

Cycle Hire Inset Platform Foundation Solution

Revision C

1. Purpose of this Note

This note provides information about alternative foundation solutions which need to be used in place of the approved standard foundations at the Westfield Cycle Hire docking stations.

The alternative foundations are based on a 'platform' type foundation structure to enable a docking station to be installed with nil or minimal digging. They provide an alternative to the standard foundation designs for use where the standard design cannot adequately accommodate the position of roots of sensitive trees and/ or shallow underground structures such as cellars, statutory undertakers' services or London Underground infrastructure.

This note should be read in conjunction with drawings CHS_I_1 Rev D and CHS_I_2 Rev D.

2. Background

The Cycle Hire Scheme was launched within Central London, in summer 2010. An expansion to the existing scheme is currently under construction and due to launch on 8 March 2012. The Scheme allows people to hire a bicycle from a docking station, use it as desired, and return it to either the same or another docking station. Within the Scheme area, approximately 580 docking stations located every 300 – 500 metres are required.

Each docking station comprises a terminal and docking points (the 'street furniture'). The terminal controls the locking and release of Scheme bicycles, enables payment of subscription fees and user tariffs, and provides way-finding mapping and information about the local area, including the location of other docking stations. The docking points will each secure one bicycle when docked.

In a limited number of locations, the standard foundation designs cannot adequately accommodate shallow underground structures such as cellars and statutory undertakers' services. In addition, an alternative foundation solution is required where borough tree officers consider that the standard foundations are likely to have an unacceptable impact on trees, which cannot be dealt with by special construction methodologies. As a result these sites either cannot be constructed or can only be part constructed - so are unviable.

Accordingly, alternative foundation options have been developed which remove or minimise the need to excavate. This note provides further information on the inset foundation.

3. Inset platform foundations

a) Design

The inset platform foundation is designed to allow installations at sites where there is shallow access below the surface. It provides a flush finish between the top of the platform and surrounding surface and an inconspicuous variation to the standard design.

Platforms will be fabricated from structural steel. Steel plates (maximum 500mm width) will be mounted on two steel beams and lateral supports, which in turn are mounted on a larger steel plate (800mm width) (Figures 1 and 2). Rods fixed to the base plate provide the fixing for the street furniture to be bolted to the platform. The cable ducting is housed within a ducting channel within the structure.

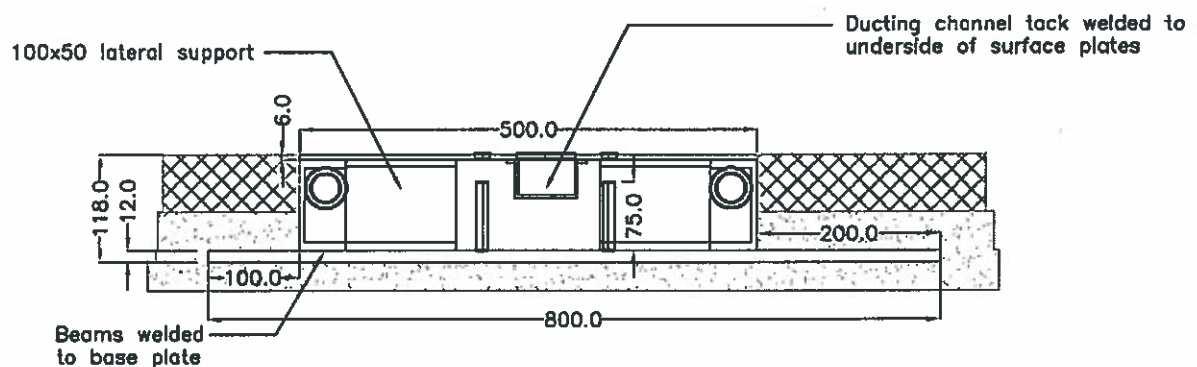


Figure 1: Cross section showing foundation inset into pavement surface



Figure 2: Prototype of inset platform. Colour of finish is correct, but a different paint system has now been selected

The inset platform is designed to sit flush with the existing surface (Figures 3 and 4). The platform has an overall depth of 118mm, although it may be necessary to remove approximately 150mm of material, usually comprising surface materials and bedding course (sand), to provide a stable base for the platform.

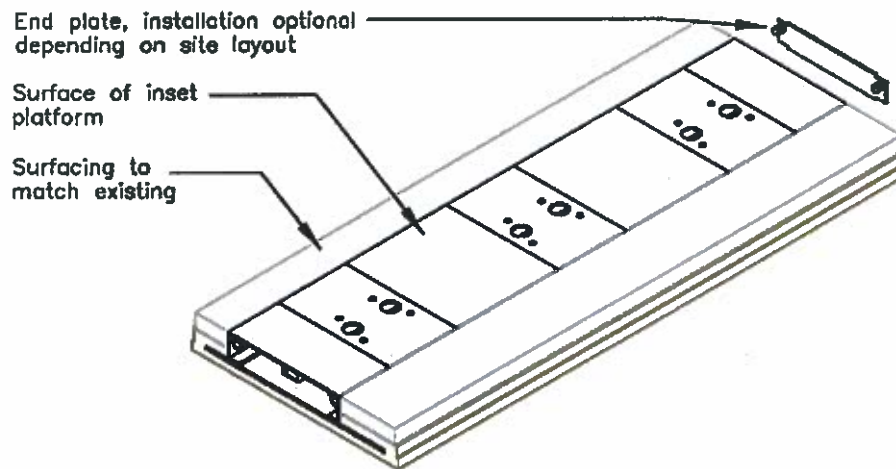


Figure 3: Isometric diagram showing insert foundation design



Figure 4: Mock up installation in four different pavement types- clockwise from top: tarmacadam, granite setts, concrete pavers, York stone pavers. Note that the pavements

