

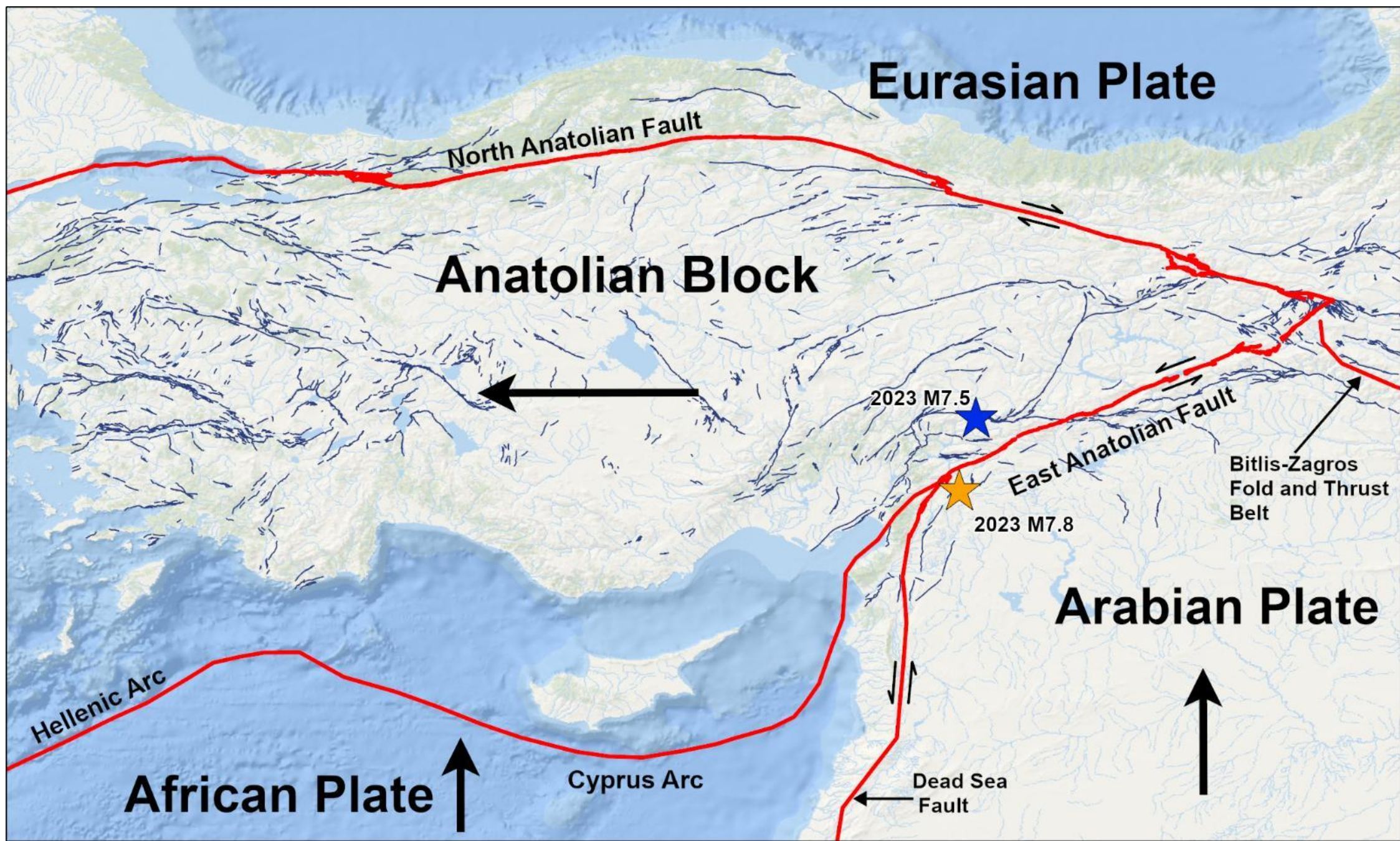
2023 土耳其-敘利亞地震 2023 Turkey-Syria earthquake

一般建築勘災報告

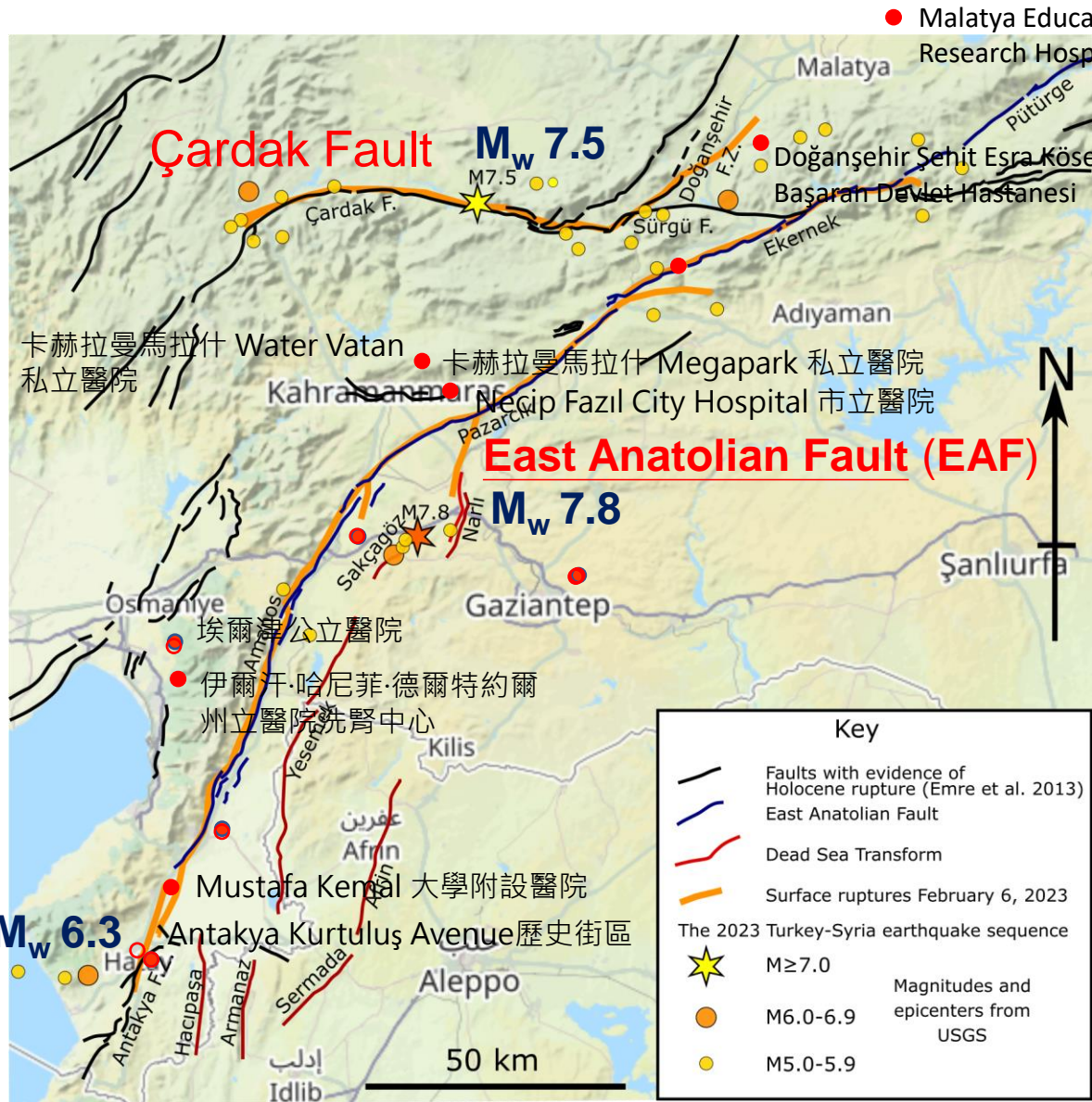
台南市結構工程技師公會

施忠賢理事長

2023-07-29



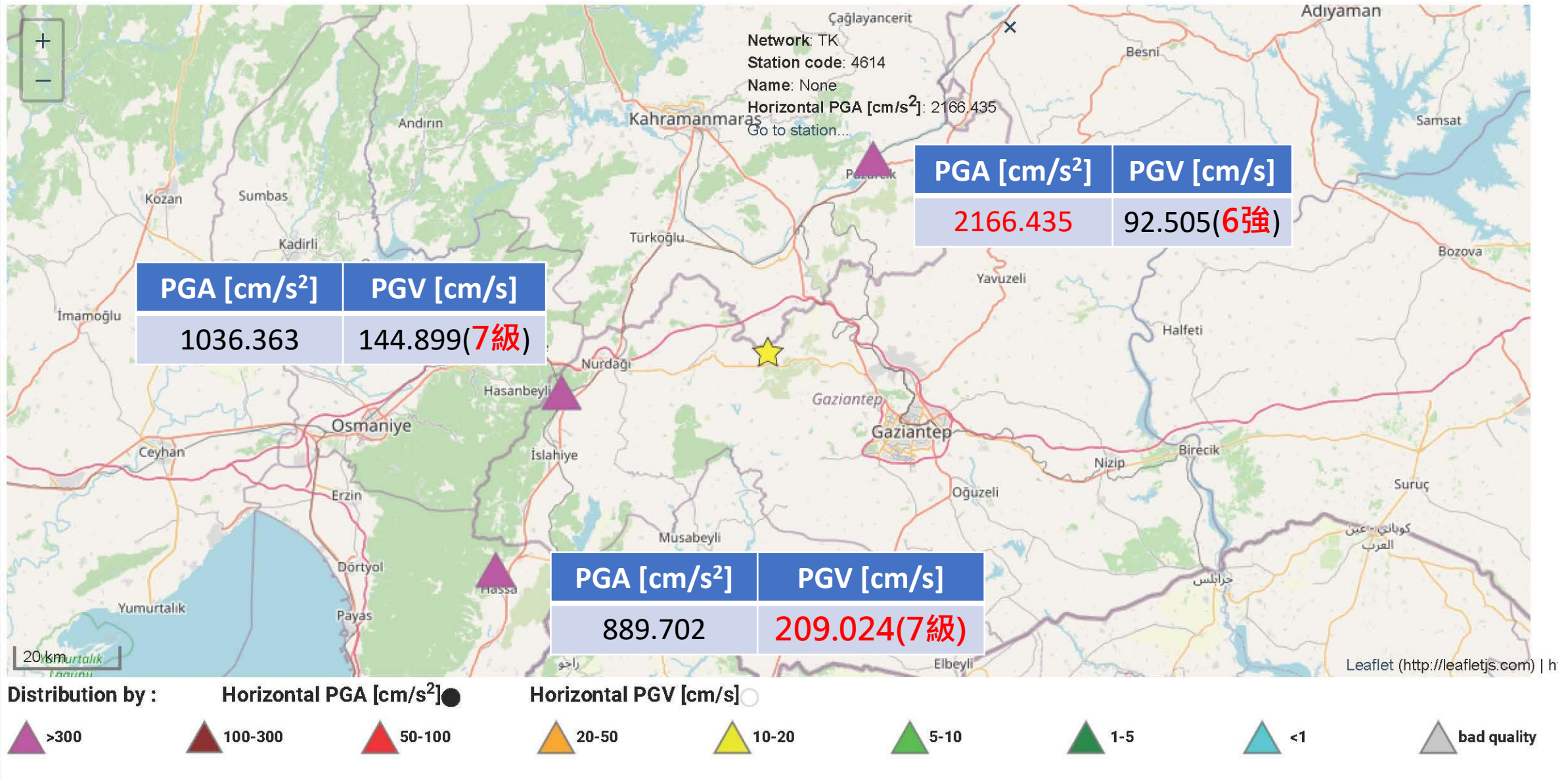
圖片來源: USGS [Earthquake Hazards Program](#)



Casualties by Turkish province

Province	Deaths	Injuries
Adana ^[95]	454	7,450
Adiyaman ^[96]	8,387	17,499
Batman ^[97]	0	20
Diyarbakır ^[98]	414	902
Elazığ ^[95]	5	379
Gaziantep ^[99]	3,897	13,325
Hatay ^{[100][101]}	23,065	30,762
Kahramanmaraş ^{[102][103]}	12,622	9,243
Kilis ^[104]	74	754
Malatya ^[105]	1,410	7,300
Mardin ^[106]	1	0
Osmaniye ^{[107][95]}	991	2,224
Şanlıurfa ^[108]	340	8,919
Unspecified	278	8,427
Total	50,783	107,703

By Mikenorton - Own work, CC BY-SA 4.0,
<https://commons.wikimedia.org/w/index.php?curid=129243326>



資料來源：ESM - Engineering Strong Motion database (esm-db.eu)



