Lead Paint Adaptation and Remediation Strategies for Historic Windows

2025

Research and Graphical Support to Newport's Window and Door Replacement Guidelines

Prepared for the Newport Restoration Foundation
and City of Newport Historic District Commission

NRF Newport Restoration Foundation
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Acknowledgements

The Lead Paint Adaptation and Remediation Strategies for Historic Windows project is a collaboration between the Office of Planning and Economic Development for the City of Newport, RI and the Newport Restoration Foundation (NRF). The project seeks to provide tools for historic homeowners to understand the current Rhode Island lead hazard laws and to advocate for the safe use and preservation of wood windows. The following resource was produced by Heritage Restoration, Inc.

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The Lead Paint Adaptation and Remediation Strategies for Historic Windows offers comprehensive solutions for property owners, preservation professionals, and contractors to safely manage and remediate lead paint hazards in historic wood window units, particularly those in pre-1978 rental properties as regulated under Rhode Island's Lead Hazard Mitigation Act (2002, amended 2023).

This guide was completed in June 2025. Please consult current lead remediation laws and policies for the most up to date best practices and approved methods for achieving lead-safe status.

This manual focuses on the techniques used to remove lead hazards from wood windows. All lead work in Rhode Island is regulated and governed by the Lead Safe Work Practices Rules and Regulations. Renovation, Repair, and Painting (RRP) work can only be performed by a Licensed Lead Renovation Firm. To be considered "lead safe," windows should always be tested by a RI licensed lead inspector. NRF cannot guarantee that the application of these techniques will result in a passed lead inspection. For more information, please consult the Rhode Island Department of Health.

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BACKGROUND & OVERVIEW

Background

The Rhode Island Lead Hazard Mitigation Act of 2002 set some of the strongest protections for tenant rights and property owner obligations for the removal or safe conformance of lead paint in rental properties in the United States. The law requires pre-1978 rental properties to be Lead-Safe certified, placing the role of compliance on the property owner to remove or mitigate any impact or abrasion surfaces that create hazardous lead paint dust. The 2023 passage of new and expanded lead enforcement laws by the Rhode Island General Assembly have heightened the enforcement and financial penalties for not adhering to Lead-Safe practices, namely through a state-wide registry that opened in 2025. These laws recognize removal of painted surfaces as one of the most effective ways to control lead hazards, but this approach can also result in the extensive and unnecessary loss of architectural features and historic finishes. There are currently no exemptions for historic properties.

Wooden windows can create abrasion commonly identified by lead inspectors as a barrier for a property to reach Lead-Safe compliance. Addressing these issues in a window system is a challenge with few affordable or widely shared options. Recognizing that lead paint is a hazardous material but can be properly encapsulated or removed to meet health standards, the City of Newport and the Newport Restoration Foundation partnered to produce this report as an educational tool and compliance resource for property owners to avoid disposing of architectural features containing lead paint.

Historic wood windows are a character-defining feature of the Newport Historic District, as well as historic properties generally. The Newport Historic District Commission requires applicants, where feasible, to repair rather than replace historic windows and their assemblies. The impact of this legislation has produced a dramatic uptick in homeowners reaching out about lead-based paint, pressure by contractors and window salespeople, and misinformation related to historic windows and the lead inspection process. **The goal of this resource is to provide clarity on the RI lead hazard mitigation laws, specifically as they relate to historic properties with wooden windows, and provide adaptation and mitigation options for property owners seeking to retain and safely operate their historic windows**.

The first half of this document provides background into the RI lead paint laws, and standards for inspection. The second half of the document includes window typology graphics and common areas for lead paint window hazards. The graphics are designed to help the reader identify where lead paint hazards could exist on a window assembly and the possible remedies to each component to meet lead safe operation.

Purpose and Scope

This guide integrates preservation and public health standards, equipping stakeholders with evidence-based remediation methodologies to retain historic fabric while pursuing lead-safe certification and aims to:

- Support compliance with lead-safe housing laws
- Preserve the integrity of historic wood windows
- Educate on window types, parts, and operational systems
- Provide remediation techniques specific to each window component

Key Concepts

Lead Hazards in Historic Windows

Historic windows pose unique risks due to friction(abrasion) and impact surfaces.
Hazards include:

- Deteriorated paint (chipping, peeling, flaking and chalking)
- Abrasion from sash operation
- Impact damage on sills and jambs

Mitigation and Remediation Strategies

Remedies must ensure that no lead-based paint remains damaged, loose, or exposed.
Common solutions include:

- **Encapsulation** – sealing intact lead paint surfaces
- **Paint removal & refinishing** – stripping to bare wood and repainting
- **Enclosure** – covering surfaces with non-lead materials
- **Replacement** – reproducing window parts in-kind

Window Types Covered

Includes styles from 1700s to present, such as:

- Single & Double Hung
- Casement, Awning, Hopper, Pivot
- Sliding and Fixed units
  Each type includes diagrams identifying hazards and solutions per component (sash, sill, stool, jamb, stop, etc.).

Systems and Hardware

Balance, stay, and jamb liner systems (e.g., weights, pulleys, springs, locks) are evaluated for lead hazard risks and updated solutions.

Regulatory Compliance

Outlines:

- Federal and RI thresholds for lead dust (e.g., 5 µg/ft^2 on floors)
- Required inspection/testing protocols (e.g., XRF, dust wipes)
- Mitigation standards for landlords, including documentation and tenant notification

Window Lead Hazard Identification Form

This resource includes two printable forms to help the user systematically evaluate each wood window, identifying areas of hazard and selecting mitigation tactics for each, then document lead mitigation work performed on each window along with the results.

LEAD HAZARD MITIGATION STANDARDS

Rhode Island Lead Hazard Mitigation Standards

These standards, adopted by the Housing Resources Commission, apply specifically to dwelling units and associated common areas of rental properties and cover:

Continuing and ongoing responsibility for lead hazard control by the landlord

- Repair of deteriorated paint
- Correction of dust-generating conditions, such as abrasion or impact areas
- Provision of cleanable surfaces to eliminate harmful dust loading
- Correction of soil lead hazards
- Safe work practices

Unit turnover

- Providing information on lead hazards and their avoidance and control to tenants
- Documentation of lead hazard mitigation compliance
- An explicit process for notification by tenants to property owners of instances of deterioration in conditions effecting lead hazards

DEFINITION OF LEAD-BASED PAINT

Paint or other surface coatings that contain at least:

1 milligram per centimeters square (mg/cm2) of lead;

0.5 percent lead; or 5,000 parts per million lead by dry weight.

In 1978 the Consumer Product Safety Commission banned the residential use of lead-based paint that contained greater than or equal to 0.06 percent or 600 ppm of lead.

FEDERAL THRESHOLDS FOR LEAD DUST CONTAMINATION

Floors 5 µg/ft^2

Interior window sills (stool)
40 µg/ft^2

Window troughs (Clearance only)
100 µg/ft^2

Assessment Methods to Verify Lead-Based Paint

Lead paint was in common use prior to 1978, so all dwellings built before 1978 are assumed to contain lead paint as a default. Specific surfaces can be tested using XRF (x-ray fluorescence) or lab analysis to determine lead content. Only a licensed lead inspector can definitively certify that a building is lead safe.

Risk Assessment- A comprehensive evaluation for lead-based paint hazards that includes paint testing, dust and soil sampling, and a visual evaluation. The risk assessment report identifies lead hazards and appropriate lead hazard reduction methods. There are no certifications for a risk assessor in Rhode Island.

Visual Inspection- Means a visual inspection by an owner or designated person to determine that the lead mitigation standards were maintained when the term of tenancy is two (2) years or more. A notarized Affidavit of Completion of Visual Inspection must be submitted to the Department of Health every two (2) years until tenant turnover.

Visual assessment- Means the visual examination of a residential dwelling or a child care facility following a lead hazard control (LHC) project or lead hazard reduction (LHR) project to determine whether the project has been successfully completed; or, the visual examination of a residential dwelling or a child care facility to determine the existence of deteriorated paint or other potential sources of environmental lead exposure as part of a Risk Assessment.

