



LSC TRANSPORTATION CONSULTANTS, INC.
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WMMI Variance of Use
Transportation Memorandum
(LSC #S214310)
May 5, 2021

Traffic Engineer's Statement

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.





Date

WMMI Variance of Use Transportation Memorandum

Prepared for:
Grant Dewey
Executive Director
Western Museum of Mining & Industry
225 North Gate Blvd.
Colorado Springs, CO 80921

MAY 5, 2021

LSC Transportation Consultants
Prepared by: Kirstin D. Ferrin, P.E.
Reviewed by: Jeffrey C. Hodsdon, P.E.

LSC #12345



CONTENTS

LAND USE AND ACCESS	1
EXISTING ROAD AND TRAFFIC CONDITIONS	2
Existing Traffic Volumes	3
Crash History	3
Pedestrian, Bicycle and Public Transit Access	3
TRIP GENERATION	3
TRIP DISTRIBUTION AND ASSIGNMENT	4
Trip Directional Distribution	4
Site-Generated Traffic	4
Short-Term Total Traffic Volumes	4
LEVEL OF SERVICE AND VEHICLE QUEUING ANALYSIS	4
CONCLUSIONS AND RECOMMENDATIONS	6
Trip Generation	6
Level of Service	6
Auxiliary Lanes	6
Enclosures:	7
Figures 1-4	
Traffic Count Reports	
Level of Service Reports	



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May 5, 2021

Grant Dewey
Executive Director
Western Museum of Mining & Industry
225 North Gate Blvd.
Colorado Springs, CO 80921

RE: WMMI Variance of Use
Transportation Memorandum
El Paso County, Colorado
LSC #S214310

Dear Mr. Dewey:

In response to your request, LSC Transportation Consultants, Inc. has prepared this Transportation Memorandum for the proposed variance of use for the existing Western Museum of Mining & Industry in El Paso County, Colorado. The site is located south of North Gate Boulevard between the I-25 northbound ramps and Struthers Road in El Paso County, Colorado (El Paso County parcel ID 6207200017).

LAND USE AND ACCESS

The existing Western Museum of Mining & Industry is located at 225 North Gate Boulevard. The museum has one full-movement access to North Gate Boulevard located 435 feet west of the North Gate Boulevard/Struthers Road intersection (centerline-to-centerline). The museum is currently open for visitors. The purpose of the variance is to also allow previous (or historic) operations as well as special events on the property. The report trip-generation and intersection/access analysis focuses on weekend special events.

Per information provided by the applicant, the museum intends to host medium-sized events on weekends and a few larger, all-day events on the weekends. The application also includes allowance for some small events in the evenings on weekdays.

Because the weekend events may be larger, this analysis focuses on the daily and peak-hour trip impacts of these weekend events. Some planned weekend events include:

- Celtic Festival – Large event
- Oktober Fest – Large event
- RRH Harvest Festival – Medium event
- Miners' Pumpkin Patch – Medium event
- Indie Music Fest – Medium event
- Pig Jig – Nephcare – Medium event
- Music Festivals – Medium event
- Demo Days (Super Saturday) – Small event

The museum provided the expected number visitors for a medium- and large-sized event. To be conservative, the high end of the range of visitors was used for analysis. It was assumed that a medium-sized event may draw up to 600 visitors throughout the day on Saturday, while a large event may draw up to 1,000 visitors.

To classify event sizes, small events would range from 1 to 50 vehicles, medium events between 51 and 250 vehicles, and large events between 251 and 500 vehicles.

Events will generally occur between the hours of 4:00 p.m. and 10:00 p.m. on Fridays, 11:00 a.m. to 10:00 p.m. on Saturdays, and 11:00 a.m. to 5:00 p.m. on Sundays. The Saturday peak hour of event traffic would be early evening from about 6:00 to 7:00 p.m. For events beginning on Friday evening, the event peak hour would likely occur after the peak hour of the adjacent roadways, with higher entering than exiting trips.

EXISTING ROAD AND TRAFFIC CONDITIONS

Figure 1 shows the streets adjacent to and in the vicinity of the site. In addition to **Interstate 25**, the adjacent streets serving the site are identified below followed by a brief description of each:

North Gate Boulevard is a four-lane urban principal arterial that runs east/west from the Air Force Academy to Highway 83. It is classified as a four-lane Urban Minor Arterial on the El Paso County *Major Transportation Corridors Plan* and the City of Colorado Springs *Intermodal Transportation Plan*. The posted speed limit is 40 miles per hour (mph) adjacent to the site.

