



April 29, 2022

Missoula Land Use and Planning Committee
Missoula City Council
Mayor John Engen
435 Ryman
Missoula, MT 59802

RE: Grant Creek Village Transportation Impacts

Greenlight Engineering has been asked by the Friends of Grant Creek and Rocky Mountain Elk Foundation to evaluate the transportation related impacts of the proposed Grant Creek Village Multifamily development in Missoula, Montana. We have reviewed the April 2022 Grant Creek Village Residential Development Traffic Impact Study 2022 UPDATE (hereafter referred to as the "TIS").

There are several significant errors and omissions in the TIS that makes the traffic analysis unreliable and not compliant with City of Missoula, Montana Department of Transportation ("MDT") and/or industry standards.

Executive Summary

- The TIS provides no analysis of Reserve Street south of the I-90 interchange where the development will add over 2000 vehicle trips per day.
- The TIS assumes that zero growth will occur in this area of Missoula over the next 10 years.
- The TIS failed to collect two hour traffic counts during the weekday AM and weekday PM peak hour as required.
- The traffic counts presented in Appendix A of the TIS do not match the traffic volumes presented in Appendix B & the traffic volumes do not balance between adjacent intersections indicating traffic count or mathematical errors.
- The TIS analyses of the I-90 Eastbound Offramp/Reserve Street and I-90 Westbound Offramp/Reserve Street intersections does not remotely match actual traffic signal timing in operation. The operations presented in the TIS are not reliable. The transportation model was not calibrated to provide reliable results.
- Stonebridge Road is required to be extended into the site as a public road and not terminate into a drive aisle without a public turnaround.
- The seasonal traffic volume variation of Grant Creek Road to account for recreational traffic has not been accurately accounted for because it is compared to roads that possibly have little to no seasonal traffic.

Intersections Have Been Omitted from the TIS

Title 20.60.140 of the *Zoning Ordinance of the City of Missoula, Montana* (“zoning ordinance”) requires:

“The city engineer may require a traffic study for a proposed development that generates 200 or more average daily (weekday) trips. The traffic study must provide adequate information to allow the transportation planner and the city engineering department to assess the impact of the proposed development on nearby streets and intersections, including its impacts on pedestrians, bicyclists, and public transit.”

The *Missoula City Public Works Standards and Specifications Manual* (“MCPWSSM”) requires:

“The traffic impact study **shall** include analysis and impacts to all transportation facilities, including adversely affected nearby streets and intersections, public transit, bicyclists, and pedestrians...Developments or redevelopments that will contribute 200 or more additional average daily (weekday) trips to City streets based on the latest edition of the Institute of Transportation Engineers’ *Trip Generation Manual* shall submit a traffic impact study” (emphasis added).

The transportation system has not been analyzed such that the TIS adequately analyzes the impacts of the proposed development. The TIS study area should be expanded to evaluate roads and intersections that are affected by the development. Certainly, facilities that will be adversely impacted have not been analyzed.

As evidenced by Figure 3 of the TIS, 54% of the development's traffic will utilize Reserve Street south of I-90 in coming to or leaving the project site. Appendix B of the TIS illustrates that the development will add 157 weekday AM peak hour trips and 229 weekday PM peak hour trips to Reserve Street south of I-90. Per the TIS, the development's daily trip generation is 3,808 trips. Therefore, during the course of the day, the development will add 2056 daily trips to Reserve Street south of the I-90 interchange.

According to MDT data, the 2021 average daily traffic on Reserve Street south of the I-90 interchange is approximately 20,000 vehicles per day¹. The development would add more than 10% to the existing traffic on Reserve Street south of the I-90 interchange. The TIS is clear that the development will have a significant impact by noting “At full build-out, the Grant Creek Village will account for a 60% increase in traffic volumes on Grant Creek Road and a 20% increase in traffic volumes along North Reserve Street.” In spite of a 10-20% increase in traffic volumes caused by this development alone on Reserve Street, the TIS provides no analysis of any of the impacts on any roadways or intersections south of the I-90 interchange.