FOR FRICTION SURFACES CAUSING ABRASION

Treatments of operating surfaces that create abrasion must eliminate or control the risk of lead paint becoming airborne.

Friction surfaces include any vertical or horizontal moving sash that comes into contact with other window parts.

Examples of acceptable treatments include:

Paint Removal and Refinishing

- Once removed and refinished, adjust function to eliminate abrasion

Enclosure

- Window channel guides or covers that enclose painted surfaces to prevent abrasion
- Requires adjustment to function without abrasion

Replacement

- Reproduce and replace part with the lead hazard

FOR IMPACT SURFACES

Treatment of impact surfaces that have accumulated or failing lead paint must eliminate dust or debris on contact.

Impact surfaces include a sill of a vertically moving sash and the jamb of a casement, pivot, awning and hopper unit.

Examples of acceptable treatments include:

- Enclosure
- Paint Removal and Refinishing

Lead Inspection Report- Means a written report, on forms provided or approved by the Department of Health, which documents the results of a lead inspection, and includes the visual assessment, field testing, sample analysis results, summary of findings, and, for regulated facilities and target housing, lead hazard reduction or lead hazard control requirements and site-specific recommendations, as applicable.

Types of Hazards on Window Units

Deteriorated paint- any interior or exterior paint or other coating that is cracking, chipping, peeling, or chalking (a break down of the paint formulation resulting in a powdery residue); or any paint or coating that is otherwise damaged or separated from the surface to which it was applied. Any chewable lead-based painted surface on which there is evidence of teeth marks.

Friction surface– Surface that is subject to abrasion or friction as it operates and lead dust is likely to occur around such surfaces. Treatment of friction surfaces is required only if there is evidence that the paint surface is subject to abrasion; and lead dust levels on the nearest horizontal surface underneath the friction surface are equal to or greater than the standards specified.

Impact Surface- Impact surface is damaged, abraded, rubbed, impacted or otherwise deteriorated. Paint on an impact surface that is damaged, abraded, rubbed, impacted or otherwise deteriorated requires remediation.

Lead Hazard Remediation Strategies

All lead-based paint, including pre-1978 painted surfaces required to be assumed positive, must be intact with no paint or coating on a damaged or deteriorated component; no surface which has loose, delaminating, flaking, peeling, chipping, chalking, or blistering paint; no paint that is otherwise becoming separated from the substrate; no paint which is abraded by friction or impact, shows evidence of teeth marks, or is damaged by water.

Historic windows units are comprised of parts with different functions, where the remediation plan is specific to their condition and use. Non-functioning units or parts without friction or impact can be mitigated through encapsulation and stabilization to eliminate chipping, peeling, flaking and/or chalking.

Lead Hazard Remediation Strategies include the following methods:

Enclosure- Lead-painted surface is covered with metal, plastic, or other approved material to prevent lead paint debris from being released.

Paint Removal & Refinishing- Removing lead-based paint to bare wood and coating with paint.

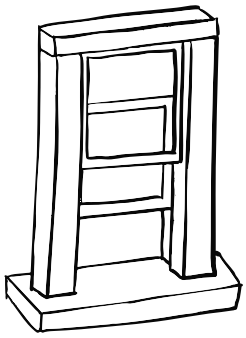
Replacement- Part is reproduced in-kind and refit into unit. This does not require full unit replacement, but rather individual unit parts.

UNDERSTANDING WINDOWS AND THEIR PARTS

Historic Window Types

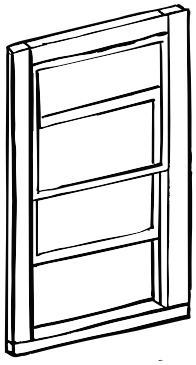
The first step in mitigating potential lead hazards is identifying the type(s) of windows on a property. Windows come in various shapes, sizes, and styles, and can be fixed in place or designed to open and close. The type of window and how it operates determines where there are hazards and how to mitigate them. For more information on each one, turn to the page specified.

pg. 19



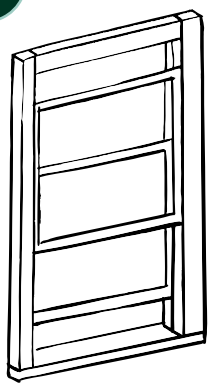
Plank Frame
Single Hung
1700-1820
Fixed upper sash above a vertically rising lower sash

pg. 20



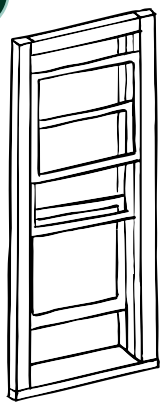
Stud Frame
Single Hung
1820 to present
Fixed upper sash above a vertically rising lower sash

pg. 21



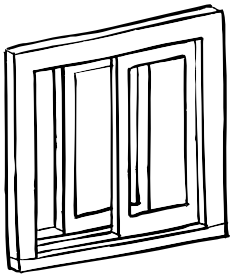
Double Hung
1850 to Present
Vertically rising operable sashes

pg. 21



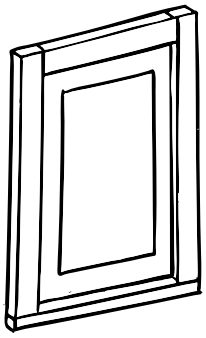
Triple Hung
1850 to Present
Vertically rising operable sashes

pg. 22



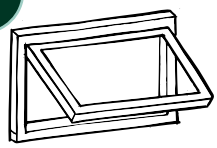
Sliding
17th century
to present
Horizontal operable sashes

