.3	7.9	* 6.4				
Max Green Setting (Gmax), s	18.5	* 44	16.9	37.1	15.1	* 48	14.7	* 40				
Max Q Clear Time (g_c+I1), s	9.3	5.9	10.2	13.9	3.1	6.3	6.7	21.8				
Green Ext Time (p_c), s	0.8	0.7	0.7	6.7	0.0	1.0	0.4	6.3				
Intersection Summary												
HCM 6th Ctrl Delay			26.5									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↘↘
Traffic Volume (vph)	0	371	0	341	675	0	0	0	0	48	0	1031
Future Volume (vph)	0	371	0	341	675	0	0	0	0	48	0	1031
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Flt		1.00		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	422	0	388	767	0	0	0	0	55	0	1172
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	422	0	388	767	0	0	0	0	55	0	1172
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		30.5		27.3	65.3					12.8		91.7
Effective Green, g (s)		30.5		27.3	65.3					12.8		91.7
Actuated g/C Ratio		0.33		0.30	0.71					0.14		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		1183		513	2458					244		2760
v/s Ratio Prot		0.12		c0.22	0.22					0.03		
v/s Ratio Perm												c0.42
v/c Ratio		0.36		0.76	0.31					0.23		0.42
Uniform Delay, d1		23.2		29.2	4.9					35.0		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d2		0.2		6.3	0.1					0.5		0.5
Delay (s)		23.4		35.5	5.0					35.5		0.5
Level of Service		C		D	A					D		A
Approach Delay (s)		23.4			15.2			0.0			2.1	
Approach LOS		C			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			91.7			Sum of lost time (s)			21.1			
Intersection Capacity Utilization			46.6%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	922	0	0	0	0	0	0	0	0	341	0
Future Volume (vph)	0	922	0	0	0	0	0	0	0	0	341	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%				0%
Total Lost time (s)		6.9										4.0
Lane Util. Factor		0.95										1.00
Frt		1.00										1.00
Flt Protected		1.00										1.00
Satd. Flow (prot)		3557										1845
Flt Permitted		1.00										1.00
Satd. Flow (perm)		3557										1845
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	1048	0	0	0	0	0	0	0	0	388	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1048	0	0	0	0	0	0	0	0	388	0
Turn Type		NA										NA
Protected Phases		4 6!										Free!
Permitted Phases												
Actuated Green, G (s)		50.2										91.7
Effective Green, g (s)		50.2										91.7
Actuated g/C Ratio		0.55										1.00
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		1947										1845
v/s Ratio Prot		c0.29										0.21
v/s Ratio Perm												
v/c Ratio		0.54										0.21
Uniform Delay, d1		13.3										0.0
Progression Factor		1.00										1.00
Incremental Delay, d2		0.3										0.2
Delay (s)		13.6										0.2
Level of Service		B										A
Approach Delay (s)		13.6			0.0			0.0				0.2
Approach LOS		B			A			A				A
Intersection Summary												
HCM 2000 Control Delay			10.0				HCM 2000 Level of Service					A
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			91.7				Sum of lost time (s)			21.1		
Intersection Capacity Utilization			52.5%				ICU Level of Service					A
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
 13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗	↘		↗			
Traffic Volume (veh/h)	0	419	0	0	820	112	66	0	114	0	0	0
Future Volume (veh/h)	0	419	0	0	820	112	66	0	114	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1973	0	0	1803	1803	1856	0	1856			
Adj Flow Rate, veh/h	0	455	0	0	891	0	72	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	3	0	0	3	3	3	0	3			
Cap, veh/h	0	1152	0	0	1052		1111	0				
Arrive On Green	0.00	0.31	0.00	0.00	0.31	0.00	0.63	0.00	0.00			
Sat Flow, veh/h	0	3946	0	0	3515	1528	1767	0	1572			
Grp Volume(v), veh/h	0	455	0	0	891	0	72	0	0			
Grp Sat Flow(s),veh/h/ln	0	1874	0	0	1712	1528	1767	0	1572			
Q Serve(g_s), s	0.0	13.4	0.0	0.0	34.1	0.0	2.2	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	13.4	0.0	0.0	34.1	0.0	2.2	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1152	0	0	1052		1111	0				
V/C Ratio(X)	0.00	0.40	0.00	0.00	0.85		0.06	0.00				
Avail Cap(c_a), veh/h	0	2691	0	0	2459		1111	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.95	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	38.2	0.0	0.0	45.4	0.0	10.1	0.0	0.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	2.0	0.0	0.0	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			
%ile BackOfQ(95%),veh/ln	0.0	10.0	0.0	0.0	20.6	0.0	1.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	38.4	0.0	0.0	47.4	0.0	10.1	0.0	0.0			
LnGrp LOS	A	D	A	A	D		B	A				
Approach Vol, veh/h		455			891	A		72	A			
Approach Delay, s/veh		38.4			47.4			10.1				
Approach LOS		D			D			B				
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		92.5		47.5				47.5				
Change Period (Y+Rc), s		4.5		4.5				4.5				
Max Green Setting (Gmax), s		30.5		100.5				100.5				
Max Q Clear Time (g_c+I1), s		4.2		15.4				36.1				
Green Ext Time (p_c), s		0.2		3.0				6.9				
Intersection Summary												
HCM 6th Ctrl Delay					42.6							
HCM 6th LOS					D							

HCM 6th Signalized Intersection Summary
 14: Mt Rose Highway & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↖↗	↕	↖↗	↖	↖↗	↖	
Traffic Volume (veh/h)	67	386	734	40	53	92	
Future Volume (veh/h)	67	386	734	40	53	92	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	71	406	773	31	56	73	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	200	2212	1286	574	397	182	
Arrive On Green	0.05	0.59	0.38	0.38	0.12	0.12	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	71	406	773	31	56	73	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	0.7	1.9	7.2	0.5	0.6	1.7	
Cycle Q Clear(g_c), s	0.7	1.9	7.2	0.5	0.6	1.7	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	200	2212	1286	574	397	182	
V/C Ratio(X)	0.35	0.18	0.60	0.05	0.14	0.40	
Avail Cap(c_a), veh/h	2247	8917	5487	2447	3113	1428	
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	1.00	
Uniform Delay (d), s/veh	17.8	3.7	9.6	7.6	15.5	16.0	
Incr Delay (d2), s/veh	1.1	0.0	0.5	0.0	0.2	1.4	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	0.5	0.4	3.0	1.0	0.4	2.8	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	18.9	3.7	10.1	7.6	15.7	17.5	
LnGrp LOS	B	A	B	A	B	B	
Approach Vol, veh/h		477	804		129		
Approach Delay, s/veh		6.0	10.0		16.7		
Approach LOS		A	A		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				30.1	9.0	8.0	22.0
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				3.9	3.7	2.7	9.2
Green Ext Time (p_c), s				2.6	0.4	0.2	5.8
Intersection Summary							
HCM 6th Ctrl Delay			9.2				
HCM 6th LOS			A				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt Rose Highway/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	137	251	47	94	565	1125	53	495	105	468	272	127
Future Volume (veh/h)	137	251	47	94	565	1125	53	495	105	468	272	127
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	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	149	273	0	102	614	0	58	538	0	509	296	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	243	920		130	809		123	931		637	1702	
Arrive On Green	0.07	0.24	0.00	0.08	0.24	0.00	0.04	0.18	0.00	0.19	0.34	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	149	273	0	102	614	0	58	538	0	509	296	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	3.2	4.8	0.0	4.9	13.9	0.0	1.4	7.9	0.0	11.6	3.4	0.0
Cycle Q Clear(g_c), s	3.2	4.8	0.0	4.9	13.9	0.0	1.4	7.9	0.0	11.6	3.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	243	920		130	809		123	931		637	1702	
V/C Ratio(X)	0.61	0.30		0.78	0.76		0.47	0.58		0.80	0.17	
Avail Cap(c_a), veh/h	865	1784		409	1607		798	1719		1209	2351	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.1	25.4	0.0	37.0	28.7	0.0	38.6	30.4	0.0	31.8	19.1	0.0
Incr Delay (d2), s/veh	2.5	0.2	0.0	9.8	1.5	0.0	2.8	0.6	0.0	2.4	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(95%),veh/ln	2.6	3.7	0.0	4.0	9.1	0.0	1.0	5.4	0.0	8.1	2.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	25.5	0.0	46.7	30.2	0.0	41.4	31.0	0.0	34.2	19.2	0.0
LnGrp LOS	D	C		D	C		D	C		C	B	
Approach Vol, veh/h		422	A		716	A		596	A		805	A
Approach Delay, s/veh		30.5			32.6			32.0			28.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.4	22.3	11.4	26.5	8.9	34.7	11.3	26.6				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	13.6	9.9	6.9	6.8	3.4	5.4	5.2	15.9				
Green Ext Time (p_c), s	1.6	3.0	0.2	1.6	0.1	1.8	0.3	3.8				
Intersection Summary												
HCM 6th Ctrl Delay			30.9									
HCM 6th LOS			C									

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	49.1							
Intersection LOS	E							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	639		1060		1183		142	
Demand Flow Rate, veh/h	659		1092		1218		146	
Vehicles Circulating, veh/h	143		1178		613		2084	
Vehicles Exiting, veh/h	2087		653		189		186	
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		105.7		23.1		39.2	
Approach LOS	A		F		C		E	
Lane	Left	Right	Left	Right	Left	Right	Left	
Designated Moves	LT	TR	LT	TR	L	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.470	0.530	0.470	0.530	0.530	0.470	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	310	349	513	579	646	572	146	
Cap Entry Lane, veh/h	1183	1258	457	522	768	843	241	
Entry HV Adj Factor	0.970	0.971	0.971	0.971	0.970	0.972	0.975	
Flow Entry, veh/h	301	339	498	562	627	556	142	
Cap Entry, veh/h	1147	1221	444	506	745	819	235	
V/C Ratio	0.262	0.278	1.123	1.110	0.841	0.678	0.605	
Control Delay, s/veh	5.6	5.5	110.6	101.4	29.0	16.5	39.2	
LOS	A	A	F	F	D	C	E	
95th %tile Queue, veh	1	1	18	18	10	5	4	

HCM 6th TWSC
 1: Joy Lake Rd & Mt Rose Highway

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	674	8	161	342	10	106
Future Vol, veh/h	674	8	161	342	10	106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	200	500	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	4	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	822	10	196	417	12	129

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	-	822	0	1631
Stage 1	-	-	-	-	822
Stage 2	-	-	-	-	809
Critical Hdwy	-	-	4.13	-	6.43
Critical Hdwy Stg 1	-	-	-	-	5.43
Critical Hdwy Stg 2	-	-	-	-	5.43
Follow-up Hdwy	-	-	2.227	-	3.527
Pot Cap-1 Maneuver	-	0	803	-	111
Stage 1	-	0	-	-	430
Stage 2	-	0	-	-	436
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	803	-	84
Mov Cap-2 Maneuver	-	-	-	-	208
Stage 1	-	-	-	-	430
Stage 2	-	-	-	-	330

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	20
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBL	WBT
Capacity (veh/h)	208	372	-	803	-
HCM Lane V/C Ratio	0.059	0.347	-	0.245	-
HCM Control Delay (s)	23.4	19.7	-	10.9	-
HCM Lane LOS	C	C	-	B	-
HCM 95th %tile Q(veh)	0.2	1.5	-	1	-

HCM 6th Roundabout
 2: Bordeaux Dr/Timberline Dr & Mt Rose Highway

Intersection						
Intersection Delay, s/veh	14.2					
Intersection LOS	B					
Approach	EB	WB		NB	SB	
Entry Lanes	1	2		1	1	
Conflicting Circle Lanes	2	2		2	2	
Adj Approach Flow, veh/h	1005	787		203	63	
Demand Flow Rate, veh/h	1035	810		209	64	
Vehicles Circulating, veh/h	214	26		1075	785	
Vehicles Exiting, veh/h	635	1070		174	51	
Ped Vol Crossing Leg, #/h	0	0		0	0	
Ped Cap Adj	1.000	1.000		1.000	1.000	
Approach Delay, s/veh	24.3	5.4		0.7	6.0	
Approach LOS	C	A		A	A	
Lane	Left	Left	Right	Left	Bypass	Left
Designated Moves	LTR	LT	TR	LT	R	LTR
Assumed Moves	LTR	LT	TR	LT	R	LTR
RT Channelized					Free	
Lane Util	1.000	0.470	0.530	1.000		1.000
Follow-Up Headway, s	2.535	2.667	2.535	2.535		2.535
Critical Headway, s	4.328	4.645	4.328	4.328	188	4.328
Entry Flow, veh/h	1035	381	429	21	1957	64
Cap Entry Lane, veh/h	1184	1318	1389	569	0.971	729
Entry HV Adj Factor	0.971	0.971	0.972	0.950	183	0.979
Flow Entry, veh/h	1005	370	417	20	1900	63
Cap Entry, veh/h	1150	1280	1351	541	0.096	713
V/C Ratio	0.874	0.289	0.309	0.037	0.0	0.088
Control Delay, s/veh	24.3	5.4	5.4	7.1	A	6.0
LOS	C	A	A	A	0	A
95th %tile Queue, veh	12	1	1	0		0

HCM 6th Roundabout
 3: Callahan Rd & Mt Rose Highway

Intersection							
Intersection Delay, s/veh	13.9						
Intersection LOS	B						
Approach	EB		WB		NB		SB
Entry Lanes	2		2		1		1
Conflicting Circle Lanes	2		2		2		2
Adj Approach Flow, veh/h	1354		1329		282		38
Demand Flow Rate, veh/h	1395		1369		290		39
Vehicles Circulating, veh/h	415		20		1400		1309
Vehicles Exiting, veh/h	933		1670		410		80
Ped Vol Crossing Leg, #/h	0		0		0		0
Ped Cap Adj	1.000		1.000		1.000		1.000
Approach Delay, s/veh	17.0		8.0		27.8		9.1
Approach LOS	C		A		D		A
Lane	Left	Right	Left	Right	Left	Left	
Designated Moves	LT	TR	LT	TR	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	LTR	LTR	
RT Channelized							
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328	
Entry Flow, veh/h	656	739	643	726	290	39	
Cap Entry Lane, veh/h	921	998	1325	1396	432	467	
Entry HV Adj Factor	0.970	0.971	0.971	0.970	0.971	0.970	
Flow Entry, veh/h	636	718	625	704	282	38	
Cap Entry, veh/h	894	969	1287	1355	420	453	
V/C Ratio	0.712	0.741	0.485	0.520	0.671	0.084	
Control Delay, s/veh	16.9	17.2	7.8	8.1	27.8	9.1	
LOS	C	C	A	A	D	A	
95th %tile Queue, veh	6	7	3	3	5	0	

HCM 6th TWSC
 4: Mt Rose Highway & Mountain Ranch Rd

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙		↑↑		↘	
Traffic Vol, veh/h	5	0	1101	23	7	10
Future Vol, veh/h	5	0	1101	23	7	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	-5	5	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	0	1327	28	8	12

Major/Minor	Major2	Minor2
Conflicting Flow All	-	0 1341 678
Stage 1	-	- 1341 -
Stage 2	-	- 0 -
Critical Hdwy	-	- 6.86 6.96
Critical Hdwy Stg 1	-	- 5.86 -
Critical Hdwy Stg 2	-	- - -
Follow-up Hdwy	-	- 3.53 3.33
Pot Cap-1 Maneuver	-	- 142 392
Stage 1	-	- 207 -
Stage 2	-	- - -
Platoon blocked, %	-	- -
Mov Cap-1 Maneuver	-	- 142 392
Mov Cap-2 Maneuver	-	- 142 -
Stage 1	-	- 207 -
Stage 2	-	- - -

Approach	WB	SB
HCM Control Delay, s	0	22.4
HCM LOS		C

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	227
HCM Lane V/C Ratio	-	-	0.09
HCM Control Delay (s)	-	-	22.4
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.3

HCM 6th Roundabout
5: Fawn Ln & Mt Rose Highway

Intersection					
Intersection Delay, s/veh	9.6				
Intersection LOS	A				
Approach	EB		WB		NB
Entry Lanes	2		2		1
Conflicting Circle Lanes	2		2		2
Adj Approach Flow, veh/h	1618		1385		48
Demand Flow Rate, veh/h	1666		1427		49
Vehicles Circulating, veh/h	52		12		1652
Vehicles Exiting, veh/h	1387		1689		66
Ped Vol Crossing Leg, #/h	0		0		0
Ped Cap Adj	1.000		1.000		1.000
Approach Delay, s/veh	10.6		8.2		13.0
Approach LOS	B		A		B
Lane	Left	Right	Left	Right	Left
Designated Moves	LT	TR	LT	TR	LR
Assumed Moves	LT	TR	LT	TR	LR
RT Channelized					
Lane Util	0.470	0.530	0.470	0.530	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328
Entry Flow, veh/h	783	883	671	756	49
Cap Entry Lane, veh/h	1287	1359	1335	1406	349
Entry HV Adj Factor	0.971	0.971	0.970	0.971	0.980
Flow Entry, veh/h	760	857	651	734	48
Cap Entry, veh/h	1250	1319	1295	1365	342
V/C Ratio	0.608	0.650	0.503	0.538	0.141
Control Delay, s/veh	10.3	10.9	8.1	8.4	13.0
LOS	B	B	A	A	B
95th %tile Queue, veh	4	5	3	3	0

HCM 6th Roundabout
6: Mt Rose Highway & Thomas Creek Rd

Intersection						
Intersection Delay, s/veh	16.9					
Intersection LOS	C					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	1594		1428		596	
Demand Flow Rate, veh/h	1642		1471		614	
Vehicles Circulating, veh/h	351		165		1087	
Vehicles Exiting, veh/h	1350		1828		549	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	21.1		11.0		20.1	
Approach LOS	C		B		C	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	LTR
Assumed Moves	LT	TR	LT	TR	L	LTR
RT Channelized						
Lane Util	0.470	0.530	0.470	0.530	0.529	0.471
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	772	870	691	780	325	289
Cap Entry Lane, veh/h	977	1054	1160	1234	497	564
Entry HV Adj Factor	0.970	0.971	0.972	0.971	0.972	0.969
Flow Entry, veh/h	749	845	671	757	316	280
Cap Entry, veh/h	948	1023	1127	1198	483	546
V/C Ratio	0.790	0.826	0.596	0.632	0.654	0.513
Control Delay, s/veh	20.3	21.8	10.8	11.2	23.8	15.9
LOS	C	C	B	B	C	C
95th %tile Queue, veh	8	10	4	5	5	3

