

EMERGING TECHNOLOGIES IN DIAGNOSTIC INVESTIGATION OF STRUCTURES

INTRODUCTION:

- 1.1 Forties saw a spurt in civil engineering innovations. With it came a large number of huge infra structure projects costing millions of Dollars then. Today fifty years later, civil engineers are faced with very difficult options. They have, either to reconstruct the dilapidated structures or repair them. An important tool, prior to repair is investigation of these structures. It is analogous to pathological examination in medical sciences. The advances in this field are complemented by advancements in electronics, better understanding of the chemistry of materials in use and development in understanding the mechanics of the structures.
- 1.2 The techniques used in investigation have evolved from the redundant dye penetration technique to identify cracks, mechanically loading the structure to evaluate load capacity of the structure. Gone are the days when elephants were made to climb the building to evaluate its safety. Various other techniques were developed during early fifties like rebound hammer tests and ultra pulse velocity tests were developed and were implemented in various civil engineering projects. Many other important technologies were also developed and implemented in nondestructive testing.

Emerging technologies in electronics and mathematical models have made it possible to use the latest computers and transforms to evaluate the performance of the structures prior to its actual usage. It is also possible to evaluate the stability of the structure in use during its life span. The various technologies used today in nondestructive testing incorporate the latest telemetry, electronics and chemical technology. The technologies being used include a wide range of applications. In this paper, discussion is restricted to those applications, which has been used by our company in India.