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SIMPSON GUMPERTZ & HEGER



Engineering of Structures
and Building Enclosures

Mr. Nicholas Redding
Executive Director
Preservation Maryland
3600 Clipper Mill Road, Suite 248
Baltimore, MD 21211

Project 181502 – Ellicott City Flood-Mitigation Document Third-Party Review, Ellicott City, MD

Dear Mr. Redding:

In response to the recent 30 July 2016 and 27 May 2018 severe flooding events within Ellicott City, MD, the Howard County government (Howard County) issued a proposed flood-mitigation plan to improve stormwater management and conveyance within the surrounding area. As part of the plan, Howard County proposes acquisition and demolition of ten historic building structures on the south side of lower Main Street immediately west of the intersection with Maryland Avenue in order to widen the adjacent stream channel thereby reducing floodwater height and flow velocity.

Preservation Maryland engaged Simpson Gumpertz & Heger Inc. (SGH) to perform a third-party review of the flood-mitigation plan proposed by Howard County in order to review the possibility of alternative solutions that marry life safety improvements with historic preservation efforts.

Based on our review of the documents provided to us by Preservation Maryland and our experience with flood-mitigation projects in Ellicott City and other communities, we believe that flood-mitigation strategies which address both life safety concerns and preservation of the historic character of Ellicott City have not been fully vetted by Howard County. In our full report which follows, we propose a number of items which should be considered before implementing any flood-mitigation strategy. We summarize these items below:

1. **2016 Hydrology and Hydraulics (H&H) Report:** Update the various improvement scenarios and their hydrologic analyses presented in the 2016 H&H Report to reflect the extent of damage associated with the 27 May 2018 flood event. Potential variances in the effectiveness of the proposed mitigation strategies should be evaluated. The update may consider:
 - 1.1. Analyze the hydraulic effects of the two tunnel bores presented in the 2016 H&H Report independent of others stormwater management and/or conveyance improvements and independent of each other. Consider other potential locations and/or shortened segments of tunnel bores or similar high-capacity conveyance improvements and analyze the hydraulic behavior. Evaluate the feasibility and cost of the alternate tunnel bores.
 - 1.2. Reassess the localized effects of the stormwater management and conveyance improvements proposed in the 2016 H&H Report, with a focus on the effective depth and flow velocity reduction in areas that currently pose the greatest risk to life safety such as areas with high occupancy and limited means of evacuation. As noted within Section 2.1.2 of our report, The Ellicott City Flood Mitigation Plan evaluates four options and their potential ability to improve stormwater management and conveyance within the historic downtown. However, the plan does not quantify the flow velocity reduction for options one through three.
 - 1.3. The concepts presented to-date do not reduce floodwater velocity and depth within the Lower Main Street area to an extent where swiftwater rescue is not required in future

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flood-related instances with similar rainfall volume to that of the 30 July 2016 flood event in Ellicott City.

2. **National Register of Historic Places Status:** Review the contribution of the ten historic properties slated for demolition to Ellicott City's historic status to understand the range of available floodproofing options. Also, review the potential implications (financial and social) should demolition of these buildings result in loss of National Register of Historic Places status. Preservation Maryland and the Maryland Historic Trust should be enlisted to assist Howard County with this effort.
3. **Open First-Floor Improvements:** Review mitigation strategies including stormwater management and conveyance improvements in combination with Open First-Floor (structural reinforcing and wet floodproofing) improvements. The quantity of buildings slated for Open First-Floor concept improvements should consider the extent of damage sustained in the 30 July 2016 and 27 May 2018 flood events. Options that protect individual building structures will reduce damage from both flooding within the Tiber-Hudson watershed (e.g., 2016 and 2018 flood events) as well as backwater flooding from the Patapsco River.
 - 3.1. Coordinate with the historic preservation community, including Preservation Maryland and the Maryland Historic Trust, to explore the viability of implementing structural reinforcing elements in tandem with wet floodproofing measures to create Open First-Floor concepts within the ten buildings proposed for demolition and additional buildings (if required).
 - 3.2. The precipitation and stream gage data reported in the 2016 H&H Report show that Hudson Branch floodwater depth peaked in approximately 2 hrs during the 30 July 2016 flood event. Therefore, implementation of a flood warning system capable of providing rapid and reliable notification of imminent flood risk is necessary to allow continued first-floor occupancy of wet floodproofed buildings and public access to Lower Main Street.
 - 3.3. Develop a cost/benefit comparison of demolition/relocation versus Open First-Floor concept for the ten buildings at Lower Main Street to accompany the proposed mitigation report revisions.

Enclosed, please find our third-party review for your consideration.

We are available at your convenience for additional questions or comments.

Sincerely yours,

Laura Marie Burgess

Eric R. Ober, P.E.
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Laura M. Burgess
Senior Staff I – Structures

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Professional Certification.

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 43366 Exp. Date: 3-26-19

Eric R. Ober
10/4/2018