
FROM THE FIRST BUILDINGS BUILT IN AMERICA TO THE 1930S, WOOD WINDOWS FRAMED PEOPLE'S VIEW ON THE WORLD.
PHILADELPHIA, 1776
NCPTT


WESTWARD EXPANSION, 1800s


FROM BROOKLYN TO BOURBON STREET, WOOD, UBIQUITOUS AND READILY AVAILABLE, WAS THE STANDARD FOR WINDOW FRAMES NO MATTER THE ARCHITECTURAL STYLE.

IN THE 1930S, LARGER BUILDINGS BROUGHT THE NEED FOR METAL WINDOW CASINGS. AS NEW WINDOW MATERIALS TOUTING ENERGY EFFICIENCY BECAME POPULAR IN THE 1970S AND '80S, INSTEAD OF DAMAGED WOODEN WINDOW FRAMES BEING REPAIRED, THEY WERE TOSSED OUT IN FAVOR OF MANUFACTURED MATERIALS LIKE VINYL AND ALUMINUM. HISTORIC FACADES SUFFERED AESTHETICALLY.

SAVING OLD WOOD WINDOWS INCREASES BOTH LONGEVITY AND SUSTAINABILITY.

TRADITIONALLY, WOODEN WINDOW FRAMES WERE MADE FROM OLD-GROWTH FORESTS—ONES WITH TREES 100 OR MORE YEARS OLD—BECAUSE THEY OFFER THE DENSEST, STRONGEST WOOD.

COMPETITION WITH OTHER TREES FOR RESOURCES SLOWS GROWTH IN OLD-GROWTH FOREST TREES, CREATING TIGHTER GROWTH RINGS. TIGHTER GROWTH RINGS MAKE FOR STRONGER WOOD. THE VERTICAL GRAINS IN HEART-WOOD ARE THE STRONGEST AND MAKE THE BEST WINDOW FRAMES.

BARK
INNER BARK
HEARTWOOD
SAPWOOD

HEARTWOOD IS MADE AS SAPWOOD CELLS AGE AND BECOME FILLED WITH RESINS AND MATERIALS CALLED LIGNIN. THESE RESINS BIND THE HEARTWOOD, GIVING IT STRENGTH. OLDER TREES HAVE MORE YEARS OF OPPORTUNITY TO DEVELOP A ROBUST HEARTWOOD.

OLD GROWTH

NEW GROWTH

NEW-GROWTH WOOD, USED IN MOST NEW WOODEN WINDOWS, IS PRODUCED IN JUST 10 OR 20 YEARS, ON A TREE FARM. WITHOUT THE NATURAL GROWING ENVIRONMENT REQUIRED TO CREATE DENSE HEARTWOOD, NEW-GROWTH WOOD MAKES FOR WINDOWS THAT CAN BREAK DOWN SOONER.

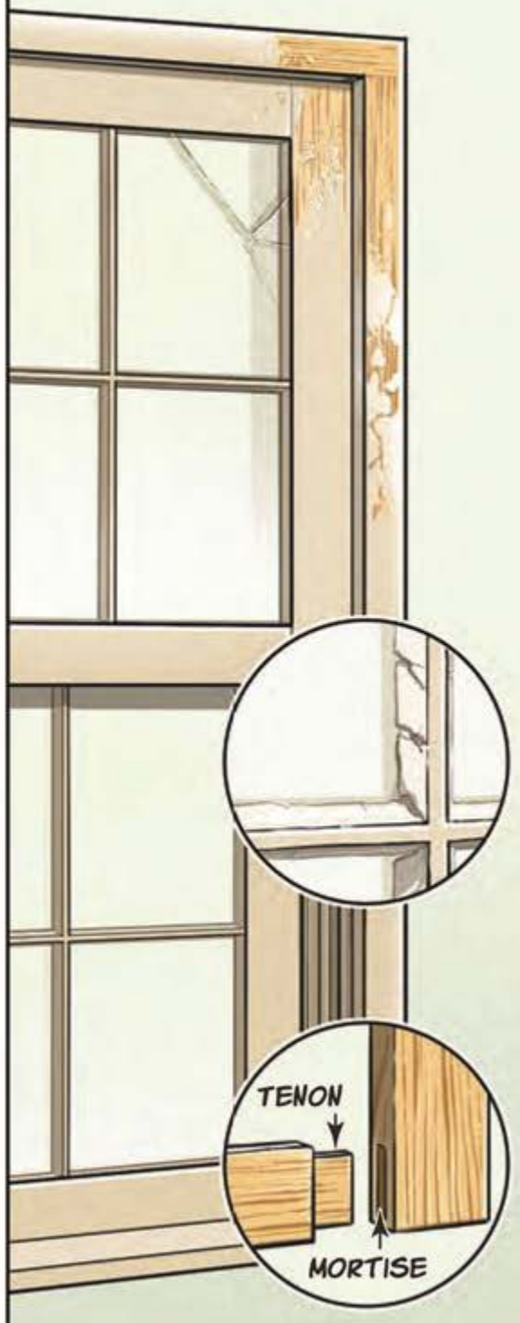
A WOODEN WINDOW IS A SIMPLE SYSTEM WITH THREE COMPONENTS.

THE **WOOD** EXPANDS AND CONTRACTS WITH THE RISE AND FALL IN TEMPERATURE. THIS RESPONSIVENESS ALSO MEANS THAT IT IS BOTH STRONG AND FLEXIBLE ENOUGH TO ACCOMMODATE THE INFLEXIBLE GLASS.

THE **GLASS**, THE LEAST FLEXIBLE PART OF THE SYSTEM, LETS IN LIGHT AND KEEPS OUT WEATHER. CREATED OF SAND (OR SILICON), IT IS SEMI-VISCOUS AND ITS MOLECULES MOVE VERY SLOWLY OVER TIME.

**PUTTY** HOLDS THE GLASS PANE IN THE WOODEN SASH. TRADITIONALLY, PUTTY IS A MIXTURE OF LINSEED OIL AND A FINE POWDER OF CALCIUM CARBONATE THAT BONDS TO THE WOOD AND SEALS WATER OUT. IT TAKES MANY YEARS TO FULLY HARDEN, SO IT'S ABLE TO FLEX WHEN THE WOOD SHRINKS OR EXPANDS.

PUTTY IS A GOOD PARTNER TO THE WOOD, WOOD IS A GOOD PARTNER TO THE GLASS.




THOUGH BROKEN GLASS NEEDS TO BE REPLACED, THE REST OF THE SYSTEM IS REPAIRABLE, AND YEARLY CHECKS CAN MAKE SURE THE REST OF THE SYSTEM STAYS HEALTHY.

PAINT KEEPS THE WOOD PROTECTED FROM MOISTURE AND INSECTS. REPAINTING IS REQUIRED WHEN IT CRACKS OR PEELS.

PUTTY NEEDS TO BE SCRAPED AND REAPPLIED IF IT IS SEPARATING FROM THE WOOD OR CRACKED.

THE CONSTRUCTION OF WOODEN WINDOWS MOST OFTEN INCLUDES JOINERY LIKE MORTISE AND TENON SYSTEMS. SINCE THEY DON'T REQUIRE ADHESIVES, BROKEN PARTS CAN BE REPLACED, RATHER THAN REPLACING THE WHOLE WINDOW.


SOURCE: ANDREA SAVONTY, SAVONTY RESTORATION; NATIONAL CENTER FOR PRESERVATION TECHNOLOGY AND TRAINING