

Shukhov Tower, Moscow

The steps towards a structural appraisal.

1. A measured survey is required which can be viewed in 3D. This will need to identify the size of all the members and will be the basis for a structural model.
2. Identify what is structure and what is services (trunking, conduit etc).
3. Identify original and non-original structure. Review what changes have occurred and why.
4. Desk study review of material strengths and design codes at the time of construction. Also review any original drawings, specifications, previous reports and previous repairs/maintenance.
5. The structure is steel sections with bolted connections. The key areas of risk of damage are the connections. A photographic survey of each node, from both sides, is needed. These can then be reviewed to establish if there are standard connection details, have details been added to/repared and what damage has occurred.
6. The damage can be added onto the survey drawings: e.g. green for no signs of damage; yellow for superficial damage; red for more significant corrosion. This will help to understand the extent of damage and if there is any pattern.
7. Select areas for further investigation to confirm the extent of damage (clean to remove paint and scale and measure the steelwork to establish how much material has been lost to corrosion).
8. Use the structural model to look at forces, stresses and deflections under loads. This will help to confirm how hard the structure is working overall identify any local areas of concern and the degree of 'spare capacity'.
9. Identify areas that need repair and prepare a suite of repair details. The location of the repairs will have an influence on the method and access to carry out the works.

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