RICE CREEK COMMONS

RAMSEY COUNTY ARDEN HILLS

MEMORANDUM

DATE: February 28, 2024

TO: Joint Development Authority Board of Commissioners
City of Arden Hills City Council

FROM: Brad Estochen, PE, PTOE, Ramsey County Engineer
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SUBJECT: JDA Traffic Study – Summary of Key Findings

As a follow-up to the presentation provided to the JDA on January 2nd, this memo provides a section by section summary of the conclusions and key findings from the Final Traffic Study, dated February 2nd, 2024, prepared for the JDA by Alliant Engineering.

Section 1: Introduction

- Traffic Study requested by the JDA, to incorporate proposed revisions to the TCAAP Redevelopment Code (TRC) and help to understand potential impacts to surrounding roadway network, as well as high level capacity needs of internal county road.

Section 2: Existing Conditions

- Existing conditions were reviewed to establish a baseline to help assess future impacts. Existing conditions evaluations were performed for the following intersections:
    - CR 96 & Old Highway 10
    - CR 96 & Snelling Avenue
    - CR 96 & Keithson Drive
    - CR 96 & Hamline Ave
    - CR 96 & Lexington Ave

Section 2.1: Data Collection

- Turning movement counts were captured per Institute of Transportation Engineers (ITE) industry standards, on a weekday, on Tuesday October 24, 2023. Data collected at that

time established the hours of 7:30 – 8:30 AM, and 4:30 – 5:30 PM, respectively for peak hours (the hours with the highest traffic volumes throughout the day).

Section 2.2: Level of Service

- Industry Traffic Engineering standards outline operational assessment values called Levels of Service (LOS). Intersections are given a ranking from LOS "A" to LOS "F" based on the average delay per vehicle. Levels of service letter rankings do not align with letter grades, in terms of "passing" or "failing". However, LOS A generally indicates "free flow" traffic, with letter rankings trending toward F indicating increased congestion, lower speeds, and potential delays, as LOS F indicates volume exceeds capacity.
- Ramsey County uses an intersection LOS E as an acceptable operating condition for traffic studies and project planning.
- Important note is that even if an intersection LOS is "low" (closer to F) due to volume exceeding capacity during peak periods, LOS will be "higher" (closer to A – free flowing) during non-peak periods.

Section 2.3: Intersection Capacity Analysis

- According to the existing year analysis for the study intersections overall during peak hours; all intersections currently operate at LOS D or better during peak hours.

Section 3: Volume Comparison

- Comparison between 2014 and 2023 turning movement counts
- Results of comparison indicated that traffic volume has decreased by 17 percent and 5 percent, respectively, for AM and PM peak periods.
- Decrease in volume due to flatter actual (observed) growth rate + COVID impacts.

Section 4: Traffic Growth Rates

Section 4.1: Traffic Growth

- Statistical analysis was used to validate new assumed growth rate of 0.50% (versus previous study assumption of 1.0%)

Section 4.2: Proposed Daily Forecasts

- New 0.50% growth rate was applied to project future 2030 traffic volumes.

Section 5: 2030 No Build – Intersection Capacity Analysis

- To assess impacts of Rice Creek Commons Development on adjacent roadway network, a "no-build" analysis was first performed to establish what the baseline future traffic conditions would look like without development build out.
- No-build analysis indicates that all study intersections are expected to operate at LOS D or better during AM and PM peak hours.

Section 6: Proposed Development

In order for comparison to 2014 study, a full build-out by 2030 was assumed in this study. However, as it is extremely unlikely for full build out of the development to occur by 2030. The projections in this study are conservative, showing an accelerated worst case scenario completely in place by 2030.

Section 6.1: Proposed Access

- Access to proposed development assumed at two locations:
  - CR 96 & North Heights Church
  - CR H & Thumb Rd/1-35W
- Improved access control at the CR 96 access will be required under any build scenario. A traffic signal at the access is assumed.
- A roundabout was constructed at the north site access per mitigation recommendations from the 2014 report. This intersection control is expected to be sufficient to serve as a primary access/entrance to the site.

Section 7: Development Trip Generation

Development trip generation calculations have been updated based on approved land use changes and proposed density changes (1960 units) as well as industry standard dictated updates (ITE Trip Generation Manual)

Section 7.1: Development Scenario Changes

- Additional 500 residential units added
- 500 units added to "rental townhome" ITE code as the result is a slightly higher (more conservative) trip generation outcome

Section 7.2: Trip Generation

- Using industry standards an average of 15 percent multi-use reduction was applied to all development trips

- Multi-use reduction accounts for internal trips between land uses and external alternative modes of travel
- Table 5 details ITE Trip Generation estimates for development areas

Section 7.3: Development Trip Distribution

- Distribution of site-generated traffic in and out of site was based on assumed distributions from initial 2014 study
- Distributions with additional development trips were applied and added to 2030 no-build scenario to arrive at 2030 build scenario traffic volumes (Figure 7)

Section 8: 2030 Build – Intersection Capacity Analysis

An analysis using the existing signal timing and previously recommended mitigation measures (from original AUAR traffic study) for the south site access at CR 96 was performed for the 2030 Build scenario.

