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DECOMMISSIONING PROGRAM OF RESEARCH HOT LABORATORY IN JAEA

-TECHNICAL REVIEW OF DISMANTLING WORKS for the lead cells-

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What's RHL

The **R**esearch **H**ot **L**aboratory

Appearance

Operation room

Overview

- RHL was constructed in1961, as the first Hot Laboratory in Japan.
- In RHL, various PIEs was performed for fuel rods and to the small samples.

Current status of RHL

The **R**esearch **H**ot **L**aboratory

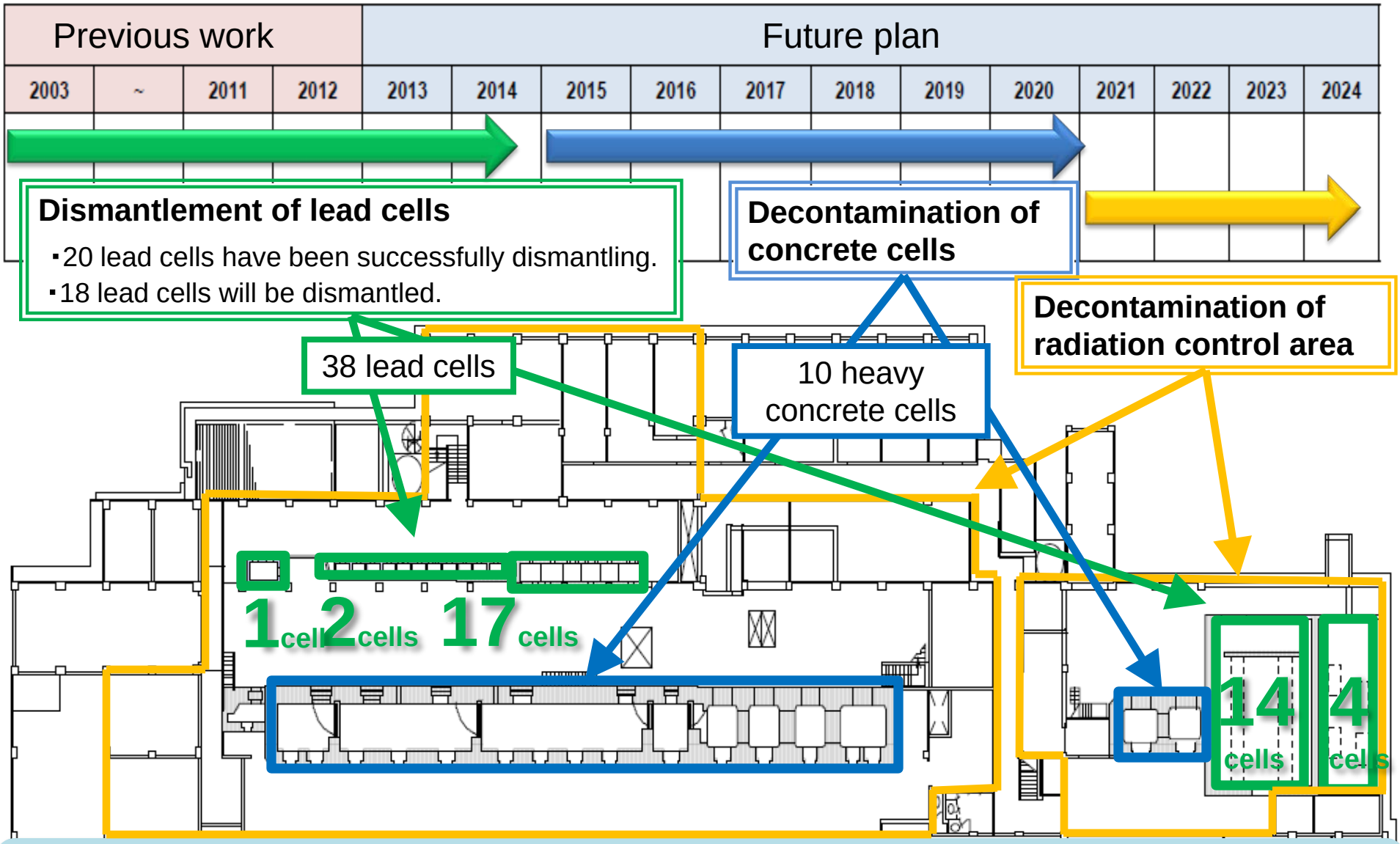
Decommissioning work

Storage room of un- irradiated fuel

Currently

- All the PIE operations in RHL had been completed. And the decommissioning works of RHL have been performed since 2003.
- The partial area of RHL has been utilized for the temporary storage of un-irradiated fuel materials used for our previous research.

