

Building Name Address	Use (as per FSA Annexed Table)	Date and Time of Incident	Structure and Stories Area	Extent of Damage (Damaged Area/ Total Area)	No. of Casualties
Marumitsu Department Store 1206 Toigosyomachi Nagano, NAGANO	Department Store (4)	Nov. 30, 1961 ----- Breakout at 03:30 (approx.) Detected at 03:55 Notified by a call to the police station ----- Extinguished by 06:00	Fire resistive	All, <u>Half</u> , Partial, Small	Fatalities 0
			8 stories above ground and 1 below	492m ² "	
			Building area 976 m ²		Injured 7 (7)
Total floor area 6,568m ²					

I. Summary of Fire Incident

(1) Summary A gas oven was left on, which caused a fire early in the morning and burned half of the basement floor. The fire was detected by the activated automatic fire detection system at a relatively ★late/early★ stage of fire, but the fire spread because the security guard failed to act effectively. Due to a lack of protective equipment (PPE), the firefighters had difficulty operating in the heavy smoke and this fire resulted in many casualties due to carbon monoxide poisoning.

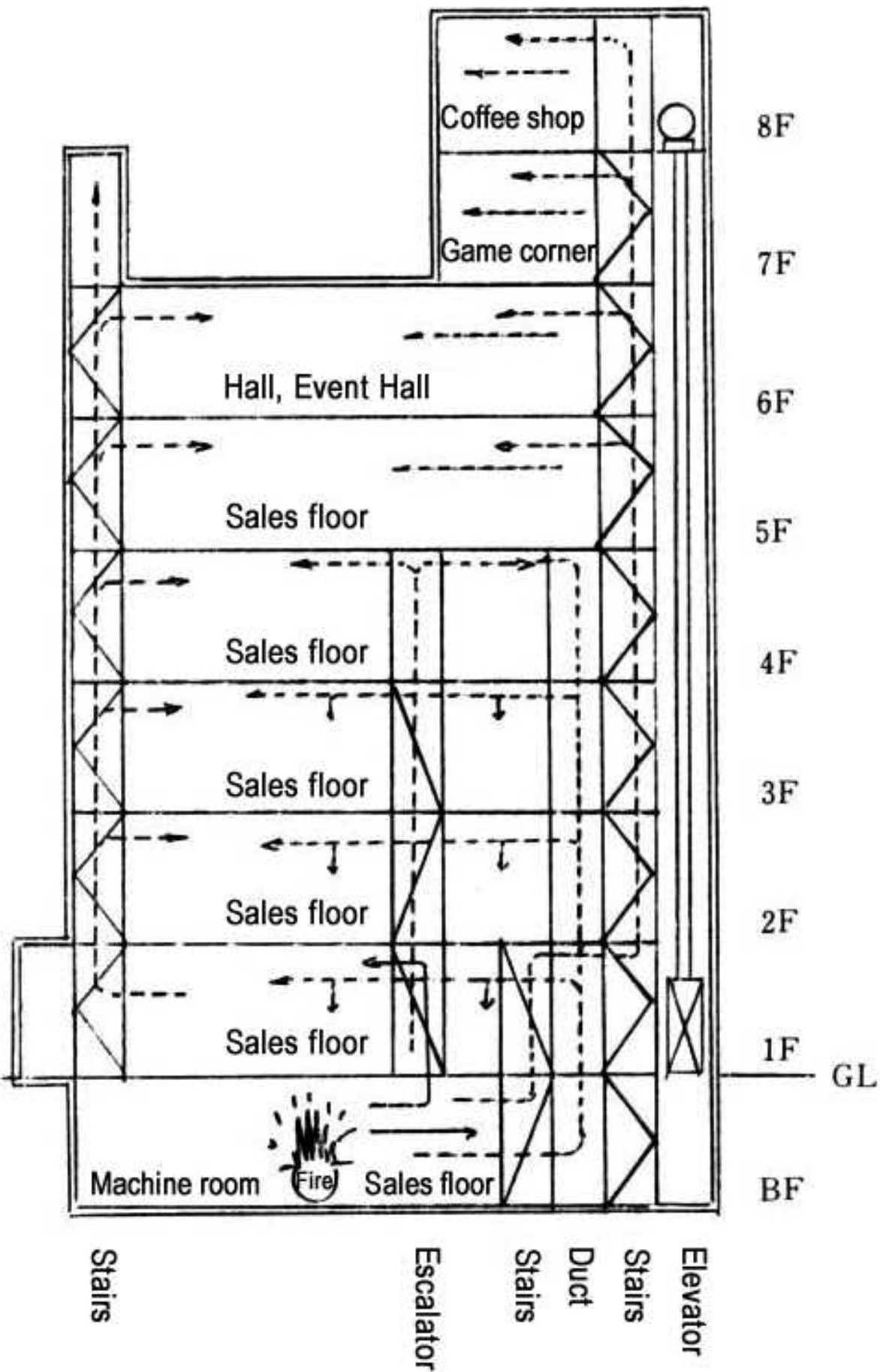
Floor	Total area	Damaged area	Use (Purpose)	No. of persons	No. of fatalities	Fire escape equipment	Firefighting equipment
	m ²	m ²					
						2 sets of inside stairs	Automatic fire alarm system
8			Machine room for the Observatory Restaurant			1 set of slow descending machines (escape equipment) on the 5th floor	Indoor fire hydrants Fire extinguishers
7			Game corner			1 set of escape chutes on the 6th floor	Water pipe connection
6			Hall, Event Hall				
5			Sales				
4			Sales				
3			Sales				
2			Sales				
1			Sales				
B1			Sales, Coffee shop, Storage, Machine room				
Total							

