





Anna Margaret Barris

Project Designer

Illinois Historic Preservation Agency

Illinois Main Street

Building a Sustainable Future

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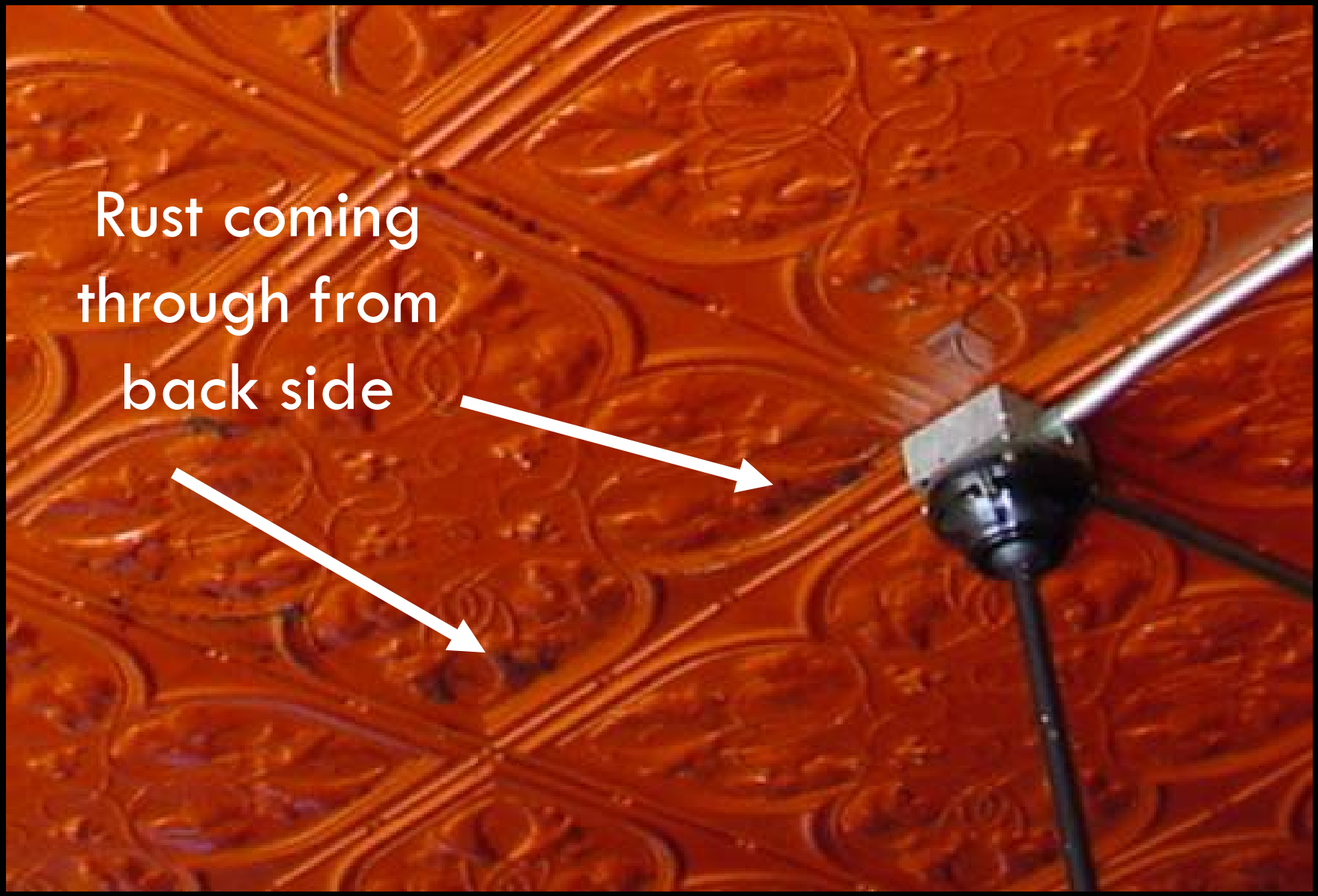
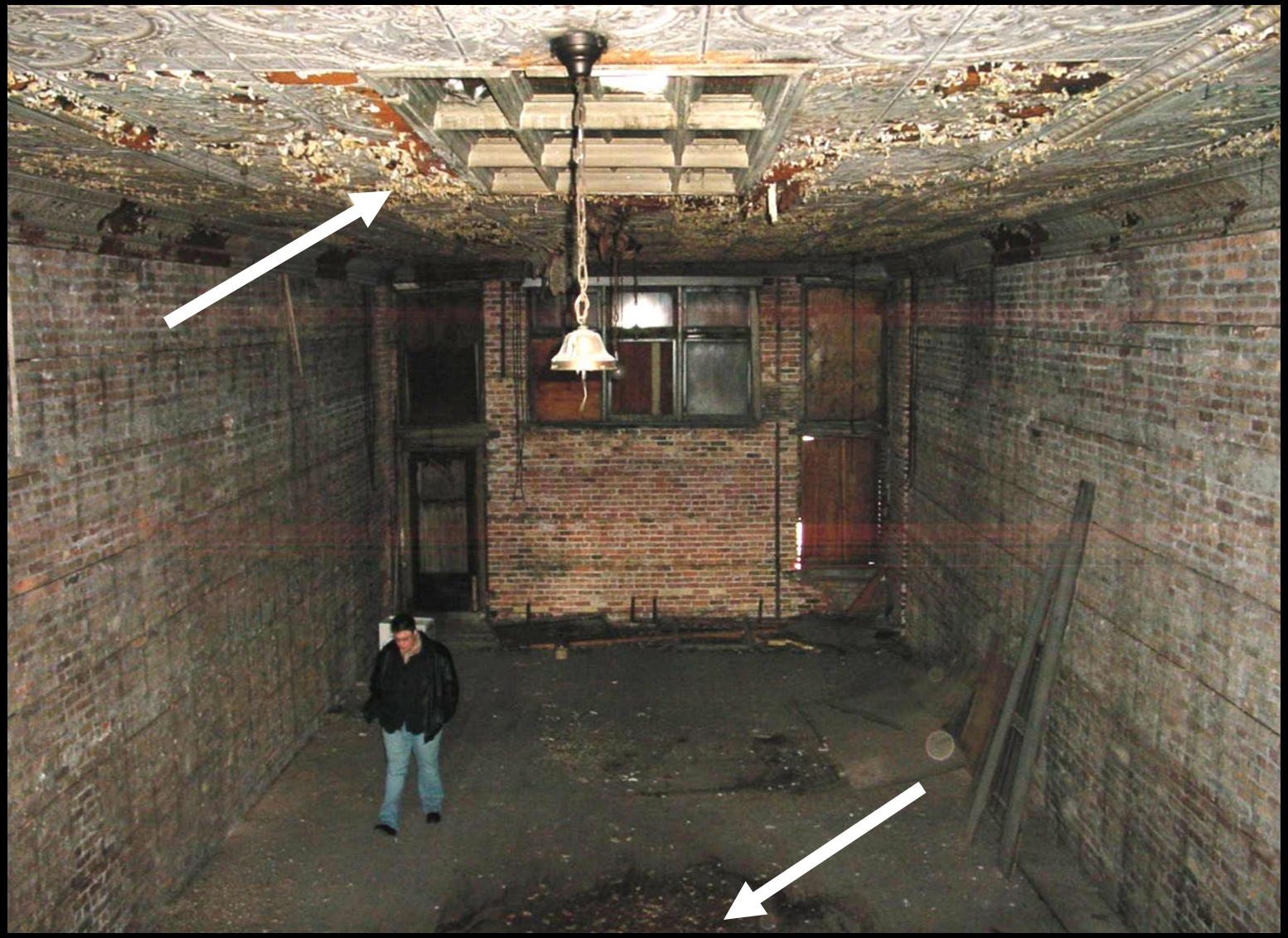
Sustaining Buildings for the Future

