

## P.V.C. SEWER PIPE RE-ROUNDING

### Field of the Invention

Sewer pipe re-rounding is an apparatus, which is drawn through deflected plastic sewer pipe to expand the pipe to its true shape. The swedging action compacts and reshapes the soil or fill around the pipe to a modified compaction allowing the pipe to return to its original shape.

### Background of the Invention

Many sewer systems and industrial waste disposal systems employ relatively large diameter plastic pipe, which is usually constructed of a polyvinyl chloride. The pipe is normally laid in a trench and a suitable bedding material such as crushed rock or the like is placed over the pipe before the trench is backfilled. The buried plastic pipe can collapse or deflect during usage, for a variety of reasons. A pipe may collapse because the bedding is not properly installed, or because of soil disturbance (live load). If for any reason the pipe does collapse, it has been necessary to re-open the trench and either repair or replace collapsed pipe. This has been a costly and time-consuming process.

### Summary of the Invention

The present invention provides a pipe expander with a high frequency vibrator which can be pulled through a pipe by means of a cable so that as it is drawn through the pipe it will expand the pipe to its true shape, without gouging the pipe and will cause the material surrounding the pipe to be compacted to a modified state or shift the material as to allow the pipe to retain its original shape. This process is possible because of P.V.C. pipes unique ability to deflect and return to its original shape without structural failure (structural failure may be possible when excessive deflection occurs usually 30% or higher, more information may be obtained from the Handbook of P.V.C. Pipe published by the Uni-bell Plastic Pipe Association). Re-rounding is done on deflection of 15% or less.

In its broadest aspect, the invention comprises apparatus for reshaping buried plastic pipes which includes a tapered or bowl shape body having a smooth outer surface with a transverse dimension and shape corresponding to the base inside dimension (refer to Uni-bell hand book for dimensions) and shape of the pipe to be reshaped and having an inwardly and smoothly tapered front end portion and vibrator assembly which acts to gradually expand the pipe to its true shape as it is drawn through the pipe.

### Evolution of the Re-rounder

The Re-rounder utilizes a high frequency vibrator that helps with the reshaping of the pipe and consolidation of the material around the pipe. Re-rounders have a very narrow re-rounding edge and the directional force of the vibrator helps drive the re-rounder through the pipe. Re-rounding has been in use for more than thirty years now and the Hurco Re-rounder, also known as the "Deflectrater", has experienced 100% success

in all re-rounding of 15% or less. Only objects located on the pipe, such as a rock, or stabilized back fill will cause a rerounding failure.

RE-ROUNDING DONE AFTER 30 DAYS WILL HAVE AN EVERLASTING EFFECT UNLESS A LIVE LOAD IS APPLIED TO THE PIPE TRENCH. A live load is defined as any movement on the trench that could cause additional compaction such as heavy truck traffic or earth moving equipment. Usually this will happen on a shallow trench only. Settlement in pipe zone (usually the bottom 2 feet of the trench) occurs in the first 30 days after installation. This is why a deflection test is normally done 30 days after installation. Since it takes soil movement to cause deflection, additional deflection after 30 days is not likely. RE-ROUNDING WILL GIVE YOU A MODIFIED COMPACTION IN THE PIPE ZONE.

“DEFLECTRATER” re-rounding system will assure you that your pipe will give you years of service. Tests have proven that the integrity of the pipe is not affected and you can rest assured the pipe will not only pass the deflection test you have required, but it will also pass an air test providing the line passed the air test prior to re-rounding.

P.V.C. pipe deflection should be viewed as a desirable feature. Deflection will allow you to view any problems in installation immediately. This is not possible in ridged pipe and it could be years before problems develop in ridged pipe costing the owners thousands in repair costs. As I mentioned before, P.V.C. has the unique ability to deflect up to 30% or more without structural problems making re-rounding not only possible, but also a cost efficient and safe method for deflection repair.

Sincerely,

Lyndon J. Hurley, President