



DEC 06 2004

December 2, 2004

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Subject: **Report of Limited Survey for Lead-Based Coatings  
Brorein, Cass, and Laurel Street Bridges Over the Hillsborough River  
Tampa, Florida  
Project 6515-04-0251.01**

*Via Fax & 1<sup>st</sup> Class Mail*

Dear Mr. Bukhari:

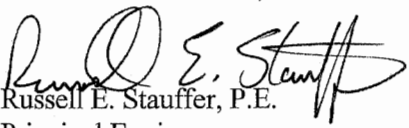
MACTEC Engineering and Consulting, Inc. (MACTEC) has completed the limited survey for suspect lead-based coatings at the above referenced bridges in Tampa, Florida. These services were provided in accordance with the MACTEC Proposal PROP04TMPA.658 Revised, dated November 2, 2004.

We appreciate the opportunity to be of service to you and look forward to our continued association. If you should have any questions concerning this report, please contact us at your convenience.

Sincerely,

**MACTEC ENGINEERING & CONSULTING, INC.**

  
John Tingley  
Project Technician

  
Russell E. Stauffer, P.E.  
Principal Engineer

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## 1.0 BACKGROUND INFORMATION

We understand that the three bridges (Brorein, Cass, and Laurel Streets) are scheduled for painting. The Brorein Street Bridge is comprised of a steel grated road surface which spans over the Hillsborough River with sidewalks on each side and two machine rooms, The Cass Street Bridge is comprised of a steel grated road surface which spans over the Hillsborough River with sidewalks on each side and two machine rooms. The Laurel Street Bridge is comprised of a steel grated road surface which spans over the Hillsborough River with sidewalks on each side and one machine room. These bridges were reported to have been initially constructed in 1925 except for Brorein Street Bridge, which was constructed in 1959. Laurel Street Bridge was reported to have been existentially sand blasted in 1981, Cass Street Bridge and Brorein Street Bridge were spot sand blasted, also in 1981. City of Tampa (COT) has requested that a limited survey of suspect lead-based coatings be performed in the above referenced bridges prior to the proposed scheduled painting.

## **2.0 FACILITY DESCRIPTION**

The subject Bridges are located in Tampa, Florida. The three bridges consist of steel beams construction, steel grated roads and sidewalks surfaces all expanding over water and large machine rooms that are controlled by independent control houses.

### 3.0 SURVEY PROCEDURES

#### 3.1 LEAD-BASED COATING SURVEY PROCEDURES

##### 3.1.1 Survey Overview

MACTEC obtained 229 (including 30 calibration tests) test readings on exterior coated surfaces. This testing was conducted on November 23, 2004, by Mr. John Tingley of MACTEC's Tampa office using U.S. Department of Housing and Urban Development (HUD) 1995 Lead Guidelines and 1997 Revisions as they applied to the testing being performed. Copies of certifications of MACTEC personnel performing the survey are provided in Appendix A of this report.

Assuming the exterior components of the bridges not tested were painted at the same time and with the same type of paint as those bridges areas tested, it is reasonable to assume that similar X-ray Fluorescence (XRF) test results on the same components as those tested would be documented.

##### 3.1.2 Regulatory Definition of Lead-Based Paint

3.1.2.1 HUD has defined lead-based paint as coatings where the concentration of lead is equal to or exceeds either of 1.0 milligrams or lead per square centimeter of surface area ( $1.0 \text{ mg/cm}^2$ ), when tested by XRF or 0.5 percent by weight (5%) when analyzed by laboratory methods.

3.1.2.2 EPA has defined lead-based paint as coatings where the concentration of lead is equal to or exceeds either of  $1.0 \text{ mg/cm}^2$ , when tested by XRF or 0.5 percent by weight (5%) when analyzed by laboratory methods.

3.1.2.3 In 1998, the Consumer Product Safety Commission (CPSC) banned coatings for non-industrial applications where the concentration of lead is equal to or exceeds 600 parts per million (ppm) or 0.06 percent by weight in the dry film, hence defining the definition of Lead based Paint as equal or greater than 600 ppm.

3.1.2.4 Occupational Safety and Health Administration (OSHA) does not have a definition of lead-based paint. Instead, OSHA addresses lead that can become airborne if **coatings containing any concentrations of lead** are disturbed during construction activities.

### 3.1.3 Methodology

The XRF used for this survey was the *NITON Model XL-309*. The instrument provides an almost instantaneous measurement of the lead content of the coating being tested in milligrams per square centimeter ( $\text{mg}/\text{cm}^2$ ).

The XRF operator was Mr. John Tingley, an Environment Protection Agency (EPA)-licensed Lead Inspector/Risk Assessor from MACTEC's Tampa, Florida office. The specific test locations are identified in the field test results sheets in Appendix A attached to this report. During the testing of the steel components, the test instrument was placed on the steel at varying vertical heights (high, middle, low). During the testing of the sidewalk grates, the test instrument was placed near a joint of the sidewalk surface. During the testing of the erected steel, the MACTEC inspector tested the bridges at the safest climbing distance. Two hundred twenty nine XRF tests were performed at the subject bridges. Typical exterior bridge components included steel beams, sidewalk grates, traffic rails, handrails and various other components that were within safe reaching distance.

A testing component was defined as a combination of color, component and substrate. In addition, utilizing the HUD Guidelines, an observation of the condition of the tested component coating was made.

