Stantec Consulting Services Inc.
12075 Corporate Parkway, Suite 200 Mequon WI 53092

October 12, 2016

Attention: Mr. John W. Peterson
Project Officer
Brownfields & NPL Reuse Section #1
USEPA Region 5
77 West Jackson Blvd
Chicago, Illinois 60604-3504

Reference: Addendum 1 to the September 15, 2016 Site-Specific Sampling and Analysis Plan
1512 Washington Street
USEPA Cooperative Agreement No. BF-00E01529-0
Stantec Project No. 193703139

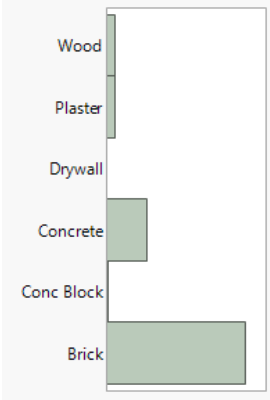
Dear Mr. Peterson:

On behalf of the City of Manitowoc (City), Stantec Consulting Services Inc. (Stantec) has prepared this addendum to the previously-approved Stantec (2016) site-specific sampling and analysis plan (SSSAP) and associated health and safety plan prepared on September 15, 2016 and approved for implementation on September 30, 2016 for assessment activities at the property located at 1512 Washington Street in the City of Manitowoc, Wisconsin (herein referred to as the Site). The work described in this Addendum will be performed using funds from an assessment grant for hazardous substance brownfields awarded to the City by the United States Environmental Protection Agency (USEPA) in 2015 under cooperative agreement BF-00E01529-0.

ENVIRONMENTAL CONCERNS

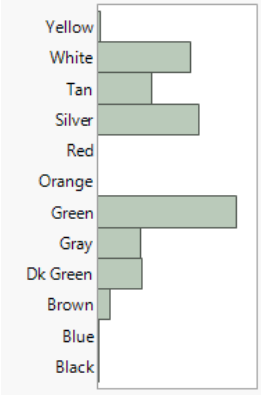
The Stantec (2016) pre-demolition asbestos and lead paint survey identified the presence of lead in multiple paint colors on a variety of porous surfaces throughout the remaining buildings. Relative measurement quantities summarized on the table below can be used to estimate the prevalence of porous material at the Site and paint colors relative to the total number of measurements. As noted in the following table, the most prominent surfaces measured were brick (71% of measurements; primarily in the south building) and concrete/concrete block (21% of measurements; primarily in the north building). The most prominent colors of paint measured at the Site are green, silver, white, tan, dark green and gray.

Total number of XRF measurements by substrate



Level	Count	Prob
Brick	1242	0.70810
Conc Block	10	0.00570
Concrete	359	0.20468
Drywall	2	0.00114
Plaster	71	0.04048
Wood	70	0.03991
Total	1754	1.00000

Total number of measurements by paint color



Level	Count	Prob
Black	4	0.00228
Blue	3	0.00171
Brown	42	0.02395
Dk Green	158	0.09008
Gray	155	0.08837
Green	494	0.28164
Orange	1	0.00057
Red	1	0.00057
Silver	359	0.20468
Tan	193	0.11003
White	333	0.18985
Yellow	11	0.00627
Total	1754	1.00000

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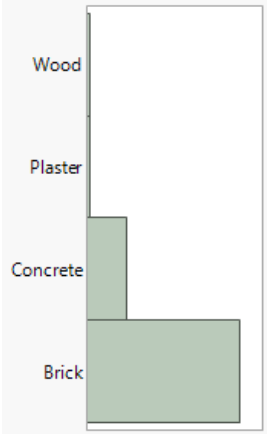
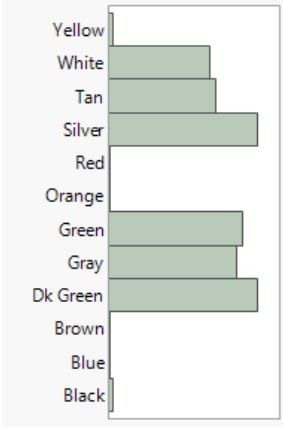
The State of Wisconsin has determined that XRF measurement results greater than 1 milligram per square centimeter are considered indicative of lead bearing paint. As summarized below, approximately 23% of measurements made of porous materials at the Site are considered indicative of lead bearing paint. Further, the table below indicates the most common lead-bearing paint colors are (almost even by proportion of samples) dark green, silver, green, gray, tan and white and the most common substrate for lead-bearing paint is brick (predominately in the south building).

Number of samples > 1 mg/cm² Pb by substrate



Level	Count	Prob
Brick	316	0.77073
Concrete	83	0.20244
Plaster	6	0.01463
Wood	5	0.01220
Total	410	1.00000

Number of samples > 1 mg/cm² Pb by paint color



Level	Count	Prob
Black	2	0.00488
Blue	1	0.00244
Brown	1	0.00244
Dk Green	78	0.19024
Gray	67	0.16341
Green	70	0.17073
Orange	1	0.00244
Red	1	0.00244
Silver	78	0.19024
Tan	56	0.13659
White	53	0.12927
Yellow	2	0.00488
Total	410	1.00000

For graphical representation of the survey results, the average lead concentration by paint color by substrate is illustrated on Figure 1 and the maximum lead concentration by paint color by substrate is illustrated on Figure 2.

PURPOSE STATEMENT

Due to the ubiquitous presence of lead bearing paint and the weathered condition of building materials, recycling the porous building materials following demolition is not practical. Instead, demolition debris will be transported offsite for disposal at a licensed landfill. If the landfill can use the demolition debris for beneficial reuse (ex. construction of roads or berms), a significant cost savings could be realized. To document the demolition debris will be suitable for beneficial reuse, laboratory analysis of representative samples of the porous media are required.

WASTE CHARACTERIZATION AND ASSESSMENT

As described in the Stantec (2016) pre-demolition inspection report and illustrated on the enclosed Figure 1 and Figure 2, lead concentrations on painted surfaces in the building are not uniform. Further, it appears the content of lead cannot be predicted simply by paint color nor by substrate. Therefore, this proposed waste characterization assessment focuses on evaluating the range of paint colors/lead contents and substrates remaining in the Site buildings in relative

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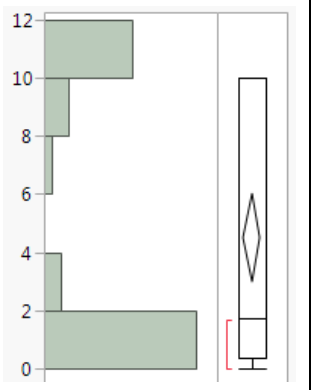
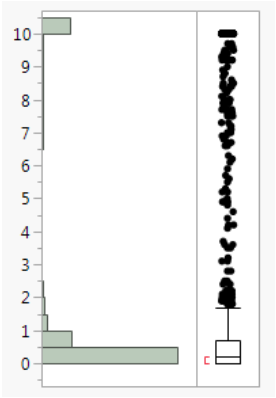
proportion to the anticipated comingled demolition debris waste stream. The proposed sample locations for this investigation are illustrated on Figures 3-9 and details summarized on Table 1. (Please note, to reduce sampling effort, the proposed sample locations are located in close proximity to sample locations targeted in the September 15, 2016 sampling and analysis plan.)

