R.L. DEPPMANN
Serving the industry since 1927

20929 Bridge Street, Southfield, MI 48033
4121 Brockton Drive SE, Grand Rapids, MI 49512
6200 Baron Drive, Bridgeport, MI 48722
6910 Treeline Drive, Suite A, Brecksville, OH 44141

Phone: (800) 589-6120 - Fax: (248) 354-3710
www.deppmann.com

April 26th 2010 ~ Monday Morning Minutes:

Sump and Sewage Pumps – Discharge Line Size by Norm Hall

There are several considerations when selecting the discharge line size from a sump or sewage pump. The discharge line must be large enough to handle the EXPECTED SOLIDS. Sump pumps normally have very little solid content in the discharge. Residential sump pumps in general handle 3/8" solids. Small commercial sump pumps may be similar to residential, however, we normally use effluent pumps for commercial applications. These pumps handle solids up to ¾".

Sewage pumps, and their discharge pipes, are selected to handle a maximum spherical solid. Residential pumps handle a minimum of 1-1/2" up to 3". Any of us with small children would naturally opt for the larger sizes, based on what gets flushed down the toilet. Commercial applications demand the ability to handle 2-1/2" to 3" solids or more.

In general, the discharge line size is equal to or larger than the pump connection size. In sewage pumps, the discharge size should also be selected so the minimum velocity is 2 feet per second or more. This is referred to as the scouring velocity to avoid clogged pipes.

MINIMUM FLOW TO MAINTAIN SCOURING VELOCITY
IN SCHEDULE 40 PIPE

Pipe size	Minimum GPM	Pipe size	Minimum GPM
1-1/4"	9	6"	180
1-1/2"	13	8"	325
2"	21	10"	500
3"	46	12"	700
4"	80		

The liquid in the discharge pipe must be turned a **minimum** of once every pump cycle. This means the run time, at the selected gallons per minute (GPM) flow rate, should move enough total gallons of liquid to completely replace all of the liquid in the discharge pipe. If we oversize the pipe or have long runs, we may have to increase the flow rate to achieve the turn rate, as well as maintain the scouring velocity. Here is a chart to help you determine volume.

VOLUME OF LIQUID IN VARIOUS SIZE PIPES
IN SCHEDULE 40 PIPE

Pipe size	Gallons per foot	Pipe size	Gallons per foot
1-1/4"	.06	6"	1.4
1-1/2"	.09	8"	2.6
2"	.16	10"	4.1
3"	.36	12"	5.9
4"	.65