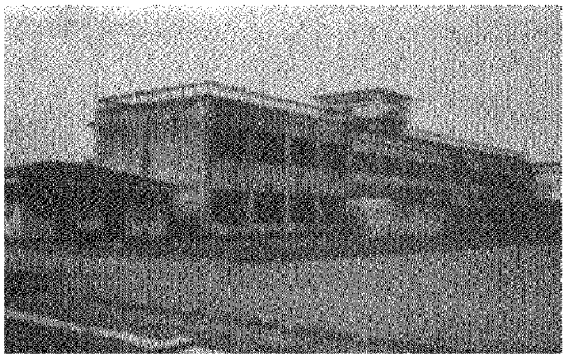
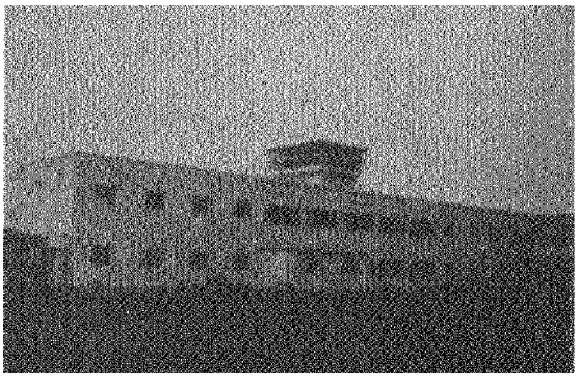
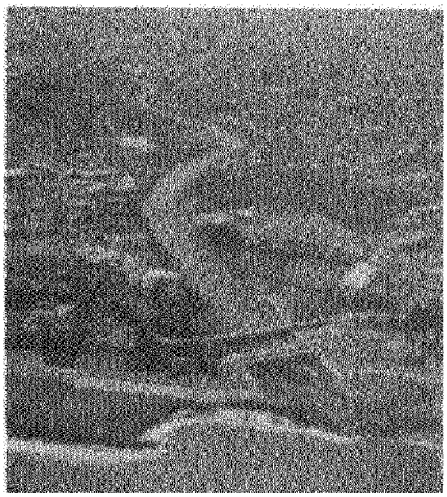
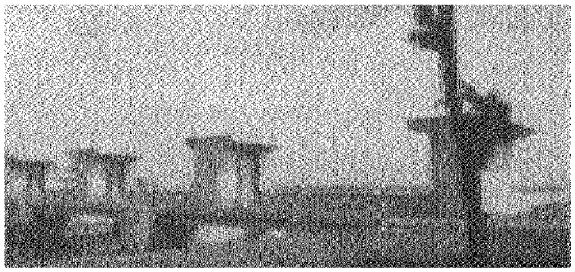




Reinforcement of a school building

The pictures show an example of the project in the Fukuda primary school building, established by Fukuda Town, Iwata Gun, Shizuoka Prefecture, which is within the areas under intensified measures.
Left: Before the project started, facing northeast.
Right: After the project completed. New reinforced walls were settled. Window sashes were remodeled for glass scattering prevention.

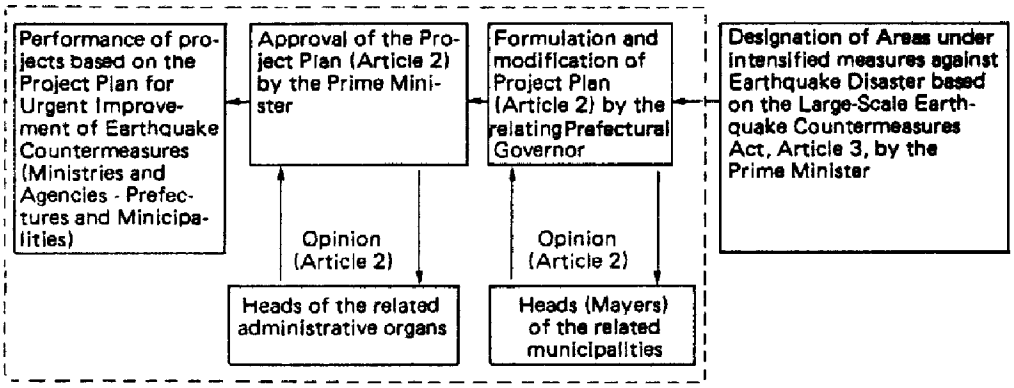




Facility of river control

The pictures show a river gate at the mouth of Tochiyama River, Yaizu City, Shizuoka Prefecture, which prevent Tsunami from flowing up along the river. The gate close automatically at the seismic intense V.

