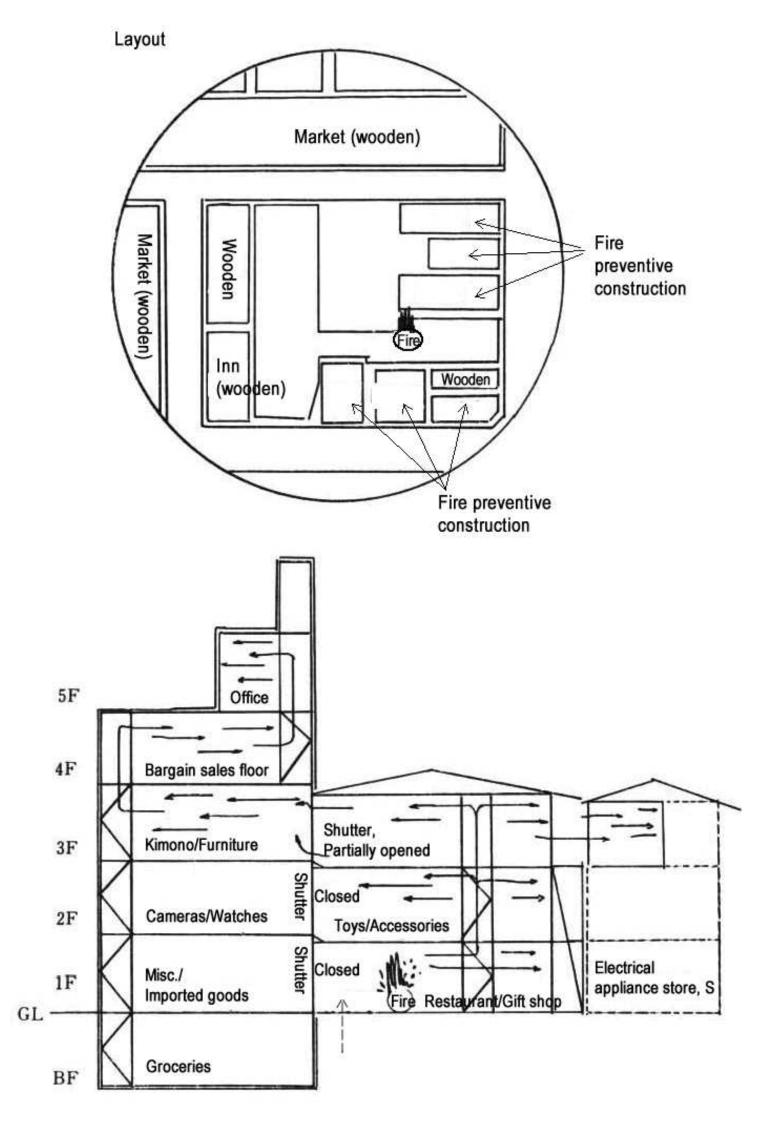
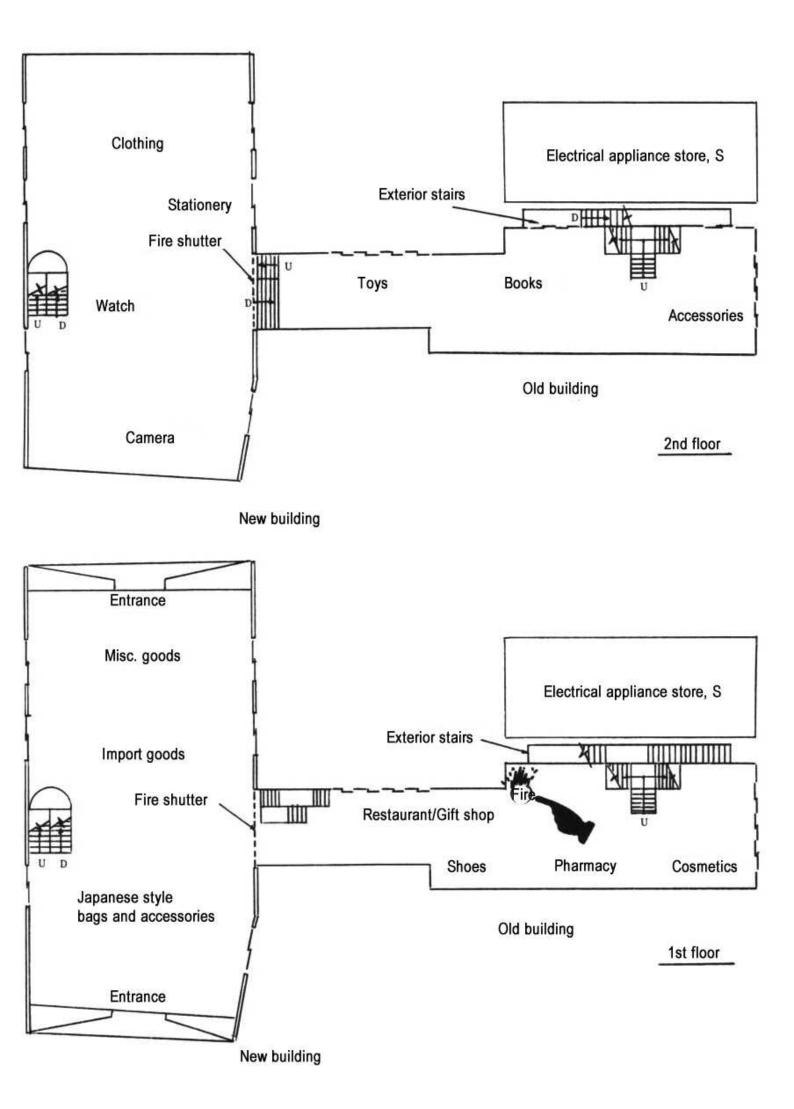
		r				r				Frank of	
		Building Name Address		`A	Use per FSA nnexed Table)	Date and Time of Incident		ure a pries rea	nd	Extent of Damage (Damaged Area/ Total Area)	No. of Casualties
		Sendai				May 5, 195		Fire resistive			
		М	Marumitsu Department Store		Department Store	Breakout at 17:30 (approx.) Detected at	5 storie ground below Partially wooden	and 1 ′		Fatalities 0	
		5-12 Ura Sendai MIYAGI			(4)	17:35 Notified by emergency call	stories ground	Building area 1,210m <sup>2</sup>		2,397m <sup>2</sup>	
				i						(47%)	Injured 4 (2)
						Extinguished by 20:00	Total flo	or are 5,14			(-)
1. 3	Summa	ry of Fire	Incident								
This department store fire was started from the 1st floor of the wooden 3-story building, which was and then spread to the 3rd to 5th floors of the 5-story fire-resistant building that was connected t The fire emerged during their business hours and there were over 2000 people inside the building evacuation led by the clerks, everybody evacuated safely.						nnected to the woo e buildings. With a	oden building. n appropriate				
(2) Co	Floor	Total area		Damaged area		Use (Purpose)	No. of persons	fata	o. of Ilitie s	Fire escape equipment	Firefighting equipment
