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Unit-3 pre stressed concrete

Basic principle of prestressing

Since the tensile strength of concrete is low, a homogeneous concrete beam has very little flexural strength. To offset this deficiency steel is provided near the bottom of simple beams to carry the tensile stresses. However a substantial area of concrete below the neutral axis merely retains the reinforcement in position but its tensile strength is neglected in the computation for the flexural strength in case of reinforced concrete beams.

In the tensile side of beam is subjected to tensile stresses before applying the external loads, then compressive stresses are induced in the concrete of the beam (and this is done by prestressing). Usually the tensile stresses in the concrete caused by the external loads are completely absorbed or counteracted by the compressive stresses in concrete, resulting from prestressing the reinforcement. The concrete, therefore is being used effectively in resisting tensile stresses produced by external loads rather than being neglected as in case of reinforced concrete.

Applications of prestressed concrete

→ prestressed concrete can be applied to almost all concrete constructions where ordinary reinforced concrete is used. but due to high cost of prestressing and better quality

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