Outline of Project Plan for Urgent Improvement of Earthquake Countermeasures

The Act based on	The Act Concerning the Special Fiscal Measures for the Project for Urgent Improvement of Earthquake Countermeasures in Areas under intensified measures against Earthquake Disaster
Enforcement of the Act	May 28, 1980
Valid until	March 31, 1990
Object	For promotion of earthquake disaster prevention measures in areas under intensified measures against earthquake disaster
Background of legislation of the Act	In designated areas under intensified measures against earthquake disaster based on the Large-Scale Earthquake Countermeasures Act, matters relating facilities such as places of refuge and evacuation routes to be provided urgently to protect lives and bodies of residents from large-scale earthquake disasters should be made arrangement, based on Article 6, Paragraph 1 of the Act. Regarding arrangement of those facilities, the Special Fiscal Measures Act was enacted by a bill presented by a Diet member in May 1980 as a law with a limited period of validity until March 31, 1985 to prevent heavy fiscal burden for local public bodies and to promote such project plans. In March 1985, the limited Period of validity was extended 5 years to March 1990.
Project operators	Six Prefectures, Shizuoka, etc., 169 municipalities and syndicates
Approval and performance of the Project Plans	

Contents of the Project Plan	Period	1980 to 1989 fiscal years
	Items	17 items, places of refuge, evacuation routes, fire fighting facilities,urgent transportation roads, urgent transportation port facilities, communication facilities, public medical care facilities, social welfare facilities, public schools, coast conservation facilities, river control facilities, sand protection facilities, security facilities, landslide prevention facilities, land collapse prevention facilities for steep slope areas, water ponds

Increase of rate of subsidy		(normally)	(Case in the Project.)
	1. Fire fighting facilities	1/3 (subsidy 1/2)	1/2
	2. Social welfare facilities (remodeling of wooden construction accommodation facilities for patients who need help)	1/2	2/3
	3. Public primary and secondary schools		
	(remodeling of hazardous buildings)	1/3	1/2
	(reinforcement of non-wooden buildings)	0	1/2 or 1/3 (depending upon financial situation)

After enactment		
	December 1980	Initial approval of the Plan
	November 1981	Modification of Enforcement Order, the Special Fiscal Measures Act (Made a criteria of financially weak municipalities)
	March 1982	Approval of modification of Shizuoka Prefecture (diagnosis of non-wooden constructions against earthquake)
	April 1982	Approval of modification of Kanagawa, Yamanashi, and Aichi Prefectures (do)
	June 1983	Approval of modification of Nagano and Yamanashi Prefectures (do)
	March 1985	Revision of the Special Fiscal Measures Act (5 years extension of valid period)
	July 1985	Approval of Modification of 6 Prefectures (5 years extension)

1. Project expenditures and rate of progress for improvement of facilities

(Unit: million yen)

Items	10 years (1980-1989) planned expenditures (Project expenditure) (A)	1980-1985 expenditures (B)	Rate of progress (B/A)(%)
Places of refuge	68,171	28,824	42
Evacuation route	36,225	16,167	45
Fire fighting facilities	35,006	19,456	56
Urgent transporting roads	123,550	85,443	69
Urgent transporting port facilities	3,399	3,359	99
Urgent transporting fishery facilities	577	577	100
Communication facilities	16,302	14,523	89
Public medical care facilities	7,463	5,905	79
Public welfare facilities	16,710	13,405	80
Public primary and secondary schools	140,609	110,551	79
River control facilities	13,223	7,462	56
Coast conservation facilities	18,670	12,001	64
Sand protection facilities	10,305	6,390	62
Security facilities	29,144	18,158	62
Landslide prevention facilities	13,172	9,398	71
Land collapse prevention facilities for steep slope areas	28,464	16,939	60
Water ponds	4,334	2,922	67
Total	565,324	371,480	66

2. Project expenditures and rate of progress for each prefecture (Kanagawa, Yamanashi, Nagano, Gifu, Shizuoka and Aichi Prefecture)

