

22

## Defects to Princes Street

- Permit to Commence Work was conditional on Infracore delivering approved IFC Drawings before construction parts of the works.
- The Infracore constructed parts of the work, in particular the track works, for which approved IFC Drawings had not been delivered.
- Substantial disruption was caused by the discovery of existing ground conditions which required treatment to achieve the load bearing requirements for construction of the tramway – highlighting a lack of ground investigation by the Designer and leading to an excessive amount of reactive design and disruption.
- The Infracore did not apply the requirements of DMRB for foundation design or for integration with existing pavements.
- The Infracore chose a method of construction for the infill between the rails which may in some circumstances be fit for purpose, but in this location does not give best value and best whole life cost. Moreover, in any areas which contain excess voids and cracks will be prone to water ingress and frost damage causing attrition and degradation leading to the formation of “pot-holes”.
- The material chosen is difficult to compact against the flexible chamber infill which has caused poorly compacted material against the rails leading by the process above to pot-holes forming against the rails.
- Laying and compacting the wearing course material chosen by the Infracore is highly susceptible to temperature of the material and is exacerbated by wind-chilling and low ambient temperatures all of which causes uneven edging against the rails which in turn has to be filled by excess sealant.
- The sealant between the rails and the wearing surfaces has in a large number of cases failed and stripped out due to faulty workmanship and the irregular void being filled.
- The infill produced by the Infracore cannot be guaranteed to achieve the life expected of it without regular and expensive intrusive remedial work which would include not just the replacement of the wearing course but also the replacement of the base course.
- There are other defects for example:
  - missing Glasstex reinforcement layer. NB Glasstex does not seem to have been laid full length of street only in certain areas
  - poor standard of workmanship in laying of granite setts and subsequent break up/deterioration
  - premature deterioration of white lining
  - sinking of studs at Pedestrian Crossing
  - rain-water ponding

- Manhole deterioration
- kerb line at gardens side of street, removed, put back in wrong position, removed again and put back when not requiring any alterations
- non-approved materials "Caithness Slabs"
- Setting out arrangements of kerbs
- Level tolerance on carriageway
- OHL foundation setting out
- Installation of OHL bolts "too short".

### Exhibit for Princes Street Defects.

On the 29 September 2010 **tie** confirmed to the Infraco that the rectification plan they submitted on 17 September 2010 was not acceptable. **tie** cited the following grounds:

- The proposals were not approved by the relevant Approval Bodies (in particular the Roads Authority and Planning Authority).
- The proposals were based on advice from unnamed and therefore purported experts and not on adequate factual data obtained by recognised testing methods.
- The proposals did not address all of the defects present in materials and workmanship.
- The proposal to remove and replace a 300 mm strip of "wearing course" either side of the rail is unacceptable to **tie**.
- The proposal to introduce another form or wearing course in random lengths is not acceptable to **tie**.
- The proposal does not make a proposal for the transition of the track's rigid construction to the adjacent flexible road construction.