

20.1

tie Remediable Termination Notice in respect of alleged
Defects on Princes Street and Responses thereto.

Bilfinger Berger Civil-EDI	
Date Received	09 AUG 2010 BW
File Number	
Action	
Distribution	



For The Attention of Martin Foerder
Project Director
Bilfinger Berger Siemens CAF Consortium
9 Lochside Avenue
Edinburgh Park
Edinburgh EH12 9DJ

Our Ref: INF CORR 5764

Date: 9th August 2010

By fax and personal delivery

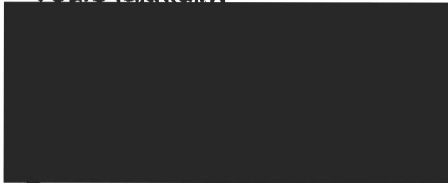
Dear Sirs,

INFRACO CONTRACT
REMIABLE TERMINATION NOTICE
INFRACO DEFAULT (a): DEFECTS ON PRINCES STREET

Enclosed is a Remediable Termination Notice in respect of Infraco Default under the Infraco Contract.

We look forward to receiving your rectification plan within 30 Business Days of the date of this Remediable Termination Notice.

Yours faithfully,



Steven Bell
Project Director – Edinburgh Trams

Citypoint Offices, 65 Haymarket Terrace, Edinburgh, EH12 5HD

Tel: +44 (0) [redacted] Email: info@edinburghtrams.com Fax: [redacted]

Web: www.edinburghtrams.com

Registered in Scotland No: 230919 at City Chambers, High Street, Edinburgh, EH1 1YJ. Edinburgh Trams is an operating name of tle Ltd

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REMEDIAL TERMINATION NOTICE

INFRACO DEFAULT (a): DEFECTS ON PRINCES STREET

1. Infraco Default (a)

- 1.1 The Infraco has breached its obligations: under clause 7.2 of the Infraco Contract to ensure that, in carrying out and completing the Infraco Works, the Infraco exercises a reasonable level of professional skill, care and diligence to be expected of a properly qualified and competent professional contractor experienced in carrying out works and services of a similar nature to the Infraco Works in connection with projects of a similar scope and complexity.
- 1.2 The Infraco has breached its obligations: under clause 34.2 to ensure that the whole of the materials and the mode, manner and speed of construction of the Infraco Works are in accordance with the Infraco Contract.
- 1.3 The Infraco has breached its obligations: under clause 26.1 of the Infraco Contract to provide all necessary superintendence during the construction and completion of the Infraco Works and to ensure that such superintendence is given by sufficient persons having adequately knowledge of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents) for the satisfactory and safe construction of the Infraco Works, and under clause 7.5.3 to minimise the potential for accidents.
- 1.4 Individually and cumulatively, these breaches materially and adversely affect the carrying out and completion of the Infraco Works.
- 1.5 This is an Infraco Default (a) under the Infraco Contract.

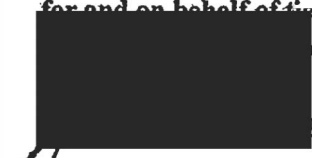
2. Nature of Infraco Default which requires to be rectified

- 2.1 The Infraco carried out Infraco Works on Princes Street during March 2009 to November 2009.
- 2.2 The Infraco has installed seriously defective works on Princes Street and has failed to remedy this. There are significant faults in the works which (i) pose an appreciable physical health and safety hazard; (ii) are capable of creating further hazards; and (iii) will severely reduce the life of the pavement. There are failings in the areas which are constructed of granite setts. The Infraco has not provided adequately qualified superintendence of the Infraco Works which would have prevented the installation of defective works on Princes Street. His assessment, on the basis of inspections carried out to date, is that poor workmanship, an ill-advised choice of materials, inappropriate design and the Infraco's lack of supervision on Site have all contributed to these defects.
- 2.3 The nature of the seriously defective works on Princes Street includes:
 - 2.3.1 At a considerable number of locations on Princes Street, the bituminous bound pavement materials have cracked and broken apparently from a lack of support. From inspection, it is surmised that this is (in whole or in part) caused by poor compaction in and around the rail flange.

- 2.3.2 There are many locations where there is a significant step down from the top of the rail and wearing surface, causing a potential hazard to road users and pedestrians.
 - 2.3.3 The regularity and application of the joint sealant is unsatisfactory.
 - 2.3.4 The workmanship on the granite setts is of an inadequate standard.
 - 2.3.5 The pavement has a life expectancy of only months before maintenance is required.
 - 2.3.6 The Infraco has laid road surfacing which is not technically compatible with the track form installation in Princes Street and is already showing obvious dilapidation.
- 2.4 The Infraco's letter (ref: 25.1.201/BDc/5937) of 9 June 2010 admitted that the works carried out to Section 1C/D (i.e. on Princes Street) are not in accordance with the Infraco Contract. Infraco responded to this letter on 18 June 2010 (ref: INF CORR 5400) with instructions on this matter. As at the date of this Remediable Termination Notice, the Infraco has neither responded to this letter and the instructions in it, nor taken any steps to facilitate and commence the necessary rectification works. This will also lead to disruption to the City of Edinburgh and a breach by Infraco of clause 7.5.2 through failure to minimise disruption to a central shopping and transport thorough fare in the City of Edinburgh.
- 2.5 The occurrence of seriously defective works on Princes Street is a breach of the Infraco's obligations under clause 7.2, 7.5.2 and 34.2 of the Infraco Contract. Individually and cumulatively, these breaches materially and adversely affect the carrying out and completion of the Infraco Works.

tie looks forward to receipt of a comprehensive rectification plan from the Infraco within 30 Business Days of the date of this Remediable Termination Notice.

for and on behalf of tie Limited



Project Director

o

...9/8/10... Date

Bilfinger Berger UK Limited EDI			
Date Received	09 AUG 2010	Scanned	
File Name:			
Action			
Distribution			



For The Attention of Martin Foerder
 Project Director
 Bilfinger Berger Siemens CAF Consortium
 9 Lochside Avenue
 Edinburgh Park
 Edinburgh EH12 9DJ

Our Ref: INF CORR 5771

Date: 9th August 2010

By fax and personal delivery

Dear Sirs,

**INFRACO CONTRACT
 REMEDIABLE TERMINATION NOTICE
 INFRACO DEFAULT (a): DEFECTS ON PRINCES STREET**

Enclosed is a Remediable Termination Notice in respect of Infraco Default under the Infraco Contract.

We look forward to receiving your rectification plan within 30 Business Days of the date of this Remediable Termination Notice.

