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## Car Park, Buildings 4 & 5 Longwalk, Stockley Park

*Client Developer: BP Properties Ltd*

*Architects: Broadway Malyan Architects & Broadway Malyan Landscape Ltd*

*Structural Engineer: Ove Arup & Partners*

*Steelwork Contractor: Dyer (Structural Steelwork) Ltd*

*Main Contractor: Try Construction Ltd*

Stockley Park is a business park with high quality established landscape and buildings. When BP sub-leased their two buildings to BT, part of the agreement required BP to provide additional car parking. An extra 170 spaces were required quickly on a site that was already intensively developed or designated Greenbelt. Stockley Park was created on a disused land-fill site and the car park had to take into account ground conditions which included a methane control bund. Low, easy maintenance was a design requirement, along with durable, good quality products and ease of access for building monitoring and repair. The design also had to fit into the existing landscape and, because of the time constraints, win the support of the planning authority from the outset.

The clear span deck proved to be the most elegant solution in the exceptionally tight space. It minimised foundations and the need for groundwork in the contaminated area, and reduced the impact on existing live services and established mature landscaping while providing a pure net gain in parking spaces. Steel was chosen as the frame material, being the 'least risk' option that could be designed, detailed, procured, fabricated and erected in the time available. The new structure was built to match the falls of the existing site, eliminating any cut and fill into the contaminated ground and methane bund. Problems of working in a contaminated environment and transporting potentially noxious material to a new site were thus avoided.

The tight construction deadline was met through the use of standard components allowing off-site fabrication

and removing uncertainties due to winter weather conditions. The deck structure comprises steel portal frames made of tapered I section plate girders, shaped to provide falls and supported on tubular legs and tie rods. The frame supports pre-cast concrete and glass deck panels, chosen for their low-weight, thinness and ability to transmit light. The structural sections could therefore be as slender as possible and of minimum height, reducing the access ramp length - an essential requirement on a confined site.

Piled foundations were used where suitable and sleeved to maintain the seal where the construction straddled the methane control bund. Stainless steel wire and tube sections, combined with powder-coated aluminium plate, were used for the architectural metalwork. The open design improves safety by enhanced light levels and improved all-round observation.

The novel building design also enabled the planning authority to relax structural fire protection requirements, which assisted in speeding up the construction. Recent building regulation changes acknowledge the low fire risk aspects of open-sided car parks in terms of 'relevant boundaries', which enabled the deck to be located close to the existing buildings. The main plate girder portals, which project below the soffit of the deck like ribs, would form reservoirs and channel smoke to the perimeter, close to the source of the fire, enabling users to recognise the location of the fire and escape in the opposite direction.



*A delightfully detailed structure which creates new standards for the appearance of deck car-parking. Designed and built under considerable time pressure and site constraints, it provides the supplementary parking required by a demanding brief and enhances the environment.*