It is well known to the city that Reserve Street south of the I-90 interchange experiences congestion. This congestion is documented by the city in *Activate Missoula 2045 Missoula Long Range Transportation Plan*². In 2015, significant portions of Reserve Street were operating at LOS E to F, indicating operating failures as illustrated in Figure 26 below. Sometime between 2015 to

¹ <https://mdt.public.ms2soft.com/tcds/tsearch.asp?loc=Mdt&mod=TCDS>

² <https://www.ci.missoula.mt.us/DocumentCenter/View/39171/2016-LRTP>

2045, the anticipated congestion significantly intensifies and spreads to the north near the I-90 interchange as illustrated in Figure 27 below.

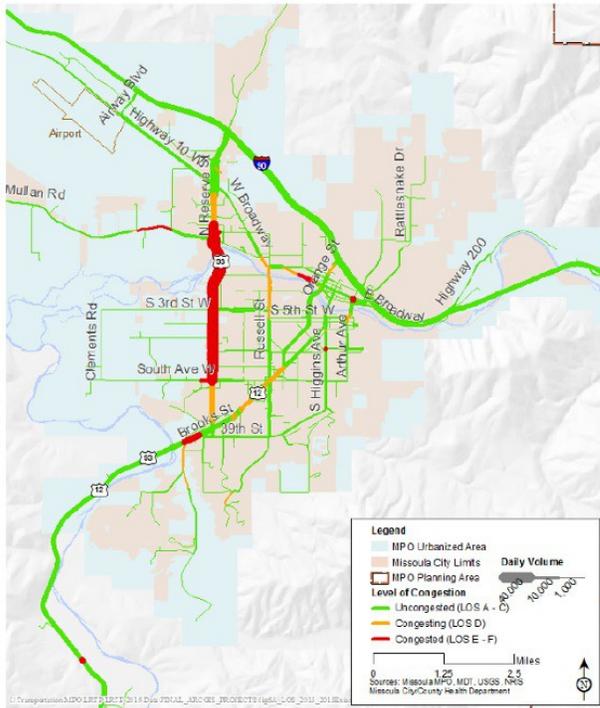


Figure 26. Current (2015) congestion on existing roadways

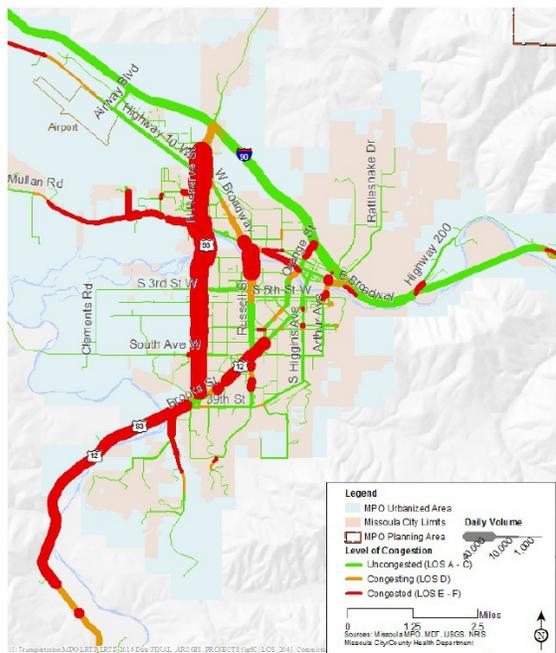


Figure 27. Projected 2045 congestion on existing roadways + committed projects

The development's impact on Reserve Street south of I-90 (2065 daily trips) is ten times the minimum threshold for requiring a traffic impact study (200 daily trips), yet there is absolutely no analysis of transportation impacts in that area. The lack of inclusion of any analysis of this area of Missoula, which is expected to experience significant congestion, is a major omission of the TIS that necessitates correction.

TIS Assumes Zero Growth Will Occur Over a Period of 10 Years

The TIS states that “The development would be constructed in several phases over the next 5-10 years.” The TIS further states that “If the traffic data anomalies on Grant Creek Road are discounted, then the overall traffic volume growth rate for the roads entering this area is near zero. Therefore, no background traffic volume growth rates were used for the short-term traffic projections for this analysis.”