pg. 24

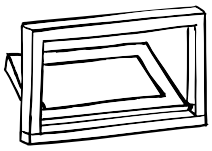


Fixed
1620 to present
Non-operable sash

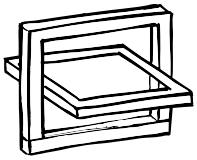
pg. 23



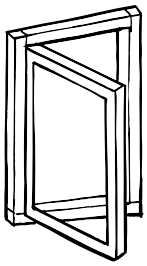
Awning



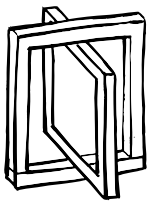
Hopper



Horizontal Pivot



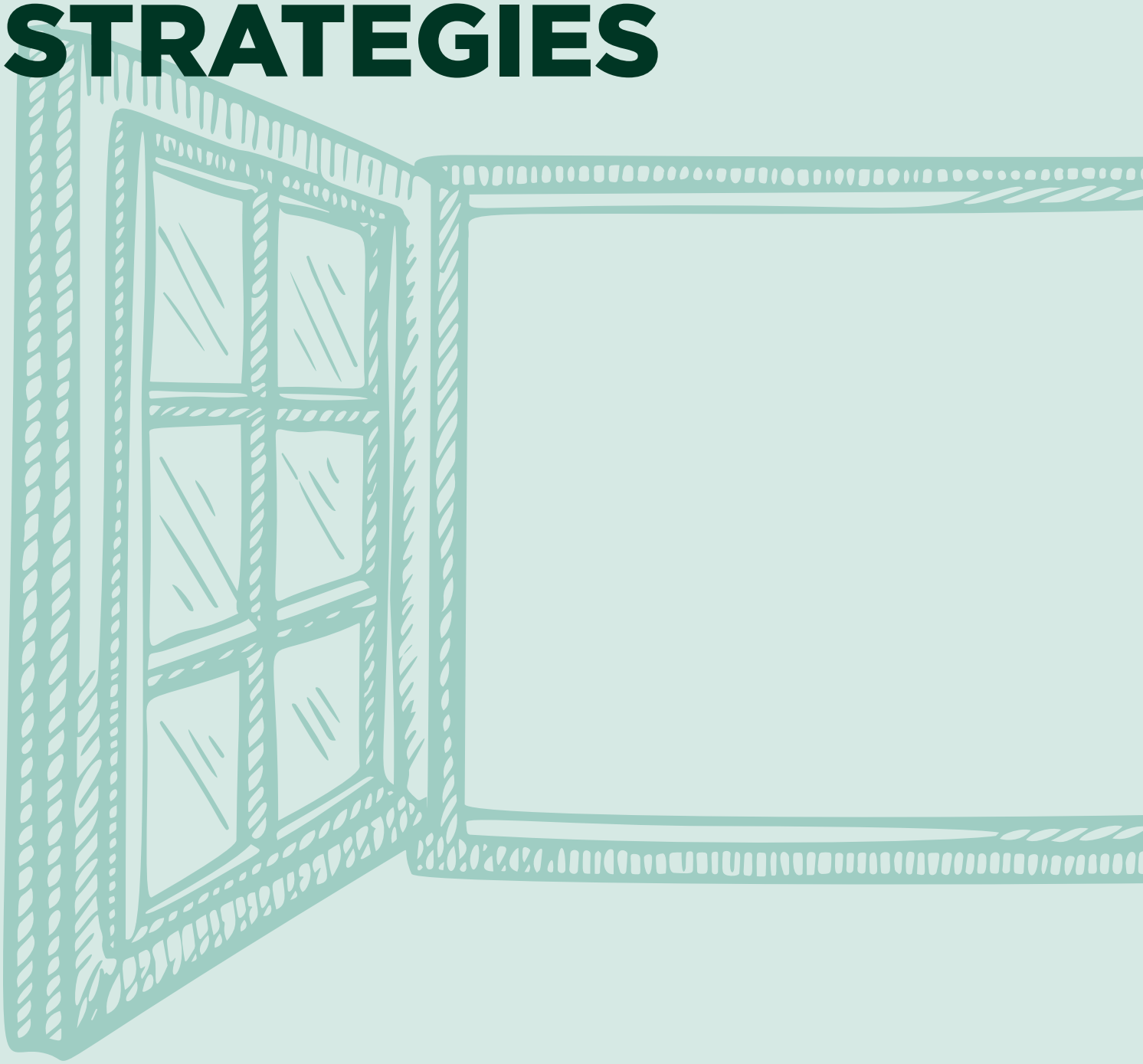
Casement



Vertical Pivot

Casement, Pivot, Awning, and Hopper
Hinged or pinned sashes on top, bottom or sides

WINDOW UNIT PARTS — REMEDIATION STRATEGIES

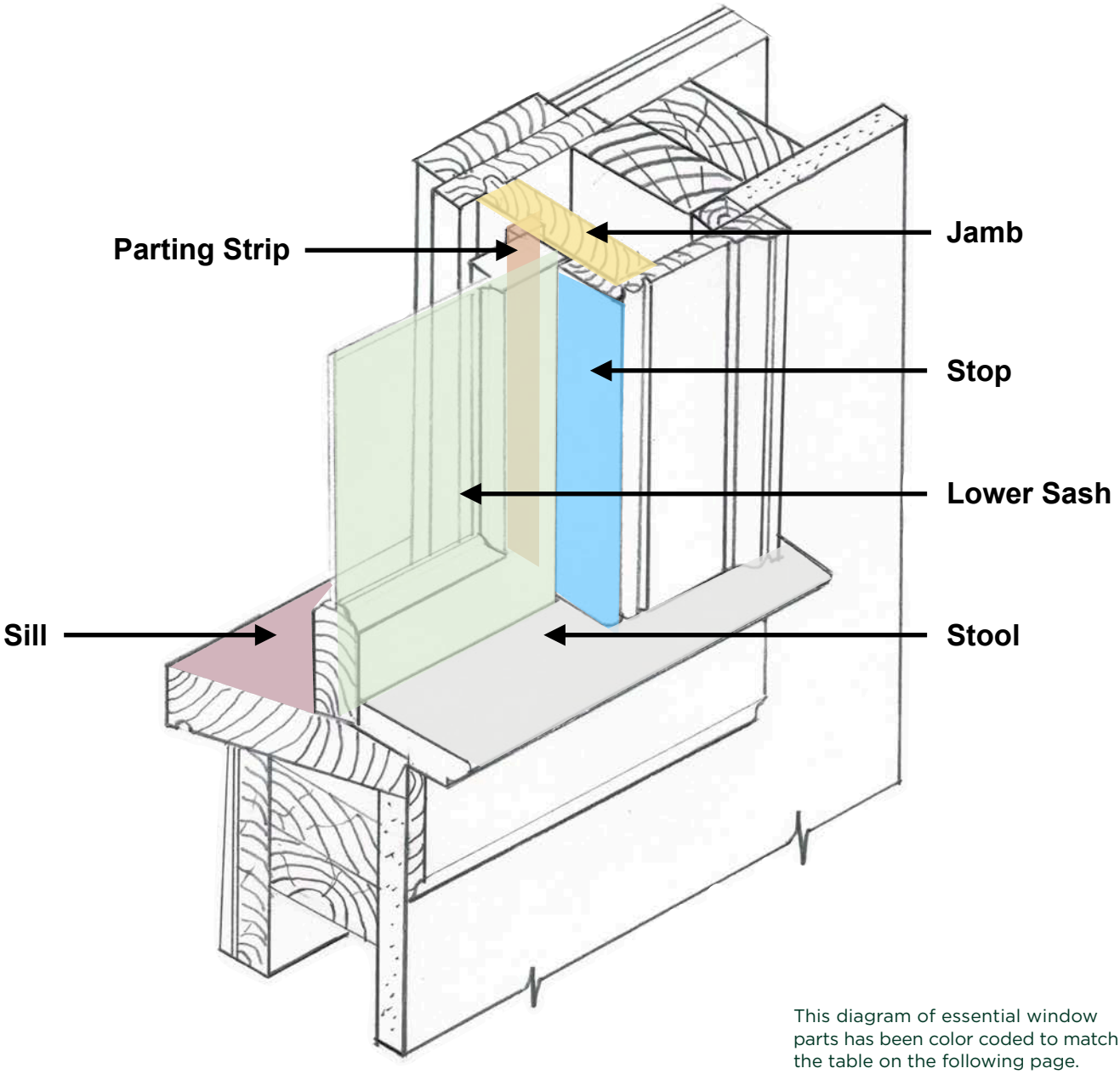


Window Unit Parts — Remediation Techniques

Windows can be complex assemblies with many parts. The names of the essential parts (see figure below) have remained the same over time, with new parts being introduced as technology and systems have advanced.

Each part of a window assembly is subject to different types of potential lead hazard. Using the table on the following page as a guide, each window part can be individually assessed and addressed while retaining the overall structure of the window.

