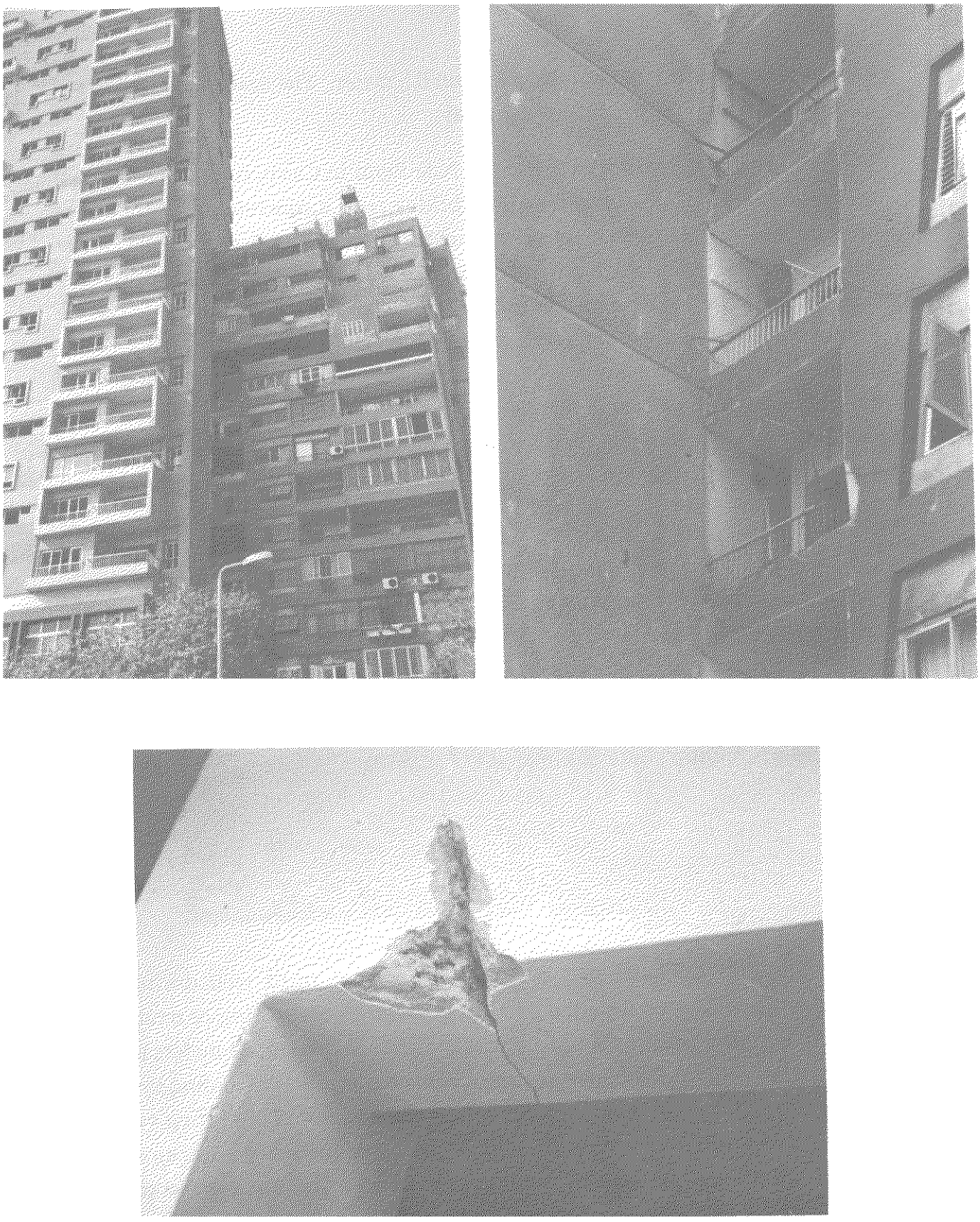

Figure 3-8: Structural damage caused by pounding.

known as "agriculture road," to settle about 0.5 meter. The road is parallel to the Nile River, which is about 100 meters away.

There are eight bridges across the Nile River in Cairo, connecting the east and west sides of Cairo. A steel girder bridge with a concrete deck, known as Kasr El-Nile Bridge (which is more than 60 years old and one of the oldest bridges on the Nile), had minor damage to the concrete deck during the earthquake. The center part of this bridge, as shown in Figure 3-11, can be rotated to allow big ships to go through the Nile. This part of the bridge acts as a double cantilever, and a section of about 1 by 0.5 meter of the concrete deck at the end of the eastern part of this cantilever fell down. It was noted that a small part of the concrete had been broken before the earthquake. Traffic on the bridge was reduced while the broken deck was replaced, and was back to normal two days after the earthquake.

Railroads. The underground system in Cairo, "the Metro," performed well during the earthquake and sustained no damage. Operation was not interrupted during or after the earthquake. There was no reported damage to the main railroad system which connect Cairo with other cities.

Airports. Cairo's international airport (about 30 km from the epicenter) performed well during the earthquake, and there was no reported damage to airport structures or contents. Operation of the airport was not interrupted during or after the earthquake.

Water and Sewage Systems

In general, the water and sewage systems performed well during the earthquake. There was no reported damage to underground piping or treatment plants. An elevated tank of about 5,000 cubic meters and about 30 meters above ground (Figure 3-12) in the city of Giza had some damage in the roofing system. The tank is supported by 64 columns (25 by 100 centimeters). The roofing system has a skylight supported by posts (15-by-15-centimeter concrete columns), about 2 meters high. Four of these posts were damaged, and there were some cracks in the roof.

Figure 3-9: A 5-story concrete-frame hospital sustained only nonstructural damage.