(Unit: million yen)

Items	10 years (1980-1989) planned expenditures (Project expenditure) (A)	1980-1985 expenditures (B)	Rate of progress (B/A) (%)
Kanagawa Pref.	85,395	46,326	54
Yamanashi Pref.	110,060	75,505	69
Nagano Pref.	41,882	33,138	79
Gifu Pref.	4,382	2,917	67
Shizuoka Pref.	318,151	210,403	66
Aichi Pref.	5,454	3,191	59
Total	565,324	371,480	66

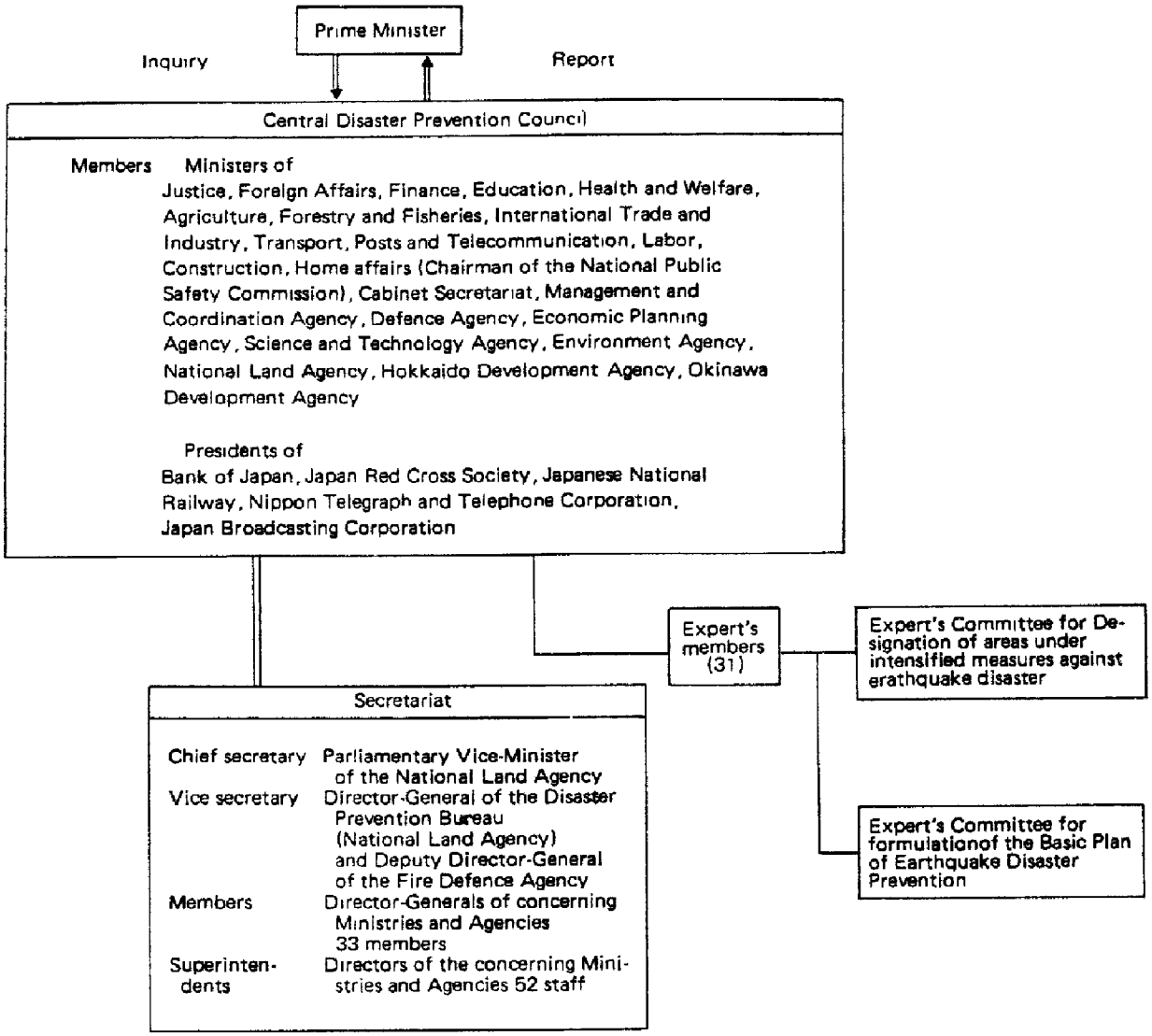
Note: Summarized in August 1985

5. SYSTEMS TO PREVENT OUR LAND FROM DISASTERS

In Japan, the Central Disaster Prevention Council in the nation and Local Disaster Prevention Councils in the prefectures and municipalities were established to secure the integration and coordination of disaster measures in cooperation with relating public bodies and residents. These organs formulated Disaster Prevention Plans to prevent and minimize disasters by performing effective short-term measures, and to rebuild those damages from disasters promptly.

In case a large-scale earthquake disaster occurs, Headquarters for Major (or Extraordinary) Disaster Countermeasures shall be established in the national and local public bodies to perform short-term measures for disaster prevention covering various fields of matters in tight connection with related organs.

In case such earthquake disaster occurs in a wide range, it is important that local residents of the area fight voluntarily against disasters, in addition to the concerning disaster prevention organs activity. Therefore, voluntarily disaster prevention organs were established in various areas to perform initial fire fighting or medical aids for victims in mutual cooperation of residents.



On the task of the National Land Agency in case large-scale disasters occur

