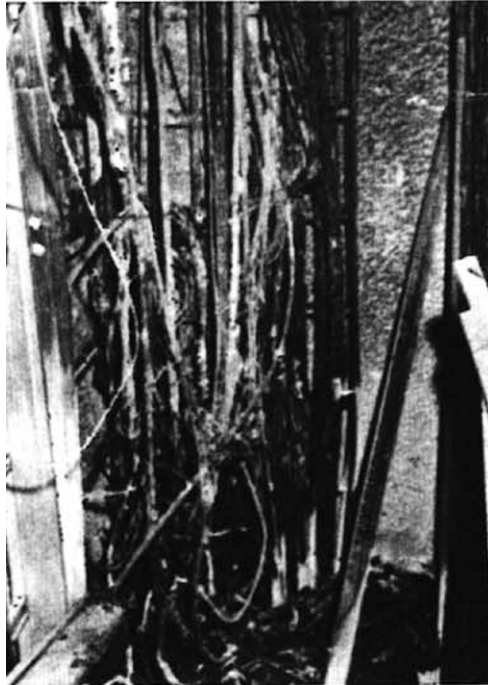


## Fukoku Seimei Building, Chiyoda ward, Tokyo



### 1. Characteristics of the fire

The fire emerged from the electric pipe space (EPS) for cable wirings on the 3rd floor of an ultrahigh-rise building (height 120 m, 29 stories above-ground and 5 below ground).

As the building was being constructed, completed floors were gradually occupied while work was still in progress on unfinished floors, and the fire provided valuable lessons regarding evacuation guidance and fire prevention for cables in the EPS.

### 2. Overview of fire outbreak

- (1) Time and date of emergence  
Around 20:12 on March 17, 1980 (Sunday)
- (2) Time and date of detection (Detection method)  
Around 20:33 on March 17, 1980 (Sunday) (119 call placed)
- (3) Time and date of extinguishment  
Around 21:57 on March 17, 1980 (Sunday)

### 3. Overview of fire origin

- (1) Location  
2-2-2 Uchisaiwai, Chiyoda ward, Tokyo
- (2) Name of building where the fire emerged  
Main building of Fukoku Seimei Mutual Life Insurance Company

- (3) Structure and configuration of building where the fire emerged
- ① Date of commencement of construction  
February 1, 1980
  - ② Status of structural extension and alteration  
Ongoing construction inside the building at the time the fire emerged
  - ③ Target use of the building  
Offices, restaurants, parking (Article 16.1)
  - ④ Structure  
Fire-resistant construction of all 5 floors below ground and 29 floors above ground
  - ⑤ Area (building area, total floor area)  
Building area: 2,188.8m<sup>2</sup>  
Floor area: 89,798.439 m<sup>2</sup>
  - ⑥ Number of accommodated personnel, occupants, enterprises, etc.  
At the time when the fire emerged, in addition to 209 people who were working late, there were around 60 people involved in the construction present.
  - ⑦ Number of workers  
Around 1,300
  - ⑧ Number of tenants  
16 tenants had moved into the building
  - ⑨ Area and target use by floor  
See separate table
  - ⑩ Others
    - (a) Status of construction at the time of emergence
 

28th floor	7–8 persons working on the interior of a restaurant
Floors 18–20	15 persons working on the interior
1st floor–mezzanine of 2nd floor	11 persons applying paint and affixing lights in the mezzanine storage room
    - (b) Floor B1  
27 workers
- (4) Status of the installed fire extinguishment and prevention facilities
- ① Fire extinguishment facilities  
Fire extinguishers, large-scale fire extinguishers, fire hydrants inside rooms, sprinklers  
Foam-based and halogenide-based fire extinguishment facilities
  - ② Alarm systems  
Automatic fire alarm system, emergency announcement system
  - ③ Evacuation facilities  
Guiding lights
  - ④ Water for fire extinguishment
  - ⑤ Facilities necessary for fire extinguishment activities  
Continuous water dispense system, emergency power outlets

- (5) Status of fire prevention measures
- ① Fire prevention supervisors  
Completed selection of candidates (Date unknown)
  - ② Fire prevention plan  
In preparation (beginning of use on February 12)
  - ③ Evacuation drills  
No evacuation drills were performed

#### **4. Weather conditions**

- (1) Weather  
Cloudy
- (2) Wind direction, speed  
Northwesterly, speed 0.5 m/s
- (3) Temperature, humidity  
Temperature 10°C, relative humidity 42%, effective humidity 25%
- (4) Weather warnings, bulletins, etc.  
None

