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TRANSPORT SA

# RAPID BAY JETTY
## Measurement of Steel Thickness

# PAVEMENTS & STRUCTURES
## Coatings and Corrosion Group

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**Project:** **Rapid Bay Jetty, Steel Thickness Measurement**
**Client:** **N. Correani, Marine Facilities**
**Report No:** **05018-2** **Date:** **03/03/2005**

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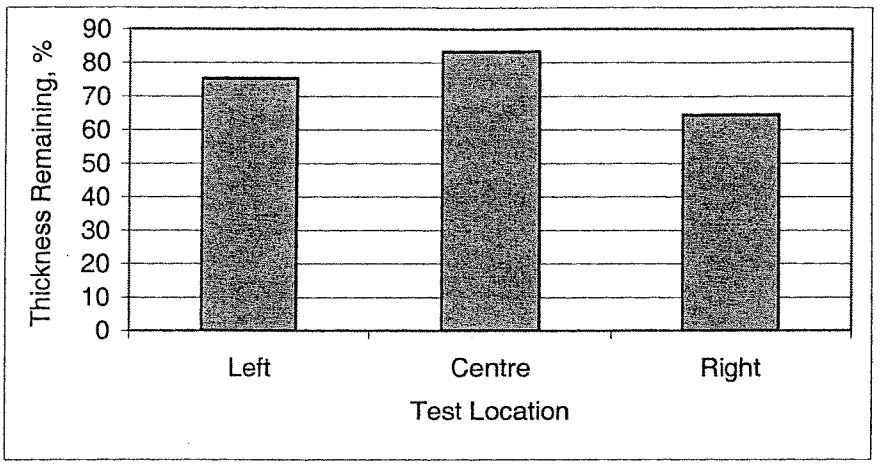


Diagram 6 - Webs

| | West | Centre | East |
|---|---|---|---|
| Thickness New, mm | 10.16 | 10.16 | 10.16 |
| Mean Webs, mm | 7.7 | 8.5 | 6.6 |
| Standard Deviation | 3.1 | 3.4 | 2.0 |

Table 6 – Web Data

## 3.4 Summary

All results are summarised in Table 7. Indications are that general metal losses of approximately 50% have been measured over the relevant spans of this structure. I believe that the original thickness figures for the crosshead webs are incorrect, which would result in a greater metal loss figure for these components.
By means of comparison, the Marine and Harbors report of 1987 indicated a loss of approximately 30% to flanges and somewhat less to the webs for spans 33 to 77.

| **Element** | **% Steel Remaining** | | | | |
|---|---|---|---|---|---|
| | West | Centre | East | Mean | Overall Mean |
| **Longitudinal** | | | | | |
| Top Flange | 49.6 | 44.7 | 59.0 | 51.1 | 50.3 |
| Web | 45.3 | 50.6 | 62.2 | 52.7 | |
| Bottom Flange | 47.8 | 46.4 | 46.8 | 47.0 | |
| Mean | 47.6 | 47.2 | 56.0 | | |
| **Crosshead** | | | | | |
| Top Flange | 34.9 | 51.1 | 31.3 | 39.1 | 52.7 |
| Web | 75.3 | 83.3 | 64.4 | 74.3 | |
| Bottom Flange | 48.9 | 49.0 | 35.9 | 44.6 | |
| Mean | 53.0 | 61.1 | 43.9 | | |

3.4 Summary (cont.)

Of the total of 387 measurements taken, 32 were recorded as zero. This indicated that no metal remained after removal of corrosion products. The locations of these measurement points are shown in bold in the Appendices. It should be noted that these do not represent all areas of metal loss, but only those which occurred at the selected measurement points.

## 4.0 CONCLUSIONS

The conclusions to be drawn from this project, based on the spans tested, are as follows:

- Longitudinal girders have lost an average of 50% of metal thickness due to corrosion.
- Crosshead channels have lost an average of 47% of metal thickness due to corrosion. (Subject to assumed web thickness of 10.16mm)
- Crosshead top flanges have lost an average of 61% of metal thickness due to corrosion.
- Crosshead bottom flanges have lost an average of 55% of metal thickness due to corrosion.
- There were numerous areas where metal loss was total, including 8% of the actual measurement points.
- Steelwork is too severely corroded for effective refurbishment using coatings or tapes or conventional corrosion management techniques.

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