



TRAFFIC MEMORANDUM

Date: May 26, 2026

To: Mr. Tim Crockett. P.E. – Crockett Engineering

From: Mrs. Shawn White, P.E., PTOE

CBB Job Number: 027-26

Project: Proposed Student Housing Development – The Retreat at Columbia
Rock Quarry Road and Grindstone Parkway
Columbia, Missouri

CBB completed a traffic impact study in March 2026 for the proposed student housing development, known as The Retreat at Columbia, generally located along the west side of Rock Quarry Road just north of Grindstone Parkway in Columbia, Missouri.

Several traffic-related questions and comments were raised at the May 7, 2026 Planning and Zoning meeting.

Trip Generation Estimates (Analysis of Midday and PM peak hours)

The March 2026 Traffic Impact Study (TIS) evaluated the weekday Midday and PM peak hours. The comment was raised as to why the TIS did not evaluate the weekday AM peak hour. The analysis hours were discussed with the City of Columbia staff and it was agreed that the study would evaluate the weekday Midday and PM peak hours as they represent the highest traffic volume hours for the proposed site.

Traffic forecasts for the proposed student housing development was estimated based upon information provided in the *Trip Generation Manual*, 12th Edition. Trip estimates for the proposed student housing development were based on ITE Code 225, Off-Campus Student Apartment (Low-Rise) (Over ½ Mile from Campus). **Table 1** summarizes the trip generation estimate for the proposed student housing development for the weekday AM, Midday and PM peak hours.

As shown in the table, the weekday Midday and PM peak hours trips are more than double the estimated AM peak hour trips for the proposed student housing development. As such, the weekday Midday and PM peak hours would represent a worst-case scenario with regard to traffic impact.





Table 1: Trip Estimate – Proposed Student Housing Development (ITE Data)

Land Use	Size	Weekday AM Peak Hour			Weekday Midday Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Off-Campus Student Apartment (Low-Rise) (ITE Land Use 225)	720 beds	30	75	105	120	110	230	115	110	225
% Higher than AM Peak Hour					Midday trips are more than double the AM trips (219% higher)			PM trips are more than double the AM trips (214% higher)		

~ Trips rounded to nearest 5 vph

Trip Generation Estimates (March 2026 TIS presents a conservative estimate)

As mentioned previously, traffic forecasts for the proposed student housing development were estimated based upon information provided in the ITE *Trip Generation Manual*. The trip rate data provided by ITE is based on 19 studies at similar off-campus student housing developments.

To aid in the trip distribution assumptions, the drives serving the Central House student housing development, located on the opposite side of Rock Quarry Road, were counted on February 19, 2026. Although not discussed in the March 2026 TIS, the trips to and from the Central House student housing development were totaled and compared to the estimates based on the ITE *Trip Generation Manual* to ensure that the ITE trip estimates used in the traffic study were representative.

Table 2 summarizes the trip generation estimate for the proposed Retreat at Columbia student housing development for the weekday Midday and PM peak hours based on the traffic counts at the Central House student housing development.

Table 2: Trip Generation Estimate – Proposed Student Housing Residential Development (Local Data)

Land Use	Size	Weekday Midday Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Proposed Retreat at Columbia (Local Central House Trip Rate Data)	720 Beds	60	80	140	85	85	170

* Trips rounded to nearest 5

In reviewing the actual trip rates for the Central House development, it was found that the ITE trip estimates used in the March 2026 TIS are approximately 163% higher than the trip estimate based on the Central House local data for the Midday peak hour and approximately 133% higher than the trip estimate based on the Central House local data for the PM peak hour. Consequently, the



trip estimate based on the ITE rates used in the March 2026 TIS presents a conservative analysis, as the proposed student housing development would be expected to generate notably less traffic than the trip estimate used in the March 2026 TIS (i.e., 90 less trips in the Midday peak and 55 less trips in the PM peak).

Trip Distribution Assumptions

The trip distribution assumptions were discussed with the City of Columbia staff and approved by staff before proceeding with the traffic analysis. The trip distribution assumptions were based on the existing travel patterns for the Central House student housing development, as well as the proposed developments access to the roadway network.