HCM 6th Roundabout
7: Edmonton Dr & Mt Rose Highway

Intersection					
Intersection Delay, s/veh	16.7				
Intersection LOS	C				
Approach	EB		WB		NB
Entry Lanes	2		2		1
Conflicting Circle Lanes	2		2		2
Adj Approach Flow, veh/h	1660		1637		226
Demand Flow Rate, veh/h	1710		1686		232
Vehicles Circulating, veh/h	305		47		1648
Vehicles Exiting, veh/h	1428		1833		367
Ped Vol Crossing Leg, #/h	0		0		0
Ped Cap Adj	1.000		1.000		1.000
Approach Delay, s/veh	20.5		10.7		32.4
Approach LOS	C		B		D
Lane	Left	Right	Left	Right	Left
Designated Moves	LT	TR	LT	TR	LR
Assumed Moves	LT	TR	LT	TR	LR
RT Channelized					
Lane Util	0.470	0.530	0.470	0.530	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328
Entry Flow, veh/h	804	906	792	894	232
Cap Entry Lane, veh/h	1020	1096	1293	1364	350
Entry HV Adj Factor	0.970	0.971	0.971	0.970	0.974
Flow Entry, veh/h	780	880	769	867	226
Cap Entry, veh/h	989	1064	1256	1324	341
V/C Ratio	0.789	0.827	0.613	0.655	0.663
Control Delay, s/veh	19.6	21.3	10.4	11.0	32.4
LOS	C	C	B	B	D
95th %tile Queue, veh	8	10	4	5	4

HCM 6th TWSC
 8: Mt Rose Highway & Telluride Dr

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘		↕	↘	↘	↘
Traffic Vol, veh/h	23	0	1322	49	29	20
Future Vol, veh/h	23	0	1322	49	29	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	25	0	25
Veh in Median Storage, #	-	1	0	-	0	-
Grade, %	-	-7	6	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	26	0	1485	55	33	22

Major/Minor	Major2	Minor2
Conflicting Flow All	-	0 1485 743
Stage 1	-	- 1485 -
Stage 2	-	- - 0 -
Critical Hdwy	-	- - 6.86 6.96
Critical Hdwy Stg 1	-	- - 5.86 -
Critical Hdwy Stg 2	-	- - - -
Follow-up Hdwy	-	- - 3.53 3.33
Pot Cap-1 Maneuver	-	- - 114 355
Stage 1	-	- - 173 -
Stage 2	-	- - - -
Platoon blocked, %	-	- -
Mov Cap-1 Maneuver	-	- - 114 355
Mov Cap-2 Maneuver	-	- - 114 -
Stage 1	-	- - 173 -
Stage 2	-	- - - -

Approach	WB	SB
HCM Control Delay, s	0	35.3
HCM LOS		E

Minor Lane/Major Mvmt	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	-	114	355
HCM Lane V/C Ratio	-	-	0.286	0.063
HCM Control Delay (s)	-	-	48.8	15.8
HCM Lane LOS	-	-	E	C
HCM 95th %tile Q(veh)	-	-	1.1	0.2

HCM 6th TWSC
 9: DeSpain Ln/Sundance Dr & Mt Rose Highway

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑			↑			↑
Traffic Vol, veh/h	0	1707	10	0	1580	72	0	0	14	0	0	4
Future Vol, veh/h	0	1707	10	0	1580	72	0	0	14	0	0	4
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	-	-	Free	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	800	-	-	50	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	4	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	1760	10	0	1629	74	0	0	14	0	0	4

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	-	0	-	-	-	0	-	-	880	-	-	815
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.96	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.33	-	-	3.33
Pot Cap-1 Maneuver	0	-	0	0	-	-	0	0	288	0	0	318
Stage 1	0	-	0	0	-	-	0	0	-	0	0	-
Stage 2	0	-	0	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	288	-	-	318
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	18.2	16.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	288	-	-	-	318
HCM Lane V/C Ratio	0.05	-	-	-	0.013
HCM Control Delay (s)	18.2	-	-	-	16.5
HCM Lane LOS	C	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0

HCM 6th Signalized Intersection Summary

10: Wedge Pkwy & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↔		↔↔	↑↑	↔	↔	↑	↔	↔↔	↑	↔
Traffic Volume (veh/h)	175	1147	19	145	918	203	31	78	225	450	59	316
Future Volume (veh/h)	175	1147	19	145	918	203	31	78	225	450	59	316
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	2012	2012	2012	1803	1803	1803	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	182	1195	18	151	956	158	32	81	176	469	61	247
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	259	2000	30	227	1173	523	65	263	223	582	502	425
Arrive On Green	0.07	0.36	0.36	0.07	0.34	0.34	0.04	0.14	0.14	0.17	0.27	0.27
Sat Flow, veh/h	3718	5576	84	3330	3425	1528	1767	1856	1572	3428	1856	1572
Grp Volume(v), veh/h	182	785	428	151	956	158	32	81	176	469	61	247
Grp Sat Flow(s),veh/h/ln	1859	1831	1997	1665	1712	1528	1767	1856	1572	1714	1856	1572
Q Serve(g_s), s	4.3	15.7	15.7	4.0	22.8	3.8	1.6	3.5	9.7	11.8	2.2	8.4
Cycle Q Clear(g_c), s	4.3	15.7	15.7	4.0	22.8	3.8	1.6	3.5	9.7	11.8	2.2	8.4
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	259	1314	716	227	1173	523	65	263	223	582	502	425
V/C Ratio(X)	0.70	0.60	0.60	0.66	0.81	0.30	0.49	0.31	0.79	0.81	0.12	0.58
Avail Cap(c_a), veh/h	278	1314	716	592	1516	676	456	915	775	1016	989	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	23.4	23.4	40.7	26.8	6.7	42.3	34.4	37.1	35.7	24.6	13.6
Incr Delay (d2), s/veh	7.1	0.7	1.4	3.3	2.7	0.3	5.7	0.7	6.1	2.7	0.1	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	10.4	11.3	3.0	13.8	3.9	1.4	2.9	7.0	8.6	1.7	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.8	24.2	24.8	44.0	29.6	7.0	47.9	35.1	43.2	38.4	24.7	14.8
LnGrp LOS	D	C	C	D	C	A	D	D	D	D	C	B
Approach Vol, veh/h		1395			1265			289			777	
Approach Delay, s/veh		27.4			28.5			41.5			29.8	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.7	18.6	11.2	40.0	8.2	30.1	14.1	37.0				
Change Period (Y+Rc), s	4.5	5.9	5.1	7.9	4.9	* 5.9	7.9	* 6.4				
Max Green Setting (Gmax), s	26.5	44.1	15.9	30.1	23.1	* 48	6.7	* 40				
Max Q Clear Time (g_c+I1), s	13.8	11.7	6.0	17.7	3.6	10.4	6.3	24.8				
Green Ext Time (p_c), s	1.4	1.0	0.3	5.9	0.0	1.2	0.0	5.9				
Intersection Summary												
HCM 6th Ctrl Delay			29.4									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

11: Mt Rose Highway & SB I-580 Off-ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↘	↑↑					↘		↗↗
Traffic Volume (vph)	0	763	0	375	727	0	0	0	0	68	0	1254
Future Volume (vph)	0	763	0	375	727	0	0	0	0	68	0	1254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)		6.9		6.6	6.0					7.6		4.0
Lane Util. Factor		0.95		1.00	0.95					1.00		0.88
Flt		1.00		1.00	1.00					1.00		0.85
Flt Protected		1.00		0.95	1.00					0.95		1.00
Satd. Flow (prot)		3557		1726	3452					1752		2760
Flt Permitted		1.00		0.95	1.00					0.95		1.00
Satd. Flow (perm)		3557		1726	3452					1752		2760
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	838	0	412	799	0	0	0	0	75	0	1378
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	838	0	412	799	0	0	0	0	75	0	1378
Turn Type		NA		Prot	NA					Prot		Free
Protected Phases		4		3	8					6		
Permitted Phases										6		Free
Actuated Green, G (s)		48.5		33.5	89.5					17.6		120.7
Effective Green, g (s)		48.5		33.5	89.5					17.6		120.7
Actuated g/C Ratio		0.40		0.28	0.74					0.15		1.00
Clearance Time (s)		6.9		6.6	6.0					7.6		
Vehicle Extension (s)		3.0		3.0	3.0					3.0		
Lane Grp Cap (vph)		1429		479	2559					255		2760
v/s Ratio Prot		c0.24		c0.24	0.23					0.04		
v/s Ratio Perm												c0.50
v/c Ratio		0.59		0.86	0.31					0.29		0.50
Uniform Delay, d1		28.3		41.4	5.2					46.0		0.0
Progression Factor		1.00		1.00	1.00					1.00		1.00
Incremental Delay, d2		0.6		14.6	0.1					0.6		0.6
Delay (s)		28.9		55.9	5.3					46.7		0.6
Level of Service		C		E	A					D		A
Approach Delay (s)		28.9			22.5			0.0			3.0	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			16.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			120.7			Sum of lost time (s)			21.1			
Intersection Capacity Utilization			59.7%			ICU Level of Service				B		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis

12: WB to SB Ramp & EB to NB Loop Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1214	0	0	0	0	0	0	0	0	375	0
Future Volume (vph)	0	1214	0	0	0	0	0	0	0	0	375	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		6.9									4.0	
Lane Util. Factor		0.95									1.00	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3557									1845	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3557									1845	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	1334	0	0	0	0	0	0	0	0	412	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1334	0	0	0	0	0	0	0	0	412	0
Turn Type		NA									NA	
Protected Phases		4 6!									Free!	
Permitted Phases												
Actuated Green, G (s)		73.0									120.7	
Effective Green, g (s)		73.0									120.7	
Actuated g/C Ratio		0.60									1.00	
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		2151									1845	
v/s Ratio Prot		c0.37									0.22	
v/s Ratio Perm												
v/c Ratio		0.62									0.22	
Uniform Delay, d1		15.1									0.0	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.6									0.1	
Delay (s)		15.6									0.1	
Level of Service		B									A	
Approach Delay (s)		15.6			0.0			0.0			0.1	
Approach LOS		B			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			12.0				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			120.7				Sum of lost time (s)			21.1		
Intersection Capacity Utilization			62.4%				ICU Level of Service			B		
Analysis Period (min)			15									
! Phase conflict between lane groups.												
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
 13: NB I-580 Off-ramp/NB I-580 On-ramp & Mt Rose Highway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↗	↘		↗			
Traffic Volume (veh/h)	0	831	0	0	771	260	230	0	393	0	0	0
Future Volume (veh/h)	0	831	0	0	771	260	230	0	393	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1973	0	0	1803	1803	1856	0	1856			
Adj Flow Rate, veh/h	0	857	0	0	795	0	237	0	0			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	3	0	0	3	3	3	0	3			
Cap, veh/h	0	1034	0	0	944		1166	0				
Arrive On Green	0.00	0.28	0.00	0.00	0.28	0.00	0.66	0.00	0.00			
Sat Flow, veh/h	0	3946	0	0	3515	1528	1767	0	1572			
Grp Volume(v), veh/h	0	857	0	0	795	0	237	0	0			
Grp Sat Flow(s),veh/h/ln	0	1874	0	0	1712	1528	1767	0	1572			
Q Serve(g_s), s	0.0	30.0	0.0	0.0	30.7	0.0	7.4	0.0	0.0			
Cycle Q Clear(g_c), s	0.0	30.0	0.0	0.0	30.7	0.0	7.4	0.0	0.0			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1034	0	0	944		1166	0				
V/C Ratio(X)	0.00	0.83	0.00	0.00	0.84		0.20	0.00				
Avail Cap(c_a), veh/h	0	2691	0	0	2459		1166	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.80	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	0.0	47.6	0.0	0.0	47.8	0.0	9.3	0.0	0.0			
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.0	2.1	0.0	0.1	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			
%ile BackOfQ(95%),veh/ln	0.0	19.3	0.0	0.0	18.9	0.0	5.1	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	49.0	0.0	0.0	49.9	0.0	9.4	0.0	0.0			
LnGrp LOS	A	D	A	A	D		A	A				
Approach Vol, veh/h		857			795	A		237	A			
Approach Delay, s/veh		49.0			49.9			9.4				
Approach LOS		D			D			A				
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		96.9		43.1				43.1				
Change Period (Y+Rc), s		4.5		4.5				4.5				
Max Green Setting (Gmax), s		30.5		100.5				100.5				
Max Q Clear Time (g_c+I1), s		9.4		32.0				32.7				
Green Ext Time (p_c), s		0.7		6.6				5.9				
Intersection Summary												
HCM 6th Ctrl Delay				44.4								
HCM 6th LOS				D								

HCM 6th Signalized Intersection Summary

14: Mt Rose Highway & Herz Blvd

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↔↔	↑↑	↑↑	↔	↔↔	↔	
Traffic Volume (veh/h)	177	893	703	54	182	363	
Future Volume (veh/h)	177	893	703	54	182	363	
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	1973	1973	1761	1761	1856	1856	
Adj Flow Rate, veh/h	186	940	740	42	192	286	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	3	3	3	3	3	3	
Cap, veh/h	332	2019	1117	498	822	377	
Arrive On Green	0.09	0.54	0.33	0.33	0.24	0.24	
Sat Flow, veh/h	3645	3847	3435	1493	3428	1572	
Grp Volume(v), veh/h	186	940	740	42	192	286	
Grp Sat Flow(s),veh/h/ln	1823	1874	1673	1493	1714	1572	
Q Serve(g_s), s	2.5	8.0	9.8	1.0	2.3	8.8	
Cycle Q Clear(g_c), s	2.5	8.0	9.8	1.0	2.3	8.8	
Prop In Lane	1.00			1.00	1.00	1.00	
Lane Grp Cap(c), veh/h	332	2019	1117	498	822	377	
V/C Ratio(X)	0.56	0.47	0.66	0.08	0.23	0.76	
Avail Cap(c_a), veh/h	1693	6719	4134	1844	2346	1076	
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	1.00	
Uniform Delay (d), s/veh	22.6	7.4	14.8	11.8	15.9	18.3	
Incr Delay (d2), s/veh	1.5	0.2	0.7	0.1	0.1	3.1	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(95%),veh/ln	1.8	3.6	5.3	1.8	1.5	12.1	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	24.1	7.5	15.5	11.9	16.0	21.5	
LnGrp LOS	C	A	B	B	B	C	
Approach Vol, veh/h		1126	782		478		
Approach Delay, s/veh		10.3	15.3		19.3		
Approach LOS		B	B		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				34.9	16.9	10.6	24.3
Change Period (Y+Rc), s				7.0	4.5	5.9	* 7
Max Green Setting (Gmax), s				93.0	35.5	24.1	* 64
Max Q Clear Time (g_c+I1), s				10.0	10.8	4.5	11.8
Green Ext Time (p_c), s				7.5	1.7	0.5	5.5
Intersection Summary							
HCM 6th Ctrl Delay			13.7				
HCM 6th LOS			B				

HCM 6th Signalized Intersection Summary
 15: S Virginia St & Mt Rose Highway/Geiger Grade Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	204	767	97	179	506	910	89	447	177	1172	642	220
Future Volume (veh/h)	204	767	97	179	506	910	89	447	177	1172	642	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2012	2012	2012	1761	1761	1761	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	208	783	0	183	516	0	91	456	0	1196	655	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	286	955		212	975		147	684		889	1788	
Arrive On Green	0.08	0.25	0.00	0.13	0.29	0.00	0.04	0.13	0.00	0.26	0.35	0.00
Sat Flow, veh/h	3718	3823	1705	1677	3346	1493	3428	5066	1572	3428	5066	1572
Grp Volume(v), veh/h	208	783	0	183	516	0	91	456	0	1196	655	0
Grp Sat Flow(s),veh/h/ln	1859	1912	1705	1677	1673	1493	1714	1689	1572	1714	1689	1572
Q Serve(g_s), s	6.1	21.5	0.0	11.9	14.4	0.0	2.9	9.5	0.0	28.8	10.7	0.0
Cycle Q Clear(g_c), s	6.1	21.5	0.0	11.9	14.4	0.0	2.9	9.5	0.0	28.8	10.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	286	955		212	975		147	684		889	1788	
V/C Ratio(X)	0.73	0.82		0.86	0.53		0.62	0.67		1.35	0.37	
Avail Cap(c_a), veh/h	636	1311		300	1181		586	1263		889	1788	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.2	39.3	0.0	47.6	33.0	0.0	52.3	45.7	0.0	41.2	26.7	0.0
Incr Delay (d2), s/veh	3.6	3.0	0.0	16.3	0.4	0.0	4.2	1.1	0.0	163.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	15.2	0.0	9.7	9.5	0.0	2.3	7.0	0.0	47.6	7.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.7	42.4	0.0	63.8	33.4	0.0	56.5	46.8	0.0	204.3	26.8	0.0
LnGrp LOS	D	D		E	C		E	D		F	C	
Approach Vol, veh/h		991	A		699	A		547	A		1851	A
Approach Delay, s/veh		44.8			41.4			48.4			141.5	
Approach LOS		D			D			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	22.3	19.2	34.7	10.8	46.5	14.5	39.3				
Change Period (Y+Rc), s	6.2	7.3	5.1	6.9	6.0	* 7.3	6.0	* 6.9				
Max Green Setting (Gmax), s	28.8	27.7	19.9	38.1	19.0	* 38	19.0	* 39				
Max Q Clear Time (g_c+I1), s	30.8	11.5	13.9	23.5	4.9	12.7	8.1	16.4				
Green Ext Time (p_c), s	0.0	2.4	0.2	4.3	0.2	4.1	0.5	3.1				
Intersection Summary												
HCM 6th Ctrl Delay											88.5	
HCM 6th LOS											F	

HCM 6th Roundabout
 16: Geiger Grade Rd & Veterans Pkwy & Whites Creek Ln

Intersection								
Intersection Delay, s/veh	56.7							
Intersection LOS	F							
Approach	EB		WB		NB		SB	
Entry Lanes	2		2		2		1	
Conflicting Circle Lanes	2		2		2		2	
Adj Approach Flow, veh/h	1366		1087		1026		186	
Demand Flow Rate, veh/h	1407		1120		1057		192	
Vehicles Circulating, veh/h	326		1001		1195		1970	
Vehicles Exiting, veh/h	1836		1251		538		151	
Ped Vol Crossing Leg, #/h	0		0		0		0	
Ped Cap Adj	1.000		1.000		1.000		1.000	
Approach Delay, s/veh	14.1		60.3		111.4		46.9	
Approach LOS	B		F		F		E	
Lane	Left	Right	Left	Right	Left	Right	Left	
Designated Moves	LT	TR	LT	TR	L	LTR	LTR	
Assumed Moves	LT	TR	LT	TR	L	LTR	LTR	
RT Channelized								
Lane Util	0.470	0.530	0.470	0.530	0.530	0.470	1.000	
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535	2.535	
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328	4.328	
Entry Flow, veh/h	661	746	526	594	560	497	192	
Cap Entry Lane, veh/h	1000	1076	538	606	450	514	266	
Entry HV Adj Factor	0.971	0.970	0.972	0.970	0.971	0.971	0.969	
Flow Entry, veh/h	642	724	511	576	544	482	186	
Cap Entry, veh/h	971	1044	522	588	437	499	258	
V/C Ratio	0.661	0.693	0.979	0.980	1.245	0.967	0.722	
Control Delay, s/veh	13.9	14.3	62.3	58.6	156.0	61.0	46.9	
LOS	B	B	F	F	F	F	E	
95th %tile Queue, veh	5	6	13	14	22	12	5	

Stakeholder and Public Engagement Summary



Stakeholder and Public Engagement Summary

A key component of the Mt. Rose Corridor Plan was to ensure involvement from local agencies and the general public throughout the study. The study team utilized a variety of groups and meetings to provide updates, and more importantly solicit feedback on study needs, assumptions, and recommendations. A Technical Advisory Committee (TAC) and Stakeholder Working Group (SWG) were developed to involve local, state, and federal agencies. The TAC was comprised of NDOT technical experts within their various Departments. The SWG consisted of senior leadership from NDOT and other stakeholder agency leadership and representatives. The SWG involved Division Chiefs or Assistant Chiefs from NDOT and Department or Division Directors from stakeholder agencies.

