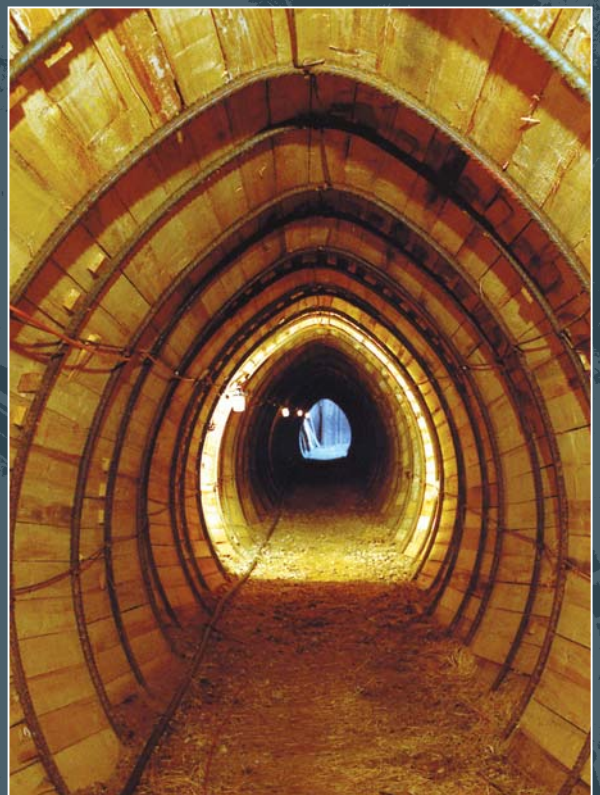


# Gallery structure building

- the solution for metropolitan sewage system underground engineering



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Figure 5: Gallery as railroad crossing

## An ideal solution for culvert

### Gallery structure building

Gallery structure building, in particular in the roadway of an existing culvert, is the ideal solution for culvert refurbishments. This method can be used on short routes as well as in the support length sections extending from shaft structure to shaft structure. Because gallery access is manned, it can be set up above an old, defective culvert. In this case the sewage water is diverted within the gallery (figure 1) through temporarily installed ducts, to which the side culverts are connected as well. Defective side culverts, on the other hand, can be refurbished from the main gallery through the installation of horizontal galleries. These horizontal galleries can be installed in any length (figure 2). The new culvert can subsequently be installed in place of the old culvert (figures 2, 3). Vitrified clay tubes with DN 150 dimensions up to large steel concrete diameters are possible. (Figure 5 large diameter tube installation DN 2100/1200 in a gallery below a railroad crossing).

Egg profile tubes are the ideal solution because of gallery geometrics, given that they are equivalent to the cross section of the gallery. The remaining hollow space is subsequently filled with insulating material. Moreover, it is also possible to install and operate a ground water reserve for low water levels (figure 6).

For standard galleries, trenches of just 2.50 m x 2.50 m have to be dug, from which the culvert refurbishment using the gallery structure building method is then completed. Usually these are also the shaft trenches which have to be set up instead of the old structure during culvert refurbishments (figure 4).

# Gallery structure building – problem solved

In civil and underground engineering, in particular in sewer system underground engineering, work frequently has to be performed in very sensitive areas. Consequently, open culvert installations are frequently not desired or too complex to operate in downtown areas due to structural density, intense traffic, railroad lines, crossing lines or shopping as well as tourist areas.

