Overview of Yaoan (Yunnan Province, China) Ms6.0 Earthquake

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Yaoan Ms6.0 Earthquake occurred at 19:19 PM, July 9, 2009. The epicenter located at latitude N25°36′, longitude E101°06′ and the macro-epicenter located at Guantun of Yaoan county, Yunnan Province of China, with damage intensity VIII.

Yaoan Ms6.0 Earthquake caused obvious damages to local buildings, lifeline systems as well as other infrastructures of 7 counties including Yaoan, Dayao, nanhua, Mouding, Yongren, Xiangyun and Binchuan. Totally, 1 person was killed and 31 severe wounded in earthquake. It caused about 2.15 billion CNY of direct economic loss.

The detail of the strongest ground motion recorded by The Yunnan Digital Strong Motion Net in the earthquake is list below.

<table>
<thead>
<tr>
<th>Event</th>
<th>Station</th>
<th>Distance (km)</th>
<th>PGA /gal</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>EW</td>
</tr>
<tr>
<td>Ms6.0</td>
<td>Hedian,Xiangyun</td>
<td>31.3</td>
<td>28.5</td>
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Based on the field investigation to 150 residential communities, the intensity contour is determined in fig.1. The total damaged area is about 6958 square Km with 230 square Km of intensity VIII area, 883 square Km of intensity VII area and 5845 square Km of intensity VI area.

Damage Characteristics

Numerous of buildings and infrastructures were damaged in Yaoan Ms6.0 Earthquake.

(1) Building damage

In damage intensity VIII area, the adobe-wood structure is the principal building type. 42% of them were severe damaged or collapse, 48% of them
were lightly damaged and only 10% remained well. Only minute quantity of brick building collapsed as well as mostly lightly damaged or even without damage.

In damage intensity VII area, only few of adobe and brick wood building collapsed or serious damaged.

In damage intensity VII area, most buildings remained intact except for few very old adobe or brick houses seriously damaged.

(2) Infrastructure damage

In this earthquake, engineering structures of transportation, power supply, tele-communication, water supply and sewerage as well as hydraulic system were all damaged in different levels.

Damage of Transportation system: roadbed fall-in, road surface cracked or subsidence, slope collapse, culvert cracked, bridge damaged and so on.

Power supply system: transmission pole lean down, line broken, transformer and meters damage.

Tele-communication: transmission pole lean down, line broken, network & communication facilities damage, broadcasting facilities damage.

Water supply and sewerage system: pipeline cracked, joint leakage, reaction tank wall cracked.

Hydraulic system: individual dam deformed, dam shoulder/foot leakage, anchor gate deformed, culvert leakage, irrigation canal cracked, and operation panel damaged.
Collapsed adobe-wood building in epicenter area

Collapse of coverage wall
Collapse of coverage wall

Damage of adobe buildings
Damage of school brick building

Damage of school brick building