

ON THE PERFORMANCE OF STEEL WIRE ROPE AS THE EXTERNAL STRENGTHENING OF RC BEAMS WITH DIFFERENT ENDANCHOR TYPES

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First Author	
Last Author	
Authors	Haryanto, Y; Gan, BS; Widyaningrum, A; Wariyatno, NG; Fadli, A;
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Abstract	<p>This work investigated the performance of steel wire rope as an external strengthening for reinforced concrete beams with different end-anchor types. A study is conducted on reinforced concrete beams with the size of 100 mm x 150 mm x 1000 mm, consisting of 1 beam without strengthening (BTP); 1 beam strengthened with 2 steel wire ropes of diameter 6 mm with end-anchor type 1 (BPA1); and 1 beam strengthened with 2 steel wire ropes of diameter 6 mm with end-anchor type 2 (BPA2). It is found that the external strengthening of reinforced concrete beams using steel wire rope has the advantage of better serviceability due to its higher ductility than the beam without strengthening. The load-carrying capacity of reinforced concrete beams, which are externally strengthened with steel wire ropes, shows a significant increase of up to 60%. All specimens meet the minimum ductility requirements; in this case, the strengthening beams have other advantages, i.e. improved performance in preventing brittle failure. In this study, the increased stiffness is associated proportionately with the increased strength. This is supported by previous findings which suggest that the stiffness cannot be completely separated and independent of the strength. The failure in all specimens appeared in the same phases and all specimens experienced flexural failure. The ratios of end-anchor type 1 to end-anchor type 2 were close to 1 for all the parameters studied, which means that both types of end-anchor make an equally good contribution to the performance of steel wire rope.</p>
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Author	ARI FADLI, S.T, M.Eng