



TOWNSHIP OF WEST ORANGE

25 LAKESIDE AVENUE, WEST ORANGE, N.J. 07052

DEPARTMENT OF PUBLIC WORKS

ROBERT D. PARISI

Mayor

Tel: (973) 325-4160

Fax: (973) 669-9588

Email: Engineering@westorange.org

LEONARD R. LEPORE

Director, Municipal Engineer

April 19, 2022

Mayor and Township Council
Municipal Building
66 Main Street
West Orange, New Jersey 07052

RE: **AWARD OF PROFESSIONAL SERVICES CONTRACT
TRIBUTARY TO WIGWAM BROOK - INVESTIGATION
INTO FREQUENT STREAM FLOODING ALONG PARK DRIVE WEST
AND NORTH NEAR THE BOUNDARY WITH LLEWELLYN PARK**

Mayor Parisi, Council President McCartney and Council Members,

On Monday, April 11, 2022 the Township received a response from Jenne Associates, LLC to analyze and conduct a field investigation to evaluate stream and pipe system from its confluence with Wigwam Brook upstream to Mountain Avenue including a hydrologic analysis of the stream to establish peak flow rates for various intensity rainfall events, develop conceptual design improvements and a report summarizing the findings of the investigation. Jenne Associates, LLC was selected for this proposal due to their familiarity with and knowledge of Llewellyn Park and past experience with flooding conditions.

Based on my review of the proposal provided by Jenne Associates, LLC, I recommend you award a Professional Services Contract to Jenne Associates, LLC, 35 Gates Avenue, Warren, NJ 07059 in the amount of \$30,500.00.

Attached, is a Resolution awarding Professional Services Contracts to Jenne Associates, LLC, 35 Gates Avenue, Warren, NJ 07059 in the amount of \$30,500.00 for services described in their proposal dated April 11, 2022.

Please contact me if you have any questions. A copy of the RFP and a copy of the response are enclosed.

Very truly yours,

Leonard R. Lepore

Leonard R. Lepore, Municipal Engineer
Director of Public Works

LRL/zyc

cc: John Gross

Jenne Associates, LLC

JENNE ASSOCIATES, LLC

Consulting Engineers

35 Gates Avenue, Warren, NJ 07059
Telephone: (908) 698-2890 * Fax: (908) 926-2359

April 11, 2022

Township of West Orange
Public Works and Engineering
25 Lakeside Avenue
West Orange, NJ .7652

Attn: Leonard Lepore, PE

Re: Tributary to Wigwam Brook – Investigation into Frequent Stream Flooding being experienced along Park Drive West and North near the boundary with Llewellyn Park along Tributary to Wigwam Brook
FULL ENGINEERING ANALYSIS
Proposal #P21021-1

Dear Mr. Lepore:

Jenne Associates, LLC (JENNE) is pleased to submit this proposal to provide Civil Engineering Design Services to the Township of West Orange (CLIENT) for the above referenced project.

Project Summary – Frequent flooding is being experienced along the Tributary of Wigwam Brook at the point where the open channel watercourse flowing out of Llewellyn Park enters an underground pipe system which carries the flow under Park Drive North to Main Street and its confluence with Wigwam Brook near Ashwood Terrace.

Flooding appears to be directly associated with the entrance (inlet) to the underground pipe system becoming blocked by debris carried by floodwaters down the open channel section of the watercourse reducing the ability of floodwater to enter the pipe system. Floodwaters subsequently rise at that location until they overtop the existing ground elevations at Park Drive West and flow down Park Drive North flooding numerous private properties. After each occurrence DPW staff has been mobilized to remove and dispose of the accumulated debris and re-establish a clear unobstructed entrance to the pipe system.

The area adjacent to the stream within Llewellyn Park is predominantly undeveloped wooded land that shows little indication of being maintained including removal of fallen or dead trees and branches which contributes to the amount of debris that can make it to the stream channel and flow to the pipe inlet.

