TÜRKİYE CUMHURİYETİ
ÇEVRE, ŞEHİRCİLİK VE
İKLİM DEĞİŞİKLİĞİ BAKANLIĞI

06.02.2023 Kahramanmaraş Earthquake

FIELD INSPECTION

2023

Many of our provinces have experienced direct earthquake damage. Of course, we always say that more than 70 percent of our country lives in earthquake zones. This earthquake is the biggest earthquake disaster seen in the last century.

Murat KURUM

Minister Of Environment, Urbanism And Climate Change

T.C.
ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ BAKANLIĞI
Yapı İşleri Genel Müdürlüğü
Yapım Teknolojileri ve Laboratuvar Daire Başkanlığı

TÜRKİYE – JAPAN

06.02.2023 KAHRAMANMARAŞ – PAZARCIK

KAHRAMANMARAŞ – ELBİSTAN EARTHQUAKE

FIELD INSPECTION

08.03.2023 - 11.03.2023

TECHNICAL COMMITTEE

T.C. Çevre Şehircilik ve İklim Değişikliği Bakanlığı;

- **Ahmet BEKTAŞ – Deputy General Manager**
- **İrşade AYDOĞDU GÜRBÜZ – Head of Department**
- **Serkan GENÇ – City planner**
- **Esra DEMİRAYAK – Civil Engineer**
- **Seda KÖSE SARI – Geological Engineer**

Japonya Teknik Heyeti;

- **Mr. ODAWARA Yuichi**
- **Mr. MUKAI Tomohisa**
- **Mr. WATANABE Hidekazu**
- **Mr. KAJIYAMA Atsushi**
- **Mr. SHIRATO Masahiro**
- **Mr. SHINKAI Hiroyasu**
- **Mr. YOKI Hideaki**
- **Ms. ISHITOBI Ai**
- **Mr. HOSOKAWA Yukinari**
- **Mr. SHIRATO Masahiro**
- **Mr. MIYANO Tomoki**
- **Mr. SUGITA Shigehiko**

1 SUMMARY OF THE RESEARCH

The earthquakes in Kahramanmaraş, Pazarcık (7.7) and Elbistan (7.6) occurred in our country, and 11 provinces were destroyed. A technical committee of 14 experts from the Ministry of MLIT has been assigned to our country by the Japanese Government and JICA to conduct technical research. Investigation of heavily, moderately and slightly damaged buildings in Hatay, Adıyaman (Gölbaşı district), Gaziantep and Kahramanmaraş provinces, debris studies, demolition works, structures damaged by the ground, prefabricated structures built in disaster areas, undamaged TOKİ buildings and spatial areas where permanent residences will be built. It was carried out together with the technical committee formed by our General Directorates of Construction Works and Spatial Planning. As a result of the examinations, technical deficiencies that caused the destruction, ground and strengthening and reconstruction issues were discussed by bilateral negotiations. In addition, in the meetings held, it was brought to the agenda what kind of contributions the Japanese Government would contribute to our country.

2 FIELD REVIEWS TOPICS

a) the damage assessment methods and comparing them with the Japanese practice,

b) To be able to propose rapid retrofitting methods that are not used in Turkey for damaged buildings,

c) undamaged TOKİ structures,

d) Structure design, reinforcement and soil improvement suitable for the ground,

e) Investigations were made in terms of spatial planning.

The program applied during the field studies is explained in order and outlined below.