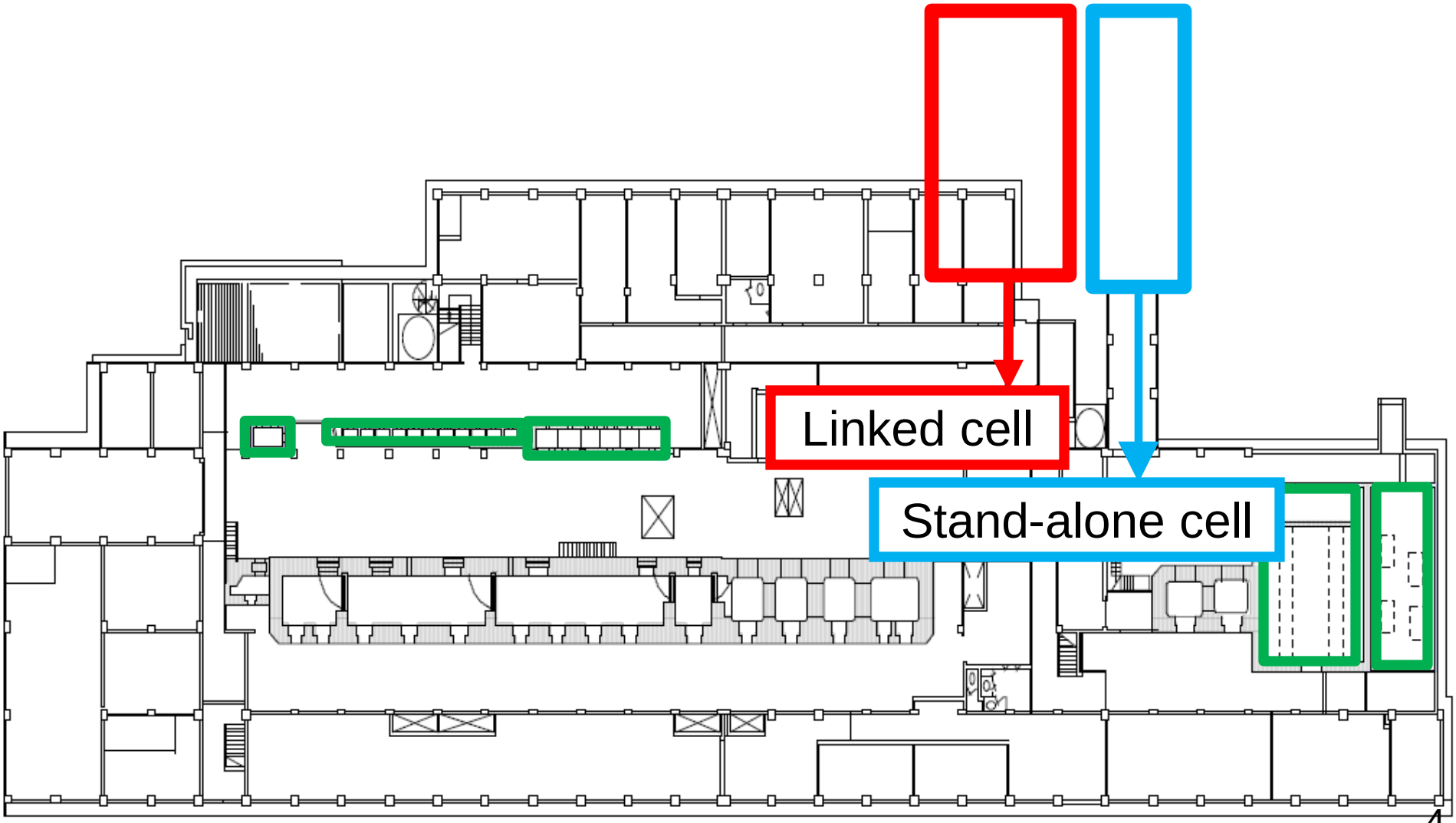
The decommissioning plan of RHL



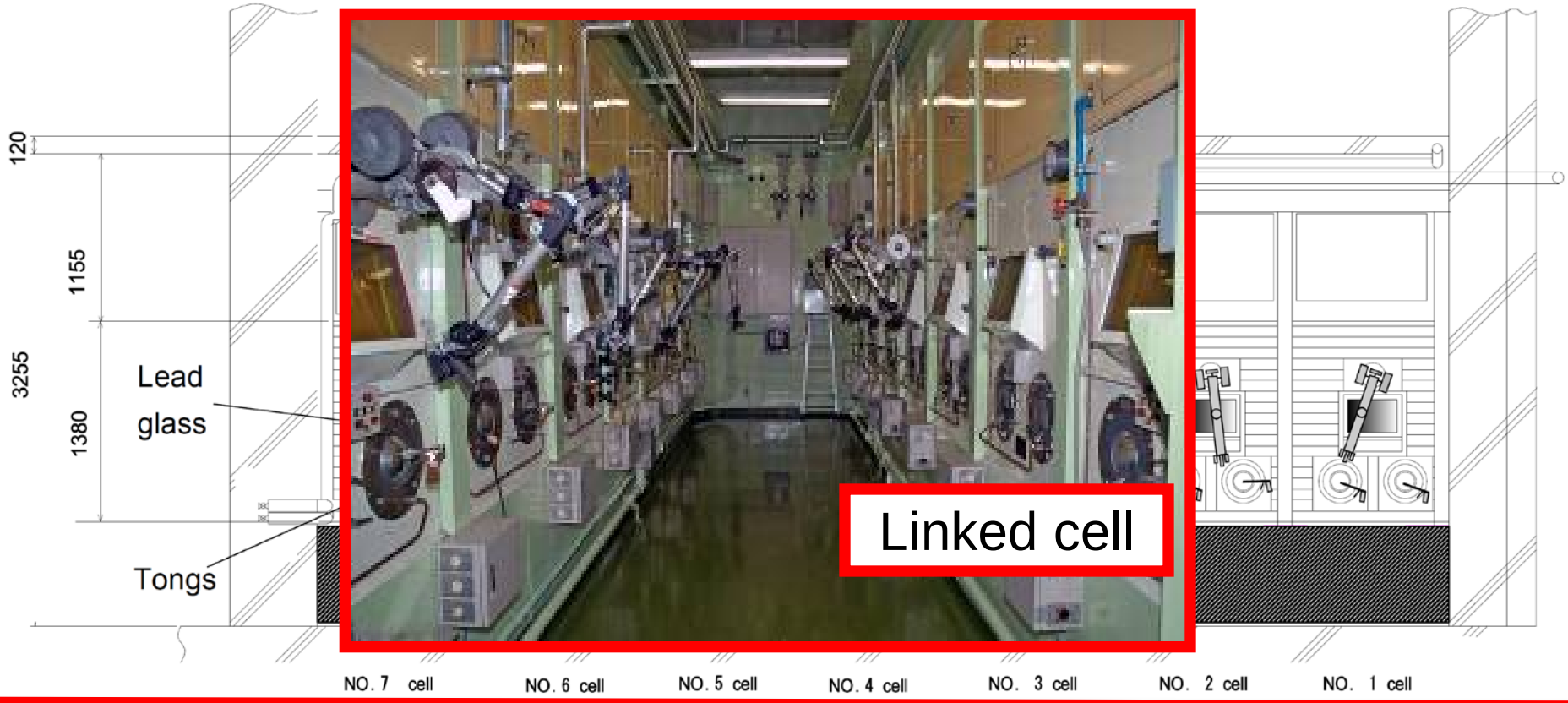
Decontamination in the yellow line area

will be performed for the exclusion of radiation control area of RHL.

