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How to replace existing windows

Replacing dated windows or adding completely new openings into an older property can really enhance the overall aesthetics of a building — but what are the practicalities and structural implications? We delve a little deeper…

Windows really can make or break a house, both in terms of how they look as well as overall performance levels. While repairing period windows is always preferable, there are times when replacement is the only option — perhaps the originals are missing or beyond saving. And, in the case of many homes, dated windows often need complete replacement.

Should you notify building control?

There are several considerations concerning Building Regulations when replacing your old windows with new, relating to areas such as thermal performance, safety, ventilation and means of escape.

In most cases, if you are just replacing existing windows and are using a FENSA-registered installer, they will be approved to carry out the work to comply with Building Regs without involving local authority building control — they 'self certify' the installation. An application to building control only needs to be made when windows are replaced by an installer not registered as a 'competent person' or where the opening is new or enlarged.

"Although registered window installers can 'self-certify' work for Building Regulations' purposes, with more complex alterations such as bay windows, notifying building control and/or getting a structural engineer to supervise works is advisable," says chartered surveyor Ian Rock.

To comply with Building Regs, maximum permitted heat loss standards apply and since changes in 2010, replacement windows must now achieve the same thermal rating as new windows — a minimum performance standard based on either a 'C' Window Energy Rating (WER) or a minimum whole window U value of 1.6 W/m^2K (glazing and frame).

There are other requirements too, some of which may apply to your project, depending on the work you are doing:

- Compliance with ventilation requirements (i.e. trickle vents in frames).
- Minimum size requirements. For

IMAGE: EVOLUTION WINDOWS (WWW.EVOLUTIONWINDOWS.COM)

SIZE AFFECTS COSTS
If you opt for a non-standard sized opening when making window openings bigger or smaller, you will need to pay extra for a bespoke window to be made to fit.

MATCHING DOORS AND WINDOWS
Kloeber's Flush Casement Windows are timber and feature an opening leaf that sits flush with the surrounding frame.

IMAGES: (TOP) EVOLUTION WINDOWS; (WWW.EVOLUTIONWINDOWS.COM); (BOTTOM) KLOEBER (WWW.KLOEBER.CO.UK)

newly formed window openings to habitable rooms there are minimum size requirements equivalent to at least 1/20th of the room's floor area.

- Building Regs' consent will also be needed for structural alterations, such as widening an existing opening and fitting a new lintel.
- On upper floors you will also need to consider means of fire escape.
- Safety glass is required for windows where the bottom of the glazing is within 800mm of floor level.

Making existing window openings bigger

There are lots of reasons why you might want to fit bigger windows. "The obvious benefit of replacing small windows with larger ones is increased light," says Paul Martin of Dale Windows (www.dalewindows.co.uk). "However, it is also worth bearing in mind that the performance of modern glazing systems is far superior to those from the past, both in terms of thermal properties and the passing of light, meaning that even replacing with the same size will likely give a marked improvement on this front.

"The integrity of the building should also be taken into account, and whether the façade will benefit or be compromised by increased window size," he adds. "Then

Will planning permission be required?

Planning permission is not usually required to replace windows, but if you live in a listed building or in a designated area, such as a conservation area or area of outstanding natural beauty, you should check with your local planning department.

However, adding new openings may well require permission — particularly if it may cause overlooking issues.

Could vinyl wrapping update your windows?

Those with tired PVCu frames might like to consider vinyl wrapping — a low cost (at least 50% cheaper according to suppliers) alternative to replacement windows.

This process involves applying a vinyl film to the frames (interior or exterior) with suppliers offering a 5-10 year guarantee for exterior frames. The installation shown above was undertaken by Framewrap UK (www.framewrap.co.uk).

there are the practicalities room side: will you have enough usable wall space?"

Enlarging a window opening should not be too complicated although issues can arise when the new window is higher performance, or a different material or depth to the old one.

"A high performance window may be heavier than the window being replaced and the wall must be able to support the additional load," says Donna Muir, sales manager for Velfac Direct. "Triple-glazed units can be significantly heavier than older units, making them unsuitable for some refurbishment projects."

"If you're just changing the sill level of the window it's unlikely this will have a significant structural impact and means you can do it without structural advice. You will of course need to patch in or remove wall construction but this can normally match the existing," says architect Paul Testa of Paul Testa Architecture (www.paultestaarchitecture.co.uk).

"Making openings wider or higher is a significant structural alteration," advises Ian Rock. "The masonry above must be supported while the walls are cut out and a suitable new lintel installed above the enlarged opening. For top floor window openings, the loadings from above should be relatively light (as they're supported by the timber wall plate running along the top of the load-bearing inner leaf). But with openings further down the wall, old lintels may be supporting very substantial loadings. The alteration work is normally carried out in a similar fashion to taking down an internal wall using special props to support short lengths of timber or concrete ('needles') temporarily inserted through the wall above the lintel until the new lintel is safely in place. Builders sometimes employ high-reach machinery to help provide temporary support externally at greater heights.