(2) Conditions per Floor		Old building (Wooden )	m² New building (Fire resistant)	Old building	m² New building		Number inside parenthese s is number of store clerks.			<pre><old building=""> Indoor stairs (2 units each on 1st to 3rd floors) </old></pre> <pre></pre> <pre></pre> <pre></pre> <pre></pre> <pre>// Content of the stain of the</pre>	Fire extinguisher s Indoor fire hydrants (1st to 4 th floors of new building)
	Roof 5		21.5 140.3		140.3	Office	0			B1 to 4 <sup>th</sup> floor 2 units of rope ladder (4th and roof	Fire alarm
	4		688.2		688.2	Bargain Sales, Office	57(7)				
	3	353.1 368.8	746.8 793.3	353.1 368.8	478.5	Sales Sales	307(57) 624(74)			floors)	
	1	368.8	841.8	368.8		Sales	641(91)				
	B1		819.0				647(47)				
	Total		5,141.6	2,3	97.7		2,276(276	0			
(3) Origin of Fire	<u>Prese</u> <u>The fir</u> the old On the combu	(Floor, Room, Part, Combustibles, <u>Habitable</u> /Non-habitable room, <u>Present</u> /Absent) <u>The fire emerged from the coffee stand near the stairwell on the 1st floor of the old building (wooden).</u> On the coffee stand, 3 kerosene stoves were being used around combustible materials. The area was under corrective construction for being an illegal structure and was surrounded by temporary panels. There was no exterior wall. The interior walls were covered by the curtains and wallpaper.						(4) Cause of Fire	pou sto he	en the coffee stan uring kerosene into ves without turning spilled the keroser osene caught fire.	one of the the stove off,

