



September 19, 2018

Chris Wheland
Superintendent of Public Utilities, City of Troy
25 Water Plant Road
Troy, NY 12182

**Subject: Recommendation for Lake Lowering, Ida Lake Dam Structural Inspection,
NYS ID: 226-1391**

Dear Mr. Wheland:

Based on our conference call yesterday afternoon, Schnabel Engineering in association with CDM Smith has prepared this correspondence to provide a summary of our observations during the recent inspection of Ida Lake Dam. Our observations are the basis for our recommendation to the City of Troy to perform a controlled lowering of Ida Lake to prevent the potential collapse of a portion(s) of the dam and resulting uncontrolled release of the impounded water and sediment behind the dam.

On Friday September 14, 2018, Schnabel Engineering and their timber specialist subcontractor, Restoration and Traditional Building, Inc., conducted a structural inspection of the Ida Lake dam spillway, a timber structure that spans the Poestenskill Creek. The timber structure is comprised of a series of buttressing crosswise supports (i.e., bents) founded on bedrock and concrete (Figure 1). The bents are spaced 5 ft on center forming a triangular frame that supports two layers of spanning timbers placed on the inclined side of the triangle (i.e., upstream dam face). The first layer of spanning timbers are 4-inch by 8-inch timbers in direct contact with and fastened to the inclined No. 2 timber of the bents. These boards are oriented perpendicular to the direction of flow over the dam. The second layer of spanning timbers is 2-inch by 8-inch tongue and groove boards in direct contact and fastened to the 4-inch by 8-inch timbers beneath. The second layer boards are oriented parallel to the direction of flow over the dam and perpendicular to the timbers beneath.

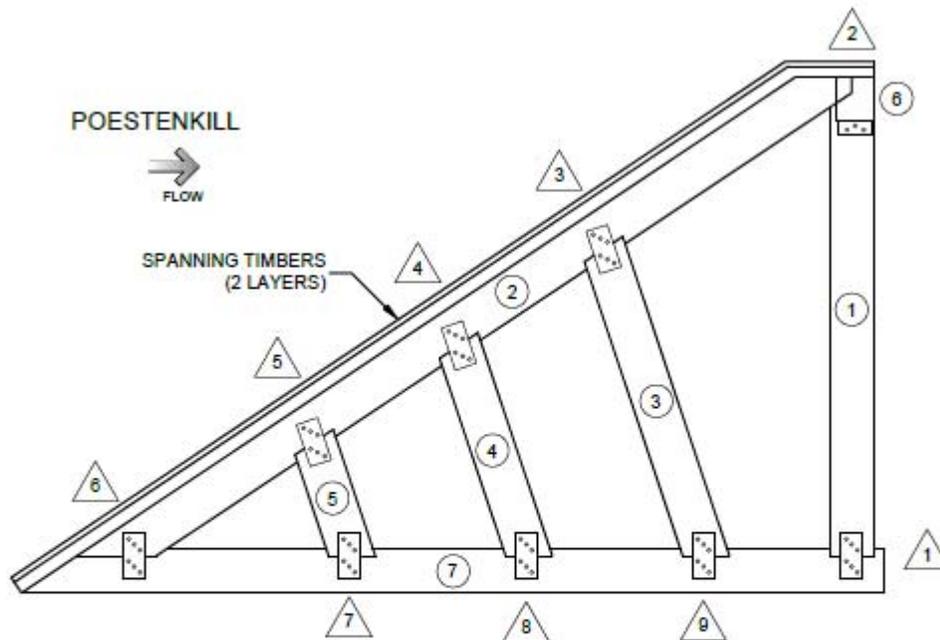


FIGURE 1 - TYPICAL CROSSWISE SUPPORTING STRUCTURE (BENT)

LEGEND:

- ① MEMBER #1
- △ JOINT #1

There are 28 bents set across the Poestenskill Creek creating a 135-ft long spillway comprised of 27 bays numbered F-1 through F-27. The inspection of the timber spillway structure involved entering behind the nappe of the spillway flow and systematically moving through each bay to evaluate the condition of the timbers that comprise the bents and the first layer of spanning timbers exposed within each bay. In general, the large 10-inch by 12-inch supporting timbers (6 members per bent) used to construct the bents are in fair to good condition. The 4-inch by 8-inch spanning timbers are in fair to very poor condition. The condition of the spanning timbers is most severe near the center of the spillway in Bays F-13 and F-14 where they are undergoing failure as evidenced by excessive deflection likely due to prolonged center channel debris/ice impact and subsequent timber decay. In addition to the observed spanning timber distress there is excessive leakage through spanning timbers in both Bays F-13 and F-14 as well as adjacent bays.

It is Schnabel's opinion that structural failure of spanning timbers will progress over the next 12 months within Bays F-13 and F-14, likely leading to a dam breach similar to the Ida Lake Dam failure that occurred in January 1999. An illustration of the 1999 breach is shown on Figure 2.



Figure 2: Previous Ida Lake Dam Breach, January 1999

To prevent another breach, we recommend taking emergency preemptive measures to lower the Ida Lake Pool level to minimize/eliminate the stresses on the dam. No mechanical means presently exist to implement this lake lowering; therefore, it would need to be accomplished by contractor intervention likely resulting in the full or partial removal of the most deteriorated Bays F-12 through F-16.

Schnabel is prepared to develop a controlled breaching plan and an interim weir design to safely pass and limit impoundment of Poestenskill flows across the dam. Schnabel also understands that the City of Troy would like budgetary cost estimates to:

- Replace the timber spillway structure with a concrete spillway that ties into new right and left abutment training walls.
- Decommission the Ida Lake Dam including wetland permitting, re-establish a new creek channel, and remove/stabilize sedimentation behind the dam.

The budgetary cost estimates would be suitable for decision making and selecting an option to bring the Ida Lake Dam into compliance with the NYS DEC dam safety regulations. Please contact me or Michael Quinn upon review of this letter to discuss your questions and comments and to set up a meeting with the appropriate representatives from the City of Troy.

Chris Wheland, Superintendent of Public Utilities
Ida Lake Dam Rehabilitation Project – Structural Inspection of Timber Spillway

Sincerely,

SCHNABEL ENGINEERING OF NEW YORK



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GJD:MSQ:scc