Yours faithfully,



Steven Bell
 Project Director – Edinburgh Trams

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REMEDIABLE TERMINATION NOTICE

INFRACO DEFAULT (a): DEFECTS ON PRINCES STREET

1. Infraco Default (a)

- 1.1 The Infraco has breached its obligation under clause 7.2 of the Infraco Contract to ensure that, in carrying out and completing the Infraco Works, the Infraco exercises a reasonable level of professional skill, care and diligence to be expected of a properly qualified and competent professional contractor experienced in carrying out works and services of a similar nature to the Infraco Works in connection with projects of a similar scope and complexity.
- 1.2 The Infraco has breached its obligations under Clause 34.2 to ensure that the whole of the materials and the mode, manner and speed of construction of the Infraco Works are in accordance with the Infraco Contract.
- 1.3 The Infraco has breached its obligations: under clause 26.1 of the Infraco Contract to provide all necessary superintendence during the construction and completion of the Infraco Works and to ensure that such superintendence is given by sufficient persons having adequately knowledge of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents) for the satisfactory and safe construction of the Infraco Works and under Clause 7.5.3 to minimise the potential for accidents.
- 1.4 Individually and cumulatively, these breaches materially and adversely affect the carrying out and completion of the Infraco Works.
- 1.5 This is an Infraco Default (a) under the Infraco Contract.

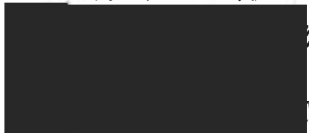
2. Nature of Infraco Default which requires to be rectified

- 2.1 The Infraco carried out Infraco Works on Princes Street during March 2009 to November 2009.
- 2.2 The Infraco has installed seriously defective works on Princes Street and has failed to remedy this. There are significant faults in the works which (i) pose an appreciable physical health and safety hazard; (ii) are capable of creating further hazards; and (iii) will severely reduce the life of the pavement. There are failings in the areas which are constructed of granite setts. The Infraco has not provided adequately qualified superintendence of the Infraco Works which would have prevented the installation of defective works on Princes Street. The assessment, on the basis of inspections carried out to date, is that poor workmanship; an ill-advised choice of materials, inappropriate design and the Infraco's lack of supervision on Site have all contributed to these defects.
- 2.3 The nature of the seriously defective works on Princes Street includes:
 - 2.3.1 At a considerable number of locations on Princes Street, the bituminous bound pavement materials have cracked and broken apparently from a lack of support. From inspection, it is surmised that this is (in whole or in part) caused by poor compaction in and around the rail flange.

- 2.3.2 There are many locations where there is a significant step down from the top of the rail and wearing surface, causing a potential hazard to road users and pedestrians.
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- 2.4 The Infraco's letter (ref: 25.1.201/BDo/5937) of 9 June 2010 admitted that the works carried out to Section 1C/D (i.e. on Princes Street) are not in accordance with the Infraco Contract. The responded to this letter on 18 June 2010 (ref: INF CORR 5400) with instructions on this matter. As at the date of this Remediable Termination Notice the Infraco has neither responded to this letter and the instructions in it, nor taken any steps to facilitate and commence the necessary rectification works.
- 2.5 The Infraco is required to replace its engineering superintendence staff with adequate and competent operatives who will control and complete rectification of all defective works in Princes Street and continue to superintend the carrying on and completion of the Infraco Works in full compliance with the terms and conditions of the Infraco Contract.

He looks forward to receipt of a comprehensive rectification plan from the Infraco within 30 Business Days of the date of this Remediable Termination Notice.

for and on behalf of the Limited



Tram Project Director

9/8/10.....Date



Our ref: 25.1.201/KDR/6729
Your ref: INF CORR 5764 and 5771

Bilfinger Berger-Siemens- CAF
Consortium

17 September 2010

BSC Consortium Office
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United Kingdom

tie limited
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Phone: +44 [REDACTED]
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For the attention of Steven Bell – Project Tram Director

Dear Sirs

**Edinburgh Tram Network Infraco
Infraco Contract: Alleged Remediable Termination Notices (Princes Street)**

We refer to your letters INF CORR 5764 and INF CORR 5771 both dated 9 August 2010.

Both letters purport to enclose Remediable Termination Notices in respect of the same factual matters, citing largely the same alleged breaches of contract. Accordingly this response addresses both Notices, remarking on the differences between the alleged Notices where appropriate.

For the avoidance of doubt this letter does not nor is it intended to constitute a rectification plan. If and to the extent the Infraco considers it necessary or appropriate notwithstanding the views expressed in this letter such a plan will be sent under separate cover.

As at the date of writing you have served Remediable Termination Notices in respect of another 4 matters. None of these matters have been the subject of referrals to dispute resolution. It appears to us that tie has abandoned the contractual mechanism for resolution of disputes. This may be because every major issue of principle has been decided against tie in adjudication. However that is no justification for now abusing the termination provisions of the contract. It is clear that tie is now pursuing a policy of serving a Remediable Termination Notice in respect of each and every grievance it may have, regardless of the significance of each grievance and its implications for the Infraco Works. Whilst we will respond to each Remediable Termination Notice in turn, we object to tie's adoption of this policy.

We summarise our response to the Notices INF CORR 5764 and INF CORR 5771 as follows:

1. The Notices do not identify a breach or breaches of contract by Infraco.
2. The alleged breaches or breaches do not materially and adversely affect the carrying out and/or completion of the Infraco Works.
3. The Notices do not therefore identify an Infraco Default (a).
4. Your two letters do not therefore constitute valid Remediable Termination Notices.
5. Any attempt to terminate the Infraco Contract on the basis of these alleged Notices will be entirely without contractual basis.

Measures are being taken by Infraco to address matters which have arisen in connection with the Princes Street works. These measures were the subject of our letter to you dated 17 September 2010 (25.1.201/KDR/6728) in response to your letter dated 18 June 2010 (INF CORR 5400) and are not repeated here.

1. **No Breach of Contract**

As detailed in our letter of 17 September 2010 (25.1.201/KDR/6728), to the extent that the works at Princes Street fail to meet the required contractual standard, this has been caused by tie's insistence that the street be re-opened to traffic by 29 November 2009. We are satisfied, having taken expert advice, that our design, workmanship and choice of materials all meet our contractual obligations and that accordingly there has been no breach of contract on the part of Infraco.

We recognise that the defects in Princes Street (caused by tie's premature opening of the Street to traffic) do require to be remedied in order to meet the contractual requirements and have proposed a rectification plan which accompanies our letter of 17 September 2010 (25.1.201/KDR/6730).

2. **Carrying out and/or Completion of the Infraco Works not materially and adversely affected**

We have proposed a timetable within the rectification plan. This plan only affects Princes Street and does not adversely affect any other part of the Infraco Works nor does it adversely affect the carrying out and/or completion of the Infraco Works as a whole.

3. **No Infraco Default (a)**

It follows from the preceding paragraphs that the circumstances you narrate in your two Notices do not meet the definition of "Infraco Default (a)" in the Infraco Contract Schedule Part 1, contrary to your assertion.

4. Letters INF CORR 5764 and 5771 are not valid Remediable Termination Notices

As no Infraco Default has occurred, you have no right to serve any Remediable Termination Notices as you have purported to do.

5. No right to Terminate

No grounds for termination can arise from these alleged Notices.

