

APPENDIX F

Traffic Impact Analysis

Mammoth Arts and Cultural Center Transportation Impact Analysis



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MAMMOTH ARTS AND CULTURAL CENTER

TRANSPORTATION IMPACT ANALYSIS

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This engineering report documents the findings and conclusions of a Transportation Impact Analysis (TIA) for the Mammoth Arts and Cultural Center Project located at the Cerro Coso Community College site (100 College Parkway) in Mammoth Lakes, California. The Project includes a 298 seat performing arts theatre, a 500 seat outdoor amphitheater, and a new parking lot. This study examines the transportation conditions for build out of the project. This study also provides the technical basis for the EIR Transportation and Circulation Section.

SCOPE OF STUDY

This transportation engineering study analyzes traffic data, intersection capacity and level of service, and transportation impacts of the proposed project in accordance with the requirements of the Town of Mammoth Lakes standards. Based upon input provided by the Town, the following intersections and roadways were identified for analysis:

- Meridian Boulevard/Old Mammoth Road
- Meridian Boulevard/Sierra Park Road
- Meridian Boulevard/College Parkway (west)
- Meridian Boulevard/College Parkway (east)/Wagon Wheel Road (west)
- Meridian Boulevard west of Old Mammoth
- Meridian Boulevard between Old Mammoth and Sierra Park
- Meridian Boulevard between Sierra Park and College Parkway (east)
- Meridian Boulevard between College Parkway and Wagon Wheel (west)
- Meridian east of Wagon Wheel (west)
- Old Mammoth Road north of Meridian
- Old Mammoth Road south of Meridian
- Sierra Park north of Meridian

In addition, the following impacts are evaluated:

- Identification of intersection traffic queuing concerns
- The need for new or expanded turn lanes
- Roadway capacity within the study area
- Vehicle Miles Traveled (VMT) within the Town on a busy winter Saturday
- Construction traffic impacts

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This section documents the existing setting and transportation conditions in the Town, providing a foundation for comparison to future conditions. The study area and the intersections evaluated are shown in Figure 1.

EXISTING SETTING

Existing Roadway Network

The major access into the Town is via State Route 203, which intersects US Highway 395 just east of the Town limits. SR 203 (also named Main Street) is a four-lane minor arterial road from US 395 through the majority of the developed portion of the Town. Meridian Boulevard, which is classified as an arterial by the Town, splits off from SR 203 just east of town where it consists of a 2 lane roadway with turn lanes. Meridian Boulevard briefly changes to a four-lane roadway between Sierra Park Road and Old Mammoth Road.

Traffic controls are provided at Meridian Boulevard/Old Mammoth Road in the form of a signal and at Meridian/Sierra Park Road as a four-way stop. The other study intersections are controlled by stop signs on the minor street approaches. The lane configuration and control of the study intersections are depicted in Figure 1.

Existing Traffic Volumes

The traffic volumes throughout the Town of Mammoth Lakes vary greatly by time of day, day of week and, more importantly, by season. While daily traffic volumes in Mammoth Lakes are sometimes the highest in the summer months, the highest peak-hour volumes are typically experienced on winter Saturdays, during the afternoon hours when skiers “download” from the Mammoth Mountain Ski Area. Particularly in areas with these high variations in traffic levels, it is important to decide what hourly traffic volumes should be used as the basis of design. To avoid the development of facilities that are only needed a relatively few days per year, the traffic engineering profession has adopted a standard procedure of basing roadway design on volumes slightly below the absolute peak volumes. For this reason the Town of Mammoth Lakes has focused its design policies on a typical winter Saturday peak hour, rather than the highest winter peak hour.

Existing Winter Saturday Traffic Volumes

Traffic counts were conducted at Meridian Blvd/Old Mammoth Road and Meridian Blvd/Sierra Park Road as part of the recently completed *Mammoth Civic Center TIA* (LSC, April 2018). These counts were adjusted to reflect typical busy winter Saturday conditions based on continuous Caltrans traffic volume counts. Since counts were not conducted at Meridian Blvd and the two College Parkway intersections, these intersection volumes are based on the Town of Mammoth Lakes Travel Demand Model and neighboring intersections. The resulting existing Saturday peak-hour volumes are shown in Figure 2.

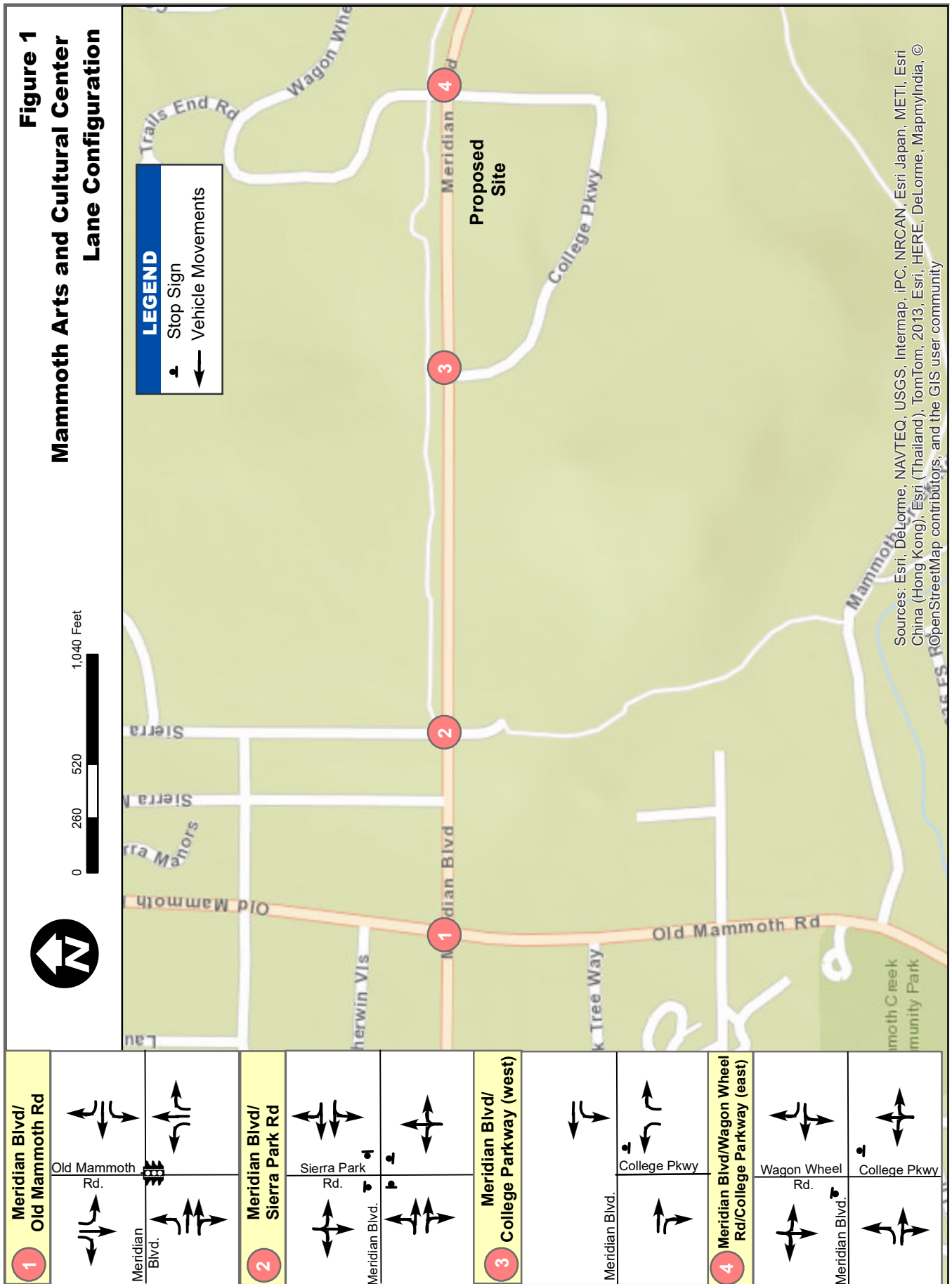
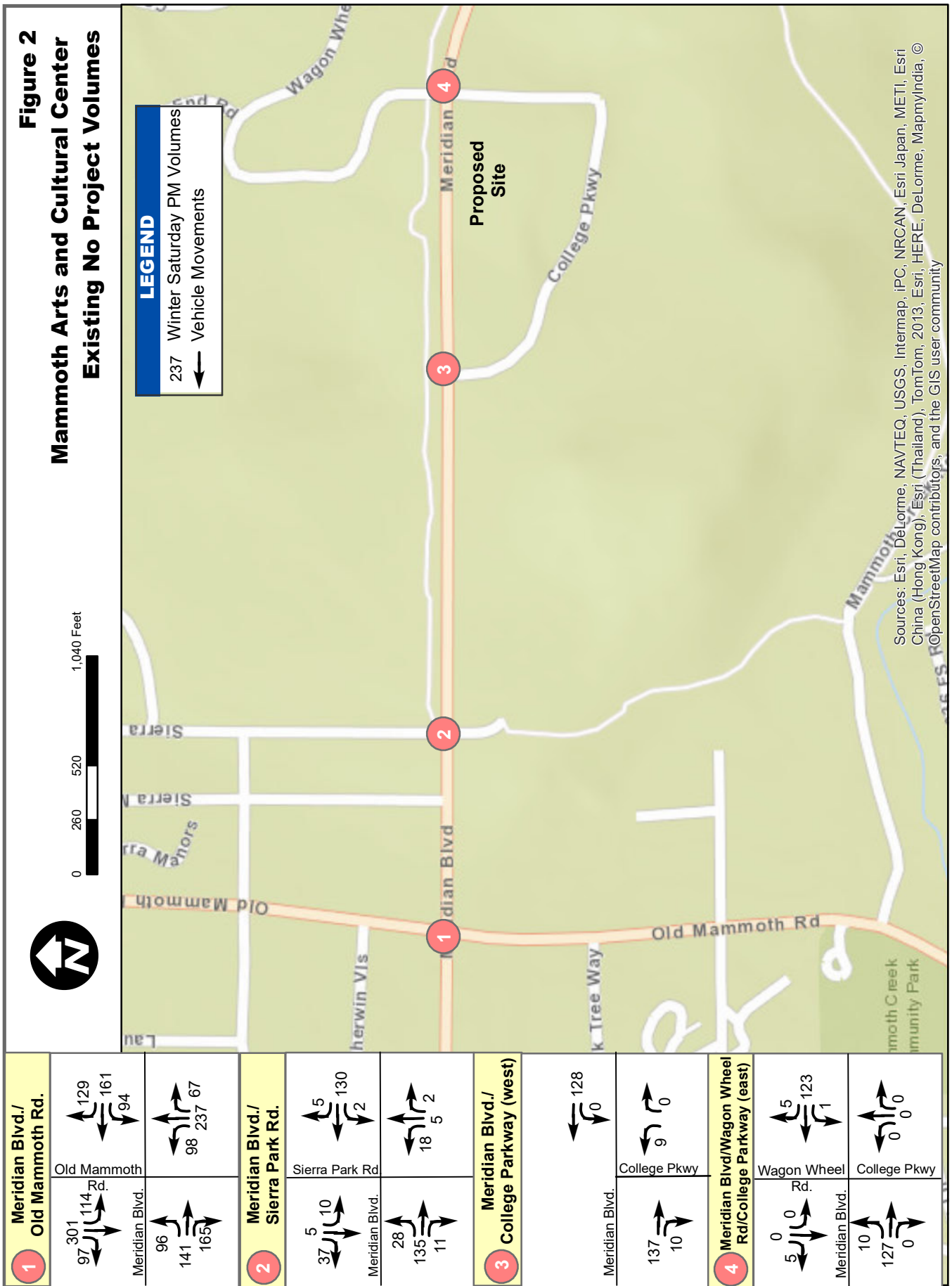


