

# STATE OF NEW HAMPSHIRE

## INTRA-DEPARTMENT COMMUNICATION

**FROM:** Michael J. DePorter, P.E.  
Chief of Preliminary Design

**DATE:** May 16, 2008

**AT (OFFICE):** Bureau of Highway Design

**SUBJECT:** Misc. Engr. District 6  
1832-J  
US 4 / Arthur Grant Circle: Durham Business Park

**TO:** Douglas J. DePorter, P.E.  
District 6 Engineer

**RECEIVED**

MAY 22 2008

### MEMORANDUM

### DISTRICT SIX

The Preliminary Design Section has reviewed the "Preliminary traffic analysis of left turns from A. Grant Circle" by Norway Plains Associates, Inc. The proposed development seeks to exceed the size limitation that had been established by Commissioner Murray in the late 1990s for development on Arthur Grant Circle. It was envisioned at that time that any development larger than the 32,000 s.f. threshold would require the closure of the direct (temporary) connection to US 4, and the provision of primary site access via Old Piscataqua Road. However, the assumptions used to arrive at the 32,000 s.f. limitation, such as development type, trip generation rates, or traffic operations, are unknown. Therefore, it is impossible to determine whether a proposed development, whether or not it complies with the size limit, has satisfied the intent of the limitation. The Norway Plains study seeks to derive a logical development threshold based on the operation of the most critical traffic movement, the left turns exiting Arthur Grant Circle.

While we continue to feel that the safest alternative would be to direct all site access to Old Piscataqua Road, we agree, as has been discussed for the last decade, that some limited volume of traffic should be able to safely utilize the existing access point to US 4. We concur with the study's assumptions for target values of delay and saturation (v/c ratio) of 100 seconds and 0.5, respectively, for the operation of the left turns exiting Arthur Grant Circle. We also agree with the use of a 0.5% growth rate, as it is based on data from the nearby US 4 permanent traffic data recorder. We recommend that a peak hour factor of 0.9 be used, according to Department standard. Re-analyzing traffic operations with the revised peak hour factor would show that the assumed target values for delay and saturation would be reached at a volume of approximately 60 total site trips (30 left turns from Arthur Grant Circle), rather than 70 site trips as computed in the study. The 30 vehicles exiting left from Arthur Grant Circle in the 2018 PM peak hour would experience an average delay of about 120 seconds and a saturation rate of 0.54. The average arrival rate of roughly one left-turning exiting vehicle every two minutes would be approximately equal to the average departure rate. Therefore, we recommend that development on Arthur Grant Circle be limited to a peak hour trip generation of 60 trips. Traffic generation in excess of this limit would require, at a minimum, the prohibition of left turns out of Arthur Grant

TOTAL P.04

2

Circle and the diversion of this traffic to Old Piscataqua Road. The engineer should analyze the actual traffic volumes and operations at Arthur Grant Circle after the completion of this development to verify the assumptions of trip generation and distribution that were made in this analysis. We encourage the Town of Durham to plan for improvements to Old Piscataqua Road to enable it to serve as the future primary access to Arthur Grant Circle as well as to the town's wastewater treatment plant and the adjacent University of New Hampshire property.

MJD/mjd

cc: W. Cass, C. Green, W. Lambert

S:\Me-1832\Durham\Business Park\06d051608.DOC

503 958 5397 P.04/04

NH DOT DIST.6

MAY-27-2008 11:07

Received 05-27-2008 01:16pm

From-603 332 0098

To-CHINBURG BUILDERS

Page 004