

Investigation on Relocation of Kyoto prefecture Katura River basin sewerage trunk line "South trunk line" with the reinforcing work of " the Sitaueno elevated bridge of Meishin Expressway "

Period

2002.6~ 2002.12

1. Research purpose

With the execution of reinforcing work of "the Sitaueno elevated bridge of Meishin Expressway" (the national road No.171) which is located between Kyoto south and Suita of the Japan Highway Public Corp. Meishin Expressway, the relocation construction of Katura River river-basin sewerage trunk line "the south trunk line" (diameter 1000mm, extension 116.4m)of Kyoto prefecture is required. For this, the fundamental items of the alignment, connection method of relocating pipeline and the effect to upstream basin water level due to raising established pipe, and so on were examined.

2. Condition of relocation examination of the south trunk line

The south trunk line (diameter: 1.0m) is the sewerage utilities which set ensuring present utilities ability as a necessary condition by considering plan items, construction, maintenance of the existing utilities, and considering future maintenance in the maintenance plan.

- (1) Maximum flow quantities in plan period and present flow capacity are ensured.
- (2) Stabilized flow condition is ensured.
- (3) Dynamic water level after the relocation is equivalent to the present.
- (4) It is made to be not troublesome as a structure in plane, longitudinal alignment and manhole for maintenance.
- (5) Relocating pipe is made to be the pipe structure considered acting load (T-25) and earthquake resistance (level 2).
- (6) During construction, it is made to be temporary structure which does not overflow over the roadway surface even in local downpour.

3. Comparative examination of plane and longitudinal alignment

4 plan was proposed according to Comparative examination of laying replacement as table (Fig.1) from

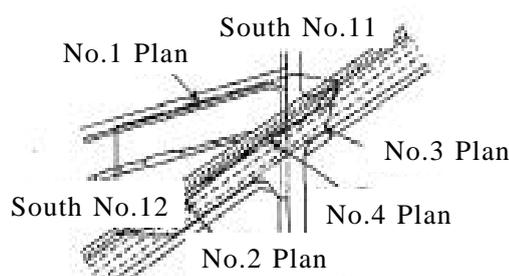


Fig.1 plane figure of JH proposal

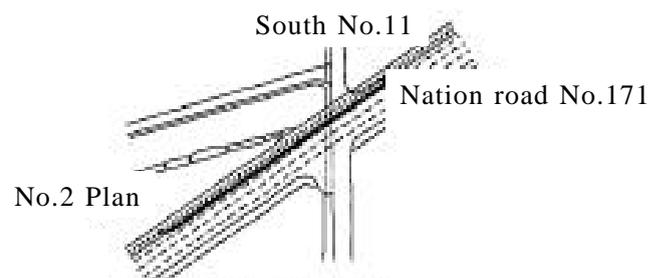


Fig.2 Plane figure of amended plan

the Japan Highway Public Corp. Ibaraki management office (of the following 「 JH 」) for Katura River river-basin sewerage south trunk line sewer (the 1000m inner diameter).

As a result of examining proposed 4 plan of the JH, the amended scheme (Fig.2) of the JH second plan was proposed by taking account of the problems in maintenance and construction, and was made to be a final scheme.

4. Examination of flow capacity and flow condition

The flowabilities, dynamic water level and so on were examined by using plan flow quantity of south trunk line and previous results of flow quantity as the examining flow quantity.

Plan sewage quantity (Data from Kyoto prefecture)

	Discharge per day (m ³ /day)	Discharge per second. (m ³ /sec)
Maximum	34.841	0.4033

Construction results of Nov., 2000

Discharge per hour (m ³ /hr)	Discharge per Second. (m ³ /sec)
1.697	0.471

For alignment, the dynamic water level rises to the maximum of 2cm according to the plan flow quantity and the maximum flow quantity from results of rainfall in November, 2000. And, though that the water surface of outside edge increases to 7cm due to water surface being slanted in the part of S-shape curve in manhole was identified, it was proven that there is not effect on flow capacity by examining the pipe diameter, overburden depth, etc..

As well as the existing pipe, the longitudinal alignment also similarly ensured gradient and step of duplicative pipe connecting to up and down flow pipe as well as existing sewer.

5. Summary

As a result of the various examinations mentioned, on the effect by raising water level due to relocation of "the south trunk line", and the problems of the maintenance, it was judged that there is no effect to the water level, pumping operation, maintenance and construction, etc..

Moreover, by making the S-shape of the invert in manhole been width of 1.0m, height of 0.6m, the head loss became little when achieved water quantity was flowed down invert. And, the relocation pipe was ranked as important trunk line, and the effects by levels 2 vibrations and pile construction of expressway, etc. were examined.

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Key Words

Katura River region sewerage, south trunk line, established tube relocation