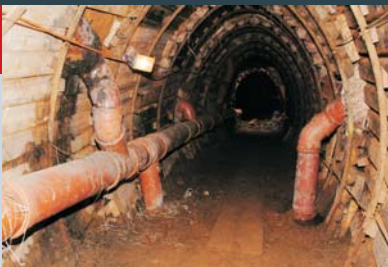


Figure 1: Temporary sewage installation



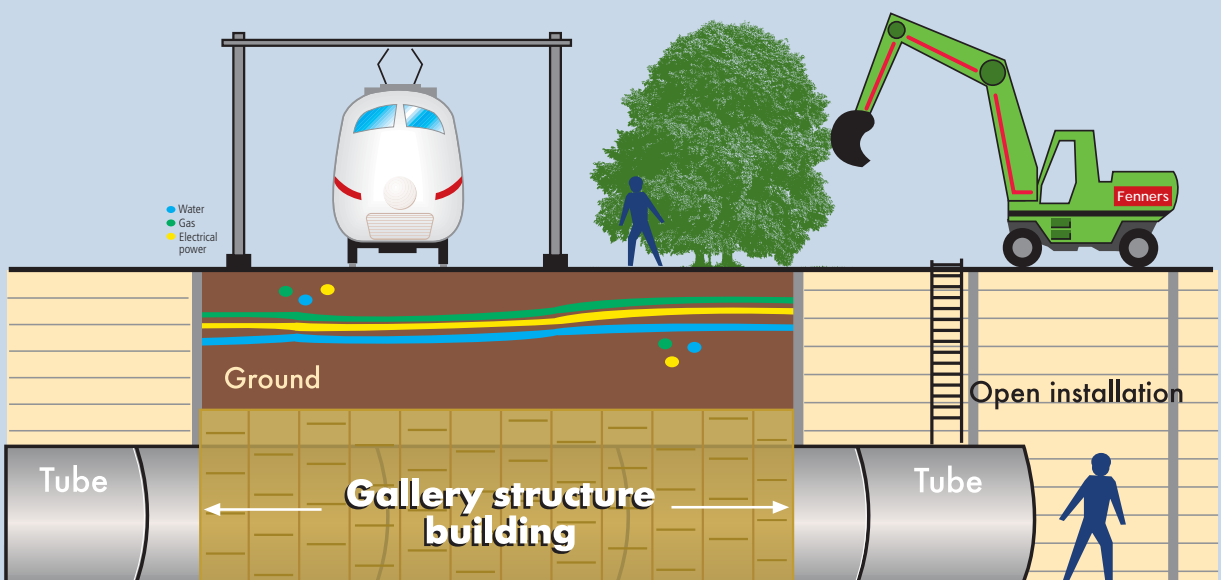
Figure 2: Horizontal galleries for side connections



Figure 3: New installation of vitrified clay tubes

Gallery structure building is the better solution for short routes, such as railway underpasses or road underpasses, etc. since it is less pricey than conventional structures.

When entire support systems are being renewed, they have the advantage that not a lot of the construction activities will be noticed on the surface (Old Town and tourist areas, etc.), which greatly reduces the encumbrances in these areas.

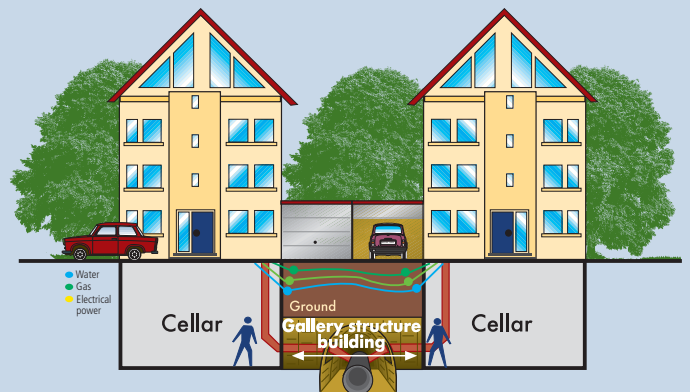


The economic alternative is imperative for short routes

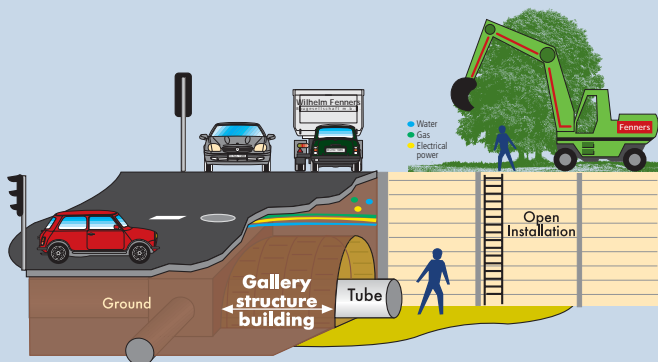


Figure 4: Gallery trench shaft structure

Moreover, this method is currently the only known solution that allows the simultaneous replacement of existing culverts including side culverts and house service connections with new culverts below ground.



