Door Security + Safety

DHI'S PUBLICATION FOR DOOR SECURITY + SAFETY PROFESSIONALS

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INSIDE:

Custom Doors, Unique Solutions, and Mixed-Use/Office Buildings

Glass doors and walls in commercial spaces have transformed how people work, play, shop and socialize. Glass provides a clean, crisp, contemporary look that can allow for natural daylight to flow from one interior space to the next.

Studies such as "A Literature Review of the Effects of Natural Light on Building Occupants," by L. Edwards and P. Torcellini, National Renewable Energy Laboratory, and "Applying Research to Boost Productivity in Your Office," by Robert Best, U.S. Green Building Council, show how natural light can improve cognitive function, mood and productivity.

Glass brings many benefits, but designers need to carefully consider how to make spaces accessible and keep a watchful eye on requirements set forth by the Americans with Disabilities Act (ADA) of 1992.

INTERIOR DOOR AND HARDWARE COMPLIANCE

Federal ADA compliance codes and requirements are a standard for architects and designers to follow during construction, tenant improvement and renovation. To help design professionals follow the law, there are multiple resources for reference.

Some issues specific to the 2010 ADA are addressed by International Code Council (ICC) A117.1, Accessible and Usable Buildings and Facilities. This standard is referenced by the

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Breaking Down Barriers

Demystifying ADA locking handle requirements for glass doors.

BY MICHELLE WITHERBY AND PAUL WITHERBY

International Building Code (IBC), International Fire Code (IFC) and National Fire Protection Association (NFPA) 101, Life Safety Code, for doors on an accessible route.

Another resource is the article, "Understanding New Accessibility Requirements for Doors," by Lori Greene, DAHC/CDC, FDAI, FDHI, CCPR, in *The Construction Specifier* at www.constructionspecifier.com/understanding-new-accessibility-requirements-for-doors.

Here are the most common ADA compliance guidelines to follow.

DOOR CLEARANCE WIDTH

Whether a door opens and closes by swinging, sliding, or folding, it must allow a minimum 810 mm (32 inches) of clear width for accessibility. This distance is measured from the face of the door to the opposite doorstop. In addition, the lower 250 mm (10 inches) of the full width of the door must be free of any projections that would impede the use of wheelchairs and other mobility devices. Any spaces due to kick plates must be capped.

DOOR HARDWARE

Door hardware must not require more than 22 N (5 pounds) of force to operate and must be operable with one hand or limb without the need for tight grasping, pinching or turning of the wrist. By this requirement, round doorknobs are not accessible. Hardware that requires simultaneous hand and finger movements requires greater dexterity and coordination and is not recommended.

Keep in mind other important hardware to operate the door, such as hinges and hydraulic rails must meet ADA compliance regulations of force to open and close. The design of the rails must also comply and not have any catch points.

DOOR CLEARANCE THRESHOLD

A strip fastened to the floor beneath a door is called a threshold and cannot be more than 13 mm (½ inch) higher or lower than the flooring or pathway leading to and from the door. Allowances are made for 19-mm (¾-inch) height, provided a beveled slope is placed on either side of the threshold to ensure a smooth transition through the doorframe.

MANEUVERING SPACE REQUIRED

Whether the door is hinged and opens inward/outward or slides, or folds to the side, there must be clear space to accommodate wheelchairs and other mobility devices prior to passing through the doors as they are opening and closing. In other words, a person in a wheelchair must be able to approach the door, turn the handle and freely enter or exit through the door.

CLOSING SPEED

Door closing speeds can vary by door type and location. Interior doors with closers should take a minimum of five seconds to move from the open position at 90 degrees to 12 degrees from the latch. Doors with spring hinges need at least 1.5 seconds to close from a 70-degree open position. Closing times for automatic doors vary depending on the type of door (i.e. swinging, sliding, or folding), as well as the dimensions and weight of the door. American National Standards Institute (ANSI) A156.10, Power-operated Pedestrian Doors, covers the requirements for "full-power" automatic doors, while ANSI A156.19, Power-assist and Low-energy Power-operated Doors, addresses "low-energy" or "power-assisted" doors (See www.adata.org.).

