Abingdon Road is a main arterial route heading south from Oxford city centre to the Southern By-Pass. It is an old road requiring regular maintenance due to its heavy traffic loads. To ensure its ability to accommodate future traffic growth, a long-term solution was required.
Oxfordshire County Council decided to reconstruct a 2km length of the road. The team which designed and carried out the work consisted of the Babtie Group (now Jacobs) as designer, and Isis Accord Contractor, under their term maintenance agreement.

Advice was sought from Maccaferri by Babtie for assistance in the design of the new road pavement. The main challenge was to limit the depth of excavation while providing an adequately strong pavement. There were archaeological remains that had to be protected under the highway and also services at shallow depth which would have been extremely expensive to relocate to allow the full pavement reconstruction depth needed for a traditional design.

Maccaferri proposed the geocomposite material Colbond Enkagrid TRC at formation level, with a steel Maccaferri Roadmesh as deep as possible in the bituminous layers to give maximum structural benefit. Initially, a 350m section of the highway was reconstructed using the approach above, which has been considered for the purposes of this case study.

The main benefits from using the Enkagrid and Roadmesh geocomponents were:

- The construction depth of the pavement could be reduced by 350mm.
- It was possible to maintain the necessary strength of the road with a reduced thickness of bituminous layers.
- There was no need to relocate the near-surface services beneath the road alignment.
- The shallow archaeological remains were preserved.
The reconstruction of this 350m section of road yielded around 1,155 tonnes of waste materials. Using the geo-components for the road construction meant that it was possible to avoid removing a further 800 tonnes of material, due to the shallower excavation depth.

To remove 800 tonnes of waste would have required around 40 truck loads. For every 10 miles haul distance between the site and the disposal site, more than 1.2 tonnes of CO2 would have been produced.

It can be assumed that the reduced volume of waste material also saved the import of 800 tonnes of bituminous fill material, saving around 4 tonnes of CO2 that would have been embodied within the material.
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