SEISMIC PERFORMANCE EVALUATION OF PUBLIC SCHOOL BUILDINGS IN ISTANBUL METROPOLITAN AREA

by

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ABSTRACT

SEISMIC PERFORMANCE EVALUATION OF PUBLIC SCHOOL BUILDINGS IN ISTANBUL METROPOLITAN AREA

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Earthquake resistance of school buildings deserves special attention with respect to seismic safety because of their occupancy characteristics and their importance to immediate and long-term earthquake disaster relief and recovery efforts.

The aim of the study is that the seismic performance evaluation of public school buildings in Istanbul. According to this, in Istanbul, three different types of projects are practiced and evaluated for public schools constructed due to different number of stories and different earthquake zones. Besides, these kinds of projects were analyzed in terms of 1975 and 1998 Turkish Codes.

In addition to the seismic performance evaluation of public schools, a preliminary screening procedure was carried out in that study. To eliminate the losses caused by earthquakes, the earthquake resistance of the school building must be examined by quick and easy method which is Rapid Visual Screening Procedure prepared by Applied Technology Council. Actually, the method which was carried out, is classified the earthquake resistance of the public schools and determined a detailed evaluation is required or not.

ÖZET

İSTANBUL'DAKİ DEVLET OKULLARININ DEPREM YÖNÜNDEN PERFORMANSLARININ DEĞERLENDİRİLMESİ

Okullar depremden sonrada fonksiyonlarını devam ettirebilmelidirler. Dolayısıyla okul binalarının depreme dayanıklı olması, deprem öncesi olduğu kadar deprem sonrası kurtarma faaliyetleri içinde son derece özel bir önem arzeder.

Bu çalışmada amaç, İstanbul'da bulunan devlet okullarının performanslarının değerlendirilmesidir. Buna göre, İstanbul İli sınırlarında yapımı tamamlanan devlet okullarında, ağırlıklı olarak uygulanmış 3 tip proje seçilmiş, bu tip projeler farklı kat adetlerine göre değerlendirilmiştir. Ayrıca, bu tip projelerin 1975 ve 1998 yönetmeliklerine göre analizleri yapılmıştır.

Bu çalışmada ayrıca yukarıdaki performans değerlendirmelere ek olarak bir ön-inceleme metodu uygulanmıştır. Depremden dolayı oluşabilecek hasarları en aza indirgemek için, okulların depreme dayanıklılığı deprem öncesi hızlı ve gözleme dayalı bir metod olan Amerika Uygulamalı Teknoloji Kurulu'na ait Hızlı Gözlemsel İnceleme metodu ile incelenmiştir. Uygulanan metod aslında devlet okullarının depreme karşı dayanıklılığını sınıflandırır ve ayrıntılı analizlere ihtiyaçları olup olmadığını belirler. Kullanılan bu metod konuyu sadece mühendislik ve emniyet açısından değerlendirir.

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CHAPTER I

INTRODUCTION AND SCOPE

INTRODUCTION

The planet that we are living on it has passed lots of phases since its formation period. The humanity has witnessed with natural disasters that people would never like to meet while the world passing on these stages. Earthquakes remain one of the world's major cataclysms. They occur frequently and result in high death tolls, thousands injured, and crippling economic losses. On average, there are more than 1000 earthquakes of magnitude 5 (M5) or greater every year worldwide, 100 M6 or greater, 10 M7 or greater, and one M8 or greater earthquake as shown in Figure 1.1. [31]

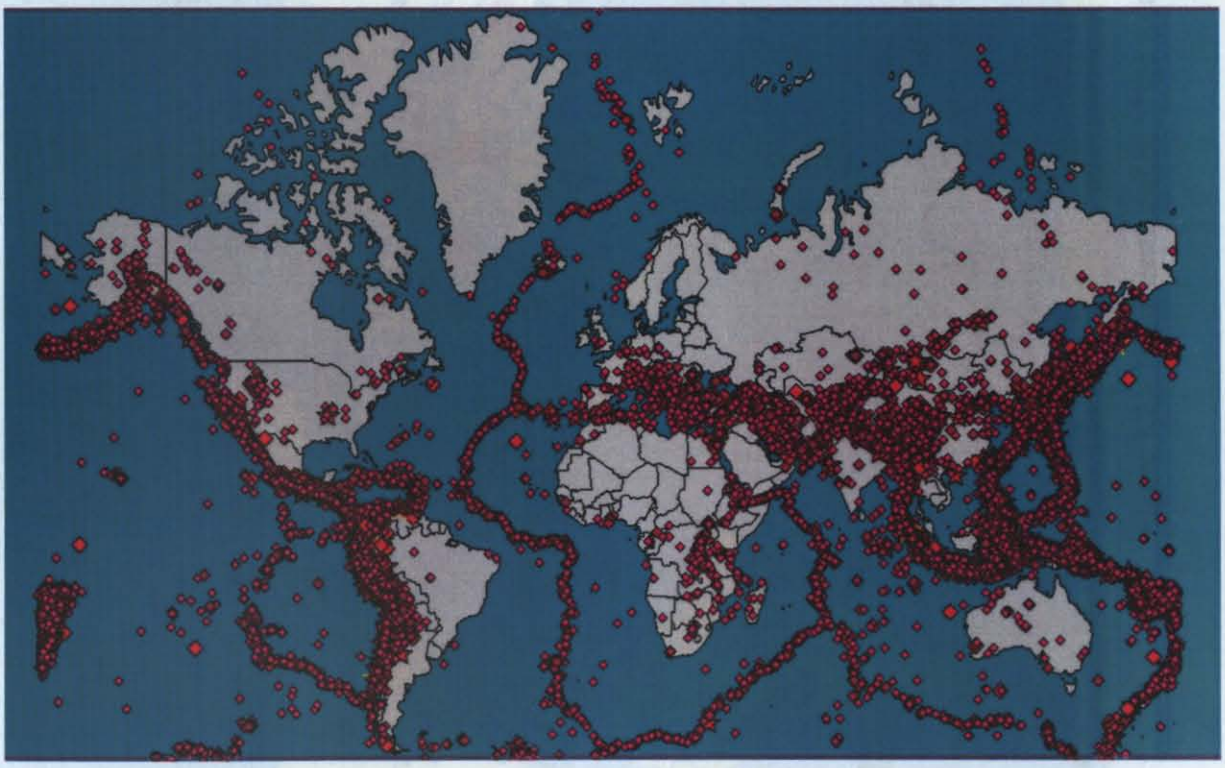

Figure 1.1 – Earthquakes of magnitude between 5.0 and 9.9 in the world [36]

In the twentieth century, more than 100 earthquakes each resulted in loss of more than 1.000 lives. For very deadly earthquakes, Figure 1.2, the loss of life exceeds that recorded in other events by an order of magnitude. Nine earthquakes in the twentieth century each resulted in the loss of more than 50.000 lives. Several, in China, Italy, Japan, the Soviet Union, the USA and Turkey have individually resulted in more than 100.000 lives lost.[31]

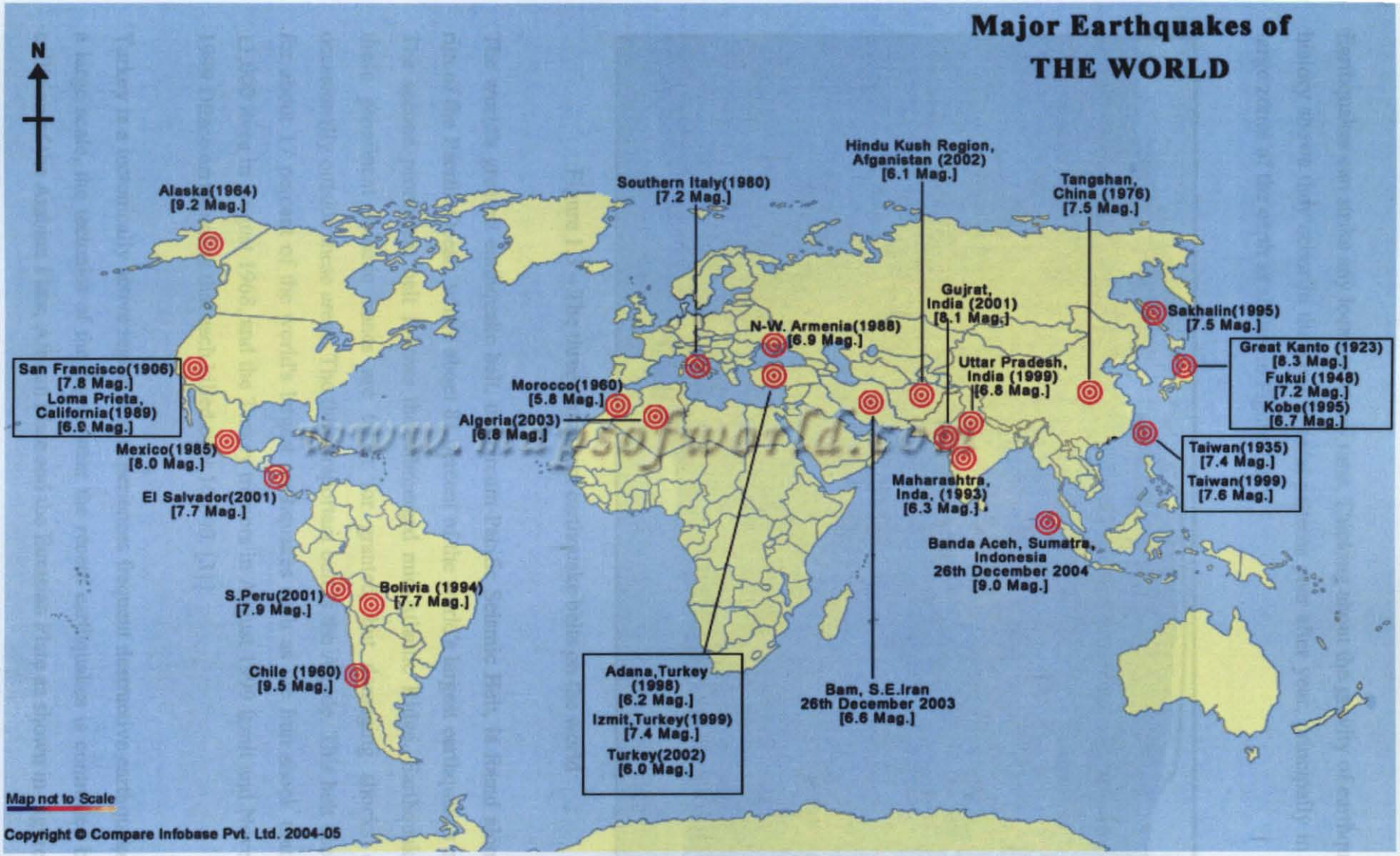

Figure 1.2 – Major earthquakes of the world

Earthquakes can strike any location at any time. Thinking about the gravity of earthquakes, history shows they occur in the same general patterns year after year, principally in three large zones of the earth as shown in Figure 1.3.

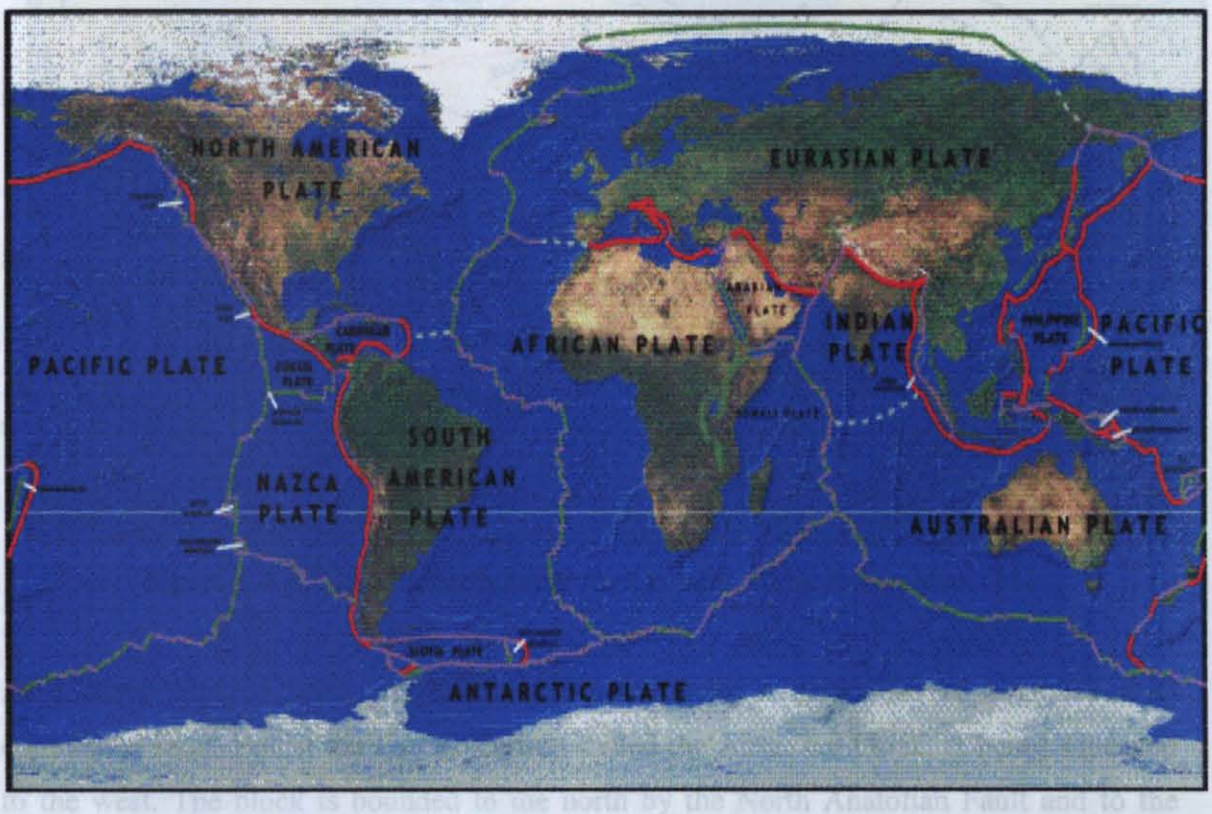

Figure 1.3 – The three prominent earthquake belts on the world

The world's greatest earthquake belt, the circum-Pacific Seismic Belt, is found along the rim of the Pacific Ocean, where about 81 percent of the world's largest earthquakes occur. The second prominent belt follows the submerged mid-Atlantic Ridge. Earthquakes in these prominent seismic zones are taken for granted, but damaging shocks occur occasionally outside these areas. The third important belt is the Alpide. This belt accounts for about 17 percent of the world's largest earthquakes such as the Iran shock that took 11,000 lives in August 1968, and the Turkey tremors in August 1999 Izmit and November 1999 Düzce earthquakes that each killed over 10,000. [31]

Turkey is a tectonically active region that experiences frequent destructive earthquakes. At a large scale, the tectonics of the region near the recent earthquakes is controlled by the collision of the Arabian Plate, African Plate and the Eurasian Plate as shown in Figure 1.4.

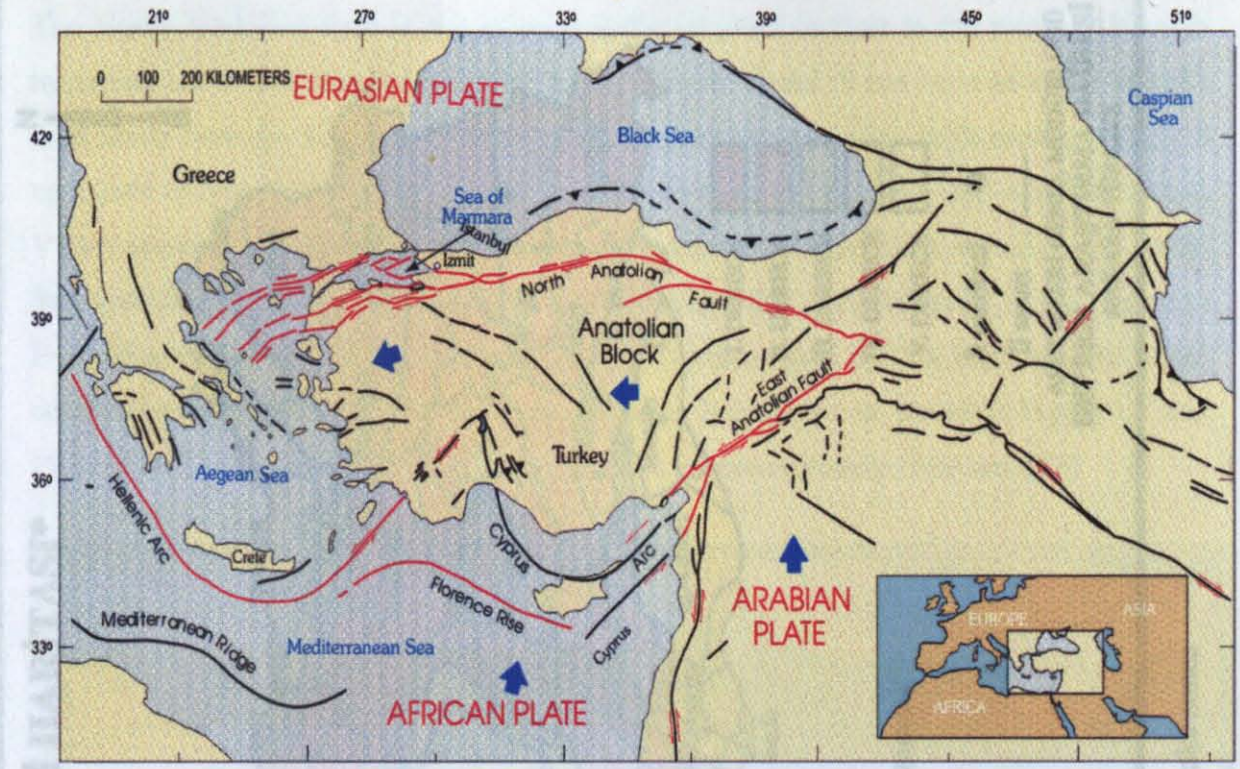

Figure 1.4 – Turkey's earthquake zone is affected by three plates [31]

At a more detailed level, the tectonics become quite complicated. A large piece of continental crust almost the size of Turkey, called the Anatolian block, is being squeezed to the west. The block is bounded to the north by the North Anatolian Fault and to the south-east by the East Anatolian fault as shown in Figure 1.5. In the Figure 1.6 Turkey's earthquake zones can be seen. [32]

Figure 1.5 – North and East Anatolian Faults

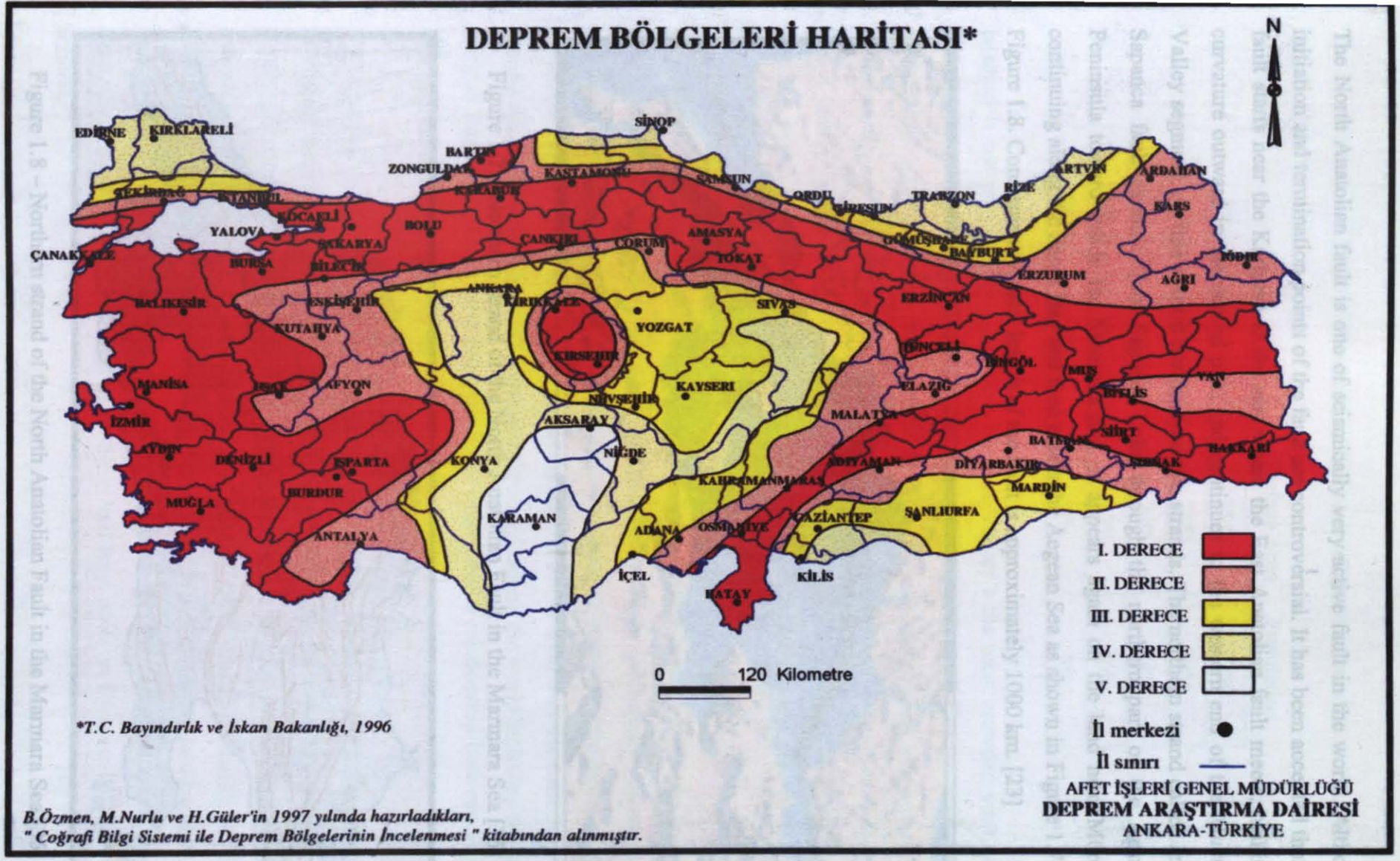

Figure 1.6 – Turkey's earthquake zones

The North Anatolian fault is one of seismically very active fault in the world. Although initiation and termination points of the fault are controversial. It has been accepted that the fault starts near the Karlıova to the east where the East Anatolian fault meets, making a curvature outward in the central part, and continues to the western end of the Mudurnu Valley segment. At this point it divides into two strands. The northern strand called Izmit-Sapanca fault extends from Sapanca Lake through the northern part of the Armutlu Peninsula toward inside the Marmara Sea. It appears again on the land near Mürefte, continuing along the Saros Bay and then enters the Aegean Sea as shown in Figure 1.7 and Figure 1.8. Consequently, total length of the fault is approximately 1000 km. [23]

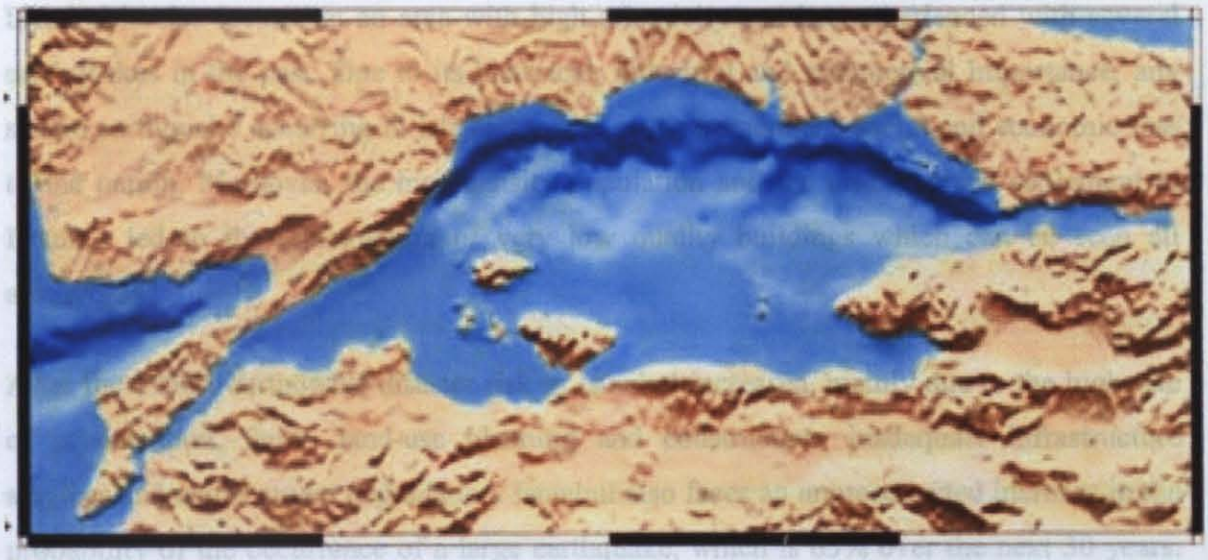

Figure 1.7 – Northern strand of the North Anatolian Fault in the Marmara Sea [35]

Figure 1.8 – Northern strand of the North Anatolian Fault in the Marmara Sea [35]

The seismic zones of Turkey in terms of surface area and population;

	Surface Area	Population
1st degree seismic zone	15 %	22%
2nd degree seismic zone	28%	29%
3rd degree seismic zone	29%	24%
4th degree seismic zone	19%	20%
None-seismic zone	9%	5%

Istanbul is not only Marmara Region's but also Turkey's the most crowded vital cities. Istanbul is also located at an area with high seismicity and has experienced with several earthquakes in the past. Due to its historical, industrial and commercial importance, any severe earthquake occurring in Istanbul would leave tremendous social and economic loss to the nation. Moreover, the high-density population and the un-organized settlement in Istanbul led to the construction of very low quality buildings which can be seen all around.[24]

After the 1950s, earthquake disaster risk in Istanbul increased, mainly due to the high rate of urbanization, faulty land-use planning and construction, inadequate infrastructure services and environment degradation. Istanbul also faces an unprecedented increase in the probability of the occurrence of a large earthquake, which is 65% over the next 30 years. During the last two decades, the Earthquake Codes all around the world including the latest Turkish Earthquake Code have progressed and established a relationship between seismic risk and appropriate seismic design. [25]

According to the latest codes, the way in which buildings are designed and constructed ultimately determines the probability and extent of earthquake damage. Observation and experimentation have generated a considerable amount of information on effective seismic-resistant design and construction. Thus, seismic efficiencies of existing buildings located in cities like Istanbul, which were designed according to recent earthquake codes and provisions should be checked. The checking of the seismic efficiencies can be determined by the seismic evaluation of these buildings such as bridges, hospitals and schools.

This is especially very critical for schools. Although school construction is similar to that of other buildings, the size, occupancy and purpose of these buildings dictate that seismic safety be given special attention;

- The occupancy of schools by society's most precious resource, its children, is required by law and therefore, the moral and legal responsibility for properly protecting occupants is very great. The occupancy density also is one of the highest of any building type and, after an earthquake, the children are very likely to be frightened, which can make emergency egress difficult at best and virtually impossible if the structure is badly damaged.

- Schools often are very complex facilities featuring relatively small classrooms, laboratories, offices and large, open assembly areas.

- After an earthquake, community damage will result in an influx of people in need of shelter and, if the school building is not functional, it becomes another disaster-related liability rather than an asset.

- Closure of schools for any length of time represents a very serious community problem, and major school damage can have a disastrous and long-term economic effect on a community.

Given these factors, it is apparent that earthquake resistance should be given serious attention during the design and construction of school buildings in areas at risk from earthquakes. An unsafe school building structure may incur structural damage during an earthquake and may collapse. If collapse occurs, there is a major disaster. Major structural damage, short of collapse, will result in evacuation as a precaution against later collapse, and the consequences of evacuation are a service loss-probably for months or even years. Even without building collapse and no injuries, earthquake damage to school equipment and contents can approach 50 percent of the worth of the facility. [4]

Considering all these factors in a place like Istanbul, where schools existed long years ago, and including the recently constructed ones, most were constructed according to the codes

and regulations of their time. The Building Code in Turkey was updated in 1998 to include modern earthquake provisions. For new buildings, this supervision aims to ensure compliance with earthquake-resistant design codes and nominal construction quality standards. A quick comparison between the new and old codes demonstrates the deficiencies which can be created by the application of old codes. Accordingly, such schools are expected to behave poorly in a severe or even in a moderate earthquake. Subsequently, there is an urgent need for the seismic evaluation of the existing schools, starting with the public schools.

The aim of seismic evaluation of existing structure is to check the existence structure and to find out how it will behave during an earthquake and to see whether strengthening is required or not. On the other hand, seismic rehabilitation of existing structures involves improvement of their seismic capacity.

Seismic evaluation can be examined into three major steps;

- Rapid Visual Screening
- Detailed Evaluation
- Retrofit Design

Rapid Visual Screening of an existing structures is a method which, with the required associated background information of the selected building would permit the engineer to visually inspect a building and reach a decision on whether the structure requires a detailed analysis or not. [2]

Detailed evaluation is needed for a structure which have failed the Rapid Visual Screening method and received a final structural score of less than two. The detailed analysis of such structures depends upon the type of the structure and involves several evaluation statements to be checked; finally the structure is modified in a manner to increase its seismic resistance.

The last step involves the design of a retrofit procedure for a structure which is found to be weak and requires strengthening of either the members or the structural system.

1.2 OBJECTIVE AND SCOPE OF THE STUDY

Special attention should be given to the public and private schools in Istanbul due to its vulnerability to earthquakes taking into account the seismic safety factor.

- More than 2019 public schools exist in Istanbul, which are mostly located in central areas where both the population and seismicity are high.

School Type	No. of Schools
Primary Schools (ages 6-14)	1504
Secondary Schools (ages 14-17)	250
Anatolian High Schools (ages 14-17)	39
Vocational Schools (ages 14-17) *	172
Other Schools (ages 14-17) **	54
Total	**2019**

Table 1.1 – A general overview of public schools stock in Istanbul

School Type	No. of Schools
Primary Schools (ages 6-14)	195
Secondary Schools (ages 14-17)	151
Mother Schools (ages 5-6)	151
Vocational Schools (ages 14-17) *	14
Other Schools (ages 14-17) **	16
Total	**527**

Table 1.2 – A general overview of private schools stock in Istanbul

* Vocational Schools: Anadolu İletişim Meslek Lisesi, Anadolu Meslek Lisesi, Anadolu Otelcilik ve Turizm Meslek Lisesi, Anadolu Ticaret Meslek Lisesi, Endüstri Meslek Lisesi, İşitme Engelliler Meslek Lisesi, Kız Meslek Lisesi, Meslek Lisesi, Ticaret Meslek Lisesi

** Other Schools: Anadolu Güzel Sanatlar Lisesi,Anadolu Öğretmen Lisesi, Anadolu Teknik Lisesi, Fen Lisesi, İmam Hatip Lisesi, Sosyal Bilimler Lisesi, Zihinsel Engelliler Okulu

- Those public schools are located in almost every part of Istanbul and have importance to immediate and long-term earthquake disaster relief and recovery efforts.

- All documents, information and data collection about schools such as number of schools, type projects and etc., are collected until the end of March 2005.

As a first step of the study, Rapid Visual Screening method was used for existing public school stocks in Istanbul. It was too hard to apply Rapid Visual Screening method to all the existing public schools in Istanbul so this study was limited to 30 public schools selected according to their damage levels.

The main objective of this study is to evaluate the seismic performance of public school buildings in Istanbul according to existing and recent Turkish Earthquake Codes (1975 and 1998). The analyses were carried on by Performance Based Seismic Design methodology where the primary purpose is to ensure life safety. The scope of the study was also limited with three different types of public school building projects, which are commonly used in Istanbul as shown in Table 1.3. These projects were evaluated based on four different criteria;

a) seismic zone factor
b) number of stories
c) construction years (after 1975 and after 1998)
d) soil type which is classified as Z = 1

	Type 10370			**Type 10403**			**Type 10025 R-480**		
	3 St.	4 St.	5 St.	3 St.	4 St.	5 St.	3 St.	4 St.	5 St.
Seismic Zone 1	x	x	x	x	x	x	-	x	-
Seismic Zone 2	x	x	x	x	x	x	-	x	-
Seismic Zone 3	x	x	x	x	x	x	-	x	-

Table 1.3 – Type projects with three different story types and seismic zones

		Seismic Zone 1													Seismic Zone 2																			Seismic Zone 3		Total
		Adalar	Avcılar	Bakırköy	Eminönü	Kadıköy	Kartal	Küçükçekmece	Maltepe	Pendik	Sultanbeyli	Tuzla	Üsküdar	Zeytinburnu	Bağcılar	Bahçelievler	Bayrampaşa	Beşiktaş	Beykoz	Beyoğlu	Büyükçekmece	Çatalca	Esenler	Fatih	Gaziosmanpaşa	Güngören	Kağıthane	Silivri	Şile	Şişli	Ümraniye	Eyüp	Sarıyer	
PUBLIC SCHOOLS	Primary Schools (ages 6-14)	6	22	35	12	82	74	69	47	72	30	29	76	26	53	40	25	30	57	26	60	56	27	51	87	22	49	46	73	35	90	52	45	1504
	Secondary Schools (ages 14-17)	1	4	9	4	21	12	14	8	11	3	4	15	4	9	7	6	5	5	5	10	9	3	11	11	3	5	8	2	12	11	6	12	250
	Anatolian High Schools (ages 14-17)	-	-	1	3	4	3	1	2	-	-	1	4	1	-	3	1	4	-	2	1	-	-	2	1	-	1	1	-	2	1	-	-	39
	Vocational Schools (ages 14-17)	-	6	4	6	7	10	11	6	5	4	3	9	9	5	8	4	6	5	6	4	3	1	5	6	5	4	2	-	8	9	7	4	172
	Other Schools (ages 14-17)	-	1	3	-	6	5	-	3	2	1	2	3	1	1	1	1	-	1	-	-	1	-	5	4	1	4	-	-	-	4	1	3	54
	Total	7	33	52	25	120	104	95	66	90	38	39	107	41	68	59	37	45	68	39	75	69	31	74	109	31	63	57	75	57	115	66	64	**2019**
PRIVATE SCHOOLS	Primary Schools (ages 6-14)	1	2	15	3	20	7	4	6	3	3	2	22	2	4	11	-	14	2	6	10	-	2	8	4	3	1	2	-	15	5	3	15	195
	Secondary Schools (ages 14-17)	1	-	8	1	13	5	6	6	2	2	-	17	1	4	8	-	10	1	14	10	-	1	9	4	4	1	1	-	8	5	2	7	151
	Mother Schools (ages 5-6)	-	2	13	1	27	2	7	7	-	-	1	10	2	2	2	2	10	5	2	13	-	2	3	6	4	-	-	-	11	3	3	11	151
	Vocational Schools (ages 14-17)	-	-	-	-	1	-	-	1	-	-	-	2	-	-	3	1	1	-	3	-	-	-	1	-	-	-	-	-	1	-	-	-	14
	Other Schools (ages 14-17)	-	-	2	-	4	-	-	2	-	-	-	4	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	1	16
	Total	2	4	38	5	65	14	17	22	5	5	3	55	5	10	25	3	35	8	25	34	-	5	21	14	11	2	3	-	35	14	8	34	**527**
	General Total	9	37	90	30	185	118	112	88	95	43	42	162	46	78	84	40	80	76	64	109	69	36	95	123	42	65	60	75	92	129	74	98	**2546**

Table 1.4 – Distribution of Public and Private Schools according to their seismic zones

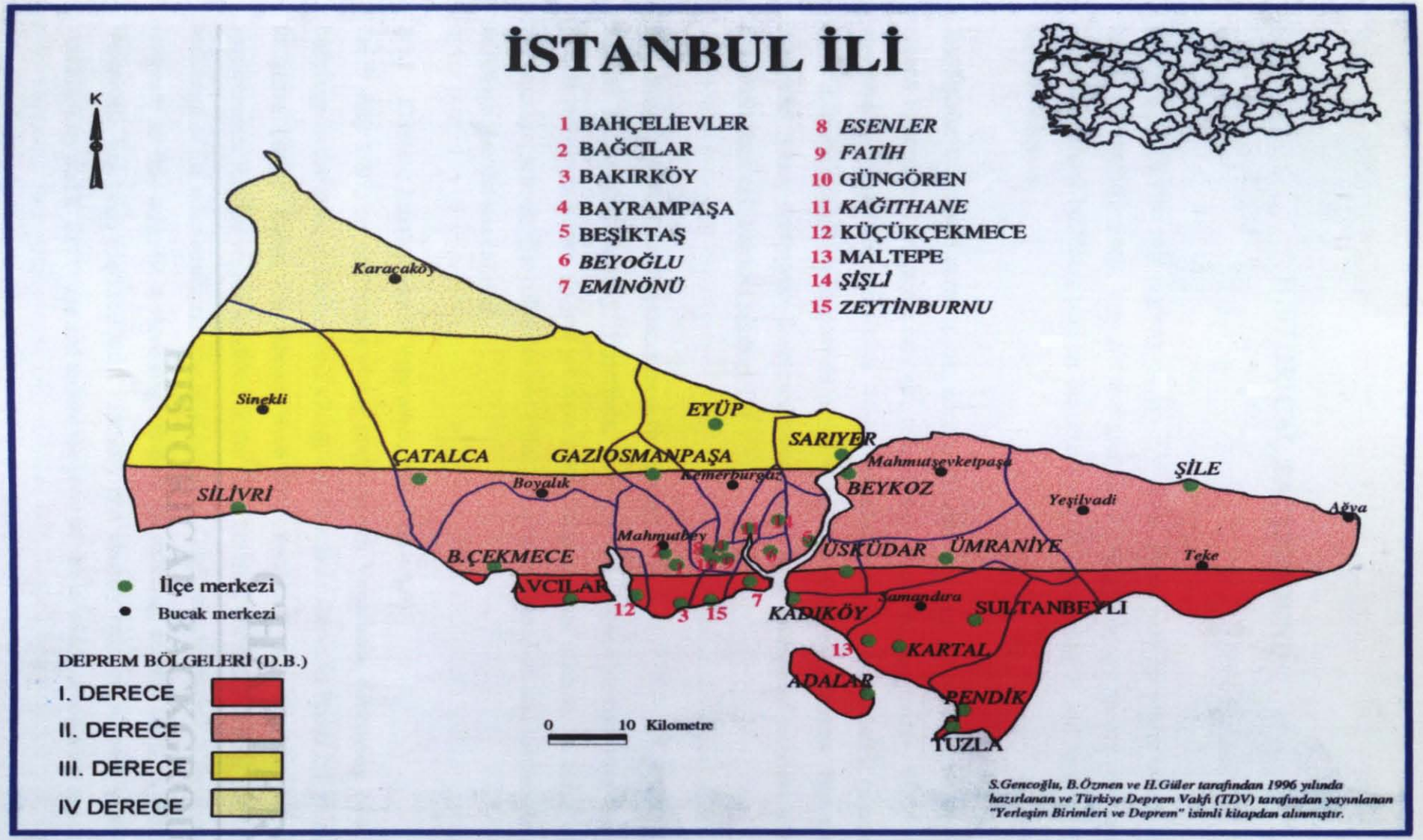

Figure 1.9 – Istanbul's districts and seismic zones

CHAPTER II

HISTORICAL BACKGROUND

HISTORICAL BACKGROUND

Schools play a vital role in every community. They are not only the places where students learn and teachers teach; they are also used for social gatherings, theatre and sports. In addition, school buildings play an important role in responding to and recovering from natural disasters.

Earthquake-threatened communities need earthquake-resistant schools. When schools are closed because of earthquake damage, education is hampered, community life disrupted, and emergency shelters unavailable. Where school attendance is compulsory, communities have a moral obligation to provide a safe study and work environment. But the most important reason earthquake-threatened communities need earthquake-resistant schools is to protect their children and teachers. [1]

2.1 Some Selected Earthquakes from the World

Recent earthquakes in Italy, Venezuela, Portugal and Algeria demonstrate that many threatened communities do not yet have earthquake-resistant schools. In some of these earthquakes, schools that collapsed and killed students were modern and located near older buildings that did not collapse.

2.1.1 Cariaco Earthquake in Venezuela, 1997 (Ms = 6.8)

On 9 July 1997, an earthquake struck north-eastern Venezuela, destroying two school buildings in the town of Cariaco and killing 46 students as shown in Photo 2.1. In addition to grave design flaws, the schools were not constructed according to the seismic requirements for that region specified in the 1968 building code. More than 1,000 school buildings of the same structural type exist in areas of high seismic hazard in the country. In response to this tragedy, a three-stage project on reducing seismic risks in schools in Venezuela has been implemented to identify and classify existing schools in terms of vulnerability and to determine and reduce the level of risk to which schools are exposed.

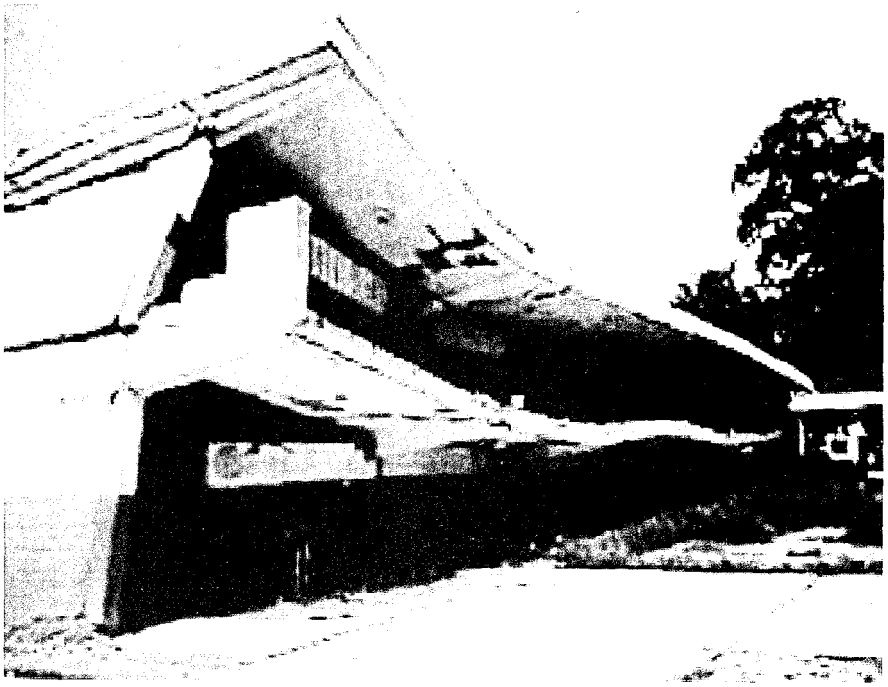

Photo 2.1 – Structural collapse in longitudinal direction of Valentin Valiente School

2.1.2 Faial Earthquake in Portugal, 1998 (Ms = 6.2)

An earthquake struck the islands of Faial and Pico in the Azores Islands on 9 July 1998, killing eight people and leaving 1,000 homeless. Following the earthquake, 21 educational buildings were inspected in an attempt to discern the correlation between general building classification factors – building structure, building quality, conservation condition and number of storey – and damage state and post-event use of the building. Half of the schools were considered suitable for immediate occupation, two schools were marked for demolition and the remainder of schools could be used after minor to moderate repairs.

2.1.3 Molise Earthquake in Italy, 2002 (Ms = 5.4)

In 2002, a primary school in San Giuliano, Italy, collapsed, killing 29 children and one teacher. Further investigation revealed that the area of San Giuliano was not classified as a seismic zone and thus the building was not constructed using seismic criteria. Use of poor quality masonry and a heavy reinforced-concrete roof also contributed to the collapse. The event alerted authorities to the vulnerability of critical structures. In 2003, five months after the earthquake, an ordinance of the prime minister stated that seismic vulnerability of all public strategic buildings, including hospitals and schools, had to be evaluated in the next five years. Soon after, new seismic zonation and seismic codes were introduced.

2.1.4 Boumerdes Earthquake in Algeria, 2003 (Ms = 6.8)

During Boumerdes earthquake 2,287 people dead and 11,000 injured. Schools were badly affected by the earthquake; 122 schools had to be rebuilt and 560 – out of 1,800 schools inspected – were seriously damaged. The cost of the earthquake in terms of school reconstruction and rehabilitation was estimated to be USD 70 million. The failure of school buildings during the disaster can be attributed to a growing urban population and subsequent demand for inexpensive and rapid school construction, poor quality construction, failure to adhere to construction regulations, lack of quality control in construction, absence of licensing for professionals and underestimated code hazard parameters. [30], [31]

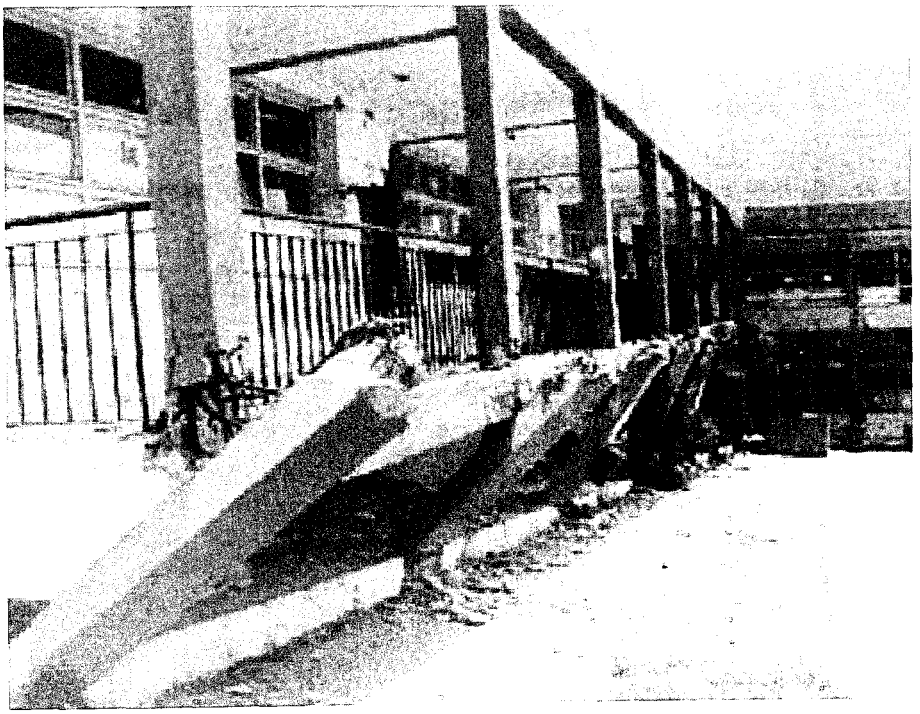

Photo 2.2 – Collapse of first floor due to column failure

DATE	LOCATION	CONSEQUENCES - SCHOOLS	CONSEQUENCES - CHILDREN
10 March 1933	Long Beach, California, USA	70 schools collapsed	The earthquake hit early in the evening after children had left for the day which saved their lives.
31 October 1935	Helena, Montana, USA	Secondary school collapsed	No one was in the building at the time of the earthquake.
4 March 1952	Sapporo, Japan	400 schools collapsed in Sapporo	The low number of casualties suggests that no one was at school at the time of the earthquake.
19 September 1985	Mexico City, Mexico	Several schools collapsed	The earthquake happened in the morning, so the children were not yet at school.
10 October 1989	El Asnam, Algeria	70-85 schools suffered extensive damage or collapsed	The earthquake occurred out of normal school hours, so children were not at school.
10 May 1997	Ardakul, Iran	Primary school collapsed	110 students killed
9 July 1997	Cariaco, Venezuela	Two schools collapsed	46 students killed
25 January 1999	Pereira & Armenia, Colombia	74% of schools damaged	Earthquake took place at the noon hour; so children were not in the buildings.
26 January 2001	Ahmedabad, India	School collapsed	At least 25 children killed
21 September 2001	Taiwan	A three-storey school collapsed	The earthquake happened in the middle of the night, so no one was in the building.
31 October 2002	San Giuliano di Puglia, Italy	Primary school collapsed	26 children and 3 adults killed
24 February 2003	Xinjiang, China	Dozens of schools collapsed	The earthquake struck 27 minutes before thousands of children would have been in classrooms. 20 students killed.
1 May 2003	Bingöl, Turkey	School dormitory collapsed	84 students killed; more than 114 in the dormitory survived. 4 school buildings collapsed but only one was occupied.
21 May 2003	Boumerdes, Algeria	130 schools suffered "Extensive to complete damage"	The earthquake occurred out of normal school hours, so children were not at school.

Table 2.1 – Some earthquakes and their affects on schools

2.2 Some Selected Earthquakes in Turkey

Turkey is an active region that experiences frequent destructive earthquakes in the past as shown in Table 2.2. Turkey has currently 18,6 million students, 680,000 teachers and 60,000 school buildings in primary and secondary education in 1st and 2nd degree seismic risk zones as shown in Figure 2.1. The country is earthquake-prone, and the seismic safety of school buildings is a constant concern for public authorities and parents. [9]

Several examples of schools were damaged during past earthquakes in Turkey will illustrate the main deficiencies which can be found in schools constructed according to codes of their times. These will simulate examples for the existing public schools in Istanbul and give an idea about what could happen if a severe earthquake were to hit Istanbul.

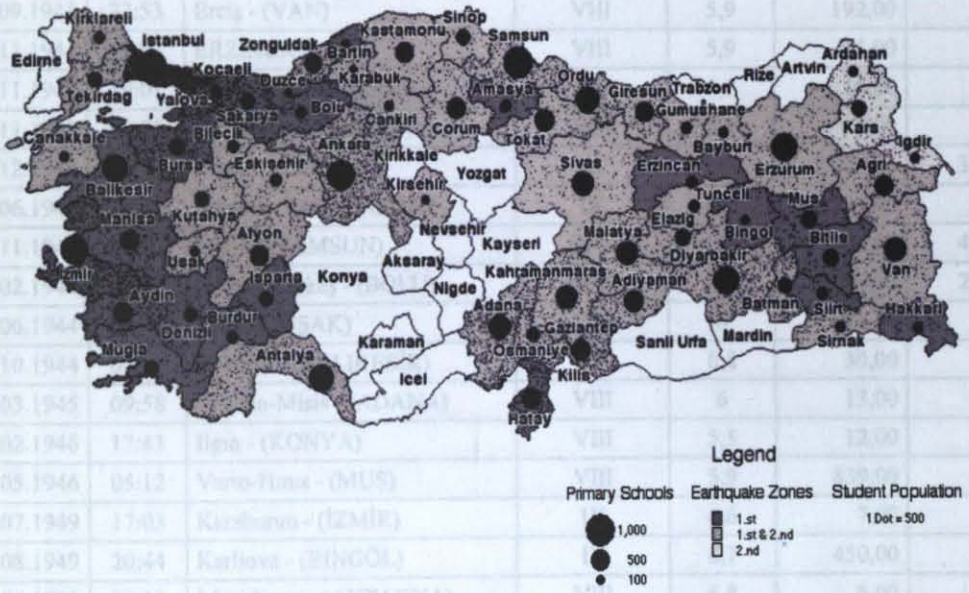

Figure 2.1 – Turkey's school children in 1st and 2nd degree seismic zones

NO	DATE	TIME	LOCATION	INTENSITY	MAG. (MS)	NO. OF DEATH	NO. OF DAMAGE BUILDING
1	29.04.1903	01:46	Malazgirt - (MUŞ)	IX	6,7	600,00	450,00
2	09.08.1912	03:29	Mürefte - (TEKİRDAĞ)	X	7,3	216,00	5.540,00
3	04.10.1914	00:07	BURDUR	IX	6,9	300,00	6.000,00
4	13.09.1924	16:34	Horasan - (ERZURUM)	IX	6,8	60,00	380,00
5	07.08.1925	08:46	Dinar - (AFYON)	VIII	5,9	3,00	2.043,00
6	22.10.1926	21:59	KARS - ERMENİSTAN	VIII	6	355,00	
7	31.03.1928	02:29	Torbalı - (İZMİR)	IX	6,5	50,00	2.500,00
8	18.05.1929	08:37	Suşehri - (SİVAS)	VIII	6,1	64,00	1.357,00
9	07.05.1930	00:34	TÜRK - İRAN SINIRI	X	7,2	2.514,00	
10	19.07.1933	22:07	Çivril - (DENİZLİ)	VIII	5,7	20,00	200,00
11	04.01.1935	16:41	Erdek - (BALIKESİR)	VIII	6,4	5,00	600,00
12	19.04.1938	12:59	KIRŞEHİR	IX	6,6	160,00	4.066,00
13	22.09.1939	02:36	Dikili - (İZMİR)	IX	6,6	60,00	1.235,00
14	21.11.1939	10:48	Tercan - (ERZİNCAN)	VII	5,9	43,00	
15	27.12.1939	01:57	ERZİNCAN	X-XI	7,9	32.968,00	116.720,00
16	13.04.1940	08:29	YOZGAT - KAYSERİ	VIII	5,6		1.000,00
17	23.05.1941	21:51	MUĞLA	VIII	6		200,00
18	10.09.1941	23:53	Erciş - (VAN)	VIII	5,9	192,00	600,00
19	12.11.1941	12:04	ERZİNCAN	VIII	5,9	15,00	
20	15.11.1942	19:01	Bigadiç - (BALIKESİR)	VIII	6,1	16,00	2.187,00
21	21.11.1942	16:01	Osmancık - (ÇORUM)	VIII	5,5	2,00	150,00
22	20.12.1942	16:03	Erbaa - (TOKAT)	IX	7	3.000,00	32.000,00
23	20.06.1943	17:32	Hendek - (ADAPAZARI)	IX	6,6	336,00	2.240,00
24	27.11.1943	00:20	Ladik - (SAMSUN)	IX-X	7,2	4.000,00	40.000,00
25	01.02.1944	05:22	Gerede-Çerkeş - (BOLU)	IX-X	7,2	3.959,00	20.865,00
26	25.06.1944	06:16	Gediz - (UŞAK)	VIII	6	21,00	3.476,00
27	06.10.1944	04:34	Ayvalık - (BALIKESİR)	IX	6,8	30,00	5.500,00
28	20.03.1945	09:58	Ceyhan-Misis - (ADANA)	VIII	6	13,00	2.500,00
29	21.02.1946	17:43	Ilgın - (KONYA)	VIII	5,5	12,00	3.349,00
30	31.05.1946	05:12	Varto-Hınıs - (MUŞ)	VIII	5,9	839,00	3.000,00
31	23.07.1949	17:03	Karaburun - (İZMİR)	IX	6,6	7,00	865,00
32	17.08.1949	20:44	Karlıova - (BİNGÖL)	IX	6,7	450,00	3.500,00
33	08.04.1951	23:38	İskenderun - (ANTAKYA)	VIII	5,8	6,00	13,00
34	13.08.1951	20:33	Kurşunlu - (ÇANKIRI)	IX	6,9	52,00	3.354,00
35	03.01.1952	08:03	Hasankale - (ERZURUM)	VIII	5,8	133,00	701,00
36	22.10.1952	19:00	Ceyhan-Misis - (ADANA)	VIII	5,6	10,00	617,00
37	18.03.1953	21:06	Yenice - (ÇANAKKALE)	IX	7,2	265,00	9.670,00
38	07.09.1953	05:58	Kurşunlu - (ÇANKIRI)	VIII	6	2,00	230,00
39	16.07.1955	09:07	Söke-Balat - (AYDIN)	IX	6,8	23,00	470,00
40	20.02.1956	22:31	ESKİŞEHİR	VIII	6,4	1,00	2.819,00
41	25.04.1957	04:25	Fethiye-Rodos - (MUĞLA)	IX	7,1	67,00	3.200,00
42	26.05.1957	08:33	Abant - (BOLU)	IX	7,1	52,00	5.200,00
43	25.04.1959	02:26	Köyceğiz - (MUĞLA)	VIII	5,9		775,00
44	23.05.1961	04:45	Fethiye-Rodos - (MUĞLA)	VIII	6,3		61,00

NO	DATE	TIME	LOCATION	INTENSITY	MAG. (MS)	NO. OF DEATH	NO. OF DAMAGE BUILDING
1	29.04.1903	01:46	Malazgirt - (MUŞ)	IX	6,7	600,00	450,00
2	09.08.1912	03:29	Mürefte - (TEKİRDAĞ)	X	7,3	216,00	5.540,00
3	04.10.1914	00:07	BURDUR	IX	6,9	300,00	6.000,00
4	13.09.1924	16:34	Horasan - (ERZURUM)	IX	6,8	60,00	380,00
5	07.08.1925	08:46	Dinar - (AFYON)	VIII	5,9	3,00	2.043,00
6	22.10.1926	21:59	KARS - ERMENİSTAN	VIII	6	355,00	
7	31.03.1928	02:29	Torbalı - (İZMİR)	IX	6,5	50,00	2.500,00
8	18.05.1929	08:37	Suşehri - (SİVAS)	VIII	6,1	64,00	1.357,00
9	07.05.1930	00:34	TÜRK - İRAN SINIRI	X	7,2	2.514,00	
10	19.07.1933	22:07	Çivril - (DENİZLİ)	VIII	5,7	20,00	200,00
11	04.01.1935	16:41	Erdek - (BALIKESİR)	VIII	6,4	5,00	600,00
12	19.04.1938	12:59	KIRŞEHİR	IX	6,6	160,00	4.066,00
13	22.09.1939	02:36	Dikili - (İZMİR)	IX	6,6	60,00	1.235,00
14	21.11.1939	10:48	Tercan - (ERZİNCAN)	VII	5,9	43,00	
15	27.12.1939	01:57	ERZİNCAN	X-XI	7,9	32.968,00	116.720,00
16	13.04.1940	08:29	YOZGAT - KAYSERİ	VIII	5,6		1.000,00
17	23.05.1941	21:51	MUĞLA	VIII	6		200,00
18	10.09.1941	23:53	Erciş - (VAN)	VIII	5,9	192,00	600,00
19	12.11.1941	12:04	ERZİNCAN	VIII	5,9	15,00	
20	15.11.1942	19:01	Bigadiç - (BALIKESİR)	VIII	6,1	16,00	2.187,00
21	21.11.1942	16:01	Osmancık - (ÇORUM)	VIII	5,5	2,00	150,00
22	20.12.1942	16:03	Erbaa - (TOKAT)	IX	7	3.000,00	32.000,00
23	20.06.1943	17:32	Hendek - (ADAPAZARI)	IX	6,6	336,00	2.240,00
24	27.11.1943	00:20	Ladik - (SAMSUN)	IX-X	7,2	4.000,00	40.000,00
25	01.02.1944	05:22	Gerede-Çerkeş - (BOLU)	IX-X	7,2	3.959,00	20.865,00
26	25.06.1944	06:16	Gediz - (UŞAK)	VIII	6	21,00	3.476,00
27	06.10.1944	04:34	Ayvalık - (BALIKESİR)	IX	6,8	30,00	5.500,00
28	20.03.1945	09:58	Ceyhan-Misis - (ADANA)	VIII	6	13,00	2.500,00
29	21.02.1946	17:43	Ilgın - (KONYA)	VIII	5,5	12,00	3.349,00
30	31.05.1946	05:12	Varto-Hınıs - (MUŞ)	VIII	5,9	839,00	3.000,00
31	23.07.1949	17:03	Karaburun - (İZMİR)	IX	6,6	7,00	865,00
32	17.08.1949	20:44	Karlıova - (BİNGÖL)	IX	6,7	450,00	3.500,00
33	08.04.1951	23:38	İskenderun - (ANTAKYA)	VIII	5,8	6,00	13,00
34	13.08.1951	20:33	Kurşunlu - (ÇANKIRI)	IX	6,9	52,00	3.354,00
35	03.01.1952	08:03	Hasankale - (ERZURUM)	VIII	5,8	133,00	701,00
36	22.10.1952	19:00	Ceyhan-Misis - (ADANA)	VIII	5,6	10,00	617,00
37	18.03.1953	21:06	Yenice - (ÇANAKKALE)	IX	7,2	265,00	9.670,00
38	07.09.1953	05:58	Kurşunlu - (ÇANKIRI)	VIII	6	2,00	230,00
39	16.07.1955	09:07	Söke-Balat - (AYDİN)	IX	6,8	23,00	470,00
40	20.02.1956	22:31	ESKİŞEHİR	VIII	6,4	1,00	2.819,00
41	25.04.1957	04:25	Fethiye-Rodos - (MUĞLA)	IX	7,1	67,00	3.200,00
42	26.05.1957	08:33	Abant - (BOLU)	IX	7,1	52,00	5.200,00
43	25.04.1959	02:26	Köyceğiz - (MUĞLA)	VIII	5,9		775,00
44	23.05.1961	04:45	Fethiye-Rodos - (MUĞLA)	VIII	6,3		61,00