To comply with directives from the Occupational Safety and Health Administration (OSHA), XRF readings were extrapolated to equivalent readings in parts per million (ppm). Please note that the lead content of zero and "true negative" XRF results (i.e., -0.2) was noted as being below the detection limit of the instrument, with no confirmatory scrape/chip samples obtained, due to the requirement to preclude any destructive testing methods.

### 3.1.4 Testing Results

Of the 229 tests, 87 showed lead concentrations at or above the EPA/HUD definition of lead-based paint (at or above  $1.0 \text{ mg}/\text{cm}^2$ ) on tested exterior paint coatings. In addition, 108 other components were documented to have lead concentrations present, but at levels below the EPA/HUD level. Only 4 components were found to have "negative" lead concentrations noted below the detection limit of the instrument (0-.1)

***NOTE: Components not documented as exceeding the HUD/EPA thresholds, including NEGATIVE readings, may contain lower concentrations of lead which, if disturbed, may release sufficient lead to exceed airborne concentrations above the OSHA Action Level or Permissible Exposure Limit.***

4.0 RESULTS OF XRF READINGS

4.1 LEAD-BASED COATINGS

XRF Readings – Cass Street Bridge

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
1	Calibration - Red	1.12 +/- 0.07			11/23/04	1.2	Noted "low source"
2	Calibration - White	0.00 +/- 0.01			11/23/04	0.0	
3	Calibration - Green	0.33 +/- 0.03			11/23/04	0.37	Noted "low source"
4	Calibration - Orange	1.62 +/- 0.14			11/23/04	1.6	
5	Calibration - Yellow	3.75 +/- 0.42			11/23/04	3.8	
<b>6</b>	<b>Cass Street Bridge – Southwest End</b>	<b>Guard Rail – Top</b>	<b>Steel</b>	<b>Silver</b>	<b>Poor</b>	<b>4.3</b>	<b>21500</b>
<b>7</b>	<b>Cass Street Bridge – Southwest End</b>	<b>Guard Rail – Side</b>	<b>Steel</b>	<b>Silver</b>	<b>Poor</b>	<b>3.4</b>	<b>17000</b>
8	Cass Street Bridge – Southwest End	L-Bracket	Steel	Silver	Poor	0.0	BDL
9	Cass Street Bridge – Southwest End	L-Bracket	Steel	Silver	Poor	0.03	150
10	Cass Street Bridge – Southwest End	I-Beam – Top	Steel	Silver	Poor	7.8	39000
11	Cass Street Bridge – Southwest End	I-Beam – Top	Steel	Silver	Poor	4.3	21500
12	Cass Street Bridge – Southwest End	I-Beam – Side	Steel	Silver	Poor	8.0	40000
13	Cass Street Bridge – Southwest End	I-Beam – Side (Traffic Side)	Steel	Silver	Fair	1.0	5000
14	Cass Street Bridge – Southwest End	Traffic Rail	Steel	Silver	Fair	0.9	4500
15	Cass Street Bridge – Southwest End	Sidewalk Grate	Steel	Silver	Fair	7.1	35500
16	Cass Street Bridge – Southeast End	Guard Rail – Top	Steel	Silver	Fair	5.6	28000
17	Cass Street Bridge – Southeast End	Guard Rail – Side	Steel	Silver	Poor	6.5	32500
18	Cass Street Bridge – Southeast End	L-Bracket	Steel	Silver	Fair	0.01	50
19	Cass Street Bridge – Southeast End	I-Beam – Top	Steel	Silver	Fair	6.5	32500
20	Cass Street Bridge – Southeast End	I-Beam – Top	Steel	Silver	Poor	6.4	32000
21	Cass Street Bridge – Southeast End	I-Beam – Side	Steel	Silver	Poor	5.2	26000
22	Cass Street Bridge – Southeast End	I-Beam – Side (Traffic Side)	Steel	Silver	Fair	1.1	5500
23	Cass Street Bridge – Southeast End	Traffic Rail	Steel	Silver	Fair	1.1	5500
24	Cass Street Bridge – Southeast End	Sidewalk Grate	Steel	Silver	Fair	0.1	500
25	Cass Street Bridge – Southside	Handrail	Steel	Silver	Poor	0.11	550
26	Cass Street Bridge – Southside	Handrail	Steel	Silver	Poor	0.1	500
27	Cass Street Bridge – Southside	Handrail	Steel	Silver	Poor	0.05	250
<b>28</b>	<b>Cass Street Bridge – Northwest End</b>	<b>Guard Rail – Top</b>	<b>Steel</b>	<b>Silver</b>	<b>Poor</b>	<b>6.4</b>	<b>32000</b>
<b>29</b>	<b>Cass Street Bridge – Northwest End</b>	<b>Guard Rail – Side</b>	<b>Steel</b>	<b>Silver</b>	<b>Poor</b>	<b>1.6</b>	<b>8000</b>
30	Cass Street Bridge – Northwest End	L-Bracket	Steel	Silver	Poor	0.1	500
<b>31</b>	<b>Cass Street Bridge – Northwest End</b>	<b>I-Beam – Top</b>	<b>Steel</b>	<b>Silver</b>	<b>Poor</b>	<b>2.4</b>	<b>12000</b>

