

FLOOD GATE INFORMATION

Flood and Erosion Protection Committee

Re: A brief history and condition of the Venice Canal Gate:

The flood gate that blocks the Lapointe Drain water from entering the lagoon system is a ten foot wide steel structure that is lifted in and out by an electric coffin hoist.

The backup, if we lost electric power, could be a mechanical (hand) chain fall or the gate could be lifted in place with the backhoe on the loader. Although cumbersome and tough to control in a strong wind the structure is solid and functional.

When moved in and out of the opening and when the gate is in the storage position the gate hangs by a single chain with no backup safety chain. This could be a dangerous situation if the chain were to break. The chain was last replaced in 2004.

The opening is hard to get boats through when there is a current coming in or out and the opening needs to be much wider.

Because of the height of the walls the ground frost has a lot of effect on the opening. It gets pushed in a small amount every year and we have had to cut the summer gate down to continue to get it in the opening. This will be an ongoing problem.

If the gate needs to be closed in a strong wind it is almost impossible for one person to do due to the size of the gate catching so much wind.

The residents around the gate have complained of the gate blocking their view and being an eye sore when it is stored out of the opening.

When this structure was put in it was intended to be a quick temporary fix to the flooding problems. If walls were installed around the lagoon system at a height where high water would not be a problem the flood gate structure could be eliminated and the opening made wide enough to pass two boats in the opening.

Randy Whipple, DPW Supervisor

*Rec 8/16/11
at FEP mtg
from shop*

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CITY OF LUNA PIER

GRAND CANAL FLOOD GATE/
LAPOINTE DRAIN STOP LOG

IMPROVEMENTS

AUGUST 1984

PRELIMINARY

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We have investigated the problems experienced with the existing installation at the Grand Canal access to the LaPointe Drain and have prepared a drawing showing the essential features of existing facilities along with proposed remedies.

1. Existing Conditions

The gate is a removable stop log built with steel rectangular tube sections welded together and slid in place vertically to form a static barrier to Lake Erie backflow caused by easterly winds.

The stop logs are removed and installed with an electric hoist permanently mounted on the dike.

The procedure for installation of the stop logs is roughly as follows:

At impending high water from easterly winds, two DPW employees are alerted to install the gate, usually at night. If at night a truck is parked so that the headlights illuminate the general area of the gate.

The gate sections are swung over the channel and the sections are lowered in place with the hook-man riding on the load. The hook-man unhooks the lifter bar and is hoisted to the dike top to repeat the cycle.

The installation of the stop log gate and lifting hoist has been made over a period of years on an evolutionary basis.

2. The Problem

The present arrangement has several major deficiencies from an operational standpoint.

The need to 'Ride the Hook' to both install and remove the stop logs is the most important of the deficiencies noted, and also the most difficult to remedy. A prior attempt has been made to eliminate the problem by constructing a new lifting bar with a remote release. The problem this was intended to correct is the need to be on the unit in place to attach or disengage the lifting bar. While the remote release would work, it does not provide for the other aspect of this operation which is to guide the lifting bar over the stop log straddle fashion. Thus no actual modifications were undertaken.

A second major deficiency is the lack of illumination of the site. While the use of truck headlights provides some light on top of the dike, no lighting whatever is provided in the waterway itself, so that the hook-man is working in the dark in or over water.

The third major deficiency is the absence of electrical grounding of the hoist. Since the power supply is three phase there is no neutral conductor. Further, the conduit used for the underground supply wiring is not electrically grounded to the hoist framework.

A deficiency of secondary nature is the proclivity of the dike to move due to frost action in the winter time, causing problems with the removal of the stop logs in the spring.

Another deficiency in this secondary category is the lack of a drive mechanism for the hoist boom, it being a free swinging design with no positive motion stops provided.

Finally, there is the overall concept of the design itself as a simple stop log which is relatively cumbersome to handle and slow to remove and install.

3. Purpose of the Gate

The gate provides access for pleasure boats through the flood control dike, which graces the perimeter of the City, from the Grand Canal marina area within the confines of the flood control dike to the LaPointe Drain and thence to Lake Erie. The flood control dike exists to protect the low lying City from high water resulting from Lake Erie water being pushed westward by easterly winds. Access for pleasure boats is provided through the gate on an unrestricted basis during the navigation season which is from approximately June 1st through November 1st. The gate is closed when high water conditions prevail and is reopened when the condition subsides. Typically, the gate is closed for some period of each day, often at night. There are occasions when the gate is closed and reopened several times in one day.

4. Results of this Investigation

The accompanying drawings detail those proposals which are directed at remedying the deficiencies noted in Part 2.

Sheet 1 provides information on the electrical grounding system required along with details for lighting the site.

The general arrangement of the gate is also shown, as is the proposed "Summer Gate" which is shown in component detail on Sheet 2. The concept is explained for the operation of the summer gate on Sheet 1.

The emphasis in these proposals is to remedy the lack of electrical grounding and lighting and to reduce the need to 'Ride the Hook' by providing a seasonal one piece gate to replace the stop logs for use during the navigation season. The entire existing system remains intact so that the present stop log gate can be installed in the winter to provide ice protection and act as a strut to keep the dike walls from closing due to frost action. It should be noted that the summer gate is designed for a nominal four foot water head only and is definitely not designed to resist ice pressure nor the forces created on the dike walls due to frost action.

5. Action Required or Recommended

While the charge to make some improvements to the existing gate was probably neither intended to initiate an in depth study of the situation nor expected to result in anything more than a simple drawing showing the equivalent of a sluice gate, nevertheless we have examined the site in some detail for those features shown and have determined that certain things must be done to correct the deficiencies observed.

Since we have determined that the existing electrical system has no grounding this work must be performed as shown to correct the safety hazard that lack of grounding creates. We further believe that lighting of the site is essential and that the proposed lighting should serve this purpose.

The proposed summer gate is another more or less expedient corrective measure to help out with the problem of providing ready access for pleasure craft from the Grand Canal to Lake Erie, yet also provide the necessary flood protection from Lake Erie high water. We believe this summer gate is workable but does not correct any of the real operational problems with the stop logs except that it does reduce their frequency.

6. Cost for Work Shown on the Drawings

We have made estimates for this work based on conversation with potential suppliers of products or services and suggest typical costs for the work as follows:

a. Electrical Grounding of Hoist

This involves mostly labor and should be approximately \$500 to \$750 complete.

b. Luminaire

The Luminaire and bracket assembly is \$142.00 or \$205.00 depending on type selected. Wiring, fusing and so forth with labor should be about \$400.00 for a total of \$550.00 to \$600.00.

c. The Summer Gate

Shop fabrication of gate and assemblies estimated at	\$3,500.00
Shop drawings by the engineer for fabrication estimated at	250.00
Field fitting, cutting, and welding; including labor, equipment and work boat estimated at	<u>1,000.00</u>
Estimated Total	\$4,750.00

d. In addition, the installation of the gate system will require two City employees, a truck and backhoe, and require two days full time.

e. Grand Total for all work estimated in the range of \$5,800 to \$6,100 plus cost of City work.

7. Recommendation

We feel that the elements involved in this gate system are of such importance that a thorough technical study and a cost benefit analysis are warranted to develop the proper course of action to be taken to remedy the operational problems.

It is urgent however, that the safety code violation be corrected. This will require installing the grounding system and recommended lighting, and use of some type of bouyant apparatus for the hook-man to stand in along with the wearing of life preservers and providing other safety gear that may be necessary for this installation.



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