



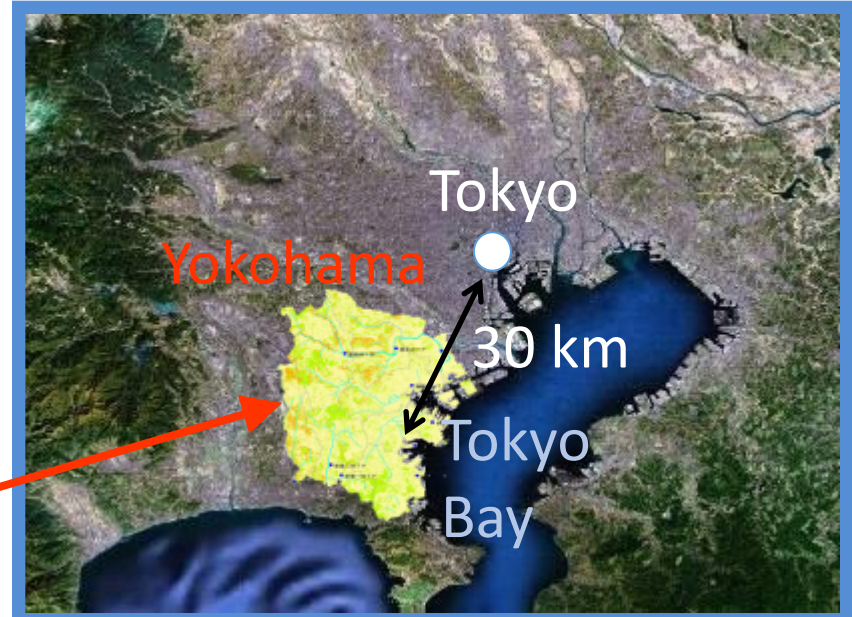
Construction and Public Relations of the Temporary Toilet System Directly Connected to Sewers in Yokohama City

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Contents

- City of Yokohama and Sewerage Facilities
- Construction of Manhole Toilet System, MTS
- Public Relations Activity
- Conclusion

City of Yokohama



City Information

Land Area	435 km ²
Population	3.7 million

Construction of MTS

- Purpose
- Outline
- Progress of Works
- Effectiveness, Kumamoto Earthquakes

Purpose

- Problem of past great earthquakes
- Conventional toilets, dysfunctional
- MTS directly connected to Sewers



Outline

Use method (procedure)

1) Remove the lid of the riser and set up the temporary toilet system.

* The tool for opening the lid is stored in the disaster-prevention warehouse.

2) Put water in the sewer pipe from the water-feed manhole.

* Use of pool water or tap water / about 800 liters
Confirm that the pipe is about half full of water from the water-feed manhole.

3) The toilet is available for use. Make sure to use the toilet only after the sewer pipe is sufficiently filled with water.

* The water in the pipe facilitates the dissolution and drainage of excrement and paper from the toilet.

4) After use by about 500 people, open the storage valve and drain the water.

* One or two times per day / drainage all at once

5) Close the storage valve once the sewer pipe has been emptied.

Repeat beginning with Step 2).