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.  
 BDL = Below Detection Limit

mg/cm<sup>2</sup> = milligrams per square centimeter  
 ppm = parts per million

Checked by: *KCS*

XRF Readings - Cass Street Bridge

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
32	Cass Street Bridge - Northwest End	I-Beam - Top	Steel	Silver	Poor	4.3	21500
33	Cass Street Bridge - Northwest End	I-Beam - Side	Steel	Silver	Fair	0.12	600
34	Cass Street Bridge - Northwest End	I-Beam - Side (Traffic Side)	Steel	Silver	Fair	1.1	5500
35	Cass Street Bridge - Northwest End	Traffic Rail	Steel	Silver	Poor	0.14	700
36	Cass Street Bridge - Northwest End	Sidewalk Grate	Steel	Silver	Fair	2.8	14000
37	Cass Street Bridge - Northeast End	Guard Rail - Top	Steel	Silver	Poor	10.0	50000
38	Cass Street Bridge - Northeast End	Guard Rail - Side	Steel	Silver	Poor	4.4	22000
39	Cass Street Bridge - Northeast End	L-Bracket	Steel	Silver	Fair	0.01	50
40	Cass Street Bridge - Northeast End	I-Beam - Top	Steel	Silver	Poor	3.4	17000
41	Cass Street Bridge - Northeast End	I-Beam - Top	Steel	Silver	Poor	6.5	32500
42	Cass Street Bridge - Northeast End	I-Beam - Side	Steel	Silver	Fair	0.08	400
43	Cass Street Bridge - Northeast End	I-Beam - Side (Traffic Side)	Steel	Silver	Poor	2.1	10500
44	Cass Street Bridge - Northeast End	Traffic Rail	Steel	Silver	Poor	3.7	18500
45	Cass Street Bridge - Northeast End	Sidewalk Grate	Steel	Silver	Fair	0.04	200
46	Cass Street Bridge - Northside	Handrail	Steel	Silver	Poor	0.08	400
47	Cass Street Bridge - Northside	Handrail	Steel	Silver	Poor	0.0	BDL
48	Cass Street Bridge - Northside	Handrail	Steel	Silver	Poor	0.03	150
49	Cass Street Bridge - Westside - Under Bridge	I-Beam - Main	Steel	Silver	Fair	0.2	1000
50	Cass Street Bridge - Westside - Under Bridge	Catwalk	Steel	Silver	Poor	7.3	36500
51	Cass Street Bridge - Westside - Under Bridge	Main Bearing Plate	Steel	Silver	Fair	0.2	1000
52	Cass Street Bridge - Westside - Under Bridge	Structural Support	Steel	Silver	Fair	-0.3	BDL
53	Cass Street Bridge - Westside - Under Bridge	I-Beam - Sidewalk Support	Steel	Silver	Poor	11.0	55000
54	Cass Street Bridge - Westside - Under Bridge	Load Shoe	Steel	Silver	Poor	0.01	50
55	Cass Street Bridge - Westside - Under Bridge	Bridge Brace	Steel	Silver	Poor	0.03	150
56	Cass Street Bridge - Westside - Under Bridge	Horizontal Floor I-Beam	Steel	Silver	Poor	0.06	300

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.  
BDL = Below Detection Limit  
mg/cm<sup>2</sup> = milligrams per square centimeter  
ppm = parts per million

Checked by: *RES*

**XRF Readings – Cass Street Bridge**

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
57	Cass Street Bridge – Westside - Under Bridge	Horizontal Floor I-Beam	Steel	Silver	Poor	0.14	700
58	Cass Street Bridge – Westside - Under Bridge	I-Beam – Main	Steel	Silver	Fair	0.5	2500
<b>59</b>	<b>Cass Street Bridge – Westside - Under Bridge</b>	<b>Load Shoe</b>	<b>Steel</b>	<b>Silver</b>	<b>Poor</b>	<b>10.0</b>	<b>50000</b>
60	Cass Street Bridge – Westside - Under Bridge	Catwalk	Steel	Silver	Poor	4.7	23500
61	Cass Street Bridge – Westside - Under bridge	Main Vertical Support	Steel	Silver	Poor	3.6	18000
62	Cass Street Bridge – Westside - Under Bridge	Rivet Plate	Steel	Silver	Poor	0.34	1700
63	Cass Street Bridge – Westside - Machine Room	Protective Sheeting	Steel	Silver	Fair	0.2	1000
64	Cass Street Bridge – Westside - Machine Room	Small I-Beam	Steel	Silver	Fair	4.2	21000
65	Cass Street Bridge – Westside - Machine Room	Catwalk	Steel	Silver	Poor	16.0	80000
66	Cass Street Bridge – Westside - Machine Room	Handrail	Steel	Silver	Poor	5.1	25500
67	Cass Street Bridge – Westside - Machine Room	Ladder	Steel	Silver	Poor	3.9	19500
68	Cass Street Bridge – Westside - Machine Room	Outer Support Beam	Steel	Silver	Poor	4.2	21000
69	Cass Street Bridge – Westside - Machine Room	Pit Wall I-Beam	Steel	Silver	Poor	0.3	1500
70	Cass Street Bridge – Eastside - Machine Room	Protective Sheeting	Steel	Silver	Fair	0.01	50
71	Cass Street Bridge – Eastside - Machine Room	Small I-Beam	Steel	Silver	Fair	5.5	27500
72	Cass Street Bridge – Eastside - Machine Room	Catwalk	Steel	Silver	Poor	7.0	35000
73	Cass Street Bridge – Eastside - Machine Room	Handrail	Steel	Silver	Poor	1.5	7500