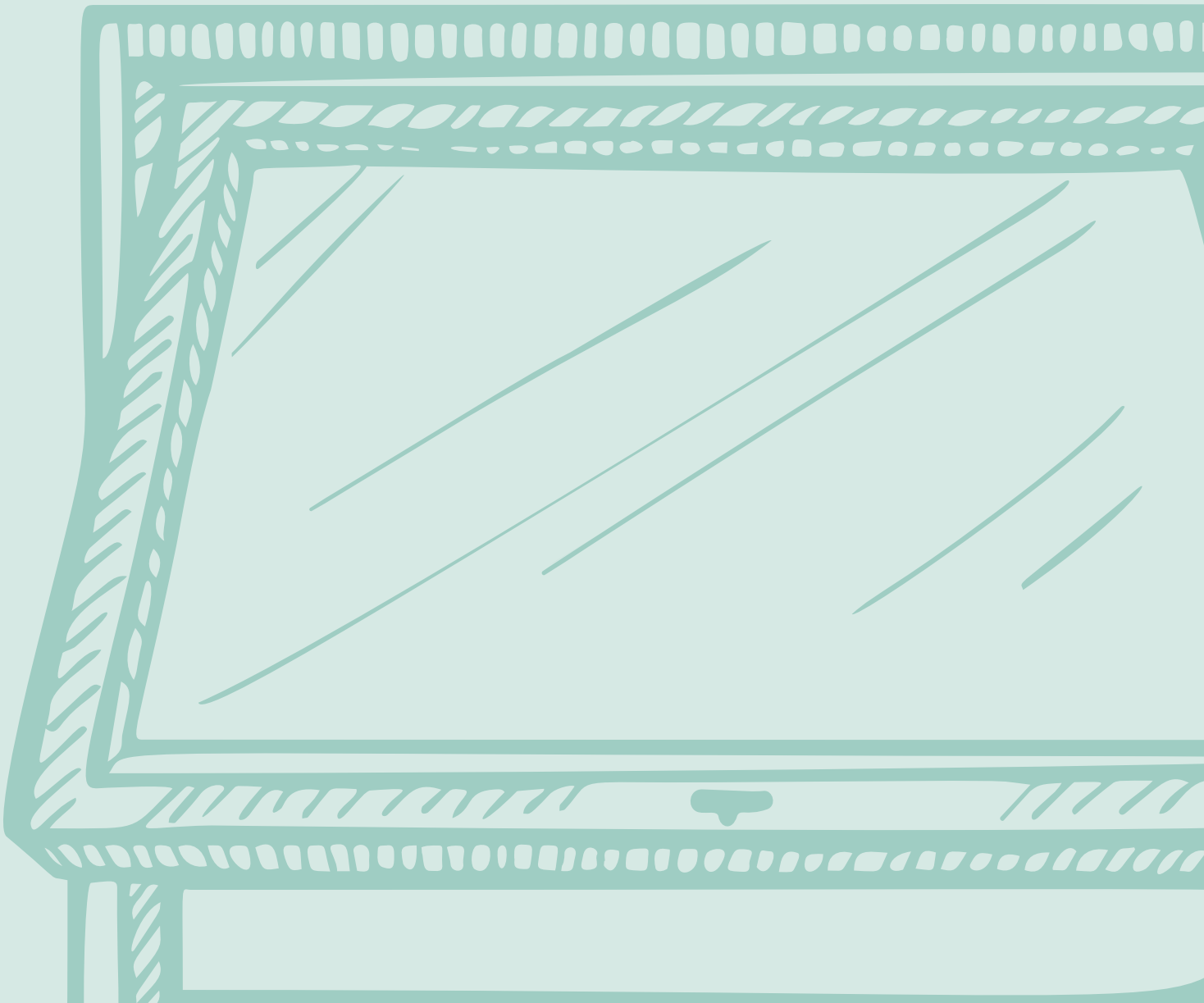
Typical Window Diagram



This diagram of essential window parts has been color coded to match the table on the following page.

PART	DESCRIPTION	HAZARD	REMEDIATION
Sash	Fixed wood assembly that holds glass	Paint condition	Encapsulate
	Operating wood assembly that holds glass	Paint Condition	Remove (delead) paint from sash surface and repaint
		Abrasion	Make sash fixed and encapsulate
			Tune up operation to eliminate abrasion
Stop	A narrow wood strip that holds a sash in place	Paint Condition	Encapsulate
		Overpaint abrading on sash	Replace
			Remove (delead) paint from surface and repaint
Parting Strip	Wood stick in between sashes with operating sash	Paint Condition	Replace
		Abrasion	Tune up operation to eliminate abrasion
Jamb	The window sash's track	Paint Condition	Remove (delead) paint from jamb surface and paint where needed or seal bare wood
			Enclose by adding jamb liner
		Abrasion	Tune up operation to eliminate abrasion
			Enclose by adding jamb liner
Stool	Flat molding inside lower sash	Paint Condition	Remove (delead) paint from surface and repaint
		Abrasion	Tune up operation to eliminate abrasion
		Impact	Remove (delead) paint from surface and repaint
Sill	Sloped piece from interior stool to the storm window	Paint Condition	Remove (delead) paint from sash surface and repaint
			Enclose by adding metal impact strip
		Abrasion	Remove (delead) paint from surface and repaint
			Enclose by adding jamb liner
		Impact	Remove (delead) paint from surface and repaint
			Add metal impact strip
Trim	Other window parts not subject to abrasion or impact	Paint Condition	Encapsulate

ENCLOSURE SYSTEMS: BALANCE, STAY AND JAMB LINER SYSTEMS



A stay system is comprised of hardware components that support and secure windows in a specific open or closed position. They help to hold them open at desired angles or heights for ventilation or preventing them from swinging open too far.

A jamb liner is a component of a window frame, specifically the vertical sides of the frame, that serves to provide a secure and airtight seal for the window sash. They are inserted into the jambs offering an additional layer for support, weather protection or isolation for a lead hazard.

A balance system is a mechanism within a window frame that allows single-hung and double-hung windows to open and close smoothly by counteracting gravity. These systems can be hidden within the window jamb and are crucial for easy operation.

COMPONENT	MATERIAL	PERIOD OF USE	OPERATION	HAZARD	REMEDIATION
Stick	Wood	1700 to present	Props up sash	Paint on stick failing	Remove (delead) paint
					Reproduce
Pin	Metal	1700 to present	Inserts into hole on jamb	Paint on pin failing	Remove (delead) paint
Lift lock	Metal	1700 to 1850	Hook drags on jamb	Abrasion on jamb	If jamb is painted, remove and replace pinch lock with new system
Pinch Lock	Metal	1830 to 1870	Metal drags on jamb	Abrasion on jamb	If jamb is painted, remove and replace compression lock with new system
Compression Lock	Metal	1950-1970	Metal drags on jamb	Abrasion on jamb	If jamb is painted, remove and replace lift lock with new balance or stay system
Spring Pin	Metal	1950 to present	Pin pulls from side of sash to insert into jamb	Abrasion on jamb	If jamb is painted, Install metal jamb liner or inter-locking weather stripping
Vinyl compression jamb liner	Vinyl	1980 to present	Retrofitted onto old window	Wraps around painted sash with paint failing	Remove (delead) paint from sash surface and repaint
Aluminum Compression Jamb	Metal	1950-1970	Metal compresses on sash to hold	Abrasion to sash	Remove (delead) paint from sash surface and repaint
Metal interlock weather stripping	Metal	1900 to present	Added metal to system to reduce air flow	Metal is painted	Remove metal and replace with new
					Strip metal
					Remove weather stripping
Metal liner using original system	Metal	1980 to present	Retrofitted onto old window	Wraps around painted sash with paint failing	Remove (delead) paint from sash surface and repaint
Spiral Balance	Metal & Plastic	1970 to present	Tension in spiral holds up sash	Paint failing on balance	Replace spiral
Spring Balance	Metal & Plastic	1970 to present	Tension in spring holds up sash	Paint failing on balance	Replace spring
Weight and Pulley	Metal	1870 to present	Sash counterbal-anced with weights using chain or rope	Pulley is painted	Remove (delead) paint
				Rope painted	Remove and replace
				Pocket contaminated	Remove pocket cover, vacuum and seal
Pullman	Metal	1950 to present	Compact spring and roller mech-anism concealed inside the jamb	Metal is painted	Strip metal OR Remove and replace

WINDOW UNITS DEFINED

Plank Frame Single Hung

Fixed upper sash above a vertically moving lower sash

SPECS

1700–1820

Frame 2-1/4″ thick x 4″ wide

Sashes typically 1″ to 1-1/8″ thick

Upper sash fixed

Lower sash designed to operate against the upper sash, exterior frame, stool and interior stop and can create abrasion

Lower sash travels vertically and can create impact to sill

POSSIBLE OPERATING SYSTEM

None

Stick

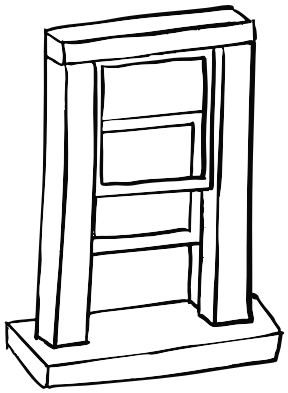
Pin

Spring latch

Compression swivel locks

Pullman

Spring balance



Plank Frame Single Hung

UPPER SASH
Fixed wood assembly that holds glass

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint and loose or failing glaze	Remove failing paint and glaze
Lead based paint abrades against the lower sash	

