



# Strategies for Restoring Doors and Windows

Staci Richey, Vintage Window Repair

SC State Historic Preservation Conference 2022



- Why Doors and Windows are Vulnerable
  - Challenges to Restoration
  - Benefits of Restoration
  - Crafting a Realistic Work Plan
  - Restoration Techniques
  - Making the Work Last
- 



## Why Doors and Windows are Vulnerable

- The exterior of historic buildings is generally very durable
- The thinnest parts of the building envelope are the doors and windows
- Doors and windows are susceptible to water and termite damage the same as the rest of the building, but are not investigated for damage very often
- The parts that people tend to ignore when it comes to maintenance are doors and windows



# Why Doors and Windows are Vulnerable

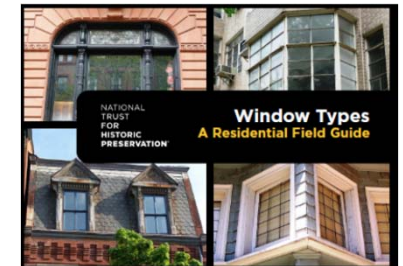
\*The vinyl window industry has convinced the public that windows are disposable, and that they have the corner on energy efficiency

\*Historic preservationists have not educated themselves, their boards, governments, and the public about the benefits of retaining historic features, energy efficiency in historic buildings, and basic maintenance

\*There are not enough tradespeople who can restore doors and windows, partly due to lack of training, but also because replacement has become so popular, and it requires little skill



Facebook.com



National Trust for Historic Preservation

Window Types — Residential Field Guide

## About the Guide



## Why Doors and Windows are Vulnerable

- \*Historic “restoration” projects from the 1970s actually included replacement of windows!
- \*Architects and developers who are in charge of modern restoration projects do not know the language – use words like “rebuild”-not sure what that is
- \*Review boards and historic district rules are lax when it comes to keeping these important features
- \*A true restoration of a window will cost more than a vinyl replacement
- \*People want as little maintenance as possible, even on historic buildings



City of Columbia, Planning



# Challenges to Restoration

- \*Overcoming popular trend of replacement
- \*Finding funding
- \*Determining if the windows and doors are original, replacements, or historic replacements
- \*Finding skilled workers
- \*Timeline (restoration takes TIME)
- \*Site conditions (access, location, people and pets in the building, weather, bushes in front of windows)
- \*Re-ropping windows can be difficult if there is no access panel, requires cutting a new one or pulling trim open
- \*Client expectations
- \*Finding more problems outside of your scope and expertise

Grant-funded project left like this by a contractor, City-owned pump house, Riverfront Park, Columbia





# Benefits of Restoration

- Keep the original scale and size of openings in proportion to the exterior walls
- Retain original craftsmanship
- Keep durable materials in use (better than much of what can be bought today)
- Keep items out of the landfill
- Keep something that can be repaired rather than installing something that has to be replaced when it fails
- Qualify for historic preservation incentives
- Restore the original beauty and function to a historic building

“To ascertain the dimensions of window frames, add four-and-one-half inches to the width of the glass for their width, and six-and-one-half inches to the height of the glass for their height. These give the dimensions, in the clear, of ordinary framed for twelve-light windows; the height being taken at the inside edge of the sill in a brick wall...” R.G. Hatfield, *The American House Carpenter*, 1844



## Crafting a Realistic Work Plan

- \*Goals
- \*Timeline
- \*Budget
- \*Funding
- \*Planning for Disruption
- \*Detail a Scope of Work





Left: Before and after of my work, replacing a meeting rail and some muntins in bottom sash

