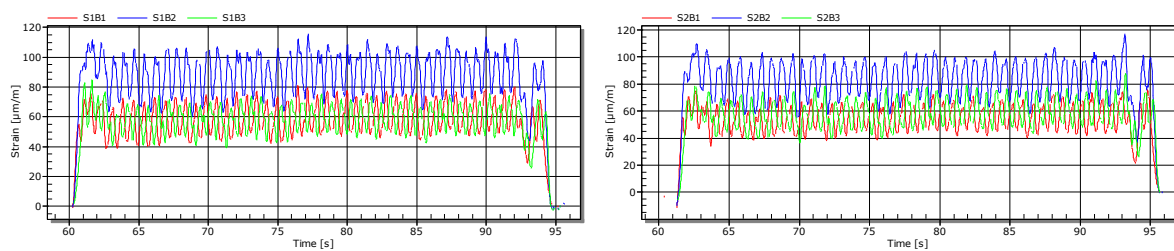


Investigations on structural adequacy of the selected super-structure spans of steel bridge in East Central Railway, Patna

Field investigations and numerical simulation studies are carried out on the super-structure of steel plate girder bridge (BR11) to evaluate the structural adequacy. During the field investigations, instrumentation on various parts of the super-structure, i.e., rail, I girder (flange and web), bearings is carried out in order to evaluate the response under static and dynamic test cases conducted using the test train formation provided by IRCON. Instrumentation on the I-girders is carried out to measure the displacement along the length of the girder at five critical locations and strain measurements are carried out at different locations across the depth of the girder. The numerical validation is thoroughly carried out using the results obtained from field investigation. Numerical simulation is carried out for response evaluation (both static and dynamic) of the super-structure. Based on the comprehensive field investigations and fully coupled through numerical simulation studies, critical observations and specific recommendations, if any, are made.



Figure Bridge super structure and test train formation



(a)

(b)

Figure Strain in the bottom flange for dynamic loading case 1 (75 kmph) in (a) Span-1 and (b) Span-2