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mezzanine floors

YOUR PLATFORM FOR FUTURE GROWTH

Case Study

Birmingham Project for MacDermid Industrial Solutions



MacDermid UK is located in Birmingham at the heart of the global metal finishing industry. Their 9,000m facility houses the R&D, process demonstration, customer service laboratories and manufacturing departments. This enables us to meet the needs of our customers by developing, testing, servicing and supplying our products from one location.



McDermid Canning needed to create an additional production facility for the manufacture of a new range of automotive chemical products, which required a major new chemical mixing facility and quality testing laboratory on their existing site. The main mezzanine level at 4.2 metres high accommodates control equipment, chemical inflow into 11 no large mixing tanks and a laboratory and office complex.

An upper walkway at 6.9 metres high extends the entire length of the platform, providing access to all high level services as well as suspended services support and control equipment mounting.

The chemical tanks are ground-floor standing but pass through the durbar steel deck surface at plant platform level, where a "no loss" standard is rigidly maintained by the use of fully welded deck plates and perimeter toeboards, with a special resin coating to the deck to create a fully "tanked" surface. A special sump was created directly beneath the upper walkway as an added safeguard to catch any spillages when servicing pipes, valves and hoses etc.



A wide range of load capacities were required across the various floor areas and levels, from lightweight office, to large flow pipes, to 1200 Kgs pallets of raw materials which are used in the mixing tanks.

DESIGN

- Platform Size : 42.7m x 6.5m (maximum dimensions) with cut-outs for various tanks as indicated on the drawing noted above to give net area of 272m². Also 2 No IBC platforms 1.3m x 1.3m and 5 No double IBC platforms 2.65m x 1.3m giving a total area of 20.6m².
- Column Grid : As shown on the drawing with a typical grid of 4.5m x 4.3m. The steelwork is extended such that the columns to the floor are positioned adjacent to the QC mezzanine. The decking finishes 2.5m from the QC mezzanine, but the steelwork is designed such that the platform can be extended at a later date.
- Height : Topside of steelwork at mezzanine floor level = 4.275m with the IBC support platforms 900mm above the deck level.
- Construction Depth : A maximum of 319mm (309mm steelwork and 8mm thick plain plate decking).
- Decking : 8mm thick plain plate supplied unfinished to allow site welding of the plates.
- Base Plates : 300 x 300 x 12 thick base plates

Loads : Imposed load (stated) – 8.33 kN/m² U.D.L to the front 1,2m of the floor with
: Imposed load (stated) – 4.8 kN/m² U.D.L to the remainder of the floor.
: Dead load (mezzanine self weight) – 0.8 kN/m² U.D.L plus
: Service load – 0.0 kN/m² U.D.L

Deflection : All steel members have been designed with a maximum deflection of L/500.