TAC Meetings

Three TAC meetings and a kick-off meeting with TAC members were conducted throughout the study process. These meetings were held on the following dates:

- November 5, 2020 (Kick-Off Meeting)
- January 7, 2021
- March 12, 2021
- May 3, 2021

TAC meetings would be held in advance of SWG meetings to make technical staff would be in support of ideas, concepts, and recommendations being made to various agency senior leadership. TAC members included the following individuals:

- Jae Pullen, NDOT Project Management
- Hoang Hong, NDOT Traffic Operations
- Sam Ahiamadi, NDOT Traffic Operations
- Jeff Bickett, NDOT Traffic Operations
- Mark Wooster, NDOT Traffic Information
- Chris Wright, NDOT Traffic Information
- Laura Wise, NDOT Scoping
- Tara Smaltz, NDOT Scoping
- Jared Feser, NDOT Scoping
- Chris Young, NDOT Environmental
- Alex Wolfson, NDOT District 2
- Scott Hein, NDOT Roadway
- Sam Dowd, NDOT Roadway
- Chris Deal, NDOT Roadway
- Fred Shakal, NDOT Safety
- Lacey Tisler, NDOT Safety

- Michael Carruba, NDOT Right-of-Way (Utilities)
- Kevin Verre, NDOT Planning
- Michael Glover, NDOT Planning
- Meg Ragonese, NDOT Public Information
- Cassie Mlynarek, NDOT Public Information
- Chad Anson, CA Group
- Andrea Engelman, CA Group
- Bardia Nezhati, Parametrix
- Jaclyn Kuechenmeister, Parametrix
- Jennifer Valentine, Parametrix

SWG Meetings

Two SWG meetings and a kick-off meeting with SWG members were conducted throughout the study process. These meetings were held on the following dates:

- November 5, 2020 (Kick-Off Meeting)
- January 11, 2021
- May 13, 2021

In addition to these SWG meetings, a one-on-one SWG was conducted between the study team and RTC staff to specifically discuss concerns and issues near the South Virginia and Veterans Parkway intersections. This meeting was held on September 15, 2021.

SWG meetings would be held between the TAC meeting and public information meeting to inform the SWG on information being presented at the public information meeting. SWG members were solicited for feedback and comments on the public information material being discussed and presented. SWG members included the following:

- Bill Thomas, RTC Executive Director
- Brian Stewart, RTC Engineering
- Dale Keller, RTC Engineering
- Michael Moreno, RTC Public Information
- Dan Doenges, RTC Planning
- Amy Cummings, RTC Planning
- Xuan Wang, RTC Planning
- Angela Fuss, City of Reno Planning
- Carrie Harrison, City of Reno Planning
- Kerri Koski, City of Reno Engineering
- Kurt Dietrich, City of Reno Traffic
- Jeremy Smith, Truckee Meadows Regional Planning Agency
- Mojra Hauenstein, Washoe County Planning
- Sophia Kirschenman, Washoe County Parks
- Julee Olander, Washoe County Community Services
- Dwayne Smith, Washoe County Community Services
- Mitch Fink, Washoe County Community Services

- Brett Rodela, Washoe County School District
- Celeste Arnold, Washoe County School District
- Lt. Luis Ayala-Zapata, Nevada State Police
- Jae Pullen, NDOT Project Management
- Hoang Hong, NDOT Traffic Operations
- Sam Ahiamadi, NDOT Traffic Operations
- Laura Wise, NDOT Scoping
- Chris Young, NDOT Environmental
- Tara Smaltz, NDOT Scoping
- Alex Wolfson, NDOT District 2
- Scott Hein, NDOT Roadway
- Sam Dowd, NDOT Roadway
- Fred Shakal, NDOT Safety
- Kevin Verre, NDOT Planning
- Michael Glover, NDOT Planning
- Meg Ragonese, NDOT Public Information
- Cassie Mlynarek, NDOT Public Information
- Chad Anson, CA Group
- Andrea Engelman, CA Group
- Bardia Nezhati, Parametrix
- Jaclyn Kuechenmeister, Parametrix
- Jennifer Valentine, Parametrix

Public Information Meetings

Public Information Meeting #1

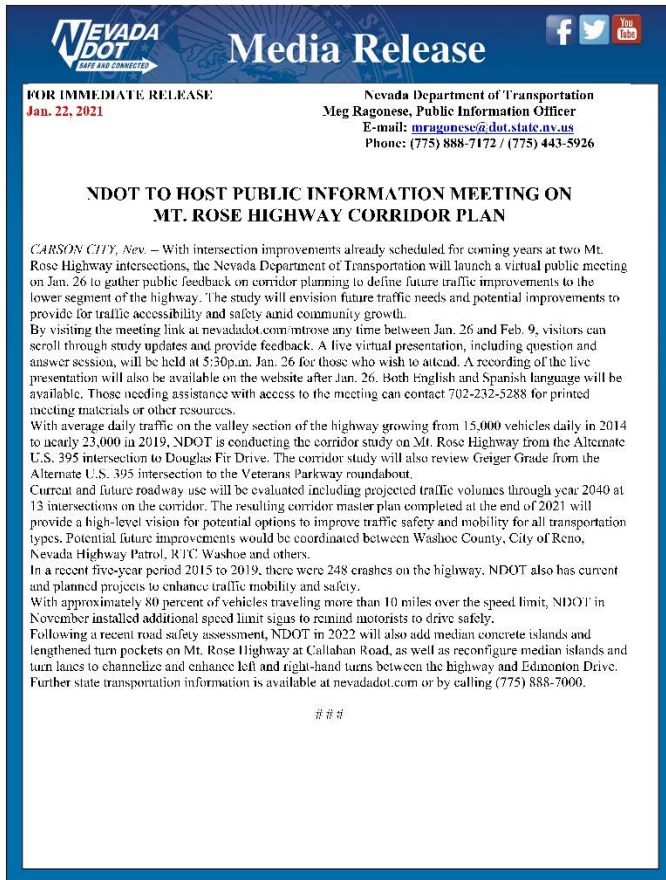
Two public information meetings were conducted as part of the study process. Public Information Meeting #1 was held on January 26, 2021. Due to COVID restrictions in place, this meeting was conducted with a live presentation via a Zoom virtual meeting followed by a question-and-answer session. Questions were provided through a chat function and the presenter, NDOT Project Manager Jae Pullen, restated the question and provided the response so all attendees could hear the question and response. The virtual meeting was held from 5:30 PM to 7:30 PM. The slide presentation was made available for 30 days following the initial Zoom meeting for review and to provide an opportunity for public comment and feedback. In addition, a survey was posted on the study's website during those 30 days. Approximately 33 people attended the Zoom meeting.

PIM #1 Notifications

Notifications for the public meeting included the following:

- E-blasts to internal project team, TAC, and SWG email lists.
- Meeting notification posting on local agency websites and on NDOT's public information web page.
- NDOT press release and associated social media coverage.
- Reno Gazette Journal ad placed along with mailer ad distributed to addresses with ¼ mile of the corridor within the study limits.

- Mailers were provided in both English and Spanish.



The graphic is a blue-bordered box containing the Nevada DOT logo (SAFE AND CONNECTED), the text 'Media Release', and social media icons for Facebook, Twitter, and YouTube. Below this is contact information for the Nevada Department of Transportation, including the name Meg Ragonese, her title as Public Information Officer, her email address (mragonese@dot.state.nv.us), and her phone number (775) 888-7172 / (775) 443-5926. The main heading is 'NDOT TO HOST PUBLIC INFORMATION MEETING ON MT. ROSE HIGHWAY CORRIDOR PLAN'. The body text describes a virtual public meeting on Jan. 26 to gather feedback on corridor planning for the lower segment of Mt. Rose Highway. It mentions that the study will envision future traffic needs and potential improvements for traffic accessibility and safety. A virtual presentation and Q&A session will be held at 5:30 p.m. on Jan. 26. A recording of the live presentation will be available on the website after Jan. 26. Both English and Spanish language versions will be available. For assistance with access to the meeting, contact 702-232-5288. The text also notes that average daily traffic on the valley section of the highway grew from 15,000 vehicles in 2014 to nearly 23,000 in 2019. The corridor study will review Greiger Grade from the Alternate U.S. 395 intersection to Douglas Fir Drive, and also review Greiger Grade from the Alternate U.S. 395 intersection to the Veterans Parkway roundabout. Current and future roadway use will be evaluated, including projected traffic volumes through year 2040 at 13 intersections. The resulting corridor master plan, completed at the end of 2021, will provide a high-level vision for potential options to improve traffic safety and mobility for all transportation types. Potential future improvements would be coordinated between Washoe County, City of Reno, Nevada Highway Patrol, RJC Washoe, and others. In a recent five-year period (2015 to 2019), there were 248 crashes on the highway. NDOT also has current and planned projects to enhance traffic mobility and safety. With approximately 80 percent of vehicles traveling more than 10 miles over the speed limit, NDOT in November installed additional speed limit signs to remind motorists to drive safely. Following a recent road safety assessment, NDOT in 2022 will also add median concrete islands and lengthened turn pockets on Mt. Rose Highway at Callahan Road, as well as reconfigure median islands and turn lanes to channelize and enhance left and right-hand turns between the highway and Edmonton Drive. Further state transportation information is available at nevadadot.com or by calling (775) 888-7000. The graphic ends with three hash symbols (# # #).

Media Release

Virtual Public Information Meeting

On January 26th, at 5:30 p.m. join the community for a virtual information meeting to discuss the Mt. Rose Corridor plan and the corridor's long-term vision. Any member of the general public is invited to share their concerns, questions and comments.

LEARN MORE

Virtual meeting and materials available for public view from 1/26/21 - 2/9/21. Learn more at nevadadot.com/mtrose. If you need special accommodations or are unable to view the public meeting over the internet please contact NDOT's Public Involvement Specialist Cassie Mlynarek at 702-232-5288.

NEVADADOT.COM/MTROSE

REUNIÓN VIRTUAL DE INFORMACIÓN PÚBLICA

El 26 de enero, a las 5:30 p. m. únase a la comunidad en una reunión informativa virtual para hablar del plan del corredor de Mt. Rose y la visión a largo plazo para el corredor. Animamos a las personas a dar su opinión al plantear dudas, formular preguntas y realizar comentarios.

MÁS INFORMACIÓN

La reunión virtual y los materiales estarán disponibles para el público del 1/26/21 al 2/9/21. Más información en nevadadot.com/mtrose. Si usted necesita alguna adaptación especial o no puede conectar con la reunión pública en el internet, puede contactar con Cassie Mlynarek, Especialista en Participación Ciudadana para NDOT, en el 702-232-5288.

NEVADADOT.COM/MTROSE

Newspaper Ad

REUNIÓN VIRTUAL DE INFORMACIÓN PÚBLICA

El 26 de enero, a las 5:30 p. m. únase a la comunidad en una reunión informativa virtual para hablar del plan del corredor de Mt. Rose y la visión a largo plazo para el corredor. Animamos a las personas a dar su opinión al plantear dudas, formular preguntas y realizar comentarios.

Learn more at | Más información en:
NEVADADOT.COM/MTROSE

Virtual Public Information Meeting

JANUARY 26TH, 2021

Virtual meeting and materials available for public view from 1/26/21 - 2/9/21. If you need special accommodations or are unable to view the public meeting over the internet please contact NDOT's Public Involvement Specialist Cassie Mlynarek at 702-232-5288.

La reunión virtual y los materiales estarán disponibles para el público del 1/26/21 al 2/9/21. Si usted necesita alguna adaptación especial o no puede conectar con la reunión pública en el internet, puede contactar con Cassie Mlynarek, Especialista en Participación Ciudadana para NDOT, en el 702-232-5288.

Mailer

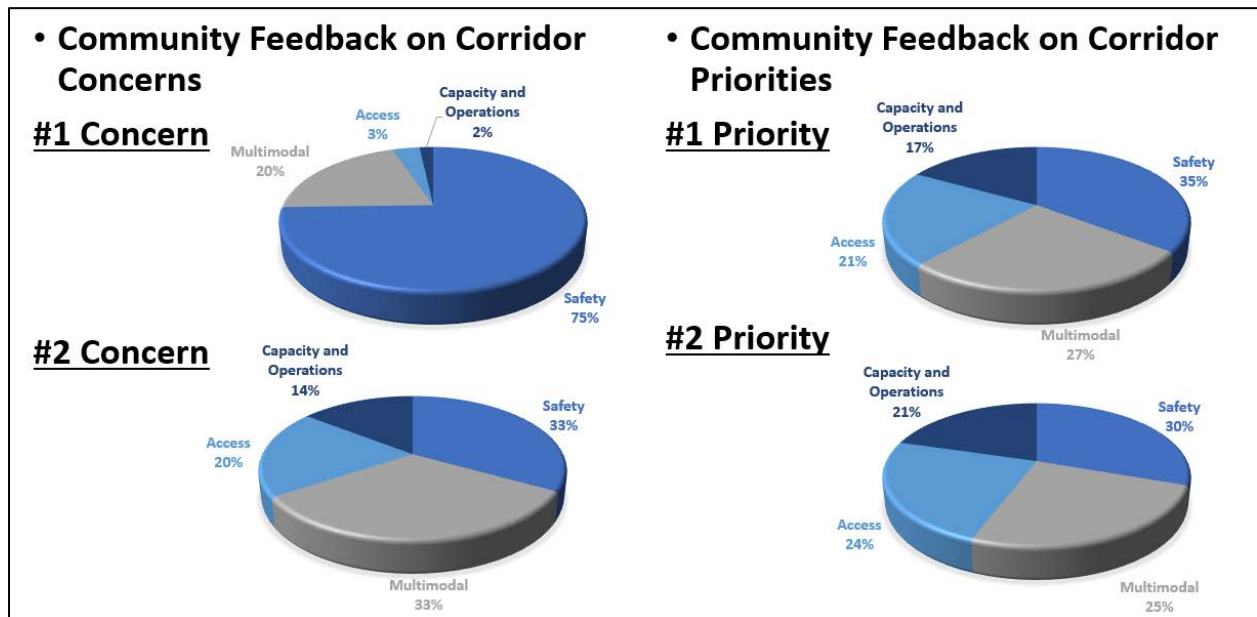
PIM #1 Survey

As part of the virtual meeting a four-question survey was provided to solicit feedback on the public's concerns and priorities. The four questions were:

1. Identify your #1 concern for the Mt. Rose Corridor
 - a. Safety
 - b. Access
 - c. Capacity and Operations
 - d. Multimodal
2. Identify your #2 concern for the Mt. Rose Corridor
 - a. Safety
 - b. Access

- c. Capacity and Operations
- d. Multimodal
- 3. Identify your #1 priority for the future vision of the Mt. Rose Corridor to address
 - a. Safety
 - b. Access
 - c. Capacity and Operations
 - d. Multimodal
- 4. Identify your #2 priority for the future vision of the Mt. Rose Corridor to address
 - a. Safety
 - b. Access
 - c. Capacity and Operations
 - d. Multimodal

The survey received 23 responses and are as shown below.



Survey Responses

PIM #1 Comments

In addition to the survey responses, 62 comments were provided in relation to the survey questions. These comments are included in Table 1.

Table 1. PIM #1 Survey Questions and Responses

Question 1: Identify your #1 concern for the Mt. Rose Corridor	Question 2: Identify your #2 concern for the Mt. Rose Corridor	Question 3: Identify your #1 priority for the future vision of the Mt. Rose Corridor to address	Question 4: Identify your #2 priority for the future vision of the Mt. Rose Corridor to address
access, capacity, & are the same thing	see Question 1		
Accessibility in/out of neighborhoods		Pork chop on Edmonton creates a safe access out of neighborhood. Limits a safe exit	
Allow access of CR49 (road just east of Fawn.	Support mass transit to Incline: Gondola/ Tram Adds to!		
Callahan Ranch & Mt Rose HWY Intersection needs a traffic light.		Callahan Ranch & Mt Rose HWY Intersection needs a traffic light.	
Cutting off resident’s ability to access streets (no left turn from Edmonton) without following through with providing access through Thomas Creek			
Dangerous homeless camping in such a high-risk fire area will come with bus transit! need no more multimodal plans!		No multimodal	
Difficulty for residents to safely and efficiently depart their neighborhood in all directions with new traffic patterns. Specifically for the Galena Terrace neighborhood, the recently installed "pork chop" curb leaves no way for residents to leave the neighborhood heading westbound. Instead, drivers must turn right and make a U turn at the next intersection in the middle of the busy highway.		See comment to question 1. The Edmonton drive intersection requires a roundabout or stoplight.	

