

25

We will be meeting on the 23 February 2011 to discuss your proposal dated 31 January 2011.

The purpose of the meeting is to break the "deadlock" you refer to and to clarify misunderstandings which appear to exist about your proposals.

We understand your proposal is not a rectification plan; it is a proposal to carry out a sample or trial which involves the removal and replacement of a 45 metre length of "flexible" asphaltic infill to the tram track across the St. David's Street Junction and to replace it with a rigid concrete infill treated with an anti-skid surface. Such a trial or sample is not expressly permitted by the Infraco Contract and you are apparently proposing it as part of the design process.

The key to unlocking the current position is for you to consult, develop and deliver a fully approved (including Roads Authority approval) integrated design which addresses the issues identified in CEC correspondence, our note of 17 February and emphasised in the points listed below.

Only when such a design is approved will you be able to produce a rectification plan which could be acceptable to us. Any remediated work to Princes Street will have to achieve the same standard as an approved Design.

To confirm our position:

Even if this was permitted or desirable and agreed to your proposal lacks some basic explanation. You give no design calculations; specification; period of trial or test; monitoring tools or criteria to measure the results against. Nor do you explain what you propose if the trial or sample fails. In fact we can only determine that whilst you say experts confirm that the original design was fit for purpose that you intend to take stray current measurements for the purposes of deciding on the "replacement of ESU Membrane". You do not explain why, or under what circumstances, the membrane would require replacing.

Without your experts' written advice we cannot verify the six bullet points you list as "salient points" as being the most important conclusions they all agree on or whether they are simply your interpretation of their advice. Providing us with their advice would be consistent with the CDM risk based approach and we look forward to receipt of this information.

We can understand that your experts may agree that an asphaltic concrete infill between the rails of the right quality and constructed to the right standard of care could be fit for purpose. There is ample research on the use and performance of asphaltic and bituminous to satisfy this conclusion. However, the type and durability of the aggregates and the design of the mix are of essential importance. The selection of materials and design of the mix would need to be, and normally would be proven by laboratory trials. The laying of such materials (particularly laying temperatures and voids) would require experienced supervision and control.

In the interests of best value and whole life cost and for the reasons of ease of construction that you now articulate, it could be expected that a cement bound concrete infill (with a bonded wearing surface) would be the default answer. Even then care would be required as to the mix design; selection of low shrinkage aggregates; and controlling, using fibre reinforced options and minimising the water cement ratio - all to minimise the effect of reflective cracking through to the wearing surface. In addition, the detailed design between rails and road surface and between rigid and flexible pavement sections requires thorough scrutiny.

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The defects which have manifested themselves are not a result of poor mechanical properties such as the compressive or tensile strengths inherent in properly produced asphaltic materials, they are almost certainly a result of poor compaction leading to cracking. Those cracks have degenerated further through the action of traffic and attrition/degradation from frost and water ingress. In fact the classic cause of "pot-holes". The speed that the defects appear relates to the traffic loading as well as the physical defects in the materials. It is natural therefore that they will initially occur where traffic loadings are at their highest.

We do agree that your methodology had scope for improvement. In fact we cited the lack of supervision and control in the formal Remedial Termination and Underperformance Warning Notices we issued on 9 August 2010. In circumstances when weather conditions are inclement and there are programme pressures a competent contractor would have increased their vigilance, control of materials and standard of supervision. Your experts apparently agree with us on this point.

Your final "salient" bullet point articulates the obvious. In common with road authorities the World over, the City of Edinburgh Council recognises this fact by providing enhanced treatment in some such circumstances. There is an abundance of research on this issue which you can refer to.

Clearly, the volume of bus traffic has not increased since 14 May 2008 and we would expect a competent design and build contractor to identify the options in terms of best value and whole life cost implications for the Roads Authority to consider when being asked to approve your design proposals, recognising the traffic volume criteria set out in Appendix 7/1 taking account of cross traffic at junctions.

We have previously rejected your rectification plan issued on 17 September 2010 on sound technical reasons. Moreover, our response could be said to be more detailed and reasoned than is expected of us when we have absolute discretion.

Your rectification plan and this latest proposal for a sample or trial still do not address the fundamental integration and technical detailing referred to by the City of Edinburgh Council in their letter to you dated 1 February 2010.

In that letter the City of Edinburgh articulate clearly your lack of explanation and we do not disagree with them. They ask sensible questions of you and we would expect a competent design and build contractor to have avoided the need for the Roads Authority to raise such questions.

To summarise:

- It is clear that you have not yet finalised the integrated road design for the On-street trackform.
- The works you installed in Princes Street were not the subject of an integrated IFC Design which had been approved by the Roads Authority.
- Under some circumstances the design solution using a flexible asphaltic/bitumen bound infill may be fit for purpose. But, taking account of all the relevant factors, in assessing the best design solution a competent contractor would be expected to consider that a cement bound concrete solution potentially may be a better answer.
- You appear to agree that there are inherent dangers of defects arising from poor methodology in using the flexible infill which would result in the solution not being best value or give a best whole life cost solution.

- To date, none of your trackform proposals adequately integrate with the road pavement design it is part of.
- You have failed to consult with the Roads Authority on best value and whole life cost implications in the manner a competent design and build contractor would be expected to.
- You do not explain your concerns about “stray current” and the need to replace the ECU Membrane.
- The defects are physical defects to work which is not the subject of a properly delivered IFC design drawing.
- You give no consideration to any necessary planning consents which would be required to implement the proposals you have put forward.
- It is for you to propose a rectification plan which is acceptable to us and not for us to instruct you.

We therefore propose the following agenda:

1. BSC to report back on their response to CEC’s letter dated 1 February 2011.
2. Decide on and agree actions required to satisfy CEC’s questions.
3. BSC to explain its design proposals for the trackform and associated road construction / reconstruction including ground improvement measures, drainage and duct design.
4. BSC to explain the purpose of the proposed trial / sample.
5. BSC to give timetable for issuing a design for approval.
6. BSC to explain its proposals for remedying the defects in Princes Street, including programme assumptions and implementation plans.
7. Arrange date of next meeting.

Steven Bell

22 February 2011