CHAPTER 3

OBJECTIVES OF THE PRESENT WORK

High performance concrete (HPC) can be produced by reducing water-binder (w/b) ratio lower than that of normal concrete. This is possible, because of chemical admixtures. The traditional methods of mix design are, therefore, not directly applicable and need to be modified whenever necessary. Though extensive research investigation has been carried out on strength and durability characteristics of HPC, very little attention has been paid by researchers previously to develop the mix design procedure for HPC. In view of the importance of HPC, the main objectives of the present work can be summarized as follows:

- To develop a simplified mix design procedure, specially for HPC by varying the percentage of replacement of cement by silica fume (0 - 15%) at a constant dosage of superplasticizer, based on BIS, ACI code methods of mix design procedure and available published literatures on HPC, for normal and high strength concrete.

- To produce and investigate the workability, strength and durability characteristics of M60, M70, M80, M90, M100 and M110 grades of HPC trial mixes by replacing 0, 2.5, 5, 7.5, 12.5 and 15 percent of the mass of cement with silica fume and using a superplasticizer.

- To find out the optimum percentage of cement replacement level by silica fume for better strength and durability characteristics of HPC.
Hence, in the present work, more emphasis is given to develop and study the strength and durability properties of HPC, using silica fume and superplasticizer so as to achieve better concrete composites and also to encourage the increased use of silica fume to maintain ecology.