#### **5. Cause of fire**

- (1) Ignition source  
Unknown. A cigarette end was recovered from the EPS, and it was considered that a discarded cigarette might have caused the fire. However, arson was also considered as a possibility since small fires were ignited in the EPS as many as four times before the incident.
- (2) Route  
Unknown
- (3) Ignited substances  
Cardboard boxes (assumed)

#### **6. Fire damage**

- (1) People  
No fatalities
- (2) Property
  - ① Building where the fire emerged (number of blocks, degree of burning, burnt area, cost of damage)
    - (a) Degree of burning: small fire
    - (b) Burned objects: four cardboard boxes on the floor of the EPS on the 3rd floor (50 smoke detectors), construction blueprints, electric drums, stands for white fluorescent lights, squared timber (4 pieces: 20 mm<sup>2</sup> cross-section x 1.2 m length), phone cable bundles, fire alarm cable bundles, CV cable bundles, everything up to the 5th floor was burned
    - (c) Cost of damage: 129,000,000 yen
  - ② Structures to which the fire spread  
None

## 7. Fire route (progression)

### (1) Overview of outbreak location

A phone line shaft located in the western part of the 3rd floor of the building extended to the ceiling of the 5th floor (passing through the EPS). This shaft contained groups of cables (electric line bundles), mostly 100-volt utility F cables.

Also, workers had left smoke detectors (in cardboard boxes), wooden cleats, phone terminals, construction blueprints and Z lights in the same room.

### (2) Situation up until the outbreak

Two construction workers were removing unneeded power lines from the EPS on the 3rd floor between 10:00 and 11:30 on the same day. After this, the room was empty.

### (3) Progression up to fire detection

A warning was displayed on an automatic fire alarm system installed in the fire prevention coordination center on floor B1, and fire warnings were displayed on all floors (1 to 5). The administrator of the center urgently dispatched Security Guard K to the 4th floor. Security Guard K reached the 4th floor via the staircase, where he noticed that the southern side of the building was filled with smoke. He then immediately notified the fire department of the fire.

### (4) Notification of fire department

Upon receiving confirmation of the fire from Security Guard K, the staff in the fire prevention center immediately called 119.

### (5) Initial firefighting attempts

Although several workers from the construction company opened the door to the EPS on the 4th floor and attempted to extinguish the fire with powder-based extinguishers, they were unsuccessful as the burning parts were located further in.

### (6) Fatalities

None

### (7) Evacuation

Although 98 people working late on the 12th floor began evacuation via the staircase upon hearing the fire warning, almost half of them (44 persons) used the emergency staircase in the western part of the building, which was close to the site where the fire emerged. The announcement "Please evacuate via the staircase in the eastern (seaside) part of the building" was not broadcast until almost all workers had already evacuated. The evacuation procedures for each tenant are shown in a separate table.

### (8) Firefighting group activities

- ① No autonomous fire department was established. All actions were implemented by the fire prevention center.
- ② The administrator of the fire prevention centre was informed by two security guards dispatched to the site of the fire that the 4th floor was filled with smoke which was entering the western part of the building, and therefore evacuation was impossible. The administrator issued the following warning twice: "There is a fire on either the 4th or the 5th floor. All people in the building, please evacuate to the 1st floor via the emergency staircases." After this, he activated the warning sign and proceeded with the evacuation. At that time, there was no clear indication as to which staircase should be used.

### (9) Propagation of the fire

As the shaft containing the phone cables (EPS) extended from the 3rd to the 5th floor, all cables in this space burned.

## 8. Firefighting activities undertaken by the fire department

### (1) Dispatched units

- ① Dispatched vehicles  
Unknown (2 fire engines)
- ② Dispatched personnel
  - (a) Professional firefighters 121
  - (b) Members of firefighting groups 2
  - Total 123

### (2) Firefighting and rescue activities

#### ① Firefighting activities

After reaching the EPS via the internal staircase and confirming that it was the point of origin of the fire, the firefighters discharged the provided fire extinguishers and subsequently dispensed water via a continuous water supply pipe.

## 9. Problems, lessons learned

(1) The fire occurred in a building where finished floors were already being used by tenants while construction work was being performed on unfinished floors. As only parts of the building were used, even though a fire prevention administrator had been selected, no fire prevention plan had been devised and no associate fire prevention administrators had been selected, and the safety measures for the entire building had not been taken into account.

