

SYSTEM DESIGN FOR STRENGTHENING SIMPLY SUPPORTED RC BEAMS IN FLEXURE BY RETROFITTING EXTERNAL UNBONDED CONVENTIONAL REINFORCEMENT



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Abstract:

The paper presents the practical design approach and guidelines for the system design of a novel strengthening technique where external unbonded ordinary reinforcement is retrofitted to reinforced concrete beams for enhancement of flexural capacity of simply supported and cantilever beams of buildings and bridges. The design guidelines for the system hardware along with the practical consideration in applications have been elaborately presented. Suitable design example have been included demonstrating the suitability of the technique in comparison to steel plate bonding. Strengthening with external unbonded reinforcement has been shown to provide an appreciable increase in the ultimate flexural strength of reinforced concrete beams. Additionally the technique offers greater simplicity and ease of installation in comparison to other widely used strengthening techniques, such as shotcrete with additional tension reinforcement, epoxy bonded steel plates and external unbonded prestressing tendons; where less stringent requirements for deflectors, anchorage and end zones are encountered.

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