(3) Origin of Fire	<p>(Floor, Room, Part, Combustibles, Habitable/Non-habitable room, Present/<u>Absent</u> Inside the counter in the coffee shop on the underground floor</p> <ul style="list-style-type: none"> ◦ Interior wall (plywood) and Ceiling (plywood or acoustic fiberboard) ◦ The partition wall between the coffee shop and the sales floor was made of fire preventive material, but there was no door at the opening. This opening became the propagation path of the fire to the sales floors. 	(4) Cause of Fire	<p><u>A gas oven that was left on.</u> At 18:00 the previous day, the gas stove was left on with a pot filled with dirty dishes and water on top of it and the staff left for the night. Presumably, the water evaporated and the fire then broke out.</p>
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(5) Fire Propagation Path	<div style="display: flex; justify-content: space-around; text-align: center;"> <div style="border: 1px solid black; padding: 5px; width: 20%;">(Location of Fire Source)</div> <div style="border: 1px solid black; padding: 5px; width: 20%;">(Propagation from Source)</div> <div style="border: 1px solid black; padding: 5px; width: 20%;">(Propagation to Adj. Zones)</div> <div style="border: 1px solid black; padding: 5px; width: 20%;">(Propagation to Upper Floors)</div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; width: 20%;">Inside the counter in the coffee shop on the basement floor</div> <div style="border: 1px solid black; padding: 5px; width: 20%;">Interior wall (plywood) and ceiling (plywood or acoustic fiberboard)</div> <div style="border: 1px solid black; padding: 5px; width: 20%;">From the opening on the partitions</div> <div style="border: 1px solid black; padding: 5px; width: 20%;">Lower portion of the escalator on the 1st floor</div> </div> <div style="display: flex; justify-content: center; align-items: center; margin-left: 100px;"> <div style="border: 1px solid black; padding: 5px; width: 20%;">Chairs and tables in the coffee shop</div> </div>									
	<p>The fire emerged from inside the counter of the coffee shop on the first basement level, and spread to the interior walls (plywood) and the ceiling (plywood and fireboard), then to the shopping area of that floor through the opening. The fire spread from the lower portion of the escalator on the 1st floor (by the radiated heat of the fire that was penetrating from the gap between the back of the basement ceiling) and burned some portions of the 1st floor ceiling. The 2nd floor escalator portion was also damaged by smoke.</p> <ul style="list-style-type: none"> ○ Main Reasons for the Propagation of the Fire <ul style="list-style-type: none"> ○ Not only witnesses gave up on the immediate attempts to extinguish the fire, but also they only made calls to the police station and the department management. The arrival of firefighters was delayed because they did not call the fire station. ○ Smoke Propagation Path <ul style="list-style-type: none"> ○ The smoke propagated to each floor from the through stairs for the basement to the 8th floors that were located on the east and west sides of the building and also from other stairs on the 1st floor. ○ The smoke also propagated to each floor from the air supply ducts for air conditioning and ventilation ducts. 									
II. Summary of the Building										
(1) Built	Construction, Completion and Major Renovations (First construction from the basement to 4th floors) Nov. 1957, (Completion) Dec. 1959									
	(2) Vertical Shafts		(3) Fire Prevention							
Fire Prevention Management	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Stairs [X]</td> <td style="width: 50%;">Duct Spaces [X]</td> </tr> <tr> <td>Elevators [X]</td> <td>Pipe Shafts []</td> </tr> <tr> <td>Escalators [X]</td> <td>Other () [X]</td> </tr> </table>		Stairs [X]	Duct Spaces [X]	Elevators [X]	Pipe Shafts []	Escalators [X]	Other () [X]	<ul style="list-style-type: none"> ○ The public relations manager was appointed as a fire-prevention manager; however, the training for employees was insufficient. ○ At that time, they had just created a basic plan for the in-house firefighting team, but the details were still under discussion. ○ Two night guards used to work for a law enforcement organization. Since the building was a fire-resistive construction, they had focused on preventing burglary and robbery rather than preventing fire and handling flammables. 	
	Stairs [X]	Duct Spaces [X]								
Elevators [X]	Pipe Shafts []									
Escalators [X]	Other () [X]									
(4) Fire Compartments		(5) Firefighting Equipment								
<ul style="list-style-type: none"> ○ Each floor was partitioned by type-B fire shutters or fire shutters, which were located on each landing of the stairwells. 		<ul style="list-style-type: none"> ○ Management was inadequate. Goods were piled up in front of the indoor fire hydrants, the landing of the stairs was being utilized as a demonstration sales area, and display casings were placed under the fire shutters. ○ At every annual inspection, the store received a recommendation to install and make available the required escape equipment. 								

