Steven J. Hyman, Consulting Engineer
Professional Limited Liability Company

November 1, 2005

Sent Via E-Mail

Oak Neck Lane Homeowners Association
c/o Mr. Michael Brandt, A.I.A.
TPG Architecture
201 North Service Road-Suite 400
Melville, NY 11747

RE: Storm Drainage Improvements @ Michalis Court
Preliminary Engineering Assessment

Dear Mr. Brandt:

As requested, the writer made a site visit to Michalis Court on Friday October 14, 2005 (3:00 p.m.) to observe the recurring flooding condition at that location. At the time of our investigation it was raining heavily, and had been for the several preceding days. The roadway was heavily flooded, with the cul-de-sac portion completely submerged. The ponded area extended back to just east of the driveway of house no. 6 (north side). The water surface extended approximately 5' to 6' up the driveway of that home.

Enclosed herewith is an aerial photograph of the site with the ponded area highlighted. Without accurate survey information it would be impossible to calculate precisely the volume of water that existed at that time. However, using various techniques we estimate the standing water had a surface area of approximately 18,500 sf. By eye, it appeared as though the deepest part of the pond might have been 18"-24". For estimating purposes, if we assume the average depth of water to have been 10", that would equate to 15,416 cubic feet of standing water at that time. It should be emphasized that the conditions observed that day were the result of several days of extensive rain that have to be considered beyond what any reasonable design criteria would allow for.

It should also be mentioned that all of the standing water did not originate from Michalis Court. In addition to the roadway itself and the driveways tributary thereto, there was a substantial amount of water entering Michalis Court from Oak Neck Lane. During our site investigation, it was noticed that the existing drainage structure on the west side of Oak Neck Lane (just north of Michalis Court) was being bypassed and flowed around the corner onto Michalis Court. This is mentioned in the context that the ultimate solution to the Michalis Court problem will likely involve improvements to the Oak Neck Lane storm drainage system as well.

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To put some perspective on the matter, we have performed some rough calculations of the storage that would be required in order to provide Michalis Court with a drainage system that might be encountered elsewhere in a typical south shore community in the Town of Islip. A standard design criteria for this type of situation would be to design for a 2" rain event, and store the resulting runoff in either subsurface drywells, or linear leaching chambers. For purposes of this exercise, we have not accounted for additional runoff that may tributary to Michalis Court due to Oak Neck Lane, or the Michalis Court front lawn areas.

We have also separated the impervious area into two classifications; roadway and driveway. It is our suggestion that the homeowners association consider installing separate drainage systems for each driveway tributary to Michalis Court, to prevent that water from entering the roadway. The driveway systems would typically be comprised of a trench drain connected to a subsurface leaching structure. Capturing driveway runoff prior to its entering the roadway would provide several benefits. First, capturing runoff toward the higher elevation portion of a watershed allows for increased depth to groundwater, which translates into the ability to provide deeper drainage structures (more volume per structure). In addition, intercepting runoff in the higher ground obviously reduces the load that will be applied to the lower area, where groundwater conditions are least favorable (less volume per structure). Finally, the driveway drainage structures could be placed beneath the front lawns, which would reduce the amount of pavement disturbance required.

Michalis Court Drainage Calculations

Description	Impervious Area (expressed in sf)	2" storage (expressed in feet)	Required Storage volume (expressed in cubic feet)
Michalis Court	16,642	x 2/12	2,773
Michalis Driveways	8,563	x 2/12	1,427
Total	25,205		4,200

The tributary areas used above were derived from scaling an aerial photograph of the subject area, and should not be taken to be precise. The information presented, however, can be quite useful in guiding the homeowners association in determining the proper way to allocate funds towards drainage improvements for this area. Following is a table illustrating approximate quantities of

drywells and/or leaching chambers that would be required for Michalis Court and its driveways to provide the volume sufficient for a 2" storm.

Comparison of Drywells Vs. Leaching Chambers (2" Storm)

Description	Required Storage volume (expressed in cubic feet)	Vertical Feet of 10' Dia Drywell	Linear Feet of 20" high linear leaching chamber
Michalis Court	2,773	41	806
Michalis Driveways	1,427	21	418
Total	4,200[1]	63	1224

[1] As a point of reference, the calculated ponding of 15,416 cf witnessed in the field on October 14th is roughly 3.67 times the volume of the theoretical 2" drainage system.

The information presented above can be used by the homeowners association and its chosen contractor to price out various storm drainage options, and make a determination as to the best use of available funds. Our firm would be available to provide additional engineering information on an as-needed basis. It should be noted, however, that there is a direct relationship between the level of detailed input we can provide vs. the accuracy of the information that can be provided to us. In other words, we would be able to provide more detailed assistance when we are provided with accurate groundwater information, and precise locations for subsurface utilities.

Please feel free to contact me at our office if you have questions or wish to discuss this matter in greater detail.

Sincerely,

Steven J. Hyman, P.E.