Shared Use Bus Boarders: Context and design considerations

Context

When a cycle route and bus route share the same road, there is a natural tension at each bus stop when buses must stop near the pavement to pick up / put down passengers. Cycle lanes running near the pavement edge have to stop short of the bus stop, causing a break in the safety and comfort for the cyclist. Protected bicycle lanes are particularly affected, as any vertical protection cannot be continued close to the bus stop on either side, to allow the bus room to 'swing into and out of' the pavement kerb line. Cycle lanes that follow bus routes are often the most direct route and so will be considered the most important to provide protection and encourage greater modal share. In the context of the Covid-19 emergency cycle lanes, this statement is all the more pertinent with the main purpose of the cycle routes is to alleviate capacity constraints on parallel public transport routes caused by the need to retain social distancing.

Design options

To maintain as much protection for cyclists as possible around bus stops, two basic designs exist:

1. Cycle Bypass

Where there is a very wide pavement or road, a cycle bypass can be built, guiding cyclists around the back on the bus stop and shelter, when a bus is at the stop. This essentially provides a floating island for bus passengers to enter and leave a bus whilst the cyclists can continue their journey on the cycle lane until such time that the passenger needs to cross the cycle lane to access the pavement via the zebra crossings provided. A template design is shown in fig 1. While this design is usually preferred, the minimum width requirements for the remaining pavement (~2.5m), cycle lane (1.5m) and floating island stop (2.5m) means this design can rarely be implemented in a London street context.

2. Shared Use Bus Boarder (SUBBs)

In contrast Shared Use Bus Boarders (SUBBs) do not take any space away from the existing footway, but instead 'borrow' space from the existing carriageway. Effectively, SUBBs are raised sections of carriageway, alleviating the need for a bus to swing into the pavement kerb line to pick up / put down passengers at-grade. Instead, the carriageway is raised to be at-grade with the pavement, so that the bus can maintain its position in the vehicular travel lane whilst still providing an accessible service for passengers.

The priority user in this short section of raised paving changes depending on whether a bus is present or not. When a bus is present, bus passengers have priority as they board and alight from the bus, requiring cyclists to give way to them. When a bus is not present, the reverse is true with any waiting passengers advised to keep clear of the raised area to allow cyclists safe passage.

This area therefore acts as a shared space with priority given to different modes depending on when the bus is stopped or not. The Highway Code (rule 223) stipulates that vehicles (including cycles) must yield to buses and "Look out for people getting off a bus or tram and crossing the road". The

design of the SUBB must convey this change in priority, to allow both sets of users to understand when to give way, and when to take priority.

Design review and monitoring

Given the benefits of SUBBs to maintaining protection of cyclists either side of bus stops, Transport for London, along with various London boroughs, have been keen to monitor, review and if necessary revise, SUBB designs to better fit the experience of both cyclists and bus users including passengers that have higher physical and cognitive needs.

Last year, TfL commissioned a study into the observed and recalled experiences of users at a number of SUBBs around London; in Camden, Enfield, Waltham Forest and Kingston. Each SUBB has variations in its design as well as the context within which it sits.

A working group was convened, including local authority officers from several boroughs including Camden, as well as teams within TfL including accessibility, transport strategy and planning, design and buses. The working group agreed the methodology of the study, and would reconvene to consider the findings. The study conducted by WSP included road safety statistical analysis, video observations and intercept surveys.

As part of the study, discussions commenced with national interest groups covering visual impairment, hearing impairment, mobility impairment and cognitive impairment. Furthermore, the study itself recorded the experience and recommendations made by users with a wide range of disabilities, in a series of site visits to the locations being monitored. The proposed design of SUBBS, to be implemented as part of Covid-19 pop-up cycle lanes, has been informed by these findings, taking account of the combined wisdom of the working group members, study participants, TfL, stakeholders and combined results of the study.

One of the SUBBs in Royal College Street, Camden was included in this study. Whilst in operation over the past 5 years, there has been no recorded road safety incidences. And whilst the study of several sites cannot be used as conclusive proof either way, it appears that bus stops which have a higher interaction rates (between numbers of bus passengers and cyclists) tend to have lower-level interaction incidences. It can be inferred that more frequent the potential interactions, the more 'practised' users are at interacting, including cyclists slowing /stopping when buses present and pedestrian waiting on the footway when the bus is not present. Covid-19 protected cycles lanes have been designed specifically to increase cyclist numbers, which will in turn increase the potential interaction rate at bus stops along these routes.