Question 1: Identify your #1 concern for the Mt. Rose Corridor	Question 2: Identify your #2 concern for the Mt. Rose Corridor	Question 3: Identify your #1 priority for the future vision of the Mt. Rose Corridor to address	Question 4: Identify your #2 priority for the future vision of the Mt. Rose Corridor to address
Enforcing speed limits	Access to westbound lanes from Callahan = no pork chop		
Get rid of the pork chop on Edmonton. Allow left turns onto Mt. Rose Highway.	Remove pork chop at Edmonton. Any time it snows or there is ice, everyone jumps the pork chop. The traffic markers appear to be replaced everyone.	Remove the pork chop. No one obeys the no left turn and creates a greater risk of accidents vs. controlled left turns.	Remove the pork chop on Mt. Rose Highway at Edmonton. Why wasn't Butch Cassidy extended to Thomas creek signal? Political penny pinchers.
I am concerned about the functionality of the highway and its lack of vision toward future use. The intersection at Edmonton is a great example of lack of forethought. This pork chop and forced right only turn out of a major neighborhood with two schools, a church, and a recent housing development, is just not adequate or safe for the level of traffic. This turn is also cumbersome, as the zoned elementary and middle school for Rolling Hills are left (to the West) and every parent and bus must turn right and then make a U-turn a short distance down the road, which I know the other neighborhood has also complained about dealing with. There needs to be better traffic flow plans in place that take into account existing conditions AND predictable growth accommodation. The Edmonton pork chop needs to be removed, if the number of cars that have crashed into it was winter hasn't already removed it for us.		Traffic flow that accommodates our growing community! Traffic patterns that allow ease of use for commonly traveled paths (example: Turning left at Edmonton onto Mount Rose highway for children going to either elementary or middle schools)	

MT. ROSE HIGHWAY CORRIDOR PLAN

Question 1: Identify your #1 concern for the Mt. Rose Corridor	Question 2: Identify your #2 concern for the Mt. Rose Corridor	Question 3: Identify your #1 priority for the future vision of the Mt. Rose Corridor to address	Question 4: Identify your #2 priority for the future vision of the Mt. Rose Corridor to address
I submitted this already and my answers haven't changed, but I wanted to add a comment about the number of student drivers in the area with the high school so close. Any way to mitigate accidents for these new drivers is important to me.			
lack of enforcement of speed limit		maintain ability to head west on highway from Callahan Road - no pork chop there please	
Lack of lanes and bad on ramps to freeway			Improvement of Round about congestion. Potentially have access from Geiger grade to Virginia without use of veterans round about.
Lack of police presence	Too many vehicles speeding above speed limits no other concern	No other concerns	No other concerns
Maintaining scenic quality of highway; keep trees, limit signage	People going too fast for conditions; sight distance at Doug Fir	Keeping highway to 2 lanes beyond existing 4 lane section to reduce speeds and maintain scenic integrity	Limit driveway and access points to reduce conflicts. In general I don't think the highway is a great place for pedestrians, bicycles or transit. Park and ride near the Summit Sierra is good.
Multiple deaths, accidents, high speed, poor access	Unsafe access from "Fawn Lane?" area, Edmonton	Mt Rose is a Scenic but non-scenic highway, California side MUCH more scenic	

MT. ROSE HIGHWAY CORRIDOR PLAN

Question 1: Identify your #1 concern for the Mt. Rose Corridor	Question 2: Identify your #2 concern for the Mt. Rose Corridor	Question 3: Identify your #1 priority for the future vision of the Mt. Rose Corridor to address	Question 4: Identify your #2 priority for the future vision of the Mt. Rose Corridor to address
Need better pedestrian/joggers and bicycle areas. Could be a gorgeous multi-use road. Doesn't need more lights, or signage. Sidewalks, clear bike ways, and plantings.	neglect/lack of maintenance.	.	it needs a facelift for the 21st century. It's our gate way to Tahoe, one of the most beautiful places on earth. Mt. Rose Hwy looks like a neglected alley.
No Jersey walls near Douglas Fir to stop people from crashing Down embankments.			
No left turn from Edmonton causes people to make illegal upturns in the middle of the highway.			
Noise from increased traffic		Noise from traffic	
none	none	none - leave it alone	none - leave it alone
Not having a separate left turn lane from MRH onto Douglas Fur southwestbound.			
Remember it's a Hwy !!!	Operations snowplows with cement intersections	Additional road access	
Specifically, a legal right hand turn on Mt. Ranch road	We have to use bike lane to get over to avoid accidents		Fix blind spot at Thomas Creek light for traffic going up Mt. Rose Hwy
Speeding. Need lights at Callahan and Timberline			
The pork chop is the worst thing in the world! Multiple cars have taken out the signs and marker. Many cars make an illegal left turn. Makes traffic flow in and out of the neighborhood unbearable when schools start and end for the day.			

MT. ROSE HIGHWAY CORRIDOR PLAN

Question 1: Identify your #1 concern for the Mt. Rose Corridor	Question 2: Identify your #2 concern for the Mt. Rose Corridor	Question 3: Identify your #1 priority for the future vision of the Mt. Rose Corridor to address	Question 4: Identify your #2 priority for the future vision of the Mt. Rose Corridor to address
The pork chop on Edmondton made that intersection more dangerous! Entering the highway with my back faced to traffic going 65+ and no entrance lane is very dangerous!	Not being able to turn left off Edmondton	Replace the pork chop at Edmondton with a light	
Too many speeders		Area between Douglas Fir and Montreux is heavy deer crossing. Speed limit should be reduced to 45 with flashing warning to watch for deer,	Animal
U-turners at Telluide from Edmonton.	Speeding coming down from Mt Tose		
	for wildlife. Examples: deer, coyote, bobcats, and lost/runaway pets.	in traffic lights at Callahan Ranch and stop signs at Fawn Ln. and Joy Lake Rd. with flashing yellow lights and reduced speed.	This highway is way overdue for signals at Callahan Ranch Rd. It was not this scary in the 70's.
	for wildlife. Examples: deer, coyote, bobcats, and lost/runaway pets.	in traffic lights at Callahan Ranch and stop signs at Fawn Ln. and Joy Lake Rd. with flashing yellow lights and reduced speed.	This highway is way overdue for signals at Callahan Ranch Rd. It was not this scary in the 70's.
	Access but in terms of deceleration/acceleration lanes, turn pockets, crosswalks, bike lanes, room to perform an action (speed up, slow down, spot for bikes/peds) that isn't in main line traffic		

MT. ROSE HIGHWAY CORRIDOR PLAN

Question 1: Identify your #1 concern for the Mt. Rose Corridor	Question 2: Identify your #2 concern for the Mt. Rose Corridor	Question 3: Identify your #1 priority for the future vision of the Mt. Rose Corridor to address	Question 4: Identify your #2 priority for the future vision of the Mt. Rose Corridor to address
	excessive speed. It seems the many people moving here from California are used to 15-20 MPH over the speed limit. As a driver trying to merge unto Mt. Rose the extra speed is dangerous. These people drive like they are entitled. I say mandatory \$500 ticket and get more cops to give them out .		speeding camera with mandatory high dollar tickets
	Keeping it a scenic corridor	Keeping it a scenic corridor	
	Lack of Police presence and traffic patrol.	More signage, MPH, Watch out for animals, driveway opening up ahead	
	Lack of safe Bike Lanes	Vision of safer Bike Lanes	
	Lack of safe turn and acceleration lanes causing excessive noise and high acceleration due to short/uphill need to come to traffic speed	Easier access in and out of traffic for residents. Mitigation of impacts of proposed development at Fawn. Removal of bicycles from Mt. Rose Hwy completely.	- completely AVOIDING any use of Roundabouts. Truckee is a MESS due to them.
	Lack of stop lights at major junctions, i.e. Callahan road! This has been a major source of accidents and loss of life since the insertion of a traffic light at	Traffic light @ Callahan/Mt. Rose	

MT. ROSE HIGHWAY CORRIDOR PLAN


Question 1: Identify your #1 concern for the Mt. Rose Corridor	Question 2: Identify your #2 concern for the Mt. Rose Corridor	Question 3: Identify your #1 priority for the future vision of the Mt. Rose Corridor to address	Question 4: Identify your #2 priority for the future vision of the Mt. Rose Corridor to address
	Thomas Creek several years ago.		
	Lack of traffic lights at Callahan Ranch		
	Maintaining beauty of Mt. Rose Corridor		
	Maintaining the intended purpose of Mt Rose Corridor -- to maintain the beauty of this area along the highway		Maintain the beauty of this area - no further stoplights, no sound walls, etc.!
	Need for traffic circles to replace the signaled intersections as well as the junction of Callahan Road.		
	Restricted turning especially on Edmonton. Left turn should be allowed via high-T improvements		
	Round-about at Callahan Road would be best solution	both vision and pedestrians and bicyclists	
	Speed of vehicles		reducing speed of vehicles

Question 1: Identify your #1 concern for the Mt. Rose Corridor	Question 2: Identify your #2 concern for the Mt. Rose Corridor	Question 3: Identify your #1 priority for the future vision of the Mt. Rose Corridor to address	Question 4: Identify your #2 priority for the future vision of the Mt. Rose Corridor to address
	The concrete island at the intersection of Edmonton and Mount Rose. The lack of signs, the turn lane from Mount Rose to Edmonton in both directions. The Turn onto Mount Rose from Edmonton eastbound needs to have a merge lane all Mount Rose. Additionally this area needs to have better speed control around residential intersections		
	Too much traffic and lack of access to and from Edmonton Dr		
	Traffic lights to slow down cars driving along and gain access on/off Mt Rose hwy.		
	Unsafe speed	Reducing speed	
	Unsuitable increases in traffic for scenic corridor		Encouraging traffic to use alternate routes
	We live off Douglas Fir Drive. It is very dangerous to make a left turn. We would hope for a turn lane similar to Joy Lake		

Question 1: Identify your #1 concern for the Mt. Rose Corridor	Question 2: Identify your #2 concern for the Mt. Rose Corridor	Question 3: Identify your #1 priority for the future vision of the Mt. Rose Corridor to address	Question 4: Identify your #2 priority for the future vision of the Mt. Rose Corridor to address
		Access for pedestrians and bikes. Also, the noise of the highway, and the beauty of the highway at all points. Please also consider animal crossing areas.	
		Animal migration routes	
		High school students turning left at Edmonton	
		Scenic Corridor (if you can obtain , multimodal, good capacity), then you should also achieve a scenic corridor (one of beauty).	
		There needs to be a light at the Callahan intersection	
			Dark Sky corridor and Scenic Corridor. Highway lights are being added????!?!?!??
			Keeping bicycles off of this highway, they ride side by side creating slower traffic and hazards. There are PLENTY of other areas for bicyclists to ride. Also, bikes should be required to have mini license plates as they often do not obey the rules here.

Question 1: Identify your #1 concern for the Mt. Rose Corridor	Question 2: Identify your #2 concern for the Mt. Rose Corridor	Question 3: Identify your #1 priority for the future vision of the Mt. Rose Corridor to address	Question 4: Identify your #2 priority for the future vision of the Mt. Rose Corridor to address
			Multimodal, continued: It would be great to have a usable walk and bikeway along the Mt Rose Highway (or slightly off the highway, and/or at side of it), to enable hiking/biking from the valley west to Mt rose. The current walking and biking path ends at wedge parkway and does not connect with the Galena/Thomas Creek/Whites Creek/Galena Creek trails.
			no round-about wanted on 431.
			traffic light needed at Callahan Ranch Rd.; I was involved in an accident there. A light would have prevented the accident.


PIM #1 Presentation



Public Information Meeting #1
Mt Rose Corridor Study


January 26, 2021
5:30 pm – 6:30 pm

1



AGENDA

- Welcome and Opening Remarks
- Study’s Purpose and Goals
- Schedule
- Existing Conditions
- Community Concerns and Priorities
- Next Steps



Please type in questions about the presentation or study in the Q&A box and they will be addressed at the end of the presentation.

2



3



MT ROSE HIGHWAY APPROACH STRATEGY

- **Addressing community concerns along Mt Rose Highway**
 - Safety
 - Speeds, poor visibility, limited multimodal opportunities
 - Mobility
 - Driveway access, limited signalized intersections, limited alternative routes
- **NDOT Approach**
 - Evaluate the immediate concerns
 - Studies
 - Intersection improvement project
 - Develop a corridor plan
 - Identify the future needs



4



MT ROSE HIGHWAY APPROACH STRATEGY

• Construction Project at Callahan Road & Edmonton Drive intersection

- Scope
 - Raised median islands and lighting improvements
- Schedule
 - Final design fall 2021
 - Begin Construction spring 2022
- Construction Cost
 - \$3,000,000



5



STUDY PURPOSE AND GOALS

• Study Limitations – External to NDOT

- Development approval process (decisions made locally)

• Purpose

- Gather public feedback on the corridor
- Collaborate with local partner agencies to provide a corridor vision to address the top corridor priorities
- Corridor plan to be a useful tool for future roadway projects

• Goals

- Short term needs
 - Identify fundable immediate needs
- Long term vision
 - All agencies to include in future development & roadway plans
- Corridor Consistency
 - All future development & roadway improvements follow corridor vision

6

CORRIDOR STUDY EXPECTATIONS

- **What does a corridor study include?**
 - Understand existing conditions throughout the corridor: What priorities are we trying to address?
 - Establish a vision for the corridor: What do you want to see the corridor look like?
 - Develop an action plan for improvements, including interim fixes and longer-term changes

Planning

- Existing conditions/needs assessment
- Community visioning
- Evaluation of alternatives
- Action plan/recommended improvements

Environmental

- Environmental study (state or NEPA process)
- Preliminary engineering
- Agency issues decision

Design

- Detailed corridor design
- Right-of-way, utilities, and other impacts
- Construction plans, permits, and funding secured

Construction

- Build and deliver

7

STUDY SCHEDULE

October 2020 - January 2021	February 2021 – June 2021	June 2021 – November 2021
-----------------------------	---------------------------	---------------------------

Existing Conditions

- Planned Development
- Corridor Inventory
- Existing Operations
- Data Collection
- Public Meeting #1

Vision Development

- Forecasting Operations
- Concept Development
- Concept Screening
- Cost Estimating
- Benefit Cost Analysis
- Public Meeting #2

Action Plan

- Short Term Needs
- Long Term Needs
- Funding Sources
- Policy Needs
- Prioritization