Struthers Road is a four-lane, median-divided road that extends north from North Gate Boulevard to the intersection of Baptist Road and Jackson Creek Parkway. Struthers Road is classified as a four-lane Urban Minor Arterial on the El Paso County *Major Transportation Corridors Plan* and has a speed limit of 40 miles per hour (mph) at North Gate Boulevard.

Existing Traffic Volumes

Figure 2 shows the results of Saturday-evening traffic-volume counts conducted in April 2021 from 5:00 p.m. to 6:00 p.m. at the intersection of North Gate Boulevard/Struthers Road and the site access on North Gate Boulevard. The figure also shows existing lane geometries and traffic controls. Count data is attached.

Crash History

Three years of crash history was examined on North Gate Boulevard (2018-2020). No crashes were reported at the site access. There were sixteen reported crashes at the intersection of North Gate Boulevard/Struthers Road during the study period. Only one of these crashes resulted in injury, the remaining were property damage only. Of the 16 crashes, 7 were between an eastbound left-turning vehicle and a westbound through vehicle.

Pedestrian, Bicycle and Public Transit Access

There are no sidewalks on North Gate Boulevard adjacent to the site. There are no Mountain Metropolitan transit routes in the vicinity of the site.

TRIP GENERATION

Estimates of site-generated vehicle trips for proposed developments are typically made using the nationally published trip generation rates from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). However, this land use does not match a typical ITE Land Use category for use in estimating trip generation. Therefore, a project-specific, special-event trip-generation estimate, based on this operational information is included in this report.

It was assumed that, on average, there are 2.5 guests per vehicle. Hourly-traffic distributions for a Saturday event were provided, upon which LSC peak-hour trip calculations have been based. Table 1 provides the resulting maximum daily and peak-hour trip-generation estimates for medium- and large-sized events.

Table 1: Detailed Saturday-Trip Generation

Land Use	Visitors per Day	Vehicles per Day(1)	Trip Generation Rates (Trips per # of Veh/day)			Total Trips Generated		
			Daily Event	Event Peak Hour	Evening Peak Hour (2)	Event Daily	Event Evening Peak Hour	
			Description	Trips(1)	In	Out	Trips	In
Medium Event	600 Visitors	240	2.00	0.10	0.15	480	24	36
Large Event	1000 Visitors	400	2.00	0.10	0.15	800	40	60
Notes:								
(1) Assumes 2.5 guests/vehicle								
(2) Based on hourly tables provided by the site								
Source: LSC Transportation Consultants, Inc.								

As shown, a medium event is anticipated to result in 240 cars or 480 vehicle **trips** per day (vpd) on a Saturday with 24 inbound trips and 36 outbound trips during the peak hour (Saturday evening). A large event is anticipated to result in 400 cars or 800 vehicle trips per day (vpd) on a Saturday with 40 inbound trips and 60 outbound trips during the peak hour.

TRIP DISTRIBUTION AND ASSIGNMENT

Trip Directional Distribution

Estimation of the directional distribution of site-generated vehicle trips to the study-area roads and intersections is a necessary component in determining the site's traffic impacts. Figure 3 shows the directional distribution estimates for the proposed development. Estimates were based on the following factors: input from the museum, existing area development, the area roadway system, and the site's proposed land use.

Site-Generated Traffic

Site-generated (event-generated) traffic volumes at the study intersections (including the WMMI access to North Gate Boulevard) have been calculated by applying the directional-distribution percentages estimated by LSC (from Figure 3) to the trip-generation estimates (from Table 1). The resulting site-generated traffic is shown in Figure 3. Site-generated traffic volumes for both medium events and large events are provided.

Short-Term Total Traffic Volumes

Figure 4 shows the sum of the existing traffic volumes (from Figure 3) and site-generated Saturday peak-hour traffic volumes (shown in Figure 3). These volumes represent the projected short-term total traffic on Saturday evenings during which medium or large events are held. Laneage and intersection traffic control at the study area intersections are also shown in this figure.

LEVEL OF SERVICE AND VEHICLE QUEUING ANALYSIS

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection and is indicated on a scale from "A" to "F." LOS A is indicative of little congestion or delay. LOS F indicates a high level of congestion or delay. Table 2 shows the level of service delay ranges for signalized and unsignalized intersections.

Table 2: Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections	Unsignalized Intersections
	Average Control Delay (seconds per vehicle)	Average Control Delay (seconds per vehicle) ⁽¹⁾
A	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	50.1 sec or more
(1) For unsignalized intersections, if V/C ratio is greater than 1.0 the level of service is LOS F, regardless of the projected average control delay per vehicle.		

