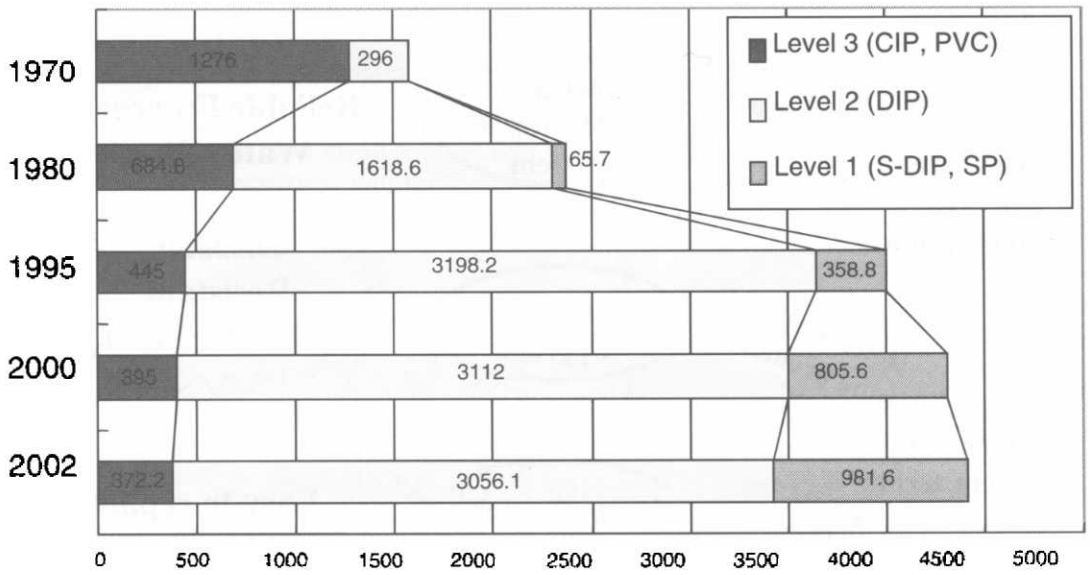
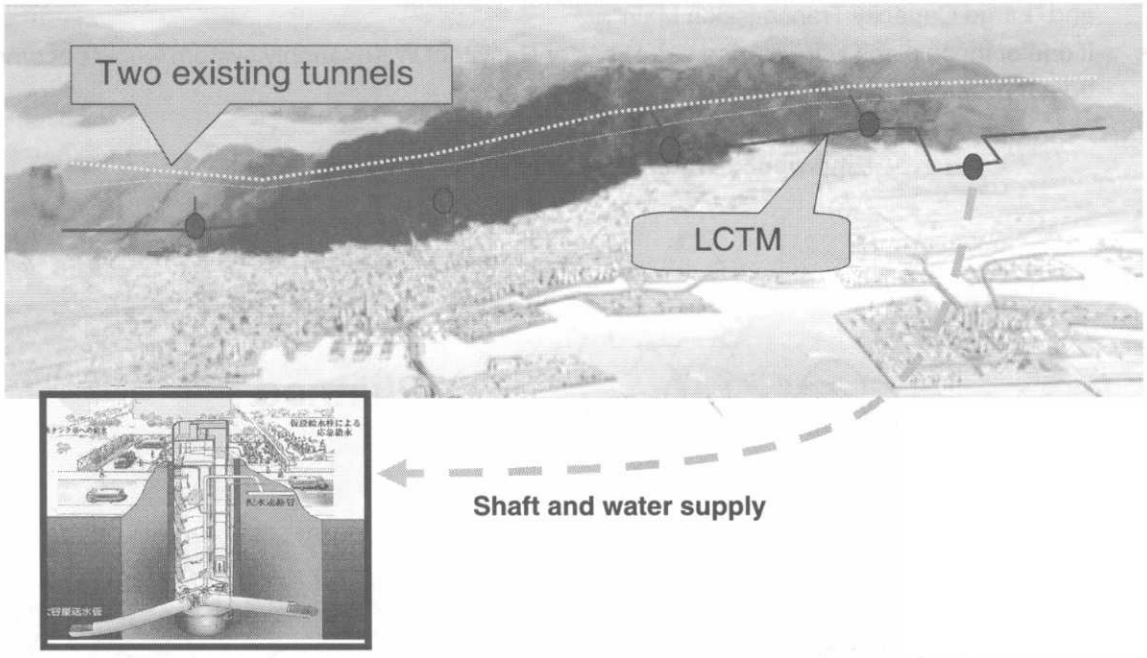


Large Capacity Transmission Main



- The Large Capacity Transmission Main project was planed as the third transmission mains for receiving the purified water from the another water supply utility.

