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MEMORANDUM

TO: Town of Sherman Inland Wetlands **FROM:** Christopher Van Zanten, P.E.

DATE: January 19, 2010

RE: Porous Asphalt versus Porous Concrete, Sherman Library Expansion
CT Route 37 and Saw Mill Road

COMMENTS:

The site development plan for the Sherman Library Expansion proposed at CT Route 37 and Saw Mill Road in Sherman, CT proposes the use of porous asphalt as a low impact development strategy in minimizing the amount of runoff from the proposed parking, driveway, and sidewalk areas of the project. Porous asphalt was selected for this project due to its ability to allow rainwater to infiltrate the pavement surface and percolate into the site's underlying native soils. By allowing rainfall to infiltrate into the ground close to where it first hits the ground, the porous asphalt promotes a more "natural" flow of stormwater through the watershed than what is typically experienced with traditional impervious hardscape areas. By minimizing the concentration of overland flow, porous asphalt also aids in the reduction of erosion and sedimentation to downgradient streams and waterbodies. Other benefits of porous pavement include the reduction of thermal impacts to downgradient watercourses and waterbodies, enhancement of water quality, runoff reduction, and groundwater recharge. In addition, it has also been proven that snow and ice melt with porous asphalt is drastically quicker than traditional pavement resulting in a reduction in the amount of salt needed for winter maintenance. A great deal of testing has been performed on porous asphalt at the University of New Hampshire Stormwater Center. An excerpt from the University of New Hampshire Stormwater Center's 2007 Annual Report detailing the testing and effectiveness of the porous pavement in reducing stormwater runoff and providing stormwater quality has been included with this memo.

The porous asphalt cross section proposed for the Sherman Library will consist of 4" of porous asphalt above a 4" layer choker course, an 8" filter course, a 3" layer of 3/8" pea stone gravel, and a 10" layer of washed crushed stone reservoir base installed above the site subgrade. In addition, a perforated 4" p.v.c. underdrain system that will be connected to the proposed drainage system is also proposed as part of the porous asphalt design. The underdrain system will be installed 4" above the bottom of the reservoir course (with perforation facing up) to serve as an overflow during periods of unusually high rainfall. In areas where the porous asphalt will be constructed above areas of bedrock, a different cross section will be used which provides an additional 16" filter course to be installed below the reservoir course and above the bedrock. This cross section will provide a total of 24" of filter course above the bedrock to provide for additional sediment and pollutant removal prior to reaching the bedrock. Details of the porous asphalt cross sections and underdrain systems are provided with this memo.

Porous asphalt was selected for the Sherman Library Expansion over porous concrete for several reasons. While both porous asphalt (18-22% void space) and porous concrete (15-22% void space)

both provide basically the same function in reducing stormwater runoff and promoting stormwater quality, there are several key distinctions that led us to select porous asphalt over porous concrete. The most notable distinction is the ease of construction and cost difference in installing porous asphalt as compared to porous concrete. While the mix production of porous asphalt is a bit more difficult than that of porous concrete, the installation of porous asphalt is much easier to install than porous concrete. While virtually any qualified installer can install porous asphalt, the installation of porous concrete requires trained and certified installers. If porous concrete is installed improperly, it can result in low infiltration rates and structural problems. Due to the need for highly trained installers, porous concrete can sometimes run up to 4 times the price of an equal area of porous asphalt for virtually the same benefit. While porous concrete does perform better in reducing the “heat island” effect in the summer due to its lighter color and ability to reflect (and not absorb the sun’s heat), it does not perform nearly as well as porous asphalt in promoting ice melt in the winter.

Due to the ease of installation and lower cost associated with porous asphalt for virtually the same benefit as porous concrete, we felt that the selection of porous asphalt over porous concrete was the proper decision on the Sherman Library Expansion proposed on CT Route 37 and Saw Mill Road in Sherman, CT. We also feel that while a reduction in “heat island” effect is definitely desirable, the ice melt benefits and reduction in salt needed for winter maintenance is more desirable in a colder climate such as Connecticut.

I hope that this memo aids you in the decision making process for the Sherman Library Expansion Site Development Plan. Please do not hesitate to contact me if you have any questions regarding this memo.

Sincerely,
Arthur H. Howland & Associates, P.C.

Christopher Van Zanten, P.E.
Senior Project Manager

cc: