

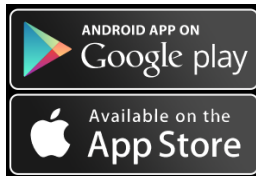


ACPA Design Apps

Compare Flow & PipePac



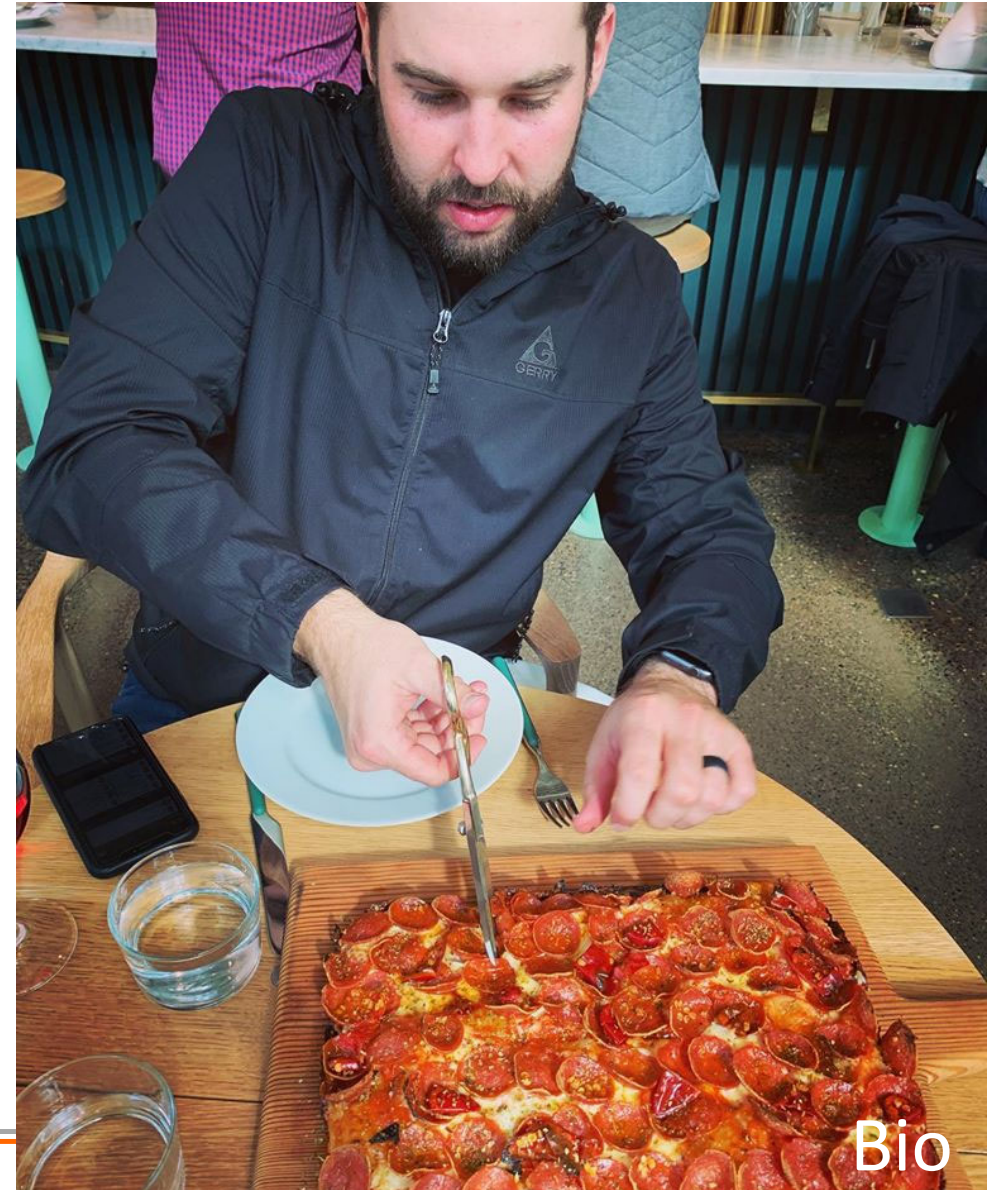
Available on



Corey Fraser, PE

Director of Concrete Pipe Northwest

- Civil Engineering Degrees from Texas at Arlington
- Dog and Pizza Lover
- 10+ Years Pipe Industry



Trygve Hoff, PE

Northeast Region Engineer

- BS Civil Engineering the Ohio State University
- Enjoys paddle boarding, skiing, and carpentry
- 8 Years Pipe Industry Experience