In times of disaster

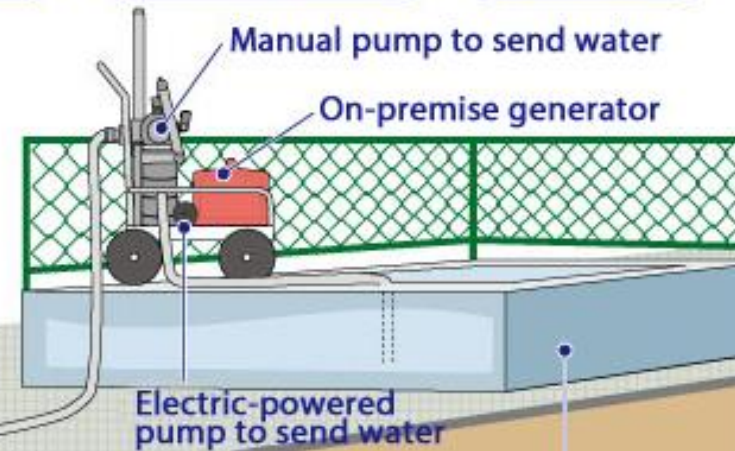


Storage valve

Sewer pipe

Riser

2) Water-feed manhole



Manual pump to send water

On-premise generator

Electric-powered pump to send water

Pool

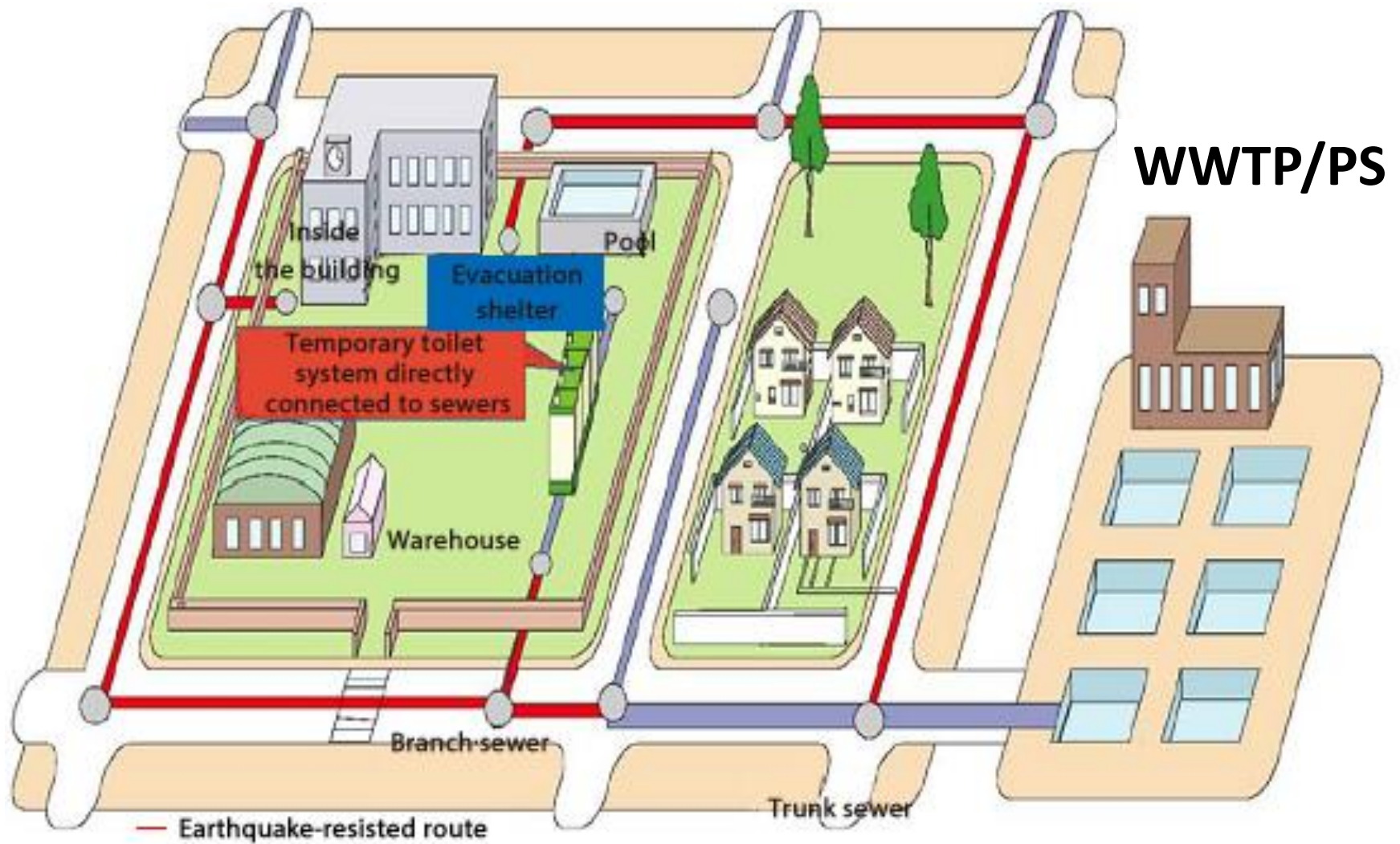
* If the pool is on the roof, it may possible to send water with a manual pump, using the natural (gravity) water flow due to the difference in level.

Set up one large-sized toilet for wheelchair access.