320 320 170

EW NS UD
550 550 400

卡赫拉曼馬拉什 Water Vatan 私立醫院
卡赫拉曼馬拉什 Megapark 私立醫院
Necip Fazıl City Hospital 市立醫院

加吉安特





2023-04-24 Necip Fazıl City Hospital 市立醫院



2023-04-24 Necip Fazıl City Hospital 市立醫院



2023-04-24 Megapark Private Hospital 卡赫拉曼馬拉什 Megapark 私立醫院



2023-04-24 Megapark Private Hospital 卡赫拉曼馬拉什 Megapark 私立醫院附近



2023-04-24 Private Water Vatan Hospital 卡赫拉曼馬拉什 Water Vatan 私立醫院



Google Map



2023-04-24 Ayşe Eczanesi 藥局及商場



2023-04-24 Ayşe Eczanesi 藥局及商場



2023-04-24 Private Water Vatan Hospital 卡赫拉曼馬拉什 Water Vatan 私立醫院

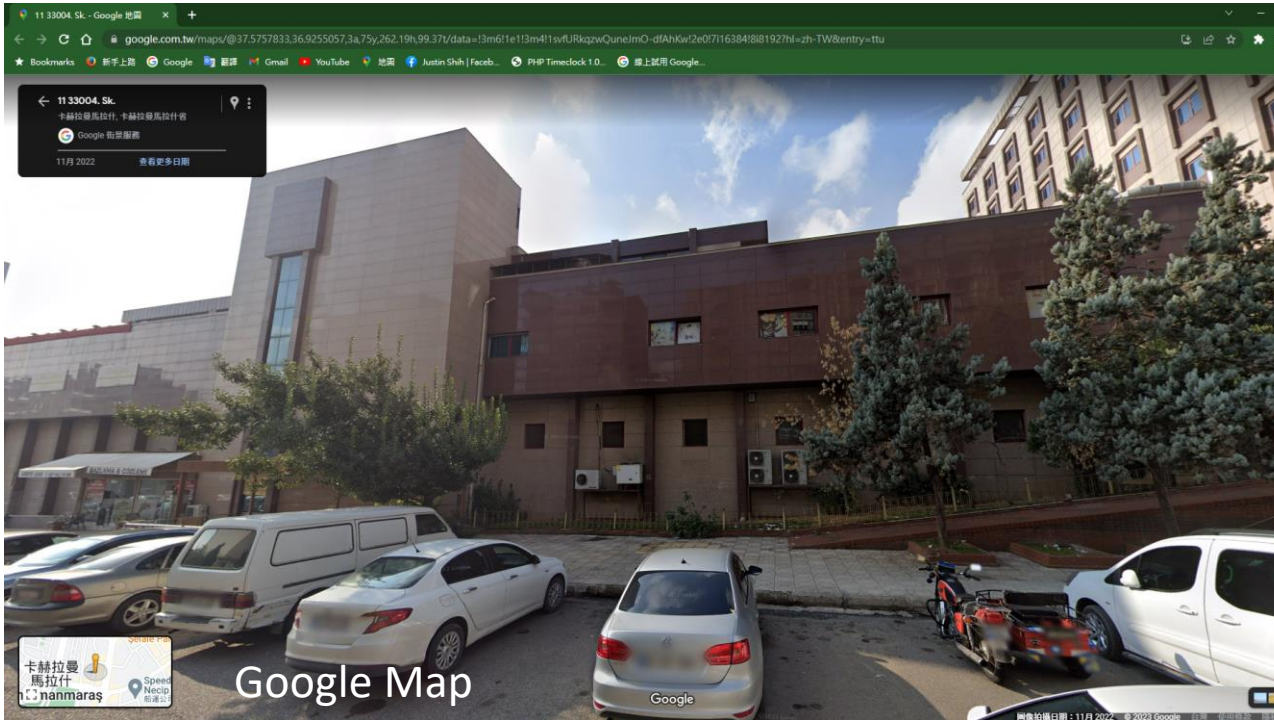
PGA [cm/s^2]	PGV [cm/s]
316.606	37.542(5強)

Hotel
已經拆除





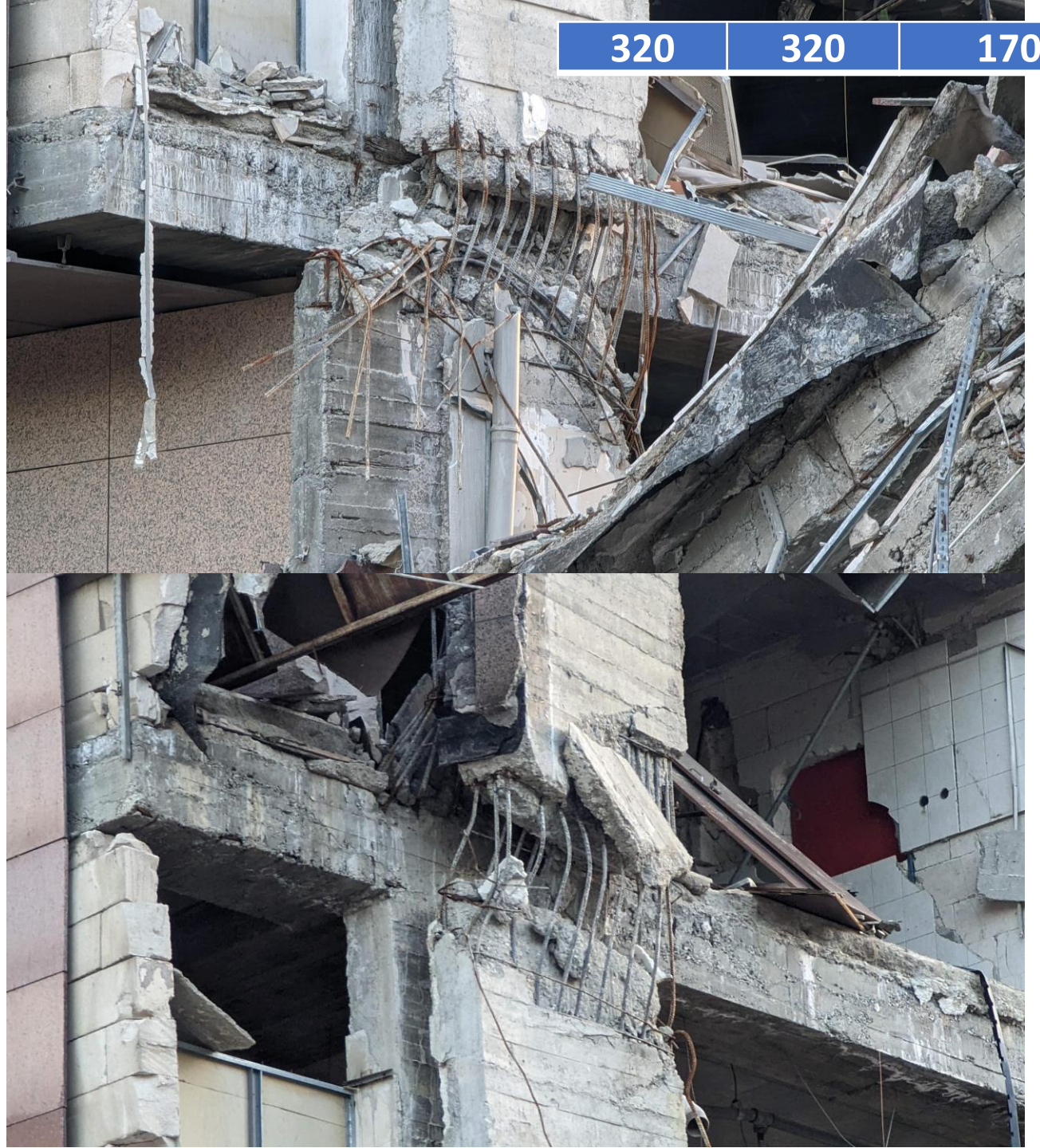
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2023-04-24 Benim Çarşım 百貨公司



