

Basic principles for planning inverted siphons with air cushion at the example Wiener Platz-Dresden

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1 Summary

The advantages of the inverted siphons with air cushion compared to conventional inverted siphons are presented in this paper. The main advantage is that the filling level is adjusted by the air cushion in the inverted siphon pipe according to the waste water flow velocity. In this way, sedimentation is nearly be avoided. The adaptation to the volume flow is achieved completely automatically. The reliable and efficient water or waste water drainage without sedimentation is possible at variable flows.

2 Introduction

If waterways, rivers, roads, pipes or other obstacles have to be crossed by waterbodies or sewers, an inverted siphon has to be used. In my example the new development of the Wiener Platz at Dresden resulted in cutting the existing infrastructure by the street tunnelling and the planned basement garage (figure 1). The structural total measure extends along the Reitbahn street on a length of approx. 150 m.

The inverted siphon plant is part of main collectors. It drains an area of 300 hectares of face using a combined sewer system. In the area of concern, approx. 20.000 inhabitants are connected.

Laying of telecommunication, gas and water pipes is relatively simple. Problems have to be solved with gravity lines of the sewer system however, especially if they have a low gradient. The transfer of the main collector with a tapering cross section measure 2.400/2.160 in prolongation of the Reitbahn street had to be planed.