

A41 Station Road Junction and Station Road Reconstruction, Buckinghamshire.

Project Profile

Client: HS2/Fusion JV

Designers: Stantec

Value: £6.5m



The Project required the complete reconstruction of 1.5 km of the existing Station Road carriageway and also to complete improvements to the existing priority junction of the A41 and Station Road, in order to cater for the increased traffic flows associated with HS2 construction work. The A41 carries traffic from Bicester to Aylesbury and Station Road serves the village of Quanton, with the access to the HS2 works site compound circa 1700m along Station Road.

The Junction Improvement Works involved widening the existing A41 carriageway, widening 50m of the Station Road southbound approach to the A41, providing a dedicated left turn lane improving junction capacity, installing 3 way traffic signals and amendment of the existing speed limit from Waddesdon to A41/Station Road to improve junction safety and proposed junction geometry.

Preliminary trial holes revealed a shallow 300mm dia Asbestos/Cement Thames Water Trunk Main was actually located below the proposed carriageway widening which required a concrete protection slab to be installed along the affected section of main.

Work included:

- The water main protection slab required careful excavation, preparation and construction of 52 no x 4.5m long x 1.3m wide x 0.25m thick in-situ mesh reinforced concrete slab sections, each with 4 x lifting eyes to allow for future removal.
- Existing HV, LV and BT (Fibre) were also diverted as an early activity.
- 500m of HB2 kerbs were installed to the new junction layout together with construction of 2 new splitter islands.
- 42 new gullies were installed including laterals connected to carrier drains or drainage ditches, 7 x type 2 chambers (concrete rectangular) and 5 x type 1 chambers (concrete circular).
- A 65m³ attenuation pond was constructed adjacent to the junction, topsoiled and fitted with a V-notch weir to control outfall flows.
- 4way and 2 way ducting plus inspection chambers for signal cables were installed along with NAL sockets for signal posts and a control cabinet. A Truckpave hardstanding area and a 10m section of footpath completed these works.
- Surfacing consisted of 50mm plane out, selected areas of regulating followed by 50mm inlay using HRA 14/35 with pre coated chippings over a total area of 2,150m².
- 90m of Station Road and the junction resurfacing were reinforced with Tensar AX5 GN paving geo-composite for crack control.
- 4m and 6m traffic signal heads were installed plus advanced roadside signage, loops, road markings and studs.
- The works were completed using temporary traffic light control
- Vibration and noise constraints due to the proximity of local property required use of dead weight rollers only and acoustic fencing being installed during the work.
- During the scheme the site team of Duncan Brooks, John Venn and Dereck Barrow were pleased to win the Fusion October 21 Award for Safety..



A41 Station Road Junction and Station Road Reconstruction, Buckinghamshire (Cont'd).

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Station Road Reconstruction involved upgrading and re-surfacing of 1,485m of the existing country lane linking the A41 with Quanton village as far as the location of the HS2 site access, in order to accommodate the unrestricted two-way movement of vehicles and HGV's servicing HS2 construction works.

The carriageway reconstruction provided a new 5.7m wide carriageway with the additional provision of passing laybys located approximately every 200m, subject to constraints provided by the highway boundary and existing features such as established hedgerows and linear field ditches.

Main work consisted of:

- 6 x Passing bays installed on the southbound carriageway, length 26m to 50m and 0.8m wide. The construction detail required excavation to 650mm below FRL, 420mm type 1, 120mm base tarmac, 80mm of binder and 45mm of surface course. Any CBR tests showing poorer quality ground conditions required a layer of Tensar Triax 7 to be installed at formation. HB2 kerbs were installed to all passing bays.
- 41 KOGS – Drainage outlet kerbs which consisted of 2 drop kerbs plus 1 drainage kerb with lateral connections positioned to outfall to existing ditches or carrier pipes, concrete filled hessian bags were used to form the outfall headwalls.
- 7,000m² of asphalt resurfacing completed using 2 different options dependant on the failure condition of the existing road.
 - ◇ Option 1. Plane out 80mm of existing surfacing and install regulating layer, place Tensar AX5 GN asphalt interlayer reinforcement, 80 - 350mm AC20 binder and 45mm HRA surface course to create new design levels
 - ◇ Option 2. Plane out full depth to sub-base, install 50mm to 120mm regulating layer as required, Tensar A%5 GN reinforcement layer, 80 - 350mm AC20 binder and 45mm HRA surface course to create new design levels.
- Signage, road markings and landscaping to verges completed the carriageway upgrade.
- The majority of work had to be completed under night time closures to allow access for HS2 vehicles during the day. All excavations had to be fully backfilled and Station Road opened to the general public at weekends.
- Site flooding was a significant problem during the work, causing substantial delay, due to poorly maintained drainage ditches and outfalls together with significant overland surface water flow from adjacent fields flow during rainfall.
- A vibration limit of 10mm/s was set during the work due to the proximity of the asbestos/cement Thames Water Trunk Main that fed 800 local homes.