LOWER SASH
Movable wood assembly that holds glass

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint and loose or failing glaze	Install metal interlocking weather stripping on jamb
Lead based paint abrades against the jamb, stop or parting strip	OR Remove failing paint and glaze

STOOL
Flat molding inside lower sash

Concerns:	Solution(s):
Lead based paint abrades the sash	Remove
Has chipping, peeling, flaking or chalking paint	OR Encapsulate failing paint

SILL
Sloped piece from interior stool to the storm window

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint	Install aluminum impact strip
Lead based paint impacts the sash	OR Remove failing paint

JAMB
The window sash's track

Concerns:

Has chipping, peeling, flaking or chalking paint

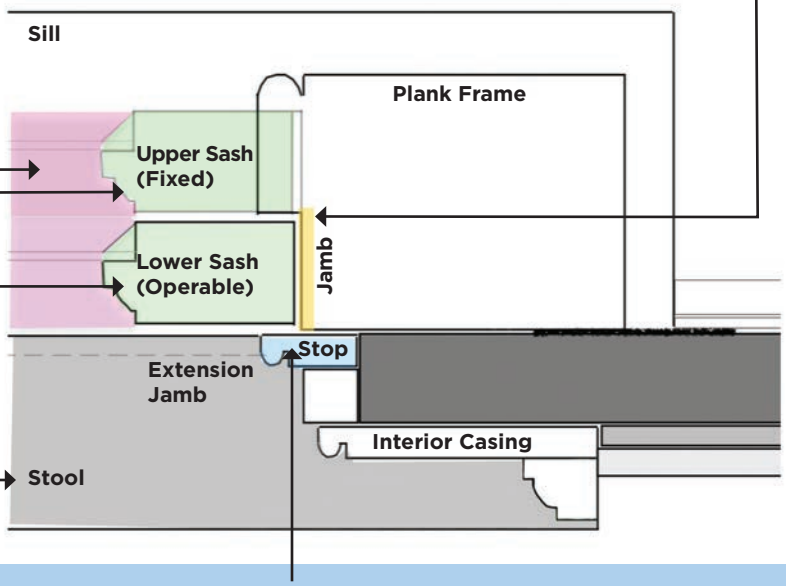
Abrasion against the sash

Solution(s):

Install metal interlocking weather stripping to travel on new track

OR
Remove failing paint

CROSS SECTION (TOP VIEW)



STOP
A narrow wood strip that holds a sash in place

Concerns:	Solution(s):
Has excess paint on the backside against the sash creating abrasion	Remove excess paint and apply wax OR Reproduce

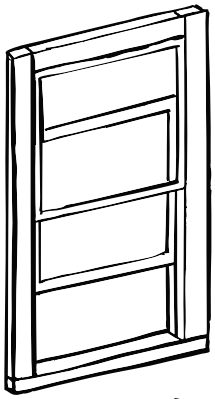
OTHER CONCERNS:

Abrasion from operating system
Solution: Remove failing finishes & repaint

Non-abrasion or impact paint surface chipping peeling, flaking or chalking
Solution: Remove failing finishes & repaint OR Encapsulate

Stud Frame Single Hung

Fixed upper sash above a vertically movement lower sash



Stud Frame Single Hung

SPECS

1820 to present

Frame 1" thick frame

Sashes typically 1-1/8" to 1-3/4" thick

Upper sash blocked in place

Lower sash designed to operate against the parting strip and interior stop and can create abrasion

Lower sash travels vertically and can create impact to sill and stool

POSSIBLE OPERATING SYSTEM

None

Stick

Pin

Spring latch

Compression swivel locks

Pullman

Spring balance

SILL
Sloped piece from interior stool to the storm window

Concerns:

Has chipping, peeling, flaking or chalking paint

Lead based paint impacts the sash

Solution(s):

Install aluminum impact strip

OR
Remove failing paint and repaint

PARTING STRIP
Wood stick in between upper and lower sash

Concerns:

Has chipping, peeling, flaking or chalking paint

Lead based paint abrades against the sashes

Solution(s):

Reproduce & Replace

JAMB
The window sash's track

Concerns:

Has chipping, peeling, flaking or chalking paint

Solution(s):

Install metal interlocking weather stripping to travel on new jamb liner

OR
Remove failing paint

LOWER SASH
Movable wood assembly that holds glass

Concerns:

Has chipping, peeling, flaking or chalking paint and loose or failing glaze

Lead based paint abrades against the jamb, stop or parting strip

Solution(s):

Install metal interlocking weather stripping on jamb

OR
Remove failing paint and glaze

STOOL
Flat molding inside lower sash

Concerns:

Lead based paint abrades the sash

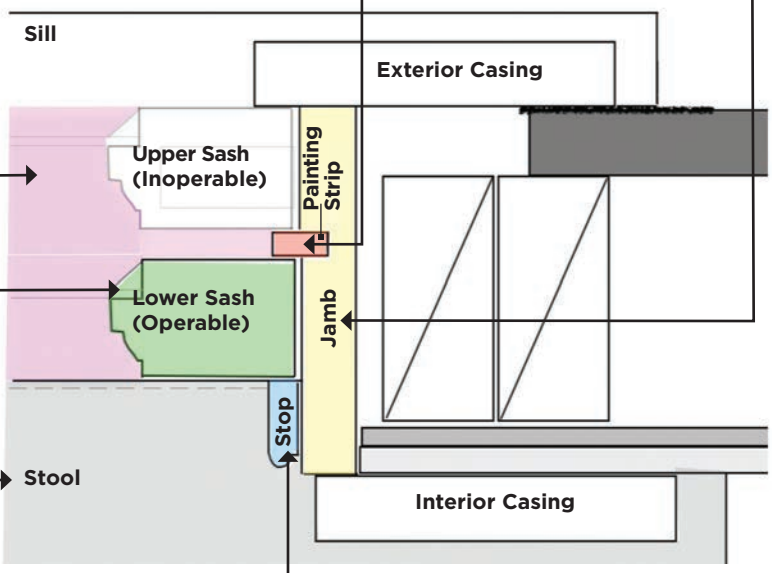
Has chipping, peeling, flaking or chalking paint

Solution(s):

Remove

OR
Encapsulate failing paint

CROSS SECTION (TOP VIEW)



STOP
A narrow wood strip that holds a sash in place

Concerns:

Has excess paint on the backside against the sash creating abrasion

Solution(s):

Remove excess paint and apply wax OR Reproduce

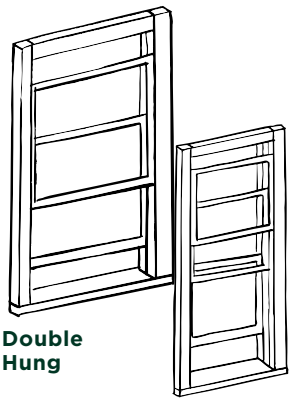
OTHER CONCERNS:

Abrasion from operating system
Solution: Remove and replace OR Encapsulatet

Non-abrasion or impact paint surface chipping peeling, flaking or chalking
Solution: Remove failing finishes & repaint OR Encapsulate

Double & Triple Hung

Vertically moving operable sashes



SPECS

1850 to present

1" thick frame with multiple jambs

Sashes typically 1-3/8"+

All sashes designed to operate against the parting strip and interior stop and can create abrasion

Lower sash travels vertically and can create impact to sill and stool

POSSIBLE OPERATING SYSTEM

None
Cam Lock
Spring Pin
Pinch Lock
Compression Swivel Locks
Pullman
Spring & Sprial Balance
Weight and Pulley

SILL
Sloped piece from interior stool to the storm window

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint	Install aluminum impact strip
Lead based paint impacts the sash	OR Remove failing paint

PARTING STRIP
Wood stick in between upper and lower sash

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint	Reproduce & Replace
Lead based paint abrades against the sashes	

JAMB
The window sash's track

Concerns:

Has chipping, peeling, flaking or chalking paint

OR
Abrasion against the sash

Solution(s):

