

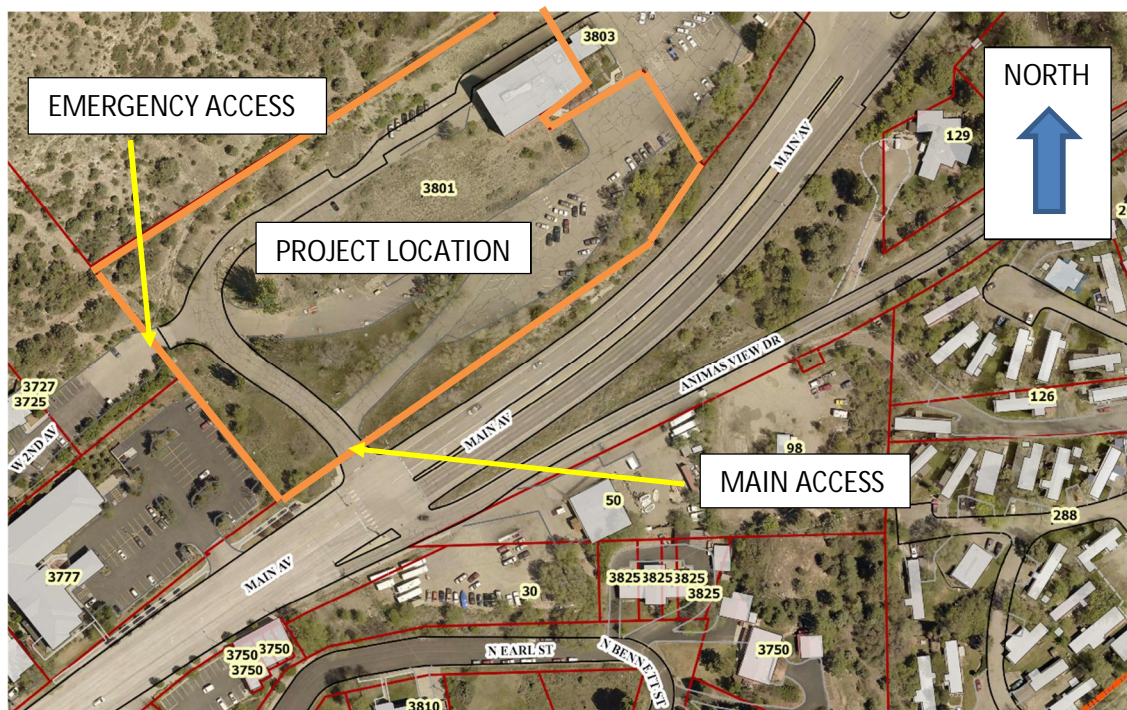
I. Proposed Project Information

MBR Development LLC is proposing a multi-phase residential apartment complex at 3801 North Main Avenue in Durango, CO. At full build out, the complex will contain 160 apartment units. Anticipated phasing of the project is as follows:

- Phase 1 – 70 apartment units – Anticipated Construction Spring 2019
- Phase 2 – 70 apartment units – Anticipated Construction Spring 2020
- Phase 3 – 20 apartment units – Anticipated Construction Spring 2021

A single access point to US 550 is being proposed at the existing traffic signal at the intersection of US 550/Animas View Drive/Existing CDOT entrance. The property will share the access with CDOT. An emergency access is also being proposed on the south-west corner of the property that will tie into West 2nd Ave.

Figure 1 – Location Map



II. Existing Roadways and Intersections

The scope of this initial analysis has been limited to the US 550/Animas View Drive signalized intersection. The paragraphs below describe each of these roadways and provides details about the existing intersection.

North Main Apartments, DURANGO, CO Preliminary Traffic Summary

May 4, 2018

By: SET Engineering LLC



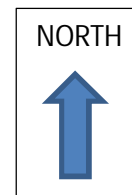
US 550 is an access category NRA south of the US 550/AVD intersection and an E-X category north of the intersection. The functional classification is a Principal Arterial. The posted speed is 35mph at the intersection and increases to 45mph approximately 300' north of the intersection.

Animas View Drive is a City Street and is classified as a Collector. It is a two-lane road with one lane of travel in each direction and a posted speed limit of 35mph.

The existing driveway that serves the CDOT Region 5 headquarters is a two-lane private driveway with no posted speed limit, a steep grade (approximately 12%), and two lanes of travel (one in each direction).

