

Sea defences, Marine Parade, Dawlish, Devon

Project case study



Product

A range of specialist ready-mixed concretes

Volume

Approx 16,000m³ to date, including 8,500m³ low carbon concrete

Client

BAM Nuttall, working for Network Rail

Overview

Hanson has supplied a range of complex concrete mixes to BAM Nuttall to deliver vital coastal protection works at Marine Parade, Dawlish, Devon. The existing sea defence along this stretch of coast had been eroding to the point of failure, threatening the main railway route into the south west. The new sea wall will protect the line and nearby houses as well as improving safety for pedestrians.

Project description

The Great Western Main Line is the only railway line running to the south west of England and is vital for transport, tourism and freight movements. Following a collapse of part of the sea wall in 2014 due to storm wave damage, several other sections in this region were identified as needing urgent repair. As a result, Hanson, working with main contractor BAM Nuttall, has designed, developed and delivered a range of specialist concrete mixes to restore and protect this key rail route.

The work to extend an 800-metre stretch of Marine Parade in Dawlish involved extending the sea wall to protect the railway behind it, re-working its pathway and building a beach access ramp.

To meet the customer's needs, the

Hanson team designed a number of bespoke mixes, which included a low carbon, pumpable concrete. This used Regen GGBS (ground granulated blastfurnace slag) to help improve sustainability credentials while maintaining durability in aggressive conditions.

Jack Brookes, site agent, BAM Nuttall, said: "From the earliest phase of this project, we have considered how this scheme can limit its environmental impact without compromising the strength and resilience of the structure. The final design uses piles buried deep in the bedrock to create stability for the structure. Those piles are protected by prefabricated facing panels created off-site and reinforced by concrete poured in behind the visible section of wall. "We identified Hanson's low carbon concrete as an innovative

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Infrastructure renewal



product that could help us to reduce our carbon impact by two-thirds while retaining the strength of traditional concrete. We worked closely with Network Rail to ensure that the material is approved for use on Britain's railway and look forward to seeing it being used in more major civil engineering schemes."

To date, the project has used 8,500m³ of low carbon concrete, with at least another 2,000m³ remaining to pour. In total, its use will save 1,300 tonnes of CO₂ from entering the atmosphere in comparison to traditional concrete – the equivalent of 1,300 return flights from London to New York and back.

In the first phase of the project Hanson

supplied 6,000m³ of ready-mixed concrete for the works, which involved pouring concrete foundations on the sea front to house a precast nib section. A separate precast facing panel sits in the nib, tied to the existing wall behind. The void between the existing wall and facing panels was then infilled with ready-mixed concrete before a paving concrete was laid on top to create a new, widened pedestrian walkway.

"In addition to the specialised mixes, we stepped in to create a colour matched solution to help BAM Nuttall make some precast facing panels when the original supplier experienced issues due to Covid-19," said David Cullimore, area general manager for Hanson Concrete.

"Working in partnership with BAM Nuttall, we also frequently overcame difficult logistical, technical and operational challenges created by pouring large amounts of high specification concrete up to 200 metres through the night in very short tidal windows."

Jack Brookes added: "The team at Hanson demonstrated high levels of professionalism and commitment during the project, consistently going above and beyond what was expected.

"The design called for several complex mixes – often needed within only a few days – and the company's quick turnaround on mix designs and technical support allowed us to stay on schedule."