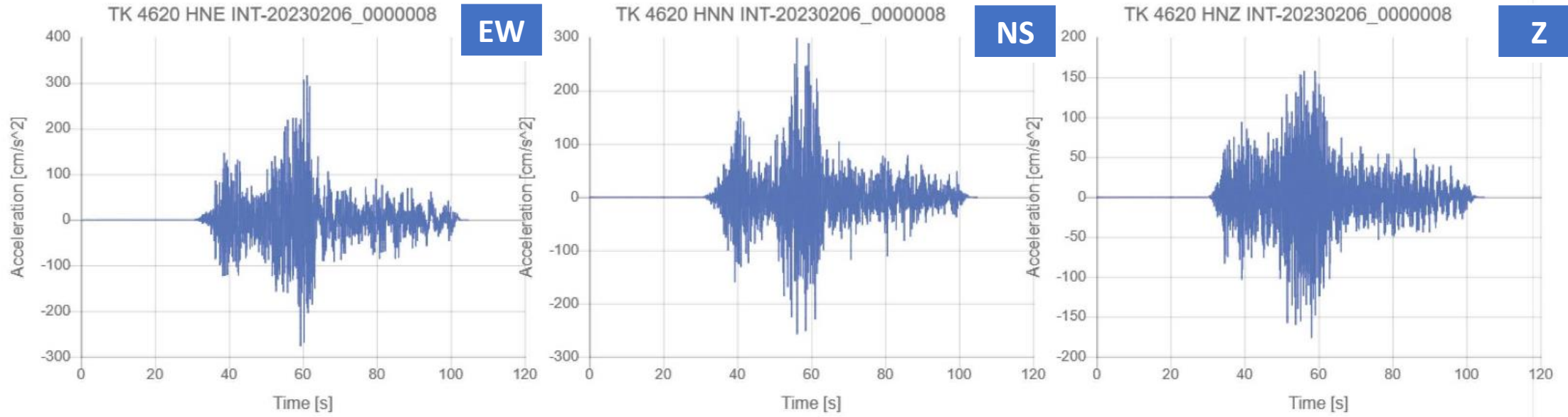
2023-04-24 Benim Çarşım百貨公司



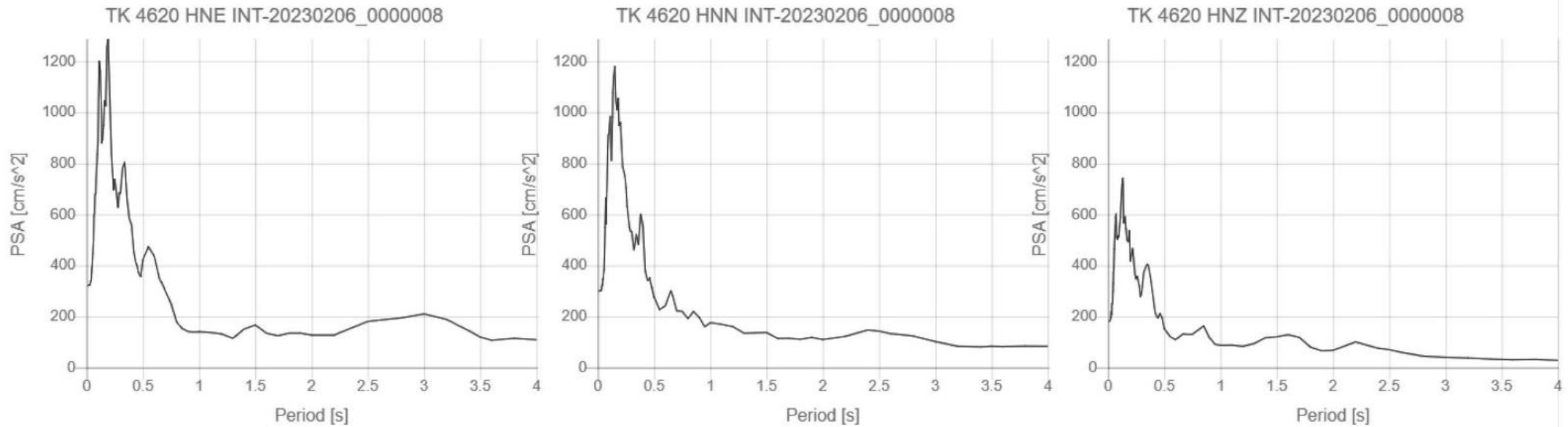
320	320	170
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Processed acceleration



Pseudo Acceleration response Spectra (PSA) 5% damped





Çekmece, 408. Sokak, 31160

Atatürk Caddesi, 安塔基亞, I

Özerli, Arif Özkök Sokak 54,

Ertan Yülek Bulvarı, Başlamı

42021. Sokak, 加百安特, 加

Gaziantep-Osmaniye Yolu, !

