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Program Name: Decoded 1 – Intro to Codes &

Accessibility Requirements

Program Number: CDW405

Learning Units: One CEH (HSW)

Provider Number: J247

Provider Name: Allegion

Description:

Decoded 1 – Introduction and Accessibility: The first class of this 4-part webinar series gives an introduction to the codes and standards used by the door and hardware industry, and an overview of the accessibility standards for door openings. Accessibility requirements which impact the selection of doors and hardware include clear opening width, opening force, closing speed, the operation of door hardware, and requirements for automatic doors.

Decoded 1 – Intro & Accessibility Requirements

Upon successful completion of this course participants should be able to:

- 1. Identify the various codes and standards affecting door openings, and when to reference each one.
- Describe how the history of tragic fires shaped code development in the United States.
- Name the accessibility standards that apply to door openings, including door size, opening force, closing speed, thresholds, and operable hardware.
- 4. Differentiate between the requirements which apply to manual doors vs. the requirements for automatic doors, including the referenced standards.

Lori Greene, AHC/CDC, CCPR, FDAI

- Manager, Codes & Resources
- 25+ years in the industry
- 20 years with Allegion and Ingersoll Rand Security Technologies
- Previous Positions
 - Specification Team Leader –
 New England
 - Specwriter
 - Customer Service / Technical Support





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Answers to your door, hardware, and code questions from Allegion.

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Decoded: Fair Housing Act (October 2014)

Category: Accessibility, DHI - Lori @ 7:38 pm Edit This





doors & hardware

The Fair Housing Act was first adopted in 1968 and was amended in 1988. The law is enforced by the United States Department of Housing and Urban Development (HUD), and requires all covered multifamily dwellings ready for first occupancy after March 13, 1991 to be accessible and usable by people with disabilities. Covered multifamily dwellings include dwelling units in buildings containing four or more units if the building has an elevator, or all ground floor units if the building does not have an elevator.

The Fair Housing Act covers many issues affecting discrimination in housing, but this article will focus on the door-related aspects of the law. There are seven basic access requirements of the Fair Housing Act:

- An accessible building entrance on an accessible route.
- 2. Accessible common and public use areas.
- 3. Usable doors (usable by a person in a wheelchair).
- 4. Accessible route into and through the dwelling unit.
- 5. Light switches, electrical outlets, thermostats and other environmental controls in accessible

A common misconception is that the Fair Housing Act applies only to federally-funded housing projects, but according to the US Department of Housing and Urban Development,

"The Fair Housing Act requires all 'covered multifamily dwellings' designed and constructed for first occupancy after March 13, 1991 to be accessible to and usable by people with disabilities.



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Forum: Door & Hardware forum, sponsored by Allegion

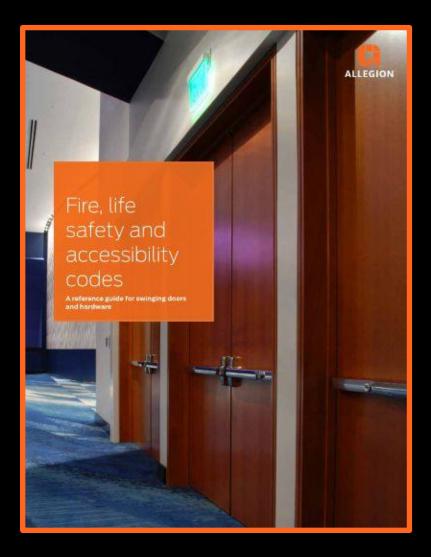
This is a specialty forum that is sponsored by Allegion. This is a great opportunity to get door specific questions answered.

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Threads 1 to 20 of 160 ▼ Page 1 of 8 1 2 3 ... ▶ Last ▶

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Title / Thread Starter		Replies / Views	Last Post By	
Sticky: Welcome! Let's talk doors!! :) Started by LGreene, April 23rd, 2012 12		Replies: 20 Views: 2,040	LGreene July 11th, 2013	
Key-Operated Locks Started by LGreene, 21 Hours Ago		Replies: 3 Views: 98	FM William Burns 6 Hours Ago 🖸	
Latch vs. Exit Device Started by Gizmo, 1 Week Ago 1236	****	Replies: 104 Views: 1,091	CodeAble 1 Day Ago 🖸	
Access Pathway Through an Opening Started by Gizmo, 1 Week Ago		Replies: 10 Views: 224	mtlogcabin 6 Days Ago 🛂	
Apartment Master Keys/Cards Started by LGreene, 3 Weeks Ago		Replies: 7 Views: 438	mark handler 3 Weeks Ago 120	
"Apartment House" Entrance Door Security Started by LGreene, 3 Weeks Ago 12		Replies: 25 Views: 420	cda 3 Weeks Ago 🛂	
Need access parts Started by chris kennedy, 3 Weeks Ago		Replies: 6 Views: 183	LGreene 3 Weeks Ago 120	
Firefighters Closed Fire Door Started by LGreene, 4 Weeks Ago 1 2	Q	Replies: 26 Views: 822	FM William Burns 3 Weeks Ago 120	
S and M Dungeon Almost Too Hot To Handle Started by LGreene, 3 Weeks Ago		Replies: 2 Views: 154	north star 3 Weeks Ago 🛂	
Detex A019 low energy door operator fine tuning Started by mjohnson, 4 Weeks Ago	>	Replies: 8 Views: 378	LGreene 3 Weeks Ago 120	
IBC 1008.1.9.8 or 1008.1.9.9		Replies: 6	LGreene	_