Buildings do not always stand up to water

Water damage can be visible

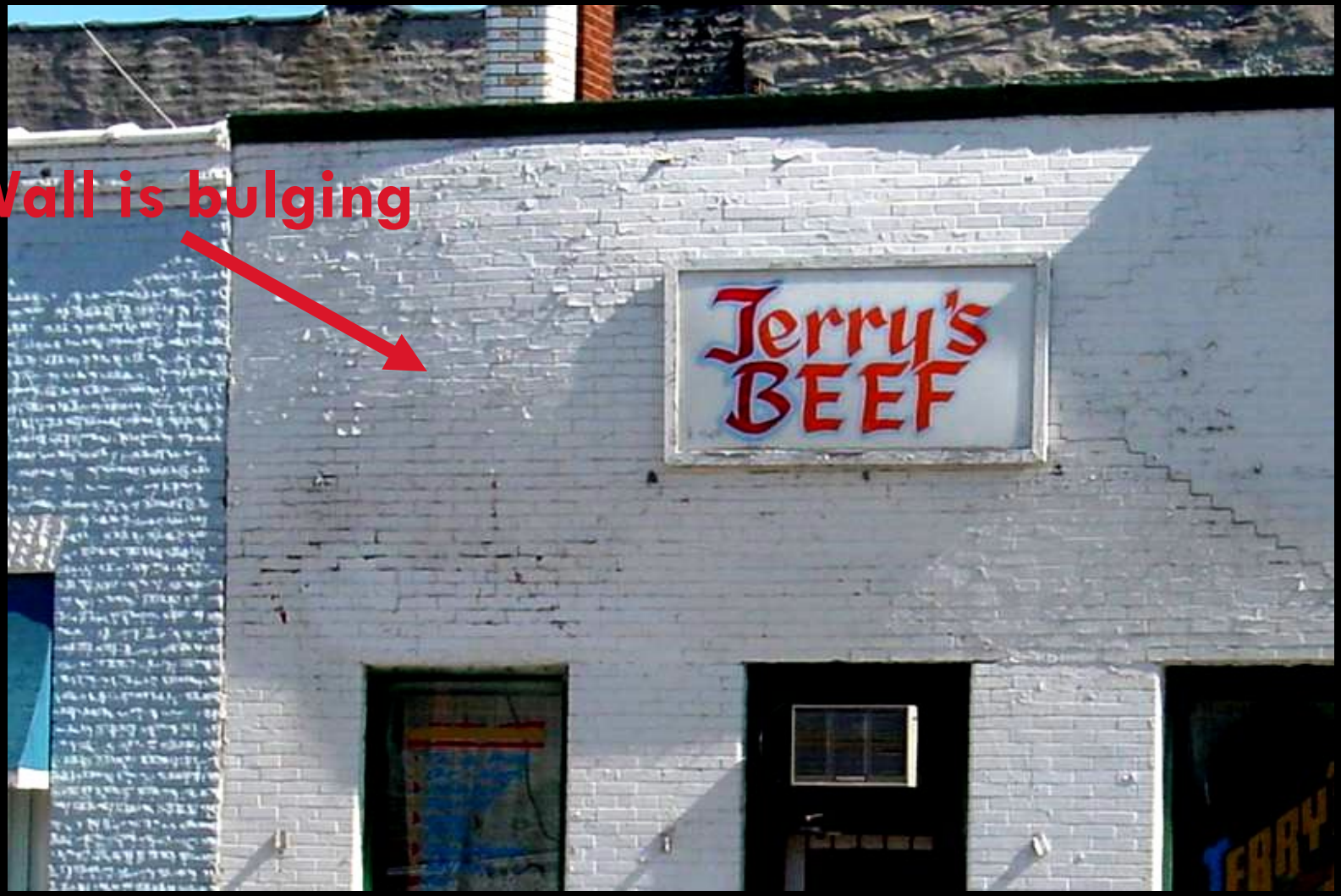


Or relatively obscure



What might have started as a small problem can soon lead to greater problems

Soon materials fall in to total disrepair



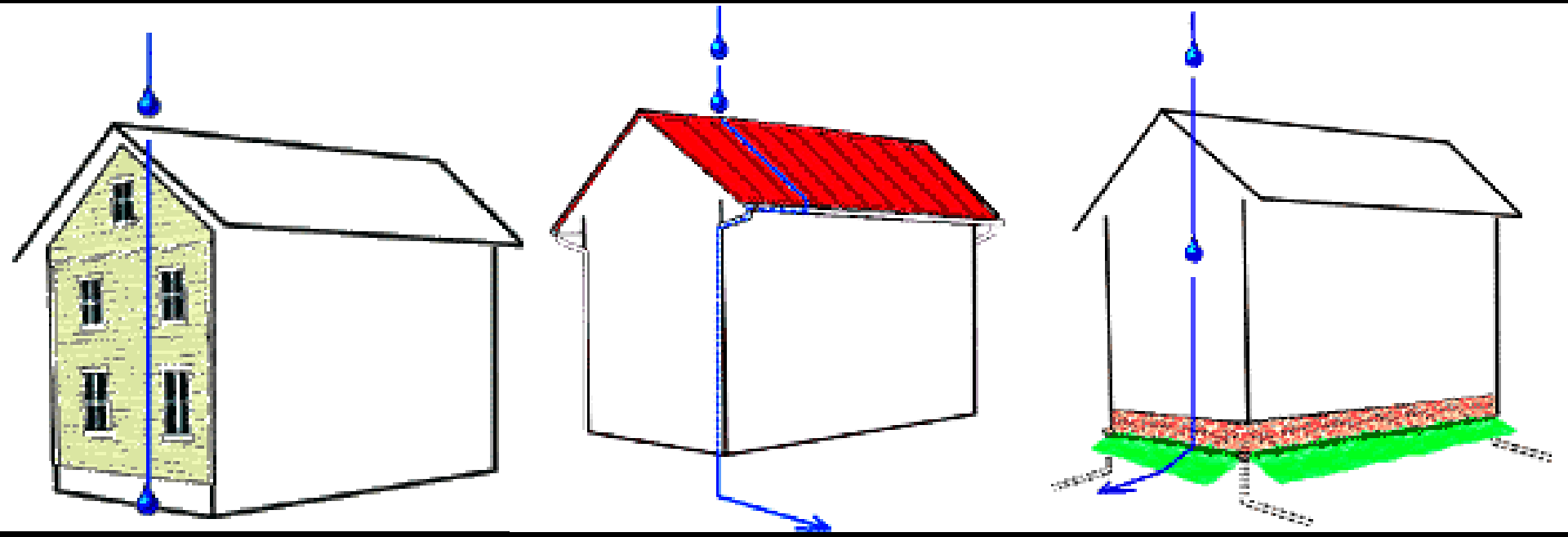
Water has caused the steel ties to rust. When steel rusts, it expands. Here it is pushing the masonry wall out of plane.

Water can lead to structural problems

If Maintenance issues are not addressed

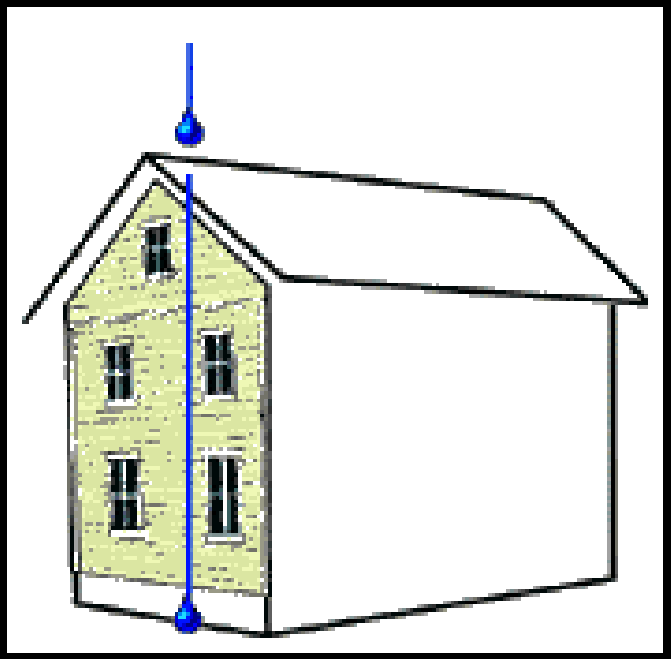
they will lead to Structural Issues

To protect your building, you must know:



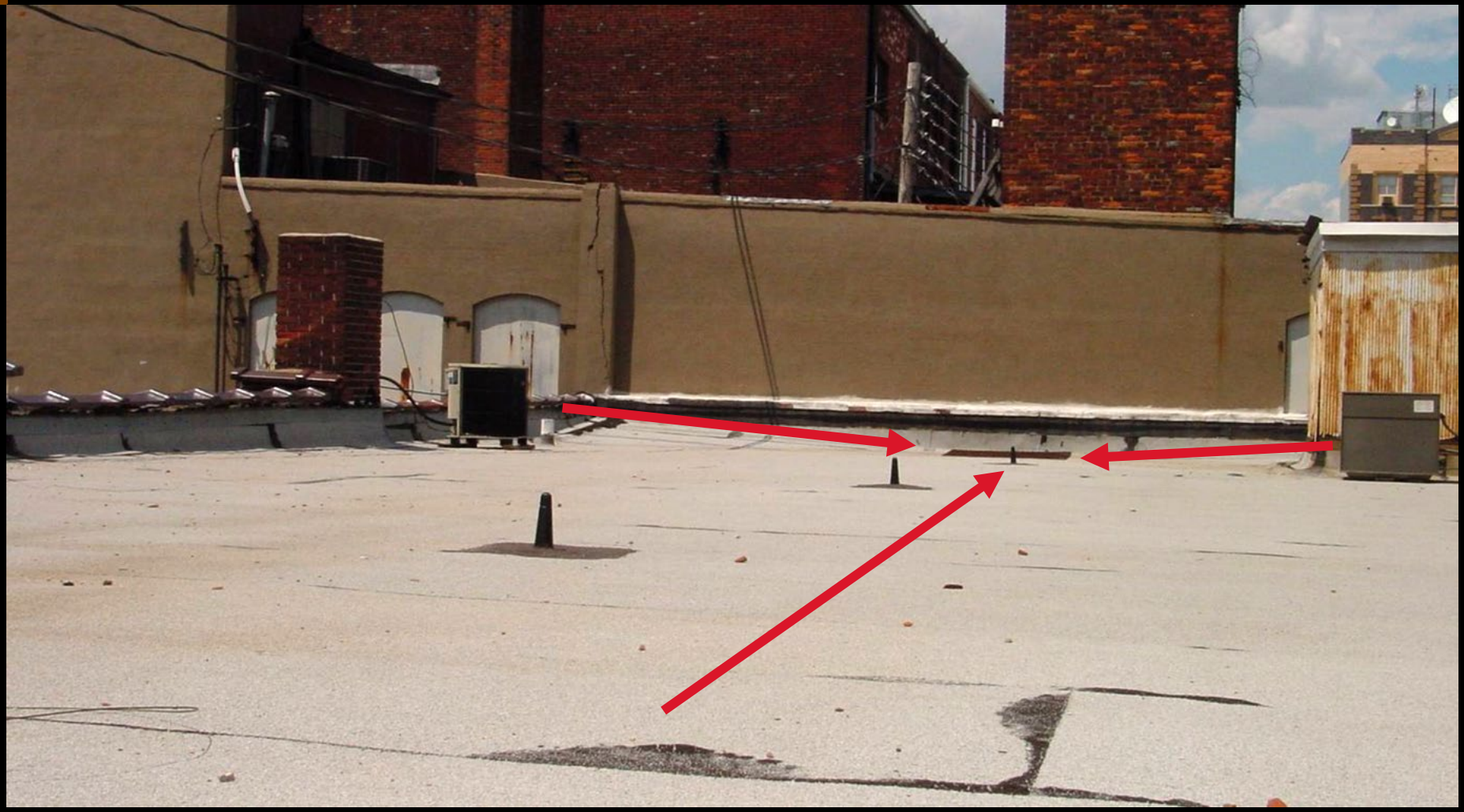
- If your building envelope is sealed.
- What route the water takes.
- Where the water goes.