Given that the development is anticipated to not be fully built out until possibly 2032, the analysis is hardly “short-term.” The TIS relies on traffic counts from 2019 and makes no growth adjustments to those counts. Therefore, the TIS relies on the assumption that there will be no growth in this area over a period of 13 years.

Despite the longer term build-out, the TIS argues that no background traffic growth should be included. Effectively, the TIS assumes that traffic volumes won't increase by one vehicle, except as a result of this development, from 2019 to 2032. That is an unusual assumption to make, especially considering the projected growth and congestion anticipated by the city in the next several years in this area of Missoula.

We have never seen such an assumption ever be made in a traffic impact analysis and frankly, the assumption is wholly unrealistic and should not be relied upon.

Clearly, the city anticipates more than zero growth over the course of the next ten years. In fact, according to Table 7 of *Activate Missoula 2045*, significant growth is anticipated.

Table 7. Household employment and person trip growth, 2015 - 2045

MPO	2015	2045	Percent Growth
Population	90,097	133,329	48%
Households	40,381	60,604	50%
Employment	69,210	109,639	58%
Person trip ends	452,860	691,705	54%

Based on Table 7, the population of Missoula is anticipated to increase by grow by an average of 1.6% per year from 2015 to 2045.

The TIS also fails to discuss or account for any “in-process” traffic, or traffic related to approved development that is not yet constructed.

The TIS should be updated to reflect an acceptable background growth to accurately portray the condition of the transportation network at the development's build-out year of 2032, as is

typical as part of a traffic impact study. The MCPWSSM requires the inclusion of growth as part of a valid traffic impact study.

Traffic Counts Not Compliant With City Requirements

MCPWSSM section 7.2.3 (A.)(5.)(a.)(2.)(a.)(i.) requires that “Existing turning movement counts shall be collected for the entire peak hour periods from 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m. in order to ensure the correct peak hour is captured.” The purpose of this requirement is to ensure that traffic studies are based upon when traffic volumes are at their peak volume.

Several of the traffic counts presented in the TIS fail to comply with this requirement. Therefore, the TIS cannot be relied upon.

The TIS includes traffic counts at I-90 Westbound Offramp/Reserve Street that illustrates a count conducted from 7:30-8:30 AM only and not 7-9 AM as required. Similarly, the TIS illustrates a count conducted from 4:45-5:45 PM only (and based on the lower volume, it appears the count was not completed through 5:45 PM) and not 4-6 PM as required. See Exhibit 1 below.

07:30 AM	9	94	0	0	103	14	0	69	0	83	0	39	47	0	86	0	0	0	0	0	272
07:45 AM	21	94	0	0	115	21	1	80	0	102	0	39	43	0	82	0	0	0	0	0	299
Total	30	188	0	0	218	35	1	149	0	185	0	78	90	0	168	0	0	0	0	0	571
08:00 AM	6	62	0	0	68	17	0	39	0	56	0	62	47	0	109	0	0	0	0	0	233
08:15 AM	20	75	0	1	96	16	0	44	1	61	0	41	48	0	89	0	0	0	0	0	246
04:45 PM	12	68	0	0	80	21	6	73	0	100	0	61	73	0	134	0	0	0	0	0	314
Total	12	68	0	0	80	21	6	73	0	100	0	61	73	0	134	0	0	0	0	0	314
05:00 PM	17	65	0	0	82	29	12	55	0	96	0	73	71	0	144	0	0	0	0	0	322
05:15 PM	13	64	0	0	77	42	4	60	0	106	0	95	73	0	168	0	0	0	0	0	351
05:30 PM	9	26	0	0	35	11	2	28	0	41	0	39	31	0	70	0	0	0	0	0	146

Exhibit 1. Excerpt of TIS illustrating traffic counts at I-90 Westbound Offramp/Reserve Street

The TIS includes traffic counts at I-90 Eastbound Offramp/Reserve Street that illustrates a count conducted from 7:15-8:45 AM only and not 7-9 AM as required. Similarly, the TIS illustrates a count conducted from 4:30-5:45 PM only and not 4-6 PM as required. See Exhibit 2 below.