Specification of lead cell

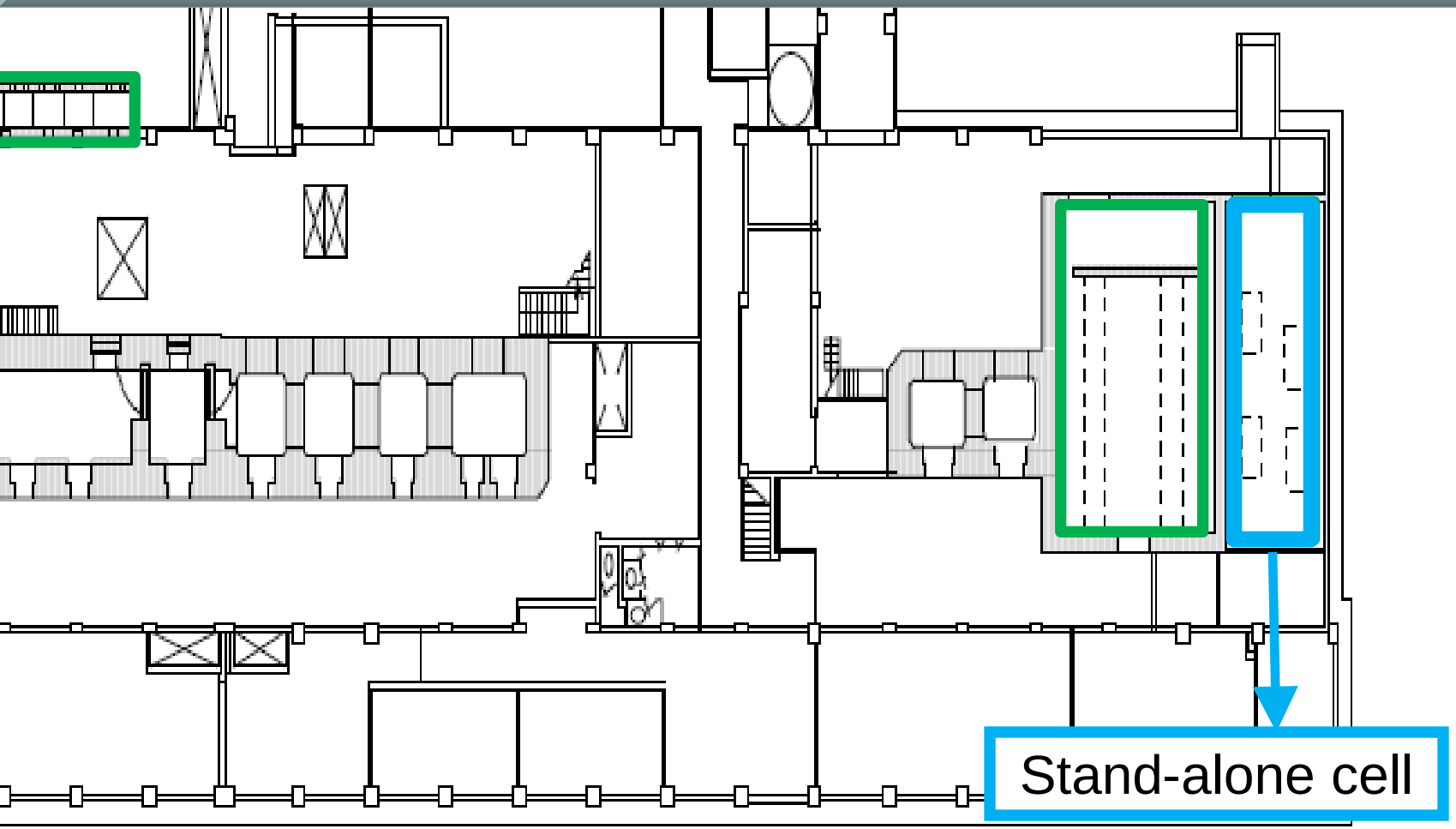


Side view of the linked cell



- There are 14 lead cells and each 7 cells are connected side to side via isolation wall.
- Width7800, High3200, Depth1300(mm)
- Front : lead block, Ceiling : Steel plates, Foundation : Heavy concrete
- No significant dose was observed.
- Dismantlement : In 2004