Your building's envelope includes

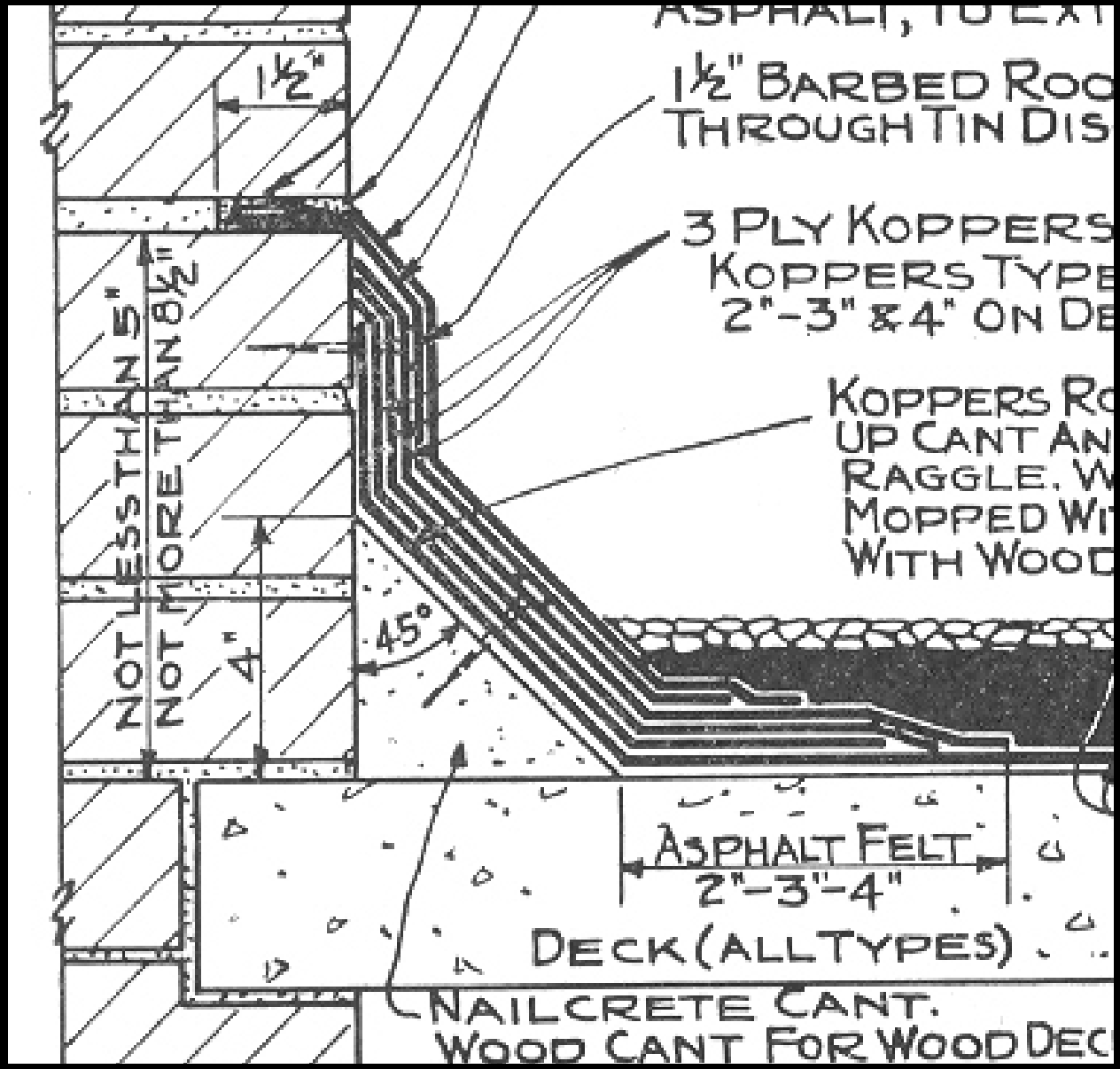


- Exterior walls
- Roofs
- Windows
- Storefront
- Any exterior surface

Leaky roof is the best known problem



Check the slope of the roof make sure water does not pool.
Double check flashing around any change in plane.



Flashing should be mortared into the surrounding brick.

Flashing covers the connection of the roof, the side wall and the adjacent brick wall

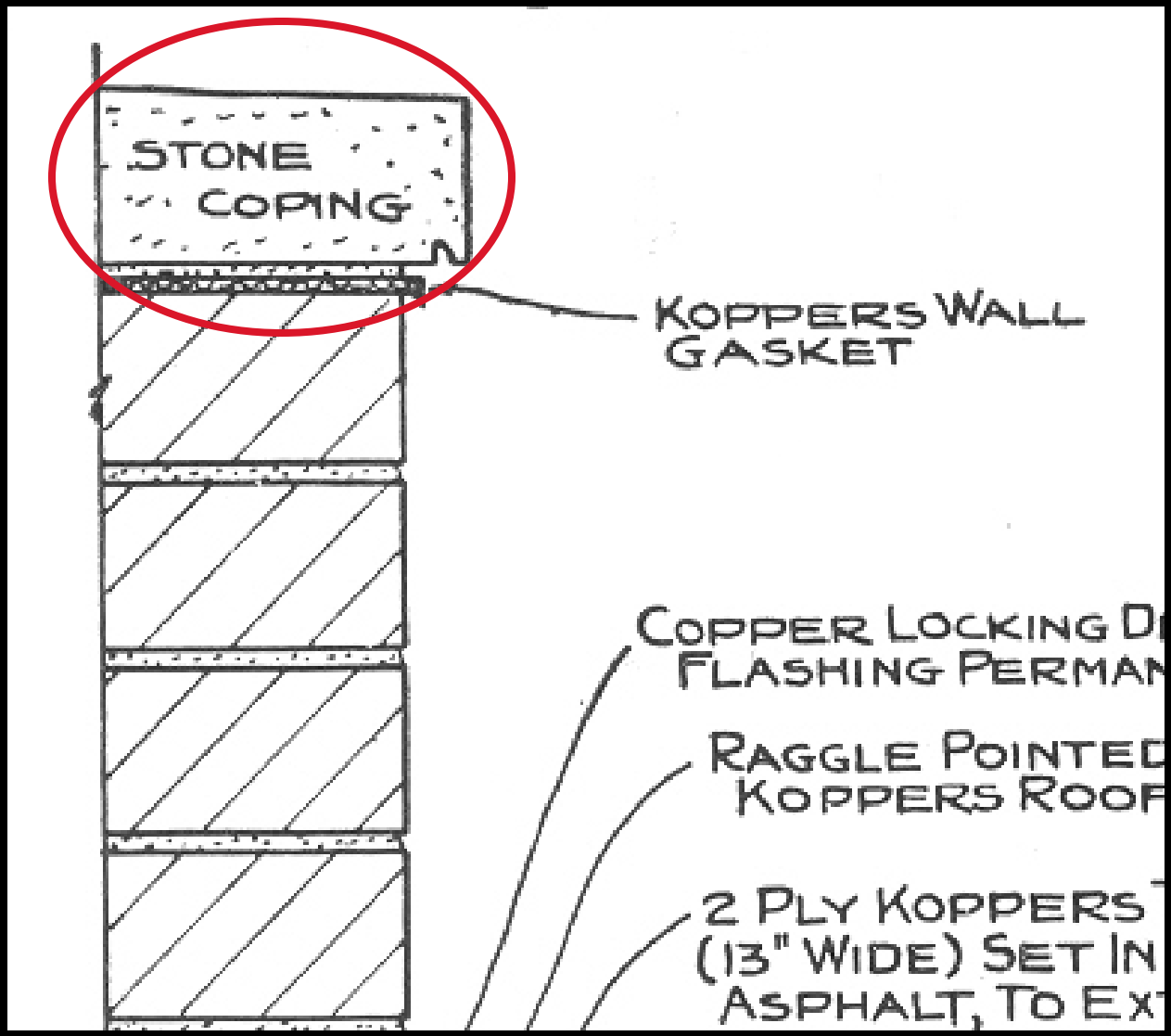
Flashing covering the connection of the roof and chimney

Inappropriate tar is letting water in.

Water is infiltrating the interior wall.

Mortar loss

Damp mossy interior walls



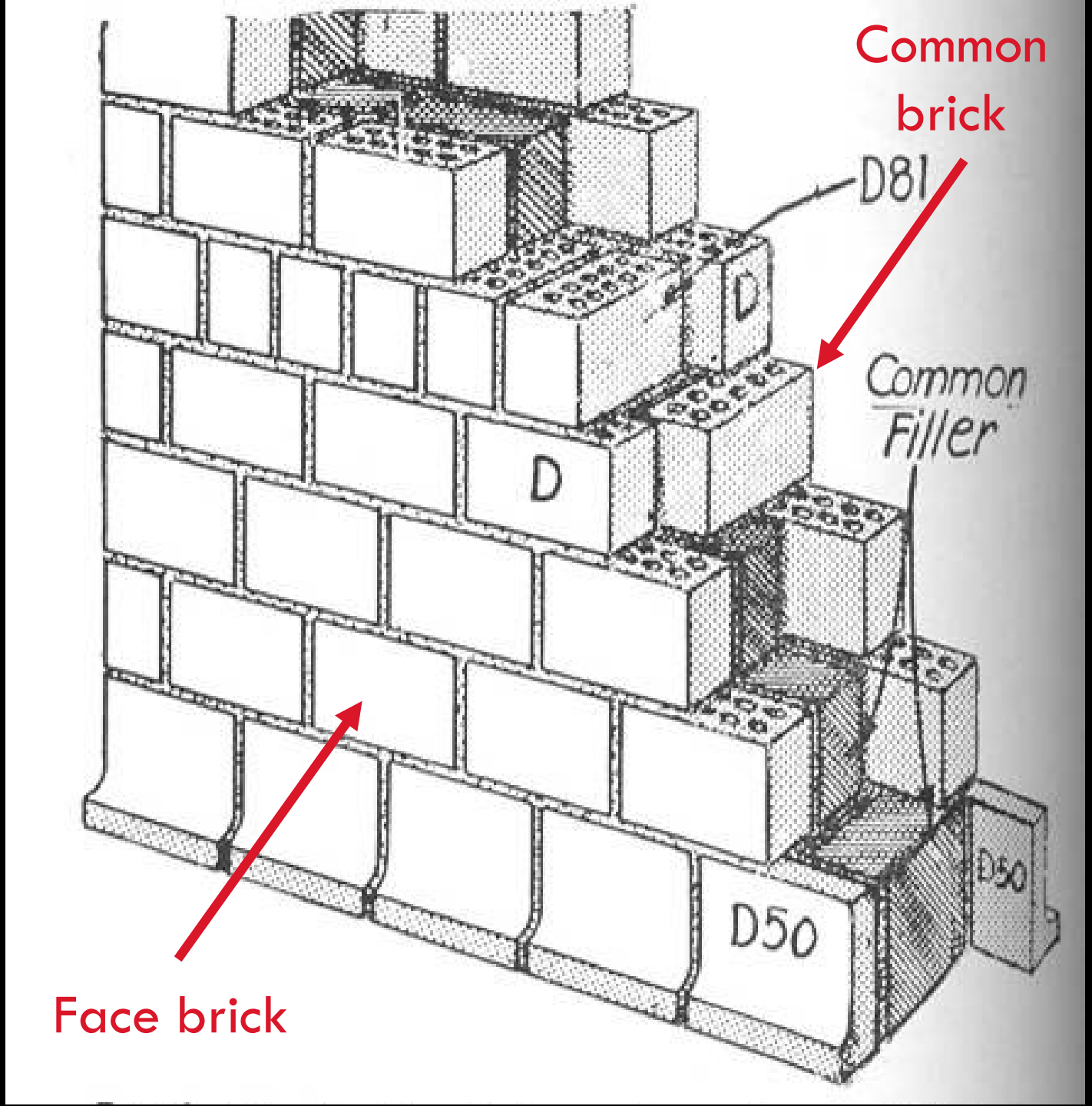
Probably the most common but unnoticed problem is missing or loose parapet caps (or coping)

Missing parapet cap; water infiltrated wall.

