

Accessible & Inclusive Design

Elevating Compliance to Compassion



ALLEGION™



Explore design considerations, code requirements and product solutions that help you deliver a welcoming experience to all.

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When an opening is
designed with people
in mind, it sends a
powerful message:
“You belong here.”





This e-book is an invitation to look beyond the opening itself and **consider the people on the other side of it.**



Introduction

Inclusive and accessible design is about far more than door hardware. At its core, it is about people—how they move through spaces, how they interact with their surroundings, and whether those spaces make them feel welcome, respected and empowered. Thoughtful design removes friction, creates ease and helps ensure that every user can navigate a space with dignity and independence. When an opening is designed with people in mind, it sends a powerful message: “You belong here.”

The strongest communities are built around human connection, and spaces designed with empathy can transform everyday experiences for everyone. True inclusive design is not just about checking boxes; it’s about shaping environments that are intuitive, comfortable and welcoming to all.

In this e-book, we explore accessible and inclusive design through multiple lenses, uncovering the principles, challenges and innovations shaping more welcoming spaces. Allegion industrial designer Ana Sofia Esquivel brings her expertise in human-centered design and her deep passion for accessibility to the conversation, offering insights into how thoughtful design can better serve real people and real needs. She is joined by Lori Greene, Allegion’s manager of codes and resources and author of [iDigHardware.com](https://www.dighardware.com), whose decades of experience as a leading authority on door hardware codes and standards provide essential perspective. Together, Ana and Lori are joined by Allegion’s product teams, who share expertise on hardware solutions, product features, and the role they play in advancing accessibility.

This e-book is an invitation to look beyond the opening itself and consider the people on the other side of it. By blending empathy, expertise, and innovation, we hope to inspire new thinking about how design can create spaces where everyone feels supported, included and valued.

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How Automatic Operators Support More Inclusive Doorway Design

Automated Openings that Work for Everyone



Primary author // Colleen Furlong

Contributing authors // Ana Sofia Esquivel, Lori Greene



Accessibility typically refers to meeting established requirements that allow people with disabilities to approach, operate and move through an opening safely and independently.



Inclusivity goes further, asking whether the opening works well for the widest possible range of people, situations and abilities—not just in theory, but in everyday use.

In door hardware, accessibility is an essential starting point—but it is not the finish line. Accessibility typically refers to meeting established requirements that allow people with disabilities to approach, operate and move through an opening safely and independently. Inclusivity goes further, asking whether the opening works well for the widest possible range of people, situations and abilities—not just in theory, but in everyday use.

That means considering physical, sensory and cognitive differences, varied levels of familiarity and strength, and the real-world conditions that influence how an opening is experienced. For architects, specifiers, facility managers and manufacturers, this distinction matters because openings should do more than comply; they should create safe, intuitive, dignified experiences for everyone who uses, installs and maintains them.

An inclusive approach accounts for everyone who interacts with the opening over its lifecycle, from the people who pass through it each day to the technicians responsible for installing, adjusting and maintaining it. “When these considerations are built into the design process from the beginning, the result is often a more effective and well-integrated solution that provides the premium experience for all, regardless of their abilities, rather than a more isolated add-on solution later,” says Ana Sofia Esquivel, industrial designer at Allegion.

This broader perspective on inclusion also reflects the reality architects and facility managers face every day: accessible design decisions do not happen in isolation. They must be made alongside critical requirements for fire and life safety, security and long-term functionality—making usability an essential factor in creating openings that work well for everyone.



Beginning with the 2021 edition of the International Building Code (IBC), **automatic operators are required** for the accessible public entrances serving certain buildings.

This applies to most assembly occupancies with a building **occupant load of more than 300 people**, as well as business, mercantile and some residential occupancies (including hotels) with an **occupant load of more than 500**.

Balancing Competing Priorities

When designing accessible and inclusive openings, the most common headache we see in the field is the direct contradiction between closing force and **opening force**. On one hand, a door must have enough spring force to positively latch and overcome issues like stack pressure from HVAC systems. On the other hand, reducing operable force is desired for accessibility.

This creates a functional paradox. If you crank up the closer spring to ensure secure latching, the door becomes a heavy, physical barrier to anyone with limited strength or dexterity. If you dial it down, the door may not latch, compromising safety.

Automating the opening with an operator is a common solution to this challenge and is now required by code in some instances. “Beginning with the 2021 edition of the International Building Code (IBC), **automatic operators are required** for the accessible public entrances serving certain buildings. This applies to most assembly occupancies with a building occupant load of more than 300 people, as well as business, mercantile and some residential occupancies (including hotels) with an occupant load of more than 500. For the accessible public entrances serving these buildings, at least one door or set of doors (exterior and vestibule) must have an automatic operator,” said Lori Greene, Allegion’s manager of codes and resources.

The operators installed to meet this code requirement for accessible public entrances may be either power-operated doors complying with ANSI/BHMA A156.10 or low-energy power-operated doors complying with ANSI/BHMA A156.19. Power-assist operators that do not also operate as fully-automatic doors would not be acceptable; on some power-assist doors the operator reduces the opening force but the door must be opened manually.

Reliable Door Solutions for Inclusive Buildings

As codes increasingly recognize the role of automatic operators in improving accessibility, the conversation naturally shifts from what is required to how those requirements can be met effectively in practice. In real-world conditions, doors must do more than satisfy accessibility goals on paper—they must respond consistently to wind, stack pressure, flooring resistance and everyday traffic while still supporting safety and security. That is where product solutions come into focus. From technologies that adapt door motion to changing conditions to systems designed for easier installation, intuitive operation and dependable long-term performance, these innovations help translate both code requirements and the broader goals of inclusive design into measurable, real-world results.



The Senior Swing becomes a **best-in-class option** for any accessible opening.

The enhanced LCN® Senior Swing™ uses **award winning AdaptivIQ™ technology** to deliver smooth, consistent door motion that automatically compensates for wind, carpet drag, and HVAC stack pressures.

LCN®

LCN Low Energy Swing Operators

LCN Senior Swing

The enhanced [LCN® Senior Swing™](#) uses award winning AdaptivIQ™ technology to deliver smooth, consistent door motion that automatically compensates for wind, carpet drag, and HVAC stack pressures. This reliable, automatic operation helps remove the physical strain and uncertainty faced by people with mobility aids or limited strength or dexterity—enabling safer, more independent and dignified passage while maintaining secure latching.

This inclusive design isn't limited to the everyday user but includes the technicians as well. The Senior Swing controller was designed with a focus on simplifying the configuration and set-up process to meet the needs of technicians of all ability levels. "Features such as clear displays, intuitive navigation, and interaction methods that support both speed and simplicity were used to make the solution more usable for a broader range of people," said Esquivel.

Designed for straightforward installation and dependable year-round performance, the Senior Swing minimizes downtime and maintenance burden for facilities, helping buildings meet accessibility goals with fewer disruptions and lower total cost of ownership. Couple that with the ability to pair the operator with up to four presence sensors (six for double door applications) for additional user safety, and the Senior Swing becomes a best-in-class option for any accessible opening.

LCN COMPACT

Where the Senior Swing is a true, best-in-class accessibility option, the [LCN COMPACT™](#) is a more affordable and more compact option for low-traffic applications that don't require the robust nature of operators like the Senior Swing.

Designed with flexibility in mind, the COMPACT can accommodate both push- and pull-side applications and be powered via a wall-plug adapter. This limits the additional electrical work required and simplifies the installation to a handful of screws and a simple plug-in.

Perfect for restrooms, private offices, ADA accommodations and more, the LCN COMPACT is a fantastic, affordable and reliable option to enhance opening inclusivity for those low-traffic applications that may not always be top-of-mind when thinking of accessibility needs.



Award-winning latch retraction capable L Series Grade 1 locks **create application opportunities** across many markets whether the need is security, controlled access or hands-free operation.