In the future, regarding the temporary use of buildings, along with establishing a realistic fire prevention framework, the qualifications of the staff at the fire prevention center should be improved, and training with respect to the design of safety measures should be implemented.

(2) Although the EPS comprised a partitioned shaft with horizontal partitioning every 6 floors, it is desirable to implement horizontal partitioning on each floor.

Additional table

Evacuation procedures and floor area per tenant for each floor

Floor	Use	Floor area	No. of occupants when fire emerged	Evacuation method	Remarks
PH 1		148,396			
30		447,468			
29		2,188,800			Unoccupied
28	Restaurant	2,115,288			
27	Office	2,188,800	13	13 persons via the west staircase	
26	Office	2,115,288	4	4 persons via the east staircase	
25	Office	2,188,800	0		
24	Office	2,115,288	0		
23	Office	2,188,800	0		
22	Office	2,115,288	0		
21	Office	2,188,800	0		
20	Office	2,115,288			Partially occupied
19	Office	2,188,800			"
18	Office	2,115,288			"
17	Office	2,188,800	0		
16	Office	2,115,288	0		
15	Office (study)	2,188,800	16	16 persons via the west staircase	
14	Office (study)	2,115,288	14	14 persons via the east staircase	
13		2,188,800			Unoccupied
12	Office	2,115,288	98	54 persons via the east staircase 44 persons via the west staircase	
11		2,188,800			Unoccupied
10		2,115,288			"
9	Office	2,188,800	38	38 persons via the west staircase	
8	Office	2,115,288	2	2 persons via the east staircase	
7		2,188,800			Unoccupied
6		2,115,288			"
5		2,188,800			"
4		2,115,288			"
3	Office	2,188,800	13	Not evacuated	
2	Dental clinic	1,158,889			Partially occupied
M 2	Office		0		
1		2,099,099			Unoccupied
B 1	Shops	5,341,122	3		
B 2	Shops	5,851,044	8	Stopped escalator	
B 3	Parking	5,832,104			
B 4	"	"			
B 5	Switch rooms and mechanical rooms	4,946,399			
Total number of people		209 (Including 3 people from the fire prevention centre)			

Number of people evacuated via the east staircase	100
" via the west staircase	75
" via escalators	8
Not evacuated	16