道路

Çekmece, 408. Sokak, 31160 德芬/哈太, 土耳其

Çekmece, 408. Sokak, 31160 德芬/哈太, 土耳其

新增缺少的商家

路過的公寓型樓房震損

230 280 160

埃爾津公立醫院

185 175 140

伊爾汗·哈尼菲·德爾特約爾州立醫院洗腎中心

190 170 150

Mustafa Kemal 大學附設醫院

550 510 480

Serhat 好朋友 Emir 的家

380 380 145



net Yıldırım 路過的公寓型震損



2023-04-25 BABACANLAR BIROL USTA_Parkoii-ahmet Yıldırım 路過的公寓型震損



2023-04-25 BABACANLAR BiROL USTA_Parkoil-ahmet Yıldırım 路過的公寓型震損



PETA

1

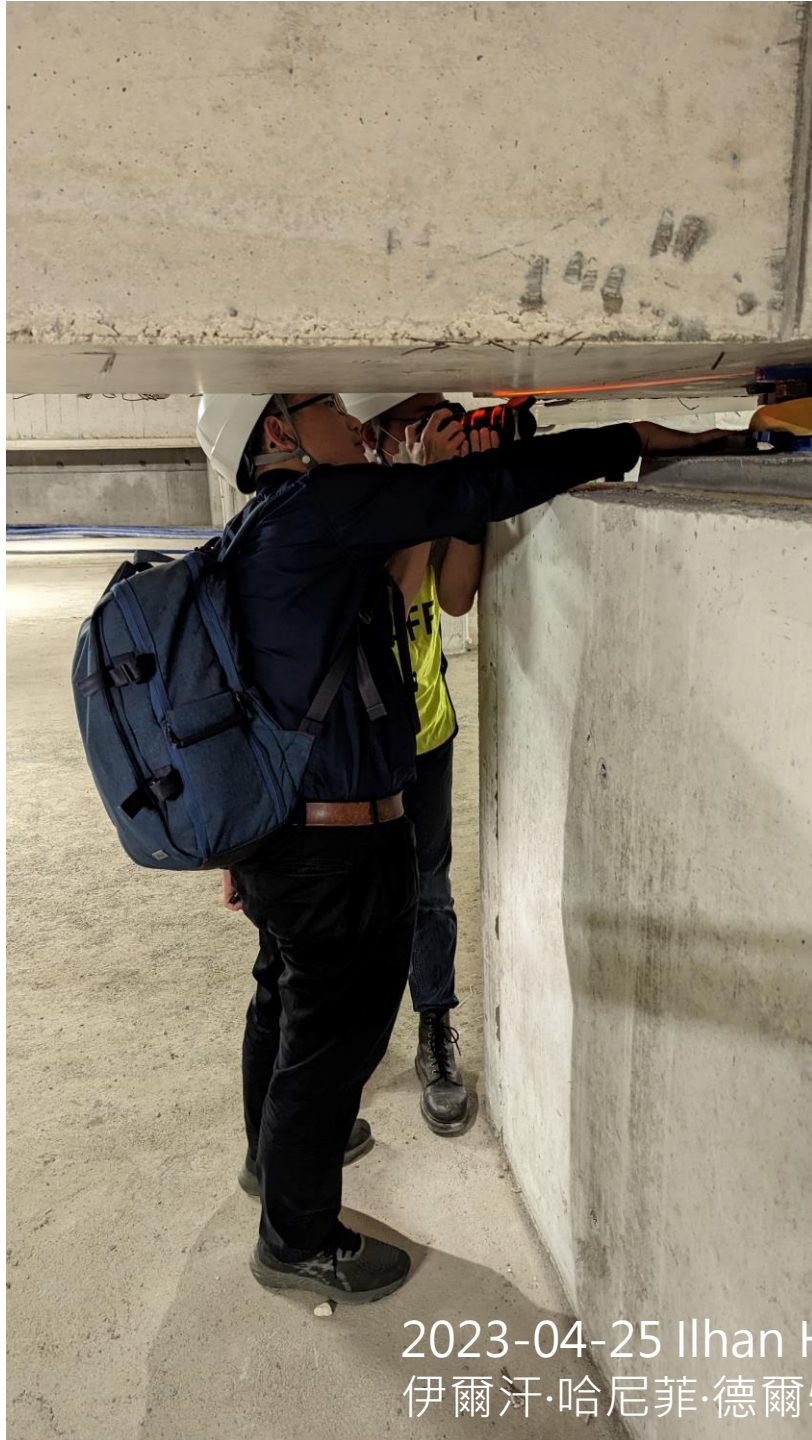
Bankası

CAN APT.
1. KAT

Bankkart
Sermayesi



2023-0425 Erzın Devlet Hastanesi 埃爾津公立醫院



2023-04-25 Ilhan Hanifi Dortyol State Hospital
伊爾汗·哈尼菲·德爾特約爾州立醫院洗腎中心





20230425 Serhat 好朋友 Emir 的家
1980s

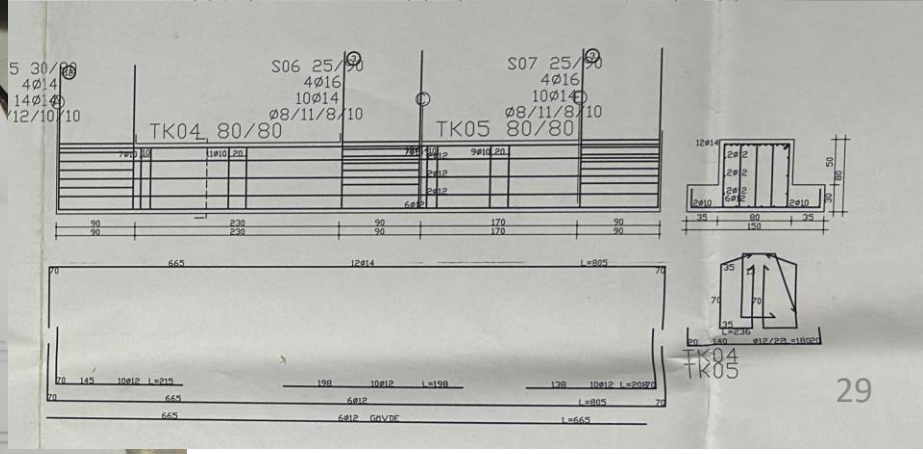
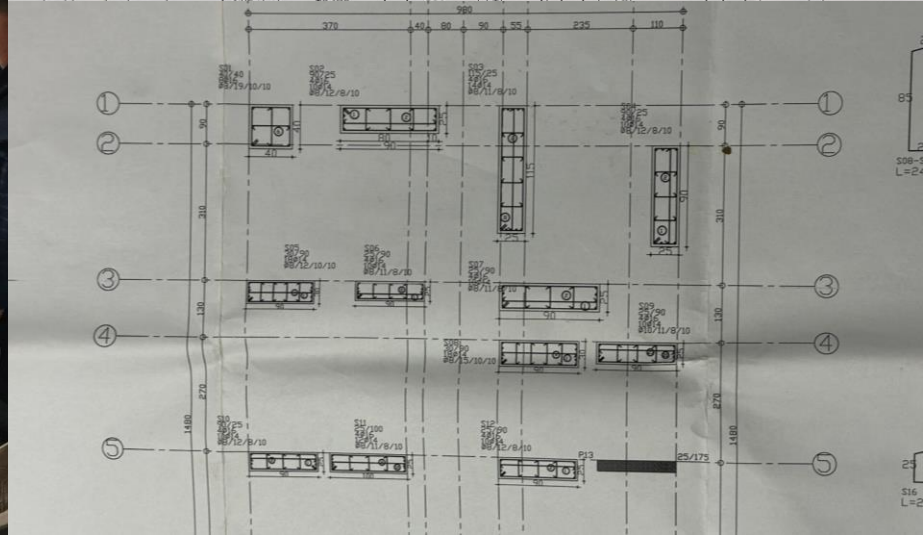
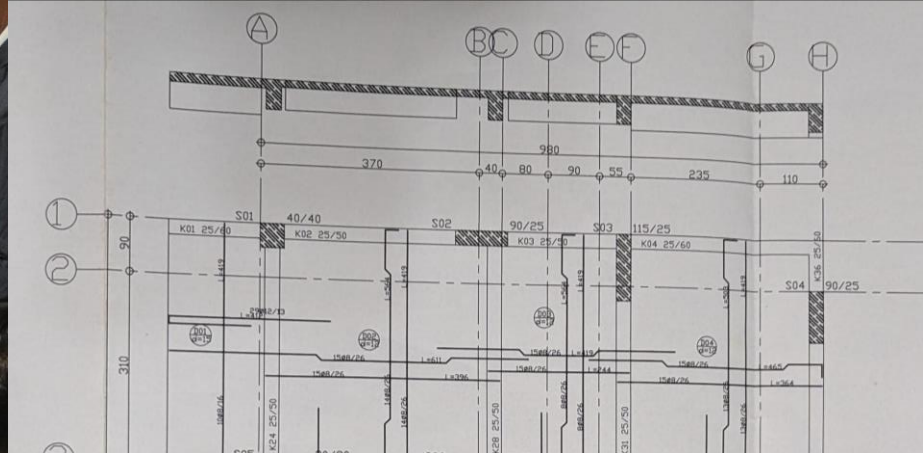




