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Collins Ridge

Traffic Impact Study

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Figure 1 Turning Movement Counts (Existing + Proposed AM)

Figure 2 Turning Movement Counts (Existing + Proposed PM)

Figure 3 Aerial Layout

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Introduction

This document was prepared to analyze the potential traffic impacts of the proposed Collins Ridge development in Smithville, Missouri. The site will be accessed by Missouri 92 on the south and Liberty Street on the north. The proposed layout of the site is shown in Figure 4. The intersections evaluated in this study are MO 92 @ Liberty Dr. and MO 92 @ Proposed Collins Ridge Dr.

Existing Conditions

MO 92 is a 2-lane highway with 2-foot shoulders and no passing zones along the frontage of the site. It is 45 MPH on the western portion of the site and transitions to 55 MPH on the eastern side of the site. Liberty Street is a 2-lane public street that carries minimal local traffic with a posted speed of 25 mph. AADT data was obtained from MoDOT and outlined below in Table 1.

Table 1: MoDOT AADT

AADT	AM	PM	DAILY
MO 92 Eastbound	161	376	2728
MO 92 Westbound	387	231	2633

Intersection turning movements counts for MO 92 @ Liberty St. were collected in traffic observation conducted in mid-January 2026 and shown in Figures 1 and 2 in the Appendix.

The Smithville school complex is located just west of the proposed development, consisting of the elementary school, middle school, high school and the bus depot. The main entrance to the schools is located on Commercial Avenue with an auxiliary entrance onto 92 about 1930' to the west of the proposed entrance to this development. There is a driveway to the White Iron Ridge wedding venue approximately 332' to the east of the proposed entrance. Additionally, there is a roundabout at the intersection of MO 92 @ Commercial Avenue that currently operates efficiently and safely during school arrival and dismissal times.

Sight Distance

Sight distance is provided at intersections to allow the drivers of stopped vehicle's sufficient view of the intersecting roadway to decide when to enter or cross it. If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. Stopping Sight Distance was measured in the field as:

MO 92 @ Collins Ridge Dr.
Eastbound: 750'+
Westbound: 444'

Using Green Book Table 3.1 Stopping Sight Distance from MoDOT’s Engineering Policy Guide, the required minimum distance for 55 MPH is 495’ and 45 MPH is 360’. We would recommend decreasing the speed limit in this section of MO 92 and also possibly relocating the entrance of Collins Ridge to increase sight distance for the intersection. There is no required minimum intersection sight distance for a 25-mph road, and no obstructions were observed at the proposed intersection of Collins Ridge Drive at Liberty Street.

Proposed Conditions

Collins Ridge is a proposed development of 117 townhomes, 287 single family homes, and 23,500 square feet of commercial space located in Smithville, Missouri. There will be three total access points for the development, with the main entrance being Missouri 92 @ Collins Ridge Drive. There will also be a new connection to Liberty St. and a connection to the Smithville School Complex. The proposed site layout is shown in Figure 4.

Trip Generation

Using the 11th edition of the ITE Trip Generation Manual, we have estimated the new trips that will be generated by the proposed Collins Ridge. Land Use Code 220 was used for the Townhomes, Land Use Code 210 was used for the Single-Family homes, and Land Use Code 710 was used for the commercial lots as it proposed general office space. The estimate AM and PM Peak Hour traffic volumes are shown below in Table 2.

Table 2: Trips Generated, Peak Hour

USE	UNITS	DAILY	AM	IN	OUT	PM	IN	OUT
Townhomes (ITE 220)	115	828	55	14	41	66	39	27
Single Family (ITE 210)	287	2706	201	50	151	270	170	100
Commercial (ITE 710)	23.5	127	36	14	41	34	6	28
TOTAL	209	1559	100	78	233	123	215	1559

Trip Distribution

Based on existing traffic flows and general observation of the surrounding areas, we have assumed that 80% of the trips will be entering and exiting the development to/from the south and 20% of the trips will be entering and exiting and exiting the development to/from the north for the single family residential. For the commercial and the townhomes, we have assumed all trips will be using the main entrance on Missouri 92 with the following distribution:

AM Peak Hour

- 30% to and 50% from Eastbound Missouri 92
- 70% to and 50% from Westbound Missouri 92

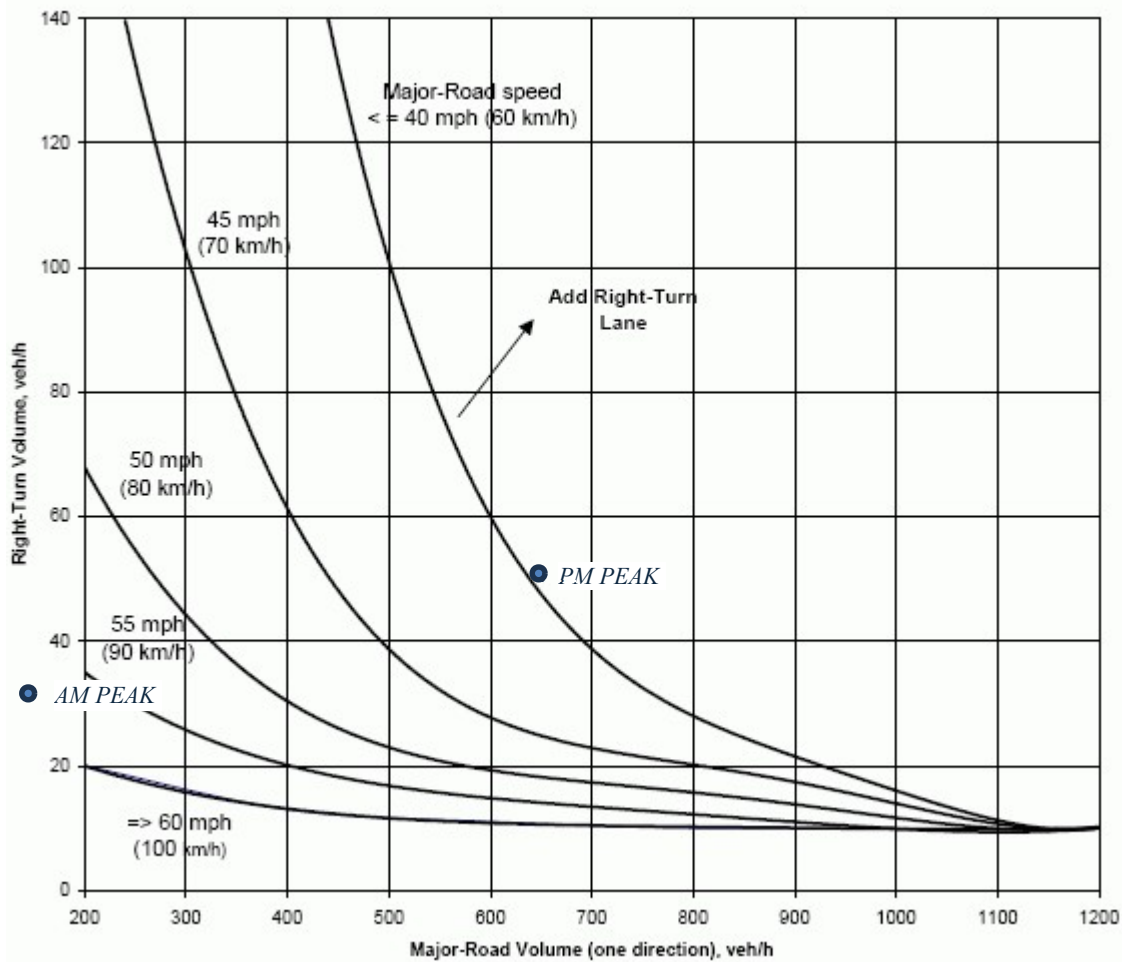
PM Peak Hour

- 50% to and 70% from Eastbound Missouri 92
- 50% to and 30% from Westbound Missouri 92