MEASURES TO BE UNDERTAKEN AT PRINCES STREET

We have addressed the causes of the defects in Princes Street and the measures we intend to take to remedy them in our letters of 17 September 2010 (25.1.201/KDR/6728 and 6730).

To the extent that the purported Notice accompanying your letter INF COR 5771 "requires" Infraco to replace its engineering superintendence staff, we would advise you that you have no power to do so in terms of such a Notice.

As is apparent from the foregoing, Infraco is acting entirely responsibly in investigating and ascertaining the cause of any apparent defects in work which has been carried out. Where appropriate, Infraco has proposed remedial works all of which will require to be carried out prior to completion and handover of the works.

No immediate hazard or disruption is caused to the members of the public by any of these matters, contrary to your unspecific and unsupported allegations. The remedial work will be carried out to ensure the minimum of disruption on Princes Street.

In conclusion, such matters as require attention in Princes Street are being attended to. In no way do these merit the instigation of a process to terminate the Infraco Contract. Such a course of action is wholly disproportionate to the matters in question. We assume that the Notices have been served to advance a tactical position on tie's part, rather than any genuine belief that these matters merit the termination of the Infraco Contract. This is entirely contrary to the parties' obligations at clause 6.1 of the Infraco Contract.



SIEMENS



We invite you to withdraw your purported Notices served with letters INF CORR 5764 and 5771.

Yours faithfully

M Foerder
Project Director
Bilfinger Berger Siemens CAF Consortium

cc: R. Walker
M. Flynn
A. Campos
M. Berrozpe
A. Urriza

Our ref: 25.1.201/KDR/6728
Your ref: INF CORR 5400

Bilfinger Berger - Siemens - CAF
Consultants

17 September 2010

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Infra Limited
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Phone: [REDACTED]
Fax: [REDACTED]

For the attention of Steven Bell, Tram Project Director

Dear Sirs,

**Edinburgh Tram Network Infraco
Infraco Contract: Extensive Defective Works in Princes Street**

We refer to your letter dated 18 June 2010 (INF CORR 5400), received on 21 June 2010 relating to the works in Princes Street.

We deny that our letter dated 9 June 2010 (25.1.201/BD/5937) admits that the works carried out to Section 1C/D are not in accordance with the Agreement. The letter was a response to the letter dated 16 April 2010 (INF CORR 4822/DB), in which we requested explanations as to the causes of specific snags or defects and how these are to be rectified and, in some cases, prevented from recurring. Our letter very clearly and concisely provided the information requested.

The works in Princes Street were subjected to delay and disruption from a number of matters completely outwith the Infraco's control. By way of example:

06/11/08	Requirement to allow bus traffic to run Westbound	Ref: INF CORR 340
12/01/09	Instruction - Princes Street Construction Works	Ref: INF CORR 573
10/11/09	Scottish Water valve leak in South David Street	Ref: Prog Mtg 10/11/09
03/11/09	Crawley tunnel repairs by MUDFA	Ref: Prog Mtg 03/11/09
03/11/09	Scottish Water valve leak in South David Street	Ref: Prog Mtg 03/11/09
07/11/09	BT cables obstructing works	Ref: Period Report 2-8
07/08/09	Delayed handover at Lothian Rd by MUDFA	Ref: Period Report 2-8
25/09/09	Crawley Tunnel remedial works necessary	Ref: Period Report 2-8
07/11/09	Comms cables awaiting diversion S Ch St	Ref: Period Report 2-8
07/11/09	Power cables awaiting diversion S Ch St	Ref: Period Report 2-8
30/10/09	Scottish Water live pipes to be re-laid in Crawley Tnl	Ref: 25.1.201/DB/3945

The impacts of these items, in addition to an increased scope of road construction, effectively reduced the time available for Infraco to complete the Princes Street construction works to the agreed construction programme (10 March 2010 completion). Infraco was forced to continue working 24/7 through periods of adverse weather because we would not delay the 29 November 2009 reopening of Princes Street.

Further, your Chief Executive, Mr Richard Jeffrey advised Stakeholders of progress via email dated 26 November 2009 where he stated:

"We remain on track to reopen Princes Street at 05.00 Sunday morning. This is despite a very difficult 24 hrs since my last report where the sticking weather significantly hampered progress on issues such as laying of the final road surfaces, white lining and mastic jointing, all of which are activities which cannot be carried out in severe weather, (it has been an exceptionally wet November which has not helped progress generally)."

The rainfall for the period when construction activities were most intense was exceptionally high. For example, on 20 November 2009, around 40mm of rain fell in 24 hours, more than half the average rainfall for November. The Met Office issued warnings of "persistent heavy, and occasionally torrential, rain", and there were flood warnings in the Lothian area. Met Office records confirm the exceptionally bad weather conditions during the Princes Street works.

Working under such conditions carried risk and he was warned many times that due to the delays, some of which have been listed above, the targeted completion date of 29 November 2009 would not be achieved. He did not instruct an extension to the completion date, with the result that:

- Work continued through unsuitable weather conditions, which undoubtedly affected quality
- Some work was installed on a temporary basis
- Some work could not be completed in the timeframe, rendering it vulnerable to damage from traffic

Infraco communicated in various ways including formal correspondence, meetings, and verbally to the effect that the 29 November 2009 completion date was at risk or could not be met, together with the reasons, some are listed below but are not exhaustive:

- BSC letter 25.1.201/DG/3426 dated 3/9/09
- BSC letter 25/1/201/DG/3468 dated 9/9/09
- Period Report 2-5 dated 9/9/09
- BSC letter 25.1.201/PW/3590
- BSC letter 25/1/201/3788 dated 9/10/09
- BSC letter 25.1.201/DG/3945 dated 2/11/09
- Period report 2-5 dated 7/11/09
- BSC letter 25.1.201/DG/4029 dated 16/11/09
- Weekly Site Meetings
- Project Management Panel Meetings
- Infraco Progress Report Meetings

We have addressed the headings contained within your letter as follows:

Evidence you refer to

We acknowledge that, for reasons which to a large extent are not attributable to Infraco, there are defects in the road surface adjacent to the rails. We can confirm that the material is indeed Hot Rolled Asphalt (HRA); is permitted in the specification and was the correct surface course in

the circumstances in respect of performance when subjected to loading from the buses; the high element of hand laying required in confined spaces and adjacent extensive street furniture in the carriage way. A design mix for each supply source was carried out as per BS 594.

We have identified the locations where the HRA has flexed and then broken away where it was laid over the chamber filling element but not milled out prior to the opening of Princes Street traffic. This occurred because delays had occurred due to reasons not attributable to Infracore given above, so the work could not be completed before reopening of Princes Street on 29 November 2009. Subsequently, further investigation has identified that these same areas are subjected to intensive bus wheel turning and braking forces which has compounded the problems highlighted by you.

Safety critical remedial work has been carried out since December 2009 during night shifts and with full road closure, on 3 July 2010 and, in straight sections of road, these remedial works are proving to be effective and durable.