	Northbound				Southbound				Eastbound				Westbound				TOTAL				
	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds					
7:00 - 7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 - 7:30	0	64	32	1	13	89	0	1	7	0	36	0	0	0	0	0	0	0	0	0	243
7:30 - 7:45	0	83	37	0	29	118	0	1	8	0	51	0	0	0	0	0	0	0	0	0	327
7:45 - 8:00	0	75	35	0	39	137	0	0	7	0	63	0	0	0	0	0	0	0	0	0	356
8:00 - 8:15	0	93	37	0	22	85	0	0	11	0	31	0	0	0	0	0	0	0	0	0	279
8:15 - 8:30	0	85	40	1	33	76	0	1	9	0	54	0	0	0	0	0	0	0	0	0	299
8:30 - 8:45	0	73	47	0	17	90	0	0	9	0	44	0	0	0	0	0	0	0	0	0	280
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 - 4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 - 4:45	0	142	93	1	18	98	0	0	5	0	31	0	0	0	0	0	0	0	0	0	388
4:45 - 5:00	0	141	98	0	10	128	0	2	9	0	46	0	0	0	0	0	0	0	0	0	434
5:00 - 5:15	0	144	112	2	33	96	0	0	14	0	57	0	0	0	0	0	0	0	0	0	458
5:15 - 5:30	0	108	67	0	16	78	0	0	5	0	29	0	0	0	0	0	0	0	0	0	303
5:30 - 5:45	0	118	64	0	15	71	0	1	9	0	31	0	0	0	0	0	0	0	0	0	309
5:45 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Exhibit 2. Excerpt of TIS illustrating traffic counts at I-90 Eastbound Offramp/Reserve Street

The TIS includes traffic counts at Grant Creek Road/Stonebridge Road that illustrates a count conducted from 7:30-8:15 AM only and not 7-9 AM as required. Similarly, the TIS illustrates a count conducted from 4:30-5:30 PM only and not 4-6 PM as required. See Exhibit 3 below.

Groups Printed- Class 1

Start Time	Grant Creek Southbound					Stonebridge Westbound					Grant Creek Northbound					Stonebridge Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:30 AM	0	91	0	0	91	0	0	0	0	0	0	20	5	0	25	6	0	0	0	6	122
07:45 AM	0	71	0	0	71	0	0	0	0	0	0	45	22	0	67	11	0	0	0	11	149
Total	0	162	0	0	162	0	0	0	0	0	0	65	27	0	92	17	0	0	0	17	271
08:00 AM	0	77	0	0	77	0	0	0	0	0	0	25	12	0	37	10	0	0	0	10	124
04:30 PM	0	43	0	0	43	0	0	0	0	0	0	55	2	0	57	7	0	1	0	8	108
04:45 PM	0	66	0	0	66	0	0	0	0	0	0	39	5	0	44	33	0	0	0	33	143
Total	0	109	0	0	109	0	0	0	0	0	0	94	7	0	101	40	0	1	0	41	251
05:00 PM	0	46	0	0	46	0	0	0	0	0	0	70	3	0	73	10	0	1	0	11	130
05:15 PM	0	45	0	0	45	0	0	0	0	0	0	80	7	0	87	12	0	0	0	12	144

Exhibit 3. Excerpt of TIS illustrating traffic counts at Grant Creek Road/Stonebridge Road

The TIS includes traffic counts at Grant Creek Road/Expo Parkway that illustrates a count conducted from 7:30-8:15 AM only and not 7-9 AM as required. Similarly, the TIS illustrates a count conducted from 4:30-5:30 PM only and not 4-6 PM as required. See Exhibit 4 below.

