National Emergency Area Retrofit ("NEAR") Schemes: West Midlands M5 Junction 4a to Junction 6

Project Profile

Client: National Highways / bmJV

Designers: WSP / Jacobs

Date: May '24 to March '25

Value: £26m

Late in 2023 Forkers Ltd were appointed by BAM/Morgan Sindall Joint Venture (bmJV) on behalf of National Highways to deliver the drainage and earthworks packages for 36no. brand new Emergency Areas along the M1 and M5 smart motorways in the midlands. The works undertaken would start on site in May 2024 and would need to be completed by March 2025 as part of National Highways' National Emergency Area Retrofit, (or "NEAR") programme of works. Our role in the works on the M5 was to aid the construction of 10no. new emergency areas installed between J4a and J6 of the M5 on both sides of the carriageway. Three of the new ERA's would be installed on newly constructed embankments, three new ERA's would be installed on new embankments with a retaining sheet pile wall, three new ERA's would be at grade and 1 new ERA would be in a cutting. Only one bay on this scheme had a grasscrete parking area.

After constructing the compound, we started construction on site at the piling platform locations as these had the longest programme. Following a full topsoil strip within the area, a 25t zero-tail excavator with GPS control was used to complete the bulk cut/ excavation exercise, with a second (and sometimes a third machine on the bigger embankments) throwing up the muck to wagons occupying lane 1 behind TVRS. Rigid 8-wheel tipper wagons were used on dayworks to remove the excavated material which would be sent away from site for beneficial reuse offsite. In some areas the material classification confirmed that the excavated material was suitable for reuse, and this excavated material was used in the construction of other embankments on site as appropriate.

Once excavated to formation, drainage and ducting to the rear of the bay was installed where required. Alongside the new drainage and ducting installation, site clearance was carried out within the bay – some existing drainage had been retained during the excavation works to ensure a dry working area, and this could now be diverted into the newly installed drainage.

With drainage routes around the back of the bay installed and established, the surcharge on the formation was removed and testing was completed, then the fill operation commenced using recycled 6N or recycled 1A as stated on the design. For the piling platforms, Tensar 520 was used at 500mm intervals to ensure bank stability during the piling operation. Compaction in accordance with Table 6/4 of the SHW Series 600 was completed during the fill exercise and was tested in accordance with Table 6/1.

On completion of the fill exercise, drainage within the bay could be installed and connected through to the back-of-bay drainage. This included a large-diameter attenuation pipe, a flow control chamber with orifice plate and overflow, and in some cases a pollution control chamber with penstock.

National Emergency Area Retrofit ("NEAR") Schemes: West Midlands M5 Junction 4a to Junction 6 (Continued)

Project Profile

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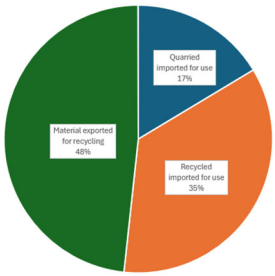
With all drainage and earthworks complete, the roadbox would be constructed next. Due to quality risks, quarried stone was preferred within the roadbox. Combined kerb drain units were installed and tied into the new drainage, as well as NFD which was installed beneath. In locations where the bay sloped toward the carriageway, standard splayed kerbs would be used and slot drain installed at the interface of the bay and lane 1.

Other subcontractors for bmJV would then take over the area to plane-off and install surfacing to the bay. High friction surfacing was then installed by others. Other works completed by others toward the end of the construction phase includes the connection of the ducting to the existing network, installation of sign posts and faces, maintenance footpaths, fencing, handrailing, VRS and electrical works/commissioning.

LA 110 Compliance



Overall on the scheme we have installed 40,000 tonnes of imported aggregates, and mucked-away 30,000 tonnes of site-won material to recycling facilities for beneficial reuse. The scheme achieved a total of 82% of recycled materials usage by weight.

We have also installed 1.5km of new drainage (225mm — 900mm dia, both filter and carrier), 62no. chambers varying is size from 1050mm to 2100mm diameter, and depth varying from 1.2m to 4.5m. We have installed 900 l/m of kerb drain units and 90 l/m of slot drain. We have completed HADDMS surveys for all newly installed assets, plus 100m of existing drainage network which will be impacted by the new emergency areas. Defects that are significant (grade 4/5) would be rectified after completion.