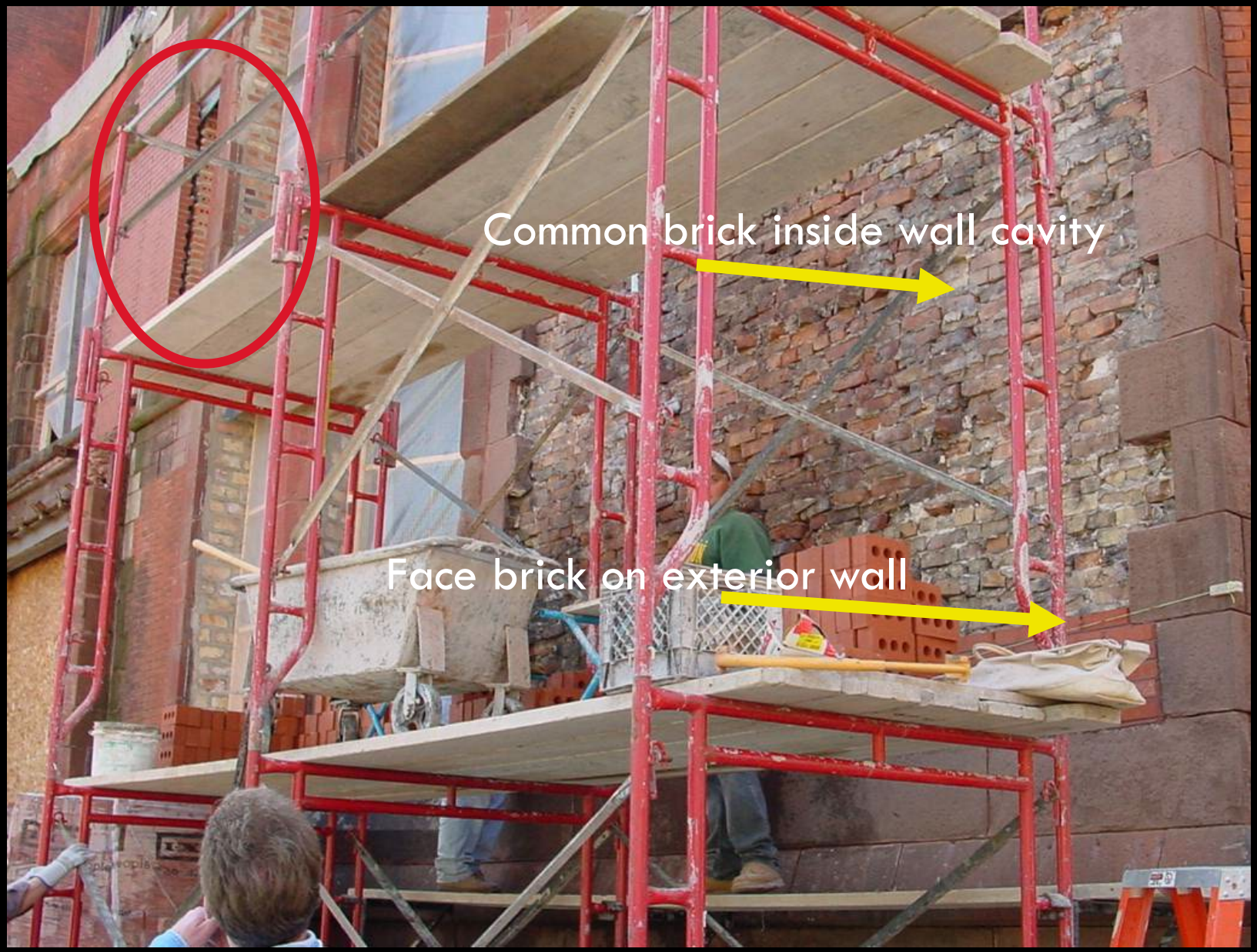
Area was parged over.

Not a solution!

Parapet caps must be mortared in place



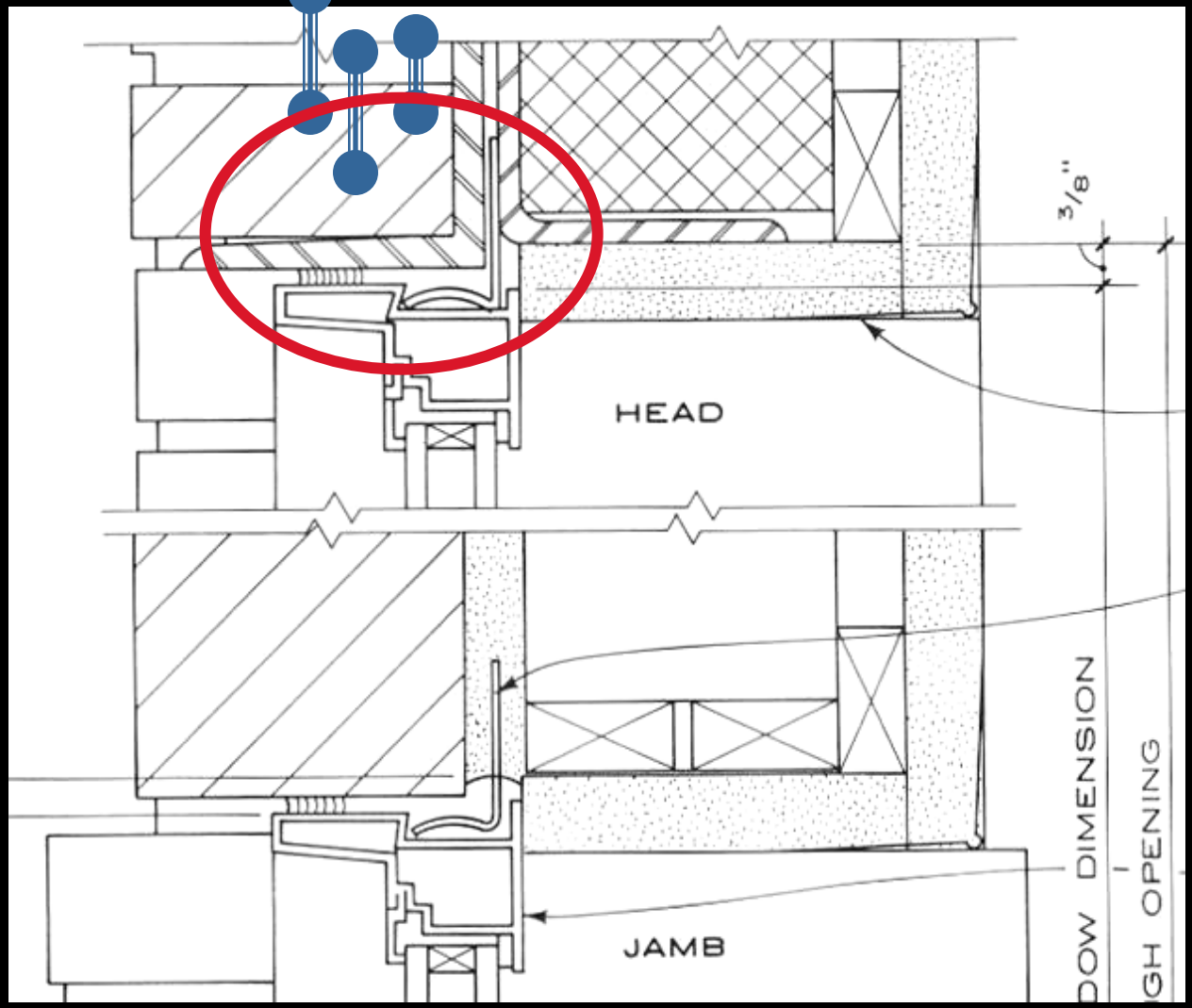

Common brick inside wall cavity
Face brick on exterior wall


Common brick inside wall cavity
Face brick on exterior wall

Side walls were constructed with pockets to hold the floor joist

These pockets must be filled with mortar to prevent water from entering the wall

Water can destroy not only this wall but the one on the other side of it as well



When water travels through the wall cavity, it can be stopped by a steel lintel. The lintel will rust, causing rust jacking.

Rust jacking

Rust jacking weakened the mortar joints.

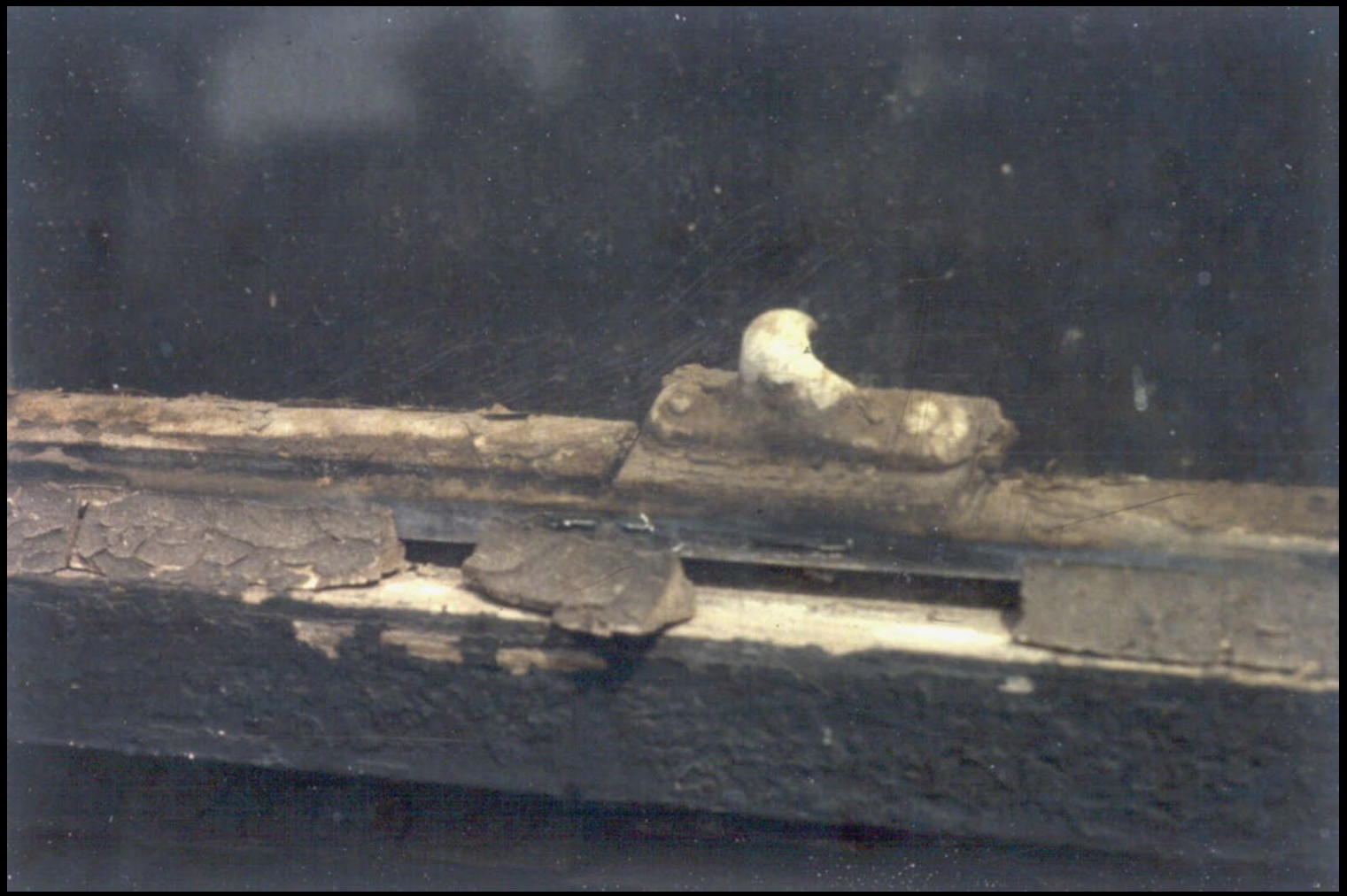
The lintel continues to expand, the caulk seals moisture inside the wall, does nothing to repair the problem

Are you maintaining your original windows?

