

**Client:**

**Inspection Areas:**

**Originator:**

**Date:**

**Job Ref: n/a**

## **Report on Inspection and Testing of Street Lighting Units**

### 1.0 Introduction

- 1.1 Acting on the instructions of Mr Ian van den Heever of City of Cape Town, inspection and testing was carried out on various columns for base & root corrosion.
- 1.2 Site work was carried out during 10<sup>th</sup> to the 12<sup>th</sup> of February 2009.

### 2.0 Procedure

#### 2.1 Base and Root

- 2.1.1 Testing carried out in accordance with documented in-house method ST9 (Issue 3) on the root of the unit using the Scribe Relative Loss of Section meter (RLS 1-D Mark 2), which compares the relative mean sectional thickness of an area of column 100mm above to approximately 100mm below ground level with the same sized area of the same column and profile at a higher level. By testing at four equally spaced positions around the base of the column where it enters the ground, the four areas tested overlap thereby including the complete circumference of the vulnerable zone in the survey. The procedure adopted was to first test immediately below the inspected door (P1) and then progressively clockwise through 90° to P2, P3 and P4 where accessible.

- 2.1.2 A 5<sup>th</sup> reading was taken where possible (P5) by placing the top of the head approximately 50mm below the door to establish if loss of section is present internally below the door opening.
- 2.1.3 Dependant on the search head used the test area using the large head extends approximately 100mm above to 100mm below the base x 200mm wide, the small head extends approximately 30mm above to 30mm below the base x 80mm wide. By comparing the value obtained at a non-corroded reference area with the reading at ground level, a relative reading for the apparent mean loss of 'sound' material is acquired.
- 2.1.4 If all loss of section is confined to the portion of the sensed zone g/l to -100mm, the displayed LSU's (relative loss of section units) approximate the apparent percentage loss of steel relative to the reference area. Where a significant loss has also occurred above g/l, and where a thin band total penetration has occurred the estimate of percentage does not apply but the indicated degree of severity remains valid.
- 2.1.5 Test results are used to categorise probable root condition. Experience to date within the United Kingdom indicates that category 4 & 5 columns invariably require repair or replacement, except where the value is influenced by the cable aperture being located within the sensed zone. Where this condition is identified during the inspection, the result is marked accordingly (\*).

## 2.2 Base - visual observations

- 2.3.1 Additionally, the portion of the base g/l to +300mm is visually inspected and classified A to G as follows:-
- A. Free from defects
  - B. Visible loss of paint/coating only
  - C. Surface corrosion only
  - D. Pitting/flaking. Minor loss of section
  - E. Extensive corrosion. Major loss of section
  - F. Hole visible within base/root of unit
  - G. Impact damage.

### 3.0 Results

3.1 Detailed individual test results are tabulated in Appendix 1 and the average value colour-coded to indicate the classification and relative severity of loss in each unit.

TR22 Category	CMT Class	Colour Coding of results	LSU's Range *	Diagnosis
2U	5	Red	>-50	Very Severe loss of section
1U	4	Orange	-25 to -50	Severe loss of section
2G	3	Yellow	-17 to -24	Significant loss of section
3G	2	Blue	-11 to -16	Moderate loss of section/pitting
6G	1	Green	0 to -10	Little relative loss of section

- Classification ranges may be amended in the light of additional data, currently with guidance from Technical Report Number 22 Third Edition 2007.

3.2 The **average** test result for each column is first calculated and to classify the overall condition, a numeric weightings of 4 is applied where one or more measurements fall within the yellow band (class 3) and a weighting of 8 for measurements that fall in the orange and red bands (classification 4 & 5).

This forms the basis for the recommended action as shown in the following table.

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TR22 Category	CMT Class	Average LSU's	Recommendation *	TR22 - Priority Score Impact
2U	5	>-50	Immediate removal or making safe the unit	No Change
1U	4	-25 to -50	Schedule for Removal/Replacement as soon as practicable or in accordance with Operating Authorities Action Matrix	No Change
2G	3	-17 to -24	Re-test within 2 years	Minus 2 from score
3G	2	-11 to -16	Re-test within 3 years	Minus 3 from score
6G	1	0 to -10	Re-test within 6 years	Minus 6 from score

\* This recommendation is based on information from testing within the United Kingdom and may require amendments to suit the South African environment, authorities and column type.

Recommendations assume:

- 1) Environmental and ground conditions remain consistent with the existing and past conditions.
- 2) The column does not suffer any impact damage or other activity that may accelerate the corrosion process.
- 3) No attachments are fixed to the column.
- 4) Extreme weather conditions.

3.3 Test results are summarised below and given in detail in appendix 1.

Classification	Root
Total number of columns tested	77
Columns in classification 1, 2 & 3	41
Columns in classification 4	14
Columns in classification 5	22

Elex khanyisa  
Signed: Tiernan Shields

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Checked and Approved by:  
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