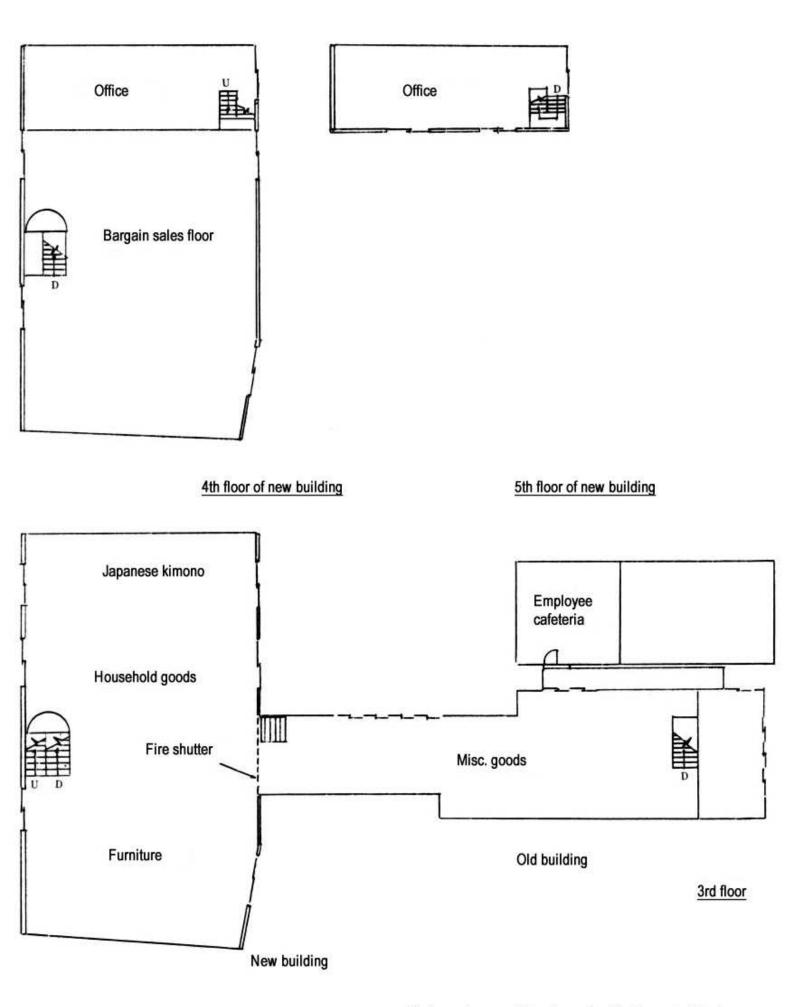
(5)	テラー! 会昭デジョへかりません (Location of Fire Source) (Propagation from Source) (Propagation to Other Floors)						
(5) Fire Propagation Path	Coffee stand on the 1st floor of the old building	From the walls, ceiling and stairwell on the 1st floor of the old building, the flames spread to the floors, walls and ceilings of the 2nd and 3rd floors of the old building successively					
n Path		The flames reached the fire shutter casing from the backside of the 3rd floor ceiling of the old building and spread to the ceiling of the new building, also from the north stairwell to the 4th and 5th floors					
	The fire emerged from the coffee stand on the 1st floor of the old building, alighting the decorative temporary curtain, papers and plywood in the vicinity, and spreading to the wooden walls and ceiling as well as to the 2nd and 3rd floors of the old wooden building. Once the fire reached the 3rd floor of the old building, it ignited the 3rd floor ceiling (new building) near the ventilation duct (fell during the fire) that was installed next to the fire shutter casing. Then, as the flame blazed up toward the north stairwell, it spread to the 4th and 5th floors, destroying them.						