The study intersections have been analyzed to determine the projected intersection levels of service for medium and large events during the Saturday evening peak-hour period.

As shown in Figure 2, the signalized intersection of North Gate Boulevard/Struthers Road currently operates at LOS B, with all movements operating at LOS C or better on Saturday evenings. These movements are anticipated to continue operating at LOS C or better when a medium or large event occurs. The 95th percentile queue for the eastbound left is projected to be 85 feet, while the existing turn lanes are 190 feet in length.

At the site access, the westbound left-turn into the site is projected to operate at LOS A during both medium and large events. The 95th percentile queue for this movement is projected to be 25 feet for both event sizes. The available storage for this movement is 70 feet. The northbound approach is anticipated to operate at LOS D during both medium and large event scenarios in this report. The projected on-site, northbound 95th percentile queue is 25 feet during a large event, which is not anticipated to impact circulation within the site. It should be noted that it was assumed that slightly more vehicles turned right out of the site access during large events due to the increase in delay for left-turning vehicles.

Most drivers exiting an event would want to turn left onto North Gate Boulevard to access I-25 at the North Gate interchange. However, if at any time during the peak period of traffic exiting an event, drivers consider the delay to be excessive, they would have the option (once reaching position number one in the northbound lane) to turn right instead and use an alternate route. By the end of summer 2021, the new I-25 interchange just south of the North Gate Boulevard is scheduled for completion. When this interchange is open, drivers will be able to turn right out of the site and use Voyager Parkway to access southbound I-25 if they prefer to avoid the delay of turning left. For event traffic departing to I-25 north, a right turn onto North Gate Boulevard followed by use of Struthers Road to the Baptist Road interchange is an option. Level of service reports are attached.

It may be beneficial for event personnel to notify exiting motorists of these alternate routes – either verbally upon departure, or by providing a wayfinding map. For events (especially larger events), scheduling and hiring Colorado Springs Police Department or El Paso County Sheriff traffic control at the WMMI access intersection may also be an available option.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

- During the Saturday peak hour of a medium event, the site is projected to generate approximately 60 trips, with 24 inbound and 36 outbound.
- During the Saturday peak hour of a large event, the site is projected to generate approximately 100 trips, with 40 inbound and 60 outbound.

Level of Service

- The intersection of North Gate Boulevard/Struthers Road is projected to operate at LOS B with all movements operating at LOS C or better during the Saturday evening, both with and without events.
- The outbound movement at the site access is projected to operate at LOS D during both medium and large events. Alternatives to a left turn out of the site are available and officer traffic control during event peaks may also be an option to consider. It may be beneficial for event personnel to notify exiting motorists of these alternate routes – either verbally upon departure, or by providing a wayfinding map. See the level of service section for additional details.

Auxiliary Lanes

- No new auxiliary lanes are required, although minor widening of the driveway entry drive just south of North Gate Boulevard would allow for a two-lane approach northbound. This could be considered as an option to reduce delay for exiting right-turning vehicles, including motorists opting to turn right instead of left during peak event exiting traffic periods.

* * * * *

Please contact me if you have any questions regarding this report.

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By Jeffrey C. Hodsdon, P.E.
Principal

CRG:jas

Enclosures: Figures 1-4
 Traffic Count Reports
 Level of Service Reports

Figures



Figure 1

Vicinity Map

WMMI (Western Mining Museum) (LSC# S214310)



LEGEND:

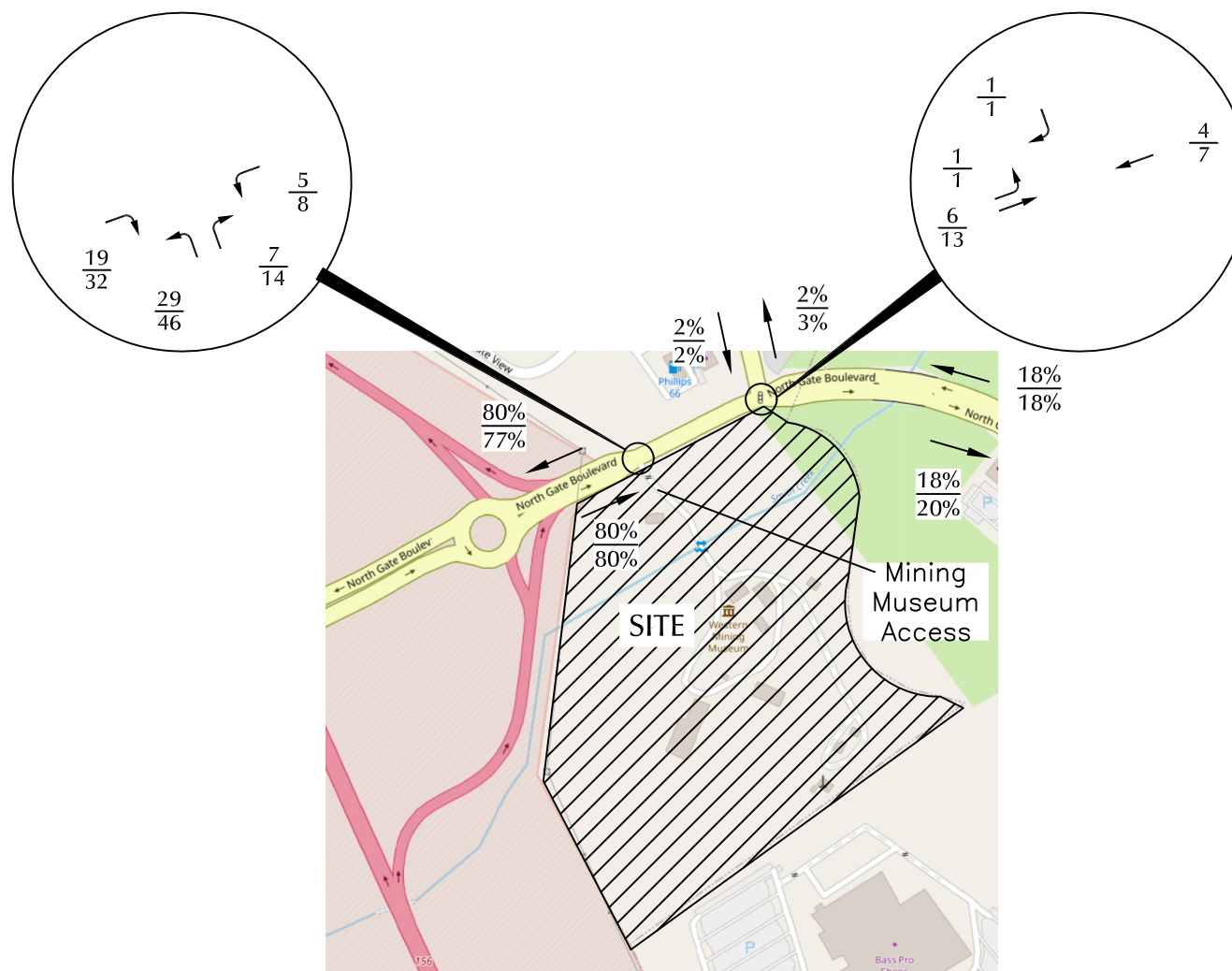
XX = Saturday Evening Traffic (5–6pm) (veh/hr)

A = Saturday PM Individual Movement Peak–Hour Level of Service

C = Saturday PM Entire Intersection Peak–Hour Level of Service

= Traffic Signal

= Stop Sign



LEGEND:

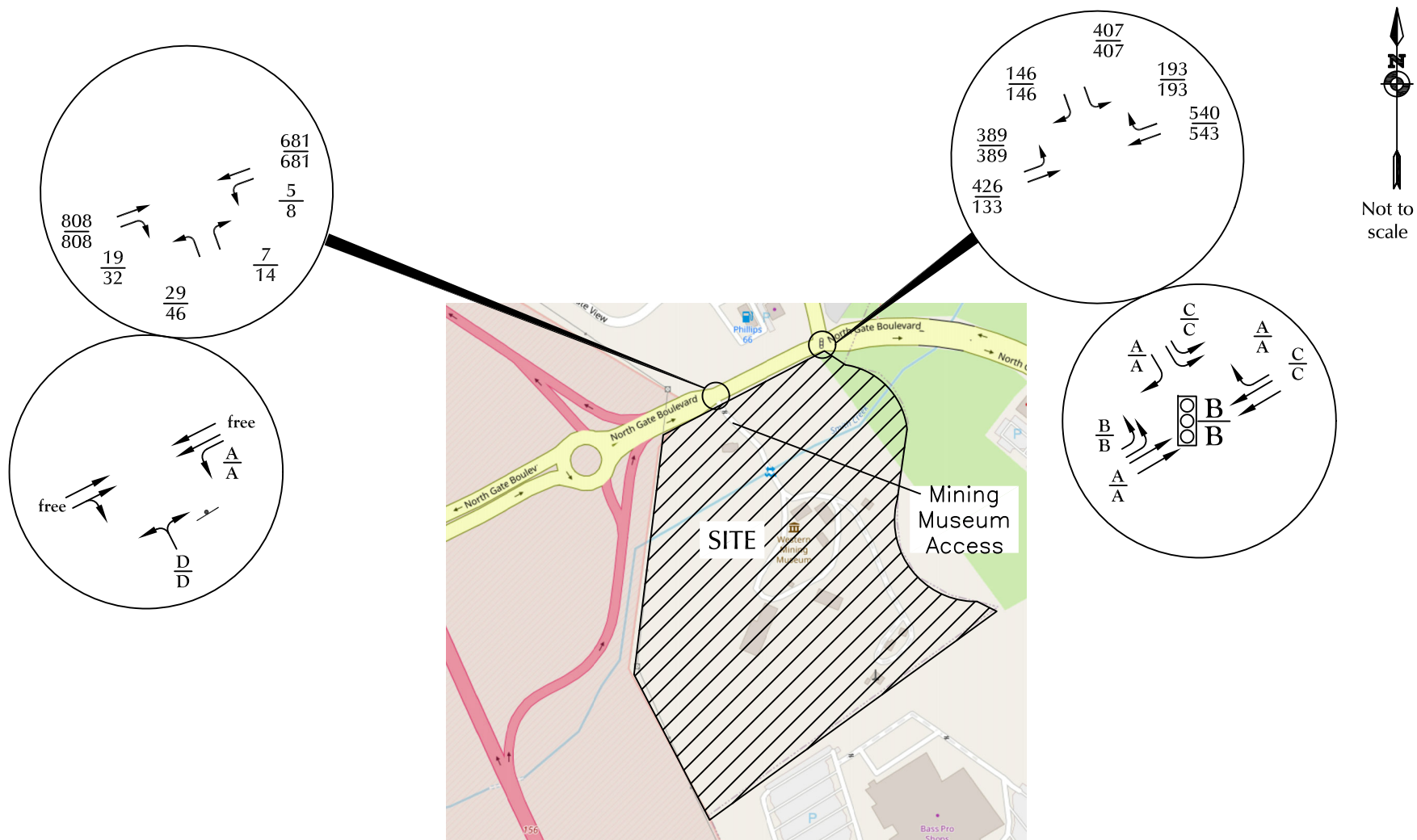
$$\frac{XX}{XX} = \frac{\text{Medium Event Traffic (veh/hr)}}{\text{Large Event Traffic (veh/hr)}}$$

$$\frac{\overrightarrow{X\%}}{X\%} = \frac{\text{Medium Event (\% of entering or exiting traffic)}}{\text{Large Event (\% of entering or exiting traffic)}} \text{ Estimated Percent Directional Distribution}$$

Figure 3

Trip Distribution & Site-Generated Traffic

WMMI (Western Mining Museum) (LSC# S214310)



LEGEND: $\frac{XX}{XX} = \frac{\text{Medium Event Peak-Hour Traffic (veh/hr)}}{\text{Large Event Peak-Hour Traffic (veh/hr)}} \text{ (assumed time of day)}$

$\frac{A}{B} = \frac{\text{Medium Event Individual Movement Level of Service}}{\text{Large Event Individual Movement Level of Service}}$

$\frac{C}{D} = \frac{\text{Medium Event Entire Intersection Level of Service}}{\text{Large Event Entire Intersection Level of Service}}$

⊥ = Stop Sign [Traffic Signal Icon] = Traffic Signal

Short-Term Saturday Event Peak-Hour Volumes and Levels of Service

Figure 4

WMMI (Western Mining Museum) (LSC# S214310)

Traffic Counts

LSC Transportation Consultants, Inc.

