

Our ref: ENG-LTR-COR-MSR-CSTR-5006  
Your ref:



Jenny Outten  
Kings Cross Station Redevelopment Programme  
Cubitt House  
1 Battle Bridge Road  
London  
NW1 2AH

**Railway Infrastructure Services**

22 June 2009  
Private and Confidential

T +44 (0) 1904 454600  
T +00 (0) 1904 454799 (direct)  
F +00 (0) 1904 454868  
andrew.g.wilkinson@corusgroup.com

**RE: Temporary Works Load Effects on Main Shed Roof Arch Ribs**

Jenny,

Please find attached our calculations into the effects of the proposed temporary works loads on the Main Train Shed Roof arch ribs. The calculations regarding the capacity of the ribs are based on our calculations submitted at Form B stage, with the addition of the loads shown on EDS drawing number P0010-04-DCA-01-H received 12 June.

We have prepared two sets of calculations to check the capacity of the roof arches, one with the cast iron O-Rings undamaged and one accounting for the cracked O-Rings.

The temporary works loads have been applied to the structure in combination with the proposed roof dead loads as a potential worst case. Temporary works loads have also been checked in combination with the design wind loads. Snow loads have not been included in the analysis as snow management is specified within the contract.

The load combinations considered do not result in an overstress to the ribs either globally or locally in the areas around the damaged cast iron O-Rings. The highest utilisation factor for combined wind load and full temporary works dead and live load is 0.98. The worst utilisation factor occurs for full temporary works dead and live load combined with the design westerly wind load.

The effects of the out of balance loading on the central spine wall have also been checked to ensure that at no point is the horizontal load at roof arch level due to temporary works greater than that due to wind loading or drifting snow loads. The worst individual out of balance load on the spine wall is due to the

design westerly wind load. When the actual loading on the station roof is considered the worst conceivable out of balance load at the spine wall occurs with drifting snow blown across the roof by the design westerly wind. The addition of the temporary working platform on one side of the train shed only increases the out of balance effect on the spine wall over and above this. It is not anticipated that the platforms in the two barrels will be significantly out of sequence with each other. To counter the additional horizontal loads on the spine wall the access system will be fitted with tie rods which connect to the arch ribs whilst the platform is in use.

Regards,

A handwritten signature in dark ink, appearing to read 'A. Wilkinson', with a stylized, cursive script.

Andrew Wilkinson, Project Engineer – Package 2  
Enc. Roof Member Checks – Complete O-Rings  
Roof Member Checks – Cracked O-Rings