

Designing For Cyclists

SPACE - THE FINAL FRONTIER...

Talk to virtually every cyclist and one of their biggest gripes is the lack of space for them on the road, particularly on busy urban streets. Instead they are often forced to choose between dicing with parked cars or moving ones. And the lack of formal cycle lanes can cause motorists to not make a point of looking out for cyclists, let alone acknowledge their right to be there.

In many situations, an ideal solution would be to provide a good segregated (off-road) cycle route. But economics and availability of route options currently dictate that most of the time cyclists need to be catered for on the road. So we need to look at how to turn our existing streets into cycle routes.

In the simplest situation we're just talking about a bit of line marking. Cycle lanes and logos typically cost about \$5000/km a year to mark on one side of the road. Transfund now allows benefits of 50c/km per cyclist for facilities that improve cycling conditions. So if, say, you have 100 cyclists in each direction per working day (or about 300 times that many in a year), you will have a very viable benefit-cost ratio of about 3.

In many cases the width for cycle lanes is already there; many traffic and parking lanes are much wider than they need to be. A 1.9m wide parking lane for example will accommodate virtually every car or light vehicle around and instil a good parking "discipline". And in a 50/60 km/h area, a 3.3m traffic lane is usually more than adequate for safety and efficiency.

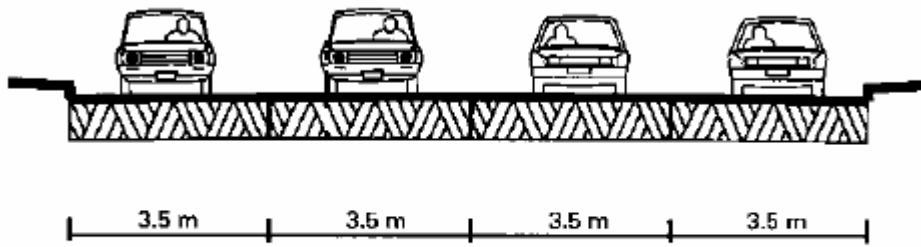
So how much space does the cyclist need? A common rule of thumb is to use a 1.0m "design envelope" to allow for the width of bicycle and rider, plus some minor tracking variation. However you'll then need to allow ideally 0.5m "comfort space" beside a 50/60 km/h traffic lane (more at higher speeds) and maybe space to avoid open doors of parked vehicles too.

Some people have trialled specific "separation spaces" between cycle lanes and traffic/parking lanes, e.g. diagonal painted hatching. However there is some evidence to suggest that motor vehicles are less careful about their lane positioning with these buffer zones present, resulting in both parked and moving vehicles being closer to cyclists on average. A far better solution may be to incorporate the extra space in the cycle lane width and let the cyclists determine where they want to position themselves.

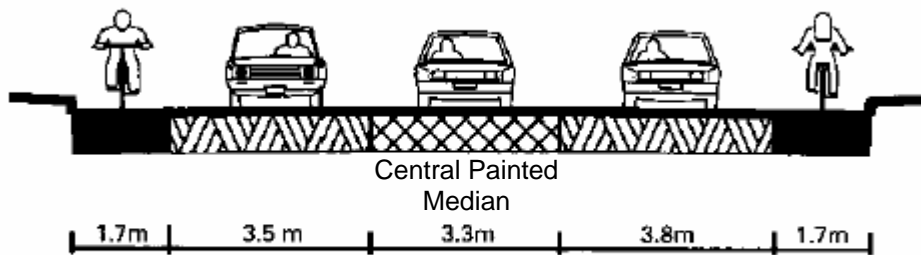
The question is often asked about where a kerb-side cycle lane width is measured from, i.e. at the kerb face or at the kerb/seal edge. It depends really on how good the transition to the road is. A modern flat kerb with a 0.3m gutter and no seal edge build-up presents no hazard to a cyclist if traversed, so a measurement from the face is fine. But if the gutter (or drain grate or whatever) presents a hazard to cyclists, then measure from further out (and fix it too!)

So what if your road really isn't wide enough to accommodate cycle lanes as well? Well maybe you have to think a little more, er, "laterally":

- Consider removing parking on one or both sides of the road. In many suburban residential streets this won't have a major impact; have a look one day at the typical number of vehicles parked. You may have to consider occasional "parking bays" (i.e. indented into the grass berm) to satisfy a limited demand, particularly where the occasional shop appears. In some cases you may actually want to remove on-street parking to both encourage use of off-street parking facilities (better for traffic management) as well as encouraging the use of alternative travel modes.
- On many multi-lane roads, space could be provided by reducing the number of traffic lanes. Contrary to popular belief, this will not cause the end of the world! In many cases the existing road has far too much capacity, and evidence from around the world shows that traffic volumes actually reduce when lanes are removed. Often the extra lane is there to provide space to get past turning vehicles, but that may not be the best solution. For example, a four-lane road with just a painted centreline could be transformed into a two-lane road with a painted median strip (for turning traffic) as well as cycle lanes either side (see diagram below). This treatment is commonly referred to as a "road diet" in the US, where it is becoming quite popular.
- Maybe you can provide short off-road cycle paths to get around pinch points. For example, near a side-road, additional turning lanes may make it difficult to squeeze in cycle lanes on both sides. Instead, opposite the side-road you could lead the cycle lane onto a short pathway behind the kerb. This is also worth considering on the inside of some curves where traffic cuts the corner. Make sure the transition from road to path is a good one though.



Before Bicycle Lanes



With Bicycle Lanes

(adapted from Macbeth 1999, "Bicycle Lanes in Toronto", ITE Journal, April 1999)

In some areas, combined cycle/parking lanes have been designated to resolve the lack of space. The problems begin however the minute you get one vehicle parked, as the following photos show. The resulting weaving path for any cyclist is not a particularly safe one for motorists to predict and avoid.



As usual, keep an eye out for the details. Suitably strong lane markings should be used, including the use of coloured surfacing where necessary at "stress points" (e.g. intersections and inside of curves). And make sure that the pinch points are dealt with (e.g. narrow bridges, side roads) - it's no good just providing cycle lanes either side! Cycle lanes should carry on through to intersections; next time we'll start looking at some ways to look after cyclists there.

Some Relevant Reading

- Austroads, 1999. *Guide to Traffic Engineering Practice, Part 14: Bicycles*, Sections 3.2 (Space to Ride) and 4.4 (Road Treatments for Cyclists).
- Christchurch City Council, 2002. *Cycle Lane Delineation Treatments*, provides a good overview of the merits of different marking schemes for cycle lanes in various situations. Web:<http://www.ccc.govt.nz/Recreation/Cycling/TechnicalResearch/>
- CROW, 1993. *Sign up for the Bike: Design Manual for a cycle-friendly infrastructure*, Section 4.4 (Mixed Profile) provides a very useful discussion on allocating street space for cyclists and other traffic.

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