

-Building for the Future- Amagasaki Locks

1.Purpose

The Amagasaki Locks help to prevent loss of life and property.



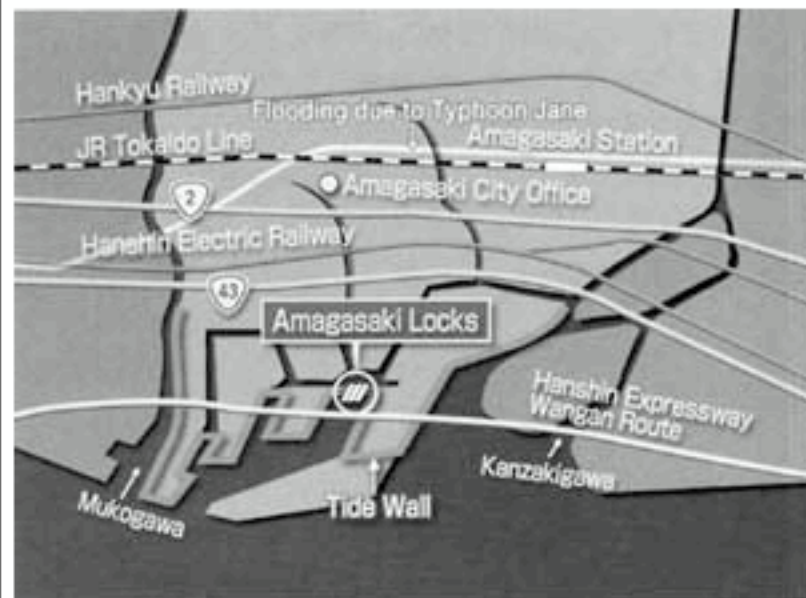
The city of Amagasaki is located along the coast of Osaka Bay. Most of the city is at an elevation lower than sea level, exposing it to severe damage from typhoons and other storms.

Amagasaki suffered terrible damage from Typhoon Jane, which struck the Kinki region in 1950, causing much loss of life and property.

September 3, 1950 Typhoon Jane

Dead or Injured: 251

Houses Destroyed or Damaged: 7,967



To prevent further disasters from causing loss of life or property, a considerable effort has been made to construct seawalls, tide gates, and other coastal protection facilities.

The Amagasaki Locks are one of the facilities constructed to protect the shoreline. The No. 1 Amagasaki Lock was completed in 1954, followed by the No. 2 Lock in 1964.



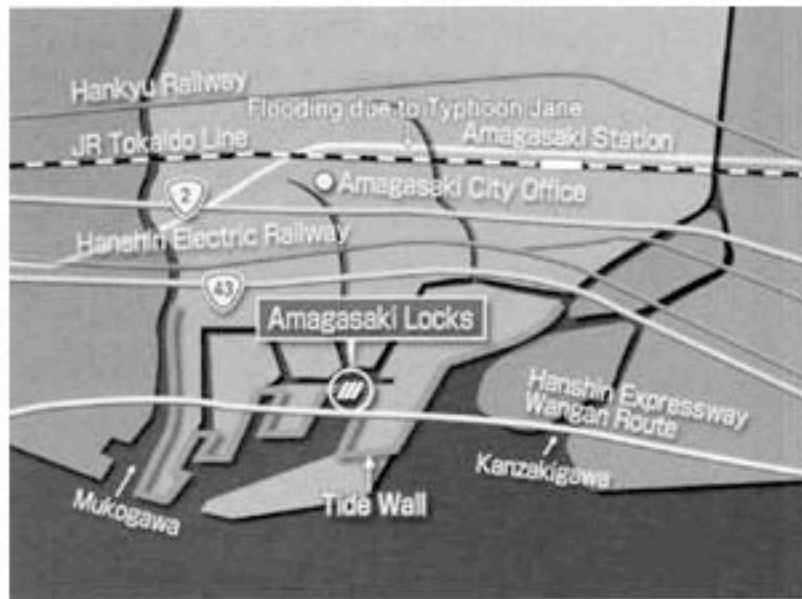
Although the Amagasaki Locks have protected the city's residents 40 or so years, renovations and improvements became necessary to counter aging of major structure members, land subsidence, and also to ensure sufficient earthquake resistance.