ADA AND MANUFACTURER DESIGN

Just as there are requirements for door size, width and placement, there are special requirements for door pull handles. This hardware needs to be within easy reach of someone in a wheelchair or other mobility device. There must be sufficient space from the door surface to allow for the hand to grip the handle. Again, to avoid tight grasping, pinching, or turning of the wrist, doorknobs should be avoided when it comes to ADA compliance. Approved ladder pull handle systems are the staggered bottom-locking ladder pull and the top-locking ladder pull.

ADA-compliant auto-patch hydraulic rail with a 48-inch non-locking ladder pull.

LADDER PULL WITH LEVER-TURN ACTUATOR

The ladder pull with lever-turn actuator replaces the standard thumb-turn, rotates 180 degrees without a push-button actuator, and must adhere to ADA operational guidelines. The lever ladder pull handle must be designed and installed so the center of the locking post is located no more than 1220 mm (48 inches) above the finished floor (AFF). The margin of height is 965 mm (38 inches) minimum to 1220 mm maximum AFF, or 864 mm to 1118 mm (34 to 44 inches) AFF in California.

STAGGERED BOTTOM LOCKING LADDER PULL

As the most recent addition to ADA-compliant door handle hardware, the staggered bottom locking pull offers a floor-locking option instead of top locking while meeting accessibility regulations. It requires a compliance of 250-mm (10-inch) minimum clearance AFF on the corridor/exterior side while allowing a full-length pull on the office/interior side. The staggered pull design is available in both locking and non-locking ladder styles, which is a value-added design detail called "interchangeability."

Left: ADA lever turn locking ladder pull that can accommodate any small (SFIC) and/or large (LFIC) core/lock.

Below: ADA top locking 72-inch locking ladder pull.

TOP-LOCKING LADDER PULL

The top- or ceiling-locking ladder pull is the most frequently used door handle. Architects and designers make this selection based on ease of use and aesthetics, since this style can be designed in a variety of shapes and finishes. The ladder pull needs to be installed a clear distance of 65.5 mm (2½ inches) projection from the glass surface to the inside of the pull surface to allow for ease of hand movement.

In states such as California, and in parts of Colorado, the top locking design is the only ADA-compliant solution. Other considerations for ADA-compliant pulls include rules for sliding door design, which require no more than 22 N (5 pounds) of force to operate and have exceptions for spaces smaller than 30 m^2 (300 square feet).

WHEN CODES COLLIDE

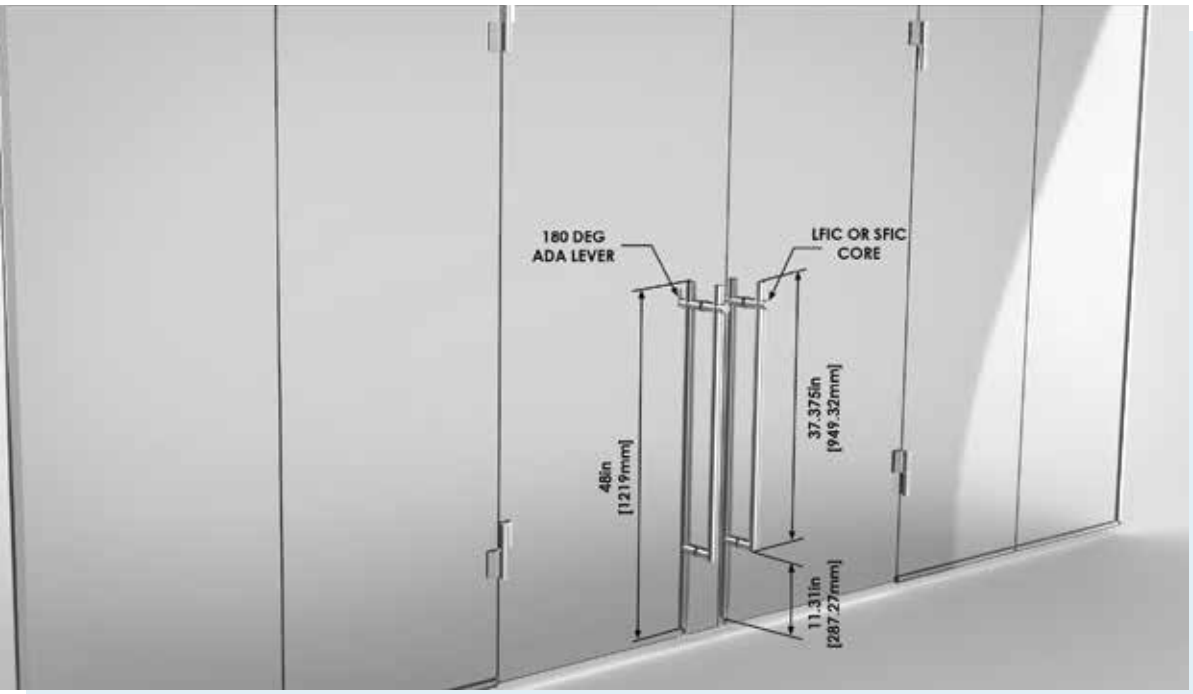
In addition to federal law, accessibility building codes can vary at state and local levels. This can leave builders to consider or, more accurately, muddle through the different or additional accessibility requirements. Subject to individual interpretation, such gray areas can result in unfortunate, costly mistakes.