"A lot of properties we see as surveyors show signs of stepped cracking to the brickwork above openings due to inadequate support during replacement window works. More seriously, some houses were originally built without lintels to the outer leaf, relying instead on support from steel window frames — replacement PVCu frames are not designed to support such loadings so a new lintel must be installed," says Ian Rock.

"As with any structural alterations where you're widening an opening, you need to get new supports (beams or lintels) specified by a structural engineer. This is often not just about the span of the opening, but also how much wall you have left after the alteration to provide lateral stability for the house," adds Paul Testa. "The type of construction will affect how complex and messy this process is."

Or smaller…

"Creating smaller openings is largely a cosmetic exercise since you're not disturbing existing lintels or masonry," says Ian Rock. "It's advisable, however, to fit cavity closers (lightweight and rigid PVCu profiles) to the reveals of the new opening so cold can't easily 'bridge across'."

"Getting hold of bricks that will provide a good match for infilling around new, smaller windows can be tricky, even on houses built a few years ago where the original brick is no longer in production," points out architect Jeff Kahane (www.jeffkahane.com). "Contact a local supplier who offers a brick-matching service — sometimes seeing a photo is enough for them to start searching. Alternatively, you might get lucky at a reclamation yard."

Installing windows with deeper frames

If the depth of your replacement windows is different to that of your existing, this will need to be addressed. "Composite windows (with external aluminium and inner timber frames) are often thicker than other styles and the impact of this needs to be assessed," says Donna Muir.

"Deeper frames can normally be accommodated by recessing the window further into the opening, having cut back

the plastered interior reveals and the window ledge to create enough space," says Ian Rock. "In cavity walls, cavity closers should be installed around the opening so that cold can't easily 'bridge across' from outside into the room. It's also important to ensure that your new window sills project out from the wall sufficiently to fully disperse rainwater."

"If you aren't significantly altering the exterior of your house then keeping the outside face of the window frame in a similar position to the existing is the best approach," says Paul Testa. "This means the weathering details can stay the same and normally means the new window frames overlap the wall cavity, giving some thermal connection at this junction."

However, the way in which your existing windows are fitted into the wall also affects the extent of work that needs to be done to deal with windows of a different depth.

Swapping windows for patio doors

There are a few potential issues when replacing windows with sliding or folding doors, explains Mike Sullivan, sales and operations manager of Centor UK.

● **Problem 1: Deflection**
The lintel on a big opening deflects progressively as various construction materials are added. In renovations, the weight of a new floor above or any additional interior or exterior wall claddings above the opening could cause deflection and could make new doors inoperable.
Solution: Have a professional structural engineer calculate the final building load. Specify a beam with tighter deflection limits; 2 to 3mm (1/16" to 1/8") across an opening is ideal.

● **Problem 2: 'Creep'**
A new load sitting on a wooden lintel could cause 'creep'. As a general rule, the deflection that occurs when a wooden lintel or beam is first loaded is doubled within the first year. This can eventually make doors inoperable.
Solution: Use steel lintels, of a size calculated by a structural engineer, for openings wider than 3.65m. Steel has zero creep.

● **Problem 3: Twisting loads**
A few years after doors have been fitted, gaps may appear and cracks could show in the plasterwork near the top corners of the opening. The cause is often a poor connection between lintel and side posts. Twisting loads from door operation cause the lintel to move in the wall.
Solution: Run the side posts full height, from floor structure to ceiling diaphragm, firmly securing the lintel to the post at both top and bottom edges. Do not simply rest the lintel on padstones as the beam will roll. If a steel lintel is used, then use steel posts that run full height.

Repairing adjacent masonry walls after installing new windows

Whichever way you look at it – internally or externally – taking out and replacing old windows is going to cause damage to the surrounding walls, meaning you'll need to 'make good' once new windows go in. How extensive the repair will depend on how significantly you are changing the size of the aperture, the exterior cladding you have and the style of the new windows.

"If you're creating a larger opening and it is done with care and is well designed, the extent of patching might be minimal," says Paul Testa. "With brick walls, it's always wise to try and widen the opening to a full (or half) brick dimension so that the new window finishes on a vertical brick joint. This allows half the bricks on the edge to remain uncut and the other half to be removed, cut and relaid with the cut facing into the cavity for a neat finish."
Matt Higgs of Kloeber (www.kloeber.co.uk) agrees: "It's good practice to open the apertures out to the nearest full brick if possible to keep the uniformity."

Rendered and timber-clad walls

"With rendered walls, if the edge is cut neatly when the opening is widened you should have minimal patching," says Paul Testa. "You should install a corner bead to protect the exposed corner, but a render patch could be restricted to a narrow strip at the edge of the window. It might be visible but neat enough until the render is replaced or repainted in the future."

"Bear in mind that fresh paint will stand out a mile, so you can end up having to re-decorate the elevation," adds Ian Rock.

"If you are working on a timber-clad elevation, finish each new reveal as simply as possible, usually with a single vertical board (as long as ventilation paths are maintained)," says Jeff Kahane. "Avoid carrying horizontal cladding around into the reveals with mitred corners — while it may look good for a couple of months, you'll almost certainly find some of those mitred joints distorting quite quickly."