## 10. Materials

Fig. 1 : Layout

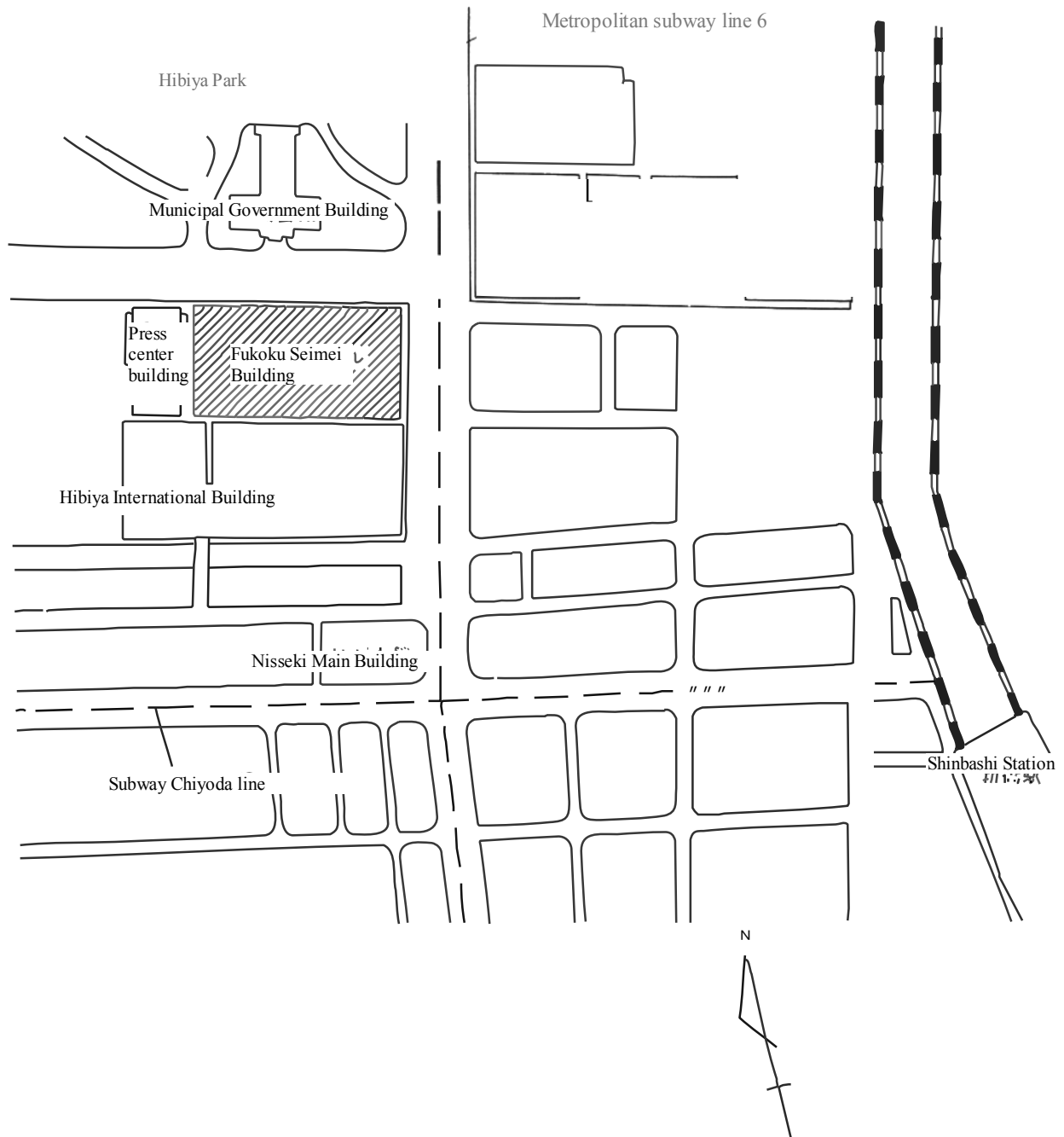
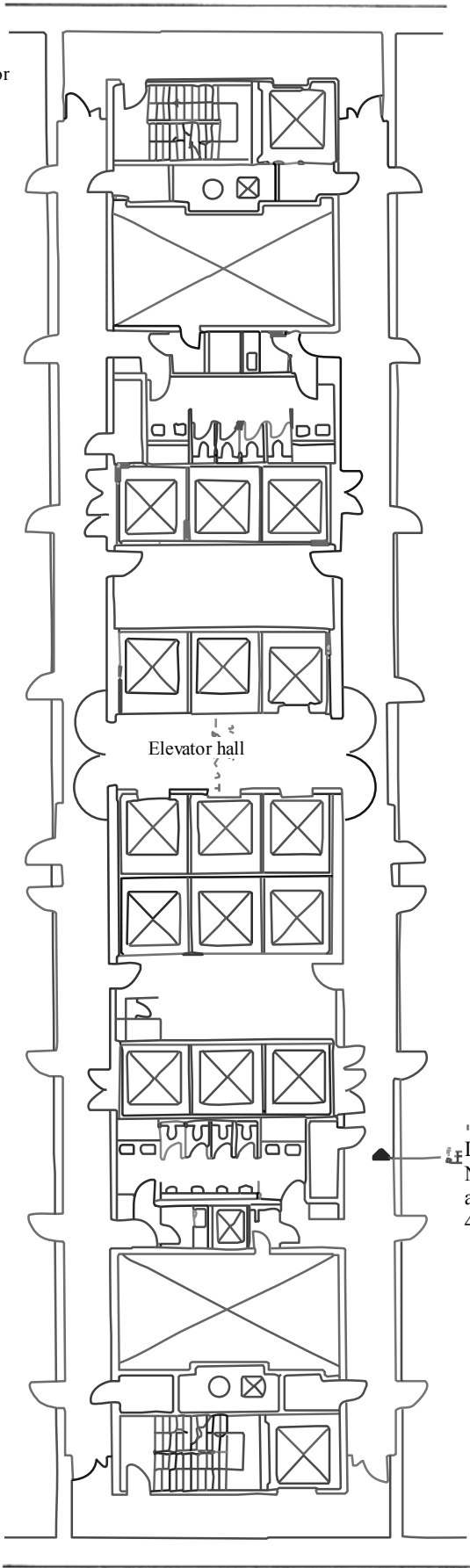


Fig. 2 Layout of the 3rd floor



Location where the fire emerged  
Note: Since this area extends to the 5th floor and the burning was similar, the layout of the 4th and the 5th floors is omitted.



