CASE STUDY

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Water Proofing Metro Railways, Kolkata

During the post-construction period, the Southern part of 'Calcutta Metro Railways' had a serious problem of inflow of water in the box tunnels through different locations which even affected the running of Metro Coach. The sources of water ingress were:

Subsoil Water

Water flowing from old, dilapidated water mains and sewage of the city vicinity of the outer side of Box tunnels of Metro Railways, alignment from Esplanade to Tollyganj.

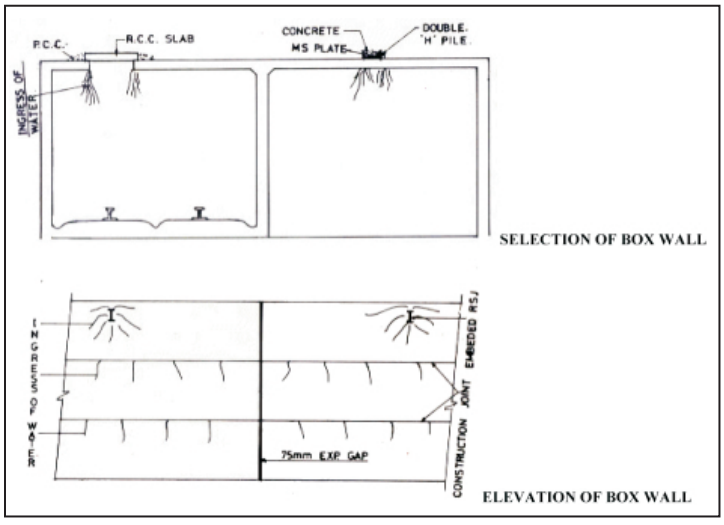
The leakage points were mainly:

a) Construction joints

b) Expansion joints

c) Joints between the entry structure and main box

d) The area surrounding the embedded inserts (the end pieces of RSJ used as struts and double 'H' piles used as columns during construction period).



e) The periphery of the openings kept over the roofs slab at a distance of 1 km apart to facilitate the lowering of 13m long rails and other tracks fittings, which were subsequently covered with RCC slab and concrete and then back filled.

f) A large opening provided for lowering the coaches through the openings was subsequently sealed with RCC slab and concrete and back filled.

The water was found to be flowing incessantly round the clock and in most of the places gushing in the form of jet. As such utilisation of cement as grouting material was out of the question. To tackle the situation "Expansive Aqua-Reactive Water Barrier and Grouting system known as Polygrout was found to be ideal.

Polygrout is a low viscosity liquid, which reacts with water in a controlled manner to form a swelling resilient adhesive solid. When impregnated under pressure into leaking structures and through the process of polymerisation, a permanent flexible water barrier is formed.