URBAN DRAINAGE SIMULATION MODEL SENSITIVITY ANALYSIS ON RUNOFF CONTROL ELEMENTS

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In link/node simulating models runoff control elements

- Grate inlets
- Curb opening inlets
- Slotted inlets
- Combination inlets

are links between surface runoff routing model, simulating hydraulics on the catchments surface and a pipe flow model simulating the hydraulics of in the pipe system.
POINT AND LINEAR DRAINAGE
LABORATORY TRENCH TESTING

Liquid velocity and height changes at successive cross sections along the trench

Effects of slope and run length can be modeled in some degree in laboratory conditions
TRENCH OUTLET TYPES AND MODELING

END OUTLET

The orifice will initially act as a weir until the top of the orifice is submerged. Therefore, the discharges for the first stages of orifice flow area computed using the weir equation.

BOTTOM OUTLET

IN-LINE PIT

UNIVERSAL PIT
Comparison of these hydraulic profiles induced division of trench drain into 5 equal length sections, with the appropriate catchments subdivision.
The scenarios of limited sensitive analysis are:

- channel K7 is rectangular with roughness $n = 0.015$ or $n = 0.024$, with no ponding area in junctions
- channel K7 is rectangular with roughness $n = 0.015$ or $n = 0.024$, with ponding area of $10m^2$ in junctions
CONCLUSIONS

- The design flow capacity for channel decreases with Manning’s n-value increase.
- Peak inflows to middle positioned junctions are higher when pond areas has been jointed to trench drain.
- Peak outflows at the end junction are higher when pond areas has been jointed, the difference might been significant for network sizing.
THANK YOU FOR ATTENTION

I BELIEVE THIS WORK SHOULD BE CONTINUED

QUESTIONS