SUBB to be used in Covid-19 pop-up cycle lane schemes

One of the principle design considerations for cycle facilities as part of the Covid-19 response is speed of implementation. As such, the basic design for Covid-19 protected cycle routes may differ

slightly from what might be built as part of a permanent scheme, whilst still be guided by the same safety considerations. To this end, the following design elements are proposed in the Covid-19 SUBB design:

- Raised paving area constructed in asphalt, at a minimum width of 2m (less by exception) to cater for adapted bicycles;

- Edge of existing footway to be marked using corduroy paving (combined with use of black asphalt) to highlight change in priorities between footway and shared space, to blind and partially sighted individuals;

- White paint markings on raised paving area include 'Give Way' markings for cyclists and a hatched area to highlight general pedestrian landing area and to visually narrow cycling area to encourage slower speeds when a bus not present;

- 'Slow' markings added to cycle lane on approach to SUBB to advise cyclists to take greater care at all times.

- Flag and pole (including bus time table information) to be kept on the footway to negate need for bus passengers to use shared space prior to bus arriving.

Next steps

Camden Council is keen to press ahead with the construction of the SUBB design bus stop in a number of projects across the borough. A consistent design template has been chosen to increase the learned experience of bus users and cyclists on how to behave at these SUBBs across the borough.

The sites will be monitored and evaluated as part of the 6-18 month experimental period for all Covid-19 schemes. Each scheme, and the elements within (including any SUBBs), will be evaluated and comments sought from stakeholders, local groups, local residents and businesses. Furthermore, a Stage 3 Road Safety Audit will be conducted at each site to highlight any post-construction issues and further design changes that need to be made. Monitoring of the SUBBs will also make an important contribution to the body of work commissioned by TfL studying the operation of SUBBs in real time.

