



Kiln Farm 7 Special Units

For Milton Keynes Development Corporation

The Corporation required the site on Kiln Farm to be developed with four single storey special units as part of its programme of Advanced Factory Units in Milton Keynes. The brief called for units of a high standard to attract and accommodate high technology, scientific and electronic light industrial users, with an appearance more akin to an office than a factory development.

The units stand as four pavilions in a parkland setting, with a car parking and vehicle access along their front elevation and Abbey Hill Golf Course to the rear. With two lawns between the units, the formal landscaping around the buildings contrasts with their informal setting.

The design intention is to achieve a consistent group of buildings carefully proportioned, with a close attention to detail. The structural steel frame to the units has been expressed externally, with exposed fascia beams and columns fabricated to exacting standards. The grey tinted window wall is set back from the perimeter, contrasting with the white steel frame.

A 10.5m x 10.5m structural grid is used throughout with units of the following dimensions:

Unit 1	—	52.5m x 42.0m
Units 2 & 3	—	52.5m x 31.5m each
Unit 4	—	10.5m x 52.5m with an internal courtyard 10.5m x 10.5m

Each unit has an entrance porte cochere covering an area 9.0m x 4.5m. Fitting-out is to be carried out by the tenants; however each unit has a fully-finished reception and service core.

Each building has a steel frame approximately 3.8m high but founded at different levels. The structure consists of 457 x 191 x 89 Kg UB main beams internally spanning between 203 x 203 x 46 Kg UC columns in one direction at 10.5m centres, which carry 203 x 133 x 25 Kg tertiary beams at 3.5m centres. These in turn support 127 x 76 x 13.4 Kg RSJ purlins at approximately 1.75m centres on appropriate packing to form a one-way fall in the metal deck roofing to gutters at 10.5m centres. Around the perimeter 750mm x 250mm fabricated fascia channels span 10.5m between 250mm square fabricated box columns positioned 1.5m outside the glazing line. Penthouses in the roof of each unit are formed from 1.3m deep fully wedged Vierendeel frames with verticals at 875mm centres, using 114mm x 114mm RSJ members throughout. The porte cocheres are supported on four columns outside the building, and from hangers connected to the 750mm x 250mm fascia beam over the main entrance. The columns are 150mm square fabricated box members. They support 400mm x 150mm fabricated channel fascia beams on all four sides. The roof is supported on joists at levels to provide a crossfall to gutters on the long sides, with rainwater downpipes inside the four columns. The roof deck and internal steelwork are designed to allow for differential movement. The external fascia beams use bearing pads with slotted connections to the joists adjacent to and parallel with the fascia beams. In addition the fascia beams have movement joints on one side of each column support to limit the extent of the differential movement and the effect of the total movement on the supporting columns and perimeter glazing. PSC bearing pads are used for horizontal joints with Orket pads at vertical movement joints. The joints in the fascia channels are sealed with Neofoma gaskets.

General stability of the building is provided by plan bracing on the roof transmitting lateral forces to the columns which cantilever from the mass concrete foundations. Simple bolted connections are therefore used throughout. The steelwork is exposed both internally and externally, the finish and alignment of fascia beams and box columns being particularly important. To accommodate fabrication and erection tolerances, slotted and oversized holes were provided with suitable packing plates.

Grade 43A steel is used throughout. Thick plates were tested for lamination at the mills. All butt welds were inspected at works using ultrasonic testing. Spot tests were carried out on fillet welds using both ultrasonic and magnetic particle inspection techniques.

All steelwork was required to have a life to first maintenance of 10 to 15 years; abrasive blasting to BS 4232 2nd Quality, and works and site coatings using high build epoxy zinc phosphate, were therefore used. The coatings were fully inspected at works and on site to check that the specified standard of protection was achieved and in particular that damaged areas were effectively repaired.

The units were built by Higgs & Hill Building Limited, and were completed in November 1985, to a contract value of approximately £2.5M, with a steelwork value of approximately £0.5M.

Architects: Building Directorate, Milton Keynes Development Corporation

Structural Engineers: F J Samuely and Partners

Steelwork Contractors: Octavius Atkinson and Sons Ltd.

Judges' comments:

Excellent detailing and fabrication of the structural steel frame are major contributions to the success of this simple, but well designed building, which merges the old distinctions between office and workshop activities.