20230425 Serhat 好朋友 Emir 的家
1980s



20230425 Serhat 好朋友 Emir 的家
2007年





2023-04-26 Çaygaz-Vakkas Oğlu 食用油工廠



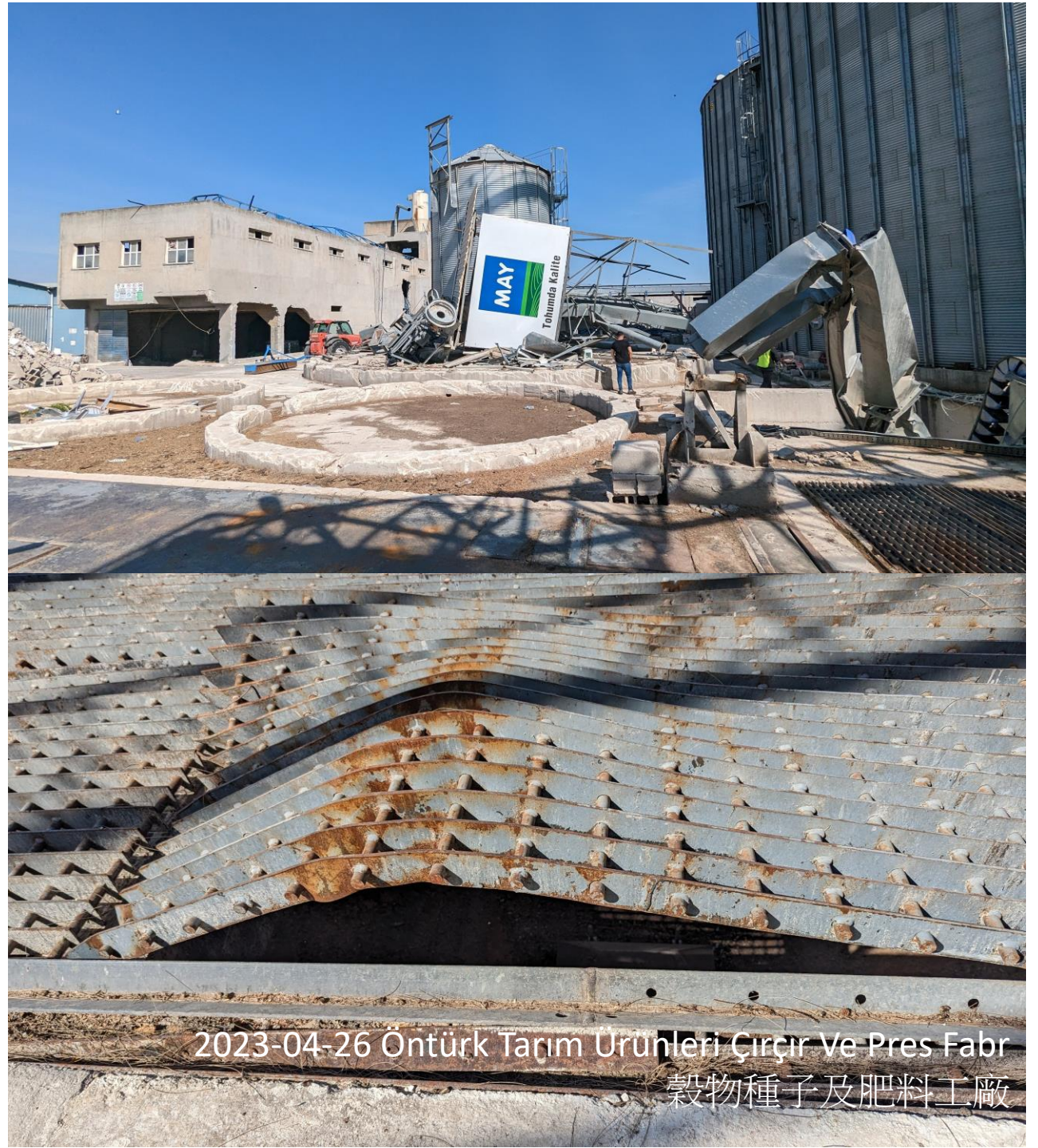
2023-0426 Antakya Kurtuluş Avenue
歷史街區



2023-04-26 Çiçek 公寓 - Vilyam Azaroglu







2023-04-26 Öntürk Tarım Ürünleri Çiçir Ve Pres Fabr
穀物種子及肥料工廠

搜尋

120 120 80 270 310 210

140 140 95 140 60 250

150 150 110

Malatya Education and Research Hospit

Karşıyaka, Eşref Bitlis
Caddesi 129; 44500
多安謝希爾/馬拉特雅, 土耳其
Doğanşehir Şehit Esra Köse Başaran Devlet Hastanesi