The distribution of lead measurements in proposed samples compared to the lead concentrations of all samples measured during the Stantec (2016) pre-demolition survey are summarized below and indicate that the proposed samples will adequately capture the upper magnitude and variation of lead concentrations in building materials. Further, the concentration of lead in proposed samples by paint color and by substrate are illustrated on Figure 10 and will adequately represent conditions identified during the investigation and illustrated on Figure 2.

Distribution of lead concentrations (mg/cm^2) in proposed samples		Distribution of lead concentrations (mg/cm^2) in all materials measured during inspection	
	**Quantiles** 100.0% maximum 10 99.5% 10 97.5% 10 90.0% 10 75.0% quartile 10 50.0% median 1.75 25.0% quartile 0.375 10.0% 0 2.5% 0 0.5% 0 0.0% minimum 0 **Summary Statistics** Mean 4.5055556 Std Dev 4.49609 Std Err Mean 0.7493483 Upper 95% Mean 6.0268136 Lower 95% Mean 2.9842976 N 36		**Quantiles** 100.0% maximum 10 99.5% 10 97.5% 10 90.0% 10 75.0% quartile 0.7 50.0% median 0.2 25.0% quartile 0 10.0% 0 2.5% 0 0.5% 0 0.0% minimum 0 **Summary Statistics** Mean 1.9071266 Std Dev 3.5415552 Std Err Mean 0.0845628 Upper 95% Mean 2.0729811 Lower 95% Mean 1.7412721 N 1754

Per Standard Operating Procedure 20 (SOP-20) (Stantec, 2016b), samples will be homogenized and powdered in-place using a hammer drill (concrete/brick) or chipped with spade-bit (wood) and collected into laboratory-supplied sample containers. To collect samples representative of the waste stream, building materials will be powdered/composited through the entirety of the building substrate, up to 6 inches of depth (estimated 180g of sample). Sample collection and field classification will be conducted per SOP No. 02 (Stantec, 2015). Samples will be visually and physically examined by Stantec field geologists, and observations made of the general material (color, consistency, powder texture), visible layering, odors, and other distinctive features as described in SOP No. 02 (Stantec, 2015). Pertinent observations noted during sampling will be documented in the field book and summarized on modified boring logs.

All building material samples will be collected and preserved in accordance with SOP No. 02, SOP No. 20, and Table 3 of the Quality Assurance Project Plan (QAPP) (Stantec, 2015). All samples will be placed in laboratory supplied containers (per SOP No. 02), preserved as appropriate, stored on ice, and submitted under chain-of-custody procedures to Test America (Chicago, Illinois), a State of Wisconsin-certified laboratory for Resource Conservation and Recovery Act (RCRA) metals analysis as described in the QAPP using protocols outlined in SOP

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No. 07. Sampling equipment such as coring/drilling tools will be decontaminated prior to arrival on-site and between each sampling location as described in SOP No. 08 and SOP No. 20.

Analytical results will be compared to USEPA toxicity values presented in 40 CFR 261.24 using the "20-times" rule. If constituent concentrations exceed the "20-times" rule, additional material submitted to the lab may be analyzed for RCRA metals following toxicity characteristic leaching procedure (TCLP) extraction. Results of this investigation will be documented in a waste characterization report, which will include laboratory reports, tables summarizing results, and figures illustrating the location of each sample.

One de-identified duplicate sample will be collected and analyzed to evaluate sample variability and overall data precision. The duplicate sample will be collected adjacent to an actual sample location.

HEALTH AND SAFETY PLAN

The site-specific Health and Safety Plan provided in the September 15, 2016 SSSAP will be utilized by Stantec personnel during the assessment activities described in this addendum.

We trust this information meets your needs. We request an expedited review of this addendum as we could complete this work next week (October 19-20) concurrent with the previously approved SSSAP. Please feel free to contact me at 414-581-6476 if you have any questions or concerns.

Regards,

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LIMITATIONS

Stantec's observations, findings, and opinions should not be considered as scientific certainties, but only as opinion based on our professional judgment concerning the significance of the data reviewed in developing this site specific sampling and analysis plan. Specifically, Stantec cannot represent that the Site does not contain any hazardous or toxic materials or other latent conditions beyond that observed by Stantec during the course of the investigation. Additionally, due to limitations of this investigation process and the necessary use of data furnished by others, Stantec and its subcontractors cannot assume liability if actual conditions differ from the information presented in this report.