Right: Work by others on same building, client was ok with it

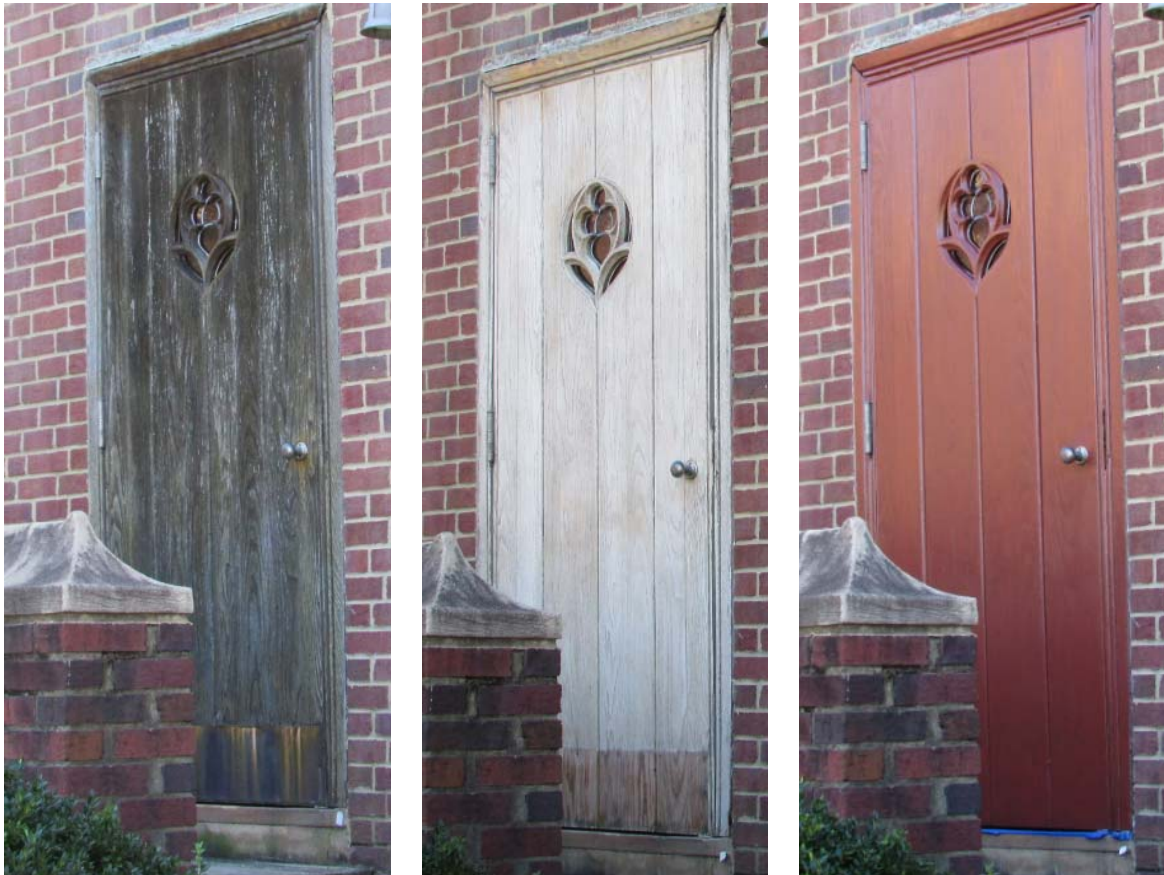


## Crafting a Realistic Work Plan: Goals

- \*Operability: ropes, other systems, and is there a door to the weights?
- \*Inside/Outside only: doors generally are in good shape on the inside
- \*Repairs (Condition): some conditions are obvious, many others are hidden by paint
- \*Appearance: what types of finishes will be used, do you want the original colors?
- \*Hardware: is it included in the restoration?
- \*Weatherstripping: will this be added?



# Crafting a Realistic Work Plan: Timeline



- \*Restoring exterior of 21 doors at church: 5 months part time (on site)
- \*Restoring exterior of 11 doors at church: 3 months part time (on site)
- \*Restoring single large door with surround: 2.5 weeks (on site)
- \*Restoring a 6/6 wood window sash only (from 25-35 hours depending on condition)
- \*Timeline should incorporate any disruptions by other trades needing access through doors or to window jambs
- \*Weather affects on-site projects
- \*It is important to avoid blocking access to doors windows due to other projects!
- \*Homeowners may wish to do a few windows per year
- \*Projects can be phased
- \*Leave room for flexibility and surprises

# Crafting a Realistic Work Plan: Budget\*

\*These numbers are not reflective of any statewide industry average; they are an average of work I have completed

## Doors

Exterior restoration: can range \$750 up to \$2,000+ depending on repairs needed, trim, transom, sidelights

## Windows

\*Tune-up to improve function of bottom sash: around \$50-\$75

\*Exterior restoration only, on site: range from \$300-\$450 depending on condition, number of panes

\*Full restoration, including removal and reinstallation: average range from \$600 to \$1,000+, depending on condition, how many panes, repairs and materials are extra, re-ropping may be extra

\*It is labor intensive!