Study Intersections – Stadium Boulevard and Rock Quarry Road

Based on a recent study completed by Lochmueller Group, dated March 13, 2025, for the University of Missouri in cooperation with the City of Columbia and MoDOT, the intersection of Stadium Boulevard and Rock Quarry Road has a total entering volume of 3,924 vehicles in the weekday PM peak hour. The proposed site is conservatively estimated to add approximately 80 trips (40 leaving and 40 coming) to the intersection in the PM peak hour, accounting for an increase in traffic of about 2%.

Given the existing volumes at the intersection of Stadium Boulevard and Rock Quarry Road, the minimal increase in traffic associated with the proposed housing development would have very little impact on the intersection operations.

Crash History – Rock Quarry Road

Crashes for the Rock Quarry Road corridor from just south of Stadium Boulevard to just north of Grindstone Parkway were queried for the five-year period from 2020 to 2024. Based on the crash data, forty-one (41) crashes occurred on Rock Quarry Road in the past five years in the study area.

Twenty-nine (29) of the crashes were property damage only, eight (8) were minor injury/suspected minor injury, two (2) were suspected serious injury and two (2) were reported as fatal crashes. There were twenty-nine (29) out of control crashes, five (5) rear end, two (2) left-turn right angle, two (2) head on, one (1) sideswipe, one (1) passing, and one (1) avoiding. Thirty-two (32) of the 41 crashes (78%) occurred during dry conditions with six (6) crashes occurring on wet pavement, two (2) crashes on snow covered pavement and one (1) crash on a pavement that had ice. Twenty-four (24) of the 41 crashes (59%) occurred during daylight hours, sixteen (16) crashes (39%) occurred during dark with streetlights off, and one (1) occurred (2%) during dark with streetlights on.

The crash rate was calculated for Rock Quarry Road using the formula below.

$$\text{Crash Rate} = \frac{\text{number of crashes} \times 10^8}{\text{Length} \times \text{ADT} \times 365 \times \text{Years}}$$



Based on 41 crashes over the last 5 years, a corridor length of 1.49 miles and an ADT of 8,335 vehicles per day (vpd), the crash rate for the Rock Quarry Road corridor is calculated to be approximately 181 crashes per Hundred Million Vehicle Miles Traveled (HMVMT).

As a comparison, the MoDOT statewide crash rate (for the past 5 years from 2023) for a major collector is 217.13 HMVMT while the MoDOT crash rate for a two-lane roadway is 183 HMVMT.

Comparing the crash rate of the Rock Quarry Road corridor to the statewide average for a major collector and a two-lane roadway, the Rock Quarry Road corridor crash rate is slightly lower than the statewide average.

Potential Safety Improvement

Rock Quarry Road is posted at 30 mph and has no advance curve warning signs even though there are several curves along the corridor. Thus, if a motorist is traveling over the posted speed limit, which is likely, and there is a curve that should be traveled at a lower speed, say 20 or 25 mph, and there is no warning of the curve for motorists, this condition could contribute to the amount of out of control (run off road) crashes occurring along the corridor. With the highest number of crashes classified as out-of-control crashes (run off road), a curve study could be performed and curve signing installed along with advisory speed signs along the corridor.

Improving curve delineation with new chevrons, horizontal arrows, and advance warning signs as well as the improvement of existing signs using fluorescent yellow sheeting could result in an 18% reduction in fatal and injury crashes for all non-intersection crash types¹ and up to a 25% reduction in all crash severities² for all non-intersection crash types during night conditions, based on the crash modifications factors included in the CMF Clearinghouse³.

We trust the supplemental traffic information provided herein is useful in your continued review of the proposed The Retreat at Columbia student housing development in Columbia. If additional information is desired, please feel free to contact me at 314-449-9572 or swhite@cbbtraffic.com.

Sincerely,

Shawn Lerai White, P.E., PTOE
Associate - Senior Traffic Engineer

¹ <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=10612>

² <https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=10613>

³ <https://cmfclearinghouse.fhwa.dot.gov/>