Identify Concerns and Priorities

➔

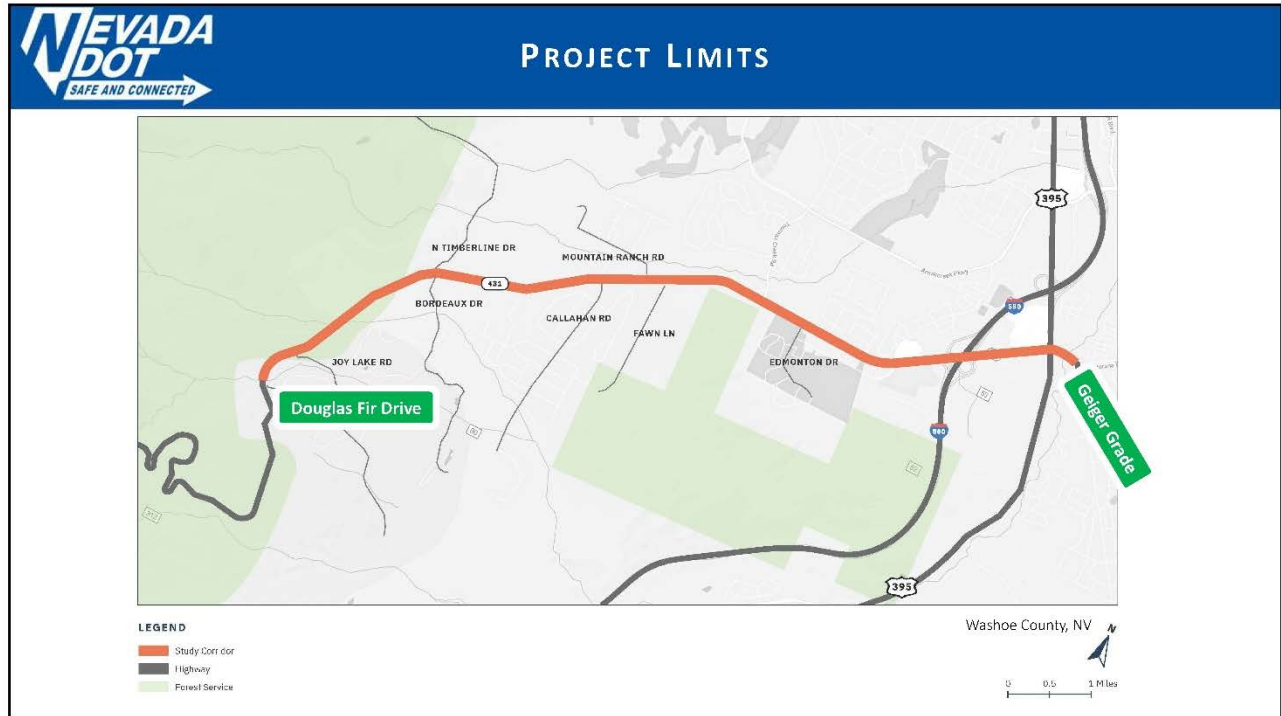
Refine Vision and Concepts

➔

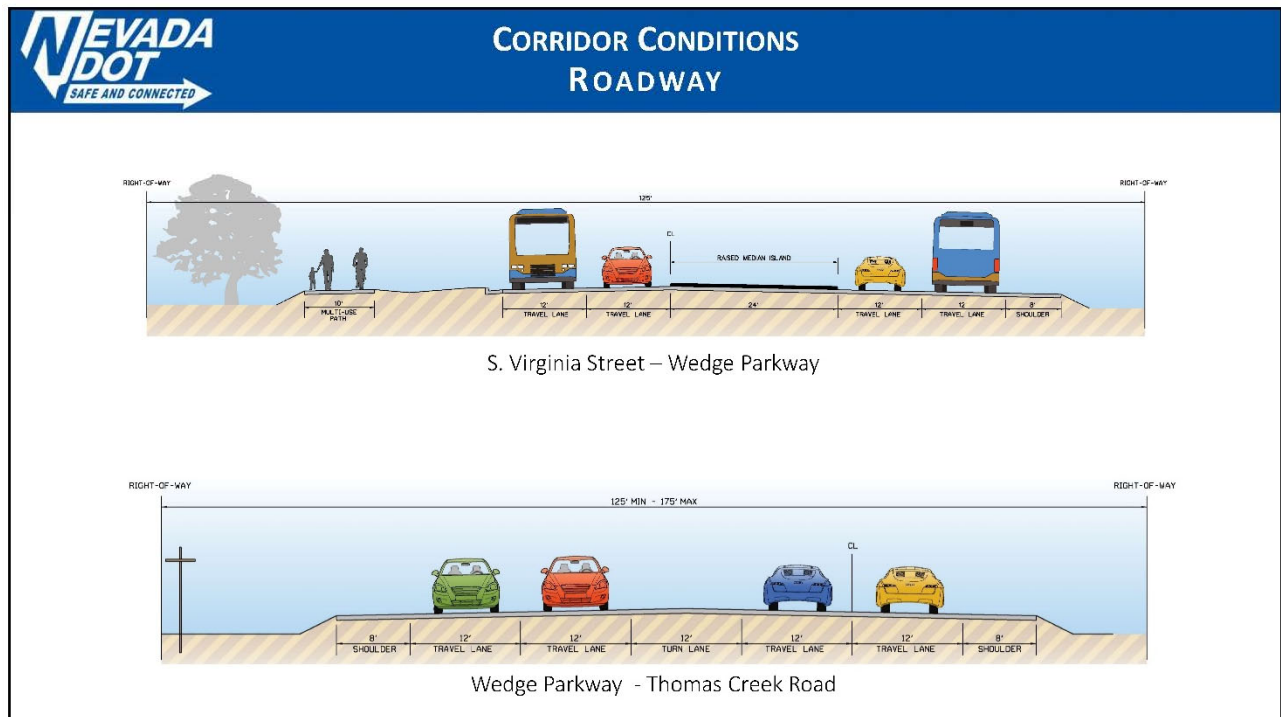
We are here

Schedule Subject to Change

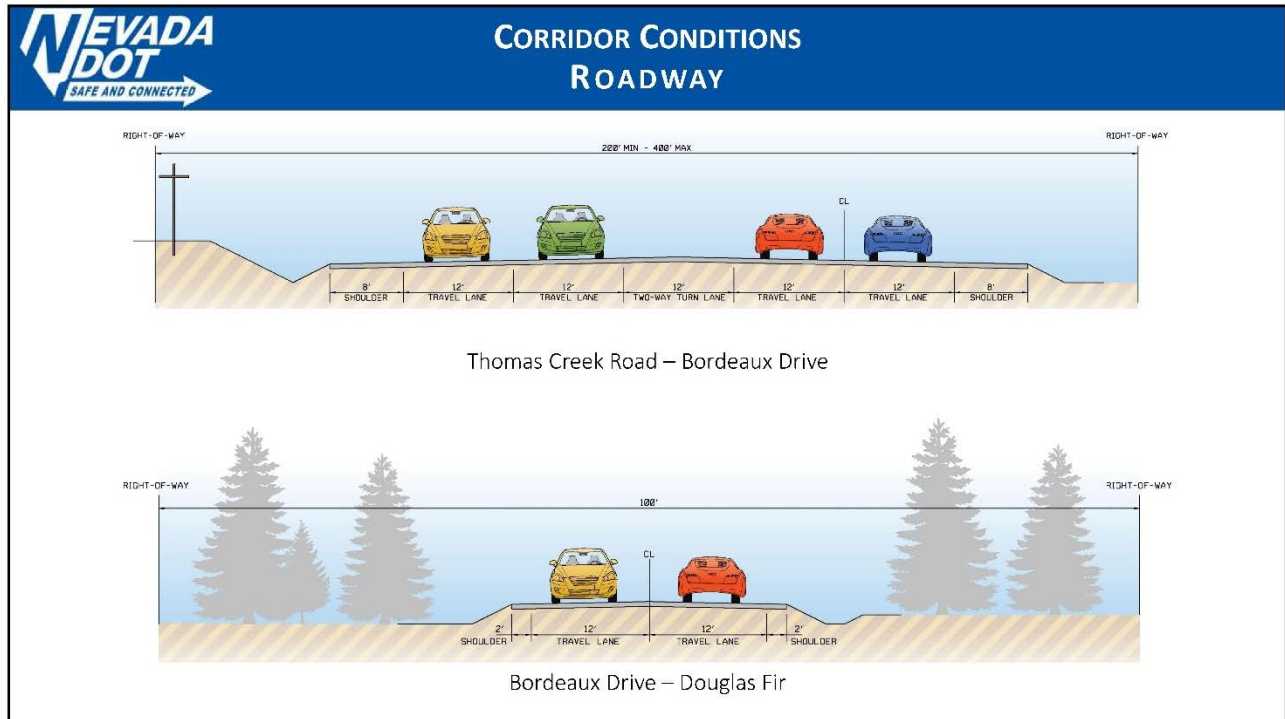
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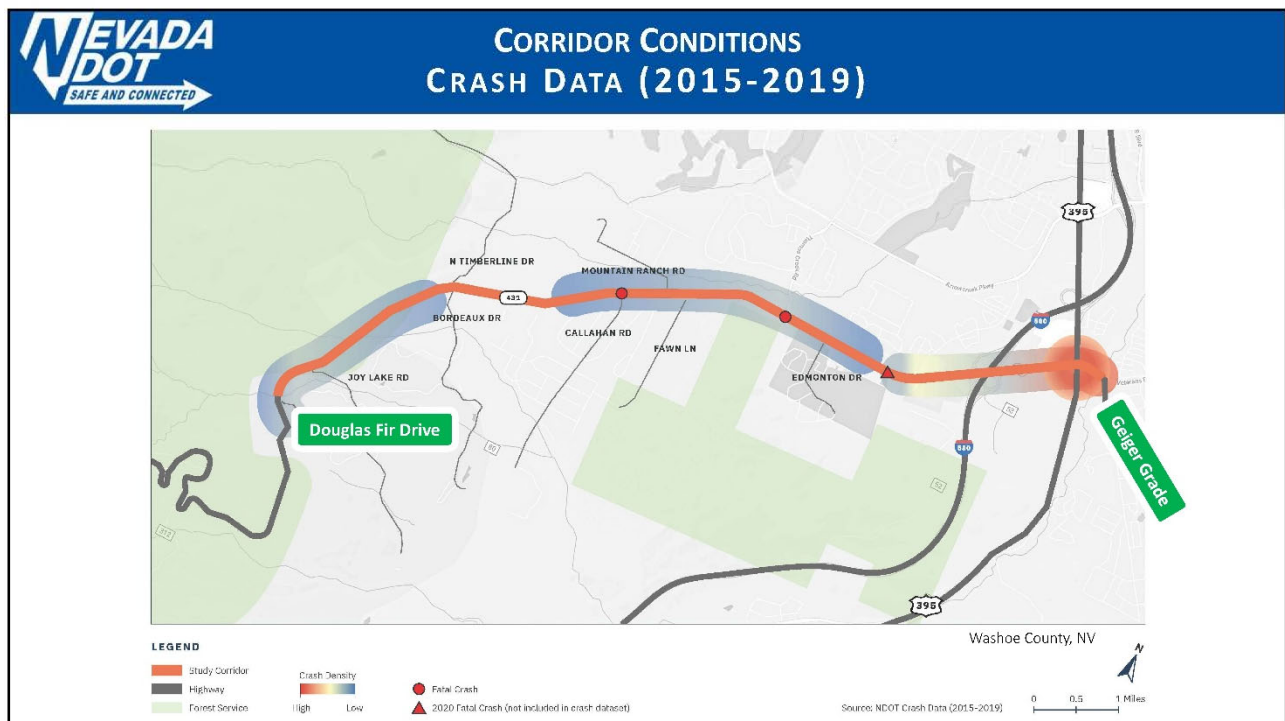
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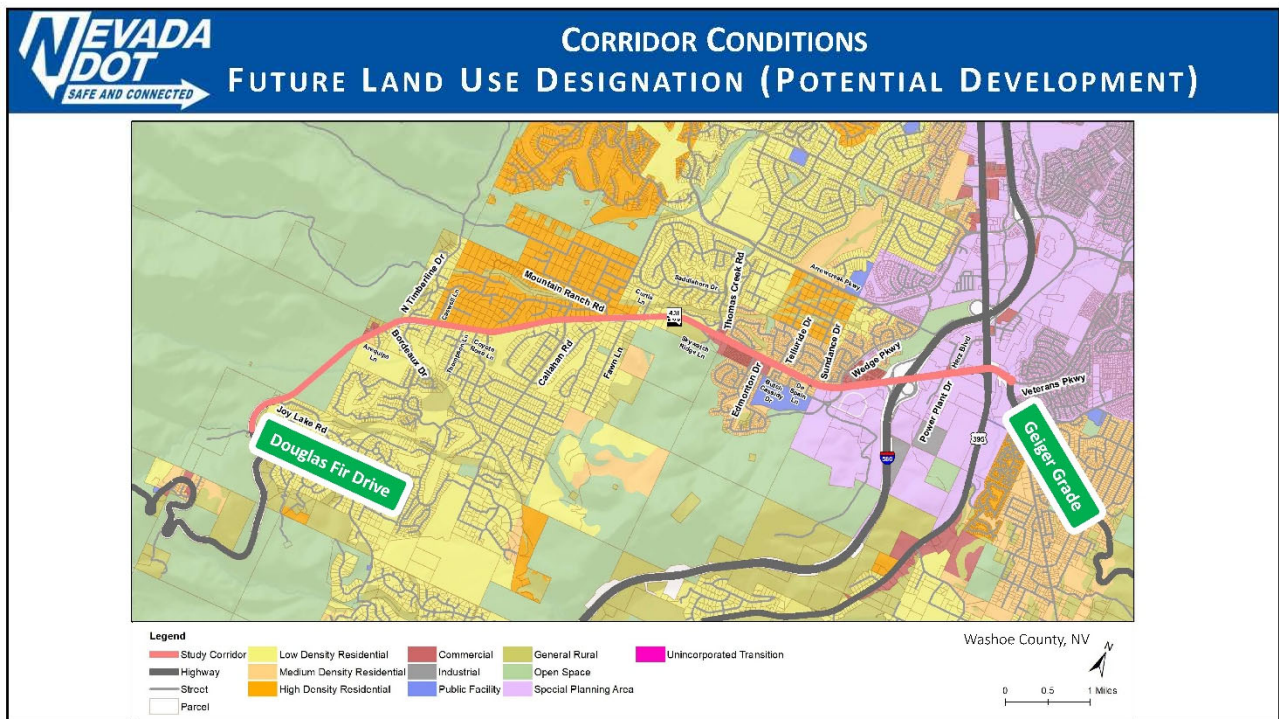
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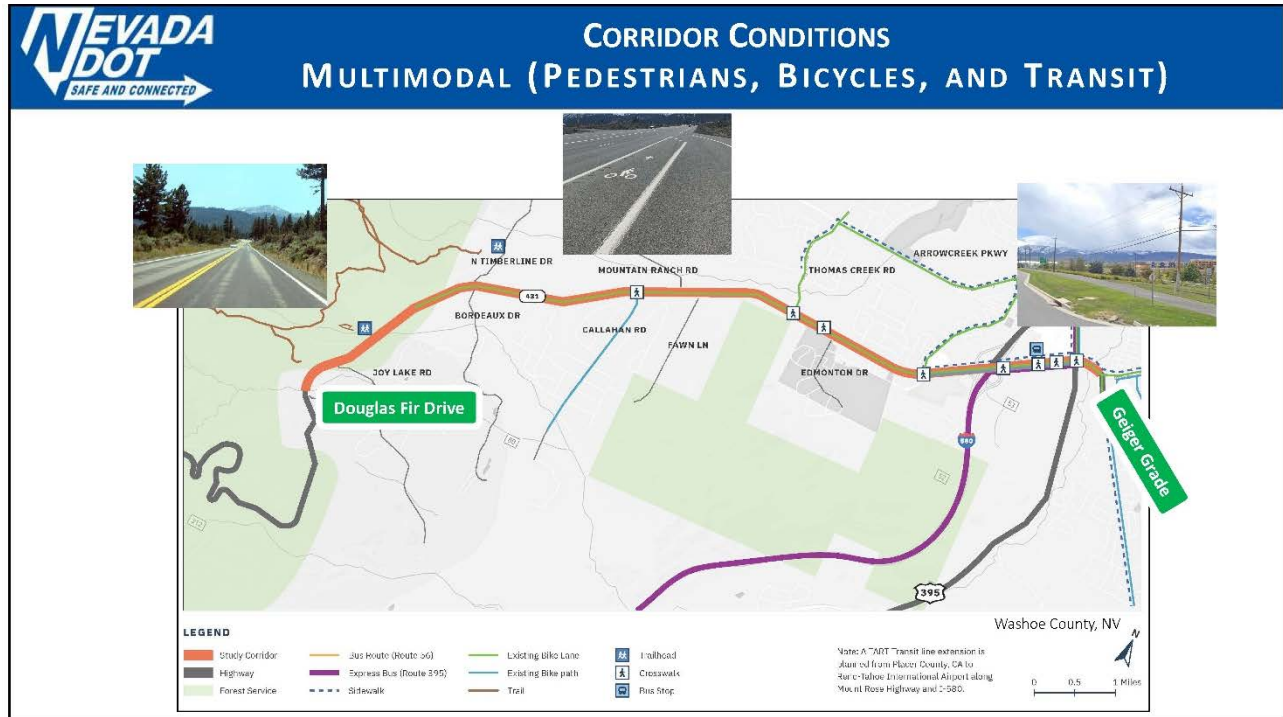
12

 CORRIDOR CONDITIONS PREVIOUS STUDIES	
Study	Agency
Road Safety Assessment	NDOT
Mt Rose Highway/Callahan Road Intersection Control Evaluation	NDOT
Mt Rose Highway/Edmonton Drive Intersection Control Evaluation	NDOT
Traffic Signal Warrant Analysis at I-580 Northbound Off-Ramp	NDOT
Mt Rose Scenic Byway Corridor Management Plan	Washoe County
South Meadows Multimodal Transportation Study	RTC Washoe
Various Community Meetings	

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CORRIDOR CONDITIONS DELAY AND CONGESTION

- Overall
 - Currently minimal delay in travel time through corridor
- Intersection
 - Existing increasing delays at Callahan left turns onto Mt Rose
 - Higher delays and congestion can result in increased safety concerns and poor decision making
- Study will look evaluate 2050 traffic needs

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SURVEY INFO

- Your input matters
- Need feedback on your concerns and corridor priorities for the future
- Why the survey?
 - Identify commonalities or conflicts between various stakeholder feedback
 - Strike a balance between agencies and public feedback
- NDOT still must address baseline needs

Question 1: Identify your #1 concern for the Mt. Rose Corridor

- Safety – Examples: Number of or severity of accidents, speeds, sight distance, unsafe feeling
- Access – Examples: Too many driveways and/or too many intersections
- Capacity and Operations – Examples: Excessive delays and congestion
- Multimodal – Examples: Lack of Access and Facilities for Pedestrians, Bicyclists, Recreation and Transit
- Other: _____

Question 2: Identify your #2 concern for the Mt. Rose Corridor

- Safety – Examples: Number of or severity of accidents, speeds, sight distance, unsafe feeling
- Access – Examples: Too many driveways and/or too many intersections
- Capacity and Operations – Examples: Excessive delays and congestion
- Multimodal – Examples: Lack of Access and Facilities for Pedestrians, Bicyclists, Recreation and Transit
- Other: _____


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WHAT ARE YOUR CONCERNS?

Primary Concern	Example Issues
Safety	<ul style="list-style-type: none"> • Number of or severity of accidents • Speeds • Sight distance • Unsafe feeling making left turns across traffic
Access	<ul style="list-style-type: none"> • Too many driveways • Too many intersections
Capacity and Operations	<ul style="list-style-type: none"> • Capacity and Operations • Excessive delays (left turns, stop signs, etc.) • Congestion
Multimodal (Peds, bikes, and transit)	<ul style="list-style-type: none"> • Lack of availability and access to facilities for pedestrians, bicyclists, recreation, and transit • Lack of feeling safe while using facilities • No connectivity to desirable activities and facilities
Others	

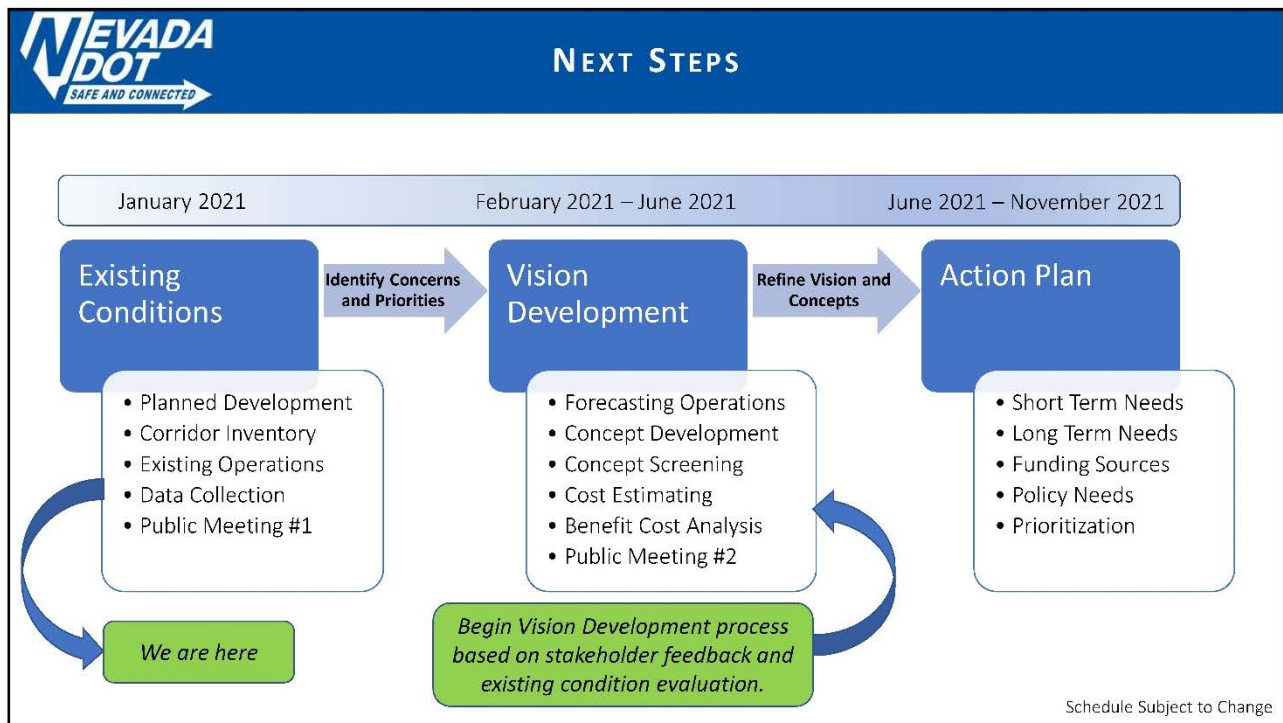
Note: Long term development, land use, and development approvals are not within NDOT's jurisdiction. Concerns about these types of concepts will need to be passed along to the City of Reno and Washoe County.

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 WHAT ARE YOUR PRIORITIES?		
Primary Priority	Vision for Improvement	Trade-offs with Realizing Vision
Safety	<ul style="list-style-type: none"> • Vision that would <u>reduce speeds</u> (i.e. roundabouts, divided highway, reduced conflict points) 	<ul style="list-style-type: none"> • Limited capacity, increase in travel time, driveway consolidation, and less/restricted access
Access	<ul style="list-style-type: none"> • Vision that would <u>provide equal or better access</u> via cross streets and potential driveways 	<ul style="list-style-type: none"> • Additional intersections, turn pockets, and conflict points
Capacity and Operations	<ul style="list-style-type: none"> • Vision that would <u>minimize corridor travel time</u> (i.e. additional lanes, signal prioritization) 	<ul style="list-style-type: none"> • Higher speeds, cross street delays, and limited access points
Multimodal (Peds, bikes, and transit)	<ul style="list-style-type: none"> • Vision that <u>provides additional multimodal access</u> throughout the corridor 	<ul style="list-style-type: none"> • Need for pedestrian signals, traffic calming, and additional pedestrian crossing times at signals
Others		

Note: Long term development, land use, and development approvals are not within NDOT's jurisdiction. Concerns about these types of concepts will need to be passed along to the City of Reno and Washoe County.

19

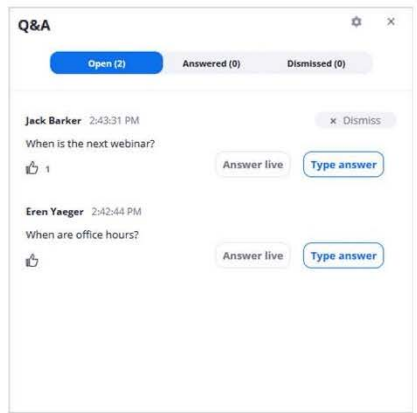
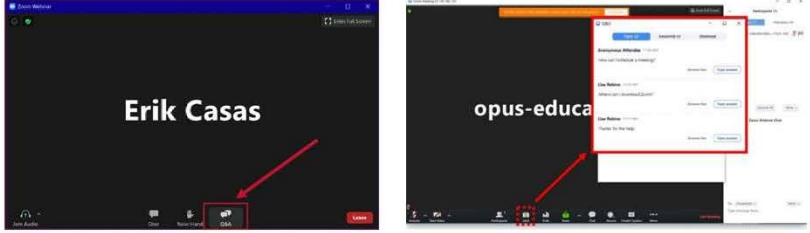


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DO YOU HAVE A QUESTION?

