

In-depth analysis of all aspects of pipe work restoration, part I

Ola Svensson, 2009-03-30

Introduction and background

My last essay focused on the three different methods used in pipe work renovation. This time the mission was to analyze these three different methods even further. Together with Per Ekelund, I was assigned to penetrate the economic and practical implications in relation to pipe work renovation and attempt to develop a manual for pipe work renovation.

I have adapted the practical part of this assignment in the form of two real cases from our everyday life in the asset management of our properties. The practical parts which will I describe are: a classical pipe work renovation in Assessorn 3, Malmö, and a planned relining in Sandbacken/Kruset, Malmö. Regarding the so-called “room in room” method, I have not found a real case to study in detail.

To describe the procedure efficiently and correctly, the essay contains pictures. To establish a form of manual is very difficult when you must take into account the market situation, location, rents, and last but not least the economic situation of the construction market.

- **Classical pipe work renovation**
As the name says, this is the classical way of performing pipe work renovation. It is also by far the most common way. The cost is approximately 105/130,000 SEK / bathroom, including new pipes.
- **Relining**
A new method of making tubes inside old sewage pipes. There is also an ever newer technology to carry out relining of water pipes.
- **The ”Room in room” method**
The bathroom is made in a factory. A bit quicker way to work than the classical method. The cost is mostly the same as for a classical pipe work renovation. It is most suitable for properties built from 1960 and onwards. Older buildings often do not have the same sizes of bathrooms.

Classical pipe work renovation

Practical case in reality - Assessorn 3, Malmö



At the end of August 2008, the exterior work started with roof work. Construction scaffolding was raised around the property so that at the same time we could paint the windows

Assessorn 3 is a property located in a B location in Malmö, address Södra Förstadsgatan 119/Värmlandsgatan 4 A and B. The property was built in 1938 and contains 31 apartments and a small commercial unit.

The property came to Akelius via Mandamus and was already showing signs of extremely neglected maintenance due to rogue ownership. In 2006 and 2007 there was interest from tenants to transform this property and two others nearby into a tenant's association owned property. This ended with the process being discontinued in September 2007.

When we should plan the budget for 2008, we faced the following problems:

- Bathrooms with zero moisture protection and a lot of water damage as result
- Leaking sewage and water pipes
- Poor running water
- Old kitchens with a low level sinks

Also the exterior planned maintenance was neglected:

- Window needed to be painted externally
- Balconies needed to be renovated
- Leaking roof needed repair

Our project leader was then instructed to take in tenders for a classical pipe work renovation to fix the most urgent things, and to be able to overcome the big costs for running maintenance. This proved to be too bad a deal.

We decided to go for a new round, but this time to do more things with the property. The request for tender contained the following parameters:

- Pipe work renovation with new bathrooms
- Pipe work renovation with new kitchens
- Installation of rat stoppers on sewage pipes
- Kitchen fans
- Stoves with ceramic hobs
- New refrigerators and freezers
- Tiles in the hall and kitchen
- Security doors
- A new roof
- Repair of balconies
- Exterior window painting

This time the offers were much better and our goal for the business was reached. Part of the cost is taken as planned maintenance, not investment, and after that we had an acceptable pay off. The reason that we managed to reach the goals of return was that those of us in the renovation project put a lot more things which raise the standard. After that the budget and the investment application was adopted in December 2007, we started up the project in March 2008. The project was purchased by a medium sized construction company, MVB AB. Project documents were produced by MVB and our project manager.

Normally this big project starts with a large tenant meeting. At these meetings, there can sometimes be too little time to talk properly with all the tenants; therefore, we wanted to try a new method this time. Our project manager, together with the contracted firm, decided that this time we should visit each tenant in their home during the evenings. This way, we had a more personal contact, and could more easily describe what would happen in each apartment and in the rest of the property. In these individual meetings the tenants were informed that the project would be carried out with tenants living in their apartments, and that the work on the individual apartment would take approximately four weeks. The tenants were also informed in writing of all telephone numbers of responsible people for the project and a time schedule for the project. The tenants were also informed that in each staircase there would be an empty apartment made available with the possibility of cooking, go to the toilet and take a shower. Access to this apartment was solved by using a code lock. Every tenant had the code to the apartment.

