



## Inmos Fab II, Newport, Gwent

For Inmos (UK) Ltd

The project, funded through the Government sponsored National Enterprise Board, consists of a micro-chip fabrication plant, together with the associated administrative, and research and development facilities. The nature of the process calls for an exceptional quality of environment necessitating a building of high service intensity. Furthermore, the building has to have sufficient flexibility to incorporate the Client's requirements in respect of the ever changing micro-technological processes.

The prime constraints on the structural concept were the provision of a column free area for total internal flexibility with capability for sustaining the loads induced by the high service intensity. To minimise the distribution runs as far as the services were concerned, the formation of a central spine was thought to be essential. Taking into consideration the magnitude of the plant loads it was felt that this central spine should contribute to the support of the main roof. This approach was developed into the final concept of a multi-level central spine off which a single storey clear span structure is hung from each side forming an 'umbrella' for all activities. The 'umbrella', in the form of a deep lattice roof structure, provides the zone for the distribution of the necessary ductwork.

The superstructure has been designed in structural steelwork, to take advantage of off-site fabrication and the speed of erection to expedite construction. The spine columns, on a 4.8 metre x 13.2 metre grid, are of circular hollow sections with pin connections and cross bracing in both vertical planes for stability. Tension hangers from the top of the spine columns provide secondary support to the 38.00 metre span primary lattice girders, and limit associated deflection. Secondary lattice girders at 6.00 metre centres span between the primary girders, in turn supporting the tertiary level steel grid upon which the profiled steel deck is laid. Fixing cleats and stud connections are provided at predetermined positions, on a regular pattern, to provide secondary support for the ductwork. The maximum number of repetitive structural elements are used so as to reduce fabrication time and simplify construction on site. The linear nature of the structure allows for the sequential overlapping of sub-structure and superstructure followed by the cladding and the service fitting out.

The entire project of 9000 square metres was completed within fifteen months at an approximate cost of £9,000,000, both the time and cost being within programme and budget defined at the commencement of the project. A Management Contractor was appointed to co-ordinate the numerous sub-contractors necessary to the completion of a project of this nature.

**Architects:** Richard Rogers and Partners Limited  
**Structural Engineers:** Anthony Hunt Associates  
**Steelwork Contractor:** Tubeworkers Ltd.



### Judges' comments

An excellent example of the use of structural steel erected rapidly with precision. The unusual design, housing high technology equipment and meeting exacting requirements for services, gives the client the flexibility he needs for his process and for the future.