



June 2, 2000

Ms. Rita L. Mihalik
National Park Service (NPS)
Harpers Ferry National Historic Park
P.O. Box 65
Harpers Ferry, West Virginia 25425

**Subject: Report of Lead Paint Survey Services
 Marmion Row Building 1A East Porch
 Harpers Ferry National Historic Park
 Harpers Ferry, West Virginia
 LAW Project 20340-0-2592**

Dear Ms. Mihalik:

Law Engineering and Environmental Services, Inc. (LAW) is pleased to present this report of our lead survey at the subject site. Our services were provided based on your acceptance of LAW's Proposal 20399-0-0000.190, dated May 9, 2000.

This report includes sections describing the project information, our scope of services, findings and observations of our testing for lead-based paint, and recommendations and conclusions. Also included in this report are Appendix A – Summary of XRF Field Readings, Appendix B – Lead Dust Wipe Sample Results, Appendix C – Lead In Soil Sample Results, and Appendix D - Annotated Field Drawings.

PROJECT INFORMATION

The project information and scope was described in NPS *Scope of Work Proposal: Hazardous Waste Check – East Porch of Historic Harper House (Marmion Row Building 1A)*, received May 8, 2000. Building 1A was built between 1735 and 1780, and is used as furnished park museum. We understand that the condition of porch requires a repair and re-construction project of the porch within the next year. We understand that the results of our survey will be used to help design the repair and re-construction project. The National Park Service provided escorted access to the building.

LAW Engineering and Environmental Services, Inc.
22455 Davis Drive, Suite 100
Sterling, VA 20164
703-404-7000 • Fax: 703-404-7070

Scope of Services

Based on the specified scope of work, LAW conducted lead-based paint testing of the East Porch and collected lead dust and soil samples. The number of samples and general sample locations followed your Scope of Work Proposal. The exact locations were determined in the field.

XRF Lead-Based Paint Testing

LAW tested 114 suspect painted porch surfaces for the presence of lead-based paint. The testing was performed using an X-Ray Fluorescence (XRF) field instrument. The EPA lead in paint threshold standard is 1.0 milligrams per square centimeter.

Lead Paint Dust Wipe Samples

LAW collected six lead-dust wipe samples on the porch. The purpose of this sampling was to assess the lead-exposure from deteriorating paint or surface dust. Laboratory testing of the lead-dust wipe samples was conducted in general accordance with Modified NIOSH Method 7082, with subsequent analysis by Flame Atomic Absorption Spectrophotometry (FLAA) or Inductively Coupled Plasma (ICP) emission spectroscopy.

Lead-Based Paint Soil Sampling

LAW collected one composite soil sample along the “drip line” on the east side of the porch. The purpose of this sampling was to assess the lead-exposure from deteriorating paint in the soil. The laboratory analysis of the composite soil sample was performed by FLAA or ICP.

Findings and Observations

XRF Lead-Based Paint Testing

Of the 114 surfaces tested, 18 surfaces had readings equal to or greater than 1.0 mg/cm². These surfaces included framing, pilasters, spindles, bottom rails, joists, and girders. The 18 surfaces that tested positive for lead-based paint are shown as highlighted entries in the attached XRF field readings. The painted surfaces were observed to be in poor to good condition. The results of the XRF field readings are included in Appendix A – Summary of XRF Field Readings.

Lead Dust Wipe Samples

Results of the wipe samples from the porch deck ranged from 29.0 micrograms per square foot (µg/ft²) to 208.0 µg/ft². Four lead wipe concentrations were above the HUD clearance level of 100 µg/ft² for floors. The results of the lead dust wipe sample analysis are included in Appendix B – Lead Dust Wipe Sample Results.

Lead In Soil Samples

Result of the composite soil sample collected along the “drip line” of the East Porch yielded a concentration of 2,550 micrograms per gram (ug/g). The concentration exceeds the HUD guideline of 2,000 ug/g for yards and building perimeters.

Recommendations and Conclusions

Based on our findings and observations, LAW provides the following conclusions and recommendations.

Lead-Based Paint

Based on the results of the XRF test readings, we recommend that the architectural elements listed below be considered painted with lead-based paint.

- Joists
- Framing
- Pilasters
- Spindles
- Bottom rails
- White Girders

A licensed lead abatement contractor should remove the East Porch elements that require replacement in accordance with applicable federal and state regulations. Prior to disposal of the wood elements, a Toxic Characteristic Leachate Procedure (TCLP) analysis should be conducted. The TCLP procedure is intended to mimic the processes occurring in landfills, where acidic conditions are common. If the test result of a "representative" sample indicates the potential to leach lead, then the material is considered hazardous and must be treated as hazardous waste.

