10th Creative Robot Contest for Decommissioning

Contest Details

廃炉創造ロボコン

Decommissioning Collaborative Council for Human Resource Development

1. Contest Outline

(1) Objective.

Various efforts are currently being made to decommission TEPCO's Fukushima Daiichi NPP based on the "Mid- to Long-term Roadmap for the Decommissioning of TEPCO's Fukushima Daiichi NPP Units 1-4". The medium- to long-term roadmap emphasizes "human resource development from a medium- to long-term perspective and collaboration with universities and research institutions.

Education and human resource development through robotics is effective in getting the younger generation interested in decommissioning.

This time, the subject is the investigation of the inside of the containment vessel of the Fukushima Daiichi Nuclear Power Plant.

(2) Outline

Date	Saturday, December 20, 2025
Place	Japan Atomic Energy Agency Naraha center for Remote Control technology development
Secretariat	National Institute of Technology, Fukushima College

(3) Schedule

March 3 (Monday)	Call for Proposals and Participants
April 18 (Friday)	Deadline for submission of application forms and idea sheets (Only Japanese KOSEN)
April 25 (Friday) (TBD)	Documentation review
May 9 (Friday)	Announcement of documentation review
August	Naraha Summer School (Only Japanese KOSEN)
December 18 (Thursday)	Registration, orientation and test run
December 19 (Friday)	Test run/Hearing
December 20 (Saturday)	Creative Robot Contest for Decommissioning

2. Challenge

(1) Task

- **Tasks to be performed by the robot**

The competition will simulate an internal investigation of the containment vessel (PCV) of the Fukushima Daiichi Nuclear Power Plant (NPP). The interior investigation involves accessing the inside of the PCV from the X-1 pene, retrieving sediments present at the bottom, and returning (Fig. 1, Fig. 2).

In this contest, the following shall apply.

①It starts inside a pipe that mimics the X-1 Penetration and passes through the piping.

②The staircase descends through a 0.5-meter-wide narrow section to reach the floor.

③The sediment is collected and returned to the starting point, the inside of the pipe, by the same route.

- **Field**

①An overview of the competition field is shown in Fig. 3.

②The size of the piping that simulates the X-1 penetration is ϕ600 (VU pipe 600A, ϕ600 x 1500).

③The starting position of the competition is in the piping, with the last part of the robot aligned with the last part of the piping.

④A 0.5m narrow section is set in front of the staircase. (Concrete blocks are placed on both sides).

⑤Details of the staircase are shown in Fig. 4 and Fig. 5.

⑥The floor immediately in front of the staircase is grating. The landing of the staircase also has a grating. The dimensions of the grating are shown in Fig. 6.

⑦The sediments shall be acrylic cubes of 30 mm per side and of unknown shape (about 30 mm square).

⑧Drones cannot use in the facility due to safety controls.

- **Field Environments**

①The robot is operated remotely, so the main unit cannot be seen directly.

②The robot must be controlled only by wired connection.

③The PCV interior is not completely seen from the operation area.

- **Robot size, weight**

①Size： No limit

②Weight：No limit

(2) Competition style

Demonstrations will run for 10 minutes. However, judges will visit each pit during the trial run for a question and answer session to check students' originality and ideas.

(3) Team

A team consists of 3 students from the same KOSEN and a Prefacer, but 2 pit crew members can be registered as well.

(4) Award (TBD)

Grand Award	1
Excellence Award	1
Idea Award	1
Technical Award	1
Special Award	approx. 5

(5) Evaluation

The evaluation of each team shall be as follows

① Passing through narrow areas	10 points (5 points for outward, 5 points for return)
② Reach the bottom of the stairs	10 points
③ Recovery operation	20 points
④ Reach top of stairs	20 points
⑤ Return to starting position	10 points
⑥ Originality and ideas	30 points

4. Others

- Photographs and videos taken on the day of the contest may be provided to the media as necessary.
- Authorization will be received at the same time as the registration.