Fig. 3 Layout of the site where the fire emerged (EPS on the 3rd floor (B))

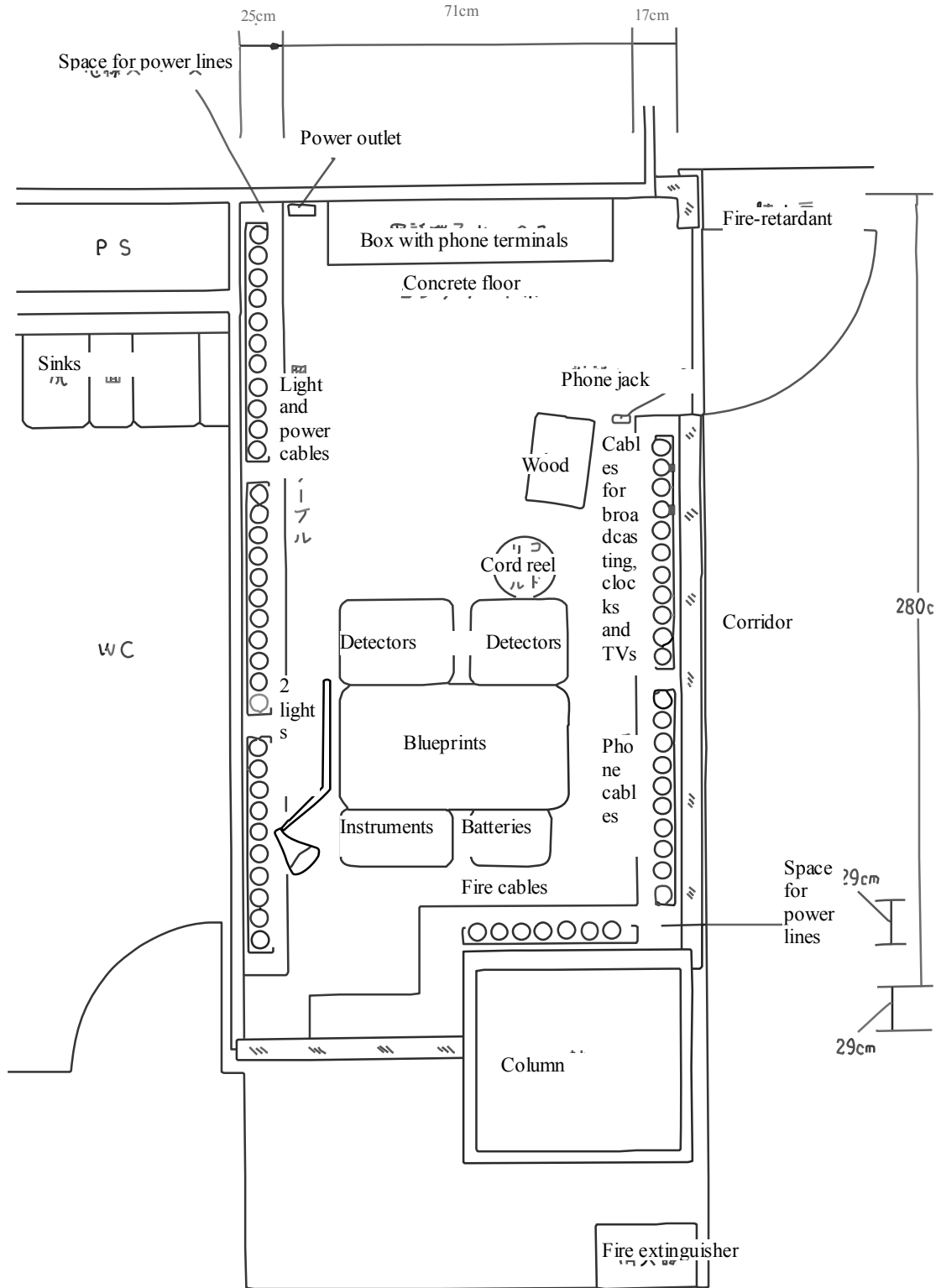
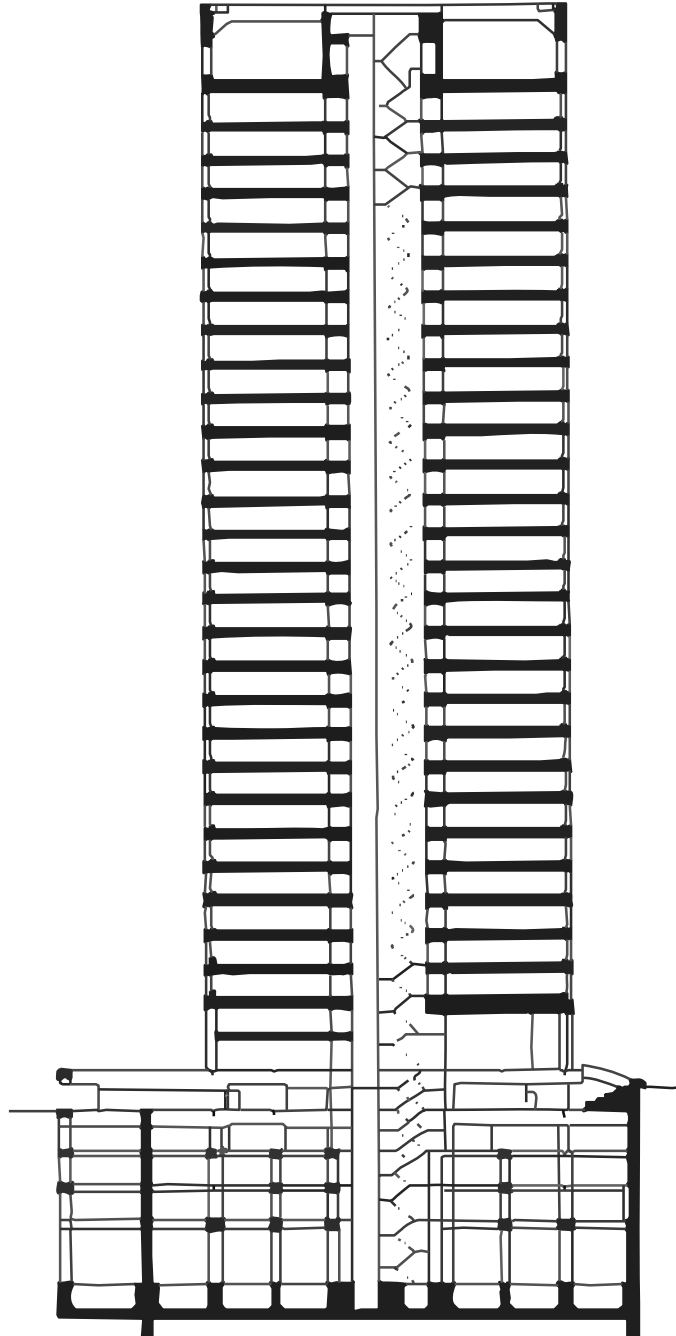


