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**PLANNING . ENGINEERING . INFORMATION TECHNOLOGY**

## MEMORANDUM

**TO:** Peter McGee

**FROM:** Joe Mehra

**SUBJECT:** Klinge Road

**DATE:** December 12, 2002

**JOB:** J-356

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This is in response to the letter by Mr. Jack McKay to Ms. Laurie Collins, dated November 10, 2002. Mr. McKay seems to agree with the methodology for computation of pollutant emissions and financial savings as computed by MCV. However, he questions the validity of the intersection delays (particularly on eastbound Porter at its intersection with Connecticut Avenue) computed by The Louis Berger Group, Inc., and presented in their report to the District of Columbia Department of Transportation. These intersection delays were used by MCV. Mr. McKay's contention is that the computer models of intersection performance, including the HCS, fail when the intersection is substantially overloaded (when the volume to capacity (v/c) ratio is larger than one).

First of all, the 2000 edition of the Highway Capacity Manual (HCM) does not seem to put a "cap" on v/c with respect to calculating delays. Secondly, the computation of delay is for the year 2017 under specific traffic conditions. A commuter will find alternative routes to bypass the intersection of Connecticut Avenue and Porter Street if the delays on eastbound Porter reach 15 minutes. However, The Louis Berger Group, Inc.'s task was not to find alternative routes to bypass this intersection, but to determine the intersection delays and levels of service for the no-build and the build alternatives, so that an alternative could be selected that would provide benefits to the motorists in the study area. The HCM or the Highway Capacity Software (HCS) provides a theoretical estimate of delay for future conditions. The HCM/HCS can provide a reasonable estimate of delays when comparing future alternatives.

I sent the following email to the Technical Support Group for the Highway Capacity Manual and the response received follows.

**Email sent:**

At what v/c ratio on an approach at a signalized intersection does the HCM result in meaningless delays? I have an intersection with an approach v/c ratio of 2.8, delay 850 secs, overall delay is 204 secs, LOS F. Are the delays meaningless from a comparison viewpoint to a build condition that would reduce the delay to 70 secs.

**Response Received:**

Meaningless is a subjective term and cannot be quantified in a technical support response, which deals with the implementation of the HCM2000 procedures by the HCS2000. If conditions are tested which lower the computed delay, comparisons would seem to have merit, (especially if the delay is reduced from 850 sec to 70 sec as suggested). How that comparison is used, and what level of accuracy is attributed to large estimates of delay in highly over-saturated conditions, is probably up to your engineering judgment.

The Louis Berger Group, Inc. (since they have presented the data in their report) and I believe that the intersection delays for comparative purposes are valid.

Please call me if you have any questions.