Enclosures: Figures
Table

FIGURES

Figure 1 - Maximum lead concentration on painted porous surfaces by paint color

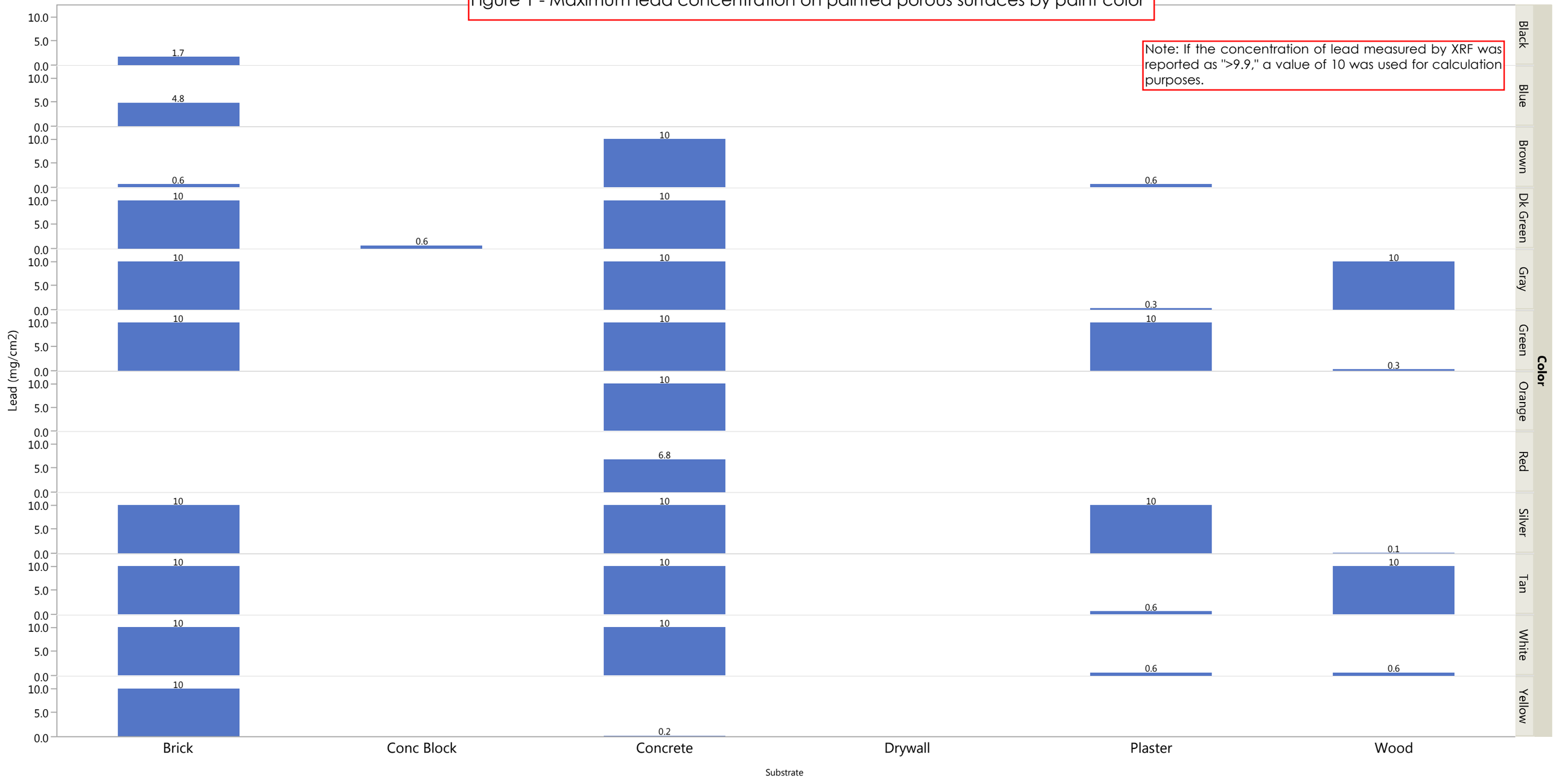


Figure 2 - Average lead concentration on painted porous surfaces by paint color