Lead Dust

Until the East Porch is repaired, we recommend that the porch deck be vacuumed on a routine basis. The vacuum should be equipped with a High Efficiency Particulate Air (HEPA) filter. The vacuuming should help minimize lead dust created from deteriorating lead-based paint applied to other porch architectural elements.

Lead In Soil

During the reconstruction of the East Porch, soil around the perimeter of the porch should be replaced to an approximate depth of 6 inches. The soil that is removed should be treated as contaminated waste and disposed of in accordance with applicable federal and state regulations.

Closing

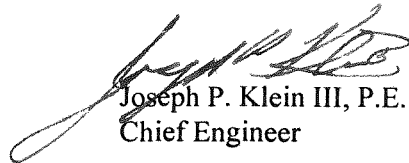
We appreciate the opportunity to provide service to the National Park Service on this very important project. Should you have any questions following your review of our report, or if we may be of further service, please do not hesitate to contact us.

Sincerely,

LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.


Irvin L. Bridgewater III.
Staff Professional

BY HEM
WITH PERMISSION


Joseph P. Klein III, P.E.
Chief Engineer

ILB/JPK/:ilb

Appendices: Appendix A – Summary of XRF Field Readings
Appendix B – Lead Dust Wipe Sample Results
Appendix C – Lead in Soil Sample Results
Appendix D – Annotated Field Drawings

APPENDIX A

SUMMARY OF XRF FIELD READINGS

Summary of XRF Field Readings

LAW ENGINEERING ENVIRONMENTAL SERVICES, INC.
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Sterling, Virginia 20164

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LEAD-BASED PAINT XRF TESTING						
PROJECT: Marmion Row Building 1A East Porch						
LOCATION: Harpers Ferry National Historic Park						
LAW PROJECT NO: 20340-0-2592						
CLIENT: National Park Service						
SAMPLE DATE: 05-11-2000						
INSPECTOR(S): ILB III						
Test Number	Area/Room Description	Surface Tested	Location	Condition	Color	Direct Reading (mg/cm ²)
		Pework Calibration				1.00
		Pework Calibration				1.00
		Pework Calibration				1.00
001	East Porch	Faccia Board North	Building 1A	Good	Green	0.00
002	East Porch	Faccia Board East	Building 1A	Poor	Green	0.00
003	East Porch	Faccia Board East	Building 1A	Poor	Green	0.00
004	East Porch	Post	Building 1A	Good	Green	0.03
005	East Porch	Post	Building 1A	Good	Green	0.01
006	East Porch	Post	Building 1A	Good	Green	0.00
007	East Porch	Post	Building 1A	Good	Green	0.02
008	East Porch	Doorway	Building 1A	Good	Green	0.00
009	East Porch	Joists North	Building 1A	Good	Green	20.00
010	East Porch	Joists North (against wall)	Building 1A	Good	Green	0.04
011	East Porch	Joists North	Building 1A	Good	Green	16.00
012	East Porch	Joists Center (against wall)	Building 1A	Good	Green	0.04
013	East Porch	Joists Center	Building 1A	Good	Green	20.00
014	East Porch	Joists Center	Building 1A	Good	Green	8.90
015	East Porch	Girder	Building 1A	Good	Green	0.10
016	East Porch	Girder	Building 1A	Good	Green	0.03
017	East Porch	Framing	Building 1A	Good	Green	0.16

Note: Direct Readings = or > 1.0 mg/cm² are considered LBP.

Table of XRF Direct Reading Results

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LEAD-BASED PAINT XRF TESTING