Figure 2
Mammoth Arts and Cultural Center
Existing No Project Volumes



Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

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PROJECT DESCRIPTION

The proposed project includes a 298 seat performing arts theatre, a 500 seat outdoor amphitheater, an upgraded roof for the existing Edison Theatre, and a new parking lot. The upgrade to the Edison Theatre will not affect the use of the theatre and therefore has no traffic impacts.

The performing arts theatre would host a number of activities including film, lecture, music, dance, and theatrical performances, as well as small conferences, dining, and private rental events. The facility would be available to the local schools and the college during weekday school hours (typically 8:00 a.m. to 3:00 p.m.). Theatre performances would typically occur Thursdays through Sundays from 7:00 p.m. to 9:00 p.m. Music performances would typically occur Fridays through Sundays from 7:00 p.m. to 9:00 p.m. Rehearsals would include a minimum of one day prior to each show; however, additional rehearsals could occur.

The outdoor amphitheater would be constructed along the eastern portion of the performing arts theatre and would act as an extension of the performing arts theatre stage, connected by two roll-up doors. The outdoor amphitheater would provide 500 seats. The amphitheater would host a variety of outdoor events similar to those described for the performing arts theatre.

TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT

Trip Generation

Trip generation analysis is the process by which transportation analysts identify the number of vehicle-trips that a specific proposed land use plan would add to local roadways.

The Institute of Transportation Engineers (ITE) Trip Generation Manual does not contain trip rates for a performing arts theatre or outdoor amphitheater. Therefore, trip generation for this project is based on a 'person-trip analysis'. Consistent with Town standards, the design day is a busy winter Saturday but not a peak time (such as Christmas week).

The person trip analysis is based on the following assumptions:

- The following mode split is based on estimated transit usage from the Town of Mammoth Lakes Travel Demand Model and 'journey to work' data from the *2012-2016 American Community Survey 5 Year Estimates* (US Census, 2016). Non-auto percentages are reduced due to the event being in the evening when most transit has stopped and in the winter bike and pedestrian use was reduced due to the dark, cold and snow.
 - Employee non-auto (winter) = 15%
 - Employee non-auto (summer) = 20%
 - Attendee non-auto (winter) = 5%
 - Attendee non-auto (summer) = 20%

- The average vehicle occupancy is estimated at 1.1 persons per vehicle for employees, performers, and performance staff, while attendees are estimated to have 3 persons per vehicle. This is based on the Town of Mammoth Lakes Travel Model Report (LSC, 2011) vehicle occupancy estimates for trip types.
- Fifty percent of employees and performance staff are assumed to make a mid-day (mid-shift) off site trip.

Multiplying the persons traveling via auto by two person-trips per day and dividing by the vehicle occupancy rate, yields the total number of vehicle trips per day. Tables 1 and 2 show the number of vehicle trips hourly for the performing arts theatre and the outdoor amphitheater, respectively. The performing arts theatre would operate in the study period of a winter Saturday while the amphitheater will only operate in the summer. Therefore this analysis is based on a maximum capacity (298 persons) event at the performing arts theatre. As shown in Table 1, this event would generate 234 daily trips with 95 occurring in the peak hour.

Trip Distribution and Assignment

The distribution of traffic arriving and departing the project site is estimated based on existing traffic patterns, the location of the site relative to residential and commercial uses in the region, and regional access patterns. Based on a review of these factors, the estimated distribution pattern for trips made in and out of the project site is summarized in Table 3. The site-generated trips for the performing arts theatre are assigned through the study intersections by applying the trip distribution pattern to the trip generation resulting in the project generated volumes as shown in Figure 3. Adding these volumes to the 'no project' volumes yields the existing plus project volumes, which are also shown in Figure 4.

Table 1: Hourly Vehicle Trip Generation for the MACC - Performing Arts Theater

Hour Starting	Full Time Employees		Performers/ Performance Staff		Attendees		Service Vehicles		Total Vehicles		
	In	Out	In	Out	In	Out	In	Out	In	Out	Total
Saturday											
8:00 AM	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	4	0	0	0	0	0	0	0	4	0	4
10:00 AM	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	1	1	1	1	2
12:00 PM	0	2	0	0	0	0	0	0	0	2	2
1:00 PM	2	0	0	0	0	0	0	0	2	0	2
2:00 PM	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	6	0	0	0	1	1	7	1	8
4:00 PM	2	0	0	0	0	0	0	0	2	0	2
5:00 PM	0	4	4	3	0	0	0	0	4	7	11
6:00 PM	0	0	3	0	92	0	0	0	95	0	95
7:00 PM	0	0	0	0	2	0	0	0	2	0	2
8:00 PM	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	2	0	4	0	94	0	0	0	100	100
10:00 PM	0	0	0	6	0	0	0	0	0	0	6
Total	8	8	13	13	94	94	2	2	117	117	234
Peak Hour is Shaded											
Source: LSC Transportation Consultants, Inc.											