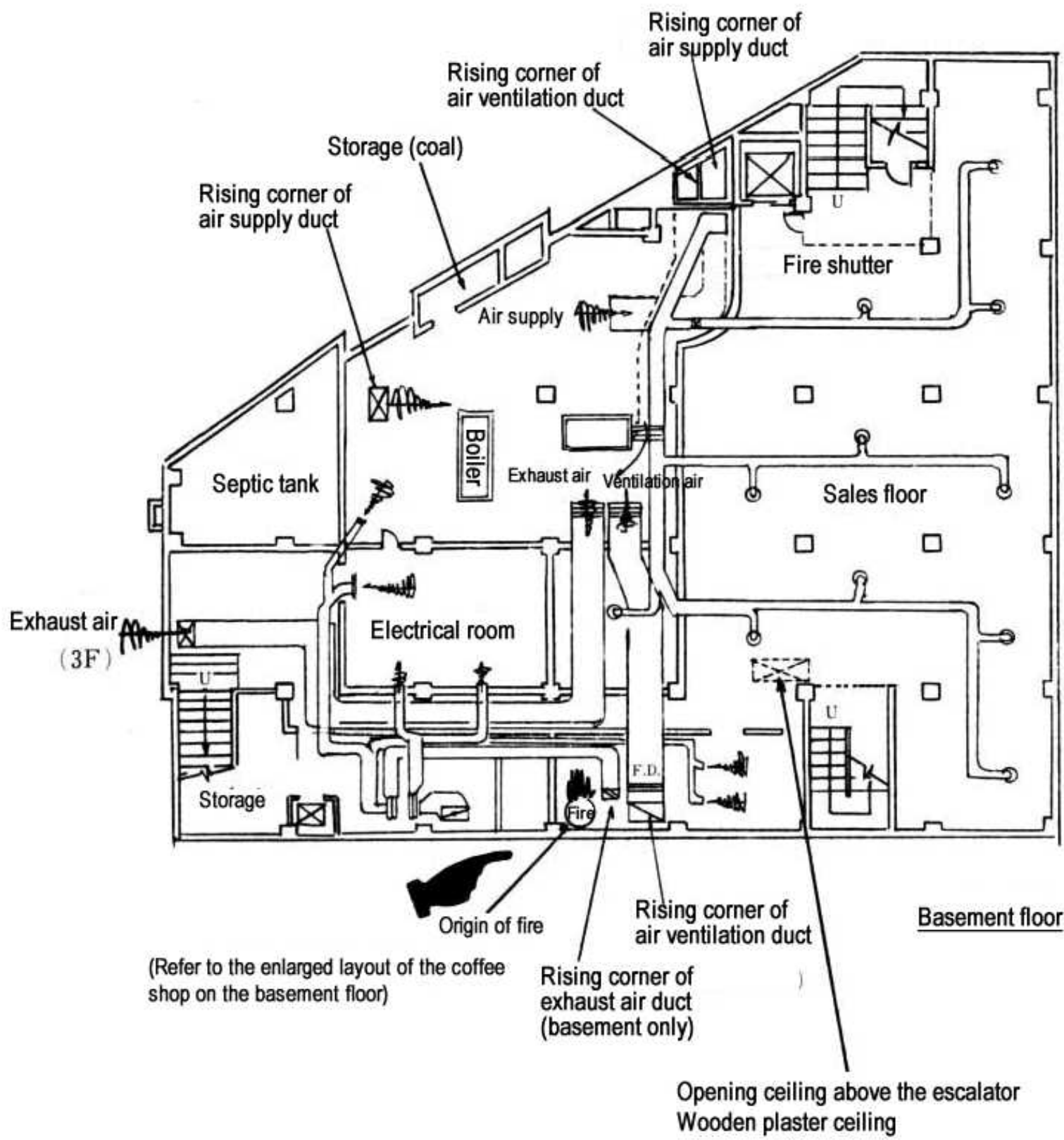
III. Actions Taken after the Fire was Detected									
(1) First Detected	<ul style="list-style-type: none"> ○ Detected by (Guard) ○ How and why (Activation of the fire detector) ○ Action taken (Rushed to confirm the fire) <hr style="border-top: 1px dashed black;"/> <p>When Guard O (age 32) just returned from his patrol, he learned through activation of the fire detector that fire had broken out on the basement floor. He rushed to the site through the machine room, but he could not open the door to the site, but he saw smoke emerging from the clearance of the door. So he took another route and found the counter in the coffee shop was burning. Then, the flames were on the ceiling and spreading to the sales section.</p>								
(2) Emergency Call	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Emergency Call</td> <td style="width: 35%;">Yes <input checked="" type="checkbox"/> (by the guard)</td> <td style="width: 50%;">Time elapsed since detection (25) minutes</td> </tr> <tr> <td></td> <td>No <input type="checkbox"/></td> <td></td> </tr> </table> <hr style="border-top: 1px dashed black;"/> <p>Upon and immediately after the activation of the fire detector, Guard S (age 55) made an emergency call, but dialed 110 (Police) (instead of 119 (Fire)).</p>	Emergency Call	Yes <input checked="" type="checkbox"/> (by the guard)	Time elapsed since detection (25) minutes		No <input type="checkbox"/>			
Emergency Call	Yes <input checked="" type="checkbox"/> (by the guard)	Time elapsed since detection (25) minutes							
	No <input type="checkbox"/>								
(3) Initial Firefighting Activities	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"></td> <td style="width: 35%;"> Successful <input type="checkbox"/> Failed <input type="checkbox"/> </td> <td rowspan="2" style="width: 50%; vertical-align: top;"> (Reasons or Conditions) Upon and immediately after the activation of the fire detector, Guard O rushed to the basement floor, but the fire had already spread from the counter to the ceiling of the coffee shop and also to the sales section. He therefore gave up controlling the fire in the sales section. Instead, he grabbed the indoor fire hydrant