APPENDIX -I LIST OF PAPERS PUBLISHED

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3. Panchal D. R., Patel H. H. and Patodi S. C.: "Design of Steel-Concrete Composite Columns with Menu Driven Processing in VB.NET", Proceedings of a National Seminar on Recent Trends in Geotechnical and Structural Engineering (RTGSE 2007), Malaviya National Institute of Technology, Jaipur, pp. 193-199, Dec. 2007.
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5. Panchal D. R. and Patodi S. C.: "A Simplified Approach for the Analysis of Steel-Concrete Composite Frame", Proceedings of the National Conference on Currents Trends in Technology (NUCONE 2008), Nirma Institute of Technology, Ahmedabad, pp. 405-409, Nov. 2008.
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10. Solanki N. K., Patel R. H., Panchal D. R. and Patodi S. C.: "Design of Composite Trusses Using Genetic Algorithm with Display of Configuration Optimization Process", Proceedings of an International conference on Advance in Concrete, Structural and Geotechnical Engineering (ACSGE 2009), Birla Institute of Technology and Science, Pilani, pp. 160, Oct. 2009.
11. Panchal D. R, Tamhane P. M. and Patodi S. C.: "Finite Element Modeling of Shear Connection for Steel-Concrete Composite Slab and Beam", Proceedings of an International conference on Advance in Concrete, Structural and Geotechnical Engineering (ACSGE 2009), Birla Institute of Technology and Science, Pilani, pp. 110, Oct. 2009.
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CONTRIBUTION

A number of user friendly software developed in the present work with pre- and post-processing capabilities coupled with section database availability at the back end for the analysis and design of a variety of composite elements such as slab, beam and column based on the latest available codes may promote the use of such steel-concrete composite elements in the construction industry; which has not become so common yet, particularly in India.

Although composite construction leads to an economical solution with high durability, rapid erection and superior seismic performance characteristics, it can be further economized by using the GA based optimum design software. Thus, a paradigm shift has been achieved in the current work through the introduction of GA based optimization methodology in the design of composite structures. The effectiveness of the suggested methodology has been successfully demonstrated in the thesis by including a variety of examples of optimum design of slabs, beams, columns, frames and trusses. It may be considered as the most significant contribution of the present work.

There is a growing need to switch from experimental study to numerical modeling of push-out test which is generally carried out to find the capacity of shear connector and the amount of slip at the interface between steel beam and slab. In the present work, a simplified 2D finite element model was proposed to simulate the push-out test using "ANSYS" software. The results of this FE model were validated by comparing with those of various country codes and "ABAQUS" 3D models; results were found quite encouraging. Hence user, sitting on a PC, can take as many re-runs with different size headed studs and concrete strength to ensure proper composite action in steel–concrete composite beams and can thus avoid the costly experimentation.

The evaluation of seismic resistance of composite structures has been attempted by some of the researchers but to a limited extend. In the present work, the seismic performance of G+3 and G+10 storied composite steel-concrete buildings was evaluated with detailed parametric study using STAAD.Pro software via limit state method, considering new IS: 800, AISC and BS codes. Moreover, the behavior of a steel-concrete composite building vis-à-vis a R.C.C. building under seismic forces was critically examined. The results of this parametric and comparative study may serve as a valuable guide line to practicing engineers in selecting the appropriate composite section and methodology to achieve the best.