The US 550/AVD intersection is signalized. AVD enters the intersection at a significant skew. The signal is currently semi-actuated, with detection in place on the US 550 legs only. The signal currently operates as a split phase for the AVD and private driveway legs (the private drive traffic gets the green light while the AVD traffic stays red, then the private drive traffic gets the red light while AVD traffic gets the green light). The current intersection configuration is shown below:

Figure 2 – Intersection Configuration





III. Project Trip Generation and Design Hour Volumes

The Institute of Transportation Engineer’s Trip Generation Manual, 6th Edition was used to estimate project traffic. Table 1 summarizes the generation rates:

Land Use Code	Independent Variable	AM			PM			Daily		
		Peak Hour	In	Out	Peak Hour	In	Out	Daily	In	Out
220 Apartments (Dwelling units)	Dwelling Units	0.56	28.0%	72.0%	0.67	61.0%	39.0%	6.63	50.0%	50.0%

Table 2 is a summary of estimated trips generated per project phase:

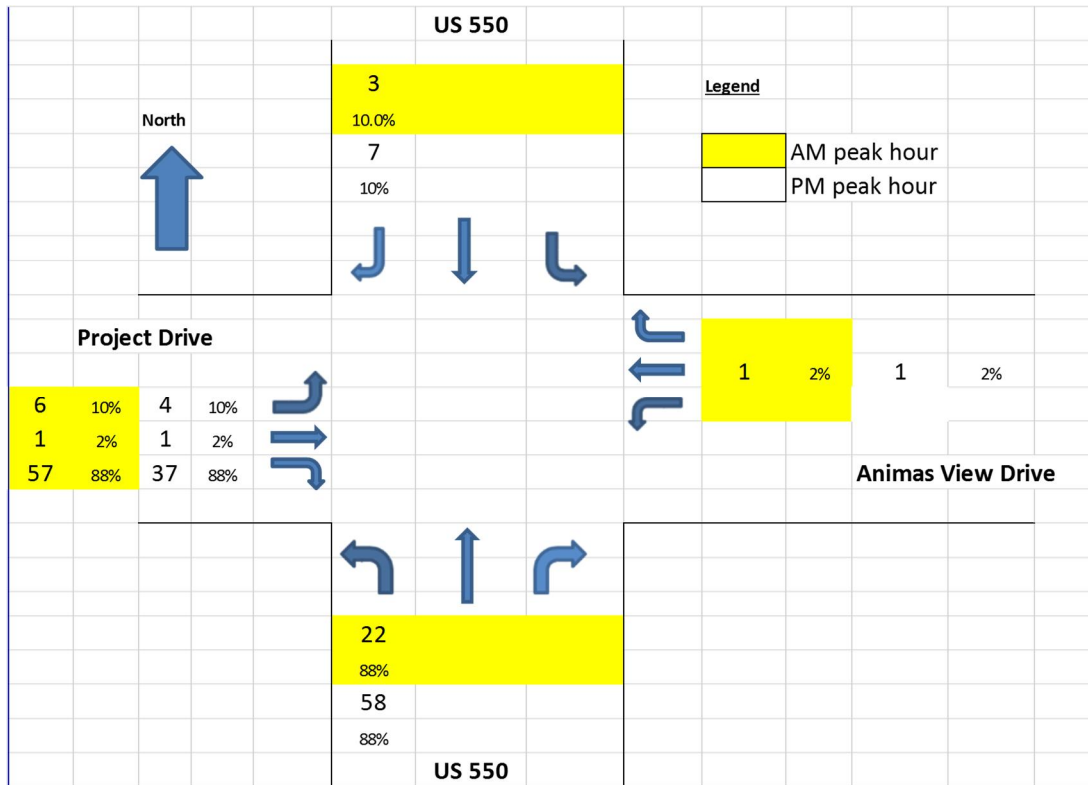
Phase	Land Use Code	Independent Variable	AM			PM			Daily		
			Peak Hour	In	Out	Peak Hour	In	Out	Daily	In	Out
Phase 1 (2019)	220 Apartments (Dwelling units)	70	39	11	28	47	29	18	464	232	232
Phase 2 (2020)	220 Apartments (Dwelling units)	70	39	11	28	47	29	18	464	232	232
Phase 3 (2021)	220 Apartments (Dwelling units)	20	11	3	8	13	8	5	133	66	66
Total		160	90	25	65	107	65	42	1061	530	530

IV. Project Trip Distribution and Assignment

Existing split information from the traffic counts was used to predict likely project traffic splits. As expected much of the traffic will be to/and from downtown Durango. The estimated splits used for this summary are 88% to/from the south, 2% to/from Animas View Drive, and 10% to/from the north. Using these percentages, project traffic assignments are shown below.