Fig. 4 Cross-section



## 10. Materials

Fig.1 Layout

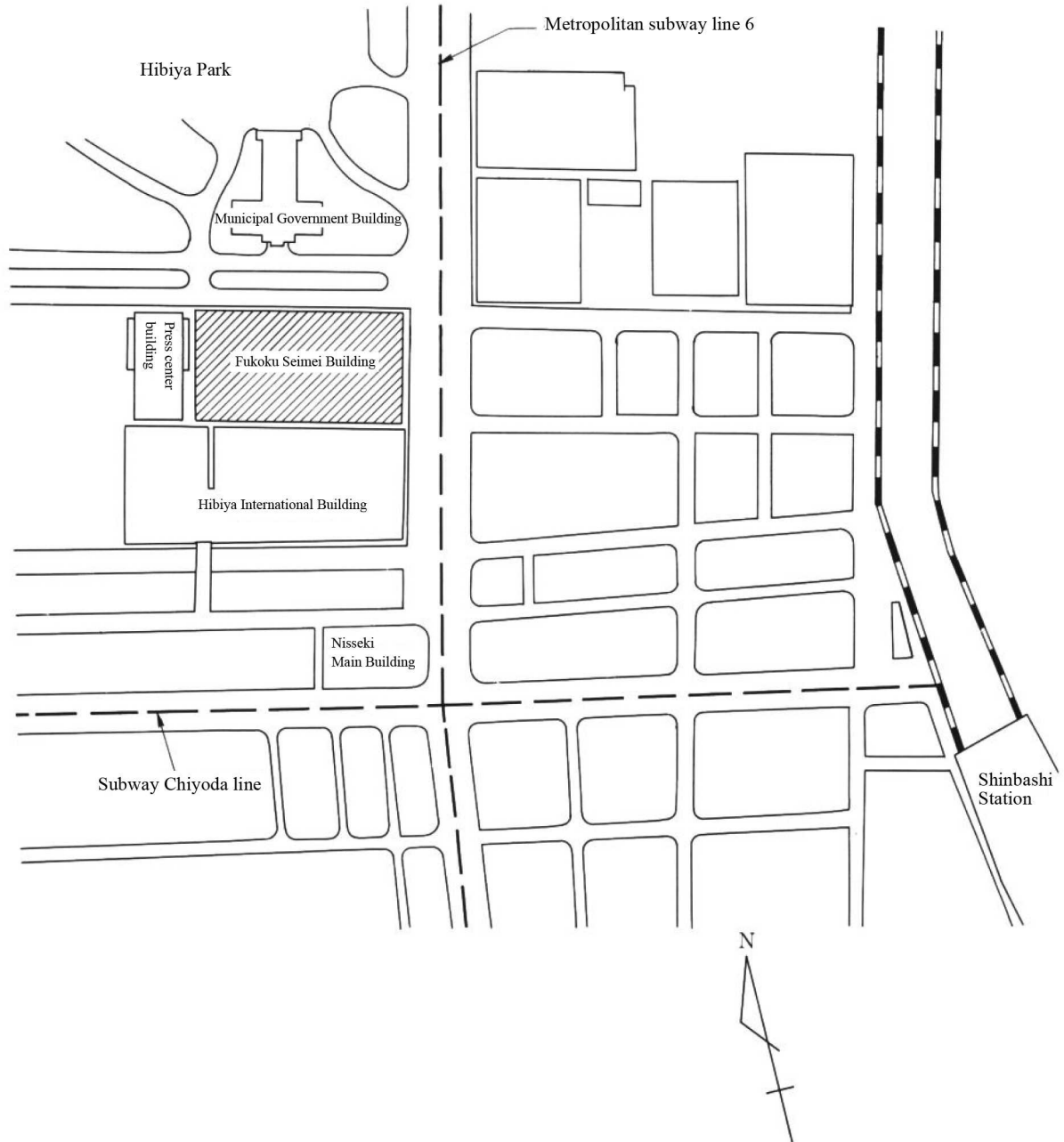
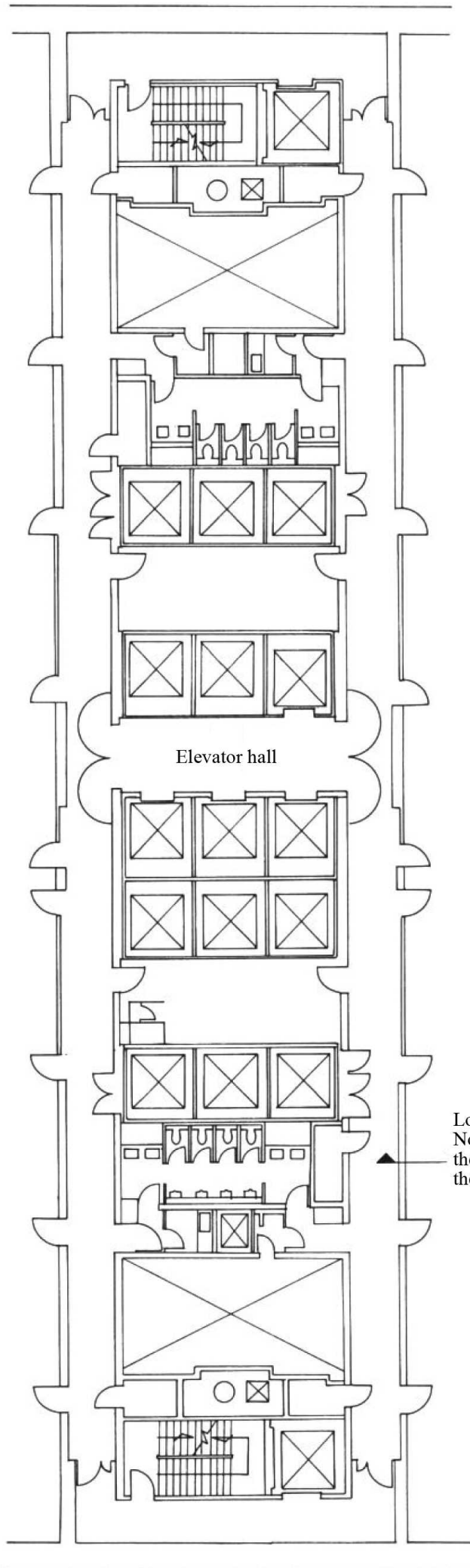


Fig. 2 Layout of the 3rd



Elevator hall

Location where the fire emerged  
Note: Since this area extends to the 5th floor and the burning was similar, the layout of the 4th and the 5th floors is omitted.