Table 2: Hourly Vehicle Trip Generation for the MACC - Outdoor Amphitheater

Hour Starting	Full Time Employees		Performers/ Performance Staff		Attendees		Service Vehicles		Total Vehicles		
	In	Out	In	Out	In	Out	In	Out	In	Out	Total
Saturday											
8:00 AM	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	4	0	0	0	0	0	0	0	4	0	4
10:00 AM	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	1	1	1	1	2
12:00 PM	0	1	0	0	0	0	0	0	0	1	1
1:00 PM	1	0	0	0	0	0	0	0	1	0	1
2:00 PM	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	6	0	0	0	1	1	7	1	8
4:00 PM	2	0	0	0	0	0	0	0	2	0	2
5:00 PM	0	4	4	3	0	0	0	0	4	7	11
6:00 PM	0	0	3	0	118	0	0	0	121	0	121
7:00 PM	0	0	0	0	15	0	0	0	15	0	15
8:00 PM	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	1	0	4	0	133	0	0	0	138	138
10:00 PM	0	1	0	6	0	0	0	0	0	7	7
Total	7	7	13	13	133	133	2	2	155	155	310
Peak Hour is Shaded											
Source: LSC Transportation Consultants, Inc.											

Table 3: Mammoth Arts and Cultural Center - Trip Distribution

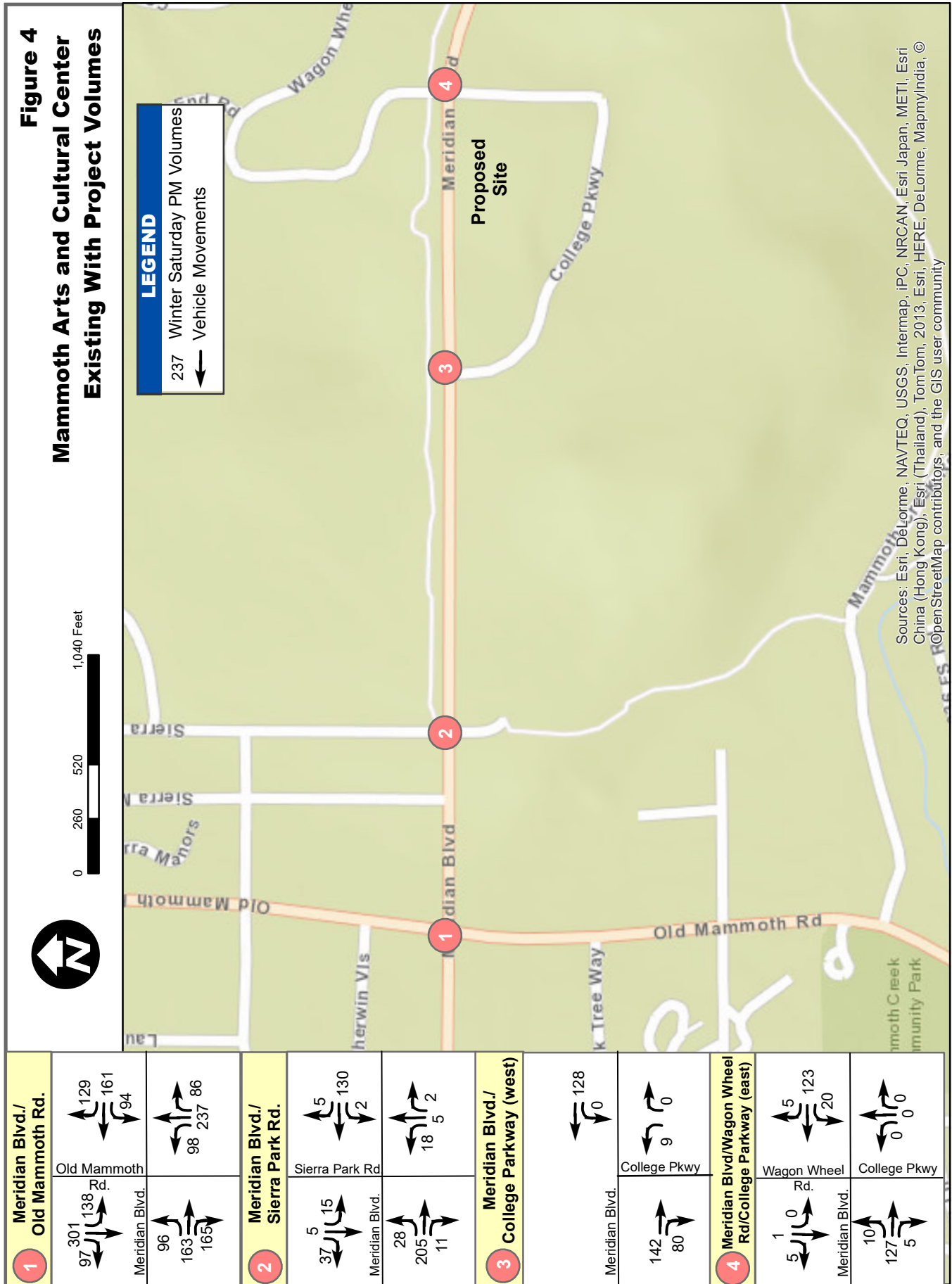
Origin/Destination	Distribution
Old Mammoth Road north of Meridian Blvd	25%
Meridian Blvd west of Old Mammoth Road	23%
Old Mammoth Road south of Meridian Blvd	20%
Meridian between Old Mammoth Road and Sierra Park Road	5%
Meridian Blvd east of Wagon Wheel	20%
Wagon Wheel	2%
Sierra Park Road North of Meridian Blvd	5%
TOTAL	100%

Source: LSC Transportation Consultants, Inc.

Figure 3



Figure 4
Mammoth Arts and Cultural Center
Existing With Project Volumes



Section 4

Future Cumulative Conditions

The potential transportation impacts of the project under future cumulative year conditions are evaluated. The first step in evaluating future cumulative traffic impact is to estimate the background traffic volumes without the project. Next, the project generated volumes are added to the future traffic volumes without the project to estimate the future Cumulative traffic volumes with the project. The future cumulative traffic volumes estimated in this chapter will be used to calculate future cumulative intersection and roadway LOS with the project in the following chapter of this report.

Methodology

The future cumulative setting associated with the traffic analysis is based on the Town of Mammoth Lakes Travel Demand Model¹, which uses the TransCAD 5.0 software application to provide forecasts of traffic conditions throughout the Town. The TransCAD program is widely used throughout the country to prepare city-wide and regional traffic forecasts. It is a “gravity model”, in that it forecasts traffic between various areas of Mammoth Lakes in a fashion similar to Sir Isaac Newton’s formula for the gravitational force between planets. Just like gravitational force is directly proportionate to the mass of two planets and inversely proportionate to the distance between the two planets, the TransCAD model forecasts the number of trips based directly on the land use quantities in each area and inversely on the travel time/distance between areas. In addition, the TransCAD model uses a “logit model” function to allocate individual passenger-trips between the transit and auto modes, based upon the relative ease of travel between specific origins and destinations by each mode. The model then iteratively balances trip productions and attractions and assigns vehicle trips to individual roadway and turning movements to result in a balanced forecast of all vehicle-trips (and transit passenger-trips) throughout the Mammoth Lakes roadway network.

The TransCAD model reflects full buildout of the Town’s General Plan as defined in the Mobility Element EIR process. The resulting preferred scenario was ‘Scenario 6: Future with New Floor Area Ratio and New Mobility Element Roadways and Transit Service’.

Future Cumulative Traffic Volumes

The future Saturday peak-hour traffic volumes without the project are provided in the Mobility Element EIR, except for the intersections of Meridian Boulevard/College Parkway (west) and Meridian Boulevard/College Parkway (east)/Wagon Wheel Road (west). Traffic volumes through these intersections are estimated based on neighboring intersections and model volumes. Note the project is located in TAZ 114 in the Mammoth Model and no growth is assumed in the TAZ.

