

Project No. and Title of the Project: SSP 37241: Field and numerical investigations to examine the load dispersal in the ROB foundation (BR 268A) due to the additional load from railway line

Client : Rail Vikas Nigam Limited (RVNL), Ranchi

RVNL, Ranchi has sponsored the project for Field and numerical investigations to examine the load dispersal in the ROB foundation (BR 268A) due to the additional load from railway line during movement of trains. During the field investigations, instrumentation on various parts of the bridge structure i.e., pile cap, pier 1 and rail, is carried out in order to evaluate the response under dynamic test cases conducted using the test train formation provided by RVNL. Instrumentation on the Pier-1 at three different locations to measure the axial and bending strain of the pier at different locations, and strain measurements in the pile cap, acceleration at different locations of the pile cap and pier-1 are carried out. It has been found from field investigations that the stress caused in the pile cap and pier-1 due to the movement of the train in 3rd line is not significant. Further, detailed finite element simulation studies are carried out to evaluate the structural response. Based on the field investigations and numerical studies, the recommendations are given to the sponsor.

Benefits to Client: The field and numerical investigations confirmed that the additional train loads from the adjacent railway line induce negligible stress in the ROB foundation. This assurance enabled the client to confidently permit the operation of 25T goods trains on the adjacent railway line.



Figure 1: General view of the bridge