Schlage L Series Motorized Latch Retraction Locks

Award-winning latch retraction capable [L Series Grade 1 locks](#) create application opportunities across many markets whether the need is security, controlled access or hands-free operation. They can replace the need for electric strike use in a form that is more secure and aesthetically pleasing. Ultra-quiet operation makes them ideal for health care environments or anywhere repeat user exit and entry can become an annoyance.

Six functions span keyed, non-keyed and lever control options. They can be retrofitted to the same pocket as a standard L Series mortise lock. A patent pending feature detects binding conditions on the motor and adjusts to help it overcome side load, stack pressure and warped door conditions while the quiet, stepper motor produces high torque at low speeds for smooth operation.



With over 90 years of experience bringing automatic doors to market, STANLEY Access Technologies focuses on long-term dependability so people can move through buildings with confidence and dignity.

STANLEY

Access Technologies

STANLEY Access Technologies: Automatic Sliding & Versatile Swing Solutions

True accessibility is more than meeting a checklist—it's about creating entrances that work reliably for everyone, every day. With over 90 years of experience bringing automatic doors to market, STANLEY Access Technologies focuses on long-term dependability so people can move through buildings with confidence and dignity.

M-Force Swing Door Operator

The [M-Force™](#) serves as a heavy-duty, versatile solution for a wide range of applications. It can be configured as either a Power Operated Pedestrian Door (ANSI/BHMA A156.10) or Low-Energy Power Operated Door (ANSI/BHMA A156.19). From a technical perspective, the M-Force is engineered for high reliability and ease of service. This dependability is a core component of inclusive design, as a door that is out of service creates a barrier for everyone.

Magic-Access Swing Door Operator

The [Magic-Access low-energy operator](#) is specifically engineered for ease of retrofit, automating manual doors with minimal structural modification. A range of mounting options enables installation in restricted spaces—such as narrow restroom entries and interior corridors—transforming them into accessible openings. Recognized for smooth, quiet operation, Magic-Access is ideal for noise-sensitive environments like patient rooms and professional offices.

The Dura-Glide® 2000/3000 Series

In high-traffic healthcare and commercial environments, high-energy sliding doors (designed to meet ANSI/BHMA A156.10) are often the most effective way to provide hands-free access while managing large volumes of pedestrians. [The Dura-Glide® 2000/3000 Series](#) delivers a completely hands-free experience with sophisticated sensors and a robust drive system, providing a smooth, quiet, and predictable path of travel that manual or low-energy swing doors may not be able to accommodate in high-volume areas.



Opening the Door to More Inclusive Design

Ultimately, automatic operators help bridge the gap between simply meeting accessibility requirements and creating openings that are more usable for people in real-life conditions. By reducing physical effort, improving consistency and helping doors perform more reliably under changing conditions, they support more intuitive and dignified passage for a broader range of users while also helping facilities address accessibility goals, security needs and long-term performance. As expectations for the built environment continue to evolve, specifying automatic doors is not just a matter of compliance; it is a practical, forward-looking design decision that can make openings easier to use, easier to maintain, and more supportive of inclusive design for everyone.



Ultimately, automatic operators help **bridge the gap** between simply meeting accessibility requirements and creating openings that are more usable for people in real-life conditions.



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Why Ergonomic Door Hardware Matters in Designing for Everyone

Importance of Ergonomics



Primary author // Colleen Furlong

Contributing authors // Ana Sofia Esquivel, Lori Greene



In door hardware, ergonomic design is not a luxury; it is **the foundation of accessibility and inclusivity.**

Door hardware is the physical handshake between a building and its occupants. If that handshake is difficult, painful or impossible, the building has failed its users. Understanding the ergonomics of door hardware through design, code considerations and product solutions is essential for creating truly inclusive environments and a more user-friendly experience.

The Design Perspective: Form Following Human Function

Ergonomics is the science of adapting the environment to the user, rather than forcing the user to adapt to the environment. In door hardware, ergonomic design is not a luxury; it is the foundation of accessibility and inclusivity. It ensures that environments can be navigated independently and safely by everyone, regardless of age, size or physical ability.

Ergonomic design helps users overcome significant mobility and usability challenges. For individuals with conditions like arthritis or

diminished grip strength, turning a traditional round knob is a painful, sometimes insurmountable barrier. For those using wheelchairs, walkers or crutches, operating a door requires hardware that responds to a closed fist, an elbow or otherwise minimal physical effort.

From a product design standpoint, the key aspects of ergonomics in this field focus on three primary areas: accommodating various hand sizes without requiring fine motor skills (grip), minimizing the physical exertion needed to unlatch and open the door (operating force), and ensuring the mechanical movement aligns with natural human biomechanics (motion).

Ana Sofia Esquivel, industrial designer at Allegion, shares that the design team's process begins by establishing best practices that specify ideal measurements for elements like lever to door distance and keypad spacing based on considerations such as typical hand size. Using these guidelines as a starting point for all projects promotes a consistent user experience across product lines, so individuals don't have to relearn how to interact with different hardware.

"To translate these guides into physical products, design teams rely on 3D printing and qualitative testing to ensure grips are comfortable and properly sized. This process heavily involves the use of design affordances—physical cues that intuitively communicate function. For example, indents on a thumb turn naturally signal it should be grabbed and turned, while domed buttons indicate they should be pushed," says Esquivel.

It is imperative that these ergonomic considerations are taken into account from the beginning. Trying to address at later phases can lead to a suboptimal design and user experience.

The Code Perspective: The Law of Accessibility

Lori Greene, codes and resources manager at Allegion, shares that these ergonomic principles are not just good practice; they are aligned with law. The primary accessibility standards relating to the ergonomics of door hardware are the Americans with Disabilities Act (ADA) Standards for Accessible Design and the ICC A117.1 Standard for Accessible and Usable Buildings and Facilities. The [golden rule for operable parts](#) is that they must be “operable with one hand and shall not require tight grasping, tight pinching or twisting of the wrist.”

“Despite these [clear guidelines](#), elements of the codes and standards related to ergonomics are frequently misunderstood or misapplied in the field. A common misapplication involves thumb turns on deadbolts. Many standard thumb turns require a pinch-and-twist motion, which directly violates the ADA prohibition on tight pinching and twisting. A slightly longer thumb turn that pivots from the end can help to ensure that this hardware is compliant with the accessibility standards,” said Greene.

She notes, that other considerations to help door openings meet the accessibility standards include:

Mounting height

For most doors, latch-releasing hardware must be [mounted](#) between 34 inches and 48 inches above the floor or ground.

Operable force

The maximum force allowed to operate door hardware varies depending on the accessibility standard. While the ADA standards limit [operable force](#) to 5 pounds, ICC A117.1 and the IBC permit a maximum of 28 inch-pounds of rotational force or 15 pounds of force in a pushing or pulling motion.

Opening force

Interior, non-fire-rated doors must be openable with a maximum of 5 pounds of [opening force](#). Exterior doors and fire doors are subject to the requirements of the adopted code, typically 30 pounds to set the door in motion and 15 pounds to open the door to the fully open position.

Closing speed

The accessibility standards require doors equipped with door closers to [close](#) from a 90-degree-open position to 12 degrees in a minimum of 5 seconds.