	<ul> <li>Main Reasons for the Propagation of the Fire         <ul> <li>The fire, which started from the 1st floor of the wooden building, was surrounded by a large quantity of combustible materials.</li> <li>Since the fire shutter on the 3rd floor malfunctioned due to the fire, it did not close to keep the fire out and the fire shutter casing became the route of the fire spread to the new building. (The opening beneath the shutter was not the direct cause of the fire spread because they removed all the combustible materials from that area.)</li> <li>Smoke Propagation Path</li></ul></li></ul>						
П.	Summary of the Building						
(1) Built	Construction, Completion and Major Renovations (Completion) 1946, (Expansion) March 1956						
Fi	(2) Vertical Shafts	(3) Fire Prevention					
Fire Prevention Management	Stairs       [X]       Duct Spaces       []         Elevators       []       Pipe Shafts       []         Escalators       []       Other ()       []         Each floor of the south stairwell of the new building was partitioned with a fire shutter; however, on the north stairwell, except for the 2nd floor, there were no fire shutters on any floor (illegal), which became the path of fire spread to the upper floors of the new building.	<ul> <li>The department store had received appropriate guidance from the fire department on a routine basis, and based on the guidance, the store had formed an in-house firefighting team of 139 members, appointing the general manger as the team leader. In an emergency, the team was supposed to form several groups such as general affairs, security, firefighting and lifesaving; however, things did not proceed as planned.</li> <li>The flammable items were poorly handled.</li> </ul>					
	(4) Fire Compartments	(5) Firefighting Equipment					
	The connecting portion between the old (wooden) and new (fire resistant) buildings was partitioned by an electrically operated fire shutter (Type-B).	There was no firefighting equipment at all in the old building (illegal).					

III.	III. Actions Taken after the Fire was Detected							
(1) First Detected	<ul> <li>Detected by         <ul> <li>How and why</li> <li>Action taken</li> <li>(Coffee stand staff)</li> <li>(Fire emerged from the kerosene that was spilled by the staff)</li> <li>(The staff tried to put it out with his jacket)</li> </ul> </li> </ul>							
tected	The coffee stand staff poured and spilled kerosene onto the stove that he did not turn off before doing so, and the kerosene caught fire. He tried to put it out with his jacket; however, this action yielded opposite effects and served to spread the fire.							
(2) Emer	Emergency Call							
Emergency Call       Yes [X] (Telephone operator)       Time elapsed since detection (5) minutes         No []       No []         A fireman happened to be on the 2nd floor (toys section) of the old building as a customer. He rushed to the origin and gave instructions to control the fire and to make an emergency call to the telephone operators' office. After the telephone operator who received the call notified the fire station, she turned on the emergency bell and the store speakers to tell everybody in the store about the fire and the location.								
(3)		Successful [ ] Failed [ X ]	(Reasons or Conditions)					
(3) Initial Firefighting Activities	<u>Initiated</u>	O Extinguished time [] O Firefighting difficulty [] O Firefighting method [X]	<ul> <li>The coffee stand staff who caused the fire tried to extinguish the flame with his jacket, but the action yielded opposite effects and served to spread the flame.</li> <li>After evacuating the customers, 4 to 5 people of the in-house firefighting team brought out the hose of the indoor fire</li> </ul>					
	Not Initiated	O Extinguished time [] O Firefighting difficulty [] O Firefighting method [] O Other []	hydrant from the 3rd floor of the new building and reopened (approx. 70m) the fire shutter in order to enter the old building. They poured water on the fire, but the flames were too strong and they had to retreat to the new building. When they tried to reclose the fire shutter, they could not close it because the heat of the fire disabled the door.					