are newly laid so the tarmac will weather lighter and the pavers darker. The platform is the correct colour but a different paint system has now been selected.

Each platform will be fabricated in lengths of 3 metres (for four docking points), 2.25 metres (for three docking points) and 1.5 metres (for two docking points) to allow for maximum utilisation of available space on site. The docking points will be bolted to the platform.

The inset platform has no foundations. However as noted above, it requires a level and stable bedding course, which may require excavation of up to 150mm. It is unlikely that excavation will be needed below the existing bedding course and therefore, there are limited arboricultural impacts associated with this solution. The platform still requires a power supply and connection to an EDF feeder pillar and this is discussed in section 4.

Figure 5 illustrates the use of the inset platform on a site above an underground car park.



Figure 5: Photomontage of inset solution above an underground car park. The platform has been coloured black to show the visible extent of the platform

b) Materials and finishes

The platforms will be constructed from structural steel finished with Dacrylate Margard Easyclean AFP Finish, a durable, corrosion resistant primer and paint system with good substrate adhesion. The system has good colour fastness and resistance to most graffiti, gum and adhesives. The surface is textured which will provide good slip resistance for pedestrians and users of the Scheme. The use of a textured finish will be sympathetic to the surrounding materials and will wear better over time.

In terms of colour, docking stations are located on sites with a wide variety of surfaces including brick, natural granite, York stones and stone mastic macadams surfaces - all change colour in wet and dry conditions, over time and with wear. A neutral mid grey Colour RAL 7000 (75% grey in a Satin course finish) has been selected to avoid problems of achieving an appropriate match of the finished steel surface with the surrounding pavements. This colour will be unobtrusive, reinforce the overall design identity of the docking stations and be complementary to the range of surface materials currently used in London.

This paint system has been selected in close consultation with Transport for London's design standards team who have extensive experience in the development and maintenance of street furniture in the London street context. This specialist paint product is used by London Underground, London Buses and a number of boroughs (including the City of Westminster). It has proved to be robust in the London context and is thus considered suitable for use on the Cycle Hire foundation platforms.

The preventative and reactive cleaning and maintenance regimes for the docking stations will also apply to the platforms. The use of a single neutral colour of finish for the platforms of all docking stations with the alternative foundations will prevent potential delays in maintenance and repair caused by the need to match site-specific colours.

4. Site specific design considerations

The structural foundation components are standardised, as set out above. However the design for each site will respond to the underground obstruction(s), the site layout, the nature of the existing (and proposed) surfacing and the general context.

The inset foundation platforms have been designed to accommodate ducting within their structure to avoid the need to dig a trench the length of the docking point area. The connection from the EDF feeder pillar to the terminal will however require trenching. The route of the ducting and the dimensions of the excavation will be determined on a site by site basis depending on the location of underground obstructions, including tree roots. If necessary, trial holes will be dug to establish the location of underground obstructions. At sensitive tree sites the route of the trenching will be agreed with borough tree officers as required.

5. Installation

The inset platforms will be installed and the street furniture bolted on as per the standard foundations.

- Following installation of the street furniture, the terminal and docking points will be connected to the power supply.

6. Planning implications

The inset foundation solution mitigates any potential impact on trees and construction difficulties associated with cellars and statutory undertaker's equipment. The inset platform will be visible to some degree. However, the use of a single neutral grey colour will be unobtrusive, reinforce the overall design identity of the docking stations and be complementary to the range of surface materials currently used in London.

As shown in figure 11, the visual impact of the inset platform is further minimised as the top of the 500mm wide platform is mainly screened by the docking points.



Figure 11: Photomontage of inset solution on a street with tree constraints. The platform has been coloured black to show the visible extent of the platform

Where planning permission has already been granted for a Cycle Hire docking station, it is considered that the inset platform would not constitute a material change and the matter can be dealt with by means of a non material amendment application.

7. Conclusion

The inset platform solutions mitigates any potential impact on trees and construction difficulties associated with cellars and statutory undertaker's equipment, allowing docking stations to be constructed that otherwise would be lost. The detailed design for each site will be worked up having regard to the specific location and site characteristics.

The inset platform will be visible to some degree. However the use of a neutral colour will be sympathetic to the existing surfacing materials and therefore would not have an adverse impact upon local streetscape.

8. Further Information

For further information contact Andrew Maunder on andrewmaunder@tfl.gov.uk.

