



ALDRIDGE TRANSPORTATION CONSULTANTS, LLC

Advanced Transportation Planning and Traffic Engineering

John M.W. Aldridge, P.E.
Colorado Licensed Professional Engineer

1082 Chimney Rock Road
Highlands Ranch, CO 80126
303-703-9112
Mobile: 303-594-4132
john@atceng.com

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Westminster OC, LLC
c/o Mark Nickless
9033 East Easter Pl. #110
Centennial, CO 80112

Re: Traffic Impact Study – Response to CDOT Comments Dated 10-23-20
Uplands – Westminster, CO

Dear Mr. Nickless:

The following are my responses to comments made by CDOT re the Uplands (aka Rose Hill) traffic impact study prepared by this firm August 9, 2020. Note it is not certain that the CDOT comments were made in reference to the August study as the comments do not identify the August study as the most recent. All comments prior March 3, 2020 including those from CDOT made July 2019 were addressed by the following items in the August 12, 2020 Response to Comments.

- 1) Re: the 95th percentile queue length report. While the Synchro reports show the 50th percentile back of queue, the Queuing and Blocking reports that are attached per CDOT's request provide the 95th percentile queue lengths.
- 2) Re: balancing. Shown the are peak hour data for each intersection which may not coincide or balance with the proximal intersections. It is more important to understand the peak hour impacts of each intersection vs. forcing a balance.
- 3) Re: number of units. The Uplands traffic study analyzes the maximum build out of 2350 residential units.
- 4) Re: Trip distribution: The trip distribution is based on the present directional splits at each intersection plus consideration of the shortest trip path to shopping, schools etc.
- 5) Re: Growth factors. We applied the recommended growth factors of 1.04 in the 5-year scenario and 1.14 for the 20-year scenario.
- 6) Re: Truck percentage. While the percent of heavy vehicles on Federal Blvd. is 2.9 percent, we applied the default percentage of 2 percent to all roads in the area most of which carry 0 to 1 percent heavy trucks. We reviewed applying 2.9 percent only on Federal Blvd. and the result was no change in overall delay and/or LOS.
- 7) Re: Signal phasing and clearance. All the signal timing information is provided in the Synchro reports. Note as the signals are fully actuated the signal timing will vary from cycle to cycle. The signal at 86th Ave. will be semi-actuated (dwell on mainline with force off changes).
- 8) Re: Peak hour factor. Per the HCM, the peak hour factor is only used for a planning analysis of the peak 15 minutes. It is not useful in this case and may skew the results of the peak hour analysis. The default peak hour factor is recommended for the total peak hour.



- 9) Re: Crown Point peak hour factor. Crown Pointe is not signalized and will have a different traffic loading with the addition of Uplands. It is best to use the HCM default factor for the peak hour analysis.

There were three repeated comments in the October 23, 2020 set. The following provides further elaboration.

- 1) Signal Phasing Clearance Times. All information on the signal phasing times is presented in the Synchro reports. Specifically, the line with “Cycle Q Clear (g-c) s” provides the clearance times. These are not normally reported because they are variable per cycle and dependent on random arrivals and actuated phasing time.
- 2) Peak Hour Factors. There is a common misconception about the importance of peak hour factors. The default factor is the best way to evaluate the peak hour. Please refer to the HCM 6th Edition (Ch.19 p. 25-26) for a comprehensive discussion on peak hour factors. The primary conclusions in the HCM are that the peak hour factor is primarily used for a planning analysis when a forecast hourly volume is provided, and an analysis of the peak 15-min period is sought. The HCM default value of .92 is accepted as highly representative. A second conclusion is that if the peak hour factor is used, a single intersectionwide factor should be used rather than movement-specific or approach-specific factors.
- 3) Queuing and Blocking Tables. The SimTraffic Q&B tables for the signalized intersections were added to the Synchro reports in the appendix of the August 9, 2020 traffic study. The unsignalized intersection reports include the 95th percentile queues.

ATC appreciates the opportunity to be of service. Please call if you have any questions. We can be reached at 303-703-9112.



Respectfully submitted,

Aldridge Transportation Consultants, LLC

John M.W. Aldridge, P.E.
Principal