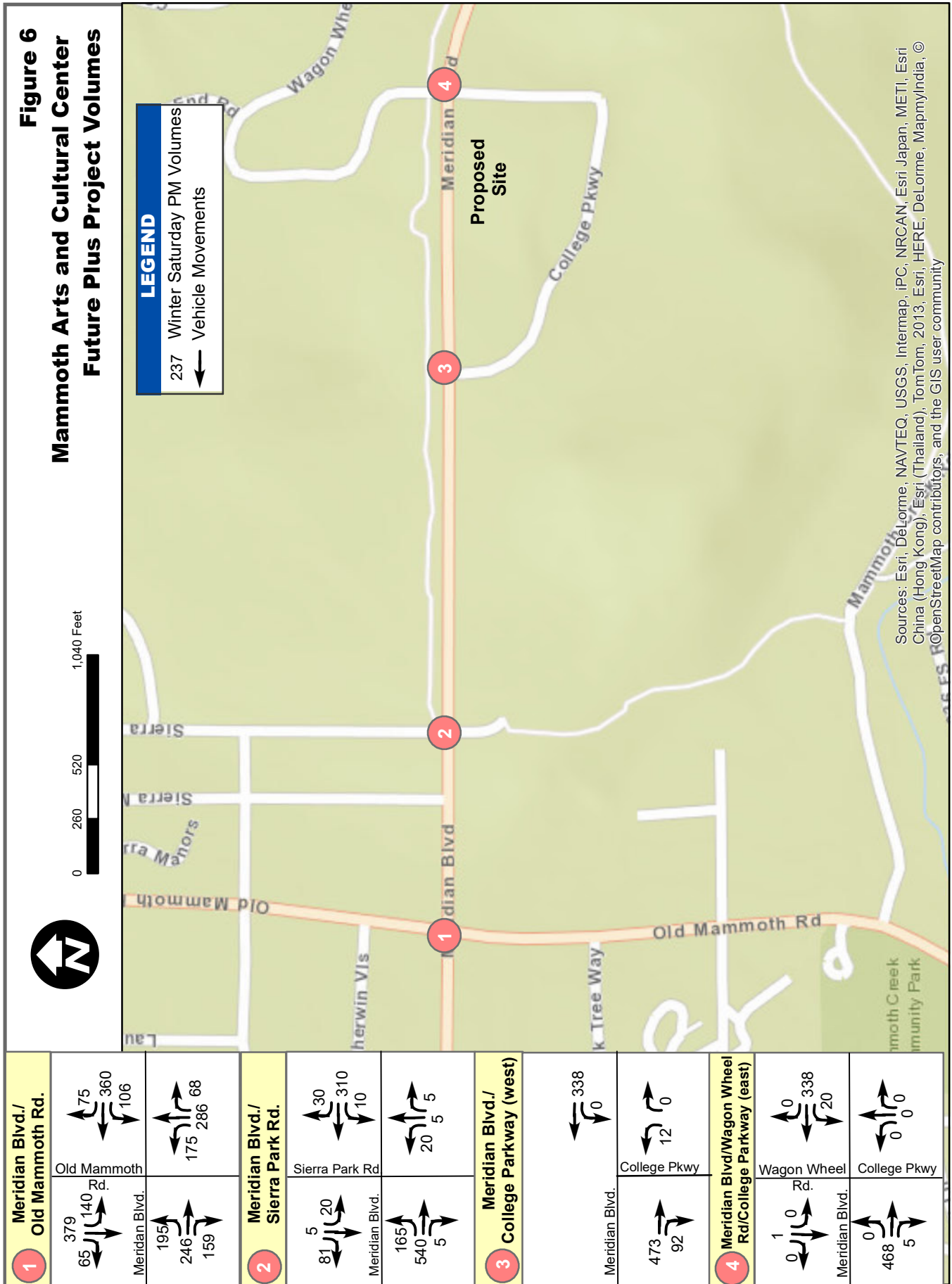
¹ Extensive background information regarding the model can be found in the *Town of Mammoth Lakes Travel Model* document, prepared by LSC in February 2011.

Based on discussions with Town of Mammoth Lakes staff there were three additional projects not included in the model that should be accounted for including the Mammoth Civic Plaza, the Mammoth Multi-Use Facility and an additional 87 rooms in the North Village. Volumes from these projects were added to the study intersections. The resulting future no project volumes are shown in Figure 5. Adding the ‘project generated’ traffic volumes to the future no project volumes yields the future plus project peak-hour volumes illustrated in Figure 6.

Figure 5
Mammoth Arts and Cultural Center
Future No Project Volumes



Figure 6
Mammoth Arts and Cultural Center
Future Plus Project Volumes



Section 5

Level of Service Analysis

The concept of Level of Service is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A Level of Service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Six levels of service are defined for each type of roadway facility. They are given letter designations, from A to F, with Level of Service A representing the best operating conditions and Level of Service F the worst. Detailed LOS descriptions are provided in Appendix A.

Level of Service (LOS) is evaluated at the study intersections, as well as roadway capacity in the study area. First, the applicable intersection LOS standards are described. Next, the LOS methodology is discussed, and the intersection LOS and roadway capacity is evaluated.

LEVEL OF SERVICE STANDARDS

The *Town of Mammoth Lakes General Plan Transportation Element*, adopted in 2001, currently contains the following Policy:

Policy 1.7: Establish and maintain a Level of Service D or better on a typical winter Saturday peak hour for signalized intersections and for primary through movements for unsignalized intersections along arterial and collector roads. This standard is expressly not applied to absolute peak conditions, as it would result in construction of roadway improvements that are warranted only a limited number of days per year and that would unduly impact pedestrian and visual conditions.

Therefore, the following LOS thresholds were applied in the General Plan traffic analysis:

- **For Signalized Intersections:** Total intersection LOS D or better must be maintained. Therefore, if a signalized intersection is found to operate at a total intersection LOS E or F, mitigation is required. It is assumed that this same threshold applies to roundabouts.
- **For Unsignalized Intersections:** In order to avoid the identification of a LOS failure for intersections that result in only a few vehicles experiencing a delay greater than 50 seconds (such as at a driveway serving a few homes that accesses onto a busy street), a LOS deficiency is *not* identified for all intersections with a worst approach LOS of LOS E or F. Instead, a LOS deficiency is assumed to occur at an unsignalized intersection only if an individual minor street movement operates at LOS E or F and total minor approach delay exceeds four vehicle hours for a single lane approach and five vehicle hours for a multi-lane approach. In other words, a deficiency is found to occur if the average number of vehicles queued over the peak-hour exceeds four at a single-lane approach, or exceeds five at a multi-lane approach. Traffic operations at the study intersections were assessed in terms of Level of Service (LOS) and delay.

These thresholds are applied in this analysis.

LEVEL OF SERVICE ANALYSIS METHODOLOGY

Intersection LOS was evaluated using Synchro software (Version 10, Trafficware) based on the *Highway Capacity Manual 6th Edition* methodologies at all study intersections.

For signalized intersections, LOS is primarily measured in terms of average delay per vehicle entering the intersection. LOS at unsignalized intersections is quantified in terms of delay per vehicle for each movement.

LEVEL OF SERVICE ANALYSIS

Intersection LOS was evaluated at all study intersections for all scenarios, and the results are summarized in Table 4. Appendix A presents the actual output from each of the LOS calculations for the study intersections.

Table 4: Mammoth Arts and Cultural Center - Intersection Level of Service									
		<u>Existing No Project</u>		<u>Existing Plus Project</u>		<u>Future No Project</u>		<u>Future Plus Project</u>	
Intersection	Control	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Meridian Blvd. Old Mammoth Road	Signal	C	28.2	C	28.3	D	37.9	D	38.5
Meridian Blvd. Sierra Park Road	AWSC	A	8.6	A	9.0	C	18.4	C	21.2
Meridian Blvd. College Parkway - West	TWSC	B	10.2	B	10.6	C	16.5	C	17.2
Meridian Blvd. College Parkway (east) / Wagon Wheel Rd (west)	TWSC	A	9.0	A	9.4	A	8.4	C	18.2
TWSC = Two Way Stop Controlled AWSC = All Way Stop Controlled Note: Reported delay is worst movement for TWSC and AWSC intersections, or total intersection for signalized. Source: LSC Transportation Consultants, Inc.									

Existing Conditions

Study intersections were evaluated to determine existing operational conditions during the typical Saturday winter PM peak hour. Using the traffic volumes presented as part of this study, it is possible to evaluate the LOS provided during this period at the intersections serving the study area. As Table 4 indicates, the LOS at all the study intersections are within the Town's Level of Service standards.

Future Buildout Conditions

As Table 4 indicates, intersection LOS standards are not exceeded at any of the study intersections without or with the project.

ROADWAY CAPACITY

First, the methodology for estimating roadway capacity is described. Next, the roadway capacity analysis for all study scenarios is presented.

Roadway Capacity Methodology

The capacity of the roadways within Mammoth Lakes was estimated as follows:

1. A base saturation flow rate of 1,600 vehicles per hour per direction was assumed. This figure is slightly lower than is typically observed in urban areas, representing the reduction in effective capacity that results from both visitor drivers that are unfamiliar with the area, as well as the impacts of winter driving conditions.
2. According to Chapter 10 (Urban Street Concepts) of the *Highway Capacity Manual*, the default directional lane split for roadways with two lanes per direction is 52.5 percent in one lane and 47.5 percent in the other. Therefore, as no recent count data is available to determine the actual lane split, for roadways with two lanes in each direction, these assumptions are applied.
3. Reductions to roadway capacity were made, as required on individual segments, to account for the presence of pedestrian crossings, on-street parking maneuvers, vehicles searching for parking spaces, and conflicting driveway turning movements.
4. The resulting roadway capacities are shown in Table 5. Please note, however, that the roadway capacities applied in this study are for planning purposes only and are only based upon estimated effects of pedestrians, parking maneuvers, and driveway turning-movement conflicts.

