

- k) Elongation at point of failure;
- l) Failure mode and damage incurred by the components;
- m) Calibration certificate of the test equipment.

9.1.8. The test certificate shall form part of a test report. The report shall include photographic evidence of the failure, a tabular and graphical plot of the load/extension relationship, and a written summary. The Contractor shall supply report to the Employer in Adobe pdf format.

9.2. Quality Submission

9.2.1. The Contractor shall provide a quality submission for each chain as a comprehensive record of the manufacture and test (if applicable). The quality pack shall be made available to the Employer at the time of the inspection, or soon after. The quality pack shall include:

- a) C of C confirming acceptability of the chain showing the order number and signed by a representative of the chain manufacturer;
- b) Record of all drawings and revision used in manufacture;
- c) Material certificates for all materials used;
- d) Sample dimensional measurements for each component and sub assembly;
- e) Hardness, depth of hardness and any heat treatment (if applicable);
- f) Results of any NDT processes carried out (if applicable);
- g) Dimensional measurements of complete assemblies;
- h) Destructive test report (if applicable) see clause 9.1.1.

9.3. Audit

9.3.1. The Employer shall audit the Contractor's manufacturing process, relevant drawings, and the Contractor's QA/QC procedures to ensure continued compliance with this specification. This factory audit shall include dimensional or hardness checks of a sample of components. The Contractor shall afford every facility for such inspection, for which the Employer will give adequate notice.

9.3.2. The Employer may also request samples of components for inspection at his own, or a third party's premises.

10. Delivery

10.1. Each complete chain shall be dipped in a suitable light protective oil (e.g. Mobilarma 522' or similar), and allowed to drain prior to packaging.

10.2. Any bushes or joining links, which are to be supplied as loose items, shall be securely wired to the end of the chain. Grease nipples as appropriate shall be bagged and securely taped to the chain.

10.3. The chains shall be packaged on 1200 x 1000 mm two-way pallets, and shall be coiled, banded and shrink wrapped. The number of complete chain lengths to be arranged on each pallet is dependent on size and weight. This shall be agreed with the Employer at receipt of purchase order.

10.4. Wheels shall not be stacked on wheels to avoid flat spots on the tyres.

10.5. Each consignment shall be clearly marked with the LU order number, LU part number, the Contractor's name and the total number of deliveries in the consignment.

10.6. The Contractor shall deliver the chains to a designated LU store, by prior arrangement with the Employer.



Document history

Edition	Date	Notes
01	October 2009	First issue, based on and superseding Metronet specification 2297BCV.
02	February 2016	Revised to incorporate latest quality requirements to DCN LU721.



Appendix 1 - References

References in the text are made to latest editions unless specific editions are cited. Where references are made to other corporate engineering documents that are not yet published, existing documents shall be followed until new documents have been authorised for use.

European and British Standards

BS EN 95-1:2008 Safety rules for the construction and installation of escalators and passengers
+ A1: 2010 conveyors

LU Engineering Standards and Guidance

S1092 Heavy Duty Type Escalators and Moving Walks
S1094 Heavy Duty Metro Type Escalators and Moving Walks

LUL Specification

SPC-LAE-TM00- Manufacture and testing of replacement escalator wheels
0585435

LU Drawings

26-01-015 Lubrication Specification



Schedule 3b Specification

As Stated in the tender documents and associated issued purchase orders

1. **DESCRIPTION OF SUPPLY** – This is a performance specification inclusive of all works and materials, unless specifically indicated otherwise, required to meet the design specifications, operating requirements and performance levels within the Contract for the supply of Materials identified below.
2. **SCOPE OF SUPPLY** – The Supplier shall be responsible for supply of all Materials, (inclusive of labour charges, plant, transport and associated costs within the following material groups:
3. **RESTRICTIONS** – Whilst on LUL sites the Supplier is to comply with the general conditions appertaining to the respective location. For example, “No Smoking”, “No Radios”, “No Portable CD Music/Media Players”, “No Swearing”, “No Drugs”, “No Alcohol” etc and comply with all alarm testing and evacuation procedures as directed.
4. **PASSES & PERMITS** – Delivery drivers will not be required to hold any form of LUL Permit. Any of the Supplier’s staff involved in filling bins and part of a VMI service will be required to hold a LUCAS card.
5. **MATERIAL SPECIFICATIONS & REQUIREMENTS**

5.1 STANDARDS - The Supplier shall deliver the Materials to meet the requirements of the Conditions of Contract.

5.2 WARRANTY & PRODUCT LIFE –

5.2.1 CONTRACTUAL WARRANTY – The Supplier will provide details of Materials under warranty and the period of warranty on the Contract Material Data Sheets.

Defective Materials under warranty will allocated a unique tracking number by the Company and returned to the Supplier together with a completed Return to Vendor (RTV) form.

On receipt of the Materials the Supplier will carry out a formal investigation as to why the Materials have failed and the RTV should be completed and returned to the Company, stating the Suppliers findings, and any corrective actions taken.