and started to prevent the fire from spreading to the machine room. </td> </tr> <tr> <td style="vertical-align: top;">Initiated</td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ○ Extinguished time [] ○ Firefighting difficulties <input checked="" type="checkbox"/> ○ Firefighting method [] </td> </tr> <tr> <td style="vertical-align: top;"><u>Not Initiated</u></td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ○ Extinguished time [] ○ Firefighting difficulties [] ○ Firefighting method [] ○ Other [] </td> <td></td> </tr> </table>		Successful <input type="checkbox"/> Failed <input type="checkbox"/>	(Reasons or Conditions) Upon and immediately after the activation of the fire detector, Guard O rushed to the basement floor, but the fire had already spread from the counter to the ceiling of the coffee shop and also to the sales section. He therefore gave up controlling the fire in the sales section. Instead, he grabbed the indoor fire hydrant and started to prevent the fire from spreading to the machine room.	Initiated	<ul style="list-style-type: none"> ○ Extinguished time [] ○ Firefighting difficulties <input checked="" type="checkbox"/> ○ Firefighting method [] 	<u>Not Initiated</u>	<ul style="list-style-type: none"> ○ Extinguished time [] ○ Firefighting difficulties [] ○ Firefighting method [] ○ Other [] 	
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(4) Summary of Firefighting Activities	<p>(Obstacles or Difficulties in Fire Control)</p> <ul style="list-style-type: none"> ○ When firefighters arrived onsite, thick smoke was heavily pouring out of the basement. Since the firefighters did not have enough protective equipment, they used wet towels to enter the basement, but it was already too difficult a situation. The basement floor was filled with smoke, which caused respiratory distress in a few minutes, so firefighter team members could confirm that flames were present. ○ Plywood or decorative materials mostly closed off the windows on the south side of the building, which interfered with smoke control from the building. Since they could only open the windows on the east side of the stairwell, 7 of the firefighters suffered carbon monoxide poisoning. 								

