Yokohama Station Area
Public-Private Partnership Flood Control

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INTRODUCTION

In the area around Yokohama Station, water is drained to the surrounding rivers at the rainwater development level in the confluence area of rainfall (about 60 mm/hr) once every ten years, three rainwater pumping stations, and three small-scale pumping stations.

Figure 1 - Status of Area around Yokohama Station

Figure 2 - Excite Yokohama 22 Area

Figure 3 - Rainwater Pumping Stations and Surrounding Rivers

Features of Area around Yokohama Station

- One of the leading terminal stations in the Tokyo metropolitan area
- A redevelopment is planned based on the large-scale commercial integration and community development plan
  - Plan name: Excite Yokohama 22
  - A district with a low foundation surrounded by waterfronts

Figure 4 - Number of Occurrences of Rainfalls above 50 mm/hr

Risk of a flood in the area around Yokohama Station

1) Frequent concentrated torrential rain
   - Frequent occurrence of rainfall exceeding the rainwater development level (occurrence of large typhoon and increase of torrential rain)

Figure 5 - Flooding around Yokohama Station's West Exit during Typhoon Masan in 2004

2) Concentration of life, wealth, and economic activity
   - Underground shopping centers are formed in the east and west of the station, and large commercial facilities are located in each area
   - Many people are concentrated, such as business guests, tourists, shoppers from within the country and abroad, workers, passengers of railroads and buses.

METHODS

Conventional rainwater development level

- Rainfall of about once every ten years in all cities (about 60 mm/hr)
- For the time being, for natural drainage areas, etc., a rainfall of about once every five years (about 50 mm/hr)

Figure 6 - Conventional Rainwater Development Level in City of Yokohama

Step-up improvement in countermeasures against a flood

Figure 7 - Full image of Yokohama Station Area Flood Controls

1) Improvement by City of Yokohama (government side)
   - Address a rainfall of once in every 30 years (about 74 mm/hr) in the area around Yokohama Station. (Improvement in the rainwater development level)

Figure 8 - Development image of rainwater trunk line, pump station

2) Improvement by private operators (public-private partnership) that conducts large-scale developments
   - Address a rainfall of once in every 50 years (about 82 mm/hr) in the Excite Yokohama Center Zone. (Development guidance)

Figure 9 - Private Rainwater Storage Facility (illustration)

Figure 10 - Effects of Public-Private Partnership Flood Controls

RESULTS

Amendments to Sewerage Bylaws of City of Yokohama and Japan’s First Flood Damage Control Area

- Revision of the Sewerage Act (establishment of national system)
- Revision of the sewerage bylaws of City of Yokohama
- Designation of the flood damage control area (first nationwide)
- Initiation of collaboration with private operators (enforcement of the city subsidization system)

A unique system had been considered since 2015 or earlier, but as the national system was established, a scheme was made allowing utilization of the national expenses as well.

Figure 11 - Designated Flood Damage Control Area

Scheme of development cost for private rainwater storage facility

In the confluence area of rainfall (about 60 mm/hr) once every ten years, three rainwater pumping stations, and three small-scale pumping stations.

Figure 12 - Image of the First Project Development

DISCUSSION

As a result of designating the area around Yokohama Station as a flood damage control area, the measures against flood are expected to effectively make progress down the road

- Target: Operators conducting large-scale developments of 5,000 m³ or more
- Site: 200 m² per 1 hectares of land area

The first project applied to the system is under preparation aiming for opening in 2020

City of Yokohama is committed to continuous efforts toward flood control measures that will become a norm for Japan

CONCLUSIONS

Figure 13 - Schematic Flowchart of the Project Development