45	18.09.1963	18:58	Çınarcık - (İSTANBUL)	VIII	6,3	1,00	230,00
46	14.06.1964	15:15	MALATYA	VIII	6	8,00	847,00
47	06.10.1964	16:31	Manyas - (BALIKESİR)	IX	7	23,00	5.398,00
48	13.06.1965	22:01	DENİZLİ	VIII	5,7	14,00	488,00
49	07.03.1966	03:16	Varto-Hınıs - (MUŞ)	VIII	5,6	14,00	1.100,00
50	19.08.1966	14:22	Varto - (MUŞ)	IX	6,9	2.396,00	20.007,00
51	22.07.1967	18:56	Mudurnu - (ADAPAZARI)	IX	6,8	89,00	7.116,00
52	26.07.1967	20:53	Pülümür - (TUNCELİ)	VIII	5,9	97,00	1.282,00
53	03.09.1968	10:19	Bartın - (ZONGULDAK)	VIII	6,5	29,00	2.478,00
54	23.03.1969	23:08	Demirci - (MANİSA)	VIII	5,9		945,00
55	28.03.1970	03:48	Alaşehir - (MANİSA	VIII	6,5	53,00	3.072,00
56	06.04.1969	05:49	Karaburun - (İZMİR)	VIII	5,9		1.360,00
57	28.03.1970	23:02	Gediz - (KÜTAHYA)	IX	7,2	1.086,00	19.291,00
58	19.04.1970	15:29	Gediz - (KÜTAHYA)	VIII	5,8		1.360,00
59	23.04.1970	11:01	Demirci - (MANİSA)	VIII	5,6		411,00
60	12.05.1971	08:25	BURDUR	VIII	5,9	57,00	3.227,00
61	22.05.1971	18:43	BİNGÖL	VIII	6,8	878,00	9.111,00
62	06.09.1975	12:20	Lice - (DİYARBAKIR)	VIII	6,6	2.385,00	8.149,00
63	24.11.1976	14:22	Muradiye - (VAN)	IX	7,5	3.840,00	9.232,00
64	05.07.1983	15:01	Biga - (ÇANAKKALE)	VIII	6,1	3,00	85,00
65	30.10.1983	07:12	ERZURUM - KARS	VIII	6,9	1.155,00	3.241,00
66	18.09.1984	15:26	Balkaya - (ERZURUM)	VIII	6,4	3,00	570,00
67	05.05.1986	06:35	Doğanşehir - (MALATYA)	VIII	5,9	7,00	824,00
68	06.06.1986	13:39	Doğanşehir - (MALATYA)	VIII	5,6	1,00	1.174,00
69	07.12.1988	09:41	Kars - ERMENİSTAN	X	6,9	4,00	546,00
70	13.03.1992	19:08	ERZİNCAN	VIII	6,8	653,00	8.057,00
71	15.03.1992	18:16	Pülümür - (TUNCELİ)	VII	5,8		439,00
72	06.11.1992	21:08	Doğanbey - (İZMİR)	VII	6		55,00
73	28.01.1994	17:45	MANİSA	VI	5,1		44,00
74	01.10.1995	17:57	Dinar - (AFYON)	VIII	6,1	90,00	14.156,00
75	05.12.1995	18:49	Kığı - (TUNCELİ)	VI+	5,7	1,00	
76	14.08.1996	01:55	Mecitözü - (AMASYA)	VI+	5,6	1,00	2.606,00
77	22.01.1997	17:57	ANTAKYA	VI+	5,4	1,00	1.841,00
78	13.04.1998	18:14	Karlıova - (BİNGÖL)	VI	5		148,00
79	27.06.1998	16:55	Ceyhan - (ADANA)	VIII	6,2	146,00	31.463,00
80	17.08.1999	03:01	Gölcük - (KOCAELİ)	X	7,8	17.480,00	73.342,00
81	12.11.1999	18:57	DÜZCE	IX	7,5	763,00	35.519,00
82	06.06.2000	05:41	Orta - (ÇANKIRI)	VII	6,1	1,00	1.766,00
83	15.12.2000	18:44	Sultandağı - (AFYON)	VII	5,8	6,00	547,00
84	25.06.2001	16:28	OSMANİYE	VII	5,5		66,00
85	03.02.2002	09:11	Çay-Sultandağı - (AFYON)	VII	6,4	44,00	622,00
86	27.01.2003	07:26	Pülümür - (TUNCELİ)	VII	6,2	1,00	50,00
87	01.05.2003	03:27	BİNGÖL	VIII	6,4	176,00	6.000,00
88	25.03.2004	21:30	Kandilli-Aşkale - (ERZURUM)	VII	5,6	9,00	1.280,00
89	02.07.2004	01:30	Doğubayazıt - (AĞRI)	VII	5,1	17,00	1.000,00

Table 2.2 – Earthquakes in Turkey between the years 1900 and 2004 (Ms > 5.0) [33]

2.2.1 Burdur Earthquake, 12 May 1971 (Ms = 5.9)

A modern reinforced concrete high school building suffered heavy damage during Burdur earthquake as shown in Photo 2.3. The shear capacity of the columns was inadequate to carry the shears produced at a lateral load intensity of only 0.07g although the bending moment capacity of these sections was considerably higher. There was practically no confinement in the column – girder connection regions as shown in Photo 2.4. Other requirements of ductility, like anchorage of tensile reinforcement and transverse reinforcement in the junction of beam – column were also neglected. [25]

Photo 2.3 – High school building heavily damaged in Burdur earthquake

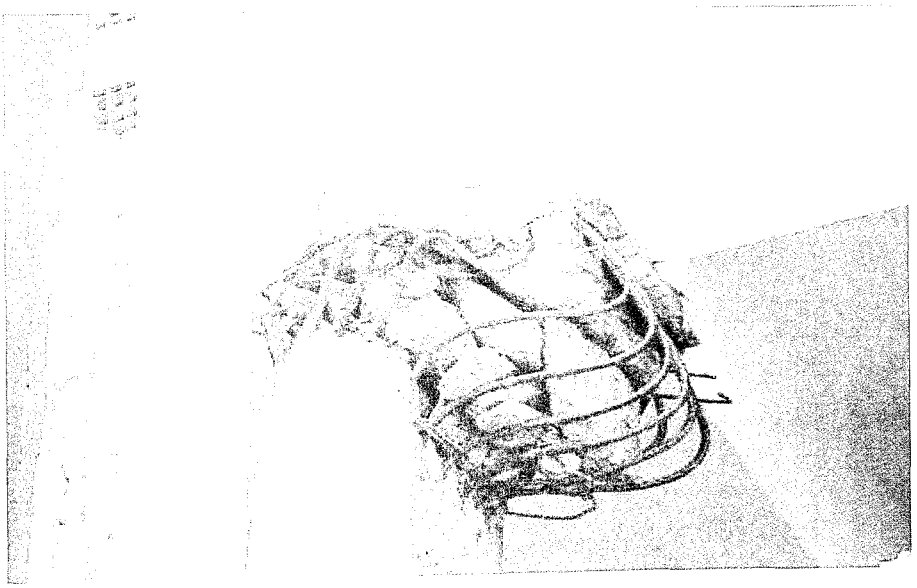

Photo 2.4 – Damage at unconfined concrete of first due to shear

2.2.2 Bingöl Earthquake, 22 May 1971 (Ms = 6.8)

During an earthquake in Bingöl in 1971, about 755 people were killed, many thousands were injured and made homeless. 5,323 residential and commercial buildings were collapsed or heavily damaged. School buildings suffered heavy damage during the earthquake as shown in Photo 2.5. The collapsed part of the school had reinforced concrete frame, floors, and roof, and the tile floors were faced with brick. The chimneys fell and the walls were badly cracked. [18]

Photo 2.5 – High school building after 1971 Bingöl earthquake

2.2.3 Diyarbakır-Lice Earthquake, 6 September 1975 (Ms = 6.9)

On September 6, 1975, a destructive earthquake occurred near the town of Lice about 75 kilometers north northeast of Diyarbakır, eastern Anatolia. Approximately 8,149 houses collapsed or were heavily damaged and Lice also suffered more than 2,384 fatalities out of a population of about 8,200. The whole damages in the city were $17 million. The town of Lice most of the official buildings especially school and government buildings were severely damaged because they were not designed to resist shaking. The two-storey Lice Secondary School Building's brick and mortar structures were damaged and the walls were cracked badly as shown in Photo 2.6. All lateral resisting elements were shattered in the west wall of the secondary school building. [15], [20]

Photo 2.6 – Shear failure and cracked walls at Lice Secondary School

2.2.4 Erzincan Earthquake, 13 March 1992 (Ms = 6.8)

Centered near the town of Erzincan, in eastern Turkey, the 6.8 magnitude quake flattened scores of buildings, killing 653 people and creating 50,000 homeless. Approximately 7,100 residential and commercial buildings were totally collapsed or heavily damaged. 9 schools were collapsed and particularly, a vocational school at the center of the city left behind 23 dead children as shown in Photo 2.7. About 40% of the population was displaced and all of the population was deprived of essential services such as medical care requiring hospitals, since all three hospitals had collapsed. [12], [16]

Photo 2.7 – Kız Sağlık Meslek Lisesi after Erzincan earthquake

2.2.5 Adana-Ceyhan Earthquake, 27 June 1998 (Ms = 6.3)

On June 27, 1998, a strong earthquake shot southern Turkey. About 150 people were killed, 1,500 were injured and many thousands were made homeless. Most of the observed damage occurred in traditional rural buildings, but many new multi-story residential buildings and industrial buildings also suffered heavy damage or even collapsed. Schools were also suffered from the earthquake. The school which consisting of three separate buildings shown in Photo 2.7, were affected the disaster. The columns of one three-story building suffered substantial damage and the other three-story building suffered only slight structural damage, but several infill walls were totally destroyed. [19]

Photo 2.8 – School building west of Ceyhan with damge of grade 2 to 3

2.2.6 Bingöl Earthquake, 1 May 2003 (Ms = 6.4)

A medium-sized earthquake in Bingöl caused the collapse of three new schools and a dormitory building located next to a school, killing 84 children as they slept on May 2003 as shown in Photo 2.8. These tragic events prompted many to question the seismic safety of school buildings. A subsequent survey of 29 school buildings concluded that none of the structures were built according to the 1998 Turkish Seismic Code.

Photo 2.9 – Çeltiksuyu Yatılı Bölge Okulu after Bingöl earthquake

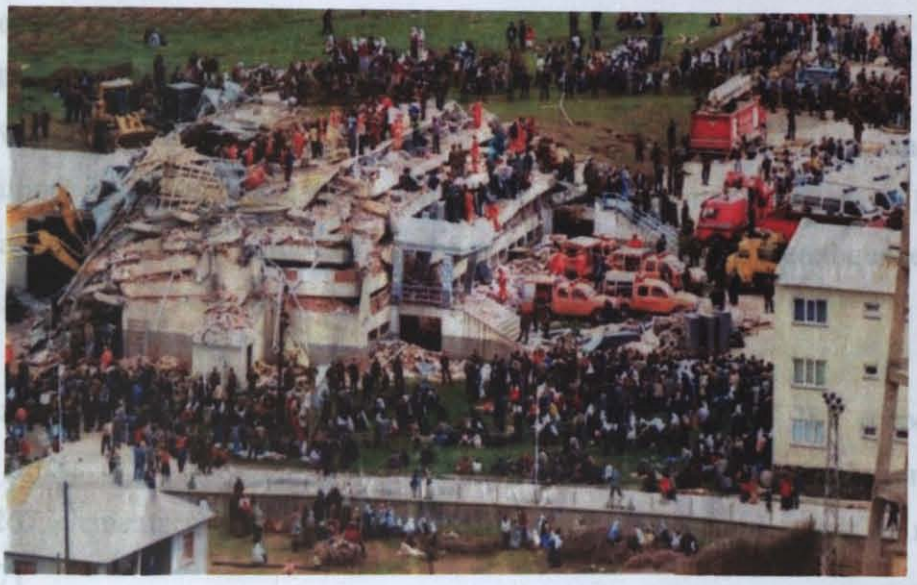

Photo 2.10 – Çeltiksuyu Yatılı Bölge Okulu after Bingöl earthquake

In this case, a shortage of resources and expertise to conduct reliable project and construction supervision, and lack of formal qualifications of contractors, engineers and architects were two factors that led to non-compliance with existing building codes. Of the 29 buildings surveyed (Bingöl Lisesi, Mehmet Akif Ilköğretim Okulu, Anadolu Güzel Sanatlar Lisesi, etc.), 3 collapsed, 10 suffered severe damage and 12 buildings sustained moderate damage. [8]

Photo 2.11 – Kaleönü Ilköğretim Okulu collapsed after Bingöl earthquake

2.2.7 Kocaeli Earthquake, 17 August 1999 (Ms = 7.4)
Düzce Earthquake, 12 November 1999 (Ms = 7.1)

Those two earthquakes killed 18,243 people, destroyed 16,400 buildings, and caused $10-25 billion in damage. Just northwest of the region strongly shaken in 1999 lies Istanbul, a rapidly growing city that has been heavily damaged by earthquakes twelve times during the past 15 centuries. [21]

In the earthquake affected region 43 schools were destroyed and 381 schools were damaged. A total of 22 elementary and 21 secondary schools were damaged beyond repair. Another 267 elementary and 114 secondary schools have received minor to moderate damage. [7]

At the same disaster in Istanbul, 60 km away, 820 schools were reportedly affected. 689 schools had been only slightly damaged and could be repaired quickly, without causing any educational disruption. Educational activities were temporarily terminated in the remaining 131 schools. Among these, 13 schools were found to be heavily damaged and immediately demolished and were replaced with new seismically safer schools. Of the remaining 118 schools, 59 were repaired, 37 were strengthened and 22 were demolished (and reconstructed) due to the high cost of foundation rehabilitation as shown in Table 2.3, Figure 2.2, Table 2.4, Figure 2.3, and Figure 2.4. [5], [10]

NO	DISTRICT NAME	SCHOOL NAME
1	Avcılar	Saadetdere İlköğretim Okulu
2	Bağcılar	Yıldıztepe İlköğretim Okulu
3	Bahçelievler	Bahçelievler İlköğretim Okulu
4	Bakırköy	Bakırköy Lisesi
5	Bakırköy	İbni Sina İlköğretim Okulu
6	Bayrampaşa	Ahmet Haşim İlköğretim Okulu
7	Bayrampaşa	Mustafa İtri İlköğretim Okulu
8	Bayrampaşa	Nail Reşit İlköğretim Okulu
9	Beşiktaş	Ortaköy İlköğretim Okulu
10	Beykoz	Dereseki İlköğretim Okulu
11	Beyoğlu	Piri Reis İlköğretim Okulu
12	Büyükçekmece	Dr.Hasan Akgün İlköğretim Okulu
13	Büyükçekmece	İncirtepe Lisesi
14	Çatalca	Çok Programlı Lise
15	Eyüp	Alibeyköy Teknik ve Endüstri Meslek Lisesi
16	Gaziosmanpaşa	Cumhuriyet Lisesi
17	Gaziosmanpaşa	Gazipaşa İlköğretim Okulu
18	Gaziosmanpaşa	Taşoluk İlköğretim Okulu
19	Kadıköy	Arif Paşa İlköğretim Okulu
20	Kadıköy	Cenap Şahabettin İlköğretim Okulu
21	Kadıköy	Suadiye Lisesi
22	Maltepe	Feyzullah İlköğretim Okulu
23	Maltepe	Gülsuyu İlköğretim Okulu
24	Maltepe	Güzide Yılmaz İlköğretim Okulu
25	Pendik	Çamçeşme İlköğretim Okulu
26	Pendik	Elka İlköğretim Okulu
27	Pendik	Güzelyalı 50.Yıl İlköğretim Okulu
28	Sarıyer	Sarıyer Lisesi
29	Şişli	Ayazağa İlköğretim Okulu
30	Tuzla	Endüstri Meslek Lisesi
31	Tuzla	Yunus Emre İlköğretim Okulu
32	Ümraniye	Uzun Mehmet İlköğretim Okulu
33	Üsküdar	Sevgi İlköğretim Okulu
34	Zeytinburnu	Dr.Reşit Galip İlköğretim Okulu
35	Zeytinburnu	Nuri Paşa İlköğretim Okulu

Table 2.3 – List of the demolished schools in Istanbul after Kocaeli earthquake

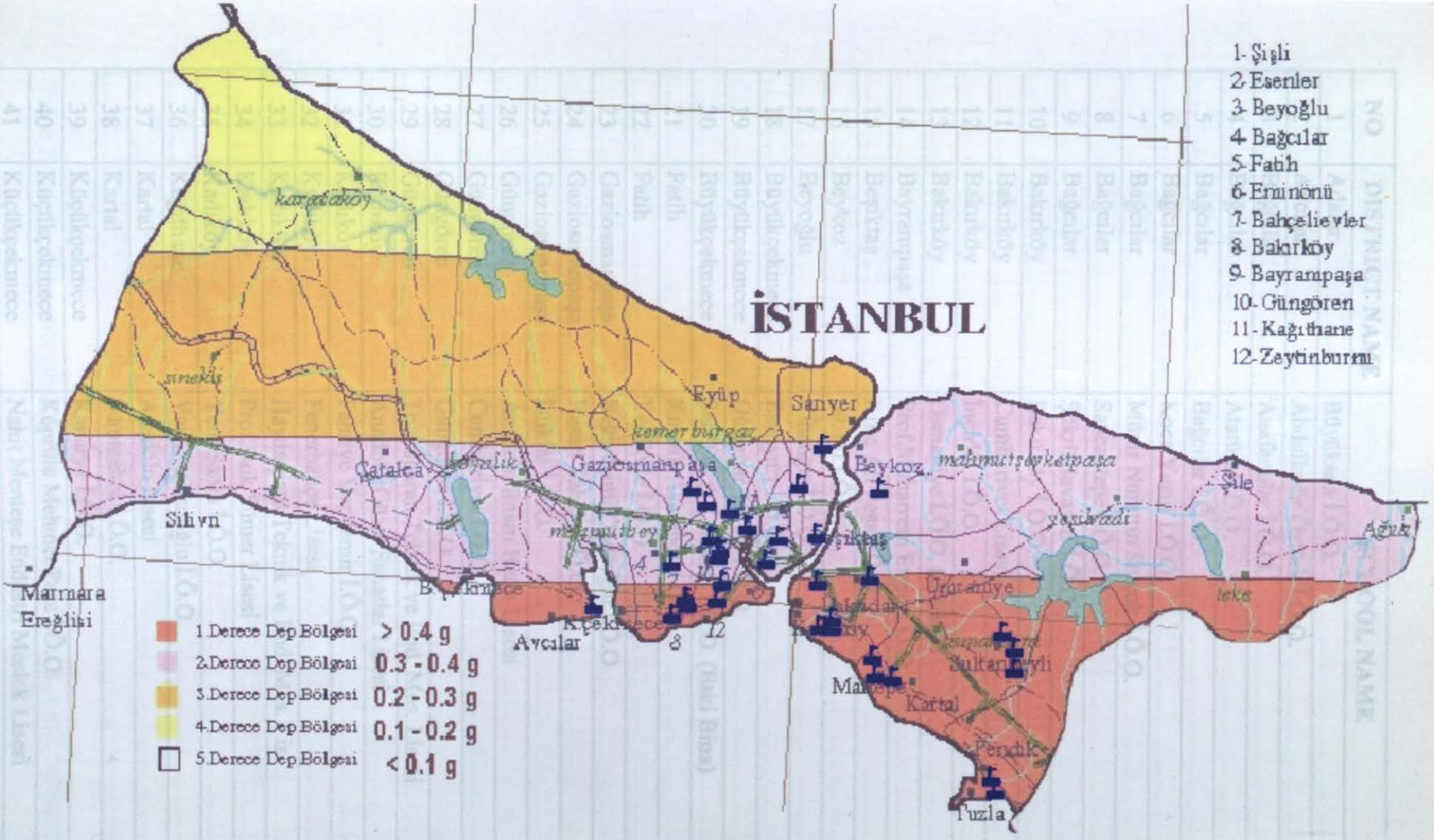

Figure 2.2 – Demolished schools in Istanbul after Kocaeli earthquake

NO	DISTRICT NAME	SCHOOL NAME
1	Adalar	Büyükada İ.Ö.O.
2	Avcılar	Abdulkadir Öztürk İ.Ö.O.
3	Bağcılar	Anafartalar İ.Ö.O.
4	Bağcılar	Atatürk İ.Ö.O.
5	Bağcılar	Bağcılar İ.Ö.O.
6	Bağcılar	Koca Yusuf İ.Ö.O.
7	Bağcılar	Münir Nurettin Selçuk İ.Ö.O.
8	Bağcılar	Sancaktepe İ.Ö.O.
9	Bağcılar	Şükrü Savaşeri İ.Ö.O.
10	Bakırköy	Bakırköy İ.Ö.O.
11	Bakırköy	Cumhuriyet Lisesi
12	Bakırköy	İncirlik İ.Ö.O.
13	Bakırköy	Osmaniye İ.Ö.O. (B Blok)
14	Bayrampaşa	Prof.Muharrem Ergin İ.Ö.O.
15	Beşiktaş	Kılıç Ali Paşa İ.Ö.O.
16	Beykoz	60.Yıl İ.Ö.O.
17	Beyoğlu	Cihangir İ.Ö.O.
18	Büyükçekmece	Esenyurt İ.Ö.O.
19	Büyükçekmece	Gürpınar 75.Yıl İ.Ö.O.
20	Büyükçekmece	Şair Fevzi Kalkancı İ.Ö.O. (Eski Bina)
21	Fatih	Kırımlı Aslanbey İ.Ö.O.
22	Fatih	Yedikule İ.Ö.O.
23	Gaziosmanpaşa	Bekir Sami Dedeoğlu İ.Ö.O
24	Gaziosmanpaşa	Hasan Tahsin İ.Ö.O.
25	Gaziosmanpaşa	İstiklal İ.Ö.O.
26	Güngören	Anadolu İmam Hatip Lisesi
27	Güngören	Cumhuriyet İ.Ö.O.
28	Güngören	Güngören İ.Ö.O.
29	Güngören	Tozkoparan Teknik ve End. Mes. Lisesi
30	Kadıköy	Anadolu Güzel Sanatlar Lisesi
31	Kadıköy	Fahriye Vandemir İ.Ö.O.
32	Kadıköy	Fenerbahçe Lisesi
33	Kadıköy	Haydarpaşa Teknik ve End. Mes. Lis.
34	Kadıköy	Prof.Faik Sümer Lisesi
35	Kadıköy	Yeni Sahra İ.Ö.O.
36	Kağıthane	Vasfi Çobanoğlu İ.Ö.O.
37	Kartal	Anadolu Lisesi
38	Kartal	Samandıra İ.Ö.O.
39	Küçükçekmece	Kanarya İ.Ö.O.
40	Küçükçekmece	Köprülü Mehmet Paşa İ.Ö.O.
41	Küçükçekmece	Nahit Menteşe Endüstri Meslek Lisesi

42	Küçükçekmece	Remzi Yurtsever İ.Ö.O.
43	Küçükçekmece	Yunus Emre İ.Ö.O.
44	Maltepe	Ertuğrul Gazi Lisesi
45	Maltepe	Gülensu İ.Ö.O.
46	Maltepe	Kaşgarlı Mahmut İ.Ö.O.
47	Pendik	Dolayaba İ.Ö.O.
48	Pendik	Fatih Sultan Mehmet İ.Ö.O.
49	Sarıyer	Kız Meslek Lisesi
50	Sarıyer	Recaizade Ekrem Bey İ.Ö.O.
51	Sarıyer	Sarıyer İ.Ö.O.
52	Sarıyer	Şükrü Nail Paşa İ.Ö.O.
53	Silivri	75.Yıl Cumhuriyet İ.Ö.O.
54	Silivri	Gazi İ.Ö.O.
55	Silivri	Nurullah Baldöktü İ.Ö.O.
56	Silivri	Selimpaşa Lisesi
57	Sultanbeyli	Kaptan-ı Derya İ.Ö.O.
58	Sultanbeyli	Örencik İ.Ö.O.
59	Şile	50.Yıl Lisesi
60	Şişli	Anadolu İ.Ö.O.
61	Şişli	Anadolu Lisesi
62	Şişli	Harbiye İ.Ö.O.
63	Şişli	Şişli Lisesi
64	Şişli	Yapı Meslek Lisesi
65	Tuzla	Çağrı Bey İ.Ö.O.
66	Tuzla	Çağrı Bey Lisesi
67	Tuzla	Tuzla Lisesi
68	Ümraniye	Atakent Lisesi
69	Ümraniye	Eflatun Cem Güney İ.Ö.O.
70	Ümraniye	Genç Osman İ.Ö.O.
71	Ümraniye	Haşim İşçan İ.Ö.O.
72	Ümraniye	Mehmetçik Lisesi
73	Ümraniye	Osman Gazi İ.Ö.O.
74	Üsküdar	Güzeltepe İ.Ö.O.
75	Üsküdar	Halil Rüştü İ.Ö.O.
76	Üsküdar	Selimiye Veteriner Sağlık Meslek Lisesi
77	Zeytinburnu	Ahmet Vefik Paşa İ.Ö.O.
78	Zeytinburnu	İsmail Rüştü Olcay Lisesi
79	Zeytinburnu	Muhsin Ertuğrul Lisesi
80	Zeytinburnu	Yedikule İ.Ö.O.

Table 2.4 – List of the strengthened schools in Istanbul after Kocaeli earthquake

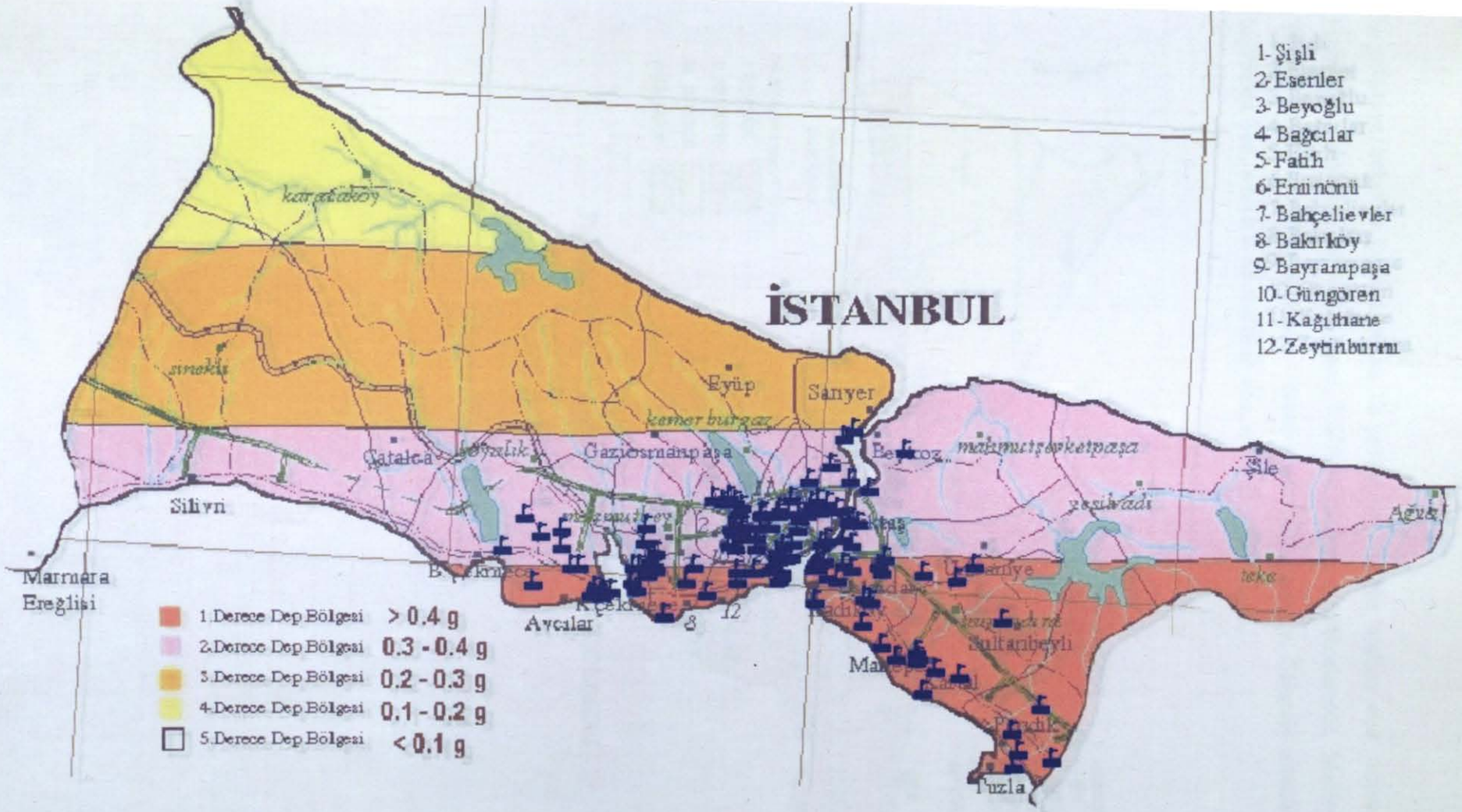

Figure 2.3 – Strengthened schools in Istanbul after Kocaeli earthquake

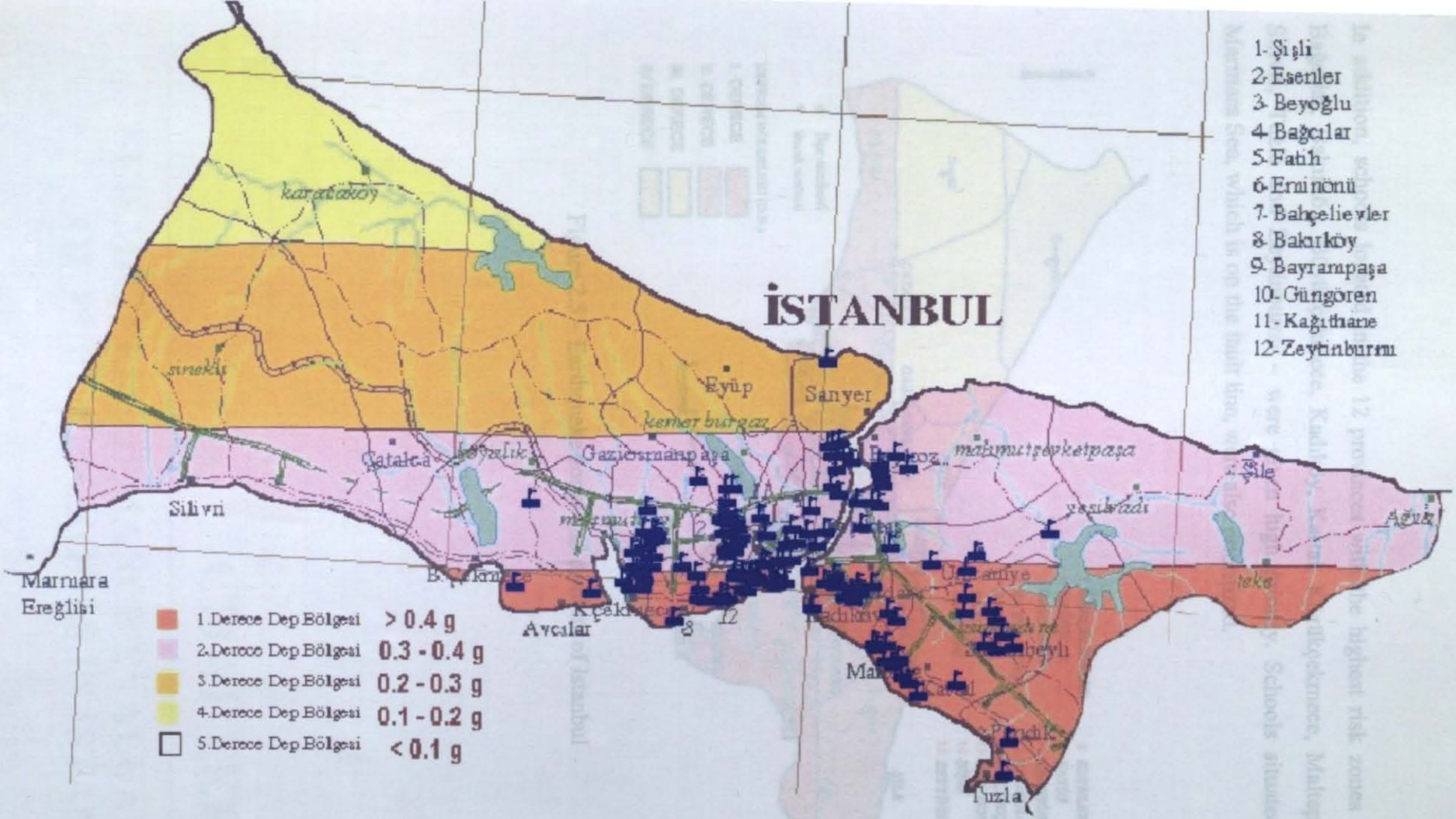

Figure 2.4 – Repaired schools in Istanbul after Kocaeli earthquake

In addition, schools located in the 12 provinces with the highest risk zones – Avcılar, Bağcılar, Bakırköy, Büyükçekmece, Kadıköy, Kartal, Küçükçekmece, Maltepe, Pendik, Silivri, Tuzla and Zeytinburnu – were given high priority. Schools situated close to Marmara Sea, which is on the fault line, were also prioritized.

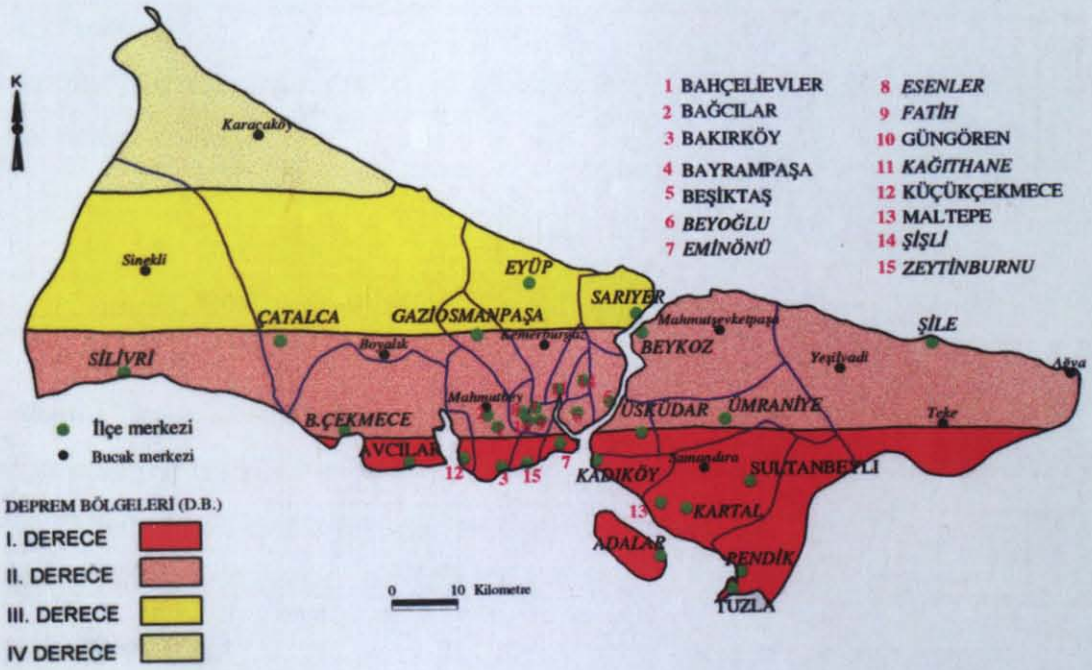

Figure 2.5 – Earthquake zones and districts of Istanbul

CHAPTER III

SEISMIC PERFORMANCE EVALUATION OF PUBLIC SCHOOLS IN ISTANBUL

SEISMIC PERFORMANCE EVALUATION OF PUBLIC SCHOOL BUILDINGS IN ISTANBUL

3.1 Introduction

The seismic performance of public schools in Istanbul Metropolitan area were evaluated by the following methods;

1. Rapid Visual Screening (RVS)
2. Pushover Analysis

3.2 Rapid Visual Screening Procedure

Two destructive earthquakes struck the Marmara region in 1999 namely Kocaeli and Düzce Earthquakes. Istanbul was also suffered from these two earthquakes. The calamities especially affected elementary and secondary schools in those three cities.

In Kocaeli and Düzce, 43 schools were destroyed and 381 schools were damaged. A total of 22 elementary and 21 secondary schools were damaged beyond repair. Another 267 elementary and 114 secondary schools have received minor to moderate damage. [7]

In Istanbul, 820 schools were reportedly affected. 689 schools had been only slightly damaged and could be repaired quickly, without causing any educational disruption. Educational activities were temporarily terminated in the remaining 131 schools. Among these, 13 schools were found to be heavily damaged and immediately demolished and were replaced with new seismically safer schools. Of the remaining 118 schools, 59 were repaired, 37 were strengthened and 22 were demolished (and reconstructed) due to the high cost of foundation rehabilitation. [5]

Rapid Visual Screening (RVS) method was carried out in order to screen the existing public school buildings in Istanbul. It was impossible to apply the RVS method to all the existing public schools. Consequently, the schools selected for this study are among the

820 schools reportedly affected; 10 of which are among the 689 schools which had been only slightly damaged and 20 of which are among 131 schools where educational activities were temporarily terminated. Therefore, the study was limited to 30 public schools according to their damages as shown in Table 3.1.

The Rapid Visual Screening Procedure is described in detail in Appendix B. This method is used to identify the potentially hazardous school buildings. In brief, it is a methodology that, with associated background information, permits the engineer to visually inspect a building and, by obtaining selected data, to arrive to a decision as to which buildings should be further studied in detail without sticking to any goal other then the seismic safety of the existing structure. [2]

3.2.1 Application of RVS to Public Schools in Istanbul

The Rapid Visual Screening Procedure for any school was accomplished by the following steps:

1. Sketching the existing layout of the schools

2. Taking photos of every screened building in the schools complexes

3. Filling FEMA-154 Data Collection form and accomplishing the requirements contained in the RVS, Structural Scores and Modifiers part for every structure

4. Assigning a score to every structure and deciding whether the examined building requires a further detailed evaluation or not

3.2.2 Results of Screened Public Schools in Istanbul

Out of 820 public schools which were reportedly affected, 30 schools were analyzed completely. The results are given in Table 3.2 and Table 3.3. Among the screened schools it can be observed that about 67% of which require detailed evaluation. The schools receiving the lower scores were the most critical ones.

	NO	DISTRICT NAME	SCHOOL NAME
SLIGHTLY DAMAGE	1	Avcılar	Deniz Köşkler İlköğretim Okulu
	2	Bağcılar	Adnan Ötügen İlköğretim Okulu
	3	Büyükçekmece	İbrahim Özaydın İlköğretim Okulu
	4	Eminönü	Cağaloğlu Anadolu Lisesi
	5	Kadıköy	Mehmet Beyazıt Lisesi
	6	Kartal	Samandıra Lisesi
	7	Küçükçekmece	Mustafa Kemal Paşa İlköğretim Okulu
	8	Küçükçekmece	Sefaköy 100.Yıl İlköğretim Okulu
	9	Pendik	Tağrık Buğra Lisesi
	10	Zeytinburnu	Gazi Paşa İlköğretim Okulu
STRENGTHENED	11	Avcılar	Abdulkadir Uztürk İlköğretim Okulu
	12	Bağcılar	Şükrü Savaşeri İlköğretim Okulu
	13	Bakırköy	Bakırköy İlköğretim Okulu
	14	Bakırköy	Osmaniye İlköğretim Okulu
	15	Büyükçekmece	Esenyurt İlköğretim Okulu
	16	Kartal	Samandıra İlköğretim Okulu
	17	Küçükçekmece	Nahit Menteşe Endüstri Meslek Lisesi
	18	Maltepe	Kaşgarlı Mahmut İlköğretim Okulu
	19	Pendik	Dolayaba İlköğretim Okulu
	20	Silivri	Selimpaşa Lisesi
	21	Üsküdar	Haydarpaşa Teknik ve Endüstri Meslek Lisesi
	22	Zeytinburnu	İsmail Rüştü Olcay Lisesi
DEMOLISHED and RECONSTRUCTED	23	Bağcılar	Yıldıztepe İlköğretim Okulu
	24	Bakırköy	Bakırköy Lisesi
	25	Bakırköy	İbni Sina İlköğretim Okulu
	26	Büyükçekmece	İncirtepe Lisesi
	27	Kadıköy	Suadiye Hacı Mustafa Tarman Lisesi
	28	Maltepe	Turgay Ciner (Feyzullah) İlköğretim Okulu
	29	Pendik	Elka İlköğretim Okulu
	30	Zeytinburnu	Nuri Paşa İlköğretim Okulu

Table 3.1 – Public schools screened by RVS method

DESCRIPTION OF THE SCHOOLS

No	District Name	School Name	Date of Inspection	Year Built	No. of Stories	Type of Building	Population	Total Floor Area (m2)
1	Avcılar	Denizköşkler İlköğretim Okulu	15.05.2005	1992	3	MRF	101-1000	7.774
2	Bağcılar	Adnan Ötügen İlköğretim Okulu	15.05.2005	1974	2	FD	11-100	385
3	Büyükçekmece	İbrahim Özaydın İlköğretim Okulu	15.05.2005	1995	4	MRF	101-1000	3.200
4	Eminönü	Cağaloğlu Anadolu Lisesi	15.05.2005	1955	5	MRF	101-1000	7.149
5	Kadıköy	Mehmet Beyazıt Lisesi	16.05.2005	1970	4	MRF	101-1000	9.220
6	Kartal	Samandıra Lisesi	16.05.2005	1986	4	MRF	101-1000	4.240
7	Küçükçekmece	Mustafa Kemal Paşa İlköğretim Okulu	15.05.2005	1999	4	MRF	101-1000	2.400
8	Küçükçekmece	Sefaköy 100.Yıl İlköğretim Okulu	15.05.2005	1980	3	MRF	101-1000	2.700
9	Pendik	Tağrık Buğra Lisesi	16.05.2005	1987	2	MRF	11-100	NA
10	Zeytinburnu	Gazi Paşa İlköğretim Okulu	15.05.2005	1958	3	URM	101-1000	1.948
11	Avcılar	Abdulkadir Uztürk İlköğretim Okulu	15.05.2005	1993	4	MRF	101-1000	4.800
12	Bağcılar	Şükrü Savaşeri İlköğretim Okulu	15.05.2005	1986	3	MRF	101-1000	600
13	Bakırköy	Bakırköy İlköğretim Okulu	15.05.2005	NA	3	URM	11-100	816
14	Bakırköy	Osmaniye İlköğretim Okulu	15.05.2005	1987	3	MRF	101-1000	2.000
15	Büyükçekmece	Esenyurt İlköğretim Okulu	15.05.2005	1989	4	MRF	101-1000	9.374
16	Kartal	Samandıra İlköğretim Okulu	16.05.2005	1992	4	URM INF	101-1000	3.600

(FD: Flexible diaphragm, MRF: Moment-resisting frame, URM INF: Unreinforced masonry infiil, URM: Unreinforced masonry, SW:Shear wall, NA: Not available)

Table 3.2 – Description of the schools analyzed by RVS method

No	District Name	School Name	Date of Inspection	Year Built	No. of Stories	Type of Building	Population	Total Floor Area (m2)
17	Küçükçekmece	Nahit Menteşe Endüstri Meslek Lisesi	15.05.2005	1992	4	MRF	101-1000	9.992
18	Maltepe	Kaşgarlı Mahmut İlköğretim Okulu	16.05.2005	1988	4	MRF	101-1000	NA
19	Pendik	Dolayaba İlköğretim Okulu	16.05.2005	1978	3	MRF	101-1000	NA
20	Silivri	Selimpaşa Lisesi	15.05.2005	1987	3	MRF	101-1000	1.935
21	Üsküdar	Haydarpaşa Teknik ve End. Meslek Lisesi	16.05.2005	1971	4	MRF	101-1000	8.200
22	Zeytinburnu	İsmail Rüştü Olcay Lisesi	15.05.2005	1988	3	MRF	101-1000	3.200
23	Bağcılar	Yıldıztepe İlköğretim Okulu	15.05.2005	2001	4	MRF	101-1000	2.895
24	Bakırköy	Bakırköy Lisesi	15.05.2005	2001	4	SW	101-1000	7.640
25	Bakırköy	İbni Sina İlköğretim Okulu	15.05.2005	2000	4	MRF	101-1000	720
26	Büyükçekmece	İncirtepe Lisesi	15.05.2005	2000	4	SW	101-1000	4.000
27	Kadıköy	Suadiye Hacı Mustafa Tarman Lisesi	16.05.2005	2001	4	MRF	101-1000	3.985
28	Maltepe	Turgay Ciner (Feyzullah) İlköğretim Okulu	16.05.2005	2002	5	MRF	101-1000	NA
29	Pendik	Elka İlköğretim Okulu	16.05.2005	2001	3	SW	101-1000	NA
30	Zeytinburnu	Nuri Paşa İlköğretim Okulu	15.05.2005	2001	1	MRF	11-100	430

(FD: Flexible diaphragm, MRF: Moment-resisting frame, URM INF: Unreinforced masonry infiil, URM: Unreinforced masonry, SW:Shear wall, NA: Not available)

Table 3.2 – (contd.) Description of the schools analyzed by RVS method

BASIC SCORES, MODIFIERS AND FINAL SCORE, S

No	School Name	Basic Score	Mid Rise	Vertical Irreg.	Plan Irreg.	Pre-Code	Post-Bench.	Soil Type	Final Score	Require Detailed Evaluation
1	Denizköşkler İlköğretim Okulu	2,50						-0,60	1,90	YES
2	Adnan Ötügen İlköğretim Okulu	2,80				-1,00		-0,60	1,20	YES
3	İbrahim Özaydın İlköğretim Okulu	2,50	0,40					-1,20	1,70	YES
4	Cağaloğlu Anadolu Lisesi	2,50	0,40		-0,50			-0,60	1,80	YES
5	Mehmet Beyazıt Lisesi	2,50	0,40		-0,50			-0,60	1,80	YES
6	Samandıra Lisesi	2,50	0,40		-0,50			-0,60	1,80	YES
7	Mustafa Kemal Paşa İlköğretim Okulu	2,50	0,40					-0,60	2,30	NO
8	Sefaköy 100.Yıl İlköğretim Okulu	2,50		-1,50				-0,60	0,40	YES
9	Tağrık Buğra Lisesi	2,50						-0,60	1,90	YES
10	Gazi Paşa İlköğretim Okulu	1,80						-0,60	1,20	YES
11	Abdulkadir Uztürk İlköğretim Okulu	2,50	0,40					-1,20	1,70	YES
12	Şükrü Savaşeri İlköğretim Okulu	2,50				-1,20		-0,60	0,70	YES
13	Bakırköy İlköğretim Okulu	1,80						-0,60	1,20	YES
14	Osmaniye İlköğretim Okulu	2,50						-0,60	1,90	YES
15	Esenyurt İlköğretim Okulu	2,50	0,40		-0,50			-0,60	1,80	YES
16	Samandıra İlköğretim Okulu	1,60	0,20					-0,40	1,40	YES

Table 3.3 – Results of basic scores, modifiers and final score, s, for the schools analyzed by RVS method

BASIC SCORES, MODIFIERS AND FINAL SCORE, S

No	School Name	Basic Score	Mid Rise	Vertical Irreg.	Plan Irreg.	Pre-Code	Post-Bench.	Soil Type	Final Score	Require Detailed Evaluation
17	Nahit Menteşe Endüstri Meslek Lisesi	2,50	0,40		-1,50			-0,60	0,80	YES
18	Kaşgarlı Mahmut İlköğretim Okulu	2,50	0,40	-1,50	-0,50			-0,60	0,30	YES
19	Dolayaba İlköğretim Okulu	2,50						-1,20	1,30	YES
20	Selimpaşa Lisesi	2,50		-1,50	-0,50			-1,20	-0,70	YES
21	Haydarpaşa Teknik ve End. Meslek Lisesi	2,50	0,40					-1,20	1,70	YES
22	İsmail Rüştü Olcay Lisesi	2,50						-1,20	1,30	YES
23	Yıldıztepe İlköğretim Okulu	2,50	0,40				1,40	-0,60	3,70	NO
24	Bakırköy Lisesi	2,80	0,40		-0,50		2,40	-0,60	4,50	NO
25	İbni Sina İlköğretim Okulu	2,50	0,40					-0,60	2,30	NO
26	İncirtepe Lisesi	2,80	0,40		-0,50		2,40	-0,60	4,50	NO
27	Suadiye Hacı Mustafa Tarman Lisesi	2,50	0,40				1,40	-0,40	3,90	NO
28	Turgay Ciner (Feyzullah) İlköğretim Okulu	2,50	0,40				1,40	-0,60	3,70	NO
29	Elka İlköğretim Okulu	2,80					2,40	-0,80	4,40	NO
30	Nuri Paşa İlköğretim Okulu	2,50					1,40	-0,60	3,30	NO

Table 3.3 – (contd.) Results of basic scores, modifiers and final score, s, for the schools analyzed by RVS method

3.3 Pushover Analysis

According to the collected data up to March 2005 (see Appendix C and CD for details) there exist 2,019 public schools in Istanbul and 1,499 of which has a typical project available. Accordingly, the scope of this thesis was limited to those schools. Project type 10403 was used in 1,017 schools and project type 10370 was used in 87 schools.

Pushover analysis uses nonlinear static methods. The structure is analyzed at each yielding step to calculate a performance point. The details of the pushover analysis will be illustrated on one type, namely 10370 (1975 – 1998) as follows.

3.3.1 Type 10370

Type 10370 is the project that has been used to build 2, 3, 4, 5 and 6-storied schools until 2004. The project had been revised and improved according to the 1975 and 1998 Turkish Seismic Codes. The plan dimensions can also be varied between 15m.-20m. by 20m.-30m. In this thesis work 10370 is analyzed for three different stories (3, 4 and 5 stories) and for two different time periods. (between 1975-1998 and between 1998-2004)

3.3.1.1 Type 10370 (1975 – 1998)

Plan dimensions: 16,20m. - 21,90m.

Slab thickness: 10cm.

Storey height: 3,5m.

The column, beam and shear wall dimensions are shown in the table below.

	b (cm)	d (cm)
Column	30	60
Beam	30	70
Shear Wall 1	720	30
Shear Wall 2	30	455

The typical plan is given in Figure 3.1. Hatched areas show the shear walls and columns.

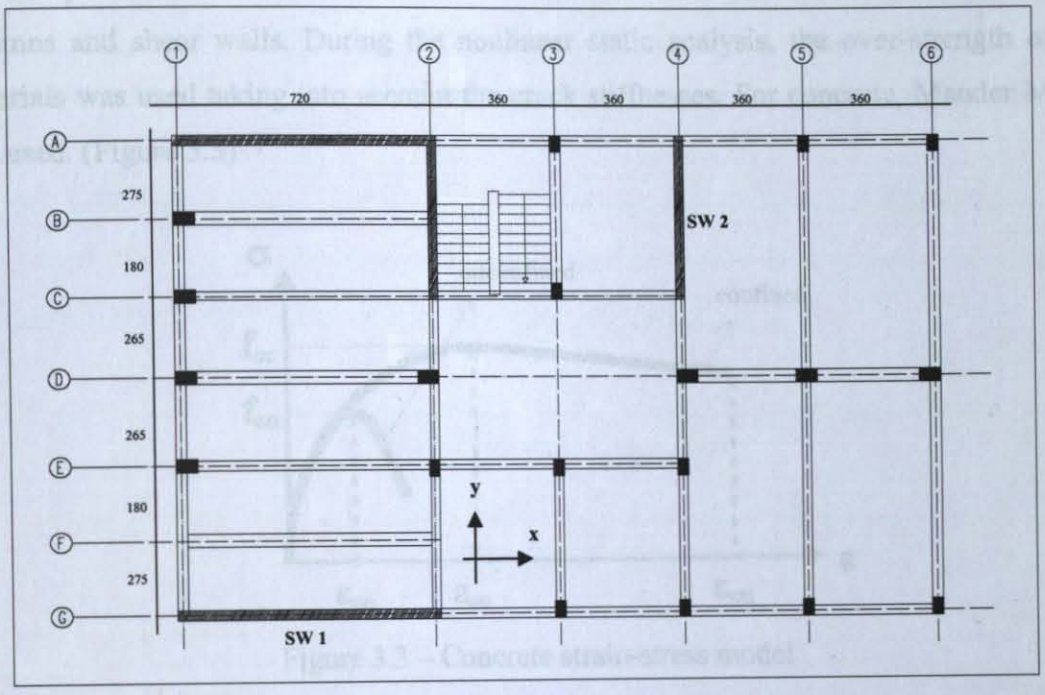

Figure 3.1 – Plan of the type 10370 (1975-1998)

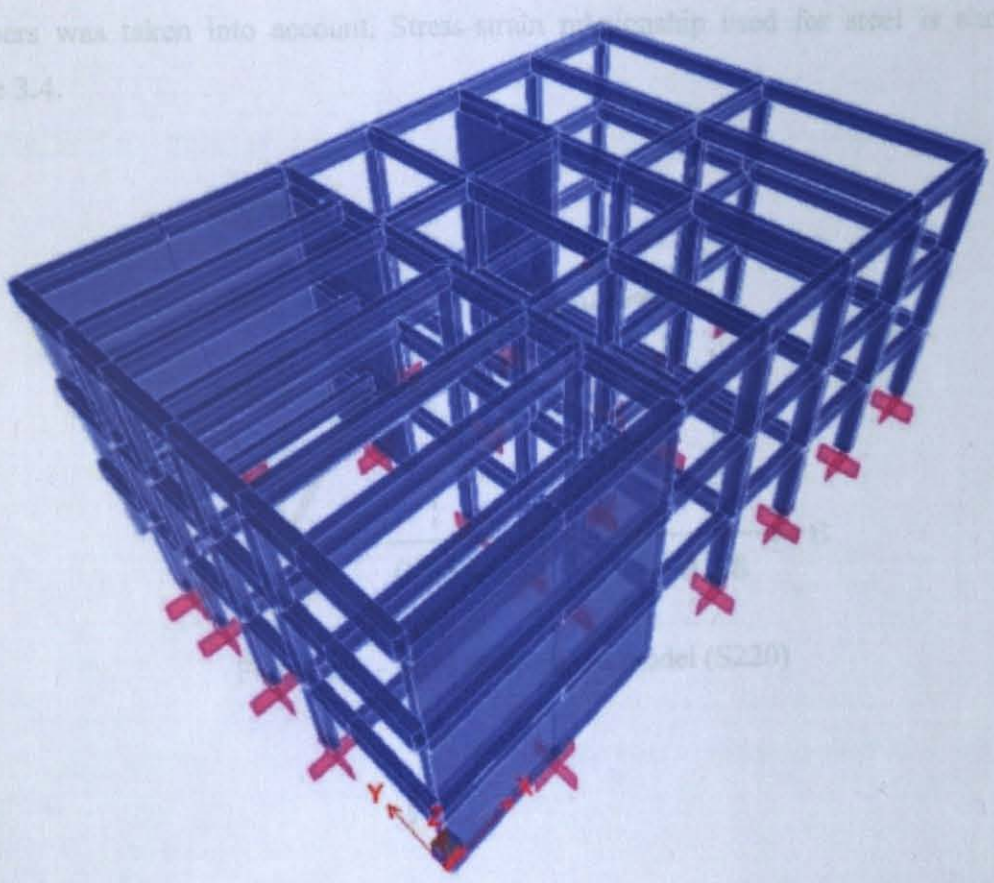

Figure 3.2 – 3D global Sap2000 model of 3 storey type 10370 (1975-1998)

Prior to moment curvature analysis of the columns and shear walls, the Sap2000 model was analyzed under dead and live loads in order to determine the normal force on the columns and shear walls. During the nonlinear static analysis, the over-strength of the materials was used taking into account the crack stiffnesses. For concrete, Mander Model was used. (Figure 3.3)

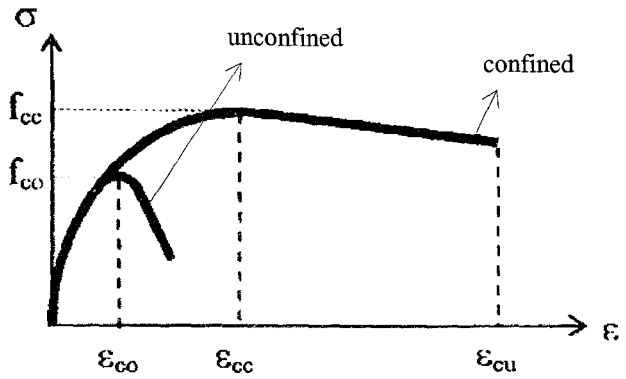

Figure 3.3 – Concrete strain-stress model

When performing moment curvature analysis of columns, confinement effect of the members was taken into account. Stress-strain relationship used for steel is shown in Figure 3.4.