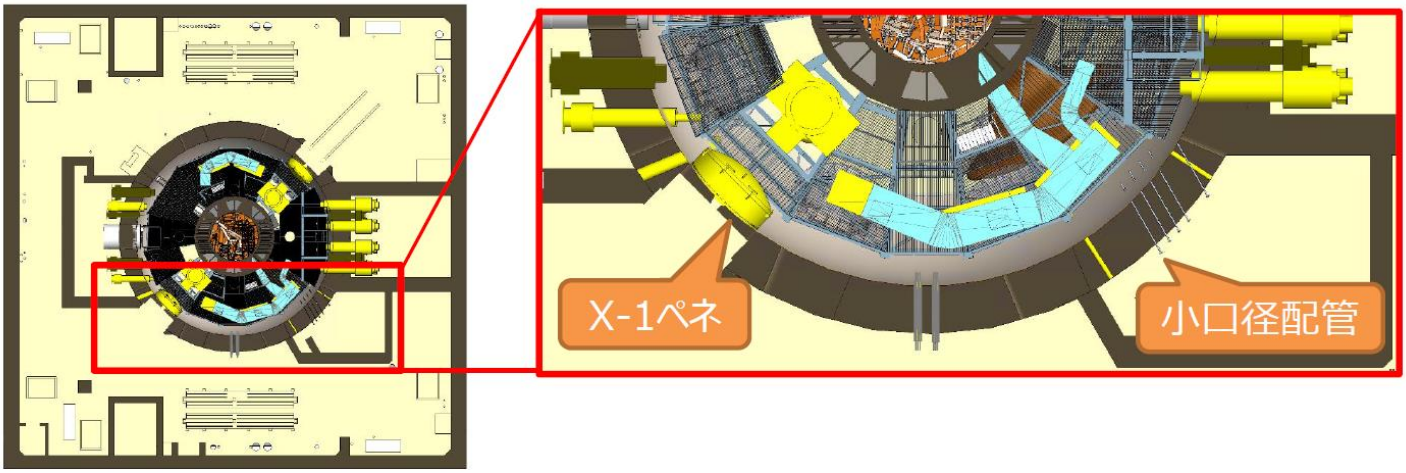

Fig. 1　Areas covered by the PCV internal survey

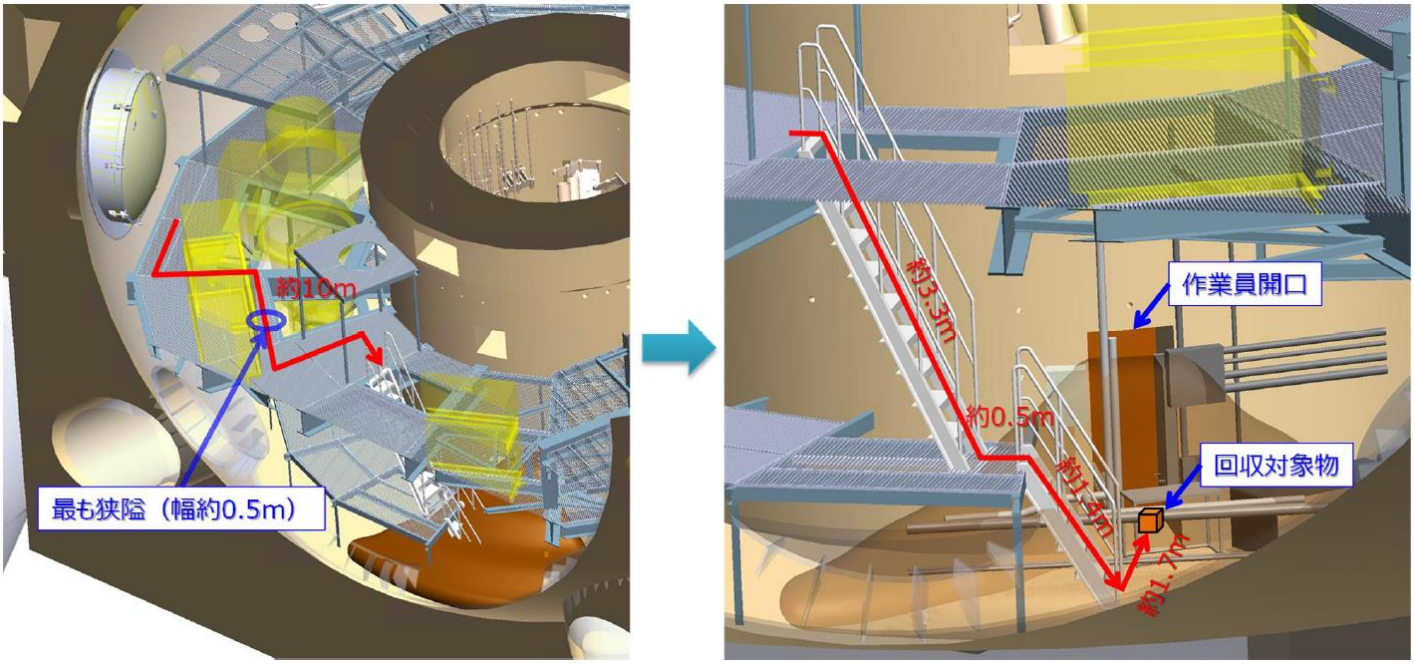