(5) Evacuation	Means of Escape (No. of Persons)	Obstacles to Evacuation
	<ul style="list-style-type: none"> ◦ Stairs [] () ◦ Elevators/Escalators [] () ◦ Escape equipment [] () ◦ Directly to ground from windows or openings [] () ◦ Rescued [] () ◦ Other (Climbed down rainwater gutters and lightning rods) [] () 	<ul style="list-style-type: none"> ◦ No windows [] ◦ Barred openings [] ◦ Locked emergency doors (Exits) [] ◦ Alarm system [] (Poorly controlled, Malfunctioned, Not installed) ◦ Power outage [] ◦ Other () []
	N/A	
(6) Casualties	Healthy individuals (drunken persons)	Obstacles to Evacuation
	Individuals in need of assistance Infants Elderly Disabled Patients/ill persons	
	None	
IV. Issues and Lessons Learned		
<ol style="list-style-type: none"> 1. Smoke masks (PPE) are required for the safety of firefighters during a basement fire. 2. To prevent firefighters from losing their way out due to poor visibility, a lifeline is required so that they can safely exit from smoke-filled sites. 3. The speed of fire spread is relatively slow in a basement fire and therefore after effectively lowering the room temperature with atomizing spray nozzles, the fire should be controlled all at once by finding the origin of the fire. 4. Water damage can be minimized by using a drain pump or controlling a faucet for water flow. 5. To prevent smoke interference, all the windows should be free from obstacles so they can be opened easily to eject smoke to outside. A fire damper should be installed on air conditioning ducts on each floor so it can be closed easily in case of emergency. 6. Escalators should be protected by fire compartments. 7. No obstacles (goods for sale) should be placed in the vicinity of stairwells, fire shutters or firefighting equipment, and all fire doors and shutters should be completely closed after business hours. 		