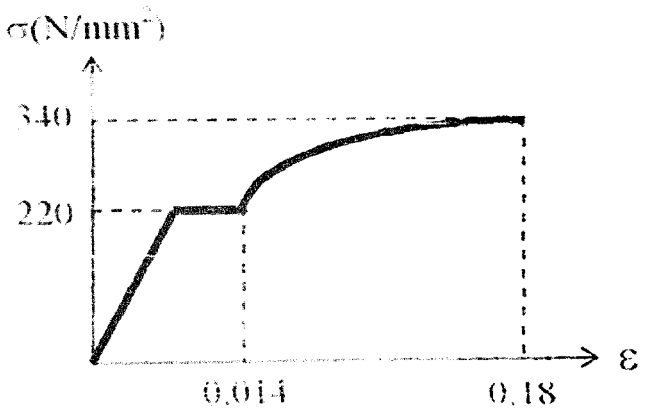

Figure 3.4 – Steel strain-stress model (S220)

It is assumed that hinges may occur at the ends of the frame elements in the analytical model. For the plastic hinge length of the members, 0.5d is assumed for beams as proposed by Çakıroğlu and Karadoğan (1997) [28] and d, for columns as proposed by Ersoy and Özcebe (2001) [29], where d is the depth for the beams and the width for the columns.

Sap2000 nonlinear analysis tool for obtaining the pushover curve was used to obtain the base shear (kN) vs. top displacement (m). Pushover curves obtained for the x and y directions are presented in Figure 3.5 and Figure 3.6 respectively.

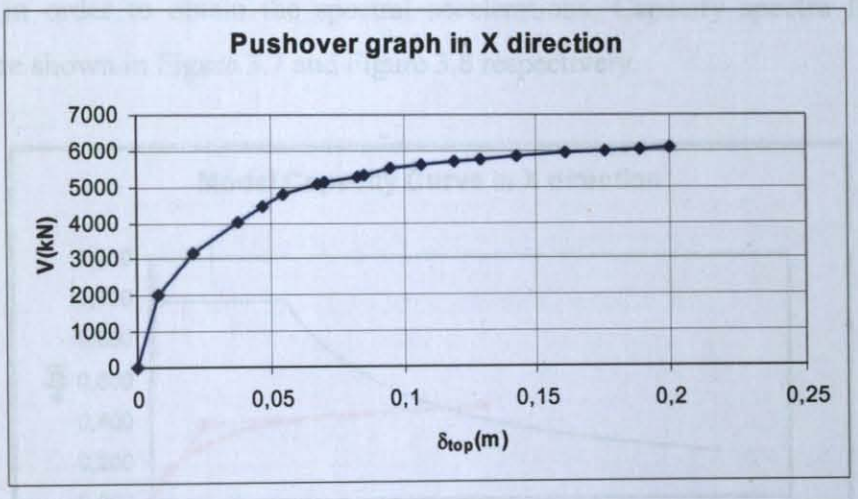

Figure 3.5 – Pushover curve of 3-storey type 10370 in x-direction (1975-1998)

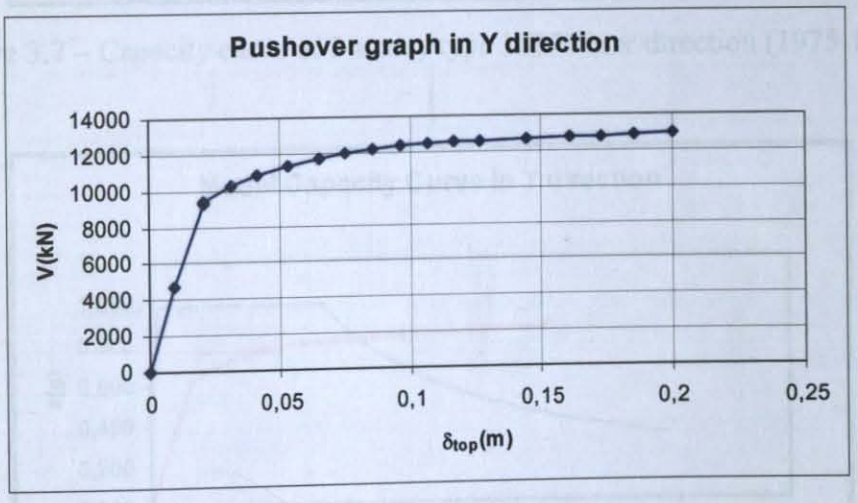

Figure 3.6 – Pushover curve of 3-storey type 10370 in y-direction (1975-1998)

Next step of the analysis was to convert the pushover curve to capacity spectrum. To draw the capacity spectrum diagram, participation factor for top displacement (γ_n) and effective participating mass (M_e) were calculated from the equations below;

$$\gamma_n = \phi_{n1}\left(\sum_{k=1}^{n} M_k\phi_{k1}\right)/\left(\sum_{k=1}^{n} M_k\phi_{k1}^2\right) \quad ; \quad M_e = \left(\sum_{k=1}^{n} M_k\phi_{k1}\right)^2/\left(\sum_{k=1}^{n} M_k\phi_{k1}^2\right)$$

Top displacement values are divided by participation factor for top displacement (γ_n) for finding the spectral displacements. Base shear values are divided by effective participating mass (M_e) in order to obtain the spectral accelerations. Capacity spectra for x and y directions are shown in Figure 3.7 and Figure 3.8 respectively.

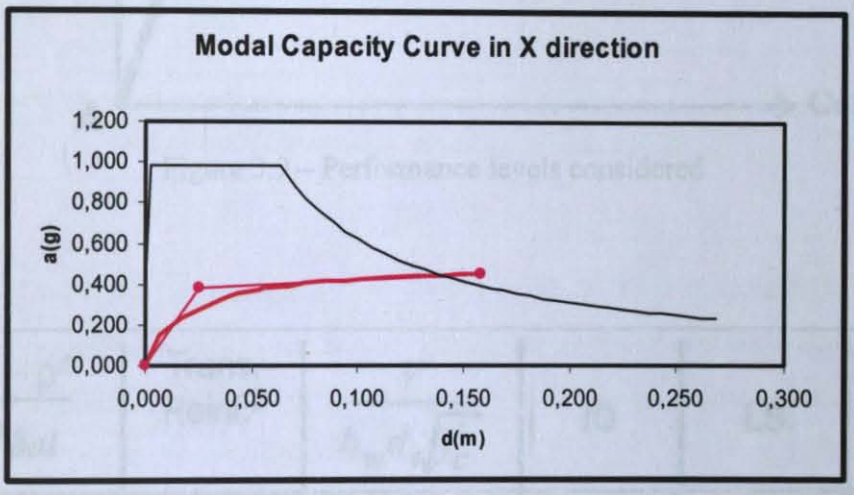

Figure 3.7 – Capacity curve of 3-storey type 10370 in x-direction (1975-1998)

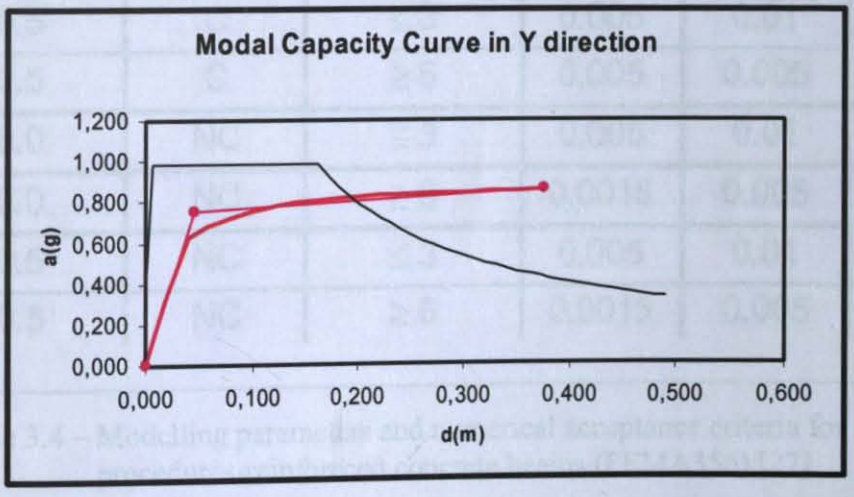

Figure 3.8 – Capacity curve of 3-storey type 10370 in y-direction (1975-1998)

Performance Evaluation

Performance evaluation of plastic hinge rotations of beams and columns were determined according to the acceptance criteria given in FEMA-356. (Table 3.4 and Table 3.5). In Figure 3.9, a typical performance levels are shown on moment curvature curve.

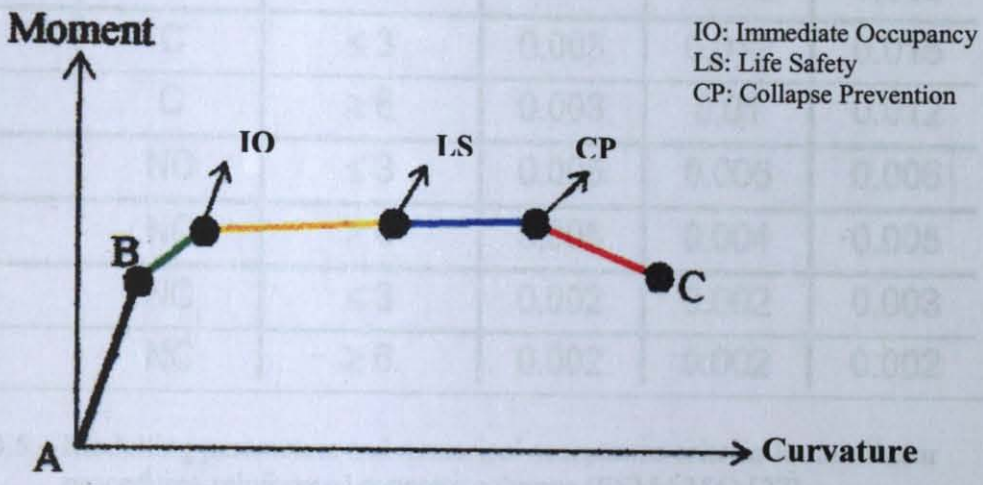

Figure 3.9 – Performance levels considered

$\frac{\rho - \rho'}{\rho_{bal}}$	Trans. Reinf.[2]	$\frac{V}{b_w d \sqrt{f'_c}}$	IO	LS	CP
≤ 0.0	C	≤ 3	0.010	0.02	0.025
≤ 0.0	C	≥ 6	0.005	0.01	0.02
≥ 0.5	C	≤ 3	0.005	0.01	0.02
≥ 0.5	C	≥ 6	0.005	0.005	0.015
≤ 0.0	NC	≤ 3	0.005	0.01	0.02
≤ 0.0	NC	≥ 6	0.0015	0.005	0.01
≥ 0.5	NC	≤ 3	0.005	0.01	0.01
≥ 0.5	NC	≥ 6	0.0015	0.005	0.005

Table 3.4 – Modelling parameters and numerical acceptance criteria for nonlinear procedures-reinforeced concrete beams (FEMA356) [27]

$\frac{P}{A_g f'_c}$	Trans. Reinf.[2]	$\frac{V}{b_w d\sqrt{f'_c}}$	IO	LS	CP
≤ 0.1	C	≤ 3	0.005	0.015	0.02
≤ 0.1	C	≥ 6	0.005	0.012	0.016
≥ 0.4	C	≤ 3	0.003	0.012	0.015
≥ 0.4	C	≥ 6	0.003	0.01	0.012
≤ 0.1	NC	≤ 3	0.005	0.005	0.006
≤ 0.1	NC	≥ 6	0.005	0.004	0.005
≥ 0.4	NC	≤ 3	0.002	0.002	0.003
≥ 0.4	NC	≥ 6	0.002	0.002	0.002

Table 3.5 – Modelling parameters and numerical acceptance criteria for nonlinear procedures-reinforeced concrete columns (FEMA356) [27]

Majority of the plastified hinges at the performance levels were in the range of life safety to collapse prevention (LS-CP) for beams. For columns the plastified hinges were in the range of immediate occupancy to life safety (IO-LS) performance levels. Performance level results are summarized in Table 3.6.

Member Name	No. of Member	A - IO	IO - LS	LS - CP	>CP
Beams	114	-	12	93	9
Columns	57	-	45	4	8
Shear Walls	12	-	12	-	-

Table 3.6 – Performance level results of 3-storey type 10370 (1975-1998)

3.3.1.2 Type 10370 (1998 – 2004)

Plan dimensions: 18,30m. - 21,90m.

Slab thickness: 14cm.

Storey height: 3,5m.

The column, beam and shear wall dimensions are shown in the table below.

	b (cm)	d (cm)
Column	30	60
Beam	30	70
Shear Wall 1	390	30
Shear Wall 2	30	780
Shear Wall 3	30	240

The typical plan is given in Figure 3.10. Hatched areas show the shear walls and columns.

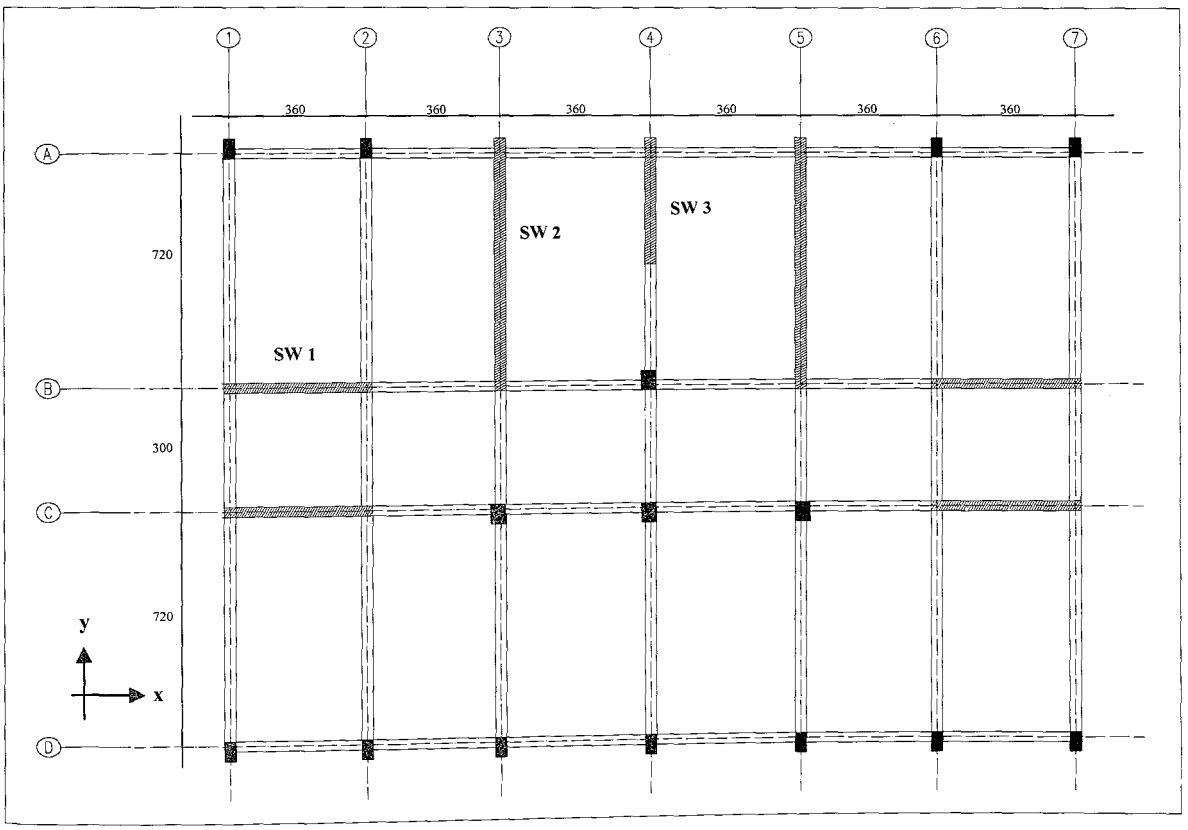

Figure 3.10 – Plan of the type 10370 (1998-2004)

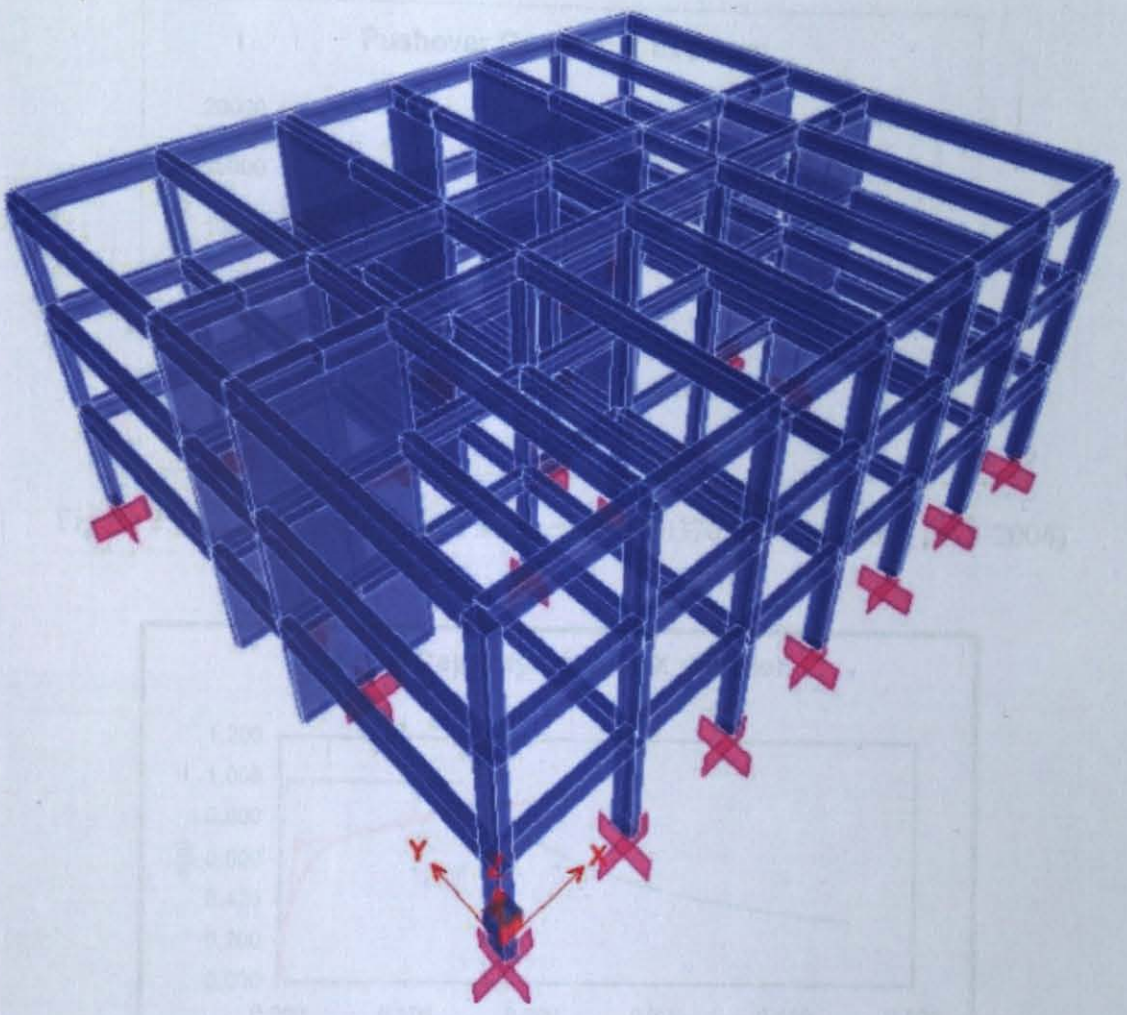

Figure 3.11 – 3D global Sap2000 model of 3 storey type 10370 (1998-2004)

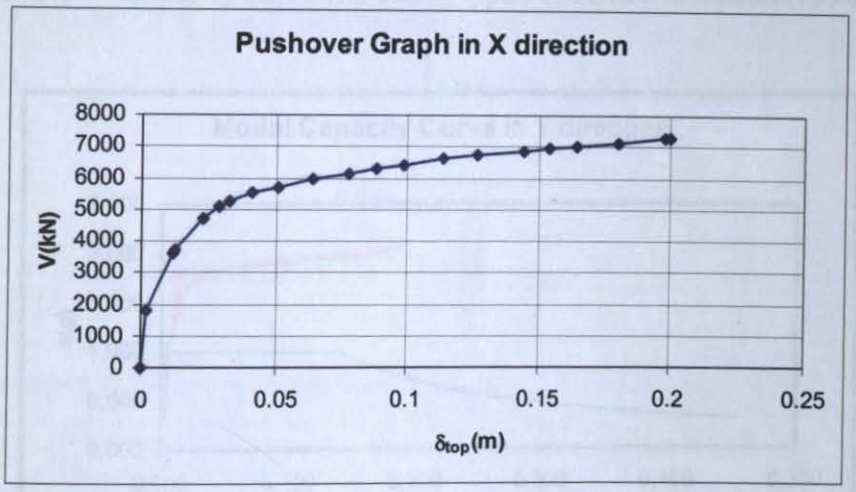

Figure 3.12 – Pushover curve of 3-storey type 10370 in x-direction (1998-2004)

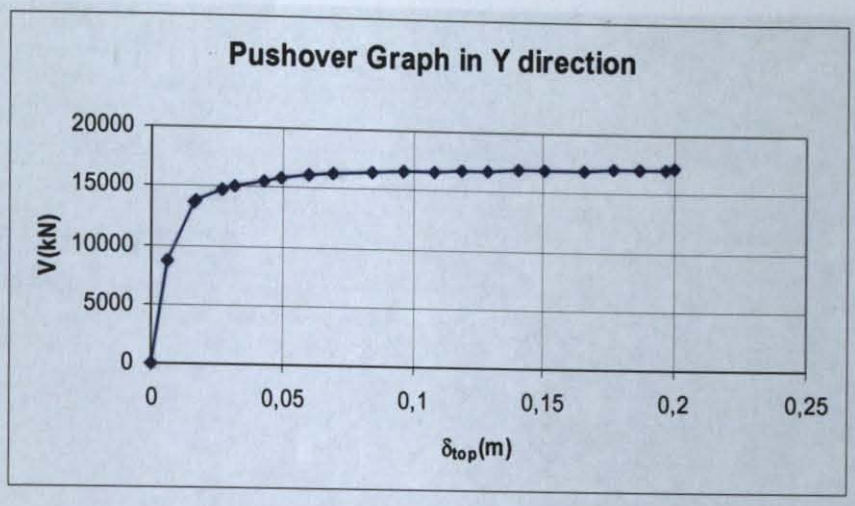

Figure 3.13 – Pushover curve of 3-storey type 10370 in y-direction (1998-2004)

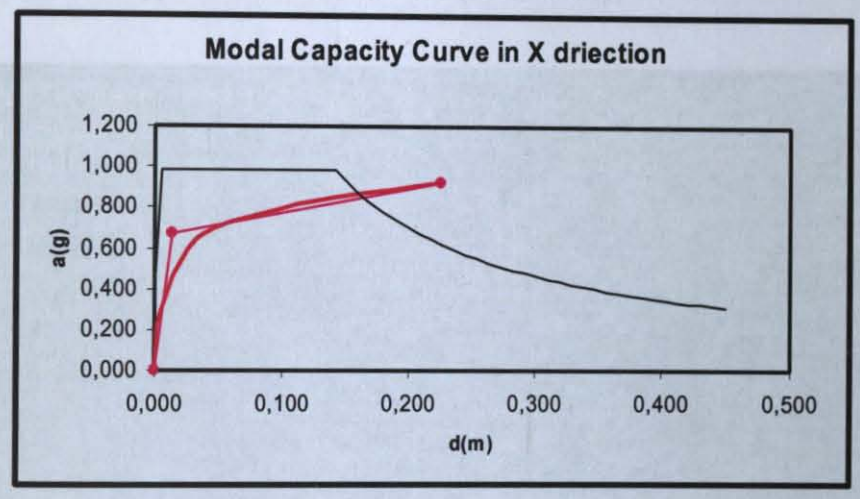

Figure 3.14 – Capacity curve of 3-storey type 10370 in x-direction (1998-2004)

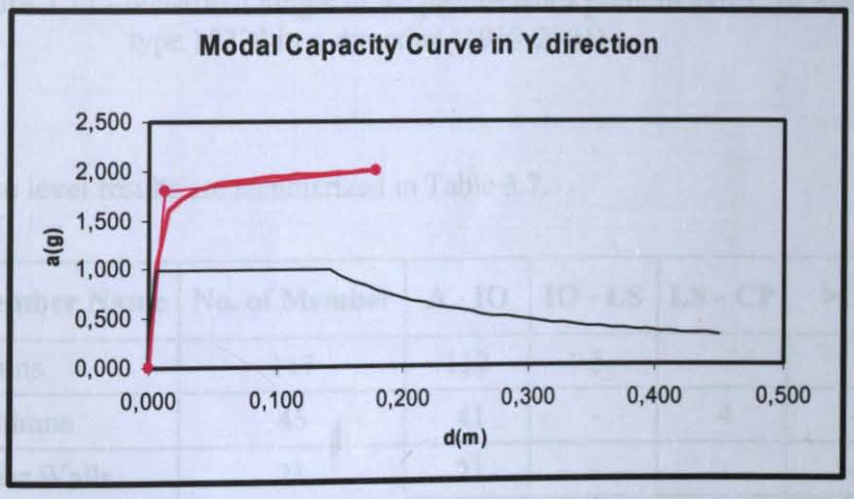

Figure 3.15 – Capacity curve of 3-storey type 10370 in y-direction (1998-2004)

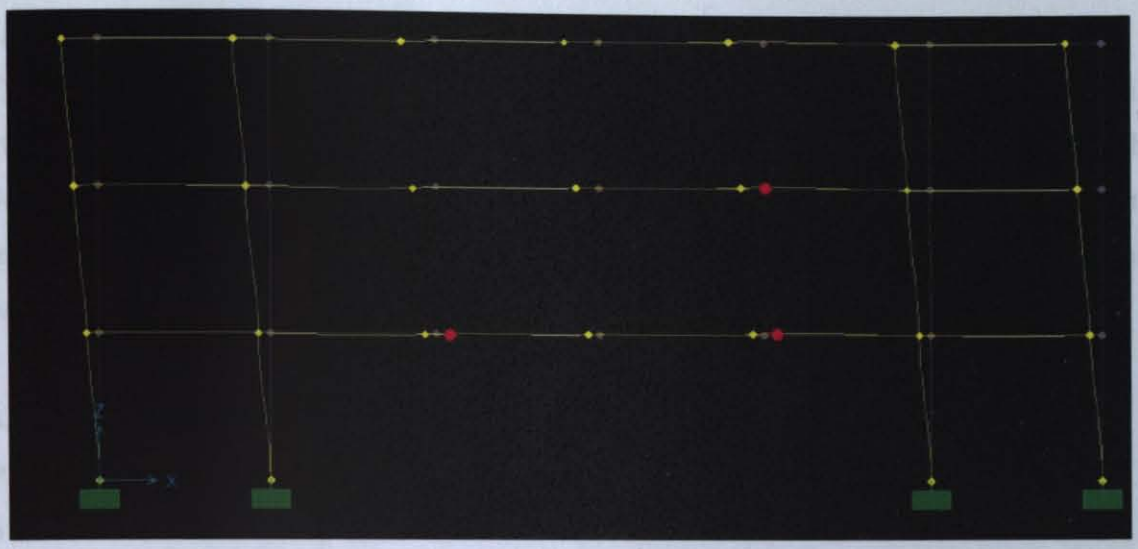

Figure 3.16 – Plastified hinges at the performance point in axis A of 3-storey type 10370 in x-direction (1998-2004)

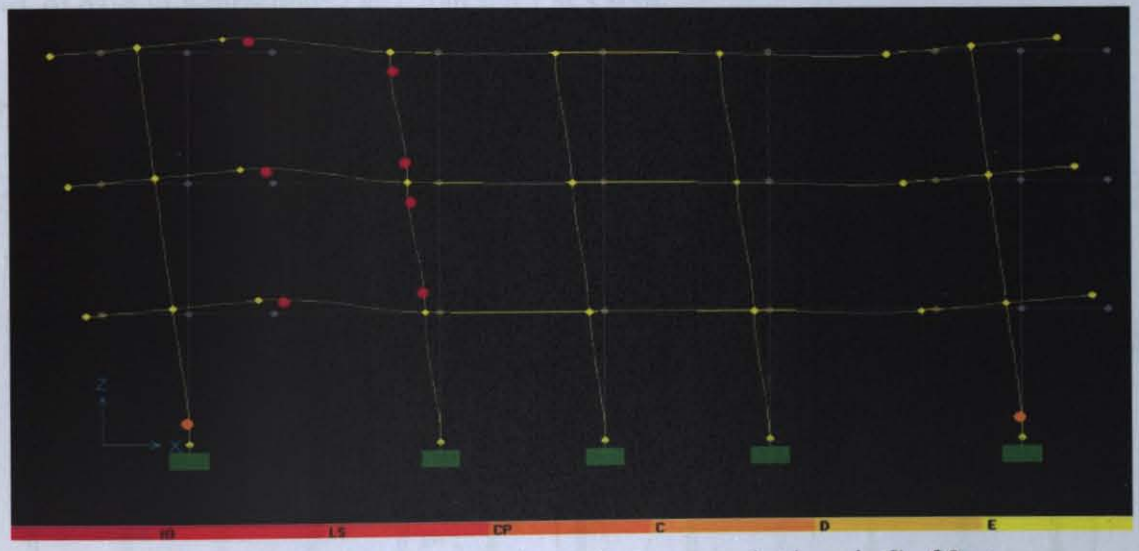

Figure 3.17 – Plastified hinges at the performance point in axis C of 3-storey type 10370 in x-direction (1998-2004)

Performance level results are summarized in Table 3.7.

Member Name	No. of Member	A - IO	IO - LS	LS - CP	>CP
Beams	117	112	5	-	-
Columns	45	41	-	4	-
Shear Walls	21	21	-	-	-

Table 3.7 – Performance level results of 3-storey type 10370 (1998-2004)

3.3.2 Type 10403

Type 10403 is the project that has been used to built 2, 3, 4, 5, 6 and 7-storied schools until 2004. The project had been revised and improved according to the 1975 and 1998 Turkish Seismic Codes. The plan dimensions can also be varied between 18m.-25m. by 40m.-50m. In this thesis work 10403 is analyzed for three different stories (3, 4 and 5 stories) and for two different time periods. (between 1975-1998 and between 1998-2004)

3.3.2.1 Type 10403 (1975 – 1998)

Plan dimensions: 19,10m. - 40,80m.

Slab thickness: 14cm.

Storey height: 3,5m.

No. of bays in x-direction: 10 at 3,60m. and 1 at 4,50m.

No. of bays in y-direction: 2 at 7,20m and 1 at 3,80m.

The typical plan is given in Figure 3.18. Hatched areas show the shear walls and columns.

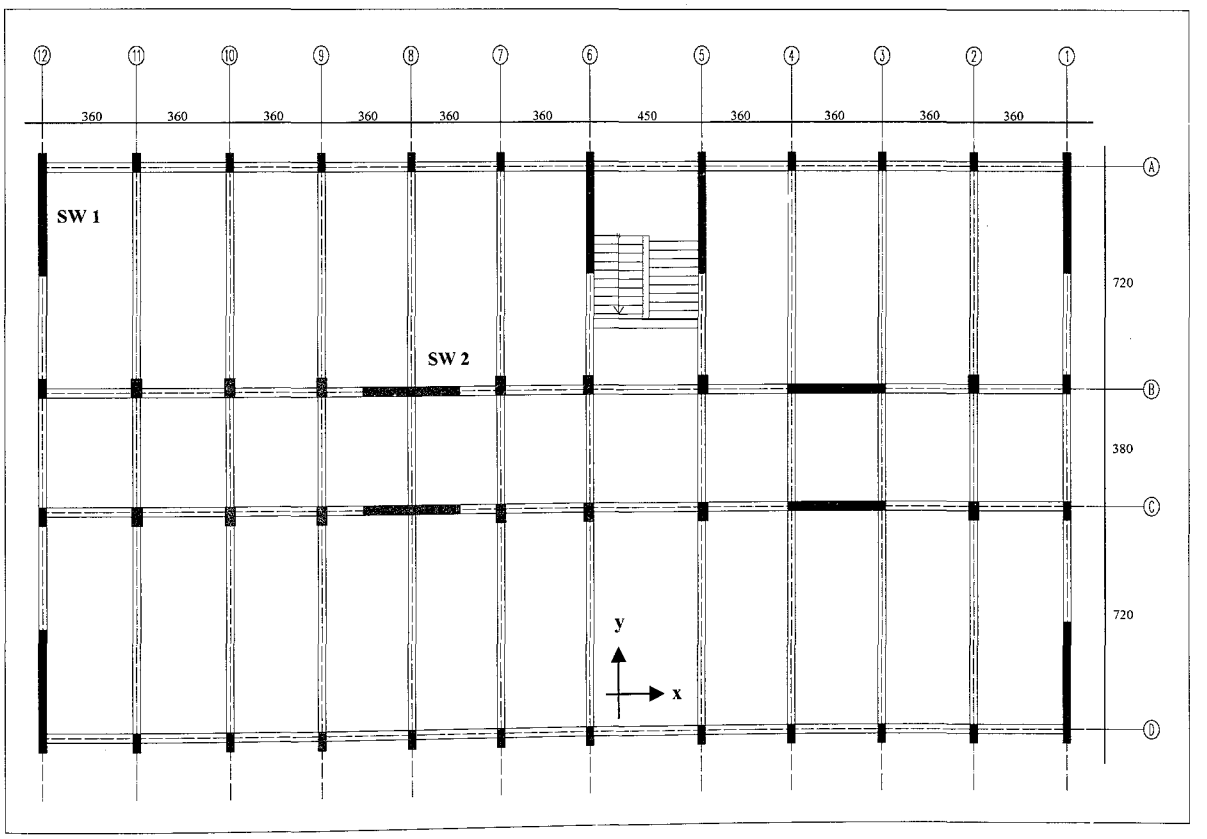

Figure 3.18 – Plan of the type 10403 (1975-1998)

The column, beam and shear wall dimensions are shown in the table below.

	b (cm)	d (cm)
Column	40	60
Beam	30	70
Shear Wall 1	30	390
Shear Wall 2	390	30

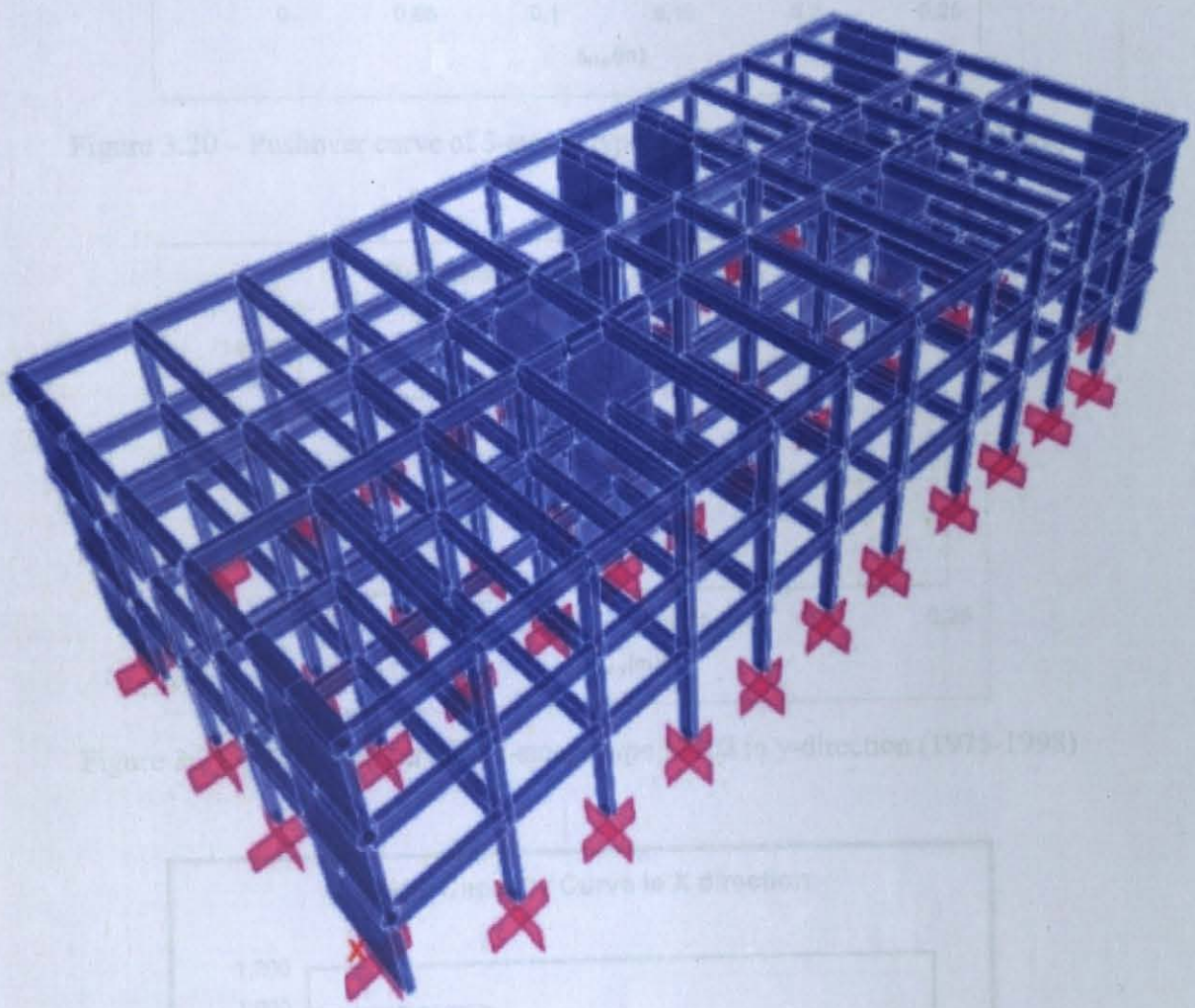

Figure 3.19 – 3D global Sap2000 model of 3 storey type 10403 (1975-1998)

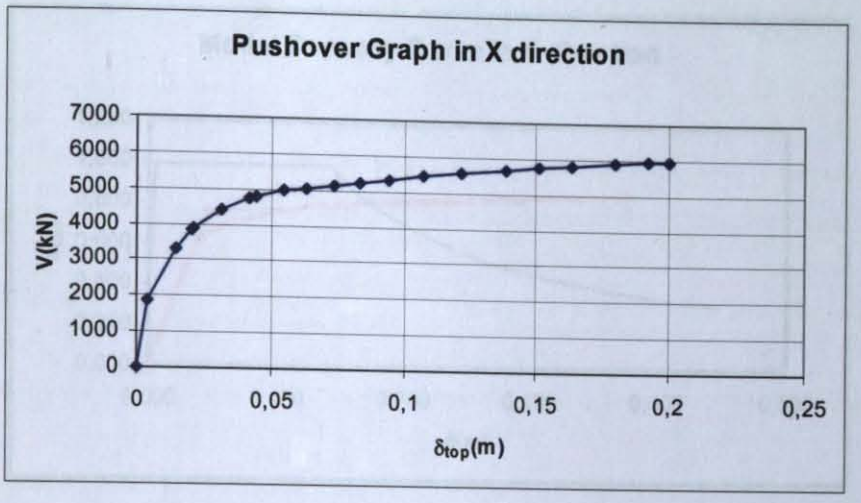

Figure 3.20 – Pushover curve of 3-storey type 10403 in x-direction (1975-1998)

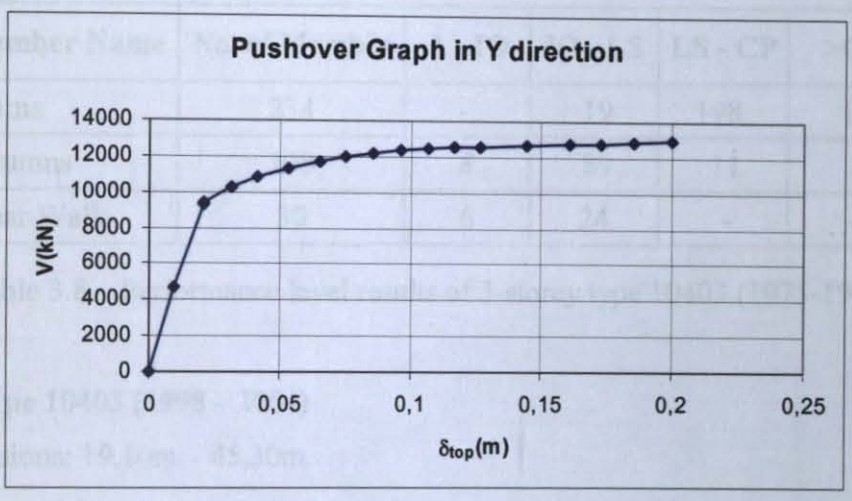

Figure 3.21 – Pushover curve of 3-storey type 10403 in y-direction (1975-1998)

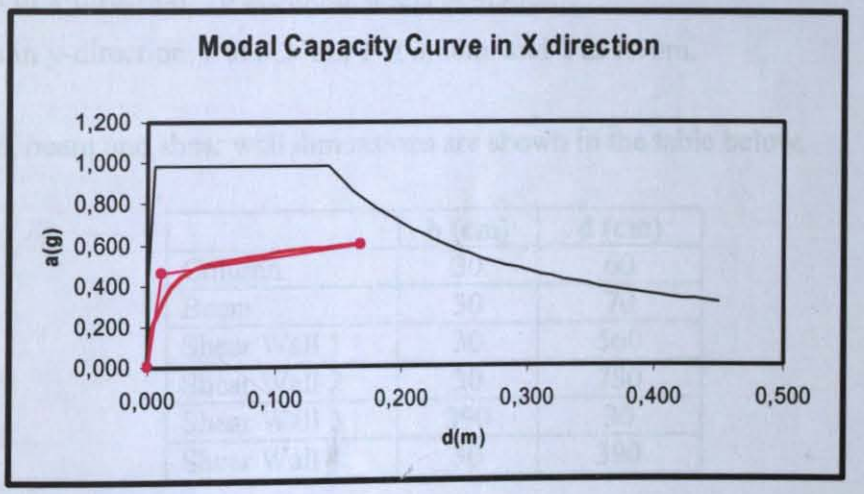

Figure 3.22 – Capacity curve of 3-storey type 10403 in x-direction (1975-1998)

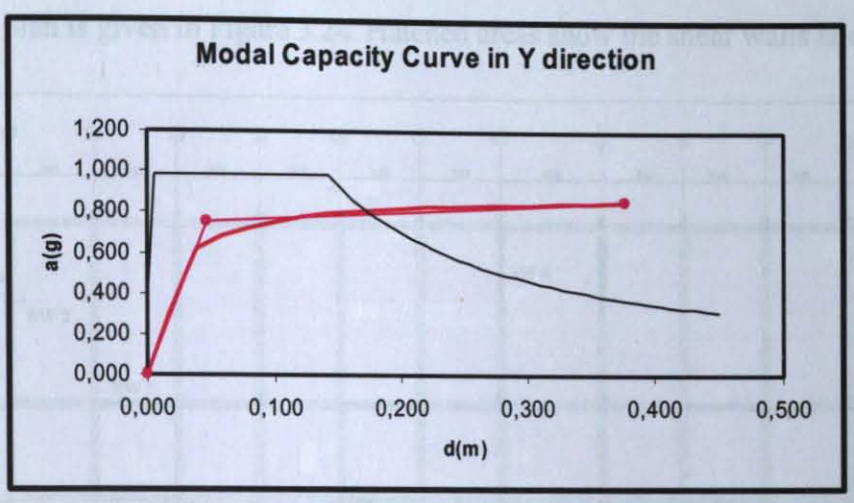

Figure 3.23 – Capacity curve of 3-storey type 10403 in y-direction (1975-1998)

Member Name	No. of Member	A - IO	IO - LS	LS - CP	>CP
Beams	234	-	19	198	17
Columns	108	8	89	11	-
Shear Walls	30	6	24	-	-

Table 3.8 – Performance level results of 3-storey type 10403 (1975-1998)

3.3.2.2 Type 10403 (1998 – 2004)

Plan dimensions: 19,10m. - 45,30m.

Slab thickness: 16cm.

Storey height: 3,5m.

No. of bays in x-direction: 10 at 3,60m. and 2 at 4,50m.

No. of bays in y-direction: 2 at 5,30m., 1 at 3,80m. and 2 at 1,90m.

The column, beam and shear wall dimensions are shown in the table below.

	b (cm)	d (cm)
Column	30	60
Beam	30	70
Shear Wall 1	30	560
Shear Wall 2	30	780
Shear Wall 3	390	30
Shear Wall 4	30	390

The typical plan is given in Figure 3.24. Hatched areas show the shear walls and columns.

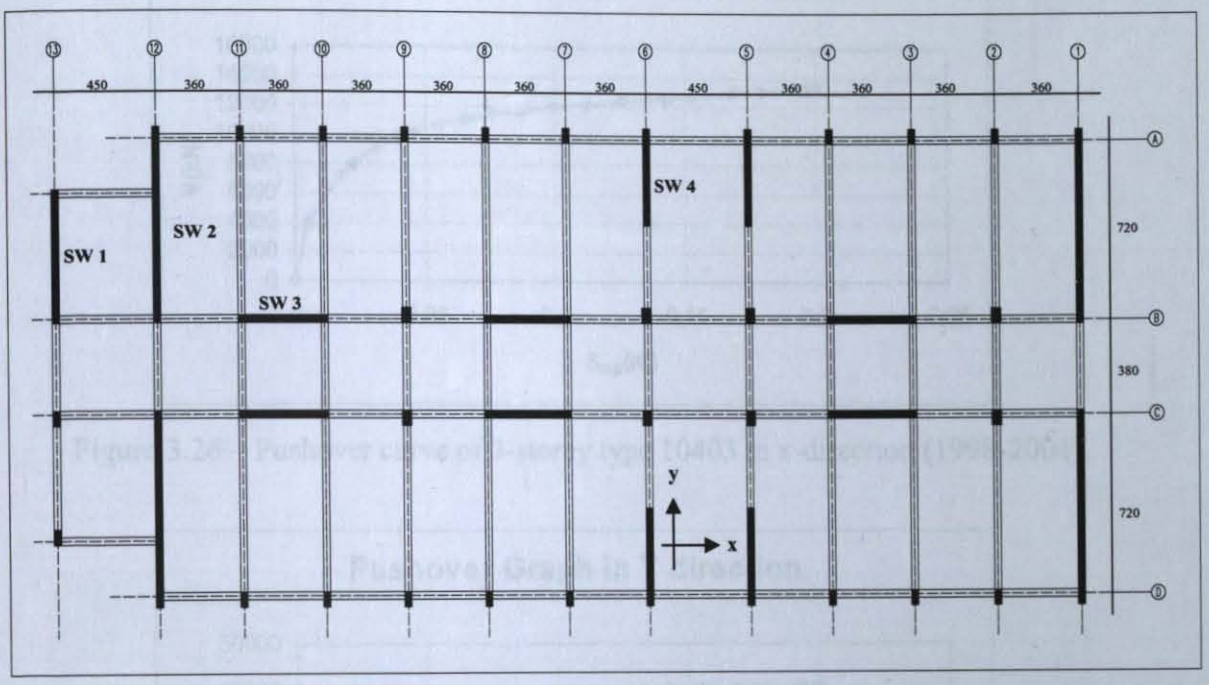

Figure 3.24 – Plan of the type 10403 (1998-2004)

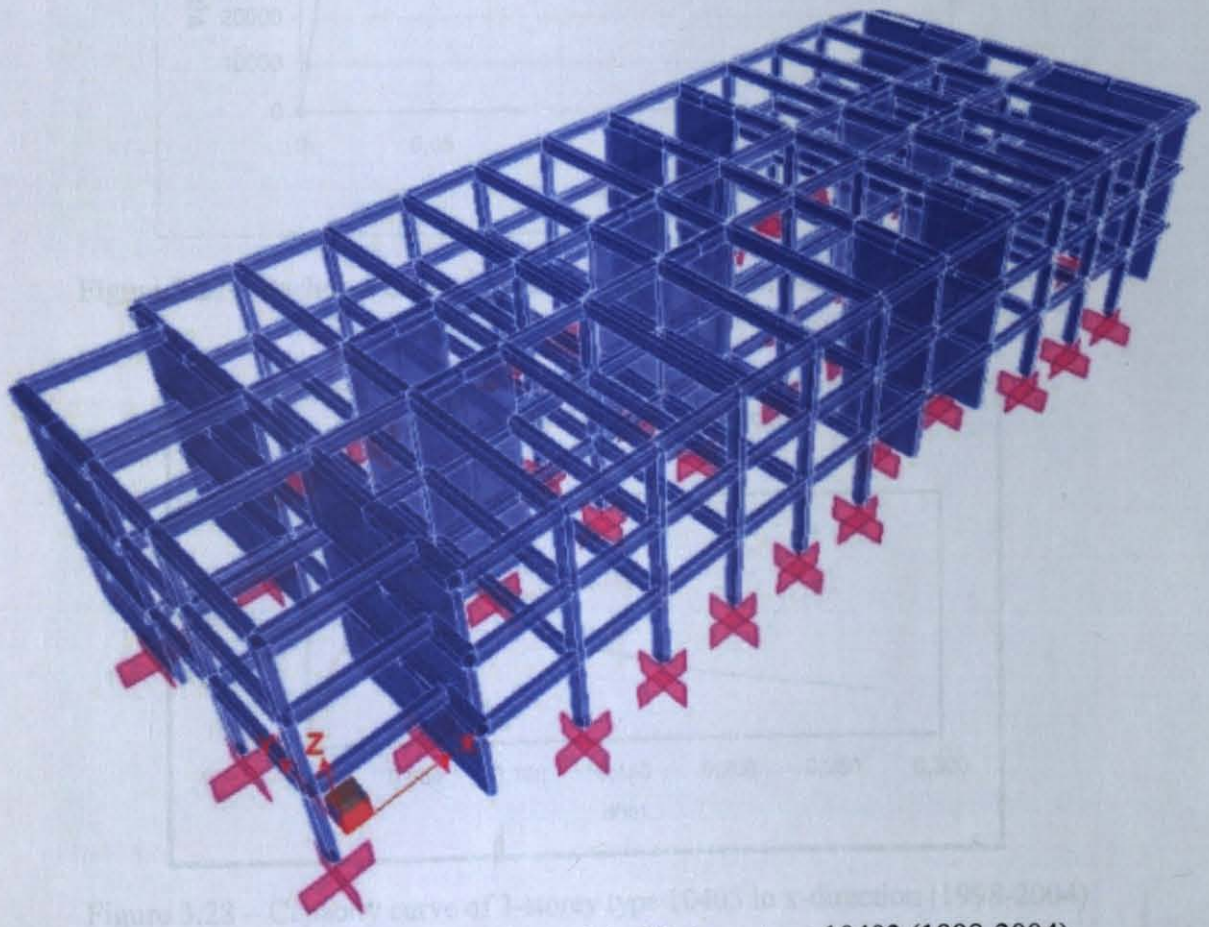

Figure 3.25 – 3D global Sap2000 model of 3 storey type 10403 (1998-2004)

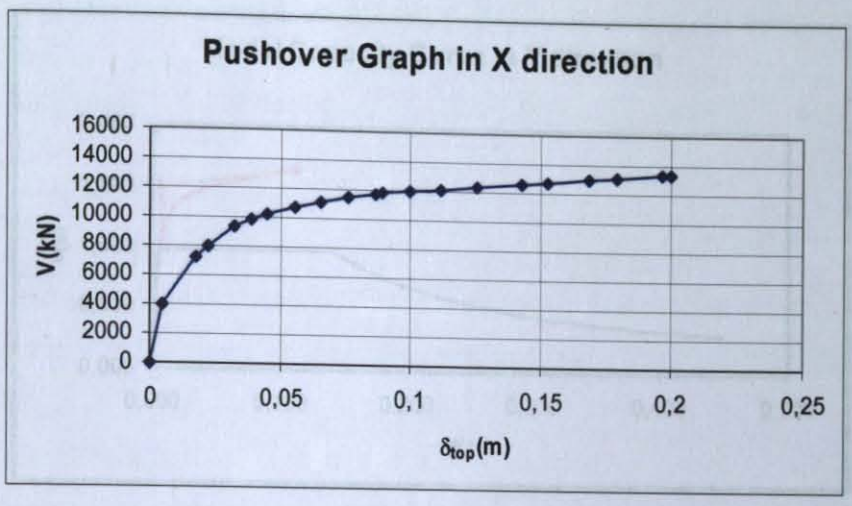

Figure 3.26 – Pushover curve of 3-storey type 10403 in x-direction (1998-2004)

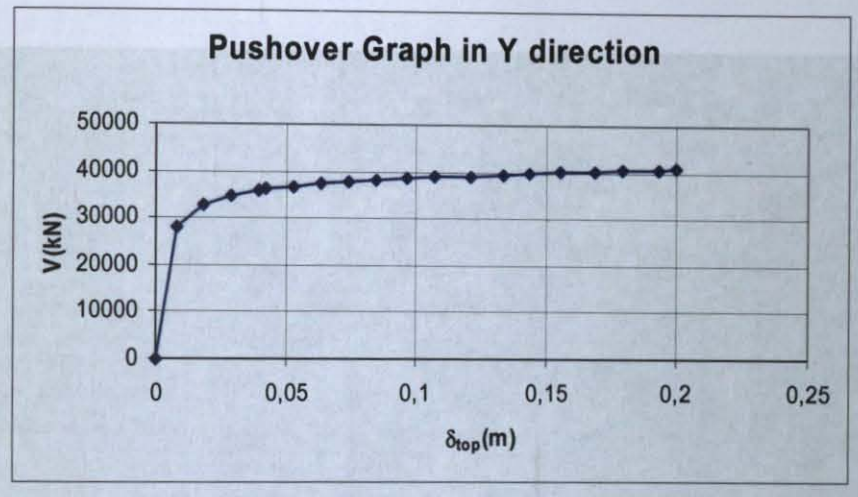

Figure 3.27 – Pushover curve of 3-storey type 10403 in y-direction (1998-2004)

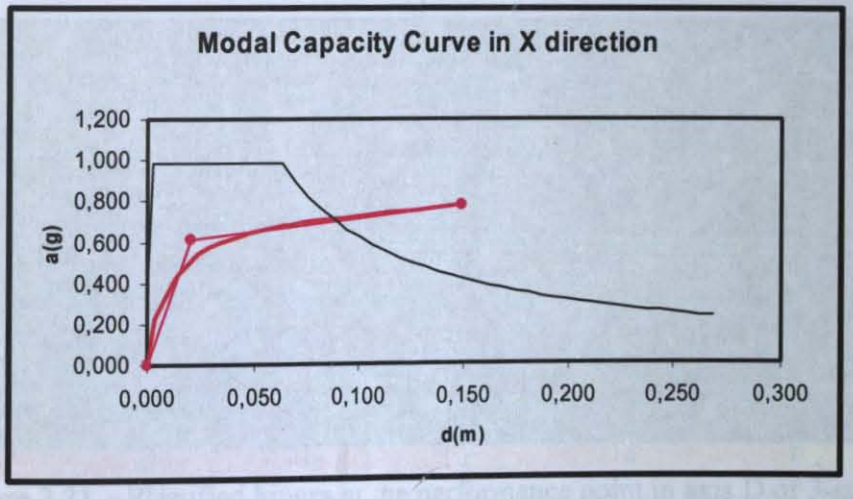

Figure 3.28 – Capacity curve of 3-storey type 10403 in x-direction (1998-2004)

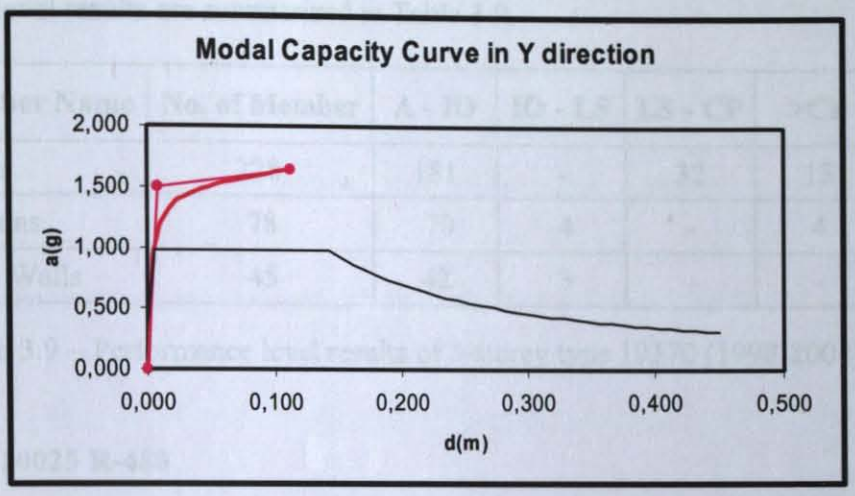

Figure 3.29 – Capacity curve of 3-storey type 10403 in y-direction (1998-2004)

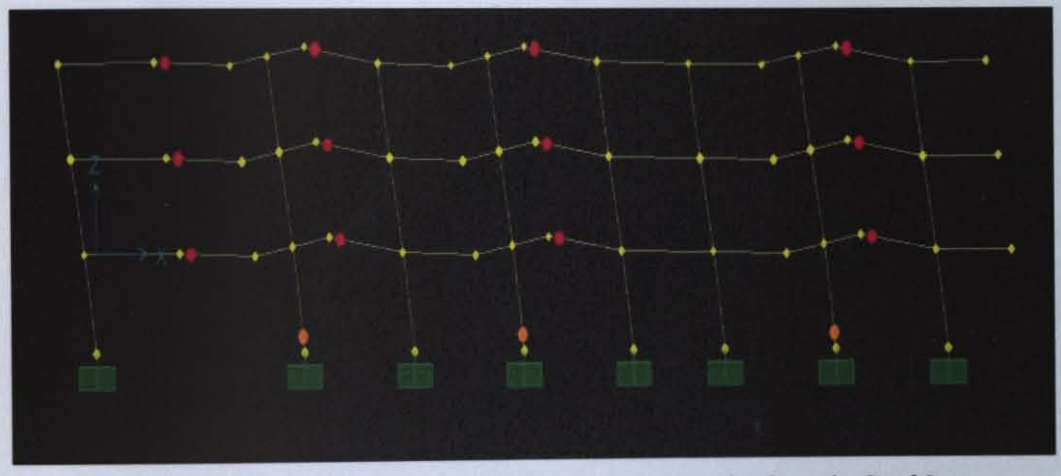

Figure 3.30 – Plastified hinges at the performance point in axis C of 3-storey type 10403 in x-direction (1998-2004)

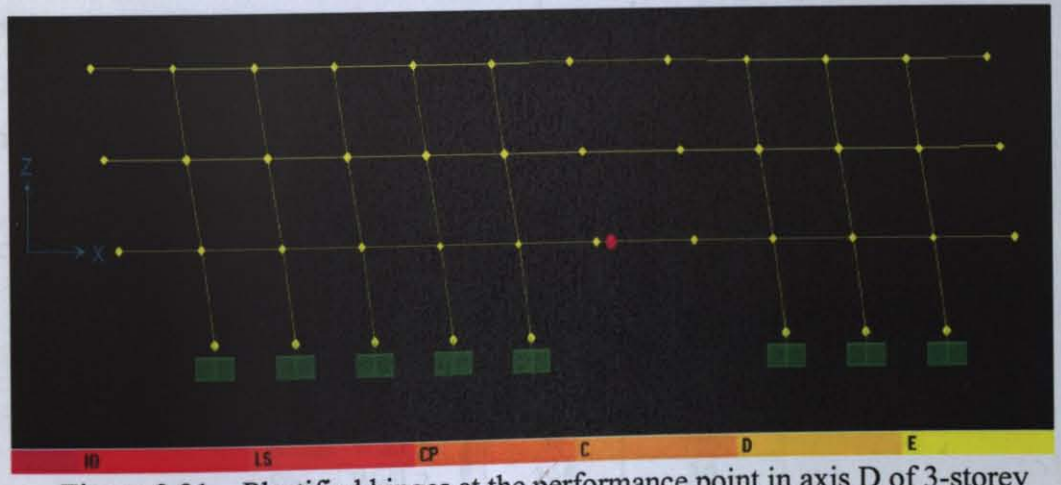

Figure 3.31 – Plastified hinges at the performance point in axis D of 3-storey type 10403 in x-direction (1998-2004)

Performance level results are summarized in Table 3.9.