Note: If the concentration of lead measured by XRF was reported as ">9.9," a value of 10 was used for calculation purposes.

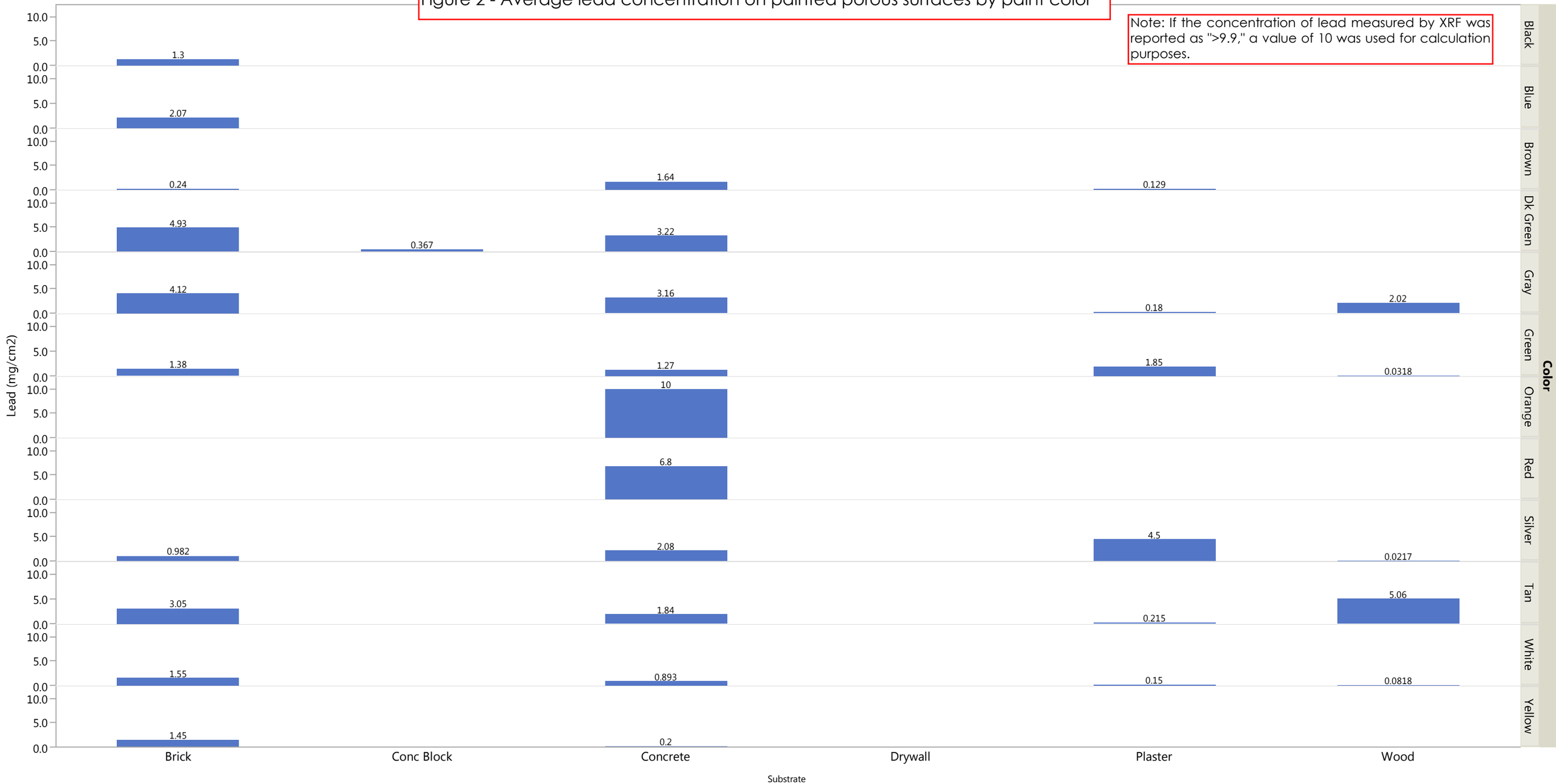
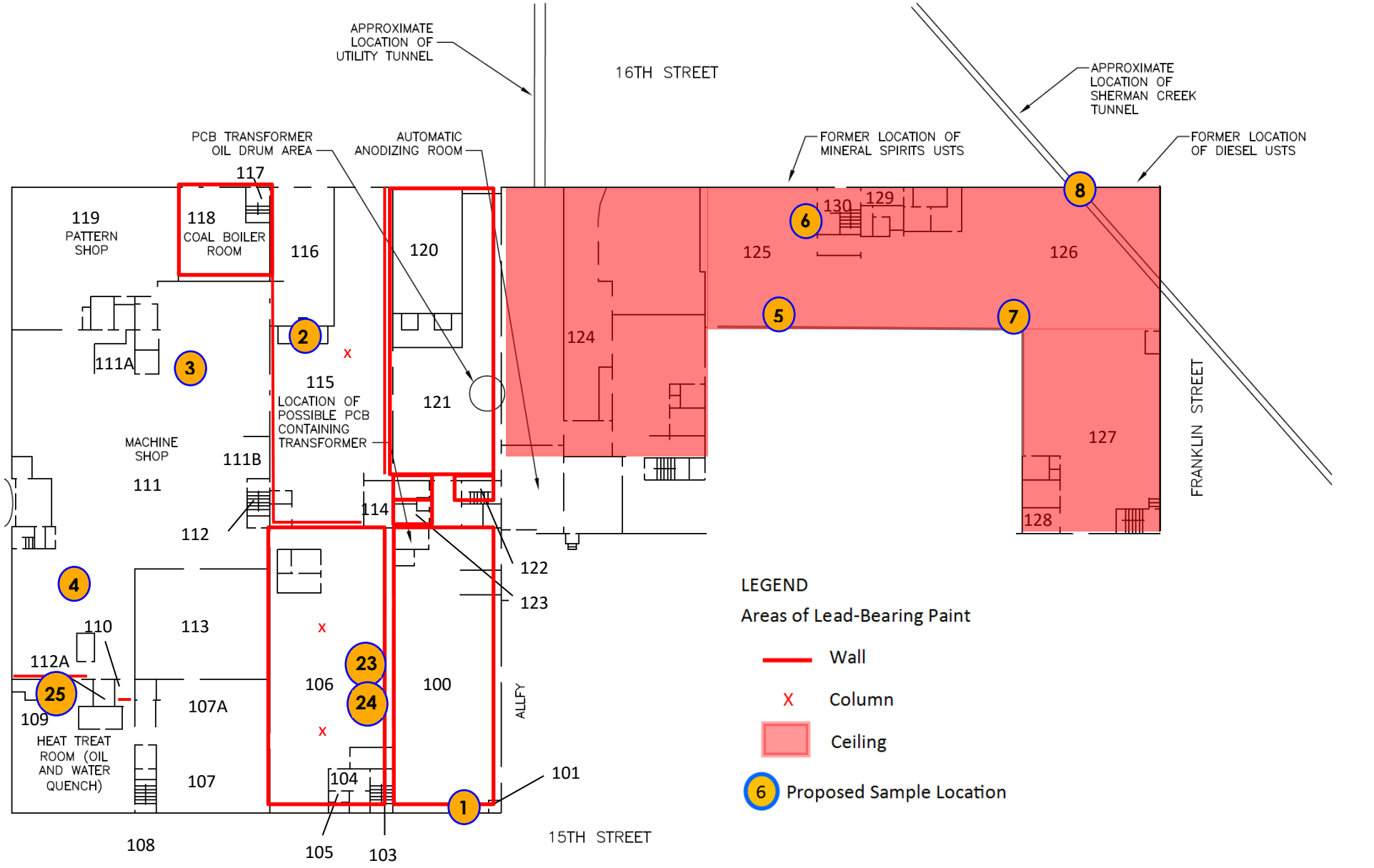


