The Ultra Guideway

The Ultra guideway consists of any flat, drivable surface with 25cm (10") kerbs that are used for optical navigation. The guideway is entirely passive, with no mechanical elements or power systems. This allows for tremendous flexibility in the design and visual appearance of both the guideway and stations. The current guideway used by Ultra at London Heathrow has been designed in conjunction with world renowned civil engineers.

The guideway can be constructed of different materials to suit the particular application, examples include steel with pre-cast concrete plank, fibreglass grid floor or simple concrete base with either concrete or plastic kerbs at ground or floor level.

Minimization of visual intrusion was an intrinsic design goal for the Ultra system. By focusing on this from the start of the project, Ultra PRT has created a system featuring the slender guideway design - only 45cm (17in) deep - seen in the photograph below. For elevated guideway, columns are typically spaced 18 metres apart, although this can be varied depending on the site specifics.

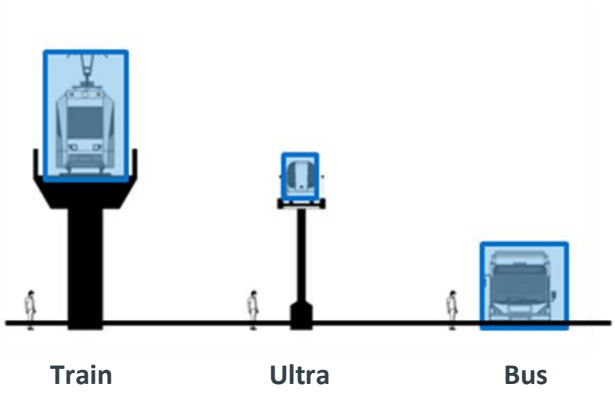

Figure 1: Ultra guideway takes up far less space than other forms of transport

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This design ensures the guideway provides a low impact profile in the most typical view, from the side, and it is of lightweight construction due to the low overall loading requirement; British Standard for a footpath is 5000Pa, Ultra loading is only 2200Pa.

This low loading requirement is possible because the guideway is designed to meet requirements for a PRT system, and not those set out in design codes for footbridges and similar structures. Recognition of the fact that the elevated structure does not need to meet design cases for pedestrian crush loads enables a lighter, lower cost and visually more attractive design to be offered, and also allows the lightweight Ultra vehicles to run on existing building floors without the need for structural alteration.

The Ultra PRT system allows for customization of (each section of) the guideway to achieve a natural fit with the environment. Typically a PRT system will be build up of multiple (intersecting) single lane loops. Depending on the area of operation, a section of a loop could be constructed elevated, at grade, or below ground. The network is able to penetrate built-up areas more closely than the larger-scale public transport.

Adding additional stations to improve system accessibility, by reducing walking distances to the service, does not affect speed or capacity of the other parts of the system as the stations as always located off the main line, and can thus be bypassed by vehicles bound for other destinations.

Finally, systems are engineered to maximize safety and reliability performance, but must be designed to cope with emergency situations where the vehicle has stopped. In all circumstances it is preferable to recover the passengers within the vehicle; however the possibility of passenger evacuation must be taken into account. On elevated systems it is possible with Ultra PRT to use a front escape hatch to access the guideway in the worst case scenario.