The National Land Agency manages and operates the Central Disaster Prevention Council ordinarily, but establishes and operates necessary headquarters in case disasters occur.

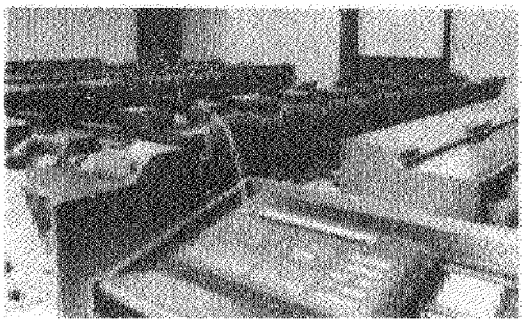
In order to perform its tasks, the Agency has some functions such as a conference room for the headquarter for Disaster Countermeasures, a General-Director's room, and the Central Disaster Prevention Administrative Wireless Communication Network Station, etc., and prepares food, water, generators for emergency use, etc., preparing for disasters in the Kasumigaseki Administrative area.

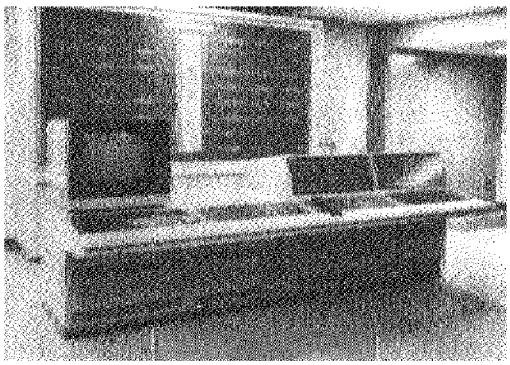
A maxim said that disaster comes soonest when it is forgotten, therefore it is very important to provide against disasters caused by earthquakes which might occur suddenly and give serious disasters, collecting necessary information and preparing necessary stuff customarily. It is recommended to fix unstable furniture and to talk about

safe places of refuge, etc. in your home. In case an earthquake occurs, the most important thing is to behave calmly and not to rush nor fall in panic.

A scale of disaster caused by an earthquake is depending on whether or not a fire breaks out and spreads. When you feel tremor, you should place yourself in a safety spot firstly, then try to turn off sources of fire quickly right after ceasing the first tremor or before starting the secondary big tremor.

Furthermore, when a large-scale earthquake occurs, "false rumors" commonly flow out. Therefore it is very important to listen to correct information provided through radio and television broadcast, and to act based on such accurate information.





The conference room for the National Headquarter for Disaster Countermeasures and Communication control room on the third floor of the National Land Agency Building.