- If you have a question about the presentation or study, we'd appreciate hearing from you
- Please use the Q&A feature



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PUBLIC INFORMATION MEETING FEEDBACK

- Link to meeting materials, concerns, and survey to be at www.mtrosepublicmeeting.com
 - **Public comment and survey responses accepted until 5:00 pm February 9th, 2021**
- Follow up Public Information in late Spring 2021
- Study Contact Information:
 - Project Manager: Jae Pullen, PE, NDOT Project Manager, 775-888-7589
 - Email: NDOTMtRoseStudy@c-agroup.com
 - Website – www.nevadadot.com/mtrose
- Response to tonight's posted questions

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Jae Pullen, P.E., NDOT Project Manager
775-888-7589

Public Information Meeting #2

Public information meeting #1 was held on August 10, 2021. This meeting was conducted in person at the Tamarack Casino from 4:30 pm to 7:30 pm. This meeting was conducted with a live presentation followed by a question-and-answer session. In addition, a recorded presentation was made available for 30 days following the initial meeting for review and to provide an opportunity for public comment and feedback.

Approximately 58 people attended the live meeting.

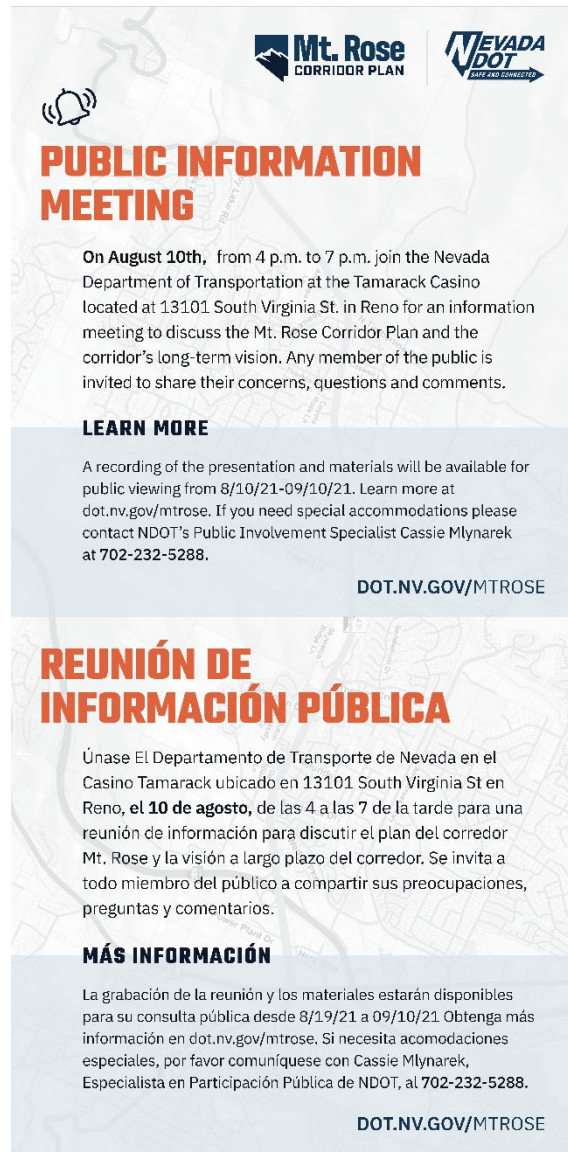
PIM #2 Notifications

Notifications for the public meeting included the following:

- E-blasts to internal project team, TAC, and SWG email lists.
- Meeting notification posting on local agency websites and on NDOT's public information web page.
- NDOT press release and associated social media coverage.
- Reno Gazette Journal ad placed along with mailer ad distributed to addresses with ¼ mile of the corridor within the study limits.
- Mailers were provided in both English and spanish.

The graphic is a blue-bordered box containing text and logos. At the top left is the Nevada DOT logo with the tagline 'SAFE AND CONNECTED'. To its right is the text 'Media Release' in a large, white, serif font. Further right are social media icons for Facebook, Twitter, and YouTube. Below the logo and title, there is a section for contact information: 'FOR IMMEDIATE RELEASE: July 29, 2021' on the left, and 'Nevada Department of Transportation Meg Ragoese, Public Information Officer E-mail: mragoese@dot.state.nv.us Phone: (775) 888-7172 / (775) 443-5926' on the right. The main title of the release is 'NDOT TO HOST IN-PERSON PUBLIC INFORMATION MEETING ON MT. ROSE HIGHWAY CORRIDOR PLAN'. The body text describes the meeting details, including the location at Tamarack Casino, the time (4 to 7 p.m. on Aug. 10), and the purpose of gathering public feedback. It also provides contact information for those needing assistance and mentions that a recording of the presentation will be available online. The text concludes with '###' and a note that further information is available at dot.nv.gov or by calling (775) 888-7000.

Media Release



PUBLIC INFORMATION MEETING

On August 10th, from 4 p.m. to 7 p.m. join the Nevada Department of Transportation at the Tamarack Casino located at 13101 South Virginia St. in Reno for an information meeting to discuss the Mt. Rose Corridor Plan and the corridor's long-term vision. Any member of the public is invited to share their concerns, questions and comments.

LEARN MORE

A recording of the presentation and materials will be available for public viewing from 8/10/21-09/10/21. Learn more at dot.nv.gov/mtrose. If you need special accommodations please contact NDOT's Public Involvement Specialist Cassie Mlynarek at 702-232-5288.

DOT.NV.GOV/MTROSE

REUNIÓN DE INFORMACIÓN PÚBLICA

Únase El Departamento de Transporte de Nevada en el Casino Tamarack ubicado en 13101 South Virginia St en Reno, el 10 de agosto, de las 4 a las 7 de la tarde para una reunión de información para discutir el plan del corredor Mt. Rose y la visión a largo plazo del corredor. Se invita a todo miembro del público a compartir sus preocupaciones, preguntas y comentarios.

MÁS INFORMACIÓN

La grabación de la reunión y los materiales estarán disponibles para su consulta pública desde 8/19/21 a 09/10/21. Obtenga más información en dot.nv.gov/mtrose. Si necesita acomodaciones especiales, por favor comuníquese con Cassie Mlynarek, Especialista en Participación Pública de NDOT, al 702-232-5288.

DOT.NV.GOV/MTROSE

Newspaper Ad

PIM #2 Handout

A meeting handout was also provided to the meeting attendees providing some brief project information. This handout is included on the following pages. In addition to the handout were large roll plots of the corridor showing potential alternatives for public feedback. Due to the size of these plots they can not legibly be included in this appendix but can be provided upon request.



PUBLIC INFORMATION MEETING

On August 10th, from 4 p.m. to 7 p.m. join the Nevada Department of Transportation at the Tamarack Casino located at 13101 South Virginia St. in Reno for an information meeting to discuss the Mt. Rose Corridor Plan and the corridor's long-term vision. Any member of the public is invited to share their concerns, questions and comments.

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Learn more at | Más información en:
DOT.NV.GOV/MTROSE



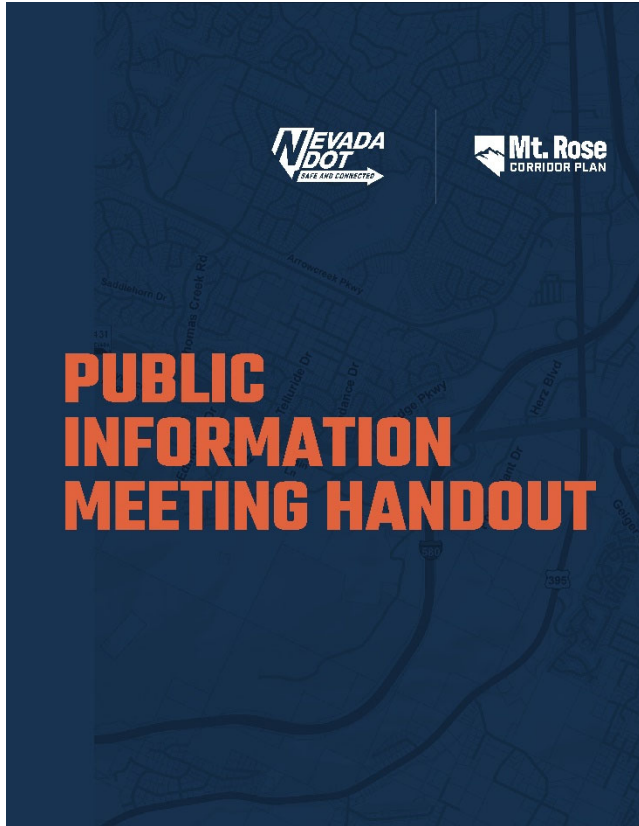
PUBLIC INFORMATION MEETING

AUGUST 10TH, 2021

A recording of the presentation and materials will be available for public viewing from 8/10/21-09/10/21. Learn more at dot.nv.gov/mtrose. If you need special accommodations please contact NDOT's Public Involvement Specialist Cassie Mlynarek at 702-232-5288.

La grabación de la reunión y los materiales estarán disponibles para su consulta pública desde 8/10/21 a 09/10/21. Obtenga más información en dot.nv.gov/mtrose. Si necesita acomodaciones especiales, por favor comuníquese con Cassie Mlynarek, Especialista en Participación Pública de NDOT, al 702-232-5288.

Mailer



Public Meeting Handout

PUBLIC INFORMATION MEETING HANDOUT

PLAN DEL CORREDOR DE MT. ROSE REUNIÓN PÚBLICA

ANTECEDENTES E HISTORIA

Únase El Departamento de Transporte de Nevada en el Casino Tamarack ubicado en 13101 South Virginia St en Reno, el 10 de agosto, de las 4 a las 7 de la tarde para una reunión de información para discutir el plan del corredor Mt. Rose y la visión a largo plazo del corredor. Se invita a todo miembro del público a compartir sus preocupaciones, preguntas y comentarios. La grabación de la reunión y los materiales estarán disponibles para su consulta pública desde 8/19/21 a 09/10/21. Obtenga más información en dot.nv.gov/mtrrose. Si necesita acomodaciones especiales, por favor comuníquese con Cassie Mlynarek, Especialista en Participación Pública de NDOT, al 702-232-5288.

El Departamento de Transporte de Nevada (NDOT, por sus siglas en inglés), en colaboración con la Ciudad de Reno, el Condado de Washoe y la Comisión Regional de Transporte (RTC, por sus siglas en inglés) y el Condado de Washoe, está colaborando en un plan que va a tratar las necesidades y los planes para permitir que Mt. Rose Highway continúe siendo una ruta segura y efectiva para todos usuarios futuros. El estudio de desarrollo será un plan general para el corredor que se completará para fines de 2021. El plan proporcionará una visión de alto nivel de opciones potenciales para mejorar la seguridad en el tráfico y la movilidad para todo tipo de transporte.

La media diaria de tráfico en esta sección de la vía ha subido de 15,000 vehículos diarios en 2014 a casi 23,000 en 2019.

PROGRAMA DEL PROYECTO

NOV - DIC 2020

Condiciones del proyecto que existe

ENE 26 2021 y AGO 10 2021

Reunión pública

NOV 2020 - ABR 2021

Análisis de tráfico y gestión de los accesos

ENE - MAYO 2021

Desarrollo de la visión para el corredor

DIC 2021

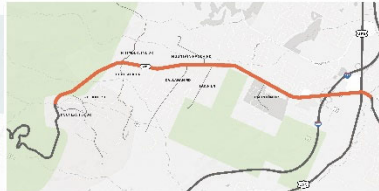
Plan de acción para el corredor

SITIO WEB DEL PROYECTO

Fénelo al día con el estudio del corredor de Mt. Rose y conozca más sobre las actualizaciones al estudio, mapas de datos, planes de visión y de acción y preguntas frecuentes, visitando el sitio web del proyecto en dot.nv.gov/mtrrose.

MAPA DEL ÁREA DEL PROYECTO

El estudio del corredor de Mt. Rose realizado por el Departamento de Transporte de Nevada (NDOT, por sus siglas en inglés) está centrado en la Mt. Rose Highway (Ruta Estatal #31) desde Douglas Fir Drive hasta Alternate U.S. 395 (S. Virginia Street) y Ojiver Creek Road desde Alternate U.S. 395 hasta la rotonda de Veterans Parkway.



PUBLIC INFORMATION MEETING

BRIEF DESCRIPTION

On August 10th, from 4 p.m. to 7 p.m. join the Nevada Department of Transportation at the Tamarack Casino located at 13101 South Virginia St. in Reno for an information meeting to discuss the Mt. Rose Corridor Plan and the corridor's long-term vision. Any member of the public is invited to share their concerns, questions and comments.

Nevada Department of Transportation (NDOT), in collaboration with the City of Reno, Washoe County,

and the Regional Transportation Commission (RTC) of Washoe County, is embarking on a planning effort that will address needs and plans to allow the Mt. Rose Highway to continue to provide a safe and effective route for all users in the future. The study will develop a corridor master plan completed at the end of 2021. The plan will provide a high-level vision for potential options to improve traffic safety and mobility for all transportation types.

PROJECT AREA MAP

The Nevada Department of Transportation's (NDOT) Mt. Rose Corridor Study is centered on Mt. Rose Highway, State Route 431, from Douglas Fir Drive to Alternate U.S. 395 (S. Virginia Street) and Ojiver Creek Road from Alternate U.S. 395 to the Veterans Parkway roundabout.



PROJECT SCHEDULE

NOV - DEC 2020

Existing project conditions

JAN 26 2021 & AUG 10 2021

Public meetings

NOV 2020 - APR 2021

Traffic analysis and access management

JAN - MAY 2021

Corridor vision development

DEC 2021

Corridor action plan

Average daily traffic on the valley section of the highway has grown from 15,000 vehicles daily in 2014 to nearly 23,000 in 2019.

PROJECT WEBSITE

Stay up to date with the Mt. Rose Corridor Study and learn more about study updates, data maps, vision and action plans, and frequently asked questions, by visiting the project site at dot.nv.gov/mtrrose.

If you need special accommodations please contact NDOT's Public Involvement Specialist Cassie Mlynarek at NDOTMtrRoseStudy@nvg-ogroup.com or by calling 702-232-5288.


PIM #2 Presentation The following are the slides provided for the public meeting presentation.



Public Information Meeting #2
Mt Rose Corridor Study
Jae Pullen, PE – NDOT Project Manager


August 10, 2021
4:00 pm – 7:00 pm

1



AGENDA

- Welcome and Opening Remarks
- Public Meeting #1 Feedback
- Potential Vision Concepts
- Study Schedule
- Next Steps



2

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STUDY PARTNERS




The logos of the study partners are arranged in two rows. The top row includes the City of Reno logo (featuring a mountain and city skyline), the RTC logo (a blue circle with 'RTC' in white), and the Washoe County Nevada logo (a circular seal with 'WASHOE COUNTY, NEVADA' and '1861'). The bottom row includes the Washoe County School District logo (stylized figures), the Nevada Highway Patrol logo (a silver star-shaped badge), and the TMRPA logo (Truckee Meadows Regional Planning Agency).

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MT ROSE HIGHWAY UPCOMING IMPROVEMENTS

- **Construction Project at Thomas Creek and Edmonton Drive**
 - Scope
 - Raised median islands and lighting improvements
 - Shared use path between Thomas Creek and Edmonton
 - Schedule
 - Final design early fall 2022
 - Begin construction spring 2023



The photograph shows a wide asphalt road with white lane markings and a white arrow pointing forward. In the background, there are hills and a clear blue sky. A traffic light pole is visible on the left side of the road.

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STUDY PURPOSE AND GOALS

- **Purpose**
 - Gather public feedback on the corridor
 - Collaborate with local partner agencies to provide a multi-modal transportation corridor vision to address the top corridor priorities
 - Corridor plan to be a useful tool for future roadway projects
 - Limitations
 - Land use and development approval process is determined by local agencies

- **Goals**
 - Short term needs
 - Identify fundable immediate needs
 - Long term vision
 - All agencies to include in future development & roadway plans
 - Corridor Consistency
 - All future development & roadway improvements follow corridor vision


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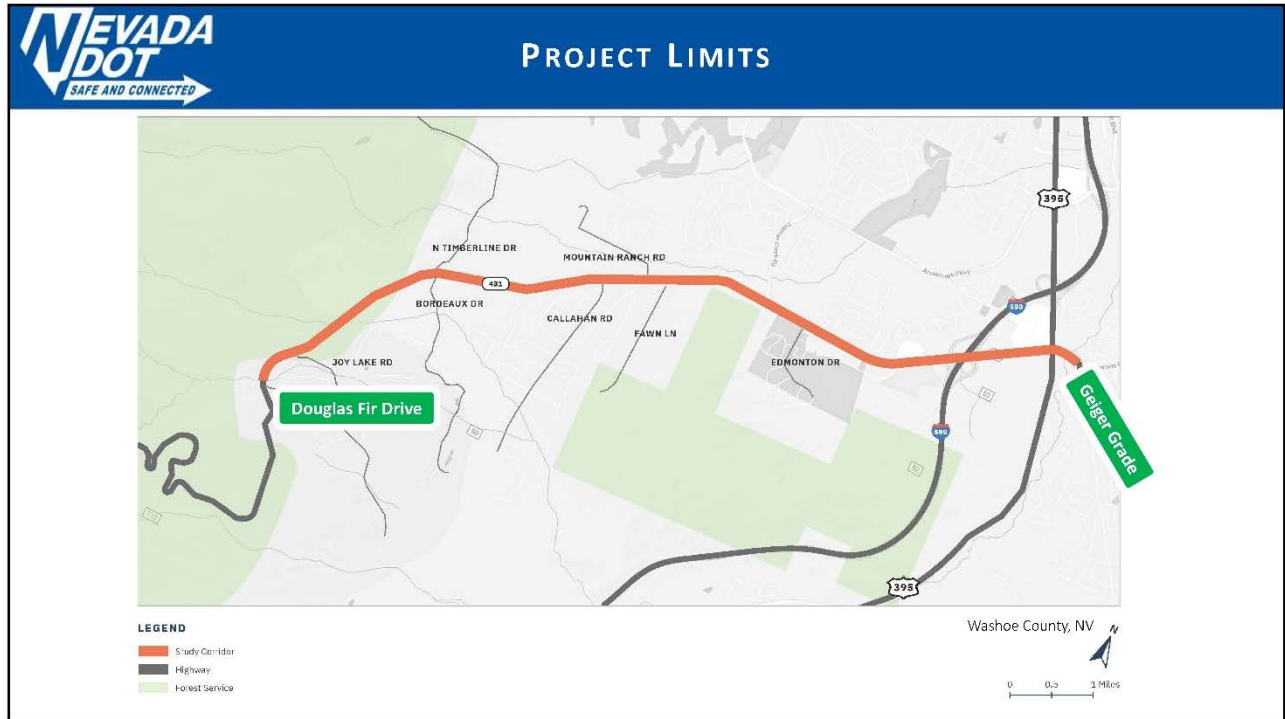
CORRIDOR STUDY EXPECTATIONS