DECODED:

Clear Opening Width and Height



From the well-known blog idighardware.com,
Lori Greene brings some much-needed clarity to codes.

BY LORI GREENE, AHC/CDC, FDAI, FDHI, CCPR

T THE BEGINNING OF MY CAREER IN THE HARDWARE INDUSTRY, there was a lot of confusion about how to measure the clear opening width of doors. The codes and standards weren't specific, so on doors with panic hardware, some fire marshals were taking the projection of the hardware into account when measuring the clear width.

Since then, the codes and standards have been clarified and now include instructions for how to measure the width of a door opening, Acceptable projections into the required clear opening width are also defined.

These requirements are found in the International Building Code (IBC), the International Fire Code (IBC), ICC A1171, Accessible and Usable Buildings and Facilities, the 2010 ADA Standards for Accessible Design, and NFPA 101, The Life Safety Code. Note that the minimum clear opening width does not apply only to doors on an accessible route, but also to doors in a means of express.

CLEAR OPENING WIDTH REQUIREMENTS:

- Doors must typically provide a minimum of 32 inches of clear opening width.
 Clear opening width is measured between the face of the door and the stop on the strike jamb with the door open 90 degrees. In many cases, swing-clear hinges may be used to increase the clear opening width by relocating the 90-degree position of the door.
- For pairs of doors, at least one leaf of the pair must provide 32 inches of clear opening width when measured from the face of the open door to the edge of the inactive leaf in the closed position. When replacing an existing pair of 30-inch doors, an unequal leaf pair is usually required.
- Sliding and folding doors in most locations must also provide at least 32 inches of clear opening width. Accessibility standards require sliding doors, including pocket doors, to have surface-mounted hardware. This hardware may prevent the doors from sliding fully open, affecting the clear opening width.
- Openings with or without doors that are more than 24 inches deep must provide a clear opening width of at least 36 inches.
- No projections are allowed into the required clear opening width between the floor and a point 34 inches above the floor. This does not necessarily mean that nothing can project off the door, it means that nothing can project into the

Housekeeping

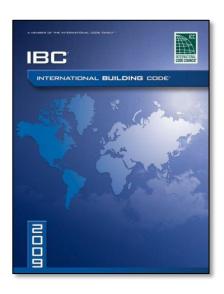
- 4 classes on code requirements related to door openings
 - Accessibility
 - Fire door assemblies
 - Egress & life safety
 - Electrified hardware
- 60-75 minutes + Q&A
- Information will be available on my website www.iDigHardware.com/decoded-092014
- If you need a certificate for AIA continuing education units, fill out the quiz each week and send it to me. I will send you a certificate.

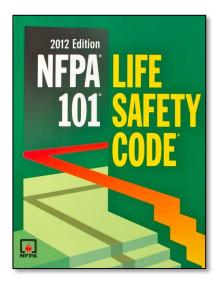


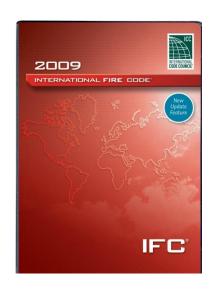
Decoded 1 – Intro & Accessibility

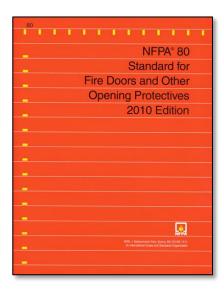
- Brief overview of <u>some</u> codes and standards which impact the door and hardware industry.
- Who is the AHJ?
- Resources for code information.
- How codes affect the door and hardware industry.
- Code development process and tragic fires that have shaped current codes.
- Accessibility requirements

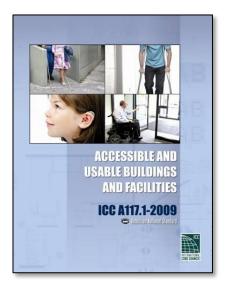
Which code / standard applies to your project?