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.  
 BDL = Below Detection Limit

mg/cm<sup>2</sup> = milligrams per square centimeter  
 ppm = parts per million

Checked by: *WBC*

**XRF Readings - Cass Street Bridge**

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
74	Cass Street Bridge - Eastside - Machine Room	Ladder	Steel	Silver	Poor	2.4	12000
75	Cass Street Bridge - Eastside - Machine Room	Outer Support Beam	Steel	Silver	Poor	5.3	26500
76	Cass Street Bridge - Eastside - Machine Room	Pit Wall I-Beam	Steel	Silver	Poor	8.1	40500
77	Cass Street Bridge - Eastside - Under Bridge	I-Beam - Main	Steel	Silver	Poor	6.6	33000
78	Cass Street Bridge - Eastside - Under Bridge	Catwalk	Steel	Silver	Poor	0.15	750
79	Cass Street Bridge - Eastside - Under Bridge	Main Bearing Plate	Steel	Silver	Poor	5.3	26500
80	Cass Street Bridge - Eastside - Under Bridge	Structural Support	Steel	Silver	Poor	5.2	26000
81	Cass Street Bridge - Eastside - Under Bridge	I-Beam - Sidewalk Support	Steel	Silver	Poor	2.5	12500
82	Cass Street Bridge - Eastside - Under Bridge	Load Shoe	Steel	Silver	Poor	8.3	41500
83	Cass Street Bridge - Eastside - Under Bridge	Bridge Brace	Steel	Silver	Poor	0.05	250
84	Cass Street Bridge - Eastside - Under Bridge	Horizontal Floor I-Beam	Steel	Silver	Poor	0.01	50
85	Cass Street Bridge - Eastside - Under Bridge	Horizontal Floor I-Beam	Steel	Silver	Poor	0.01	50
86	Cass Street Bridge - Eastside - Under Bridge	I-Beam - Main	Steel	Silver	Poor	0.03	150
87	Cass Street Bridge - Eastside - Under Bridge	Main Vertical Support	Steel	Silver	Poor	0.03	150
88	Cass Street Bridge - Eastside - Under Bridge	Rivet Plate	Steel	Silver	Poor	0.06	300
89	Calibration - Red	1.12 +/- 0.07			11/23/04	1.1	
90	Calibration - White	0.00 +/- 0.01			11/23/04	0.0	
91	Calibration - Green	0.33 +/- 0.03			11/23/04	0.31	
92	Calibration - Orange	1.62 +/- 0.14			11/23/04	1.5	

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.  
BDL = Below Detection Limit  
mg/cm<sup>2</sup> = milligrams per square centimeter  
ppm = parts per million

Checked by: RES

**XRF Readings – Cass Street Bridge**

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
93	Calibration - Yellow	3.75 +/- 0.42			11/23/04	3.3	

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.  
 BDL = Below Detection Limit

mg/cm<sup>2</sup> = milligrams per square centimeter  
 ppm = parts per million

Checked by: RES

**XRF Readings – Laurel Street Bridge**

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
1	Calibration - Red	1.12 +/- 0.07			11/23/04	1.1	
2	Calibration - White	0.00 +/- 0.01			11/23/04	0.0	
3	Calibration - Green	0.33 +/- 0.03			11/23/04	0.32	
4	Calibration - Orange	1.62 +/- 0.14			11/23/04	1.5	
5	Calibration - Yellow	3.75 +/- 0.42			11/23/04	3.2	Noted "low source"
6	Laurel Street Bridge – Northside	Upper I-Beam	Steel	Silver	Good	0.9	4500
7	Laurel Street Bridge – Northside	Upper I-Beam	Steel	Silver	Good	0.02	100
8	Laurel Street Bridge – Northside	Vertical Support I-Beam	Steel	Silver	Good	0.02	100
9	<b>Laurel Street Bridge – Northside</b>	<b>Vertical Support I-Beam</b>	<b>Steel</b>	<b>Silver</b>	<b>Good</b>	<b>1.7</b>	<b>8500</b>
10	Laurel Street Bridge – Northside	Angled Support I-Beam	Steel	Silver	Good	0.5	2500
11	Laurel Street Bridge – Northside	Angled Support I-Beam	Steel	Silver	Good	0.01	50
12	Laurel Street Bridge – Northside	Arched I-Beam	Steel	Silver	Good	0.43	2150
13	Laurel Street Bridge – Northside	Arched I-Beam	Steel	Silver	Good	0.02	100
14	<b>Laurel Street Bridge – Northside</b>	<b>Sidewalk Grate</b>	<b>Steel</b>	<b>Silver</b>	<b>Good</b>	<b>7.4</b>	<b>37000</b>
15	Laurel Street Bridge – Northside	Handrail	Steel	Silver	Good	0.0	BDL
16	Laurel Street Bridge – Northside	Handrail	Steel	Silver	Good	0.02	100
17	Laurel Street Bridge – Northside	Handrail	Steel	Silver	Good	0.01	50
18	Laurel Street Bridge – Northside	Outer Gear Skin	Steel	Silver	Fair	0.7	350
19	Laurel Street Bridge – Northside	Ladder	Steel	Silver	Good	0.47	2350
20	<b>Laurel Street Bridge – Westside - Over Road</b>	<b>Ladder</b>	<b>Steel</b>	<b>Silver</b>	<b>Good</b>	<b>1.5</b>	<b>7500</b>
21	Laurel Street Bridge – Westside - Over Road	Ladder Cage	Steel	Silver	Good	0.0	BDL
22	Laurel Street Bridge – Westside - Over Road	Vertical Lattice Beam	Steel	Silver	Good	0.0	BDL
23	Laurel Street Bridge – Westside - Over Road	Support Beam	Steel	Silver	Good	0.03	150
24	Laurel Street Bridge – Westside - Over Road	Angled Support	Steel	Silver	Good	0.01	50
25	Laurel Street Bridge – Westside - Over Road	Handrail	Steel	Silver	Poor	0.0	BDL
26	Laurel Street Bridge – Westside - Over Road	2 <sup>nd</sup> Platform - Ladder	Steel	Silver	Poor	0.01	50
27	Laurel Street Bridge – Westside - Over Road	Angle Beam	Steel	Silver	Good	0.07	350

