

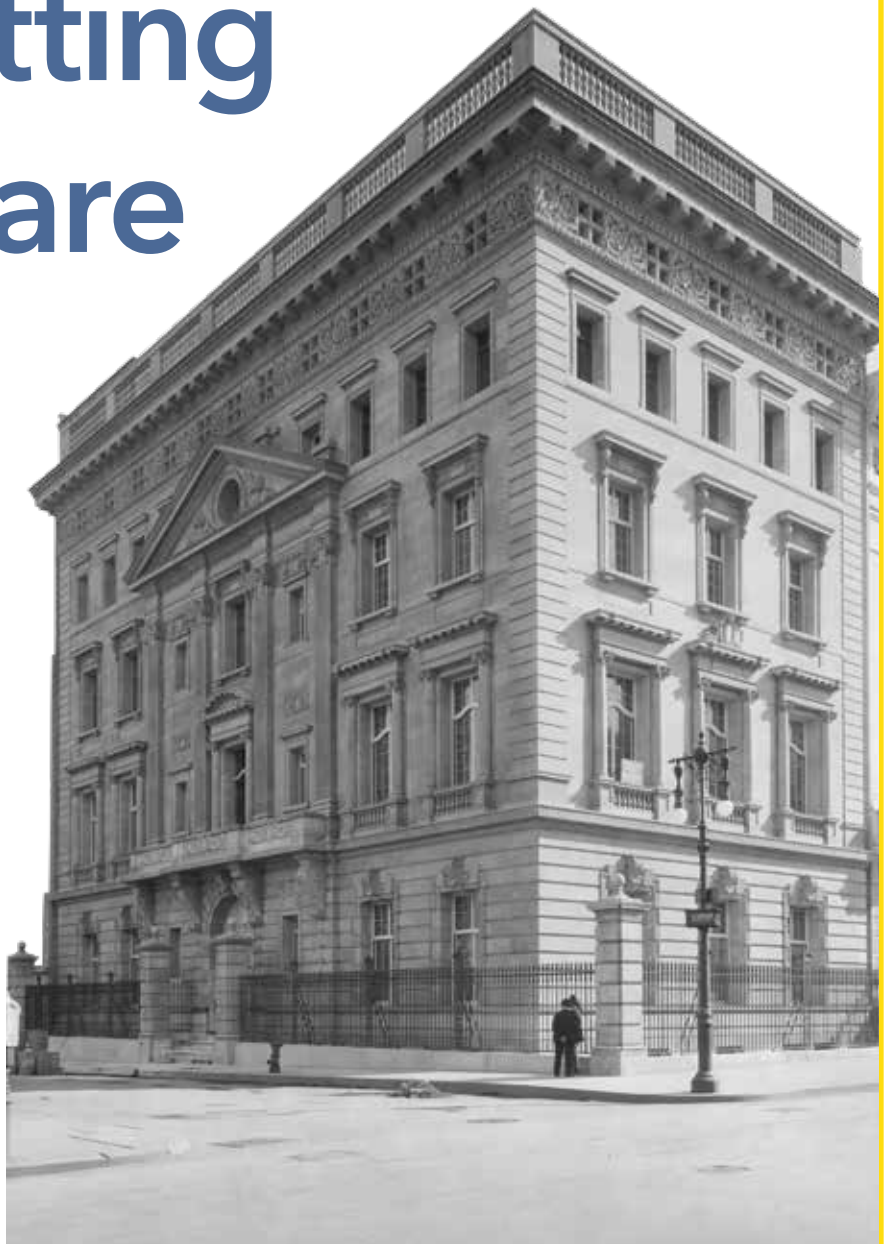


Avoiding the Headaches of Retrofitting Hardware

A look at the common challenges that can arise during the retrofitting process.

BY QIANYAN CHENG

A historical pencil rendition of the private residence of the Plant family, which was built in 1905, then sold to Cartier in 1917.



Retrofitting doors and hardware, rather than replacing them entirely, is a key redesign and building option. Not only does it provide a sustainable option while still upgrading materials with greater strength and functionality, it is also a cost-saving measure.

Common retrofitting needs include:

- Updating older buildings or openings, usually for modernized functionality, while maintaining an existing system such as retrofitting locksets and maintaining the current keying system or modifying the functionality of an access point
- Enhancing door hardware with more aesthetically attractive trim design, finishes or functionality to improve user experience
- Adding technology such as the latest access developments or smart controls

Retrofitting has, however, its own special headaches, including:

- Satisfying current regulatory codes for the retrofitted opening
- Compatibility between new hardware and existing door and frame preparations or vice versa
- Mechanical compatibility between hardware manufactured at different times or by various manufacturers

Good retrofitting combines the compatibility and sustainability of technology with the identification and fulfillment of the end users' goals, expectations and demands. Project success is also predicated on ensuring codes are met.

Meeting Current Codes

Historic projects have their own special building codes. Even if the project is not listed on an historic registry, building, fire and Americans with Disabilities Act (ADA) regulations are constantly evolving. A retrofit is not just about finding hardware that works. Any retrofit must meet current regulatory codes, and new modifications negate any grandfather clause.

Is the door into a bedroom of an old home simply a bedroom door? I had a customer who wanted a recommendation on making hardware more secure for a vintage Victorian that was being converted to a bed and breakfast. I advised him



Cartier's flagship store, located at 653 5th Ave. in New York, was retrofitted in 2001 as part of a renovation.

that because a residential bedroom was now going to be a commercial guest room, it required a fire-rated doorway. The regulation is vastly different, and the old door may be unable to be updated to meet the function and fire-rating requirements, which means a new door would be the only option.

