



FlindersCook

(Technical Services) Limited

37 Spring St
Freemans Bay
AUCKLAND
NEW ZEALAND
P.O.Box 437

Ph 09-3602077
Fax 09-3600983
e-Mail lab@flinderscook.co.nz
Mobile 021 949 194
Web www.flinderscook.co.nz

Chemical Consultants
Bulk Liquid Surveyors
P.C.A.Bailey M.Sc(Hons),PhD,MNZIC,MRSNZ.
Managing Director

Fax

To: Total Bridge Services	Attention: Joh Taylor
From: Matthew Dakins	O/No: 43715
Fax:	Pages:
Phone:	Date: May 13, 2011
Re: Bridge Paint Samples	Ref: 76533

Fourteen samples of "Paint Flakes" were received on the 6th May 2011 for analysis to determine the lead contents.

We have reported our results as both *Lead content per unit weight (ppm w/w)* and as *Lead content per unit area (gPb/m²)*.

Our results are as follows:

@ 13/5 4pm

Matthew (Flinders) said

→ thickness ← variation

low

May 13, 2001

very similar to April samples

higher than April sample b/c thicker??

not direct correlation to ppm b/c thickness of each sample varied.

Sample	Lead Content, ppm w/w	Lead Content, g/m ²	
1	Span 2 Box 22/2 (West)	≤ 90	≤ 0.4
2	Span 3 ppt 5/6 Apex (West)	560	5.2
3	Span 1 ppt 1-13 Above Walkways	330	2.0
4	Span 1 ppt 1-7 post 1-7 Below Walkways	370	3.2
5	Span 3 ppt 5-6 Above Walkways	720	5.2
6A	Span 3 ppt 5/6 Above Walkways Cross Girder	70	0.3
6B		870	4.6
7	Span 3 ppt 5/6 Cross Girder Above Walkways	500	7.4
8	Span 4 ppt 0-1 Above Walkways	560	3.5
9	Span 4 ppt 7-8 Above Walkways	520	4.7
10	Span 5 ppt 1-2 Below Walkways	750	5.7
11	Span 5 ppt 4-5 Above Walkways	800	6.6
12	Span 6 ppt 3-4 Above Walkways	260	2.0
13	Span 7 ppt 5-6 Above Walkways	430	4.5
14	Span 7 ppt 9-10 Above Walkways	470	4.1

→ thickness (varies)

see notes below

Looking at the results it can be seen that - with the exception of samples 1 and 6A - the lead contents are somewhat comparable, with a lead content of approximately 500-600 ppm w/w. Sample 1 consisted of numerous small thin flakes with only small areas of yellow paint on the back of them. Whether this is due to the paint on that area of the bridge being thinner, or due to difficulty in obtaining a sample that consists of all the paint layers we cannot say.

Sample 6 mostly consisted of flakes which were of varying thicknesses. For the analysis of sample 6 we selected a large flake that was thick at one end and thinner at the other. (Figure 1)