Right Turn Lane Analysis

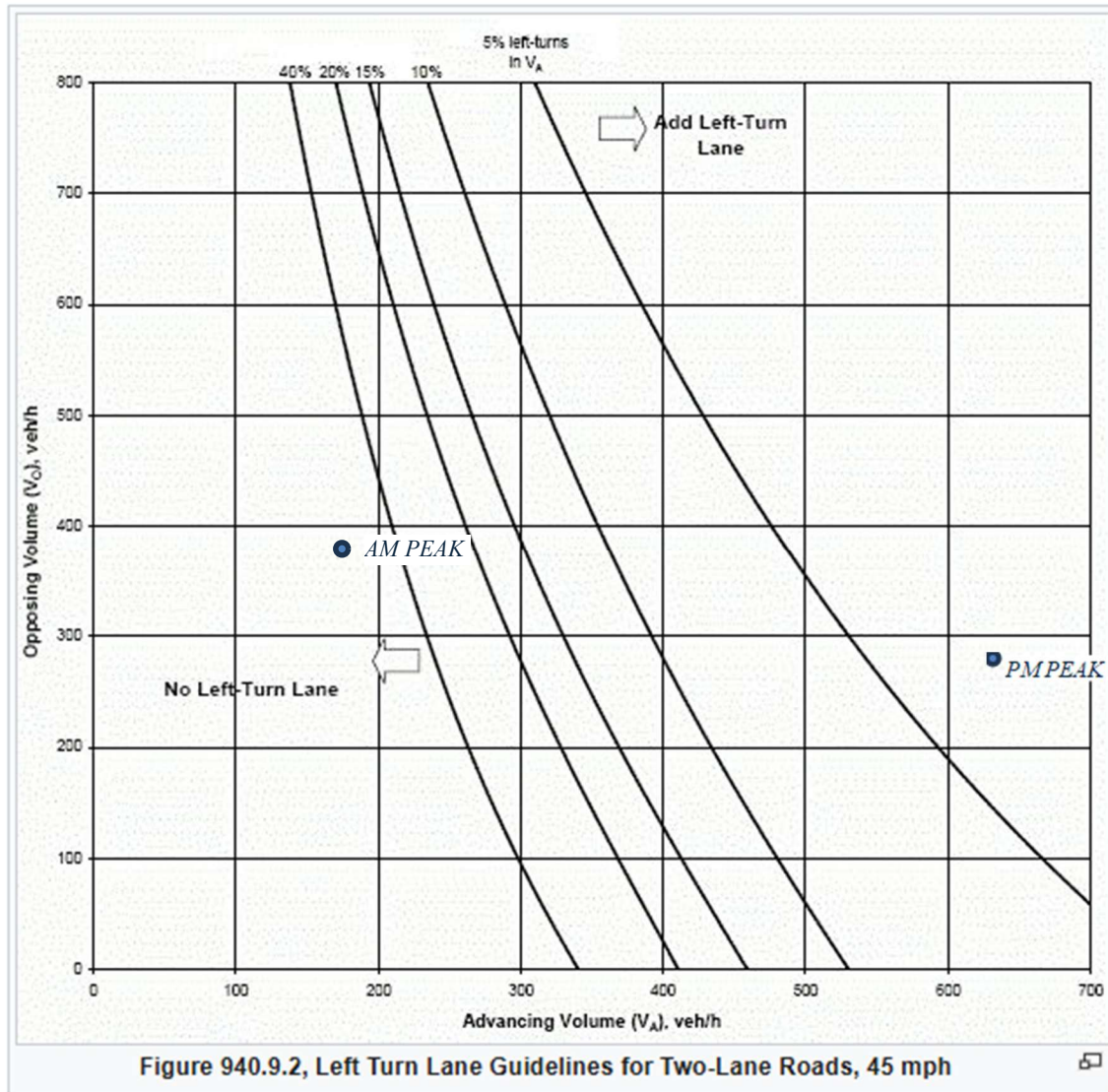
The intersection of MO 92 @ Collins Ridge was evaluated for an WB right turn lane. The peak hour counts in Figures 1 and 2 and the right turn lane guidelines outlined in MoDOT's EPG Section 940 were used to conduct this evaluation. A westbound right turn lane would be warranted in the PM peak hour at the proposed intersection of this development, but not in the AM peak hour.