Member Name	No. of Member	A - IO	IO - LS	LS - CP	>CP
Beams	228	181	-	32	15
Columns	78	70	4	-	4
Shear Walls	45	42	3	-	-

Table 3.9 – Performance level results of 3-storey type 10370 (1998-2004)

3.3.3 Type 10025 R-480

After 2004, 10370 and 10403 type projects have been outdated. Instead of the following new types have been put into practice. (Table 3.10) As an example for the new types, Type 2 (Type 10025 R-480) was selected and analyzed as illustrated below.

Type No	Type Project Name	Total No. of Constructed
Type 1	Type Ragıp Akın	16
Type 2	Type 10025 R-480	22
Type 3	Type 10025 R-720	3
Type 4	Type 2000-42	6

Table 3.10 – Number of new projects which applied during 2004 and 2005

Plan dimensions: 18,93m. - 47,40m.

Slab thickness: 15cm.

Storey height: 3,45m.

No. of bays in x-direction: 11 at 3,65m. and 1 at 6,95m.

No. of bays in y-direction: 2 at 1,80m., 2 at 5,64m and 1 at 3,75m.

The column, beam and shear wall dimensions are shown in the table below.

	b (cm)	d (cm)
Column	45	60
Beam	30	70
Shear Wall 1	30	744
Shear Wall 2	395	30
Shear Wall 3	30	564
Shear Wall 4	410	30

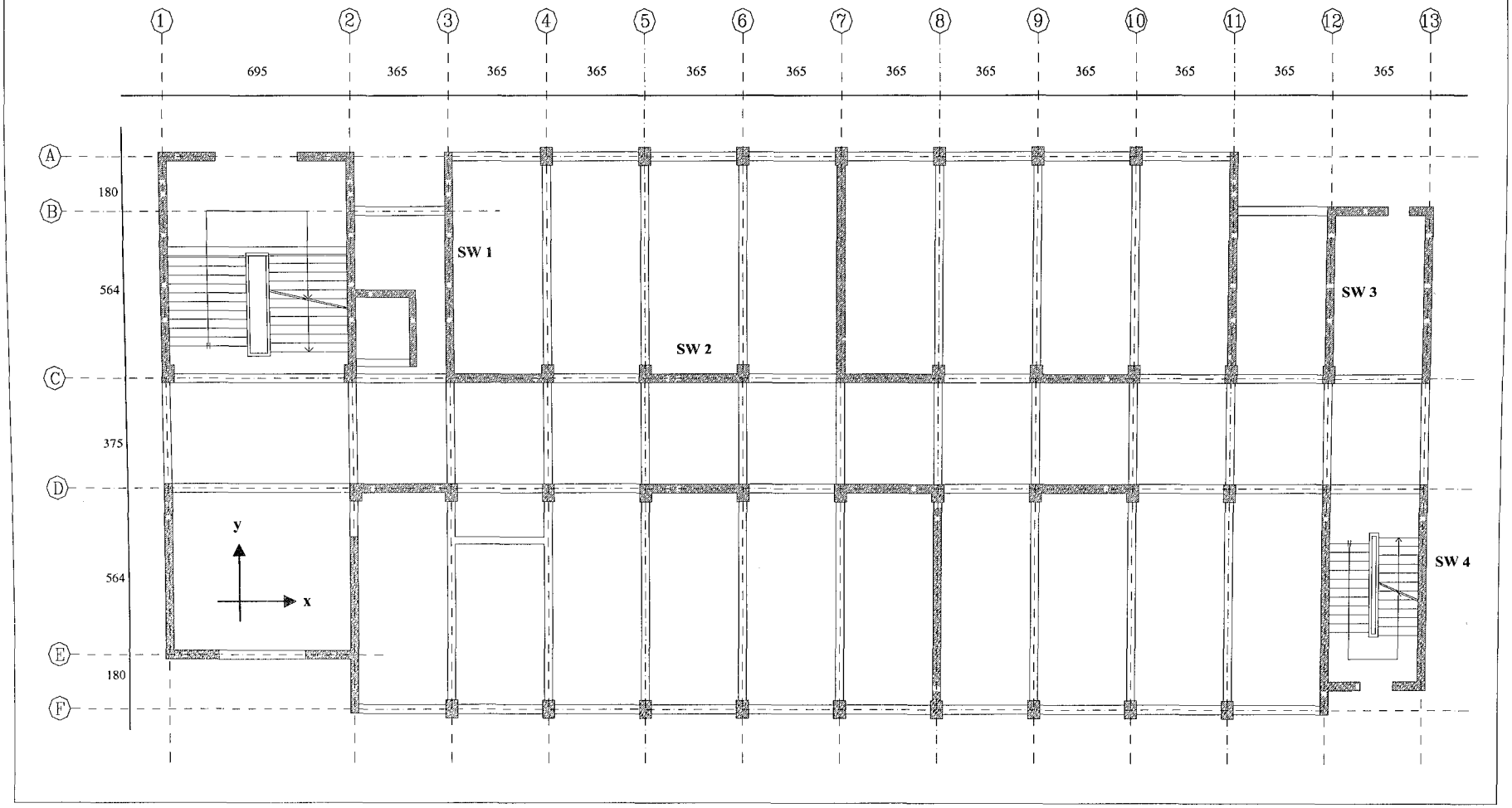

Figure 3.32 – Plan of the type 10025 R-480

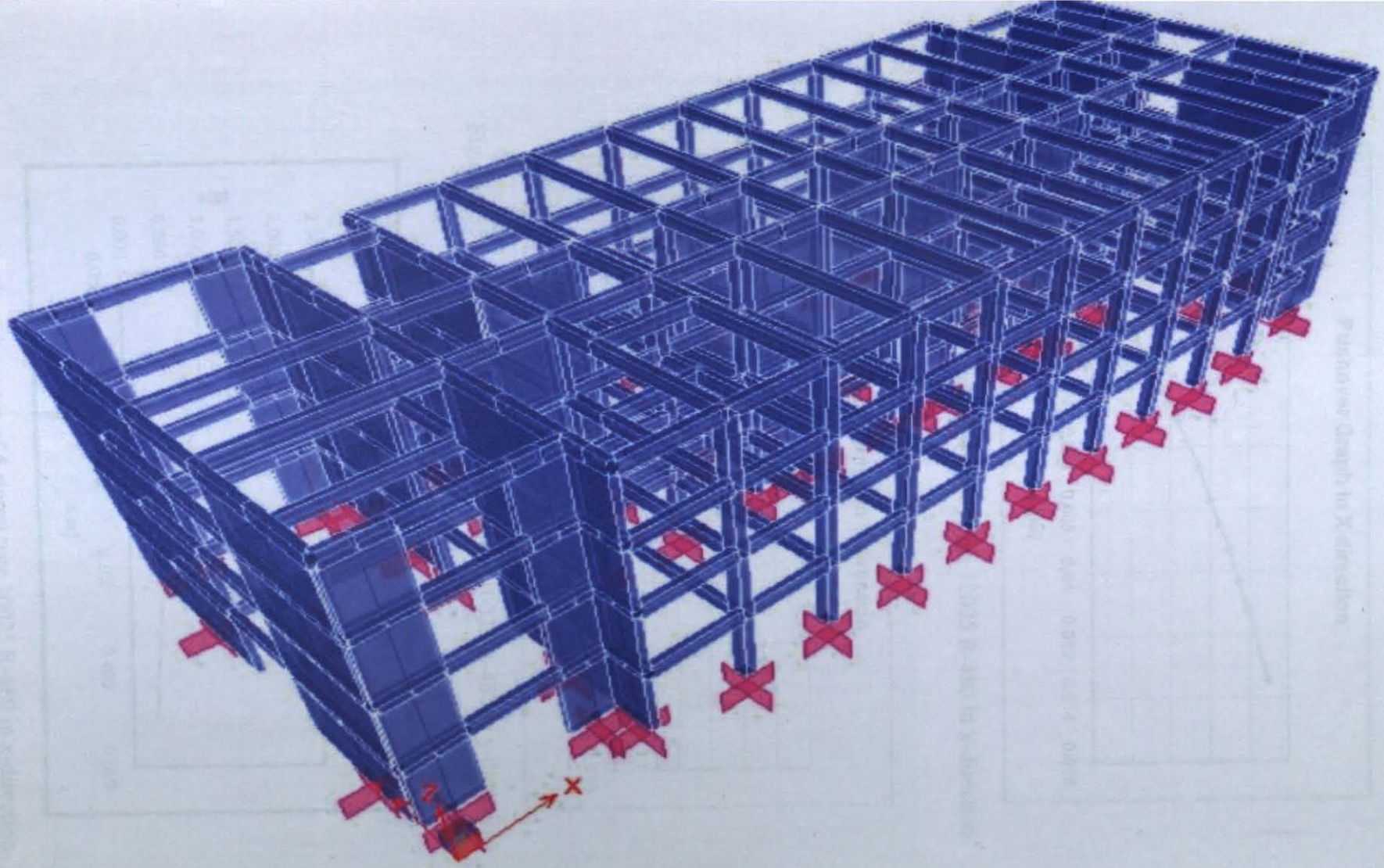

Figure 3.33 – 3D global Sap2000 model of 4 storey type 10025 R-480

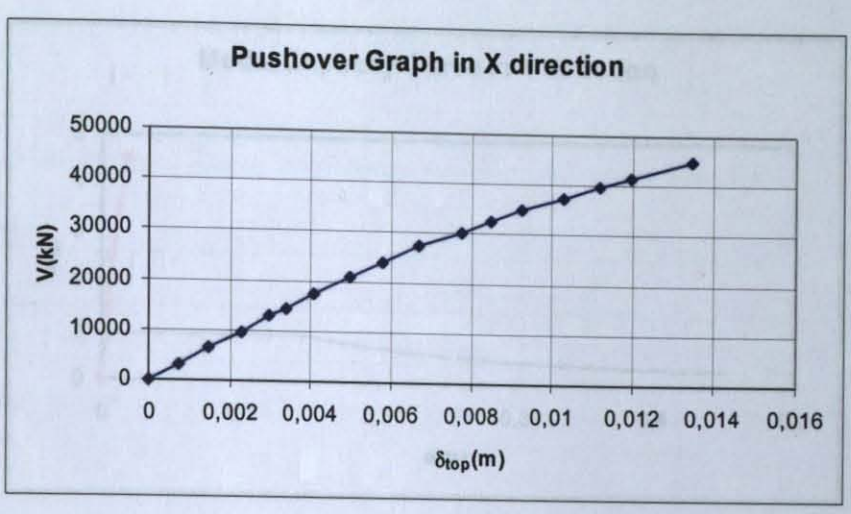

Figure 3.34 – Pushover curve of 4-storey type 10025 R-480 in x-direction

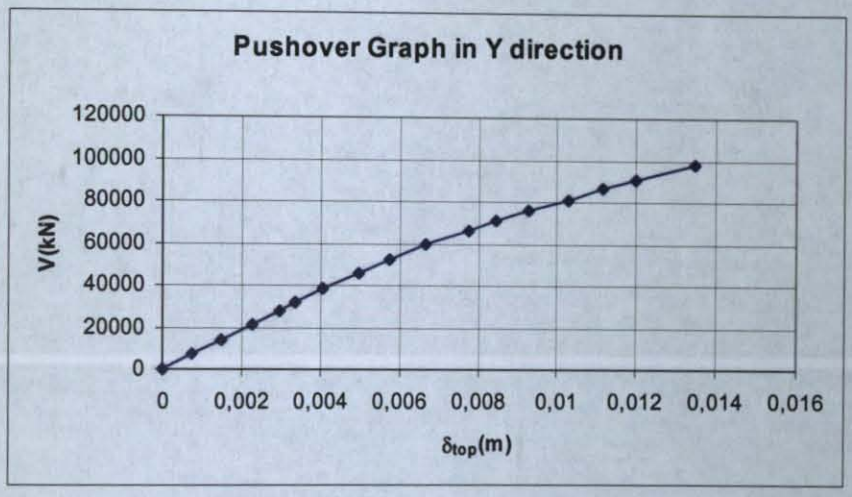

Figure 3.35 – Pushover curve of 4-storey type 10025 R-480 in y-direction

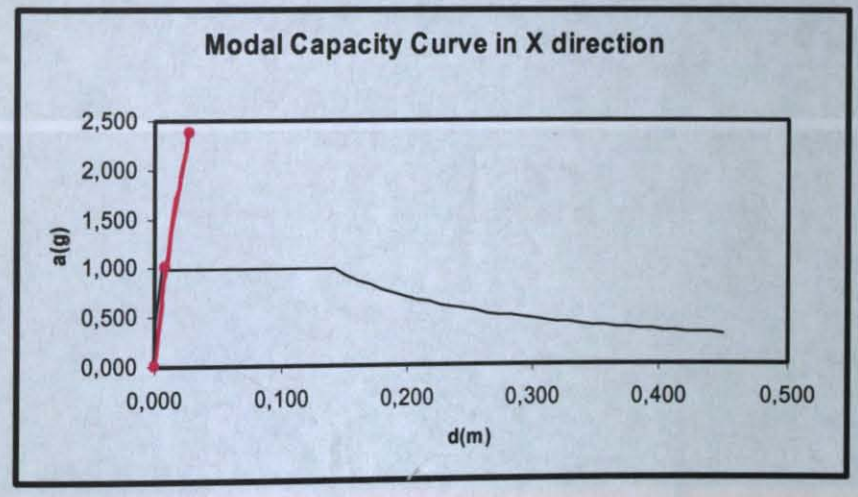

Figure 3.36 – Capacity curve of 4-storey type 10025 R-480 in x-direction

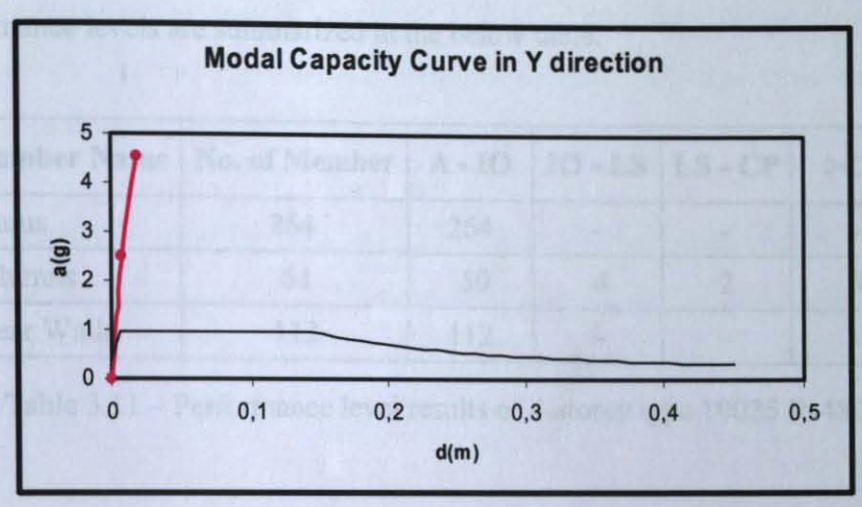

Figure 3.37 – Capacity curve of 4-storey type 10025 R-480 in y-direction

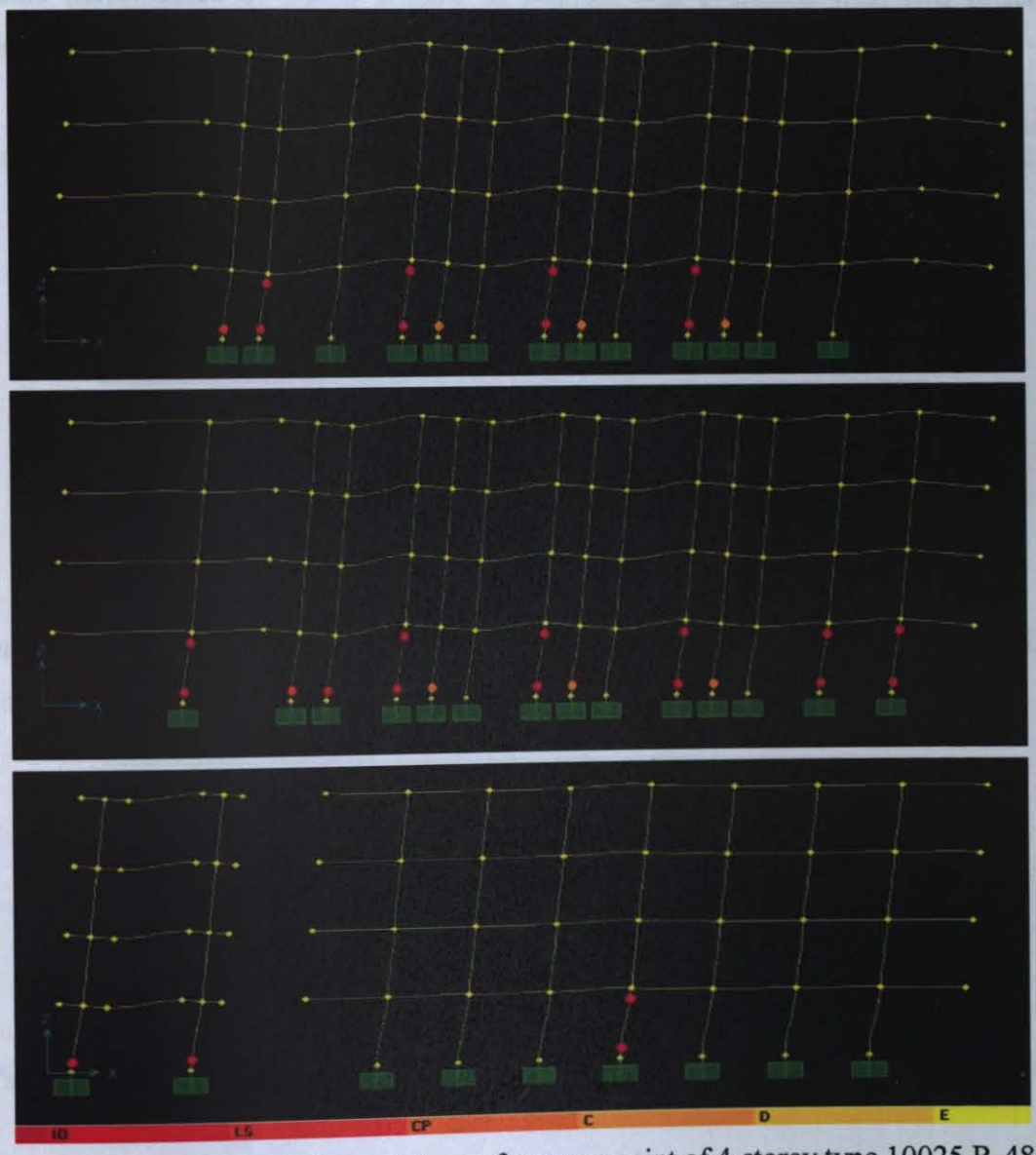

Figure 3.38 – Plastified hinges at the performance point of 4-storey type 10025 R-480

The performance levels are summarized in the below table.

Member Name	No. of Member	A - IO	IO - LS	LS - CP	>CP
Beams	264	264	-	-	-
Columns	64	50	4	2	8
Shear Walls	112	112	-	-	-

Table 3.11 – Performance level results of 4-storey type 10025 R-480

3.3.4 Comparison of the Methods

Seismic performance of public schools in Istanbul was evaluated with two different methods, namely "RVS" and "pushover analysis".

Overall performance evaluation in terms of "RVS scores" are summarized in Table 3.12.

Project Year	Typical Projects and Scores of RVS		
	10370	10403	10025 R-480
1975 - 1998	<2	<2	-
1998 - 2004	>2	>2	-
2004 - 2005	-	-	>2

Table 3.12 – Detailed evaluation schedule according to RVS

Overall performance evaluation results according to "pushover analysis" are summarized in Table 3.13.

Project Year	Typical Projects		
	10370	10403	10025 R-480
1975 - 1998	LS - CP	LS - CP	-
1998 - 2004	IO	IO	-
2004 - 2005	-	-	IO

Table 3.13 – Performance levels of typical projects according to the pushover analysis

The schools constructed between 1975 and 1998 using 10370 and 10403 typical projects had a RVS scores less than 2, indicating detailed analysis. Whereas according to the pushover analysis results the same schools show a performance in the range of LS to CP.

The schools constructed between 1998 and 2004 using 10370 and 10403 typical projects had a RVS score more than 2, meaning that pass the screening process and there is no need for a detailed analysis. These results are compatible with the pushover analysis results.

CHAPTER IV

CONCLUSION

CONCLUSION

A comprehensive data about school buildings in Istanbul Metropolitan Area was collected from the following sources;

1. Directorate of Public Works of Istanbul (Table C.8; C9; C10; C11; C12; C13; C14; C15; C16; C17; C18; C19; C20; C21; C22; C23; C24; C25; C26; C28; C29; C30; C31; C32)
2. Directorate of Education of Istanbul (Table C.1; C2; C3; C4; C5; C6; C7)
3. Emergency Management Center of Governorship of Istanbul (Table C.27)

All the above data are given in detail in CD provided.

RVS procedure was used to see the validity of the scoring process. For this purpose 30 damaged buildings (out of 820) were selected from the building stocks which were damaged during 1999 Kocaeli and Düzce earthquakes. The damaged levels of the selected 30 buildings are given in Table 3.1. All the "lightly damaged" and "strengthened buildings" had a score less than 2. Therefore they needed further detailed analysis. Whereas the newly constructed (according to 1999 Turkish Earthquake Code) buildings which replaced the collapsed buildings had a score greater than 2; therefore no further analysis was necessary for them. Although scoring of RVS procedure was based on USA data, in this exercise the initial prediction were in the correct direction.

A survey of the school types mostly practiced indicated that up to 2004, 1,499 school buildings (out of 2,019) were constructed according to types 10370 and 10403. After 2004 until March 2005, 22 school buildings (out of 49) were constructed according to type 10025 R-480. In order to determine the performance levels of above mentioned schools pushover analysis was carried on the following representative types;

10370 (between 1975 and 1998), (between 1998 and 2004)
10403 (between 1975 and 1998), (between 1998 and 2004)
10025 R-480 (2004 - ....)

From Tables 3.12 and 3.13 one can observe that; in general "RVS" predictions were in compliance with the actually observed damages and detailed analysis results. The scoring of RVS procedure is based on USA practice, thus, when used under different conditions, the scoring indexes should be adjudicated according to the local conditions.

Project Year	Typical Projects and Scores of RVS		
	10370	10403	10025 R-480
1975 - 1998	<2	<2	-
1998 - 2004	>2	>2	-
2004 - 2005	-	-	>2

Table 3.12 – Detailed evaluation schedule according to RVS

Project Year	Typical Projects		
	10370	10403	10025 R-480
1975 - 1998	LS - CP	LS - CP	-
1998 - 2004	IO	IO	-
2004 - 2005	-	-	IO

Table 3.13 – Performance levels of typical projects according to the pushover analysis

According to the "pushover analysis" results (Table 3.13) the schools constructed according to the 1975 code are expected to show LS-CP performance. On the other hand the schools constructed according to the 1998 code are expected to show IO performance.

All the work contained in this thesis was based on the data and documentation collected. The above conclusive remarks about the seismic performance of the school buildings may be altered by the actual held condition and quality control during their application.

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APPENDIX A

PROBLEMS WITH ELEMENTS IN SCHOOLS

PROBLEMS WITH THE STRUCTURAL AND NONSTRUCTURAL ELEMENTS IN SCHOOLS [4]

A.1 Seismic Evaluation

The evaluation of the probability of failure in terms of service interruption in a school should be addressed by taking into consideration the evaluation of the seismic analysis of both the structural and non-structural elements including the equipments.

A.2 Problems Associated with Structural Elements

The basic design problems affecting the seismic performance of schools are:

- Building form irregularities in both the horizontal and vertical planes
- Discontinuities in strength between the major structural elements of the building
- Inadequate diaphragms
- Effects of nonstructural elements on the structural system
- Deficiencies in connections that tie the elements of the building together
- Damage to the nonstructural components and contents of the building

Egress complications and the disruptions of post - earthquake operations are also major concerns.

A.2.1 Building Form Irregularities

Those who have studied the performance of buildings in earthquakes generally agree that the building's form greatly influences its performance under ground motion. This is because the shape and proportion of the building have a major effect on the distribution of earthquake the forces – that is, on the relative size and nature of the forces as they work their way through the building.

A simple and symmetrical building form allows for the most even and balanced distribution of forces, but symmetry of form will not ensure low torsion effects. For instance, even in simple symmetrical rectangular buildings the location of stiff stair and elevator cores, solid and glazed walls, or other design elements that add mass to only one

part of the building can result in different locations of the center of mass and the center of rigidity, and the torsion or twisting that results during an earthquakes has frequently caused substantial damage. (Figure A.1)

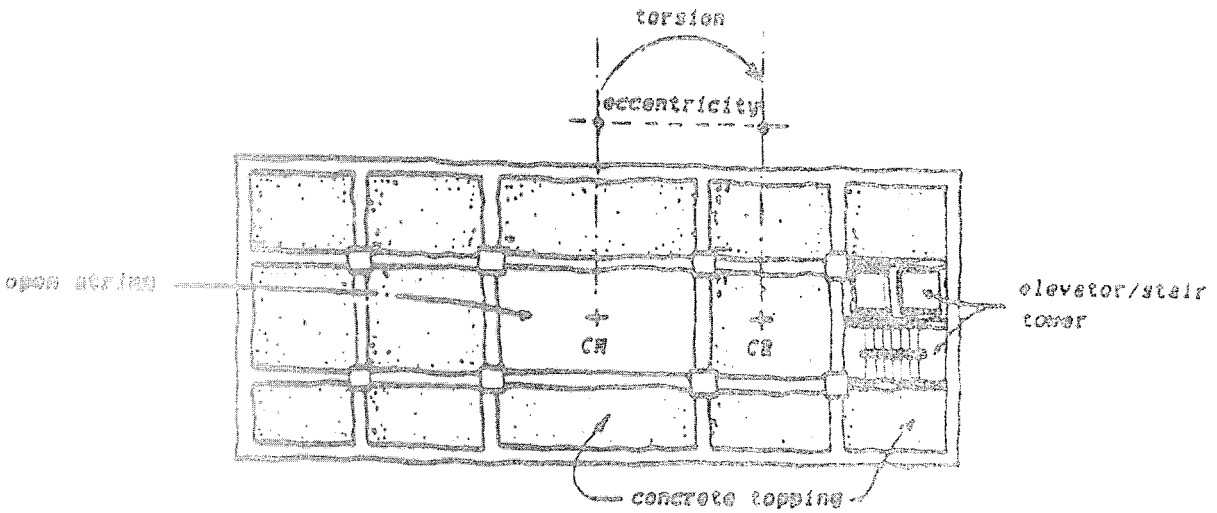


Figure A.1 – Building form-torsional eccentricity

A common building form that presents seismic design problems is that of the "re-entrant corner." The re-entrant corner is the common characteristic of overall building configurations that, in plan, assume the shape of an L, T, U, H, +, or a combination of these shapes. (Figure A.2)

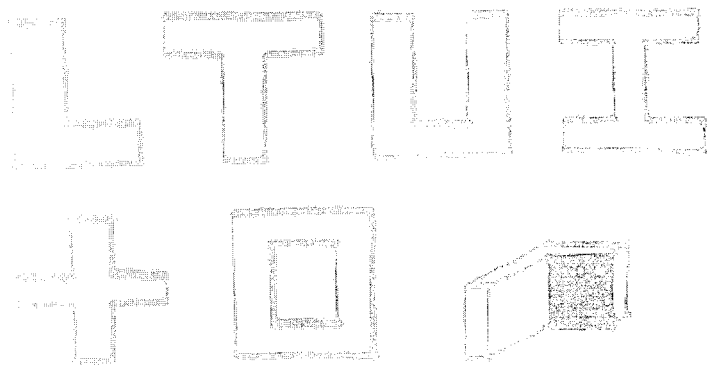


Figure A.2 – Re-entrant corner plan forms

These building shapes permit large plan areas to be accommodated in relatively compact form while still providing a percentage of perimeter rooms with access to air and light. Because of these characteristics, they are so commonly used in school design. These configurations are so common and familiar that the fact that they represent one of the most difficult problem areas in seismic design may seem surprising, but examples of earthquake damage to re- entrant corner type buildings are common. First noted before the turn of the century, this earthquake problem was generally acknowledged by the experts of the day in the 1920's.

These shapes tend to produce variations of rigidity and, hence, differential motions between different portions of the building that result in a local stress concentration at the "notch" or re-entrant corner. (Figure A.3a) In addition, the wings of re-entrant corner building often are of different heights so that the vertical discontinuity of a setback in elevation is combined with the horizontal discontinuity of the re-entrant corner in plan, resulting in even more serious problem. The setback form – a tower on a base or a building with "steps" in elevation – also has intrinsic seismic problems that are analogous to those of the re-entrant corner form. The different parts of the building vibrate at different rates, and where the setbacks occur, a "notch" is created that result in stress concentration. (Figure A.3b)

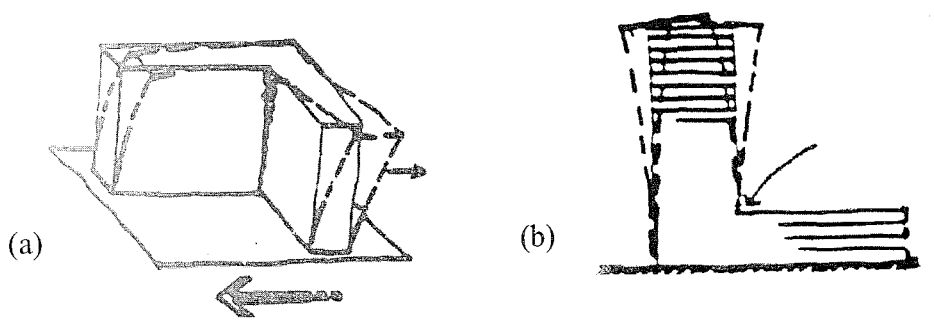


Figure A.3 – (a) movement of L-shaped building under ground motion,
(b) point of stress concentration in setback building

A.2.2 Discontinuities in Strength

An abrupt change in the vertical arrangement of the structure may result in discontinuities (changes) of strength and / or stiffness from floor to floor.

The most prominent of the problems caused by such a discontinuity is that of the "soft" first story (Figure A.4). Mainly, three typical conditions create a "soft" storey;

- The first occurs when there is a significant discontinuity of strength and stiffness between the vertical structure of one floor and the remainder of the structure. This discontinuity may occur because one floor, generally the first, significantly taller than the remainder, resulting in decreased stiffness (Figure A.4a).

- Discontinuity also may occur when some vertical framing elements are not brought down to foundation but are stopped at the second floor to increase the openness at ground level. This condition creates discontinuous load path resulting in an abrupt change of strength and stiffness at the point of change (Figure A.4b).

- Finally, the "soft" story may be created by an open floor that supports heavy structural or nonstructural walls above. This situation most serious when the wall above is a shear wall acting as a major lateral force resisting element (Figure A.4c).

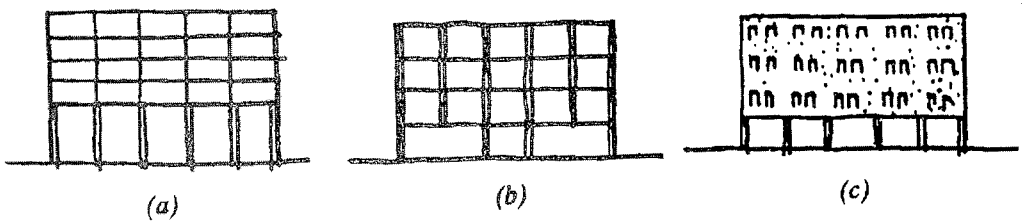


Figure A.4 – "Soft" first story (a) tall, flexible columns,
(b) interrupted vertical columns,
(c) heavy superstructure over slender frame

The basic problem with all these variations of the "soft" story is that most of the earthquake forces in the building, and any consequent structural deformity, tends to be concentrated in the weaker floor or at the point of discontinuity instead of being more uniformly distributed among all stories. The result is that, instead of the building deflection under horizontal forces being distributed equally among all the floors, it is accommodated almost entirely in the lower floors. This causes tremendous stress concentrations at the lower floor connections; failure may occur at these points and result in the collapse or partial collapse of the upper floors (Figure A.5). Where earthquake forces are not an issue, the "soft" story presents no problem, but in earthquakes around the world, buildings with this condition have suffered severely.

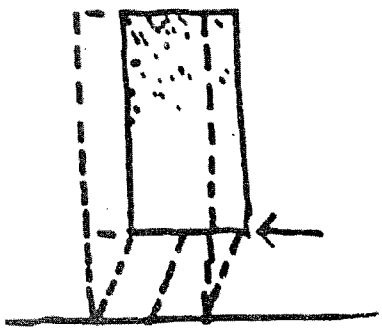


Figure A.5 – Action of "soft" first story under ground motion

The complexity educational facilities tend to result in vertical structural discontinuities. Among the more common situations are the following;

- The interconnecting of tall, long span, rigid areas featuring shear walls (classrooms, hallways) (Figure A.6a)
- The placement of stiff floors above a more flexible first floor (Figure A.6b)
- Discontinuities in column or wall placement from one floor to another (Figure A.6c)

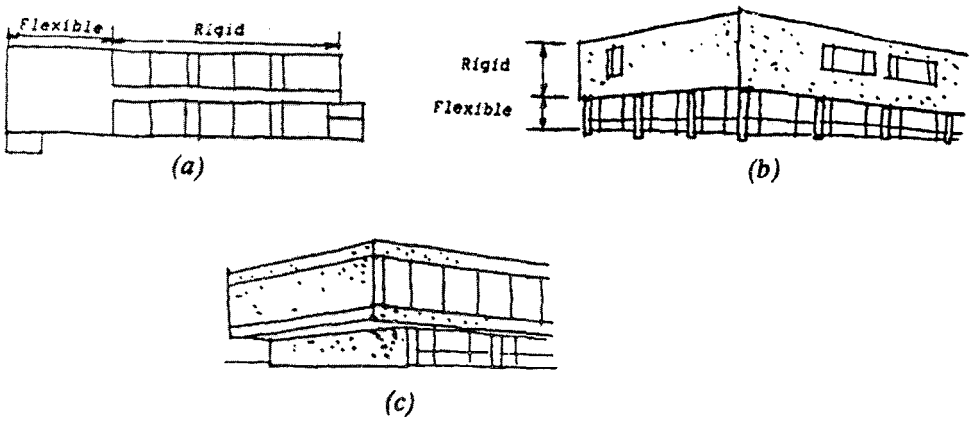


Figure A.6 – Strength discontinuity (a) plan,
(b) elevation,
(c) wall column placement

A.2.3 Inadequate Diaphragms

The earthquake loads at any level of a building will be distributed to the vertical structural elements through the roof and floor diaphragms. The roof/floor deck or slab (the horizontal diaphragm) responds to loads like a deep beam. The deck or slab is the web the beam carrying the shear and perimeter spandrel or wall is the flange of the beam resisting bending (Figure A.7)

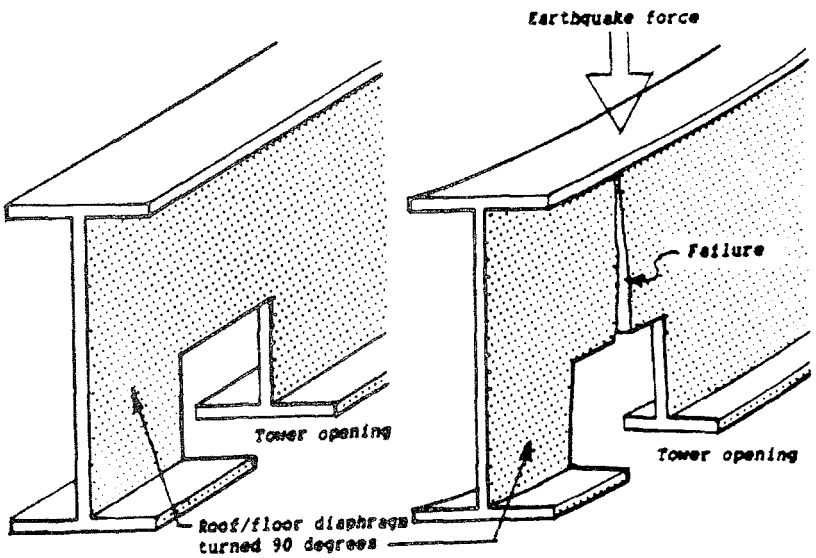


Figure A.7 – Openings in diaphragms

Three factors are important in diaphragm design;

- The diaphragm must be adequate to transfer the forces and must be tied together to act as one unit.

- The collectors (members reinforcing) must transfer the loads from the diaphragm into shear wall.

- Openings or re-entrant corners in the diaphragm must be properly placed and adequately reinforced.

Inappropriate location or excessive size of openings (elevator or stair cores, atria, skylights) in the diaphragm create problems similar to those related to cutting a hole in the web of a beam. This reduces the natural ability of the web to transfer the forces and may cause failure in the diaphragm.

A.2.4 Displacement and Drift

Drift is lateral displacement of one floor relative to the floor below. Buildings subjected to earthquakes need drift control to interior partitions, elevator and stair enclosures, glass, and envelope cladding systems and, more importantly, to minimize differential demands on the seismic resisting structural elements.

Drift control, or the recognition of the amount of potential drift, greatly influences the amount of damage control that is designed into the building. Since damage control generally is not a building code concern for typical buildings and since the state of the art is almost entirely empirical, the drift limits found in codes generally have been established without regard to considerations such as present worth of future repairs versus additional structural costs to limit drift.

Stress or strength limitations imposed by normal design level forces occasionally may provide adequate drift control. However, the design of relatively flexible moment resisting frames and of tall, narrow shear wall buildings for seismic risk areas should be governed, at least in part, by drift considerations. In areas where the potential of high seismic loads is

great, drift considerations are of major concern for buildings of medium height and higher and should be given at least some attention in the design of multistory school buildings.

Total building drift is the absolute displacement of any point in the building relative to the base. Adjoining buildings or adjoining wings of the same building must be considered since individual structures do not have identical modes of earthquake response and, therefore, have the tendency to pound against one another. Building separations or joints must be provided between adjoining structures to permit the different parts to respond independently to the earthquake ground motion.

A.3 Problems Associated with Non-Structural Elements

A.3.1 Non-Structural Infill Walls

The location of certain nonstructural elements can actually change the effectiveness of the structural elements. For instance, the location of a rigid element (stair and elevator cores, masonry infill walls) between more flexible columns will change the "flexible" elements into rigid members. Since rigid members attract seismic forces, the columns could be subjected to forces greater than those for which they were deigned and failure may result. Thus, if a column designed for a full height deflection becomes a "shorter" column because of the location of a rigid infill wall, it will actually carry a larger portion of the lateral forces than assumed since horizontal forces are distributed in proportion to the rigidity of the resisting member (Figure A.8).

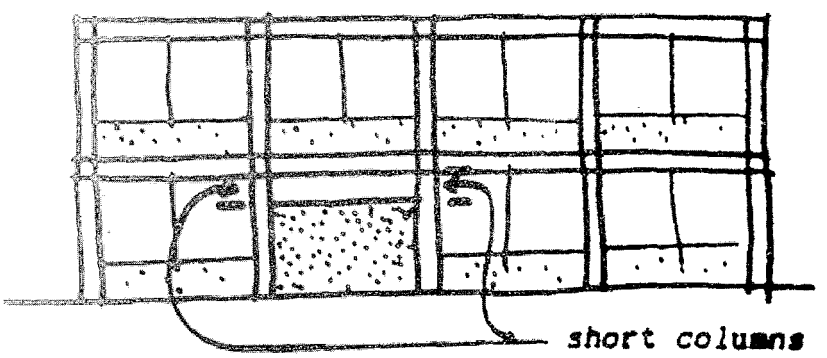


Figure A.8 - Nonstructural infill creates short columns that attract earthquake forces

Particular problems in terms of the effect nonstructural components can have on the structural system in schools are as follows;

- The location of rigidly connected stairs within more flexible long span spaces (multipurpose rooms) can modify the assumed deflection of the columns surrounding the cores, creating torsion and attracting a disproportionate load to the staircase structure (Figure A.9).

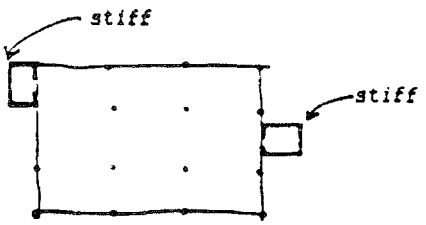


Figure A.9 – Effect of stairway placement

- The use of infill walls between columns (forming windows in classrooms) can effectively stiffen the beams and shorten the columns, attracting higher loads than assumed in the design calculations (Figures A.10).

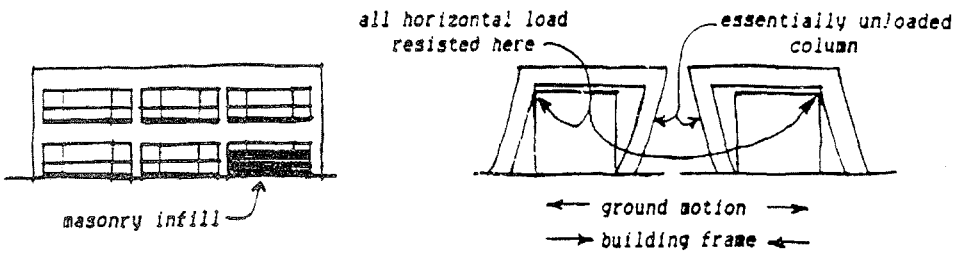


Figure A.10 – Effect on infill walls

- The addition of rigid infill nonstructural walls between columns separating classrooms can increase the stiffness of the columns far above what was assumed in the structural design.

A.3.2 Connections

Structural member connections are among the most critical elements of earthquake-resistant design. Probably the most important single attribute of an earthquake-resistant building is that it is tied together to act as a unit, but no set of seismic provisions issued before the NEHRP Recommended Provisions (and its predecessor, the Applied Technology Council's ATC 3-06) stated this requirement. It is generally accepted by structural engineers that to develop adequate connections between structural elements is more difficult than to provide strength in the members themselves. This has been demonstrated clearly in past earthquakes where considerable damage originated at connections rather than in the structural members.

Furthermore, properly designed structural elements are usually ductile – i.e., their failure is preceded by large permanent deformations that dissipate a considerable amount of energy. On the other hand, connections often are relatively brittle. Therefore, a good structural design requires connections to be stronger than the members they connect so as to force failure to take place in the ductile members rather than in the relatively brittle connections.

A structural element cannot transmit forces in excess of the capacity of the connections used to join the elements together. Thus, the structural members and the elements that connect them should be of approximately equal strength to be fully effective. If there is a weak link, the earthquake will find it.

The issue of connections is particularly important for structures that rely on a small number of supporting members, such as a roof supported by four columns. If one column or its connection fails, the roof falls. If the same roof is supported by eight columns, the loss of one column may not be serious. Engineers refer to the attribute of having more than the minimum number of structural members as "redundancy". It provides an important additional safety factor.

The large open spaces common in schools often completely lack redundancy which means that every component must remain operative to ensure the integrity of the structural system under lateral loads. Thus, appropriate connections should be used and consideration should be given to the use of higher performance connections (ductile, in particular).

Redundant characteristics can be obtained by providing several different types of seismic-resisting systems in a building; however, the designer must be careful to consider the relative stiffness and strength of the various systems in order to avoid problems. Redundancy also can be provided by increasing the number of elements (columns, shear walls), adding new elements (cross frames, bracing), or modifying some elements (increasing reinforcement and anchoring the framing to change interior nonstructural walls and panels into shear walls).

In a moment resisting frame system, redundancy can be achieved by making all joints of the vertical load - carrying frame moment resisting. Of course, proper ductility must be provided in the members of the structural system. These multiple points of resistance can prevent a catastrophic collapse due to failure of a member or joint. However, if this system is designed with the moment resisting connections limited to exterior columns (a common practice) clad only in lightweight architectural curtain walls, the building may experience large deformations during an earthquake and, consequently, a great deal of interior damage.

Particular issues related to structural system redundancy in school design are as follows;

- Failure to use the large amounts of interior wall (classrooms, corridors) as redundant systems to the primary structural system and neglect of the influence of the relative stiffness of both systems

- Use of limited numbers of columns (longer spans) in large open spaces (auditorium, cafeteria), causing these elements to become extremely critical

- Discontinuity of the uniformity of the structural system through the location of large long span areas

- Placement of openings (stacked, uniform classroom doors and windows) in the interior and exterior shear walls causing large forces to be concentrated in certain weak elements

A.3.3 Site Geology

The second category of earthquake effects involves ground motion. Ground motion does not damage a building by externally applied loads or pressure as in gravity or wind loads or pressure as in gravity or wind loads, but rather by internally generated inertial forces caused by vibration of the building's mass.

The natural tendency of any object to vibrate back and forth at a certain rate (generally expressed in seconds or fractions of a second) is its fundamental or natural period. Low to mid-rise buildings have periods in the 0.10 to 0.50 second range while taller, more flexible buildings have periods between 1 and 2 seconds or greater.

Harder soils and bedrock will efficiently transmit short period vibrations (caused by near earthquakes) while filtering out longer period motions (caused by distant earthquakes) whereas softer soils will transmit longer period vibrations.

As a building vibrates under ground motion, its acceleration will be amplified if the fundamental period of the building coincides with the period of the vibrations being transmitted through the soil. This amplified response is called resonance.

Natural periods of soil are usually in the range of 0.5 to 1.0 second so that it is entirely possible for the building and ground to have the same fundamental period and, therefore, for the building to approach a state of resonance. This was the case for many 5- to 15-story buildings in the 1985 earthquake in Mexico City.

An obvious design strategy, if one can predict approximately the rate at which the ground will vibrate, is to ensure that buildings have a natural period different from that of the expected ground vibration to avoid amplification.

A.3.4 Nonstructural Component and Content Design Strategy

The more common nonstructural elements in school buildings that should be given special design attention include;

Appendages	Entrance canopies, overhangs, balconies /roof-mounted mechanical units and signs/roofed walkways
Enclosures	Exterior nonbearing walls/exterior infill walls/veneer attachments /curtain wall system attachments
Partitions	Stairs and shafts /horizontal exits /corridors /fire separation partitions
Ceilings	Fire rated and non-fire-rated
Doors/Windows	Room-to-hallway doors/fire doors/lobby doors and glazing /windows and curtain walls/atrium spaces and skylights/glass elevator enclosures.
Lighting	Light fixtures/emergency lighting
Emergency	Structural fireproofing/emergency electrical system/fire and smoke detection system/fire suppression systems (sprinkler)/smoke removal systems/signage
Mechanical	Large equipment including chillers, heat pumps, boilers, furnaces, fans/smaller equipment including room air conditioning or heating units/cooling towers/tanks, heat exchangers, and pressure vessels/utility and service interfaces/ducts and diffusers/piping distribution systems
Electrical	Communication systems/electrical bus ducts and primary cable systems/electric motor control centers; transformers, and switchgear
Contents	Library book stacks, filing cabinets and bookcases/computers, printers, and copying equipment/lockers/stage and curtain equipment/home economics, shop, laboratory, and food preparation equipment/laboratory supplies

To overcome these problems some minimum design levels have been proposed by the NEHRP. The following design strategies (Figure A.11) should be evaluated to determine the correct procedure to protect a particular nonstructural component once its physical characteristics, location, and importance are given;

Nonstructural Systems	Flexibility/Deformation	Anchorage	Bracing	Stability	Strengthening	Separation/Isolation	Slip/Control Joints	Reduced Mass	Containment	Incorporation	Location
Exterior Elements		●	●		●			●	○	○	●
Enclosure Systems	●						●	●		●	
Finishes/Veneers	●	●					○	●			
Partitions	○	●				●	●				
Ceiling Systems		●	●		○	●		○		●	
Lighting Systems		●	●		○	○				○	
Glazing	●				●	●					●
Transportation System					●	●	●				●
Mechanical Systems	●	●	●					●			●
Furnishings/Equipment		●		●	●			●			

Figure A.11 – Earthquake strategies for nonstructural components

(identifies possible strategies and , strategies with high potential)

- Increased flexibility – Improving the ability of the element to move under earthquake loading and, thus, reducing the forces on the element (e.g., using a light fixture that enables it to sway safely)

- Anchorage – Providing for proper connection of the component to the building structure or other suitable element to resist slippage or overturning (e.g., the anchorage of heavy tanks)

- Bracing – Properly restraining the component to resist lateral movement and possible breakage (used for pipes, ducts, ceiling)

- Increased stability – Improving the inherent geometrical resistance of an element to earthquake forces by reconfiguring it (e.g., bolting together storage racks to provide a wider base)

- Isolation – Separating the element from its support (by springs or other devices) so that floor movements are not transmitted to the component

- Slip or control joints – Improving the ability of the element to move independently of its support and, thus, limiting the transfer of energy

- Mass reduction – Reducing the weight of the component to reduce the inertial forces on it

- Relocation – Changing the location of a component in order to reduce its vulnerability or threat to occupants (e.g., moving a heavy tank from a roof to a basement)

APPENDIX B

RAPID VISUAL SCREENING PROCEDURE

THE RAPID VISUAL SCREENING PROCEDURE

This chapter describes the methodology for Rapid Visual Screening (RVS) of buildings for potential seismic hazard. This method was developed by Applied Technology Council (ATC) [1] for Federal Emergency Management Agency (FEMA) in a process for determining the potentially hazardous buildings.

B.1 Introduction

A rapid visual screening procedure is a methodology that, with associated background information, would permit an individual to visually inspect a building and, by obtaining selected data, to arrive to a decision as to which the building should be further studied by an experienced professional engineer who would conduct a more in-depth review of the seismic capacity using structural drawings, design calculations, and perhaps inspecting the structure itself.

The RVS procedure has been formulated to identify, inventory, and rank buildings that are potentially seismically hazardous. The RVS procedure can be implemented relatively quickly and inexpensively to develop a list of potentially hazardous buildings without the high cost of a detailed seismic analysis of individual buildings.

Visual inspection would be a "sidewalk survey" done from the street, without benefit of entry to the building and without access to the structural drawings or most other supplementary information.

The required information such as dimensions of the building, its occupancy, structural materials and systems, condition, and etc., are entered onto a form. The inspection, data collection, and decision-making process typically will occur at the building site, taking an average of 15 to 30 minutes per building (30 minutes to one hour if access to the interior is available).

Use of the RVS on a community-wide basis enables the RVS authority to divide screened buildings into two categories:

i. those that are expected to have acceptable seismic performance
ii. those that may be seismically hazardous and should be studied further

Although RVS is applicable to all buildings, its principal purpose is to identify:

i. older buildings designed and constructed before the adoption of adequate seismic design and detailing requirements
ii. buildings on soft or poor soils
iii. buildings having performance characteristics that negatively influence their seismic response

The RVS procedure is designed to be implemented without performing structural analysis calculations. The RVS procedure utilizes a scoring system that requires the user:

i. identify the primary structural lateral-load-resisting system
ii. identify building attributes that modify the seismic performance expected of this lateral-load-resisting system.

This report is based on a Basic Structural Hazard Score. The scores for various building types are provided on the form, and the screener circles the appropriate one. For many buildings, viewed only from the exterior, this important decision requires the screener to be trained and experienced in building construction. The screener modifies the Basic Structural Hazard Score by identifying and circling Score Modifiers, which are related to observed performance attributes, and which are then added (or subtracted) to the Basic Structural Hazard Score to arrive at a final Structural Score, S. The Basic Structural Hazard Score, Score Modifiers, and final Structural Score, S, all relate to the probability of building collapse, should severe ground shaking occur (that is, a ground shaking level equivalent to that currently used in the seismic design of new buildings). Final S scores typically range from 0 to 7, with higher S scores corresponding to better expected seismic performance.

An S score of 2 is suggested as a "cut-off", based on present seismic design criteria. Using this cut-off level, buildings having an S score of 2 or less should be investigated by a design professional experienced in seismic design.

B.2 Structural Hazard Scores (S)

Having employed the RVS procedure and determined the building's Final Structural Score, S, which is based on the Basic Structural Hazard Score and Score Modifiers associated with the various performance attributes, the final S score is an estimate of the probability (or chance) that the building will collapse if ground motions occur that equal or exceed the maximum considered earthquake (MCE) ground motions (the current FEMA 310 ground motion specification for detailed seismic evaluation of buildings). These estimates of the score are based on limited observed and analytical data, and the probability of collapse is therefore approximate.

The Structural Hazard Score should be based rationally and should be physically meaningful. It is recommended that it should be a measure of the probability of major seismic damage to the building. Major damage is taken to be direct physical damage being 60 % or greater of the building value.

60 % as heavy damage is selected because:

i. it is the lower end of the major Damage State
ii. if 60 percent of a building's value is damaged, experience has shown that demolition rather then repair often ensues
iii. if 60 percent damage is selected, then most buildings likely to collapse will be included in this category, so that life-safety-related hazardous buildings (due to shaking) are probably all captured.

The Basic Structural Hazard Score is determined from the following equation:

Basic Structural Hazard Score = -log (probability of Damage >= 60%)

For example, a final score of S = 3 implies there is a chance of 1 in 10^3, or 1 in 1000, that the building will collapse if such ground motions occur. A final score of S = 2 implies there is a chance of 1 in 10^2, or 1 in 100, that the building will collapse if such ground motions occur.

The ability to relate Basic Structural Hazard Score to physical damage has the further virtue of providing a rational analytical basis for quantifying structural penalties for factors such as age, and configuration. If the impact of these factors on the likelihood or (probability) of major damage can be quantified, then the logarithm of this quantity is the modifier. Although lack of data and the present state of the art may preclude general quantification of the effect of factor such as "soft story" at present as new data emerge on the effect of this factor, its quantification can be directly related to a penalty on the Basic Structural Hazard scores.

The goal of this screening process is to inspect the schools in Istanbul. Since schools are expected to remain in service after a certain earthquake, the decision of the cut-off score S should satisfy the requirement of the serviceability of these schools. However, in the recommended method, the final Structural Score S is directly related to the probability of major damage. A cut-off value of S of 1 indicate the probability of a major damage of 1 in 10, and a value of an S of 2 corresponds to a probability of 1 in 100 and so on.

Due to these facts, the maximum safety of the structure should be insured and a higher cut-off value should be assigned for the schools. But, since schools in Istanbul are rather old or designed to previous code provisions, the assigned cut-off value of S given by the RVS method which is S >= 2 will be used in the judgment of the schools to see whether a detailed evaluation is required or not.

The main goal of the first screening process is to find out whether the screened school requires a detailed analysis or not. Any school with a structural score of S >= 2 pass the screening process and do not require a detailed evaluation: however, a school with a structural score of S < 2 requires a detailed analysis.

B.3 Effective Peak Ground Acceleration (EPGA)

Effective Peak Ground Accelerations are expressed in terms of three map areas: High, Moderate and Low. (Figures B.2, B.3 and B.4). For Istanbul, the EPGA was determined from Hazard Map given in Figure B.1. The EPGA for Istanbul is assumed to be between (0.3-0.4g), therefore, the Figure B.4 form (NEHRP Map Areas 5,6,7 High) was used for the analysis.

B.4 Implementation Sequence of RVS

There are several steps involved in planning and performing an RVS of potentially seismically hazardous buildings. As a first step, if it is to be a public or community project, the local governing body and local building officials should formally approve of the general procedure. Second, the public or the members of the community should be informed about the purpose of the screening process and how it will be carried out.

The general sequence of implementing the RVS procedure includes:

- Budget development and cost estimation, recognizing the expected extent of the screening and further use of the gathered data

- Pre-field planning, including selection of the area to be surveyed, identification of building types to be screened, selection and development of a record-keeping system, and compilation and development of maps that document local seismic hazard information
- Selection and review of the Data Collection Form

- Selection and training of screening personnel

- Acquisition and review of pre-field data: including review of existing building files and databases to document information identifying buildings to be screened (e.g., address, lot number, number of stories, design date) and identifying soil types for the survey area

- Review of existing building plans, if available

- Field screening of individual buildings

- Checking the quality and filing the screening data in the record-keeping system, or database

B.5 Data Collection Form

This section discusses the layout and use of data collection forms which is shown in Figure B.2, Figure B.3 and Figure B.4. There are three Data Collection Forms, one for each of the following three regions of seismicity: low (L), moderate (M), and high (H).

B.5.1 Basic Information

Each Data Collection Form provides space to record the building identification information, such as address, zip code, the date of the survey, and identity of the surveyor, draw a sketch of the building (plan and elevation views), attach a photograph of the building, indicate the occupancy, indicate the soil type, document the existence of falling hazards, develop a Final Structural Score, S, for the building, indicate if a detailed evaluation is required, and provide additional comments.

The Data Collection Form is completed for each building screened through execution of the following steps:

1. Verifying and updating the building identification information

2. Walking around the building to identify its size and shape, and sketching a plan and elevation view on the Data Collection Form

3. Determining and documenting occupancy

4. Determining soil type, if not identified during the pre-planning process

5. Identifying potential nonstructural falling hazards, if any, and indicating their existence on the Data Collection Form

6. Identifying the seismic lateral-load resisting system (entering the building, if possible, to facilitate this process) and circling the related Basic Structural Hazard Score on the Data Collection Form

7. Identifying and circling the appropriate seismic performance attribute Score Modifiers (e.g., number of stories, design date, and soil type) on the Data Collection Form

8. Determining the Final Score, S (by adjusting the Basic Structural Hazard Score with the Score Modifiers identified in Step 7), and deciding if a detailed evaluation is required

9. Photographing the building and attaching the photo to the form (if an instant camera is used), or indicating a photo reference number on the form (if a digital camera is used).