1.DAY (08.03.2023)

The "Coordination Center", where damage assessment studies are carried out in the city center of Hatay, was visited and the methods and types of damage assessment processes were explained. In addition, the damage assessment software and the coordination center were introduced, and it was learned that the damage assessment processes, which do not have a software in Japan, are archived on paper documents. (Photo 1-2)

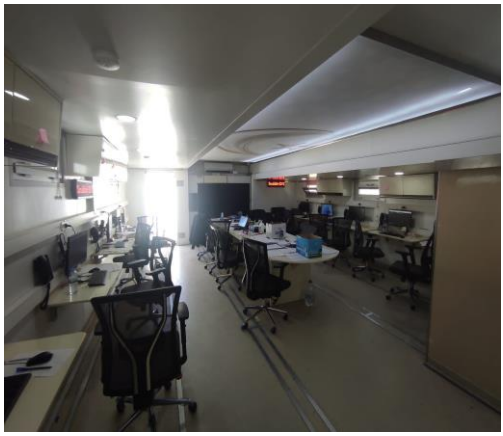


Photo 1

Photo 2

Damaged buildings located on 75 Yıl Boulevard in Antakya district of Hatay province were examined, and Doğa Apt. and Hacı Suat Yılmaz Mosque, how the damage assessment procedures are carried out in our country are explained in detail, both practically and verbally. Information on how these transactions are done in Japan was obtained. In addition, the questions directed by the Japanese delegation to us were answered by the experts on the subject. (Photo 3-4)

Photo 3

Photo 4

Investigations of the destroyed, urgently to be demolished, heavy, medium and lightly damaged buildings along 75. Yıl Boulevard continued. (Photo 5-6)

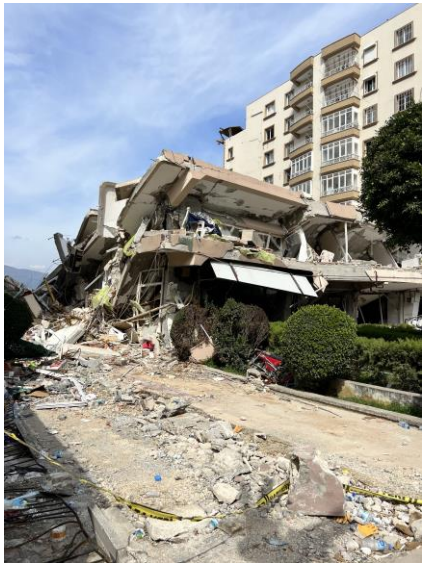


Photo 5

Photo 6

Technical examination was carried out in the buildings located in the center of Antakya and on the banks of the Asi river, and it was observed that the communication building, which was important after the earthquake, was also heavily damaged.

It has been seen that the Antakya Parliament building, which is a cultural heritage, has been destroyed and its wreckage has been examined.

By giving information about the legislative practices in our country, information about the practices in Japan was obtained and a comparison between countries was made. (Photo 7-8)

Photo 7

Photo 8

In Cebrail Neighborhood Cengiz Street, heavy, medium and lightly damaged buildings, debris investigations of collapsed buildings were continued and debris removal works were examined and information was obtained about how these operations were carried out in Japan. It was observed that the destroyed buildings were mostly old buildings that did not receive engineering service or were built according to the old earthquake regulations. (Photo 9-10)

Photo 9

Photo 10

In the examination carried out in Hatay Training and Research Hospital, which was determined to be heavily damaged; It has been observed that there are settlements on the floor of the building and it is separated from the dilatation joints. However, the technical committee from Japan stated that such damaged buildings can be retrofitted if they remain in an advantageous position according to the cost analysis in their own country. It was stated that the cause of the damage in the hospital building was mostly caused by the ground, and the building could be strengthened. Information was requested by the Turkish delegation about the applications of this type of reinforcement (ground and building) in Japan. It has been stated by Japanese experts that buildings with this type of settlement are lifted from the ground with jack-like tools and that, in addition to soil improvement works, they can be strengthened and used from the foundation of the building with the application of piles. It was stated by the Turkish delegation that if this building is strengthened by the methods mentioned on-site by Japanese experts, they will bring an example to our country in terms of ground and foundation reinforcement. (Photo 11 - 12 -13)

