

Cooperative research on the technology of polyethylene pipe for sewerage

Period

1996.11 ~ 1998.3

59p ~ 63P

(Background and Purpose)

Recently, the vacuum and compression system are positively being introduced as new sewerage collection system of the sewerage facilities suitable for the small and medium municipality. The air-tightness and water-tightness are required for the pipes because the sanitary sewage is transported by negative pressure and pressurization for the system. As the tubing for these systems, the polyethylene pipe for the sewerage is rapidly spreading.

"Sewerage plant design guideline and explanation" was revised in October, 1994, and "[reference] 4. compression and vacuum sewerage collection system" was incorporated. "The vacuum sewerage system technology manual" is published for the purpose of that on the vacuum sewerage, it is able to be originally designed by the municipality without constrain of system, by this organization in June, 1995. And, in the association of polyethylene pipe and joint for sewerage, " the new polyethylene pipe PA-11_1995 for sewerage" being the association standard is instituted, and the popularization of the polyethylene pipe for the sewerage is being attempted.

As the tubing which is excellent in earthquake resistance, in this study the polyethylene pipe increasing of construction results was examined in respect to suitability of sewerage system such as vacuum and compression sewerage system for tubing recently, and the technical manual was made.

(Result)

1. The constant conditions of Shape and dimension of the pipe joints, material property, shell characteristic, buried work characteristic, flow characteristic, design, construction and maintenance, and the development objective in applying polyethylene pipe for the sewerage to vacuum and compression sewerage system were set in 1996.

2. Execution of the performance tests of polyethylene pipe for the sewerage

It was confirmed that on polyethylene pipe for the sewerage, joint (nominal diameters of 200), the development objectives were satisfied by carrying out tensile test, flattening test, beer test, hydraulic test, bending test, flat negative pressure test and drop impact test.

3. The buried work test of the polyethylene pipe for the sewerage under the road was carried out in the year 1997, the safety as a buried pipe was confirmed by the time-dependent investigation on the effects to behavior and road surface in the construction under the road of the polyethylene pipe for the sewerage. And, it was confirmed that on the material property of polyethylene pipe, the development objectives were satisfied by carrying out creep test, chemical corrosion resistance test, antifriction test, and that and, bending peeling test, fatigue test, flexibility test are carried out as a shell characteristic test.

4. On the basis of knowledge got from performance test and buried work test under the road of the polyethylene pipe for the sewerage, the consideration on the test was carried out, and the technical manual was made.

5. As a content of polyethylene pipe technical manual for sewerage.

Chapter 1 General remarks

The following are described: Purpose and application range, application standards

chapter 2 Specification for the polyethylene pipe for sewer age

The following are described: Type, quality, material, production technique, testing method

Chapter 3 Characteristics of the polyethylene pipe for sewerage

The following are described : Material property, shell characteristic, buried work characteristic

chapter 4 Design of the polyethylene pipe for sewerage

The following are described : Flow characteristic, base work of the pipe, buried work strength design

Chapters 5 Construction

The following are described: Transportation and storage, construction standard of the EF junction,

construction of the special pipe, construction.

Chapter 6 Maintenance.

Inspection and repair were described.

Still, testing requirement, result and consideration and buried work experimental result under the road on the polyethylene pipe material characteristic and the shell characteristic for sewerage were arranged, and it was attached as a reference material.

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Key Words	Polyethylene pipe for the sewerage, vacuum sewerage system, compression sewerage system
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