We also acknowledge that the joint sealant is unsatisfactory in some areas, although this is not necessarily due to reasons attributable to Infracore. Infracore have sought and obtained expert opinion on the causes of the defects on Princes Street. These experts concluded that this was due to a combination of reasons:

- * In areas asphalted in the final days and nights before 29 November 2009, Infracore was not given the opportunity to mill, sandblast or seal the rail/road interface before Princes Street was reopened to traffic. This meant traffic was running on asphalt directly over the rubber made chamber filling element, causing the asphalt to break up. The authorised incomplete Infracore works to be completed during the night shifts of 12 to 20 December 2009 whereby Infracore carried out milling and sealant installation on the road which had already suffered damage. The irregularity you correctly noted was due to the sealant filling gaps in the wearing course created by allowing traffic to be reinstated onto Princes Street with Infracore works simply being incomplete. Refer to photographic storyboard appended to this letter. This affected significant lengths of Princes Street, the main section being between chainages 1580 to 1920, approximately Castle Street to Hanover Street.
- * Where the road surface level is now lower than the rails, and/or where the sealant was much wider than specified for the above reason, the sealant has been left exposed and has again been torn out by traffic.
- * Both asphalt and sealant were applied in adverse weather conditions, both cold and wet, due to programme constraints imposed by the to reopen Princes Street on 29 November 2009. This has led to premature failure in some areas. You are referred again to Mr Richard Jeffrey's email of 26 November 2009, the text of which was quoted above.
- * In the last sections asphalted in Princes Street, the prevented Infracore from undertaking sandblasting of the rails during night shifts due to the noise it can create. As a consequence, the sealant had to be applied in some areas where sandblasting was not carried out.

We also acknowledge that some of the granite setts were not installed to the required standard. The granite setts were laid in adverse weather conditions in the latter stages of the construction, in agreement with the, in order to achieve the opening of Princes Street on 29 November 2009.

Subsequently, further investigation has identified that these same areas are subjected to intensive bus braking and accelerating forces which has compounded the problems highlighted by you. Nevertheless, we note and agree with your comment that the design and choice of materials is sound.

Infraco took advice from noted experts in the field of asphalt and on-street tram systems. Initial indications are that there was a lack of compaction due to the asphalt being laid at temperatures at the lower end of the specification. The solution to be proposed takes cognisance of the following points:

- This is remedial work, not new work and asphalt laying equipment is not best suited to the widths required.
- Observations of the worst affected areas indicate that there are extremely high incidences of bus wheels turning and stopping on the junction of rail and road. All the experts concurred that the traffic pattern in Princes Street are unique for any tram system constructed to date.
- The large aggregates in the surface has led to a more ragged line after milling, which is unsightly, even if technically acceptable within the specification.

Comment on design & choice of material

Whilst not necessarily a fundamental contribution to the problems in Princes Street, we acknowledge that there are differences between materials used in the UK and those used in Germany and Infraco have taken extensive advice from noted experts in road construction and tram systems both in the UK and Germany. We are pleased to confirm that the design used for Princes Street has been endorsed by the experts and the consensus amongst them is that, given the recommended conditions and adherence to the specification and method statements, an acceptable, fit for purpose solution would be achieved.

To this end, Infraco has held a series of workshops over the past few months, by way of securing continuous improvement in the way the Infraco works are conducted. We have critically reviewed both the manner in which the works in Princes Street were carried out and the end product and taken advice from experts. As a result, we have made some changes to both Method Statements and Inspection & Test Plans, which we are confident will bring the required results.

The asphalt design has been carried out in accordance with HD2606 and produced to the Contract Specification Appendix 7/1 of the Contract.

We can confirm that the wearing course material is HRA and all material supplied and laid is compliant with all sections of the contract documents. With regard to your comment regarding the material being 'fatty' implies high binder content, if this was the case the pre-coated chips would not have yielded the required texture depth values which have been identified in our testing scheduled in Appendix 7/1 and are compliant with the requirements therein despite the adverse weather conditions at the later stages of the construction, in agreement with tie-in order to achieve the opening of Princes Street on 29 November 2009.

With regard to level control of HRA we concur with your statement hence the use of HRA as surface course. HRA has numerous advantages with respect to performance when subjected to heavy loading and the ability of hand laying in confined spaces.

etc) and adverse weather conditions and their insistence for the completion of works on 29 November 2009 has largely contributed to the current situation on Princes Street.

Payment

Infraco's position on payment due is aligned with the conditions outlined in the Princes Street Supplemental Agreement and we will continue to seek reimbursement under this agreement. To the extent not attributable to Infraco, the ongoing remedial work to the defects you have referred to are subject to the same payment terms.

Yours faithfully,



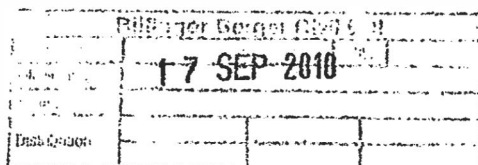
M. Foerster
Project Director
Bilfinger Berger Siemens CAF Consortium

cc: R. Walker
M. Flynn
A. Campos
M. Berrozpe
A. Uriza

Our ref: 25.1.201/KDR/6730

17 September 2010

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For the attention of Steven Bell – Tram Project Director

Dear Sirs,

**Edinburgh Tram Network Infraco
Infraco Contract: Alleged Remediable Termination Notice (Princes Street)
Rectification Plan**

We refer to your letters INF CORR 5764 and INF CORR 5771 both dated 9 August 2010.

As stated in our letter of today's date (25.1.201/KDR/6729), we do not consider that you had or have any grounds for the service of this Remediable Termination Notice which is accordingly invalid and which we have invited you to withdraw.

Notwithstanding this, and without prejudice to our position as set out in our letter (25.1.201/KDR/6729), we now attach a Rectification Plan prepared in accordance with the Infraco Contract in respect of the matters contained in your letters of 9 August 2010 (INF CORR 5764 and INF CORR 5771).

Yours faithfully,

PP [REDACTED]

M Foerder
Project Director
Bilfinger Berger Siemens CAF Consortium

cc: R. Walker
M. Flynn
A. Campos
M. Berrozpe
A. Urriza



**ETN Project
Princes Street Rectification Plan**

**ETN PROJECT
PRINCES STREET
RECTIFICATION PLAN**

**ETN Project
Princes Street Rectification Plan**

PREAMBLE

Notwithstanding the differences between the Infraco and tie as to the nature, extent and cause of the defects in Princes Street, the Infraco is fully committed to the comprehensive rectification of the defects that exist.

To this end, the Infraco has taken extensive advice from noted UK and international experts in asphalt technology and on-street tramway construction, both in investigation of the defects and design of the rectification solution.

In light of this expert advice and its own comprehensive investigations, Infraco proposes herein a comprehensive rectification plan for Princes Street. Furthermore, the Infraco is committed to the prompt and timely execution of these works in a safe and efficient manner and with a minimum of disruption to the City of Edinburgh.

Infraco requests tie's prompt acceptance of the proposals contained herein.