Threshold height

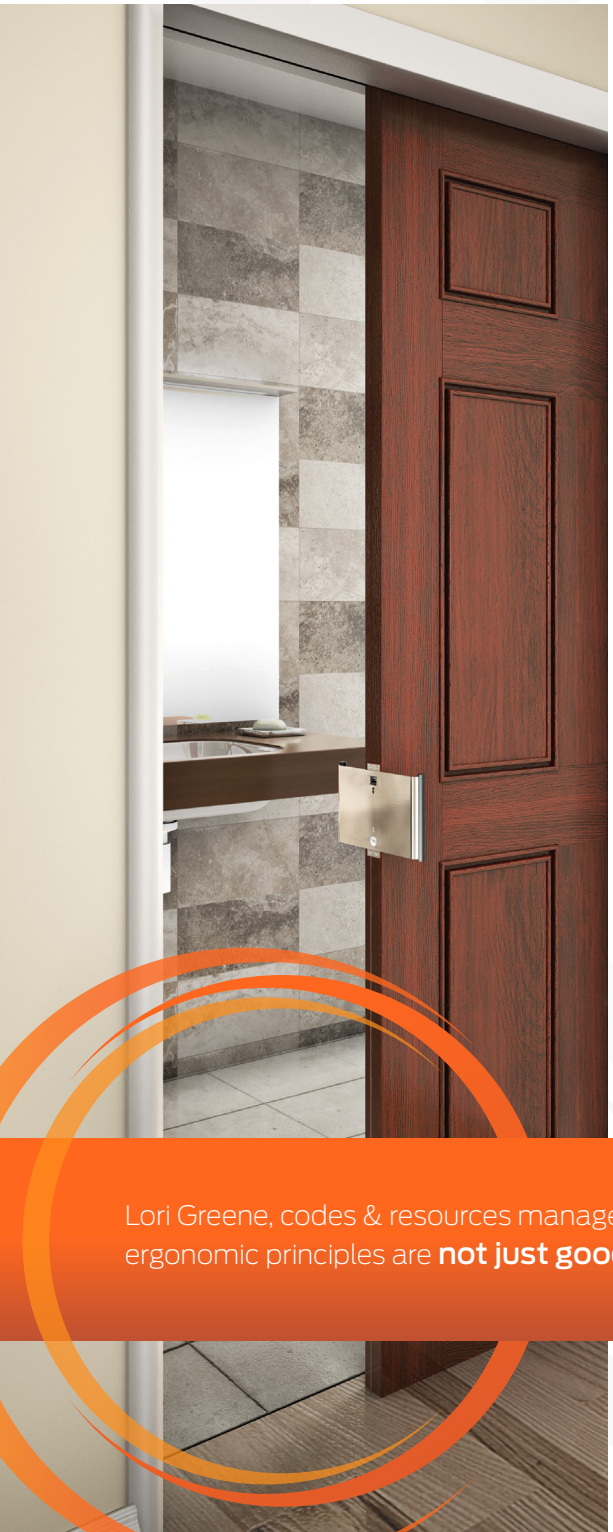
The maximum allowable height for [thresholds](#) is typically 1/2-inch, with up to 1/4-inch permitted to be a vertical change in level, up to 1/2-inch sloped at 1:2, and over 1/2-inch sloped at 1:12.

Door surface

On the [push side](#) of manually-operated doors, the area measured 10 inches up from the floor must be flush and smooth, to prevent a crutch, cane, or wheelchair footpad from getting caught.

Automatic operators

Beginning with the 2021 edition of the IBC, [automatic operators](#) are required for the accessible public entrances serving certain types of buildings.



Lori Greene, codes & resources manager at Allegion, shares that these ergonomic principles are **not just good practice**; they are aligned with law.



To meet these ergonomic imperatives and code requirements, Allegion offers **intentionally-designed solutions** that bridge the gap between design and accessibility.

The Solutions Perspective: Engineering for the User

To meet these ergonomic imperatives and code requirements, Allegion offers intentionally-designed solutions that bridge the gap between design and accessibility. Allegion's portfolio includes several key ergonomic solutions: Schlage® L Series mortise locks, Von Duprin® panic devices and Ives and Trimco accessories.



Schlage L Series Locks

Designed for security, beauty and flexibility, **L Series mortise locks** feature the most comprehensive list of functional, design and trim options Schlage has to offer.

Thumb turn functions are available with either standard or oversized thumb turns (both compliant with the accessibility standards), and the L Series chassis supports 33 lever styles that comply with the ADA's 5-pound maximum force requirement. Additional trim choices include HL push/pull levers specifically suited for hospital use.

VON DUPRIN®

Von Duprin Panic Hardware

When **Von Duprin** invented the first self-releasing exit device over a century ago, it changed the trajectory of life safety and set the stage for future accessibility standards. Designed to allow panicked crowds to escape a building by simply leaning or pushing against a horizontal bar, the invention eliminated the need to turn a knob or operate complex latches during emergencies. Decades later, this principle—operability without tight grasping, pinching, or twisting of the wrist—shaped the foundation of the Americans with Disabilities Act (ADA) requirements for door hardware. By prioritizing intuitive, low-force, push-to-exit functionality to save lives, Von Duprin established a standard that evolved to ensure equitable, barrier-free access and egress.



The Trimco 1069 ADA pocket door pull eliminates fine finger dexterity, making it **highly ergonomic** for users with limited hand mobility.



Ives and Trimco privacy door latches are an **ADA-compliant alternative** to traditional hotel room chains or sliding guards.



Hands-free pulls from Ives and Trimco provide **an improved ergonomic experience** for individuals with mobility challenges or limited dexterity.



Pocket Door Pulls

The [Trimco 1069 ADA pocket door pull](#) is an accessible hardware solution that replaces traditional pocket door pulls. Standard pocket door hardware requires fine finger dexterity, whereas the 1069 model eliminates this need, making it highly ergonomic for users with limited hand mobility. Unlike surface-mounted pulls that prevent a door from opening completely, this specialized pull allows the pocket door to fully retract into the wall, helps ensure that the doorway maintains the full ADA clearance width.

IVES

EZ Pulls

[Ives EZ pulls](#) are designed with an expanded 2-1/2-inch clearance gap between the door and the handle. This generous spacing exceeds the standard 1-1/2-inch ADA minimum guideline, making it significantly easier and more ergonomic for users with physical limitations. This design strikes a perfect balance with accessibility codes: it provides ample hand room without extending more than 4 inches off the door, which would otherwise create a protruding obstacle.

Privacy Door Latches

[Ives](#) and [Trimco privacy door latches](#) are an ADA-compliant alternative to traditional hotel room chains or sliding guards that require significant finger dexterity to pinch and slide small components. In contrast, these ADA solutions feature a simple paddle that can easily be activated by simply bumping it.

Hands-Free Pulls

Hands-free pulls from [Ives](#) and [Trimco](#) are available in designs that include a 45-degree angled handle. This angle allows the user to open the door using their forearm rather than hands, providing an improved ergonomic experience for individuals with mobility challenges or limited dexterity. The slope of the handle makes it easy and comfortable for a user to remove their arm as well.



Conclusion

Selecting door hardware is a critical responsibility that impacts the daily lives of building occupants. By prioritizing ergonomics and understanding the intersection of industrial design, accessibility codes and innovative manufacturing solutions, architects and facility managers can ensure their buildings are welcoming to all. When we design for the most vulnerable users, we inherently create a better, more seamless experience for everyone.



By prioritizing ergonomics and understanding the intersection of industrial design, accessibility codes and innovative manufacturing solutions, architects and facility managers can ensure their buildings are **welcoming to all.**



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How Low-Force Door Operation Supports Accessibility and More Seamless Access

Less Force, More Seamless Access



Primary author // Colleen Furlong

Contributing authors // Ana Sofia Esquivel, Adam Fisk, Lori Greene, Kimberly Haymaker



A door is **more than just an entryway**—it is a critical component of life safety, security and accessibility.



If interaction with the hardware requires excessive force, it can transform an otherwise simple doorway into a potential physical barrier. Designing solutions requires **a thoughtful and intentional process.**

A door is more than just an entryway—it is a critical component of life safety, security and accessibility and must balance two vital needs: a door must be easy enough for anyone to open, yet close with enough power to latch securely and protect the building and its occupants.