2504 E Pikes Peak Ave, Suite 304
Colorado Springs, CO 80909
719-633-2868

File Name : Struthers Rd - Northgate Blvd Sat PM
Site Code : 00000000
Start Date : 4/3/2021
Page No : 1

Groups Printed- Unshifted

Start Time	Struthers Rd Southbound					Northgate Blvd Westbound										North Gate Blvd Eastbound					Int. Total
	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	
03:45 PM	166	0	76	0	242	0	126	126	0	252	0	0	0	0	0	72	279	0	0	351	845
Total	166	0	76	0	242	0	126	126	0	252	0	0	0	0	0	72	279	0	0	351	845
04:00 PM	173	0	74	0	247	0	102	108	0	210	0	0	0	0	0	47	183	0	1	231	688
04:15 PM	123	0	50	0	173	0	90	116	0	206	0	0	0	0	0	63	136	0	0	199	578
04:30 PM	94	0	51	0	145	0	106	116	0	222	0	0	0	0	0	57	141	0	0	198	565
04:45 PM	101	0	37	2	140	0	87	116	0	203	0	0	0	0	0	45	149	0	1	195	538
Total	491	0	212	2	705	0	385	456	0	841	0	0	0	0	0	212	609	0	2	823	2369
05:00 PM	112	0	36	0	148	0	84	112	0	196	0	0	0	0	0	49	137	0	0	186	530
05:15 PM	119	0	37	0	156	0	105	106	0	211	0	0	0	0	0	52	131	0	0	183	550
05:30 PM	91	0	42	0	133	0	114	110	0	224	0	0	0	0	0	45	132	0	0	177	534
05:45 PM	85	0	30	0	115	0	85	92	0	177	0	0	0	0	0	47	136	0	0	183	475
Total	407	0	145	0	552	0	388	420	0	808	0	0	0	0	0	193	536	0	0	729	2089
Grand Total	1064	0	433	2	1499	0	899	1002	0	1901	0	0	0	0	0	477	1424	0	2	1903	5303
Apprch %	71	0	28.9	0.1		0	47.3	52.7	0		0	0	0	0		25.1	74.8	0	0.1		
Total %	20.1	0	8.2	0	28.3	0	17	18.9	0	35.8	0	0	0	0	0	9	26.9	0	0	35.9	

LSC Transportation Consultants, Inc.

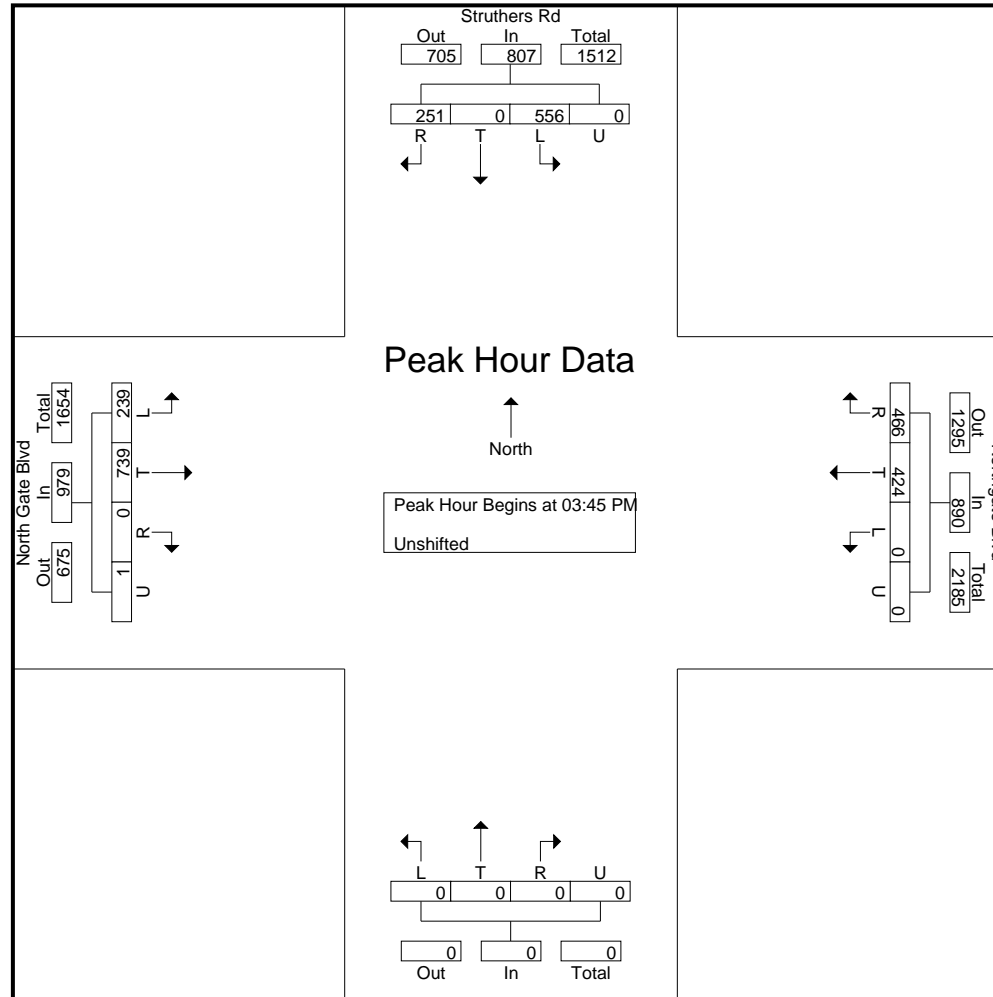
2504 E Pikes Peak Ave, Suite 304
Colorado Springs, CO 80909
719-633-2868