The time schedule was as follows:

External works – week 39 to week 50

Establishment – week 40

Scaffolding mounting– week 39 to week 40

Demolition roof– week 41

Rescheduling paperboard– week 41 to week 43

Plate work – week 41 to week 42

Painting windows outside – week 42 to week 48

Balcony works – week 41 to week 46

Scaffolding dismantling – week 49 to week 50

Inside work with pipe work renovation – week 45 to week 18

Värmlandsgatan 4A – week 45 to week 50

Värmlandsgatan 4B – week 3 to week 9

Södra Förstadsgatan 119 – Week 8 to Week 18



A picture of new sewage pipes

The interior works consists of the following activities:

Demolition

In the old bathroom all fixtures and fittings were demolished such as bath tub, toilet, sink, etc. The floor and walls were broken up in order to find all installations. As you tear out every old pipe to make room for the new bathroom, it cannot be used. In the kitchen all fixtures and fittings were demolished such as kitchen decor, splash protection, gas cooker, fridge, freezer and pipes. The carpet in the hall was removed, the old door demounted, and a new security door was installed directly. The electricity that would be changed was disconnected. Construction waste is not transported through the apartment, but through a window. It is very important that the entrepreneur shows great caution against the surface so that it would not be destroyed.

Dehumidifying

After an extensive demolition, you can discover different moisture damage. If you find any moisture damage you have to dry it out; this can be very time consuming. To accelerate this process, use a dehumidification unit.

Installation

After the drying-out process, you can install the new bathroom and the new kitchen.

It usually begins by installing the new water and sewage drains to continue with the fixtures and fittings. The backbone of the kitchen is in place to continue with the mud flap, stoves with ceramic glass platepour, cooker hoods, fridge / freezer, tiles in kitchen and hall.

Inspection

After that the builder considers themselves finished with the apartment, and cleaning has been completed; it is time for inspection together with the builder, our project manager and external consultants. Remarks should be corrected within a reasonable time, about one to two weeks.



Picture of a bathroom where repair work is started

Today, two of three staircases are inspected with good results and little remarks. The complaints from tenants has been very little, this has to do with the large amount of time we have spent on information. If you look at the unforeseen costs of the project, a few points have turned up which have not been seen in the beginning of the project. There were a few square meters of rotten roof wood and rotten wood on window frames. However, we hope to be able to raise rents higher than in the calculation.



Picture of a new kitchen



Picture of a new bathroom



Picture of a bathroom with moisture protection

Relining

Practical case in reality - Sandbacken 13/Kruset 1 in Malmö



Sandbacken 13/Kruset 1 is three residential buildings in a B location in Malmö, Kirseberg, address Solgatan 29,30 and Bulltoftavägen 18-20. The properties were built in 1946 and contain 66 apartments. The properties were bought by Akelius in the summer of 2007 in a package of nine properties. During the inspection of the buildings, social problems were found, neglected planned maintenance, the need to do pipe work renovation, and to renovate apartments. However, we could not find any leakage of wastewater or in the water pipes at that moment. Rents were relatively low. Housed within the properties, there was also a big empty commercial unit, well suited to be transformed to eight apartments. The deal, however, depended on how we could resolve the future renovation needs of these two properties. After much discussion with the property owners association, we found a way to ROT renovate apartments. The concept was done with new bathrooms, new kitchen, new finishes, new security doors, etc. This allowed us to build out the social problem, get fresh apartments and give the area a lift in the long run. But, the biggest obstacle was the pipe work renovation needed within five to ten years. Since we knew we could go for the ROT renovation in each individual apartment, we started to study everything about relining. It turned out that the sewage pipes were not a problem. When we investigated relining the water pipes, no companies had this technology. We therefore checked the possibility of making new water pipes in the staircases. However, during the past year, companies have turned up that also perform relining of water pipes with satisfactory results; it is practically the same technique as with sewage pipes. In each of the bathrooms we renovated we mounted a pretty big inspection hatch so that the inspection would be easier when we came to relining. We also disconnect all radiators, we do this because the radiator pipes in Kirseberg are a little bit tricky. The pipes are mounted in the top layer of the floor. When you have a stop in the sewage pipe, water goes down to the pipes and weakens them. This leads to a lot of moisture damage in Kirseberg.