Specification of lead cell



Side view of the stand-alone cell

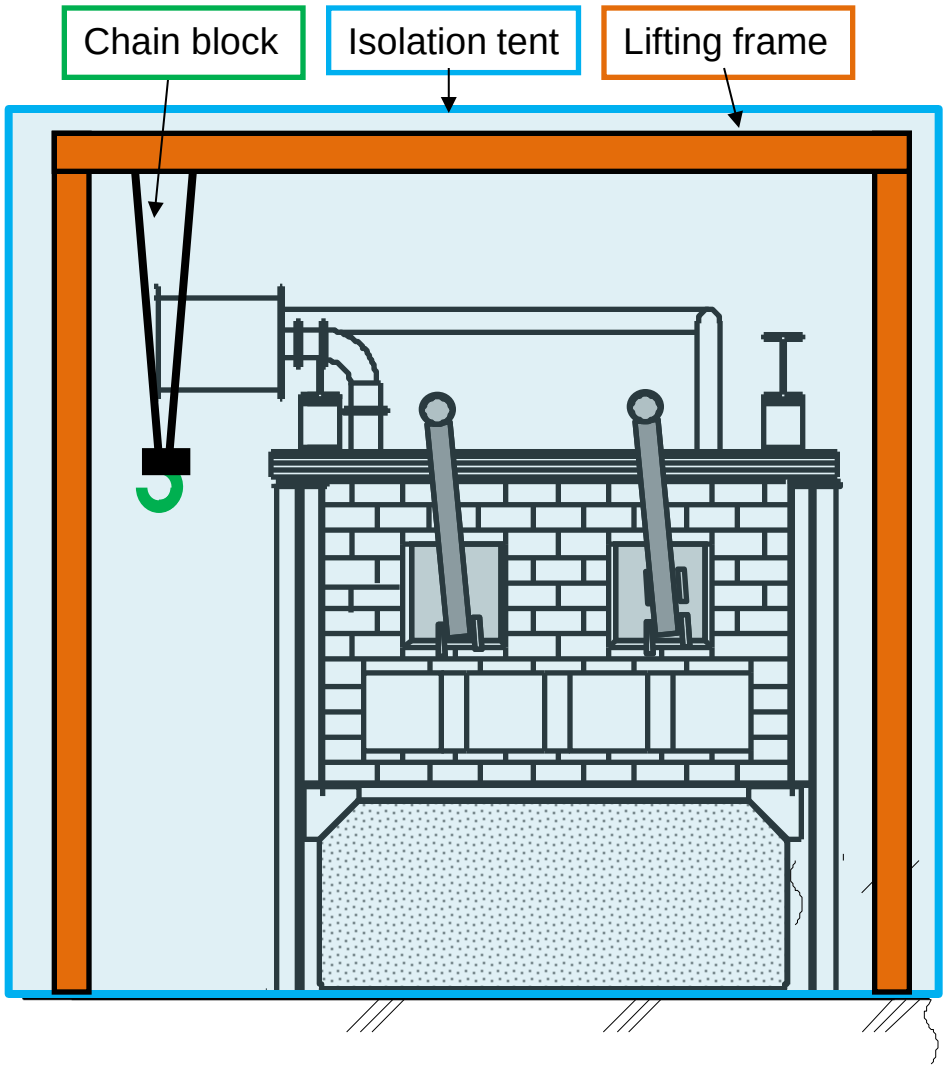
- There are 4 lead cells.
- Width2000, High2000, Depth1400(mm)
- No significant dose was observed.
- Dismantlement : In 2003(1cell), In 2004(3cells)

Dismantling procedures of lead cells

Stand-alone cell and linked cell have the quite similar structure,
so that their dismantle procedures are also similar.

I will explain you the dismantlement procedure of stand-alone cell as an example.