Renovations and improvements were begun in 1986.

-Building for the Future- Amagasaki Locks

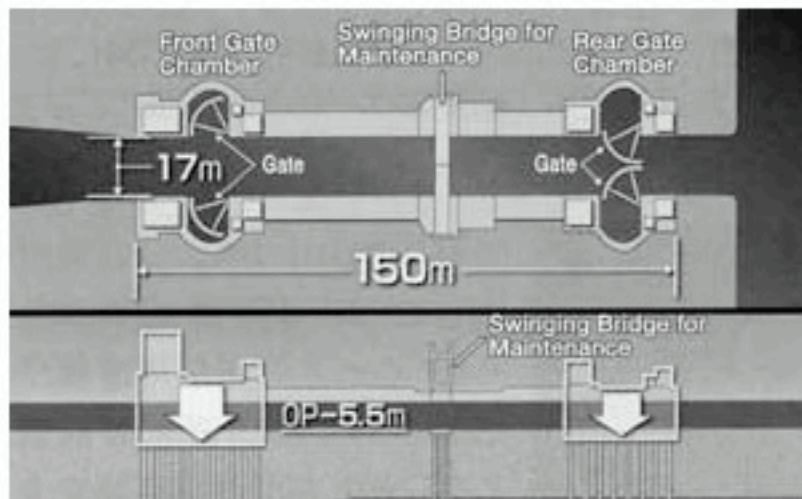
2.Structural Design

Two locks ensure smooth shipping traffic.



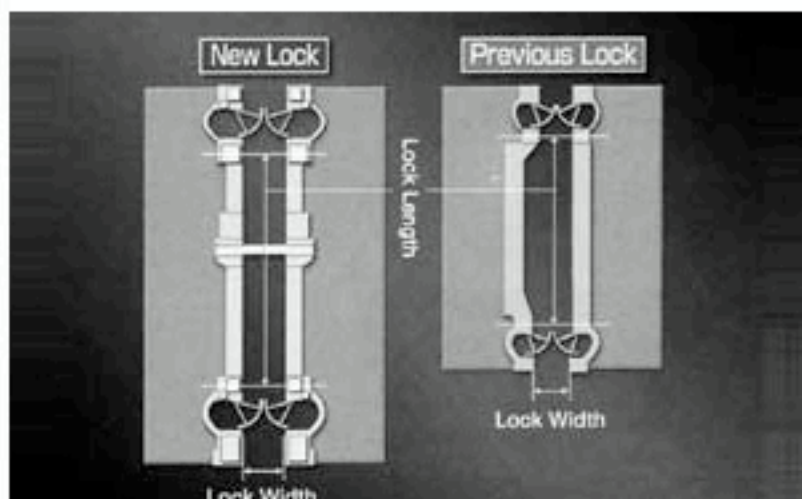
The Amagasaki Locks, together with tide walls, protect the city from damage due to high tides.

Many factories along the canal inside the Amagasaki Locks use ships to transport materials and products. To ensure smooth shipping traffic and maintain proper water flow management for the various rivers that empty into the port, two locks – No. 1 and No. 2 – were constructed.



Each lock has a front gate chamber and a rear gate chamber which open and close to adjust the water level when a ship passes through the lock. This enables ships to easily enter and leave the port even when the water level outside the locks is higher than the water level in the inner canal.

At the center of each lock chamber there is a swinging bridge that can be turned 90°. With a maximum load capacity of 6 tons, this bridge allows maintenance vehicles and personnel to pass when there are no ships moving through the locks.