File Name : Struthers Rd - Northgate Blvd Sat PM

Site Code : 00000000

Start Date : 4/3/2021

Page No : 3



Levels of Service

Lanes, Volumes, Timings
3: North Gate Blvd & Struthers Rd

Existing
Saturday Evening



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰↰	↱↱	↰↰	↰	↰↰	↰
Traffic Volume (vph)	388	420	536	193	407	145
Future Volume (vph)	388	420	536	193	407	145
Satd. Flow (prot)	3433	3539	3539	1583	3433	1583
Flt Permitted	0.278				0.950	
Satd. Flow (perm)	1005	3539	3539	1583	3433	1583
Satd. Flow (RTOR)				210		165
Peak Hour Factor	0.90	0.90	0.92	0.92	0.88	0.88
Shared Lane Traffic (%)						
Lane Group Flow (vph)	431	467	583	210	463	165
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Total Split (s)	21.5	56.0	34.5	34.5	34.0	34.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Act Effect Green (s)	51.5	51.5	30.0	30.0	29.5	29.5
Actuated g/C Ratio	0.57	0.57	0.33	0.33	0.33	0.33
v/c Ratio	0.42	0.23	0.49	0.31	0.41	0.26
Control Delay	10.8	9.9	25.7	4.6	24.9	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	9.9	25.7	4.6	24.9	4.9
LOS	B	A	C	A	C	A
Approach Delay		10.3	20.1		19.6	
Approach LOS		B	C		B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 16.2

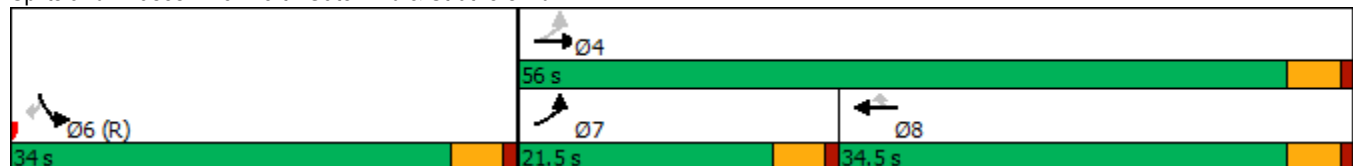
Intersection LOS: B

Intersection Capacity Utilization 48.7%

ICU Level of Service A

Analysis Period (min) 15













Splits and Phases: 3: North Gate Blvd & Struthers Rd



Lanes, Volumes, Timings
3: North Gate Blvd & Struthers Rd

Short Term Total - Medium Event

Saturday Evening

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	389	426	540	193	407	146
Future Volume (vph)	389	426	540	193	407	146
Satd. Flow (prot)	3433	3539	3539	1583	3433	1583
Flt Permitted	0.275				0.950	
Satd. Flow (perm)	994	3539	3539	1583	3433	1583
Satd. Flow (RTOR)				210		166
Peak Hour Factor	0.90	0.90	0.92	0.92	0.88	0.88
Shared Lane Traffic (%)						
Lane Group Flow (vph)	432	473	587	210	463	166
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Total Split (s)	21.5	56.0	34.5	34.5	34.0	34.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Act Effect Green (s)	51.5	51.5	30.0	30.0	29.5	29.5
Actuated g/C Ratio	0.57	0.57	0.33	0.33	0.33	0.33
v/c Ratio	0.42	0.23	0.50	0.31	0.41	0.26
Control Delay	10.8	9.9	25.8	4.6	24.9	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	9.9	25.8	4.6	24.9	4.8
LOS	B	A	C	A	C	A
Approach Delay		10.3	20.2		19.6	
Approach LOS		B	C		B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 16.2