Replacement Windows !

Historic windows were constructed so they could be repaired!

Windows need to be painted to protect the wood



Old brittle putty should be replaced

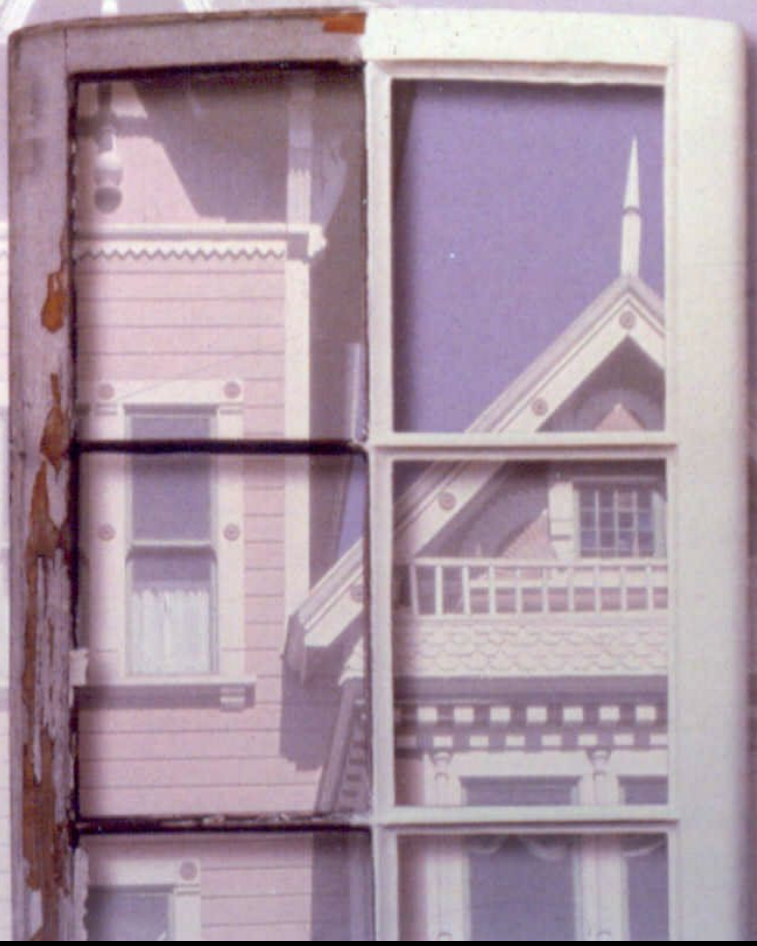
Broken sash cords should be replaced with new sash cord…

…or chains

Joints should be tighten

Where there is wood rot or decay, a new member can be installed or wood can be repaired with a consolidant

ADVANCED WOOD REPAIR TECHNOLOGY PROVEN TO SAVE YOUR MAINTENANCE BUDGET



THE PROBLEM

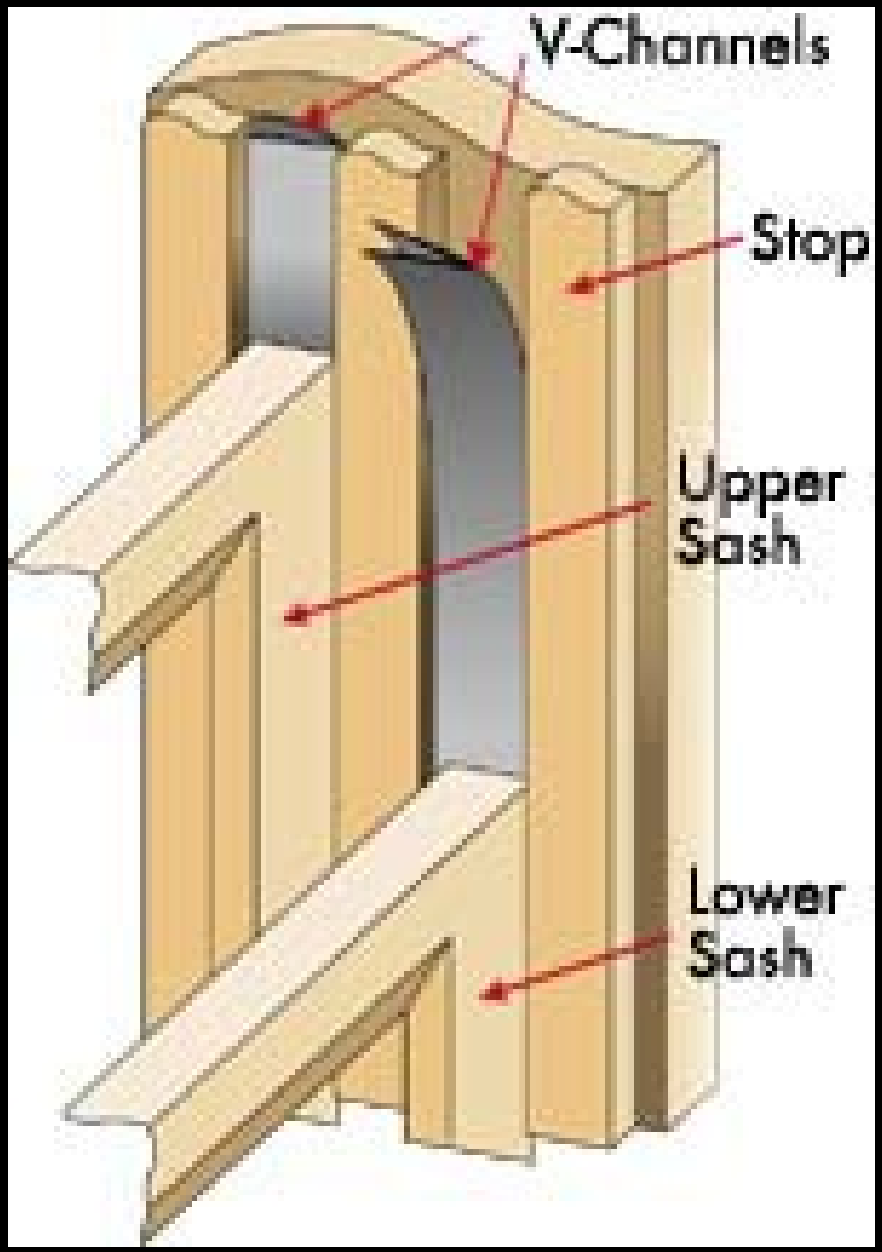
- Open joints
- Decayed wood
- Failed paint
- High maintenance

THE SOLUTION

- Sound joints
- Repaired wood
- Lasting paint
- Low maintenance

Windows: Annual Energy costs

	ANNUAL COST	CONST. COST	PAYBACK
Typical wood window	$ 20	$ 0	0
Add Storm/weatherstrip	$ 13	$100	14 yrs
New insulated glass	$ 10	$400	40 yrs



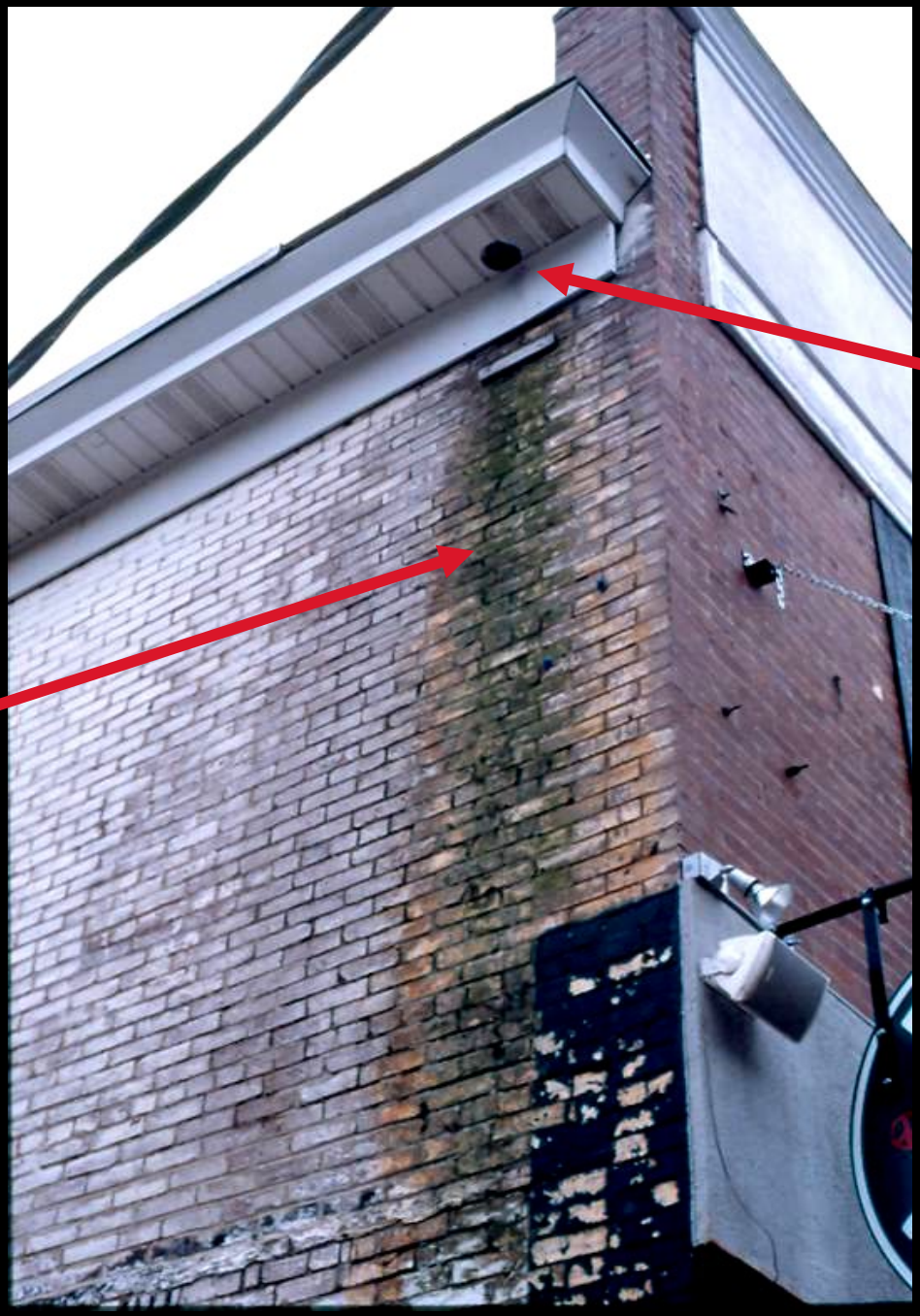
Add weather stripping to prevent air infiltration

Storm windows interior or exterior


PRAIRIE ARCHIVES
USED AND RARE
PAPER AMERICANA • ANTIQUARIAN BOOKS
Robbie's
ESTAURANT
Holy Land
DINE

So your building envelope is sealed.