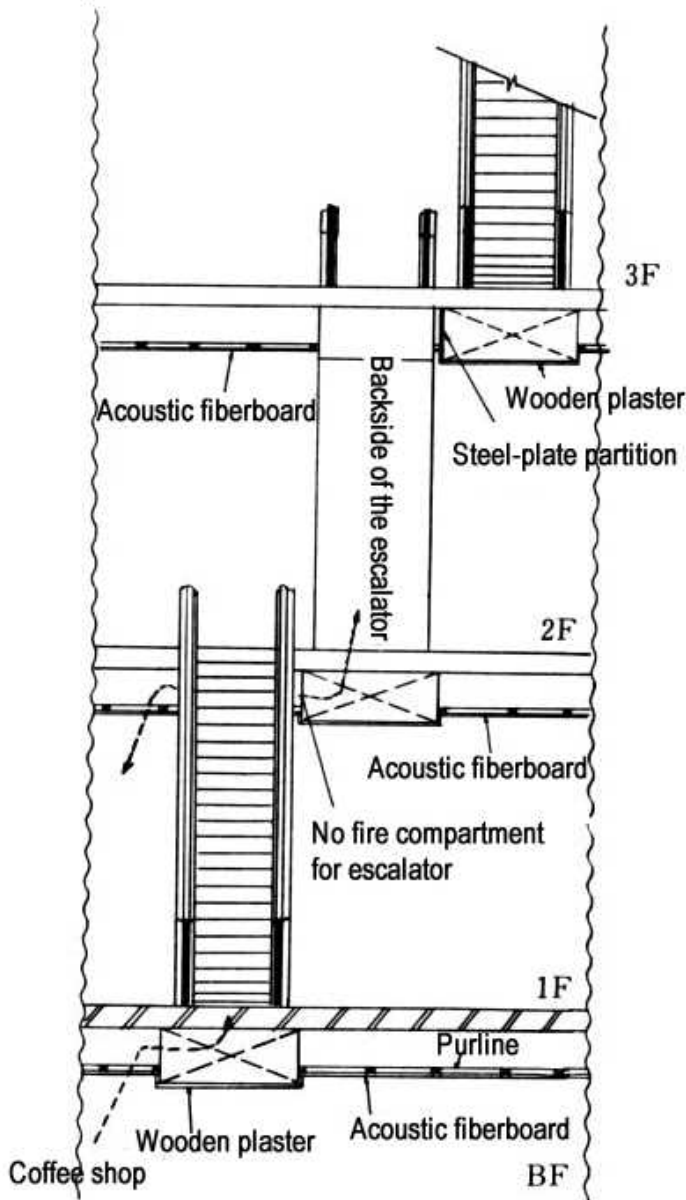


Symbols

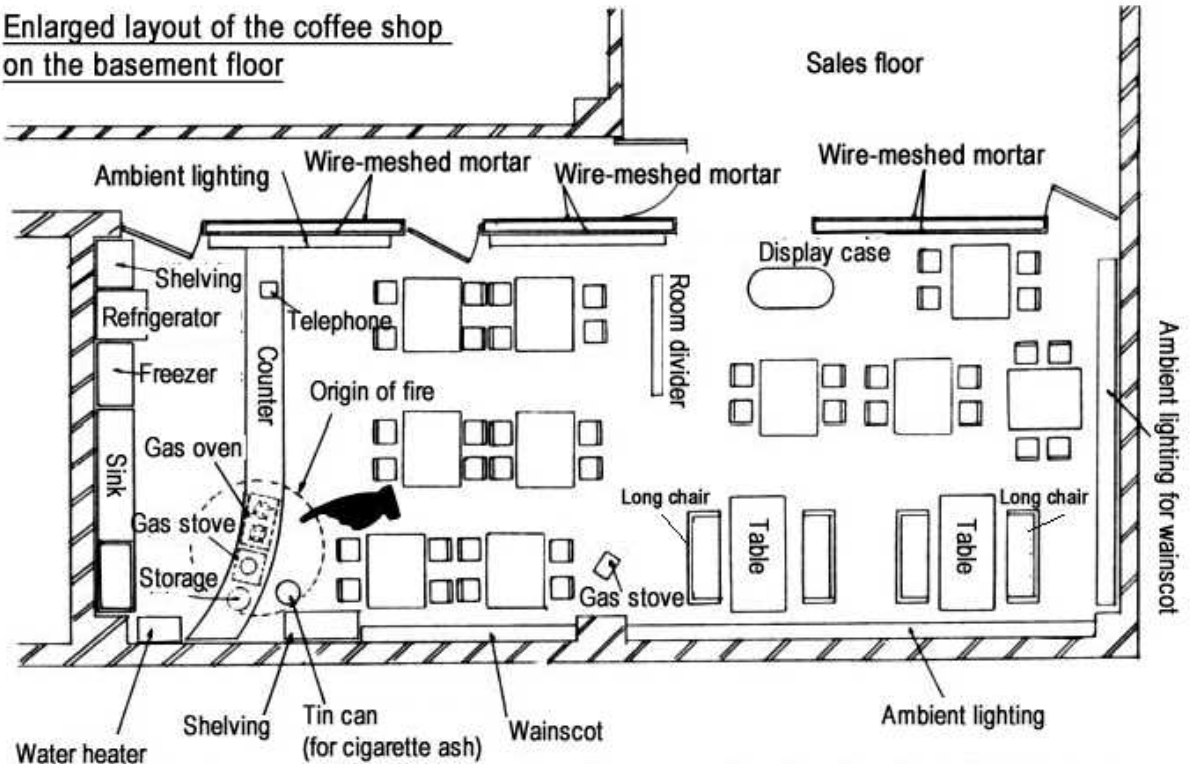
- ←----- Smoke and heat
- ←----- Spreading path



Spread around the escalator



Enlarged layout of the coffee shop on the basement floor



* Gas oven/stove and condiments/cooking oil located under the counter