

ITT3-Scenario: Rolling Stock System Specialist Engineering Support

Question [3B]

Provision of specialist engineering support to TfL rolling stock engineering that will deliver solutions to complex safety, reliability and maintenance optimisation initiatives; this will include failure analysis to root cause, design feasibility justification, business case preparation, risk assessments and design modifications.

The supplier will need to demonstrate specialist knowledge and understanding of all professional engineering matters relating to Railway Engineering and be able to apply them to the operation of an underground Metro, light rail operations (DLR and Tram operations) and heavy rail operations (both passenger and freight).

The delivery of successful rolling stock specialist designs or modifications depends on the following skills, knowledge and experience:

- a) Audio / Visual on train communications
 - b) Rolling Stock CCTV systems
 - c) Rolling Stock electrical design and installation
 - d) Rolling Stock mechanical design and installation
 - e) Rolling Stock System investigations
 - f) Rolling Stock Design feasibility
 - g) On-train Traction and braking systems
 - h) Door Systems
 - i) Power Engineering and 3rd/4th rail power conductor interface
 - j) Fire performance of materials used on rolling stock
 - k) Line Upgrades
 - l) Rolling stock interfaces to the Permanent Way - Wheel / rail interface
 - m) Gauging interface with Stations, tunnels and lineside equipment
 - n) Rolling stock structural design and analyses
 - o) Rolling Stock interior carbody design
 - p) Interfaces with modern and legacy Signalling systems
 - q) Rolling stock related EMC
 - r) Rolling Stock specific depot plant & equipment
 - s) Train management systems
 - t) On-train surveillance systems and Equipment
 - u) Systems Engineering
 - v) On and off train systems Integration
 - w) Incident investigation and support
 - x) Rolling stock RAMS Analysis
 - y) Rolling stock cab simulators
 - z) Noise, vibration and Environment
 - aa) Ergonomics and human factors
 - bb) Vehicle Dynamics
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- 1. Validation of project and stakeholder requirements
 - 2. Liaising closely with TfL specialist rolling stock engineers and maintenance staff during the design process
 - 3. Interfacing with other TfL engineering disciplines e.g. signals, track, power engineering and operations, etc.
 - 4. Carrying out any necessary visits to depots to investigate failure modes, examine reports, analyse results and develop innovative, cost-effective solutions in collaboration with fleet engineers and specialist rolling stock engineers (FRACAS)

5. Carrying-out any necessary site visits to depots to examine rolling stock and conducting design correlation activities
6. Provision of competent and metro experienced specialist resources to design, check and approve designs
7. Knowledge of, or obtaining knowledge of and implement London Underground rolling stock design standards and assurance arrangements
8. Availability of the supporting tools e.g. CAD, Software Development tools, or other tools, to support the production of the designs and drawings
9. Delivering all documentation to ensure the works can be built, installed, tested , commissioned and maintained over its design life
10. Technical support and management of 1 to 9

The supplier will be expected to supply a wide range of specialist advice, studies, surveys, reports, design and supervision services which will in turn rely and depend on skill, competence and capabilities including but not limited to the list shown above:

In no more than 1500 words contained in a maximum of 4 sides of A4 (pictures, diagrams etc. may be included in the sides of A4 limit) describe your company's capability to provide rolling stock specialist engineering services described above.