

July 13, 2022

Mr. John T. Pierpont, Village Manager
Village of Pelham Manor
Village Hall
4 Penfield Place
Pelham Manor, NY 10803

**RE: Village-Wide Drainage Infrastructure Assessment;
Wynnewood Road / Highbrook Avenue &
Washington Avenue / Oak Lane Watershed Analysis and Design
Scope of Services**

Dear Mr. Pierpont:

AI Engineers, Inc., Dolph Roffeld Engineering Division (AIE/DRE) is pleased to submit this scope of work as requested with regard to assessing existing drainage infrastructure Village wide. In addition, included will be analysis and designs for the Wynnewood Road / Highbrook Avenue watershed as well as the Washington Avenue / Oak Lane watershed areas for the extension of the drainage system.

In general, our scope of work will include a comprehensive drainage assessment of the entire Village. This will result in an overall map of the drainage system, noting pipe sizes, slopes and materials, drainage structures and watershed areas. This mapping will assist in formulating an overall plan of maintenance and investigation of the system Village wide and will allow AIE/DRE to develop a computer model of the drainage system. The model will be key in analyzing and assessing capacity improvements to the Village system to identify future capacity improvement projects.

In addition, AIE/DRE will provide specific watershed analysis and design of drainage infrastructure improvements in the two specific areas noted above.

Our scope of work will include the following tasks.

I. Village Wide Drainage Infrastructure Assessment:

1. Review of existing information such as the Westchester County Hazard Mitigation Plan with regard to recurring flood hazard areas and identified projects listed for the Village.
2. Review NFIP Flood Insurance Rate Maps to identify and assess areas of Special Flood Hazard.
3. Procure Village-wide aerial photography mapping to be used as a base map.
4. Review existing historic drainage mapping throughout the Village as well as GIS storm drainage mapping to create a drainage system map. Delineate existing watershed areas Village-wide as well as flood hazard areas.

5. Utilize the drainage system mapping to prepare a plan for Closed Circuit TV (CCTV) inspection to clean, identify and confirm storm drainage piping sizes and conditions Village wide and update the system map accordingly.
6. Provide land surveying services to obtain invert elevations for the drainage system network.
7. Hydrologic analysis will be performed to model the various watershed areas Village wide. The analysis will utilize HydroCad®, a TR-20 (United States Department of Agriculture Natural Resource Conservation Service Technical Release 20) based computer model. Current rainfall extreme precipitation data such as Northeast Regional Climate Center or NOAA Atlas 14 precipitation data and the most recent FEMA Flood Insurance Rate Maps will be utilized. The study will analyze and model existing conditions and will include various storm events and intensities as needed to evaluate current system capacity and future improvements. Correlation of the model to actual storm event data and anecdotal evidence will also be performed.
8. Hydraulic analysis of the drainage system will be performed. The analysis will utilize computer software such as products from Bentley, AutoDesk as well as HEC-RAS as needed to model the existing system as well as proposed improvements. Once modelled, various potential design options will be studied during this phase to determine and make recommendations for proposed capacity improvements. This phase will also consider the effects of the 100 year floodplains within the Village at key outfalls.
9. Prepare a report discussing findings and options with a recommended projects that can increase system capacity.
10. Preliminary Design of any capacity improvements once authorized by the Village, will be prepared along with construction cost estimates for future project planning/budgeting.

II. Wynnewood Road / Highbrook Avenue & Washington Avenue / Oak Lane Watershed Analysis and Design:

1. Confirm tributary areas and model the watershed area to design a new drainage collection system to be connected into the existing system on Highbrook Avenue near Colonial Avenue.
 - a. Closed Circuit TV (CCTV) inspection to identify and confirm storm drainage piping and connections will be required in some areas. This is to be performed in concurrence with the Village wide study.
 - b. Survey will be required during this phase to confirm actual field conditions and to serve as a base map for final design documents. Survey work is to be billed at a direct cost to the Village and will be based on the aerial mapping performed under the Village wide study.
2. Analyze and model the drainage system to determine best sizing and routing of the proposed storm drains. This will include identifying the best routing for connection to the Village system. Modelling will include the 10, 25, and 100 year storm events.
3. Confirm downstream existing pipe capacities and make recommendations as might be needed.

4. Prepare final design and construction documents for Bid. Design of the preferred project once authorized by the Village, will be prepared along with a construction cost estimate.

In addition to the above services, AIE/DRE will prepare bid documents for a general infrastructure improvements / on-call contractor. This will allow for interim measures to be undertaken for localized improvements to enhance capture of stormwater runoff into the existing system as need arises or make any identified repairs to the system as the study progresses.

We look forward to working together with you on this exciting project.

Respectfully submitted,

A handwritten signature in black ink that reads 'Anthony Oliveri'.

Anthony Oliveri P.E.
Vice President