Where does the water go when it is shed?



Here moss is growing where the downspout should be connected. Now the building needs cleaned and repointed

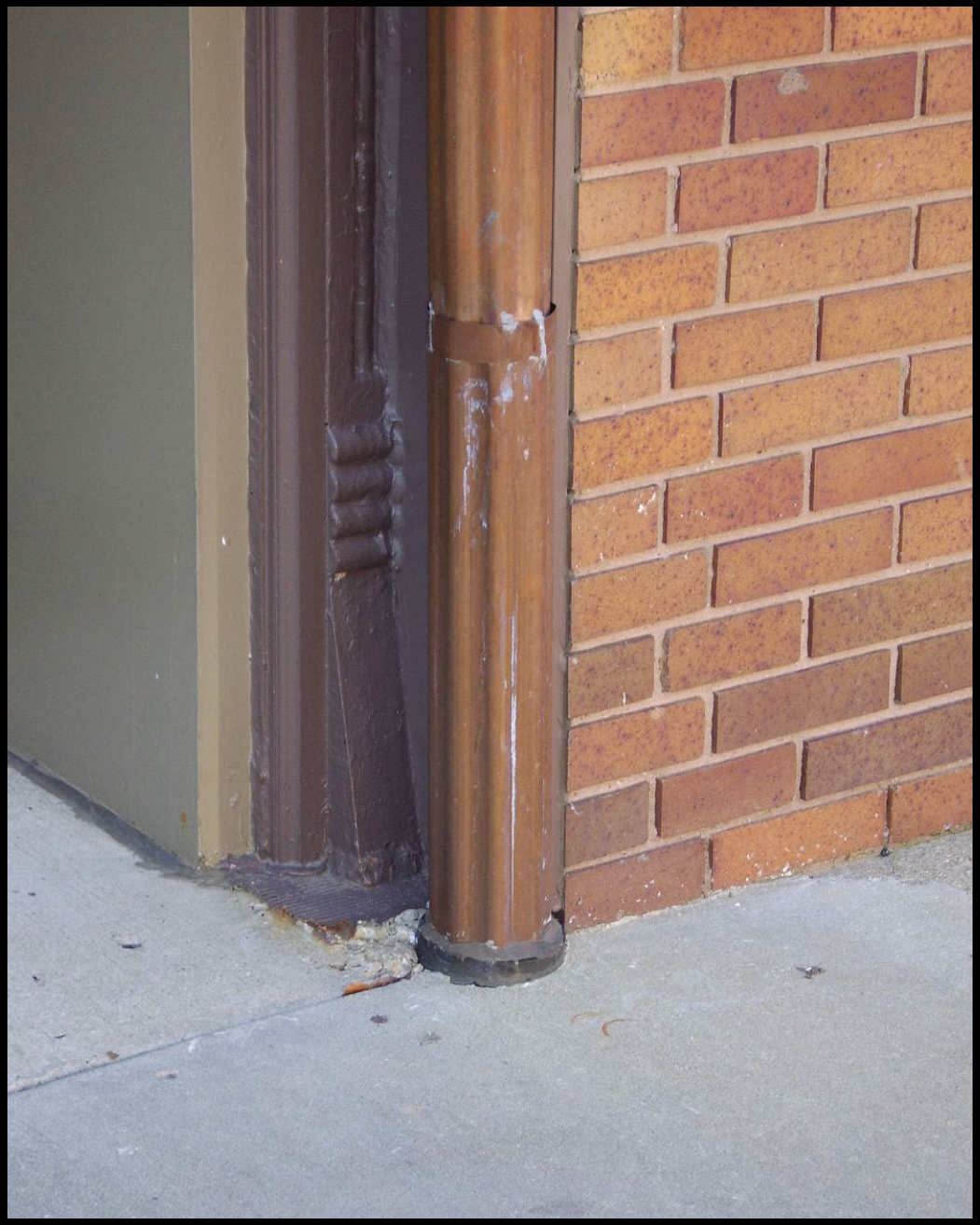
Leaky gutters defeat the purpose of downspouts

Leaky gutters defeat the purpose of downspouts

Gutters and Downspouts must be clean, connected and free of leaks!

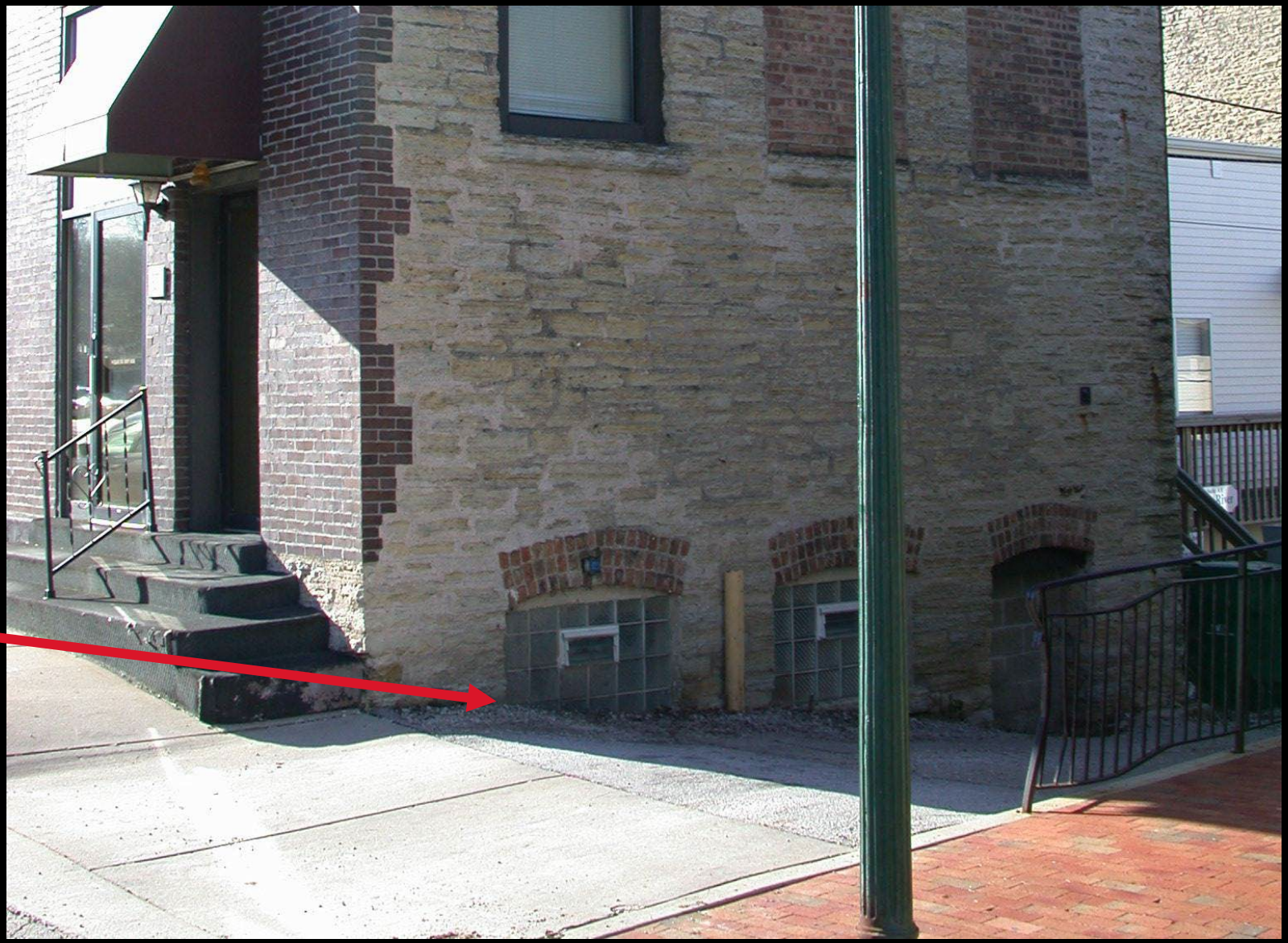
Now that you know where how the water is traveling, where is its destination?

Here the downspout is connected under ground to the storm drainage system.



If water is collecting at the base of the building,

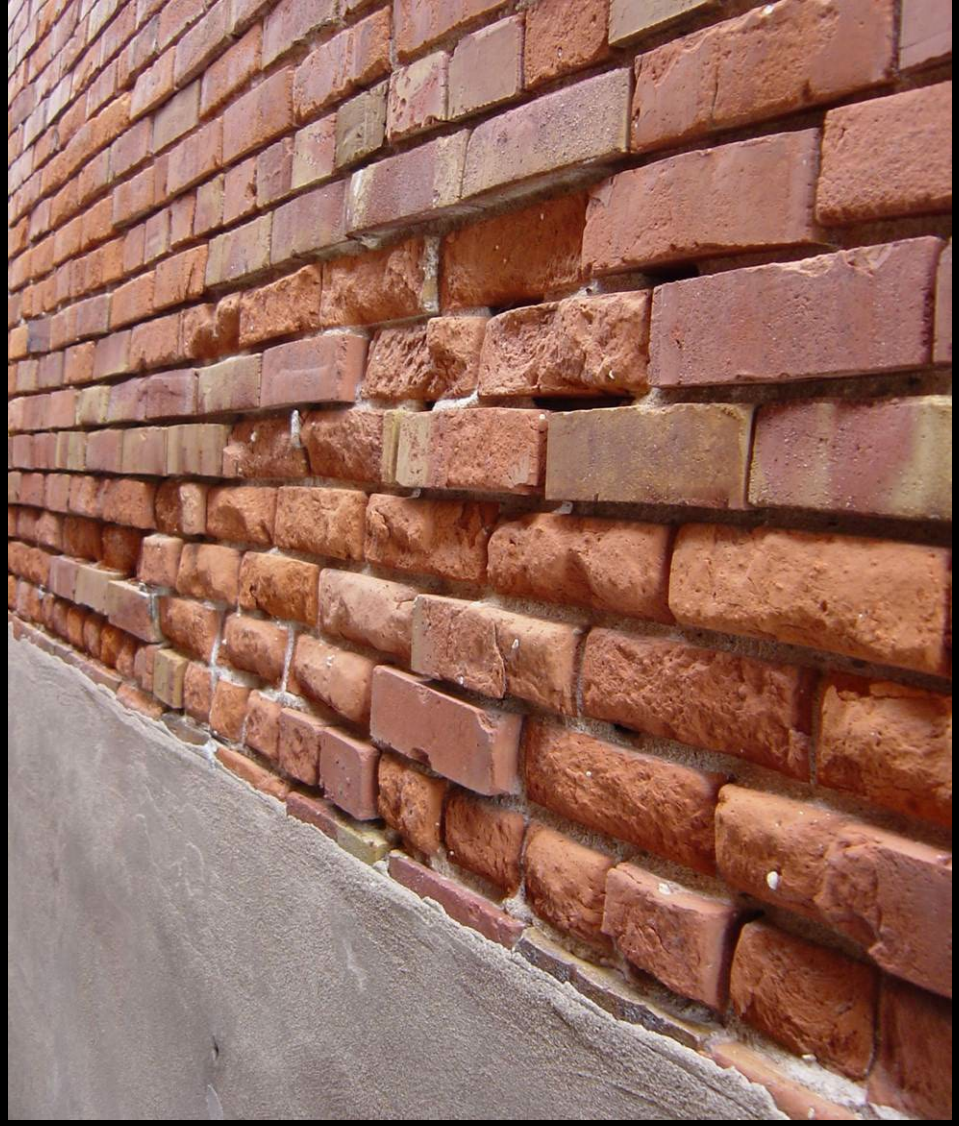
it can creep up in to the brick, a condition called "rising damp."