Beyond the fire and ADA codes that apply to every commercial building, there are many other codes to be aware of, including sound or acoustic related codes for education and health care, specific UL codes related to the storage of medications in health care facilities, UL security codes required for electrified hardware and lockdown codes in schools. Troubling as it can be, these various codes often conflict with one another, making retrofit headaches even worse.

Finally, don't forget there may be local jurisdiction regulations such as return-to-door fire codes and earthquake codes in California or hurricane codes for exterior doors in certain areas of Florida.

The comprehensive research you undertake upfront, or selecting a hardware manufacturer with the knowledge and experience to meet all building codes related to the entire retrofit project, will save time and avoid the problems that would be sure to come later.

Door and Hardware Compatibility

Doors and frames prepped for old hardware may or may not fit new hardware and vice versa.

Keeping old hardware on a new door may not create an issue if the hardware is in decent performing condition and still up to code for the retrofitted opening. Good commercial hardware is built for a millions-of-use life cycle, so if the hardware is expected to last a reasonably long time, it can usually be reinstalled on a new door and function correctly. New installation could also resolve loosened fixtures or any alignment issues that may have occurred over time.



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Keeping existing doors for new hardware is possible if modification to the doors does not trigger reinspection for fire codes or other building code compliance. Again, do your research upfront. Double-check existing door prep dimensions for such essential factors as backsets and center-to-center fixture distances, functions, thru-bolts patterns, reinforcement for installation, frame conditions, and drywall types or power sources.

CHECKLIST

- ⊙ Fire doors are always scrutinized by inspectors. It is always going to be easier and more cost-effective to replace, rather than retrofit, a fire door.
- ⊙ Do not bother trying to update panic devices because they are no longer compliant, and the cost of modification and recertification will always be triple or more than the cost of replacing with new devices.
- ⊙ Locksets and cylinders are great options and come in a wide range of designs for retrofitting. Be aware that your retrofit project must meet the required code compliance as well as the necessary functions of the door.
- ⊙ If you are retrofitting trim to enhance aesthetics, be sure the selection is compatible with the existing locking mechanisms. Select

a door hardware manufacturer that offers updated latches, roses and lock functionalities for both current and older products, either for retrofitting needs or to occasionally replace product under warranty.

- ⊙ Although usually not at the top of an inspection list, gasketing, whether for sound, air or water infiltration, can prompt a plethora of adverse conditions, including door binding or lack of closure, fire-rating issues, conflict with the latch or impairment of the swing operation.

Mechanical Component Compatibility

Mechanical compatibility requires verifying vital information such as key configuration dimensions. Beyond the obvious prep and dimensions, there is hidden compatibility in hardware internal configurations such as cylinder cams, strikes, latch retraction or rotation degrees, tailpiece dimensions, and spindle size and shape. Contact the manufacturer as needed to ensure a retrofit part from an early production or generation will work with the new version.

CHECKLIST

- ⊙ Weatherstripping often prevents proper functioning of latching or locking points if one of them is a retrofit. Proper adjustments at installation are crucial.
- ⊙ Door closers on swing doors may affect the proper functioning of locks but can be adjusted by checking the latching and sweeping speed valves on the closer.
- ⊙ Similarly, the latest soft-close functions in sliding door tracks may also create retrofitting issues for sliding door locks to latch. The good news is that this is usually correctable with adjustments in the soft close or the lock-striking plate.
- ⊙ In a retrofit project, you may find yourself attempting to fit hardware into an existing door prep that was not cut for a perfect fit. Larger escutcheon options beautifully cover up gaps, scratches or old screw holes.
- ⊙ For complex hospitality projects where aesthetics and user experience are paramount, retrofitting custom design and finish can be incredibly challenging. The experienced custom hardware manufacturer can solve your client's headache easier than you trying to match Oil Rubbed Bronze from five different manufacturers.

Custom levers can be designed to retrofit and meet commercial regulation while also matching the original door prep and design.



The Last Big Headache

A retrofitting budget should always consider additional costs beyond material and installation.

As an example, converting security storage doors at an airport to add access control sounds relatively simple yet would require reinspection since these are fire doors. The cost of the changes plus recertification and the risk associated with attempting to ensure the original-but-modified doors pass current regulatory specs would cost more than \$1,000 per opening, with no certainty that the retrofit would succeed. The cost of a new door is approximately \$500 and entails far less uncertainty.

Always ask the following questions to determine if the project is really a candidate for retrofitting:

- What is the budget?
- How old is the object you are trying to retrofit?
- Will the retrofit change the regulation of the opening?
- Will new components be mechanically and electrically compatible with existing systems?
- Has ADA versus life safety been considered?
- If access control is a key element in the retrofit, will the current door and/or hardware work with the latest technology?

The best way to avoid a retrofitting headache is not to incur one by attempting to force a retrofit where it doesn't belong.

Tech Compatibility and Sustainability

Technology is moving faster than ever, and major changes are coming to the door hardware industry. Traditionally, electrified hardware paired with access control has been only considered for commercial buildings with the strictest security requirements. More than ever, it is a key requirement in building specifications, planning and design. In the residential market, smart technology has become one of the driving forces in real estate purchase decisions. Cloud-based smart technology will undoubtedly create a wave of demand and evolutionary changes in our industry, whether we are ready for it or not.

With the next retrofitting wave on the way and clients expecting and demanding retrofitting solutions for smart technology, what new headaches will torture us? Cloud security, software compatibility, sustainability update requirements, integration potential and data privacy will all be critical considerations.

How do we avoid a fresh variety of new pain in retrofitting hardware? We don't yet have all the answers, but continued research of case studies, market feedback, innovations and developments in technology, and legal implications will help our industry discover solutions to a new set of hardware headaches. Stay tuned! +



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