940.9.8 Right Turn Lane Guidelines for Two-Lane Roadways



Left Turn Lane Analysis

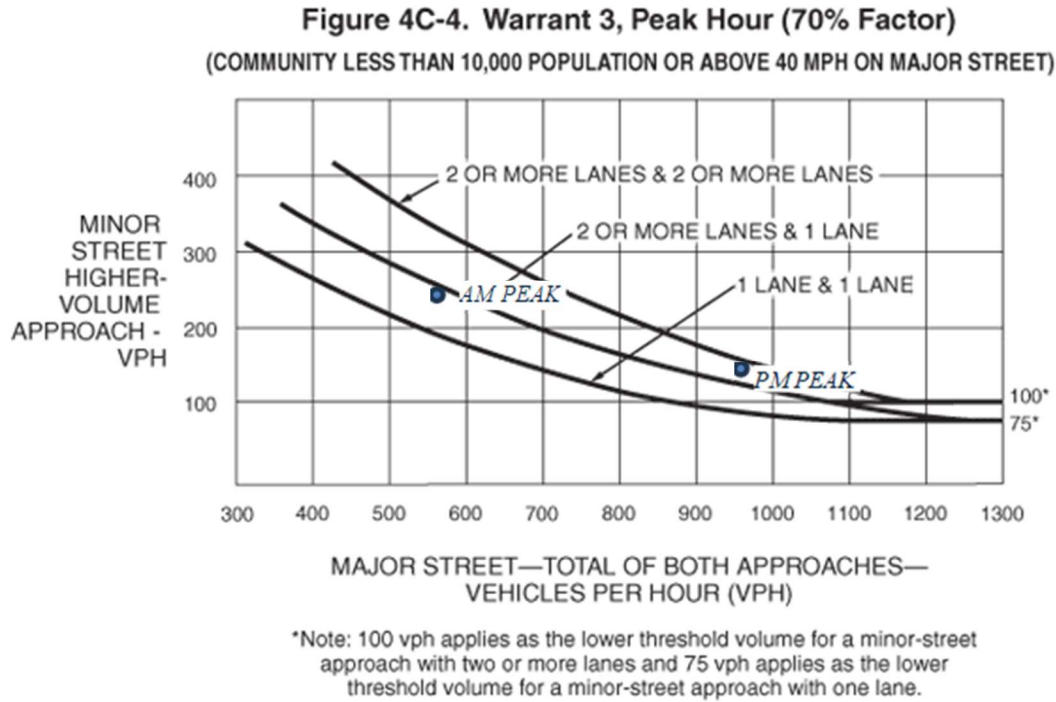
The intersection of MO 92 @ Collins Ridge Drive was evaluated for an Eastbound Left turn lane. The peak hour counts in Figures 1 and 2 and the left turn lane guidelines outlined in MoDOT's EPG Section 940 were used to conduct this evaluation. An eastbound right turn lane would be warranted in the PM peak hour at the proposed intersection of this development, but not in the AM peak hour.



Traffic Signal Warrants

The need for traffic signals was evaluated using the Manual on Uniform Traffic Control Devices Chapter 4C and MoDOT EPG Section 902.3. Using the proposed peak hour counts with 2 approach lanes, there

will not be enough traffic volumes at the intersection of MO 92 @ Collins Ridge Dr. to satisfy Warrant 4C, peak hour warrant.



Crash History

Crash history was reviewed for the MO 92 corridor between the Smithville School Entrance and the intersection at Liberty Street as well as Liberty St. from MO 92 to Liberty Dr. using the State of Missouri STARS reporting system.

