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汶川地震钢筋混凝土框架震害及震后修复建议(PDF)

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Title: Damage investigation of RC frames in Wenchuan earthquake and suggestions for post-earthquake rehabilitation

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摘要: 介绍了汶川大地震中几座典型钢筋混凝土框架结构的震害,重点总结了框架结构中梁、柱、节点以及楼梯间的震害情况,发现除较为常见的梁柱弯曲破坏、剪切破坏、弯剪破坏以及框架节点的破坏外,框架梁柱中的粘结破坏、施工缝处的破坏及楼梯间破坏也较为严重.部分新建结构尚未完工也遭到严重破坏,且表现为“强梁弱柱”“强构件弱节点”的破坏形态.总结了国内外对损坏的钢筋混凝土框架结构进行震后修复和加固的研究进展,并对汶川地震后结构的震后修复和抗震加固工作提出了建议,强调应从结构整体角度进行震后修复和加固工作,考虑各种修复方案的优点和不足,重视结构整体和构件的相互关系,避免修复后的结构出现刚度不均,并注重形成多道抗震防线.

Abstract: Some typical RC frames damaged during the Wenchuan earthquake were introduced,with emphasis on the damage to RC beams,columns,beam-column joints and stair wells.It is concluded that except for flexural,shear,flexural-shear damage to RC beams,columns and beam-column joints,longitudinal steel bond

damage,construction joint damage and stair well damage are also found in many RC frames.Some new RC frames,even unfinished,were severely damaged,and much of them appeared "strong beam and weak column","strong member and weak joint" failure modes.Previous study on the repair and strengthening of damaged RC frames were summarized.Some key problems and suggestions for past-earthquake rehabilitation of the damaged RC frames,such as the overall aseismic capacity of the building,the merit and fault of each repair technique,the relationship between structure and members,imbalance of structure rigidity,multi-defense lines for earthquake resistance were introduced and more attention should be paid in the future design.

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