Fig. 2　Access image from X-1 Penetration

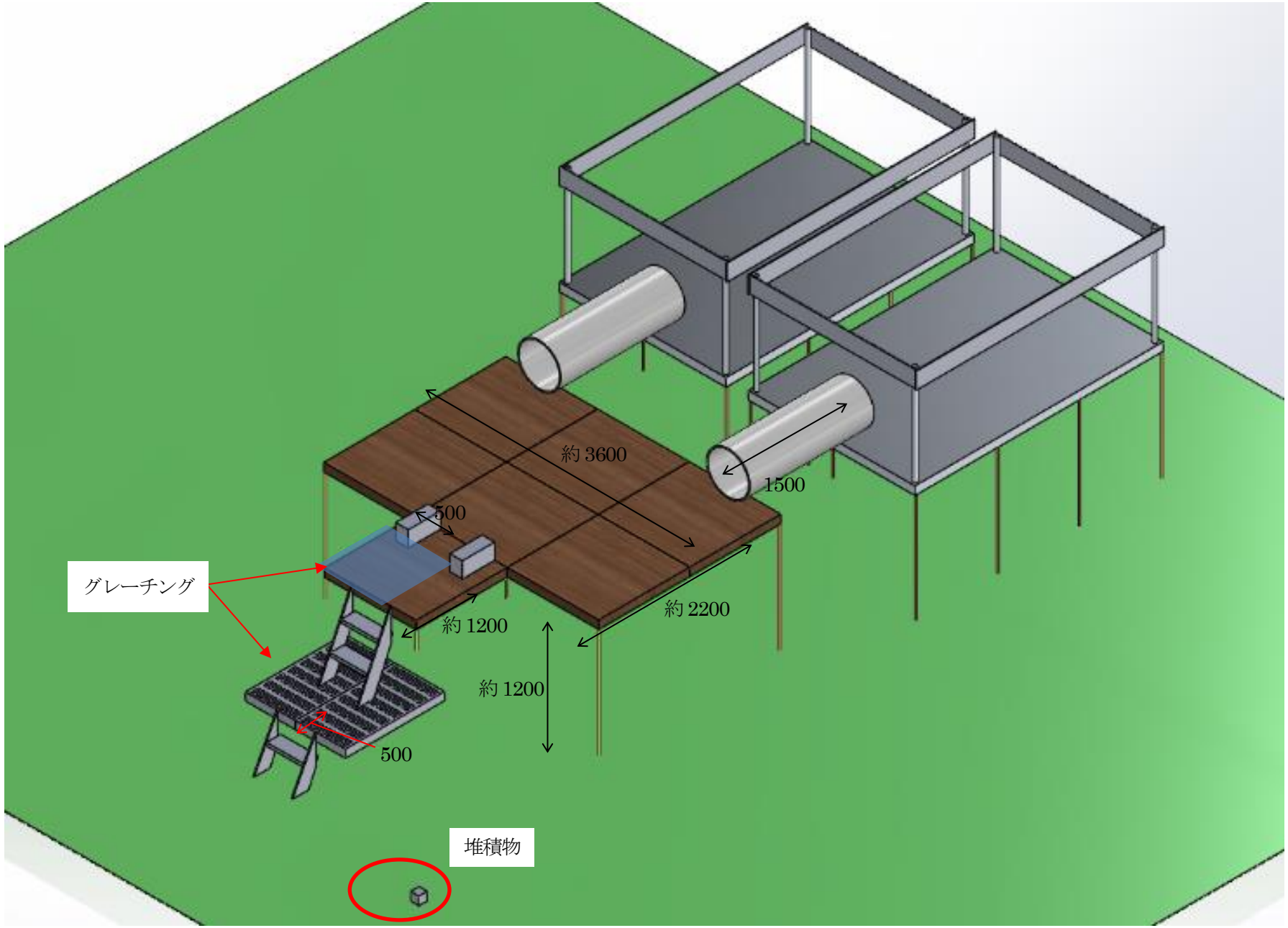

Fig. 3　Field

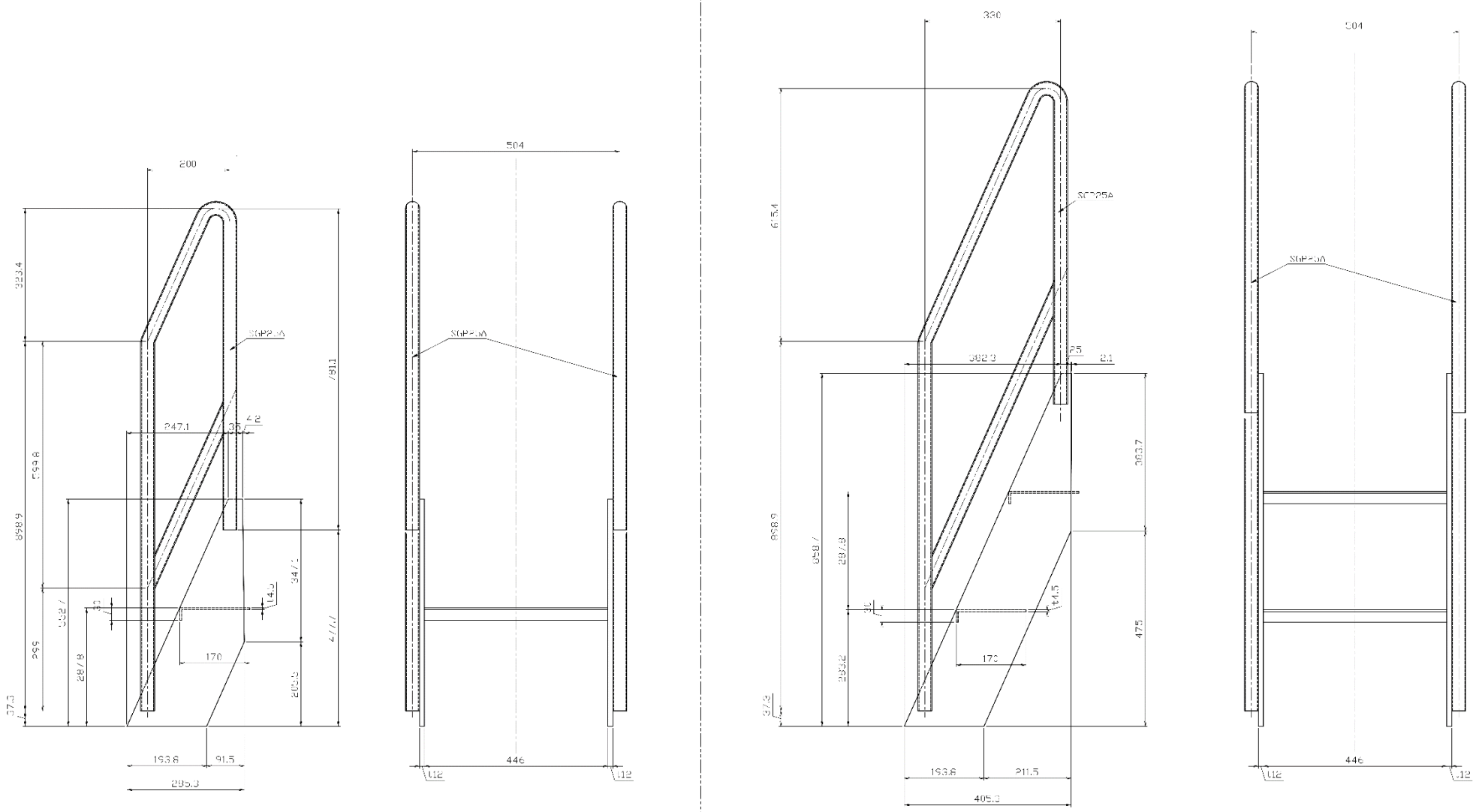