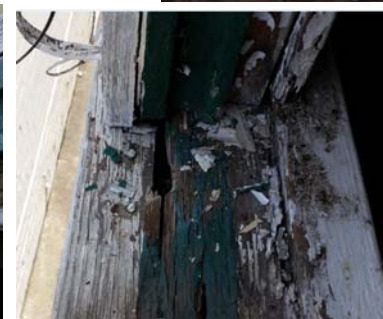
**\*But-it lasts for decades if properly maintained!**



# Crafting a Realistic Work Plan: Funding



- \*Funding may dictate the timeline and possible break down into phases
- \*Historic preservation tax incentives generally have restoration of historic doors and windows as qualifying expenses
- \*Some grant funds may cover this type of work for non-profits or commercial groups, such as the Richland County Conservation Commission grant



Bad repair to hole in sill causing water damage



## Crafting a Realistic Work Plan: Planning for Disruption

- Doors will be inaccessible during certain times
- Windows will be boarded up unless there are existing storm windows, making the room darker
- On-site work is messy
- On-site work requires access to electricity and sometimes water
- Doors need to be opened to be able to work on the edges
- Lawn guys blowing dust into fresh paint and banging their equipment into a newly restored door is not fun

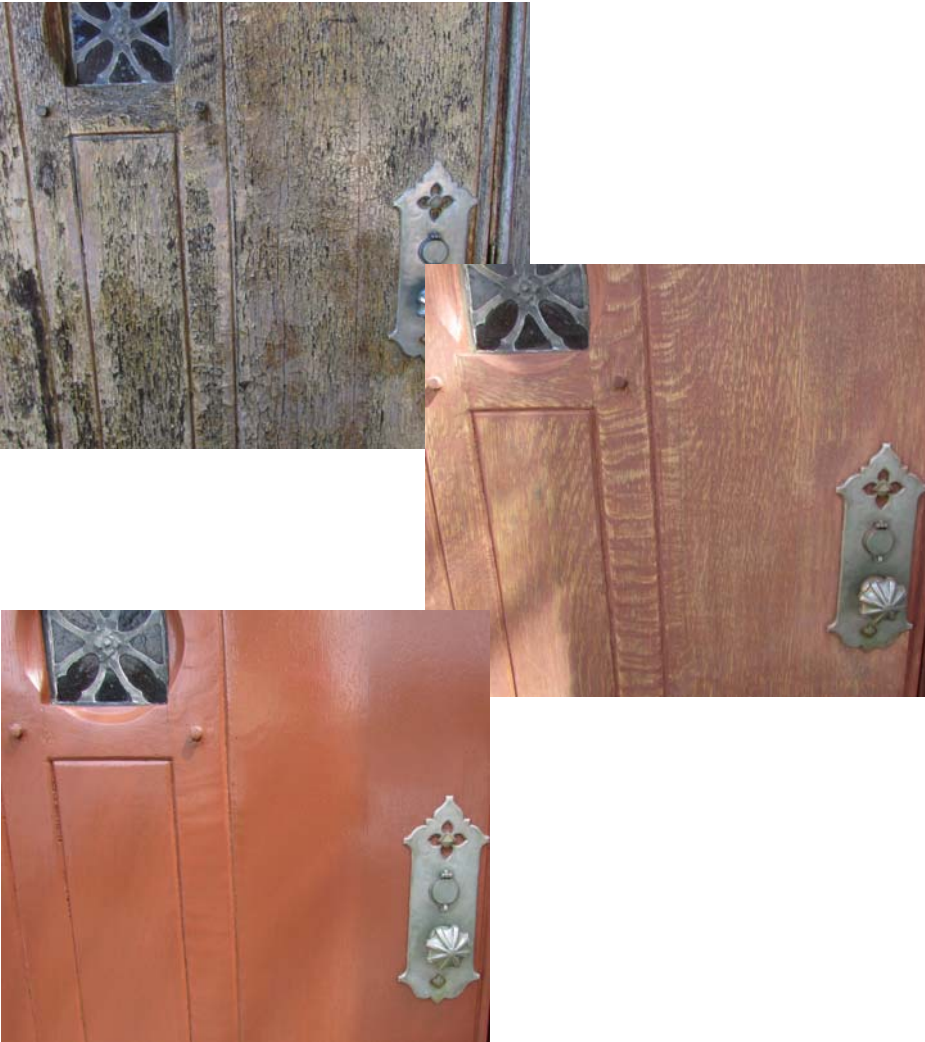
# Crafting a Realistic Work Plan: Detail a Scope of Work in Writing

A good Scope of Work will include at least:

1. Technical description of restoration work to be performed
2. Expected timeline/completion date
3. Expected disruption and provisions of electricity/water
4. Cost
5. Exclusions (weatherstripping is not included, use of historic glass not included for replacements, etc.)
6. Provisions for unexpected obstacles



# Restoration Techniques: Doors



For exterior of a painted wood door:

1. Strip paint using heat gun or infrared heat if there are a lot of layers
2. If only a few layers or it is a polyurethane/stained finish, use chemical or scrapers
3. Protect any glass from heat
4. Make repairs as needed
5. Clean the wood with water and tiny bit of dish soap
6. Sand smooth (120 grit)
7. Use raking light to find imperfections, fill, sand
8. Treat wood with 50/50 mixture of boiled linseed oil and mineral spirits or turpentine (caution: boiled linseed oil can spontaneously combust if left on rags!)
9. Only do #8 if you are painting the door again as this treatment will darken the wood
10. Prime with oil-based paint
11. Sand primer with 220 grit sandpaper, use tack cloth to clean the surface
12. Topcoat with two coats of latex paint, the best you can find
13. If staining, coat with spar urethane for exterior



# Restoration Techniques: Doors





Multiple layers of paint made the door look terrible





Used heat gun to remove old paint, had repairs to make from old water damage



Door fully stripped (left) and problem area (above) repaired with wood hardener and epoxy





# Restoration Techniques: Windows



1. Remove window from the opening, label to location
2. Remove putty with steam or heat, protect glass from heat with metal
3. Remove glazing points, remove glass
4. Strip paint using heat gun or infrared heat if there are a lot of layers
5. If only a few layers or it is a polyurethane/stained finish, use chemical or scrapers
6. Make repairs as needed, replace parts as needed
7. Clean the wood with water and tiny bit of dish soap
8. Sand smooth (120 grit)
9. Use raking light to find imperfections, fill, sand
10. Treat wood with 50/50 mixture of boiled linseed oil and mineral spirits or turpentine (caution: boiled linseed oil can spontaneously combust if left on rags!)
11. Only do #8 if you are painting the window again as this treatment will darken the wood
12. Reinstall glass and glazing points, add new putty
13. Prime with oil-based paint
14. Sand primer with 220 grit sandpaper, use tack cloth to clean the surface
15. Topcoat with two coats of latex paint, the best you can find

**Pro Tips for Restorers and Clients:**

- \*Windows with metal weatherstripping and parting beads are much harder to remove
- \*Windows with spring balances (rather than rope and pulley) are harder to remove
- \*You may damage old metal weatherstripping during the removal so do not make promises about it staying intact
- \*Parting beads may break during removal
- \*Paint may be the only thing holding up a top sash, so be careful!
- \*You will have to remove some trim to get the windows out
- \*NO, all white paint does not match when you try to touch up the trim. There are dozens of “white” paint colors and no, you will likely not match it even when you take a sample to the store
- \*Re-roping can range from easy to super difficult depending on the window
- \*Weights are specific to the window and are each half the weight of the sash to provide balance







### **Pro Tips for Restorers or Potential Restorers (or, Things That Have Happened to Me):**

- \*Make sure you look at the windows in person if possible before tackling a project because...
- \*Storm windows may be glued on!
- \*There may be interior storms screwed in
- \*Make sure the person in charge does not block your access to the windows on the day of installation after you have been working on the windows for a few months and they promised no other work was going on inside but hey, now there is!
- \*Make sure other contractors do not throw away precious parts of the window trim into the dumpster, so that you have to search for said parts and pray they are not broken
- \*Do not bid on replacing ropes when you think the weights are there, because maybe the weights are gone, and the weight pocket has been packed tight with fiberglass insulation and drywall and the weights you found on ebay get lost by the USPS
- \*Do not agree to use historic glass as replacement glass and then do a panicked search for glass large enough
- \*Pack extra tools in case someone decided to caulk the windows shut on the outside!

## Technical Points: Removing Finishes

- \*Stripping paint with heat is the fastest method

- \*You may have to use chemicals for poly/stain coats

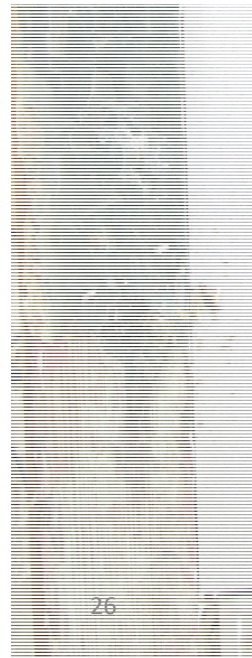
- \*You may have to use hand scraping/sanding as some older paints (calcimine paint) does not respond to heat or chemicals! Surprise!