**ETN Project
Princes Street Rectification Plan**

CONTENTS

- 1. Strategy**
- 2. Details**
- 3. Approvals**
- 4. Programme and Methodology**

APPENDICES

- Appendix A Plan Identifying Areas**
- Appendix B Remedial Works / Enhanced Design**
- Appendix C Outline Method of Construction**
- Appendix D Programme**

**ETN Project
Princes Street Rectification Plan**

1 STRATEGY

Introduction

As a direct recognition of some of the reasons for failure as outlined in our letter dated 17 September 2010 (25.1.201/KDR/6728), Infracore has examined the design, methods of construction and quality procedures and have made changes where it was considered necessary. Consideration has also been given to the remedial works carried out in July 2010. The remedials are performing satisfactorily, except in areas subjected to intensive bus wheel turning and braking forces.

Further, the Infracore Parties have agreed that all stages of construction, method statements and inspection and test plans will be adhered to, no matter what time constraints or deadlines are imposed upon Infracore by the CEG.

Based on the above, Infracore have developed three separate solutions as detailed below.

Remedial Works – Enhanced Design

In view of the independent experts observations of intensive bus wheel turning and braking forces, Infracore and the independent experts have considered that the design could be enhanced to provide the following benefits:

- a. Provide a more robust surface to withstand turning and braking forces from buses
- b. Provide a straighter and stronger edge of road surface at the gap for the sealant to the rail
- c. Minimise or eliminate the need for milling

Four key areas of Princes Street have been identified where the failures described above were the most severe and it is considered that remedial works to the existing design will be at risk from intensive bus wheel turning and braking forces. These are detailed on the Princes Street Plan at Appendix A. It is in these areas that the Infracore recommends use of the enhanced design.

**ETN Project
Princes Street Rectification Plan**

Remedial Works – Existing Design

It is considered by both the Infraco and the independent experts that all other areas that require remedial works the existing design will fulfill the design requirements.

Remedial works adjacent to the rails will be carried out in accordance with the Rectification Plan Details. Areas where this applies are detailed on the Princes Street Plan at Appendix A.

Granite setts

Both the Infraco and tie are of the opinion that, subject to the works being carried out in accordance with the method statement, the materials and design are fit for purpose. The defective granite setts installation at the tramstop in Princes Street will be relaid as necessary in accordance with the specification / method statement. The area of granite setts is also identified in the Princes Street Plan at Appendix A.

**ETN Project
Princes Street Rectification Plan**

2 DETAILS

Remedial Works / Enhanced Design

The drawing attached at Appendix B indicates the detail proposed for remedial work in four areas where there are intensive bus wheel turning and braking forces. Features of the detail are as follows:

Coverage over the trackform, i.e. asphalt base course, binder course and wearing course, will be replaced by concrete.

- a. The groove for rail/road sealant above the chamber filling element will be formed in concrete
- b. An additional sealant will be introduced at the junction of the concrete slab and the existing asphalt road.
- c. The concrete is non-structural as the trackform and track improvement layers below provide the structural elements of the design
- d. Light mesh will be installed in the concrete slab for anti-crack purposes
- e. Crack inducers will be provided at specified intervals and the cracks will be saw-cut and sealed in the top surface. This measure is to control the natural cracking process of concrete during curing.
- f. The concrete will be coloured black to match the adjacent asphalt
- g. Concrete will have a retardant in the top surface to allow an exposed aggregate finish to be created, which will provide the skid resistance required
- h. Rail fixing bolts will be protected by a mortar in order that the concrete can be removed in the future for rail replacement/maintenance
- i. Anti-crack reinforcement has been designed taking cognisance of any stray current requirements.
- j. Concrete is one of the recommended coverages for use with Rheda City trackforms and is in compliance with DMRB

Remedial Works / Existing Design

The existing design consists of the Rheda City Trackform with 3 layers of Asphalt viz. base course, binder course and wearing course.

The remedial work will involve removal and reinstatement of the asphalt wearing course either side of the rails to a width of 300mm. This wearing course will be relaid and

4 PROGRAMME AND METHODOLOGY

Programme

Once tie accepts the Rectification Plan, it will be necessary to agree possession of the four identified sections of road with CEC to minimise disruption to the City and stakeholders. It is anticipated that this would have to avoid important trading periods such as Christmas shopping and the January sales. We have included these assumptions in our programme.

Key dates in our programme will be:

17/09/10	Issue of Rectification Plan
04/10/10	tie acceptance of Rectification Plan
15/10/10	Submit Design to CEC with information to close out associated informatives
29/11/10	Submission to TMWG / TMRP
26/11/10	CEC Technical Approval of designs
07/01/11	CEC Approval of Traffic Management
07/01/11	Permit to Commence Works
10/01/11	Mobilisation
17/01/11	Commence Enabling Works
14/02/11	Traffic Diversions and Commence Works
27/05/11	Completion of Works

A Gant (bar chart) style programme is included at Appendix D of this Rectification Plan, which reflects these key dates.

**ETN Project
Princes Street Rectification Plan**

Methodology

The key stages will be:

- a. Approval of designs
- b. Submission of Method Statements
- c. Approval of Traffic Management and method statements
- d. Mobilisation of contractors
- e. Obtain Permit to Commence Works
- f. Enabling works and traffic management set-up
- g. Site establishment
- h. Mark up exact extent of remedial works (Drawings indicate to nearest chainage reference)
- i. Carry out remedial works / enhanced design
- j. Carry out remedial works / existing design
- k. Road marking
- l. Demobilisation from Princes Street including clean up of Site
- m. Inspection and handover to CEC
- n. Restore traffic routes

**ETN Project
Princes Street Rectification Plan**

**APPENDIX A
PLAN IDENTIFYING AREAS**

CONCRETE PAVEMENT LAYER SHALL BE STEEL REINFORCED
TOP SURFACE TO BE COLOURED TO MATCH ADJACENT
SURFACE. AGGREGATE SIZE OF 20mm CONCRETE SHALL
HAVE SVA NO. 44. PROPER MATCH ROAD
SURFACING FOR RESISTANCE

C40 CONCRETE 3 x 8mm REINFORCEMENT TOP EQUALLY SPACED, 50mm COVER.
REINFORCEMENT SHALL BE IN ACCORDANCE WITH CLAUSE 11.2 TO ACHIEVE SMOOTHING
RESISTANCE REQUIREMENTS IN ACCORDANCE WITH APPENDIX 7/L/1028/04 AND 1036/06.

SEALED USING PMB OR SIMILAR
MATERIAL IN ACCORDANCE WITH
REQUIREMENTS OF MCMC CLAUSE
713 AND 801.

ROAD CONSTRUCTION
ORDER TO DRAWING SERIES 'TRM'
FOR DETAILS

RHEDA CITY TRACK FORM DESIGN BY BSC WIDTH-2149

REINFORCED
CONCRETE SLAB

C40 CONCRETE A 252 FRESH FABRIC REINFORCEMENT TOP,
50mm COVER, FINISH IN ACCORDANCE WITH CLAUSE 11.2
TO ACHIEVE SMOOTHING RESISTANCE REQUIREMENTS IN
ACCORDANCE WITH APPENDIX 7/L/1028/04 AND
1036/06.