To prevent water from pooling, gravel has been built up against the building.

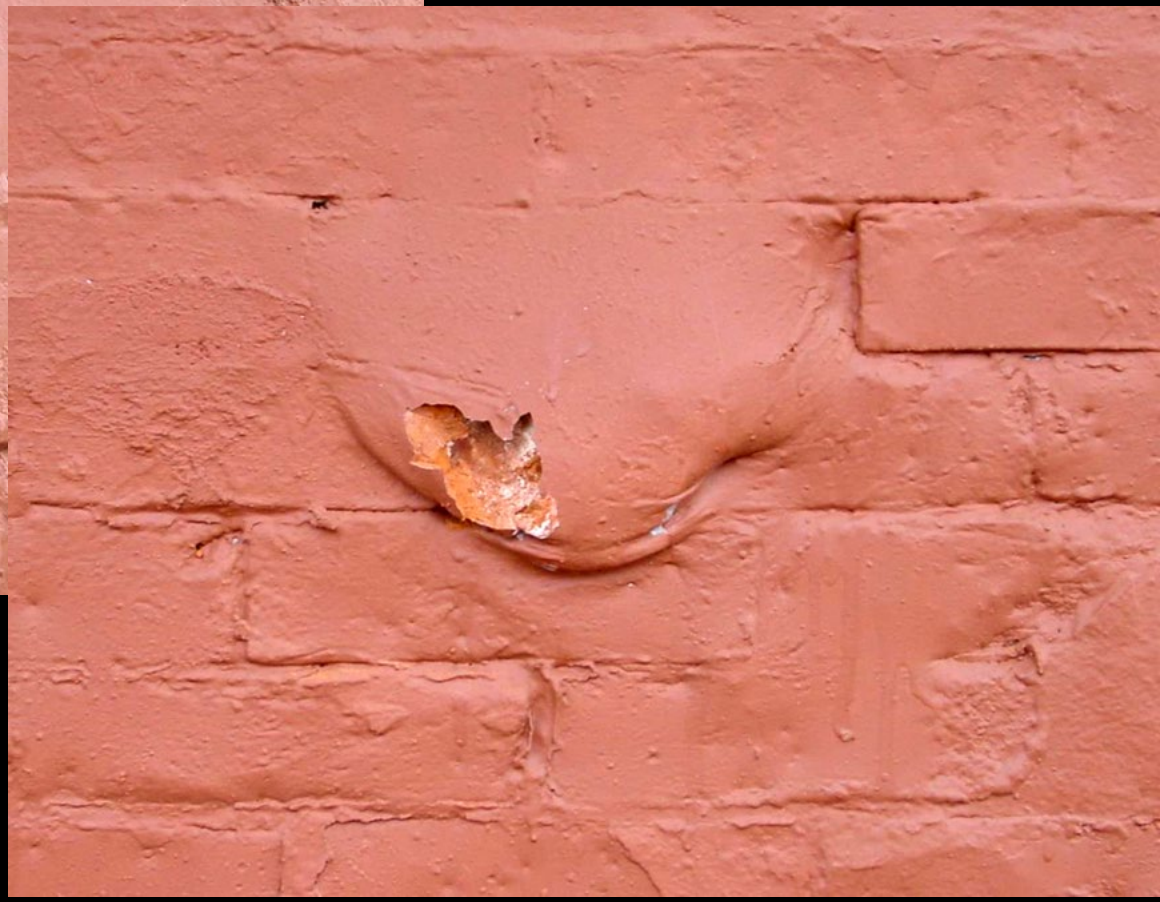
Parging brick makes the problem worse!

Water is trapped behind the parging, holding moisture against the brick.



Moisture will keep traveling up the wall to escape if it cannot escape through the mortar joints it will force the face off of the historic brick

Coatings such as Modac will trap moisture in wall, causing more spalling.



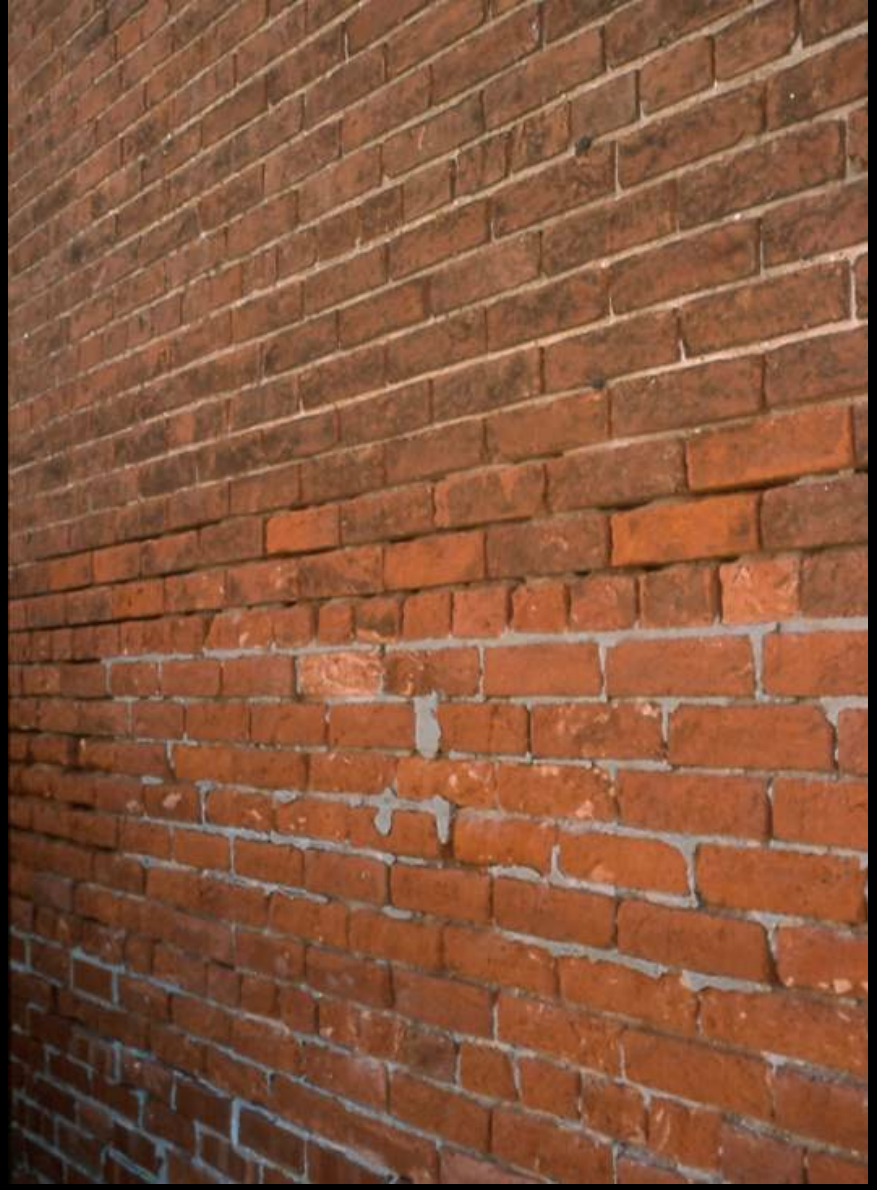
The coating has bonded with the hard outer shell of the historic brick.

Bad repointing can damage the brick and change the character of a building

If improper mortar is used spalling will occur

leaving the soft inside of the brick exposed

This can also happen when brick is sandblasted.



Historically, mortar was meant to be the sacrificial layer. It is easier to replace than brick.

When repointing, great care should be taken to not damage the brick.

A low pressure water wash is key when repointing.
The wall should remain wet when repointing.

The new mortar joints should match the old in joint profile, mortar composition, and color.

The new mortar should be mixed by hand on site and tested to match the old mortar in composition, and color.

Packing the new “old” mortar

The joints are then “raked”

and then compressed with a bristle brush

If brick has not been painted then do not paint it,
it only introduces an additional maintenance cycle.

If brick has been painted, then the best thing to do is leave it painted and continue the maintenance.

Rusting metals should be painted

Rust can literally erode away the metal.

Lose detail

Damages ornament

Rust looks bad!

To prevent further rusting, steel and iron should be scraped with a wire brush, primed, and painted.

Copper and bronze can be left alone to patina.