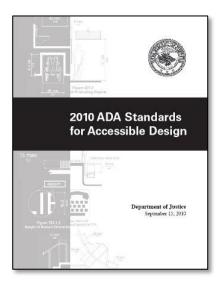


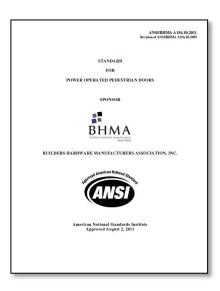




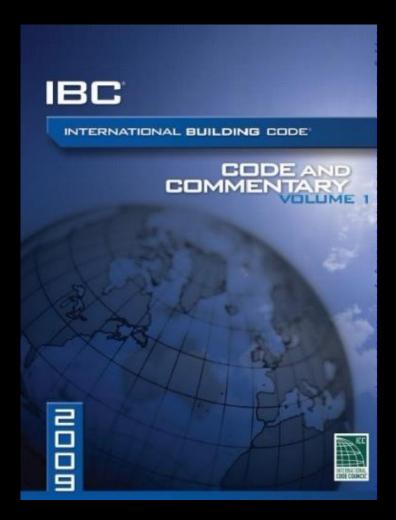


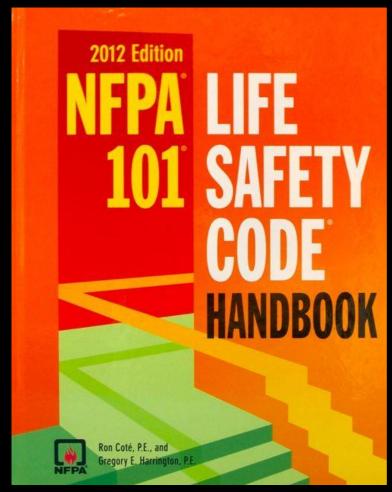






Commentary / Handbook



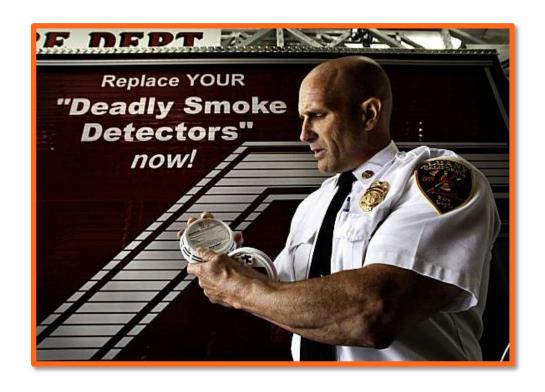


How codes affect doors and hardware...

- The use of many products is code-driven:
 - Which doors require panic hardware?
 - What hardware must be used on a fire door?
 - Where can delayed egress locks be used?
- Codes affect the selection of almost every hardware item:
 - Fire doors must have hardware that is approved for use on a fire door assembly, often including gasketing.
 - Doors on an accessible route must meet accessibility guidelines – in some cases both A117.1 and the ADA.
 - Electrified hardware is covered by 7 different code sections within the IBC and NFPA 101.

Authority Having Jurisdiction (AHJ)

- Building Inspector
- Fire Marshal
- Insurance Inspector
- Joint Commission (hospitals)
- Health Inspector
- Electrical Inspector
- Others



Code change is often prompted by tragedy

- Iroquois Theater Fire (1903)
 - 603 killed
- Triangle Shirtwaist Factory (1911)
 - 146 killed
- Cocoanut Grove (1942)
 - 492 killed
- Station Nightclub (2003)
 - 100 killed
- Many others





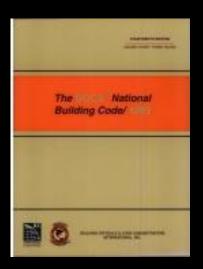


IF YOU SEE SOMETHING. SAY SOMETHING.

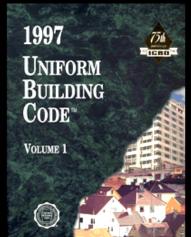
Why do we have codes?