It should also be noted that, consistent with standard analysis procedures elsewhere, level of service and capacity were not adjusted to account for snow conditions. The occurrence of stormy/snowy weather conditions and snow on the roadways occurs over a relatively small proportion of the winter and vehicle traffic generally decreases significantly in inclement weather conditions. Furthermore, it would be speculative to try to determine the impact to roadway capacity resulting from stormy conditions, as conditions are unique to each storm, as is driver behavior. This approach is consistent with other traffic analyses and travel demand models that LSC has prepared in similar areas with high annual snowfall.

Roadway Capacity Analysis

The roadway capacity analysis for each scenario is presented in Table 5. As shown, all roadway segments currently operate well within the estimated capacity. All segments are expected to continue to operate well below capacity with implementation of the proposed project. Therefore, no roadway capacity concerns are identified.

Table 5: Mammoth Arts and Cultural Center - Roadway Capacity												
Street Name	between	and	Direction	Capacity (vehicles per hour)	Existing No Project		Existing Plus Project		Future No Project		Future Plus Project	
					Peak Hour Volume	V/C	Peak Hour Volume	V/C	Peak Hour Volume	V/C	Peak Hour Volume	V/C
Meridian Blvd	West of Old Mammoth		Eastbound	2,600	402	0.15	424	0.16	578	0.22	600	0.23
			Westbound	1,600	356	0.22	356	0.22	600	0.38	600	0.38
	Old Mammoth	Sierra Park	Eastbound	2,600	322	0.12	387	0.15	640	0.25	710	0.27
			Westbound	2,600	384	0.15	384	0.15	541	0.21	541	0.21
	Sierra Park	College Parkway (west)	Eastbound	1,600	147	0.09	222	0.14	490	0.31	565	0.35
			Westbound	1,600	137	0.09	137	0.09	350	0.22	350	0.22
Old Mammoth Road	College Parkway (west)	Wagon Wheel Road (west)	Eastbound	1,600	137	0.09	142	0.09	468	0.29	473	0.30
			Westbound	1,600	128	0.08	128	0.08	338	0.21	338	0.21
	East of Wagon Wheel (west)		Westbound	1,600	127	0.08	127	0.08	468	0.29	468	0.29
			Eastbound	1,600	129	0.08	148	0.09	339	0.21	358	0.22
	North of Meridian		Southbound	1,600	512	0.32	536	0.34	560	0.35	584	0.37
			Northbound	1,600	462	0.29	462	0.29	556	0.35	556	0.35
Sierra Park Road	South of Meridian		Southbound	1,600	560	0.35	560	0.35	644	0.40	644	0.40
			Northbound	1,600	402	0.25	421	0.26	510	0.32	529	0.33
	North of Meridian		Southbound	1,300	52	0.04	57	0.04	101	0.08	106	0.08
			Northbound	1,300	38	0.03	38	0.03	200	0.15	200	0.15
Note: V/C = volume -to- capacity ratio. Source: LSC Transportation Consultants, Inc.												

Section 6

Transportation Impacts and Mitigation

The following potential areas of transportation impacts are considered in this section:

- Intersection Level of Service Impacts
- Intersection Traffic Queuing
- Need for New or Expanded Turn Lanes
- Roadway Capacity
- Vehicle Miles Traveled
- Construction Traffic Impacts

INTERSECTION LEVEL OF SERVICE

All study intersections currently operate at an acceptable LOS under all existing year scenarios, with or without the performing arts theatre. Under future cumulative conditions without and with the project, all intersections will continue to operate at acceptable LOS.

INTERSECTION TRAFFIC QUEUEING

The 95th-percentile traffic queue lengths were reviewed at the study intersections, in order to identify locations where the queues could potentially interfere with operations at adjacent driveways or intersections. No queueing issues were identified at any study intersection under existing or future scenarios with or without project.

NEED FOR NEW OR EXPANDED TURN LANES

New turn lanes may be warranted to enhance safety by separating vehicles turning into the site from those passing by the site. Using the National Cooperative Highway Research Program (NCHRP) 457 Guidelines, the need for new turn lanes into College Parkway east and west were evaluated. Based on the proposed volumes with the project, no new turn lanes are warranted under existing or future conditions.

ROADWAY CAPACITY

All roadways in the study area have reserve capacity under all scenarios. Therefore, no mitigation is necessary from a roadway capacity standpoint.

VEHICLE MILES TRAVELED

The Vehicle Miles Traveled (VMT) impact of the project is assessed by multiplying the average trip length for each origin/destination zone by the number of project-generated trips. As shown in Table 6, the project is estimated to generate an increase of approximately 315 VMT within the Town over the course of a winter Saturday. The Town's VMT threshold based on the 2011 TransCAD model is 179,708 total VMT over the course of a busy winter Saturday. In

comparison with the Town's threshold, the project would generate a minimal increase in VMT on a Saturday.

Table 6: Mammoth Arts and Cultural Center - Vehicle Miles Traveled (VMT)

Origin/Destination	Average Distance (miles)	Percent of Trips to Area	New Trips (daily)	Vehicle Miles Traveled (VMT)
Old Mammoth Road north of Meridian Blvd	2.0	25%	59	117
Meridian Blvd west of Old Mammoth Road	1.3	23%	54	70
Old Mammoth Road south of Meridian Blvd	1.5	20%	46	70
Meridian between Old Mammoth Rd and Sierra Park Rc	0.6	5%	12	7
Meridian Blvd east of Wagon Wheel	0.9	20%	46	42
Wagon Wheel	0.3	2%	5	1
Sierra Park Road North of Meridian Blvd	0.7	5%	12	8
Projects Impact		100%	234	315

Source: LSC Transportation Consultants, Inc.

CONSTRUCTION TRAFFIC IMPACTS

Construction of the project would result in temporary construction traffic to/from the site. Substantial truck hauling trips are not anticipated, assuming the proposed structure would not have subterranean levels. The study roadways have sufficient reserve capacity to accommodate the construction traffic. Consequently, the construction traffic impacts associated with the project are expected to be less than significant.

Appendix A

HCM 6th Signalized Intersection Summary

1: Old Mammoth Rd & Meridian Blvd

08/08/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	141	165	94	161	129	98	237	67	114	301	97
Future Volume (veh/h)	96	141	165	94	161	129	98	237	67	114	301	97
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	145	170	97	166	133	101	244	69	118	310	100
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	225	332	296	126	236	200	132	794	673	152	815	691
Arrive On Green	0.13	0.19	0.19	0.07	0.13	0.13	0.07	0.42	0.42	0.09	0.44	0.44
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	99	145	170	97	166	133	101	244	69	118	310	100
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.1	5.7	7.7	4.2	6.7	6.3	4.4	6.8	2.1	5.1	8.9	3.0
Cycle Q Clear(g_c), s	4.1	5.7	7.7	4.2	6.7	6.3	4.4	6.8	2.1	5.1	8.9	3.0
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	225	332	296	126	236	200	132	794	673	152	815	691
V/C Ratio(X)	0.44	0.44	0.57	0.77	0.70	0.66	0.77	0.31	0.10	0.78	0.38	0.14
Avail Cap(c_a), veh/h	317	429	382	326	451	382	313	794	673	358	815	691
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	32.0	28.5	29.3	36.1	33.1	33.0	36.0	15.1	13.7	35.5	15.1	13.4
Incr Delay (d2), s/veh	1.3	0.9	1.7	9.5	3.8	3.7	9.0	1.0	0.3	8.2	1.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.4	2.9	2.1	3.1	2.5	2.2	3.0	0.7	2.5	3.9	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.3	29.4	31.0	45.6	36.9	36.7	44.9	16.1	14.0	43.6	16.4	13.9
LnGrp LOS	C	C	C	D	D	D	D	B	B	D	B	B
Approach Vol, veh/h		414			396			414			528	
Approach Delay, s/veh		31.0			39.0			22.8			22.0	
Approach LOS		C			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	39.4	10.1	19.7	10.9	38.5	14.9	14.9				
Change Period (Y+Rc), s	4.1	4.9	4.5	4.9	4.1	4.9	4.9	4.9				
Max Green Setting (Gmax), s	13.9	34.5	14.5	19.1	15.9	32.5	14.1	19.1				
Max Q Clear Time (g_c+I1), s	6.4	10.9	6.2	9.7	7.1	8.8	6.1	8.7				
Green Ext Time (p_c), s	0.2	2.3	0.1	1.2	0.2	1.7	0.1	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			28.2									
HCM 6th LOS			C									