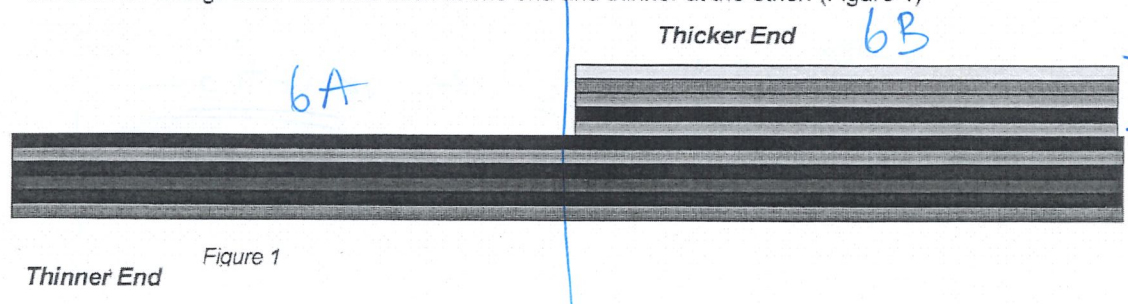


Figure 1

lead almost entirely here

= mostly one thick yellow + two thinner yellow-orange

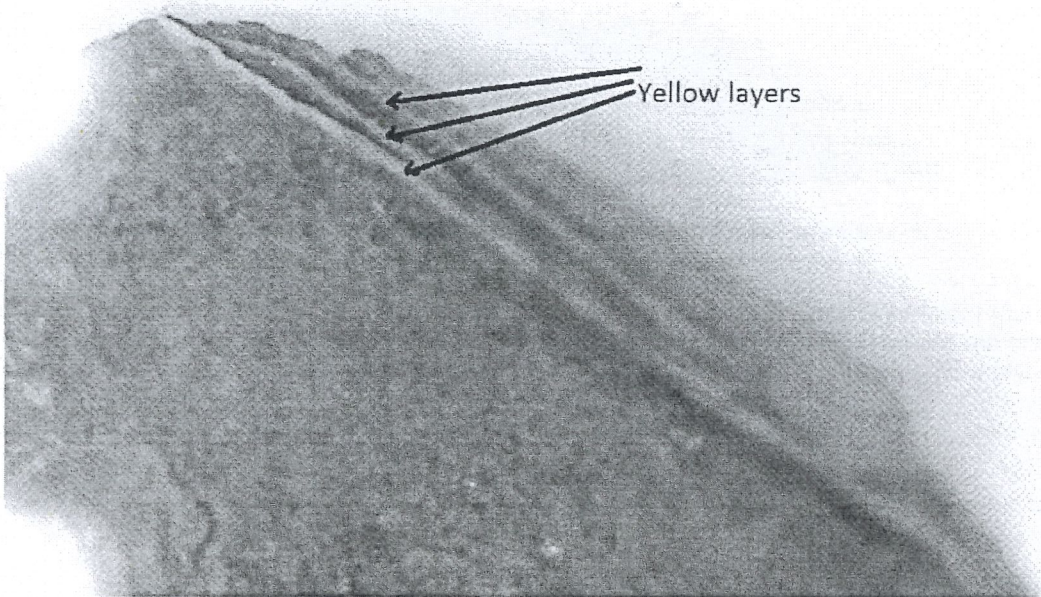
May 13, 2011

The shape of this flake is probably indicative of the trouble in scraping it off the structure; the missing layers from the thin end of the flake are probably still attached to the bridge.

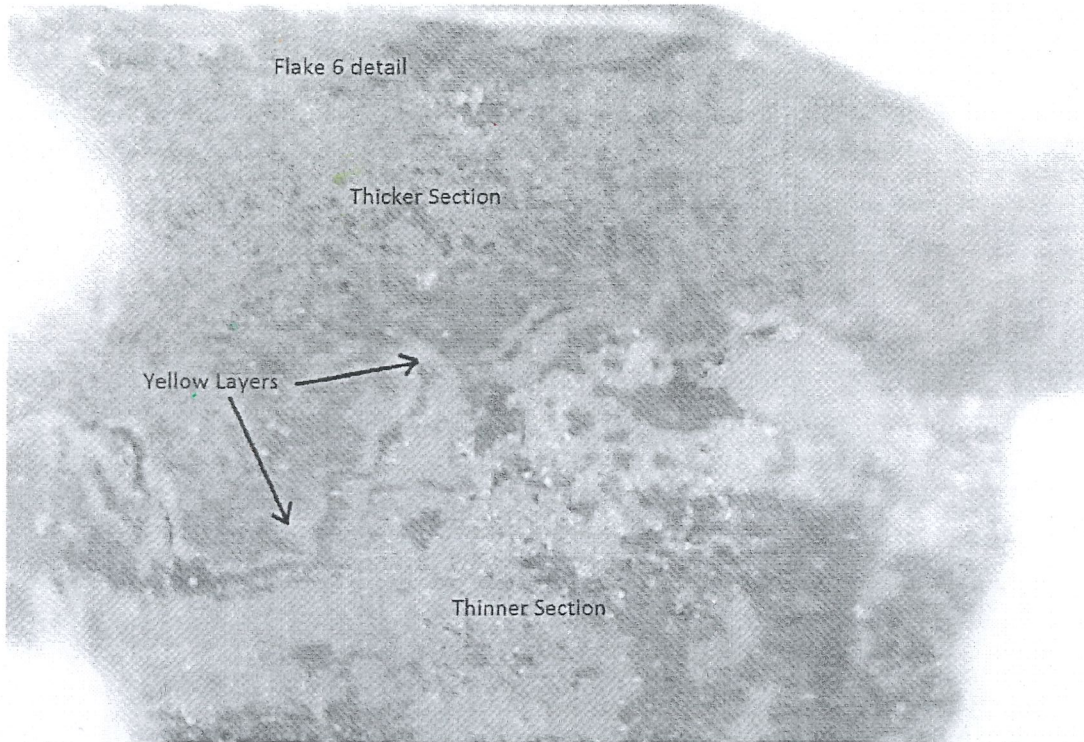
The sample was then cut in two; the thinner end being analysed as sample 6A and the thicker end as 6B. The disparate lead contents observed indicates that the lead is almost entirely held within the additional layers.

Examination of the layers of the Sample 6 Flake before analysis showed the additional layers to mostly consist of one thick yellow layer and two thinner yellow-orange layers. Two photographs of the flake showing these layers are shown below. A visual inspection of flakes in other samples shows these yellow and yellow-orange layers to be present in all the other samples except for Sample 1 as previously mentioned.

Sample 6, paint layers detail.



May 13, 2011



These results therefore indicate that the yellow / yellow-orange layers have a high lead content and the other layers are essentially lead free (or much reduced). Although further more specific analysis would be needed to confirm this.

? still only
870 ppm
ie 0.1% (?)

Regards

Matthew Dakins