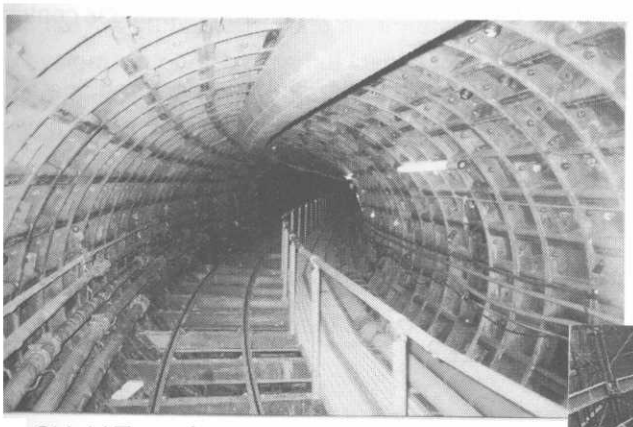
Large Capacity Transmission Main

Inspection, repair, renew (Existing Transmission) ⬅ **feasible**

- Water transmission capacity
- To maintain two existing tunnels
- To reduce recovery period
- Back up for the other tunnels
- Emergency water supply in downtown area

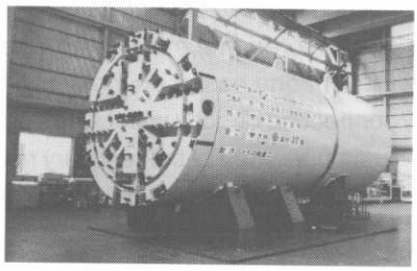
1. LCTM will make the two existing transmission tunnels feasible to inspect, repair and renew only to be a anti-seismic countermeasure. To reduce recovery period, to back up for the other tunnels, and emergency water supply in downtown area.

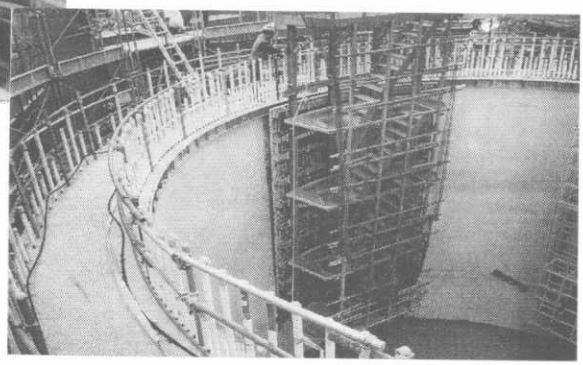
Construction



Shield Tunnel

Shield Machine ϕ 3350

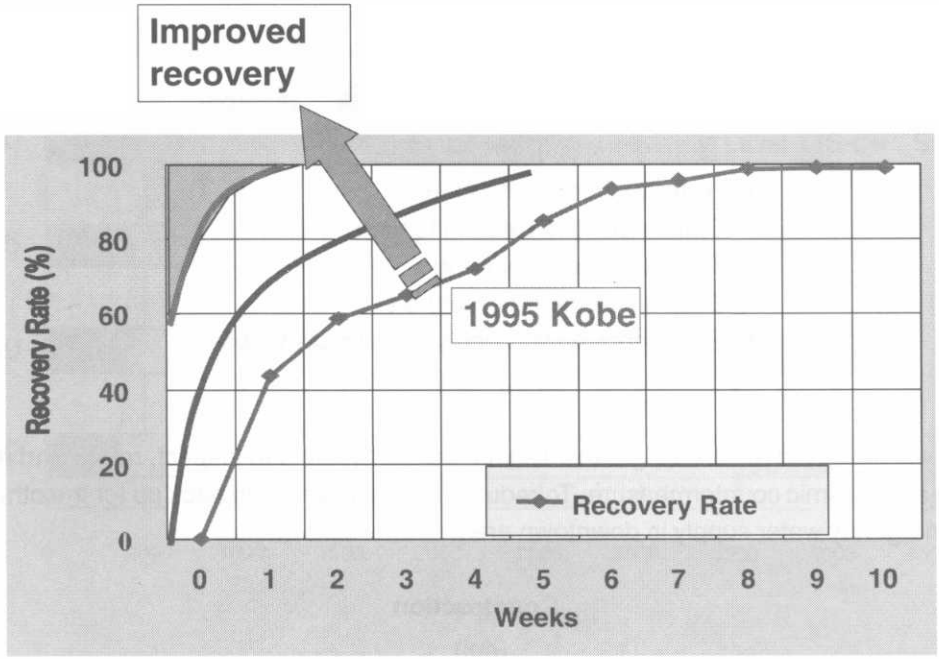




Shaft

2 LCTM is constructing with shield tunnel method, of it's diameter is 3.35meters, and transmission main's diameter is 2.4 meters.