- \*Smart Strip by Peel Away is a product I have used successfully on stained doors

- \*Tiny 1-inch Bahco carbide scraper is the best I have used for muntins and detail work

- \*When using directed steam or heat gun around glass you MUST protect it as it will crack within seconds of exposure

- \*You can build a steam cabinet with insulation panels for a general steam that is safer but slower



### Technical Point: Making Repairs

- \*Some wood may have to be replaced, if it is bowed or rotted out or deeply pitted and cracked through
- \*Donor windows are the easiest source of materials
- \*Old doors have good wood that can be used to make parts
- \*Muntins are very hard to replicate without the proper tools but you can potentially find someone to make them, otherwise you may find a donor window with muntins that are close enough
- \*Wood hardeners like the Minwax product can be used to strengthen a punky area
- \*Architectural epoxies like Sculpwood and Abatron's products are long lasting
- \*You MUST remove the gray, dried out layer of wood and get to sound wood to paint
- \*Thin veneers on wood doors can sometimes be glued back down with success, bubbles are tough



**Right:** C.1920s door

cut down for wood  
**Above:** door wood on top, being made into a bottom rail for window, donor from old window below, original, deteriorated piece on bottom  
**Left:** Sculpwood fills cracks, shapes well





### **Technical Point: Applying Finishes**

- \*The smoothness of the putty lines on windows depends on the smoothness of the muntin bar, so it must be repaired before putty is applied
- \*Sarco is the brand many professionals use for window putty
- \*To fill in areas that are pitted on a stained finish, mix sanding dust (from sanding that door) with the stain to make a filler
- \*All wood (\*and glass) expands and contracts
- \*Use the highest quality brushes available and take care of them, use the appropriate type for oil or latex
- \*Spar urethane is rated for outdoor use as a clear coat over stain
- \*Use latex as the topcoat simply because the next person will assume it is latex
- \*If you are not stripping the old paint then test for oil or latex or prime over everything before using a topcoat
- \*Avoid painting the edges of windows (and inside edge of door) because moisture needs to escape and latex paint sticks to other surfaces
- \*Add wax to window jambs to improve functionality

# Avoid Mistakes: Make the Work Last

- \*Avoid dark colors on doors and windows as they will expand and contract more
- \*Loosening of the joints leads to water infiltration, which leads to rot
- \*Do not use a hard putty that will shrink away from the wood on the windows
- \*Apply borate or other products to inhibit rot and insects
- \*Inspect the work annually to see if touch-ups are needed, paint is the first line of defense!
- \*If there was a serious water and rot problem, fix the cause!
- \*Add awnings or a drip edge atop doors that have no water protection
- \*Add storm windows to help with condensation
- \*Storm doors also may help, just know they can trap some heat, so avoid dark paint on the doors if they get direct sunlight
- \*Add kickplates to doors to help with people and water damage



# Big Picture

- \*Facilitate workshops so people can gain confidence with basic maintenance
- \*Utilize incentives like the Bailey Bill
- \*Learn about historic windows and energy efficiency-they are not at odds!
- \*Educate decision makers
- \*Promote appreciation of historic doors and windows
  - oldest door
  - best door
  - most window panes
  - most unique design
- \*We need more restorers! (Window Preservation Alliance)



Windowpreservationalliance.org



Images from Historic Columbia

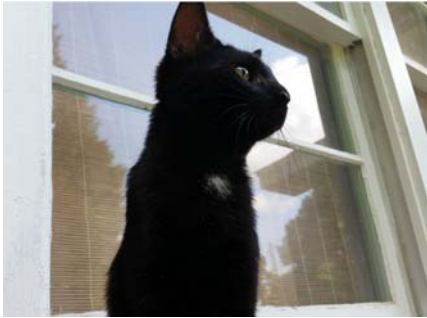


My repairs to a neat window



Thank you!  
Any questions?

Staci.Richey@gmail.com



Old presentation:  
[https://www.columbiasc.gov/depts/planning-preservation/docs/shpo\\_historic\\_wood\\_windows\\_and\\_doors.pdf](https://www.columbiasc.gov/depts/planning-preservation/docs/shpo_historic_wood_windows_and_doors.pdf)