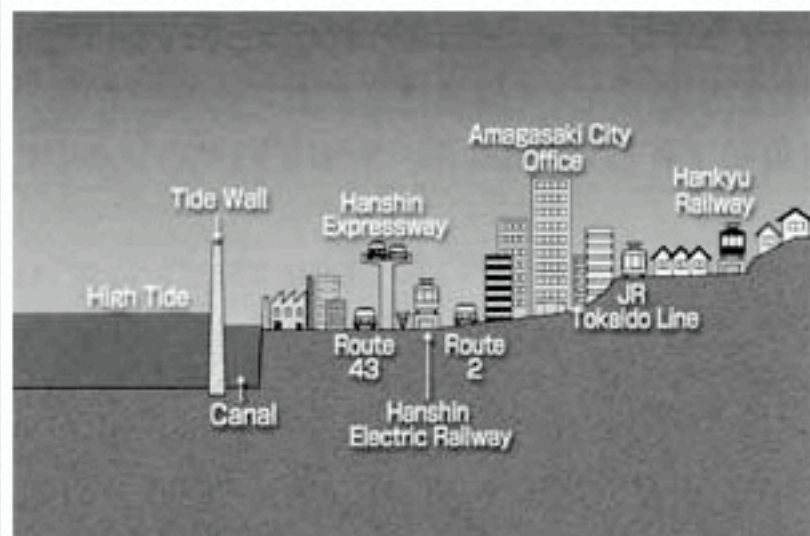


To accommodate larger vehicles, the newly constructed locks were improved to widen the lock chambers, enabling ships to pass through more safely than the previous locks.

-Building for the Future- Amagasaki Locks

3.Features

The Amagasaki Locks utilize the same system as the Panama Canal.

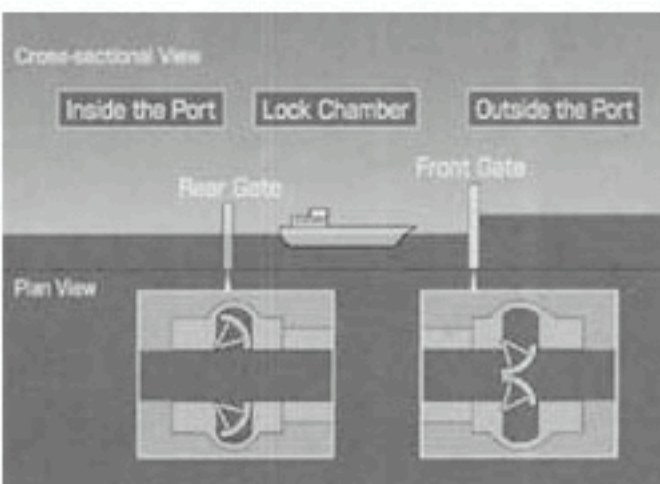
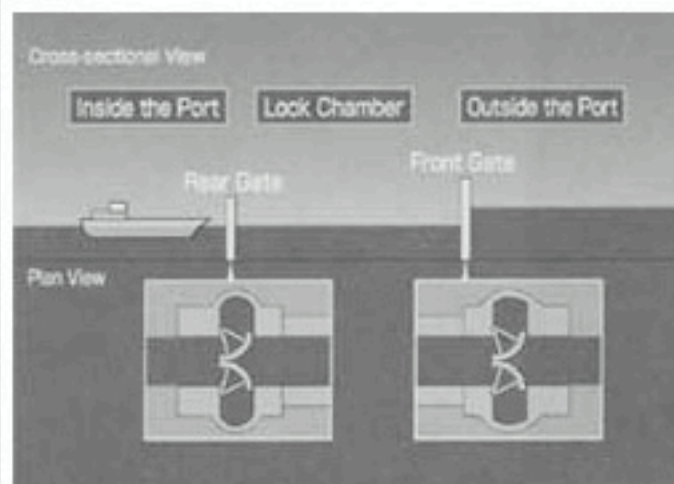


The Amagasaki Locks are one of the few installations in Japan to utilize the same system as the Panama Canal.