(4)	(Obstacles or Difficulties in Fire Control)							
(4) Summary of Firefighting Activities	<ul> <li>When the firefighters arrived onsite, approximately 8 minutes had elapsed since the fire broke out and the fire had consumed 1/3 of the 1st floor and 2/3 of the 2nd floor of the old building. In addition, heavy smoke was pouring out from both sides of the 1st and 2nd floors as well as from the 3rd floor and was rapidly spreading the fire. (Rescue)</li> <li>On the 4th floor, 6 store clerks evacuated the customers. However, they spent too much time setting aside some goods and lost their way out, so 4 of them went to the roof floor. On the other hand, 2 of them used some Kimono fabric to descend: one clerk (male) made it to the ground, but the other one (female) lost her grip and fell onto the roof of a two-story building. Later, those who escaped to the roof floor were rescued by firefighters.</li> <li>4 telephone operators on the 3rd floor were trapped in their office since they remained for a while to finish their task, and they called for help from their windows. They were rescued by the firefighters who extended the rope ladders from the roof top of the adjacent building.</li> </ul>							
ties								

(5	Means of Escape (No. of Persons)	Obstacles to Evacuation				
(5) Evacuation	<ul> <li>Stairs [ X ] (1400)</li> <li>Elevators/Escalators [ ] ( )</li> <li>Escape equipment [ ] ( )</li> <li>Directly to ground from windows or ope</li> <li>Rescued [ X ] ( 8 )</li> <li>Other (Climbed down rainwater gutters ( 2 )</li> </ul>	<ul> <li>No windows []</li> <li>Barred openings []</li> <li>Locked emergency doors (Exits) []</li> <li>Alarm system [] (Poorly controlled, Malfunctioned, Not installed)</li> <li>Power outage []</li> <li>Other () []</li> </ul>				
	<ul> <li>Since the kerosene combustion yielded remarkable smoke and flames from the onset, the customers who were near the fire source immediately escaped to the east exit or to the new building. The customers on the 2nd and 3rd floors of the old building detected the fire from the smoke coming out of the stairways, floor and walls and started their evacuation at an early stage of the fire. Since the store clerks helped them to evacuate, everybody evacuated from the old building in approx. 3 minutes after onset of the fire.</li> <li>On the other hand, the customers in the new building did not respond to the store clerks' instructions at first because they believed that the fire resistant building was safe, which caused temporary confusion. However, since the clerks continued to warn them using the PA system and megaphones, everybody evacuated from the building without any causalities.</li> <li>The store executives who were notified of the fire decided to evacuate the customers first. They placed the male store</li> </ul>					
	clerks on each floor to avoid congestion around the stairway and closed the fire shutters after everybody evacuated from the old building, which provided a good amount of time for evacuation.					
(6) Casualties	Healthy individuals (Drunk persons ) Individuals in need of assistance Infants Elderly Disabled Patients/ill persons	Obstacles to Evacuation          No windows []         Barred openings []         Locked emergency doors (Exits) []         Alarm system [] (Poorly controlled, Malfunctioned, Not installed)         Power outage []         Other () []				
IV	None Issues and Lessons Learned					
<ol> <li>The store failed to provide thorough training on how to handle flammables and how to notify about and extinguish fire.</li> <li>The department building was inadequately constructed and therefore, in order to comply with the Building Standards Law, they had built a new building. Since they just had removed the wooden structure (east side of the new building), there was no exterior wall. When the fire broke out, there were only temporary plywood walls that were covered by curtains because they were waiting for the permit for the extension/renovation. Given these conditions, that particular part of the building was a vulnerable space to handle flammables.</li> <li>After the fire shutter was closed in between the old and new buildings, the store clerks removed the display case and other combustible materials, so the goods did not contribute to the spread of fire.</li> <li>Since the department store was able to supply electricity with a private generator until the electrical technician decided to cut it off, they avoided a chaotic condition that could arise from a power outage.</li> <li>The fire broke out in a department store that held an unspecified number of people. Although there were over 2,000 people at that time, no one was hurt and all evacuated safely because the store made appropriate decisions and issued</li> </ol>						
	evacuation instructions.					







Note: underground floor layout omitted (new building)