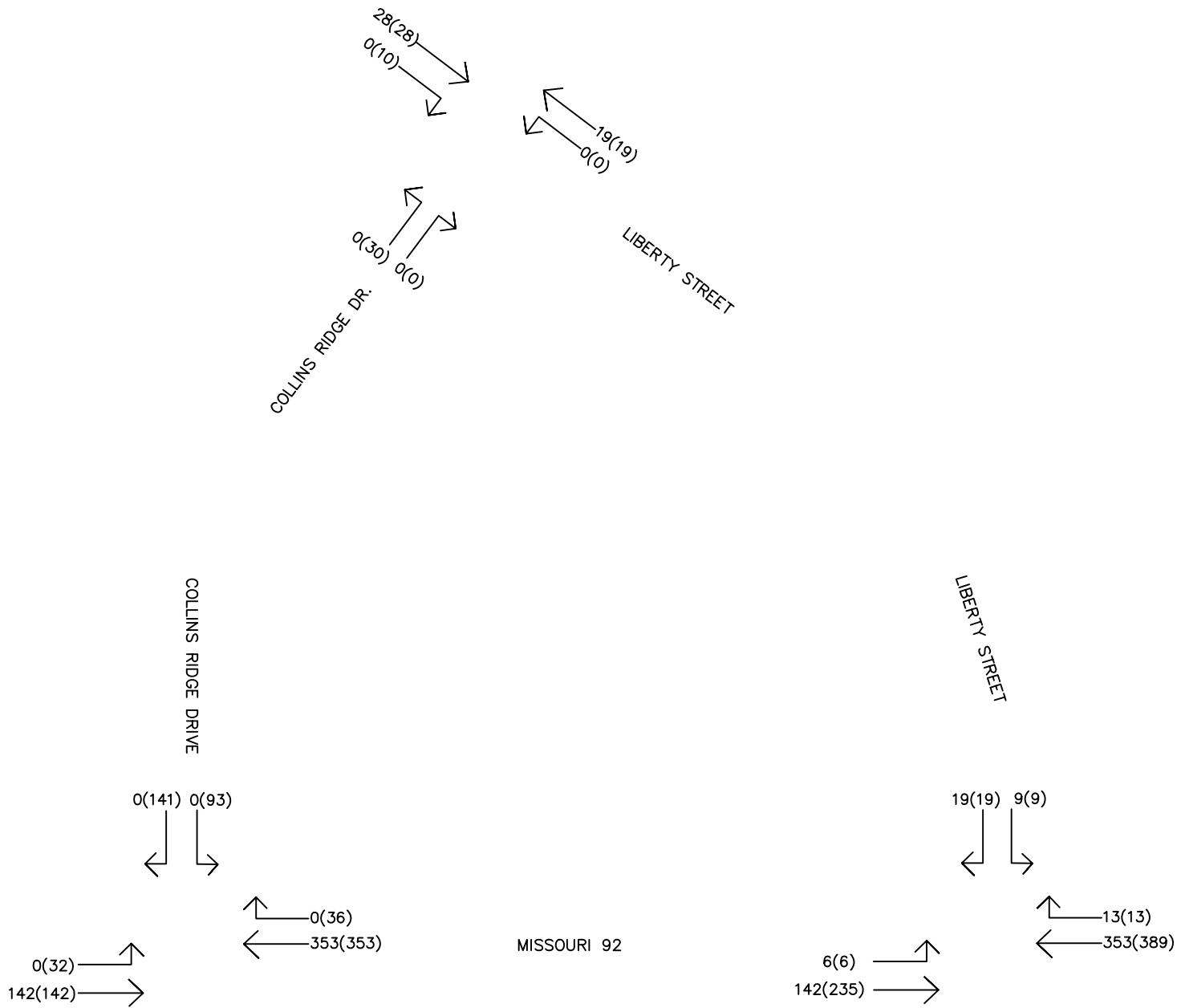
- MO 92
 - 2021: No crashes
 - 2022: 1 PDO (Deer), 1 PDO at Intersection of 92 @ Liberty
 - 2023: 2 PDO (Deer), 2 PDO
 - 2024: No crashes
 - 2025: 1 Injury at the intersection of 92 @ Liberty
- Liberty St.
 - 2021: No crashes
 - 2022: No crashes
 - 2023: No crashes
 - 2024: No crashes
 - 2025: No crashes

Conclusion

This study examined the potential impacts associated with the proposed Collins Ridge residential and commercial development. The new intersection of MO 92 @ Collins Ridge Dr. that will be constructed with this development should be stop controlled. Southbound Collins Ridge Drive will require a dedicated left and right turn lane with a stop sign. Additionally, both eastbound and westbound turn lanes should be constructed on MO 92.