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.

BDL = Below Detection Limit

mg/cm<sup>2</sup> = milligrams per square centimeter

ppm = parts per million

Checked by: **RCS**

**XRF Readings - Laurel Street Bridge**

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
	Over Road						
28	Laurel Street Bridge - Southside	Upper I-Beam	Steel	Silver	Good	0.8	4000
29	Laurel Street Bridge - Southside	Vertical Support I-Beam	Steel	Maroon	Good	0.01	50
30	Laurel Street Bridge - Southside	Vertical Support I-Beam	Steel	Maroon	Good	0.33	1650
31	Laurel Street Bridge - Southside	Angled Support I-Beam	Steel	Silver	Good	0.7	3500
32	Laurel Street Bridge - Southside	Angled Support I-Beam	Steel	Silver	Good	0.03	150
33	Laurel Street Bridge - Southside	Arched I-Beam	Steel	Silver	Good	0.01	50
<b>34</b>	<b>Laurel Street Bridge - Southside</b>	<b>Sidewalk Grate</b>	<b>Steel</b>	<b>Silver</b>	<b>Fair</b>	<b>2.9</b>	<b>14500</b>
35	Laurel Street Bridge - Southside	Handrail	Steel	Maroon	Good	0.32	1600
36	Laurel Street Bridge - Southside	Handrail	Steel	Maroon	Good	0.01	50
37	Laurel Street Bridge - Southside	Handrail	Steel	Maroon	Good	0.05	250
38	Laurel Street Bridge - Southside	Outer Gear Skin	Steel	Silver	Good	0.03	150
39	Laurel Street Bridge - Westside - Under Bridge	Lower Horizontal Lattice Beam	Steel	Silver	Good	0.01	50
40	Laurel Street Bridge - Westside - Under Bridge	Driveshaft Support	Steel	Silver	Good	0.02	100
41	Laurel Street Bridge - Westside - Under Bridge	Lower Angle Beam	Steel	Silver	Good	0.0	BDL
42	Laurel Street Bridge - Westside - Under Bridge	Main Bridge Beam	Steel	Silver	Good	0.02	100
<b>43</b>	<b>Laurel Street Bridge - Westside - Under Bridge</b>	<b>Large Beam (Side to Side)</b>	<b>Steel</b>	<b>Silver</b>	<b>Good</b>	<b>1.0</b>	<b>5000</b>
44	Laurel Street Bridge - Westside - Under Bridge	Vertical Beam (Side to Side)	Steel	Silver	Good	0.39	1950
45	Laurel Street Bridge - Westside - Under Bridge	Angle Beam (Side to Side)	Steel	Silver	Good	0.7	3500
<b>46</b>	<b>Laurel Street Bridge - Westside - Under Bridge</b>	<b>Handrail</b>	<b>Steel</b>	<b>Silver</b>	<b>Good</b>	<b>1.6</b>	<b>8000</b>
47	Laurel Street Bridge - Westside - Under Bridge	Floor	Steel	Silver	Good	0.02	100

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.  
 BDL = Below Detection Limit  
 mg/cm<sup>2</sup> = milligrams per square centimeter  
 ppm = parts per million

Checked by: Ves

**XRF Readings – Laurel Street Bridge**

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
48	Laurel Street Bridge – Westside - Under Bridge	Large Rivet Plate	Steel	Silver	Good	0.5	2500
49	Laurel Street Bridge – Westside - Under Bridge	Main Bridge Support	Steel	Silver	Good	0.02	100
50	Laurel Street Bridge – Westside - Under Bridge	Lower Bridge Beam	Steel	Silver	Good	0.35	1750
51	Laurel Street Bridge – Westside - Under Bridge	Bridge Beam (Side to Side)	Steel	Silver	Good	0.9	4500
52	Laurel Street Bridge – Westside - Under Bridge	Lower Bridge Beam Rivet Plate	Steel	Silver	Good	0.04	200
53	Laurel Street Bridge – Westside - Under Bridge	Main Bearing Clamp	Steel	Silver	Good	0.45	2250
54	Laurel Street Bridge – Westside - Under Bridge	Inner Gear Skin	Steel	Silver	Good	0.6	3000
55	Calibration - Red	1.12 +/- 0.07			11/23/04	1.1	
56	Calibration - White	0.00 +/- 0.01			11/23/04	0.0	
57	Calibration - Green	0.33 +/- 0.03			11/23/04	0.36	
58	Calibration - Orange	1.62 +/- 0.14			11/23/04	1.8	
59	Calibration - Yellow	3.75 +/- 0.42			11/23/04	3.1	