Dismantling procedures of lead cells



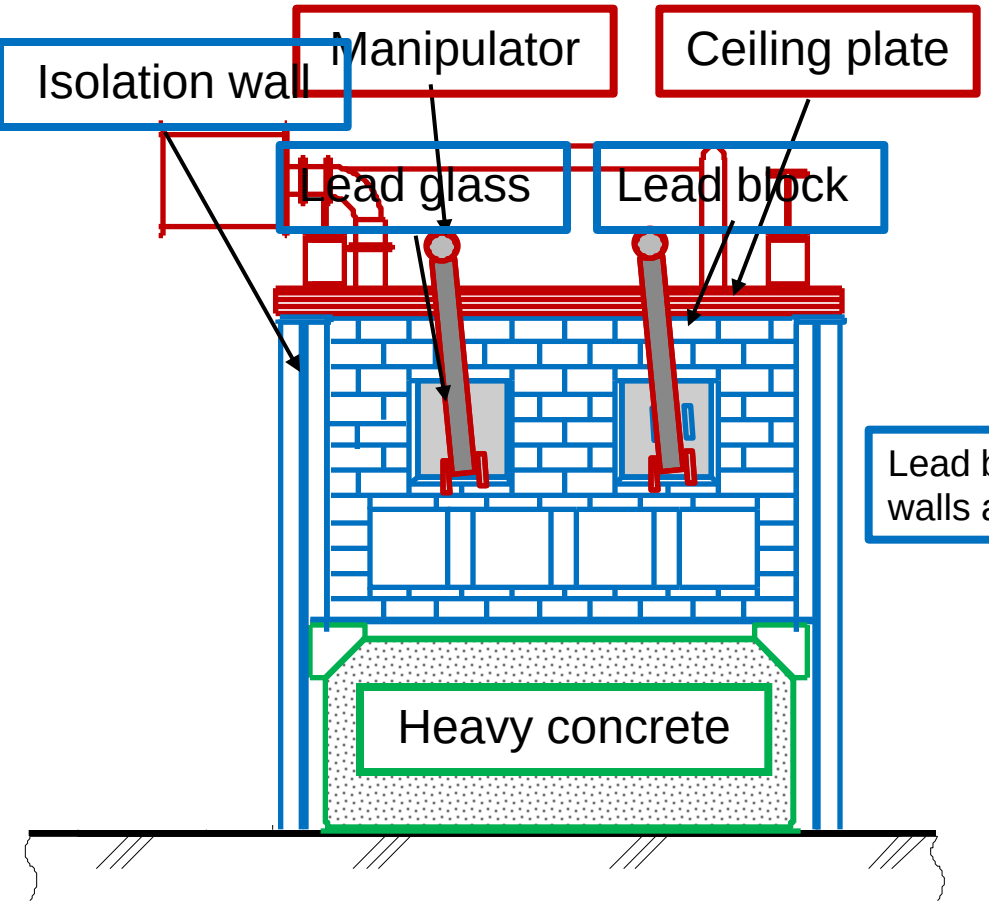
Stand- alone cell

The lifting frames are assembled surrounding the cell to mount the chain blocks which are used for dismantling of the heavy items.

The cell and lifting frames are covered with the isolation tent to prevent the contamination release.

Dismantling procedures of Lead cells

Electric grinder is applied to cut the welded parts between the ceiling plate and cell walls. Then, Ceiling plate and manipulator arms is removed.



Stand- alone cell

Lead blocks are removed from the top one, and the isolation walls are removed with the chain block and trolley.

The remained foundation is fractured with the jackhammer and the chemical infusion materials.

The waste amount generated by dismantlement of lead cells

(kg)

Decommissioning work	dismantling cells	Lead block		Steel stock		Heavy concrete		Other	
		contamination	no contamination	contamination	no contamination	contamination	no contamination	contamination	no contamination
Linked cells	14	768	28,889	1,800	41,777	-	2,716	430	25,145
Stand-alone cells	4	1,598	2,2311	1,800	41,976	-	4,592	645	10,333

・The indicated weight include both contamination and no contamination one.

Work rate

Decommissioning work	Days of work	Number of persons engaged (person-day)
Linked cells	80	1,006
Stand-alone cells	50	481

・ It spent 80 days for linked cell, 14 lead cells, and 50 days for stand-alone cell, 4 lead cells.
・ Most of work days were spent for the foundation dismantlement.

↓

To reduce the dismantling duration, we developed the dismantling technique for the cell foundation.

Development of dismantling technique

In the first attempt for the foundation dismantling, it needs very long time to make a first crack with the jackhammer because of their hardness.

Its hardness becomes the major cause of duration extension.