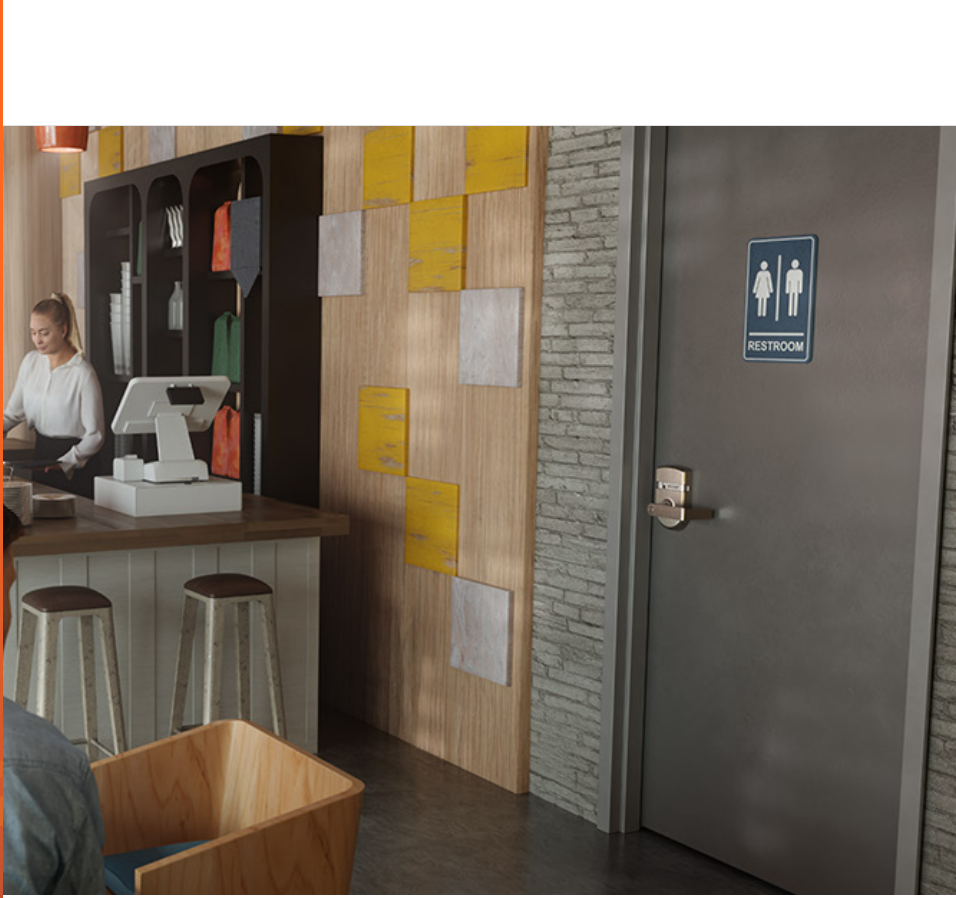
Designing for Inclusivity

Standard door hardware may present significant usability challenges for individuals with a physical disability. If interaction with the hardware requires excessive force, it can transform an otherwise simple doorway into a potential physical barrier. Designing solutions requires a thoughtful and intentional process.

Ana Sofia Esquivel, Allegion industrial designer, shared, “You must consider all different types of users and use cases, as well as the variability in state and local code requirements related to this topic. To understand the full impact of a design on a user, you must see how the user interacts with the product. Therefore, significant prototyping and user testing is included in the design process.”



You must consider **all different types of users** and use cases.



Ease of using hardware is often evaluated in terms of the **amount of force** required to operate it.

Code Considerations: Unlatching vs. Opening Force

Ease of using hardware is often evaluated in terms of the amount of **force required to operate it**. That is where many different types of forces come into play: the force required to unlatch the hardware, the force required to engage a thumb turn or lever and the force required to open the door are all important to consider and are also frequently confused and misunderstood.

The primary codes and standards governing these forces are the Americans with Disabilities Act (ADA) Standards for Accessible Design, the International Building Code (IBC), and ICC A117.1, Accessible and Usable Buildings and Facilities. One misunderstood and often misapplied element of these codes and standards is the 5-pound limit. Historically, there has been confusion over whether the 5-pound maximum applies to pushing the door open vs operating or unlatching the hardware.

According to Lori Greene, Allegion codes and resources manager, “The ADA standards and the model codes clearly mandate that interior, non-fire-rated doors must require no more than 5 pounds of force to open. However, a conflict between the ADA standards and the IBC/A117.1 requirements has created confusion about the limitations on the allowable force to operate the hardware.

Prior to 2010, the ADA standards were not specific about the force needed to operate door hardware such as lever handles or panic hardware. However, in the 2010 edition of the ADA standards, an editorial change was made that now requires door hardware to meet the limitations for operable parts, including a maximum operable force of 5 pounds.

The IBC has historically limited the operation of panic hardware to a maximum of 15 pounds of force but did not get into detail regarding the operable force of other door hardware. Modifications to the 2017 edition of ICC A117.1 and the 2021 edition of the IBC establish limits of 15 pounds of pushing or pulling motion (ex. panic hardware or a hospital latch) and 28 inch-pounds of rotational motion (ex. lever handle).”

The Solutions: Purpose-Built Hardware

With these challenges in mind, Allegion offers a broad portfolio of solutions that let you tailor functionality to the operational requirements of your opening.

Allegion Door Control Solutions from LCN, Falcon & Dexter

Often looked at from the security viewpoint of reliably closing a door, closers also have a direct effect on the force required to open a door and are an excellent tool to elevate accessibility.

Adam Fisk, Allegion marketing manager, shares, “The majority of LCN®, Falcon and Dexter surface mounted closers have an adjustable spring size—or spring force—from either 1-5 or 1-6. This allows our customers to tailor each door to perform as needed, offering the blend of security and inclusivity that works best for them. When it comes to the 5-pounds-of-force limit, the size 1 setting is a great place to start. This setting can typically provide the closing force required for an interior, non-fire rated door to latch reliably, while minimizing the necessary opening force. It’s a careful balance that can, at times, get tricky.

There are applications where size 1 isn’t going to provide enough force to close the door. In a situation with heavy stack pressure, the spring force may need to be set at a size 3 or 4 to reliably close and latch the door. The door may now be secure, but the opening force is likely going to exceed that 5-pound limit. In these situations, an automatic door operator may be a better option than a traditional closer.”

Automatic door operators turn compliance to convenience, opening any door with a simple hand wave or button press. Not only does this remove the concern over opening force limits, but it also accommodates minimal maneuvering clearances, adding accessibility to tight corners and narrow corridors. The [9500IQ Senior Swing™](#) is a great option for high-use-and-abuse applications, while the [6400 COMPACT™](#) may be a better choice for lower traffic openings.

When it comes to accessibility, door closers and automatic door operators can help a facility raise the bar on being “just compliant,” and add the inclusivity required to better serve those who need it.

Automatic door operators **turn compliance to convenience**, opening any door with a simple hand wave or button press.



When it comes to accessibility, door closers and automatic door operators can help a facility **raise the bar** on being “just compliant,” and add the inclusivity required to better serve those who need it.

VON DUPRIN®

The Von Duprin AX Series

To address modern accessibility challenges and comply with the most stringent building codes, Von Duprin® engineered the [AX device option](#). Designed to minimize the physical effort required for egress, the AX device is UL-certified to meet the strict 5-pound maximum operating force requirement, supporting compliance with both the ADA and California Building Code (CBC).

Unlike standard panic hardware that often require significantly higher push force to retract the latch, the AX device utilizes an innovative internal mechanical design to achieve this ultra-low operating force. This accessible, low-force solution empowers individuals with limited mobility to navigate doorways independently and safely. Available on Von Duprin's industry-leading 98/99, 94/95, 75/78 and 22 Series exit devices, the AX offering delivers ANSI/BHMA Grade 1 performance, helping facilities to provide equitable access without sacrificing the heavy-duty durability and security required in demanding, high-traffic environments.



Schlage Lock Portfolio

In lock hardware, there is also a need to strike a balance between those mechanisms required to serve the function and longevity of the product while still meeting ADA requirements. Kimberley Haymaker, Allegion marketing manager, shares "Function and longevity in the construction of many locks relies on complex mechanisms alongside the use of springs within the spring cage, chassis and latch. Springs must provide proper resistance to reliably move lock mechanism components to fully retract and extend the latch, while also minimizing lever droop or sag over time and providing the lock with a "quality feel" all within the 5-pound maximum force rule."

