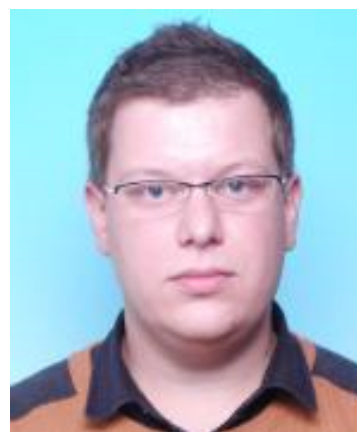


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METHODS OF RECOVERY TECHNICAL EQUIPMENT OF THE CITY BY USING NEW TRENDS



Introduction

The concept of technical infrastructure is understood as all related construction technical service territory, thus the construction of individual energy, information and other specific systems securing individual distributions, sampling point, resources and other special construction designed especially for adjusting the parameters of individual media or signals. It is therefore important to realize that it is well made, managed and maintained technical infrastructure constitutes one of the principal segments of urbanized territory, without which will be each, however beautiful and technically perfect building a box without lives. Individual technical equipment items simply extend the life of our whole society and the environment surrounding it, whether negatively such as restrictive limits, but also positively shaping the conditions for the functioning of all systems on which our society is increasingly dependent.

Today just technical infrastructure contributes a great deal to satisfy the basic needs of the population living in urban areas. From their perspective, the most important parameter of engineering network to their functionality and reliability. It is therefore extremely important that the technical equipment of the city was as far as possible continuous reliable as the lowest possible risk of failure, because they tend to have a negative impact on the functioning of the city not only in terms of reducing the quality of human life, but also affect public health, hygiene, safety landscape protection, property and the environment. These requirements, however, are unthinkable without a quality project, skilfully made construction, using the latest materials and processes go hand in hand with high technology equipment, ensuring their quality design management, maintenance and renewal of assets of individual managers.

It is therefore necessary to realize that sustainable development of the city as a whole is chiefly sustainable development of its individual parts, including technical equipment. That is, however, now often inevitable lag, and it is inevitable to its planning and especially the well-defined large scale restoration.

Why proceed to the renewal of the technical infrastructure?

An important segment of the city is technical infrastructure, which today not contribute to the sustainable development of the city as it should. This is mainly due to the current state of these buildings, which often does not match the legislative requirements, set incorrectly administration, maintenance, coordination of both individual networks, as well as coordination of the entities that manage these buildings. It is also wrong setting the overall concept of these structures, mainly due to the continued growth of the cities, resulting in a constant editing of existing networks, their configuration or building new networks. Often these works are carried out largely improvised and often arise as construction ills that may in the years to cause considerable problems. Technical infrastructure and loses it's originally stated systematic and becomes quite confused mixture of routes, which is very sensitive to the emergence of potential failures and accidents. It is therefore necessary to start this already critical situation to deal with, set order, carry out the overall coordination of all technical buildings, including their surroundings and create a total concept, which will include not only today's needs but also future (Šrytr, 2012).

It is necessary to note that the technical infrastructure, as well as other structures not designed with an indefinite useful life and is therefore necessary to count with wear, which of course entails a considerable investment in maintenance and rehabilitation. Life itself of these building is directly dependent on many influences affecting, which may include such as aging materials, poor quality materials, poor or unskilled labor for installation, but also the poor implementation of the management and maintenance, changes to operating pressures of the media or change their properties and last but not least, the effects of external factors, namely for the effects of dynamic pressure, but also the effects of root penetration, stray currents, etc. As a rule, the building is subject to the effects of these multiple effects at once, and life is so reduced several times faster. Recently, more and more frequent cause of failure of engineering network is a mechanical disruption of the implementation of the modification or reconstruction of neighboring networks, where their earthworks usually extend up to the protected area network side, which is mainly due to poor synergy between the administrators or bad Devising Network (Šrytr, 2012).

Effect of aging and wear material dramatically reduces the service life of these structures and brings a gradual increase expended funds for repairs more frequently occurring disturbances engineering networks. The available statistics even indicate that the water distribution networks in the Czech Republic average escapes to 21% of distributed water and Slovak, it is even 32% water. Available resources also states that more than half of the sewerage system does not meet the criteria for sewers, terms waterproof resistance and also from gas pipelines leak 5% of transported gas. In addition to these leaks caused mainly material leakage or leakage connections are also often encounter problems of flow profiles affected by corrosion, clogging or blockage even, which often has the effect of possible hydraulic losses. It is therefore clear that the constant improvised repair solutions are already insufficient and must be made to restore the technical equipment of the city (Proske, Šrytr, 2012; Šrytr, 2012).

Deciding on restoration technical utilities

A well planned renewal of technical equipment is of strategic importance for the sustainable development of the city. Especially since there is almost unavoidable use of sufficiently high quality facility management, which will be relevant in the long term building control and manage. Using the most advanced facility management tools with the highest possible and most accurate amount of data about managed buildings can be achieved very good optimization of individual engineering network and associated buildings, which naturally brings considerable financial savings. At the same time we are able to model the service life

of engineering structures and strategically plan their timely recovery, which can prevent potential failures and accidents on construction of technical infrastructure.

In the case of accession to the renewal of the technical infrastructure of the is operator forced to consider possible alternatives, which are primarily dependent on the actual condition of individual buildings which do not comply mainly due to the leakage of material or individual links, breach of the walls and the like. Following the decision of the administrator then either proceeds only to the reconstruction of existing lines, or complete recovery. Decide whether these actions will be carried out in an open trench or use of trenchless technologies. The actual decision is not a simple process, as you need to consider many criteria, including in particular economic aspects of each solution. It is therefore necessary to take into account not only the financing of the work itself, but also the associated costs, which may be, for example, the cost of the temporary use of public spaces, diversion of transport, etc. It is also necessary to take into account the condition of urban public spaces and pay attention to the use of such procedures, to the maximum extent possible, avoid unnecessary damage, or disruption of other elements found in this area (Proske, Šrytr, 2012).