SEALANT MATERIAL "SCORAFLEX EXTRA" TO BE
INSTALLED IN ACCORDANCE WITH MANUFACTURERS
SPECIFICATION IN STRICT ACCORDANCE WITH
BACH ENGINEERING STRUCTURE REF
ETERNITY 104 A 00 B 09516_5_16 IS - Installation of
Joint Sealants

ROD 15 TO BE WRAPPED IN BENS
TAPE, CLASS 2 SHORT FIBRE
SANDWICHING JOINT

C40 CONCRETE 3 x 8mm REINFORCEMENT TOP EQUALLY SPACED, 50mm COVER.
FINISH IN ACCORDANCE WITH MCMC CLAUSE 726 TO ACHIEVE SMOOTHING
RESISTANCE REQUIREMENTS IN ACCORDANCE WITH APPENDIX 7/L/1028/04
AND 1036/06.

SEALED USING PMB OR SIMILAR
MATERIAL IN ACCORDANCE WITH
REQUIREMENTS OF MCMC CLAUSE
713 AND 801.

INDICATIVE CENTRAL
RESERVATION

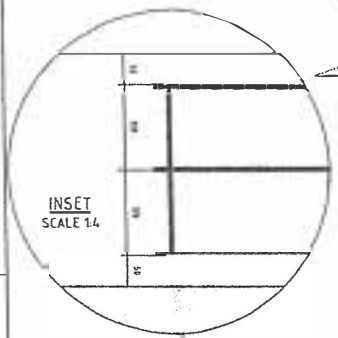
EXTEND TANKING WITH POLYMER MODIFIED
BITUMEN SEALANT TO SURFACE OF ROAD

EXPOSED CONCRETE SURFACE TO BE
TREATED TO CREATE SUSTAINABLE JOINT
BETWEEN EXISTING AND NEW CONCRETE

EXPOSED CONCRETE SURFACE TO BE
TREATED TO CREATE SUSTAINABLE JOINT
BETWEEN EXISTING AND NEW CONCRETE

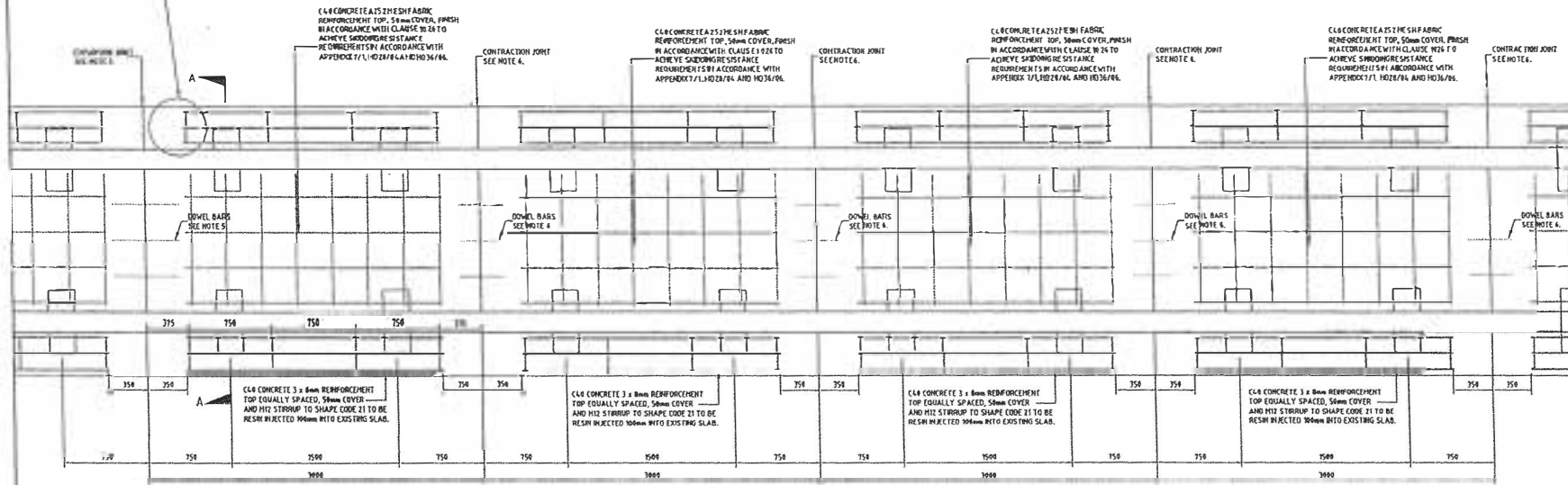
DEPTH OF TRACKS AND STRAIGHT
CONCRETE LEVELS TO BE 400mm
SLAB CONCRETE (MCMC 707/01)

SECTION A-A
SCALE 1:10



NOTES

1. C40 CONCRETE FOR SLEEPER AND SIGNAL SUPPORTS REFER TO ACCORDANCE WITH MCMC CLAUSE 11.2 TO 11.5, AND 1016.
2. SLAB FORMWORK SHALL BE 100mm THICK AND 100mm HIGH.
3. JOINTS TO BE CONCRETE WITH REINFORCING BARS LOCATED AS SHOWN IN THE DRAWING.
4. NOT APPLIED SEALANT TYPE IN THE TYPE ELEMENT.
5. TRANSVERSE EXPANSION JOINT TO BE AT TRACK BARS REPLACING THE CONTRACTOR SHALL CONFORM TO THE MCMC CLAUSE WITH MCMC VOLUME 1.1 AND 1016/04.
6. TRANSVERSE CONSTRUCTION JOINTS TO BE IN ACCORDANCE WITH MCMC VOLUME 1.1 AND 1016/04.
7. FOR LOCATION OF APPLICATIONS FOR TRACKS REFER TO DATA WHICH APPLICABLE TO THE TRACKS.



PLAN
SCALE 1:20

REV.	DESCRIPTION OF REVISION	DATE	CHKD.	APP.	DATE

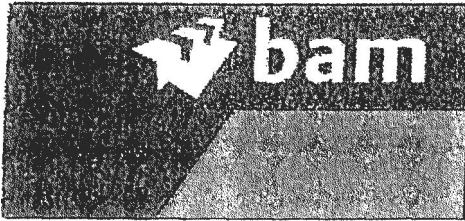
For Information Only

EDINBURGH TRAM NETWORK

DR MCMC CONTRACTOR

NEWHAVEN ROAD TO HAYMARKET
SECTION 10/10 IN STREET TRACKFORM
REMEDIAL WORKS FOR PRINCES STREET
AT SLEEPERS

DESIGNED BY: MCMC
CHECKED BY: MCMC
DATE: 13/09/2020
AS SHOWN



ENGINEERING INSTRUCTION No.: 15

From: PME	To: HZW	Cc: RGE, BDR, GGE, DGR, RJW
Document no.: ETN(TRW=TD&ADB # 055745	Date: March 20 th 2009	Rev. A
SUBJECT: Installation of Joint Sealant		

1) Introduction

This Engineering Instruction describes the procedure for the installation process of the joint sealing compound material. The procedure describes only the process after the cover layer has been finished.

