

POST-EARTHQUAKE RECONNAISSANCE OF SARPOL-E ZAHAB STEEL BUILDINGS AFTER 6.4 MAGNITUDE AFTERSHOCK

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Results of a post-earthquake reconnaissance on steel buildings of Sarpol-e Zahab are presented in this paper. Common damages and defects on such buildings after the main shock as well as the most important repairing methods are reported.

The observed steel structures are divided into three categories of moment resisting frames, bracing frames (with concentric braced frame -CBF- or eccentric brace frame -EBF) and dual systems.

Stability of moment resisting frames depends mostly on the quality of their connection welding; they must be normally sufficient to transfer full capacity of the beam to the column. Despite, this issue was not given sufficient attention in some buildings.



Figure 1. A steel structure with moment resisting frame in one direction and braced system in another.



Figure 2. The connection plate dimensions and the welding length are insufficient.

In general, steel structures are repaired by column strengthening, foundation rehabilitation, adding bracings (regular bracings or BRB) and strengthening the connections, shown in Figure 3. The column is strengthened by adding a series of longitudinal steel plates or horizontal clamps (for battened columns) or by adding new columns close to the damaged columns.

Efficiency of these repairing methods are naturally tested in 25 November 2018 6.4 magnitude aftershock, which are reported in this paper. Figure 4 shows a repaired four-story steel building, before and after the aftershock.



Figure 3. An example of repairing a connection (executed and in drawings).



(a) Before the aftershock (b) After the aftershock *Figure 4. shows a repaired four-story steel building.*

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