In addition to its main utilization in gallery construction for sewage system underground engineering, this method has also been successfully used in utility line installations and obstacle location, etc.



Crossing traffic is not adversely affected

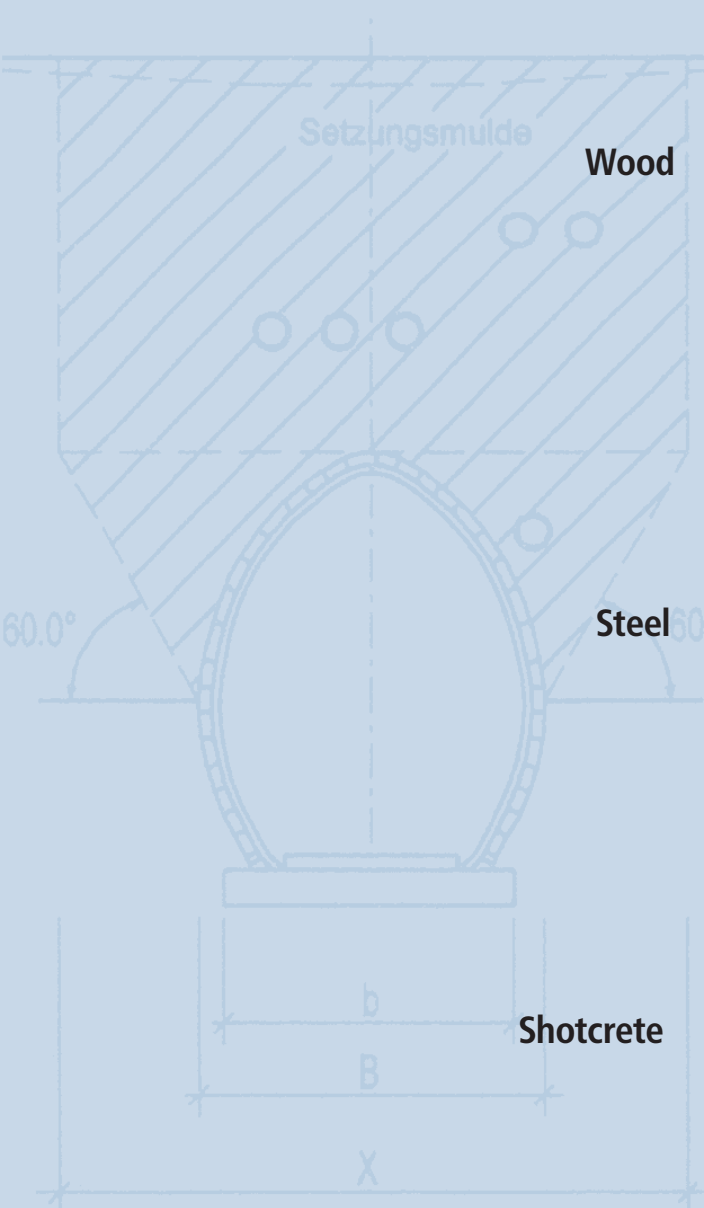
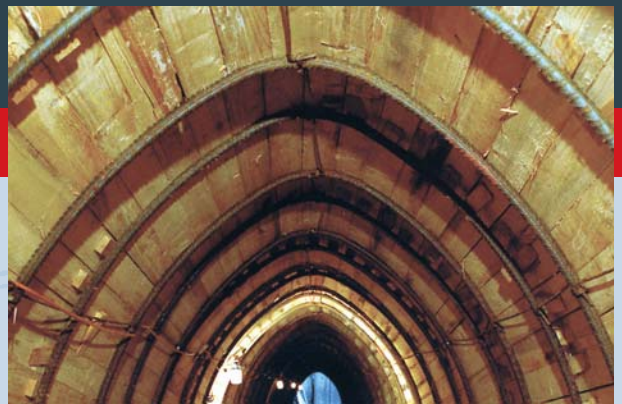


Figure 6: Ground water reserves in the gallery

# 3 gallery finishing options

Depending on local requirements, galleries can be finished in wood, steel or shotcrete.

Differing approaches are dictated by local geology, static requirements or by the general conditions imposed by the builder. The same applies to trenches to be dug.



Shotcrete

An ideal solution for culvert refurbishment



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