

A Message from the Minnesota Concrete Pipe Association, MnCPA

The hydraulic roughness coefficient, or Manning's n of a pipe has a direct affect on the hydraulic capacity of a pipe and needs to be taken into account when designing storm sewers. In the past, it was common practice for design engineers to use a Manning's n of 0.012 – 0.013, and since most storm sewers were constructed with concrete pipe, this was an appropriate practice. With the increasing pressure to use alternative pipe materials for storm sewers, the engineer must make certain the n value used in the analysis is appropriate for the pipe materials being considered.

Depending on how much the n value varies from one pipe material to another, it may be necessary to provide a separate storm sewer design for each of the pipe materials being allowed. An alternative to this would be to adjust the size of pipe based on the n value of the pipe material.

In selecting the appropriate n value to use when designing with HDPE pipe, it's important that the engineer be aware of the difference between laboratory test values and actual installed values. When buried in the ground, corrugated smooth wall HDPE pipe undergoes circumferential shortening due to the soil pressure on the pipe. This shortening causes a phenomenon, often times referred to as corrugation growth, which results in the inner liner becoming corrugated. The severity of the corrugations varies from one installation to another, but typically increases with depth and soil pressure.

The Alabama Department of Transportation has studied the effects of corrugation growth and concluded that smooth wall corrugated HDPE pipe should be considered to have an n value of 0.016 or greater. As a result, ADOT now requires an increase in HDPE pipe size compared to RCP for certain pipe installations. We urge you to take this into consideration when selecting n values for your next storm sewer design.

If you would like to read more about n values for various pipe materials, please click on the following link from the American Concrete Pipe Association:
http://www.concrete-pipe.org/ysk_pdfs/CPInsights_2.pdf

Thank you for your time,



The **Minnesota Concrete Pipe Association** is a non-profit organization comprised of concrete product suppliers in Minnesota.

Please visit our website www.mnconcpipe.org for more information.

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