Groups Printed- Class 1 - New Group

Start Time	Grant Creek Southbound					Expo Westbound					Grant Creek Northbound					Expo Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:30 AM	0	89	2	0	91	3	0	7	0	10	1	17	7	0	25	16	0	0	0	16	142
07:45 AM	0	69	2	0	71	2	0	7	0	9	0	43	7	0	50	15	0	0	0	15	145
Total	0	158	4	0	162	5	0	14	0	19	1	60	14	0	75	31	0	0	0	31	287
08:00 AM	0	75	2	0	77	0	0	5	0	5	0	25	5	0	30	5	0	0	0	5	117
04:30 PM	0	41	2	0	43	4	1	1	0	6	0	51	11	0	62	10	0	0	0	10	121
04:45 PM	0	62	4	0	66	6	0	9	0	15	1	33	18	0	52	5	0	0	1	6	139
Total	0	103	6	0	109	10	1	10	0	21	1	84	29	0	114	15	0	0	1	16	260
05:00 PM	0	44	2	0	46	2	0	10	0	12	0	68	14	0	82	9	4	0	1	14	154
05:15 PM	0	43	2	0	45	3	0	2	0	5	0	77	19	0	96	12	0	0	0	12	158

Exhibit 4. Excerpt of TIS illustrating traffic counts at Grant Creek Road/Expo Parkway

TIS Contains Numerous Traffic Count Discrepancies

There are significant discrepancies presented between the traffic counts of Appendix A and the traffic model volumes presented in Appendix B, making these numbers not reviewable. There is no work shown or explained, and with the incomplete traffic counts as noted above, it is not possible to determine why these discrepancies exist. The traffic counts, as presented, are not reliable.

As previously noted by RT Cox in previous proceedings, there are issues with traffic volumes inexplicably not balancing between intersections.

For example, Appendix B of the TIS illustrates 290 southbound through vehicles and 45 eastbound right turning vehicles at the Grant Creek Road/Stonebridge Road intersection during the weekday AM peak hour combining to a southbound flow of 335 vehicles between the Grant Creek Road/Stoneridge Road intersection and Grant Creek Road/Expo Parkway intersection. The TIS illustrates 282 southbound through vehicles and eight left turning vehicles at the Grant Creek

Road/Expo Parkway intersection during the weekday AM peak hour combining to a southbound flow of 290 southbound vehicles between the Grant Creek Road/Stoneridge Road intersection and Grant Creek Road/Expo Parkway intersection. There are no intersections of note between Grant Creek Road/Stoneridge Road and Grant Creek Road/Expo Parkway, yet there is a discrepancy of 45 vehicles.

Similarly, during the weekday AM peak hour, there are 90 northbound left turns and 184 northbound through vehicles at the Grant Creek Road/Stoneridge Road (a combined flow of 274 vehicles) while at the Grant Creek Road/Expo Parkway intersection, only 187 vehicles were counted to proceed northbound through the Expo Parkway intersection. This is a discrepancy of 90 vehicles. As these traffic counts were conducted on the same day and time period in 2019, clearly this is in error.

1 X 4)	4	↩	10.4 B
Stonebridge	290	↓	
	4	↩	↩ 90
	45	↩	↑ 184
			10.5/13.9 B/B
	0	↩	↩ 8
	282	↓	↑ 0
Expo Pkwy	8	↩	↩ 29
	4	↩	↩ 29
Seasonal Factors	0	↩	↑ 175
tors	61	↩	↩ 4

Exhibit 5: Excerpt of TIS Illustrating Discrepancies of Weekday AM Peak Hour Volumes

During the weekday PM peak hour, there is a discrepancy of 41 southbound vehicles between the two intersections and 13 vehicles in the northbound direction.

PM Peak Hour (15 Min X 4)	4	↩	9.7 A
Stonebridge	184	↓	
	4	↩	↩ 29
	49	↩	↑ 326
			10.6/14.5 B/B
	0	↩	↩ 8
	184	↓	↑ 0
Expo Pkwy	8	↩	↩ 12
	0	↩	↩ 78
	8	↩	↑ 314
	49	↩	↩ 4

Exhibit 6: Excerpt of TIS Illustrating Discrepancies of Weekday PM Peak Hour Volumes

There may be additional counting or mathematical errors that have not been accounted for.