B.5.2 Building Identification Information

Space is provided in the upper right-hand portion of the Data Collection Form to document building identification information (i.e., address, name, year built, number of stories, and other data). Proper identification and location of the building is critically important for subsequent use in hazard assessment and mitigation by the RVS authority. It is recommended that the street address and zip code be recorded on the form. Following is guidance and discussion pertaining to number of stories, year built, identification of the screener, and estimation of total floor area.

Number of stories and year built information are the key elements of the RVS procedure. Building age is tied directly to design and construction practices. Therefore, age can be a factor in determining building type and thus can affect the final scores.

B.5.3 Sketch

As a minimum, a sketch of the plan of the building should be drawn on the Data Collection Form. The sketches are especially important, as they reveal many of the building's attributes to the screener as the sketch is made.

B.5.4 Soil Type

Soil type has a major influence on amplitude and duration of shaking, and thus structural damage. The deeper the soils at a site, the more damaging the earthquake motion will be. The six soil types considered in the RVS procedure are the same as specified in the FEMA 302 report. The six soil types, with measurable parameters that define each type, are:

- Type A (hard rock) - measured shear wave velocity, $v_s > 5000$ fl/sec.
- Type B (average rock) - v_s between 2500 and 5000 ft/sec
- Type C (soft rock and very dense soil) - v_s between 1200 and 2500 ft/sec, or standard blow count $N > 50$, or undrained shear strength $s_u > 2000$ psf.
- Type D (stiff soil) - v_s between 600 and 1200 ft/sec, or standard blow count N between 15 and 50, or undrained shear strength, s_u between 1000 and 2000 psf.
- Type E (soft soil) - more than 100 feet of soft soil with plasticity index $PI > 20$, water content $w > 40\%$, and $s_u < 500$ psf; or a soil with $v_s < 600$ ft/sec.
- Type F (poor soil) - soils requiring site-specific evaluations

(The parameters v_s N, and s_u are, respectively, the average values of shear wave velocity. Standard Penetration Test (SPT) blow count and undrained shear strength of the upper 100 feet of soils at the site.)

To be able to assign the soil condition for the schools located in Istanbul, the map of Istanbul province by province is required. Then, the soil type of the site is assigned, accordingly; penalties will be assigned in the Structural Scores and Modifiers form for the schools in that site.

B.5.5 Occupancy

The occupancy of a building refers to its use, whereas the occupancy load is the number of people in the building. Although usually not bearing directly on the structural hazard or probability of sustaining major damage, the occupancy of a building is of interest and use when determining priorities for mitigation. Nine general occupancy classes that are easy to recognize have been defined. They are listed on the form as Assembly, Commercial, Emergency Services, Government, Historic, Industrial, Office, Residential, School buildings.

B.5.6 Falling Hazards

Nonstructural falling hazards such as chimneys, parapets, cornices, veneers, overhangs and heavy cladding can pose life-safety hazards if not adequately anchored to the building. Although these hazards may be present, the basic lateral-load system for the building may be adequate and require no further review. The falling hazards of major concern are: unreinforced chimneys, parapets and heavy cladding.

B.5.7 Building Types and Related Structural Scores

The lateral-load-resisting system is one of fifteen types that have been observed to be prevalent, based on studies of building stock in the United States. The fifteen types are consistent with the model building types identified in the FEMA 310 Report and the predecessor documents that have addressed seismic evaluation of buildings (e.g., ATC, 1987; BSSC, 1992). (Table B.1)

		Seismic Area (NEHRP MAP AREAS)		
	Building Identifier	**low (1,2)**	**moderate (3,4)**	**high (5,6,7)**
W1	LIGHT WOOD FRAME	7.4	5.2	4.4
W2	WOOD FRAME	6.0	4.8	3.8
S1	STEEL M/R FRAME	4.6	3.6	2.8
S2	STEEL BRACED FRAME	4.6	3.6	3.0
S3	LIGHT METAL FRAME	4.6	3.8	3.2
S4	STEEL F. W/C SHEAR WALLS	4.8	3.6	2.8
S5	STEEL F. W/URM INFILLS	5.0	3.6	2.0
C1	CONCRETE M/R FRAME	4.4	3.0	2.5
C2	CONCRETE SHEAR WALL	4.8	3.6	2.8
C3	CONCRETE F. W/ URM INFILLS	4.4	3.2	1.6
PC1	TILT-UP	4.4	3.2	2.6
PC2	PRECAST CONCRETE	4.6	3.2	2.4
RM1	RM W/FLEXIBLE FLOOR	4.8	3.6	2.8
RM2	RM W/RIGID DIAGHRAGMS	4.6	3.4	2.8
URM	URM BEARING WALL	4.6	3.4	1.8

Table B.1 – Basic Structural Hazard Scores for all Building Classes and NEHRP Areas

For each of these fifteen model building types, a Basic Structural Hazard Score has been computed that reflects the estimated likelihood that building collapse will occur if the building is subjected to the maximum considered earthquake ground motions for the region. The Basic Structural Hazard Scores are based on the damage and loss estimation functions provided in the FEMA-funded HAZUS damage and loss estimation methodology (NIBS, 1999). The Basic Structural Scores are provided on each Data Collection Form in the first row of the structural scoring matrix in the lower portion of the Data Collection Form.

B.5.8 Lateral-Force-Resisting System

At the heart of the RVS procedure is the task of identifying the lateral-force-resisting system from the street. Once the lateral-force-resisting system is identified, the screener finds the appropriate alpha-numeric code on the Data Collection Form and circles the Basic Structural Hazard Score immediately beneath it.

B.5.9 Modifiers

This section discusses major factors that significantly impact structural performance during earthquakes, and the assignment of Score Modifiers related to each of these factors (attributes). The severity of the impact on structural performance varies with the type of lateral-force-resisting system; thus the assigned Score Modifiers depend on building type. Score Modifiers associated with each performance attribute are indicated in the scoring matrix on the Data Collection Form.

Accordingly there are a number of factors that can modify the seismic performance of a structure causing the performance of an individual building to differ from the average. These factors basically are related to significant deviations from the normal structural practice or conditions, or have to do with the effect of soil amplification on the expected ground motion.

The number and variety of such performance modification factors, for all types of buildings, is very large and many of these cannot be detected from the street on the basis of a rapid visual inspection. Because of this, based on querying of experts and check - list from ATC-14, a limited number of the most significant factors were identified. Factors

considered for this RVS were limited to those having an especially severe impact on seismic performance. Those that could not be readily observed from the street were eliminated. The performance modification factors were assigned values, based on judgment, such that when added to the Basic Structural Hazard Scores above, (or subtracted depending on whether their effect was to decrease or to increase the probability of major damage) the resulting modified score would approximate the probability of major damage given the presence of that factor.

Following are descriptions of each performance attribute, along with guidance on how to recognize each from the street. If a performance attribute does not apply to a given building type, the Score Modifier is indicated with "N/A", which indicates "not applicable".

B.5.9.1 Mid-Rise Buildings

If the building has 4 to 7 stories, it is considered a mid-rise building, and the score modifier associated with this attribute should be circled.

B.5.9.2 High-Rise Buildings

If the building has 8 or more stories, it is considered a high-rise building, and the score modifier associated with this attribute should be circled.

B.5.9.3 Vertical Irregularity

Buildings with major cantilevers, major setbacks, or vertical geometric irregularities, in- plane offset, weak story, weight irregularity slopped walls or columns, slopped grade or other structural features that would cause a significant change in the stiffness in the upper stories of the building.

B.5.9.4 Plan Irregularity

Plan irregularity can affect all building types. Plan irregularities causing torsion are especially prevalent among corner buildings, in which the two adjacent street sides of the building are largely windowed and open, whereas the other two sides are generally solid. Wedge-shaped buildings, triangular in plan, on corners of streets not meeting at 90°, are similarly susceptible.

Although plan irregularity can occur in all building types, primary concern lies with wood, tilt-up, pre-cast frame, reinforced masonry and unreinforced masonry construction. Damage at connections may significantly reduce the capacity of a vertical-load-carrying element, leading to partial or total collapse.

B.5.9.5 Pre-Code

This Score Modifier applies for buildings in high and moderate seismicity regions and is applicable if the building being screened was designed and constructed prior to the initial adoption and enforcement of seismic codes applicable for that building type (e.g., steel moment frame, S1).

B.5.9.6 Post-Benchmark

This Score Modifier is applicable if the building being screened was designed and constructed after significantly improved seismic codes applicable for that building type (e.g., concrete moment frame, C1) were adopted and enforced by the local jurisdiction. The year in which such improvements were adopted is termed the "benchmark" year. Benchmark year(s) for the various model building types should have been identified as part of the Data Collection Form review process during the pre-planning stage.

B.5.9.7 Soil Type

Score Modifiers are provided for Soil Type C, Type D, and Type E. The appropriate modifier should be circled if one of these soil types exists at the site. If sufficient guidance or data are not available during the planning stage to classify the soil type as A through E, a soil type E should be assumed. However, for one- or two-story buildings with a roof height equal to or less than 25 feet, a class D soil type may be assumed if the actual site conditions are not known. There is no Score Modifier for Type F soil because buildings on soil type F cannot be screened effectively by the RVS procedure.

B.5.10 Final Score

The Final Structural Score, S, is determined for a given building by adding (or subtracting) the Score Modifiers for that building to the Basic Structural Hazard Score for the building. The result is documented in the section of the form entitled Final Score. Based on this information, and the "cut-off " score selected during the pre-planning process the screener

then decides if a detailed evaluation is required for the building and circles "YES" or "NO".

B.5.11 Confidence

If in doubt as to which category is most appropriate for particular building, the surveyor should record the possible categories and mark them with asterisk (*) to indicate the subjective evaluation. If the screener has little or no confidence about any choice for the structural system, the screener should write DNK below the word "Building Type", which indicates the screener, does not know.

B.5.12 Photograph

At least one general photograph of the building should be taken showing the two sides of the building for identification purposes. (This would preferably be an "instant" type photo, to avoid the task of latter collating photos with forms.) If possible, the photograph should be taken from a sufficient distance to include the whole building, and such that adjacent faces are included.

B.5.13 Comments

This last section of the form is for recording any comments the screener may wish to make regarding the building, occupancy, condition, quality of the data or unusual circumstances of any type. Comments may be made on the strength of mortar used in a masonry wall, or building features that can be seen at or through window openings.

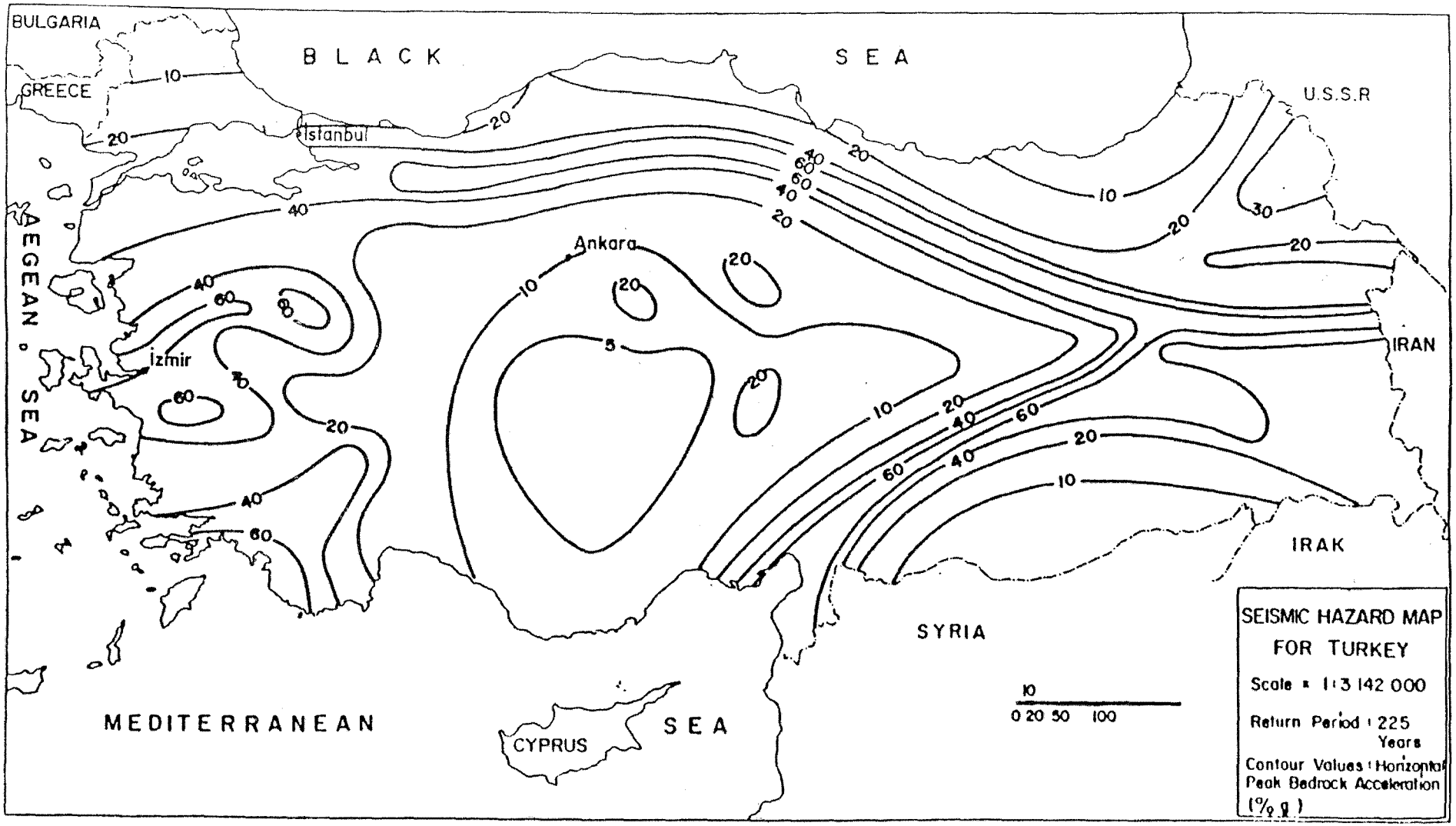


Figure B.1 – Iso-acceleration contour map for the return period of 225 years

Rapid Visual Screening of Buildings for Potential Seismic Hazards

FEMA-154 Data Collection Form

LOW Seismicity

Address: _____

Zip _____

Other Identifiers _____

No. Stories _____ Year Built _____

Screener _____ Date _____

Total Floor Area (sq. ft.) _____

Building Name _____

Use _____

PHOTOGRAPH

Scale:

OCCUPANCY				SOIL TYPE						FALLING HAZARDS			
Assembly	Govt.	Office	Number of Persons	A	B	C	D	E	F	☐	☐	☐	☐
Commercial	Historic	Residential	0 – 10 11 – 100	Hard Rock	Avg. Rock	Dense Soil	Stiff Soil	Soft Soil	Poor Soil	Unreinforced Chimneys	Parapets	Cladding	Other:
Emer. Services	Industrial	School	101-1000 1000+										

BASIC SCORE, MODIFIERS, AND FINAL SCORE, *S*

BUILDING TYPE	W1	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM
Basic Score	7.4	6.0	4.6	4.8	4.6	4.8	5.0	4.4	4.8	4.4	4.4	4.6	4.8	4.6	4.6
Mid Rise (4 to 7 stories)	N/A	N/A	+0.2	+0.4	N/A	+0.2	-0.2	+0.4	-0.2	-0.4	N/A	-0.2	-0.4	-0.2	-0.6
High Rise (>7 stories)	N/A	N/A	+1.0	+1.0	N/A	+1.0	+1.2	+1.0	0.0	-0.4	N/A	-0.2	N/A	0.0	N/A
Vertical Irregularity	-4.0	-3.0	-2.0	-2.0	N/A	-2.0	-2.0	-1.5	-2.0	-2.0	N/A	-1.5	-2.0	-1.5	-1.5
Plan Irregularity	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
Pre Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Post-Benchmark	0.0	+0.2	+0.4	+0.6	N/A	+0.6	N/A	+0.6	+0.4	N/A	+0.2	N/A	+0.2	+0.4	+0.4
Soil Type C	-0.4	-0.4	-0.8	-0.4	-0.4	-0.4	-0.4	-0.6	-0.4	-0.4	-0.4	-0.2	-0.4	-0.2	-0.4
Soil Type D	-1.0	-0.8	-1.4	-1.2	-1.0	-1.4	-0.8	-1.4	-0.8	-0.8	-0.8	-1.0	-0.8	-0.8	-0.8
Soil Type E	-1.8	-2.0	-2.0	-2.0	-2.0	-2.2	-2.0	-2.0	-2.0	-2.0	-1.8	-2.0	-1.4	-1.6	-1.4

FINAL SCORE, *S* _____

COMMENTS

Detailed Evaluation Required

YES NO

* = Estimated, subjective, or unreliable data
DNK = Do Not Know

BR = Braced frame
FD = Flexible diaphragm
LM = Light metal

MRF = Moment-resisting frame
RC = Reinforced concrete
RD = Rigid diaphragm

SW = Shear wall
TU = Tilt up
URM INF = Unreinforced masonry infill

Figure B.2 – FEMA 154 Data Collection Form with Low Seismicity

Rapid Visual Screening of Buildings for Potential Seismic Hazards

FEMA-154 Data Collection Form

MODERATE Seismicity

Address: _____

Zip _____

Other Identifiers _____

No. Stories _____ Year Built _____

Screener _____ Date _____

Total Floor Area (sq. ft.) _____

Building Name _____

Use _____

PHOTOGRAPH

Scale:

OCCUPANCY				SOIL TYPE						FALLING HAZARDS			
Assembly	Govt.	Office	Number of Persons	A	B	C	D	E	F	☐	☐	☐	☐
Commercial	Historic	Residential	0 – 10 11 – 100	Hard Rock	Avg. Rock	Dense Soil	Stiff Soil	Soft Soil	Poor Soil	Unreinforced Chimneys	Parapets	Cladding	Other:
Emer. Services	Industrial	School	101-1000 1000+										

BASIC SCORE, MODIFIERS, AND FINAL SCORE, S

BUILDING TYPE	W1	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM
Basic Score	5.2	4.8	3.6	3.6	3.8	3.6	3.6	3.0	3.6	3.2	3.2	3.2	3.6	3.4	3.4
Mid Rise (4 to 7 stories)	N/A	N/A	+0.4	+0.4	N/A	+0.4	+0.4	+0.2	+0.4	+0.2	N/A	+0.4	+0.4	+0.4	-0.4
High Rise (>7 stories)	N/A	N/A	+1.4	+1.4	N/A	+1.4	+0.8	+0.5	+0.8	+0.4	N/A	+0.6	N/A	+0.6	N/A
Vertical Irregularity	-3.5	-3.0	-2.0	-2.0	N/A	-2.0	-2.0	-2.0	-2.0	-2.0	N/A	-1.5	-2.0	-1.5	-1.5
Plan Irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.2	-1.0	-0.4	-1.0	-0.2	-0.4	-0.4	-0.4	-0.4
Post-Benchmark	+1.6	+1.6	+1.4	+1.4	N/A	+1.2	N/A	+1.2	+1.6	N/A	+1.8	N/A	2.0	+1.8	N/A
Soil Type C	-0.2	-0.8	-0.6	-0.8	-0.6	-0.8	-0.8	-0.6	-0.8	-0.6	-0.6	-0.6	-0.8	-0.6	-0.4
Soil Type D	-0.6	-1.2	-1.0	-1.2	-1.0	-1.2	-1.2	-1.0	-1.2	-1.0	-1.0	-1.2	-1.2	-1.2	-0.8
Soil Type E	-1.2	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6	-1.6

FINAL SCORE *S*

COMMENTS

Detailed Evaluation Required

YES NO

* = Estimated, subjective, or unreliable data
DNK = Do Not Know

BR = Braced frame
FD = Flexible diaphragm
LM = Light metal

MRF = Moment-resisting frame
RC = Reinforced concrete
RD = Rigid diaphragm

SW = Shear wall
TU = Tilt up
URM INF = Unreinforced masonry infill

Figure B.3 – FEMA 154 Data Collection Form with Moderate Seismicity

Rapid Visual Screening of Buildings for Potential Seismic Hazards

FEMA-154 Data Collection Form

HIGH Seismicity

Address: _____

Zip _____

Other Identifiers _____

No. Stories _____ Year Built _____

Screener _____ Date _____

Total Floor Area (sq. ft.) _____

Building Name _____

Use _____

Scale:

PHOTOGRAPH

OCCUPANCY				SOIL TYPE						FALLING HAZARDS			
Assembly	Govt.	Office	Number of Persons	A	B	C	D	E	F	☐	☐	☐	☐
Commercial	Historic	Residential	0 – 10 11 – 100	Hard Rock	Avg. Rock	Dense Soil	Stiff Soil	Soft Soil	Poor Soil	Unreinforced Chimneys	Parapets	Cladding	Other:
Emer. Services	Industrial	School	101-1000 1000+										

BASIC SCORE, MODIFIERS, AND FINAL SCORE, *S*

BUILDING TYPE	W1	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM
Basic Score	4.4	3.8	2.8	3.0	3.2	2.8	2.0	2.5	2.8	1.6	2.6	2.4	2.8	2.8	1.8
Mid Rise (4 to 7 stories)	N/A	N/A	+0.2	+0.4	N/A	+0.4	+0.4	+0.4	+0.4	+0.2	N/A	+0.2	+0.4	+0.4	0.0
High Rise (> 7 stories)	N/A	N/A	+0.6	+0.8	N/A	+0.8	+0.8	+0.6	+0.8	+0.3	N/A	+0.4	N/A	+0.6	N/A
Vertical Irregularity	-2.5	-2.0	-1.0	-1.5	N/A	-1.0	-1.0	-1.5	-1.0	-1.0	N/A	-1.0	-1.0	-1.0	-1.0
Plan Irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-1.0	-1.0	-0.8	-0.6	-0.8	-0.2	-1.2	-1.0	-0.2	-0.8	-0.8	-1.0	-0.8	-0.2
Post-Benchmark	+2.4	+2.4	+1.4	+1.4	N/A	+1.6	N/A	+1.4	+2.4	N/A	+2.4	N/A	+2.8	+2.6	N/A
Soil Type C	0.0	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
Soil Type D	0.0	-0.8	-0.6	-0.6	-0.6	-0.6	-0.4	-0.6	-0.6	-0.4	-0.6	-0.6	-0.6	-0.6	-0.6
Soil Type E	0.0	-0.8	-1.2	-1.2	-1.0	-1.2	-0.8	-1.2	-0.8	-0.8	-0.4	-1.2	-0.4	-0.6	-0.8

FINAL SCORE, *S*

COMMENTS

Detailed Evaluation Required

YES NO

* = Estimated, subjective, or unreliable data
DNK = Do Not Know

BR = Braced frame
FD = Flexible diaphragm
LM = Light metal

MRF = Moment-resisting frame
RC = Reinforced concrete
RD = Rigid diaphragm

SW = Shear wall
TU = Tilt up
URM INF = Unreinforced masonry infill

Figure B.4 – FEMA 154 Data Collection Form with High Seismicity

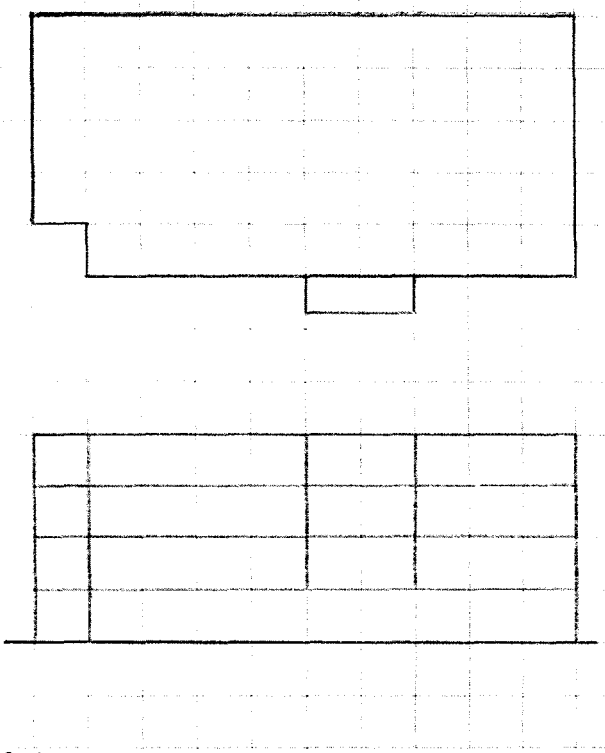
B.6 Examples for Completed FEMA-154 Data Collection Forms

Only 3 examples out of 30 are given in printed form, the rest are given in CD.

Rapid Visual Screening of Buildings for Potential Seismic Hazards

FEMA-154 Data Collection Form

HIGH Seismicity



Scale:

Address: KEMALPAŞA MAH. HALKALI CAD. TURNA SK. NO:28 Zip

Other Identifiers

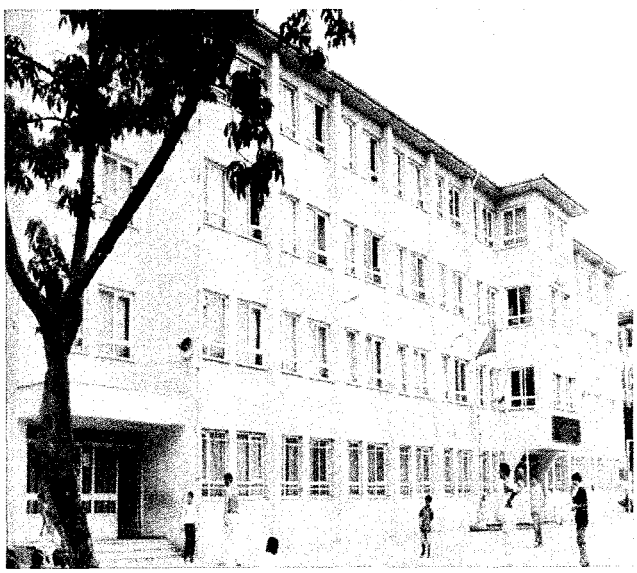
No. Stories 4 Year Built 1999

Screener RIDVAN EKŞER Date 2005

Total Floor Area (sq. ft.) 2400 m²

Building Name MUSTAFA KEMAL PAŞA İ.Ö.O.

Use PRIMARY SCHOOL



OCCUPANCY

Assembly, Commercial, Emer. Services, Govt., Historic, Industrial, Office, Residential, (School)

Number of Persons: 0 – 10, (101-1000), 11 – 100, 1000+

SOIL TYPE

A Hard Rock, B Avg. Rock, C Dense Soil, (D Stiff Soil), E Soft Soil, F Poor Soil

FALLING HAZARDS

☐ Unreinforced Chimneys ☐ Parapets ☐ Cladding ☐ Other

BASIC SCORE, MODIFIERS, AND FINAL SCORE, *S*

BUILDING TYPE	W1	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM
Basic Score	4.4	3.8	2.8	3.0	3.2	2.8	2.0	(2.5)	2.8	1.6	2.6	2.4	2.8	2.8	1.8
Mid Rise (4 to 7 stories)	N/A	N/A	+0.2	+0.4	N/A	+0.4	+0.4	(+0.4)	+0.4	+0.2	N/A	+0.2	+0.4	+0.4	0.0
High Rise (> 7 stories)	N/A	N/A	+0.6	+0.8	N/A	+0.8	+0.8	+0.6	+0.8	+0.3	N/A	+0.4	N/A	+0.6	N/A
Vertical Irregularity	-2.5	-2.0	-1.0	-1.5	N/A	-1.0	-1.0	-1.5	-1.0	-1.0	N/A	-1.0	-1.0	-1.0	-1.0
Plan Irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-1.0	-1.0	-0.8	-0.6	-0.8	-0.2	-1.2	-1.0	-0.2	-0.8	-0.8	-1.0	-0.8	-0.2
Post-Benchmark	+2.4	+2.4	+1.4	+1.4	N/A	+1.6	N/A	+1.4	+2.4	N/A	+2.4	N/A	+2.8	+2.6	N/A
Soil Type C	0.0	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
Soil Type D	0.0	-0.8	-0.6	-0.6	-0.6	-0.6	-0.4	(-0.6)	-0.6	-0.4	-0.6	-0.6	-0.6	-0.6	-0.6
Soil Type E	0.0	-0.8	-1.2	-1.2	-1.0	-1.2	-0.8	-1.2	-0.8	-0.8	-0.4	-1.2	-0.4	-0.6	-0.6

FINAL SCORE, *S* 2.3

COMMENTS

Detailed Evaluation Required

YES (NO)

* = Estimated, subjective, or unreliable data
DNK = Do Not Know

BR = Braced frame
FD = Flexible diaphragm
LM = Light metal

MRF = Moment-resisting frame
RC = Reinforced concrete
RD = Rigid diaphragm

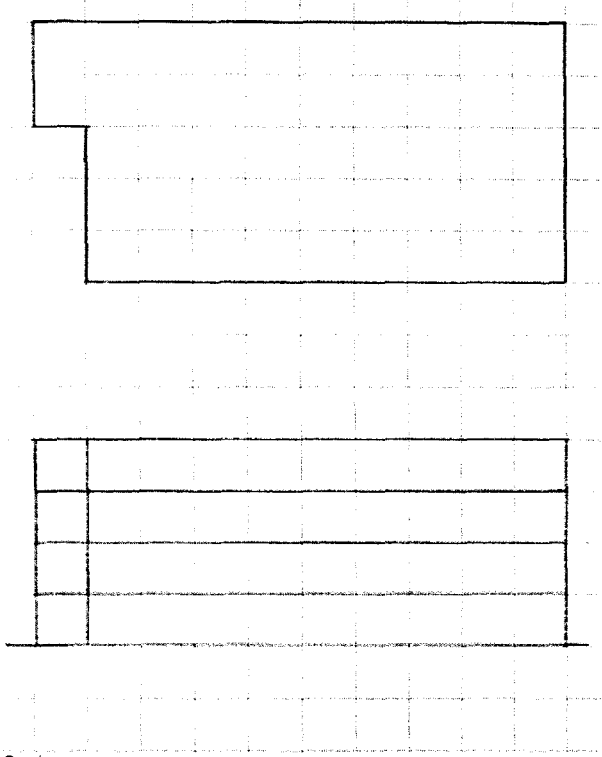
SW = Shear wall
TU = Tilt up
URM INF = Unreinforced masonry infill

Figure B.5 – Rapid Visual Screening of Mustafa Kemal Paşa Primary School

Rapid Visual Screening of Buildings for Potential Seismic Hazards

FEMA-154 Data Collection Form

HIGH Seismicity



Scale:

Address: MERKEZ MAH. NAMIK KEMAL CAD. NO:6 Zip

Other Identifiers

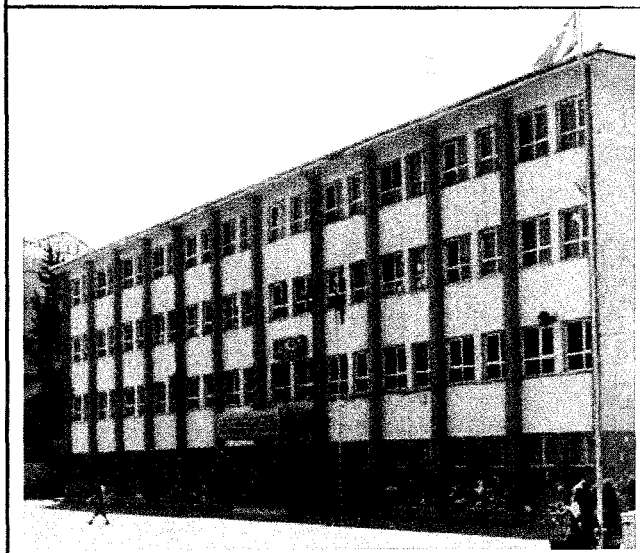
No. Stories 4 Year Built 1993

Screener BURS EKSER Date 2005

Total Floor Area (sq. ft.) 4800 m²

Building Name ABDULKADIR UZTÜRK ILK

Use PRIMARY SCHOOL



OCCUPANCY				SOIL TYPE						FALLING HAZARDS			
Assembly	Govt.	Office	Number of Persons	A	B	C	D	(E)	F	☐	☐	☐	☐
Commercial	Historic	Residential	0 – 10 11 – 100	Hard Rock	Avg. Rock	Dense Soil	Stiff Soil	Soft Soil	Poor Soil	Unreinforced Chimneys	Parapets	Cladding	Other
Emer. Services	Industrial	(School)	(101-1000) 1000+										

BASIC SCORE, MODIFIERS, AND FINAL SCORE, *S*

BUILDING TYPE	W1	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	C1 (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM
Basic Score	4.4	3.8	2.8	3.0	3.2	2.8	2.0	(2.5)	2.8	1.6	2.6	2.4	2.8	2.8	1.8
Mid Rise (4 to 7 stories)	N/A	N/A	+0.2	+0.4	N/A	+0.4	+0.4	(+0.4)	+0.4	+0.2	N/A	+0.2	+0.4	+0.4	0.0
High Rise (> 7 stories)	N/A	N/A	+0.6	+0.8	N/A	+0.8	+0.8	+0.6	+0.8	+0.3	N/A	+0.4	N/A	+0.6	N/A
Vertical Irregularity	-2.5	-2.0	-1.0	-1.5	N/A	-1.0	-1.0	-1.5	-1.0	-1.0	N/A	-1.0	-1.0	-1.0	-1.0
Plan Irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-1.0	-1.0	-0.8	-0.6	-0.8	-0.2	-1.2	-1.0	-0.2	-0.8	-0.8	-1.0	-0.8	-0.2
Post-Benchmark	+2.4	+2.4	+1.4	+1.4	N/A	+1.6	N/A	+1.4	+2.4	N/A	+2.4	N/A	+2.8	+2.8	N/A
Soil Type C	0.0	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
Soil Type D	0.0	-0.8	-0.6	-0.6	-0.6	-0.6	-0.4	-0.6	-0.6	-0.4	-0.6	-0.6	-0.6	-0.6	-0.6
Soil Type E	0.0	-0.8	-1.2	-1.2	-1.0	-1.2	-0.8	(-1.2)	-0.8	-0.8	-0.4	-1.2	-0.4	-0.6	-0.8

FINAL SCORE, *S* 1.7

COMMENTS

Detailed Evaluation Required: (YES) NO

* = Estimated, subjective, or unreliable data
DNK = Do Not Know

BR = Braced frame
FD = Flexible diaphragm
LM = Light metal

MRF = Moment-resisting frame
RC = Reinforced concrete
RD = Rigid diaphragm

SW = Shear wall
TU = Tilt up
URM INF = Unreinforced masonry infill

Figure B.6 – Rapid Visual Screening of Abdulkadir Uztürk Primary School

Rapid Visual Screening of Buildings for Potential Seismic Hazards

FEMA-154 Data Collection Form

HIGH Seismicity

Address: OSMANIYE MAH. İNCİRLİ YOLU MİNE SK. NO:28/2 2/6Y Zip

Other Identifiers

No. Stories 3 Year Built 1987

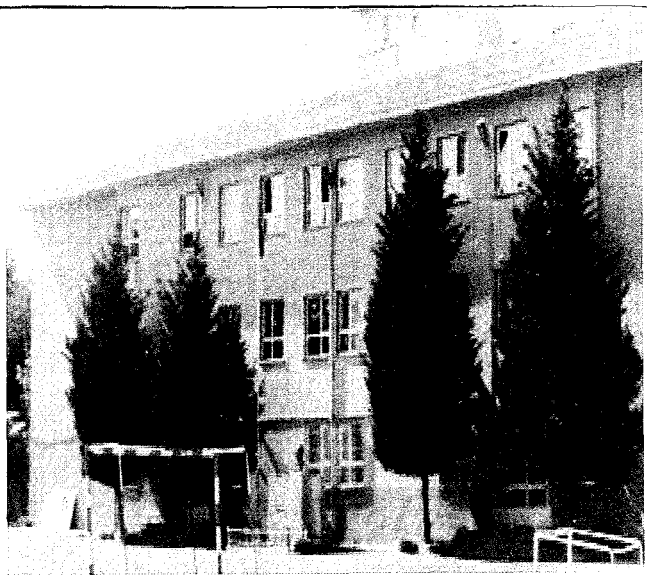
Screener BURÇ EKSER Date 2005

Total Floor Area (sq. ft.) 2000 m²

Building Name OSMANIYE İLKÖĞRETİM OKULU

Use PRIMARY SCHOOL

Scale:



OCCUPANCY				SOIL TYPE						FALLING HAZARDS			
Assembly	Govt.	Office	Number of Persons	A	B	C	(D)	E	F	☐	☐	☐	☐
Commercial	Historic	Residential	0 – 10 11 – 100	Hard Rock	Avg. Rock	Dense Soil	Stiff Soil	Soft Soil	Poor Soil	Unreinforced Chimneys	Parapets	Cladding	Other
Emer Services	Industrial	(School)	(101-1000) 1000+										

BASIC SCORE, MODIFIERS, AND FINAL SCORE, S

BUILDING TYPE	W1	W2	S1 (MRF)	S2 (BR)	S3 (LM)	S4 (RC SW)	S5 (URM INF)	(C1) (MRF)	C2 (SW)	C3 (URM INF)	PC1 (TU)	PC2	RM1 (FD)	RM2 (RD)	URM
Basic Score	4.4	3.8	2.8	3.0	3.2	2.8	2.0	(2.5)	2.8	1.6	2.6	2.4	2.8	2.8	1.8
Mid Rise (4 to 7 stories)	N/A	N/A	+0.2	+0.4	N/A	+0.4	+0.4	+0.4	+0.4	+0.2	N/A	+0.2	+0.4	+0.4	0.0
High Rise (> 7 stories)	N/A	N/A	+0.6	+0.8	N/A	+0.8	+0.8	+0.6	+0.8	+0.3	N/A	+0.4	N/A	+0.6	N/A
Vertical Irregularity	-2.5	-2.0	-1.0	-1.5	N/A	-1.0	-1.0	-1.5	-1.0	-1.0	N/A	-1.0	-1.0	-1.0	-1.0
Plan Irregularity	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Pre-Code	0.0	-1.0	-1.0	-0.8	-0.6	-0.8	-0.2	-1.2	-1.0	-0.2	-0.8	-0.8	-1.0	-0.8	-0.2
Post-Benchmark	+2.4	+2.4	+1.4	+1.4	N/A	+1.6	N/A	+1.4	+2.4	N/A	+2.4	N/A	+2.8	+2.6	N/A
Soil Type C	0.0	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
Soil Type D	0.0	-0.8	-0.6	-0.6	-0.6	-0.6	-0.4	(-0.6)	-0.6	-0.4	-0.6	-0.6	-0.6	-0.6	-0.6
Soil Type E	0.0	-0.8	-1.2	-1.2	-1.0	-1.2	-0.8	-1.2	-0.8	-0.8	-0.4	-1.2	-0.4	-0.6	-0.8

FINAL SCORE, S 1.9

COMMENTS

Detailed Evaluation Required: (YES) NO

* = Estimated, subjective, or unreliable data
DNK = Do Not Know

BR = Braced frame
FD = Flexible diaphragm
LM = Light metal

MRF = Moment-resisting frame
RC = Reinforced concrete
RD = Rigid diaphragm

SW = Shear wall
TU = Tilt up
URM INF = Unreinforced masonry infill

Figure B.7 – Rapid Visual Screening of Osmaniye Primary School

APPENDIX C

DETAILS OF DATA COLLECTED ABOUT PUBLIC SCHOOLS IN ISTANBUL

Legend

All the information provided in Appendix C was obtained from the following sources;

1. Directorate of Public Works of Istanbul (Table C.8; C9; C10; C11; C12; C13; C14; C15; C16; C17; C18; C19; C20; C21; C22; C23; C24; C25; C26; C28; C29; C30; C31; C32)
2. Directorate of Education of Istanbul (Table C.1; C2; C3; C4; C5; C6; C7)
3. Emergency Management Center of Governorship of Istanbul (Table C.27)

In the following pages the data collected about public schools in Istanbul Metropolitan Area are given since the tables are long, only the first pages are given in printed form, the full version are stored in the CD provided.

Brief statistics are given in the below table about types 10370 and 10403 projects. More than 2,019 public schools and 527 private schools exist in Istanbul and 1,499 of which has a typical project available. Among these public schools, 1,017 schools are put in practice according to typical project of 10403 and 87 schools are put in practice according to typical project of 10370. The total number of schools whose typical project is available is corresponding to 74 % of the total amount of 1,499.

No. of typical project which is available among 2,019 public schools	1,499
No. of typical project 10403	1,017
No. of typical project 10370	87
Other types	395

List of Tables

PUBLIC SCHOOLS IN ISTANBUL METROPOLITAN AREA

NO	DISTRICT NAME	SCHOOL NAME	SCHOOL ADDRESS	SCHOOL TYPE
1	Adalar	Burgazada İ.Ö.O.	Mehtap Sokak No:59 Burgazada	İlköğretim Okulu
2	Adalar	Büyükada İ.Ö.O.	Fişekhane Sokak No:20 Büyükada	İlköğretim Okulu
3	Adalar	Büyükada Şehit Murat Yüksel İ.Ö.O	Lalahatun Sokak No:45 Büyükada	İlköğretim Okulu
4	Adalar	Heybeliada İ.Ö.O.	Heybeli Mektebi Sokak 22/A Heybeliada	İlköğretim Okulu
5	Adalar	Hüseyin Rahmi Gürpınar Çok Programlı Lise	Turgut Reis Sokak No:23 Heybeliada	Çok Programlı Lise
6	Adalar	İstanbul Üniversitesi Tıp Fakültesi Hastanesi İ.Ö.O.	Heybeliada Göğüs Hastalıkları Hastanesi Heybeliada	İlköğretim Okulu
7	Adalar	Kınalıada İ.Ö.O.	Beşiroğlu Sokak No:32 Kınalıada	İlköğretim Okulu
8	Avcılar	50.Yıl İnsa Lisesi	Merkez Mah. Namik Kemal Cad. No:8 Avcılar	Lise
9	Avcılar	Abdulkadir Öztürk İ.Ö.O.	Merkez Mah. Namik Kemal Cad. No:6 Avcılar	İlköğretim Okulu
10	Avcılar	Ali Karay İ.Ö.O.	Firuzköy Mah. Aydin Sok. Avcılar	İlköğretim Okulu
11	Avcılar	Alsancak İ.Ö.O.	Karayollari Mevkii Iskeci Cad. Vatan Hastanesi Arkasi	İlköğretim Okulu
12	Avcılar	Ambarlı İ.Ö.O.	Cumhuriyet Cad. No:23 Avcılar	İlköğretim Okulu
13	Avcılar	Ambarlı Lisesi	Ambarlı Mevkii Avcılar	Lise
14	Avcılar	Atatürk İ.Ö.O.	Denizköskler Mah. Zafer Cad. No:42 Avcılar	İlköğretim Okulu
15	Avcılar	Anadolu Teknik Meslek ve Endüstri Meslek Lisesi	E-5 Karayolu Üzeri Avcılar	Endüstri Meslek Lisesi
16	Avcılar	Avcılar Lisesi	Cihangir Mah. E-5 Karayolu Yanı Avcılar	Lise
17	Avcılar	Borusan Otomotiv Zehra Nurhan Kocabıyık İ.Ö.O.	Gümüspala Mah. Yeni Yuvam Sok. No:21 Avcılar	İlköğretim Okulu
18	Avcılar	Cihangir İ.Ö.O.	Cihangir Mah. Talatpaşa Cad. No:49 Avcılar	İlköğretim Okulu
19	Avcılar	Cumhuriyet İ.Ö.O.	Firuzköy Mah. Hasan Önel Cad. No:33 Avcılar	İlköğretim Okulu
20	Avcılar	Denizköşkler İ.Ö.O.	Denizköskler Mah. Gümüspala Cad. Akkoyun Sk. Avcılar	İlköğretim Okulu
21	Avcılar	Eğitim Uygulama Okulu ve İş Eğitim Okulu	Merkez Mah. E-5 Karayolu Yanı Avcılar	Zihinsel Engelliler
22	Avcılar	Firuzköy İ.Ö.O.	Firuzköy Mah. Kadir Özdemir Cad. No:88 Avcılar	İlköğretim Okulu
23	Avcılar	Gümüşpala İ.Ö.O.	Gümüspala Mah. Özgür Sok. Avcılar	İlköğretim Okulu
24	Avcılar	Güngör Tekiner İ.Ö.O.	Denizköskler Mah. Gümüspala Cad. Akkoyun Sk. Avcılar	İlköğretim Okulu
25	Avcılar	Haydar Akın Anadolu Meslek Lisesi	Mustafa Kemalpasa Mah. Hilal Sk. No:69 Avcılar	Anadolu Meslek Lisesi
26	Avcılar	IHKiB Hazır Giyim ve Konfeksiyon Meslek Lisesi	Ambarli Mah. Ögretmenler Cad. Okul Sk. Avcılar	Kız Meslek Lisesi
27	Avcılar	İnönü İ.Ö.O.	Ambarlı Mah. Fevzi Çakmak Cad. Kırım Sk. No:31 Avcılar	İlköğretim Okulu
28	Avcılar	Kız Meslek Lisesi	Ambarlı Mah. Öğretmenler Cad. Okul Sk. Avcılar	Kız Meslek Lisesi
29	Avcılar	Mareşal Fevzi Çakmak İ.Ö.O.	Cihangir Mah. Kirazlı Cad. Kartopu Sk. Avcılar	İlköğretim Okulu
30	Avcılar	Mehmetçik İ.Ö.O.	Mustafa Kemalpasa Mah. Karadut Sk. Avcılar	İlköğretim Okulu
31	Avcılar	Milli Eğitim Vakfı Nihat Çandarlı İ.Ö.O.	Yesilkent Mah. Balikyolu Cad. No:1 Avcılar	İlköğretim Okulu
32	Avcılar	Mustafa Kemal Paşa İ.Ö.O.	Üniversite Mah. Kamp Sok. No:4 Avcılar	İlköğretim Okulu
33	Avcılar	Necdet Semker İ.Ö.O.	Tahtakale Mah. Okul Yolu Sok. No:1 Avcılar	İlköğretim Okulu

*** Rest of the table can be seen in CD

PUBLIC PRIMARY SCHOOLS IN ISTANBUL METROPOLITAN AREA

NO	DISTRICT NAME	SCHOOL NAME	SCHOOL ADDRESS	SCHOOL TYPE
1	Adalar	Burgazada İ.Ö.O.	Mehtap Sokak No:59 Burgazada	İlköğretim Okulu
2	Adalar	Büyükada İ.Ö.O.	Fişekhane Sokak No:20 Büyükada	İlköğretim Okulu
3	Adalar	Büyükada Şehit Murat Yüksel İ.Ö.O	Lalahatun Sokak No:45 Büyükada	İlköğretim Okulu
4	Adalar	Heybeliada İ.Ö.O.	Heybeli Mektebi Sokak 22/A Heybeliada	İlköğretim Okulu
5	Adalar	İstanbul Üniversitesi Tıp Fakültesi Hastanesi İ.Ö.O.	Heybeliada Göğüs Hastalıkları Hastanesi Heybeliada	İlköğretim Okulu
6	Adalar	Kınalıada İ.Ö.O.	Beşiroğlu Sokak No:32 Kınalıada	İlköğretim Okulu
7	Avcılar	Abdulkadir Öztürk İ.Ö.O.	Merkez Mah. Namik Kemal Cad. No:6 Avcılar	İlköğretim Okulu
8	Avcılar	Ali Karay İ.Ö.O.	Firuzköy Mah. Aydin Sok. Avcılar	İlköğretim Okulu
9	Avcılar	Alsancak İ.Ö.O.	Karayollari Mevkii Iskeci Cad. Vatan Hastanesi Arkasi	İlköğretim Okulu
10	Avcılar	Ambarlı İ.Ö.O.	Cumhuriyet Cad. No:23 Avcılar	İlköğretim Okulu
11	Avcılar	Atatürk İ.Ö.O.	Denizköskler Mah. Zafer Cad. No:42 Avcılar	İlköğretim Okulu
12	Avcılar	Borusan Otomotiv Zehra Nurhan Kocabıyık İ.Ö.O.	Gümüspala Mah. Yeni Yuvam Sok. No:21 Avcılar	İlköğretim Okulu
13	Avcılar	Cihangir İ.Ö.O.	Cihangir Mah. Talatpaşa Cad. No:49 Avcılar	İlköğretim Okulu
14	Avcılar	Cumhuriyet İ.Ö.O.	Firuzköy Mah. Hasan Önel Cad. No:33 Avcılar	İlköğretim Okulu
15	Avcılar	Denizköşkler İ.Ö.O.	Denizköskler Mah. Gümüspala Cad. Akkoyun Sk. Avcılar	İlköğretim Okulu
16	Avcılar	Firuzköy İ.Ö.O.	Firuzköy Mah. Kadir Özdemir Cad. No:88 Avcılar	İlköğretim Okulu
17	Avcılar	Gümüşpala İ.Ö.O.	Gümüspala Mah. Özgür Sok. Avcılar	İlköğretim Okulu
18	Avcılar	Güngör Tekiner İ.Ö.O.	Denizköskler Mah. Gümüspala Cad. Akkoyun Sk. Avcılar	İlköğretim Okulu
19	Avcılar	İnönü İ.Ö.O.	Ambarlı Mah. Fevzi Çakmak Cad. Kırım Sk. No:31 Avcılar	İlköğretim Okulu
20	Avcılar	Mareşal Fevzi Çakmak İ.Ö.O.	Cihangir Mah. Kirazlı Cad. Kartopu Sk. Avcılar	İlköğretim Okulu
21	Avcılar	Mehmetçik İ.Ö.O.	Mustafa Kemalpasa Mah. Karadut Sk. Avcılar	İlköğretim Okulu
22	Avcılar	Milli Eğitim Vakfı Nihat Çandarlı İ.Ö.O.	Yesilkent Mah. Balikyolu Cad. No:1 Avcılar	İlköğretim Okulu
23	Avcılar	Mustafa Kemal Paşa İ.Ö.O.	Üniversite Mah. Kamp Sok. No:4 Avcılar	İlköğretim Okulu
24	Avcılar	Necdet Semker İ.Ö.O.	Tahtakale Mah. Okul Yolu Sok. No:1 Avcılar	İlköğretim Okulu
25	Avcılar	Ömer Seyfettin İ.Ö.O.	Gümüspala Mah. Müge Sk. Avcılar	İlköğretim Okulu
26	Avcılar	Saadetdere İ.Ö.O.	Mustafa Kemalpasa Mah. Cami Sk. No:126 Avcılar	İlköğretim Okulu
27	Avcılar	Salih Şükriye Yoluç İ.Ö.O.	Tahtakale Mah. Okul Sk. No:1 Avcılar	İlköğretim Okulu
28	Avcılar	Vali Rıdvan Yenişen İ.Ö.O.	Mustafa Kemalpaşa Mah. Lale Sok. No:58 Avcılar	İlköğretim Okulu
29	Bağcılar	50.Yıl Adnan Ötügen İ.Ö.O	Sancaktepe Mah. Okul Sk. Bağcılar	İlköğretim Okulu
30	Bağcılar	Adnan Ötüken İ.Ö.O.	İnönü Mah. 30/12 Sok. No:26 Bağcılar	İlköğretim Okulu
31	Bağcılar	Anafartalar İ.Ö.O.	Bağlar Mah. Atatürk Cad. Okul Sk. No:13 Bağcılar	İlköğretim Okulu
32	Bağcılar	Arif Nihat Asya İ.Ö.O.	Yeni Mah. Mevlana Cad. Tuna Sk. Bağcılar	İlköğretim Okulu

*** Rest of the table can be seen in CD

PUBLIC SECONDARY SCHOOLS IN ISTANBUL METROPOLITAN AREA

NO	DISTRICT NAME	SCHOOL NAME	SCHOOL ADDRESS	SCHOOL TYPE
1	Avcılar	50.Yıl İnsa Lisesi	Merkez Mah. Namik Kemal Cad. No:8 Avcılar	Lise
2	Avcılar	Ambarlı Lisesi	Ambarlı Mevkii Avcılar	Lise
3	Avcılar	Avcılar Lisesi	Cihangir Mah. E-5 Karayolu Yanı Avcılar	Lise
4	Avcılar	Süleyman Nazif Lisesi	Gümüspala Mah. Haci Kadin Sk. Avcılar	Lise
5	Bağcılar	100.Yıl Mehmet Bey Lisesi	Kıbrıs Cad.Yıldıztepe Mah. No:2 Bağcılar	Lise
6	Bağcılar	Akşemsettin Lisesi	Demirkapı Mah. Aksemsettin Cad. No:1 Bağcılar	Lise
7	Bağcılar	Bağcılar Lisesi	Kıbrıs Cad. Yıldıztepe Mah. No:2 Bağcılar	Lise
8	Bağcılar	Barbaros Lisesi	Barbaros Mh. 8/5-C Sok. No:9 Bağcılar	Lise
9	Bağcılar	Dr.Kemal Naci Ekşi Lisesi	Çinar Mah. Esenler Cad. No:83 Bağcılar	Lise
10	Bağcılar	Evren Lisesi	Kemalpasa Mah. 24/1 Sk. Bağcılar	Lise
11	Bağcılar	Mahmutbey Lisesi	Göztepe Mah. Papatya Sk Bağcılar	Lise
12	Bağcılar	Mehmet Niyazi Altuğ Lisesi	Güneşli Mh. Evren Cd. Barış Sk. No:5 Bağcılar	Lise
13	Bağcılar	Orhan Gazi Lisesi	Fevzi Çakmak Mah.11.Sok. No:3 Bağcılar	Lise
14	Bahçelievler	Bağlar Lisesi	Kocasinan Merkez Mah. Çavuspasa Köprüyolu Cad. No:133	Lise
15	Bahçelievler	Bahçelievler Lisesi	Yildizli Sokak Yayla Duragi Bahcelievler/Istanbul	Lise
16	Bahçelievler	Çobançeşme Lisesi	Çobançeşme Mah. Mithatpaşa Cad. No:3 Yenibosna	Lise
17	Bahçelievler	Kemal Hasoğlu Lisesi	Efes Pilsen Yani Mehmet Akif Cad. No:10 Bahcelievler	Lise
18	Bahçelievler	Kocasinan Lisesi	Siyavuşpaşa Mah.Mustafa Kemal Paşa Cad. Bahcelievler	Lise
19	Bahçelievler	Necip Fazıl Kısakürek Lisesi	Yenibosna Zafer Mah.Yıldırım Beyazyt Cad. Okul Sok. No:3	Lise
20	Bahçelievler	Yenibosna Lisesi (Yabancı Dil Ağırlıklı Lise)	Merkez Mah. Müslüm Sokak Yenibosna-Bahcelievler/Istanbul	Lise
21	Bakırköy	Ataköy Cumhuriyet Lisesi	Ataköy 7.8.Kısım Bahriye Üçok Mah.Bakırköy	Lise
22	Bakırköy	Ataköy Lisesi	Refet Bele Caddesi Ataköy 4.Kısım	Lise
23	Bakırköy	Bakırköy Lisesi	Yeni Mahalle İstanbul Cad. No: 93 Bakırköy - İstanbul	Lise
24	Bakırköy	Gürlek-Nakipoğlu Lisesi	Osmaniye Kireç Ocağı Mevki Çolak İbrahim Sok. Bakırköy	Lise
25	Bakırköy	Hasan Polatkan Lisesi	Ataköy 9. Kısım Bakırköy-İstanbul	Lise
26	Bakırköy	Sabri Çalışkan Lisesi	Kartaltepe Mah. Karacaoğlan Sok.No.23 Bakırköy	Lise
27	Bakırköy	Tevfik Ercan Lisesi	Şenlikköy Mah. Mektep Sok. Bila No Florya	Lise
28	Bakırköy	Yahya Kemal Beyatlı Lisesi	Cevizlik Mah. Niyazibey Sok. No:38 Bakırköy - İstanbul	Lise
29	Bakırköy	Yeşilköy 50.Yıl Lisesi	Ümran Sok. No:19 Yeşilköy Bakırköy	Lise
30	Bayrampaşa	Ahmet Rıfat Canayakın Lisesi	Yenidoğan Mh.Mutlu Sk.No:1	Lise

*** Rest of the table can be seen in CD

PUBLIC ANATOLIAN HIGH SCHOOLS IN ISTANBUL METROPOLITAN AREA

NO	DISTRICT NAME	SCHOOL NAME	SCHOOL ADDRESS	SCHOOL TYPE
1	Bahçelievler	Adnan Menderes Anadolu Lisesi	Ferit Selimpaşa Cad. Gülter Hanım Sokak No:13 Yayla	Anadolu Lisesi
2	Bahçelievler	Anadolu Lisesi	Istanbulevleri Sarmasik Sokak Bahcelievler	Anadolu Lisesi
3	Bahçelievler	Dede Korkut Anadolu Lisesi	Cumhuriyet Mah. 8. Sokak No:41 Bahcelievler	Anadolu Lisesi
4	Bakırköy	Yeşilköy 50.Yıl Anadolu Lisesi	Menekşe Sok. No:1 Yeşilyurt-Bakırköy	Anadolu Lisesi
5	Bayrampaşa	Anadolu Lisesi	İsmetpaşa Mah.Tuna Cd.No:7	Anadolu Lisesi
6	Beşiktaş	Atatürk Anadolu Lisesi	Cihanmüma Mah. Serencebey YokuşU No.69 Yyldyz	Anadolu Lisesi
7	Beşiktaş	İstanbul Amerikan Robert Lisesi		Anadolu Lisesi
8	Beşiktaş	Kabataş Erkek Lisesi	Çırağan Cad. No:40 34349 Beşiktaş	Anadolu Lisesi
9	Beşiktaş	Sakıp Sabancı Anadolu Lisesi	Barbaros Bulvari Yıldız-Beşiktaş	Anadolu Lisesi
10	Beyoğlu	Anadolu Lisesi	İstiklal Cad. Nuriziya Sok. Tomtom Mah. 80050	Anadolu Lisesi
11	Beyoğlu	Galatasaray Lisesi	Ystiklal Caddesi No:263 80060	Anadolu Lisesi
12	Büyükçekmece	Hüseyin Yıldız Anadolu Lisesi	Büyüksehir Konutlari Dr Imren Aykut Cad. Beylikdüzü	Anadolu Lisesi
13	Eminönü	Cağaloğlu Anadolu Lisesi	Babiali Cad.No:13 Cagaoglu Eminönü	Anadolu Lisesi
14	Eminönü	İstanbul Erkek Lisesi		Anadolu Lisesi
15	Eminönü	Vefa Anadolu Lisesi		Anadolu Lisesi
16	Fatih	Pertevniyal Anadolu Lisesi	Atatürk Bulvari	Anadolu Lisesi
17	Fatih	Vatan Anadolu Lisesi	Arpa Emini Mah. Tatlipinar Cad. No: 15	Anadolu Lisesi
18	Gaziosmanpaşa	Anadolu Lisesi	Yenimahalle 602 Sok:No:1 Gaziosmanpaşa	Anadolu Lisesi
19	Kadıköy	Anadolu Lisesi	Dr. Esat Isik Cd. No:84 Moda	Anadolu Lisesi
20	Kadıköy	Kenan Evren Anadolu Lisesi	Recep Peker Cd. No:17 Kızıltoprak	Anadolu Lisesi
21	Kadıköy	Mustafa Saffet Anadolu Lisesi	Merdivenköy, Barbaros Sk. Kadıköy	Anadolu Lisesi
22	Kadıköy	Osmangazi Anadolu Lisesi	Merdivenköy, Barbaros Sk.	Anadolu Lisesi
23	Kağıthane	Anadolu Lisesi	Hamidiye Mah. Akşemsettin Sok. No. 3	Anadolu Lisesi