Reduction of Recovery Period by Large Capacity Transmission Main and Block divide

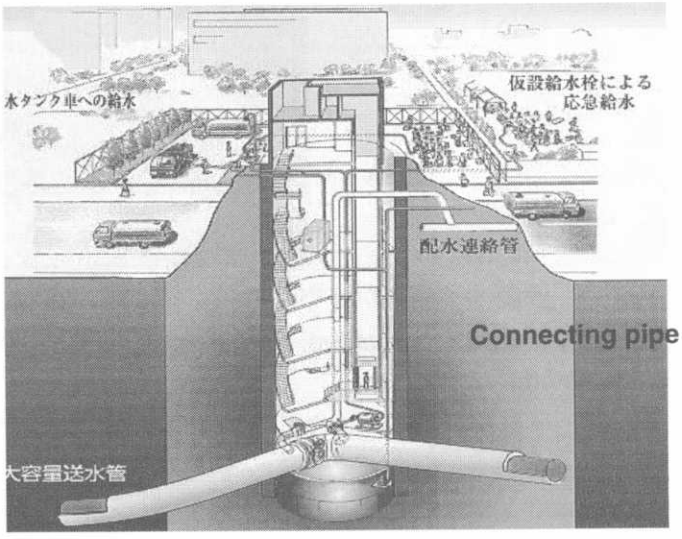


Now, let me to explain in which degree the LCTM and the seismic pipe replacement projects contribute to reduction of recovery period.

- Red colored line indicates the real rate in the Kobe earthquake, and blue colored line shows present one based on the simulation in the case of anti-seismic distribution pipe being now and connecting directly with LCTM.
- The upper area of the recovery rate lines shows the total household-days to be suspended service. Therefore, the effect of these project is to reduce the recovery time by about 60%. Furthermore, if the pipe-network was divided into blocks, it became to be a green colored line.

Use of the shaft

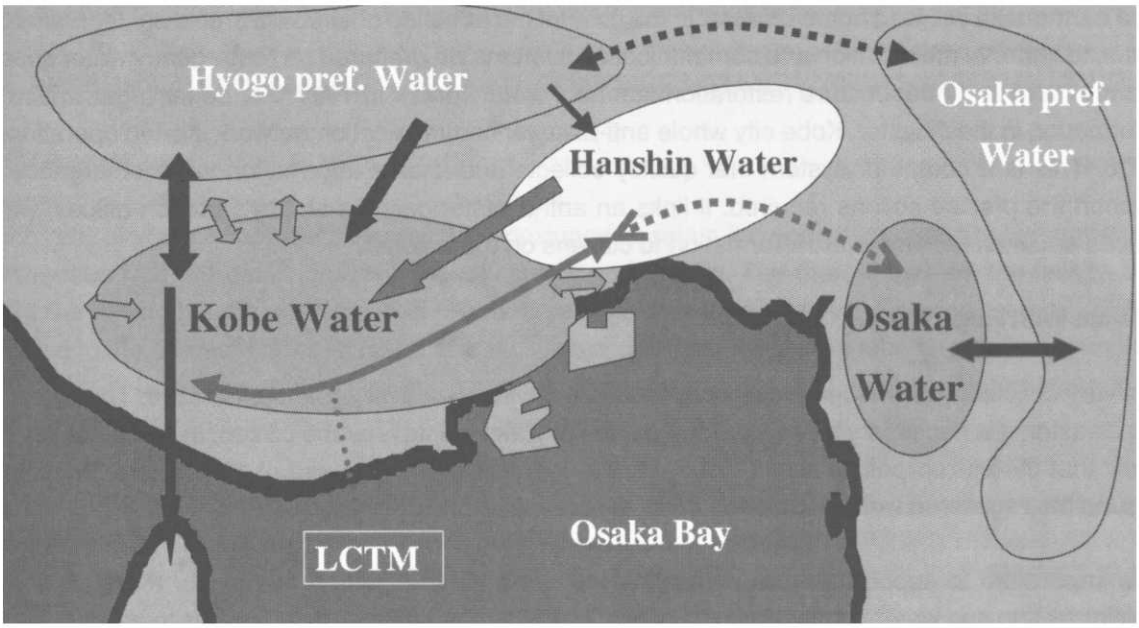
Water supply to water wagons and fire trucks



Emergency water supply via temporary water taps

1. LTCM can correspond to the emergency watering, too.
2. If distribution reservoir is damaged, we would change to supply the water directly from LTCM soon.

Wide Area Water Network system



This is the image figure of wide area network system for mutual cooperation connecting LCTM with other systems in northern part of Osaka Bay Area. This network system is in the stage of a plan, but, if the system is completed, each utility in this area become to have enough resources even in the disaster.

Others Countermeasures

- Collaboration Agreements with other Cities and Utilities
- Preparation of Anti-Disaster Manuals
- Information Systems
- Private Well Registration

Collaboration Agreements with other Cities & Utilities

A disaster of the same severity as the Kobe earthquake cannot be dealt with by own city hall staves only. Therefore, on the assumption that a city will accept help from other cities in the same prefecture or even from over the country, it's necessary to reach an agreement in advance as to cost sharing, accommodations, line of command and so on.

Kobe city signed an agreement involving the collaboration of 13 major cities in Japan for support in times of disaster. And renewed with five other cities. With nearby municipalities, Kobe had signed a 3 city agreement, which expanded to cover 7cities and 2 towns. Separately from the Kobe city agreement, the waterworks bureau, in consideration of the importance of anti-disaster measures to restore waterworks quickly in large cities, prepared a memorandum in 1996 involving 12 major utilities in collaboration and support. In this memorandum, a leading supporter utility is designated to each utility to quickly put in motion a support system and enable smooth coordination.