

PREMIUM HARDSTANDING WITH LESS STEEL FOR QUALITY-LED BUSINESS PARK

Danley helps customers avoid the rising cost of steel with innovative reinforcement method.

During phase one of the new Hillthorn Business Park in Washington, Northeast England, the main contractor, GMI Construction, was tasked with reducing material costs in what was a premium-grade commercial development.

When finished, the site will house circa 582,000 sqm of the highest quality industrial buildings in a prime location, providing the local economy with 11 units ranging in size from 21,550 – 124,250 sqm.

Like many large-scale commercial developments, the contractors tasked with constructing Hillthorn Business Park were keen to reduce the project's reliance on raw materials, to keep costs low and sustainability front and centre. Steel is a prime example of this, so when it came to specifying a 18,650 sqm hardstanding, specialist flooring provider Advanced Flooring Solutions was tasked with finding a solution that would deliver a premium hardstanding that used minimal steel.



To meet the criteria of less steel, Jim Gallagher from Advanced Flooring Solutions knew that he needed an alternative to the mesh reinforcement used by traditional concrete flooring systems.

Jim explains:

"The Danley Reinforcement Design™ eradicates traditional mesh reinforcement and replaces it with support at the joints, for faster installation, reduced material requirement and a performance-engineered finished result."

"Having used this system before, we'd experienced firsthand the significant reduction in steel and concrete that can be achieved, and more importantly, the difference this makes to cost and carbon emissions."



Strategic Reinforcement™ Design Danley® PD3® Dowel Cradles Danley® Dowels

Project information

- Client: Hillthorn Business Park
- Project: Hillthorn Business Park
- Location: Washinton, Northeast England
- Concrete Hardstanding Area: 10500m²
- Main Contractor: GMI Construction
- Design Slab Engineer: Adept Consulting Engineers Ltd
- Concrete Contractor: Advanced Flooring Solutions
- Completion Date: August 2023

Danley's Services

- Technical design support to the engineer
- On-site installation training and guidance on best practices for quality assurance
- Danley® design warranty

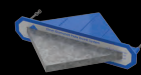


Danley® Strategic Reinforcement™ Design

- 165mm PAV2 C32/40 Concrete Slab
- No steel reinforcing mesh
- PD3® Dowel Cradles at contraction joints
- Danley® Dowels at construction joints
- Joints spaced at 4.2m x 4.2m



Danley PD3 Cradle™



Danley™ Dowels

Original Design:

- 200mm PAV2 C32/40 Concrete Slab
- Single layer of A142 mesh
- H12mm x 600mm dowelled construction joints at 300 c/c spacings.
- Joints spaced 4.3m x 6m



(1) Danley PD3 Cradle™ (2) Danley™ Dowels

Instead of a centralised steel support, the Danley Reinforcement Design™ uses tapered plate dowel technology to support the joints, preventing common forms of deterioration such as joint spalling and random cracking. By better managing the typical behaviour of concrete, performance is improved and downtime is kept minimal.

Tasked with reducing material dependency, especially the use of steel, GMI Construction completed the project at Hillthorn Business Park using 18% less concrete, and an impressive 49% less steel. These material savings translated to an overall cost saving on the hardstanding of 7% and a material carbon saving of 18%. In addition to these savings, the customer is set to benefit from a hardstanding that is durable, fit for purpose and easy to maintain.

The Strategic Reinforcement™ Design complies with Concrete Society TR66 Rev 1: External in-situ Concrete Paving, ACI 330.2R-17: Guide for the Design and Construction of Concrete Site Paving for Industrial and Trucking Facilities and ACI 360-R-10: Guide to Design of Slabs-on-Ground.