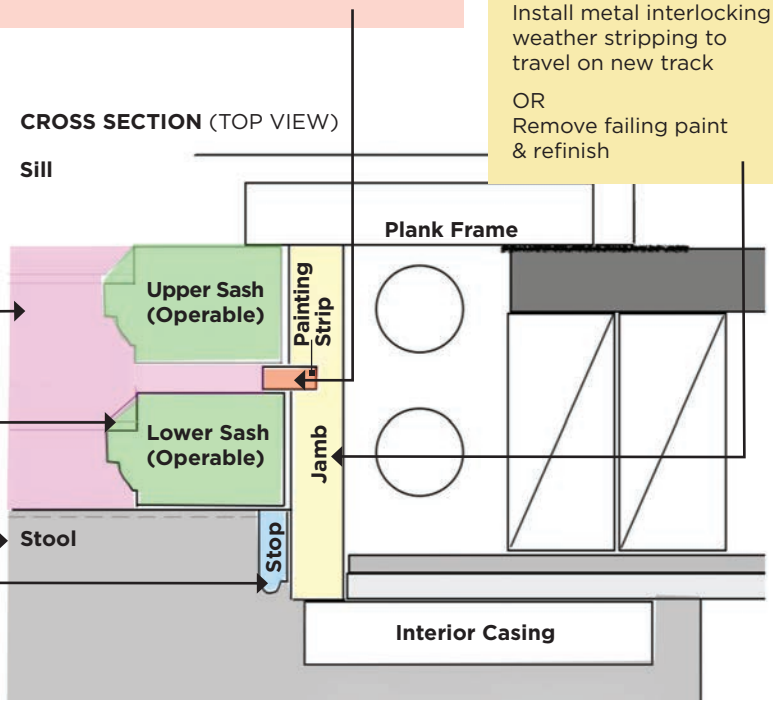
Install metal interlocking weather stripping to travel on new track

OR
Remove failing paint & refinish

SASHES
Movable wood assembly that holds glass

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint and loose or failing glaze	Install metal interlocking weather stripping on jamb
OR Lead based paint abrades against the jamb, stop or parting strip	OR Remove failing paint and glaze

CROSS SECTION (TOP VIEW)



STOOL
Flat molding inside lower sash

Concerns:	Solution(s):
Lead based paint abrades the sash	Remove
OR Has chipping, peeling, flaking or chalking paint	OR Encapsulate failing paint

STOP
A narrow wood strip that holds a sash in place

Concerns:	Solution(s):
Has excess paint on the backside against the sash creating abrasion	Remove excess paint and apply wax
	OR Reproduce

OTHER CONCERNS:

Upper sash(es) have abrasion
Solution: Fix upper sash(es) so they do not operate

Abrasion from operating system
Solution: Remove failing finishes & repaint OR

Non-abrasion or impact paint surface chipping peeling, flaking or chalking
Solution: Remove piece and replace

Old ropes
Solution: Prep and encapsulate

Painted hardware
Solution: Replace ropes

Sliding

Horizontal moving sashes

SPECS

17th century to present

(Most common in mid-20th century)

Sashes typically 1-3/8"+

All sashes slide horizontally, and can create abrasion against the sill and stop

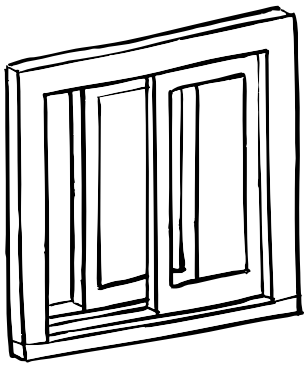
Sash can have impact against the jamb

POSSIBLE OPERATING SYSTEM

Sliding on an upper and lower track

Swivel locks

Cam locks



Sliding

SILL
Sloped piece from interior stool to the storm window that is the sash's track

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint	Install aluminum impact strip
Lead based paint impacts the sash	OR Remove failing paint and repaint

JAMBS
The sash impacts jamb when closed

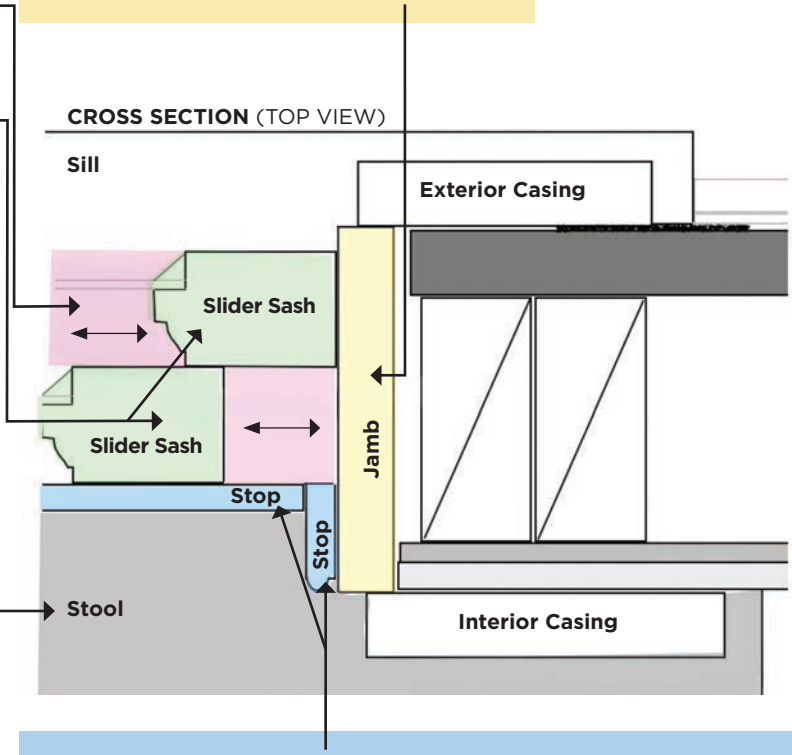
Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint	Remove
OR Abrasion against the sash	OR Encapsulate failing paint

SASHES
Movable wood assembly that holds glass

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint and loose or failing glaze	Install metal interlocking weather stripping on jamb
OR Lead based paint abrades against the jamb, stop or parting strip	OR Remove failing paint and glaze

STOOL
Flat molding inside lower sash

Concerns:	Solution(s):
Lead based paint abrades the sash	Remove
Has chipping, peeling, flaking or chalking paint	OR Encapsulate failing paint



STOP
A narrow wood strip that holds a sash in place

Concerns:	Solution(s):
Has excess paint on the backside against the sash creating abrasion	Remove excess paint and apply wax OR Reproduce

OTHER CONCERNS:

Non-abrasion or impact paint surface chipping peeling, flaking or chalking
Solution: Remove and replace OR Encapsulate

Casement, Pivot, Awning and Hopper

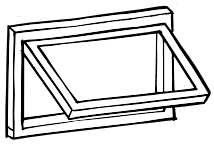
Hinged sashes on top, bottom or sides

SPECS

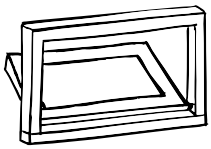
1620 to present
Pre 1800 frame 2-1/4" thick x 4" wide
Post 1800 1" thick frame
Sashes typically 1-3/8" - 1-3/4" thick
Sash operates on a hinge
Sash can abrade against jamb or sill
Sash can have impact against the jamb

POSSIBLE OPERATING SYSTEM

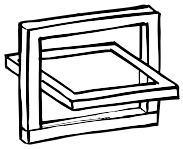
Various stays and lock systems



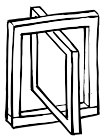
Awning



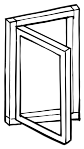
Hopper



Horizontal Pivot



Vertical Pivot



Casement

SILL
Sloped piece from interior stool to the storm window that is the sash's track

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint	Encapsulate or remove paint
Lead based paint impacts the sash	AND/OR Fit sash so no l onger abrades

