

GENIE OF MERCY

The innovative use of a pipe pulling machine and 12 custom-made tools enables a contractor to clean a clogged pipe where four other companies failed

By Scottie Dayton

For nine months, four different contractors tried to clean the 20-inch steel waste pipe at the 747-bed Brigham and Women's Hospital in Boston, Mass. Medical wastes had accumulated in the 1,200-foot-long line for more than 30 years, reducing its diameter by half in areas and effectively clogging it. The hospital was paying a contractor \$5,000 a week to remove the trash manually.

The maintenance manager had given up hope of having the pipe cleaned. It ran beneath the heart room, morgue, and other sensitive areas two stories underground. A quote of \$3 million to replace the pipe — requiring the shutting down of those essential departments — spurred the manager to try one final possibility. Nick Woodhead at US Jetting referred him to Gerry Robinson of Pipe Genie in Vancouver, B.C.

Robinson, who was working at St. Anselm's College in Manchester, N.H., drove to Boston to assess the job. "I used a hammer and chisel to test the hardness of the debris," he says. "It took quite a bit of beating to dislodge any material, so I knew that removing it would require a lot of power and specialized tools."

Fed up with giving down payments to contractors who failed, hospital officials told Robinson that he would not see a cent until 95 percent of the pipe's diameter had been restored without using

water or chemicals. Robinson accepted the terms and cleaned the pipe in two weeks using a pipe-pulling system and set of proprietary tools.

Hush, inventor at work

Robinson returned to Vancouver and spent a month developing 12 patented tools that could rip, scrape and scrub the material off the 3/8-inch thick pipe wall. The tools, designed like a ball to navigate numerous S-curves around elevator shafts and main support columns, also had to pull backward should they jam.

Returning to the hospital, Robinson



Special tools like this one were used to rip, scrape and scrub collected material from the hospital's medical waste pipe.

"One access was in the heart room where the MRI and monitoring machines are. When the hospital had a Code Blue, we had four minutes to get everything out and secure the area. We had our share of Code Blues."

Gerry Robinson

and three men worked daily from 4 p.m. to 6 a.m. The waste pipe came out in an underground service tunnel large enough to accommodate a hearse, then elevated 40 feet to a parking garage where trash fell into a 40- by 8- by 8-foot refuse bin. Vacuums pulled medical wastes through the pipe. Next to it was the linen pipe.

The crew started work in the tunnel by slicing through the trash pipe with a

steel-cutting saw. "We couldn't use torches for fear of igniting the material, and we had to keep the pipe perfectly round," says Robinson.

Bracing the pipe was critical in protecting its end from damage or collapse under 40 tons of pulling power. The men built a retaining barrier from 4x4 timbers, then positioned a pipe-pulling Pipe Genie TA-40 with 9-hp hydraulic power against it. The machine lay on its side due to space restrictions.

The Pipe Genie system uses a pulling chain instead of a cable, and Robinson needed 2,000 feet of 5/8-inch chain. "Each time we inserted a tool, we pulled the entire 1,200 feet," he says.



Innovations from Pipe Genie cleaned the 20-inch waste pipe at Brigham and Women's Hospital after four other contractors failed with more conventional methods.



TOUGH JOB

PROJECT:

Clean 1,200 feet of a 20-inch steel medical waste pipe without using water or chemicals

CONTRACTOR:

Pipe Genie, Vancouver, B.C.

CUSTOMER:

Brigham and Women's Hospital, Boston, Mass.

EQUIPMENT:

Pipe Genie TA-40 pipe-pulling system and 12 proprietary cleaning tools, Pipe Genie, Vancouver, B.C.

RESULTS:

Line cleaned in two weeks, saving the hospital millions of dollars

"However, every tool also dragged a chain behind so I could pull it out if it became stuck."

As the machine pulled, the chain fell in a small pile behind it. Robinson uncoupled the chain at 100-foot increments, wrapped the lengths around a special cart, and a crewman rolled it back to the entry point in the heart room. The return trip involved riding elevators and going around buildings. One thousand feet of chain was constantly in the pipe.

Clean by numbers

Material was removed in increments, and slowly, so as to avoid jams. Robinson also didn't know if the pipe had ovalizations that could bind the tools. The first tool pulled was a flow-through cutter that acted like a plow. Two knives mounted equidistant on a disk ripped off 85 percent of the material they hit. Debris dropped to the bottom of the pipe and was not carried forward.

Tool 2 also had two knives mounted equidistant on each side of the disk, but in positions different from those on Tool 1. Tool 3 had three equidistant knives on each side of the disk. These tools were also flow-through cutters. The machine was pulling at 80 to 90 percent of its power, around 40 tons.

To extract the loosened debris, Robinson designed a chain conveyor that attached to the pulling machine's chain.

“Because the pipe was choked down to 10 inches in places, the conveyor could jam if we pulled out too much material,” he explains. “I therefore added incrementally larger buckets behind the first chain conveyor to handle the overflow. We had an access every 200 feet through which we removed the debris.” The material was transported in wheelbarrows to the refuse bin in the garage.

Robinson then pulled Tools 4 and 5, which had four and five contact points. The encrusted material ripped off a little at a time.

Blues in the night

Part of the job involved cleaning four vertical shafts that connected to the main trash pipe. Each shaft was an access point.

“One access was in the heart room where the MRI and monitoring machines are,” says Robinson. “When the hospital had a Code Blue, we had four minutes to get everything out and secure the area. We had our share of Code Blues.”

Another part of the job involved cleaning two pipe segments that came out in the garage 20 feet above the floor. One section ran totally underground, while the other ran above ground for a distance of 300 feet. The men built a rugged lumber platform that reached the

mouths of both pipes, constructed wooden retaining barriers around them, then disassembled the pulling machine and carried it to the garage.

Once the bulk of the debris was removed, Robinson pulled different types of cable scrubbers through several times, followed by proprietary squeegees. One tool on a 19-inch round disk had rubber on one side and metal fingers on the other.

“As we pulled the tool, the rubber compressed and exerted pressure on the fingers so they pushed against the pipe wall,” he explains. “The fingers knocked off the material, and the rubber squeegeed the surface. We pulled the tool through several times.” The final tool was a 21-inch rubber pig working like a squeegee.

After a subcontractor video-inspected the pipe, the hospital’s head engineer approached Robinson, removed his hat, and said, “Of all the engineers who went through here and made such big promises, you’re the only guy who not only pulled it off, but did it in two weeks.”

Robinson and his crew removed 12,000 pounds of material, filling the refuse bin and saving the hospital millions of dollars. Most of the pipe is down to white metal. ■

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