Lanes, Volumes, Timings
1: Old Mammoth Rd & Meridian Blvd

08/14/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	141	165	94	161	129	98	237	67	114	301	97
Future Volume (vph)	96	141	165	94	161	129	98	237	67	114	301	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	215		0	160		0	175		175	230		170
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		489			773			245			393	
Travel Time (s)		8.3			13.2			6.7			10.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	99	315	0	97	166	133	101	244	69	118	310	100
v/c Ratio	0.40	0.45		0.45	0.54	0.36	0.47	0.31	0.09	0.50	0.38	0.13
Control Delay	43.0	18.1		44.9	42.2	9.6	45.5	22.3	1.3	44.9	22.4	3.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	18.1		44.9	42.2	9.6	45.5	22.3	1.3	44.9	22.4	3.8
Queue Length 50th (ft)	52	37		50	86	0	52	92	0	61	120	0
Queue Length 95th (ft)	110	82		108	161	49	112	191	8	125	236	26
Internal Link Dist (ft)		409			693			165			313	
Turn Bay Length (ft)	215			160			175		175	230		170
Base Capacity (vph)	312	908		321	446	480	308	788	737	353	806	751
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.35		0.30	0.37	0.28	0.33	0.31	0.09	0.33	0.38	0.13
Intersection Summary												
Area Type:	Other											

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Vol, veh/h	28	135	11	2	130	5	18	5	2	10	5	37
Future Vol, veh/h	28	135	11	2	130	5	18	5	2	10	5	37
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	150	12	2	144	6	20	6	2	11	6	41
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	8.4	8.1	8.1	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	72%	29%	0%	3%	0%	19%
Vol Thru, %	20%	71%	86%	97%	93%	10%
Vol Right, %	8%	0%	14%	0%	7%	71%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	96	79	67	70	52
LT Vol	18	28	0	2	0	10
Through Vol	5	68	68	65	65	5
RT Vol	2	0	11	0	5	37
Lane Flow Rate	28	106	87	74	78	58
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.038	0.148	0.116	0.102	0.105	0.07
Departure Headway (Hd)	4.9	5.024	4.779	4.913	4.848	4.381
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	732	718	754	731	741	819
Service Time	2.924	2.724	2.479	2.63	2.565	2.402
HCM Lane V/C Ratio	0.038	0.148	0.115	0.101	0.105	0.071
HCM Control Delay	8.1	8.6	8.1	8.2	8.1	7.7
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.5	0.4	0.3	0.4	0.2

HCM 6th TWSC
3: College Pkwy & Meridian Blvd

08/15/2018

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↱	↱	↱	↱
Traffic Vol, veh/h	137	10	0	128	9	0
Future Vol, veh/h	137	10	0	128	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	350	-	125	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	149	11	0	139	10	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	160	0	294	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	139	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1419	-	697	891
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	888	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1419	-	697	891
Mov Cap-2 Maneuver	-	-	-	-	697	-
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	888	-
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)	697	-	-	-	1419	-
HCM Lane V/C Ratio	0.014	-	-	-	-	-
HCM Control Delay (s)	10.2	0	-	-	0	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

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	10	127	0	1	123	5	0	0	0	0	0	5
Future Vol, veh/h	10	127	0	1	123	5	0	0	0	0	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	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	138	0	1	134	5	0	0	0	0	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	139	0	0	138	0	0	301	301	138	296	296	134
Stage 1	-	-	-	-	-	-	160	160	-	136	136	-
Stage 2	-	-	-	-	-	-	141	141	-	160	160	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1445	-	-	1446	-	-	651	612	910	656	616	915
Stage 1	-	-	-	-	-	-	842	766	-	867	784	-
Stage 2	-	-	-	-	-	-	862	780	-	842	766	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1445	-	-	1446	-	-	643	606	910	651	610	915
Mov Cap-2 Maneuver	-	-	-	-	-	-	643	606	-	651	610	-
Stage 1	-	-	-	-	-	-	835	760	-	860	783	-
Stage 2	-	-	-	-	-	-	856	779	-	836	760	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.1			0			9		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	1445	-	-	1446	-	-	915				
HCM Lane V/C Ratio	-	0.008	-	-	0.001	-	-	0.006				
HCM Control Delay (s)	0	7.5	-	-	7.5	0	-	9				
HCM Lane LOS	A	A	-	-	A	A	-	A				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0				

HCM 6th Signalized Intersection Summary

1: Old Mammoth Rd & Meridian Blvd

08/08/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	163	165	94	161	129	98	237	86	138	301	97
Future Volume (veh/h)	96	163	165	94	161	129	98	237	86	138	301	97
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	168	170	97	166	133	101	244	89	142	310	100
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	225	332	296	126	236	200	132	764	647	181	815	691
Arrive On Green	0.13	0.19	0.19	0.07	0.13	0.13	0.07	0.41	0.41	0.10	0.44	0.44
Sat Flow, veh/h	1781	1777	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	99	168	170	97	166	133	101	244	89	142	310	100
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.1	6.7	7.7	4.2	6.7	6.3	4.4	7.0	2.8	6.2	8.9	3.0
Cycle Q Clear(g_c), s	4.1	6.7	7.7	4.2	6.7	6.3	4.4	7.0	2.8	6.2	8.9	3.0
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	225	332	296	126	236	200	132	764	647	181	815	691
V/C Ratio(X)	0.44	0.51	0.57	0.77	0.70	0.66	0.77	0.32	0.14	0.79	0.38	0.14
Avail Cap(c_a), veh/h	317	429	382	326	451	382	313	764	647	403	815	691
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	32.0	28.9	29.3	36.1	33.1	33.0	36.0	15.9	14.7	34.7	15.1	13.4
Incr Delay (d2), s/veh	1.3	1.2	1.7	9.5	3.8	3.7	9.0	1.1	0.4	7.3	1.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.8	2.9	2.1	3.1	2.5	2.2	3.1	1.0	3.0	3.9	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.3	30.1	31.0	45.6	36.9	36.7	44.9	17.0	15.1	42.1	16.4	13.9
LnGrp LOS	C	C	C	D	D	D	D	B	B	D	B	B
Approach Vol, veh/h		437			396			434			552	
Approach Delay, s/veh		31.2			39.0			23.1			22.6	
Approach LOS		C			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	39.4	10.1	19.7	12.1	37.2	14.9	14.9				
Change Period (Y+Rc), s	4.1	4.9	4.5	4.9	4.1	4.9	4.9	4.9				
Max Green Setting (Gmax), s	13.9	34.5	14.5	19.1	17.9	30.5	14.1	19.1				
Max Q Clear Time (g_c+I1), s	6.4	10.9	6.2	9.7	8.2	9.0	6.1	8.7				
Green Ext Time (p_c), s	0.2	2.3	0.1	1.3	0.2	1.7	0.1	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			28.3									
HCM 6th LOS			C									

Lanes, Volumes, Timings

1: Old Mammoth Rd & Meridian Blvd

08/14/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	163	165	94	161	129	98	237	86	138	301	97
Future Volume (vph)	96	163	165	94	161	129	98	237	86	138	301	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	215		0	160		0	175		175	230		170
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		489			773			245			393	
Travel Time (s)		8.3			13.2			6.7			10.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	99	338	0	97	166	133	101	244	89	142	310	100
v/c Ratio	0.42	0.49		0.46	0.56	0.36	0.48	0.34	0.13	0.56	0.38	0.13
Control Delay	43.4	19.4		45.4	42.8	9.7	45.9	23.9	3.0	44.9	22.2	3.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.4	19.4		45.4	42.8	9.7	45.9	23.9	3.0	44.9	22.2	3.7
Queue Length 50th (ft)	52	43		50	86	0	52	94	0	73	120	0
Queue Length 95th (ft)	110	91		108	161	49	112	197	21	143	236	26
Internal Link Dist (ft)		409			693			165			313	
Turn Bay Length (ft)	215			160			175		175	230		170
Base Capacity (vph)	302	888		310	430	468	298	713	679	383	822	764
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.38		0.31	0.39	0.28	0.34	0.34	0.13	0.37	0.38	0.13
Intersection Summary												
Area Type:	Other											

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Vol, veh/h	28	205	11	2	130	5	18	5	2	15	5	37
Future Vol, veh/h	28	205	11	2	130	5	18	5	2	15	5	37
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	228	12	2	144	6	20	6	2	17	6	41
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	8.8	8.3	8.3	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	72%	21%	0%	3%	0%	26%
Vol Thru, %	20%	79%	90%	97%	93%	9%
Vol Right, %	8%	0%	10%	0%	7%	65%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	131	114	67	70	57
LT Vol	18	28	0	2	0	15
Through Vol	5	103	103	65	65	5
RT Vol	2	0	11	0	5	37
Lane Flow Rate	28	145	126	74	78	63
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.039	0.201	0.169	0.103	0.107	0.081
Departure Headway (Hd)	5.077	4.991	4.815	5.005	4.94	4.598
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	706	721	747	717	726	780
Service Time	3.105	2.712	2.536	2.728	2.663	2.621
HCM Lane V/C Ratio	0.04	0.201	0.169	0.103	0.107	0.081
HCM Control Delay	8.3	9	8.5	8.3	8.3	8
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.7	0.6	0.3	0.4	0.3