Figure 3 - Porous Media Sample Locations on Ground Floor



Ground Floor Plan

Figure 4 - Porous Media Sample Locations on 2nd Floor

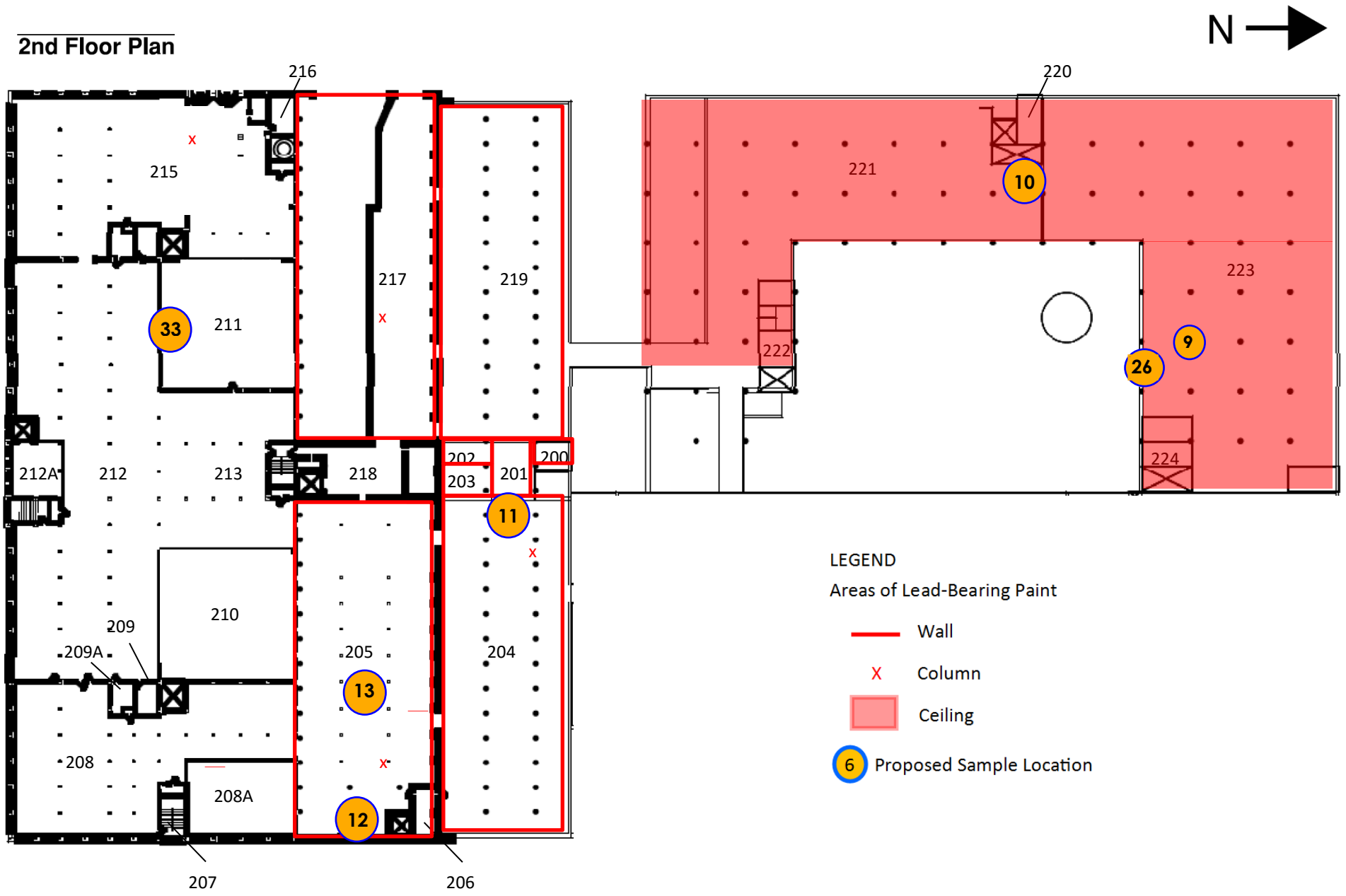


Figure 5 - Porous Media Sample Locations on 3rd Floor

3rd Floor Plan

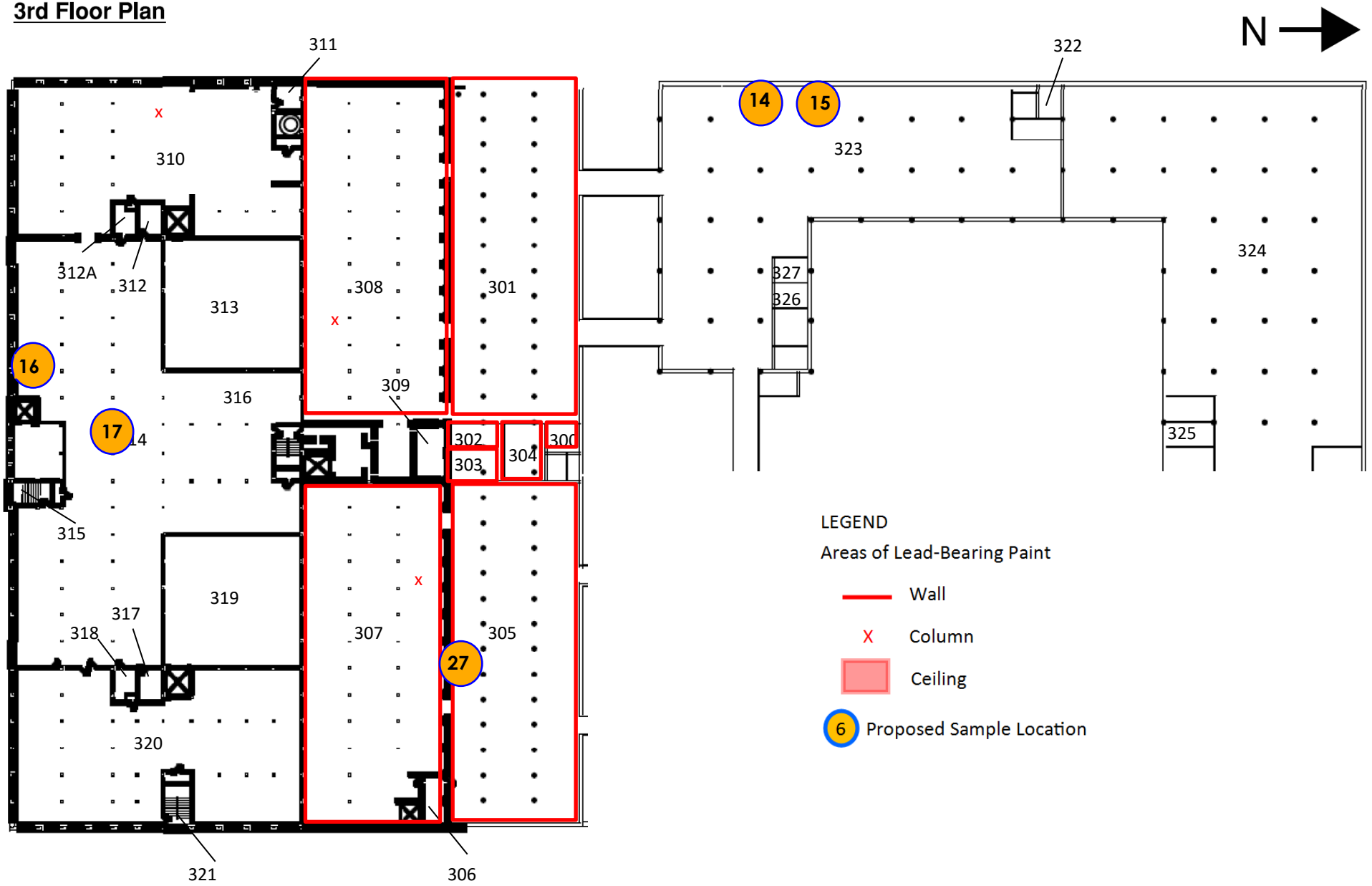


