

# *Static Pipe Bursting*

## *Christchurch Sewer Lateral's*

**Earthquake damaged sewer laterals**  
**New trenchless method of installation saves time and money.**

At 4.36am on September 4<sup>th</sup> 2010, a major earthquake hit the city of Christchurch causing destruction to many residential properties and inner city historic buildings. The epicentre was 40km west of Christchurch City, south east of Darfield, the quake measured 7.1 magnitude at a depth of 10km.

On February 22<sup>nd</sup> 2011, another devastating earthquake hit the city. This 6.3 magnitude event was centered beneath the southern edge of Christchurch at a depth of 6km. Approximately 73% of commercial buildings in the CBD and 51,000 houses required demolition, and 185 people lost their lives. Large parts of the city's water and waste water pipeline network were severely damaged. Approximately 2000 kilometers of sewer house laterals required replacement within the sewer network.

G N Brewer Ltd of Christchurch were identified as one of Christchurch Cities leading contractors, their business had been established to undertake council water and waste water repairs works. Trenchless technology methods were preferred as this would minimize ongoing disruption to traffic, pedestrians and residents within the community with less road and street closures during repairs. Static Pipe Bursting methods were preferred, most equipment on the market were either too large or home built. Deane Brewer of G.N.Brewer Ltd approached AB Equipment who recommended the use of a Hammer Head PB30 portable pipe bursting rig as it was capable of pulling pipe in at a rate of 1 metre every 3 minutes.

The PB30 is a small, compact, down hole unit designed for installing Polyethylene pipe. Deane was introduced to "Cartridge Method" Static Pipe Bursting using Restrain™ PVC-U sewer pipe as already used in other New Zealand cities including Wellington, New Plymouth, Hastings, Masterton and Whakatane. He chose to pioneer this proven method of installation for use in Christchurch City.

A trial took place during December 2011 where representatives from CCC, SCIRT, AB Equipment, Mico Pipelines, Iplex Pipelines and other industry experts attended. The burst-shot chosen was located at Ashmore Street in Woolston, a 12m shot was pulled through earthquake damaged DN100 clay pipe. A small 1.5m x 1.5m receiving pit was excavated in the street above the existing sewer main. The low impact small entry or pipe launch pit was established in a front lawn between established trees, garden and a concrete driveway.



*Hammer Head PB30 Portable Static Pipe Bursting rig.*



*DN100 RESTRAIN™ Gravity Sewer Pipe 1m lengths ready for "Cartridge Style Installation" within small installation pit.*



AB Equipment set up and operated the PB30 bursting rig while the Brewer's team were trained by Iplex Pipelines to install Restrain™ PVC-U sewer pipe "Cartridge Method", by installing short pipe-lengths down a small pit connecting one pipe after another. The pull back was complete in under 1 hour, the trial was considered a success.

Brewer's began installing Restrain™ pipe full time from February 2011, Deane Brewer commented; "Our company has found the use of Restrain™ PVC pipe using pipe bursting extremely useful, we use it for all our relay work. We use it where we are short on space or where we are needed to reduce reinstatement costs as excessive damage can be caused from traditional open trenching methods. We have had 100% success rate with this product on all our straight run pipe relays and in some instances we have found it cost effective". He said; "I can replace 8-12 laterals per day which allows us to get through a greater volume of work".

Since Brewer's pioneered "Cartridge Style" Static Pipe Bursting in Christchurch, 18 other portable pipe bursting rigs have been purchased by other contractors there. The demand for DN100 x 1m lengths of Restrain™ pipe has since exceeded all expectations. Contractors like the easy installation method as there is no butt fusion jointing required, no pipe string to lay out on site, there is the ease of connecting standard RRJ PVC fittings, increased productivity and less reinstatement required.

The longest sewer completed using this technique and equipment was completed in Masterton during December 2012, this was a 108m DN150 installation, installing 6m lengths of Restrain™ pipe.

More than 40,000 metres of Restrain™ PVC-U sewer pipe has been installed in New Zealand.



*Wire bursting rope, pull head and Restrain™ starter pipe within entry pit.*



*Restrain™ pulled through existing clay sewer lateral.*



*Restrain™ exiting the old sewer lateral into the PB30 cradle.*



*Connection of Restrain™ using traditional RRJ PVC fittings to existing sewer main...*



*...and connection to the house, complete.*

**Iplex Pipelines NZ Ltd retain the intellectual property rights for Restrain™ pipe; New Zealand Patent No. 561752.**

**Contractor**

G.N.Brewer Ltd

**Asset Owner**

Christchurch City

**Designer**

Stronger Christchurch Infrastructure Rebuild Team (SCIRT)

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