- **What does a corridor study include?**
 - Understand existing conditions throughout the corridor: What priorities are we trying to address?
 - Establish a vision for the corridor: What do you want to see the corridor look like?
 - Develop an action plan for improvements, including interim fixes and longer-term changes

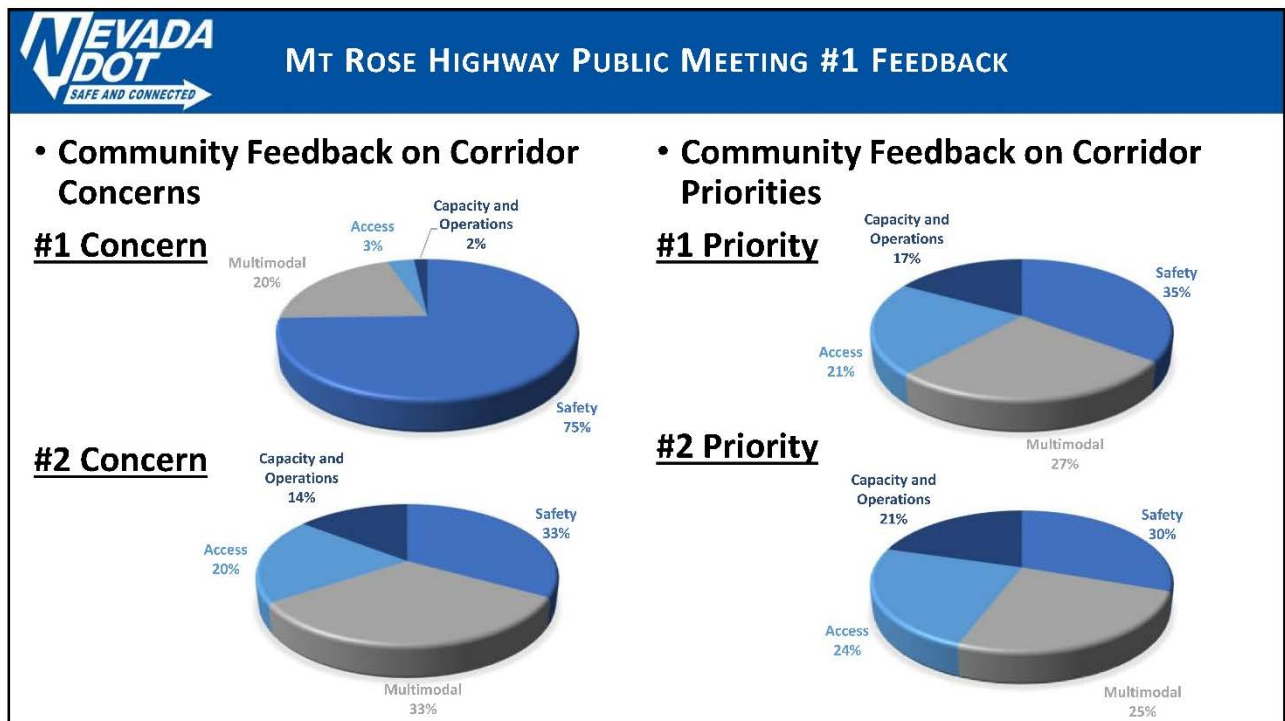
Planning <ul style="list-style-type: none"> • Existing conditions/needs assessment • Community visioning • Evaluation of alternatives • Action plan/recommended improvements 	Environmental <ul style="list-style-type: none"> • Environmental study (state or NEPA process) • Preliminary engineering • Agency issues decision 	Design <ul style="list-style-type: none"> • Detailed corridor design • Right-of-way, utilities, and other impacts • Construction plans, permits, and funding secured 	Construction <ul style="list-style-type: none"> • Build and deliver
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CA3 NEVADA DOT SAFE AND CONNECTED

MT ROSE HIGHWAY PUBLIC MEETING #1 FEEDBACK

- Public feedback on concerns and priorities
 - Safety
 - Multimodal (pedestrian, bicycle, and mass transit)
- Common suggestions
 - Right turn acceleration and deceleration lanes
 - Improved intersection control at major intersections (Callahan, Veterans)
 - Better multi-modal opportunities and access
 - Traffic calming
 - Animal fencing




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VISION STATEMENT

*The Mt. Rose Corridors Study's vision is to develop a long term (30-year) implementation framework, including **immediate mobility strategies**, to provide a **safe** and reliable **multimodal** corridor that **maintains connectivity** to the community in a fiscally responsible manner. These strategies will be based on local partner agencies and public input and accommodate future planned development through sound planning policies.*



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CORRIDOR VISION DEVELOPMENT

- 4 potential Visions developed
 - “Urban Arterial”
 - “Suburban Parkway”
 - “Controlled Access”
 - “Rural”
- Vision differences
 - Major intersection control
 - Roadway treatment of median and outside edge of roadway
 - Access from side streets
 - Pedestrian and bicycle access
 - Posted speed limit
- Common elements (included in each Vision)
 - Animal fencing west of Thomas Creek
 - Shared use path throughout corridor

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NEVADA DOT
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TYPES OF INTERSECTION CONTROL

Traffic Signal

Components

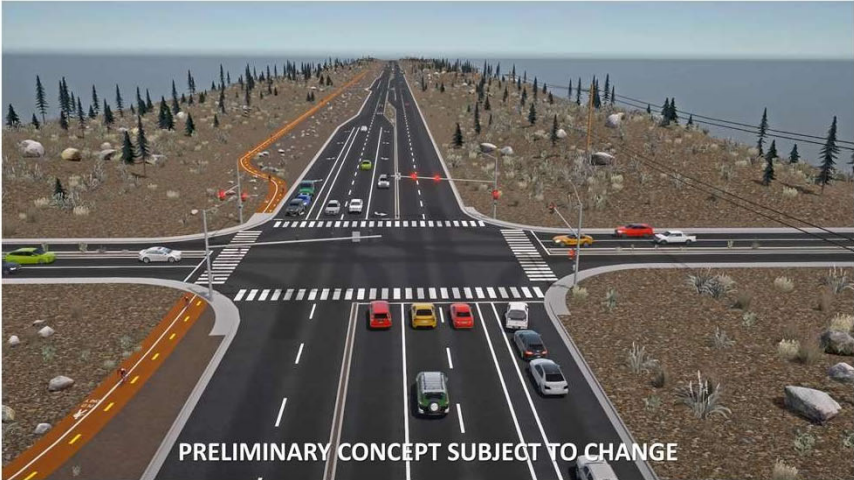
- Signal Poles
- Crosswalks

Benefits

- Dedicated green times
- Signalized pedestrian crossing
- Ability to time signals

Concerns

- Higher crash severity
- May not meter corridor speed



PRELIMINARY CONCEPT SUBJECT TO CHANGE

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TYPES OF INTERSECTION CONTROL

Roundabout

Components


- Curved entries
- Circular center raised island

Benefits

- Less crash severity
- Metering of corridor speed
- Less conflict points

Concerns

- Favors major street movements
- Unsignalized pedestrian crossing



PRELIMINARY CONCEPT SUBJECT TO CHANGE

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TYPES OF INTERSECTION CONTROL

J-Cut

Components


- Right out only
- U-Turn at next reasonably spaced intersection

Benefits

- Eliminates left turns across opposing traffic

Concerns

- Out-of-way travel
- No pedestrian crossing at intersection



PRELIMINARY CONCEPT SUBJECT TO CHANGE

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POTENTIAL VISIONS – SUBURBAN PARKWAY CONCEPT

Types of Improvements

- Roundabouts
- Natural median island
- Curved roadway
- Innovative intersections (J-Cut and High-T)

Benefits

- Potential left turn refuges allowing crossing one direction at a time
- Roundabouts at major intersection for constant speed control
- Roadway curvature to control speeds
- “Free flow” through roundabouts

Concerns

- Roundabout driver confusion
- Limited left turn access requiring minor out-of-direction travel

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POTENTIAL VISIONS – CONTROLLED ACCESS CONCEPT

Types of Improvements

- Frontage roads
- Barrier separated roadway
- Interchange or signalized type intersections

Benefits

- Minimized potential for head-on incidents
- Less SR 431 delay
- Signalized left turns

Concerns

- Potential need for extensive right-of-way
- High costs
- Incompatibility with scenic byway corridor
- High speeds
- Does not address several common public concerns (speeds, preserve access)
- Access reserved for major intersections

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POTENTIAL VISIONS – RURAL CONCEPT

Types of Improvements

- Median Buffer
- Wider Shoulders
- Intersection acceleration and deceleration lanes

Benefits

- Improved intersection operations and safety
- Additional area for animal avoidance
- Potential use of rumble strips for driver awareness

MULTI-USE PATH
SHOULDER
TRAVEL LANE
B U F F E R
TRAVEL LANE
SHOULDER

Concerns

- Widened pavement may encourage higher speeds

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CONCEPT SCREENING PROCESS

Full Range of Alternatives

① Initial Screening

② Corridor Screening

③ Implementation Considerations

YES/NO

Reality Check

ONGOING PUBLIC AND STAKEHOLDER OUTREACH

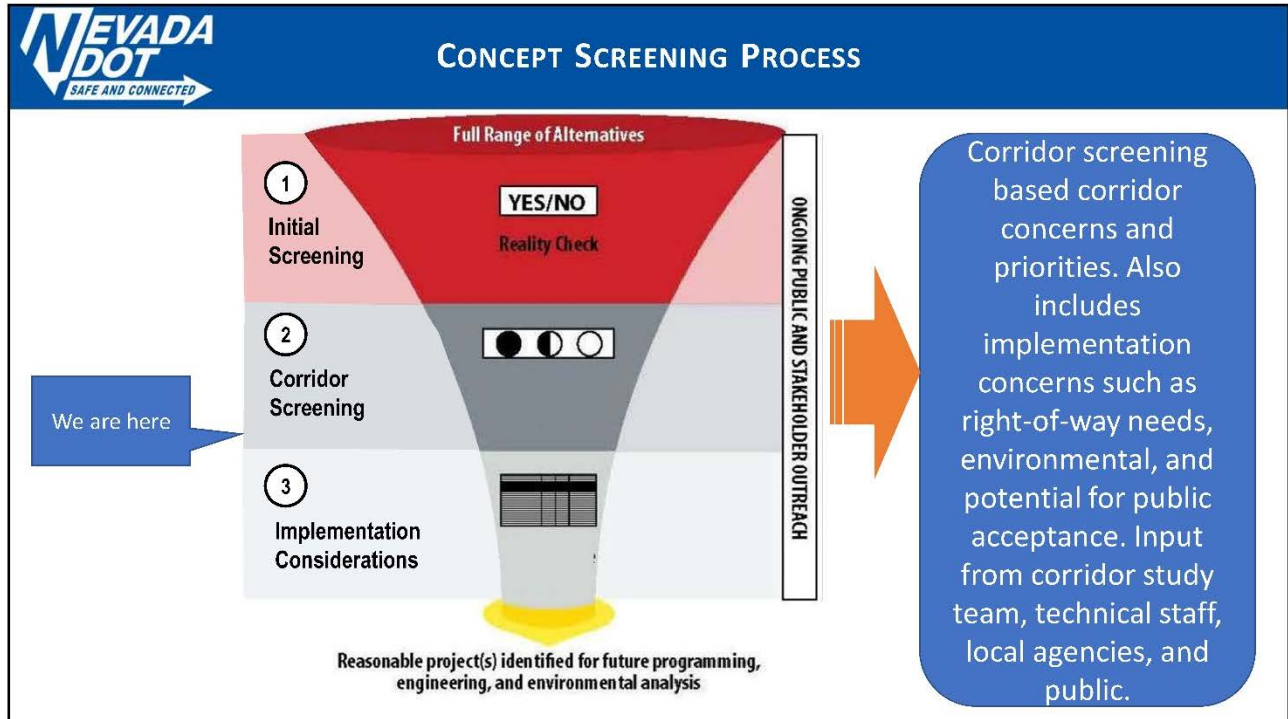
Reasonable project(s) identified for future programming, engineering, and environmental analysis

➔

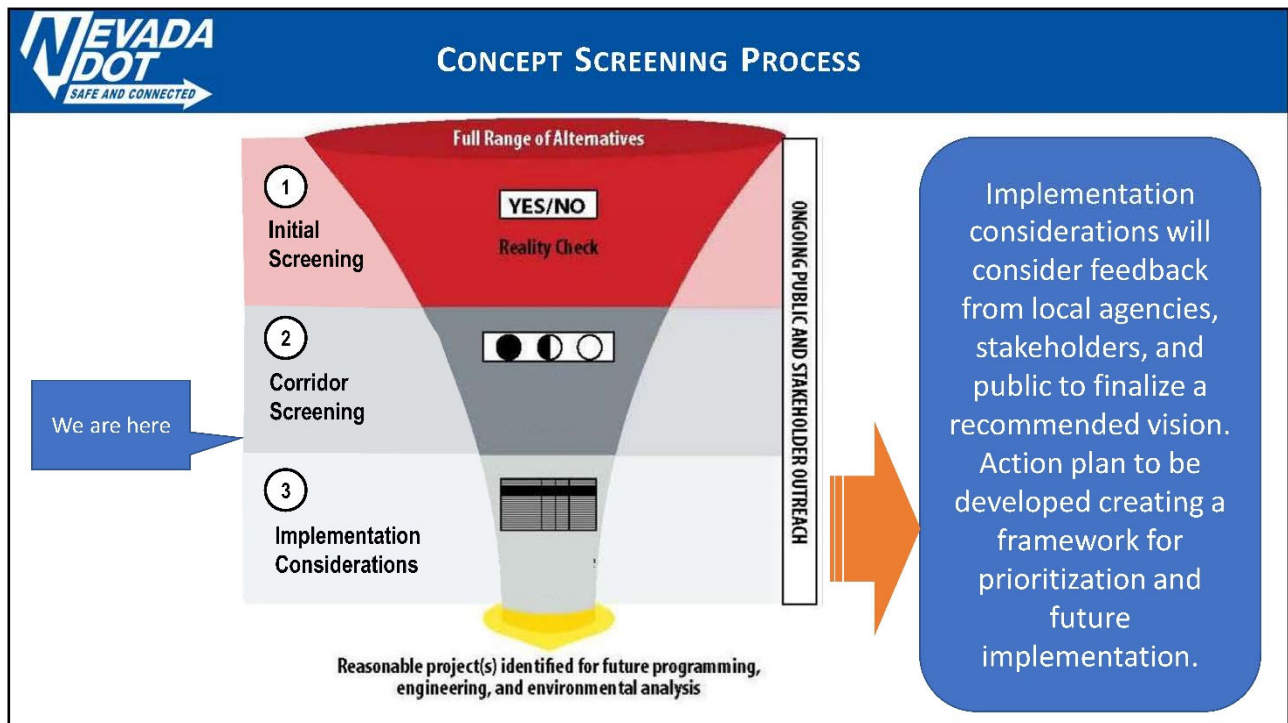
Initial screening based on vision statement and corridor concerns and priorities. If alternative failed to meet these, alternative dismissed. Conducted by corridor study team.

We are here

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NEVADA DOT SAFE AND CONNECTED
CORRIDOR SCREENING – PROPOSED VISIONS

Wedge Parkway to Veterans Parkway	Douglas Fir to Bordeaux
<p>Recommended Vision – “Urban Arterial”</p> <ul style="list-style-type: none"> Existing conditions closely match this vision More urban corridor Not part of the Scenic Byway corridor 	<p>Recommended Vision – “Rural”</p> <ul style="list-style-type: none"> Two-lane roadway section Rural corridor Provides additional width for animal avoidance

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NEVADA DOT SAFE AND CONNECTED
CORRIDOR SCREENING – COMPARATIVE EVALUATION

Bordeaux to Wedge Parkway

<p>Alternative 1 – Urban Arterial</p> <ul style="list-style-type: none"> Safety <ul style="list-style-type: none"> <i>Raised Concrete Median</i> <i>Signalized pedestrian crossings at major intersections</i> <i>Minimal speed/crash reduction with signal control</i> <i>Constricted roadway feel to control speed</i> Multimodal <ul style="list-style-type: none"> Shared use path. Need separation or barrier protection Mobility <ul style="list-style-type: none"> <i>Potential for signal coordination to avoid “stop and go”</i> Access <ul style="list-style-type: none"> <i>Signalized access at major intersections (when warranted)</i> 	<p>Alternative 2 – Suburban Parkway</p> <ul style="list-style-type: none"> Safety <ul style="list-style-type: none"> <i>Natural median with minimal inside shoulder</i> <i>Rectangular Rapid Flashing Beacons (RRFB) for pedestrian crossings</i> <i>Roundabouts at major intersection to control corridor speed</i> <i>Roadway curves to control speed</i> Multimodal <ul style="list-style-type: none"> Shared use path. Need separation or barrier protection Mobility <ul style="list-style-type: none"> <i>“Free flow” roundabout characteristics</i> Access <ul style="list-style-type: none"> <i>Potential for left turn refuges depending on median width.</i>
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PUBLIC INFORMATION MEETING FEEDBACK

- Place green Post-It on preferred alternatives and segments
- Place yellow Post-It with additional suggestions and at suggested location (if applicable)

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PUBLIC INFORMATION MEETING
FEEDBACK

- Link to meeting materials and concerns at www.mtrosepublicmeeting.com
 - **Public comment and survey responses accepted until 11:59 pm September 10th, 2021**
- Study Contact Information:
 - NDOT Project Manager: Jae Pullen, PE, 775-888-7589
 - Email: NDOTMtRoseStudy@c-agroup.com
 - Website – www.dot.nv.gov/mtrose

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Jae Pullen, P.E., NDOT Project Manager
775-888-7589

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Study Email

A study specific email was established during Public Information Meeting #1 and remained in service throughout the study process. This email was constantly monitored by the study team with email responded to within 24-48 hours. Approximately 118 emails were received through this communication platform and provide a wide variety of comments, statements, and over thoughts about the corridor. Many of these comments were able to be considered as part of the vision development, screening, evaluation, and recommendation process.

Planning and Environmental Linkage (PEL)



Initial Planning and Environmental Linkage (PEL) Summary

Purpose of PEL and Regulatory Framework

PEL, or Planning and Environmental Linkage, is a high-level, early-planning study process that represents an approach to transportation decision-making that considers environmental, community and economic goals early in the planning stage and carries them through project development, including design and construction. The goal of PEL is to gather feedback during planning to inform the environmental review process, including the National Environmental Policy Act (NEPA). The general outcome of a PEL includes:

- Established the vision and Identifies transportation issues
- Initiates coordination with oversight agencies, stakeholders and members of the public
- Streamlines the overall project development process and minimizes duplication in decision-making
- Develops the need and purpose for proposed improvements
- Promotes efficient and cost-effective solutions and environmental stewardship

Without PEL, the decisions reached during the planning study usually need to be revisited to be valid in NEPA. This results in a repetition of efforts which translates into additional project development time and expense. PEL honors decisions made during planning throughout public involvement and resource agency coordination.