- At full build out, all study intersections are expected to perform at a LOS C or better during weekday AM peak hour, except for CR 96 & Lexington.
- At full build out, all study intersections are expected to perform at a LOS D or better during weekday PM peak hour, except for CR 96 & Lexington.
- Due to operational deficiencies observed at CR 96 & Lexington with existing signal timing, an updated capacity analysis was performed with revised signal timing throughout the corridor.
- With the revised signal timing, all study intersections are expected to operate at LOS D or better for both weekday AM/PM peak hours.
- Ramsey County routinely evaluates signal timing and will adjust signal operations in order to be responsive to changes in traffic volumes and improve operations.

Section 9: CR 96 & Rice Creek Commons Property Lane Configurations

- Additional scenarios were analyzed to better understand when additional capacity (turning movements) would be needed at the southern Rice Creek Commons access at CR 96.
- Table 8 details that the analysis confirms that with only one east bound turn lane at the southern entrance, the intersection will perform at LOS E during peak hours at full build out.
- Table 10 details a third scenario based on split phase signal timing. Results of this scenario indicate that all study intersections are expected to operate at overall LOS D or better for both peak periods.
- Additional analysis indicates that a second eastbound left turn lane on CR 96 at the southern Rice Creek Commons entrance would not be needed immediately; but could

be implemented as a mitigation measure once development volumes increase and impacts are fully realized.

- Modifications to side-street corridor approaches will likely be needed at all unsignalized intersections to mitigate side-street approach delays at full build out.

Section 10: Internal Roadway Capacity Analysis (Spine Road)

- A high-level capacity analysis was conducted for the primary internal roadway (Spine Road – CSAH 4).
- Previously shown as a 4 lane (5 lane including turn lanes) divided roadway.
- 46,194 daily trips assumed were distributed throughout the internal roadway network
- A 60/40 split was assumed for trips using the northern/southern entrance to the site
- The spine road was split into 7 segments for the analysis
- Highway Capacity Manual standards were applied and used in comparison to the projected daily trips at full build out.
- Tables 11 and 12 summarize the results of the internal roadway capacity analysis for a 3 lane cross-section. Analysis indicates that a 4 lane roadway is likely no longer required throughout the entire corridor; a 3 lane (4 lane including right turn lanes) cross-section could perform at acceptable LOS in some segments of the spine road corridor.
- Further analysis will be completed to determine spine road cross-section during final design phase.

Section 11: Conclusions

- Observed 2023 Turning Movement Counts (TMCs) were 17% and 5% less than 2013 TMCs for the AM & PM peak hours. Reduction is due to COVID impacts, as well as flatter actual growth rate.
- COVID impacts and flatter actual growth results in a current assumed growth rate of 0.50% compared to the 2014 calculated growth rate of 0.93%.
- Land Use updates were made per proposed development plan to accommodate an additional 500 units; a 15% multi-use reduction for internal trips and a 60 north/40 south split was utilized.
- Results of 2030 Build intersection capacity analyses indicates that with signal timing modifications, all study intersections are expected to operate at overall LOS D or better during all peak hours with previously indicated mitigation measures.
- Increased delays would be realized at full build scenario at some intersections.
- Results of 2030 Build analysis could be improved with additional mitigation measures, such as split-phasing signalization and added turn lanes, as necessary during future build-out phases.
- Based on high-level capacity analysis the spine road may not need to be 4 lane (5 with turn lanes) throughout but could transition from reduced cross-section to 4 lane prior to

higher density areas of the development. Further analysis to determine spine road cross-section will be performed in final design phase. Right-of-way to accommodate wider cross-section will be maintained throughout.

- There is adequate capacity along CR 96 to accommodate anticipated Rice Creek Commons development trips. Additional mitigation measures will be implemented along the corridor as necessary during phased build-out to address potential side-street delays.

Assumptions for changes in Land Use and 500 additional Housing Units:

1. The trip generation tables from the 2014 study (minimum development scenario) were utilized. This had 525 single family units, 300 apartments, 525 condo/townhomes (rental and owned) and 150 senior rental townhome/condo (1500 units total).
2. The Alatus development plan was used to generate the number of trips. Specific numbers/units were not tied to that diagram but using the land use changes and layout assumptions provided the basis to compare results to the previous study.
3. The Rice Creek Commons diagrams were used to understand what unit type the additional 500 residential units should be to develop the appropriate number of anticipated trips. The additional 500 units were lumped into NR-3 and NR-4 which are medium density land uses. This was included in modifying the land use for section 14 from exclusively Flex Space (light industrial) to a mix of flex space and residential. The additional 500 units of housing was spread out over sections 7, 8 and 14. This gets the additional 500 units included in the trip generation to 2000 total units (approximately 1960).
4. The 500 additional units were allocated as follows: 50 senior housing, 50 rental townhome, 100 condo/townhome, 100 apartments, 200 single family to arrive at conservative estimates.
5. The previous study calculated 48,970 trips from the site when fully built. Using the new ITE trip generation estimates the number of trips for the site are expected to be 44,165 when the site is fully built. When incorporating the additional housing units into the new site calculations the expected number of trips are 47,104The updated trip generation via ITE resulted in a decrease of nearly 5000 trips (48,970-44,165). Adding in the trips from the conversion of Flex space to additional residential units adds 3000 trips to the site (47,104 – 44165) resulting in a net reduction of 1,866 trips for the overall site compared to the previous study (48,970 – 47,104).