Ufuk şekerleme 四~六層連棟店屋

Hayranın,
33004. Sokak 8, 46040
奧尼基舒巴特/卡赫拉曼馬拉什省, 土耳其

卡赫拉曼馬拉什的私立 Water Vatan 醫院
卡赫拉曼馬拉什 Megapark 的私立醫院
Necip Fazıl City Hospital 市立醫院

埃爾津公立醫院
Yesil, 9
Sokak, 31600 伊爾汗·哈尼菲·德爾特約爾的州立醫院洗腎中心
德爾特約爾/哈太, 土耳其

Mustafa Kemal 大學附設醫院

Çekmece, 369. Sokak 2, 31160
德芬/哈太, 土耳其
Antakya Kurtuluş Avenue
歷史街區

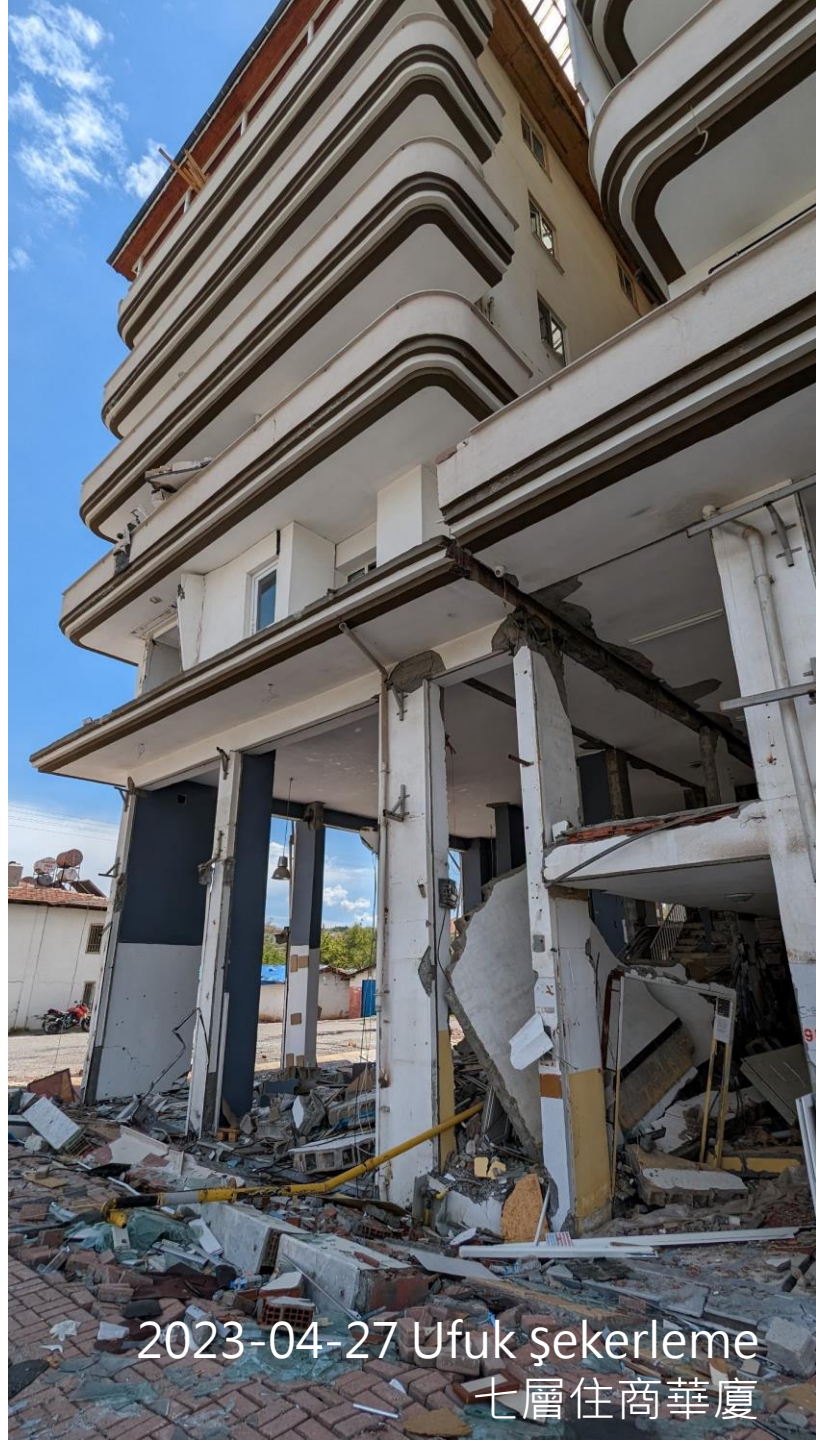


2023-04-27 Ufuk şekerleme 四~六層連棟店屋



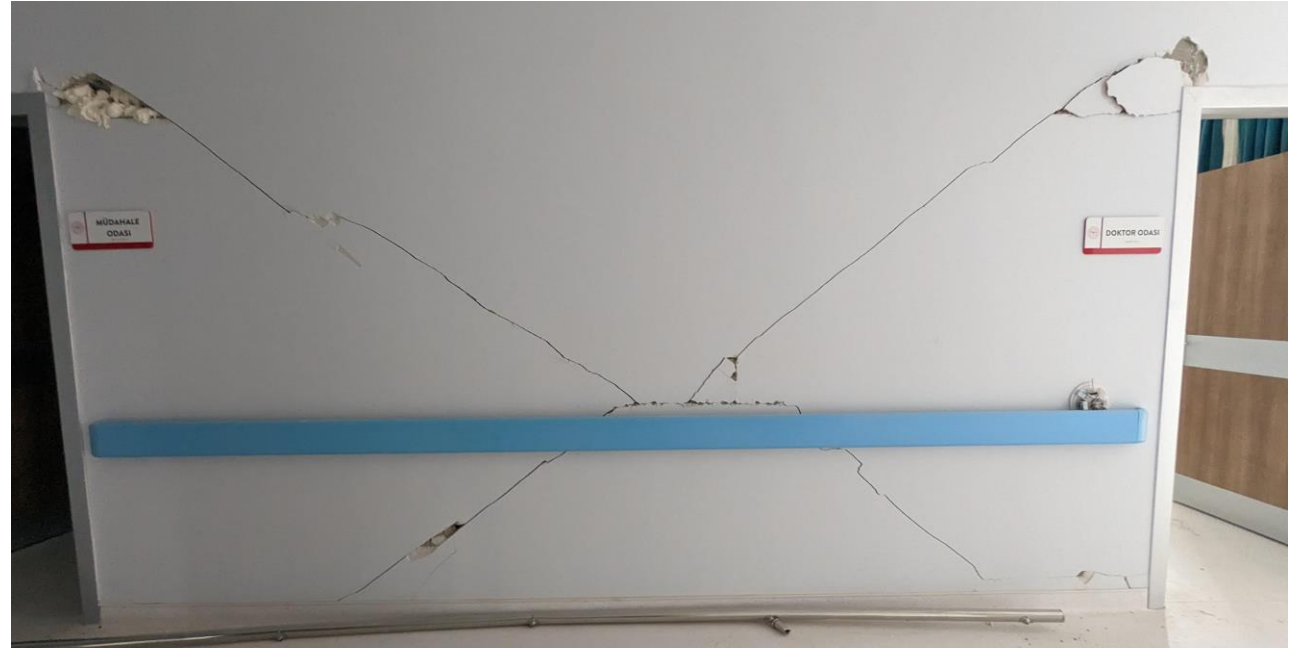


2023-04-27 Ufuk şekerleme
四~六層連棟店屋



2023-04-27 Ufuk şekerleme
七層住商華廈





2023-04-27 Doğanşehir Şehit Esra Köse Başaran Devlet Hastanesi





2023-0427 Malatya Education and Research Hospit

Table 2-1 Key events in the evolution of seismic design codes in Turkey

Year	Event	Code development
1939	Erzincan earthquake (M7.9)	
1940	Committee formed to develop a seismic zonation map for Turkey	First seismic code published
1942		Earthquake zone map prepared; map promulgated in 1945
1943	Tosya earthquake (M7.2)	
1944	Gerede earthquake (M7.2)	Seismic code revised
1947		Seismic code revised
1949		Seismic code revised
1953		Seismic code revised
1958	Ministry of Reconstruction and Resettlement established	
1961		Seismic code revised
1963		Earthquake zone map revised
1966	Varto earthquake (M7.1)	
1967	Adapazari earthquake (M7.1)	
1968		Seismic code revised
1975		Seismic code revised; ductile detailing introduced
1992	Erzincan earthquake (M6.9)	
1997		Seismic code revised; ductile detailing required
1999	Izmit earthquake (M7.4) Düzce earthquake (M7.2)	