JAMBS
The sash impacts jamb when closed

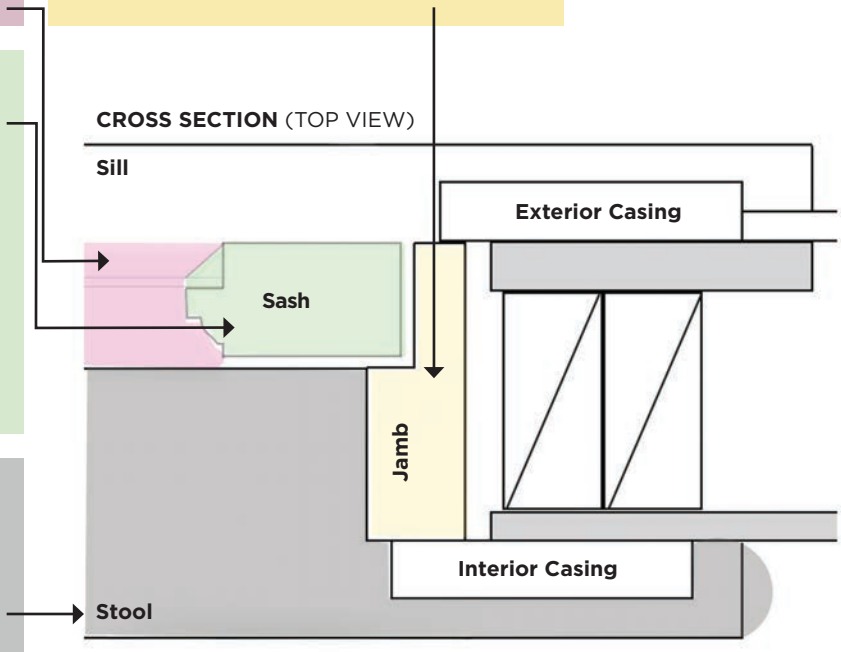
Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint	Encapsulate or remove paint
AND/OR Impact or abrades against the sash	OR Fit sash so no longer abrades

SASHES
Movable wood assembly that holds glass

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint and loose or failing glaze	Install metal interlocking weather stripping on jamb
OR Lead based paint abrades or impacts the jamb or stop	OR Remove failing paint and glaze

STOOL
Flat molding inside lower sash

Concerns:	Solution(s):
Sash impact with the stool	Encapsulate or remove paint
OR Has chipping, peeling, flaking or chalking paint	AND/OR Fit sash so no longer abrades



OTHER CONCERNS:

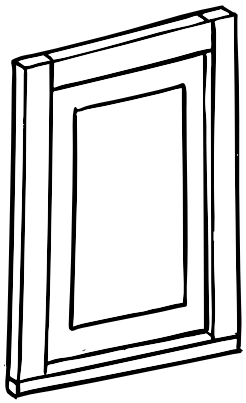
Non-abrasion or impact paint surface chipping peeling, flaking or chalking
Solution: Remove and replace OR Encapsulate

Fixed

Non-operable sash

SPECS
1620 to present
Pre 1800 jamb 2-1/4" thick x
4" wide
Post 1800 1" thick casing
Sashes typically 1-3/8" - 1-3/4" thick
Sash does not operate

POSSIBLE OPERATING SYSTEM
None



Fixed

SILL
Sloped piece from interior stool to the storm window that is the sash's track

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint	Encapsulate paint

JAMBS
The sash does NOT move

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint	Remove Encapsulate failing paint

SASHES
Fixed wood assembly that holds glass

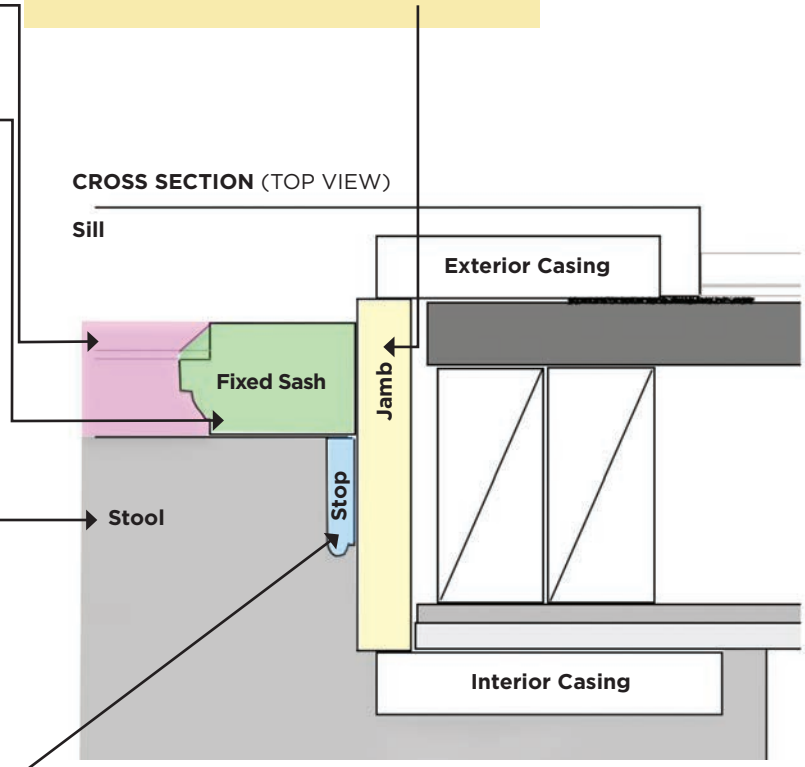
Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint and loose or failing glaze	Encapsulate paint

STOOL
Flat molding inside sash

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint	Encapsulate OR Remove paint

STOP
A narrow wood strip that holds a sash in place

Concerns:	Solution(s):
Has chipping, peeling, flaking or chalking paint and loose or failing glaze	Encapsulate paint



OTHER CONCERNS:

Non-abrasion or impact paint surface chipping peeling, flaking or chalking
Solution: Remove and replace OR Encapsulate

WINDOW LEAD HAZARD IDENTIFICATION AND MITIGATION FORMS

Window Lead Hazard Identification

Documentation can help you communicate with a lead inspector or contractor. For each window, print a copy of this form and use it to document lead hazards, how you determined the hazard, and proposed mitigation.

Window ID/Location	Date	Project ID	Window Type

Lead Hazard Identification				
Part	**Type of Hazard**	**Verification Method**	**Mitigation Recommendations**	**Notes**
	Condition **C** Friction **F** Impact **I** Lead Hazard **NONE**	**XRF** Lab Sample **LS** Field Test **FT** Assumed **A**	Paint Removal & Repaint **PRP** Encapsulate **ECAP** Enclosure **ENCL** Replacement **REPL**	
Sill (Window Well)				
Stool (Interior flat trim)				
Exterior Jamb				
Interior Jamb				
Parting Strip				
Interior Stops				
Exterior Stops				
Glaze Putty				
Upper Sash (Int. & Ext.)				
Lower Sash (Int. & Ext.)				
Hardware (Pulleys, lock, etc.)				
Window Trim				
Other				

TYPE OF HAZARD

Condition- Chipping, peeling flaking or chalking

Friction- Abrasion occurring between two moving surfaces

Impact- Striking surface contains lead paint

Lead Hazard NONE- No lead paint detected

TESTING METHOD

XRF- X-ray fluorescence, device to detect and quantify lead in paint

Lab Sample- Paint chip sent to lab

Field Test- Lead surface test kit

Assumed- Appears to be lead

MITIGATION RECOMMENDATIONS

Paint Removal & Repaint- Strip paint and refinish

Encapsulate- applying a liquid coating as a barrier over lead paint

Enclosure- Applying a physical barrier over lead paint

Replacement- Remove and reproduce part

Window Lead Hazard Mitigation

For each window you address, print a copy of this form and use it to document your mitigation method and lead inspection results. Keeping these records can help with future inspections.

