



SEISMIC RESPONSE TO 2016 CENTRAL ITALY EARTHQUAKES OF BRB RETROFITTED SCHOOL BUILDING IN NORCIA

G.Fiorentino⁽¹⁾, C.Nuti⁽²⁾, F.Paolacci⁽³⁾

⁽¹⁾ Research fellow, Roma Tre University, gabriele.fiorentino@uniroma3.it

⁽²⁾ Full professor, Roma Tre University, camillo.nuti@uniroma3.it

⁽³⁾ Assistant professor, Roma Tre University, fabrizio.paolacci@uniroma3.it

Abstract

2016 Central Italy earthquakes, whose three major events occurred between 29 August and 30 October with epicenters located in proximity of the town of Norcia, caused important effects on structures. In particular, the seismic event of 30 October was particularly strong to produce the collapse of important constructions in Norcia like the Basilica of S. Benedetto. However, the behavior of some buildings has been object of particular attention because significantly favorable. In particular, a recent RC frame school building located outside the walls of the historical center was subjected to particularly intense accelerations, whose effects have been highly mitigated because of the presence of BRB dissipative braces. The structure is composed by a three-storey RC frame and it is subdivided in three different parts, separated by two expansion joints. Connected to the school buildings there is a steel frame external lift structure, separated from the main structure by joints. The building was built in the sixties and it was renovated in 2010 and subsequently retrofitted using BRB braces. In order to evaluate the behavior of this particular construction a monitoring systems, composed by accelerometers placed at the several floors, has been installed. This allowed the recording of the structural response and recognize its favorable behavior. Consequently, a numerical model has been implemented in a non-linear analysis software to simulate the seismic response and to compare it with the on-site recordings and verify the effectiveness of the passive control system in reducing the maximum response. The results are here summarized and commented in the light of the current state of art on dissipative bracing technique.