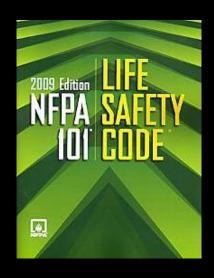


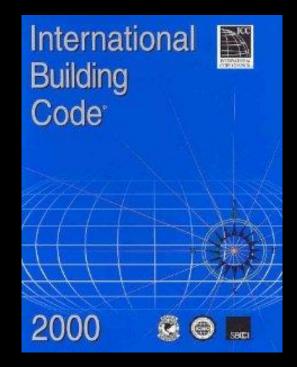
Code Development Process

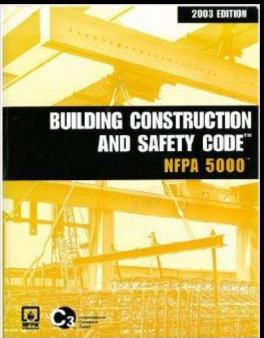














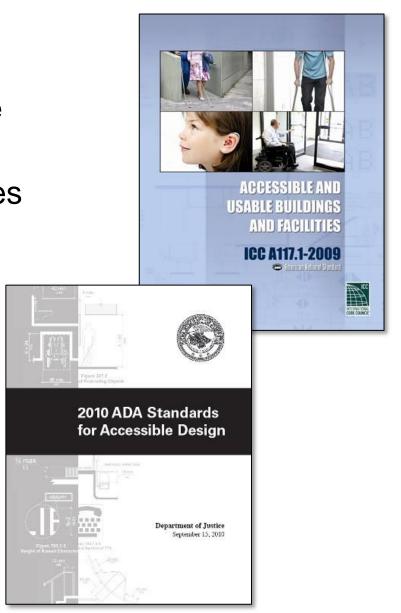
Accessibility

- A117.1 vs. ADA vs. Others
- Clear Width
- Maneuvering Clearance
- Hardware & Thresholds
- Closing Speed & Opening Force
- Flush Bottom Rail
- Vision Lite Location
- Operable Force



Accessibility Standards

- A117.1 Accessible and Usable Buildings and Facilities
- ADA Americans with Disabilities Act Standards for Accessible Design
- UFAS Uniform Federal Accessibility Standards
- State Standards
- Fair Housing Act
- Others

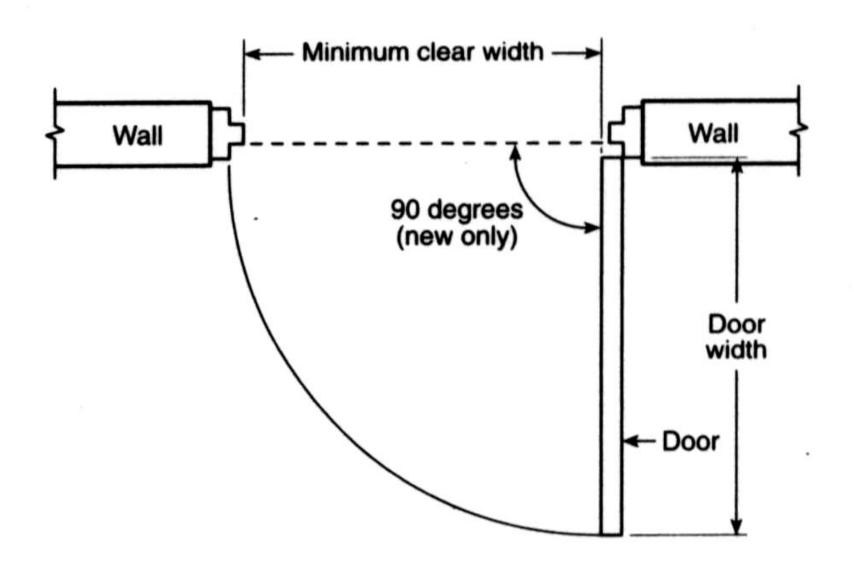


404 Doors and Doorways

- **404.1 General.** Doors and doorways that are part of an accessible route shall comply with Section 404.
- **404.2** Manual Doors. Manual doors and doorways, and manual gates, including ticket gates, shall comply with Section 404.2.

EXCEPTION: Doors, doorways, and gates designed to be operated only by security personnel shall not be required to comply with Sections 404.2.6, 404.2.7, and 404.2.8.

- **404.2.1 Double-Leaf Doors and Gates.** At least one of the active leaves of doorways with two leaves shall comply with Sections 404.2.2 and 404.2.3.
- 404.2.2 Clear Width. Doorways shall have a clear opening width of 32 inches (815 mm) minimum. Clear opening width of doorways with swinging doors shall be measured between the face of door and stop, with the door open 90 degrees. Openings more than 24 inches (610 mm) in depth at doors and doorways without doors shall provide a clear opening width of 36 inches (915 mm) minimum. There shall be no projections into the clear opening width lower than 34 inches (865 mm) above the floor. Projections into the clear opening width between 34 inches (865) mm) and 80 inches (2030 mm) above the floor shall not exceed 4 inches (100 mm).





Swing clear hinges can help increase the clear opening width.



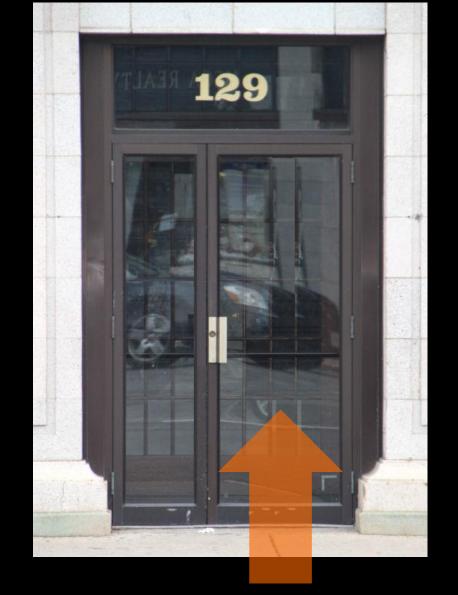
Swing Clear Hinge





Pocket pivots also increase the clear opening width.



