

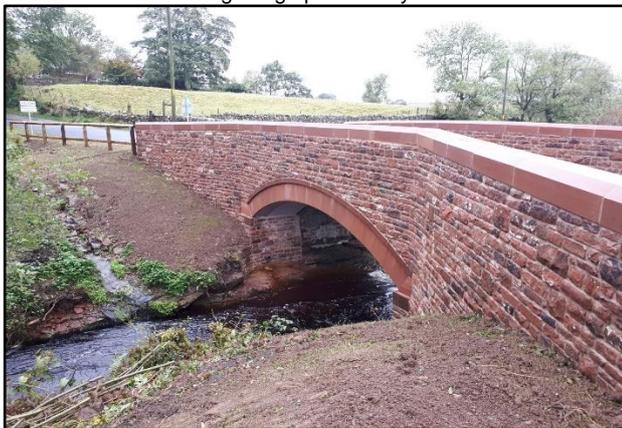
Widening of Hilton Beck Masonry Arch Bridge, Hilton nr
Appleby, Cumbria



Existing bridge prior to any works



New concrete saddle to the existing stone arch barrel



New bridge widening and stone masonry to wing walls/parapet



New surfacing and finishing to new bridge

Client: Cumbria County Council

Value: £260,000

Location: Appleby, Cumbria

Duration: 8 weeks

Project information

Design & Build of upstream widening of Hilton Beck masonry arch bridge near the village of Hilton in Cumbria. The structure was widened to reduce the likelihood of vehicles colliding and damaging the parapets, which is currently a regular occurrence. The highway over the structure consisted of a single 3.0m wide carriageway bordered by two raised hard verges a minimum of 600mm wide, the bridge was widened on its upstream (east) side keeping the bridge and carriageway approximately square to the water course. The widening was a single span precast concrete arch supported on masonry faced in-situ cast reinforced concrete spread footing bearing directly onto rock. The precast concrete arch followed a similar profile to the existing masonry arch barrel. Both the existing arch barrel and the proposed precast concrete arch are saddled with concrete to tie the existing and widened sections of the bridge together and allow the whole structure to act monolithically. The existing upstream spandrel wall and parapet were taken down to the extrados of the arch barrel voussoirs to allow the saddle to be continuous of the two arches. A new precast reinforced concrete spandrel wall was constructed on the upstream side of the bridge and faced in sandstone masonry to suit to masonry of the existing bridge. The downstream sandstone masonry parapet was reconstructed with an increased width and height of 400mm and 1050mm respectively, the upstream parapet is of similar mass masonry construction and of the same dimensions.

Sandstone masonry faced mass concrete wing walls provided at both ends of the bridge on the upstream side. The alignment of the north upstream wing wall behind the proposed north abutment widening is splayed to increase the potential sightline for vehicles turning left onto the bridge from the north side. The alignment of the south upstream wing wall behind the proposed south abutment widening is in line with the upstream spandrel wall. The parapets over the new wing walls are similar to the parapets over the bridge. The existing downstream wing walls were unmodified but backed in concrete. The parapets on the existing downstream wing walls were reconstructed as per the parapets over the bridge. Bird mouth fencing was amended to tie in with the existing fence and surfacing over the bridge to complete the structure and approach, then road markings, sign erection and verge soil on completion.