

Archtec for Railroad Bridges

The strengthening, repair and stabilization of masonry railroad bridges

Archtec is an engineering process to strengthen and refurbish masonry arch bridges and structures. The process involves advanced numerical modelling of the bridge and simulation of the loading regime to specify a retrofitted reinforcing system. A computer model is used to determine the load carrying capacity of the bridge in its current condition.

Live loading is simulated to develop an optimum design for the retrofitted reinforcement. The reinforcement utilizes the CINTEC anchor which has been developed specifically for the ancient and often historically important masonry. The combination of discrete element analysis, numerical simulation, engineering and a unique anchoring system forms the innovative approach which ensures old bridges can be preserved and continue to function under existing loading the much increased loading demands of the railroad authority.

The ARCHTEC system can incorporate a variety of strengthening measures to improve the capacity and condition of masonry arches in general. With this in mind, the ARCHTEC system (including the modelling, simulation and analysis as part of the ARCHTEC design process), could include measures to strengthen against seismic shock. This can be included in the ARCHTEC design process. CINTEC anchors, as used in the ARCHTEC system, have been successfully tested for seismic performance and have been used to strengthen masonry structures in world earthquake zones.

The ARCHTEC method of strengthening and stabilizing bridges, offer engineering flexibility that reduces, or even eliminates bridge closures during the reinforcement work. The installation techniques are surgical and leave little evidence of structural invasion, in compliance with the policies and recommendations of Historical Restoration requirement.



Leaderfoot Viaduct



Teviot Viaduct



Outwood Viaduct