HCM 6th TWSC
3: College Pkwy & Meridian Blvd

08/15/2018

Intersection

Int Delay, s/veh 0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	142	80	0	128	12	0
Future Vol, veh/h	142	80	0	128	12	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	-	-	350	-	125	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	154	87	0	139	13	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	241
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1326
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1326
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	658	-	-	-	1326	-
HCM Lane V/C Ratio	0.02	-	-	-	-	-
HCM Control Delay (s)	10.6	0	-	-	0	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0	-

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	127	0	20	123	5	0	0	0	0	1	5
Future Vol, veh/h	10	127	0	20	123	5	0	0	0	0	1	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	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	138	0	22	134	5	0	0	0	0	1	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	139	0	0	138	0	0	344	343	138	338	338	134
Stage 1	-	-	-	-	-	-	160	160	-	178	178	-
Stage 2	-	-	-	-	-	-	184	183	-	160	160	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1445	-	-	1446	-	-	610	579	910	616	583	915
Stage 1	-	-	-	-	-	-	842	766	-	824	752	-
Stage 2	-	-	-	-	-	-	818	748	-	842	766	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1445	-	-	1446	-	-	595	565	910	605	569	915
Mov Cap-2 Maneuver	-	-	-	-	-	-	595	565	-	605	569	-
Stage 1	-	-	-	-	-	-	835	760	-	817	740	-
Stage 2	-	-	-	-	-	-	799	736	-	836	760	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			1			0			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	1445	-	-	1446	-	-	831				
HCM Lane V/C Ratio	-	0.008	-	-	0.015	-	-	0.008				
HCM Control Delay (s)	0	7.5	-	-	7.5	0	-	9.4				
HCM Lane LOS	A	A	-	-	A	A	-	A				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0				

HCM 6th Signalized Intersection Summary

1: Old Mammoth Rd & Meridian Blvd

08/14/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	224	159	106	360	75	175	286	49	116	379	65
Future Volume (veh/h)	195	224	159	106	360	75	175	286	49	116	379	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	205	236	167	112	379	79	184	301	52	122	399	68
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	243	592	402	142	433	367	221	627	531	154	557	472
Arrive On Green	0.14	0.29	0.29	0.08	0.23	0.23	0.12	0.34	0.34	0.09	0.30	0.30
Sat Flow, veh/h	1781	2024	1375	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	205	206	197	112	379	79	184	301	52	122	399	68
Grp Sat Flow(s),veh/h/ln	1781	1777	1623	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	10.0	8.3	8.7	5.5	17.5	3.6	9.0	11.4	2.0	6.0	17.0	2.8
Cycle Q Clear(g_c), s	10.0	8.3	8.7	5.5	17.5	3.6	9.0	11.4	2.0	6.0	17.0	2.8
Prop In Lane	1.00		0.85	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	243	520	475	142	433	367	221	627	531	154	557	472
V/C Ratio(X)	0.84	0.40	0.42	0.79	0.88	0.22	0.83	0.48	0.10	0.79	0.72	0.14
Avail Cap(c_a), veh/h	311	565	516	257	530	449	281	627	531	269	557	472
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	37.6	25.3	25.5	40.4	33.1	27.8	38.2	23.5	20.4	40.0	28.0	23.0
Incr Delay (d2), s/veh	15.1	0.5	0.6	9.2	13.2	0.3	15.4	2.6	0.4	8.7	7.7	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	5.2	3.4	3.3	2.7	9.1	1.3	4.9	5.4	0.8	3.0	8.7	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.8	25.8	26.0	49.5	46.3	28.1	53.7	26.2	20.8	48.8	35.7	23.7
LnGrp LOS	D	C	C	D	D	C	D	C	C	D	D	C
Approach Vol, veh/h		608			570			537			589	
Approach Delay, s/veh		35.0			44.4			35.1			37.0	
Approach LOS		C			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.2	31.5	11.6	31.0	11.8	34.8	17.1	25.6				
Change Period (Y+Rc), s	4.1	4.9	4.5	4.9	4.1	4.9	4.9	4.9				
Max Green Setting (Gmax), s	14.1	26.6	12.9	28.4	13.5	27.2	15.6	25.3				
Max Q Clear Time (g_c+I1), s	11.0	19.0	7.5	10.7	8.0	13.4	12.0	19.5				
Green Ext Time (p_c), s	0.2	1.7	0.1	2.1	0.1	1.7	0.2	1.2				
Intersection Summary												
HCM 6th Ctrl Delay				37.9								
HCM 6th LOS				D								

Lanes, Volumes, Timings

1: Old Mammoth Rd & Meridian Blvd

08/14/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	224	159	106	360	75	175	286	49	116	379	65
Future Volume (vph)	195	224	159	106	360	75	175	286	49	116	379	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	215		0	160		0	175		175	230		170
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		489			773			245			393	
Travel Time (s)		8.3			13.2			6.7			10.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	205	403	0	112	379	79	184	301	52	122	399	68
v/c Ratio	0.78	0.36		0.57	0.86	0.17	0.77	0.54	0.09	0.59	0.77	0.13
Control Delay	61.1	16.8		53.0	55.1	3.3	62.3	34.0	0.3	53.3	44.2	1.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	16.8		53.0	55.1	3.3	62.3	34.0	0.3	53.3	44.2	1.9
Queue Length 50th (ft)	127	60		69	228	0	115	164	0	75	239	0
Queue Length 95th (ft)	#232	103		123	#374	18	#217	257	0	132	#387	10
Internal Link Dist (ft)		409			693			165			313	
Turn Bay Length (ft)	215			160			175		175	230		170
Base Capacity (vph)	290	1140		240	496	505	262	558	554	251	521	525
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.35		0.47	0.76	0.16	0.70	0.54	0.09	0.49	0.77	0.13
Intersection Summary												
Area Type:	Other											
#	95th percentile volume exceeds capacity, queue may be longer.											
	Queue shown is maximum after two cycles.											

Intersection	
Intersection Delay, s/veh	13.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Traffic Vol, veh/h	165	470	5	10	310	30	20	5	5	15	5	81
Future Vol, veh/h	165	470	5	10	310	30	20	5	5	15	5	81
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	174	495	5	11	326	32	21	5	5	16	5	85
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	15.7	10.8	9.9	10
HCM LOS	C	B	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	67%	41%	0%	6%	0%	15%
Vol Thru, %	17%	59%	98%	94%	84%	5%
Vol Right, %	17%	0%	2%	0%	16%	80%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	400	240	165	185	101
LT Vol	20	165	0	10	0	15
Through Vol	5	235	235	155	155	5
RT Vol	5	0	5	0	30	81
Lane Flow Rate	32	421	253	174	195	106
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.057	0.657	0.378	0.278	0.304	0.17
Departure Headway (Hd)	6.453	5.615	5.393	5.772	5.627	5.761
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	555	648	672	624	639	623
Service Time	4.489	3.315	3.093	3.5	3.355	3.793
HCM Lane V/C Ratio	0.058	0.65	0.376	0.279	0.305	0.17
HCM Control Delay	9.9	18.4	11.3	10.7	10.8	10
HCM Lane LOS	A	C	B	B	B	A
HCM 95th-tile Q	0.2	4.9	1.8	1.1	1.3	0.6

HCM 6th TWSC
3: College Pkwy & Meridian Blvd

08/15/2018

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	468	22	0	338	12	0
Future Vol, veh/h	468	22	0	338	12	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	-	-	350	-	125	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	493	23	0	356	13	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	516	0	861	505
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	356	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1050	-	326	567
Stage 1	-	-	-	-	606	-
Stage 2	-	-	-	-	709	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1050	-	326	567
Mov Cap-2 Maneuver	-	-	-	-	326	-
Stage 1	-	-	-	-	606	-
Stage 2	-	-	-	-	709	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		16.5		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	326	-	-	-	1050	-
HCM Lane V/C Ratio	0.039	-	-	-	-	-
HCM Control Delay (s)	16.5	0	-	-	0	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0	-