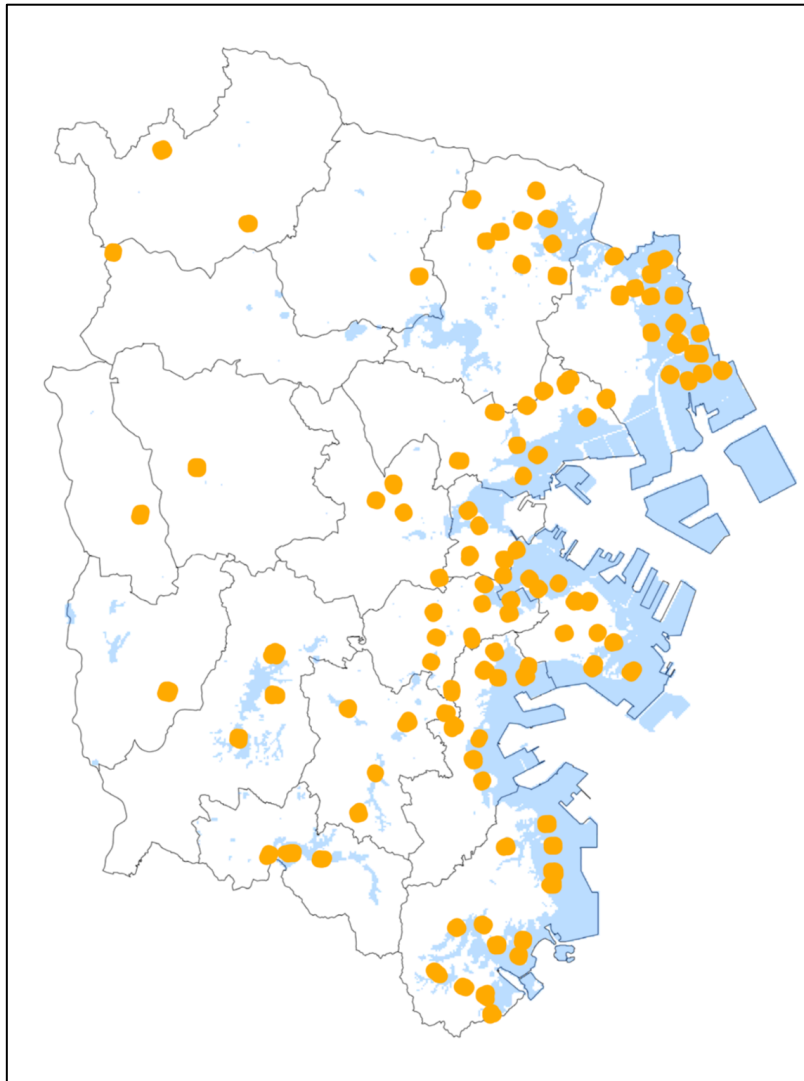
Outline



Outline



Progress



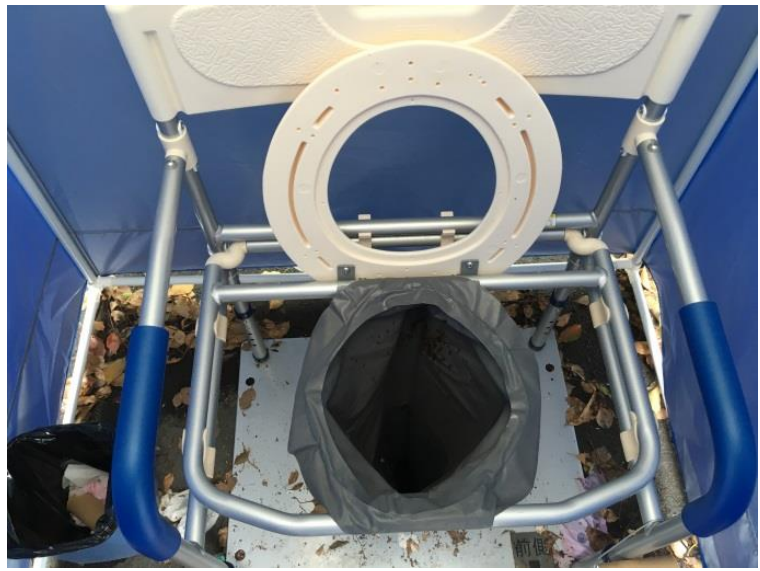
■ Liquefaction area

■ Constructed point

109

454

Effectiveness demonstrated, Kumamoto eq



Public Relations activity

- Set up Drills
- Educational Videos
- Signboard with QR code
- Model
- Naming
- Sewerage Mapping System

