TROUBLED BRIDGES OVER WATERS...

Bridges present some of the most difficult barriers for cyclists, either through their narrowness or non-existence. Although they are often the most expensive part of developing cycle routes, they are crucial to providing overall connectivity and must be planned for. Unlike problematic roads that can often be avoided, in many cases there are no alternatives to problem crossings.

New bridges for cyclists (and usually pedestrians too) don't come cheap. Recent bridges and "clip-ons" constructed in New Zealand have typically cost about $1200-1600 per square metre. The costs of course vary somewhat due to different lengths, widths and structural methods but for (say) a 2.5m-wide cycle bridge, you could expect it to cost about $350,000 per 100m (more for additional columns and approach works). Fortunately, recent changes to Transfund's project evaluation procedures allow for additional benefits to cyclists in removing bridge constraints, so that the economics are a *little* easier to manage.

But there may be other ways to minimise or remove the problem. Some possible treatments include:

- Install pre-fabricated structures for small crossings.
- Recycle disused road/rail bridge structures (e.g. retain the old bridge for cyclists when upgrading).
- Use abandoned bridge abutments & piers to create a new crossing facility over top.
- Provide a lightweight crossing in conjunction with existing utility (pipe/cable) bridges.
- Make alterations so that cyclists can use an existing footpath on a bridge. This should not cause considerable conflicts between cyclists and pedestrians however.
- Re-mark the road to provide narrower traffic lanes with adequate shoulders. It may also have the effect of slowing traffic down!
- Consider a lower speed limit on some long narrow rural bridges.
- Provide warning signage and/or ban overtaking on the bridge. A good example of some signage in advance of a narrow bridge is shown here.
- Add clip-on lanes to the bridge sides for cyclists and pedestrians.
- Provide alternative routes via sealed fords across generally dry channels.
- Widen the existing bridge carriageway (perhaps in conjunction with strengthening projects).

An excellent example of a recent bridge solution was the construction of an off-road bridge link across the Manawatu River on SH1 south of Foxton. This traverses the floodplain to a simple bridge over the small main channel, avoiding the narrow 1-km highway bridge.

As with cycle paths and lanes, adequate width is important. It's even more important on bridges for a number of reasons:

- Unlike paths/lanes, which have adjacent road or berm space, cyclists are usually constrained on a bridge by safety barriers immediately adjacent to them.
- In some cases, the bridge may also be the focus of recreational activity (e.g. fishing), requiring even more clearance
- It's much harder to come back and widen a sub-standard bridge later!

Use the normal path/lane width standards (based on usage) as a guide and allow extra clearance from any railings, etc. Generally *at least* 2.5-3.0m is recommended for segregated (two-way) crossings. It's disappointing that some recent bridges, intended for two-way shared pedestrian/cycle use, have been constructed only 2m wide. Try comfortably going past someone in that width! The analogy would be to build a two-way road bridge only 5m wide... get it right the first time!

As usual, look for the little details when providing bridge crossings. Provide good safe approaches (a cycle facility on one side only of a bridge can be hazardous for cyclists who have to cross the road). Handrails must be an adequate height (e.g. 1.4m), and if slightly tapered out can provide a wider perceived width. Make sure bridge joints won't cause any problems. And be wary of the bridge surfacing - some wooden bridges can be a menace for cyclists in winter!

When you're talking about a crossing for a railway or busy road, don't forget that the alternative form of "grade separation" is to go under, i.e. an underpass. Underpasses get a bit of a bad reputation sometimes

security-wise, but it's nothing that good design (e.g. no hidden recesses) and good lighting can't fix. Underpasses have the advantage of usually not requiring as much vertical change (height gaps for bikes being smaller than gaps for trucks), but they can present some drainage problems. Again, if possible, look to use existing structures, e.g. putting cycle paths under bridge ends or large culverts.

Finally, an intriguing example where trying to provide for cyclists seems to have overtaken common sense. Visitors to the Mackenzie high country may have come across this innocuous looking bridge:

The bridge carriageway is more than 8m wide and little more than 30m long, so it's hardly a menace. If you choose to obey the direction signs on your bike however, you'll find yourself faced with:

- A rough gravelly path leading onto a bumpy wooden footbridge,
- A very narrow (~0.7m) bridge width to squeeze along,
- Only a 0.6m high handrail to protect you from the river below, and
- Chicken wire across the far end preventing you from getting through!

I know where I'll take my chances…

Some Relevant Reading

- Austroads, 1999. *Guide to Traffic Engineering Practice, Part 14: Bicycles*, Section 7 (Provision at Structures)
- FHWA, 1998. *Implementing Bicycle Improvements at the Local Level*, Chapters 4 (Breaking Bicycling Barriers) & 7 (Roadway Bridge Modifications). US Federal Highway Agency, Publication No. FHWA-98-105. Web: http://www.bikefed.org/bike_guide_online.htm.
- *Transit NZ Bridge Manual*, May 1994 (4th amendment Jun 2002) provides some local guidance, especially Appendix A (Bridge Widths & Clearances), but needs some more work on cyclist provision.

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