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.  
 BDL = Below Detection Limit  
 mg/cm<sup>2</sup> = milligrams per square centimeter  
 ppm = parts per million

Checked by: DES

**XRF Readings – Brorein Street Bridge**

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
1	Calibration - Red	1.12 +/- 0.07			11/23/04	1.1	
2	Calibration - White	0.00 +/- 0.01			11/23/04	0.0	
3	Calibration - Green	0.33 +/- 0.03			11/23/04	0.32	
4	Calibration - Orange	1.62 +/- 0.14			11/23/04	1.6	
5	Calibration - Yellow	3.75 +/- 0.42			11/23/04	3.0	Noted "low source"
6	Brorein Street Bridge – Southside	Handrail	Steel	Silver	Fair	0.05	250
7	Brorein Street Bridge – Southside	Handrail	Steel	Silver	Fair	0.16	800
8	<b>Brorein Street Bridge – Southside</b>	<b>Lower Rail</b>	<b>Steel</b>	<b>Silver</b>	<b>Fair</b>	<b>1.1</b>	<b>5500</b>
9	<b>Brorein Street Bridge – Southside</b>	<b>Lower Rail</b>	<b>Steel</b>	<b>Silver</b>	<b>Fair</b>	<b>2.7</b>	<b>13500</b>
10	Brorein Street Bridge – Southside	Sidewalk Grate	Steel	Silver	Fair	0.31	1550
11	Brorein Street Bridge – Southside	Sidewalk Grate	Steel	Silver	Fair	0.15	750
12	Brorein Street Bridge – Southside	Handrail Dividers	Steel	Silver	Fair	0.21	1050
13	<b>Brorein Street Bridge – Southside</b>	<b>Handrail Dividers</b>	<b>Steel</b>	<b>Silver</b>	<b>Fair</b>	<b>2.4</b>	<b>12000</b>
14	Brorein Street Bridge – Northside	Handrail	Steel	Silver	Fair	0.05	250
15	Brorein Street Bridge – Northside	Handrail	Steel	Silver	Fair	0.14	700
16	Brorein Street Bridge – Northside	Lower Rail	Steel	Silver	Fair	0.7	3500
17	Brorein Street Bridge – Northside	Lower Rail	Steel	Silver	Fair	0.15	750
18	Brorein Street Bridge – Northside	Sidewalk Grate	Steel	Silver	Fair	0.04	200
19	Brorein Street Bridge – Northside	Sidewalk Grate	Steel	Silver	Fair	0.1	500
20	Brorein Street Bridge – Northside	Handrail Dividers	Steel	Silver	Fair	0.13	650
21	Brorein Street Bridge – Northside	Handrail Dividers	Steel	Silver	Fair	0.38	1900
22	<b>Brorein Street Bridge – Westside – Under Bridge</b>	<b>Main Bridge Beam</b>	<b>Steel</b>	<b>Silver</b>	<b>Fair</b>	<b>22.0</b>	<b>110000</b>
23	<b>Brorein Street Bridge – Westside – Under Bridge</b>	<b>Main Bridge Beam</b>	<b>Steel</b>	<b>Silver</b>	<b>Fair</b>	<b>25.0</b>	<b>125000</b>
24	<b>Brorein Street Bridge – Westside – Under Bridge</b>	<b>I-Beam Header</b>	<b>Steel</b>	<b>Silver</b>	<b>Fair</b>	<b>30.0</b>	<b>150000</b>
25	<b>Brorein Street Bridge – Westside – Under Bridge</b>	<b>Main Bearing</b>	<b>Steel</b>	<b>Silver</b>	<b>Fair</b>	<b>37.0</b>	<b>185000</b>
26	<b>Brorein Street Bridge – Westside – Under Bridge</b>	<b>Main Beam (Side to Side)</b>	<b>Steel</b>	<b>Silver</b>	<b>Fair</b>	<b>31.0</b>	<b>155000</b>
27	<b>Brorein Street Bridge – Westside – Under Bridge</b>	<b>Handrail</b>	<b>Steel</b>	<b>Silver</b>	<b>Fair</b>	<b>22.0</b>	<b>110000</b>

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.  
 BDL = Below Detection Limit  
 mg/cm<sup>2</sup> = milligrams per square centimeter  
 ppm = parts per million