The two basic outcomes will be:

- (i) No Fault Found – The Supplier has re-tested the Materials and can find no fault with them. The parts will be re-supplied to the Company; or.
- (ii) Fault Found – The Supplier has re-tested the Materials and has found fault. The fault has been determined and corrective action has or will take place to ensure no re-occurrence. The Company at its discretion may then quarantine, screen and return to the Supplier all existing stock from the same batch for full replacement.

Any Materials that have been returned to the Supplier under a warranty claim or quality issue will be deducted from monies owed to the Contactor by the Company’s accounts payable department at the Price at which it was supplied to the Company. The Company will not be responsible for the costs of shipment back to the Supplier for any Materials that are deemed to have, and agreed as Fault Found. Any shipping costs

incurred by the Company will either be deducted from monies owed to the Supplier, or alternatively the Supplier can choose to arrange their own pick up.

There may be small items of such low value that, between the Supplier and the Company, the cost to process any warranty claim would outweigh any cost benefit or supply any business justification for doing so. The Company and the Supplier will agree these items at the outset of the Contract being awarded. However this would not apply to any business or safety critical Materials.

The warranty period will re-commence for any material that is repaired under warranty. Any replacement materials will be classed as new for the calculation of warranty.

Where Materials under warranty have been maintained by the Company they will remain under warranty provided that the Suppliers instructions and guidelines have been followed. The Supplier will provide all maintenance instructions and manuals to the Company during the mobilisation period of the Contract.

- 5.2.2 PREDICTED PRODUCT LIFE - The Supplier will provide details of the expected product life for Materials on the Contract Material Data Sheet.
- 5.2.3 LATENT DEFECTS - Any latent defect in any item of Supplied Materials shall be rectified by the Supplier if it becomes apparent or is discovered at any time in the period of five (5) years after the commencement of the warranty period for the affected Materials.

6. ENGINEERING AND DESIGN CHANGE PROCESS

The Supplier is responsible for following the process detailed below to advise the Company and get a design change approved:

The Supplier will formally request a design change, being an alternative, or a modification to an existing part, and will complete any paperwork that the Company deems necessary. The Supplier will supply supporting data to validate the design or alternative change being proposed. This may include, but not be limited to, certificates of conformity, test data, data sheets.

The Company will formally review the proposal, and then notify the Supplier of the outcome.

The Company will notify the Supplier in writing of any product or design changes they make in house. A testing process will take place before the implementation of any changes (refer to Testing section below).

7. TESTING

Where formal approval is required for the introduction or amendment of new or existing materials and parts, or equipment testing of new Materials, the Company may request testing to be carried out (Acceptance Tests). This testing may be observed by the Company where deemed necessary.

Testing will require the Supplier to undertake/provide the following, (non exhaustive):

Provision of a sample – including any pre-production, or production tooling and or modifications to any existing tooling.

Provision of any external testing documentation.

Provision of any sample submission paperwork.

Responding to technical queries issued by the Company's Engineering department.

Provision of any further testing required by the Company to satisfy itself that the alternative Materials offered will not put the travelling public at risk.

Provision of any internal engineering costs born by the Company (the costs of its own internal personnel)

Compilation of final engineering report and sign off.

The costs for the above may be financed in one of the following ways to be agreed prior to commencement of testing.

The Supplier absorbs the costs.

The Company absorbs the costs.

The Supplier and Company jointly absorb the costs.

The testing process will align with the requirements of the Engineering and Design Change Process detailed above.

8. OBSOLESCENCE & COUNTERFEIT PROTECTION

8.1 OBSOLESCENCE MANAGEMENT - The Supplier shall be fully responsible throughout the Term of the Contract for the cost of managing any incidence of obsolescence, and for implementing actions to ensure the continued supply of Materials listed under the Contract.

The availability of all active electronic components that are constituent parts of any Materials supplied under the Contract will need to be monitored. Monitoring shall consist of the Supplier evaluating the likelihood of obsolescence at appropriate time periods in order to give the Company prior notice of obsolescence. The Supplier shall provide, as part of its bid proposal, details of its monitoring processes including arrangements for notification.

8.2 MATERIAL AVAILABILITY - The Supplier shall provide, as part of its bid proposal, predictions of the time for which the Materials listed under this Contract will continue to remain available for purchase from the Supplier or its sub-contractors including time beyond the Term of this Contract.

8.3 EQUIPMENT DISCONTINUATION - The Supplier shall provide, as part of its bid proposal, details of its proposed action in the event that, during the Term of the Contract, the Supplier or its sub-contractors become unable or unwilling to continue to offer Materials listed under the Contract, for example, due to the discontinuation of production for any Materials or component. Details shall include arrangements for notification.

8.4 COUNTERFEIT PROTECTION - The Supplier shall develop and implement processes or procedures, or both, to ensure, to the best of its ability, protection against the procurement of counterfeits by either itself or its sub-contractors. Such processes and procedures shall be auditable by the Company.

9. TRACEABILITY - All safety critical parts must have full traceability and the Supplier will have a fully documented traceability process. Materials classed as safety critical are detailed on the Contract Material Data Sheets.

(APPENDIX 1 - CONTRACT MATERIAL DATA SHEETS)

10. MATERIAL SUPPLY

10.1 ORDER PROCESS – The Company will produce Orders as and when demand arises.