PROJECT: Marmion Row Building 1A East Porch

LOCATION: Harpers Ferry National Historic Park

LAW PROJECT NO: 20340-0-2592

CLIENT: National Park Service

SAMPLE DATE: 05-11-2000

INSPECTOR(S): ILB III

Test Number	Area/Room Description	Surface Tested	Location	Condition	Color	Direct Reading (mg/cm ²)
018	East Porch	Framing	Building 1A	Good	Green	14.00
019	East Porch	Framing	Building 1A	Good	Green	12.00
020	East Porch	Girder	Building 1A	Good	Green	0.01
021	East Porch	Inside Stringer	Building 1A	Good	Green	0.00
022	East Porch	Inside Stringer	Building 1A	Good	Green	0.01
023	East Porch	Inside Stringer	Building 1A	Good	Green	0.00
024	East Porch	Tread	Building 1A		Red	0.00
025	East Porch	Riser	Building 1A	Poor	Green	0.00
026	East Porch	Tread	Building 1A	Poor	Red	0.00
027	East Porch	Riser	Building 1A	Poor	Green	0.01
028	East Porch	Riser	Building 1A	Poor	Green	0.00
029	East Porch	Tread	Building 1A	Poor	Red	0.02
030	East Porch	Newel Post	Building 1A	Good	Green	0.03
031	East Porch	Bottom Rail	Building 1A	Good	Green	0.00
032	East Porch	Top Rail	Building 1A	Good	Green	0.03
033	East Porch	Post	Building 1A	Good	Green	0.01
034	East Porch	Top Rail	Building 1A	Good	Green	0.06
035	East Porch	Pilaster	Building 1A	Good	Green	1.60
036	East Porch	Bottom Rail	Building 1A	Poor	Green	0.00
037	East Porch	Deck	Building 1A	Poor	Red	0.01

Note: Direct Readings = or > 1.0 mg/cm² are considered LBP.

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LEAD-BASED PAINT XRF TESTING

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LOCATION: Harpers Ferry National Historic Park

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SAMPLE DATE: 05-11-2000

INSPECTOR(S): ILB III

Test Number	Area/Room Description	Surface Tested	Location	Condition	Color	Direct Reading (mg/cm ²)
038	East Porch	Bottom Rail	Building 1A	Good	Green	0.25
039	East Porch	Spindle	Building 1A	Good	Green	1.10
040	East Porch	Spindle	Building 1A	Good	Green	0.90
041	East Porch	Top Rail	Building 1A	Good	Green	0.33
042	East Porch	Pilaster	Building 1A	Good	Green	1.40
043	East Porch	Front Column	Building 1A	Good	Green	0.02
044	East Porch	Front Column	Building 1A	Good	Green	0.02
045	East Porch	Front Column	Building 1A	Good	Green	0.02
046	East Porch	Front Column	Building 1A	Good	Green	0.02
047	East Porch	Top Rail	Building 1A	Good	Green	0.00
048	East Porch	Top Rail	Building 1A	Good	Green	0.00
049	East Porch	Top Rail	Building 1A	Good	Green	0.00
050	East Porch	Bottom Rail	Building 1A	Good	Green	0.00
051	East Porch	Bottom Rail	Building 1A	Good	Green	0.00
052	East Porch	Bottom Rail	Building 1A	Good	Green	0.10
053	East Porch	Spindle	Building 1A	Good	Green	0.00
054	East Porch	Spindle	Building 1A	Good	Green	0.00
055	East Porch	Spindle	Building 1A	Good	Green	0.00
056	East Porch	Spindle	Building 1A	Good	Green	0.00
057	East Porch	Spindle	Building 1A	Good	Green	0.00

Note: Direct Readings = or > 1.0 mg/cm² are considered LBP.

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LEAD-BASED PAINT XRF TESTING

PROJECT: Marmion Row Building 1A East Porch

LOCATION: Harpers Ferry National Historic Park

LAW PROJECT NO: 20340-0-2592

CLIENT: National Park Service

SAMPLE DATE: 05-11-2000

INSPECTOR(S): ILB III

Test Number	Area/Room Description	Surface Tested	Location	Condition	Color	Direct Reading (mg/cm ²)
058	East Porch	Spindle	Building 1A	Good	Green	0.00
059	East Porch	Deck	Building 1A	Poor	Red	0.00
060	East Porch	Deck	Building 1A	Poor	Red	0.00
061	East Porch	Top Column	Building 1A	Good	Green	0.00
062	East Porch	Top Column	Building 1A	Good	Green	0.01
063	East Porch	Top Column	Building 1A	Good	Green	0.01
064	East Porch	Top Column	Building 1A	Good	Green	0.01
065	East Porch	Center Post	Building 1A	Good	Green	0.01
066	East Porch	Top Rail	Building 1A	Good	Green	0.40
067	East Porch	Bottom Rail	Building 1A	Good	Green	1.30
068	East Porch	Post	Building 1A	Good	Green	0.90
069	East Porch	Spindle	Building 1A	Good	Green	0.00
070	East Porch	Spindle	Building 1A	Good	Green	0.26
071	East Porch	Deck	Building 1A	Poor	Red	0.06
072	East Porch	Farcia Board	Building 1A	Good	Green	0.10
073	East Porch	Post	Building 1A	Good	Green	0.01
074	East Porch	Top Rail	Building 1A	Good	Green	0.46
075	East Porch	Post	Building 1A	Good	Green	0.18
076	East Porch	Bottom Rail	Building 1A	Good	Green	0.70
077	East Porch	Spindle	Building 1A	Good	Green	1.00

Note: Direct Readings = or > 1.0 mg/cm² are considered LBP.