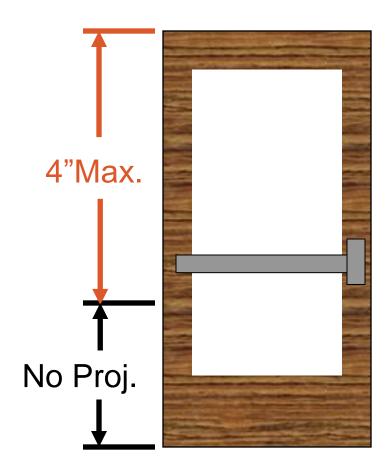


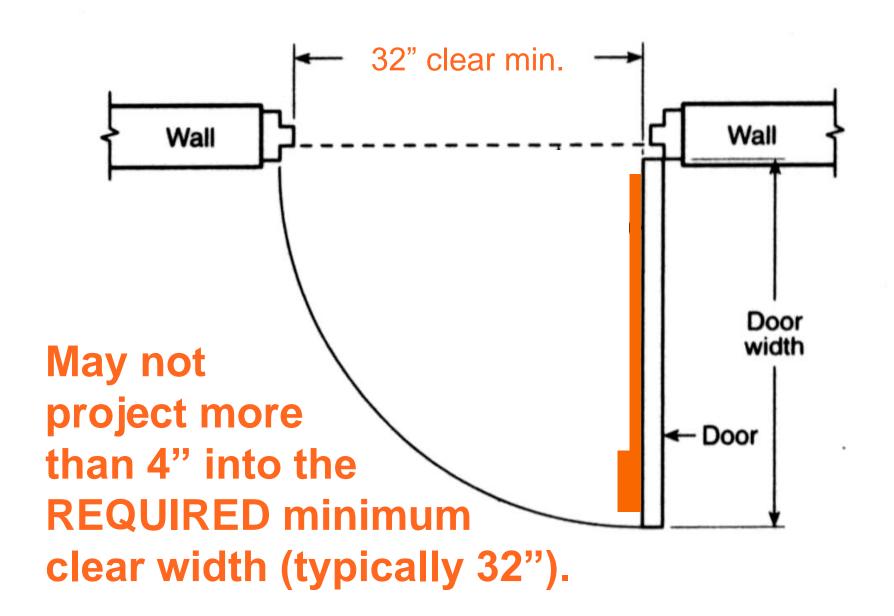
At least one leaf must provide 32" clear measured from face of door open at 90 degrees to edge of inactive leaf.

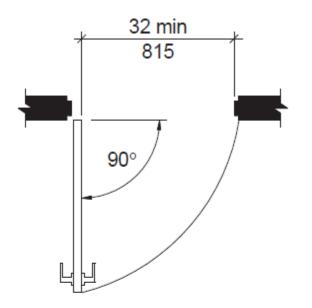


Projections Into Clear Width

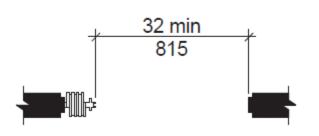
- No projections into the required clear opening width lower than 34" above the floor.
- Projections into the required clear opening width between 34" and 80" above the floor shall not exceed 4".



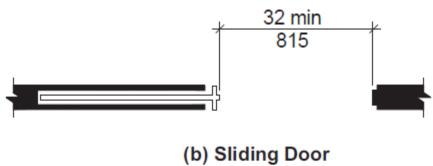


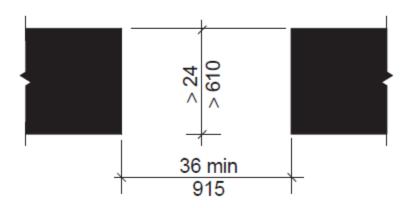


(a) Hinged Door



(c) Folding Door





(d) Doorways without Doors

Clear Opening Height

- Minimum clear height = 80"
- Exception 78" to the closer arm / stop
- Code does not address clearance to mag-locks, but 80" clear seems to be the preference among code officials (not 78").



80" min.

