

1. Introduction

On February 6, 2023, a series of large-scale earthquakes occurred in southern Turkey. According to the United States Geological Survey (USGS), the initial earthquake, with a magnitude of 7.8, originated in southern Turkey near the northern border of Syria. Nine hours later, a second earthquake of magnitude 7.5, occurred 90 km to the north. Subsequent major aftershocks extended the affected area.

<<https://www.usgs.gov/programs/earthquake-hazards/science/frequently-asked-questions-about-2023-earthquakes-turkiye>>

<<https://www.usgs.gov/news/featured-story/m78-and-m75-kahramanmaras-earthquake-sequence-near-nurdagi-turkey-turkiye>>

These earthquakes significantly disrupted the lives of people, buildings, and infrastructure. In response, the Government of Japan provided emergency relief supplies and deployed Japan Disaster Relief Urban Search and Rescue (USAR) Teams and Emergency Medical Teams (EMT) to the sites affected by the earthquake. In addition, the Government of Japan dispatched a Japan Disaster Relief (JDR) Expert Team to reconnaissance the damage caused to buildings and infrastructure and hold discussions with Turkish government agencies and research institutions for restoration and reconstruction. The JDR Expert Team dealt with many aspects of restoration and reconstruction, including buildings, urban planning, water supply, sewage treatment systems, gas, electricity, roads, bridges, railways, ports, and dams, as well as social inclusiveness. The Japanese Ministry of Land, Infrastructure, Transport, and Tourism deployed engineers and researchers to become members of the JDR Expert Team. The JDR Expert Team stayed in Turkey from March 7 to 15, 2023. The JDR Expert Team submitted its report in April 2023 to the Ministry of Foreign Affairs through the Japan International Cooperation Agency, an implementation agency for JDR Expert Team activities, which is currently under publication.

This document presents the technical and scientific observations of roads and bridges that the authors made in a post-earthquake survey around Antakya, Nurdağı, and Malatya in Turkey. It also discusses relevant research topics for the future revision of the Japanese Specifications for Highway Bridges. Note that the authors are fully responsible for this document, which does not represent the views of the JDR Expert Team; Ministry of Foreign Affairs; Ministry of Land, Infrastructure, Transport, and Tourism; or Japan International Cooperation Agency.