



The three technologies applied are as follows (indicated by half-tone cells in Table 1)

① Employment of improved inverted siphon culverts

At a crossing of the Okamoto river, which is a class A river under prefectural administration, an improved siphon culvert 18 m long was employed. Unlike with an inverted siphon culvert constructed by conventional pipe jacking, the starting and arrival shafts used in pipe jacking are no longer necessary. Moreover, the depth of the starting and arrival manholes is about 4 meters shallower, so a reduction in the construction cost and work period can be expected.

② Omission of manholes by use of curved pipes or other means

At horizontal bends in the prefectural road, a manhole is omitted at four locations and a curved pipe is used in their place. A construction cost reduction can be expected from manhole omissions.

③ Extension of manhole intervals

For the prefectural road, manhole intervals of between 57 and 100 m were established in three sections, and manholes were omitted at three locations as a result. A construction cost reduction can be expected

**(Plans for the future)**

In FY2008 and on, an investigation into the introduction of the 15 new installation techniques will be conducted in the remaining sections.

In FY2010 and on, we plan to perform an examination of “exposed piping for pipe culverts” and “factory-made, extremely small-scale treatment facilities (PMBR)” by means of a pilot program.

Collaborators: Ninohe City, Japan Institute of Wastewater Engineering Technology

Contact : Toshiaki Shimizu, Takashi Terakawa, Eiji Wachi, Yoichi Ishikawa

Key words

15 new installation technologies, construction cost and work period reduction