California, for example, is a state with its own unique set of regulations. In this state, top-locking, lever-actuated ladder pulls comprise the only approved design solution for ADA conditions. Additionally, the dimension range of the center of the locking post AFF is 864 mm to 1118 mm (34 to 44 inches) specifically, whereas in all other states, it is 965 to 1220 mm (38 to 48 inches).

ENFORCING COMPLIANCE CODES

Generally, it has been a challenge for various industries to get a clear understanding of ADA accessibility requirements. As with most regulations, enforcement is up to interpretation as well as ongoing regional changes to the act. When designing pull handles, it is important to consider both national and state requirements.

Responsibility for compliance falls on many shoulders and is therefore often a gray area. Assumptions may be made that the manufacturer considers ADA when designing, or that the architect or designer has a strong grasp of its requirements. +



This schematic shows a 180-degree ADA staggered level handle pull. The lever pull handle rotates only 180 degrees without push-button actuation and must be easy to turn with one hand without the need for tight grasping, pinching or turning of the wrist. It must be designed and installed no more than 1220 mm (48 inches) above the finished floor with a minimum height of 965 mm (38 inches).

When it comes down to final approval, doors and their hardware are inspected by local building officials and construction inspectors who are well versed in federal and local building codes. They can inspect buildings at any time during the final installation and determine whether the building receives a certificate of occupancy (CO). Of course, their individual interpretation can either accept or decline installed hardware.

SHAPE AS A COMMON ERROR

A thumb-turn actuator is one of the most common errors architects and designers make when specifying handles. This actuator requires a two-point dual-action, such as press and rotate, to operate. A lever-turn actuator handle requires only a one-point lever actuator to operate and is a compliant solution.

Avoiding mistakes can be as simple as reviewing ADA guidelines and doing some pre-planning before construction begins or products are purchased for installation. It is also crucial to check with suppliers to see which ones align with ADA codes. These steps can save the cost of redoing a project.

CONCLUSION

Understanding and working within the accessibility code guidelines benefits owners, architects and designers, especially when it comes to cost. If the correct architectural hardware is specified from the beginning, this provides peace of mind and confidence that approved, proper design solutions are being selected and installed and expensive change orders and costly error replacements avoided

Since the ADA went into effect, accessibility into and within any building for everyone is the standard, whether the project is a retrofit or new construction. There are regularly updated building codes and requirements to follow at federal, state, and local levels. Sometimes, these are clear-cut, but other times, they may conflict.

The best way to handle them and ensure compliance is to work with manufacturers experienced in accessibility code compliance. Architects and designers need to check and re-check their interior glass doors and hardware before specifying products and installing them. A little pre-planning in the beginning ensures a job done right at final inspection.

To help ensure ADA compliance on your next project, download the Comprehensive Guide to ADA Door Handle Compliance at www.t-concepts.com/ada-compliance-guide.

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