*** Rest of the table can be seen in CD

PUBLIC VOCATIONAL SCHOOLS IN ISTANBUL METROPOLITAN AREA

NO	DISTRICT NAME	SCHOOL NAME	SCHOOL ADDRESS	SCHOOL TYPE
1	Bahçelievler	Aydın Doğan Anadolu İletişim Meslek Lisesi	Mehtap Sokak No:2 Bahcelievler	Anadolu İletişim Meslek Lisesi
2	Güngören	Tuncay Azaphan Anadolu İletişim Meslek Lisesi	Sırpsındığı Sok.N:40 Merter Güngören	Anadolu İletişim Meslek Lisesi
3	Avcılar	Haydar Akın Anadolu Meslek Lisesi	Mustafa Kemalpasa Mah. Hilal Sk. No:69 Avcılar	Anadolu Meslek Lisesi
4	Bağcılar	Hikmet Nazif Kurşunoglu Anadolu Meslek Lisesi	Baglar Mah. Koçman Cad. Pinar Sk. No:1 Bağcılar	Anadolu Meslek Lisesi
5	Beşiktaş	Ziya Kalkavan Anadolu Denizcilik Meslek Lisesi	Çırağan Cad.Yıldız Mah.No:34 Beşiktaş/İST.	Anadolu Meslek Lisesi
6	Beyoğlu	Ayşe Ege Anadolu Kız Meslek Lisesi	Bedrettin Mah. Ayni Alibaba Sok KasympaşA	Anadolu Meslek Lisesi
7	Beyoğlu	İTO Anadolu Meslek ve Terzilik Meslek Lisesi	Evliye Çelebi Mah. Mesrutiyet Cad. No:114	Anadolu Meslek Lisesi
8	Büyükçekmece	Borusan Asım Kocabıyık Anadolu Meslek Lisesi	E 5 Karayolu Üzeri Beko KarşYsy B.Çekmece	Anadolu Meslek Lisesi
9	Eminönü	Cağaloğlu Anadolu Kız Meslek Lisesi	Cağaoğlu Alemdar Mah.Çatal Çeşme Sk.No:9 Eminönü/İst	Anadolu Meslek Lisesi
10	Eminönü	Cağaloğlu Anadolu Moda Tasarımı Meslek Lisesi	Çatalçesme Sok. No:11 Cagaloglu Eminönü	Anadolu Meslek Lisesi
11	Eyüp	Haydar Akçelik Anadolu Meslek ve Kız Meslek Lisesi	Nisanci Mah. Abdurrahman Serefbey Cad. No:40	Anadolu Meslek Lisesi
12	Kadıköy	Anadolu Meslek ve Kız Meslek Lisesi	Moda Cad.Cem Sk.No:195 Moda	Anadolu Meslek Lisesi
13	Kartal	Sabiha Gökçen Anadolu Kız Meslek Lisesi	Orhantepe Mah. Beşinci Sk. Enstitü Arkası Cevizli/	Anadolu Meslek Lisesi
14	Küçükçekmece	TASEV Ayakkabı Ana. Mes. Lis. ve End. Mes. Lis.	Halkalı Merkez Mh.Çamlıkaltı Mevkii Fatih Cad. No:94	Anadolu Meslek Lisesi
15	Maltepe	Handan Hayrettin Yelkikanat Anadolu Meslek Lisesi	Girne Mah.E-5 Yanyol Kapet KarşYsy	Anadolu Meslek Lisesi
16	Pendik	Anadolu Denizcilik Meslek Lisesi	Esenyalı Mah. Cumhuriyet Cad. Metehan Sok. No:1 Pendik	Anadolu Meslek Lisesi
17	Sarıyer	Şükran Ülgezen Anadolu Meslek ve Endüstri Meslek Lisesi	Ortakçı Sok. No:5 İstinye	Anadolu Meslek Lisesi
18	Şişli	Rüştü Uzel Anadolu Meslek ve Hazır Giyim Lisesi	Teşvikiye Cad. No:158 Nişantaşı Şişli	Anadolu Meslek Lisesi
19	Tuzla	İMKB Anadolu Meslek ve Meslek Lisesi	Aydınlı Mahallesi Dere Sok.	Anadolu Meslek Lisesi
20	Beşiktaş	Anadolu Otelcilik veTurizm Meslek Lisesi	Nisbetiye Cd. 80630 Levent/Beşİktaş/Ystanbul	Anadolu Otelcilik ve Tur. Mes. Lis.
21	Küçükçekmece	İMKB Anadolu Otelcilik ve Turizm Meslek Lisesi	Cennet Mah. Turgut Reis Cad.	Anadolu Otelcilik ve Tur. Mes. Lis.
22	Zeytinburnu	Mehmet İhsan Mermerci Ana. Otelcilik ve Tur. Mes. Lis.	Merkezefendi Mh. Mevlevihane Cd. No:28 Cevizlibağ	Anadolu Otelcilik ve Tur. Mes. Lis.
23	Eminönü	Sultanahmet Anadolu Ticaret Meslek Lisesi	Tavukhane Sok.N0:13 Sultanahmet Eminönü	Anadolu Ticaret Meslek Lisesi
24	Güngören	Tuncay Azaphan Anadolu Ticaret Meslek Lisesi	Sırpsındığı Sok.N:40 Merter Güngören	Anadolu Ticaret Meslek Lisesi
25	Tuzla	Süleyman Demirel Anadolu Ticaret ve Meslek Lisesi	Aydıntepe Mah. Yeşildere Cad. No:56	Anadolu Ticaret Meslek Lisesi
26	Zeytinburnu	Anadolu Ticaret Meslek Lisesi ve Dış Ticaret Meslek Lisesi	Telsiz Mah. 87. Sokak Zeytinburnu/İst.	Anadolu Ticaret Meslek Lisesi
27	Avcılar	Anadolu Teknik Meslek ve Endüstri Meslek Lisesi	E-5 Karayolu Üzeri Avcılar	Endüstri Meslek Lisesi
28	Bağcılar	Abdurrahman Nermin Bilimli Anadolu Teknik ve E.M.L.	Barbaros Mah. Mahmutbey Yolu 8.Sk. Bağcılar	Endüstri Meslek Lisesi
29	Bağcılar	Endüstri Meslek Lisesi	Merkez Mah. Evren Cad. İleri Sk. No:1 Bağcılar	Endüstri Meslek Lisesi
30	Bahçelievler	Endüstri Meslek Lisesi		Endüstri Meslek Lisesi
31	Bahçelievler	Erkan Avcı Anadolu Teknik ve Endüstri Meslek Lisesi	Kültür Sokak No:5	Endüstri Meslek Lisesi
32	Bahçelievler	Kocasinan Teknik Lise ve Endüstri Meslek Lisesi	Kocasinan Merkez Mah.Kizilelma Cad.No:16 Bahcelievler	Endüstri Meslek Lisesi
33	Bakırköy	Atışalanı Endüstri Meslek Lisesi		Endüstri Meslek Lisesi
34	Bayrampaşa	İnönü Anadolu Teknik ve Endüstri Meslek Lisesi	Kışla Cd. Rami Gıda Sitesi Karşısı Topçular	Endüstri Meslek Lisesi

*** Rest of the table can be seen in CD

OTHER PUBLIC SCHOOLS IN ISTANBUL METROPOLITAN AREA

NO	DISTRICT NAME	SCHOOL NAME	SCHOOL ADDRESS	SCHOOL TYPE
1	Kadıköy	Avni Akyol Anadolu Güzel Sanatlar Lisesi	Rıdvanpaşa Sokak No:34 Göztepe/İstanbul	Anadolu Güzel Sanatlar Lisesi
2	Bayrampaşa	İTO Anadolu Teknik Lisesi (Erkek Teknik)	Yenidoğan Mh. Çevreyolu Cd. Fatih Parkı Yanı.	Anadolu Teknik Lisesi
3	Kağıthane	Profilo Anadolu Teknik Lisesi ve Endüstri Meslek Lisesi	Cendere Cad.No:8 Kaşıthane /Ystanbul	Anadolu Teknik Lisesi
4	Ümraniye	75.Yıl DMO Anadolu Bilgisayar Teknik Lisesi	Emek M. Kayalar Cd. No:65 Sarıgazi Ümraniye	Anadolu Teknik Lisesi
5	Fatih	Çapa Anadolu Öğretmen Lisesi	Millet Cad.No:116 Çapa	Anadolu Öğretmen Lisesi
6	Kadıköy	Atatürk Fen Lisesi	Eğitim Mh.Sarayönü Cad.Kuyubaşı	Fen Lisesi
7	Bakırköy	Anadolu İmam Hatip	Kartaltepe Mah. Terakki Cad. Terakki Çıkmazı Sok. No:1	İmam Hatip Lisesi
8	Bakırköy	İmam Hatip Lisesi	Kartaltepe Mah. Terakki Cad. Terakki Çıkmazı Sok. No:11	İmam Hatip Lisesi
9	Beykoz	İmam Hatip Lisesi	Tokatköy Gürkan Sokak Beykoz	İmam Hatip Lisesi
10	Çatalca	İmam Hatip Lisesi	Kaleiçi Mah. Domuzdere Mevkii Çatalca	İmam Hatip Lisesi
11	Eyüp	İmam Hatip Lisesi	Isalmbey Cad.Bostan Sok. Eyüp	İmam Hatip Lisesi
12	Fatih	İmam Hatip Lisesi	Fethiye Kapisi Sk. No: 1 Çarsamba	İmam Hatip Lisesi
13	Gaziosmanpaşa	İmam Hatip Lisesi	Ordu Cad.No:1 Gaziosmanpasa	İmam Hatip Lisesi
14	Gaziosmanpaşa	Kazım Karabekir İmam Hatip Lisesi	Karadeniz Mah.Cebeci Cad.Gaziosmanpaşa	İmam Hatip Lisesi
15	Gaziosmanpaşa	Küçükköy İmam Hatip Lisesi	Kazımkarabekir Mahall.Hekimsuyu Cad.No:1 Küçükköy	İmam Hatip Lisesi
16	Güngören	Anadolu İmam Hatip Lisesi	Gençosman Mah.Doganbey Cad.ÜççeşMeler Sokak No:1	İmam Hatip Lisesi
17	Kadıköy	Anadolu İmam Hatip Lisesi	Acybadem Cd. No:135	İmam Hatip Lisesi
18	Kağıthane	Anadolu İmam Hatip Lisesi	Sanayi Mah.Gümüşhane Cad No.7	İmam Hatip Lisesi
19	Kağıthane	İmam Hatip Lisesi	Sanayi Mah.Gümüşhane Cad No.1	İmam Hatip Lisesi
20	Kartal	Anadolu İmam Hatip Lisesi	Atalar Cad.Pamuk Sk. No:3 Esentepe/Kartal/İstanbul	İmam Hatip Lisesi
21	Kartal	Aziz Bayraktar İmam Hatip Lisesi	Eyüp Sultan Mh.İmam Hatip Cad.No: 3 Samandıra	İmam Hatip Lisesi
22	Kartal	İmam Hatip Lisesi	Cumhuriyet Mh.Fatih Cd.Rabiye Sk.No:5 Kartal/İstanbul	İmam Hatip Lisesi
23	Kartal	Samandıra İmam Hatip Lisesi	Eyup Sultan Mh. İ.H.L. Cad. Orman İci Sk. No:4 Samandıra	İmam Hatip Lisesi
24	Maltepe	Anadolu İmam Hatip	Talatpaşa Mah./Maltepe/İst.	İmam Hatip Lisesi
25	Maltepe	İmam Hatip Lisesi	Cevizli Mah. Talatpaşa Cad. No : 20	İmam Hatip Lisesi
26	Pendik	Anadolu İmam Hatip Lisesi	Adnan Menderes Bulvarı No:4 Pendik	İmam Hatip Lisesi
27	Pendik	İmam Hatip Lisesi	Adnan Menderes Bulvarı No: 4 Pendik/İstanbul	İmam Hatip Lisesi
28	Sarıyer	Anadolu İmam Hatip Lisesi	Dr. Hilmi Alantar Sk. No:6 İstinye Sarıyer	İmam Hatip Lisesi
29	Sarıyer	İmam Hatip lisesi	Dr. Hilmi Alantar Sk. No:7 İstinye Sarıyer	İmam Hatip Lisesi
30	Sultanbeyli	İmam Hatip Lisesi	Mehmet Akif Ersoy Mah.Fatih Bulvarı Biberlik Sk.No:13	İmam Hatip Lisesi

*** Rest of the table can be seen in CD

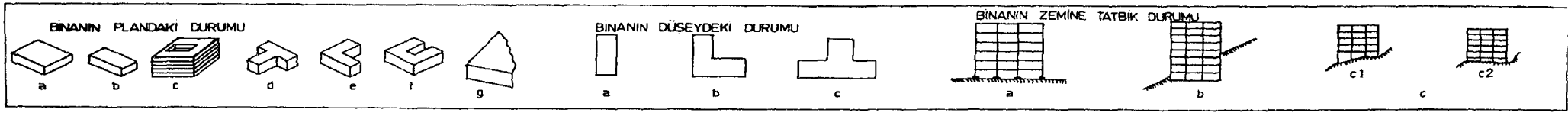
PRIVATE SCHOOLS IN ISTANBUL METROPOLITAN AREA

NO	DISTRICT NAME	SCHOOL NAME	SCHOOL ADDRESS	SCHOOL TYPE
1	Adalar	Özel Büyükada Rum İlköğretim Okulu	Alaçam Sokak No:13 Büyükada İstanbul	İlköğretim Okulu
2	Adalar	Özel Heybeliada Rum Erkek Lisesi	Ümittepesi No:3 Heybeliada İstanbul	Lise
3	Avcılar	Özel Avcılar Fatih İlköğretim Okulu	Bağlariçi Cad. Aydın Sok. No:2 Firuzköy Avcılar/İstanbul	İlköğretim Okulu
4	Avcılar	Özel Avcılar Sultan Fatih İlköğretim Okulu	Anbarlı Mah. Balaban Sok. No:29 Avcılar/İstanbul	İlköğretim Okulu
5	Avcılar	Özel Bahçeşehir Kültür Anaokulu	Badem 01 Villa 01Bahçeşehir/İstanbul	Ana Okulu
6	Avcılar	Özel Şeker Çocuk Anaokulu	Ambarlı Mah. Bağdar Sok. Aydoğdu Apt. No:15 İstanbul	Ana Okulu
7	Bağcılar	Özel Albayrak Anaokulu	Bağcılar Cad. 42.Sok. No:6 Bağcılar/İstanbul	Ana Okulu
8	Bağcılar	Özel Bağcılar Birikim İlköğretim Okulu	İnönü Mah. Bağcılar Cad. 27.Sok. No:8 Bağcılar İstanbul	İlköğretim Okulu
9	Bağcılar	Özel Bağcılar Birikim Lisesi	İnönü Mah. Bağcılar Cad. 27.Sok. No:8 Bağcılar İstanbul	Lise
10	Bağcılar	Özel Bağcılar Ensar İlköğretim Okulu	Demirkapı Mah. Nergis Sok. Bağcılar-İstanbul	İlköğretim Okulu
11	Bağcılar	Özel Bağcılar Ensar Lisesi	Demirkapı Mah. Nergis Sok. Bağcılar-İstanbul	Lise
12	Bağcılar	Özel Cihangir Anaokulu	Evren Mah. Gülbahar Sok.Metro Grosmarket Yanı Güneşli İstanbul	Ana Okulu
13	Bağcılar	Özel Cihangir İlköğretim Okulu	Evren Mah. Gülbahar Sok.Metro Grosmarket Yanı Güneşli İstanbul	İlköğretim Okulu
14	Bağcılar	Özel Cihangir Lisesi	Evren Mah. Gülbahar Sok.Metro Grosmarket Yanı Güneşli İstanbul	Lise
15	Bağcılar	Özel Güneşli İlköğretim Okulu	Bağlar Mah. Atatürk Cad. Güray Sok. No:2 Bağcılar/İstanbul	İlköğretim Okulu
16	Bağcılar	Özel Güneşli Lisesi	Bağlar Mah. Atatürk Cad. Güray Sok. No:2 Bağcılar/İstanbul	Lise
17	Bahçelievler	Özel Aka İlköğretim Okulu	Radyum Sokak No:21 Bahçelievler/İstanbul	İlköğretim Okulu
18	Bahçelievler	Özel Aka Lisesi	Radyum Sokak No:21 Bahçelievler/İstanbul	Lise
19	Bahçelievler	Özel Aslı Anaokulu	İstanbul Evleri Uğur Apt. No:4 Bahçelievler/İstanbul	Ana Okulu
20	Bahçelievler	Özel Bahçelievler Fatih İlköğretim Okulu	Kocasinan Mah. Mahmutbey Yolu Tavukçu Sok. No:1	İlköğretim Okulu
21	Bahçelievler	Özel Bahçelievler İhlas Çok Programlı Lise	Yenibosna Fatih Cad. No:1 Bahçelievler-İstanbul	Lise
22	Bahçelievler	Özel Bahçelievler İhlas İlköğretim Okulu	Yenibosna Fatih Cad. No:1 Bahçelievler-İstanbul	İlköğretim Okulu
23	Bahçelievler	Özel Bilim Kültür Akşam Lisesi	Talatpaşa Cad. No:1 Bahçelievler/İstanbul	Lise
24	Bahçelievler	Özel Bücürük Anaokulu	Soğanlı Mah. M.Kemalpaşa Cad. Zümrüt Sok. No:6/1-2	Ana Okulu
25	Bahçelievler	Özel Elit Gençler İlköğretim Okulu	Talatpaşa Bulvarı No:17 Bahçelievler/İstanbul	İlköğretim Okulu
26	Bahçelievler	Özel Elit Gençler Lisesi	Talatpaşa Bulvarı No:17 Bahçelievler/İstanbul	Lise
27	Bahçelievler	Özel Eresin Anadolu İletişim Meslek Lisesi	Turgutreis Caddesi Bozkır Sok. No:1 Bahçelievler/İstanbul	Meslek Lisesi
28	Bahçelievler	Özel Eresin Otecilik Ve Turizm Meslek Lisesi	Turgutreis Caddesi Bozkır Sok. No:1 Bahçelievler/İstanbul	Otelcilik Lisesi
29	Bahçelievler	Özel Feza Anadolu İletişim Meslek Lisesi	Çobançeşme Mah. Darphane Üstü Kuleli Mevkii Yenibosna	Meslek Lisesi
30	Bahçelievler	Özel Gökkuşağı İlköğretim Okulu	Eski Londra Asfaltı No:15 Bahçelievler/İstanbul	İlköğretim Okulu
31	Bahçelievler	Özel Gökkuşağı Lisesi	Eski Londra Asfaltı No:15 Bahçelievler/İstanbul	Lise
32	Bahçelievler	Özel İstanbul Ar-El Fen Lisesi	Yenibosna Güneşli Yolu Atatürk Caddesi Radar Karşısı	Fen Lisesi

*** Rest of the table can be seen in CD

INFORMATION OF PUBLIC SCHOOLS IN ISTANBUL IN 2003

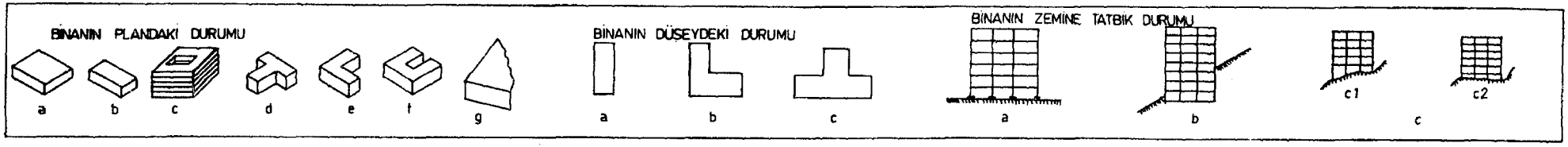
INFORMATION BEFORE 1999 EARTHQUAKES															INFORMATION AFTER 1999 EARTHQUAKES	
NO	DISTRICT NAME	SCHOOL NAME	SECTION OF MAP	PLOT OF LAND	BUILDING TYPE	NO. OF STORIES	FLOOR AREA (M2)	WIDTH LENGTH (MT)	SOIL TYPE	ORDER OF STRUC.	YEAR BUILT	PLAN TYPE	VERTICAL TYPE	GROUND TYPE	DAMAGE	REPAIR / REINFORCEMENT
1	Adalar	Burgazada İ.Ö.O.	9 - 65	1 - 3	B.ARME	3	825	11 - 25	ORTA	AYRIK	1960	d	a	b		
2	Adalar	Büyükada Şehit Murat Yüksel İ.Ö.O. 1.Kademe	41 - 203	6 - 9	B.ARME	3	1680	12 - 35	SERT	AYRIK	1967	b	a	c1	az	
3	Adalar	Büyükada Şehit Murat Yüksel İ.Ö.O. 2.Kademe	42 - 175	--- - 13	B.ARME	4	1320	15 - 22	YUMUŞAK	1 TRF. BİTİŞİK	1987	b	a	a	az	
4	Adalar	Heybeliada İ.Ö.O.	29 - 96	--- - 83	B.ARME	3	600	10 - 20	ORTA	AYRIK	1964	b	a	b		
5	Adalar	Hüseyin Rahmi Gürpınar Lisesi	4 - 10	--- - 4	B.ARME	2	2400	10 - 110	SERT	AYRIK	1972	b	a	c1		
6	Adalar	Kınalıada İ.Ö.O.	--- - 18	--- - 7	B.ARME	2	805	11,5 - 35	ORTA	AYRIK	1966	b	a	a		



*** *Rest of the table can be seen in CD*

BUILDING INFORMATION OF PUBLIC SCHOOLS IN ISTANBUL

NO	DISTRICT NAME	SCHOOL NAME	YEAR BUILT	NO. OF STORIES	WIDTH LENGTH (MT)	FLOOR AREA (M2)	PLAN TYPE	VERTICAL TYPE	GROUND TYPE	PROJECT TYPE	BUILDING TYPE
1	Adalar	Burgazada İ.Ö.O.	1960	3	11 - 25	825,00	d	a	b	x	B.ARME
2	Adalar	Büyükada Şehit Murat Yüksel İ.Ö.O.	1987	4	15 - 22	1.320,00	b	a	a	10403	B.ARME
3	Adalar	Heybeliada İ.Ö.O.	1964	3	10 - 20	600,00	b	a	b	10403	B.ARME
4	Adalar	Hüseyin Rahmi Gürpınar Lisesi	1972	2	10 - 110	2.400,00	b	a	c1	x	B.ARME
5	Adalar	Kınalıada İ.Ö.O.	1966	2	12 - 35	805,00	b	a	a	10403	B.ARME
6	Avcılar	50.Yıl İnsa Lisesi	1985	2	15 - 31	5.034,00	b	b	a	x	B.ARME
7	Avcılar	Alsancak İ.Ö.O.	1995	4	20 - 50	7.000,00	b	a	a	10403	B.ARME
8	Avcılar	Ambarlı İ.Ö.O.	1987	3	15 - 33	5.356,00	b	a	a	10403	B.ARME
9	Avcılar	Atatürk İlköğretim Okulu	1999	2	-	5.252,00				x	B.ARME
10	Avcılar	Avcılar Abdulkadir Öztürk İ.Ö.O.	1993	4	18 - 50	4.800,00	b	a	b	10403	B.ARME
11	Avcılar	Avcılar Lisesi	1993	4	18 - 44	4.000,00	b	a	a	10403	B.ARME
12	Avcılar	Borusan Oto İ.Ö.O.	1998	2	-	10.000,00				x	B.ARME
13	Avcılar	Cihangir İ.Ö.O.	1989	2	15 - 40	4.520,00	b	a	a	10403	B.ARME
14	Avcılar	Cumhuriyet İ.Ö.O.	1991	4	18 - 33	3.458,50	b	a	b	10403	B.ARME
15	Avcılar	Denizköşkler İ.Ö.O.	1993	4	19 - 46	7.774,00	b	a	a	10403	B.ARME
16	Avcılar	Eğitim Uygulama Okulu ve İş Eğitim Okulu	1996	3	-	554,00				x	B.ARME
17	Avcılar	Endüstri Meslek Lisesi	1984	4	25 - 84	14.083,00	b	a	a	10403	B.ARME
18	Avcılar	Firüzköy İ.Ö.O.	1932	3	15 - 22	2.020,00	b	a	a	10403	B.ARME
19	Avcılar	Gümüşpala İ.Ö.O.	1973	3	-	3.600,00	a	a	a	10370	YIĞMA
20	Avcılar	Güngör Tekiner İ.Ö.O.	1989	4	20 - 40	3.920,00	b	a	a	10403	B.ARME
21	Avcılar	Haydar Akın Anadolu Meslek Lisesi	1993	2	15 - 30	2.250,00	b	a	a	10403	B.ARME
22	Avcılar	İHKİB Hazır Giyim ve Konfeksiyon Meslek Lisesi	1993	4	22 - 54	4.608,00	d	b	a	x	B.ARME
23	Avcılar	İnönü İ.Ö.O.	2000	3	-	7.000,00				x	B.ARME
24	Avcılar	M.Kemalpaşa İ.Ö.O.	1993	4	17 - 46	4.104,00	b	a	a	10403	B.ARME
25	Avcılar	Mareşal Fevzi Çakmak İ.Ö.O.	1993	4	19 - 45	8.300,00	a	d	a	x	B.ARME
26	Avcılar	Mehmetçik İ.Ö.O.	1993	4	17 - 45	3.038,00	b	a	c2	10403	B.ARME
27	Avcılar	Milli Eğitim Vakfı Nihat Çandarlı İ.Ö.O.	1555	4	-	4.508,00				x	B.ARME



*** Tip projesi belli olan 1499 adet okuldan 10403 nolu tip projeye sahip olan okul sayısı 1017 adettir. 10370 nolu tip projeye sahip olan okul sayısı 87 adettir.
Her iki proje sayısının toplamı 1104 adettir ki bu rakam toplam sayının yaklaşık olara

*** Rest of the table can be seen in CD

LIST OF 820 REPORTEDLY AFFECTED PUBLIC SCHOOLS IN ISTANBUL AFTER 1999 KOCAELI EARTHQUAKE AND TYPE OF REINFORCEMENT (REPAIRED / STRENGTHENED / DEMOLISHED AND RECONSTRUCTED)

NO	DISTRICT NAME	SCHOOL NAME	TYPE OF REINFORCEMENT	NO. OF BUILDING	LOW DAMAGE	MODERATE DAMAGE	HEAVY DAMAGE	DAMAGE LEVEL	REINFORCEMENT	
									RETROFIT	NON RETROFIT
1	Adalar	Büyükada Eski Rum İ.Ö.O.		1	1			low		X
2	Adalar	Büyükada İ.Ö.O.	Strengthened	2	2			low	X	
3	Adalar	Büyükada Şehit Murat Yüksel İ.Ö.O.		1	1			low		X
4	Adalar	Heybeliada Hüseyin Rahmi Gürpınar Lisesi		2	2			low		X
5	Adalar	Heybeliada İ.Ö.O.	Propose to demolish	3		3		moderate		X
6	Adalar	Kınalıada İ.Ö.O.		1	1			low		X
7	Avcılar	50.Yıl İnsa Lisesi	Repaired	2		2		moderate	X	
8	Avcılar	Abdulkadir Öztürk İ.Ö.O.	Strengthened	1		1		moderate	X	
9	Avcılar	Alsancak İ.Ö.O.	Repaired	1		1		moderate	X	
10	Avcılar	Ambarlı İ.Ö.O.	Repaired	2		2		moderate	X	
11	Avcılar	Avcılar Lisesi		1	1			low		X
12	Avcılar	Borusan Oto İ.Ö.O.		3	3			low		X
13	Avcılar	Cihangir İ.Ö.O.	Propose to demolish	1			1	heavy		X
14	Avcılar	Cumhuriyet İ.Ö.O.	Propose to demolish	2		1	1	heavy		X
15	Avcılar	Deniz Köşkler İ.Ö.O.	Repaired	1		1		moderate	X	
16	Avcılar	Endüstri Meslek Lisesi		5	5			low		X
17	Avcılar	Firuzköy İ.Ö.O		1	1			low		X
18	Avcılar	Gümüşpala İ.Ö.O.	Repaired	1	1			low	X	
19	Avcılar	Güngör Tekiner İ.Ö.O.	Propose to demolish	1			1	heavy		X
20	Avcılar	Mareşal Fevzi Çakmak İ.Ö.O.		1	1			low		X
21	Avcılar	Mehmetçik İ.Ö.O.		1	1			low		X
22	Avcılar	Mustafa Kemal Paşa İ.Ö.O.		1	1			low		X
23	Avcılar	Necdet Semker İ.Ö.O.		1	1			low		X
24	Avcılar	Ömer Seyfettin İ.Ö.O.	Repaired	1		1		moderate	X	
25	Avcılar	Saadetdere İ.Ö.O.	Reconstructed	1			1	heavy	X	
26	Avcılar	Salih Şükriye Yoluç İ.Ö.O.		1	1			low		X
27	Bağcılar	Adnan Ötüken İ.Ö.O.	Repaired	1	1			low	X	
28	Bağcılar	Anafartalar İ.Ö.O.	Strengthened	1	1			low	X	
29	Bağcılar	Arif Nihat Asya İ.Ö.O.	Repaired	1	1			low	X	
30	Bağcılar	Aşkaleli İbrahim Polat İ.Ö.O.		1	1			low		X
31	Bağcılar	Atatürk İ.Ö.O.	Strengthened	1		1		moderate	X	
32	Bağcılar	Bağcılar İ.Ö.O.	Strengthened	1	1			low	X	
33	Bağcılar	Bağcılar Lisesi	Repaired	1	1			low	X	
34	Bağcılar	Barbaros Lisesi		1	1			low		X

*** Rest of the table can be seen in CD

LIST OF SLIGHTLY DAMAGED PUBLIC SCHOOLS WITHOUT CAUSING ANY EDUCATIONAL DISRUPTION IN ISTANBUL AFTER 1999 KOCAELI EARTHQUAKE

NO	DISTRICT NAME	SCHOOL NAME	TYPE OF REINFORCEMENT	NO. OF BUILDING	LOW DAMAGE	MODERATE DAMAGE	HEAVY DAMAGE	DAMAGE LEVEL	REINFORCEMENT	
									RETROFIT	NON RETROFIT
1	Adalar	Büyükada Eski Rum İ.Ö.O.		1	1			low		X
2	Adalar	Büyükada Şehit Murat Yüksel İ.Ö.O.		1	1			low		X
3	Adalar	Heybeliada Hüseyin Rahmi Gürpınar Lisesi		2	2			low		X
4	Adalar	Kınalıada İ.Ö.O.		1	1			low		X
5	Avcılar	Avcılar Lisesi		1	1			low		X
6	Avcılar	Borusan Oto İ.Ö.O.		3	3			low		X
7	Avcılar	Endüstri Meslek Lisesi		5	5			low		X
8	Avcılar	Firuzköy İ.Ö.O		1	1			low		X
9	Avcılar	Mareşal Fevzi Çakmak İ.Ö.O.		1	1			low		X
10	Avcılar	Mehmetçik İ.Ö.O.		1	1			low		X
11	Avcılar	Mustafa Kemal Paşa İ.Ö.O.		1	1			low		X
12	Avcılar	Necdet Semker İ.Ö.O.		1	1			low		X
13	Avcılar	Salih Şükriye Yoluç İ.Ö.O.		1	1			low		X
14	Bağcılar	Aşkaleli İbrahim Polat İ.Ö.O.		1	1			low		X
15	Bağcılar	Barbaros Lisesi		1	1			low		X
16	Bağcılar	Firuzan Sadıkoğlu İ.Ö.O.		1	1			low		X
17	Bağcılar	Gazi İ.Ö.O.		1	1			low		X
18	Bağcılar	Hasan Kağnıcı İ.Ö.O.		1	1			low		X
19	Bağcılar	Koca Ragıp Paşa İ.Ö.O.		1	1			low		X
20	Bağcılar	MEV 60.Yıl Uçanevler İ.Ö.O.		1	1			low		X
21	Bağcılar	Orhangazi Lisesi		1	1			low		X
22	Bağcılar	Peyami Safa İ.Ö.O.		1	1			low		X
23	Bağcılar	Ticaret Meslek Lisesi		1	1			low		X
24	Bağcılar	Tiryaki Hasan Paşa İ.Ö.O.		1		1		moderate		X
25	Bağcılar	Türk İsveç Kardeşlik İ.Ö.O.		1	1			low		X
26	Bağcılar	Zeynep Bedia Kılıçoğlu İ.Ö.O.		1	1			low		X
27	Bahçelievler	75.Yıl Cumhuriyet İ.Ö.O.		1	1			low		X
28	Bahçelievler	Adnan Menderes Anadolu Lisesi		1	1			low		X
29	Bahçelievler	Ali Haydar Günver İ.Ö.O.		2	1	1		low		X
30	Bahçelievler	Altınyıldız İ.Ö.O.		1	1			low		X
31	Bahçelievler	Bahçelievler Lisesi		1	1			low		X
32	Bahçelievler	Emir Sultan İ.Ö.O.		1	1			low		X
33	Bahçelievler	Emlak Kredi Blokları İ.Ö.O.		1	1			low		X
34	Bahçelievler	Eşref Bitli İ.Ö.O.		1	1			low		X
35	Bahçelievler	Hürriyet İ.Ö.O.		1	1			low		X
36	Bahçelievler	Kazım Karabekir İ.Ö.O.		1	1			low		X
37	Bahçelievler	Kemal Hasanoğlu İ.Ö.O.		1	1			low		X

*** Rest of the table can be seen in CD

LIST OF QUICKLY REPAIRED PUBLIC SCHOOLS WITHOUT CAUSING ANY EDUCATIONAL DISRUPTION IN ISTANBUL AFTER 1999 KOCAELI EARTHQUAKE

NO	DISTRICT NAME	SCHOOL NAME	TYPE OF REINFORCEMENT	NO. OF BUILDING	LOW DAMAGE	MODERATE DAMAGE	HEAVY DAMAGE	DAMAGE LEVEL	REINFORCEMENT	
									RETROFIT	NON RETROFIT
1	Avcılar	50.Yıl İnsa Lisesi	Repaired	2		2		moderate	X	
2	Avcılar	Alsancak İ.Ö.O.	Repaired	1		1		moderate	X	
3	Avcılar	Ambarlı İ.Ö.O.	Repaired	2		2		moderate	X	
4	Avcılar	Deniz Köşkler İ.Ö.O.	Repaired	1		1		moderate	X	
5	Avcılar	Gümüşpala İ.Ö.O.	Repaired	1	1			low	X	
6	Avcılar	Ömer Seyfettin İ.Ö.O.	Repaired	1		1		moderate	X	
7	Bağcılar	Adnan Ötüken İ.Ö.O.	Repaired	1	1			low	X	
8	Bağcılar	Arif Nihat Asya İ.Ö.O.	Repaired	1	1			low	X	
9	Bağcılar	Bağcılar Lisesi	Repaired	1	1			low	X	
10	Bağcılar	Hoca Ahmet Yesevi İ.Ö.O.	Repaired	1	1			low	X	
11	Bağcılar	İstiklal İ.Ö.O.	Repaired	1	1			low	X	
12	Bağcılar	Kurtdereli Mehmet İ.Ö.O.	Repaired	1	1			low	X	
13	Bağcılar	Malazgirt İ.Ö.O.	Repaired	1	1			low	X	
14	Bağcılar	Nene Hatun İ.Ö.O.	Repaired	1	1			low	X	
15	Bağcılar	Üsküp İ.Ö.O.	Repaired	1	1			low	X	
16	Bahçelievler	Erkan Avcı Anadolu Tek. ve End. Mes. Lis.	Repaired	6	5	1		moderate	X	
17	Bayrampaşa	Anadolu Lisesi	Repaired	1	1			low	X	
18	Bayrampaşa	İnönü Endüstri Meslek Lisesi	Repaired	2	1	1		moderate	X	
19	Bayrampaşa	Ticaret Meslek Lisesi	Repaired	2		2		moderate	X	
20	Bayrampaşa	Uluğbey İ.Ö.O.	Repaired	1	1			low	X	
21	Bayrampaşa	Yahya Kemal İ.Ö.O.	Repaired	1	1			low	X	
22	Beşiktaş	Atatürk Anadolu Lisesi	Repaired	2	1	1		moderate	X	
23	Beşiktaş	Berna Nahum İ.Ö.O.	Repaired	1	1			low	X	
24	Beşiktaş	Burak Reis İ.Ö.O.	Repaired	1	1			low	X	
25	Beşiktaş	Hüseyin Aycıbın İ.Ö.O.	Repaired	1	1			low	X	
26	Beşiktaş	Kabataş Anadolu Lisesi	Repaired	2	1	1		moderate	X	
27	Beşiktaş	M.Ali Büyükhanlı Ticaret Meslek Lisesi	Repaired	1	1			low	X	
28	Beşiktaş	Rüştü Akın Anadolu Meslek Lisesi	Repaired	3	1	2		moderate	X	
29	Beyoğlu	Anadolu Lisesi	Repaired	1	1			low	X	
30	Beyoğlu	Hoca İshak Efendi İ.Ö.O.	Repaired	1	1			low	X	
31	Beyoğlu	Kadı Mehmet İ.Ö.O.	Repaired	1		1		low	X	
32	Beyoğlu	Şehit Öğretmen Neşe Altem İ.Ö.O.	Repaired	1	1			low	X	
33	Beyoğlu	Tevfik Sağlam İ.Ö.O.	Repaired	1	1			low	X	
34	Büyükçekmece	Akçimento Mehmet Akif Ersoy İ.Ö.O.	Repaired	1		1		moderate	X	
35	Büyükçekmece	Esenyurt Cumhuriyet İ.Ö.O.	Repaired	1	1			low	X	
36	Büyükçekmece	Halil Fahri Orman İ.Ö.O.	Repaired	1	1			low	X	
37	Büyükçekmece	İbrahim Özaydın İ.Ö.O.	Repaired	1		1		moderate	X	

*** Rest of the table can be seen in CD

LIST OF STRENGTHENED PUBLIC SCHOOLS IN ISTANBUL AFTER 1999 KOCAELI EARTHQUAKE

NO	DISTRICT NAME	SCHOOL NAME	TYPE OF REINFORCEMENT	NO. OF BUILDING	LOW DAMAGE	MODERATE DAMAGE	HEAVY DAMAGE	DAMAGE LEVEL	REINFORCEMENT	
									RETROFIT	NON RETROFIT
1	Adalar	Büyükada İ.Ö.O.	Strengthened	2	2			low	X	
2	Avcılar	Abdulkadir Öztürk İ.Ö.O.	Strengthened	1		1		moderate	X	
3	Bağcılar	Anafartalar İ.Ö.O.	Strengthened	1	1			low	X	
4	Bağcılar	Atatürk İ.Ö.O.	Strengthened	1		1		moderate	X	
5	Bağcılar	Bağcılar İ.Ö.O.	Strengthened	1	1			low	X	
6	Bağcılar	Koca Yusuf İ.Ö.O.	Strengthened	1	1			low	X	
7	Bağcılar	Münir Nurettin Selçuk İ.Ö.O.	Strengthened	1		1		moderate	X	
8	Bağcılar	Sancaktepe İ.Ö.O.	Strengthened	1	1			low	X	
9	Bağcılar	Şükrü Savaşeri İ.Ö.O.	Strengthened	1		1		moderate	X	
10	Bakırköy	Bakırköy İ.Ö.O.	Strengthened	1	1			low	X	
11	Bakırköy	Cumhuriyet Lisesi	Strengthened	1	1			low	X	
12	Bakırköy	İncirlik İ.Ö.O.	Strengthened	1	1			low	X	
13	Bakırköy	Osmaniye İ.Ö.O. (B Blok)	Strengthened	1	1			low	X	
14	Bayrampaşa	Prof.Muharrem Ergin İ.Ö.O.	Strengthened	2		2		moderate	X	
15	Beşiktaş	Kılıç Ali Paşa İ.Ö.O.	Strengthened	1		1		moderate	X	
16	Beykoz	60.Yıl İ.Ö.O.	Strengthened	1		1		moderate	X	
17	Beyoğlu	Cihangir İ.Ö.O.	Strengthened	1		1		moderate	X	
18	Büyükçekmece	Esenyurt İ.Ö.O.	Strengthened	1		1		moderate	X	
19	Büyükçekmece	Gürpınar 75.Yıl İ.Ö.O.	Strengthened	1		1		moderate	X	
20	Büyükçekmece	Şair Fevzi Kalkancı İ.Ö.O. (Eski Bina)	Strengthened	1	1			low	X	
21	Fatih	Kırımlı Aslanbey İ.Ö.O.	Strengthened	1		1		moderate	X	
22	Fatih	Yedikule İ.Ö.O.	Strengthened	6	6			moderate	X	
23	Gaziosmanpaşa	Bekir Sami Dedeoğlu İ.Ö.O	Strengthened	4	1	3		moderate	X	
24	Gaziosmanpaşa	Hasan Tahsin İ.Ö.O.	Strengthened	1		1		moderate	X	
25	Gaziosmanpaşa	İstiklal İ.Ö.O.	Strengthened	1		1		moderate	X	
26	Güngören	Anadolu İmam Hatip Lisesi	Strengthened	1		1		moderate	X	
27	Güngören	Cumhuriyet İ.Ö.O.	Strengthened	1		1		moderate	X	
28	Güngören	Güngören İ.Ö.O.	Strengthened	2		2		moderate	X	
29	Güngören	Tozkoparan Teknik ve End. Mes. Lisesi	Strengthened	2		2		moderate	X	
30	Kadıköy	Anadolu Güzel Sanatlar Lisesi	Strengthened	2	1	1		moderate	X	
31	Kadıköy	Fahriye Vandemir İ.Ö.O.	Strengthened	1		1		moderate	X	
32	Kadıköy	Fenerbahçe Lisesi	Strengthened	1		1		moderate	X	
33	Kadıköy	Haydarpaşa Teknik ve Endüstri Meslek Lisesi	Strengthened	3	1	2		moderate	X	

*** Rest of the table can be seen in CD

- TABLE C.13 -

LIST OF DEMOLISHED AND RECONSTRUCTED PUBLIC SCHOOLS IN ISTANBUL AFTER 1999 KOCAELI EARTHQUAKE

NO	DISTRICT NAME	SCHOOL NAME	TYPE OF REINFORCEMENT	NO. OF BUILDING	LOW DAMAGE	MODERATE DAMAGE	HEAVY DAMAGE	DAMAGE LEVEL	REINFORCEMENT	
									RETROFIT	NON RETROFIT
1	Avcılar	Saadetdere İ.Ö.O.	Reconstructed	1			1	heavy	X	
2	Bağcılar	Yıldıztepe İ.Ö.O.	Reconstructed	1			1	heavy	X	
3	Bahçelievler	Bahçelievler İ.Ö.O.	Reconstructed	1			1	heavy	X	
4	Bakırköy	Bakırköy Lisesi	Reconstructed	1			1	heavy	X	
5	Bakırköy	İbni Sina İ.Ö.O.	Reconstructed	1			1	heavy	X	
6	Bayrampaşa	Ahmet Haşim İ.Ö.O.	Reconstructed	1			1	heavy	X	
7	Bayrampaşa	Mustafa İtri İ.Ö.O.	Reconstructed	2		2		heavy	X	
8	Bayrampaşa	Nail Reşit İ.Ö.O.	Reconstructed	2		1	1	heavy	X	
9	Beşiktaş	Ortaköy İ.Ö.O.	Reconstructed	1			1	heavy	X	
10	Beykoz	Dereseki İ.Ö.O.	Reconstructed	1			1	heavy	X	
11	Beyoğlu	Piri Reis İ.Ö.O.	Reconstructed	2		1	1	heavy	X	
12	Büyükçekmece	Dr.Hasan Akgün İ.Ö.O.	Reconstructed	1			1	heavy	X	
13	Büyükçekmece	İncirtepe Lisesi	Reconstructed	1			1	heavy	X	
14	Çatalca	Çok Programlı Lise	Reconstructed	1			1	heavy	X	
15	Eyüp	Alibeyköy Teknik ve Endüstri Meslek Lisesi	Reconstructed	9	3	4	2	heavy	X	
16	Gaziosmanpaşa	Cumhuriyet Lisesi	Reconstructed	1			1	heavy	X	
17	Gaziosmanpaşa	Gazipaşa İ.Ö.O.	Reconstructed	2		1	1	heavy	X	
18	Gaziosmanpaşa	Taşoluk İ.Ö.O.	Reconstructed	1			1	heavy	X	
19	Kadıköy	Arif Paşa İ.Ö.O.	Reconstructed	1			1	heavy	X	
20	Kadıköy	Cenap Şahabettin İ.Ö.O.	Reconstructed	3		1	2	heavy	X	
21	Kadıköy	Suadiye Lisesi	Reconstructed	1			1	heavy	X	
22	Maltepe	Feyzullah İ.Ö.O.	Reconstructed	2			2	heavy	X	
23	Maltepe	Gülsuyu İ.Ö.O.	Reconstructed	1			1	heavy	X	
24	Maltepe	Güzide Yılmaz İ.Ö.O.	Reconstructed	1			1	heavy	X	
25	Pendik	Çamçeşme İ.Ö.O.	Reconstructed	2		1	1	heavy	X	
26	Pendik	Elka İ.Ö.O.	Reconstructed	2		1	1	heavy	X	
27	Pendik	Güzelyalı 50.Yıl İ.Ö.O.	Reconstructed	2		1	1	heavy	X	
28	Sarıyer	Sarıyer Lisesi	Reconstructed	2		1	1	heavy	X	
29	Şişli	Ayazağa İ.Ö.O.	Reconstructed	2		1	1	heavy	X	
30	Tuzla	Endüstri Meslek Lisesi	Reconstructed	4		4		heavy	X	
31	Tuzla	Yunus Emre İ.Ö.O.	Reconstructed	3		2	1	heavy	X	
32	Ümraniye	Uzun Mehmet İ.Ö.O.	Reconstructed	2		1	1	heavy	X	
33	Üsküdar	Sevgi İ.Ö.O.	Reconstructed	2		1	1	heavy	X	

*** Rest of the table can be seen in CD

LIST OF PROPOSE TO DEMOLISH PUBLIC SCHOOLS IN ISTANBUL AFTER 1999 KOCAELI EARTHQUAKE

NO	DISTRICT NAME	SCHOOL NAME	TYPE OF REINFORCEMENT	NO. OF BUILDING	LOW DAMAGE	MODERATE DAMAGE	HEAVY DAMAGE	DAMAGE LEVEL	REINFORCEMENT	
									RETROFIT	NON RETROFIT
1	Adalar	Heybeliada İ.Ö.O.	Propose to demolish	3		3		moderate		X
2	Avcılar	Cihangir İ.Ö.O.	Propose to demolish	1			1	heavy		X
3	Avcılar	Cumhuriyet İ.Ö.O.	Propose to demolish	2		1	1	heavy		X
4	Avcılar	Güngör Tekiner İ.Ö.O.	Propose to demolish	1			1	heavy		X
5	Bahçelievler	Halit Ziya Uşaklıgil İ.Ö.O. (B blok)	Propose to demolish	2		1	1	heavy		X
6	Bakırköy	Ataköy 60.Yıl İ.Ö.O.	Propose to demolish	2		1	1	heavy		X
7	Beşiktaş	Şair Nedim İ.Ö.O. (B Blok)	Propose to demolish	1		1		moderate		X
8	Beykoz	Deri Kundura İ.Ö.O.	Propose to demolish	1		1		moderate		X
9	Beykoz	Sedat Simavi İ.Ö.O. (B Blok)	Propose to demolish	1	1			low		X
10	Beyoğlu	İTO Kadınlar Çeşmesi İ.Ö.O.	Propose to demolish	2		2		moderate		X
11	Büyükçekmece	Fatih Sultan Mehmet İ.Ö.O. (A,B Blok)	Propose to demolish	1		1		moderate		X
12	Eminönü	Beyazıt İ.Ö.O. (A1 ve Ek Blok)	Propose to demolish	2		2		moderate		X
13	Gaziosmanpaşa	Arnavutköy İ.Ö.O.	Propose to demolish	1			1	heavy		X
14	Kadıköy	Dr.Sait Darga İ.Ö.O.	Propose to demolish	1		1		moderate		X
15	Kadıköy	İnönü İ.Ö.O. (A,B Blok)	Propose to demolish	1		1		moderate		X
16	Kartal	Nişantepe İ.Ö.O.	Propose to demolish	2		2		moderate		X
17	Kartal	Paşaköy İ.Ö.O.	Propose to demolish	2		2		moderate		X
18	Kartal	Saffet Simavi İ.Ö.O.	Propose to demolish	1		1		moderate		X
19	Kartal	Şakir Demir İ.Ö.O.	Propose to demolish	2		2		moderate		X
20	Maltepe	Ahmet Rasim İ.Ö.O. (A Blok)	Propose to demolish	1		1		moderate		X
21	Maltepe	Altayçeşme İ.Ö.O. (B Blok)	Propose to demolish	1		1		moderate		X
22	Maltepe	Hasan Şadoğlu İ.Ö.O.	Propose to demolish	1		1		moderate		X
23	Maltepe	Kadir Rezzan Has İ.Ö.O. (A Blok)	Propose to demolish	1		1		moderate		X
24	Maltepe	Kazım Tunç İ.Ö.O.	Propose to demolish	1		1		moderate		X
25	Maltepe	Mürüvvet Hanım İ.Ö.O. (A1 Blok)	Propose to demolish	2		2		moderate		X
26	Maltepe	Orhangazi İ.Ö.O. (Eski bina)	Propose to demolish	1		1		moderate		X
27	Maltepe	Suzan-Ahmet Yalkın İ.Ö.O.	Propose to demolish	2		1	1	heavy		X
28	Maltepe	Yılmaz Mızrak İ.Ö.O.	Propose to demolish	2		2		moderate		X
29	Pendik	Abdurrahman Gazi İ.Ö.O	Propose to demolish	1		1		moderate		X
30	Pendik	Ahmet Kutsi Tecer İ.Ö.O.	Propose to demolish	1		1		moderate		X
31	Pendik	Atatürk İ.Ö.O. (Eski bina)	Propose to demolish	1		1		moderate		X
32	Pendik	Ayazma İ.Ö.O. (Eski bina)	Propose to demolish	1		1		moderate		X
33	Pendik	Erol Türker İ.Ö.O.	Propose to demolish	1		1		moderate		X

*** Rest of the table can be seen in CD

- TABLE C.15 -

PUBLIC SCHOOLS WITH 10370 TYPICAL PROJECTS IN ISTANBUL

ID	DISTRICT NAME	SCHOOL NAME	YEAR BUILT	NO. OF STORIES	WIDTH LENGTH (MT)	FLOOR AREA (M2)	BUILDING TYPE
1	Avcılar	Gümüşpala İ.Ö.O.	1973	3	-	3.600,00	YIĞMA
2	Bahçelievler	Ali Haydar Günver İ.Ö.O.	1978	3	22 - 14	942,00	B.ARME
3	Bahçelievler	Emlak Konut İ.Ö.O.	1991	4	20 - 22	1.760,00	B.ARME
4	Bakırköy	60.Yıl Ataköy İ.Ö.O.	1983	2	-	800,00	B.ARME
5	Bakırköy	Bakırköy İ.Ö.O.		3	16 - 17	816,00	YIĞMA
6	Bakırköy	Gazi İ.Ö.O.	1995	3	28 - 32	925,00	B.ARME
7	Bakırköy	Mimar Sinan İ.Ö.O.	1990	3	32 - 33	863,00	B.ARME
8	Bayrampaşa	Şehit Kamil Balkan İ.Ö.O.	1964	4	17 - 22	1.496,00	B.ARME
9	Beşiktaş	12 Eylül İ.Ö.O.	1982	2	31 - 14	1.888,00	B.ARME
10	Beykoz	Paşamandıra İ.Ö.O.	1954	1	7 - 18	126,00	YIĞMA
11	Beyoğlu	Kabataş Ticaret Meslek Lisesi	1942	3	90 - 90	4.060,00	YIĞMA
12	Büyükçekmece	Dr.Sadık Ahmet İ.Ö.O.	1993	3	31 - 31	2.920,00	B.ARME
13	Büyükçekmece	İbrahim Özaydın İ.Ö.O.	1995	4	19 - 42	3.200,00	B.ARME
14	Çatalca	İnceğiz Köyü İ.Ö.O.	1958	1	12 - 14	166,00	YIĞMA
15	Çatalca	Karamandere İ.Ö.O.	1967	1	12 - 25	300,00	B.ARME
16	Çatalca	Ormanlı Köyü İ.Ö.O.	1999	2	15 - 22	660,00	B.ARME
17	Çatalca	Sazlıbosna İ.Ö.O.	1934	2	15 - 22	660,00	B.ARME
18	Eminönü	Büyük Reşit Paşa İ.Ö.O.	1756	2	25 - 25	1.000,00	YIĞMA
19	Eminönü	Cağaloğlu Anadolu Kız Meslek Lisesi	1978	4	17 - 19	1.440,00	B.ARME
20	Eminönü	Sultanahmet Endüstri Meslek Lisesi		2	42 - 56	2.352,00	TAŞ
21	Eminönü	Tevfik Kut İ.Ö.O.		4	12 - 10	2.788,00	B.ARME
22	Eminönü	Vefa Anadolu Lisesi	1967	4	20 - 17	340,00	TUĞLA
23	Esenler	Atışalanı İsmet Paşa İ.Ö.O.	1986	3	15 - 22	3.840,00	B.ARME
24	Esenler	Dr.İlhami Faydagör İ.Ö.O.	1971	3	15 - 22	1.500,00	B.ARME
25	Eyüp	Alibeyköy Teknik Endüstri Meslek Lisesi	1970	2	25 - 34	850,00	B.ARME
26	Eyüp	Esentepe İ.Ö.O.	1962	4	30 - 50	1.500,00	B.ARME
27	Eyüp	Rami İ.Ö.O.	1926	3	15 - 35	610,00	B.ARME
28	Eyüp	Şair Nebi İ.Ö.O.	1988	4	10 - 10	1.665,00	B.ARME
29	Eyüp	Şehit Kubilay İ.Ö.O.	1988	4	14 - 21	294,00	B.ARME
30	Eyüp	Tantavi İ.Ö.O.	1986	5	25 - 33	646,00	B.ARME
31	Eyüp	Yunus Emre İ.Ö.O.	1975	3	15 - 30	345,00	B.ARME
32	Fatih	29 Mayıs İ.Ö.O.	1970	6	15 - 14	1.260,00	B.ARME
33	Fatih	Davutpaşa Lisesi	1485	3	20 - 24	1.440,00	B.ARME
34	Fatih	Yedikule İ.Ö.O.	1968	2	18 - 18	613,00	B.ARME
35	Fatih	Yunus Emre İ.Ö.O.	1895	2	15 - 20	600,00	B.ARME
36	Gaziosmanpaşa	Adnan Menderes İ.Ö.O.	1991	4	20 - 48	3.840,00	B.ARME
37	Gaziosmanpaşa	Aslan Gazi İ.Ö.O.	1987	4	-	2.225,00	B.ARME
38	Gaziosmanpaşa	Dumlupınar İ.Ö.O.	1968	4	17 - 31	2.108,00	B.ARME
39	Gaziosmanpaşa	Sabri Alan İ.Ö.O.	1983	3	15 - 35	1.575,00	B.ARME
40	Güngören	Güneşlitepe İ.Ö.O.	1971	1	12 - 12		B.ARME
41	Kadıköy	Habibe Yahşi Lisesi	1995	2	-	11.391,00	B.ARME
42	Kadıköy	Yenisahra İ.Ö.O.	1978	1	20 - 20	6.720,00	B.ARME
43	Kartal	50.Yıl General Refet Bele İ.Ö.O.	1970	3	15 - 42	4.200,00	B.ARME
44	Kartal	Kartal Lisesi	1996	4	15 - 53	1.500,00	B.ARME
45	Kartal	Kartal Samandıra İ.Ö.O.	1992	4	-	3.600,00	B.ARME
46	Kartal	Kartal Semiha Şakir Lisesi	1988	3	14 - 23	1.400,00	B.ARME
47	Kartal	Kartal Şakir Demir İ.Ö.O.	1995	4	15 - 22	1.280,00	B.ARME
48	Kartal	Medine Tayfur Sökmen İ.Ö.O.	1974	3	15 - 21	840,00	B.ARME
49	Kartal	Mustafa Karaşahin İ.Ö.O.	1989	3	12 - 19	900,00	B.ARME
50	Kartal	Paşaköy İ.Ö.O.	1995	4	14 - 20	1.280,00	B.ARME
51	Küçükçekmece	Bezirgan Bahçe İ.Ö.O.	1981	3	21 - 15	945,00	B.ARME
52	Küçükçekmece	Halkalı Cumhuriyet İ.Ö.O.	1996	3	50 - 50	7.500,00	B.ARME
53	Küçükçekmece	Hayriye Gök İ.Ö.O.	1995	4	13 - 15	780,00	B.ARME
54	Maltepe	Adnan Kahveci İ.Ö.O.	1991	4	20 - 45	-	B.ARME
55	Maltepe	Anadolu Tek. Lis. ve End. Mes. Lis.	1994	4	30 - 84	-	B.ARME