Scope of Work – Based on our knowledge of Llewellyn Park, experience with past flooding conditions and removal operations at this location and technical experience with stream flow modeling and improvement plan design, JENNE proposes the following scope of work for undertaking an Engineering evaluation of the situation and development of Preliminary Improvement schemes which could be implemented to mitigate the situation in the future:

1. Prepare a base map for use in the engineering evaluations utilizing the West Orange Topographic Maps and other available sources. A delineation of the ground area contributing rainwater to the stream will be shown as well as property lines and current owners.

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Stream Flooding along the Tributary to Wigwam Brook
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2. Undertake an in depth field evaluation of the stream and pipe system from its confluence with Wigwam Brook upstream to Mountain Avenue where the stream channel begins, documenting stream and adjacent ground conditions, crossing structures (bridges/culverts) and other factors that affect the amount and velocity of the water. Included in this effort will be an evaluation of the route the water flows over the properties on Park Drive North and Park Drive West, discussions with the residents affected by the flooding as well as DPW staff that have responded to the cleanup efforts.
3. Working with the West Orange Tree Consultant, undertake an evaluation of the visible tree limbs and other debris currently lying on the ground adjacent to the stream that could wash into the stream (and then be carried down to the pipe system entrance) as well an evaluation of the potential of exiting trees in the area to drop additional branches in the future.
4. Develop a scope of work for a pipe inspection contractor to undertake a video inspection of the condition of the underground pipe system and provide onsite coordination with the contractor during the filed operation. It is anticipated that this work will be contracted for directly by West Orange.
5. Develop a scope of work for a NJ Licensed Land Surveyor to:
 - Undertake a topographic survey of the stream from where the properties flood along Park Drive West and Park Drive North to the driveway bridge/culvert located just upstream of the pipe inlet location;
 - Obtain cross sections of the stream up to the Bloomfield Way bridge/culvert as well as the geometry and elevations of the pipe system and other bridges/culverts crossing the stream.
 - Obtain cross sections and crossing bridge/culvert geometry along Wigwam Brook from where the tributary joins to a point 500' downstream.
 - Stream cross sections will be every 100' as required by NJDEP.

The stream cross section and pipe/bridge/culvert information is necessary to undertake the stream flow computer modeling required to establish stream flow characteristics, evaluate the reduction in flooding that can be expected from alternate improvement options investigated and as will be required for any NJDEP permitting required for the construction.

6. Based on the surveys and the video inspection, evaluate the condition of the underground pipe system documenting any structural or other issues that need to be addressed that either impact the ability of the pipe to handle the floodwater flowing through it or have the potential to cause a future problem or possible failure/collapse.

Any conditions of structural concern will be brought to the immediate attention of West Orange to be further evaluated and addressed.

7. Undertake a hydrologic analysis of the stream, in accordance with NJDEP requirements, to establish the peak flow rates that can be expected to occur for various intensity (and probability of occurrence) rainfall events.

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8. Develop a hydraulic model of the stream, in accordance with NJDEP requirements, to predict the water surface (flood level) elevations that can be expected for each rainfall event assuming the pipe inlet flows frequently, to serve as a basis in evaluating the reduction in flooding that can be expected from alternative improvement options investigated.

Part of this effort will include obtaining actual rainfall information for recent storms in an attempt to correlate with the flooding experienced based on observed blockages of the pipe inlet.

9. Develop alternate improvement measures, to a conceptual design level, that could be implemented, to predict the affect each would have on reducing the flooding being experienced.

