

MAZDA DEALERSHIP & CAR STACKING TOWER



Client: Hodgson/Autopod
Project Value: Undisclosed
Project Details: Construction of a new showroom and workshop building with an eight level car display tower and integral vehicle lift.

The project comprised a 7,500ft² first floor showroom and 7,500ft² ground floor workshop with extensive external areas. The project also incorporated an innovative eight level 'car tower'. The project was constructed on a site with a strategic Northumbrian Water 'interceptor sewer' flowing 8m below, this created no build zone that conflicted with the proposed site layout and building position. The presence of the strategic sewer created a challenge in that the tunnel, at 8m depth, could not be surcharged thus creating an excessive stand-off distance for conventional foundations. A piled design was adopted so that the foundations could transfer the load of the building to the ground below the sewer, in addition the building was cantilevered over the pipe location. The design involved liaising with the Architect, Client, M&E designer and Contractor, several workshop equipment suppliers also had discrete requirements to be incorporated into the civil and structural design.

The car display tower required Portland to work closely with the German manufacturer to prove compliance with UK regulations and design adequate foundations that met the strict requirements for settlement, both overall and differential. The vehicle lift within the tower also provided access for the display vehicles on the first floor showroom. A comprehensive coordination exercise was required at the interface of the two structures in relation to differential movement.

As part of the approval process to build over the sewer, a comprehensive survey exercise was undertaken to accurately determine its position. Initially tunnelling records were obtained along with archive information in relation the access chambers. By coordinating with Northumbrian Water we were able to agree access to the Tunnel by controlling flows at the main pumping station. This allowed a confined space team to survey the internal faces of the tunnel and establish its condition and record its co-ordinates. This allowed the design of the foundations to be undertaken with the piles positioned in relation to the tunnel structure. The building footprint overlapped with the tunnel position and therefore it was agreed that a cantilevered substructure would be used to ensure that agreement to build over was obtained by preventing loads being transferred to the tunnel structure.