Maneuvering Clearance

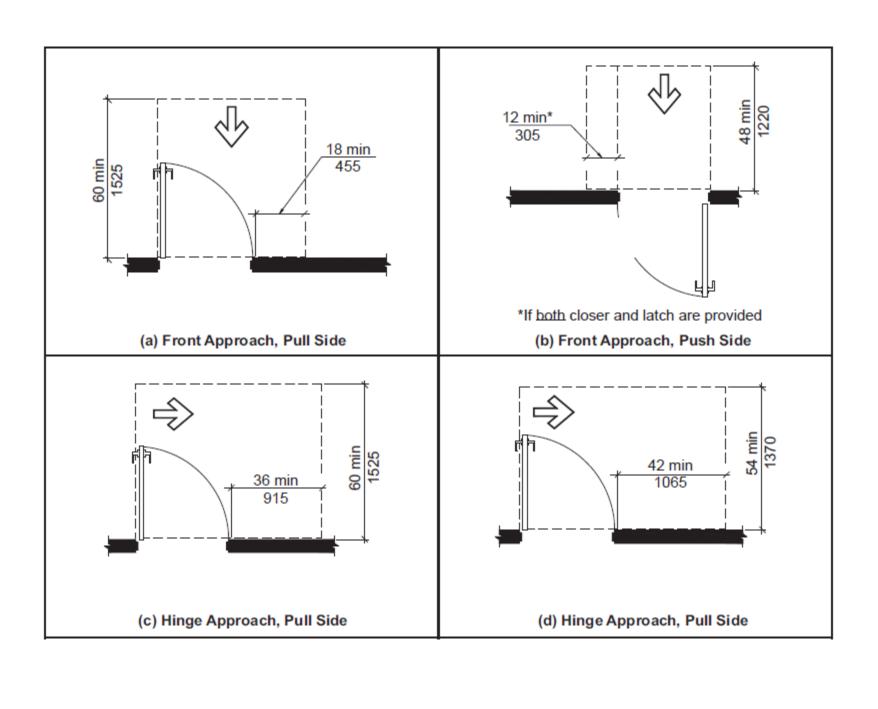
TABLE 404.2.3.2—MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS

TYPE	TYPE OF USE		MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS		
Approach Direction	Door Side	Perpendicular to Doorway	Parallel to Doorway (beyond latch unless noted)		
From front	Pull	60 inches (1525 mm)	18 inches (455 mm)		
From front	Push	48 inches (1220 mm)	0 inches (0 mm) ³		
From hinge side	Pull	60 inches (1525 mm)	36 inches (915 mm)		
From hinge side	Pull	54 inches (1370 mm)	42 inches (1065 mm)		
From hinge side	Push	42 inches (1065 mm) ¹	22 inches (560 mm) ^{3 & 4}		
From latch side	Pull	48 inches (1220 mm) ¹	24 inches (610 mm)		
From latch side	Push	42 inches (1065 mm) ²	24 inches (610 mm)		

¹Add 6 inches (150 mm) if closer and latch provided. ²Add 6 inches (150 mm) if closer provided.

³Add 12 inches (305 mm) beyond latch if closer and latch provided.

⁴Beyond hinge side.





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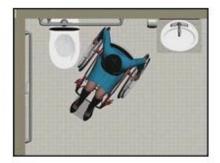
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Animations



Wheelchair Maneuvering



Accessible Toilet Rooms



Maneuvering at Doors



Accessible Bathing Facilities



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Chapter 2: New Construction

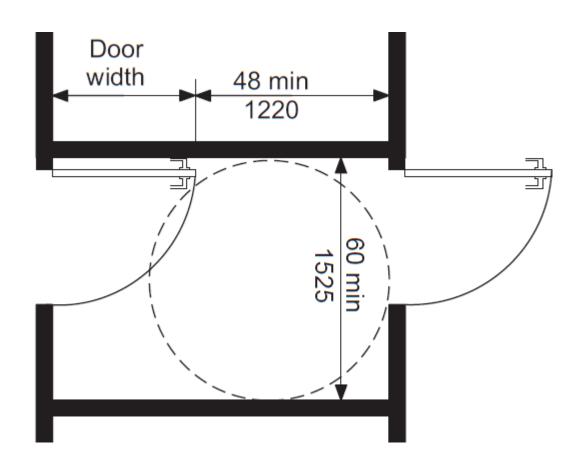
Chapter 2: Alterations and Additions

Chapter 3: Floor and **Ground Surfaces**

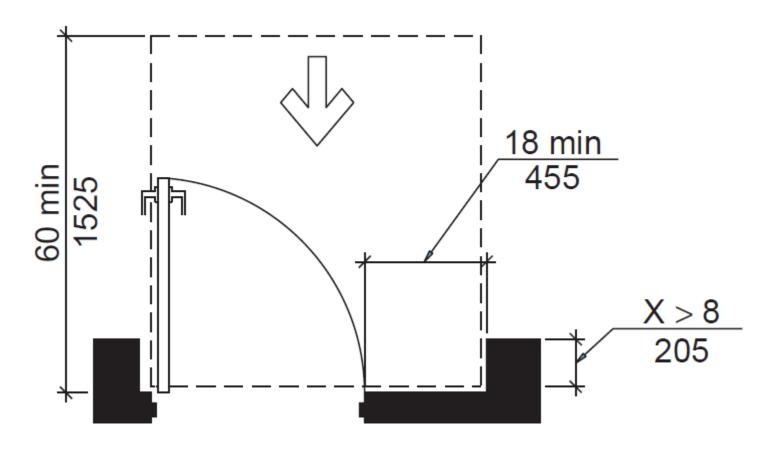
Chapter 3: Clear Floor or Ground Space and **Turning Space**

Chapter 3: Operable

404.2.5 Two Doors in Series. Distance between two hinged or pivoted doors in series shall be 48 inches (1220 mm) minimum plus the width of any door swinging into the space. The space between the doors shall provide a turning space complying with Section 304.