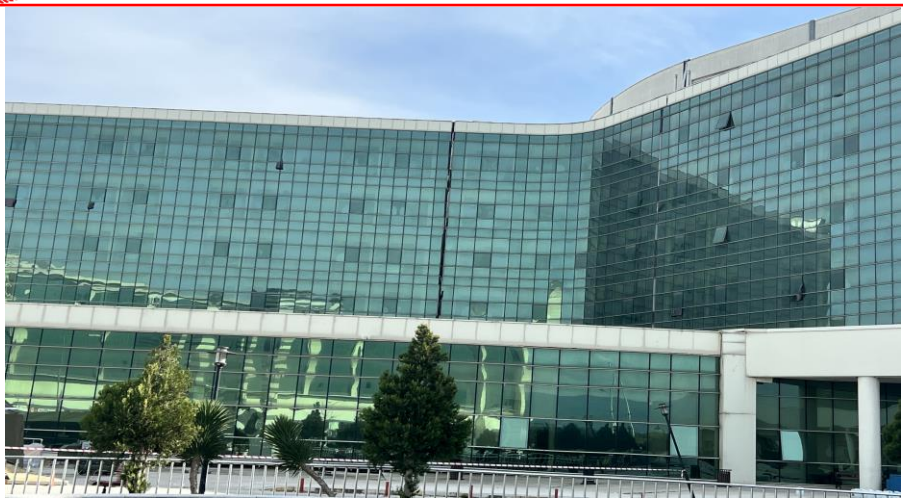


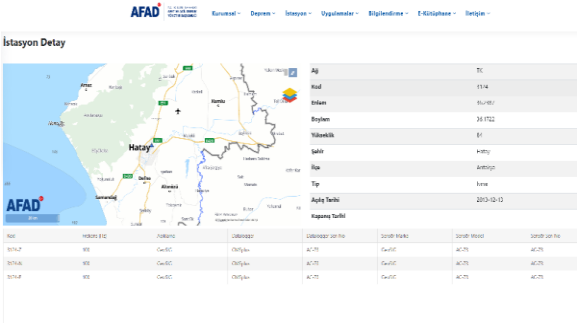
Photo 11

Photo 12

Photo 13

In order to observe the reasons why the G values of the station with the Earthquake Station number 3124 are higher than the other stations, the "Earthquake Recording Station" located in the land of the 53rd Branch Directorate of the 5th Regional Directorate of Highways in Hatay province Antakya district was examined. It was stated that it was the 5th station that perceived the intensity of the earthquake as the highest on 06.02.2023 and no destruction or damage was detected at the station. (Photo 14)

Photo 14



The day was concluded by evaluating the studies and interviews in the fields visited.

2.DAY (09.03.2023)

A visit was made to the "Coordination Center", where damage assessment studies are carried out in Gölbaşı district of Adıyaman, and information about the works was obtained by interviewing Numan HATİPOĞLU, the coordination Governor. The support that can be given was evaluated by the Japanese delegation by learning the needs of the district. (Photo 15)

Photo 15

Following the meeting, information was given about the suspension procedures after damage assessment and the maps on which damage assessment was processed. (Photo 16)

Photo 16

Investigations were made in the Çınar Apartment, located on the Azerbaijan street of Gölbaşı district. It was clearly observed that the building, which was determined as severely damaged by the damage assessment teams, had settled due to ground liquefaction. In addition, during the examinations made inside the building, it was determined that there were no cracks in the carrier system. (Photo 17-18)

When the Japanese delegation was asked about the building, it was stated that this building could be saved, just like the previous hospital building, and it was repeated that the building could be continued to be used by lifting the building with oiled jacks, improving the ground, and placing the building back in its place.