Checked by: 1205

**XRF Readings - Brorein Street Bridge**

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
28	Broroin Street Bridge - Westside - Under Bridge (Gear Room)	I-Beam	Steel	Silver	Fair	13.0	65000
29	Broroin Street Bridge - Westside - Under Bridge (Gear Room)	Vertical Gear Support	Steel	Silver	Fair	19.0	45000
30	Broroin Street Bridge - Westside - Under Bridge (Gear Room)	Gear Motor	Steel	Silver	Fair	25.0	125000
31	Broroin Street Bridge - Westside - Under Bridge (Gear Room)	Side of Gear	Steel	Silver	Fair	28.0	140000
32	Broroin Street Bridge - Westside - Under Bridge (Gear Room)	Large Side I-Beam	Steel	Silver	Fair	5.1	25500
33	Broroin Street Bridge - Westside - Under Bridge (Gear Room)	Large Front I-Beam	Steel	Silver	Fair	13.0	65000
34	Broroin Street Bridge - Westside - Under Bridge (Gear Room)	Ladder	Steel	Silver	Fair	21.0	105000
35	Broroin Street Bridge - Northwest - Under Bridge @ Fenders	Large Bridge Beam (Outside)	Steel	Silver	Fair	0.04	200
36	Broroin Street Bridge - Northwest - Under Bridge @ Fenders	Large Bridge Beam (Inside)	Steel	Silver	Fair	11.0	55000
37	Broroin Street Bridge - Northwest - Under Bridge @ Fenders	Angle Bracket (Outside)	Steel	Silver	Fair	0.8	4000
38	Broroin Street Bridge - Northwest - Under Bridge @ Fenders	Angle Bracket (Inside)	Steel	Silver	Fair	0.6	3000
39	Broroin Street Bridge - Southwest - Under Bridge @ Fenders	Large Bridge Beam (Inside)	Steel	Silver	Fair	0.7	3500
40	Broroin Street Bridge - Southwest - Under Bridge @ Fenders	Large Bridge Beam (Outside)	Steel	Silver	Fair	0.13	650
41	Broroin Street Bridge - Southwest - Under Bridge @ Fenders	Angle Bracket (Inside)	Steel	Silver	Fair	0.07	350
42	Broroin Street Bridge - Southwest - Under Bridge @ Fenders	Angle Bracket (Outside)	Steel	Silver	Fair	23.0	115000
43	Broroin Street Bridge - Southwest - Under Bridge @ Fenders	Angle Bracket (Outside)	Steel	Silver	Fair	2.7	13500
44	Broroin Street Bridge - Southwest - Under Bridge @ Fenders	Sidewalk Support	Steel	Silver	Fair	0.08	400
45	Broroin Street Bridge - Eastside - Under Bridge @ Fenders	Main Beam	Steel	Silver	Fair	15.0	75000

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.  
 mg/cm<sup>2</sup> = milligrams per square centimeter

Checked by: *RLS*

ppm = parts per million

XRF Readings - Brorein Street Bridge

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
46	Under Bridge Brorein Street Bridge - Eastside - Under Bridge	Main Beam	Steel	Silver	Fair	16.0	80000
47	Under Bridge Brorein Street Bridge - Eastside - Under Bridge	I-Beam Header	Steel	Silver	Fair	38.0	190000
48	Under Bridge Brorein Street Bridge - Eastside - Under Bridge	Main Bearing	Steel	Silver	Fair	29.0	145000
49	Under Bridge Brorein Street Bridge - Eastside - Under Bridge	Ladder	Steel	Silver	Fair	6.7	33500
50	Under Bridge @ Fenders Brorein Street Bridge - Southeast - Under Bridge @ Fenders	Large Bridge Beam (Outside)	Steel	Red	Fair	0.13	650
51	Under Bridge @ Fenders Brorein Street Bridge - Southeast - Under Bridge @ Fenders	Large Bridge Beam (Inside)	Steel	Silver	Fair	3.0	15000
52	Under Bridge @ Fenders Brorein Street Bridge - Southeast - Under Bridge @ Fenders	Angle Bracket (Outside)	Steel	Silver	Fair	2.1	10500
53	Under Bridge @ Fenders Brorein Street Bridge - Southeast - Under Bridge @ Fenders	Angle Bracket (Inside)	Steel	Silver	Fair	0.9	4500
54	Under Bridge @ Fenders Brorein Street Bridge - Southeast - Under Bridge @ Fenders	Sidewalk Support	Steel	Silver	Fair	0.09	450
55	Under Bridge @ Fenders Brorein Street Bridge - Northeast - Under Bridge @ Fenders	Large Bridge Beam (Inside)	Steel	Silver	Fair	0.15	750
56	Under Bridge @ Fenders Brorein Street Bridge - Northeast - Under Bridge @ Fenders	Large Bridge Beam (Outside)	Steel	Silver	Fair	1.0	5000
57	Under Bridge @ Fenders Brorein Street Bridge - Northeast - Under Bridge @ Fenders	Angle Bracket (Inside)	Steel	Silver	Fair	0.08	400
58	Under Bridge @ Fenders Brorein Street Bridge - Northeast - Under Bridge @ Fenders	Angle Bracket (Outside)	Steel	Silver	Fair	0.9	4500
59	Under Bridge (Gear Room) Brorein Street Bridge - Eastside - Under Bridge (Gear Room)	I-Beam	Steel	Silver	Fair	13.0	65000
60	Under Bridge (Gear Room) Brorein Street Bridge - Eastside - Under Bridge (Gear Room)	Vertical Gear Support	Steel	Silver	Fair	32.0	160000
61	Under Bridge (Gear Room) Brorein Street Bridge - Eastside - Under Bridge (Gear Room)	Gear Motor	Steel	Silver	Fair	26.0	130000
62	Under Bridge (Gear Room) Brorein Street Bridge - Eastside - Under Bridge (Gear Room)	Side of Gear	Steel	Silver	Fair	21.0	105000

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.  
 BDL = Below Detection Limit