2) Step I - Cleaning

The joint shall be cleaned from stones and pollution. This cleaning procedure will be done by cleaning machine, by hand with broom or with high a pressure air machine. The joint shall be clean of all loose pollution.

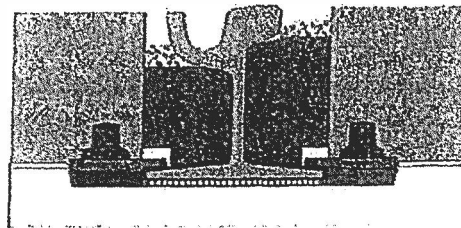


Fig. 1 Polluted joint

3) Step II – Primer (red colour)

For a good adhesion between the joint sealing compound and the rail, chamber element and cover layer (e.g. asphalt, block paving or concrete), the 2 sides of the joint shall be pretreated. In principle joints must be coated with a primer.

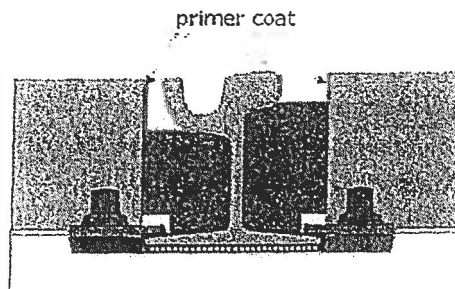


Fig. 2 Coated with a primer

4) Step III – Joint sealing compound

The material should only be moulded when the weather is dry and when there are normal construction temperatures ¹⁾. The exact installation instruction (e.g. consistence of the material, processing temperature, manual installation or machine processing) shall be in accordance with the supplier's instructions.

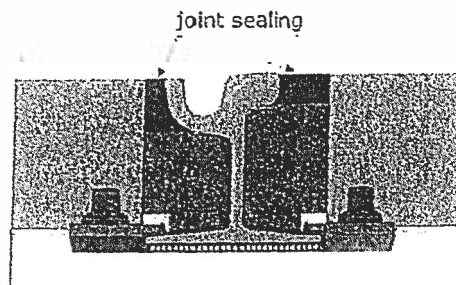


Fig. 3 Joint sealing compound

Note 1): The processing temperature is described in the material information.

5) Tolerances

According to ZTV Fug-StB (German guide lines, updated version) the joint sealing compound shall be installed with a tolerance of 3-6 mm under the top of road surface. The minimum of the upper level in relation to the TOR is 3 mm (see image below).

The road surface (cover material ¹⁾) shall be installed with tolerances of + 0 / -1 mm ²⁾ in relation to the TOR. The road surface between the rails shall be installed with tolerances of + 0 / -1 mm in relation to the Top of Keeper Flanger ³⁾.

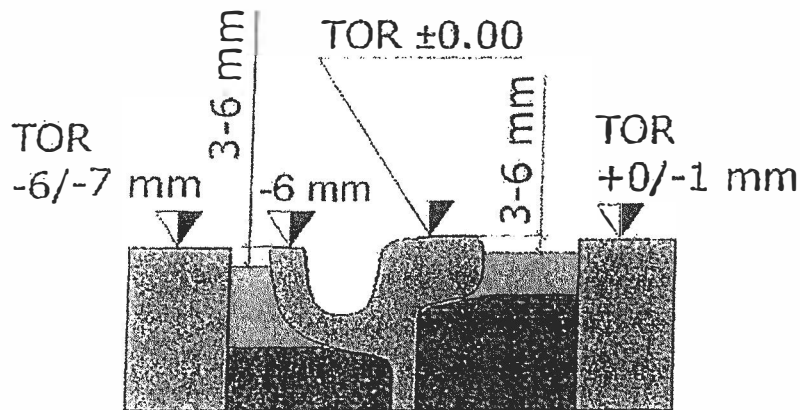


Fig. 4 Detail of joint sealing compound level

Note 1): the cover material is done by the civil contractor

Note 2): the values is given in Trackwork Specification

Note 3): the top of keeper flanger is 6 mm under the highest point of rail head.

Reference documents:

ZTV Fug-StB 01 (German guide lines),

Trackwork Specification, ULE90130-SW-SPN-00050 (version 5), paragraph 14.4.5

Signature Teamleader:		Signature Engineer:	
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**APPENDIX D
PROGRAMME**



For The Attention of Martin Foerder
Project Director
Bilfinger Berger Siemens CAF Consortium
9 Lochside Avenue
Edinburgh Park
Edinburgh EH12 9DJ

Our Ref: INF CORR 6314

Date: 29 September 2010

Dear Sirs,

**Edinburgh Tram Network – Infraco
Response to Infraco's Princes Street Rectification Plan:**

We write to inform you that your rectification plan submitted on 17 September 2010 is not acceptable to us.

Without prejudice to our rights pursuant to Clause 118, our decision is *inter alia* in recognition of the following:

- Your proposals are not approved by the relevant Approval Bodies (in particular the Roads Authority and Planning Authority).
- Your proposals are based on advice from unnamed and therefore purported experts and not on adequate factual data obtained by recognised testing methods.
- Your proposals do 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 us.
- The proposal to introduce another form of wearing course in random lengths and locations is not acceptable to us.
- You make no proposal for the transition from the track's rigid construction to the adjacent flexible road construction.

In addition to your failure to submit an acceptable rectification plan we refer to the following letters from us which either specifically refer to Clause 37 or are de facto instructions to you to act in accordance with Clause 37.1 and which you have not acted upon:

Citypoint Offices, 65 Haymarket Terrace, Edinburgh, EH1 2 5HD

Tel: +44 [REDACTED] Email: info@edinburghtrams.com Fax: + [REDACTED]

Web: www.edinburghtrams.com

Registered in Scotland No: 230949 at City Chambers, High Street, Edinburgh, EH1 1YJ. Edinburgh Trams is an operating name of the Ltd.

Direct dial [REDACTED]
e-mail: steven.bell@tie.tld.uk
web: www.tie.tld.uk

CEC02084518_0035

2 April 2010	INF. CORR 4642/DB
16 April 2010	INF. CORR. 4822/DB
7 May 2010	INF. CORR. 4957/DB
18 June 2010	INF. CORR 5400
26 July 2010	INF. CORR 5665/DB
2 September 2010	INF. CORR 5951/GB

You are clearly in default of these.