Fig 1. Template for cycle bypass, where footway or road space is generous

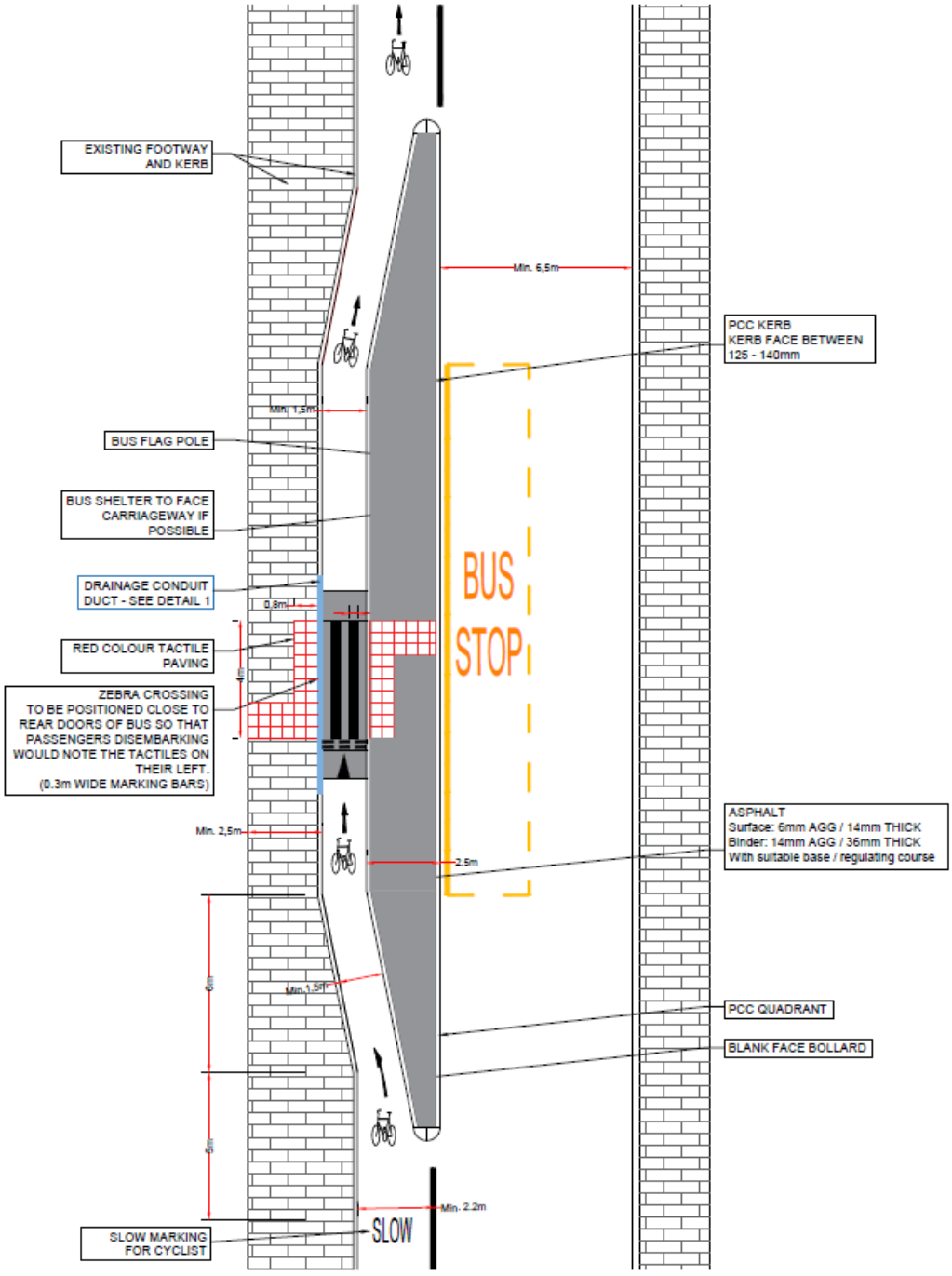
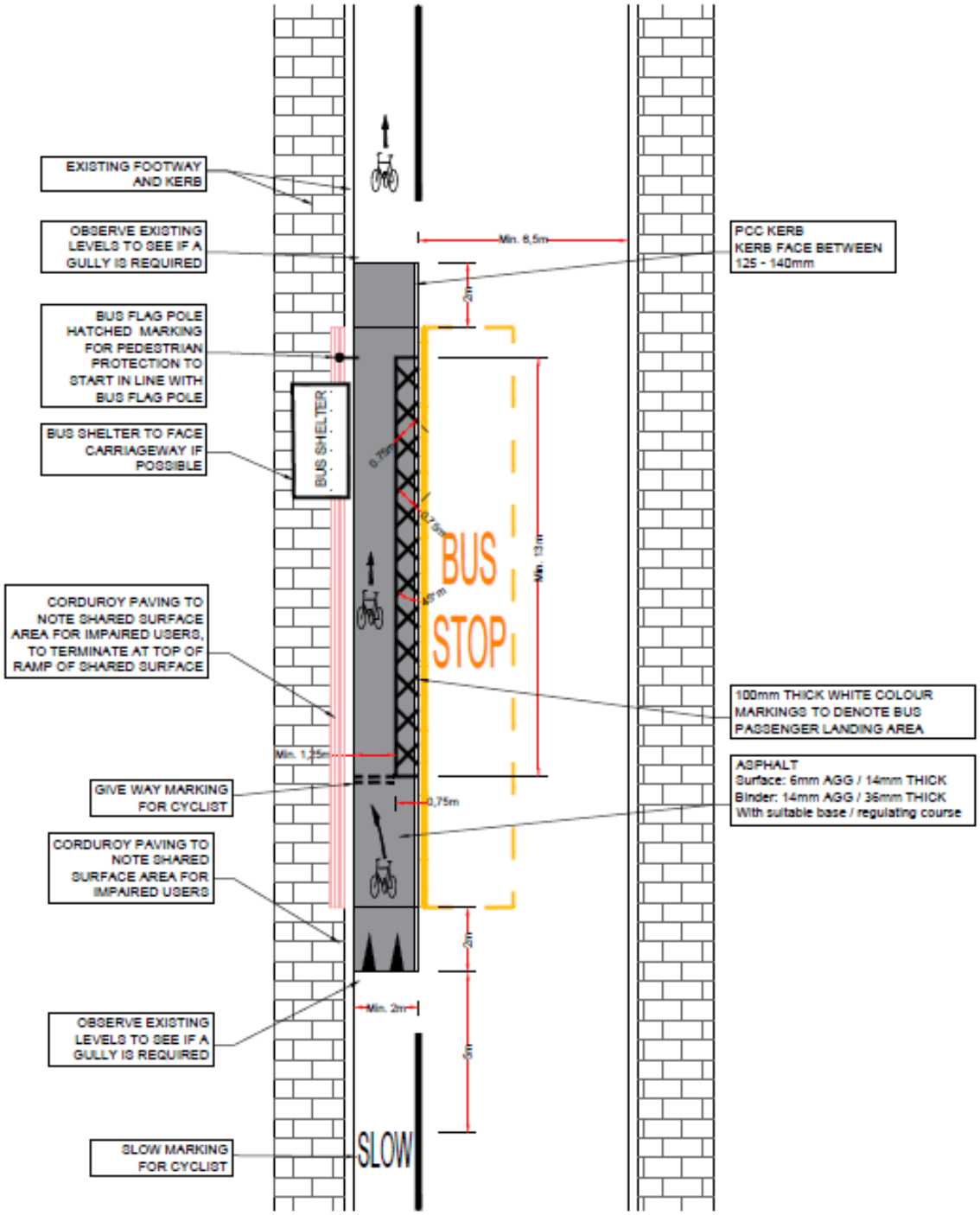


Fig 2. Shared Use Bus Boarder, where footway widths are tighter



SHARED USE BUS STOP (SUBB)