Figure 6 - Porous Media Sample Locations on 4th Floor

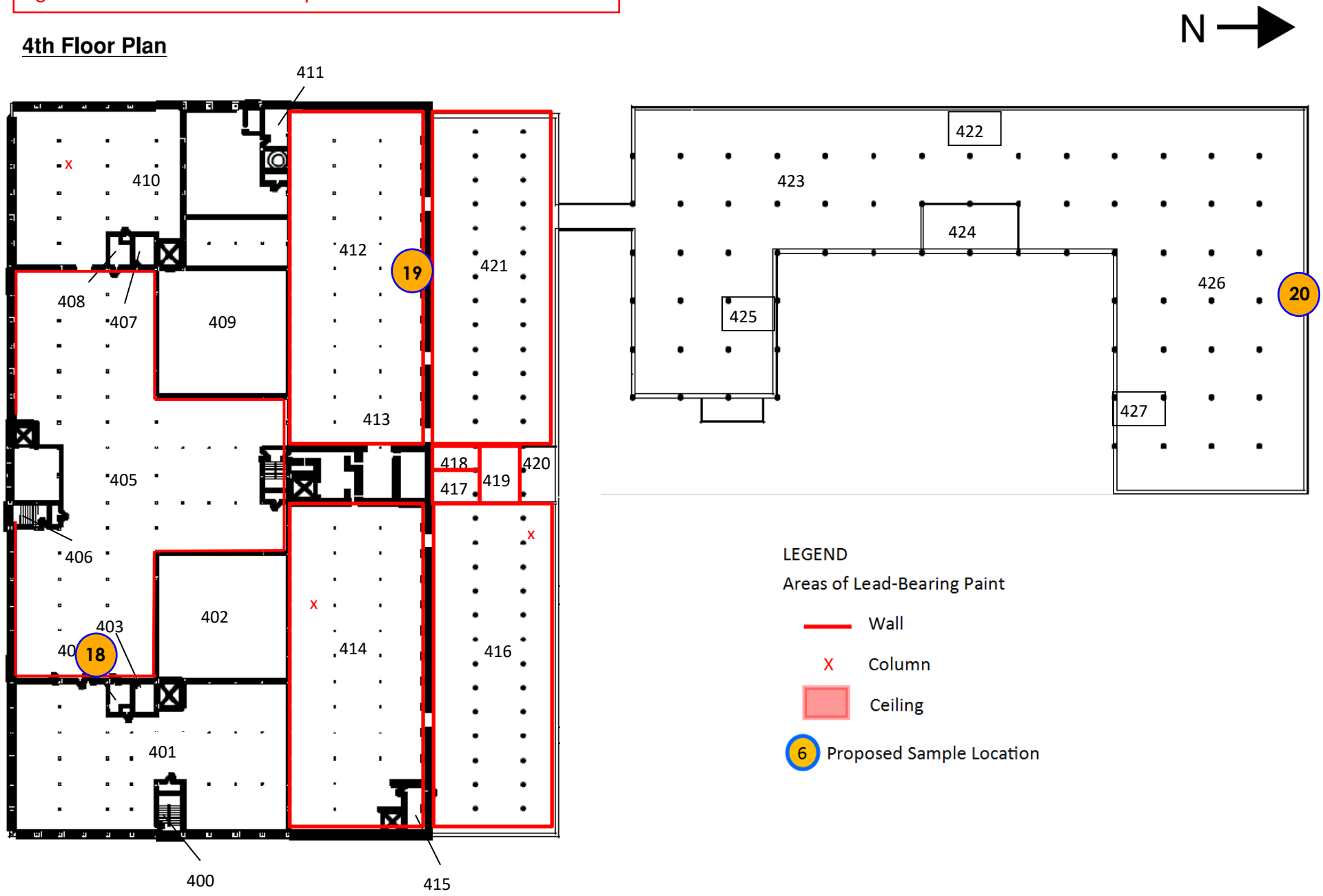


Figure 7 - Porous Media Sample Locations on 5th Floor

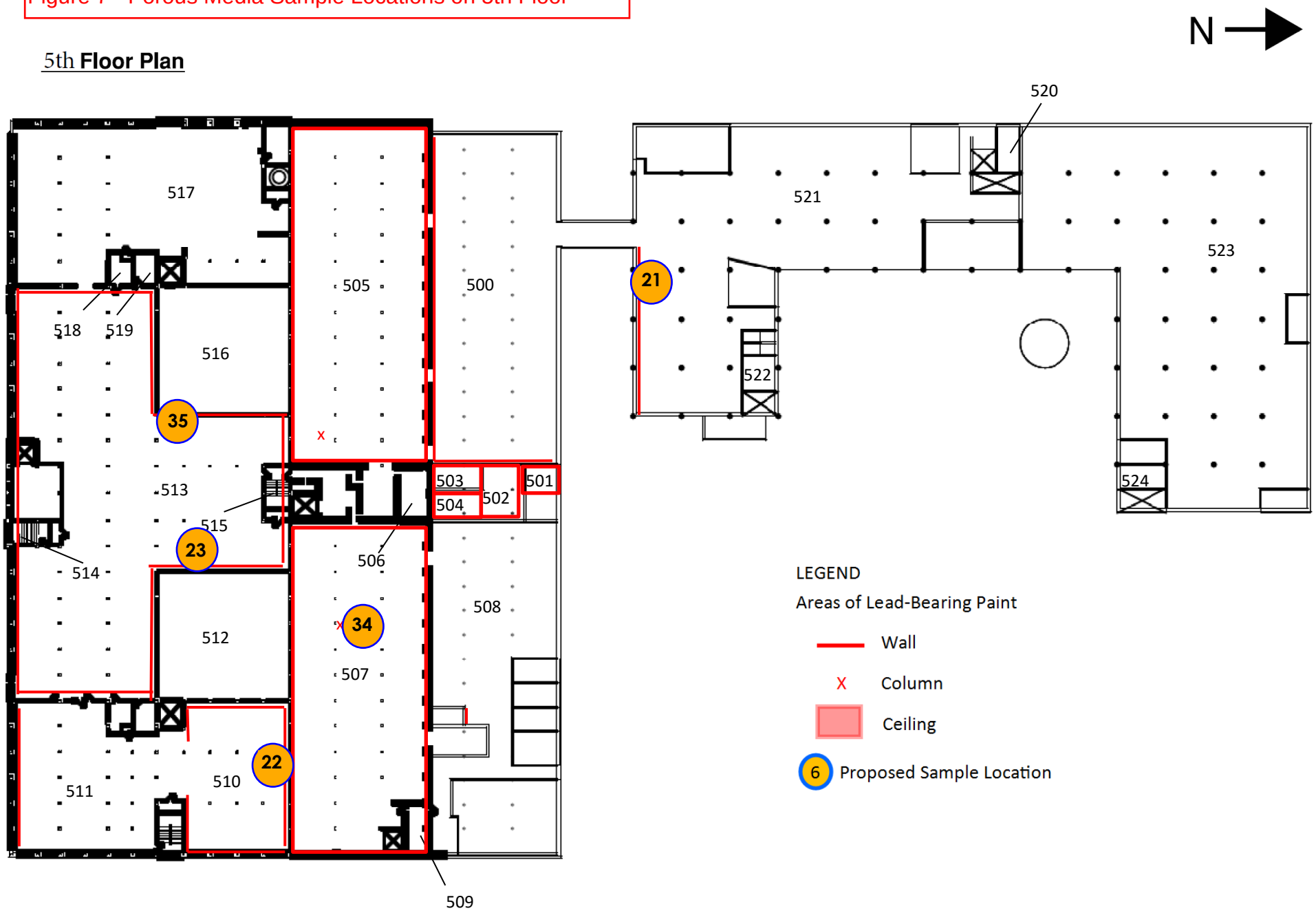


Figure 8 - Porous Media Sample Locations on 6th Floor

6th Floor Plan

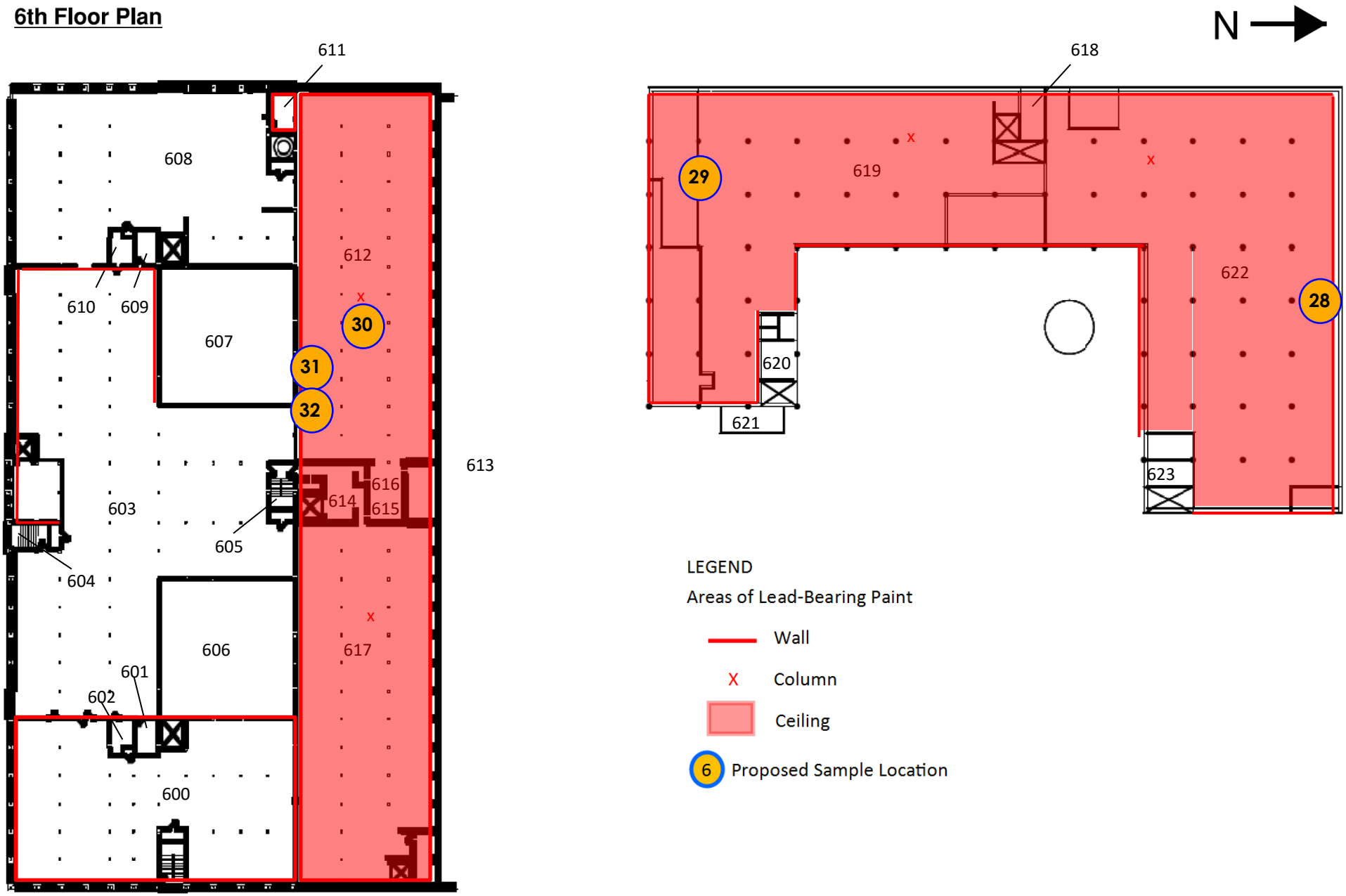