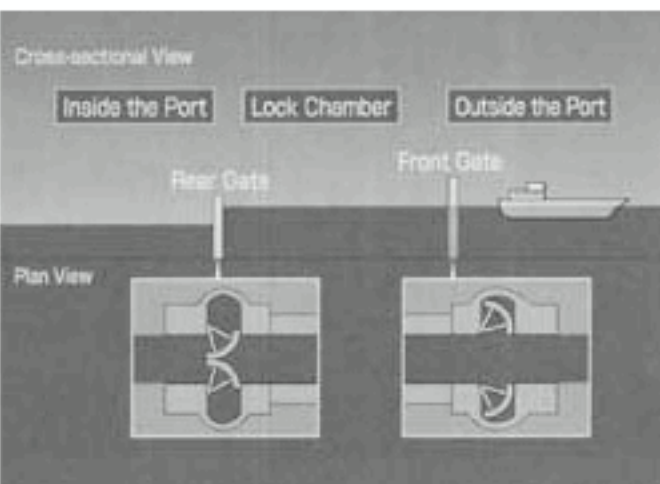
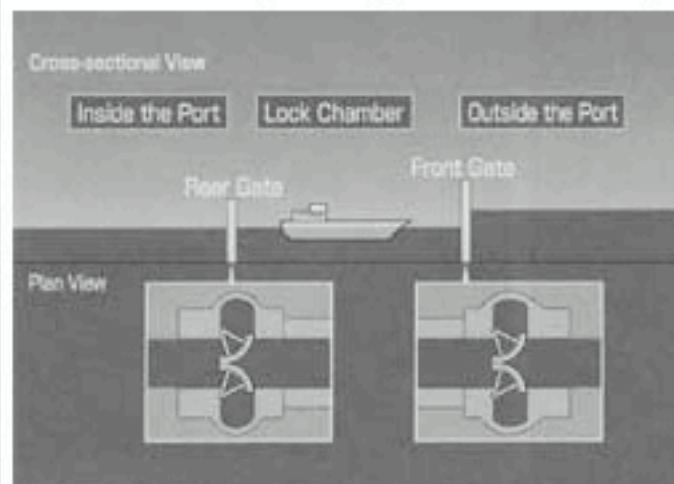
This system enables ships to enter and leave the port without having to raise the water level in the canal, even when the water level outside the locks is high, such as at high tide.

Operation Management

The tide level outside the docks is higher than the control level approximately 16 hours a day. The locks operate 24 hours a day.

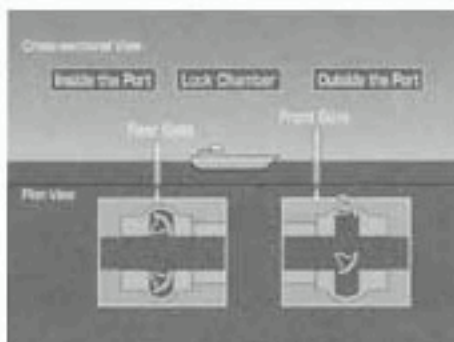


1.The lock's rear gate is opened, and the ship in the canal moves into the lock chamber.



2. Once the ship is completely inside the lock chamber, the rear gate is closed, and the ship waits inside the lock chamber. Next, the front gate is opened and the water inside the lock chamber rises, allowing the ship to move out of the lock. Ships are thus able to enter and leave the port without having to raise the water level inside the canal.