Analysis of I-90 WB Offramp/Reserve Street and I-90 EB Offramp/Reserve Street Intersection Not Reliable

In regard to the I-90 WB Offramp/Reserve Street and I-90 EB Offramp/Reserve Street interchange intersections signal timing, the TIS states that “130-second cycles provide high intersection capacity at the interchange and is necessary due to the signal phasing plan and

roadway geometries.” However, the TIS of the intersection illustrates that the intersections were analyzed with a whopping 194 second (over three minutes) traffic signal cycle length. The TIS also indicates that the intersections are not operating in “coordination.” Signals that are operating in coordination work together to progress traffic from one intersection to the next and is common at closely spaced intersections during peak hours, like the I-90 interchange intersections.

We obtained the traffic signal timing in operation at these intersections from MDT, observed signal operations in the field, and subsequently confirmed with MDT staff (see Appendix A) that the intersections operate with a coordinated 100 second cycle length in both the weekday AM and PM peak hours. Neither of these intersections can possibly operate with a 130 second or 194 second cycle lengths as reported and/or analyzed in the TIS. The traffic signal operations presented in the TIS is incorrect. As a result, the TIS analysis of those intersections is not reliable and need to be redone so they reflect reality.

Intersection Summary	
Area Type:	Other
Cycle Length:	194
Actuated Cycle Length:	157.8
Natural Cycle:	175
Control Type:	Actuated-Uncoordinated

Exhibit 7: Excerpt of TIS illustrating 194 second cycle length and uncoordinated operations (presented for both I-90 intersections)

Transportation Model Not Calibrated

Based upon the above discussion regarding traffic signal timing, it is clear that the transportation model developed as part of the TIS was not calibrated or field checked for reliability. The TIS relies on a microsimulation model, SimTraffic, to determine intersection queuing. The TIS makes no reference to calibration of the microsimulation model.

The Federal Highway Administration (FHWA) document *Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software* states that “...without calibration, the analyst has no assurance that the model will correctly predict traffic performance for the project. Calibration is the adjustment of model parameters to improve the model's ability to reproduce local driver behavior and traffic performance characteristics. Calibration is performed on various components of the overall model...The importance of calibration cannot be overemphasized...”

In Oregon, the *Analysis Procedures Manual* states that “Good calibration is...critical for accurate analysis...Although calibration (fine-tuning) may take some time, it is necessary because if the existing conditions is not duplicating observed conditions, then the future conditions or build alternative performance will not be predicted very well.”

As noted earlier, the existing traffic signal timing was not utilized in the analysis. SimTraffic, a microsimulation software, requires accurate input parameters in order to deliver accurate results. It is clear that given that not even existing traffic signal timing parameters were utilized

that the input parameters are of sufficient quality and detail to result in an accurate microsimulation. For this reason, the SimTraffic software should not have been used and the SimTraffic results should not be accepted. Again, the results of the TIS should not be accepted.

Stonebridge Road is Required to be Extended

Stonebridge Road, a public road, currently terminates at the eastern property line of the subject site without a public turnaround. The proposed site plan includes the construction of a private drive aisle extending from the existing western terminus of Stonebridge Road. Section 7.4.1 (D) (8) of the MCPWSSM requires Stonebridge Road to be extended onto the site rather than ending in a drive aisle:

- a. Street connections shall be provided to any existing or approved public street or right of way extension adjacent to the development, nearby destinations such as schools, parks, transit stops, employment centers, and commercial areas as well as collector and arterial transportation corridors, non-motorized transportation corridors, and future phases of development.
- b. The circulation pattern for the development must be designed to take advantage of the topography of the site to accommodate the circulation demands of the proposed development, adjacent transportation facilities, adjacent land uses, parcels of land in the immediate area, and be designed in accordance with area-wide transportation plans. The circulation system must provide for complete multi-modal transportation, such as automobiles, pedestrians, bicycles, buses, and emergency vehicles..."