Figure 9 - Porous Media Sample Locations on 7th Floor

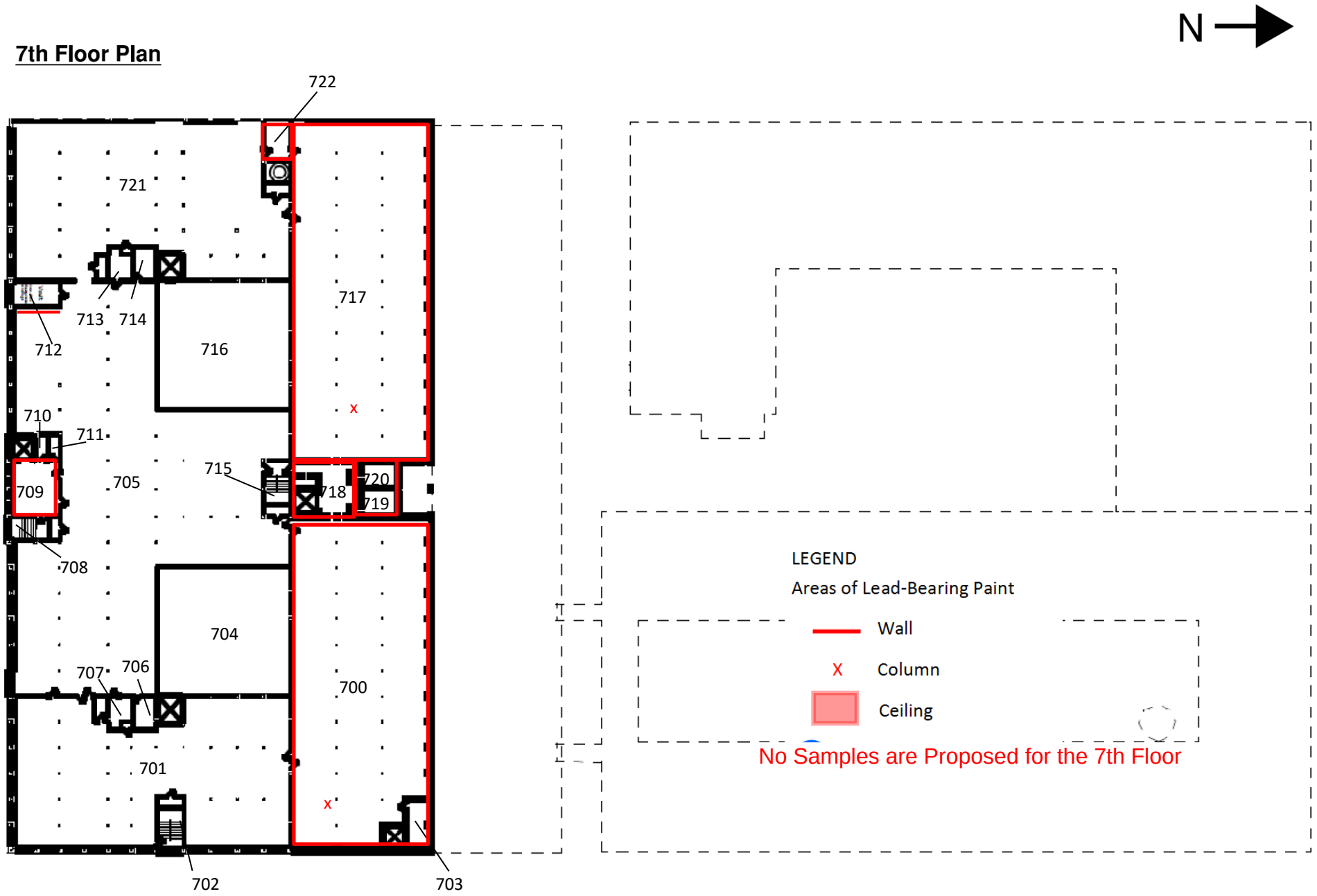


Figure 10 - Concentration of lead, paint color, and substrate for proposed samples.

Note: If the concentration of lead measured by XRF was reported as ">9.9," a value of 10 was used for calculation purposes.