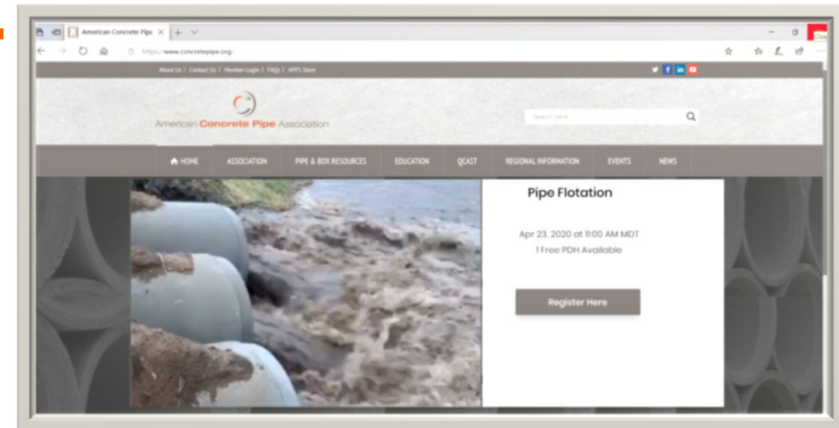




Compare Flow



Hydraulic Capacity of Culverts



Hydraulic Capacity of Culverts

About: Manning's "n" discussion

- Hydraulic capacity formula
- Default "n" values per FHWA 2012

About

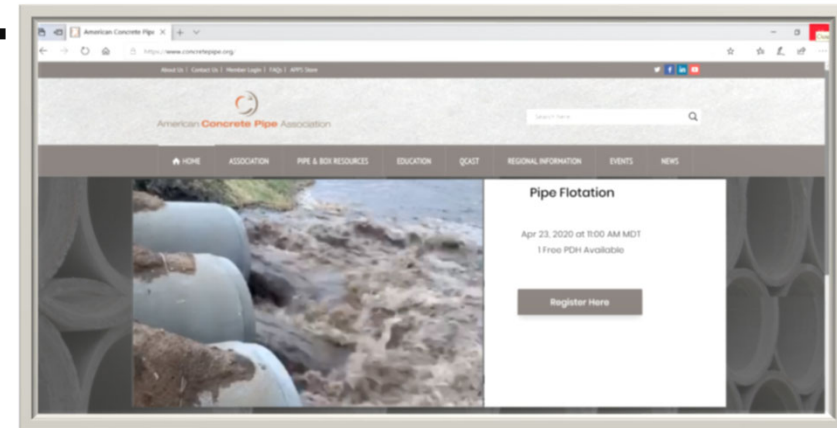
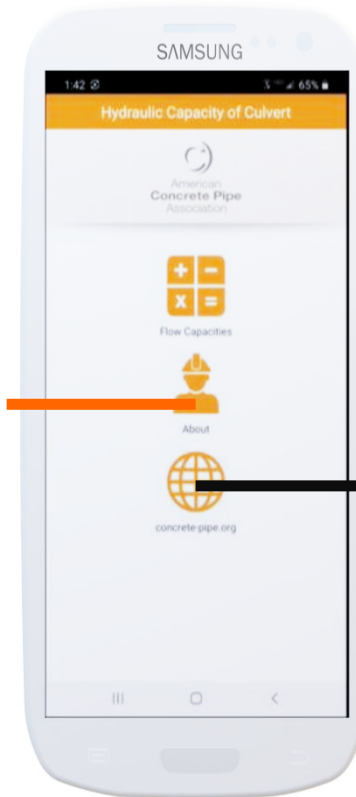
About ACPA Compare Flow

The most widely accepted formula for evaluating the hydraulic capacity of non-pressure sewers is the Manning Formula:

$$Q = \frac{1.486}{n} \cdot A \cdot R^{\frac{2}{3}} \cdot s^{\frac{1}{2}}$$

where:
Q= Flow in pipe, ft³/sec.
A= Cross sectional area of flow, ft².
R= Hydraulic radius, equal to the cross-sectional area of flow divided by the wetted perimeter of pipe, ft.
s= Slope of pipe, ft/ft.
n= Coefficient of roughness appropriate to the type of pipe.

In order to evaluate possible alternatives in either pipe geometry or material, use this app to compare the hydraulic flow capacity among various concrete pipe including circular, arch, elliptical, and box sections. An option is also included for circular flexible pipes made from materials such as metal, thermoplastic, or thermoset resins. The Manning's n values vary greatly for these products depending upon the wall configuration. Solid wall pipes will have Manning's n values similar to concrete pipe, whereas corrugated pipes will have much higher Manning's n values. Somewhere in-between lies corrugated plastic pipe with a smooth liner, where the interior liner tends to reflect the external corrugations into the interior wall over time.



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