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	468	0	1	338	0	0	0	0	0	0	0
Future Vol, veh/h	0	468	0	1	338	0	0	0	0	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	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	493	0	1	356	0	0	0	0	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	356	0	0	493	0	0	851	851	493	851	851	356
Stage 1	-	-	-	-	-	-	493	493	-	358	358	-
Stage 2	-	-	-	-	-	-	358	358	-	493	493	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1203	-	-	1071	-	-	280	297	576	280	297	688
Stage 1	-	-	-	-	-	-	558	547	-	660	628	-
Stage 2	-	-	-	-	-	-	660	628	-	558	547	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1203	-	-	1071	-	-	280	297	576	280	297	688
Mov Cap-2 Maneuver	-	-	-	-	-	-	280	297	-	280	297	-
Stage 1	-	-	-	-	-	-	558	547	-	660	627	-
Stage 2	-	-	-	-	-	-	659	627	-	558	547	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			0			0		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	1203	-	-	1071	-	-	-				
HCM Lane V/C Ratio	-	-	-	-	0.001	-	-	-				
HCM Control Delay (s)	0	0	-	-	8.4	0	-	0				
HCM Lane LOS	A	A	-	-	A	A	-	A				
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-				

HCM 6th Signalized Intersection Summary

1: Old Mammoth Rd & Meridian Blvd

08/14/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	246	159	106	360	75	175	286	68	140	379	65
Future Volume (veh/h)	195	246	159	106	360	75	175	286	68	140	379	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	205	259	167	112	379	79	184	301	72	147	399	68
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	243	614	382	142	432	366	221	602	510	181	560	474
Arrive On Green	0.14	0.29	0.29	0.08	0.23	0.23	0.12	0.32	0.32	0.10	0.30	0.30
Sat Flow, veh/h	1781	2102	1310	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	205	218	208	112	379	79	184	301	72	147	399	68
Grp Sat Flow(s),veh/h/ln	1781	1777	1635	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	10.1	8.9	9.3	5.5	17.6	3.6	9.1	11.7	2.9	7.3	17.1	2.8
Cycle Q Clear(g_c), s	10.1	8.9	9.3	5.5	17.6	3.6	9.1	11.7	2.9	7.3	17.1	2.8
Prop In Lane	1.00		0.80	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	243	519	477	142	432	366	221	602	510	181	560	474
V/C Ratio(X)	0.84	0.42	0.44	0.79	0.88	0.22	0.83	0.50	0.14	0.81	0.71	0.14
Avail Cap(c_a), veh/h	309	562	517	256	527	446	280	602	510	234	560	474
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	37.8	25.6	25.8	40.6	33.3	28.0	38.4	24.6	21.6	39.5	28.0	23.0
Incr Delay (d2), s/veh	15.4	0.5	0.6	9.2	13.4	0.3	15.7	3.0	0.6	15.4	7.5	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	5.3	3.6	3.5	2.7	9.1	1.3	4.9	5.6	1.1	3.9	8.7	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.2	26.2	26.4	49.8	46.7	28.2	54.1	27.6	22.2	54.9	35.6	23.7
LnGrp LOS	D	C	C	D	D	C	D	C	C	D	D	C
Approach Vol, veh/h		631			570			557			614	
Approach Delay, s/veh		35.0			44.8			35.6			38.9	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.2	31.8	11.7	31.1	13.2	33.8	17.2	25.6				
Change Period (Y+Rc), s	4.1	4.9	4.5	4.9	4.1	4.9	4.9	4.9				
Max Green Setting (Gmax), s	14.1	26.6	12.9	28.4	11.8	28.9	15.6	25.3				
Max Q Clear Time (g_c+I1), s	11.1	19.1	7.5	11.3	9.3	13.7	12.1	19.6				
Green Ext Time (p_c), s	0.2	1.7	0.1	2.2	0.1	1.8	0.2	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			38.5									
HCM 6th LOS			D									

Lanes, Volumes, Timings
1: Old Mammoth Rd & Meridian Blvd

08/14/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	246	159	106	360	75	175	286	68	140	379	65
Future Volume (vph)	195	246	159	106	360	75	175	286	68	140	379	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	215		0	160		0	175		175	230		170
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.941				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3330	0	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3330	0	1770	1863	1583	1770	1863	1583	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		146				114			114			114
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		489			773			245			393	
Travel Time (s)		8.3			13.2			6.7			10.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	205	259	167	112	379	79	184	301	72	147	399	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	205	426	0	112	379	79	184	301	72	147	399	68
v/c Ratio	0.78	0.38		0.57	0.86	0.17	0.77	0.53	0.13	0.72	0.76	0.13
Control Delay	61.3	19.0		53.2	55.5	3.3	62.7	33.3	2.2	63.0	43.8	1.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.3	19.0		53.2	55.5	3.3	62.7	33.3	2.2	63.0	43.8	1.9
Queue Length 50th (ft)	127	72		69	228	0	115	163	0	92	239	0
Queue Length 95th (ft)	#232	118		123	#374	18	#217	251	12	#181	#387	10
Internal Link Dist (ft)		409			693			165			313	
Turn Bay Length (ft)	215			160			175		175	230		170
Base Capacity (vph)	289	1125		239	493	503	261	564	558	219	525	528
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.38		0.47	0.77	0.16	0.70	0.53	0.13	0.67	0.76	0.13

Intersection Summary

Area Type: Other

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th AWSC
2: Sierra Park Rd & Meridian Blvd

08/14/2018

Intersection	
Intersection Delay, s/veh	15
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Vol, veh/h	165	540	5	10	310	30	20	5	5	20	5	81
Future Vol, veh/h	165	540	5	10	310	30	20	5	5	20	5	81
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	174	568	5	11	326	32	21	5	5	21	5	85
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	17.8	11.1	10	10.2
HCM LOS	C	B	A	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	67%	38%	0%	6%	0%	19%
Vol Thru, %	17%	62%	98%	94%	84%	5%
Vol Right, %	17%	0%	2%	0%	16%	76%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	435	275	165	185	106
LT Vol	20	165	0	10	0	20
Through Vol	5	270	270	155	155	5
RT Vol	5	0	5	0	30	81
Lane Flow Rate	32	458	289	174	195	112
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.058	0.715	0.435	0.285	0.311	0.183
Departure Headway (Hd)	6.583	5.618	5.414	5.899	5.753	5.895
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	544	646	666	610	625	609
Service Time	4.622	3.341	3.137	3.63	3.485	3.927
HCM Lane V/C Ratio	0.059	0.709	0.434	0.285	0.312	0.184
HCM Control Delay	10	21.2	12.3	11	11.1	10.2
HCM Lane LOS	A	C	B	B	B	B
HCM 95th-tile Q	0.2	6	2.2	1.2	1.3	0.7

HCM 6th TWSC
3: College Pkwy & Meridian Blvd

08/15/2018

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	473	92	0	338	12	0
Future Vol, veh/h	473	92	0	338	12	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	-	-	350	-	125	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	498	97	0	356	13	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	595	0	903	547
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	356	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	981	-	308	537
Stage 1	-	-	-	-	580	-
Stage 2	-	-	-	-	709	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	981	-	308	537
Mov Cap-2 Maneuver	-	-	-	-	308	-
Stage 1	-	-	-	-	580	-
Stage 2	-	-	-	-	709	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		17.2		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	308	-	-	-	981	-
HCM Lane V/C Ratio	0.041	-	-	-	-	-
HCM Control Delay (s)	17.2	0	-	-	0	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	468	5	20	338	0	0	0	0	0	1	0
Future Vol, veh/h	0	468	5	20	338	0	0	0	0	0	1	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	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	200	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	493	5	21	356	0	0	0	0	0	1	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	356	0	0	498	0	0	895	894	496	894	896	356
Stage 1	-	-	-	-	-	-	496	496	-	398	398	-
Stage 2	-	-	-	-	-	-	399	398	-	496	498	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1203	-	-	1066	-	-	261	280	574	262	280	688
Stage 1	-	-	-	-	-	-	556	545	-	628	603	-
Stage 2	-	-	-	-	-	-	627	603	-	556	544	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1203	-	-	1066	-	-	255	273	574	257	273	688
Mov Cap-2 Maneuver	-	-	-	-	-	-	255	273	-	257	273	-
Stage 1	-	-	-	-	-	-	556	545	-	628	588	-
Stage 2	-	-	-	-	-	-	610	588	-	556	544	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.5			0			18.2		
HCM LOS							A			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	-	1203	-	-	1066	-	-	273				
HCM Lane V/C Ratio	-	-	-	-	0.02	-	-	0.004				
HCM Control Delay (s)	0	0	-	-	8.4	0	-	18.2				
HCM Lane LOS	A	A	-	-	A	A	-	C				
HCM 95th %tile Q(veh)	-	0	-	-	0.1	-	-	0				