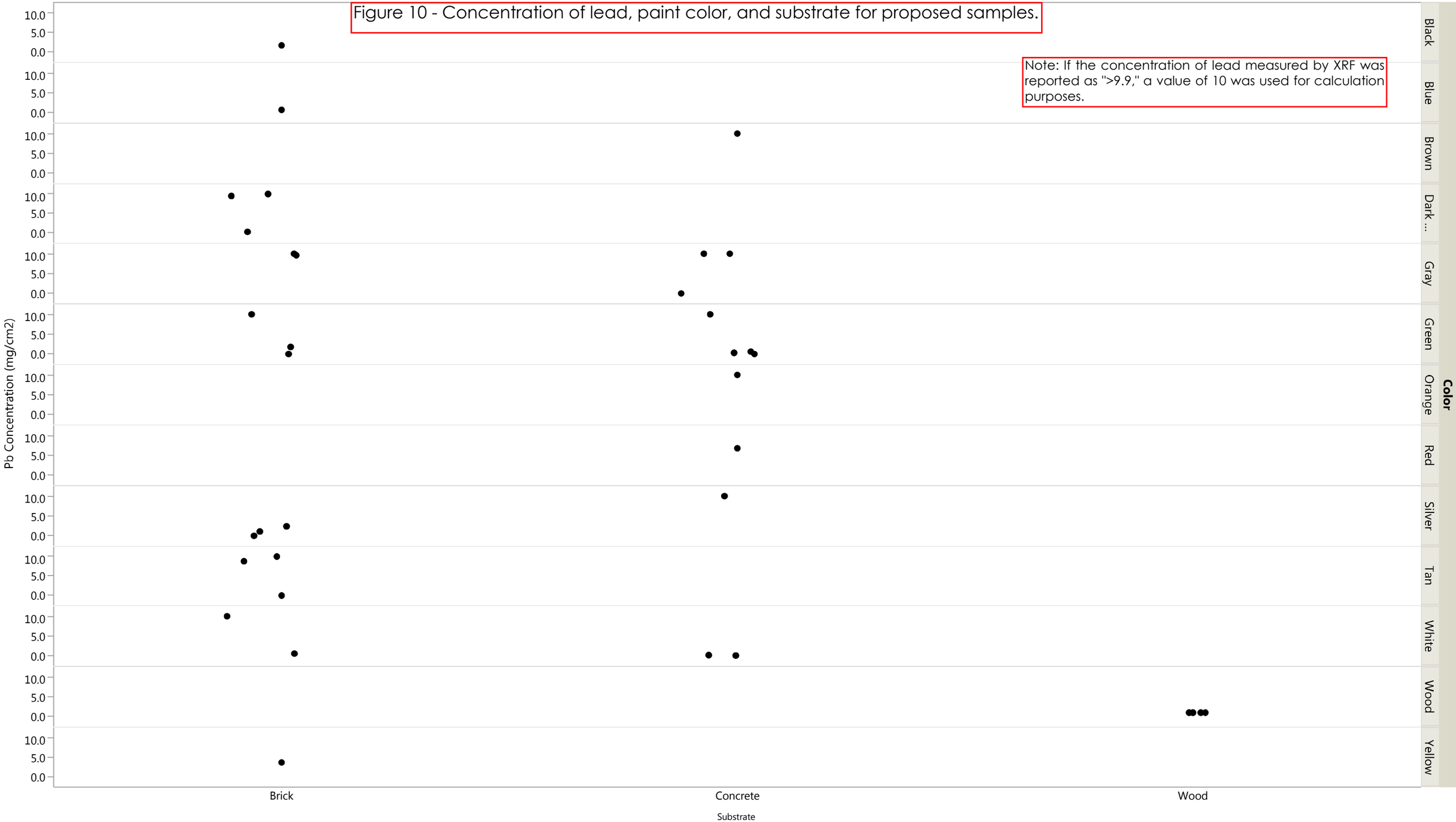


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TABLE

Table 1
Proposed Porous Media Sample Location
1512 Washington Street; Manitowoc Wisconsin

Building	Floor	Proposed Sample Location	Proposed Analysis	Wall	Structure	Location	Substrate	Color	XRF Reading No	Pb Concentration (mg/cm2)
South	1st	1	(1) Composite RCRA Metals (6010)	A	Wall	L Ctr	Brick	Gray	7	>9.9
		2	(1) Composite RCRA Metals (6010)	C	Wall	U Rgt	Brick	Silver	150	0
		3	(1) Composite RCRA Metals (6010)	Flooring			Wood	NA	Unk	Unk
		4	(1) Composite RCRA Metals (6010)	Flooring			Wood	NA	Unk	Unk
		23	(1) Composite RCRA Metals (6010)	D	Wall	U Lft	Brick	Green	46	-0.2
		24	(1) Composite RCRA Metals (6010)	D	Wall	L Lft	Brick	Dark Green	47	> 9.9
		25	(1) Composite RCRA Metals (6010)	C	Wall	U Lft	Brick	Tan	82	> 9.9
North	1st	5	(1) Composite RCRA Metals (6010)	A	Wall	U Lft	Concrete	Green	626	> 9.9
		6	(1) Composite RCRA Metals (6010)	C	Wall	U Ctr	Concrete	Gray	634	0
		7	(1) Composite RCRA Metals (6010)	A	Wall	U Ctr	Concrete	White	647	0.1
		8	(1) Composite RCRA Metals (6010)	C	Wall	L Rgt	Concrete	Gray	655	> 9.9
North	2nd	9	(1) Composite RCRA Metals (6010)	Left Column			Concrete	Green	739	0
		10	(1) Composite RCRA Metals (6010)	D	Wall	L Ctr	Brick	Green	726	1.8
		26	(1) Composite RCRA Metals (6010)	B	Wall	U Lft	Brick	White	749	0.6
South	2nd	11	(1) Composite RCRA Metals (6010)	C	Wall	L Ctr	Brick	Dark Green	259	9.5
		12	(1) Composite RCRA Metals (6010)	A	Wall	L Ctr	Brick	Tan	277	0
		13	(1) Composite RCRA Metals (6010)	Flooring			Wood	NA	Unk	Unk
		33	(1) Composite RCRA Metals (6010)	B	Wall	L Ctr	Brick	Blue	31	0.7
North	3rd	14	(1) Composite RCRA Metals (6010)	C	Wall	U Lft	Concrete	White	30	0.2
		15	(1) Composite RCRA Metals (6010)	C	Wall	L Lft	Concrete	Green	29	0.3
South	3rd	16	(1) Composite RCRA Metals (6010)	B	Wall	L Rgt	Brick	Dark Green	204	0.3
		17	(1) Composite RCRA Metals (6010)	Flooring			Wood	NA	Unk	Unk
		27	(1) Composite RCRA Metals (6010)	B	Wall	L Lft	Brick	Tan	131	8.8
South	4th	18	(1) Composite RCRA Metals (6010)	A	Wall	L Ctr	Brick	Silver	274	2.4
		19	(1) Composite RCRA Metals (6010)	D	Wall	L Ctr	Brick	Gray	322	9.6
North	4th	20	(1) Composite RCRA Metals (6010)	D	Wall	L Lft	Concrete	Green	141	0.6
North	5th	21	(1) Composite RCRA Metals (6010)	B	Wall	L Ctr	Concrete	Gray	170	> 9.9
South	5th	22	(1) Composite RCRA Metals (6010)	D	Wall	U Lft	Brick	Black	243	1.7
		23	(1) Composite RCRA Metals (6010)	A	Wall	L Ctr	Brick	Silver	24	1.1
		34	(1) Composite RCRA Metals (6010)	Center Column			Concrete	Brown	416	> 9.9
		35	(1) Composite RCRA Metals (6010)	C	Wall	L Ctr	Brick	Yellow	36	3.7
North	6th	28	(1) Composite RCRA Metals (6010)	D	Wall	L Rgt	Concrete	Red	275	6.8
		29	(1) Composite RCRA Metals (6010)	B	Wall	L Ctr	Concrete	Silver	249	> 9.9
South	6th	30	(1) Composite RCRA Metals (6010)	Left Column			Concrete	Orange	333	> 9.9
		31	(1) Composite RCRA Metals (6010)	B	Wall	L Lft	Brick	Green	340	> 9.9
		32	(1) Composite RCRA Metals (6010)	B	Wall	U Lft	Brick	White	341	> 9.9

Notes:
South building is the 7-story building located adjacent to Washington Street.
North building is the 6-story building located adjacent to Franklin Street.
Proposed analysis is for (1) composite sample at each location analyzed for eight resource conservation and recovery act (RCRA) metals using method SW 846 6010.
Wall "A" is the road side (15th Street) of the building. Walls B/C/D are determined clockwise from Wall A.
Location indicates lower (L) or upper (U) and left (Lft), center (Ctr) or right (Rgt) portion of wall.
XRF Reading No corresponds to sample ID from Stantec (2016) pre-demolition asbestos and lead paint survey.
Lead concentration as measured by XRF and reported in milligrams per square centimeter (mg/cm2).