

CONSTRUCTION OF TUNNELS, BY NEW AUSTRIAN TUNNELLING METHOD (NATM) AND BY TUNNEL BORING MACHINE (TBM)

VAIBHAV PHADKE¹ & NIKHIL TITIRMARE²

¹Civil Engineer, Pune University, Maharashtra, India

²Deputy Engineer, Department of Civil, Mumbai Metro Rail Corporation, Maharashtra, India

ABSTRACT

Tunnels have played a vital role in the evolution and Sustenance of man-kind through the ages. History has seen the evolution of tunneling starting with cave formation, for water management, under ground transportation, mineral extraction and for warfare purposes. Initially hand dug with crude tools like chisels, Hammers, spades and shovels, the civil engineering tunneling technology has seen progress in leaps and bounds. The ever increasing needs of the modern human race have driven the tunneling technology to its pinnacle. This is being realized through rapid advancements in terms of geological and hydro-geological engineering, tunnel design, capacity, construction methods and speed and maintenance during operations. Safety during construction and operations is getting integrated in all aspects through conscious and educated decisions. In most of the cases tunnel construction is expensive but it saves time and provides comfort. Large excavation of soil or rock etc. is necessary for a tunnel construction. With the availability of modern equipment, excavation and backfilling has become easier. In this paper we will explore some advanced methods of tunneling.

KEYWORDS: Construction Sequence, Methodology, New Austrian Tunnelling Method (NATM), Support Systems Tunnel Boring Machine (TBM)