Window ID/Location	Date	Project ID	Window Type

Lead Hazard Mitigation			
Parts of Window	**Mitigations Made**	**Lead Inspection Results**	**Pass/Fail**
	Paint Removal & Repaint **PRP** Encapsulation **ECAP** Enclosure **ENCL** Replacement **REPL** No Mitigation **NONE**	**Dust Swipes for Sill- >100 µg/ft²** **Dust Swipes for Stool- >40 µg/ft²** **Visual** **N/A**	**P** **F**
Sill (Window Well)			
Stool (Interior flat trim)			
Exterior Jamb			
Interior Jamb			
Parting Strip			
Interior Stops			
Exterior Stops			
Glaze Putty			
Upper Sash (Int. & Ext.)			
Lower Sash (Int. & Ext.)			
Hardware (Pulleys, lock, etc.)			
Window Trim			
Other			
Conclusion			

MITIGATION MADE

Paint Removal & Repaint- Strip paint and refinish

Encapsulate- applying a liquid coating as a barrier over lead paint

Enclosure- Applying a physical barrier over lead paint

Replacement- Remove and reproduce part

No Mitigation- No work required

LEAD INSPECTION RESULTS

Dust Swipe Results- These standards define the levels of lead dust in paint, dust, and soil that are considered hazardous.

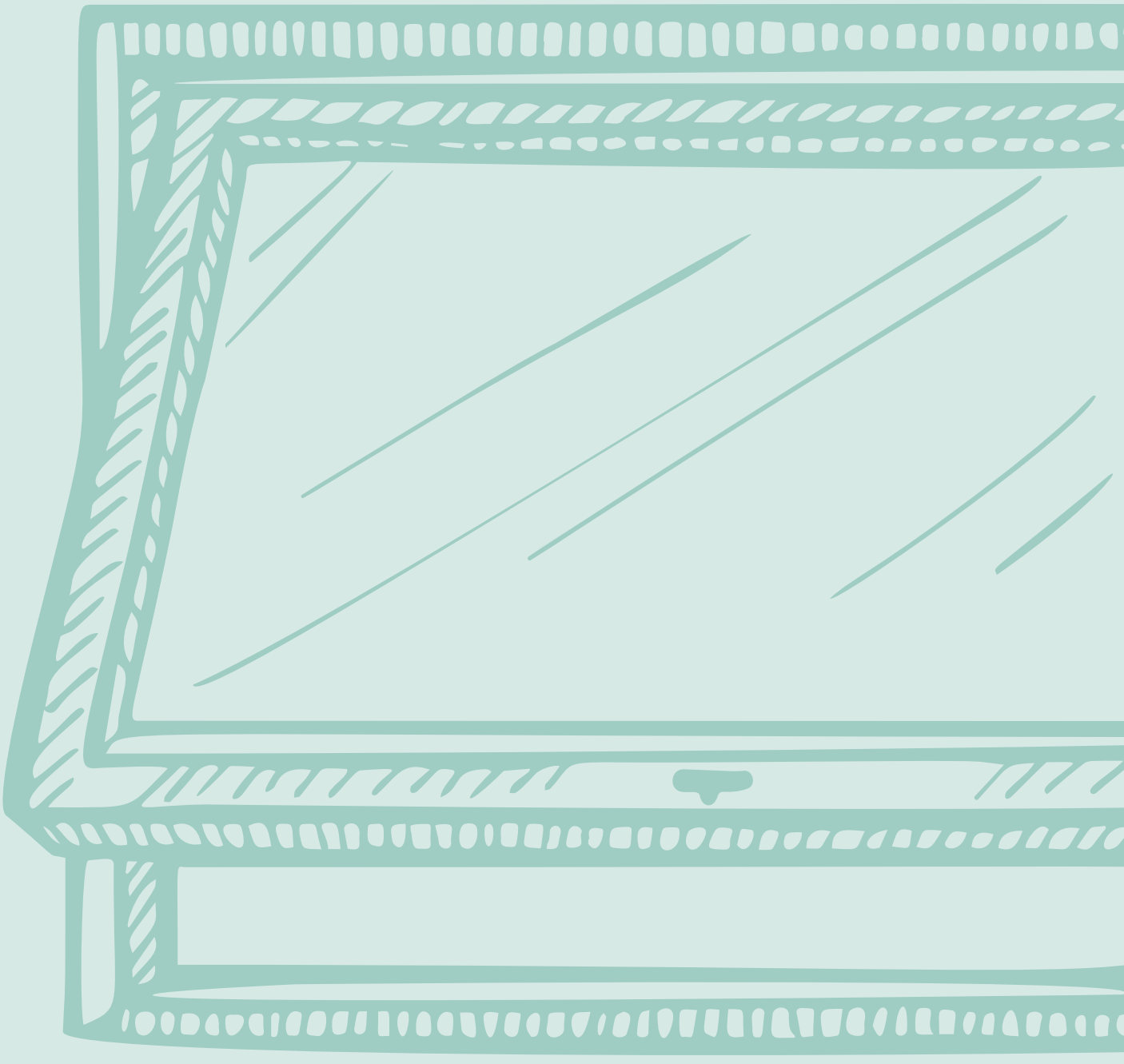
Sill- >100 µg/ft²- Area under lower sash from interior trim to exterior window edge or storm window

Stool- >40 µg/ft²- A flat, interior trim piece installed on the inside of a lower sash. Provides a finished, decorative, and functional surface, often acting as a small shelf.

Visual- No chipping peeling flaking or chalking paint

N/A- Material does not contain lead paint

UNRESOLVED CHALLENGES



Unresolved Challenges

Despite ongoing efforts to reduce lead exposure in historic buildings, several critical challenges remain unresolved—particularly at the intersection of preservation, environmental health, and equitable access to remediation resources.

1. Gaps in Environmental Lead Source Attribution:
While historic windows are often scrutinized as primary sources of lead dust, insufficient data exists on how external environmental sources—such as traffic corridors, industrial legacy sites, and aging infrastructure—contribute to interior lead accumulation. Expanded environmental monitoring and source attribution research are needed to develop effective cross-sector mitigation strategies.

2. Lack of Standardized Protocols for Historic Window Remediation:
Currently, there is no universally adopted set of standards for lead-safe treatment of historic wood windows that balances code compliance with preservation best practices. This gap results in inconsistent application of remediation techniques and can lead to either ineffective hazard control or unnecessary destruction of historic fabric. Development of evidence-based protocols remains a high priority.

3. Limited Contractor Training and Workforce Capacity:
A shortage of contractors trained in both lead-safe work practices and historic preservation techniques limits the scalability of safe, appropriate interventions. Workforce development programs, certification pathways, and technical training modules are essential to fill this gap.

4. Need for Digital and On-Site Assessment Tools:
There is currently no widely available digital tool tailored to the needs of homeowners, inspectors, and contractors working with historic windows. Projects like the proposed web-based application—featuring interactive diagrams and report generation—remain unfunded but represent high-impact opportunities for public education and field use.

5. Need for Statewide Risk Assessment:
Other states such as Massachusetts offer lead risk assessments where an state inspector uses a XRF device to test for lead hazards in a home. This report informs a homeowner of where lead hazards exist prior to a lead hazard clearance inspection, providing time for a homeowner to safely address hazards before an inspection. Adopting a risk assessment process in RI would remove some of the unknowns from the inspection process while giving homeowners a longer window of time to make repairs.

6. Equitable Access to Resources and Funding:
Lower-income homeowners living in older housing stock often face disproportionate exposure to lead hazards but may lack access to funding or information on preservation-sensitive remediation options. Policy solutions, grant programs, and targeted outreach are needed to ensure environmental justice principles are embedded in all lead hazard reduction efforts.

7. Difficulty Identifying Lead for Lead Safe Work Practices:
There are limited lead testing kits on the market that are both affordable and accurate. XRF Spectrometers, used by lead inspectors, are the best way to identify lead paint on historic surfaces, but these tools are cost prohibitive for typical homeowners. To follow lead safe work practices, crews assume all pre-1978 surfaces could have lead paint without verification, leading to increased removal of historic fabric to avoid the lengthy process of remediation. More testing kits at an affordable cost would allow homeowners to accurately identify hazards and non-hazards to advise on lead safe practices.

By addressing these unresolved challenges through coordinated projects, research, and public-private partnerships, Rhode Island can strengthen its role as a national leader in both lead hazard reduction and historic preservation.

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NRF
Newport
Restoration
Foundation