Yours faithfully



Steven Bell
Project Director – Edinburgh Tram

Our ref: ETN(BSC)TIE=TD&ABC#058097
Your ref: INF CORR 6314

Bilfinger Berger-Siemens- CAF Consortium

BSC Consortium Office
9 Lochside Avenue
Edinburgh Park
Edinburgh
EH12 9DJ
United Kingdom

14 January 2011

Bilfinger Berger Civil EDJ	
14 JAN 2011	

tie limited
CityPoint
66 Haymarket Terrace
Edinburgh
EH12 5HD

Phone: [REDACTED]
Fax: [REDACTED]

For the attention of Mr. Steven Bell, Tram Project Director

Dear Sirs,

**Edinburgh Tram Network Infraco
Infraco Contract: Remediable Termination Notice: Alleged Infraco Default (a): Defects on Princes Street Rectification Plan**

We refer to your letter reference INF CORR 6314 dated 29 September 2010, which informs us that our Rectification Plan sent under cover of our letter reference 25.1.201/KDR/6730, dated 17 September 2010 is not acceptable to you.

Since receiving your letter, we have met both tie and CEC and made a presentation about the trackwork design, with special emphasis on both the defects and rectification of Princes Street. Further information was requested by CEC and provided in BSC letters Ref: ETN(BSC)CEC=TD&ABC#058044 dated 10 December 2010 and ETN(BSC)CEC=TD&ABC#058044 dated 14 December 2010 and we look forward to the follow-up meeting to be held very soon. We believe the presentation and further information provided would have addressed most of the points raised in your letter reference INF CORR 6314. For completeness, however, we provide the following response to your letter:

Without prejudice to our position as set out in our letter reference 25.1.201/KDR/6729 also dated 17 September 2010 and in particular our position that we do not consider your allegations in respect of Princes Street constitute an Infraco Default or that a Rectification Plan is required, we respond to your stated reasons for rejection as follows:

- Approvals**
The Rectification Plan is comprehensive and includes obtaining approval from relevant bodies (in particular, the Roads Authority and Planning Authority) in Section 3. Therefore the Plan recognises that Approvals are not available yet. As you are aware, the presentation given to CEC and tie on 02 December 2010, referred to above, represented a key stage in this process.
- In addition to Rail One, the manufacturers of the Rheda Trackform System, Experts consulted in drawing up the Princes Street Rectification Plan and still available to advise us include:

Name	Organisation	Area of expertise
Professor Jordan	Expert	Asphalt and on-street tramworks
Dr Suess	ThyssenKrupp	Asphalt and on-street tramworks
Dr Cliff Nicholls	Transport Research Laboratory	Asphalt/Roads
Gerd Hirschelmann	VCL	Track & Road
Volker Schaefer	Schaefer Consult	Asphalt

3. Defects

Following completion of the majority of the work in Princes Street and its reopening to the public on 29 November 2009, it became apparent that there were a number of defects, some of which became worse under prolonged traffic loads. The problems were in three main elements:

- Asphalt adjacent to the rails breaking up
- Asphalt near the rails subsiding below rail level
- Rail/asphalt joint sealant coming loose

The Infraco has accepted that remedial work will be necessary, but it has been necessary to fully understand the nature of the failures, the reasons for them and the best course of action to prevent recurrence.

Extensive advice has been taken from noted experts (as listed above) in asphalt technology and on-street tramway construction, both in investigation of the defects and design of the rectification solution.

Whilst we have noted the contents of the various letters you list at the bottom of your letter in relation to Clause 37, it has been necessary to fully understand each of the defects before taking action. As recognised by the Office of the Rail Regulator, all on-street trackworks represent a compromise between road and rail requirements and all the tram systems built in the UK in recent history have suffered from problems, some of which have occurred in Princes Street. Infraco has gone to great lengths to learn from these experiences and ensure these lessons are incorporated into the Rectification Plan.

Notwithstanding our need to build any advice into our Rectification Plan, any safety-critical damage requiring repair has been dealt with as necessary since December 2009 and these repairs will be taken out and replaced with the proposed repair system where appropriate.

The reasons for the failures are now better understood and these are given in Infraco's response to tie letter INF CORR 5400, Ref: 25.1.201/KDR/6728 dated 17 September 2010 and subsequently in the presentation to CEC and tie on 02 December 2010. Nevertheless, the technical solutions proposed in the Rectification Plan address all of the defects so that these can be avoided during rectification works.

4. 300mm strip replacement

You do not state why the proposal to replace a 300mm strip of wearing course either side of the rails is unacceptable to you, so it is difficult to respond specifically. Nevertheless, this is necessary to repair the zone that suffered damage when Princes Street was opened to traffic before Infraco was allowed to mill the groove and/or install sealant adjacent to the rails. 300mm is considered by our expert advisors to be the minimum width practical for a repair, but is also the appropriate width in the situation around the rails

5. Concrete wearing course

The proposal to introduce concrete in the areas noted in the Plan was in response to the need to address the durability necessary for very high wheel turning and stopping forces at junctions. Simply specifying Class 0 (Motorway standard) in these areas does not necessarily provide the durability required for these locations in Princes Street. The locations and lengths chosen are not random, as they are related to actual traffic patterns observed at the road junctions. We believe you may have misunderstood this aspect of the Plan but trust that the presentation on 2 December 2010 clarified matters for you. Of course, we are happy to meet you and explain the rationale in more detail.

6. Transition between road and track

The Rheda system incorporates a flexible joint between road and track that allows independent movement of the track when trams pass, as is the case with all modern on-street tram systems. It is important that the tracks are allowed to deflect (less than 1.5mm) under tram loading and then recover after a tram has passed, without deflection or even loading of the adjacent road. No transition is required, but the chamber filling element and flexible sealant above provide the means for this engineering requirement.

Where standard road construction meets tram road construction above the concrete trackform and track improvement layer, a geogrid has been provided to prevent reflective cracking over the edge of the concrete slab. This detail was designed by SDS after having been considered by their own in-house roads expert.

We trust this satisfies the points you list. Nevertheless, we confirm our availability to advise you further at your convenience if you require further details or explanation.

We request that you now accept our Rectification Plan. In the meantime, we continue to address the issues detailed in the Plan in accordance with our contractual obligations as quickly as possible in the interests of both the ETN Project and also the people of Edinburgh. We would remind you that where dependencies are identified, in particular on tie actions, these must be carried out. Failure to address and carry out its necessary actions will jeopardize the successful completion of the Plan and may amount to a breach of the obligations under the Infraco Contract. Given recent publicity, it is important that we are jointly seen to be working towards a solution in Princes Street. Additionally, temporary repairs being carried out do not have a long life and further deterioration increases the risk of an accident to a member of the public.

Yours faithfully,



Martin Förder
Project Director
Bilfinger Berger Siemens CAF Consortium
MFO/ABR/KDI/SDE

cc: Klaus Dieker - Infraco (Siemens)
Michael Wilken - Infraco (Siemens)
Damian Wheeler - Infraco (Siemens)
Thomas Schwanse - Infraco (Siemens)
Stefan Rotthaus - Infraco (Bilfinger Berger)
Simon Nesbitt - Infraco (Bilfinger Berger)
Ian Brazenall - Infraco (Bilfinger Berger)