Other features of the lock may come into play as well. Examples here include interconnect type locks and the use of visual indication on a lock which is activated by a push button or thumb turn. Larger visual indication elements are preferred because they allow the locked or unlocked status of the door to be seen at a distance. However, larger often means heavier elements within the lock are being engaged. In the case of an interconnected lock, the function type may mean more than one locking or latching mechanism is being retracted. In both examples, balancing features and functions against the 5-pound rule can be challenging.

Within the Schlage portfolio of locks, all meet ADA guidelines for unlatching and operational force. A standout in terms of meeting these guidelines while delivering the largest visual indication messaging in the market is the [ND Series cylindrical lock](#). Its patented design centers on meeting the 5-pound rule without sacrificing anything in terms of message size.



This accessible, low-force solution empowers individuals with limited mobility to navigate doorways independently and safely.



Within the Schlage portfolio of locks, all meet ADA guidelines for unlatching and operational force.



Conclusion

Addressing usability challenges and making openings more accessible and inclusive, is a complex challenge that must be addressed in a balanced way, with an understanding of code requirements and competing needs such as fire, life safety and security. Allegion offers a broad range of hardware solutions, including Schlage locks, Von Duprin panic hardware and LCN closers.



Addressing usability challenges and making openings more accessible and inclusive, is a complex challenge that **must be addressed in a balanced way.**



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How Tactile and Auditory Cues Improve Accessibility in Door Hardware

Tactile & Auditory Feedback



Primary author // Colleen Furlong

Contributing authors // Ana Sofia Esquivel, Lori Greene



True inclusivity isn't one dimensional, it's a **holistic approach** that puts the user at the center.



Intentionality is crucial when determining how best to apply textures and auditory cues.

True inclusivity isn't one dimensional, it's a holistic approach that puts the user at the center. For door hardware, that means considering all the ways that people experience and interact with their environment. Cues about the environment come from all our senses, including sight and sounds. Taking those into consideration when designing solutions is a fundamental part of designing a space that is intuitive and welcoming to all.

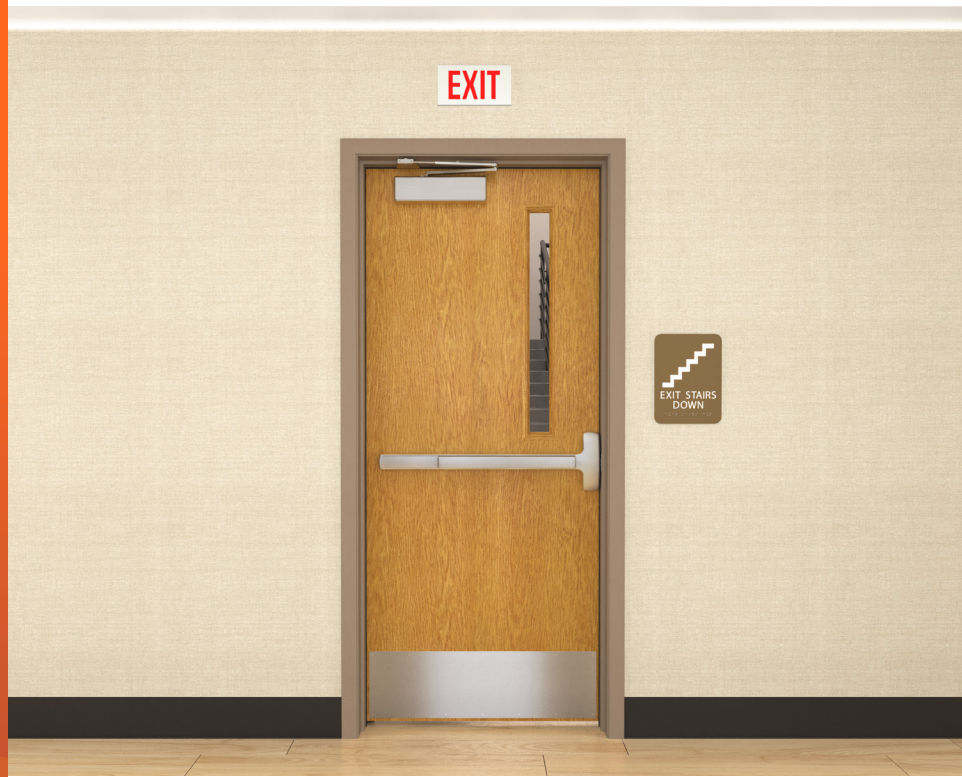
Designing for the Senses

Tactile and auditory feedback are important tools for communicating information about the environment, especially to those with visual impairments. There are many ways door hardware can be designed to incorporate these elements; knurling on levers, auditory signals from products and usage of braille on devices and signage are common examples.

Ana Sofia Esquivel, industrial designer for Allegion, shares that "intentionality is crucial when determining how best to apply textures and auditory cues. Allegion uses these elements strategically, consistently and sparingly, so as not to confuse the user. Likewise with auditory feedback, frequency and tone of auditory signals are carefully designed to ensure there is clear intuitive distinction between positive and negative feedback so users can correctly interpret the signal."



Tactile and auditory feedback is **incorporated in a variety of products** across Allegion's portfolio to promote accessible and inclusive design.



Navigating the Code Confusion

Tactile warning is an aspect of the accessibility standards that has changed over the years. In early revisions of the ICC A117.1 (Accessible and Usable Buildings and Facilities), there was a requirement for tactile warning on doors leading to hazardous areas such as electrical and mechanical rooms. In the decades since, these references have been removed from the standard, though some state standards still include them.

In addition to hazardous areas, some facilities considered using knurling on stair doors. Lori Greene, Allegion manager of codes and resources, says “The thought behind this idea was that someone who is visually impaired could fall down the stairs, but my concern is that the person might not enter the exit stair because they believe that the door leads to a hazardous room. This would be especially true if the stair door was equipped with a lever handle. Because we don’t want to discourage someone from using the exit, a much better solution would be tactile lettering and/or braille on the touchpad of the panic hardware, indicating that the door leads to a stair. The tactile signage now required by the model codes and accessibility standards for room identification will also help to prevent someone from unknowingly entering a stairway.”

Detectable warning is a distinct and separate issue addressed by the codes and standards. Detectable warning as defined by the 2010 ADA Standards for Accessible Design is “A standardized surface feature built in or applied to walking surfaces or other elements to warn of hazards on a circulation path”. It features raised domes in the walking surface and is often required at transportation platform edges and similar changes in level.

Solutions Built with Intention

Tactile and auditory feedback is incorporated in a variety of products across Allegion’s portfolio to promote accessible and inclusive design. From Von Duprin and Schlage levers with options for knurling to braille signs, to auditory feedback from electronic solutions, these features are designed with the user in mind to provide feedback through a variety of senses to make the opening more intuitive and convey important information to the user.

VON DUPRIN®

Von Duprin Panic Hardware

[Von Duprin](#) offers several different tactile options, both on the access and egress side of the door. On the egress side of the door, tactile feedback can be added to the push pad and crossbar in two ways. First, there is the option to add knurling to the push pad/crossbar. Knurling gives the touch pad a rough texture that can be used to signal a hazard. In addition, there is a braille option that includes raised letters and braille on the touch pad. The default braille message provided by Von Duprin is “CAUTION STAIRWELL”. Customized messages can be accommodated up to 20 characters via the engineering specials ordering process. On the access side of the door, select trims, including the [360L](#), [370L](#) and [996L](#), can be ordered with tactile feedback.



Schlage Mechanical Locks

A number of Schlage locks offer the option of milled or knurled tactile warnings on levers. Within the Schlage product portfolio, [Schlage Grade 1 L Series mortise locks](#) feature the largest number of lever designs capable of including this option. In addition, the L Series also offers the largest variation of available lock types (among the Schlage product portfolio) including mechanical, electrified, electronic and multi-latch locks for which tactile warning options extend across the entire family. Similarly, [ND Series Grade 1 cylindrical locks](#) offer tactile warning options on most lever styles which are shared across mechanical, electrified and electronic lock solutions. Additional Schlage lock products featuring tactile warning options include AD and CO Series electronic locks, as well as ALX and S Series mechanical locks.