Fig. 3 Layout of the site where the fire emerged (EPS on the 3rd floor (B))

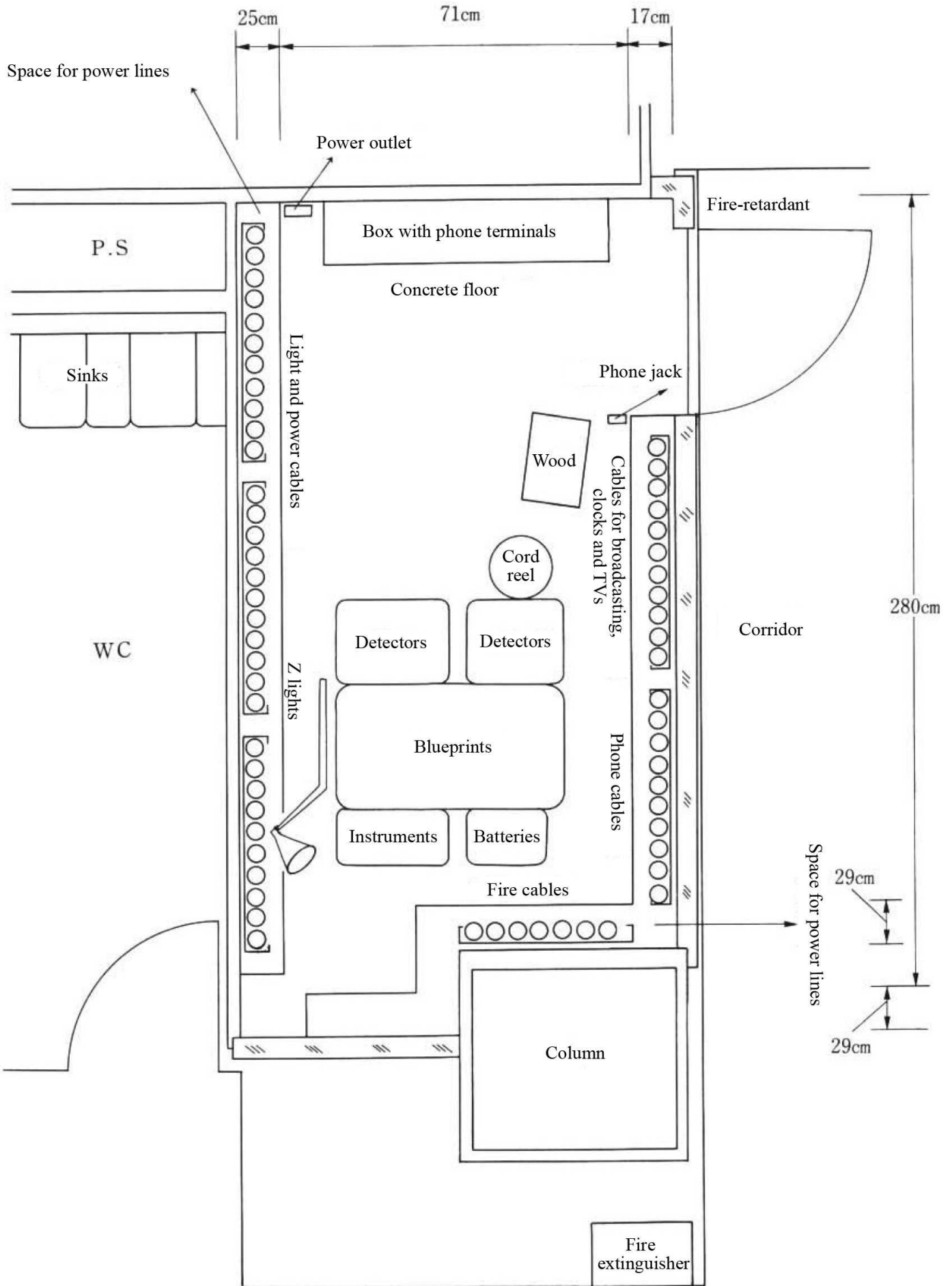


Fig. 4 Cross-section