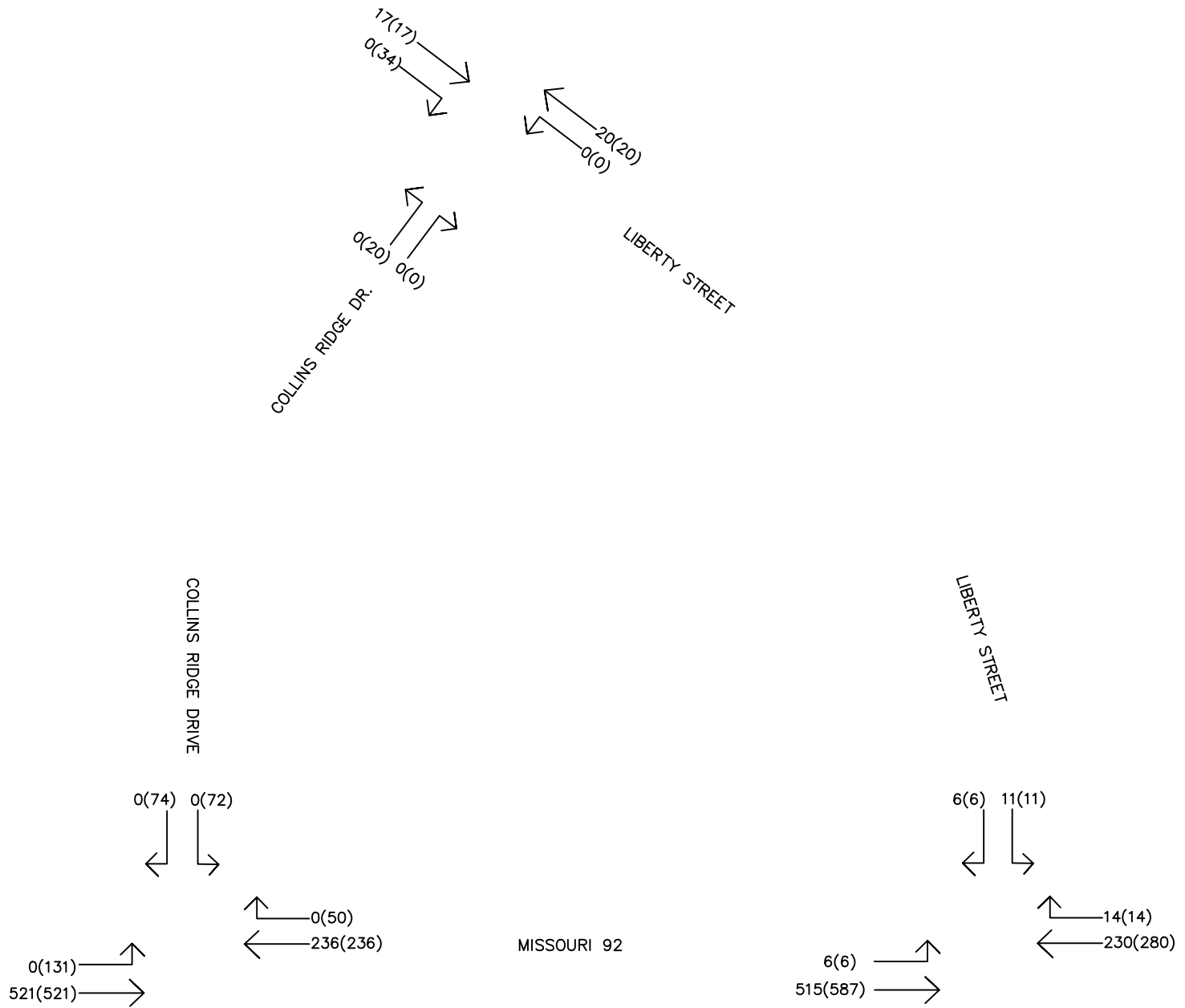
We would also recommend that MoDOT conduct a speed study along MO 92 to determine if the 45 MPH zone should be extended to east of Liberty Street in anticipation of this new development and potential school traffic using Collins Ridge Drive.

FIGURE 1 COLLINS RIDGE AM TURNING MOVEMENT COUNTS



EXISTING (PROPOSED)

FIGURE 2 COLLINS RIDGE PM TURNING MOVEMENT COUNTS



EXISTING (PROPOSED)

Figure 3



Figure 4