Trimco Custom Capabilities

When faced with a design challenge that standard hardware cannot address, Trimco can aide in the design and production of [custom hardware solutions](#). From custom door pulls, plates and accessories, Trimco's industrial designers can help create a solution that meets the project's needs. Designed for high performance and crafted by skilled artisans, Trimco's custom solutions use high quality materials to meet the demands of the application.



Von Duprin offers **several different tactile options**, both on the access and egress side of the door.



A number of Schlage locks **offer the option of milled or knurled tactile warnings** on levers.



Trimco's industrial designers can **help create a solution** that meets the project's needs.



Audio and visual cues work together to create **integrated and intuitive feedback** that enhances usability for people with a wide range of abilities.

Allegion Electronic & Electrified Solutions

We design sound with intent—tuning tone, pitch, duration and frequency—so our electronics aim to deliver clear, inclusive feedback that supports safety, accessibility and intuitive use. A simple, consistent sound language (such as short rising chimes for success and lower falling tones for denial) enables users to understand what the product is communicating.

Audio and visual cues work together to create integrated and intuitive feedback that enhances usability for people with a wide range of abilities. We then validate the entire interface with diverse users to ensure it is intuitive, pleasant, and aligned with the brand.



Schlage Mobile-Enabled & Smart Readers

The [Schlage MTB11](#) and [MTB15](#) are contactless, mobile-enabled smart readers. Schlage mobile enabled smart readers allow users with motor impairments to simply present a lanyard, fob or smartphone near the device to gain entry. Supporting Bluetooth and NFC mobile credentials provides an added inclusivity bonus: it allows individuals with visual or cognitive disabilities to manage access using their own smartphones, leveraging built-in features like screen readers, voice control and large text.

When specifying a model, it is important to consider the form factor that best meets users' needs. The MTB11 is a narrow, mullion-mount reader, while the MTB15 is a wider, single-gang wall mount. The single-gang design of the MTB15 offers a slightly larger physical “target” area compared to the MTB11, making it significantly easier for users with tremors or limited hand-eye coordination to tap their credentials.



LCN Automatic Operators

LCN® offers auto operator solutions that incorporate clear audible cues to help users quickly understand system status and responses.

The [LCN 9500IQ/2800IQ Senior Swing™](#) Series uses an audible beep primarily as a UI confirmation (e.g., confirming settings have been applied with an audible beep) or to warn when the door has been triggered to open but cannot do so (e.g., because of an error or because the operator is switched off).

Another example is the [LCN 6400 COMPACT™ Series](#), which provides tonal feedback during calibration: rising-pitch tones confirm a successful calibration, while falling-pitch tones indicate a failed calibration. These simple auditory cues let users quickly recognize status and errors without needing to look at the display.



Elevating Inclusivity

Allegion's goal is to provide a truly inclusive experience, going beyond just meeting the bare minimum compliance requirements. Allegion's hardware professionals leverage tactile and auditory feedback as just one of the many tools they have at their disposal to design openings that are intuitive, accessible, and welcoming to all.



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Allegion's goal is to provide **a truly inclusive experience**, going beyond just meeting the bare minimum compliance requirements.

How Visual Communication Helps Make Door Hardware More Inclusive and Intuitive

Visual Communication



Primary author // Colleen Furlong

Contributing authors // Ana Sofia Esquivel, Lori Greene



Inclusive design focuses on **breaking down barriers** to deliver solutions that are usable and intuitive to more people.



By designing with usability and accessibility principles in mind, we are able to **set new standards** for an elevated user experience.

Inclusive design focuses on breaking down barriers to deliver solutions that are usable and intuitive to more people; it starts with challenging assumptions. When it comes to communication, text-based communication is commonly used, but this approach can overlook important user considerations, such as native language, reading proficiency and visual acuity.

Use of visual communication is one way to overcome these challenges and aims to convey important information in a way that is more efficient and easier to understand. The important question then becomes, what means of visual communication best conveys the desired information in a way that is universally recognized and understood? The answer takes careful consideration, research and extensive usability testing to refine and optimize.

Ana Sofia Esquivel, Allegion industrial designer shares, “When designing solutions, such as visual indicators, the industrial design team considers both usability and accessibility standards to improve the user experience, with key focuses on distance visibility and color vision deficiency (CVD or color blindness). As a result, our indicators are not red and green; they are red and white because those with CVD are often unable to differentiate between red and green. We also conducted research to understand how large or small the text on the solutions needed to be. By designing with usability and accessibility principles in mind, we are able to set new standards for an elevated user experience.”



It is **important to stay up to date** on the latest code updates related to lockdown included in the 2027 edition of the International Building Code (IBC).

Navigating Codes

A common application where visual indicators are used is in emergency lockdown. Current building code does not require the use of visual indicators. However, code does dictate requirements that all lockdown solutions, including those with visual indicators, must satisfy.

Lori Greene, Allegion manager of codes and standards, highlights some important codes to know related to emergency lockdown, “From an [accessibility](#) standpoint, lockdown solutions must satisfy the American’s with Disabilities Act (ADA) and it’s requirements that releasing hardware must be operable without tight grasping, pinching, or twisting of the wrist, and must allow egress without the use of a key, tool, special knowledge or effort.

Fire and life safety is another important aspect to consider. Life Safety Code (NFPA 101) requires in most jurisdictions, [one motion](#) must unlatch the door for egress, although recent editions of NFPA 101 allow a second nonsimultaneous releasing motion for classroom doors in existing schools. It also dictates that releasing hardware must be mounted between 34 inches and 48 inches above the floor.

Finally, it is important to stay up to date on the latest code updates related to lockdown included in the [2027 edition](#) of the International Building Code (IBC). Beginning with the 2027 edition, classrooms, offices, and other occupied rooms in the applicable use groups in schools, day care centers, colleges and universities will be required to be lockable from inside the room.

The new code will also include locking requirements for exterior entry doors in these facilities. Exterior doors must be lockable from the egress side of the door—opening the door to lock or unlock the outside trim will not comply. This section will also require at least one door on each building face to be able to be unlocked from the outside with a key or other approved means.

One common mistake we see related to lockdown, is that in an effort to enhance security, life safety may inadvertently be sacrificed. This is the case with many [barricade devices](#) that restrict free egress. They are often perceived as a cost-effective retrofit solution, however many of these products can violate life safety code requirements.

Therefore, it is important that when evaluating lockdown solutions, including those with visual indicators, you do so with an understanding of all applicable codes.

In high stress situations, **clarity and confidence matter.** Lockdown solutions with visual indicators provide information in a quick and intuitive manner through the use of symbols, words and color coding.



The features of the panic hardware allow the user to **remain on the secure side of the door** while quickly determining the status of the device from a distance, easily change the status of the device from the interior side, and maintain free egress.

Solutions for Visual Indication

In high stress situations, clarity and confidence matter. Lockdown solutions with visual indicators provide information in a quick and intuitive manner through the use of symbols, words and color coding.

VON DUPRIN®

Von Duprin Panic Hardware with Visual Indicators

Von Duprin status indicators aid lockdown procedures by providing visual verification of the status of the lever trim or dogging mechanism. They are visible at a distance so that the status can be assessed without having to approach the door. They feature icons that accompany the words to make determining the status of the device quick and intuitive.

The indicators are also color coded, displaying red when they are “LOCKED” and white when they are “UNLOCKED”. These colors are purposefully used to account for color vision deficiency.

In the case of the cylinder & hex dogging security indicator (CDSI/HDSI) the indicator refers to the status of the dogging mechanism and displays “LOCKED” when the dogging mechanism is undogged and “UNLOCKED” when the dogging mechanism is dogged, as well as the corresponding symbols.

In addition, where a key cylinder or thumb turn is in use, Von Duprin directional indicators aid the user in determining which way the key or thumb turn must be rotated to secure the opening by using easily understood arrow symbols. This makes operation in emergency situations efficient.

Together, these features allow the user to remain on the secure side of the door while quickly determining the status of the device from a distance, easily change the status of the device from the interior side, and maintain free egress.