The lack of extension of Stonebridge Road precludes access for future development to the west. Additionally, the lack of extension would result in the lack of a public turnaround at the terminus of the road.

MCPWSSM section 7.4.2 "Cul-de-Sacs, Loop and Circle Streets, Dead-End Streets, and Turnarounds" states:

- "Cul-de-sacs, loop and circle streets, and dead-end streets are prohibited unless approved by City Engineering.
 - 1. If approved, turnarounds shall be per IFC Appendix D.
 - 2. If approved, the maximum length of a cul-de-sac street is 600 feet."

While the public road is ending, no turnaround is proposed at the end of this public street. Additionally, the length between the terminus of Stonebridge Road and Grant Creek Road (apparently the nearest public road) is approximately 725 feet, well in excess of what would be allowed for a cul-de-sac street.

Seasonal Variation Not Appropriately Accounted For

It is typical to account for seasonal variations in traffic counts when a road experiences a significant fluctuation in traffic volumes based on the season, such as along roadways that serve recreational purposes like routes to the coast or to summer or winter recreation areas. Grant Creek Road serves the Snowbowl ski resort and other winter and summer activities.

To account for the seasonal variation in traffic the TIS notes that “The raw 2018 and 2019 data collected for this project may be adjusted for seasonal variations using data collected from MDT’s automatic count stations located on Orange Street Bridge in Missoula (Site #A-037) and on Van Buren Street north of I-90 (Site #A-067).”

We agree that a seasonal variation should be evaluated and likely applied to Grant Creek Road. However, Orange Street Bridge and Van Buren Street north of I-90 are likely not good comparisons to the seasonal variation on Grant Creek Road. Neither of these roadways lead directly to a recreation area like Grant Creek Road does and are therefore, not good predictors of how traffic will vary on Grant Creek Road.

Traffic counts along Grant Creek Road were conducted in October of 2019 and March of 2021. Neither of these time periods likely represent the peak recreational period for the Snowbowl ski resort or other winter or summer recreational activities.

Therefore, the seasonal variation analysis presented in the TIS is likely not reliable.

Crash Analysis Incomplete

The TIS provides:

“ATS obtained crash data from the MDT vehicle crash database for the section of Grant Creek Road between the I-90 interchange and Stonebridge Road...The MDT database indicates that 28 vehicle crashes occurred along this section. Most of these crashes were rear-end (6) and sideswipe collisions (7). A total of 24 of the crashes were multi-vehicle collisions and most occurred on dry roadways and in daylight conditions. Seven injury collisions were reported. These types and numbers of crashes are typical for urban roadway segments. No specific crash trends or crash locations were identified.”

The TIS did not include the crash data, which is typical to include as part of a traffic impact study so that it can be reviewed. Additionally, the crash analysis is incomplete in that it provides no substantive information such as intersection crash rates or number of crashes/type of crashes at particular locations.

Important Traffic Data Omitted

The TIS omits evidence of information necessary for conducting accurate intersection capacity analysis including the impact of trucks, buses, or bicycles. None of these users were counted. All of these users of the transportation system have an effect on the intersection operational analysis and are inputs of the *Highway Capacity Manual* intersection capacity methodology.

The TIS illustrates a peak hour factor of 1.0 for all scenarios. It is typical to study the peak 15 minutes of the transportation system. With a peak hour factor of 1.0, it is clear that the peak 15 minutes of the transportation system has not been studied.

The TIS fails to provide any evidence of traffic crash data.

The Rocky Mountain Elk Foundation (“RMEF”) has been substantially affected by the pandemic with the visitor center closing in March of 2020. RMEF experienced approximately 40,000

visitors per year prior to the pandemic and it remains closed to this day. However, it will reopen to visitors. Traffic counts collected after March 2020 do not reflect these volumes and have not been adjusted to account for this traffic.

The TIS fails to account for any developments that have been approved since traffic counts were collected in October 2019. It is common in traffic impact studies to include the traffic from approved developments, commonly referred to as “in-process” traffic.

