



Characterize the hydraulic behaviour of grate inlet in urban drainage to prevent the urban's flooding

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One of the most important problems that have some cities is the urban floods because of poor drainage design. Therefore the systems the drainage do not have the capacity of capture the flow of discharge generated in a rain event and insert it into the drainage network.

Even though the two problems that have caught the main attention are the evaluation of the volumes falling in the river basin because extreme rainfall events often lead to urban pluvial flooding being a hydrologic problem and the hydraulic design of the sewer network being a hydraulic problem to limiting capacity of the drainage system, there is an intermediate step between these two processes that is necessary to solve that is the hydraulic behavior of the grate inlet. We need to collect the runoff produced on the city surface and to introduce it in the sewer network.

Normally foundry companies provide complete information about drainage grate structural capacity but provide nothing about their hydraulic capacity. This fact can be seen because at the moment does not exist any official regulation at national or international level in this field. It's obvious that, nowadays, there is a great gap in this field at the legislative level owing to the complexity of this field and the modernity of the urban hydrology as science [1].

In essence, we shows the relevance to know the inlet hydraulic interception capacity because surface drainage requires a satisfactory knowledge on storm frequency, gutter flow and above all inlet capacity.

In addition, we development an important achievement is the invention and development of techniques for measurement of field velocities in hydraulics engineering applications. Hence knowledge the technological advances in digital cameras with high resolution and high speed found in the environmental, and the advances in image processing techniques, therefore now is a tremendous potential to obtain of behavior of the water surface flow [2].

A novel technique using particle image velocimetry to measure surface flow velocities has been developed and validated with the experiments assays with the grate inlets [3 - 4].

Indeed, the Methodology carried out can become a useful tools to understand the hydraulics behavior of the flow approaching the inlet where the traditional measuring equipment have serious problems and limitations [5 - 6].

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