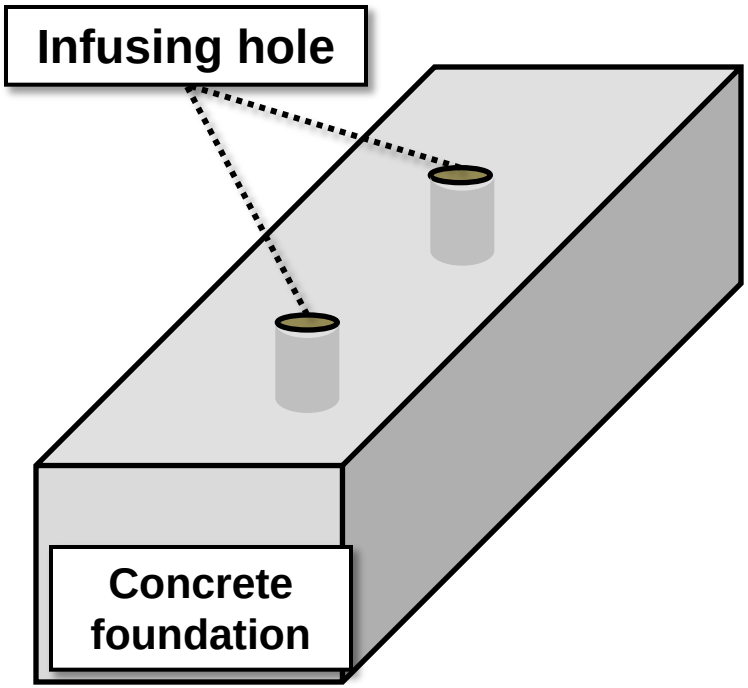
To make the first crack quickly

We applied the chemical infusion materials.

Development of dismantling technique

With the several mock-up tests,

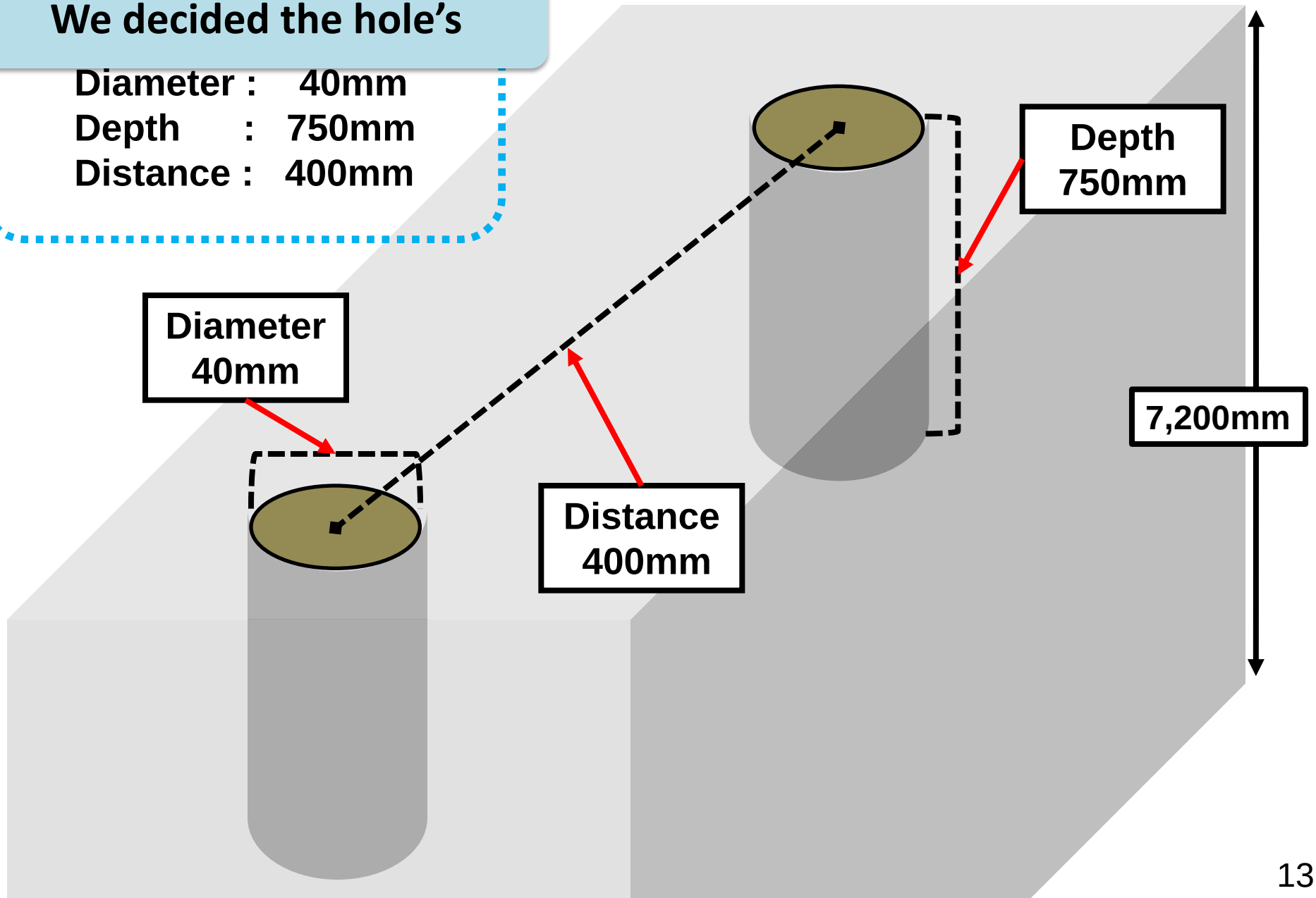
p of
heavy concrete foundation.