*** Rest of the table can be seen in CD

PUBLIC SCHOOLS WITH 10403 TYPICAL PROJECT IN ISTANBUL

ID	DISTRICT NAME	SCHOOL NAME	YEAR BUILT	NO. OF STORIES	WIDTH LENGTH (MT)	FLOOR AREA (M2)	BUILDING TYPE
1	Adalar	Büyükada Şehit Murat Yüksel İ.Ö.O.	1987	4	15 - 22	1.320,00	B.ARME
2	Adalar	Heybeliada İ.Ö.O.	1964	3	10 - 20	600,00	B.ARME
3	Adalar	Kınalıada İ.Ö.O.	1966	2	12 - 35	805,00	B.ARME
4	Avcılar	Alsancak İ.Ö.O.	1995	4	20 - 50	7.000,00	B.ARME
5	Avcılar	Ambarlı İ.Ö.O.	1987	3	15 - 33	5.356,00	B.ARME
6	Avcılar	Avcılar Abdulkadir Öztürk İ.Ö.O.	1993	4	18 - 50	4.800,00	B.ARME
7	Avcılar	Avcılar Lisesi	1993	4	18 - 44	4.000,00	B.ARME
8	Avcılar	Cihangir İ.Ö.O.	1989	2	15 - 40	4.520,00	B.ARME
9	Avcılar	Cumhuriyet İ.Ö.O.	1991	4	18 - 33	3.458,50	B.ARME
10	Avcılar	Denizköşkler İ.Ö.O.	1993	4	19 - 46	7.774,00	B.ARME
11	Avcılar	Endüstri Meslek Lisesi	1984	4	25 - 84	14.083,00	B.ARME
12	Avcılar	Firüzköy İ.Ö.O.	1932	3	15 - 22	2.020,00	B.ARME
13	Avcılar	Güngör Tekiner İ.Ö.O.	1989	4	20 - 40	3.920,00	B.ARME
14	Avcılar	Haydar Akın Anadolu Meslek Lisesi	1993	2	15 - 30	2.250,00	B.ARME
15	Avcılar	M.Kemalpaşa İ.Ö.O.	1993	4	17 - 46	4.104,00	B.ARME
16	Avcılar	Mehmetçik İ.Ö.O.	1993	4	17 - 45	3.038,00	B.ARME
17	Avcılar	Necdet Semker İ.Ö.O.	1995	4	19 - 46	4.730,00	B.ARME
18	Avcılar	Ömer Seyfettin İ.Ö.O.	1985	4	-	5.630,00	B.ARME
19	Avcılar	Saadetdere İ.Ö.O.	1985	2	15 - 35	2.520,00	YIĞMA
20	Avcılar	Süleyman Nazif Lisesi	1992	3	15 - 70	8.830,00	B.ARME
21	Avcılar	Ticaret Meslek Lisesi	1992	3	-	3.150,00	B.ARME
22	Bağcılar	Adnan Ötüken İ.Ö.O.	1974	3	15 - 22	385,00	YIĞMA
23	Bağcılar	Akşemsettin Lisesi	1993	4	24 - 60	700,00	B.ARME
24	Bağcılar	Anafartalar İ.Ö.O.	1988	3	18 - 42	756,00	B.ARME
25	Bağcılar	Arif Nihat Asya İ.Ö.O.	1990	4	20 - 44	880,00	B.ARME
26	Bağcılar	Aşkaleli İbrahim Polat İ.Ö.O.	1990	3	19 - 36	646,00	B.ARME
27	Bağcılar	Atatürk İ.Ö.O.	1993	4	24 - 60	700,00	B.ARME
28	Bağcılar	Bağcılar Endüstri Meslek Lisesi	1984	1	14 - 79	546,00	B.ARME
29	Bağcılar	Bağcılar İ.Ö.O.	1979	2	15 - 44	-	B.ARME
30	Bağcılar	Bağcılar Lisesi	1975	3	20 - 30	600,00	B.ARME
31	Bağcılar	Barbaros Lisesi	1989	3	15 - 43	950,00	B.ARME
32	Bağcılar	Dr.Cemil ve Fevziye Özkaya İ.Ö.O.	1985	2	10 - 23	360,00	B.ARME
33	Bağcılar	Dr.K.Naci Ekşi Lisesi	-	4	15 - 34	540,00	B.ARME
34	Bağcılar	Evren İ.Ö.O.	1992	4	20 - 45	900,00	B.ARME
35	Bağcılar	Firüzan Sadıkoğlu İ.Ö.O.	1988	3	40 - 19	760,00	B.ARME
36	Bağcılar	Gazi.İ.Ö.O.	1987	4	15 - 43	123,50	B.ARME
37	Bağcılar	Güneşli İ.Ö.O.	1985	3	15 - 45	4.735,00	B.ARME
38	Bağcılar	Hasan Kağnıcı İ.Ö.O.	1993	4	17 - 45	765,00	B.ARME
39	Bağcılar	Hızır Reis İ.Ö.O.	1982	3	18 - 25	450,00	B.ARME
40	Bağcılar	Hoca Ahmet Yesevi İ.Ö.O.	1993	5	18 - 42	756,00	B.ARME
41	Bağcılar	İnönü İ.Ö.O.	1983	2	15 - 44	660,00	B.ARME
42	Bağcılar	İstanbul Ticaret Odası İ.Ö.O.	1986	3	15 - 44	660,00	B.ARME
43	Bağcılar	İstikbal İ.Ö.O.	1992	4	18 - 40	3.400,00	B.ARME
44	Bağcılar	Karacaoğlan İ.Ö.O.	1985	2	12 - 35	1.600,00	B.ARME
45	Bağcılar	Kirazlı .İ.Ö.O.	1992	4	19 - 16	836,95	B.ARME
46	Bağcılar	Kirazlı Gaziosmanpaşa İ.Ö.O.	1977	2	24 - 72	1.725,00	B.ARME
47	Bağcılar	Koca Ragıppaşa İ.Ö.O.	1988	4	20 - 21	820,00	B.ARME
48	Bağcılar	Koca Yusuf İ.Ö.O.	1989	3	22 - 70	1.540,00	B.ARME
49	Bağcılar	Kurtdereli Mehmet İ.Ö.O.	1989	3	-	3.775,00	B.ARME
50	Bağcılar	Mahmutbey İ.Ö.O.	1958	1	10 - 24	2.160,00	YIĞMA
51	Bağcılar	Malazgirt İ.Ö.O.	1982	4	15 - 38	1.140,00	B.ARME
52	Bağcılar	Münir Nurettin Selçuk İ.Ö.O.	-	3	100 - 50	-	B.ARME
53	Bağcılar	Nene Hatun İ.Ö.O.	1987	3	19 - 40	740,00	B.ARME
54	Bağcılar	Niyazi Altuğ Lisesi	1988	4	19 - 40	774,00	B.ARME
55	Bağcılar	Orhangazi Lisesi	1989	3	15 - 56	872,00	B.ARME
56	Bağcılar	Peyami Safa İ.Ö.O.	1985	4	13 - 22	286,00	B.ARME

*** Rest of the table can be seen in CD

PUBLIC SCHOOLS BUILT BEFORE 1975 IN ISTANBUL

NO	DISTRICT NAME	YEAR BUILT	SCHOOL NAME	NO. OF STORIES	PROJECT TYPE	BUILDING TYPE
1	Adalar	1960	Burgazada İ.Ö.O.	3	x	B.ARME
2	Adalar	1964	Heybeliada İ.Ö.O.	3	10403	B.ARME
3	Adalar	1966	Kınalıada İ.Ö.O.	2	10403	B.ARME
4	Adalar	1972	Hüseyin Rahmi Gürpınar Lisesi	2	x	B.ARME
5	Avcılar	1555	Milli Eğitim Vakfı Nihat Çandarlı İ.Ö.O.	4	x	B.ARME
6	Avcılar	1932	Firüzköy İ.Ö.O.	3	10403	B.ARME
7	Avcılar	1973	Gümüşpala İ.Ö.O.	3	10370	YIĞMA
8	Bağcılar	1958	Mahmutbey İ.Ö.O.	1	10403	YIĞMA
9	Bağcılar	1974	Adnan Ötüken İ.Ö.O.	3	10403	YIĞMA
10	Bağcılar	1975	Bağcılar Lisesi	3	10403	B.ARME
11	Bahçelievler	1963	Bahçelievler İ.Ö.O.	3	10403	B.ARME
12	Bahçelievler	1965	Siyavuşpaşa İ.Ö.O.	3	10403	YIĞMA
13	Bakırköy	1963	Mustafa Necati İ.Ö.O.	3	x	B.ARME
14	Bakırköy	1966	Halil Vedat Fıratlı İ.Ö.O.	4	x	B.ARME
15	Bakırköy	1966	Yeşilköy Anadolu Lisesi	3	x	B.ARME
16	Bakırköy	1967	Şehit Pilot Muzaffer Erdönmez İ.Ö.O.	2	10403	B.ARME
17	Bakırköy	1968	Behrem Ağa İ.Ö.O	2	10403	B.ARME
18	Bakırköy	1968	Halil Bedii Yönetken İ.Ö.O.	2	10403	B.ARME
19	Bakırköy	1968	Hamdullah Suphi Tanrıöver İ.Ö.O.	3	x	B.ARME
20	Bakırköy	1968	Yahya Kemal Beyatlı Lisesi	4	10403	B.ARME
21	Bakırköy	1970	Muhittin Üstündağ İ.Ö.O.	3	10403	B.ARME
22	Bakırköy	1971	50.Yıl Lisesi	4	10403	B.ARME
23	Bakırköy	1972	Basınköy İ.Ö.O.	1	10403	B.ARME
24	Bakırköy	1974	Ataköy Lisesi	5	10403	B.ARME
25	Bayrampaşa	1963	Nail Reşit İ.Ö.O.	3	10403	B.ARME
26	Bayrampaşa	1963	Uluğbey İ.Ö.O.	2	x	B.ARME
27	Bayrampaşa	1964	Ali Ülker İ.Ö.O.	3	x	B.ARME
28	Bayrampaşa	1964	Oğuzhan İ.Ö.O.	2	10403	B.ARME
29	Bayrampaşa	1964	Şehit Kamil Balkan İ.Ö.O.	4	10370	B.ARME
30	Bayrampaşa	1964	Yahya Kemal İ.Ö.O.	4	10403	B.ARME
31	Bayrampaşa	1965	Sağmalcılar Lisesi	-	x	B.ARME
32	Bayrampaşa	1967	İnönü Anadolu Teknik Endüstri Meslek Lisesi	3	10403	B.ARME
33	Bayrampaşa	1968	Hürriyet İ.Ö.O.	4	10403	B.ARME
34	Bayrampaşa	1968	Şair Baki İ.Ö.O.	3	10403	B.ARME
35	Bayrampaşa	1969	Nuri Örs İ.Ö.O.	3	10403	B.ARME
36	Bayrampaşa	1970	Bayrampaşa İ.Ö.O.	2	10403	B.ARME
37	Bayrampaşa	1972	Bayrampaşa Rıfat Canayakın Lisesi	4	10403	B.ARME
38	Bayrampaşa	1973	Fetihtepe İ.Ö.O. (Ana Bina)	3	10403	B.ARME
39	Bayrampaşa	1973	Prof.Muharrem Ergin İ.Ö.O.	4	10403	B.ARME
40	Beşiktaş	1881	Gaziosmanpaşa İ.Ö.O.	2	10403	AHŞAP
41	Beşiktaş	1882	Kabataş Lisesi	3	10403	YIĞMA
42	Beşiktaş	1915	İstanbul Amerikan Robert Lisesi	4	10403	B.ARME
43	Beşiktaş	1953	Natuk Birkan Pratik Kız Sanat Okulu	2	10403	YIĞMA
44	Beşiktaş	1961	Etiler Lisesi	4	10403	B.ARME
45	Beşiktaş	1963	Büyük Esma Sultan İ.Ö.O.	3	10403	B.ARME
46	Beşiktaş	1963	Hasan Ali Yücel İ.Ö.O.	4	10403	B.ARME
47	Beşiktaş	1963	Tevfik Fikret İ.Ö.O.	3	10403	YIĞMA
48	Beşiktaş	1963	Zübeyde Hanım Anadolu Kız Meslek Lisesi	5	10403	B.ARME
49	Beşiktaş	1964	Burak Reis İ.Ö.O.	3	10403	B.ARME
50	Beşiktaş	1964	Sakıp Sabancı Lisesi	4	10403	B.ARME
51	Beşiktaş	1964	Şair Nedim İ.Ö.O.	4	10403	B.ARME
52	Beşiktaş	1966	Tabiyeli Mehmet Emin Ercun İ.Ö.O.	2	x	B.ARME
53	Beşiktaş	1967	Beşiktaş Lisesi	3	x	B.ARME
54	Beşiktaş	1967	Kılıç Alipaşa İ.Ö.O.	3	10403	B.ARME
55	Beşiktaş	1969	Şair Mehmet Emin Yurdakul İ.Ö.O.	2	10403	B.ARME

*** Rest of the table can be seen in CD

PUBLIC SCHOOLS BUILT BETWEEN 1975 AND 1998 IN ISTANBUL

0	DISTRICT NAME	YEAR BUILT	SCHOOL NAME	NO. OF STORIES	PROJECT TYPE	BUILDING TYPE
1	Adalar	1987	Büyükada Şehit Murat Yüksel İ.Ö.O.	4	10403	B.ARME
2	Avcılar	1984	Endüstri Meslek Lisesi	4	10403	B.ARME
3	Avcılar	1985	50.Yıl İnsa Lisesi	2	x	B.ARME
4	Avcılar	1985	Ömer Seyfettin İ.Ö.O.	4	10403	B.ARME
5	Avcılar	1985	Saadetdere İ.Ö.O.	2	10403	YIĞMA
6	Avcılar	1987	Ambarlı İ.Ö.O.	3	10403	B.ARME
7	Avcılar	1988	Salih Şükriye Yoluç İ.Ö.O.	3	x	B.ARME
8	Avcılar	1989	Cihangir İ.Ö.O.	2	10403	B.ARME
9	Avcılar	1989	Güngör Tekiner İ.Ö.O.	4	10403	B.ARME
10	Avcılar	1989	Vali Rıdvan Yenişen İlköğretim Okulu	4	x	B.ARME
11	Avcılar	1991	Cumhuriyet İ.Ö.O.	4	10403	B.ARME
12	Avcılar	1992	Süleyman Nazif Lisesi	3	10403	B.ARME
13	Avcılar	1992	Ticaret Meslek Lisesi	3	10403	B.ARME
14	Avcılar	1993	Avcılar Abdulkadir Öztürk İ.Ö.O.	4	10403	B.ARME
15	Avcılar	1993	Avcılar Lisesi	4	10403	B.ARME
16	Avcılar	1993	Denizköşkler İ.Ö.O.	4	10403	B.ARME
17	Avcılar	1993	Haydar Akın Anadolu Meslek Lisesi	2	10403	B.ARME
18	Avcılar	1993	İHKİB Hazır Giyim ve Konfeksiyon Meslek Lisesi	4	x	B.ARME
19	Avcılar	1993	M.Kemalpaşa İ.Ö.O.	4	10403	B.ARME
20	Avcılar	1993	Mareşal Fevzi Çakmak İ.Ö.O.	4	x	B.ARME
21	Avcılar	1993	Mehmetçik İ.Ö.O.	4	10403	B.ARME
22	Avcılar	1995	Alsancak İ.Ö.O.	4	10403	B.ARME
23	Avcılar	1995	Necdet Semker İ.Ö.O.	4	10403	B.ARME
24	Avcılar	1996	Eğitim Uygulama Okulu ve İş Eğitim Okulu	3	x	B.ARME
25	Avcılar	1996	Sade Zorlu Ticaret Meslek Anadolu Lisesi	3	x	B.ARME
26	Avcılar	1998	Borusan Oto İ.Ö.O.	2	x	B.ARME
27	Bağcılar	1977	Kirazlı Gaziosmanpaşa İ.Ö.O.	2	10403	B.ARME
28	Bağcılar	1979	Bağcılar İ.Ö.O.	2	10403	B.ARME
29	Bağcılar	1982	Hızır Reis İ.Ö.O.	3	10403	B.ARME
30	Bağcılar	1982	Malazgirt İ.Ö.O.	4	10403	B.ARME
31	Bağcılar	1983	İnönü İ.Ö.O.	2	10403	B.ARME
32	Bağcılar	1983	Uçanevler İ.Ö.O.	3	10403	B.ARME
33	Bağcılar	1984	Bağcılar Endüstri Meslek Lisesi	1	10403	B.ARME
34	Bağcılar	1985	Dr.Cemil ve Fevziye Özkaya İ.Ö.O.	2	10403	B.ARME
35	Bağcılar	1985	Güneşli İ.Ö.O.	3	10403	B.ARME
36	Bağcılar	1985	Karacaoğlan İ.Ö.O.	2	10403	B.ARME
37	Bağcılar	1985	Peyami Safa İ.Ö.O.	4	10403	B.ARME
38	Bağcılar	1986	İstanbul Ticaret Odası İ.Ö.O.	3	10403	B.ARME
39	Bağcılar	1986	Şükrü Savaşeri İ.Ö.O.	3	10403	-
40	Bağcılar	1987	Gazi.İ.Ö.O.	4	10403	B.ARME
41	Bağcılar	1987	Nene Hatun İ.Ö.O.	3	10403	B.ARME
42	Bağcılar	1987	Yeşilbağ İ.Ö.O.	4	10403	B.ARME
43	Bağcılar	1988	Anafartalar İ.Ö.O.	3	10403	B.ARME
44	Bağcılar	1988	Firüzan Sadıkoğlu İ.Ö.O.	3	10403	B.ARME
45	Bağcılar	1988	Koca Ragıppaşa İ.Ö.O.	4	10403	B.ARME
46	Bağcılar	1988	Niyazi Altuğ Lisesi	4	10403	B.ARME
47	Bağcılar	1989	Barbaros Lisesi	3	10403	B.ARME
48	Bağcılar	1989	Koca Yusuf İ.Ö.O.	3	10403	B.ARME
49	Bağcılar	1989	Kurtdereli Mehmet İ.Ö.O.	3	10403	B.ARME
50	Bağcılar	1989	Orhangazi Lisesi	3	10403	B.ARME
51	Bağcılar	1989	Vali Cahit Bayar İ.Ö.O.	3	10403	B.ARME
52	Bağcılar	1990	Arif Nihat Asya İ.Ö.O.	4	10403	B.ARME
53	Bağcılar	1990	Aşkaleli İbrahim Polat İ.Ö.O.	3	10403	B.ARME
54	Bağcılar	1990	Sancaktepe İ.Ö.O.	3	10403	B.ARME
55	Bağcılar	1990	Tiryaki Hasan Paşa İ.Ö.O.	2	10403	B.ARME

*** Rest of the table can be seen in CD

PUBLIC SCHOOLS BUILT AFTER 1998 IN ISTANBUL

NO	DISTRICT NAME	YEAR BUILT	SCHOOL NAME	NO. OF STORIES	PROJECT TYPE	BUILDING TYPE
1	Avcılar	1999	Atatürk İlköğretim Okulu	2	x	B.ARME
2	Avcılar	2000	İnönü İ.Ö.O.	3	x	B.ARME
3	Bahçelievler	1999	75.Yıl Cumhuriyet İ.Ö.O.	4	x	B.ARME
4	Bahçelievler	1999	Bağlar İ.Ö.O.	4	10403	B.ARME
5	Bahçelievler	1999	Hürriyet İ.Ö.O.	2	x	B.ARME
6	Bahçelievler	1999	Mehmet Akif Ersoy İ.Ö.O.	3	10403	B.ARME
7	Bahçelievler	1999	Mustafa Kemal İ.Ö.O.	4	x	B.ARME
8	Bahçelievler	2000	Behiye Dr.Nevhiz Işıl İ.Ö.O.	4	x	B.ARME
9	Bayrampaşa	1999	Kocatepe İ.Ö.O.	4	x	B.ARME
10	Bayrampaşa	2001	Mustafa Itri İ.Ö.O.	5	x	B.ARME
11	Beşiktaş	2000	Bingül Erdem Lisesi	6	x	B.ARME
12	Büyükçekmece	1999	Bizimkent İ.Ö.O.	3	x	B.ARME
13	Büyükçekmece	1999	Esenkent Atatürk İ.Ö.O.	4	x	B.ARME
14	Büyükçekmece	1999	Esenyurt Cumhuriyet İ.Ö.O.	3	x	B.ARME
15	Büyükçekmece	1999	Kavaklı İ.Ö.O.	4	10403	B.ARME
16	Büyükçekmece	1999	SA Akçimento Mehmet Akif Ersoy İ.Ö.O.	4	x	B.ARME
17	Büyükçekmece	1999	Türkoba İ.Ö.O.	1	10403	B.ARME
18	Büyükçekmece	2000	Şair Fevzi Kutlu Kalkancı İ.Ö.O.	5	x	B.ARME
19	Çatalca	1999	Ormanlı Köyü İ.Ö.O.	2	10370	B.ARME
20	Esenler	1999	Kazım Karabekir İ.Ö.O.	-	x	-
21	Esenler	1999	Menderes İ.Ö.O.	-	x	-
22	Esenler	2000	Esenler İ.Ö.O.	-	x	-
23	Esenler	2000	O.Çetinkaya İ.Ö.O.	-	x	-
24	Fatih	1999	Genç Osman İ.Ö.O.	4	x	B.ARME
25	Gaziosmanpaşa	1999	Halis Kutmangil İ.Ö.O.	1	10403	YIĞMA
26	Kadıköy	1999	Osman Gazi Anadolu Lisesi	3	x	
27	Kadıköy	2001	Suadiye Hacı Mustafa Tarman Lisesi	4	x	B.ARME
28	Kağıthane	1999	Ali Fuat Cebesoy İ.Ö.O.	5	10403	B.ARME
29	Kağıthane	1999	Arıcılar İ.Ö.O.	3	x	B.ARME
30	Kağıthane	1999	Atatürk İ.Ö.O.	4	x	B.ARME
31	Kartal	1999	Atatürk İ.Ö.O.	4	x	B.ARME
32	Kartal	1999	Cengiz Topel İ.Ö.O.	4	x	B.ARME
33	Kartal	1999	İhsan Zakiroğlu İ.Ö.O.	4	x	B.ARME
34	Kartal	1999	Kartal Yıldız İşçimenler İ.Ö.O.	4	10403	B.ARME
35	Kartal	1999	Saime Zıpkın İ.Ö.O.	4	x	B.ARME
36	Kartal	1999	Soğanlık Anaokulu	2	x	B.ARME
37	Kartal	1999	Vali Erol Çakır Ticaret Meslek Lisesi	4	x	B.ARME
38	Küçükçekmece	1999	Mustafa Kemalpaşa İ.Ö.O.	4	x	B.ARME
39	Küçükçekmece	1999	Şamlar Köyü İ.Ö.O.	4	10403	B.ARME
40	Küçükçekmece	1999	Tepe İ.Ö.O.	5	10403	B.ARME
41	Küçükçekmece	1999	Yeşilyuva İ.Ö.O.	3	10403	B.ARME
42	Küçükçekmece	2000	Mehmet Yaren Gümeli İ.Ö.O.	6	x	B.ARME
43	Pendik	1999	50.Yıl Güzelyalı İ.Ö.O.	4	10403	B.ARME
44	Pendik	1999	Kazım Karabekir İ.Ö.O.	4	x	B.ARME
45	Pendik	1999	Mahir İz İ.Ö.O.	4	x	B.ARME
46	Pendik	1999	Maraşal Fevzi Çakmak İ.Ö.O.	4	x	B.ARME
47	Pendik	1999	Osmangazi İ.Ö.O.	4	x	B.ARME
48	Pendik	1999	Semiha Kıraç İ.Ö.O.	2	x	B.ARME
49	Pendik	2000	Seyit Burhan Toprak İ.Ö.O.	4	10370	B.ARME
50	Pendik	2001	Ayazma İ.Ö.O.	4	x	E. BETON
51	Sarıyer	1999	Kumköy Ferhan Bedii Fevzioğlu İ.Ö.O.	4	10403	B.ARME
52	Sarıyer	2000	Sarıyer Lisesi	4	10403	B.ARME
53	Sarıyer	2001	Alpaslan İ.Ö.O.	5	x	B.ARME
54	Silivri	1999	Fevzipaşa İ.Ö.O.	4	x	B.ARME
55	Silivri	1999	Namık Kemal İ.Ö.O.	3	x	B.ARME

*** Rest of the table can be seen in CD

PUBLIC SCHOOLS WHICH BUILT IN 2005 IN ISTANBUL METROPOLITAN AREA

NO	SCHOOL NAME	PROJECT TYPE
1	Avcılar Denizköşkler İÖO. Ek Bina	Tip-3
2	K.Çekmece M.Kemal Paşa İÖO.	Tip-1
3	K.Çekmece-Halkalı Çamlıkaltı İÖO.	Tip-4
4	K.Çekmece Söğütlüçeşme İÖO.	Tip-2
5	K.Çekmece Halkalı Toplu Konut İÖO.	Tip-4
6	K.Çekmece Sefaköy Sultan Murat İÖO.	Tip-1
7	B.Çekmece Hoşdere Köyü İÖO.	Tip-4
8	K.Çekmece Nasrettin Hoca İÖO.	Tip-2
9	Esenler Atatürk İÖO.	Tip-1
10	Silivri Semizkumlar İÖO.	Tip-2
11	Silivri Hasan Özvarnalı İÖO.	Tip-2
12	Gaziosmanpaşa Yunus Emre İÖO.	Tip-1
13	Gaziosmanpaşa Haraççı İÖO.	Tip-2
14	Gaziosmanpaşa Cebeci İÖO. (2.Blok)	Tip-2
15	Gaziosmanpaşa Aslan Gazi İÖO. Ek Bina	Tip-2
16	Bağcılar 100.Yıl İÖO.	Tip-1
17	Bağcılar İnönü İÖO.	Tip-1
18	Bağcılar Kirazlı Gaziosmanpaşa İÖO.	Tip-2
19	Bakırköy Şehit Pilot M.Erdönmez İÖO.	Tip-1
20	Bakırköy Ahmet H.Tanpınar İÖO.	Tip-3
21	Zeytinburnu Bozkurt İÖO.	Tip-2
22	Zeytinburnu Ziya Gökalp İÖO.	Tip-1
23	Bahçelievler Yenibosna Kuleli Mevki İÖO.	Tip-2
24	Bahçelievler Yenibosna Doğu Sanayi İÖO.	Tip-1
25	Güngören Merkez Mahallesi İÖO.	Tip-2
26	Bayrampaşa İÖO.	Tip-1

NO	SCHOOL NAME	PROJECT TYPE
27	Bayrampaşa Nuri Örs İÖO.	Tip-2
28	Bayrampaşa Uluğbey İÖO.	Tip-2
29	Bayrampaşa Şair Şinasi İÖO.	Tip-1
30	Eyüp Feridun Tümer İÖO.	Tip-4
31	Eyüp Şehit Kubilay İÖO.	Tip-2
32	Bağcılar Kirazlı Evren Mahallesi İÖO.	Tip-2
33	Maltepe Albay Niyazi Esen İÖO.	Tip-1
34	Maltepe Hasan Şadoğlu İÖO. (Ek Bina)	Özel Tip
35	Ümraniye İstiklal İÖO.	Tip-1
36	Ümraniye Aşağı Dudullu Sintaş İÖO.	Tip-4
37	Ümraniye Yenidoğan Mevlana Mah. İÖO.	Tip-1
38	Ümraniye Namık Kemal Mah. İÖO.	Tip-2
39	Üsküdar Gazi Mustafa Altıntaş İÖO.	MSÜ
40	Ümraniye Yenidoğan H.Tolgacan İÖO.	Tip-2
41	Kartal Beyhan Şenyuva İÖO.	Tip-4
42	Ümraniye Yenidoğan Merve Mah. İÖO.	Tip-2
43	Pendik Ercan Görür İÖO.	Tip-3
44	Kartal Nihat Erim İÖO.	Tip-2
45	Pendik Fatma Gözen Eralp İÖO.	Tip-1
46	Pendik Alemdarpaşa İÖO.	Tip-1
47	Tuzla Osman Gazi İÖO.	Tip-2
48	Tuzla Çağrıbey İÖO.	Tip-2
49	Tuzla Aydınlı Mevki İÖO.	Tip-2

TİP 1 : Ragıp Akın Tipli Proje **16 Adet**
TİP 2 : 10025 R-480 Tipli Proje **22 Adet**
TİP 3 : 10025 R-720 Tipli Proje **3 Adet**
TİP 4 : 2000-42 Tipli Proje **6 Adet**
MSÜ : G.Mustafa Altuntaş Tipli Proje **1 Adet**
ÖZEL TİP : Hasan Şadoğlu Tipli Proje **1 Adet**

Toplam : 49 Adet

- TABLE C.21 -

1 STOREY PUBLIC SCHOOLS IN ISTANBUL

NO	DISTRICT NAME	SCHOOL NAME	YEAR BUILT	NO. OF STORIES	PROJECT TYPE	BUILDING TYPE
1	Bağcılar	Bağcılar Endüstri Meslek Lisesi	1984	1	10403	B.ARME
2	Bağcılar	Mahmutbey İ.Ö.O.	1958	1	10403	YIĞMA
3	Bahçelievler	Fikret Yüzatlı İ.Ö.O.	1987	1	10403	B.ARME
4	Bakırköy	Ataköy İ.Ö.O.	1963	1	x	YIĞMA
5	Bakırköy	Basınköy İ.Ö.O.	1972	1	10403	B.ARME
6	Beykoz	Ali Bahadır İ.Ö.O.	1958	1	10403	YIĞMA
7	Beykoz	Bibi Gencell İ.Ö.O.	1964	1	10403	B.ARME
8	Beykoz	Cumhuriyet İ.Ö.O.	1932	1	10403	YIĞMA
9	Beykoz	Çavuşbaşı Ahmet Akça İ.Ö.O.	1966	1	10403	YIĞMA
10	Beykoz	Çengeldere İ.Ö.O.	1968	1	10403	YIĞMA
11	Beykoz	Elmalı İ.Ö.O.	1997	1	10403	YIĞMA
12	Beykoz	Feride Alpavti İ.Ö.O.	1954	1	10403	YIĞMA
13	Beykoz	Firuzbey İ.Ö.O.	1969	1	10403	YIĞMA
14	Beykoz	İshaklı İ.Ö.O.	1970	1	10403	YIĞMA
15	Beykoz	Kaynarca İ.Ö.O.	1967	1	10403	YIĞMA
16	Beykoz	Kılıçlı İ.Ö.O.	1938	1	10403	YIĞMA
17	Beykoz	Mahmut Şevket Paşa İ.Ö.O.	1950	1	10403	YIĞMA
18	Beykoz	Paşamandıra İ.Ö.O.	1954	1	10370	YIĞMA
19	Beykoz	Polonezköy İ.Ö.O.	-	1	x	YIĞMA
20	Beykoz	Sait Taşçıoğlu İ.Ö.O.	1971	1	10403	YIĞMA
21	Beykoz	Selahattin Karakaşlı İ.Ö.O.	1978	1	10403	B.ARME
22	Beykoz	Tepetarla İ.Ö.O.	1918	1	10403	YIĞMA
23	Beykoz	Ziya Ünsel İ.Ö.O.	1966	1	x	B.ARME
24	Beyoğlu	Pratik Kız Sanat Okulu	1972	1	x	YIĞMA
25	Büyükçekmece	Çakmaklı İ.Ö.O.	1949	1	10403	B.ARME
26	Büyükçekmece	İsmail Hakkı Tonguç İ.Ö.O.	1997	1	10403	B.ARME
27	Büyükçekmece	Türkoba İ.Ö.O.	1999	1	10403	B.ARME
28	Çatalca	Akalan Köyü İ.Ö.O.	1939	1	x	YIĞMA
29	Çatalca	Aydınlar Köyü İ.Ö.O.	1969	1	x	P.FABRİK
30	Çatalca	Bahşayış Köyü İ.Ö.O.	1960	1	10403	YIĞMA
31	Çatalca	Binkılıç İ.Ö.O.	1968	1	10403	YIĞMA
32	Çatalca	Boyalık Köyü Örfi Çetinkaya İ.Ö.O.	1939	1	10403	YIĞMA
33	Çatalca	Çakıl Köyü İ.Ö.O.	1946	1	10403	YIĞMA
34	Çatalca	Çiftlikköy İ.Ö.O.	1928	1	x	P.FABRİK
35	Çatalca	Dağyenice Köyü İ.Ö.O.	1948	1	10403	B.ARME
36	Çatalca	Deliklikaya İ.Ö.O.	1972	1	x	B.ARME
37	Çatalca	Dursunköy İ.Ö.O.	1975	1	10403	B.ARME
38	Çatalca	Elbasan Köyü İ.Ö.O.	1929	1	x	YIĞMA
39	Çatalca	Gümüşpınar Köyü İ.Ö.O.	1944	1	x	TAŞ
40	Çatalca	Hallaçlı Köyü İ.Ö.O.	1977	1	x	YIĞMA
41	Çatalca	İnceğiz Köyü İ.Ö.O.	1958	1	10370	YIĞMA
42	Çatalca	İzzettin Köyü İ.Ö.O.	1928	1	x	YIĞMA
43	Çatalca	Kabakça İ.Ö.O.	1944	1	10403	-
44	Çatalca	Kalfaköy İ.Ö.O.	1948	1	10403	YIĞMA
45	Çatalca	Karacaköy İ.Ö.O.	1968	1	10403	B.ARME
46	Çatalca	Karamandere İ.Ö.O.	1967	1	10370	B.ARME
47	Çatalca	Muratbey Esin Ovacık İ.Ö.O.	1967	1	10403	B.ARME
48	Çatalca	Nakkaş Köyü İ.Ö.O.	1923	1	x	YIĞMA
49	Çatalca	Ovayenice Köyü İ.Ö.O.	1929	1	x	TAŞ
50	Çatalca	Örencik Köyü İ.Ö.O.	1954	1	10403	YIĞMA
51	Çatalca	Örencik Köyü İ.Ö.O. Ek Bina	1970	1	10403	YIĞMA
52	Çatalca	Subaşı Köyü İ.Ö.O.	1928	1	x	B.ARME
53	Çatalca	Yalıköy İ.Ö.O.	1959	1	10403	B.ARME
54	Çatalca	Yassıören İ.Ö.O.	1982	1	10403	B.ARME
55	Çatalca	Yazlıkköyü İ.Ö.O.	1981	1	10403	YIĞMA

*** Rest of the table can be seen in CD

2 STOREY PUBLIC SCHOOLS IN ISTANBUL

NO	DISTRICT NAME	SCHOOL NAME	YEAR BUILT	NO. OF STORIES	PROJECT TYPE	BUILDING TYPE
1	Adalar	Hüseyin Rahmi Gürpınar Lisesi	1972	2	x	B.ARME
2	Adalar	Kınalıada İ.Ö.O.	1966	2	10403	B.ARME
3	Avcılar	50.Yıl İnsa Lisesi	1985	2	x	B.ARME
4	Avcılar	Atatürk İlköğretim Okulu	1999	2	x	B.ARME
5	Avcılar	Borusan Oto İ.Ö.O.	1998	2	x	B.ARME
6	Avcılar	Cihangir İ.Ö.O.	1989	2	10403	B.ARME
7	Avcılar	Haydar Akın Anadolu Meslek Lisesi	1993	2	10403	B.ARME
8	Avcılar	Saadetdere İ.Ö.O.	1985	2	10403	YIĞMA
9	Bağcılar	Bağcılar İ.Ö.O.	1979	2	10403	B.ARME
10	Bağcılar	Dr.Cemil ve Fevziye Özkaya İ.Ö.O.	1985	2	10403	B.ARME
11	Bağcılar	İnönü İ.Ö.O.	1983	2	10403	B.ARME
12	Bağcılar	Karacaoğlan İ.Ö.O.	1985	2	10403	B.ARME
13	Bağcılar	Kirazlı Gaziosmanpaşa İ.Ö.O.	1977	2	10403	B.ARME
14	Bağcılar	Tiryaki Hasan Paşa İ.Ö.O.	1990	2	10403	B.ARME
15	Bahçelievler	Hürriyet İ.Ö.O.	1999	2	x	B.ARME
16	Bahçelievler	Kemal Hasanoğlu İ.Ö.O.	1990	2	10403	B.ARME
17	Bahçelievler	Yeni Bosna Doğu Sanayi İ.Ö.O.	1980	2	10403	B.ARME
18	Bakırköy	60.Yıl Ataköy İ.Ö.O.	1983	2	10370	B.ARME
19	Bakırköy	Arif Şenel İ.Ö.O.	-	2	10403	B.ARME
20	Bakırköy	Ataköy Atatürk İ.Ö.O.	1988	2	x	B.ARME
21	Bakırköy	Behrem Ağa İ.Ö.O	1968	2	10403	B.ARME
22	Bakırköy	Hakan Polatkan Lisesi	1991	2	x	B.ARME
23	Bakırköy	Halil Bedii Yönetken İ.Ö.O.	1968	2	10403	B.ARME
24	Bakırköy	İbni Sina İ.Ö.O.	1987	2	10403	B.ARME
25	Bakırköy	Medeni Berk İ.Ö.O.	1988	2	x	B.ARME
26	Bakırköy	Şehit Pilot Muzaffer Erdönmez İ.Ö.O.	1967	2	10403	B.ARME
27	Bayrampaşa	Bayrampaşa İ.Ö.O.	1970	2	10403	B.ARME
28	Bayrampaşa	Cevatpaşa İ.Ö.O.	1988	2	10403	B.ARME
29	Bayrampaşa	Mobil Lisesi	1990	2	10403	B.ARME
30	Bayrampaşa	Oğuzhan İ.Ö.O.	1964	2	10403	B.ARME
31	Bayrampaşa	Şair Şinasi İ.Ö.O.	1979	2	10403	B.ARME
32	Bayrampaşa	Tuna İ.Ö.O. (1.Bina)	1981	2	10403	B.ARME
33	Bayrampaşa	Uluğbey İ.Ö.O.	1963	2	x	B.ARME
34	Beşiktaş	12 Eylül İ.Ö.O.	1982	2	10370	B.ARME
35	Beşiktaş	50.Yıl Süheyla Artam İ.Ö.O.	1973	2	x	B.ARME
36	Beşiktaş	Anafartalar İ.Ö.O.	1982	2	10403	B.ARME
37	Beşiktaş	Bernar Nahum İ.Ö.O.	1979	2	10403	B.ARME
38	Beşiktaş	Cumhuriyet İ.Ö.O.	1981	2	10403	YIĞMA
39	Beşiktaş	Faik Binal İ.Ö.O.	1986	2	10403	B.ARME
40	Beşiktaş	Gaziosmanpaşa İ.Ö.O.	1881	2	10403	AHŞAP
41	Beşiktaş	Levent Kız Meslek Lisesi	-	2	10403	B.ARME
42	Beşiktaş	Lütfi Banat İ.Ö.O.	1987	2	x	B.ARME
43	Beşiktaş	Mehmetçik İ.Ö.O.	1976	2	10403	B.ARME
44	Beşiktaş	Natuk Birkan Pratik Kız Sanat Okulu	1953	2	10403	YIĞMA
45	Beşiktaş	Org.Kamil Güzey İ.Ö.O.	1988	2	10403	B.ARME
46	Beşiktaş	Şair Behçet Kemal Çağlar İ.Ö.O.	1972	2	10403	B.ARME
47	Beşiktaş	Şair Mehmet Emin Yurdakul İ.Ö.O.	1969	2	10403	B.ARME
48	Beşiktaş	Tabiyeli Mehmet Emin Ercun İ.Ö.O.	1966	2	x	B.ARME
49	Beşiktaş	Yıldız Erten Anaokulu	1981	2	10403	B.ARME
50	Beşiktaş	Ziya Kalkavan Anadolu Denizcilik Meslek Lisesi	-	2	10403	YIĞMA
51	Beykoz	Akbaba İ.Ö.O.	1992	2	10403	B.ARME
52	Beykoz	Atatürk İ.Ö.O.	1988	2	10403	B.ARME
53	Beykoz	Beykoz Kız Meslek Lisesi	-	2	x	AHŞAP
54	Beykoz	Defterdar Mehmetbey İ.Ö.O.	1956	2	10403	YIĞMA
55	Beykoz	Dereseki İ.Ö.O.	1976	2	10403	B.ARME

*** Rest of the table can be seen in CD

3 STOREY PUBLIC SCHOOLS IN ISTANBUL

NO	DISTRICT NAME	SCHOOL NAME	YEAR BUILT	NO. OF STORIES	PROJECT TYPE	BUILDING TYPE
1	Adalar	Burgazada İ.Ö.O.	1960	3	x	B.ARME
2	Adalar	Heybeliada İ.Ö.O.	1964	3	10403	B.ARME
3	Avcılar	Ambarlı İ.Ö.O.	1987	3	10403	B.ARME
4	Avcılar	Eğitim Uygulama Okulu ve İş Eğitim Okulu	1996	3	x	B.ARME
5	Avcılar	Firüzköy İ.Ö.O.	1932	3	10403	B.ARME
6	Avcılar	Gümüşpala İ.Ö.O.	1973	3	10370	YIĞMA
7	Avcılar	İnönü İ.Ö.O.	2000	3	x	B.ARME
8	Avcılar	Sade Zorlu Ticaret Meslek Anadolu Lisesi	1996	3	x	B.ARME
9	Avcılar	Salih Şükriye Yoluç İ.Ö.O.	1988	3	x	B.ARME
10	Avcılar	Süleyman Nazif Lisesi	1992	3	10403	B.ARME
11	Avcılar	Ticaret Meslek Lisesi	1992	3	10403	B.ARME
12	Bağcılar	Adnan Ötüken İ.Ö.O.	1974	3	10403	YIĞMA
13	Bağcılar	Anafartalar İ.Ö.O.	1988	3	10403	B.ARME
14	Bağcılar	Aşkaleli İbrahim Polat İ.Ö.O.	1990	3	10403	B.ARME
15	Bağcılar	Bağcılar Lisesi	1975	3	10403	B.ARME
16	Bağcılar	Barbaros Lisesi	1989	3	10403	B.ARME
17	Bağcılar	Firüzan Sadıkoğlu İ.Ö.O.	1988	3	10403	B.ARME
18	Bağcılar	Güneşli İ.Ö.O.	1985	3	10403	B.ARME
19	Bağcılar	Hızır Reis İ.Ö.O.	1982	3	10403	B.ARME
20	Bağcılar	İstanbul Ticaret Odası İ.Ö.O.	1986	3	10403	B.ARME
21	Bağcılar	Koca Yusuf İ.Ö.O.	1989	3	10403	B.ARME
22	Bağcılar	Kurtdereli Mehmet İ.Ö.O.	1989	3	10403	B.ARME
23	Bağcılar	Münir Nurettin Selçuk İ.Ö.O.	-	3	10403	B.ARME
24	Bağcılar	Nene Hatun İ.Ö.O.	1987	3	10403	B.ARME
25	Bağcılar	Orhangazi Lisesi	1989	3	10403	B.ARME
26	Bağcılar	Sancaktepe İ.Ö.O.	1990	3	10403	B.ARME
27	Bağcılar	Şükrü Savaşeri İ.Ö.O.	1986	3	10403	-
28	Bağcılar	Uçanevler İ.Ö.O.	1983	3	10403	B.ARME
29	Bağcılar	Vali Cahit Bayar İ.Ö.O.	1989	3	10403	B.ARME
30	Bağcılar	Yavuz Selim İ.Ö.O.	-	3	10403	B.ARME
31	Bahçelievler	Ali Haydar Günver İ.Ö.O.	1978	3	10370	B.ARME
32	Bahçelievler	Altınyıldız İ.Ö.O.	1983	3	x	B.ARME
33	Bahçelievler	Aydın Doğan Anadolu İletişim Meslek Lisesi	1998	3	x	B.ARME
34	Bahçelievler	Bağlar Lisesi	1983	3	x	B.ARME
35	Bahçelievler	Bahçelievler Anadolu Lisesi	1998	3	x	B.ARME
36	Bahçelievler	Bahçelievler İ.Ö.O.	1963	3	10403	B.ARME
37	Bahçelievler	Bahçelievler Lisesi	1989	3	x	B.ARME
38	Bahçelievler	Bahçelievler Şirintepe İ.Ö.O.	1989	3	10403	B.ARME
39	Bahçelievler	Çobançeşme İ.Ö.O.	1984	3	10403	B.ARME
40	Bahçelievler	Erkan Avcı Anadolu Teknik Lisesi ve End. Mes. L.	1989	3	x	B.ARME
41	Bahçelievler	GSD Eğitim Vakfı Bahçelievler İ.Ö.O.	1998	3	x	B.ARME
42	Bahçelievler	Halit Ziya Uşaklıgil İ.Ö.O.	1987	3	x	B.ARME
43	Bahçelievler	Kemal Hasoğlu Lisesi	1986	3	10403	B.ARME
44	Bahçelievler	Kocasinan Lisesi	1977	3	10403	B.ARME
45	Bahçelievler	Mehmet Akif Ersoy İ.Ö.O.	1999	3	10403	B.ARME
46	Bahçelievler	Org.Eşref Bitlis İ.Ö.O.	1993	3	x	B.ARME
47	Bahçelievler	Siyavuşpaşa İ.Ö.O.	1965	3	10403	YIĞMA
48	Bakırköy	Ataköy Cumhuriyet Lisesi	1994	3	x	B.ARME
49	Bakırköy	Bakırköy İ.Ö.O.	-	3	10370	YIĞMA
50	Bakırköy	Bakırköy Lisesi	1959	3	x	B.ARME
51	Bakırköy	Bakırköy Pilot Cengiz Topel İ.Ö.O.	-	3	10403	B.ARME
52	Bakırköy	Cumhuriyet İ.Ö.O.	-	3	10403	B.ARME
53	Bakırköy	Gazi İ.Ö.O.	1995	3	10370	B.ARME
54	Bakırköy	Hamdullah Suphi Tanrıöver İ.Ö.O.	1968	3	x	B.ARME
55	Bakırköy	İncirlik Ahmet Hamdi Tanpınar İ.Ö.O.	1978	3	10403	B.ARME

*** Rest of the table can be seen in CD

4 STOREY PUBLIC SCHOOLS IN ISTANBUL

NO	DISTRICT NAME	SCHOOL NAME	YEAR BUILT	NO. OF STORIES	PROJECT TYPE	BUILDING TYPE
1	Adalar	Büyükada Şehit Murat Yüksel İ.Ö.O.	1987	4	10403	B.ARME
2	Avcılar	Alsancak İ.Ö.O.	1995	4	10403	B.ARME
3	Avcılar	Avcılar Abdulkadir Öztürk İ.Ö.O.	1993	4	10403	B.ARME
4	Avcılar	Avcılar Lisesi	1993	4	10403	B.ARME
5	Avcılar	Cumhuriyet İ.Ö.O.	1991	4	10403	B.ARME
6	Avcılar	Denizköşkler İ.Ö.O.	1993	4	10403	B.ARME
7	Avcılar	Endüstri Meslek Lisesi	1984	4	10403	B.ARME
8	Avcılar	Güngör Tekiner İ.Ö.O.	1989	4	10403	B.ARME
9	Avcılar	İHKİB Hazır Giyim ve Konfeksiyon Meslek Lisesi	1993	4	x	B.ARME
10	Avcılar	M.Kemalpaşa İ.Ö.O.	1993	4	10403	B.ARME
11	Avcılar	Mareşal Fevzi Çakmak İ.Ö.O.	1993	4	x	B.ARME
12	Avcılar	Mehmetçik İ.Ö.O.	1993	4	10403	B.ARME
13	Avcılar	Milli Eğitim Vakfı Nihat Çandarlı İ.Ö.O.	1555	4	x	B.ARME
14	Avcılar	Necdet Semker İ.Ö.O.	1995	4	10403	B.ARME
15	Avcılar	Ömer Seyfettin İ.Ö.O.	1985	4	10403	B.ARME
16	Avcılar	Vali Rıdvan Yenişen İlköğretim Okulu	1989	4	x	B.ARME
17	Bağcılar	Abdurrahman Nermin Bilimli Anadolu Teknik Lisesi	1995	4	x	B.ARME
18	Bağcılar	Akşemsettin Lisesi	1993	4	10403	B.ARME
19	Bağcılar	Arif Nihat Asya İ.Ö.O.	1990	4	10403	B.ARME
20	Bağcılar	Atatürk İ.Ö.O.	1993	4	10403	B.ARME
21	Bağcılar	Dr.K.Naci Ekşi Lisesi	-	4	10403	B.ARME
22	Bağcılar	Evren İ.Ö.O.	1992	4	10403	B.ARME
23	Bağcılar	Gazi.İ.Ö.O.	1987	4	10403	B.ARME
24	Bağcılar	Hasan Kağnıcı İ.Ö.O.	1993	4	10403	B.ARME
25	Bağcılar	İstikbal İ.Ö.O.	1992	4	10403	B.ARME
26	Bağcılar	Kirazlı .İ.Ö.O.	1992	4	10403	B.ARME
27	Bağcılar	Koca Ragıppaşa İ.Ö.O.	1988	4	10403	B.ARME
28	Bağcılar	Malazgirt İ.Ö.O.	1982	4	10403	B.ARME
29	Bağcılar	Niyazi Altuğ Lisesi	1988	4	10403	B.ARME
30	Bağcılar	Peyami Safa İ.Ö.O.	1985	4	10403	B.ARME
31	Bağcılar	Ticaret Meslek Lisesi	1992	4	10403	B.ARME
32	Bağcılar	Üsküp İ.Ö.O.	1990	4	10403	B.ARME
33	Bağcılar	Yeşilbağ İ.Ö.O.	1987	4	10403	B.ARME
34	Bağcılar	Yıldıztepe İ.Ö.O.	-	4	10403	B.ARME
35	Bağcılar	Zeynep Bedia Kılıçoğlu İ.Ö.O.	1991	4	10403	B.ARME
36	Bahçelievler	75.Yıl Cumhuriyet İ.Ö.O.	1999	4	x	B.ARME
37	Bahçelievler	Adnan Menderes Anadolu Lisesi	1991	4	10403	B.ARME
38	Bahçelievler	Ata İ.Ö.O.	1998	4	x	B.ARME
39	Bahçelievler	Bağlar İ.Ö.O.	1999	4	10403	B.ARME
40	Bahçelievler	Bahçelievler Dedekorkut Anadolu Lisesi	1996	4	x	B.ARME
41	Bahçelievler	Bahçelievler Endüstri Meslek Lisesi	-	4	x	B.ARME
42	Bahçelievler	Bahçelievler Ticaret Meslek Lisesi	1995	4	10403	B.ARME
43	Bahçelievler	Behiye Dr.Nevhiz Işıl İ.Ö.O.	2000	4	x	B.ARME
44	Bahçelievler	Dr.Refik Saydam İ.Ö.O.	1989	4	10403	B.ARME
45	Bahçelievler	Emir Sultan İ.Ö.O.	1994	4	10403	B.ARME
46	Bahçelievler	Emlak Konut İ.Ö.O.	1991	4	10370	B.ARME
47	Bahçelievler	İHKİB Yenibosna Hazır Giyim Meslek Lisesi	1997	4	10403	B.ARME
48	Bahçelievler	Kazım Karabekir İ.Ö.O.	1982	4	10403	B.ARME
49	Bahçelievler	Kocasinan İ.Ö.O.	1989	4	10403	B.ARME
50	Bahçelievler	Kocasinan Teknik Lise Ve Endüstri Meslek Lisesi	1992	4	x	B.ARME
51	Bahçelievler	Kudret Saraçoğlu İ.Ö.O.	1998	4	x	B.ARME
52	Bahçelievler	Kuleli İ.Ö.O.	1998	4	10403	B.ARME
53	Bahçelievler	Mevlana İ.Ö.O.	1983	4	10403	B.ARME
54	Bahçelievler	Mustafa Kemal İ.Ö.O.	1999	4	x	B.ARME
55	Bahçelievler	Necip Fazıl Kısakürek Lisesi	1990	4	10403	B.ARME

** Rest of the table can be seen in CD

5 STOREY PUBLIC SCHOOLS IN ISTANBUL

NO	DISTRICT NAME	SCHOOL NAME	YEAR BUILT	NO. OF STORIES	PROJECT TYPE	BUILDING TYPE
1	Bağcılar	Hoca Ahmet Yesevi İ.Ö.O.	1993	5	10403	B.ARME
2	Bahçelievler	Hazım Ersu İ.Ö.O.	1998	5	x	B.ARME
3	Bahçelievler	Koza İ.Ö.O. (Yeni Bina)	1996	5	x	B.ARME
4	Bahçelievler	Yenibosna İ.Ö.O.	1983	5	10403	B.ARME
5	Bakırköy	Ataköy Lisesi	1974	5	10403	B.ARME
6	Bakırköy	Bakırköy İmam Hatip Lisesi	1979	5	x	B.ARME
7	Bayrampaşa	Bayrampaşa Ticaret Lisesi	1989	5	x	B.ARME
8	Bayrampaşa	Mustafa Itri İ.Ö.O.	2001	5	x	B.ARME
9	Beşiktaş	Zübeyde Hanım Anadolu Kız Meslek Lisesi	1963	5	10403	B.ARME
10	Beykoz	Beykoz İmam Hatip Lisesi	1977	5	x	B.ARME
11	Beykoz	Hacınuman İ.Ö.O.	1987	5	10403	B.ARME
12	Beyoğlu	Taksim Ticaret Meslek Lisesi	-	5	10403	YIĞMA
13	Büyükçekmece	Hüseyin Yıldız Anadolu Lisesi	1997	5	10403	B.ARME
14	Büyükçekmece	Şair Fevzi Kutlu Kalkancı İ.Ö.O.	2000	5	x	B.ARME
15	Eminönü	Cağaloğlu Anadolu Lisesi	1955	5	10403	B.ARME
16	Eminönü	Gedik Paşa İ.Ö.O.		5	10403	B.ARME
17	Eminönü	İstanbul Erkek Lisesi Eğitim Vakfı	1996	5	x	B.ARME
18	Esenler	Habibler İ.Ö.O.	1993	5	10403	B.ARME
19	Eyüp	Eyüp İmam Hatip Lisesi	1991	5	10403	B.ARME
20	Eyüp	Tantavi İ.Ö.O.	1986	5	10370	B.ARME
21	Fatih	Çapa Atatürk İ.Ö.O.	1989	5	10403	B.ARME
22	Fatih	Kocamustafapaşa Lisesi	1972	5	x	B.ARME
23	Gaziosmanpaşa	Gaziosmanpaşa Kız Meslek Lisesi	1991	5	10403	B.ARME
24	Güngören	Tozkoparan Teknik End.Mes.Lisesi	1983	5	10403	B.ARME
25	Güngören	Tuncay Azaphan Anadolu Tic. Mes. Lis. Tic. Mes. Lisesi	1996	5	x	B.ARME
26	Kadıköy	50.Yıl Tahran Lisesi	1974	5	10403	B.ARME
27	Kadıköy	Dost Eller İşitme Engelliler İ.Ö.O.	1968	5	10403	B.ARME
28	Kadıköy	Kazım Karabekir İ.Ö.O.	1996	5	10403	B.ARME
29	Kadıköy	Mihriban Boysan İ.Ö.O.	1991	5	x	B.ARME
30	Kağıthane	Ali Fuat Cebesoy İ.Ö.O.	1999	5	10403	B.ARME
31	Kağıthane	Ekrem Cevahir Çok Programlı Lise	1997	5	10403	B.ARME
32	Kağıthane	Harmantepe İ.Ö.O.	1997	5	10403	B.ARME
33	Kağıthane	Kağıthane Lisesi	1993	5	10403	B.ARME
34	Kağıthane	Özel Şişli Lisesi	1989	5	10403	B.ARME
35	Kağıthane	Profilo Ana. Tek. Lisesi Ana. Mes. Lisesi	1990	5	10403	B.ARME
36	Kağıthane	Ticaret Odası Anadolu Ticaret Meslek Lisesi	1987	5	x	B.ARME
37	Kağıthane	Yaşar Doğu İ.Ö.O.	1991	5	10403	B.ARME
38	Kartal	Kartal İhsan Bayrakçı İ.Ö.O.	1996	5	10403	B.ARME
39	Kartal	Kartal Samandıra İmam Hatip Lisesi	-	5	10403	B.ARME
40	Kartal	Kutlu Aktaş İ.Ö.O.	1998	5	x	B.ARME
41	Küçükçekmece	Atatürk Anadolu Meslek Lisesi	1993	5	10403	B.ARME
42	Küçükçekmece	Söğütlüçeşme Lisesi	1985	5	10403	B.ARME
43	Küçükçekmece	Tepe İ.Ö.O.	1999	5	10403	B.ARME
44	Maltepe	Atatürk İ.Ö.O.	1994	5	10403	B.ARME
45	Maltepe	Mürüvvet Hanım İ.Ö.O.	1991	5	10403	B.ARME
46	Maltepe	Ticaret Meslek Lisesi	1987	5	x	B.ARME
47	Sarıyer	Alpaslan İ.Ö.O.	2001	5	x	B.ARME
48	Sarıyer	Daruşşafaka İ.Ö.O.	1992	5	10370	B.ARME
49	Sarıyer	Sarıyer Vehbi Koç Vakfı Lisesi	1975	5	10370	B.ARME
50	Silivri	Silivri Teknik Lise Ve End.Meslek Lisesi	1994	5	10403	B.ARME
51	Sultanbeyli	Sultanbeyli İmam Hatip Lisesi	1994	5	10403	B.ARME
52	Sultanbeyli	Turan Fevzioğlu Lisesi (Gedikpaşa Lisesi)	1998	5	10403	B.ARME
53	Şile	Balibey 75.Yıl İ.Ö.O.	1988	5	x	-
54	Şişli	Nişantaşı Anadolu Lisesi	1905	5	10403	YIĞMA
55	Şişli	Şişli Lisesi	1969	5	10403	B.ARME

*** Rest of the table can be seen in CD

LIST OF PUBLIC SCHOOLS ADJUDICATED BY GOVERNORSHIP OF ISTANBUL HAVE STRENGTHENED AND ANALYZED OF SEISMIC SAFETY BETWEEN THE YEARS 2004 AND 2005

NO	DISTRICT NAME	SCHOOL NAME
1	Adalar	Burgazada İ.Ö.O.
2	Adalar	Büyükada İ.Ö.O.
3	Adalar	Büyükada Şehit Murat Yüksel İ.Ö.O
4	Adalar	Heybeliada İ.Ö.O.
5	Adalar	Hüseyin Rahmi Gürpınar Çok Prog. Lise
6	Adalar	Kınalıada İ.Ö.O.
7	Avcılar	Avcılar Lisesi
8	Avcılar	Endüstri Meslek Lisesi
9	Avcılar	İnsa Lisesi
10	Avcılar	Süleyman Nazif Lisesi
11	Avcılar	Ticaret Meslek Lisesi
12	Bağcılar	50.Yıl Adnan Ötügen İ.Ö.O.
13	Bağcılar	Abdurrahman ve Nermin Bilimli EML.
14	Bağcılar	Akşemsettin Lisesi
15	Bağcılar	Anafartalar İ.Ö.O.
16	Bağcılar	Arif Nihat Asya İ.Ö.O.
17	Bağcılar	Aşkaleli İbrahim Polat İ.Ö.O.
18	Bağcılar	Atatürk İ.Ö.O.
19	Bağcılar	Bağcılar İ.Ö.O.
20	Bağcılar	Bağcılar Lisesi
21	Bağcılar	Barbaros Lisesi
22	Bağcılar	Dr.Cemil ve Fevziye Özkaya İ.Ö.O.
23	Bağcılar	Dr.Kemal Naci Ekşi Lisesi
24	Bağcılar	Evren İ.Ö.O.
25	Bağcılar	Firuzan Sadıkoğlu İ.Ö.O.
26	Bağcılar	Gazi İ.Ö.O.
27	Bağcılar	Gazi Osman Paşa İ.Ö.O.
28	Bağcılar	Hasan Kağnıcı İ.Ö.O.
29	Bağcılar	Hızır Reis İ.Ö.O.
30	Bağcılar	Hoca Ahmet Yesevi İ.Ö.O.
31	Bağcılar	İnönü İ.Ö.O.
32	Bağcılar	İstiklal İ.Ö.O.
33	Bağcılar	İTO. İ.Ö.O.
34	Bağcılar	Karacaoğlan İ.Ö.O.
35	Bağcılar	Kirazlı İ.Ö.O.
36	Bağcılar	Koca Ragıp Paşa İ.Ö.O.
37	Bağcılar	Koca Yusuf İ.Ö.O.
38	Bağcılar	Kurtdereli Mehmet İ.Ö.O.
39	Bağcılar	Malazgirt İ.Ö.O.
40	Bağcılar	Mehmet Niyazi Altuğ Lisesi
41	Bağcılar	Münir Nurettin Selçuk İ.Ö.O.
42	Bağcılar	Nene Hatun İ.Ö.O.
43	Bağcılar	Orhangazi Lisesi
44	Bağcılar	Peyami Safa İ.Ö.O.
45	Bağcılar	Sancaktepe İ.Ö.O.
46	Bağcılar	Şükrü Savaşeri İ.Ö.O.
47	Bağcılar	Ticaret Meslek Lisesi
48	Bağcılar	Türk-İsveç Kardeşlik İ.Ö.O.
49	Bağcılar	Uçanevler İ.Ö.O.
50	Bağcılar	Üsküp İ.Ö.O.