All Schlage L Series mortise locks designed to provide **peace of mind** whether the application is for classroom lockdown or privacy.



Schlage Locks with Visual Indicators

For many years Schlage L Series mortise locks have offered [lock status visual indication trims](#). These include options for multiple languages as well as symbol characters depicted as a closed padlock or an open padlock to describe a locked or unlocked state. More recently, Schlage has introduced a broader array of indication trims on cylindrical ND Series locks and B series deadbolts as well as an expanded offering for L Series. These award-winning solutions all feature a combination of red “LOCKED” and white “UNLOCKED” color cues as standard to ensure individuals with color vision deficiency can readily see and understand the status of the lock. Within the marketplace, the Schlage indication trims offer some of the largest, 180-degree visibility windows available allowing users to see status from a distance and at nearly any angle. The ND Series window is notably large, and like the L and B Series, contains both symbols and words. All are designed to provide peace of mind whether the application is for classroom lockdown or privacy.



Breaking Down Communication Barriers

Use of accessible design principles can help make solutions more intuitive and inclusive, promoting wider usability. In emergency lockdown situations, wider usability should be one of many goals to strive for. Utilizing visual communication is one tool designers use in support of this goal. As you evaluate solutions, this broader understanding of inclusive design, code requirements and available product features provides helpful context in the decision-making process.

[Learn more about Allegion's recommended best practices](#) for the safety and security of openings, doors and hardware in K-12 settings.



Use of accessible design principles can help make solutions **more intuitive and inclusive**, promoting wider usability.



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Why Reducing Physical Barriers Is Essential to Inclusive Opening Design

Reducing Physical Barriers



Primary author // Colleen Furlong

Contributing authors // Ana Sofia Esquivel, Lori Greene



Inclusive design considers a broad range of user needs and **looks for solutions** that elevate the experience for everyone.



When an opening is designed to minimize barriers, it can **improve usability** for all.

When designing a doorway to be inclusive, the goal is to remove friction for all users and provide safe and easy access. To help achieve this, physical barriers must be addressed, and code compliant ramps, thresholds and hardware are helpful tools in doing so.

Empathy in Form and Function

A user centric approach is key to understanding potential points of friction and addressing them to make movement through a space easier and more intuitive. The intent is to create an environment where the hardware and floor transitions support an uninterrupted path of travel.

Ana Sofia Esquivel, industrial designer at Allegion, explains, “Inclusive design considers a broad range of user needs and looks for solutions that elevate the experience for everyone. The goal is to provide the same seamless experience, whether the person using the opening is a parent carrying an infant, a person in a wheelchair or someone experiencing a temporary limitation. When an opening is designed to minimize barriers, it can improve usability for all.”

A user centric approach is key to understanding potential points of friction and addressing them to **make movement through a space easier** and more intuitive.

The Architectural Standard for Equity

When looking at requirements for an opening, a starting point in the door hardware industry is the applicable model codes and standards. When it comes to accessible openings, the Americans with Disability Act (ADA) is a frequently referenced standard. ADA mandates strict tolerances for floor transition and threshold height, clear opening size and maneuvering clearance.

Lori Greene, Allegion's manager of codes & resources, shares key aspects of the standard:

Changes in Level

The accessibility standards include requirements intended to allow building occupants to move through doorways without encountering obstacles. For example, [changes in level](#) can make it more difficult for someone using a wheelchair to maneuver through a door opening. To help mitigate these challenges, the standards limit thresholds for both manually-operated and automatic doors to ½-inch maximum height (¾-inch for existing or altered thresholds). For these thresholds, a change of level of up to ¼-inch is permitted to be vertical, and changes in level of ¼-inch to ½-inch must be beveled with a slope not greater than 1:2. If the rise is greater than ½-inch, a ramp with a slope of 1:12 maximum must be used (with some exceptions for existing locations).

Clear Opening Width

For most doors, the minimum [clear opening width](#) is 32 inches (there are some exceptions). For single doors, this is measured from the face of the door – open to 90 degrees – to the stop on the strike side of the frame. For pairs of doors, at least one door must provide a minimum of 32 inches of clear opening width. Again, this is measured with the door open to 90 degrees, and the measurement is taken from the face of the open door to the edge of the other door in the closed position or to the side of the mullion, if present.

Projections

To address panic hardware and other latching hardware, projections into the required clear opening width of up to 4 inches are allowed at a height of 34 inches or more. If a door opening does not provide sufficient clear opening width, swing clear hinges may help to meet the clear width requirement. On manual doors, within the bottom [10 inches](#) of the door height (measured up from the floor), hardware may not project off the door. This area must be flush and smooth to avoid catching a crutch, cane, or wheelchair footpad as the person moves through the doorway.

Clear Opening Height

The minimum clear opening height is typically 80 inches. The model codes and referenced standards permit some types of hardware to project down into the opening as long as a clear opening height of 78 inches is maintained, measured to the [projecting hardware](#). While the accessibility standards reference the projection of door closers and door stops, the International Building Code (IBC) has added additional exceptions for automatic operators and electromagnetic locks.

Maneuvering Clearance

The area around a manually operated door is required to be kept clear of obstructions, to allow a person using a wheelchair, walker, or crutches sufficient space to maneuver when opening the door. This area is called the [maneuvering clearance](#), and the size of the required clear space can vary depending on whether it is on the push side or pull side of the door, and if the approach to the door is from the front, the latch side, or the hinge side. If a door does not have the required maneuvering clearance, adding an automatic operator may bring the opening into compliance. Refer to the adopted accessibility standard for specific maneuvering clearance dimensions.

Erasing the Physical Divide

To provide the desired user experience and meet the code requirements, door hardware professionals turn to solutions that are purposefully engineered with accessibility in mind, to overcome challenges with uneven surfaces, floor transitions, opening widths and other accessibility challenges.

A photograph showing a person's hands on a wheelchair, positioned near a door handle. The person is wearing a light blue shirt. The wheelchair is black. The background is slightly blurred, showing an indoor setting.

When it comes to accessible openings, the Americans with Disability Act (ADA) is a frequently referenced standard.



Zero International ADA Thresholds

Thresholds can help smooth the transition between surfaces. **Zero** offers a wide array of thresholds to address a variety of opening conditions, including uneven floor heights, different flooring materials, and demanding environmental conditions. A wide range of Zero thresholds are ADA compliant—simply look for the ADA icon in the catalog to identify these models.

When addressing changes in floor elevation, Zero's ADA ramps offer a gradual, sloped design. For more complex floor transitions, Zero's Traction Tread™ Adjustable Thresholds feature an adjustable height mechanism to level uneven floors.

In retrofit applications where new flooring meets an existing surface, creating a flush transition can be difficult. Zero's Half-Saddle thresholds feature a flat profile on one side and a sloped edge on the other, making them an effective, ADA-compliant solution for bridging the gap between flush surfaces and raised floors without creating a tripping hazard.

Because accessibility also relies heavily on slip resistance, safety is built into the surface of these products. Many Zero thresholds can be customized with Traction Tread™ Non-Slip Epoxy Abrasives. These finishes provide a high friction coefficient and can support safe passage for users, even in wet conditions.

For applications where environmental protection is needed in addition to accessibility, Zero offers specialized ADA-compliant solutions. Rabbed thresholds, for example, help control demanding environments where temperature or acoustic performance is a primary concern. Additionally, thermal break thresholds are effective for exterior openings at mitigating cold transfer and condensation build up on the interior and at helping keep the floor dry and safe while maintaining an accessible path of travel.

Zero Automatic Door Bottoms with Light Spring (LS) Option

While Automatic Door Bottoms (ADB) are highly effective at sealing the gap beneath a door, the friction of standard models can sometimes increase the force needed to open the door, potentially exceeding ADA limits. To solve this, Zero offers 'Light Spring' (LS) Automatic Door Bottoms. These models utilize a specialized spring mechanism that requires significantly less operating force, allowing facilities to achieve superior sound and draft control while maintaining the ADA 5 lbf maximum opening force requirement.