Development of dismantling technique

We decided the hole's

Diameter : 40mm
Depth : 750mm
Distance : 400mm



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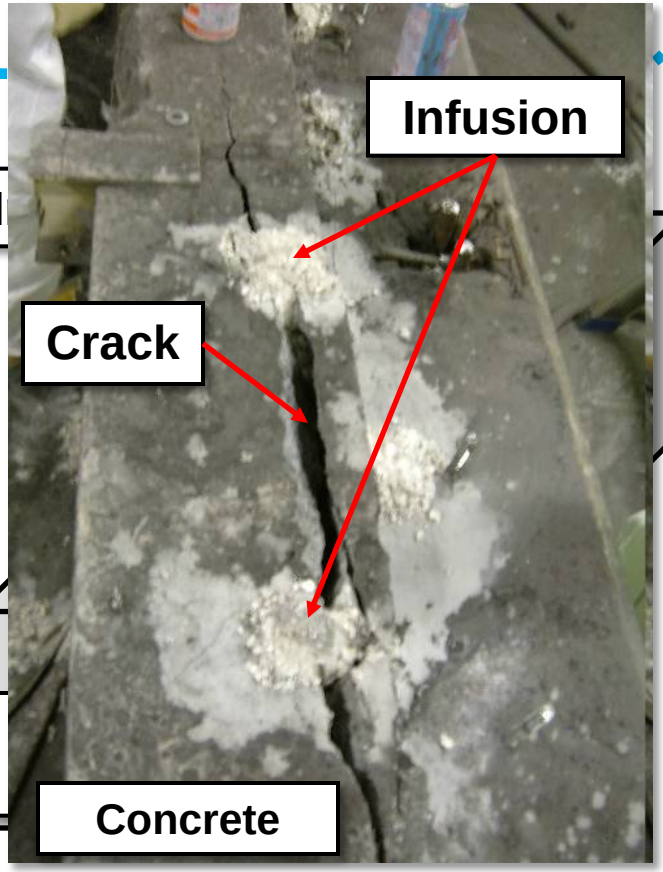


1st

We make the infusing hole at the top of heavy concrete foundation.

2nd

After infusion is injected,
one day is necessary to complete its chemical reaction.

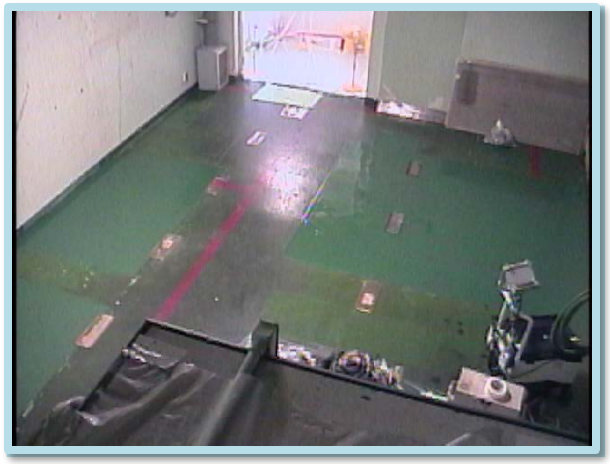
Its volume inflate, and the first crack is generated

The concrete is easily broken by jackhammer

We can reduce the total dismantling duration

Conclusions

1. Dismantling procedures of lead cell is established.
2. Generated wastes were segregated well.
3. Dismantling duration was reduced to use the chemical infusion materials for concert foundation.



By these obtained data,
the decommissioning plan will be successfully progressed

Thank you for your attention