



<b>Client</b>	Carillion for Network Rail
<b>Project Description</b>	For this project Cass Hayward were engaged in a value engineering exercise to accelerate design progress and generate savings. The proposed new viaduct structure for the reconstruction of over-line arch OB 43 was amended to utilise only simple precast concrete portal units. This eliminated the requirement for the steel girders and piling. The steel for the viaduct had already been procured but Cass Hayward were able to reconfigure the design of another structure, underline bridge UB 57, to find another use for the material. A composite bridge was designed to provide an over-spanning solution at this location which was preferred to the original arch-widening design.
<b>Cass Hayward Role(s)</b>	<ul style="list-style-type: none"> <li>• Value Engineering study</li> <li>• Design of reconstructed underline bridge and over-line bridge</li> <li>• Design of new foundations for UB 57</li> <li>• Track / Structure interaction analysis for UB 57</li> <li>• Design of underpass for pedestrian / cyclists</li> </ul>
<b>Project Statistics</b>	<ul style="list-style-type: none"> <li>• Completed December 2010 – design period 9 weeks for OB 43</li> <li>• OB43 portal clear span of 12m &amp; skew of 41° providing minimum headroom of 5.0m</li> <li>• UB 57 square span of 21m over North Calder Water</li> </ul>
<b>Special Features</b>	<ul style="list-style-type: none"> <li>• OB43 slender design provided gauge clearance and allowed improvements to existing carriageway vertical alignment</li> <li>• Existing arch abutment to retain backfill on UB 57.</li> <li>• UB57 uses weathering steel to minimise maintenance</li> <li>• UB57 over-span design obviated need for land-take &amp; dewatering</li> <li>• UB57 new deck avoided difficult longitudinal site stitch for widening</li> </ul>