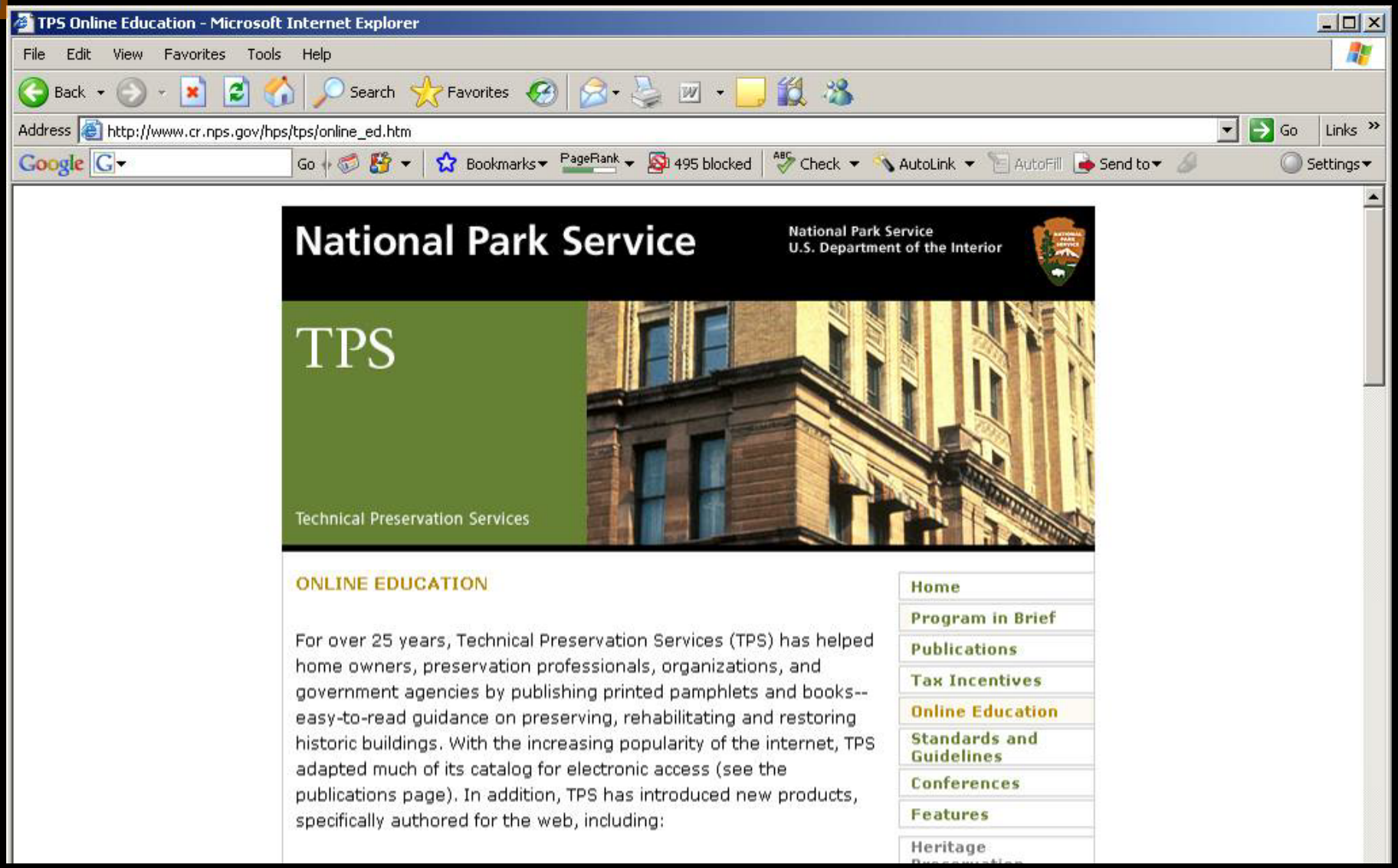
When patching, use galvanized metal and screws.
Match the profile.

Wood must be kept painted.

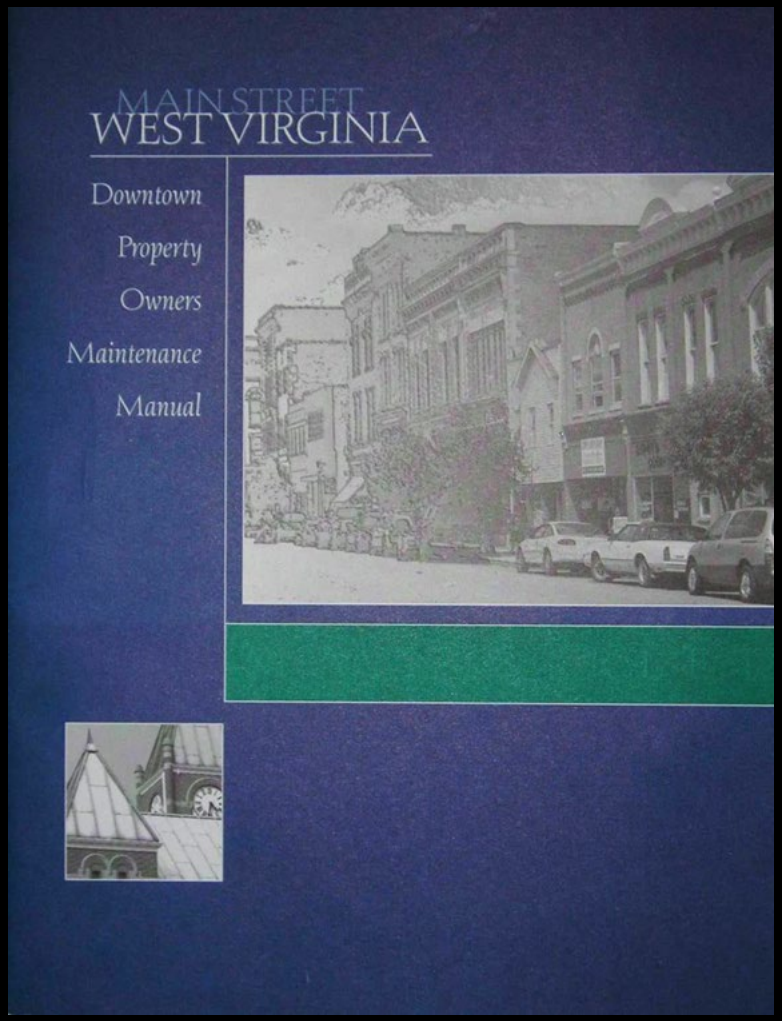
Wood needs protection!

Individual members can be replaced or patched with epoxies.

If wood is exposed it should be protected by paint.



www.nps.gov/tps/education/online-training.htm



Main Street West Virginia Downtown Property Owners Maintenance Manual

Contact: Michael Gioulis

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Any questions?

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The following are examples of assessments that were completed based on the Site Review Form.

These assessments were done for the local Main Street organization to make sure façade grant funds would address the appropriate repairs.

Technical Assistance
123 N. Dixie (Dixie Barber Shop)

May 25, 2006
Reviewers: Harry Hunderman & Anna Margaret Borntrager

STOREFRONT

- Windows
  - Historic, original to storefront. Glass is cracked in south display window at recessed entrance. Clear acrylic caulk can be used to infill the crack; eventually the glass should be replaced.

  - Steel window frames should be scraped with a wire brush to remove rust and repainted.

Technical Assistance
123 N. Dixie (Dixie Barber Shop)

May 25, 2006
Reviewers: Harry Hunderman & Anna Margaret Borntrager

- Transoms

  The original prismatic glass transoms are in very good condition.

- Bulkhead

  At recessed entry, historic panels are of steel construction. They should be scraped with a wire brush and repainted. Plywood panels cover the original bulkheads at sidewalk. The plywood panels should be removed, and the original bulkheads (which are probably either steel or glass) should be restored.

- Entrance

  Historic door is in good condition. It should be repainted when the storefront is repainted.

Technical Assistance
123 N. Dixie (Dixie Barber Shop)

May 25, 2006
Reviewers: Harry Hunderman & Anna Margaret Borntrager

UPPER FAÇADE

•Windows

Historic windows should be retained and repainted. Consider painting storm windows as well.

•Masonry

Water is infiltrating the parapet brick, most likely at the roof line or at the coping. Roof should be inspected for proper flashing and the coping joints examined.

Spalling is occurring at parapet. The mortar should be removed (by hand) and replaced with Type N or O mortar mixes, taking care not to get mortar on the face of the brick. Mortar should be tinted and joints should be raked to match historic joints.

Technical Assistance
123 N. Dixie (Dixie Barber Shop)

May 25, 2006
Reviewers: Harry Hunderman & Anna Margaret Borntrager

SIGN

Wooden individual letters no longer represent current business; however are very interesting. The sign can be left in place as is or new letters can be constructed to match the existing. Window graphics are clear and appropriate to the historic character.

STRUCTURAL ISSUES

There are no evident structural issues.

IMMEDIATE RECOMMENDATIONS

Fix water problem at roof/coping
Repoint mortar at area above upper floor windows with correct mortar mix
Remove plywood from bulkheads and restore original material beneath.

Technical Assistance
12 N. Dixie

March 3, 2005
Reviewers: Harry Hunderman & Darius Bryjka

STOREFRONT

Non historic with the exception of the prism glass transoms, which should be preserved and repaired. Altering the storefront would be costly and is not of high priority. At least, it should be maintained and painted, and a new fabric awning spanning the width of the façade should replace the existing.

Technical Assistance
12 N. Dixie

March 3, 2005
Reviewers: Harry Hunderman & Darius Bryjka

UPPER FAÇADE

Masonry

Historic Tiffany brick. Any spalling glaze should be flaked off and those areas painted with acrylic paint (Thorosheen).

Windows

Historic. Appear to be in fair condition. Should be repaired and painted.

SIGN

Will be left up to tenant, but should be flush mounted, externally illuminated by gooseneck light fixtures.

Technical Assistance
12 N. Dixie

March 3, 2005
Reviewers: Harry Hunderman & Darius Bryjka

STRUCTURAL ISSUES

The steel lintel above the storefront is significantly corroded and the adjacent Tiffany brick is structurally unstable. The face brick is likely de-bonded from the backup brick. At a minimum, the brick between the prism glass transom and the upper story windows will have to be removed, and the lintel replaced while stabilizing the rest of the masonry above. It may be necessary to install supplementary anchors to secure the Tiffany brick to the backup brick.

Technical Assistance
12 N. Dixie

March 3, 2005
Reviewers: Harry Hunderman
& Darius Bryjka

IMMEDIATE RECOMMENDATIONS

Replace storefront lintel and secure the Tiffany brick

Repair the transom windows

Repair the upper story windows

Repair areas of spalled brick

Install new awning

Restore the storefront (of low priority)

Technical Assistance
125 N. Dixie

May 25, 2006
Reviewers: Harry Hunderman & Anna Margaret Borntrager

STOREFRONT

Windows

Historic bronze or copper-clad window fames in good condition; small corner piece of frame is missing at entrance.

Transoms

Covered with T-111 plywood, this should be removed and the original transoms restored.

Bulkhead

Historic glazed Tiffany brick in great condition.

Entrance

2 historic doors both in good condition. Great terrazzo floor and tin ceiling at recessed entry.

Technical Assistance
125 N. Dixie

May 25, 2006
Reviewers: Harry Hunderman & Anna Margaret Borntrager

UPPER FAÇADE

- Windows
  - Non-historic aluminum windows in wood frames (inappropriate proportions). These should be replaced with new wood windows that fill the entire masonry opening.
  - Historic sills should be scraped and cleaned with a nylon bristle brush.
  - Steel lintels should be scraped of rust and repainted.

Technical Assistance
125 N. Dixie

May 25, 2006
Reviewers: Harry Hunderman & Anna Margaret Borntrager

Masonry

Historic glazed Tiffany brick in fair condition, almost no signs of spalling. It appears that the mortar joints around window lintels have been inappropriately caulked and/or are significantly eroded. Caulking and any loose mortar should be removed and joints should be repointed with Type N or O mortar mix.

SIGN

Current signage is cluttered and ineffective. A new sign should be installed after transom windows are restored. Vinyl window graphics should be used instead of temporary paper signs.

Technical Assistance
125 N. Dixie

May 25, 2006
Reviewers: Harry Hunderman & Anna Margaret Borntrager

STRUCTURAL ISSUES

There are no evident structural issues.

IMMEDIATE RECOMMENDATIONS

Scrape and paint steel lintels above upper floor windows

Repoint masonry

Remove plywood from transoms and restore the transom windows

Consider replacing the existing upper-floor windows with windows that are historically correct.