

Chute lining

makes for improved refuse handling

FOR SOME TIME now Castlebrae Drainage Services Ltd, a specialist drainage systems renovation contractor, has been working with Glasgow City Council, Scotland, on a programme of work to improve the refuse collection systems in many of the city's high-rise residential blocks. To date work has been carried out in some 15 council-owned high-rises.

Most of the high-rises have been occupied for many years and in that time the refuse chutes, which run from the top floors to the ground floor refuse collection points, have deteriorated over time and been subjected to blockages. Where blockages occur, council staff have to break through the structure of the chute to access and clear the problem. On average blockages have been known to occur at a rate of around three per week or over 100 per year. This of course has a significant impact on council finances and staff resources.

SOLVING THE PROBLEM

In order to try to minimise such occurrences, Glasgow City Council approached Castlebrae with a view to establishing a technique that would help to keep the

refuse chutes open whilst extending their longevity by refurbishing the whole chute.

Castlebrae offered up a lining system developed by Trelleborg-epros, a specialist renovation and lining systems manufacturer, particularly in the drainage sector, which had been specially designed for such a use.

The system comprises a chemically resistant fibreglass liner, designed specifically for chute lining work, which prior to installation is impregnated with a special ambient cure, silicate resin. This resin, again specially developed for the chute lining operation, not only has excellent bonding properties, but both chemical and heat resistance (to temperatures in excess of 280 °C). In high temperatures or fire situations the resin is also designed to give off CO₂ which makes it 'self-extinguishing' as the CO₂ limits the ability of fire to take hold.

In preparing for the work for Glasgow City Council, the product was put through several approval processes with both the fire and rescue service and the City Council. The resin has DIBT approval in Germany.

Having passed the approvals processes, it was decided to apply the liner system as the solution to the high-rise chutes dilemma.

INSTALLATION

Since the start of the work, Castlebrae has undertaken lining operations on some 15 different high-rise blocks, ranging from 10 to 23 stories high across Glasgow City Centre and the surrounding areas.

Prior to lining, Castlebrae carries out full cleaning operation and CCTV surveys the refuse chute under repair to confirm that the work is necessary in any particular block. Once a decision is made that work is required, the contractor adopts a standard lining procedure.

Since no access is required to homes in any block, there are no particular access difficulties for the contractor to be overcome. Lining is achieved with the crew situated towards the top of the building, either on the roof or located at the highest refuse hopper location on the top floor of the building. Lining is completed from top to bottom in 5 m sections, this being the section length between hopper entry

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points between floors.

The impregnated liner is placed around a packer and held in position using special netting around the outside. This packer is prepared on the ground floor, at the base of the refuse chute. The packer arrangement is then hoisted up into the chute from the roof or top floor working location until it is in the required position within the chute. The packer is then inflated with compressed air to push the liner into place against the inner wall of the chute. The liner is then held in place whilst the ambient cure resin sets. The use of the packer system can be compared to a typical patch liner system in a sewer repair operation, only vertically orientated. Once the liner has cured the packer is deflated and lower back down the chute to prepare for the next length.

To date, hundreds of these linings have been completed by Castlebrae at an average installation rate of around nine 'patches' per day.

The only special arrangement that has to be made when working in any particular high-rise is that refuse has to be removed by hand for the residents during the course of the work. This is because the chute is

taken completely out of service whilst lining is completed.

On the lower height building a completed chute renovation operation normally takes between three and four days while on the taller blocks the work can take up to one full week.

For the contractor, Castlebrae Drainage, Tommy Easton said: 'Since the start of this work programme with the City Authority the rate of blockages occurring in the towers treated with the liner has fallen dramatically. From an average three chokes a week (100 call-outs per year) which cost the council a significant amount of money to deal with the call-out rate is now down to one over the past year. This just goes to show just how effective the Trelleborg-epros lining system has been and its suitability for the purpose. We expect to see further use of the system over the coming months and years.'

Ian Ramsay, Trelleborg-epros sales director, said: 'We are happy to have worked on a project like this, where we have taken a trenchless solution and adapted it to another non-sewer-related application. We have worked closely with both Castlebrae

and Glasgow City Council to get all the approvals and were impressed at the speed things were done. We hope to be able to develop this solution and are in discussions with city councils outside the UK to trial the product.'

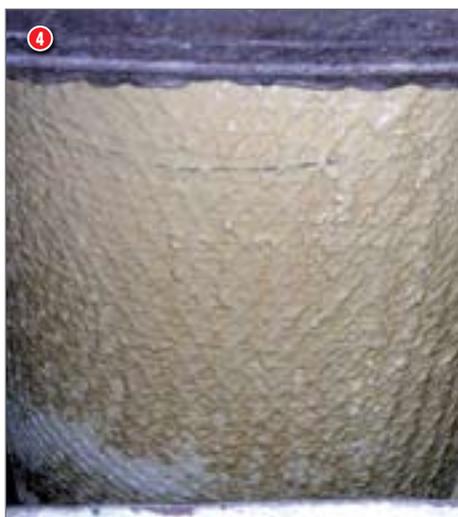
Subsequent to the installation of various chute liners in different tower blocks, there have been three fires in lined chutes. All these fires were extinguished in accordance with what was expected from the liner specification. Council officials were very pleased with this outcome because, despite there having been fires in the chutes, they caused no building damage and there was no need to evacuate residents from the buildings or re-house anyone in order to effect repairs, because none were necessary. □

1 A typical tower block in which the chute lining work was carried out by Castlebrae Drainage

2 and 3 The roof top winching position for hauling the prepared liner into position from the chute bottom

4 A liner section curing in the chute

5 and 6 Each liner section is carefully prepared by hand and rolled onto the inflatable packer (figure 5). The liner is held in place around the packer using a special netting (figure 6)



Source:

http://www.saice.org.za/downloads/monthly_publications/2007/CivilEngAug2007/#/0