PEL is often used when:

- A need has been identified and planning funds have been dedicated towards identifying possible alternative solutions, but no construction funding has been identified or committed.
- The potential project is large in scale with large or complex potential impacts, and a long lead time may be needed for different elements.
- The corridor includes a large geographic scale and/or regionally significant proposal that could result in multiple programmable projects with independent utility and logical termini.
- There are complex community impacts or complex environmental constraints.
- There are known or anticipated public controversy about the scope, need, purpose, or potential alternatives.
- Too many alternatives exist for an efficient NEPA process.
- Even with a lot of initial planning work, NEPA will not meet the Environmental Assessment (1 year) or Environmental Impact Statement (2 year) time limits.

NDOT developed a PEL Questionnaire and Checklist

(<https://www.dot.nv.gov/home/showdocument?id=4962>) to aid in documenting planning methods, findings, and potential environmental concerns in a consistent and orderly fashion.

Initial PEL Purpose – Mt. Rose Corridor Plan

A subset of questions from the NDOT PEL checklist will be documented as part of this memo, which serves as an *Initial PEL for the Mt. Rose Corridor Plan*. The choice to develop an abbreviated PEL has been

made to **document pertinent public and stakeholder decisions made regarding the ultimate vision** for Mt. Rose Highway. As a high-level planning study, detailed analysis and decisions were not made on specific corridor improvements. Rather, consensus was built around the corridor vision, which will guide development and implementation of specific projects by a variety of agency partners in the future.

It is expected that this Initial PEL will evolve as corridor planning advances and matures.

Mt. Rose Corridor Plan Overview

State Route 431 (SR 431), locally known as the Mt. Rose Highway, is a 24.5-mile highway in Washoe County, Nevada, that connects Incline Village at Lake Tahoe with the Reno-Sparks metropolitan area (Figure 1). The highway, a Nevada Scenic Byway, takes its name from Mount Rose, which lies just off the highway.

In recent years, the corridor has faced increased pressure from new development, increasing speeds, and rising safety concerns. Based on these needs, the Nevada Department of Transportation (NDOT), in collaboration with the City of Reno, Washoe County, Washoe County School District, the Regional Transportation Commission (RTC) of Washoe County, Nevada State Police (NSP), and the Truckee Meadows Regional Planning Agency (TMRPA), have completed a corridor planning effort for the northeastern 7.5 miles to address these needs, establish a long-term vision for the corridor, and determine potential improvement concepts to allow the Mt. Rose Highway to continue to provide a safe and efficient route for all users.

Figure 1. Mt. Rose Corridor Study Area and Vicinity



Mt. Rose Highway Initial PEL

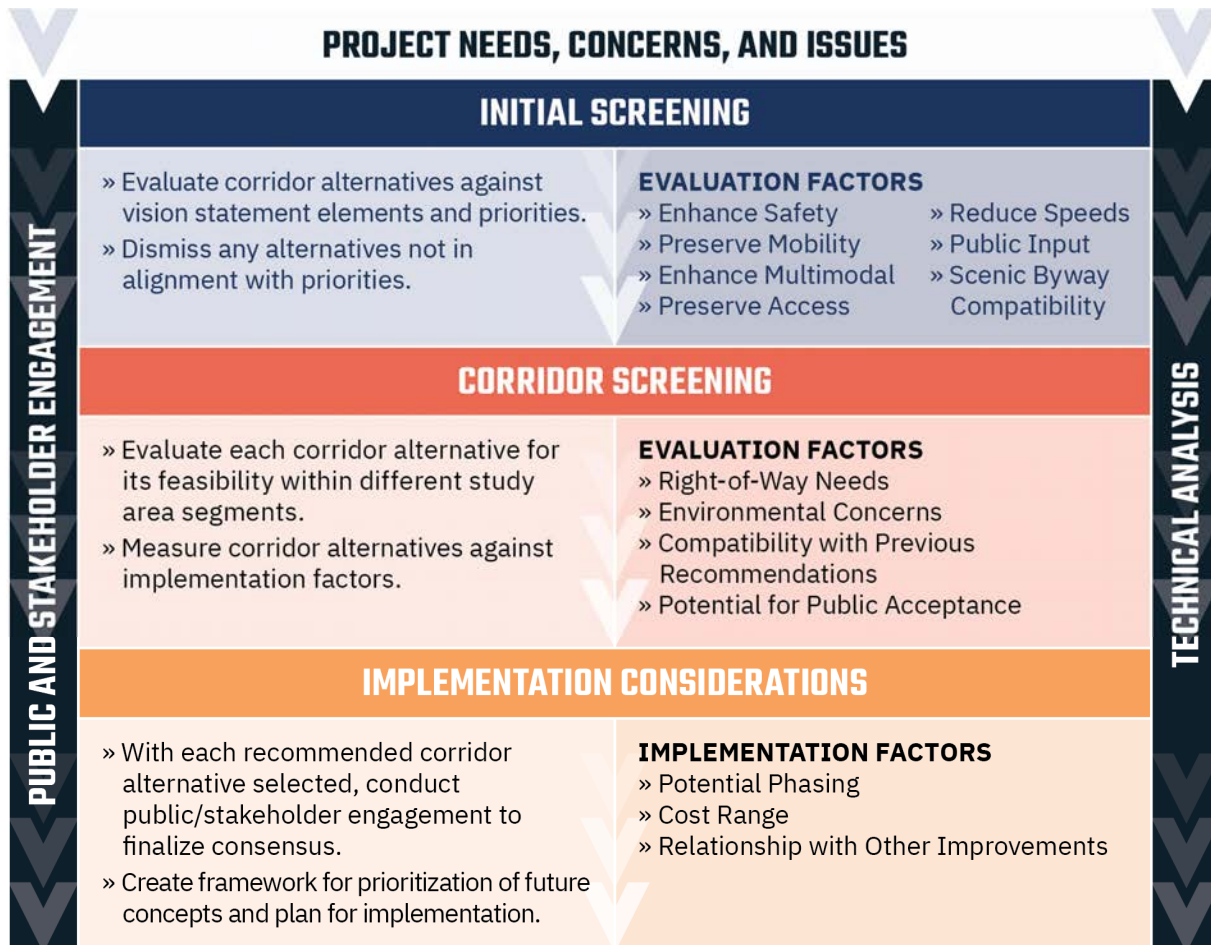
The desired outcomes for this Initial PEL are two-fold:

- Develop a consensus-based vision for future improvements, including recommended corridor characteristics
- Identify stakeholder partners and future roles/responsibilities to implement the corridor vision

Study Process

This corridor planning process for Mt. Rose Highway is illustrated in Figure 2, which includes a two-part screening, along with definition of implementation considerations. Evaluation factors for each step in the process are shown in the graphic below.

Figure 2. Mt. Rose Corridor Study – Planning Process



Overall, the process commenced with a review of existing and planned conditions along Mt. Rose Highway from the Geiger Grade roundabout (Veteran’s Parkway) on the east to Douglas Fir Drive. This included a general review and the built and natural environment, but not at a pre-NEPA resource specialist level.

The study area was divided into four segments for more context-sensitive consideration of each corridor alternative, ensuring the greatest compatibility with adjacent land uses and roadway function.

Existing conditions information was brought to the stakeholders and public to receive input on their priorities and concerns for Mt. Rose Highway, leading to development of the corridor vision. The corridor vision served as the guiding principle for the rest of the study – informing the development and evaluation of alternatives, and selection of a recommended corridor character for the differing project segments.

The study included two rounds of public outreach and regular stakeholder coordination to receive feedback on study progress and decisions throughout the process. Extensive coordination occurred with

NDOT and RTC near the end of the study to ensure that the recommendations set the foundation for further planning, environmental, and/or design to advance in a timely manner.

Corridor Vision

A primary purpose of this Initial PEL is to document development of the corridor vision and decision on the recommended corridor characteristics. A formal purpose and need was not developed, however the corridor vision serves as the overall framework for why this study is needed and what it will achieve.

This study included two rounds of public meetings, an online survey, monthly meetings with the Technical Advisory Committee, and quarterly meetings with a Stakeholder Working Group. Study partners included:

- City of Reno
- Nevada Department of Public Safety
- NDOT
- RTC of Washoe County
- Truckee Meadows Regional Planning Agency
- Washoe County
- Washoe County Parks and Recreation
- Washoe County School District
- U.S. Forest Service

Data, input, and feedback were paired with concerns and priorities expressed through a study survey to establish the corridor vision and prioritize alternatives.

The top transportation priority expressed for the corridor was safety, with nearly 75% of all survey participants ranking this first. Safety concerns included high crash rates, especially fatalities; high speeds; compromised sight distances; left turns across traffic; and animal crossings. The second highest priority was multimodal travel, including connectivity to facilities for pedestrians, bicyclists, and trails; feeling of being safe while using multimodal facilities; and connectivity to desirable activities and destinations.

Vision

The Mt. Rose Corridor Study's vision is to develop a long term (30-year) implementation framework, including immediate **mobility strategies**, to provide a **safe** and reliable **multimodal** corridor that maintains connectivity to the community in a fiscally responsible manner. These strategies will be based on local partner agencies and public input and accommodate future planned development through sound planning policies.

Vision Characteristics – Recommended Corridor Alternative Concepts

Based on the vision identified, a series of corridor alternatives reflecting different characters or roadway functions were developed for Mt. Rose Highway. A two-part screening process was carried out to evaluate the alternatives, including consideration of input received from the public meetings, stakeholder engagement, and past study recommendations to determine which concept best fit the corridor context and met the corridor vision.

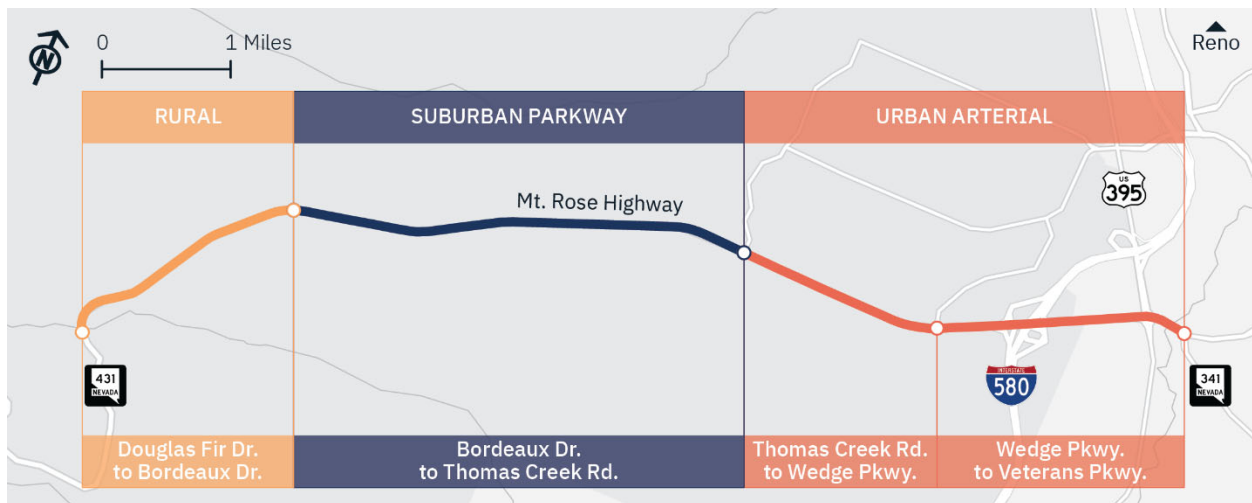
Three different corridor concepts were selected, as shown in Figure 3:

- Implement **Urban Arterial** corridor alternative concept in the two most eastern segments, from **Thomas Creek Road to Veterans Parkway**. These segments are the most developed with a diversity of land use types that lend toward a more urban roadway type. Traffic will be controlled with signalized intersections, narrowed lane widths, and a raised median. The Veterans Parkway roundabout could

be enhanced for better operations. Public feedback expressed interest in maintaining neighborhood and commercial access points.

- Implement **Suburban Parkway** corridor alternative between **Bordeaux Drive and Thomas Creek Road**. This segment forms the transition between the more urbanized area near the freeway to the more rural section heading into the National Forest. This selected corridor alternative reflects that transition with a reconstruction concept to provide a larger natural median, introduce slight roadway curvature, and utilize narrower lanes all to control speeds while maintaining scenic byway characteristics. It would also use roundabouts to consistently slow and direct traffic. Public feedback was very positive in regard to maintaining traffic flow and local street access, while slowing speeds through this primarily residential area.
- Implement **Rural** corridor alternative between **Douglas Fir Drive and Bordeaux Drive**. This segment enters/is partially bordered by National Forest Service land and becomes a much more rural and meandering route with greater grade changes and lower speed limit (45 mph). As a two-lane corridor, this concept would provide widened shoulders for avid bicyclists or room to pull off for animal avoidance. Public feedback has continually requested a safer pedestrian crossing to the Galena Creek Visitor’s Center. Therefore, an enhanced trail pedestrian crossing has been identified to allow recreational visitors to safely cross the highway via a future overpass crossing.

Figure 3. Mt. Rose Selected Corridor Vision Concepts



The Mt. Rose Corridor Plan (final report) outlines a series of phased improvements that could meet the vision concepts presented above. These improvements include such options as intersection treatments (e.g., traffic signals, roundabouts), corridor widening, parallel multi-use trail, speed changes, etc. It is envisioned that more detailed scoping and design work will refine and advance these concepts.

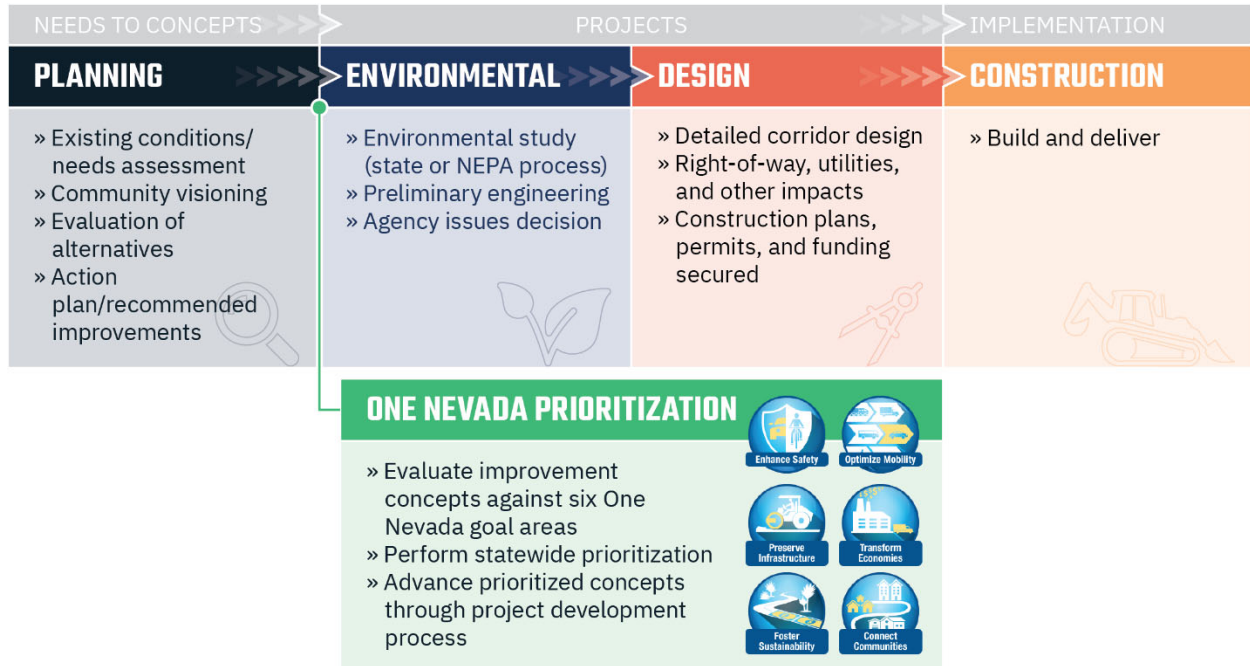
Implementation Partners

NDOT is expected to advance implementation for the major roadway improvements included as part of the vision concepts. RTC of Washoe County, the U.S. Forest Service, City of Reno, Washoe County, and private developers will take the lead on other project components. The “Implementation of the Vision” chapter within the Final Report outlines the logical entity to take primary responsibility for the different recommended actions.

For NDOT-led concepts, Figure 4 presents the typical project development process, as transportation needs are turned into constructible projects. At this stage of project development, Mt. Rose Highway

Corridor Study recommendations are “concepts”. Upon completion of this study, the corridor vision recommendations will move through the One Nevada prioritization process to advance to the next step, which could include environmental review, preliminary engineering, or detailed design.

Figure 4. Project Development Process



PEL Recommendation

This Initial PEL documents the comprehensive visioning process and decisions that took place as part of the Mt. Rose Corridor Study and thus, the decision on the corridor vision and segmented vision concepts should not change in the future. This establishes the consensus-based and context-sensitive decisions on what roadway framework and function best meets each segment. Individual projects that achieve these vision concepts could change from what is presented in the Final Report, but they should reflect the overarching intent of the corridor vision concepts.

Future phases of work should:

- Continue to engage the public and stakeholders
- Implement a series of common elements throughout the corridor:
 - Parallel multi-use path, including pedestrian crossing near Galena Creek Visitor’s Center
 - Driver feedback signs
 - Wildlife fencing
 - Safety countermeasures
- Work with stakeholders to advance near-term spot improvements:
 - Veterans Parkway roundabout operations
 - Toll Road extension
 - Callahan intersection improvements
- Investigate access or right-of-way issues with corridor reconstruction concepts

Concurrence

By signature, we concur that the transportation planning document meets the following criteria in terms of acceptability for application in NEPA projects:

- Public involvement (outreach and level of participation)
- Stakeholder involvement (outreach and level of participation)
- Resource agencies' involvement and participation
- Documentation of the above efforts
- Applicability of the general findings and conclusions for use, by reference, in NEPA documents

Approved by: _____ Date: _____ Approved by: _____ Date: _____

Sondra Rosenberg, PTP
Assistant Director, Planning
Nevada Department of Transportation

Kevin Verre
Assistant Chief, Multi-Modal and Program Development
Nevada Department of Transportation

Approved by: _____ Date: _____

Dan Doenges, PTP, RSP
Director of Planning
Regional Transportation Commission of Washoe County

Prepared by:

Signature: _____ Date: _____ Signature: _____ Date: _____

Nanette Maxwell, PE
Senior Project Manager
Nevada Department of Transportation

Jackie Kuechenmeister, AICP
PEL Lead
Parametrix



Mt. Rose
CORRIDOR PLAN

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www.dot.nv.gov/projects-programs/programs-studies/mt-rose-highway-corridor-study