

## Edinburgh Tram Network

### SDS Document ULE90130-SW-REP-00755 V1 DKE Review of CAF Tram

#### 1 Use of "Autotrack"

We need to remember that CAF have already carried out an series of DKE studies and calculations. SDS has listed these at Section 2 of their report (although the list may not be exhaustive).

For their analysis SDS has chosen to use Autotrack as the principal tool. By their own admission it is designed for the prediction of road vehicle swept paths and only considers the 2D i.e. plan view. Therefore they have had to make adjustments and assumptions particularly with regard to the effect of cant. Nowhere in the report is validation of this approach given. P48 merely gives inputs not proof.

As explained in Section 3.5 when their own adjusted Autotrack outputs show a potential problem they have fallen back on the tabulated outputs already produced and submitted by CAF. Even then they have interpolated where no direct comparative data was available.

Surely it would have been better to have used the same package for the infrastructure. It would give consistency of application and thus results. Above all it would give credibility and assurance for tie and their advisors.

At the very least I would wish to see CAF's view of the methodology and outputs of the SDS approach.

#### 2 Passing Clearances

Section 4.1 states that there is one point on the alignment where there is a non-compliance with RSP2 (presumably Clause 110 and Figure 3).

Quite why this one spot is not explained although it may be because of the fact that both tracks are canted in one direction. However the quoted radii vary and some of the figures quoted seem to at variance with those in the Track Alignment Criteria and certainly different from those in CAF calculations. (See Q20.93.112 for example)

Whatever CAF have already stated that the rear-view cameras were a critical area. Further that, assuming track spacing to be as per the Track Alignment Criteria, in the range of curves  $c200 < r < 3500$  there separation between passing cameras would be less than the RSP2 guidance figure of 100mm.

In practice the cameras are at a height of c2683mm above rail; well beyond the RSP2 threshold of 2100mm where a lower figure could be acceptable.

Therefore provided that I had assurance that under no combination of circumstances could a physical clash occur I would support a formal request for a derogation.

I would also be tempted to ask SDS why they identified no other locations given that there must be other curves which fall within the range identified by CAF.

#### 3 Clearance to OLE Poles

It is obviously disappointing to see such a large list. However it is difficult to check any of the positions with the information supplied in the tables (for example the track radii or cant are not given). Some of the problem is no doubt due to the CEC requirement for tapered poles with

the consequential larger width at the bottom. The SDS solution of moving poles marginally sounds simple but all will need to be considered carefully both from the foundations and the integrity of the OLE arrangement.

Also clearance to an individual side pole need only be 100mm not the 600mm suggested at Section 3.3.1: they count as an isolated obstruction. Equally this clearance can be reduced even further above 2100mm. It is not clear from the tables what dimension has been used for side poles.

We should ask for Siemens for their views and acceptance or rejection of the SDS proposed solution.

#### **4 Edinburgh Park Station Bridge**

I am out of touch with the emerging design for this bridge. I note though that walkways are not discussed and that the issue is a combination of larger diameter poles and the high cant levels. Maintenance and emergency evacuation paths were discussed at length at one stage. Was it ever resolved satisfactorily?

All of the above would suggest to me that the best solution if indeed there is a problem would be double cantilevers on the high side of the curves rather than centre poles. I seem to remember that was suggested in the infamous VE initiatives a long time ago.

#### **5 Walkways on Structures**

Section 4.4.2 gives a dimension of 430mm as a minimum for a walkway. Where does this figure come from?

Some actual examples rather than the general statements at Sections 4.4 and 5.4 would be useful remembering that the width of the tram has been known for over 2 years. Perhaps they want to be paid to look?

#### **6 Platform Clearances**

Platforms always intrude into the DKE so they are not strictly a DKE issue at all. Equally platforms should always be designed so that the front edge has a considerable amount of adjustment to accommodate individual types of trams both stopping and passing through. There should also be sufficient to allow for a re-adjustment at some stage in the wear over time of the rails. The extremely prescriptive requirements of RVAR as applied to tramways make this even more critical.

SDS has known this from the start. Indeed their experience elsewhere should have helped them to design accordingly.

It is a fact that the CAF tram is marginally wider at door sill level than the SDS Assumed Tram. The Assumed Tram was never seen to be the maximum sized tram but a typical one from the market then available. Therefore the platform design should have been such that a marginally wider tram could be accommodated without changes other than to the platform edge copings. Taking the figures in the SDS report the difference is 25mm on the half width of the vehicle although it is difficult to be sure as they mix DKE and physical dimensions in the discussion: (I've not checked the actual drawings).

It is for SDS to demonstrate if indeed there is a problem rather than the statements in Section 5.5.1. The suggestion that the sill be adjusted on the tram at this stage is a nonsense as they must well know.

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