The TIS should be updated to provide necessary data to ensure the adequacy of the transportation system.

Section 20.60.140 of the zoning ordinance requires “The traffic study must provide adequate information to allow the transportation planner and the city engineering department to assess the impact of the proposed development on nearby streets and intersections, including its impacts on pedestrians, bicyclists, and public transit.”

Approval Criteria & Conclusion

In reviewing zone changes, section 20.85.040 of the zoning ordinance requires:

“In reviewing and making decisions on zoning amendments, the zoning officer, Planning Board and City Council must consider...Whether the proposed zoning amendment is consistent with MCA § 76-2-304...Whether the zoning is made in accordance with a growth policy...Whether the zoning is designed to promote public health, public safety, and the general welfare...Whether the zoning is designed to facilitate the adequate provision of transportation...and other public requirements...Whether the zoning considers the effect on motorized and nonmotorized transportation systems...Whether the zoning conserves the value of buildings and encourages the most appropriate use of land throughout the jurisdictional area...Whether the proposed zoning amendment is in the best interests of the city as a whole.”

MCA § 76-2-304 requires:

“

- (1) Zoning regulations must be:
 - (a) made in accordance with a growth policy; and
 - (b) designed to:
 - (i) secure safety from fire and other dangers;
 - (ii) promote public health, public safety, and the general welfare; and
 - (iii) facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements.
- (2) In the adoption of zoning regulations, the municipal governing body shall consider:
 - (a) reasonable provision of adequate light and air;
 - (b) the effect on motorized and nonmotorized transportation systems;
 - (c) promotion of compatible urban growth;
 - (d) the character of the district and its peculiar suitability for particular uses; and
 - (e) conserving the value of buildings and encouraging the most appropriate use of land throughout the jurisdictional area.

As described above, the TIS contains numerous errors and omissions. As a result it cannot be found that the transportation system is adequate, that the zone change promotes public safety and the general welfare, and that the effect on motorized and non-motorized transportation systems has been adequately considered.

Should you have any questions, feel free to contact me at 503-317-4559.

Sincerely,

Rick Nys, P.E.
Principal Traffic Engineer



Appendix A

Traffic Signal Timing Email From Montana Department of Transportation

Re: RFI-22-244-Nys-I-90-W-Reserve-Signal-Timing



From Huckins, Betty <bhuckins@mt.gov>
To rick@greenlightengineering.com <rick@greenlightengineering.com>
Date 2022-04-25 15:03

Rick,

You're correct about the operation of both intersections:

The weekday AM peak 7-9 AM operates in coordination with plan 3/1/1, which has a cycle length of 100 seconds.

The weekday PM peak 4-6 PM (actually 11:30 AM – 7:00 PM) operates in coordination with plan 3/2/1, which also has a cycle length of 100 seconds.

From: Hamel, Kelly <keljohnson@mt.gov>

Sent: Monday, April 25, 2022 11:00 AM

To: Balsley, Phill <pbalsley@mt.gov>

Cc: Huckins, Betty <bhuckins@mt.gov>

Subject: FW: [EXTERNAL] Re: RFI-22-244-Nys-I-90-W-Reserve-Signal-Timing

Hi Phill.

Can you help the requester with the follow-up question please?

Thank you, Kelly

From: Rick Nys <rick@greenlightengineering.com>

Sent: Sunday, April 24, 2022 9:47 AM

To: Hamel, Kelly <keljohnson@mt.gov>

Subject: [EXTERNAL] Re: RFI-22-244-Nys-I-90-W-Reserve-Signal-Timing

Hi Kelly,

I know this is not your area, but I had a follow up confirmation question about these documents that I'm hoping you can forward to the correct person.

I wanted to confirm that during the weekday AM peak hour (7-9 AM), the intersections are in plan 3/1/1 with a 100 second cycle length and are in coordination and that during the weekday PM peak hour (4-6 PM), the intersections are in plan 3/2/1 with a 100 second cycle length and are in coordination.

Thanks,

Rick Nys, P.E.

Principal Traffic Engineer