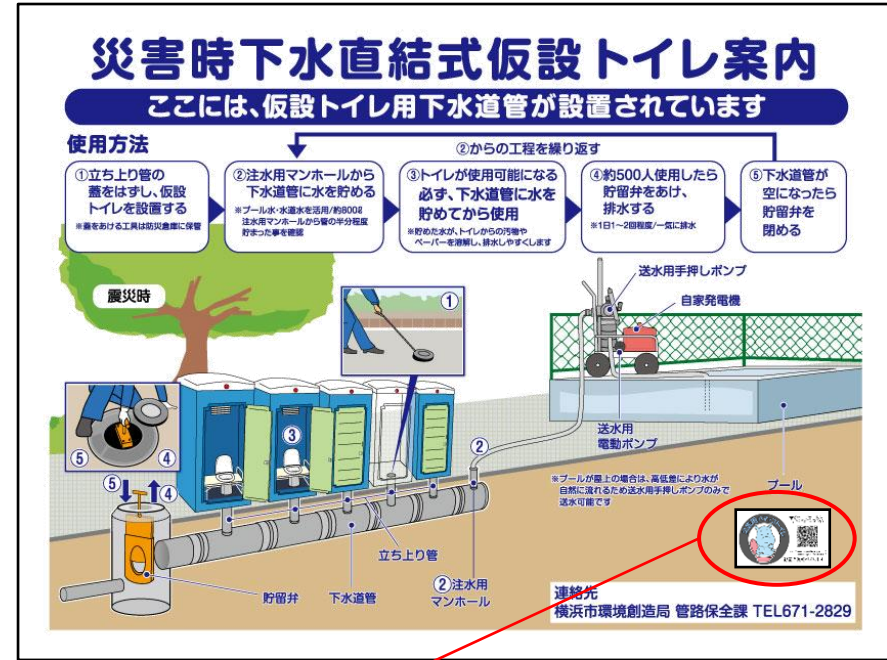
Drills



Video & Manual, how to set-up



Signboard with QR code



Models for Awareness



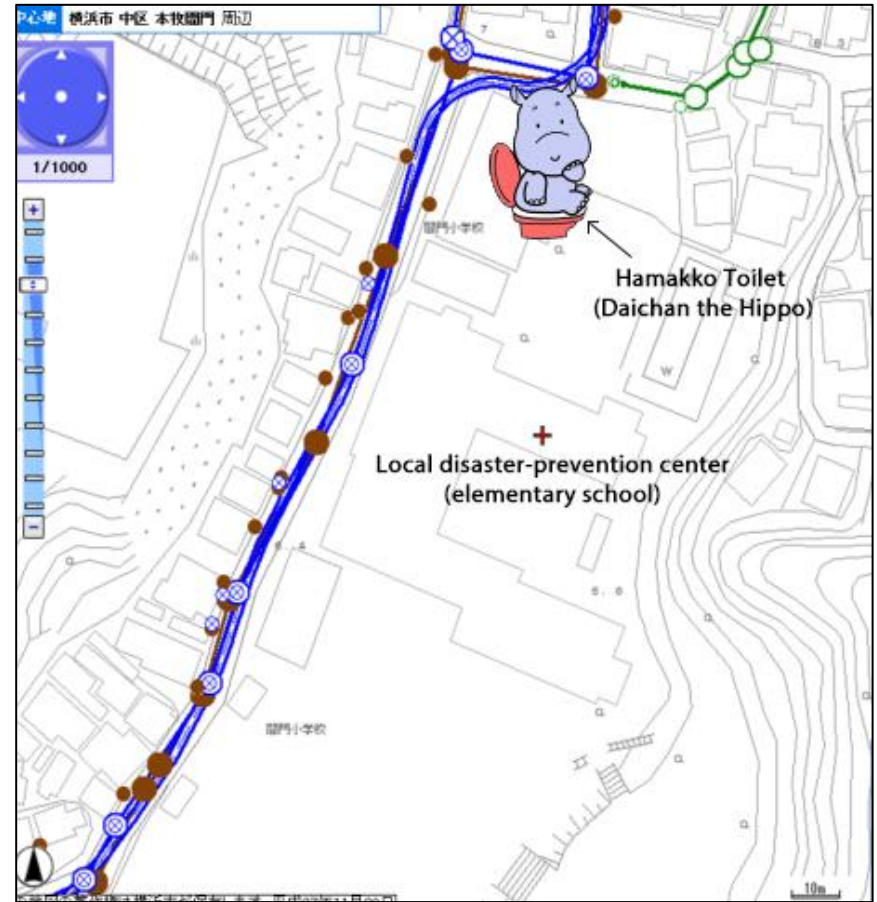
Naming

- Hamakko Toilet
- Hamakko Toilet Meister

 <p>ハマッコトイレマイスター認定証</p> <p>No.00001</p> <p>氏名 _____</p> <p>上記のものはハマッコトイレマイスターであることを証明する</p> <p>環境創造局下水道管路部管路保全課 平成 年 月 日 環境創造局長 大熊 洋二</p> 	<p>所管 環境創造局下水道管路部管路保全課 TEL 045-671-2829 FAX 045-641-5330 Email ks-kanrohozen@city.yokohama.jp</p> <p>●災害用ハマッコトイレについてはこちら http://www.city.yokohama.lg.jp/kankyo/gesui/sinsaitoire/</p> <p>「下水直結式仮設トイレ～使用方法～」 https://youtu.be/gRZurLlJTdc</p> <p>「下水直結式仮設トイレ～送水用ポンプの使い方～」 https://youtu.be/gEKMbQTTacA</p> 
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Certification for Volunteers

Sewerage Mapping System, Web



Conclusion

- Speed up of Construction
- Demonstrated effectiveness of MTS
- PR activities and next generation education
- Increased resiliency to disasters

Thank you for listening



Sewage Works City of Yokohama