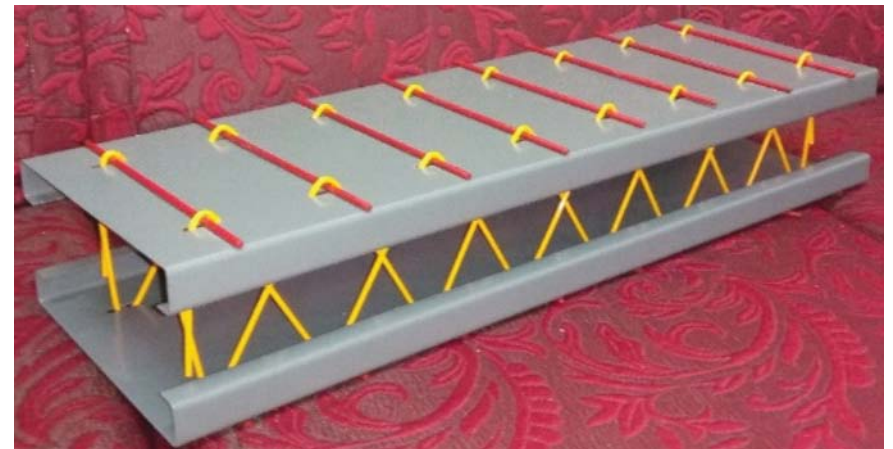




## Laced Steel Concrete Composite (LSCC) System



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## Laced Steel Concrete Composite (LSCC) System

Laced Steel Concrete Composite (LSCC) system consists of thin perforated cover plates at top and bottom which are connected using lacings and cross rods with concrete filled in between the plates. The cover plate performs the role of longitudinal reinforcement. Lacings transfer forces between steel and concrete while cross rods are used to anchor the lacings in position.

### Unique Features

- Simple structural elements made of commonly used materials integrated to devise new configuration for effective performance under blast loads
- Connection of structural elements established through a novel way such that it contributes to the performance
- Optimised material usage to result in enhanced strength, deformation and rotational capabilities
- Highly suitable to resist suddenly applied dynamic loads such as blast
- Distance between explosive storage structures for defense applications can be reduced by more than 1/3<sup>rd</sup>

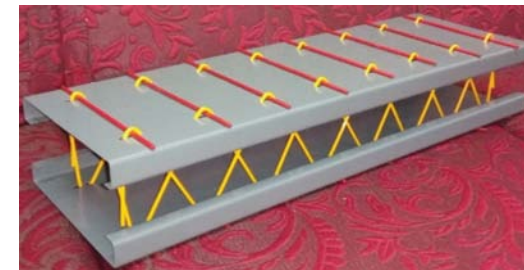
### Performance Comparison

- LSCC beams are capable of undergoing large support rotation, nearly twice in comparison with other steel-concrete composite beams
- Post-peak response indicate load drop of maximum 15% only for either monotonic or cyclic reversal load

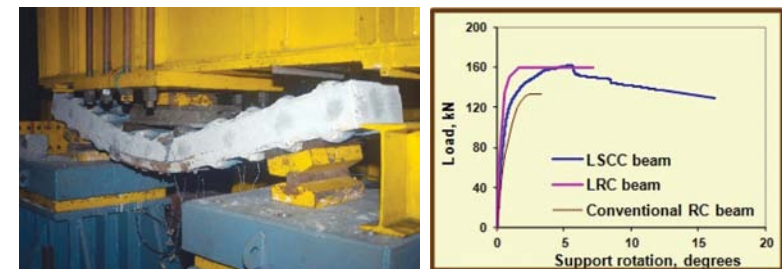
- LSCC beams possess 3x cyclic ductility factors as compared to laced reinforced concrete beams
- For a given capacity, LSCC beams require same amount of material but offers superior performance

### Beneficiaries

- LSCC system is mainly useful for strategic sector. The Centre for Fire, Explosive and Environment Safety (CFEES), DRDO laboratory has shown interest in LSCC system and has come forward to sponsor a major project for evaluating structural performance at operational environmental conditions.
- For blast resistant structures of chemical and fireworks industries that handle explosive substances



*Scaled model of a LSCC beam*



*Laboratory experiment on LSCC beam*