Initial measures identified during the preparation of this proposal include:

- Modify the existing pipe system inlet and debris catching grate to improve its function and clog less frequently. This could include changing the shape of the inlet itself to improve its capacity (the ability of water to get into it). This should qualify for construction under an NJDEP Permit-By-Rule 2 – Repair of Lawfully Existing Structure.
 - Construct one or more debris catching structures upstream of the pipe inlet providing for additional storage for the debris before it reaches the inlet debris rack and blocks it. This will most likely require an NJDEP Individual Permit for construction.
 - Raising the ground elevations between the pipe inlet and the adjacent land on Park Drive West to hold the ponding water to a higher elevation before overtopping and flowing downstream across the properties. This could include evaluating an alternate path for the ponded water to flow (instead of across the private properties) such as over to and down Bloomfield Way, as long as it could be accomplished in a safe and controlled manner.
 - Alter the ground elevations on the properties where the flooding is being experienced to reduce the damage (including possibly protecting areas/features that are damaged) and safely direct it back into the underground pipe system or down Park Drive North.
 - Evaluate potential modifications to the underground pipe system other than at the inlet location to improve the ability of the pipe to safely carry the floodwaters and reduce the impact that blockage at the inlet will have on flooding of the private properties.
 - Evaluate the establishment of an ongoing program for debris/tree limb removal along the stream to reduce the amount of debris that can potentially flow down the stream and cause a blockage at the pipe inlet. This effort will include identification of the properties/owners whose land abuts (or includes) the stream. When investigating this in the past for the Llewellyn Park Committee of Managers it was determined that the stream is located on individual properties and no easements existed allowing for, or requiring, maintenance of the stream and/or the adjacent lands including removal of debris that could readily make it to the stream,
10. Prepare a report summarizing the findings of the investigation including the methodology utilized. A detailed description and conceptual design will be presented for each alternative improvement investigated including feasibility of addressing the issue (expected reduction in flooding magnitude or frequency), order-of-magnitude cost estimate, and initial evaluation of required permitting. Recommendations will be made as to how to proceed including the next steps to be implemented for each feasible alternative evaluated.

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In addition to field visits and meetings outlined above and periodic progress meetings with you and your staff, one (1) formal meeting with the Mayor and Council is anticipated in the quoted fee.

INFORMATION TO BE PROVIDED BY CLIENT:

- Video Inspection of the existing underground pipe as described above.
- Topographic and stream cross section survey as described above.

ADDITIONAL SERVICES - Should JENNE identify required work which is not included in the above scope of work and fee, CLIENT will be notified immediately. Upon authorization by CLIENT, JENNE undertake this additional work as an Additional Service, at a negotiated additional lump sum fee or on an hourly basis in accordance with the attached rate schedule.

FEES AND PAYMENT – JENNE will perform the professional services described above for the lump sum fees as follows:

SCOPE OF SERVICES OUTLINED ABOVE (Includes \$1,500 allowance for expenses)\$30,500.00

DESIGN SERVICES FOR CONSTRUCTION PLANS TO IMPLEMENT CHOSEN ALTERNATIVE To be determined based on Alternative

CONSTRUCTION PHASE SERVICES..... To be determined based on Alternative

To be invoiced Invoices will be submitted monthly based on documents percent complete for the quoted Lump Sum Fees.

Thank you for providing us the opportunity to meet with you and provide this proposal.

If you have any questions or require further information, please do not hesitate to contact me.

Very truly yours,



Carl A. Jenne, PE, CME
Principal

CAJ:cj [Jenne Stream Proposal-LT_20220411-Fullengineering.Doc]
Enclosure: Attachment B - Hourly Rate Schedule

HOURLY RATE SCHEDULE

Township of West Orange Municipal Engineering Services – 2022

	<u>HOURLY BILLING RATE</u>
PRINCIPAL	\$ 225.00
LICENSED PROFESSIONAL – LEAD	\$ 195.00
OTHER LICENSED PROFESSIONAL.....	\$ 175.00
PROJECT/SENIOR PROFESSIONAL.....	\$ 150.00
SENIOR DESIGNER/ENGINEER	\$ 125.00
DESIGNER/ENGINEER.....	\$110.00
ENGINEERING ASSISTANT	\$75.00
 SUBCONSULTANTS	 Cost + 10%
 EXPENSES	 Cost + 10%

Professional services for the purposes of litigation matters, court appearances and attendance at other legal proceedings shall be billed at 1.5 times the above rates.