# Hydraulic Model Study of Grate and Curb Inlets for Storm Drainage.

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**Abstract.** Hydraulics of storm sewer inlets are difficult to theoretically predict. Flows are not accurately modeled with either weir equations or submerged orifice equations. Flow over and through inlets may be weir like, submerged, or a combination of the two. To address this issue, several agencies ranging from the Urban Drainage and Flood Control District (UDFCD), Colorado Department of Transportation (CDOT), and various counties and cities teamed up to build a physical model of storm flow through inlets. The ultimate purpose of the model is to provide information to aid in the design of street grate and curb inlets for storm drainage. The purpose of this presentation is to present the model, and some preliminary results.

A 3:1 (physical: model) froude scale model was created, from which data is collected regarding the hydraulic capacities of grates and curb inlets, both with and without debris. The model was constructed within an existing flume in the Darryl B. Simons building of the Engineering Research Center at Colorado State University. The model consists of a wood framed "street" section and a steel curb, gutter, and sidewalk. The model can be configured to vary both logitudinal and lateral slope, as well as sump conditions. Three types of curb and gutter inlets were constructed to model flow, these are common to several cities in the Colorado Front Range area, specifically the metro Denver area. The Inlets modeled are the Denver Type 13, Denver Type 16, and the CDOT Type R.

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