1997 年規範要求韌性設計

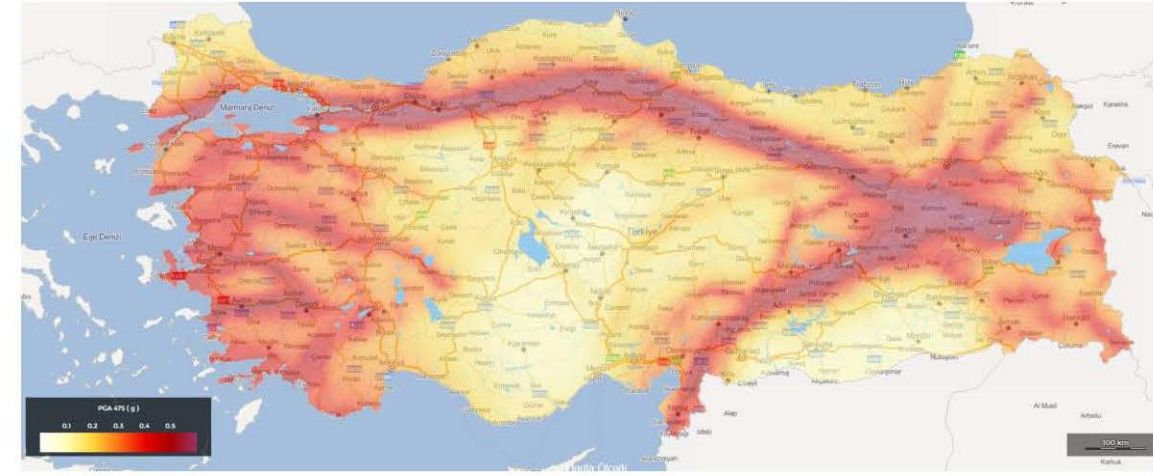
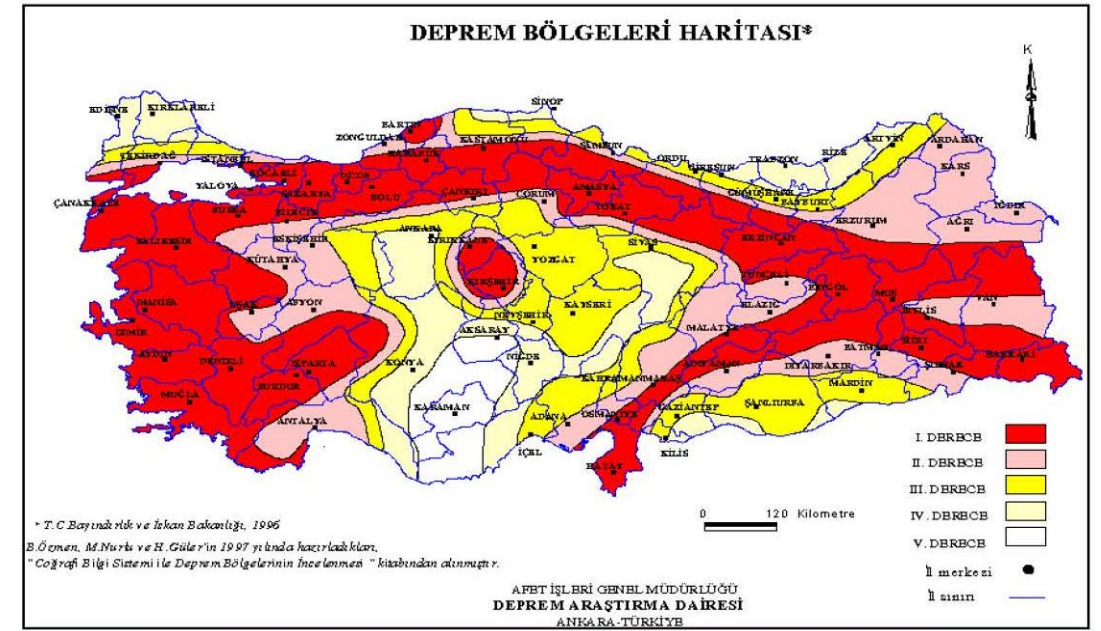


Figure 1. 1996 Seismic Zones Map (top) and 2018 Seismic Hazard Map (bottom). Both are based on 475-year PGA on very stiff soil.

1997 seismic code

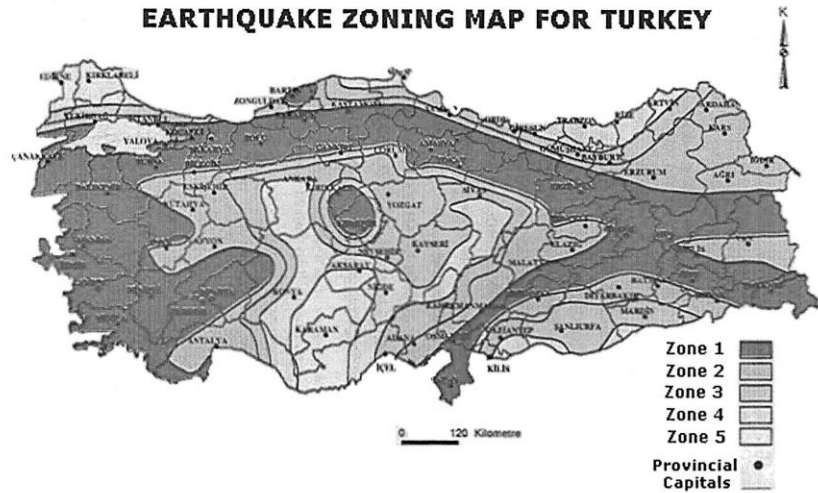


Figure 2-6 Earthquake zonation map of Turkey in the 1997 seismic code

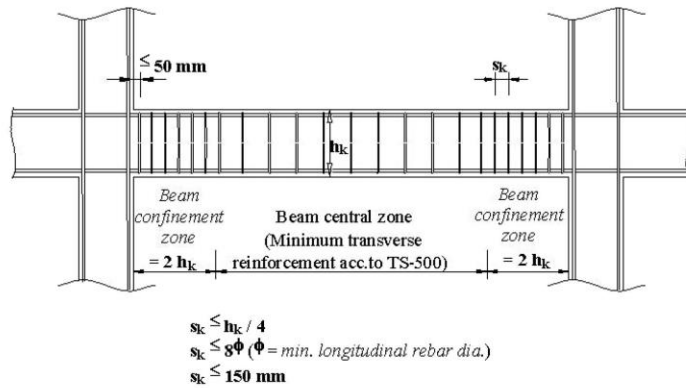


Figure 2-7 Transverse reinforcement requirements for beams in the 1997 seismic code

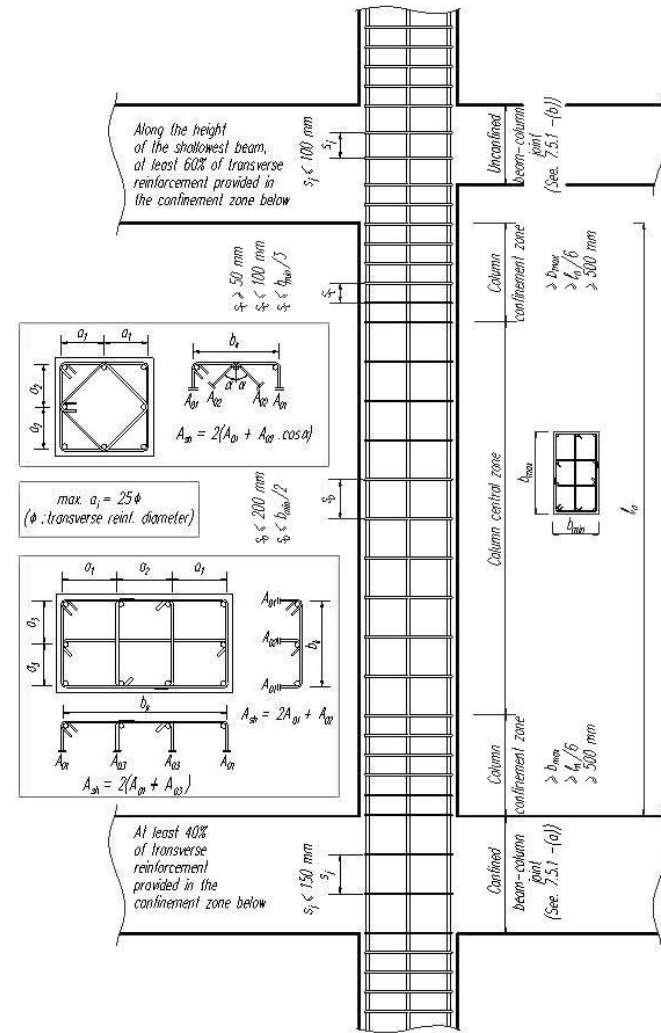


Figure 2-8 Column confinement zones and detailing requirements in the 1997 seismic code

謝謝聆聽、敬請指教



感謝土耳其教授團隊、姚團長及團員們協助順利完成勘災