Table of provisions against earthquakes

Ordinary preparation	When a warnings statement is issued	When a earthquake actually occurs
• Share in tasks within families • Diagnose anti-quake safety of your house • Check concrete block walls • Get fix furniture • Safety measures for propane gas • Safety measures for kerocine stoves • Food stock • Drinking water stock • Standing preparation of transister radio and torches	(In intensified areas and surrounding areas such as the National Capital Region) • Confirm information • Turn off sources of fire • Take over school children • Arrange your house orderly • Prepare water and fire fighting (intensified areas) • Dress lightly • Confirm urgent taking out articles • Evacuate from dangerous areas immediately • Prepare for evacuation	• Ensure your safety first • Turn off sources of fire quickly • In case of fire, fire fighting first • Don't rush out of door • Stay away from dangerous places such as narrow allay, near by walls, cliffs, or river banks • Pay attention to landslide, collapse, tsunami, and flood • Evacuate on foot, and minimize your carrying goods • Cooperate for first aids • Listen to correct information, don't be misled by false rumor • Stay in order, and be carefull of sanitation

Reference Material on Earthquake

Scale of Seismic Intensity and Magnitude

The strength of the shaking of the earth's surface at a given point is expressed in terms of "seismic intensity", while the energy of an earthquake is measured in terms of "magnitude" expressed by "M" in general.

An earthquake stronger than M-7 is classified as large-earthquake, between M-5 and M-7 as medium-earthquake between M-3 and M-5 as small-earthquake, and between M-1 and M-3 as minor-earthquake. Especially, an earthquake stronger than M-8 is called as "great", and usually occurs about once a ten years period in Japan and vicinity areas. But, medium-scale earthquakes occur more frequently, about a hundred times a year, and smaller ones occur much more frequently.

Scale of seismic intensity (Japan Meteorological Agency)

Scale of seismic intensity	General character	Reference
0	Not felt. Only detected by a seismograph	Can see some suspended materials slightly swing, or hear clatterring, but not felt.
I	Minor tremor. Felt by people sitting still or being carefull for earthquakes	Can feel slight sflake in case sitting still, but the time is short. Can easily miss in case of standing
II	Light tremor. Felt by a large number of people. Slightly shaking doors may be noted.	Can see some shaking suspended materials. Felt by standing people, but not felt by moving people. Sleepers might awake in case
III	Weak tremor. Houses shake, doors clatter loudly, suspended materails such as electric light appliance shake significantly. Can notice shaking water in some containers.	Felt with some surprise, sleepers awake, but people might not rush out of doors. Not felt fear, Felt by outdoor people, but might not felt by walking people.
IV	Medium tremor. Houses shake violently, unstalbe objects such as flower pots fall over, or water inside of some vessels spill over. Felt by walking people get out of doors.	Sleepers jump out of beds, and feel fear. Can notice shaking telegraph poles and trees. Roof tiles dislocated, but not damaged. Feel slightly dizzy.
V	Strong tremor. House walls crack, gravestones and similar objects topple down, stone fence or chimneys break.	Difficult to keep stand. Houses get light damage, but collapse on soft ground Unstable furniture fall down
VI	Severe tremor. Houses collapse less than 30%, landslides and cracks in the ground occur. Almost all people can't stand stably.	Difficult to walk. Have to crawl to move
VII	Violent tremor. Houses collapse more than 30%, landslides, cracks in the ground, and faulting occur.	

Magnitude is expressed by logarithmic scale, therefore increase of magnitude number "one" means increase of energy 30 times.

Compared with other energy sources, M-8.5 is compared to the energy generated by a 100,000 kw electric generator for 100 years operation, and M-6.2 is compared to the energy of a Hiroshima type atomic bomb.

Liquefaction

This means to become liquidize ground by earthquake motion. Just a small sand eruption occurs in case it is small-scale, but collapse of constructions, sinking of roads, railways, and river banks, uneven sinking of oil pipes, floating of drainpipes, etc., would happen in case of large-scale. Ground liquefaction is a phenomenon caused by separation of sand grains due to instant high water pressure between those grains because of vibration. Therefore, it easily occurs in non-solid, well sorted, high water content (high ground water table), and shallow sand layers, in case earthquakes stronger than seismic intensity 5 occur. In cases of the Niigata Earthquake in 1964 and the Nihonkai Chubu Earthquake in 1983, extensive ground liquefaction occurred and got much attention.

The liquidized ground of Wakami Town, Akita Prefecture, when the Nihonkai Chubu Earthquake occurred (supplied y the National Land Agency).