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INSPECTOR(S): ILB III

Test Number	Area/Room Description	Surface Tested	Location	Condition	Color	Direct Reading (mg/cm ²)
078	East Porch	Spindle	Building 1A	Good	Green	0.60
079	East Porch	Deck	Building 1A	Poor	Red	0.02
080	East Porch	Faccia	Building 1A	Good	Green	0.00
081	East Porch	Post	Building 1A	Good	Green	0.01
082	East Porch	Post	Building 1A	Good	Green	0.02
083	East Porch	Top Rail	Building 1A	Good	Green	0.00
084	East Porch	Top Rail	Building 1A	Good	Green	0.00
085	East Porch	Top Rail	Building 1A	Good	Green	0.01
086	East Porch	Bottom Rail	Building 1A	Good	Green	0.00
087	East Porch	Bottom Rail	Building 1A	Good	Green	0.00
088	East Porch	Bottom Rail	Building 1A	Good	Green	0.00
089	East Porch	Spindle	Building 1A	Good	Green	0.00
090	East Porch	Spindle	Building 1A	Good	Green	0.00
091	East Porch	Spindle	Building 1A	Good	Green	0.00
092	East Porch	Spindle	Building 1A	Good	Green	0.01
093	East Porch	Spindle	Building 1A	Good	Green	0.00
094	East Porch	Spindle	Building 1A	Good	Green	0.00
095	East Porch	Deck	Building 1A	Poor	Red	0.00
096	East Porch	Faccia	Building 1A	Good	Green	0.00
097	East Porch	Faccia	Building 1A	Good	Green	0.00

Note: Direct Readings = or > 1.0 mg/cm² are considered LBP.

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LEAD-BASED PAINT XRF TESTING

PROJECT: Marmion Row Building 1A East Porch

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LAW PROJECT NO: 20340-0-2592

CLIENT: National Park Service

SAMPLE DATE: 05-11-2000

INSPECTOR(S): ILB III

Test Number	Area/Room Description	Surface Tested	Location	Condition	Color	Direct Reading (mg/cm ²)
098	East Porch	Faccia	Building 1A	Poor	Green	0.00
099	East Porch	Girder Trim	Building 1A	Good	White	0.01
100	East Porch	Joist	Building 1A	Poor	White	0.46
101	East Porch	Joist	Building 1A	Poor	White	25.00
102	East Porch	Joist	Building 1A	Poor	White	16.00
103	East Porch	Ceiling	Building 1A	Fair	Green	0.00
104	East Porch	Girder	Building 1A	Poor	White	16.00
105	East Porch	Joist	Building 1A	Poor	White	19.00
106	East Porch	Joist	Building 1A	Poor	White	5.10
107	East Porch	Joist	Building 1A	Poor	White	26.00
108	East Porch	Ceiling	Building 1A	Fair	Green	0.00
109	East Porch	Girder	Building 1A	Poor	White	0.28
110	East Porch	Joist	Building 1A	Poor	White	0.90
111	East Porch	Joist	Building 1A	Poor	White	0.48
112	East Porch	Joist	Building 1A	Poor	White	1.00
113	East Porch	Ceiling	Building 1A	Fair	Green	0.00
114	East Porch	Girder	Building 1A	Good	Green	0.70

Note: Direct Readings = or > 1.0 mg/cm² are considered LBP.