An important factor is therefore timely solutions and planning the restoration or reconstruction which is necessary in sufficient time to prepare suggestions for solutions and prepare design documentation. In this step, it is necessary to take into account all the information about the area, examine the current situation of existing buildings and on this basis propose a possible solution methods and quality materials with sufficient lifetime. This issue is the need to devote sufficient time and attention. A common requirement today is the lowest purchase price of the material used, which can reduce costs for example, by 20 %, but the reach life of up to half the lower than of quality material. For this reason it is necessary at this preparatory stage to minimize the effort to use improvised methods or use low quality materials for the purpose of reduce the today financial costs, as bad and undeveloped the proposal of these buildings brings huge future costs to maintain and repair (Šrytr, 2012; Portál VAKINFO).

Current trends in the renewal of the technical infrastructure

Thanks to new technologies used for the production of materials, machinery, etc. is now available a range of new advanced construction methods, which allow the building not only in an open trench, but also for the use of controlled or uncontrolled trenchless technology (Fig. 1-3).

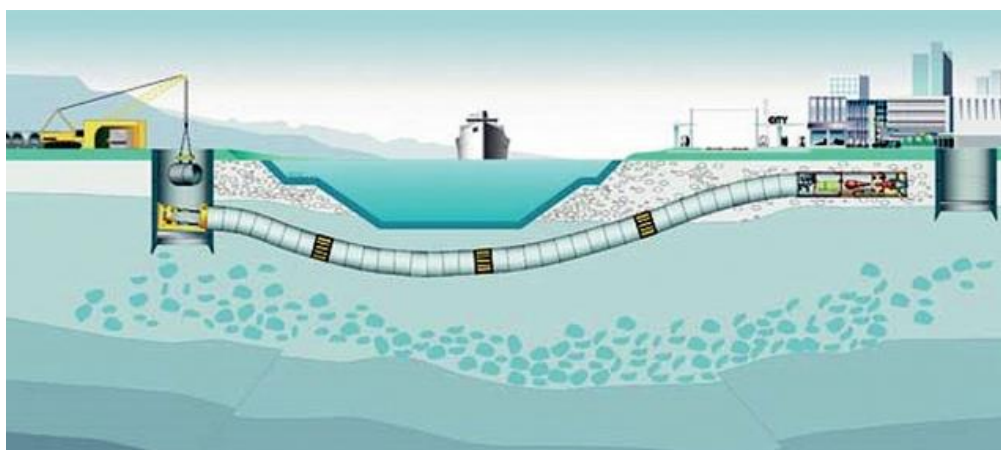


Fig. 1. Trenchless technology - Micro-tunneling method (Stavební noviny).

Trenchless technology allows storing pipe fittings individual networks or ducts for cable networks. Selecting a suitable deposition technology networks, however, depends primarily on the conditions at the site of installation. It should be noted that trenchless technology is

obviously more expensive than a ordinary open trench and so u are still not sufficiently wide-spread. With this technology, we begin to encounter more often especially in urban cities, where despite the financial severity of this method is this method used. This is mainly due to an effort not to burden the historic core, to minimize traffic restrictions in the city center, the major transport routes and intersections, or in the case of more stringent requirements for environmental protection. However, these technologies do not enable only installing new route engineering networks by using micro-tunneling, pilot drilling, or extrusion of the soil, but also allow the remediation and possible repairs, especially repair individual of the existing networks, when is the most used either relining methods, thus when is the most used either relining methods, thus put in new pipe to milling existing route or method where is also to milled existing routes retracts seamless liner, the sleeve, which when stretched inflated with compressed air and then allowed to harden, thereby forming a new plastic pipe (Proske, Šrytr, 2012; ASB portál).



Fig. 2. Trenchless Technology - Relining Method (Company Wavin Osma Ltd).

Other trenchless technology is the method of plowing. It is a method of laying pipe designed especially for long conduit engineering network running across unpaved surfaces. The method is implemented using a plow device, consisting of a tractor and plow who piping or wiring pulled into the blade grooves formed. Leadership is thus stored in aligned trench with a maximum depth of 2 m. (ASB portál).



Fig. 3. Trenchless Technology – Plow method (ASB portál).

Conclusion

Network technical equipment is an integral part of every city or town, without which it would not be possible in this area nowadays inhabit. These buildings directly influences the set comfort of the urbanized area throughout its life, it is necessary therefore to realize that their continuous functionality we depend and any limitation of functionality brings with it not only limits the set standard, but also affects the hygiene, safety, public health, etc. It is there-

fore necessary to ensure their ongoing management, maintenance and renewals that without any restriction to the sustainable development of the city.

Since the majority of engineering network located beneath the surface, it is extremely important to put emphasis on their service life quality project preparation, the use of modern materials, professional and well executed work, operation, maintenance and eventual recovery by implementing suitable remediation methods. These requirements are inevitable and, in the case of non-acceptance consequently, lead to breakdowns and accidents, which bring considerable financial costs for their elimination.

In the future, it is more appropriate to ensure the effective management; operation and maintenance of movable property for engineering network administrators use a quality facility management. Strategically plan and timely interventions to individual engineering networks and strive to achieve their maximum life. It is also important to apply more modern, especially trenchless technology and to avoid the constant deterioration of public space thanks excavation work.

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