Fig. 4　Stairs Drawing

High-resolution drawings　https://fdecomi.fukushima-nct.ac.jp/2025/stairs.png

Fig. 5 Stairs

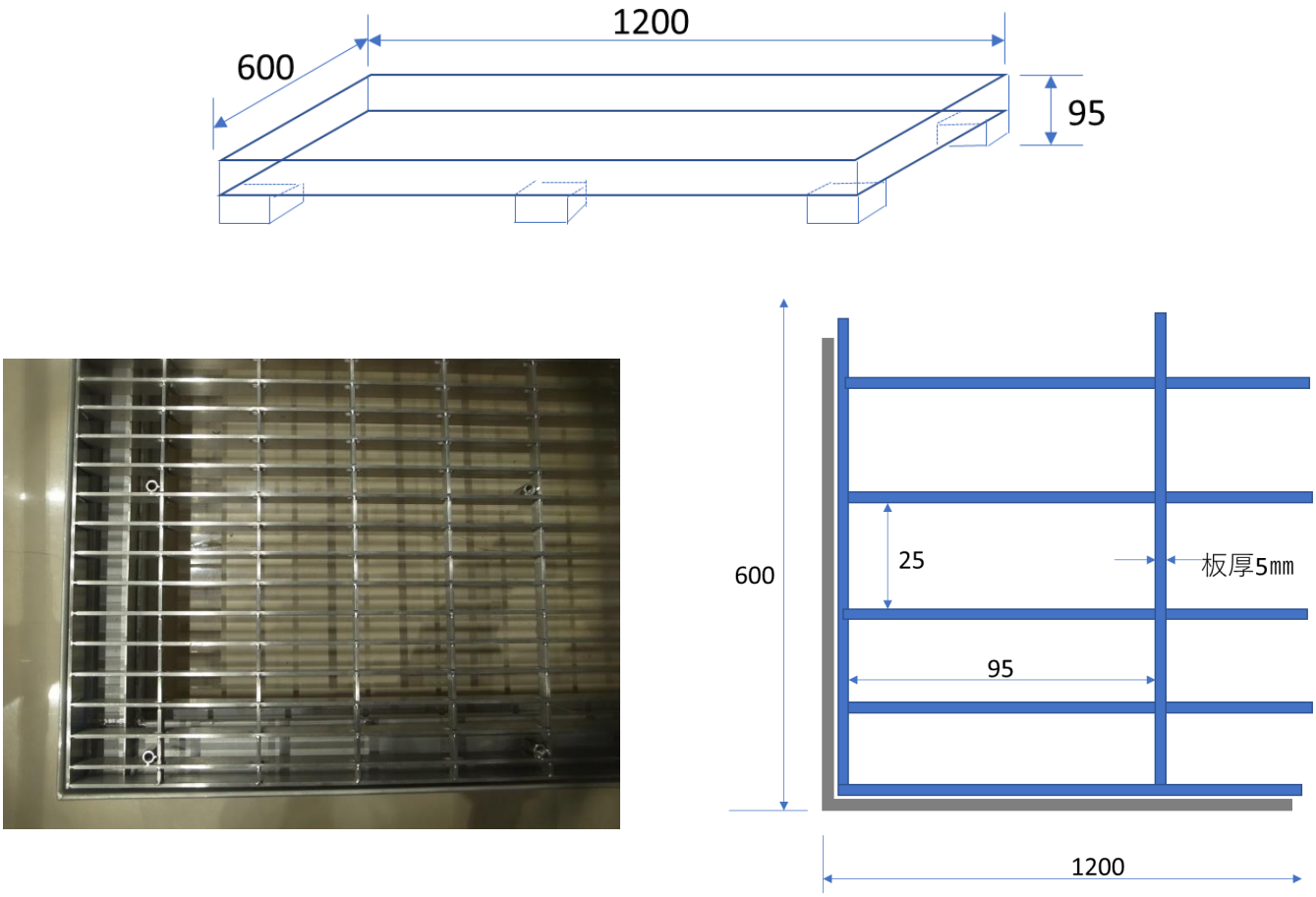

Fig. 6　Grating

Product name　：　Stainless steel grating (SUS)　KNSG　（FB タイプ）
KNSG　Ｐ３０　５００×９９４×１５
https://kawagure.co.jp/grating/#stainless