APPENDIX B

LEAD DUST WIPE SAMPLE RESULTS

LEAD DUST WIPE SAMPLE RESULTS

<u>Date</u>	<u>Sample Location</u>	<u>Sample Number</u>	<u>Area Sampled</u>	<u>Concentration (ug/ft²)</u>
5/11/00	East Porch, North End, Left Side	1A-01W	1 ft ²	105
	East Porch, North End, Right Side	1A-02W	1 ft ²	208
	East Porch, South End, Left Side	1A-03W	1 ft ²	29
	East Porch, South End, Right Side	1A-04W	1 ft ²	85.5
	East Porch, Center, Left Side	1A-05W	1 ft ²	101
	East Porch, Center, Right Side	1A-06W	1 ft ²	104

APPENDIX C

LEAD IN SOIL SAMPLE RESULTS

LEAD IN SOIL SAMPLE RESULTS

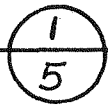
<u>Date</u>	<u>Sample Location</u>	<u>Sample Number</u>	<u>Concentration (mg/Kg)</u>
5/11/00	Along the drip line of the East Side of Porch	1A-01S	2,550

*National Park Service
Harpers Ferry, WV – Building 1A
LAW Project 20340-0-2592*

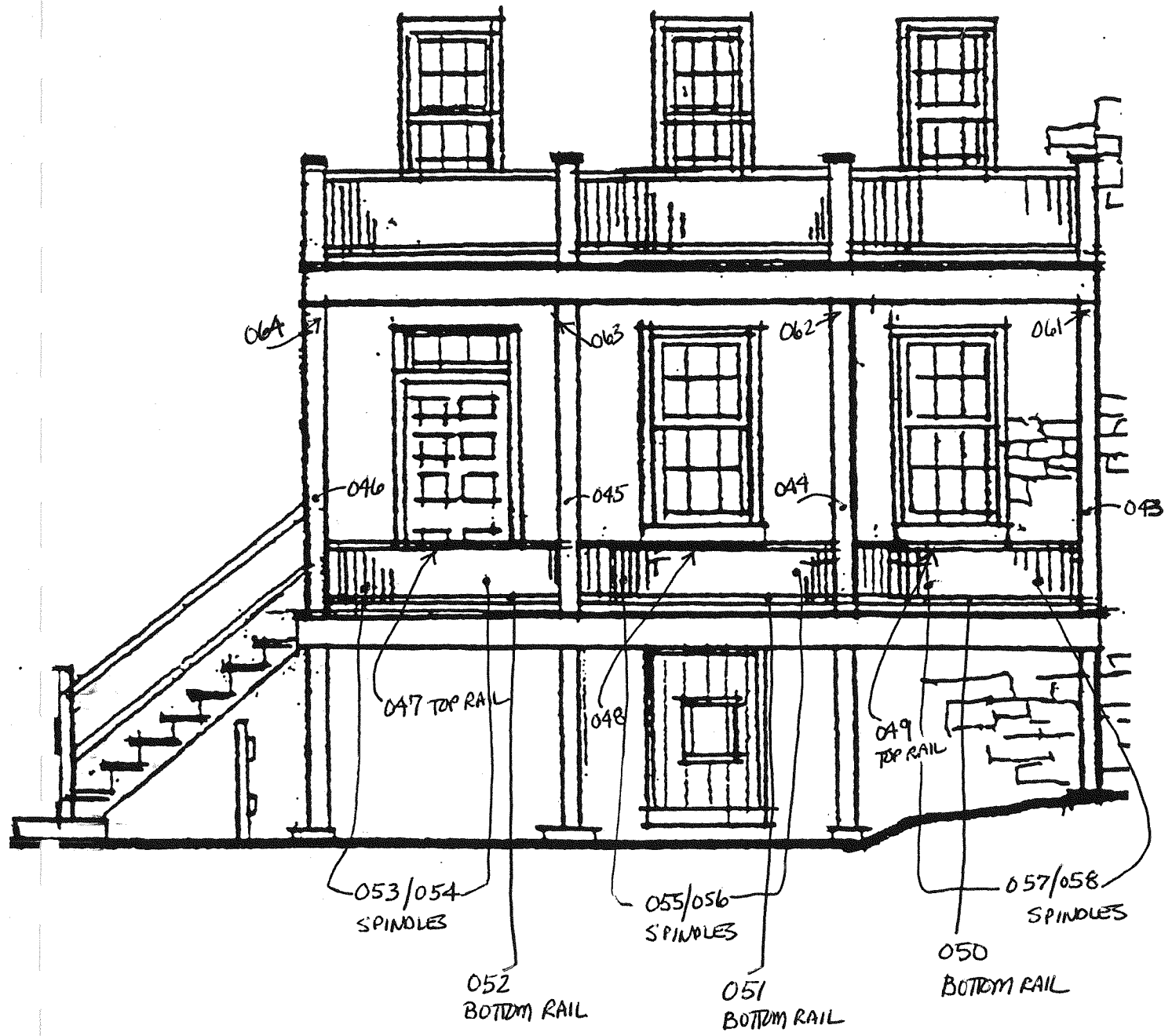
*June 2, 2000
Report of Lead Paint Survey Services*