Checked by: VLG

ppm = parts per million

mg/cm<sup>2</sup> = milligrams per square centimeter

XRF Readings - Broroin Street Bridge

Sample	Location	Component	Substrate	Color	Condition	Results (mg/cm <sup>2</sup> )	Extrapolated Results (ppm)
63	Broroin Street Bridge - Eastside - Under Bridge (Gear Room)	Large Side I-Beam	Steel	Silver	Fair	9.2	46000
64	Broroin Street Bridge - Eastside - Under Bridge (Gear Room)	Large Front I-Beam	Steel	Silver	Fair	21.0	105000
65	Broroin Street Bridge - Eastside - Under Bridge (Gear Room)	Ladder	Steel	Silver	Fair	14.0	70000
66	Calibration - Red	1.12 +/- 0.07			11/23/04	1.1	
67	Calibration - White	0.00 +/- 0.01			11/23/04	0.0	
68	Calibration - Green	0.33 +/- 0.03			11/23/04	0.42	Noted "low source"
69	Calibration - Orange	1.62 +/- 0.14			11/23/04	1.7	
70	Calibration - Yellow	3.75 +/- 0.42			11/23/04	3.4	

The samples **bolded**, were found to contain lead in concentrations above the definition of 1.0 mg/cm<sup>2</sup>.  
 BDL = Below Detection Limit

ppm = parts per million

Checked by: LES

## 5.0 RECOMMENDATIONS

### 5.1 LEAD-BASED COATINGS

The disturbance of lead containing painted surfaces should also be addressed in accordance with OSHA Occupational Exposure to Lead in Construction (29 CFR 1926.62). The OSHA Lead Regulations include provisions for training; written compliance programs; exposure assessments; notifications; engineering controls; and specified work practices. Also, based on the concentration of lead identified, any waste generated by operations that would disturb these materials should be considered potentially hazardous and waste characterization (including TCLP testing) should be performed by the contractor, prior to off site waste shipment, to determine the proper disposal requirements.

## 6.0 QUALIFICATIONS

MACTEC has endeavored to observe the existing conditions at the designated areas of the bridges using generally accepted procedures. Regardless of the thoroughness of a survey, there is always the possibility that some areas were overlooked, inaccessible, or different from those at specific sample locations. Therefore, conditions at every location may not be as anticipated and as summarized in this report. In addition, renovation or demolition may uncover altered or differing conditions. We recommend that you notify MACTEC if any changed conditions are encountered so that we can assess the situation and its impact on our original recommendations.

This report is intended for the exclusive use of City of Tampa. This survey was not intended to be or developed as a substitute for project-specific Bidding or Contract Documents. Use of this report or reliance upon information contained in this report by any other party acts as an agreement by that party to the same terms and conditions under which our services were provided. Furthermore, any use of this report by a party for purposes beyond those intended by MACTEC and City of Tampa will be at the sole risk of that party.

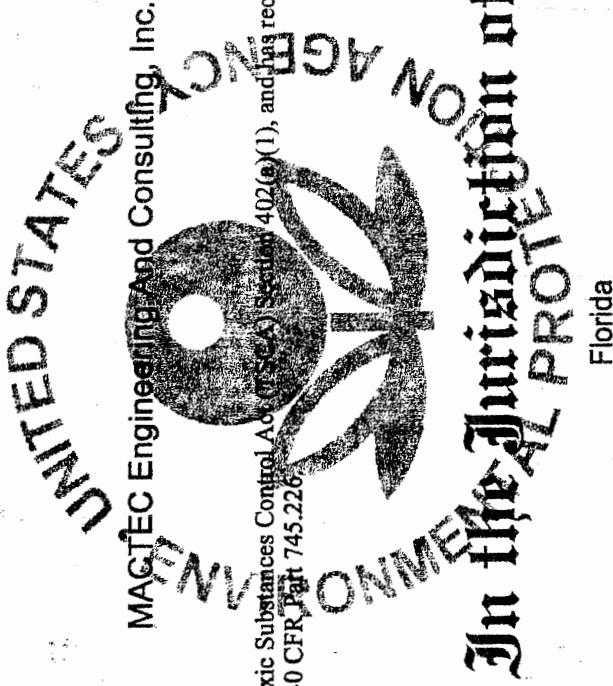
**APPENDIX A**

**LEAD**

Certifications

# United States Environmental Protection Agency

This is to certify that



has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402(e)(1), and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226.

In the Jurisdiction of:

Florida

This certification is valid from the date of issuance and expires

July 13, 2006

FL-376-1

Certification #

SEP 11 2003

Issued On

Joanne Benante, Chief

Pesticides and Toxic Substances Branch



# United States Environmental Protection Agency

This is to certify that

John D. Tingley

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402(a)(1), and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as a:

Risk Assessor

In the Jurisdiction of:

Florida

This certification is valid from the date of issuance and expires June 29, 2007

FL-R-3461-1

Certification #

MAY 27 2004

Issued On

*Maury Fite*  
for Joanne Benante, Chief

Pesticides and Toxic Substances Branch



# NITON

CORPORATION

## *Certificate of Achievement*

*John Tingley*

*Law Engineering*

*has successfully completed the Manufacturer's Training Course for the  
NITON Spectrum Analyzer and is now certified  
in radiation safety and monitoring, measurement technology,  
and machine maintenance of the NITON XRF Spectrum Analyzer.  
(CIH's - The ABIH awards 1 CM point, approval #5827)*

A1042758815

Certificate Number

08/09/01 Orlando, FL

Date & Site of Course



*Victoria Gryzyluski*

Training Coordinator

Director of Training