When the deal was completed, and we had access to the properties, we started to convert the empty commercial unit to apartments. It became a total of eight new apartments and a new waste room. In the business calculation, there were also some cost for fixing neglected maintenance such as window painting.

Today, we have ROT renovated 20 apartments of a total of 66 apartments.

The day we have renovated a whole staircase, we will carry out a relining as follows:

Cleaning

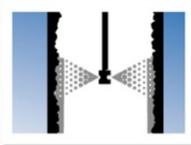
After the tubes are located, they are cleaned and purged from deposits by mechanical grinding. The system is flushed and after drying, the tubes are checked with a video camera. This inspection point is to ensure that all the older drains are whole before filling with the plastic mass.

Reinforcement of the older drains is performed if needed.



Relining

After the cleaning and inspection is completed, coating can be done. Plastic mass is pumped out through a nozzle, rotating brushes are used to create a smooth coating and for forming the tubes. Even here the whole process is monitored by a video camera.



Inspection

The work is finalized by yet another video monitoring to ensure that the quantity of plastic the tubes received was adequate, and that nothing went wrong.



Mounting

Finally, all assembly is dismantled, and the work is complete.



A picture of a renovated bathroom in Malmö (every bathroom looks the same). The idea is that when an entire staircase is done to do relining of sewage pipes



A standard raised bathroom in the region of Malmö gives the landlord the right to charge an extra rent of 350 kr / month.



During construction the existing radiator was removed and replaced with an electric toweldryer as in the Malmö region, this gives the landlord the right to charge a rent of a further 35 kr / month



Renovated kitchens in Kirseberg.

A new kitchen gives 450 kr/month, Stove with Ceramic rings gives 50 kr/month, new lighting gives 25 kr/month, new tiles gives 45 kr/month.



Renovated hall in Kirseberg.



Renovated living room in Kirseberg. New parquet floor gives 55 kr/month.

The new bathroom is mounted with a ventilation slit to the old room so that any moisture can dry out while the new bathroom is used.

A bathroom and the pipe work renovation normally takes one to two weeks from the first day of work, until the tenants can use their new bathroom. Most things are prefabricated in a factory and the material is supplied with good logistics.

A prefad cartridge is placed and the new pipes are mounted inside the cartridge with an alarm indicator for leakage; everything to minimize the risk of further water damage. The cartridge makes service and maintenance easier in the future. Often a wall hung toilet is mounted that gives more floor space and makes cleaning easier. Often a tub with a half front is mounted.

This makes cleaning down under and behind the tub easier. Most manufacturers of Room in Room can also offer options. These things are usually decided together in consultation with the client before the project starts.

Examples of options:

- Towel Drying
- Floor Heating
- Spotlights
- Dimmers
- Jacuzzis
- Washer
- Clothes dryers
- Shower enclosures
- Ceramic and clinker in addition to the standard
- Seizure beyond standard



Finished walls packaged in factory



Loading



Tiled walls wrapped for all climates



Material shipped by container to the construction site



A Robot puts tiles on the new walls



Top and bottom of the new walls are followed after each other in the production line

Frequent questions about prefabricated bathrooms:

How much surface area is lost from the old bathroom?
The depth of the new wall inc. profiles is about 18mm.

Is the new wall too heavy to handle for the assembly process?
Compared with traditional pipe work renovation, a lot of work is eliminated and a lot of work with heavy loads such as demolition and construction do not exist.

What happens if the finished wall is not consistent regarding measurement when they are delivered to the workplace?
This must not be allowed to happen! A laser meter is used.

Sources

www.vvsforetagen.se

Affärsplan Akelius Malmö 2008 och 2009

<http://www.rumirum.se/>