Photo17

Photo 18

Slumping and collapses are observed in the buildings used as social facilities located on the lakeside of Gölbaşı, and ground slippage and soil liquefaction were observed in the region. (Photo 19-20)

Photo 19

Photo 20

Investigations were made in a prefabricated building located on the lakeside of Gölbaşı, and it was observed that the structure collapsed approximately between 60 and 100 cm in places, where there were decompositions in the junction areas of the prefabricated elements of the building due to the liquefied soil. (Photo 21-22)

Photo 21

Photo 22

The effect of the earthquake in the region was observed once again on the train line from Gölbaşı to Adana. (Photo 23)

Photo 23

In the examinations made in the Mufti building located on Gazi Street in Gölbaşı district, it was determined that the building settled due to liquefaction of the ground, like the general of Gölbaşı district. However, it was stated that during the construction phase of this building, soil improvement was made and pile foundation was applied on the ground, and information was obtained from the company that made the piles about the work they did at the building site. It was stated that 38 piles were used in the building in total, they had a depth of 12 m and were made with 4 reinforcements, and it was seen that the application was insufficient. (Photos 24-25)

Photo 24

Photo 25

In the general examinations made in the Cumhuriyet District of Gölbaşı district, settlements due to soil liquefaction are observed intensively.

The Japanese delegation was informed about the ground surveys and ground improvements in our country, and they were asked how the applications were made. It was stated that the improvements with piles continued until the hard ground, and that at least 28 reinforcements were placed in it. (Photo 26-27-28-29-30-31)

Photo 26

Photo 27

Photo 28

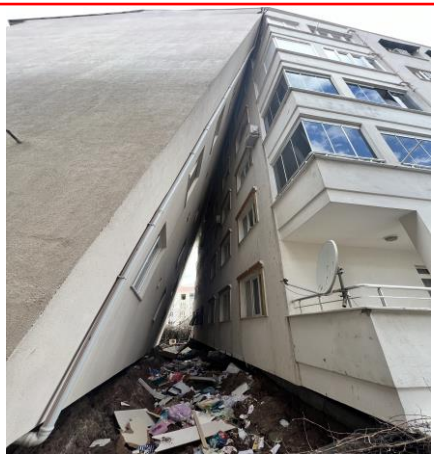


Photo 29

Photo 30

Photo 31

The site built by TOKİ, located in Gölbaşı District of Adıyaman Province, was examined and it was determined by the damage assessment teams that the buildings in the site were generally undamaged or slightly damaged. The same conclusion was reached in the buildings examined by the technical committee.

While the site selection of the areas where the TOKİ site will be built, ground surveys and separate ground surveys are carried out in each building, projects are created accordingly, this application is in the legislation not only for TOKİ but also for all buildings, the foundation of TOKİ buildings is raft foundation and tunnel formwork system is used, the sewage systems of the buildings It was stated that there was no damage, and it was possible to enter the houses if desired.

The container city established in Mimar Sinan District was visited regarding how the temporary shelters were built after the earthquake, 688 containers are planned in the region, there are currently 300 containers, container installation works are continuing, 1 family is placed in each container, connections to the sewerage for waste water are made, measures taken for the summer, security, social areas, etc. information on the subject. (Photo 32)

Photo 32

Returning to the Gölbaşı Coordination Center, the evaluation of the two days was made and the questions asked by the Japanese delegation were answered and the questions asked by us were answered.

Our request for cooperation was conveyed to the Japanese delegation on soil improvement and building reinforcement, together with technical support on soil improvement and building reinforcement of a building that they would choose, which is not heavily damaged, and on insulators. It was stated that they would forward our request, and the other days were planned and the day was ended.

3.DAY (10.03.2023)

At the same time, the Gaziantep Coordination Center, the main coordination center where damage assessment works are carried out in the whole region, was visited and information was obtained about the works carried out there.

Under the leadership of General Manager of Construction Affairs Banu ASLAN, a meeting was held with the Japan Delegation.

It was stated that a total of 90% was reached in 11 provinces in the damage assessment studies, and the views of the Japan Delegation on the subject were asked. It was stated that after the wishes of the Japanese parties to get well soon, it was stated that Turkey took very fast action in the damage assessment studies, and it was explained that the determinations were made according to the score sheet in their country, not through software, but through forms.