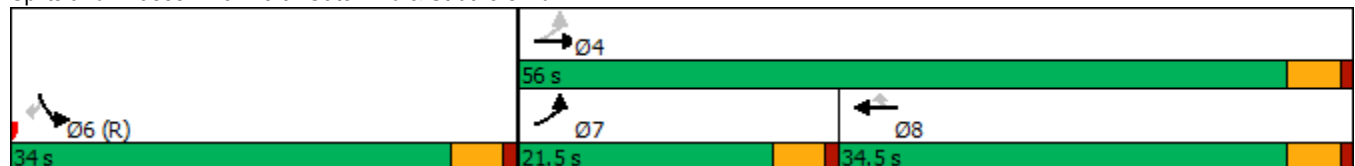
Intersection LOS: B

Intersection Capacity Utilization 48.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: North Gate Blvd & Struthers Rd



HCM 6th TWSC
5: WMMI Access & North Gate Blvd

Short Term Total - Medium Event
Saturday Evening

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	808	19	5	681	29	7
Future Vol, veh/h	808	19	5	681	29	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	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	878	21	5	740	32	8













Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	899	0	1269
Stage 1	-	-	-	-	889
Stage 2	-	-	-	-	380
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	751	-	160
Stage 1	-	-	-	-	362
Stage 2	-	-	-	-	661
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	751	-	159
Mov Cap-2 Maneuver	-	-	-	-	159
Stage 1	-	-	-	-	362
Stage 2	-	-	-	-	656

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	29.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	185	-	-	751	-
HCM Lane V/C Ratio	0.212	-	-	0.007	-
HCM Control Delay (s)	29.6	-	-	9.8	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.8	-	-	0	-

Lanes, Volumes, Timings
3: North Gate Blvd & Struthers Rd

Short Term Total - Large Event
Saturday Evening

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	389	433	543	193	407	146
Future Volume (vph)	389	433	543	193	407	146
Satd. Flow (prot)	3433	3539	3539	1583	3433	1583
Flt Permitted	0.274				0.950	
Satd. Flow (perm)	990	3539	3539	1583	3433	1583
Satd. Flow (RTOR)				210		166
Peak Hour Factor	0.90	0.90	0.92	0.92	0.88	0.88
Shared Lane Traffic (%)						
Lane Group Flow (vph)	432	481	590	210	463	166
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Total Split (s)	21.5	56.0	34.5	34.5	34.0	34.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Act Effect Green (s)	51.5	51.5	30.0	30.0	29.5	29.5
Actuated g/C Ratio	0.57	0.57	0.33	0.33	0.33	0.33
v/c Ratio	0.42	0.24	0.50	0.31	0.41	0.26
Control Delay	10.8	9.9	25.8	4.6	24.9	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	9.9	25.8	4.6	24.9	4.8
LOS	B	A	C	A	C	A
Approach Delay		10.3	20.2		19.6	
Approach LOS		B	C		B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 16.2

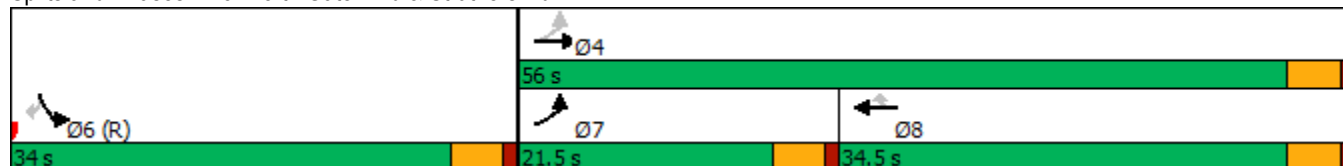
Intersection LOS: B

Intersection Capacity Utilization 49.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: North Gate Blvd & Struthers Rd



HCM 6th TWSC
5: WMMI Access & North Gate Blvd

Short Term Total - Large Event
Saturday Evening

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	808	32	8	681	46	14
Future Vol, veh/h	808	32	8	681	46	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	-	-	75	-	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	878	35	9	740	50	15

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	913	0	1284
Stage 1	-	-	-	-	896
Stage 2	-	-	-	-	388
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	742	-	157
Stage 1	-	-	-	-	359
Stage 2	-	-	-	-	655
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	742	-	155
Mov Cap-2 Maneuver	-	-	-	-	155
Stage 1	-	-	-	-	359
Stage 2	-	-	-	-	647

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	34.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	186	-	-	742	-
HCM Lane V/C Ratio	0.351	-	-	0.012	-
HCM Control Delay (s)	34.5	-	-	9.9	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	1.5	-	-	0	-