APPENDIX D

ANNOTATED FIELD DRAWINGS

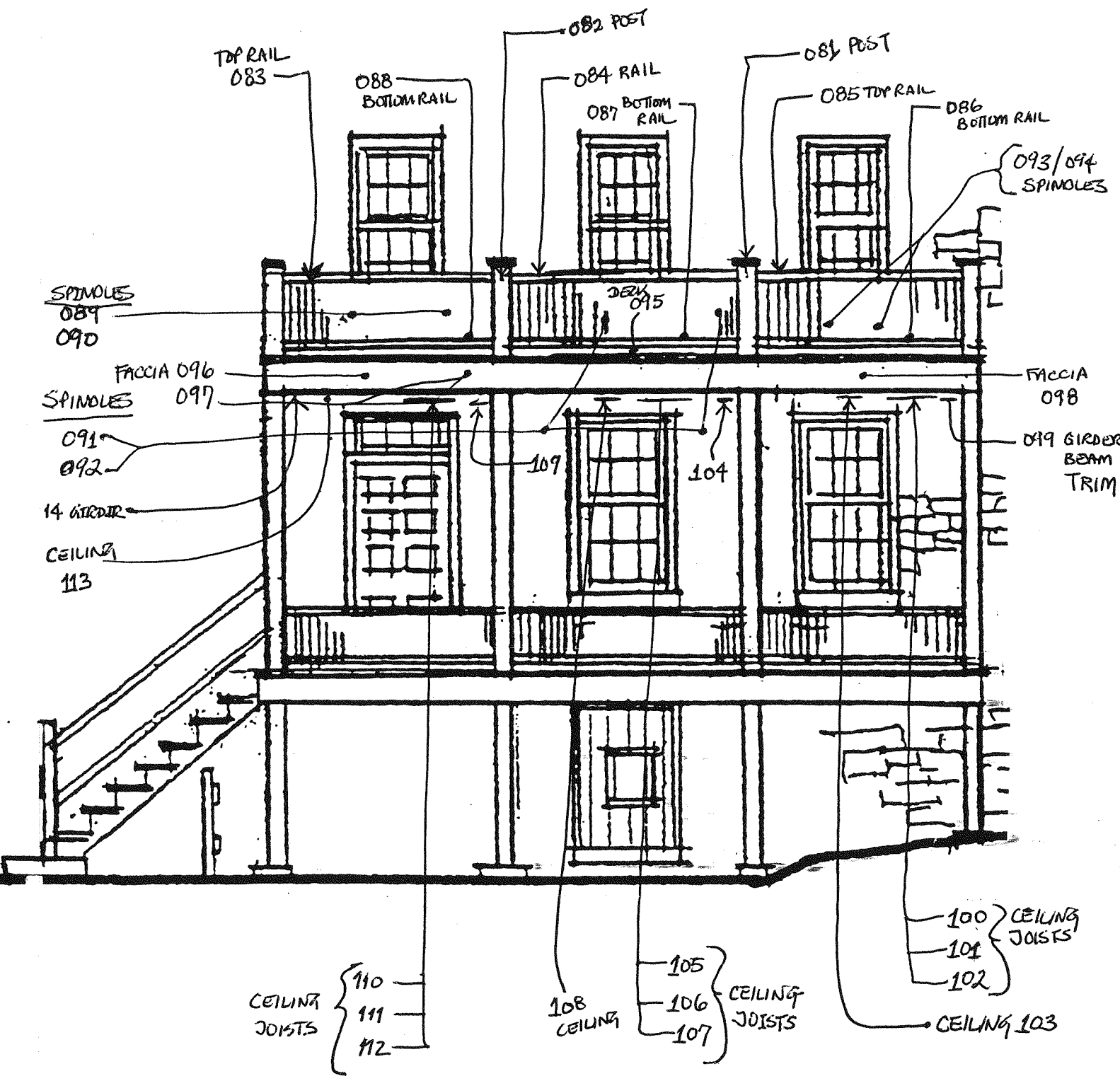


HISTORIC HARPER HOUSE



2
5

EAST ELEVATION - 1A EAST PORCH,
NOT TO SCALE. HAF/NDP/NPS.
HISTORIC HARPER HOUSE



3 EAST ELEVATION - 1A EAST PORCH,
 5 NOT TO SCALE. HAFE/NDP/NPS.
 HISTORIC HARPER HOUSE