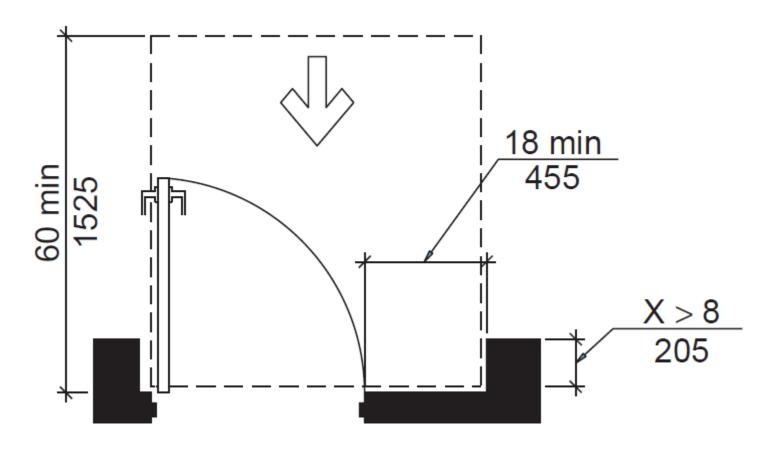
404.2.3.5 Recessed Doors. Where any obstruction within 18 inches (455 mm) of the latch side of a doorway projects more than 8 inches (205 mm) beyond the face of the door, measured perpendicular to the face of the door, maneuvering clearances for a forward approach shall be provided.





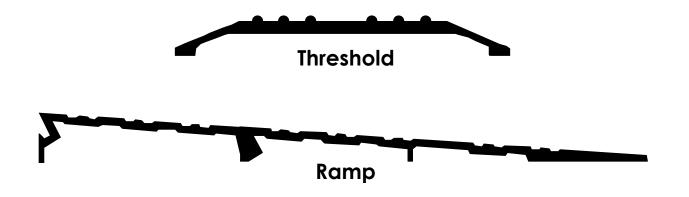


404.2.3.5 Recessed Doors. Where any obstruction within 18 inches (455 mm) of the latch side of a doorway projects more than 8 inches (205 mm) beyond the face of the door, measured perpendicular to the face of the door, maneuvering clearances for a forward approach shall be provided.



404.2.4 Thresholds. If provided, thresholds at doorways shall be $\frac{1}{2}$ inch (13 mm) maximum in height. Raised thresholds and changes in level at doorways shall comply with Sections 302 and 303.

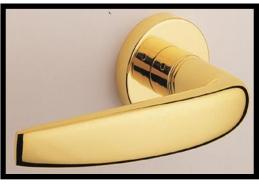
EXCEPTION: An existing or altered threshold shall be permitted to be $^{3}/_{4}$ inch (19 mm) maximum in height provided that the threshold has a beveled edge on each side with a maximum slope of 1:2 for the height exceeding $^{1}/_{4}$ inch (6.4 mm).





Door Hardware







In California, the lever has to return to within $\frac{1}{2}$ " of the face of the door.

404.2.6 Door Hardware. Handles, pulls, latches, locks, and other operable parts on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, pinching, or twisting of the wrist to operate. Operable parts of such hardware shall be 34 inches (865 mm) minimum and 48 inches (1220 mm) maximum above the floor. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides.

EXCEPTION: Locks used only for security purposes and not used for normal operation shall not be required to comply with Section 404.2.6.

Thumbturns

- Size is not specified by the standards.
- No grasping, tight pinching, or twisting the wrist.
- Accessibility
 standards are not
 prescriptive on this
 issue.



Pulls

- Projection of pull is not specified by ADA or A117.1.
- Pull should be open so hand can slide through.
- Accessibility
 standards are not
 prescriptive on
 this issue either.





GOOD

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308.2 Forward Reach.

308.2.1 Unobstructed. Where a forward reach is unobstructed, the high forward reach shall be 48 inches (1220 mm) maximum and the low forward reach shall be 15 inches (380 mm) minimum above the floor.

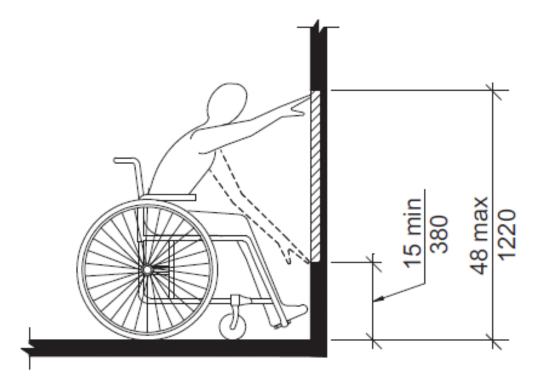


FIG. 308.2.1 UNOBSTRUCTED FORWARD REACH Hardware must be mounted between 34" and 48" AFF.

