

Investigation research on circular diversion Weir of improving confluence in the Otsu City

Period

2003.7~ 2004.2

111P ~ 117P

(Purpose)

For diversion manhole of improving confluence, this research carries out the investigation of structure of facilities which satisfy required functions by hydraulic model study, arranges hydraulic characteristic as a necessity for setting shape of facilities in 11 spots, and makes establishing basic structure as purpose.

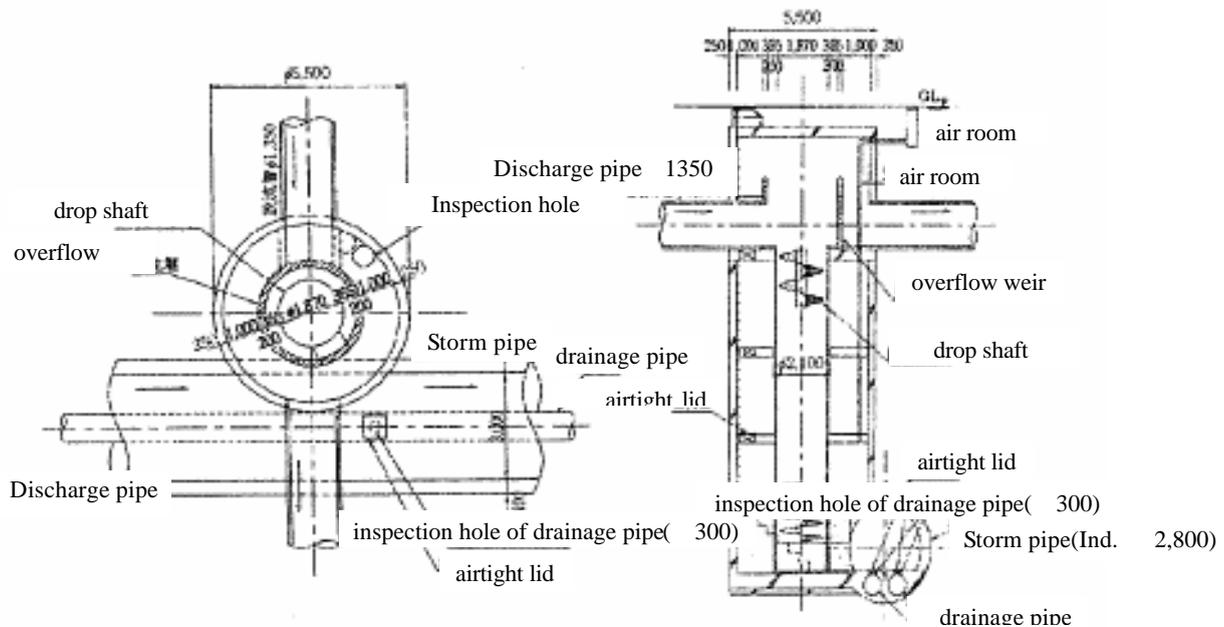


Fig.1 Standard structure figure of diversion manhole

(Result)

1. Local experiment

(1) Experiment on cross-sectional shape of overflow weir.

As result of comparing water level with flow characteristic and flow coefficient of each overflow weir in complete overflow, the flow coefficient of circular cross section is the largest, and overflow depth can be decreased. As rectangular cross section and knife-edged cross section, although there is almost no difference between each other in the range including plan overflow depth, in the region of small overflow depth, the knife-edged shape becomes advantage.

(2) Experiment on the plane shape.

In circular shape and oval shape, the swelling situation of the local water surface is different, and circular one is more excellent in stability than the oval. On the other hand, it is important to select weir plane shape that causes small effects of backwater to upstream in the diversion manhole. In flow condition, the result was obtained that circular cross section becomes further advantage than the oval. In addition, it is almost not different for water level by cross-sectional shape until $0.5Q$, when exceed, oval shape rises further than the circular at the highest high-water level.

2. General experiment

Though experiment was carried out for draft shape, because the dynamical water level of the upstream pipe rises high, the following improvements was carried out, and the effect of decreasing of water level was confirmed.

- Joint of the upstream pipe is made to be the gradual extension shape.
- Central cylinder of drop shaft is reduced and guide board is removed.
- Joint of the downstream pipe is made to be bell mouth shape.

(Future problem)

It is necessary that examine the application range of last shape set by this experiment and modify the design method in correspondence to the installation position.

Collaborators : Otsu City

Japan institute of Wastewater Engineering Technology

Researchers : Suzuki Shigeru, Inage Junzi, Masuoka Hideiti

Key Words

circumference weir, confluence improvement, flow coefficient, diversion manhole, drop shaft J903BIO12.