It has been stated that Japan and Turkey are friendly countries, that both countries are earthquake countries, therefore they were sent by the State as an expert team by Japan, there are serious problems with the ground and foundations, cooperation in areas such as soil survey, soil improvement, pile foundations is evaluated. specified.

Photo 33

It was stated that Turkey National Risk Shield Model Working Groups were formed in our country, working groups were formed on 14 different subjects of these groups, and one of the groups was the New Construction Technologies Board.

It was stated that a cooperation with JICA was started before the disaster, this cooperation was requested to continue, and the importance of the topics discussed in the previous meetings was reminded with the

earthquake, and it was stated that the insulator issue should be put into operation as soon as possible and JICA support is of importance in this regard.

It was stated that site selections, projects, tenders and groundbreaking for rural areas and industrial zones have started in some regions, so the work on the insulator should be started as soon as possible. Financial support was requested for the establishment of a laboratory by saying that inspection is important in our country, where there is no isolator laboratory in our country.

On the side of the Japanese delegation, it was stated that after the discussions on the subject of Insulator demands, information on the subject will be conveyed to us, and we will also discuss what kind of support we can provide in this regard, and that they will provide the support they can, as they are also earthquake countries.

It was stated that we should start working and moving forward before the winter months, and when asked how the process would work and how long it would take;

Japan Delegation; It has been stated that they will prepare their reports on the field studies in a short time after they return to their countries, but the insulator process will not be within the time period we want.

After the meeting, Hatay-Dörtyol State Hospital, a building with an insulator application, was visited. It was observed that the building, which has 341 seismic isolators, did not suffer any damage in the 3 major earthquakes and aftershocks. The hospital continued its activities uninterruptedly during and after the earthquake. (Photo 34-35-36)

Photo 14

Photo 25

Photo 36

4.DAY (11.03.2023)

The "Coordination Center", where damage assessment studies are carried out in Kahramanmaraş, was visited and information about the works was given. Deputy Minister of Foreign Affairs of Japan, Mr. Kenji YAMADA and Deputy General Manager of Construction Affairs Mr. Murat AKINBINGÖL and Spatial Planning Deputy General Manager Mr. With the participation of Ahmet BEKTAŞ, Azerbaijan Street, Trabzon Street and Ebrar Site, which were most affected by the earthquake in Kahramanmaraş, were visited and the Deputy General Managers informed the Deputy Minister of Japan on the subjects of damage assessment,demolition and debris removal.

Returning to the coordination center, the Japanese Deputy Minister of Foreign Affairs Mr. Kenji YAMADA and Deputy Minister Mr. A meeting was held with Fatma VARANK.

After the meeting, together with the technical delegation, Kahramanmaraş Provincial Director of Environment, Urbanism and Climate Change, Mr. Together with Osman ARISAL, an examination was carried out on the school buildings that had previously been retrofitted. By giving information about the strengthening works in our country, it was expressed that they wanted to benefit from their experiences, especially

about the retrofitting processes that can be done while the building continues to be used.

In addition, the site selection studies of the newly established industrial site were examined, the Spatial Planning General Manager Assist. Mr. Ahmet BEKTAŞ has been informed. An area where drilling works were carried out related to these studies was visited. Legislations in our country regarding drilling works were conveyed. Information about the storage conditions and experiments of drilling samples was given and the application in Japan was asked. I was told that there is a similar application. (Photo 39-40)

Photo 39

Photo 40

The site built by TOKİ in Karataş Neighborhood was examined and it was determined by the damage assessment teams that the buildings in the site were generally undamaged or slightly damaged. The same conclusion was reached in the buildings examined by the technical committee, and questions about the construction stages of the previous TOKİ residences were answered.

As an example of the site selection studies in the legislation, the location of the new residences to be built next to the TOKİ residences in the Karataş District has been examined. (Photo 45 - 46)

Photo 41

Photo 42

4-day field investigations were evaluated and the field investigation was completed in order to make reports on both sides.