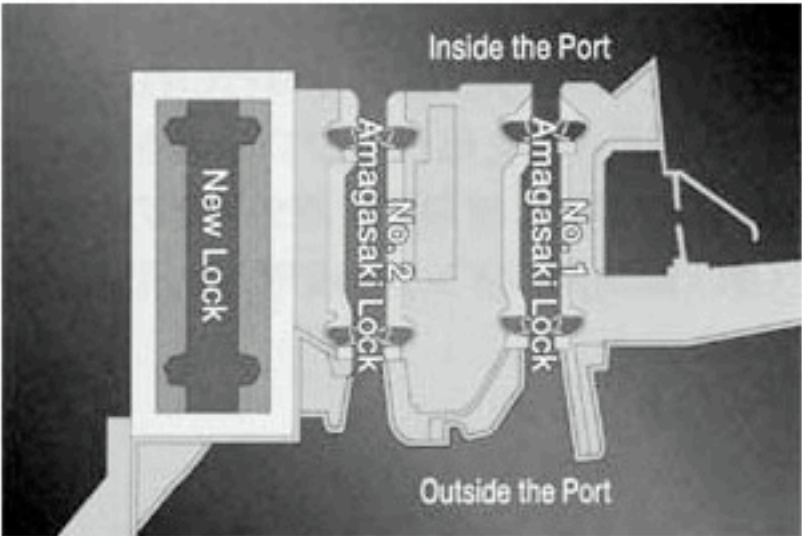
When the tide level outside the port is lower than the control level (O.P. +1.35m), the gates can be left open to allow ships to freely enter and leave.(far right column)



-Building for the Future- Amagasaki Locks

4.Renovation and Improvement Work

Renovation and improvement of the Amagasaki Locks was carried out in such a way as to avoid disrupting shipping.



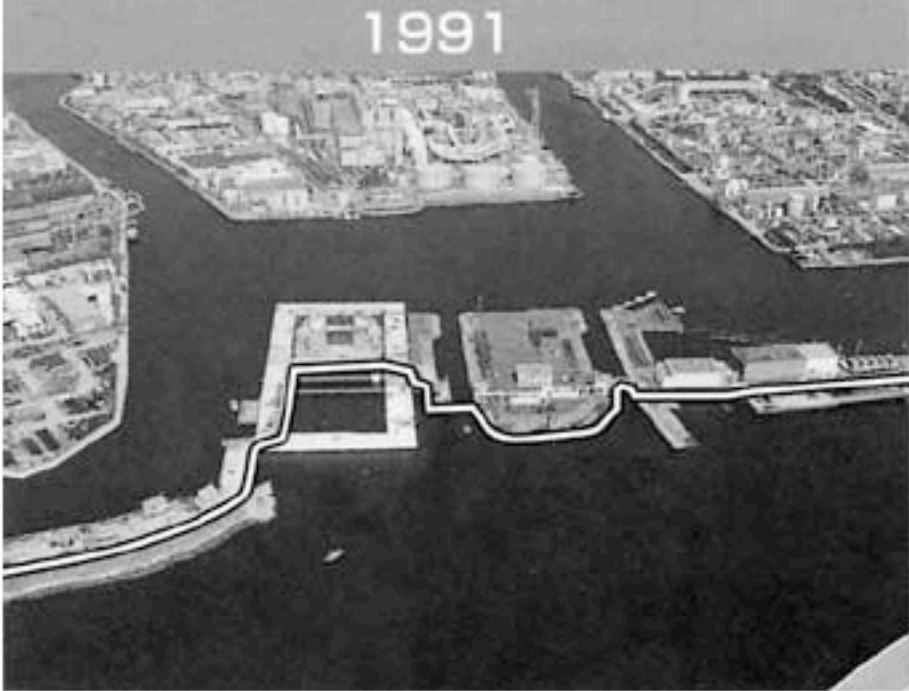
To avoid disrupting shipping and maintain proper water flow management for the various rivers that empty into the port, construction proceeded while keeping two locks in place at all times. In order to maintain the outermost tidal protection line throughout the project, the work proceeded in stages while constructing temporary partition walls for each lock, dividing them into two sections, a front gate section (inside the port) and a rear gate section (outside the port), as well as a temporary tide wall (outermost protection line).

Changes in the Locks

To maintain the outermost tidal protection line (tide wall), the massive project was conducted in stages.