Figure 3 – Project Traffic Assignment



V. Existing and Projected Traffic Volumes

Counts for the study intersection were provided by CDOT. The counts were conducted on Wednesday 6/01/16 and Thursday 6/02/16. The counts were performed from 7:00 – 8:45AM, 11:00AM – 1:00PM, and 4:30 – 6:30PM. The peak hours for intersection analyses were determined to be 7:30 -8:30AM and from 4:45 – 5:45PM. The counts for the two days were averaged to represent the 2016 AM and PM peak hour background traffic.

All background traffic was adjusted to July 2016 using a seasonal adjustment factor of 1.02, calculated from US 550 count data available on the CDOT website. Then US 550 and Animas View Drive counts were projected to future years using the US 550 yearly growth factor of 1.04% (20 year growth factor = 1.23). No growth factor was applied to the private driveway as no future growth is anticipated for these parcels beyond full build out of this project.

VI. Intersection Analysis

Section 2.3 (5) of the CDOT State Highway Access Code requires Traffic Impact Studies to project background traffic to the 20th-year from the date of final build-out before adding project traffic for



analysis purposes. Based on the anticipated phasing schedule, final build-out is anticipated in 2021. Therefore, the 20th-year for analysis purposes is 2041.

The minimum acceptable levels of service were taken from the 2005 CDOT Roadway Design Guide, and are shown below in Figure 4:

Figure 4: CDOT Level of Service Requirements

Functional Class	Appropriate Level of Service for Specified Combinations of Area and Terrain Type			
	Rural Level	Rural Rolling	Rural Mountainous	Urban and Suburban
Freeway	B	B	C	C
Arterial	B	B	C	C
Collector	C	C	D	D
Local	D	D	D	D

Note: As may be fitting to the conditions, strive to provide the highest level of service practical.

US 550 (points to C in Urban and Suburban for Freeway)

AVD (points to D in Urban and Suburban for Collector)

Synchro traffic software (Version 10) was used to analyze each intersection.

Using the existing intersection configuration (with no improvements), a summary of the level of service analysis are shown in Table 3 below:

Table 3: HCM 2000 Peak Hour Level of Service - Existing Intersection Configuration (no improvements)

Scenario	Ebound Private Drive			Wbound AVD			Nbound US 550			Sbound US 550			Overall Intersection
	LT	Thru	RT	LT	Thru	RT	LT	Thru	RT	LT	Thru	RT	
Growth 2041 & Project AM	B			D			C	C	A	B	C		C
	14			52.3			31.6	21.4	0	17	31.6		29.6
Growth 2041 & Project PM	B			C			B	B	A	B	C		B
	10.2			33.8			15.5	17.2	1.4	11.3	21.9		19.1

Comparing the resulting levels of service with Figure 4 above, the levels of service for all movements meet the minimum requirements. However, the levels of service highlighted in yellow are right at the threshold.

In addition, in previous discussions with CDOT, CDOT has mentioned their desire to have the split phase signal timing removed. Assuming removal of the split phase signal timing, a summary of level of service analysis are shown in Table 4 below:

Table 4: HCM 2000 Peak Hour Level of Service - Existing Intersection Configuration (no improvements)

Scenario	Ebound Private Drive			Wbound AVD			Nbound US 550			Sbound US 550			Overall Intersection
	LT	Thru	RT	LT	Thru	RT	LT	Thru	RT	LT	Thru	RT	
Growth 2041 & Project AM	A			C			B	A	A	A	B		B
	5.8			20.1			11.6	9.8	0	10	16.5		14.2
Growth 2041 & Project PM	A			B			A	B	A	A	B		B
	5.3			16.7			9.2	11.7	1.2	8	13		11.7



Table 4 shows the improved performance of the intersection with the split phase removed.

VII. Conclusions and Recommendations

While Table 3 shows satisfactory performance of the intersection in the year 2041 with the addition of full-build out project traffic, CDOT has mentioned removal of the split phase during several conversations. Without formally submitting the study for review and approval by CDOT, the conservative assumption would be to assume removal of the split phase will be a requirement of this development. Detailed cost estimating of potential improvements is outside of the scope of this traffic summary. However, based on initial conversations with CDOT staff identifying the possible required improvements and cost information from previous, similar projects, a conceptual estimate on the cost of these improvements is around \$50,000. *Please use this estimated cost information cautiously, as it is based largely on speculation on what CDOT and the City of Durango will require/accept.*

In addition to the removal of the split phase, CDOT has mentioned concerns about the existing driveway grade and the desire to have the driveway widened to three lanes wide (one lane in-bound and two lanes out-bound). The civil/site designer on the project is likely best suited to determine how these improvements will impact the site design and overall project costs.