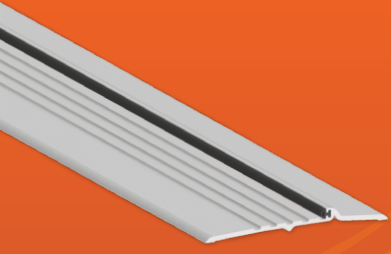
Keep in mind, both the ADA Standards for Accessible Design and ICC A117.1 Accessible and Usable Buildings and Facilities require manually operated doors to have a flush smooth surface on the push side, measured 10 inches up from the floor, so mortised or semi-mortised ADBs are an effective solution in such circumstances.



Zero offers a **wide array** of thresholds to address a variety of opening conditions,



A wide range of Zero thresholds are **ADA compliant**.



For applications where environmental protection is needed in addition to accessibility, Zero offers **specialized ADA-compliant solutions**.



LCN provides a **variety of applications** that can at least minimize the door as a barrier to accessibility.

LCN®

LCN Closers | Holding the Door

A door could have all the bells and whistles—proper maneuvering clearance, a proper threshold, correct hinges, but there's still one thing left for consideration—the door itself. Even a properly hung door that is fully code-compliant can present a challenge to those with limited mobility. So, what are the options to help with this unavoidable barrier?

One is to mechanically hold the door open at a full 180-degree swing. This can not only clear the opening itself but also keep the door from becoming an unintentional barrier in the room or corridor it opens into. One important note: a mechanical hold open cannot be used on a fire door.

For a high-traffic opening, the cast iron LCN 4040XP with a hold open extra duty arm (HEDA) is an excellent option. This configuration mounts on the push side of a door and has an adjustable hold open point up to 180-degrees. Simply set the desired hold point during installation, and any user can activate it by pushing past that point or disengaging the hold open by pulling the door in the closing direction.

For a lighter traffic opening, the [LCN cast iron 1460](#) with a standard hold open arm (H) is another great choice. This closer can mount on the push or pull side of a door for a full 180-degree swing, providing the installer some flexibility based on the expected flow of traffic.

For fire-rated doors, our 4310ME SENTRONIC closer with a swing free arm is a great configuration to make navigating an opening simpler—particularly for those who need additional time. As opposed to immediately closing upon release, the 4310ME holds the door in place where it was released, whether that be 35-degrees or 90-degrees. The swing free arm then allows the door to act similarly to a door without a closer between that release point and fully closed.

This functionality can allow a person with mobility challenges to gradually make their way through an opening without the need to consistently apply pressure to open the door. The door can be pushed open in small increments, allowing the individual to make their way through the opening at a pace that is comfortable within their abilities.

While removing the door entirely isn't usually a realistic option, LCN provides a variety of applications that can at least minimize the door as a barrier to accessibility. To further explore LCN's many accessible configurations, please visit LCNClosers.com.

For accessible openings, the Von Duprin less bottom rod (LBR) solution **is an attractive option** because it eliminates the floor strike and hardware at the bottom of the door. This leaves the threshold clear and minimizes protruding hardware.



VON DUPRIN®

Von Duprin Panic Devices Less Bottom Rod (LBR)

Each type of exit device has a specific door and frame prep. For vertical rod devices this may require the need for a floor strike. For accessible openings, the **Von Duprin** less bottom rod (LBR) solution is an attractive option because it eliminates the floor strike and hardware at the bottom of the door. This leaves the threshold clear and minimizes protruding hardware. Should a bottom latch be required, Von Duprin offers rod guards and latch guards, which have smooth sloped surfaces to minimize the possibility of interference when accessibility is a concern.

In the case where the LBR solution is on a fire-rated opening, an auxiliary fire latch (AFL) should be paired with the device. Fire-rated openings require secure, multi-point latching to prevent door warpage and maintain compartmentalization during extreme heat. To address this, an AFL is installed within the door edge. This heat-activated mechanism automatically deploys when exposed to high temperatures, securely pinning the doors together or to the frame. By integrating an auxiliary fire latch, facilities can leverage the operational and architectural benefits of an LBR device while maintaining compliance with life-safety and fire-rating standards.



A Seamless Path Forward

Removing physical barriers at the doorway is a technical challenge that requires precise specification and a clear understanding of how people move through a space. By aligning empathetic industrial design principles with knowledge of codes, delivering environments that are fundamentally accessible, safe, and welcoming to everyone becomes a greater possibility.



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By aligning empathetic industrial design principles with knowledge of codes, delivering environments that are fundamentally accessible, safe, and welcoming to everyone becomes **a greater possibility.**



Author Bios



Ana Sofia Esquivel

Ana Sofia Esquivel is an industrial designer on the design team at Allegion, contributing to the company's commercial catalog across brands including LCN, Schlage, and Von Duprin. Her recent work focuses on usability and accessibility, championing inclusive solutions that remove barriers and deliver great experiences for everyone, regardless of physical or cognitive abilities.

She embeds accessibility from the earliest stages of product development, using user research, rapid prototyping, and close cross-functional collaboration to create solutions that are secure, reliable, and intuitive. Ana Sofia believes accessible design is a strategic differentiator that adds value for customers and improves everyday life, and she is committed to designing products that enable independence, dignity, and ease of use for all users.



Adam Fisk

Adam Fisk is the Brand & Solutions Marketing Manager at Allegion, where he focuses on brand and product storytelling. He leans on audience insights to craft messaging that sticks and to position Allegion's door control products for real success. His work is all about turning complex needs into clear and concise narratives that both connect with people and drive meaningful business results.



Colleen Furlong

Colleen Furlong is Director of Brand & Solutions Marketing at Allegion, where she leads strategic marketing initiatives for commercial brands and solutions that support growth, product commercialization, and customer engagement. With more than 15 years of experience spanning brand, product, and solutions marketing, she has built deep expertise in go-to-market strategy, market research, brand positioning and integrated campaign development within the building products and security industries.

Throughout her career at Allegion and Ingersoll Rand, Colleen has led the commercialization of numerous new products, guided brand and website strategy initiatives, and developed marketing programs that have contributed to revenue growth and stronger market positioning. She holds an MBA with a concentration in Data Analytics from the University of Southern Indiana and a BS in Business Economics & Public Policy and Marketing from Indiana University Bloomington.



Lori Greene

Lori Greene is the manager, codes and resources at Allegion and brings four decades of hands-on experience in the door and hardware industry. Since beginning her career in 1986 with an aluminum storefront company, she has worked with distributors, a manufacturer's rep agency, and joined MPS Sales in 1994—later becoming part of Ingersoll Rand Security Technologies and, in 2013, Allegion. Lori routinely supports architects, hardware and security consultants, code officials, integrators, locksmiths, and facility personnel on technical and code-related questions.

In her role, Lori provides education and guidance on code requirements for doors and hardware and actively participates in code development. She founded iDigHardware.com in 2009 to capture and share answers to the many recurring questions she has encountered throughout her career, making complex hardware and code topics accessible to practitioners across the industry. She continues to share new posts on the site daily to address the constantly changing code requirements that apply to door openings.



Kim Haymaker

Kim Haymaker is a Brand & Solutions Marketing Manager at Allegion for Schlage commercial mechanical locks and key systems. Helping customers understand the value and application potential of Schlage's Grade 1 mechanical and electrified lock product lines and the key systems that support them is a primary focus of her nearly 12-year career at Allegion.

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About Allegion

At Allegion (NYSE: ALLE), we design and manufacture innovative security and access solutions that help keep people safe where they live, learn, work and connect. We're pioneering safety with our strong legacy of brands like CISA®, Interflex®, LCN®, Schlage®, SimonsVoss® and Von Duprin®. Our comprehensive portfolio of hardware, software and electronic solutions is sold around the world and spans residential and commercial locks, door closer and exit devices, steel doors and frames, access control and workforce productivity systems.

For more, visit www.allegion.com

KRYPTONITE ■ LCN ■  ■ STEELCRAFT ■ VON DUPRIN