Before renovation and improvement outermost tidal protection line

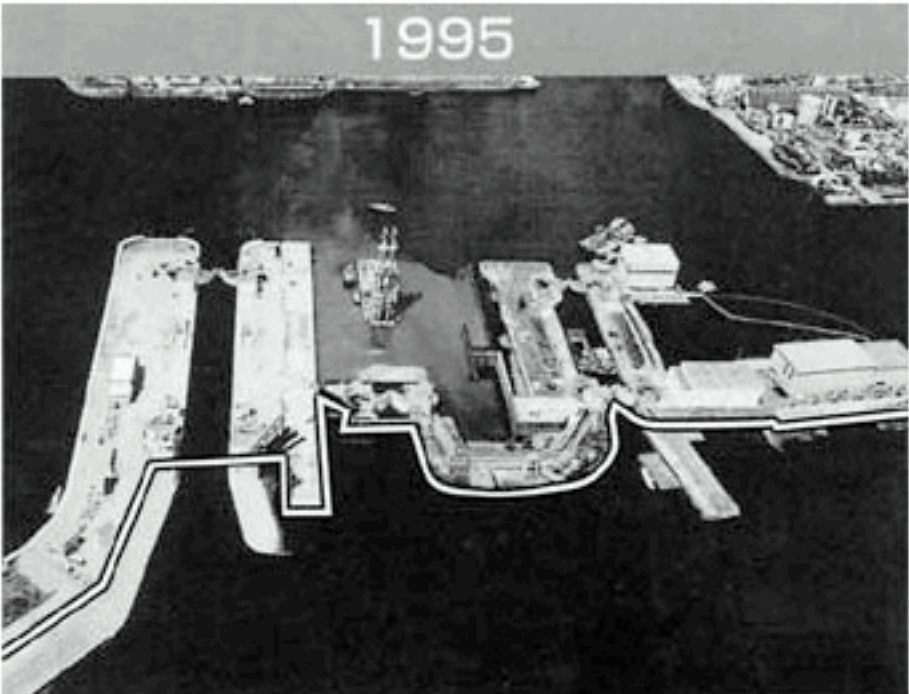


Construction Work

- Temporary partition wall during construction of the new No. 2 lock
- Front gate section (outside port) Completion of temporary partition wall

