

INTRODUCTION

- 1.1 Stone Technical Services Ltd was commissioned by Geoffrey Osborne Limited to undertake a structural inspection survey of the Lighting Towers 6 & 7, Wimbledon Train Depot, London. This report was instigated by the client in order to ascertain whether the two aforementioned lighting towers were in sufficiently good condition to be accessed for the purpose of their demolition. Unlike the other lighting towers on the site these two towers are located in positions which present access difficulties for large cranes etc. As a consequence the client is planning to dismantle the towers in small sections which requires a person to access the towers in order to assist with the dismantling of the structure.
- 1.2 The two lighting towers are formed from a four sided steel lattice frame. Lighting tower 6 is approximately 30m in height. Lighting tower 7 is approximately 25m in height. Both also have a steel framed lighting platform at the top of the tower.
- 1.3 SL visited site on 13th July 2010 to assess the lighting towers, noted in item 1.2, for structural adequacy for the purposes described in 1.1.
- 1.4 The brief for this report is outlined as follows:
- visit site to perform an assessment of the structures in question in relation to the clients requirements stated in 1.1.
 - confirm findings of visit.
 - assess if any remedial works are required.
 - provide recommendations to rectify any potential issues if applicable.
- 1.5 This report does not cover any other aspects related to these structures other than their structural adequacy and their suitability to support a person when accessing the tower by the ladder access currently provided.
- 1.6 The conclusions and recommendations made in this report are limited to those that could be established based on the findings of the site visit. SL reserves the right to alter their conclusions and recommendations in light of further or more detailed information that may become available. It is not possible for SL to comment upon parts of the structure/building which were not accessible and are therefore not able to confirm if these areas are free from defects.
- 1.7 This report was carried out by Stone Technical Services Ltd and undertaken by:
- G. Stone

2 STRUCTURE DETAILS/INFORMATION

2.1 General Information

- 2.1.1 The structures under consideration are steel lattice framed lighting towers. The towers have four sides each of which is a vertical steel framed lattice. The lattices are formed from vertical circular steel boom members which are most probably hollow sections and circular solid steel bar internal bracing members. The vertical boom members are shared between the adjoining side frames so that when viewed on plan there is only one vertical member seen in each corner. The tower frames are spliced at approximately 3m intervals throughout their height. The internal bracing bars are welded at one end and bolted at the other end. The towers sit on a single concrete foundation which projects above ground level.
- 2.1.2 The lighting platform at the top of the tower is also formed from a mixture of steel circular hollow sections and solid steel bar members. The floor of the platform is an open steel mesh.

3 SITE OBSERVATIONS/COMMENTS

3.1 Lighting Tower 6 - (Approx. 30m in height) (See Appendix A for survey photos)

- 3.1.1 The concrete base of the tower appeared to be in good condition with no signs of distress.
- 3.1.2 The structure at lower level, just above the ground level, was surrounded by tree branches prior to the inspection. These were partially removed in order to provide a clear view of the structure. As can be seen in the photos, contained in appendix A, the structure is in good condition generally. Even where there is moss growing on some of the members there was found to be little or no rust present below the moss. Where rust was present it was found to be a very thin layer and did not represent a significant structural problem. There was evidence that the structure had been painted and maintained to a certain degree during its life on the site which appears to have helped in preserving the structure at the lower level.
- 3.1.3 The structural members displayed increasing amounts of rust the higher up the tower they were located although even those members possessing the greatest amounts of rust had not suffered a significant loss of cross sectional area. Photo 11 of tower 6 shows a typical example of the level of rusting observed at the higher levels of the tower. When touched the rust was not found to be flaky and the surface of the members felt hard to the touch. The level of rust observed on the tower was therefore considered insignificant in terms of the structural adequacy of the tower especially in light of the fact that they are due for demolition shortly. If, however, it was decided that the towers were to be retained then it would be recommended that the rust be cleaned from all members and that they be painted for protection against further loss of cross sectional area.
- 3.1.4 As with the tower structure there was evidence of relatively minor levels of surface rusting on the structure which formed the lighting platform at the top of the tower. Again the level of rusting was not considered to significantly affect the structural adequacy of the platform.
- 3.1.5 Note that the internal condition of the tubular steel members could not be inspected however there were no external signs on these members which would suggest significant rusting internally had taken place.

3.2 Lighting Tower 7 - (Approx. 25m in height) (See Appendix A for survey photos)

- 3.2.1 As with the lighting tower 6 structure the concrete base of the tower appeared to be in good condition with no signs of distress.
- 3.2.2 The lower levels of lighting tower 7 are in good condition as can be seen from the photos in appendix A.
- 3.2.3 As with the lighting tower 6 structure the structural members displayed increasing amounts of rust the higher up the tower they were located although even those members possessing the greatest rust had not suffered a significant loss of cross sectional area and therefore the structure was considered structurally adequate.
- 3.2.4 As with the lighting tower 6 structure there was evidence of relatively minor levels of surface rusting on the structure which formed the lighting platform at the top of the tower. Again the level of rusting was not considered to affect the structural adequacy of the platform.
- 3.2.5 Note that the internal condition of the tubular steel members could not be inspected however there were no external signs on these members which would suggest significant rusting internally had taken place.

4 CONCLUSIONS/RECOMMENDATIONS

4.1 General

- 4.1.1 In general terms both Lighting Tower 6 and Lighting Tower 7 are considered structurally adequate for their originally intended purpose and access by a person via the means currently provided. The light amount of rusting present on some members is considered not to have significantly affected the structural adequacy of the towers in question.
- 4.1.2 It is important to note that it is very probable that the towers in question were only designed to be accessed by one person at a time.
- 4.1.3 It must also be noted that applying loads to any structure for which it was not designed originally is dangerous and could potentially result in the failure of that structure. Therefore it is recommended that design checks should be carried out by a suitably qualified Structural Engineer prior to any such loads being applied to a structure. For example if the demolition/dismantling process applies different loading patterns to the towers, in question, it is recommended that they be checked by a suitably qualified Structural Engineer prior to any such loads being applied to those structures.
- 4.1.4 If required SL would be able to provide a quotation for providing further assistance in assessing the feasibility of potential methods of demolition/dismantling of the structures in question. For example the lifting of more than one section (Approx. 3m between splices) of the tower during demolition would not be recommended without further consideration by a suitably qualified Structural Engineer.

APPENDIX A - SURVEY PHOTOS

