

TRAMLINE BIKE-CRASH DANGERS, AND HOW TO MINIMISE THE RISKS

Spokes has received many reports of crashes on Edinburgh's tramlines, some with serious injury. Based on this, and other sources, we here make suggestions for reducing your chances of becoming another victim.

If you have had a tramline crash (recently or in the past) please complete our survey, which provides us with useful information about the nature and causes of tramline crashes. We also suggest where and how to report your crash formally – and to get legal advice if necessary.

Here ... www.spokes.org.uk/documents/public-transport/tram.

How to Minimise the Likelihood of a Tramline Crash

- (a) approach the tramline as close to 90 degrees as possible – unfortunately the tramline layout is such that anything near to 90 degrees is impossible in many places
- (b) it is often said that an angle of 60 degrees or more is pretty safe from the trapping hazard – but skidding is still a serious risk, especially if wet. Angles below 45 degrees are increasingly risky for both hazards
- (c) cross the tramlines in a straight line, not cornering. When cornering, the bike is leaning slightly, which makes skidding more likely
- (d) avoid braking when crossing tramlines – this can make skidding more likely
- (e) do not slow down to cross tramlines, and do keep a sensitive but firm grip on your handlebars. This should help your wheel to roll over the tramline groove with less chance of being deflected into it
- (f) as far as possible (and it is often not possible) keep a good distance from motor vehicles, especially behind you. Traffic pressures make crashes more likely, for example affecting your crossing angle
- (g) cycling between tramlines can provide a relatively traffic-free route, but we don't advise it because it requires two tramline crossings at dodgy angles - and we know of crashes that have resulted
- (h) be very aware that many of the crashes reported to Spokes are from **experienced cyclists**, who regularly use tramlined roads, but one of the hazards described below unexpectedly intervened – for example, a tramline marginally too high, wetness causing slippage, or traffic pressures
- (i) we hate to say this, but if you are aware of a particularly dangerous location or situation (e.g. wet, lots of traffic) discretion can be the better part of valour ... it may be wise to get off and walk if you can; though it is not always possible.

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BACKGROUND TO TRAMLINE CRASHES AND WHY THEY HAPPEN

1. Layout of the tramline network

Tramline layouts should aim to minimise or avoid bike/tramline interaction as far as possible. The ideal solution is segregated bike lanes, with tramline crossing points at angles as close as possible to 90 degrees.

Sadly, the Edinburgh phase 1 layout neglected this and so is more prone to tramline bike crashes than it needed to be. The Princes Street tramlines are in the centre of the road, with a wide central reservation, rather than tramlines on one side of the road and a segregated bike lane on the other. Thus you are cycling on the roadway with no physical separation from the tramlines - and crossing angles tend to be poor.

Phase 2 learned from this and provided segregated bike lanes in Leith Walk: the bike lane designs could be better, but thanks to segregation from tramlines *we have not had a single tramline crash reported there*.

A particularly dangerous (and scary) layout feature is where you are expected to cycle on the road adjacent to the tramline, and there is *limited width*. In this case you may hit the tramline at a dangerous angle as a result of some unexpected and unavoidable event; for example...

- If there is kerb on your left, a walker may step off the pavement without looking, so you move right to avoid hitting them; we know of one such a crash, with very serious injuries, at Haymarket Yards. This could also occur just before Haymarket Stn, where the bike lane abuts footway and tramline.
- If there is a traffic lane on your left (as in Princes Street, at the West End junction heading for Shandwick Place) you may be forced to the right by a long vehicle or aggressive driver.

2. Travel direction

There are two types of crashes

- ◆ You are needing to cross all the rails, e.g. at a junction, or to get to the other side of the road
- ◆ You are cycling in the same direction as the rails: surprisingly, there are many such crashes.

3. Presence of traffic

This is a major aggravating factor. In (2a) you cannot position yourself for the ideal crossing angle. In (2b) you may be forced sideways into the tramline.

4. Construction detail

- ◆ Does the top of the tramline protrude above the road surface? Where this is the case, skidding is much more likely. We understand that ORR (now UK Tram) guidance suggests a 6mm tolerance between +3mm/-3mm above/below the road surface level.
- ◆ Even where construction was done correctly, this height distance may worsen if the adjacent road surface sinks
- ◆ Further hazards can occur if other construction or maintenance flaws result in gaps between the road surface and the tramline, or in the road surface breaking up
- ◆ According to experienced tram/railway commentator Dave Holladay, all the above apply in parts of Edinburgh's first tramline – see his article referenced in (6) below.

5. Skidding and wetness

Crashes can occur when wheels...

- ◆ get trapped in tramlines, thus stopping instantly
- ◆ skid on tramlines – contrary to public perception, our crash reports survey suggests that more tramline bike crashes result from skidding on the rails than from wheels getting trapped. Of 72 reported cases, 38% said they were caused by skidding, 21% by skidding followed by wheel-trapping, and only 31% by wheel-trapping alone.

Skidding...

- ◆ is more likely when it is wet
- ◆ is more likely when tramlines protrude above the road surface, as in (4) above, or if there are certain other construction or maintenance defects
- ◆ is more likely when meeting the tramline at a small angle, but can occur at any angle, even angles considered safe from trapping

6. More about tramline crashes

- ◆ There is more about tramlines and tramline crashes, including how to report crashes, the history of the Edinburgh system as it affects cycling, and more, on the Spokes website, at www.spokes.org.uk/documents/public-transport/tram
- ◆ There is now an online portal linking to UK campaign group tramcrash reporting sites - initially Edinburgh, Sheffield and Nottingham. Find it at tramcrash.co.uk – see graphic
- ◆ There is an interesting [commentary on the Edinburgh tramlines](#) (phase 1) by transport and engineering professional Dave Holladay, who has a particular interest in rail and tram

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