Tidal Wall

- Front of temporary partition wall

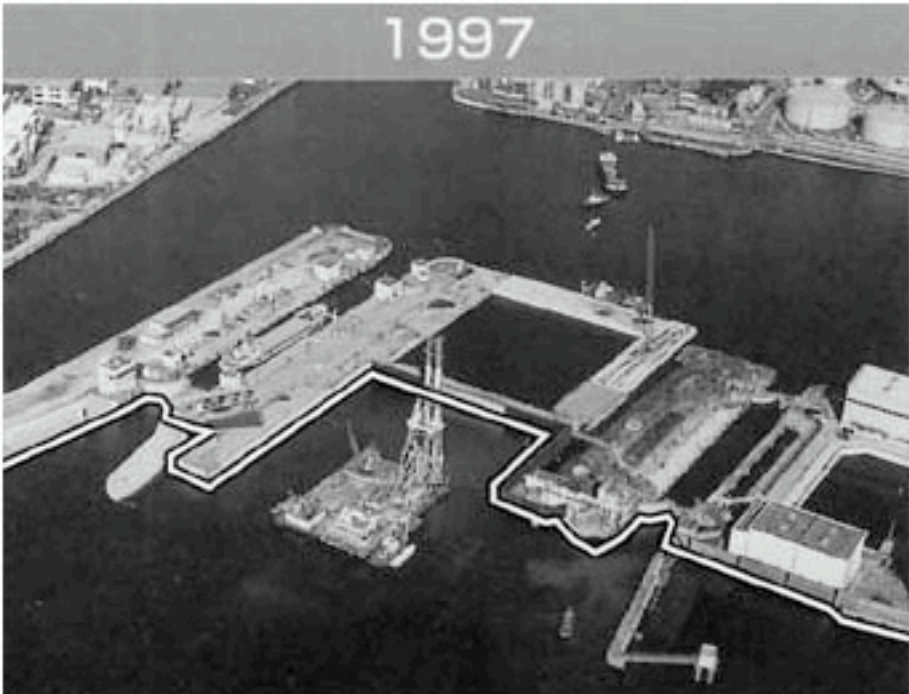


Construction Work

- Completion of new No. 2 Lock
- Rear gate section of new No. 1 Lock (inside port)
- Improvement of seabed foundation

Tide Wall

- Existing front gate



Construction Work

- Rear gate section (inside port) Completion of temporary partition wall
- Removal of front gate

Tide Wall

- Front of temporary partition wall

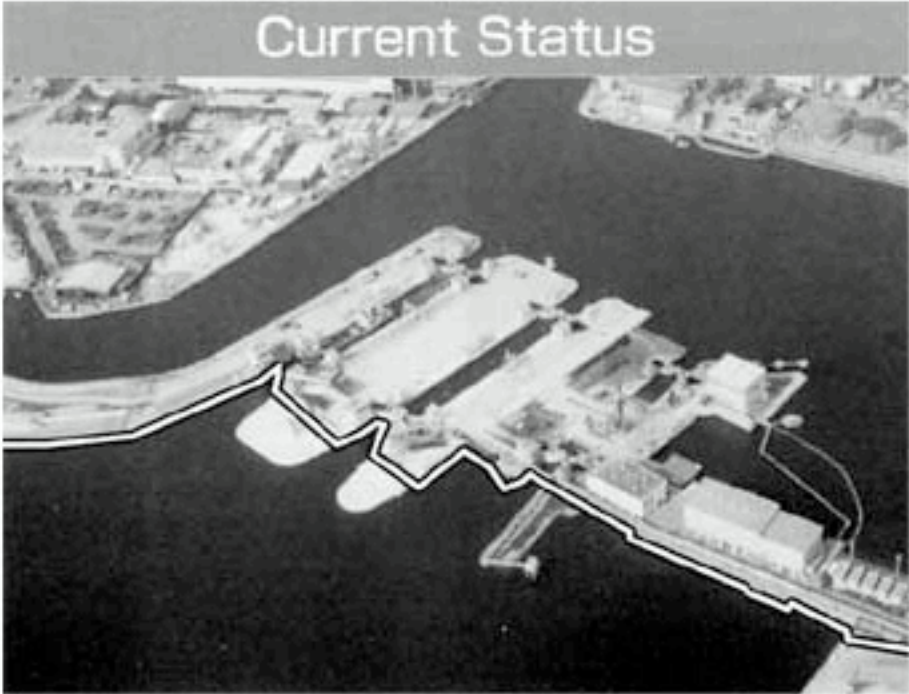


Construction Work

- Front gate section (outside port) Temporary partition wall under construction

Tide Wall

- Front of temporary partition wall



Construction Work

- Completion of new No. 1 Lock

Tide Wall

- Front of new No. 1 and No. 2 gate

-Building for the Future- Amagasaki Locks

5.Current Status

The Amagasaki Locks are being developed as a recreational waterfront area to create a more enjoyable living environment.

Amagasaki Locks After completion (Artist's conception)



The work has now moved on to the installation of peripheral equipment and facilities, such as the construction of the Central Control Center that will manage the operation of the lock, as well as construction of access roads and landscaping work.

"Refresh Port Amagasaki" (Artist's conception)



Redevelopment of canals and waterways crisscrossing Amagasaki City's southern coastal area, as well as various environmental improvement and waterfront development projects are spurring development of the area around the Amagasaki Locks into a modern multi-functional harbor zone.

In addition to maintaining the smooth flow of cargo and protecting the shoreline, the new Amagasaki Locks are being developed as a recreational waterfront area to create a more enjoyable living environment.