NO	DISTRICT NAME	SCHOOL NAME
51	Bağcılar	Vali Cahit Bayer İ.Ö.O.
52	Bağcılar	Yeşilbağ İ.Ö.O.
53	Bağcılar	Yıldıztepe İ.Ö.O.
54	Bağcılar	Zeynep Bedia Kılıçoğlu İ.Ö.O.
55	Bahçelievler	75.Yıl Cumhuriyet İ.Ö.O.
56	Bahçelievler	Ali Haydar Günver İ.Ö.O.
57	Bahçelievler	Halit Ziya Uşaklıgil
58	Bakırköy	60.Yıl Ataköy İ.Ö.O.
59	Bakırköy	50.Yıl Anadolu Lisesi
60	Bakırköy	Anadolu Kız Meslek Lisesi
61	Bakırköy	Arif Şenal İ.Ö.O.
62	Bakırköy	Ataköy Atatürk İ.Ö.O.
63	Bakırköy	Ataköy Cumhuriyet Lisesi
64	Bakırköy	Ataköy İ.Ö.O.
65	Bakırköy	Ataköy Lisesi
66	Bakırköy	Bakırköy İ.Ö.O.
67	Bakırköy	Behramağa İ.Ö.O.
68	Bakırköy	Cumhuriyet İ.Ö.O.
69	Bakırköy	Emlak Kredi Konutları İ.Ö.O.
70	Bakırköy	Florya Tevfik Ercan Lisesi
71	Bakırköy	Gazi İ.Ö.O.
72	Bakırköy	Halil B.Yönetken İ.Ö.O.
73	Bakırköy	Halil Vedat Fıratlı İ.Ö.O.
74	Bakırköy	Kartaltepe İ.Ö.O.
75	Bakırköy	Medeni Berk İ.Ö.O.
76	Bakırköy	Muhittin Üstündağ İ.Ö.O.
77	Bakırköy	Osmaniye İ.Ö.O.
78	Bakırköy	Sabri Çalışkan Lisesi
79	Bakırköy	Ticaret Meslek Lisesi
80	Bakırköy	Yeşilköy 50.Yıl Lisesi
81	Beşiktaş	Şair Nedim İ.Ö.O.
82	Beykoz	60.Yıl İ.Ö.O.
83	Beykoz	Denizcilik ve Su Ürünleri Meslek Lisesi
84	Beykoz	Deri Kundura İ.Ö.O.
85	Beykoz	Fevzi Çakmak Lisesi
86	Beykoz	Sedat Simavi İ.Ö.O.
87	Beykoz	Tepe Tarla İ.Ö.O.
88	Beyoğlu	Ayşe Ege Kız Meslek Lisesi
89	Beyoğlu	İTO Kadınlar Çeşmesi İ.Ö.O.
90	Beyoğlu	Piripaşa İ.Ö.O.
91	Beyoğlu	Taksim İ.Ö.O.
92	Büyükçekmece	75.Yıl Cumhuriyet Lisesi
93	Büyükçekmece	Adem Çelik İ.Ö.O.
94	Büyükçekmece	Adnan Kahveci İ.Ö.O.
95	Büyükçekmece	Ahmediye Doğuş İ.Ö.O.
96	Büyükçekmece	Ali Kul Çok Programlı Lise
97	Büyükçekmece	Altınyıldız İ.Ö.O.
98	Büyükçekmece	Aşiret Dalcı İ.Ö.O.
99	Büyükçekmece	Azime Yılmaz İ.Ö.O.
100	Büyükçekmece	Beykop Ali Çebi İ.Ö.O.

*** Rest of the table can be seen in CD

LIST OF REINFORCEMENT PUBLIC SCHOOLS IN ISTANBUL AFTER 1999 KOCAELI EARTHQUAKE

REPAIRED SCHOOLS		
NO	DISTRICT NAME	SCHOOL NAME
1	Avcılar	50.Yıl İnsa Lisesi
2	Avcılar	Alsancak İ.Ö.O.
3	Avcılar	Ambarlı İ.Ö.O.
4	Avcılar	Deniz Köşkler İ.Ö.O.
5	Avcılar	Gümüşpala İ.Ö.O.
6	Avcılar	Ömer Seyfettin İ.Ö.O.
7	Bağcılar	Adnan Ötüken İ.Ö.O.
8	Bağcılar	Arif Nihat Asya İ.Ö.O.
9	Bağcılar	Bağcılar Lisesi
10	Bağcılar	Hoca Ahmet Yesevi İ.Ö.O.
11	Bağcılar	İstiklal İ.Ö.O.
12	Bağcılar	Kurtdereli Mehmet İ.Ö.O.
13	Bağcılar	Malazgirt İ.Ö.O.
14	Bağcılar	Nene Hatun İ.Ö.O.
15	Bağcılar	Üsküp İ.Ö.O.
16	Bahçelievler	Erkan Avcı Ana. Tek. ve End. Mes. Lis.
17	Bayrampaşa	Anadolu Lisesi
18	Bayrampaşa	İnönü Endüstri Meslek Lisesi
19	Bayrampaşa	Ticaret Meslek Lisesi
20	Bayrampaşa	Uluğbey İ.Ö.O.
21	Bayrampaşa	Yahya Kemal İ.Ö.O.
22	Beşiktaş	Atatürk Anadolu Lisesi
23	Beşiktaş	Berna Nahum İ.Ö.O.
24	Beşiktaş	Burak Reis İ.Ö.O.
25	Beşiktaş	Hüseyin Aycıbın İ.Ö.O.
26	Beşiktaş	Kabataş Anadolu Lisesi
27	Beşiktaş	M.Ali Büyükhanlı Ticaret Meslek Lisesi
28	Beşiktaş	Rüştü Akın Anadolu Meslek Lisesi
29	Beyoğlu	Anadolu Lisesi
30	Beyoğlu	Hoca İshak Efendi İ.Ö.O.
31	Beyoğlu	Kadı Mehmet İ.Ö.O.
32	Beyoğlu	Şehit Öğretmen Neşe Altem İ.Ö.O.
33	Beyoğlu	Tevfik Sağlam İ.Ö.O.
34	Büyükçekmece	Akçimento Mehmet Akif Ersoy İ.Ö.O.
35	Büyükçekmece	Esenyurt Cumhuriyet İ.Ö.O.

STRENGTHENED SCHOOLS		
NO	DISTRICT NAME	SCHOOL NAME
1	Adalar	Büyükada İ.Ö.O.
2	Avcılar	Abdulkadir Öztürk İ.Ö.O.
3	Bağcılar	Anafartalar İ.Ö.O.
4	Bağcılar	Atatürk İ.Ö.O.
5	Bağcılar	Bağcılar İ.Ö.O.
6	Bağcılar	Koca Yusuf İ.Ö.O.
7	Bağcılar	Münir Nurettin Selçuk İ.Ö.O.
8	Bağcılar	Sancaktepe İ.Ö.O.
9	Bağcılar	Şükrü Savaşeri İ.Ö.O.
10	Bakırköy	Bakırköy İ.Ö.O.
11	Bakırköy	Cumhuriyet Lisesi
12	Bakırköy	İncirlik İ.Ö.O.
13	Bakırköy	Osmaniye İ.Ö.O. (B Blok)
14	Bayrampaşa	Prof.Muharrem Ergin İ.Ö.O.
15	Beşiktaş	Kılıç Ali Paşa İ.Ö.O.
16	Beykoz	60.Yıl İ.Ö.O.
17	Beyoğlu	Cihangir İ.Ö.O.
18	Büyükçekmece	Esenyurt İ.Ö.O.
19	Büyükçekmece	Gürpınar 75.Yıl İ.Ö.O.
20	Büyükçekmece	Şair Fevzi Kalkancı İ.Ö.O. (Eski Bina)
21	Fatih	Kırımlı Aslanbey İ.Ö.O.
22	Fatih	Yedikule İ.Ö.O.
23	Gaziosmanpaşa	Bekir Sami Dedeoğlu İ.Ö.O
24	Gaziosmanpaşa	Hasan Tahsin İ.Ö.O.
25	Gaziosmanpaşa	İstiklal İ.Ö.O.
26	Güngören	Anadolu İmam Hatip Lisesi
27	Güngören	Cumhuriyet İ.Ö.O.
28	Güngören	Güngören İ.Ö.O.
29	Güngören	Tozkoparan Teknik ve End. Mes. Lisesi
30	Kadıköy	Anadolu Güzel Sanatlar Lisesi
31	Kadıköy	Fahriye Vandemir İ.Ö.O.
32	Kadıköy	Fenerbahçe Lisesi
33	Kadıköy	Haydarpaşa Teknik ve End. Mes. Lis.
34	Kadıköy	Prof.Faik Sümer Lisesi
35	Kadıköy	Yeni Sahra İ.Ö.O.

DEMOLISHED AND RECONSTRUCTED SCHOOLS		
NO	DISTRICT NAME	SCHOOL NAME
1	Avcılar	Saadetdere İ.Ö.O.
2	Bağcılar	Yıldıztepe İ.Ö.O.
3	Bahçelievler	Bahçelievler İ.Ö.O.
4	Bakırköy	Bakırköy Lisesi
5	Bakırköy	İbni Sina İ.Ö.O.
6	Bayrampaşa	Ahmet Haşim İ.Ö.O.
7	Bayrampaşa	Mustafa İtri İ.Ö.O.
8	Bayrampaşa	Nail Reşit İ.Ö.O.
9	Beşiktaş	Ortaköy İ.Ö.O.
10	Beykoz	Dereseki İ.Ö.O.
11	Beyoğlu	Piri Reis İ.Ö.O.
12	Büyükçekmece	Dr.Hasan Akgün İ.Ö.O.
13	Büyükçekmece	İncirtepe Lisesi
14	Çatalca	Çok Programlı Lise
15	Eyüp	Alibeyköy Teknik ve End. Mes. Lis.
16	Gaziosmanpaşa	Cumhuriyet Lisesi
17	Gaziosmanpaşa	Gazipaşa İ.Ö.O.
18	Gaziosmanpaşa	Taşoluk İ.Ö.O.
19	Kadıköy	Arif Paşa İ.Ö.O.
20	Kadıköy	Cenap Şahabettin İ.Ö.O.
21	Kadıköy	Suadiye Lisesi
22	Maltepe	Feyzullah İ.Ö.O.
23	Maltepe	Gülsuyu İ.Ö.O.
24	Maltepe	Güzide Yılmaz İ.Ö.O.
25	Pendik	Çamçeşme İ.Ö.O.
26	Pendik	Elka İ.Ö.O.
27	Pendik	Güzelyalı 50.Yıl İ.Ö.O.
28	Sarıyer	Sarıyer Lisesi
29	Şişli	Ayazağa İ.Ö.O.
30	Tuzla	Endüstri Meslek Lisesi
31	Tuzla	Yunus Emre İ.Ö.O.
32	Ümraniye	Uzun Mehmet İ.Ö.O.
33	Üsküdar	Sevgi İ.Ö.O.
34	Zeytinburnu	Dr.Reşit Galip İ.Ö.O.
35	Zeytinburnu	Nuri Paşa İ.Ö.O.

*** Rest of the table can be seen in CD

LIST OF REPAIRED PUBLIC SCHOOLS IN ISTANBUL AFTER 1999 KOCAELI EARTHQUAKE

NO	DISTRICT NAME	SCHOOL NAME
1	Avcılar	50.Yıl İnsa Lisesi
2	Avcılar	Alsancak İ.Ö.O.
3	Avcılar	Ambarlı İ.Ö.O.
4	Avcılar	Deniz Köşkler İ.Ö.O.
5	Avcılar	Gümüşpala İ.Ö.O.
6	Avcılar	Ömer Seyfettin İ.Ö.O.
7	Bağcılar	Adnan Ötüken İ.Ö.O.
8	Bağcılar	Arif Nihat Asya İ.Ö.O.
9	Bağcılar	Bağcılar Lisesi
10	Bağcılar	Hoca Ahmet Yesevi İ.Ö.O.
11	Bağcılar	İstiklal İ.Ö.O.
12	Bağcılar	Kurtdereli Mehmet İ.Ö.O.
13	Bağcılar	Malazgirt İ.Ö.O.
14	Bağcılar	Nene Hatun İ.Ö.O.
15	Bağcılar	Üsküp İ.Ö.O.
16	Bahçelievler	Erkan Avcı Ana. Tek. ve End. Mes. Lis.
17	Bayrampaşa	Anadolu Lisesi
18	Bayrampaşa	İnönü Endüstri Meslek Lisesi
19	Bayrampaşa	Ticaret Meslek Lisesi
20	Bayrampaşa	Uluğbey İ.Ö.O.
21	Bayrampaşa	Yahya Kemal İ.Ö.O.
22	Beşiktaş	Atatürk Anadolu Lisesi
23	Beşiktaş	Berna Nahum İ.Ö.O.
24	Beşiktaş	Burak Reis İ.Ö.O.
25	Beşiktaş	Hüseyin Aycıbın İ.Ö.O.
26	Beşiktaş	Kabataş Anadolu Lisesi
27	Beşiktaş	M.Ali Büyükhanlı Ticaret Meslek Lisesi
28	Beşiktaş	Rüştü Akın Anadolu Meslek Lisesi
29	Beyoğlu	Anadolu Lisesi
30	Beyoğlu	Hoca İshak Efendi İ.Ö.O.
31	Beyoğlu	Kadı Mehmet İ.Ö.O.
32	Beyoğlu	Şehit Öğretmen Neşe Altem İ.Ö.O.
33	Beyoğlu	Tevfik Sağlam İ.Ö.O.
34	Büyükçekmece	Akçimento Mehmet Akif Ersoy İ.Ö.O.
35	Büyükçekmece	Esenyurt Cumhuriyet İ.Ö.O.
36	Büyükçekmece	Halil Fahri Orman İ.Ö.O.
37	Büyükçekmece	İbrahim Özaydın İ.Ö.O.
38	Büyükçekmece	Kavaklı İ.Ö.O.
39	Büyükçekmece	Kumburgaz İ.Ö.O.
40	Büyükçekmece	Rıfat Ilgaz İ.Ö.O.
41	Büyükçekmece	Tevfik İleri İ.Ö.O.
42	Büyükçekmece	Yusuf Aktaş İ.Ö.O.
43	Çatalca	Endüstri Meslek Lisesi
44	Çatalca	Ferhat Paşa İ.Ö.O
45	Çatalca	Kız Meslek Lisesi
46	Eminönü	Cağaloğlu Anadolu Lisesi
47	Eminönü	Cağaloğlu Anadolu Mes. ve Kız Lisesi
48	Eminönü	Cibali Lisesi
49	Eminönü	İstanbul Lisesi
50	Eminönü	Kadırga Endüstri Meslek Lisesi
51	Eminönü	Matbaa Meslek Lisesi
52	Eminönü	Sultanahmet Endüstri Meslek Lisesi
53	Eminönü	Vefa Anadolu Lisesi
54	Esenler	Atışalanı Lisesi
55	Esenler	Birlik İ.Ö.O.
56	Esenler	Mareşal Fevzi Çakmak İ.Ö.O.
57	Esenler	Neyir Turan İ.Ö.O.
59	Esenler	Ressam Şevket Dağ İ.Ö.O.
60	Eyüp	Cumhuriyet İ.Ö.O.
61	Eyüp	Dede Korkut İ.Ö.O.
62	Eyüp	Ebusuud İ.Ö.O.
63	Eyüp	Ortakçılar Lisesi
64	Eyüp	Refhan Sümer Lisesi
65	Fatih	Alpaslan İ.Ö.O.
66	Fatih	Atatürk Çağdaş Yaşam Lisesi
67	Fatih	Çapa Anadolu Öğretmen Lisesi
68	Fatih	Çapa İ.Ö.O.
69	Fatih	Davutpaşa Lisesi
70	Fatih	Gelenbevi Lisesi
71	Fatih	Melek Hatun İ.Ö.O.
72	Fatih	Riyazici Salih Zeki İ.Ö.O.
73	Fatih	Sultan Selim Kız Meslek Lisesi
74	Fatih	Valide Sultan Pertevniyel Lisesi
75	Gaziosmanpaşa	23 Nisan İ.Ö.O.
76	Gaziosmanpaşa	50.Yıl İ.Ö.O.
77	Gaziosmanpaşa	Cemal Reşit Rey İ.Ö.O.
78	Gaziosmanpaşa	Esentepe İ.Ö.O.
79	Gaziosmanpaşa	Fahrettin Özdoğru Ticaret Mes. Lisesi
80	Gaziosmanpaşa	Fevzi Kutlu Kalkancı İ.Ö.O.
81	Gaziosmanpaşa	Gazi Ahmet Muhtar Paşa İ.Ö.O.
82	Gaziosmanpaşa	Mehmet Akif Ersoy Lisesi
83	Gaziosmanpaşa	Pilevne Lisesi
84	Kadıköy	29 Ekim İ.Ö.O.
85	Kadıköy	Anadolu Kız Meslek Lisesi
86	Kadıköy	Dosteller İşitme Engelliler İ.Ö.O.
87	Kadıköy	Fehmi Ekşioğlu İ.Ö.O.
88	Kadıköy	Gözcü Baba Lisesi
89	Kadıköy	Habibe Yahşi Lisesi
90	Kadıköy	Hayrullah Kefoğlu Lisesi
91	Kadıköy	İhsan Sungu İ.Ö.O.
92	Kadıköy	Kemal Atatürk Lisesi
93	Kadıköy	Kemal Berktan İ.Ö.O.
94	Kadıköy	Mehmet Beyazıt Lisesi
95	Kadıköy	Melihat Şefizade İ.Ö.O.
96	Kadıköy	Osmangazi İ.Ö.O.
97	Kadıköy	Sait Cordan İ.Ö.O.
98	Kadıköy	Şehit Mehmet Fidan İ.Ö.O.
99	Kadıköy	Şenesenler Lisesi
100	Kağıthane	Aşık Veysel İ.Ö.O.
101	Kağıthane	Cengizhan Lisesi
102	Kağıthane	Gültepe İ.Ö.O
103	Kağıthane	Gültepe Teknik ve End. Mes. Lisesi
104	Kağıthane	Hacı Ethem Öktem İ.Ö.O.
105	Kağıthane	Merkez İ.Ö.O.
106	Kağıthane	Önder İ.Ö.O.
107	Kağıthane	Profilo Anadolu Teknik Lisesi
108	Kağıthane	Vali Hayri Kozakçıoğlu Tic. Mes. Lisesi
109	Kağıthane	Yaşar Doğu İ.Ö.O.
110	Kağıthane	Zühal İ.Ö.O.
111	Kartal	Burakbora Anadolu Lisesi
112	Kartal	Hacı Hatice Bayraktar Lisesi
113	Kartal	Marmara İ.Ö.O.
114	Kartal	Sabiha Gökçen Kız Meslek Lisesi
115	Kartal	Samandıra Lisesi

*** Rest of the table can be seen in CD

LIST OF STRENGTHENED PUBLIC SCHOOLS IN ISTANBUL AFTER 1999 KOCAELI EARTHQUAKE

NO	DISTRICT NAME	SCHOOL NAME
1	Adalar	Büyükada İ.Ö.O.
2	Avcılar	Abdulkadir Öztürk İ.Ö.O.
3	Bağcılar	Anafartalar İ.Ö.O.
4	Bağcılar	Atatürk İ.Ö.O.
5	Bağcılar	Bağcılar İ.Ö.O.
6	Bağcılar	Koca Yusuf İ.Ö.O.
7	Bağcılar	Münir Nurettin Selçuk İ.Ö.O.
8	Bağcılar	Sancaktepe İ.Ö.O.
9	Bağcılar	Şükrü Savaşeri İ.Ö.O.
10	Bakırköy	Bakırköy İ.Ö.O.
11	Bakırköy	Cumhuriyet Lisesi
12	Bakırköy	İncirlik İ.Ö.O.
13	Bakırköy	Osmaniye İ.Ö.O. (B Blok)
14	Bayrampaşa	Prof.Muharrem Ergin İ.Ö.O.
15	Beşiktaş	Kılıç Ali Paşa İ.Ö.O.
16	Beykoz	60.Yıl İ.Ö.O.
17	Beyoğlu	Cihangir İ.Ö.O.
18	Büyükçekmece	Esenyurt İ.Ö.O.
19	Büyükçekmece	Gürpınar 75.Yıl İ.Ö.O.
20	Büyükçekmece	Şair Fevzi Kalkancı İ.Ö.O. (Eski Bina)
21	Fatih	Kırımlı Aslanbey İ.Ö.O.
22	Fatih	Yedikule İ.Ö.O.
23	Gaziosmanpaşa	Bekir Sami Dedeoğlu İ.Ö.O
24	Gaziosmanpaşa	Hasan Tahsin İ.Ö.O.
25	Gaziosmanpaşa	İstiklal İ.Ö.O.
26	Güngören	Anadolu İmam Hatip Lisesi
27	Güngören	Cumhuriyet İ.Ö.O.
28	Güngören	Güngören İ.Ö.O.
29	Güngören	Tozkoparan Teknik ve End. Mes. Lisesi
30	Kadıköy	Anadolu Güzel Sanatlar Lisesi
31	Kadıköy	Fahriye Vandemir İ.Ö.O.
32	Kadıköy	Fenerbahçe Lisesi
33	Kadıköy	Haydarpaşa Teknik ve End. Mes. Lis.
34	Kadıköy	Prof.Faik Sümer Lisesi
35	Kadıköy	Yeni Sahra İ.Ö.O.
36	Kağıthane	Vasfi Çobanoğlu İ.Ö.O.
37	Kartal	Anadolu Lisesi
38	Kartal	Samandıra İ.Ö.O.
39	Küçükçekmece	Kanarya İ.Ö.O.
40	Küçükçekmece	Köprülü Mehmet Paşa İ.Ö.O.
41	Küçükçekmece	Nahit Menteşe Endüstri Meslek Lisesi
42	Küçükçekmece	Remzi Yurtsever İ.Ö.O.
43	Küçükçekmece	Yunus Emre İ.Ö.O.
44	Maltepe	Ertuğrul Gazi Lisesi
45	Maltepe	Gülensu İ.Ö.O.
46	Maltepe	Kaşgarlı Mahmut İ.Ö.O.
47	Pendik	Dolayaba İ.Ö.O.
48	Pendik	Fatih Sultan Mehmet İ.Ö.O.
49	Sarıyer	Kız Meslek Lisesi
50	Sarıyer	Recaizade Ekrem Bey İ.Ö.O.
51	Sarıyer	Sarıyer İ.Ö.O.
52	Sarıyer	Şükrü Nail Paşa İ.Ö.O.
53	Silivri	75.Yıl Cumhuriyet İ.Ö.O.
54	Silivri	Gazi İ.Ö.O.
55	Silivri	Nurullah Baldöktü İ.Ö.O.
56	Silivri	Selimpaşa Lisesi
57	Sultanbeyli	Kaptan-ı Derya İ.Ö.O.
58	Sultanbeyli	Örencik İ.Ö.O.
59	Şile	50.Yıl Lisesi
60	Şişli	Anadolu İ.Ö.O.
61	Şişli	Anadolu Lisesi
62	Şişli	Harbiye İ.Ö.O.
63	Şişli	Şişli Lisesi
64	Şişli	Yapı Meslek Lisesi
65	Tuzla	Çağrı Bey İ.Ö.O.
66	Tuzla	Çağrı Bey Lisesi
67	Tuzla	Tuzla Lisesi
68	Ümraniye	Atakent Lisesi
69	Ümraniye	Eflatun Cem Güney İ.Ö.O.
70	Ümraniye	Genç Osman İ.Ö.O.
71	Ümraniye	Haşim İşcan İ.Ö.O.
72	Ümraniye	Mehmetçik Lisesi
73	Ümraniye	Osman Gazi İ.Ö.O.
74	Üsküdar	Güzeltepe İ.Ö.O.
75	Üsküdar	Halil Rüştü İ.Ö.O.
76	Üsküdar	Selimiye Veteriner Sağlık Meslek Lisesi
77	Zeytinburnu	Ahmet Vefik Paşa İ.Ö.O.
78	Zeytinburnu	İsmail Rüştü Olcay Lisesi
79	Zeytinburnu	Muhsin Ertuğrul Lisesi
80	Zeytinburnu	Yedikule İ.Ö.O.

LIST OF DEMOLISHED AND RECONSTRUCTED PUBLIC SCHOOLS IN ISTANBUL AFTER 1999 KOCAELI EARTHQUAKE

NO	DISTRICT NAME	SCHOOL NAME
1	Avcılar	Saadetdere İ.Ö.O.
2	Bağcılar	Yıldıztepe İ.Ö.O.
3	Bahçelievler	Bahçelievler İ.Ö.O.
4	Bakırköy	Bakırköy Lisesi
5	Bakırköy	İbni Sina İ.Ö.O.
6	Bayrampaşa	Ahmet Haşim İ.Ö.O.
7	Bayrampaşa	Mustafa İtri İ.Ö.O.
8	Bayrampaşa	Nail Reşit İ.Ö.O.
9	Beşiktaş	Ortaköy İ.Ö.O.
10	Beykoz	Dereseki İ.Ö.O.
11	Beyoğlu	Piri Reis İ.Ö.O.
12	Büyükçekmece	Dr.Hasan Akgün İ.Ö.O.
13	Büyükçekmece	İncirtepe Lisesi
14	Çatalca	Çok Programlı Lise
15	Eyüp	Alibeyköy Teknik ve End. Mes. Lis.
16	Gaziosmanpaşa	Cumhuriyet Lisesi
17	Gaziosmanpaşa	Gazipaşa İ.Ö.O.
18	Gaziosmanpaşa	Taşoluk İ.Ö.O.
19	Kadıköy	Arif Paşa İ.Ö.O.
20	Kadıköy	Cenap Şahabettin İ.Ö.O.
21	Kadıköy	Suadiye Lisesi
22	Maltepe	Feyzullah İ.Ö.O.
23	Maltepe	Gülsuyu İ.Ö.O.
24	Maltepe	Güzide Yılmaz İ.Ö.O.
25	Pendik	Çamçeşme İ.Ö.O.
26	Pendik	Elka İ.Ö.O.
27	Pendik	Güzelyalı 50.Yıl İ.Ö.O.
28	Sarıyer	Sarıyer Lisesi
29	Şişli	Ayazağa İ.Ö.O.
30	Tuzla	Endüstri Meslek Lisesi
31	Tuzla	Yunus Emre İ.Ö.O.
32	Ümraniye	Uzun Mehmet İ.Ö.O.
33	Üsküdar	Sevgi İ.Ö.O.
34	Zeytinburnu	Dr.Reşit Galip İ.Ö.O.
35	Zeytinburnu	Nuri Paşa İ.Ö.O.

LIST OF PROPOSE TO DEMOLISH AND NOT TO USE WITHOUT REINFORCEMENT PUBLIC SCHOOLS ACCORDING TO DIRECTORATE OF PUBLIC WORKS OF ISTANBUL

NO	DISTRICT NAME	SCHOOL NAME	DAMAGE GRADE	PROPOSE TO DEMOLISH	NOT TO USE WITHOUT REINFORCEMENT
1	Adalar	Heybeliada İ.Ö.O. (A,B,C,D Blok)	moderate	X	
2	Avcılar	Cihangir İ.Ö.O.	heavy	X	
3	Avcılar	Cumhuriyet İ.Ö.O.	moderate	X	
4	Avcılar	Güngör Tekiner İ.Ö.O.	heavy	X	
5	Avcılar	Saadetdere İ.Ö.O.	heavy	X	
6	Bağcılar	Anafartalar İ.Ö.O.	low		XX
7	Bağcılar	Atatürk İ.Ö.O.	moderate		XX
8	Bağcılar	Bağcılar İ.Ö.O.	low		XX
9	Bağcılar	Kocayusuf İ.Ö.O.	low		XX
10	Bağcılar	Münir Nurettin Selçuk İ.Ö.O. (Eski bina)	moderate		XX
11	Bağcılar	Sancaktepe İ.Ö.O.	low		XX
12	Bağcılar	Şükrü Savaşeri İ.Ö.O.	moderate		XX
13	Bahçelievler	Halit Ziya Uşaklıgil İ.Ö.O. (B blok)	heavy	X	
14	Bakırköy	Ataköy 60.Yıl İ.Ö.O. (Yığma)	heavy	X	
15	Bakırköy	Bakırköy İ.Ö.O.	low		XX
16	Bakırköy	Osmaniye İ.Ö.O. (B Blok)	low		XX
17	Beşiktaş	Şair Nedim İ.Ö.O. (B Blok)	moderate	X	
18	Beykoz	60.Yıl İ.Ö.O.	moderate		XX
19	Beykoz	Deri Kundura İ.Ö.O.	moderate	X	
20	Beykoz	Sedat Simavi İ.Ö.O. (B Blok)	low	X	
21	Beyoğlu	İTO Kadınlar Çeşmesi İ.Ö.O. (B Blok)	moderate	X	
22	Büyükçekmece	Fatih Sultan Mehmet İ.Ö.O. (A,B Blok)	moderate	X	
23	Büyükçekmece	Şair Fevzi Kalkancı İ.Ö.O. (Eski Bina)	low		XX
24	Eminönü	Beyazıt İ.Ö.O. (A1 ve Ek Blok)	moderate	X	
25	Gaziosmanpaşa	Arnavutköy İ.Ö.O.	heavy	X	
26	Kadıköy	Dr.Sait Darga İ.Ö.O.	moderate	X	
27	Kadıköy	İnönü İ.Ö.O. (A,B Blok)	moderate	X	
28	Kartal	Nişantepe İ.Ö.O.	moderate	X	
29	Kartal	Paşaköy İ.Ö.O.	moderate	X	
30	Kartal	Saffet Simavi İ.Ö.O.	moderate	X	
31	Kartal	Şakir Demir İ.Ö.O.	moderate	X	
32	Maltepe	Ahmet Rasim İ.Ö.O. (A Blok)	moderate	X	
33	Maltepe	Altayçeşme İ.Ö.O. (B Blok)	moderate	X	
34	Maltepe	Hasan Şadoğlu İ.Ö.O.	moderate	X	
35	Maltepe	Kadir Rezzan Has İ.Ö.O. (A Blok)	moderate	X	
36	Maltepe	Kazım Tunç İ.Ö.O.	moderate	X	
37	Maltepe	Mürüvvet Hanım İ.Ö.O. (A1 Blok)	moderate	X	
38	Maltepe	Orhangazi İ.Ö.O. (Eski bina)	moderate	X	
39	Maltepe	Suzan-Ahmet Yalkın İ.Ö.O.	heavy	X	
40	Maltepe	Yılmaz Mızrak İ.Ö.O.	moderate	X	
41	Pendik	Abdurrahmangazi İ.Ö.O	moderate	X	
42	Pendik	Ahmet Kutsi Tecer İ.Ö.O.	moderate	X	
43	Pendik	Atatürk İ.Ö.O. (Eski bina)	moderate	X	
44	Pendik	Ayazma İ.Ö.O. (Eski bina)	moderate	X	
45	Pendik	Elka İ.Ö.O. (Eski bina)	moderate	X	
46	Pendik	Erol Türker İ.Ö.O.	moderate	X	
47	Pendik	Süreyyapaşa İ.Ö.O. (B Blok)	moderate	X	
48	Pendik	Şeyhli İ.Ö.O.	moderate	X	
49	Silivri	Beyciler Mukaddes Sönmez İ.Ö.O.	heavy	X	
50	Silivri	Kavaklı İ.Ö.O. (Betonarme)	moderate	X	
51	Silivri	Kurfallı Köyü İ.Ö.O.	moderate	X	
52	Silivri	Nurullah Baldöktü İ.Ö.O.	low		XX
53	Silivri	Turgut Reis İ.Ö.O. (2.Blok)	moderate	X	
54	Sultanbeyli	İzzettin İ.Ö.O.	heavy	X	
55	Sultanbeyli	Sultanbeyli Lisesi	heavy	X	
56	Şile	Kabakoz İ.Ö.O.	heavy	X	
57	Tuzla	Avni Yukarıuç İ.Ö.O. (A,B,C Blok)	moderate	X	XX:Bu okulların güçlendirilmesine veya yıkılmasına Yapı Yaklaşık Maliyetinin tespitinden sonra karar verilecektir.
58	Tuzla	Aydınlı İ.Ö.O.(B Blok)	moderate	X	
59	Üsküdar	Bekir Esener İ.Ö.O. (A,B Blok)	moderate	X	
60	Üsküdar	İhsan Kurşunoğlu İ.Ö.O. (A Blok)	moderate	X	
61	Zeytinburnu	Gazipaşa İ.Ö.O. (B,C Blok)	moderate	X	

APPENDIX D

PHOTOS ABOUT SCHOOLS

Photo D.1 – Unconfined concrete problem at Beykoz Dereseki İ.Ö.O.

Photo D.2 – Corrosion and unconfined concrete problem at Beykoz Dereseki İ.Ö.O.

Photo D.3 – Cracks at slab and deflection problem at Büyükçekmece Gürpınar İ.Ö.O.

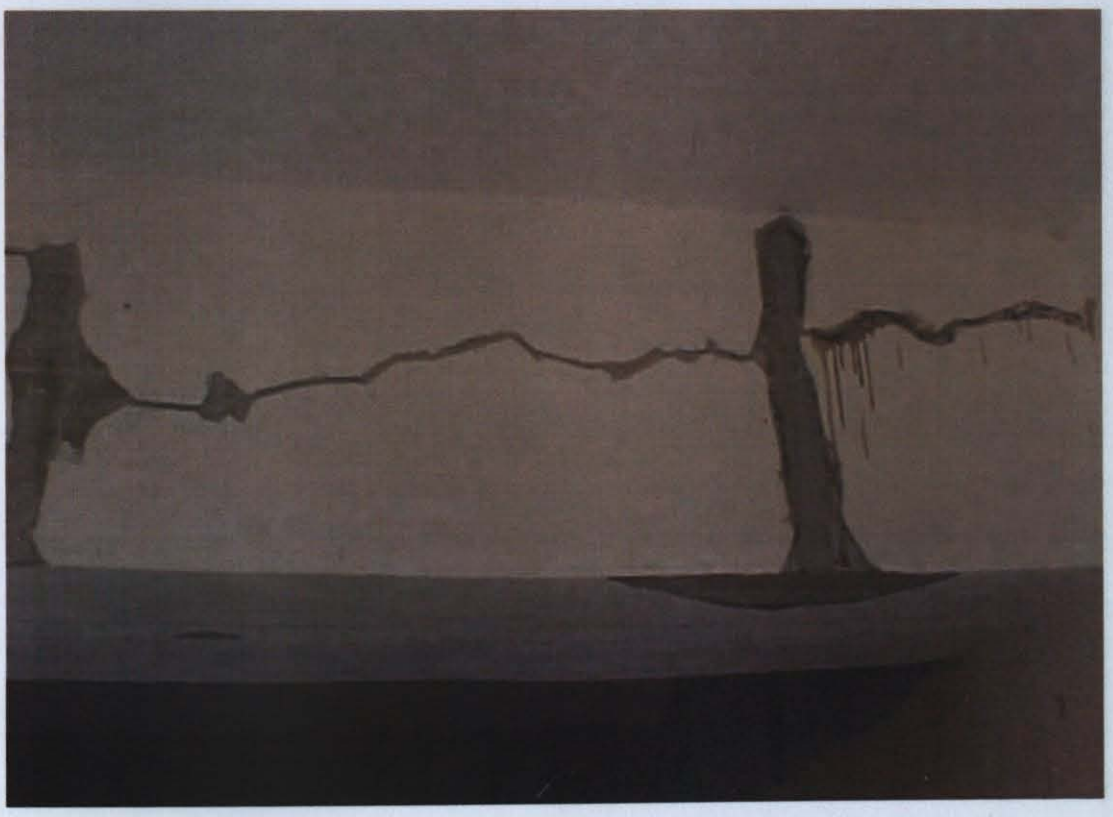


Photo D.4 – Bending failure of beam at Büyükçekmece Gürpınar İ.Ö.O.

Photo D.5 – Heavy damaged shear wall crack at Büyükçekmece Gürpınar İ.Ö.O.

Photo D.6 – Shear crack at beam at Sarıyer Şükrü Nail İ.Ö.O.

Photo D.7 – Insufficient structural design at Kadıköy Avni Akyol Güzel Sanatlar Lisesi

Photo D.8 – Retrofit of Kadıköy Avni Akyol Güzel Sanatlar Lisesi

Photo D.9 – Corrosion problem and lack of confinement at Fatih Kırımlı Aslanbey İ.Ö.O.

Photo D.10 – Lack of confinement and concrete strength problem at Fatih Kırımlı Aslanbey İ.Ö.O.

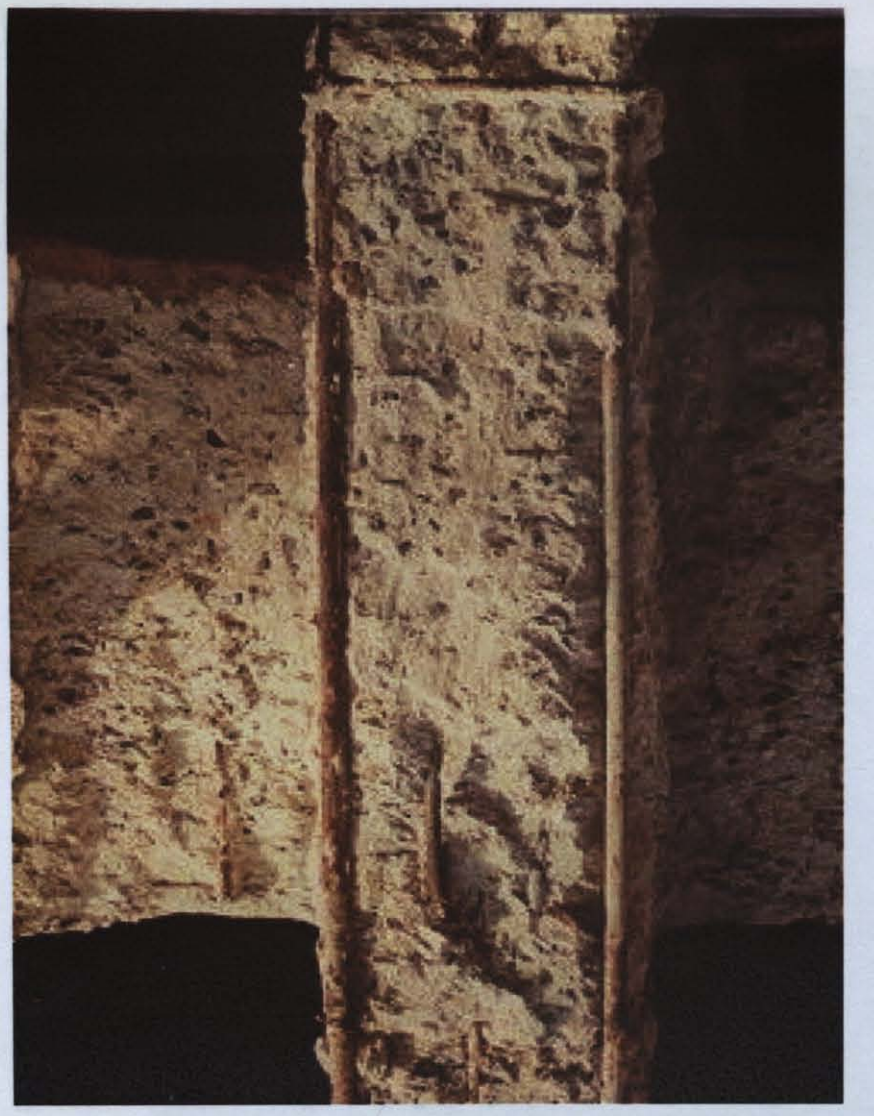


Photo D.11 and Photo D.12 – Poor quality concrete, lack of confinement and corrosion problem at Gazi Mahallesi İstiklal İ.Ö.O.

Photo D.13 – Slender column and structure design problem at Gazi Mahallesi İstiklal İ.Ö.O.

Photo D.14 – Bar density and concrete quality problem at Kartal Anadolu Lisesi

Photo D.15 – Retrofit of Kartal Anadolu Lisesi

Photo D.16 – Concrete spalling at column end at Kartal Anadolu Lisesi

Photo D.17 – Bending crack on tie beam at Küçükçekmece Yunus Emre İ.Ö.O.

Photo D.18 – Close up of bending crack on tie beam at Küçükçekmece Yunus Emre İ.Ö.O.

Photo D.19 – Shear crack in basement at Küçükçekmece Yunus Emre İ.Ö.O.

Photo D.20 – Heavy damaged shear wall at Küçükçekmece Yunus Emre İ.Ö.O.

Photo D.21 – Retrofit of Maltepe Kaşgarlı Mahmut İ.Ö.O.

Photo D.22 – Retrofit of column at Maltepe Kaşgarlı Mahmut İ.Ö.O.

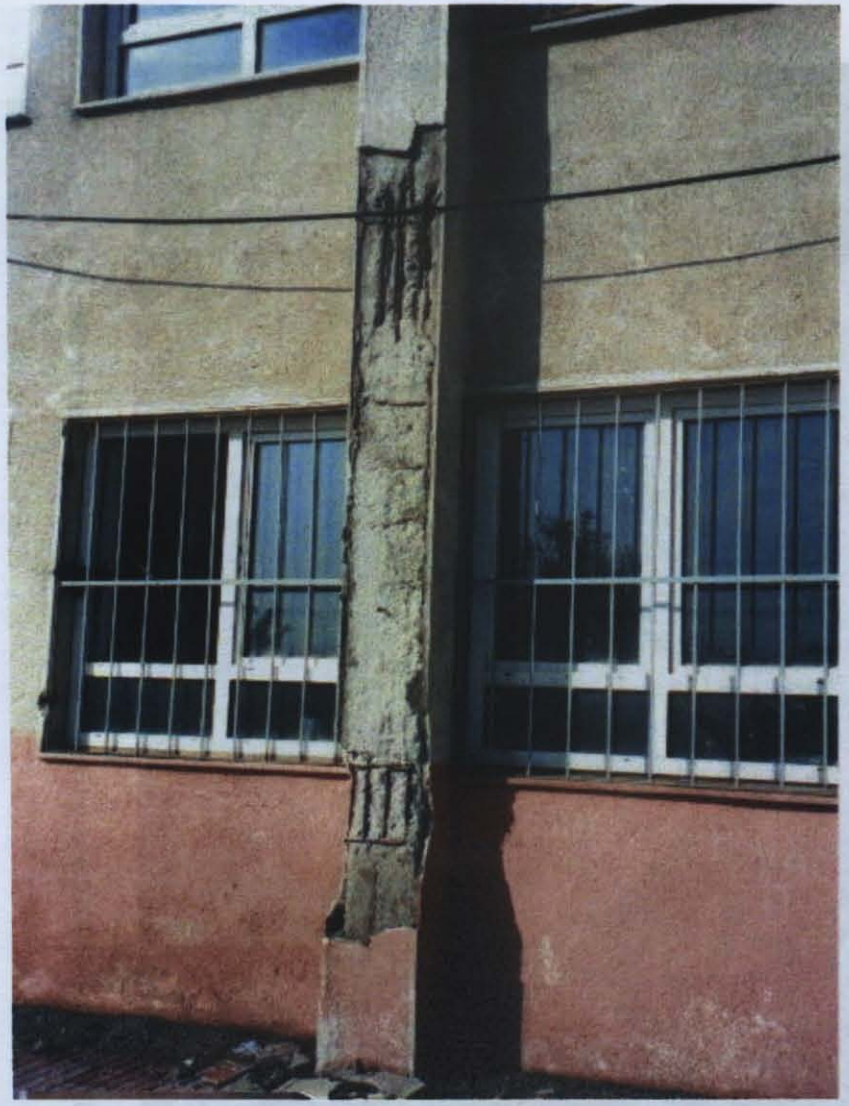


Photo D.23 – Lack of confinement at column at Ümraniye Genç Osman İ.Ö.O.

Photo D.24 – Lack of confinement and retrofit of Ümraniye Genç Osman İ.Ö.O.

Photo D.25 – Retrofit of Ümraniye Gençosman İ.Ö.O.

Photo D.26 – Insufficient structural design with poor detailing at Üsküdar Halil Rüştü İ.Ö.O.

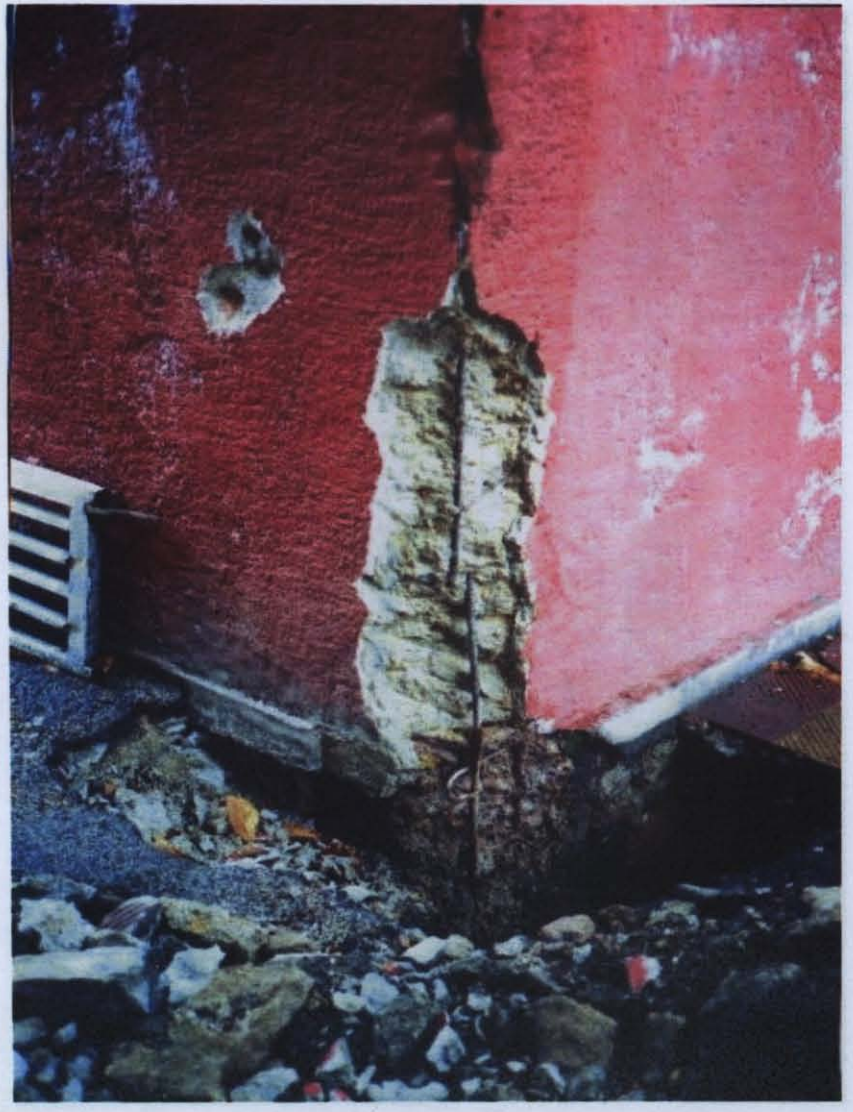


Photo D.27 – Lack of confinement and longitudinal rebar problem at Üsküdar Halil Rüştü İ.Ö.O.

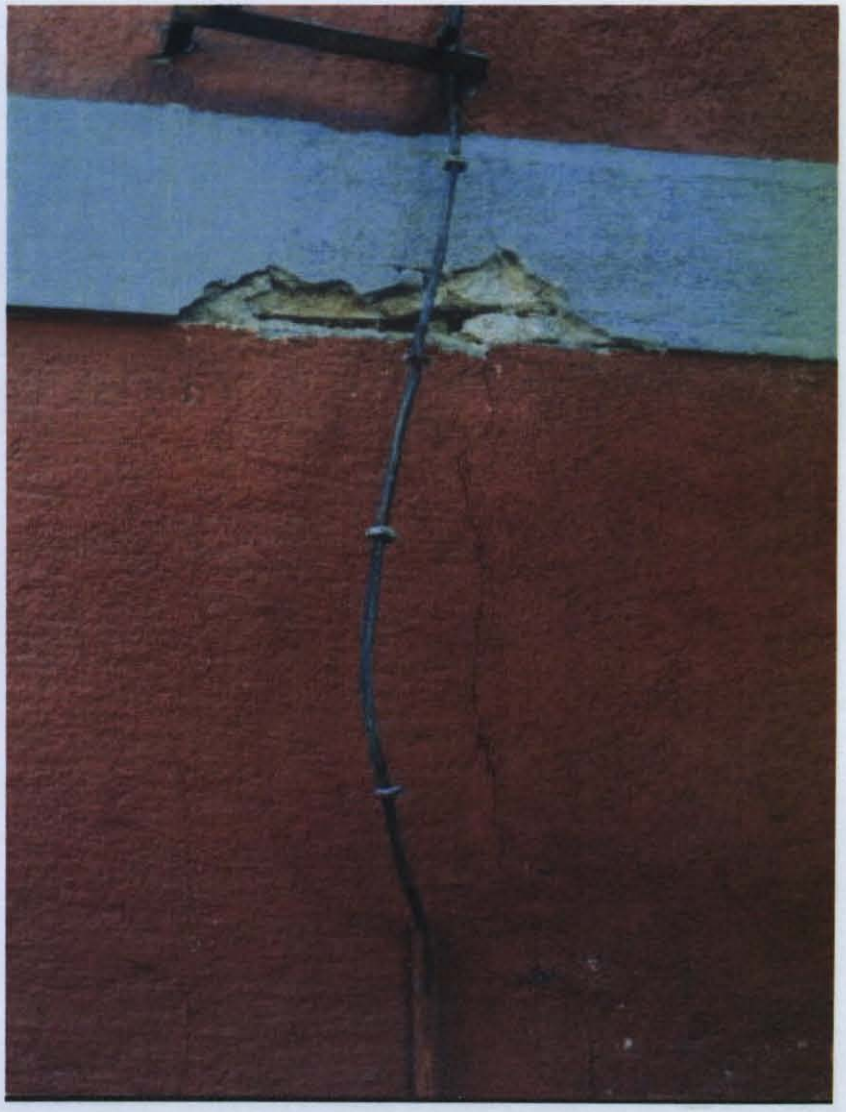


Photo D.28 – Crack on infill walls and corrosion problem at Üsküdar Halil Rüştü İ.Ö.O.

Photo D.29 – Corrosion of reinforcing bars with poor quality of reinforced concrete at Zeytinburnu Yedikule İ.Ö.O.

Photo D.30 – Failure of column/beam connection with buckling of longitudinal bar due to poor confinement Zeytinburnu Yedikule İ.Ö.O.

Photo D.31 – Heavy damaged column with shear crack

Photo D.32 – Short column effect with lack of confinement

Photo D.33 – Corrosion problem and lack of confinement

Photo D.34 – Corrosion problem, poor quality concrete and lack of confinement

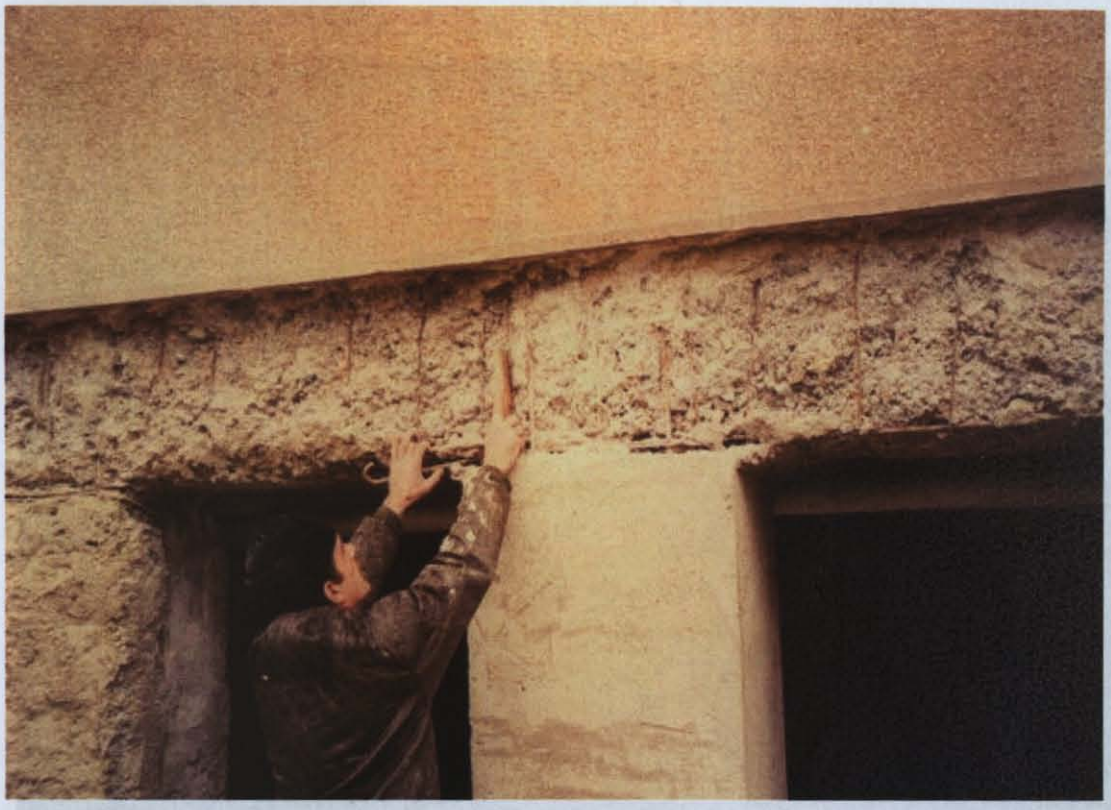


Photo D.35 – Purifying the reinforcing rebars from corrosion

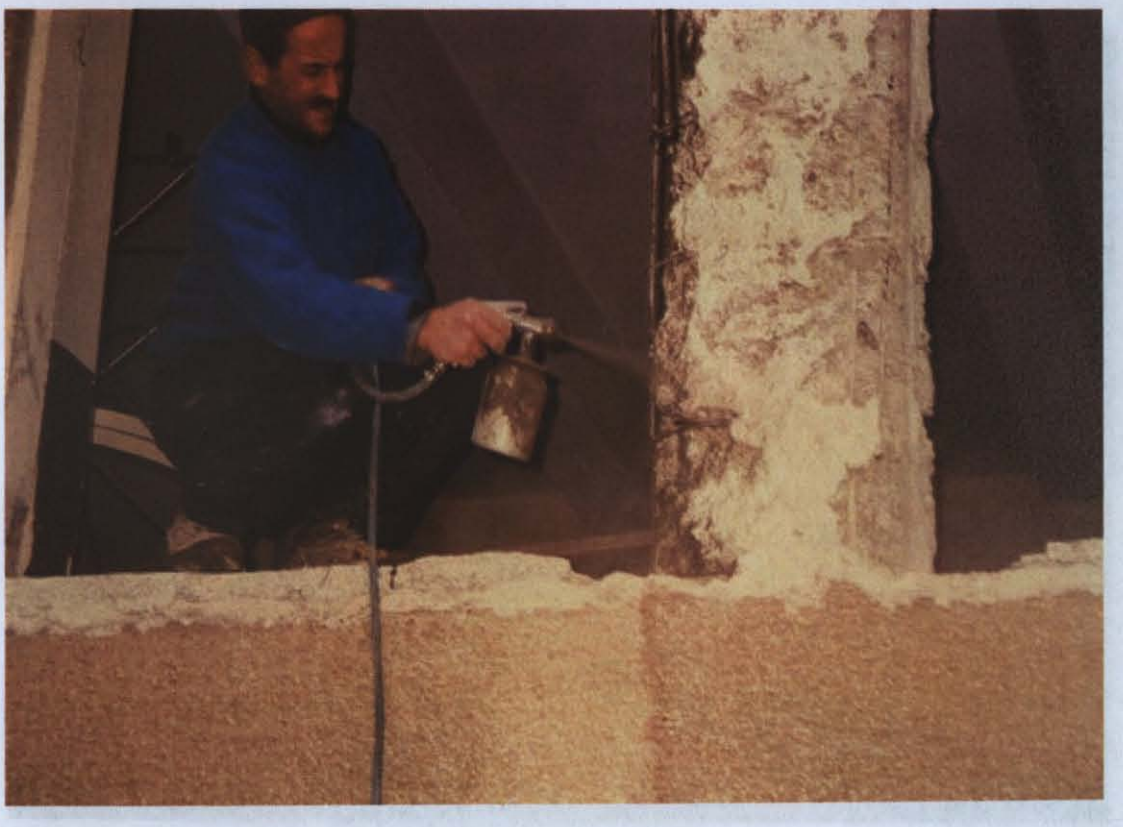


Photo D.36 – Protecting the reinforcing rebars from corrosion with protective material

Photo D.37 – Retrofit of slab with epoxy

Photo D.38 – Filling the cracks with using injection of epoxy