Sliding Doors

- When fully open, operating hardware must be exposed and usable from both sides.
- Surface-mounted pulls are required, and the door does not retract fully into the pocket.
- Affects clear opening width.



NOT Accessible

404.2.6 Door Hardware. Handles, pulls, latches, locks, and other operable parts on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, pinching, or twisting of the wrist to operate. Operable parts of such hardware shall be 34 inches (865 mm) minimum and 48 inches (1220 mm) maximum above the floor. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides.

EXCEPTION: Locks used only for security purposes and not used for normal operation shall not be required to comply with Section 404.2.6.

2010 ADAAG – Operation 2013 California Building Code

404.2.7 Door and Gate Hardware. Handles, pulls, latches, locks, and other <u>operable parts on doors and gates shall</u> <u>comply with 309.4</u>. Operable parts of such hardware shall be 34 inches (865 mm) minimum and 48 inches (1220 mm) maximum above the finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides.

2010 ADAAG – Operation 2013 California Building Code

309.4 Operation. Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum.

EXCEPTION: Gas pump nozzles shall not be required to provide operable parts that have an activating force of 5 pounds (22.2 N) maximum.



If you *hate* hardware, we can help! (If you *dig* hardware, there's hope for you too! ;-)

Answers to your door, hardware, and code questions from Allegion.

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Decoded: Operable Force for Door Hardware (May 2014)

Category: Accessibility, DHI, Locks & Keys, Panic Hardware — Lori @ 6:12 am Edit This Comments (8)



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This post will be printed in the May 2014 issue of

doors & hardware

The 2010 ADA Standards for Accessible Design, effective in March of 2012, included an unexpected change regarding the maximum allowable force to operate door hardware. This modification to the standards was made as an editorial change, which is typically used to address errors or make clarifications that do not affect the scope or application of the code requirements. Editorial changes do not go through the normal code development process which would include committee hearings and opportunities for public comment.

Prior to the 2010 edition, the ADA standards required door hardware to have "a shape that is easy to grasp, and does not require tight grasping, tight pinching, or twisting of the wrist to operate." No force limitation was mentioned with regard to the operation of hardware. In fact, the paragraph relative to door opening force (different from operational force) stated that interior, non-fire-rated doors must have a maximum opening force of 5 pounds, but clarified the requirement by stating, "These forces do not apply to the force required to retract latch bolts or disengage other devices that may hold the door in a closed position." This statement made it clear that the 5-pound force that applies to opening a door, does not apply to the operation of the hardware.

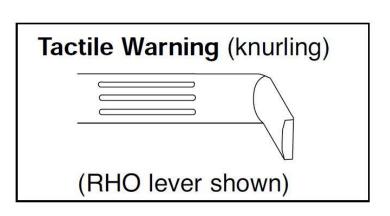
The 2010 edition of the ADA standards changed the paragraph that applies to door



Tactile Warning - UFAS

4.29.3* TACTILE WARNINGS ON DOORS TO **HAZARDOUS AREAS.** Doors that lead to areas that might prove dangerous to a blind person (for example, doors to loading platforms, boiler rooms, stages, and the like) shall be made identifiable to the touch by a textured surface on the door handle, knob, pull or other operating hardware. This textured surface may be made by knurling or roughing or by a material applied to the contact surface. Such textured surfaces shall not be provided for emergency exit doors or any doors other than those to hazardous areas.

This requirement does not appear in the ADA or A117.1. It is required by Massachusetts 521 CMR.



404.2.7 Closing Speed.

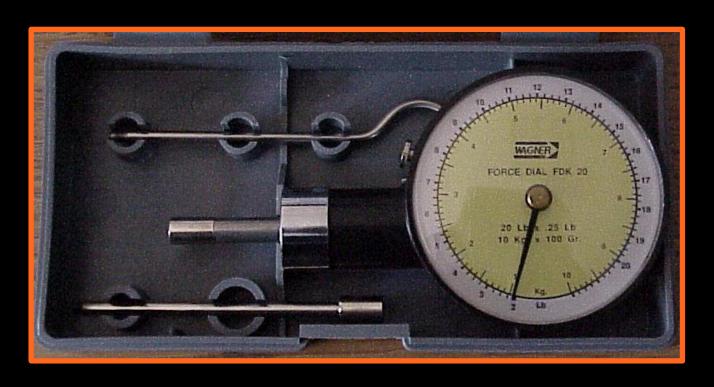
404.2.7.1 Door Closers. Door closers shall be adjusted so that from an open position of 90 degrees, the time required to move the door to an open position of 12 degrees shall be 5 seconds minimum.

404.2.7.2 Spring Hinges. Door spring hinges shall be adjusted so that from an open position of 70 degrees, the door shall move to the closed position in 1.5 seconds minimum.

Delayed action closers are not required by the accessibility standards.

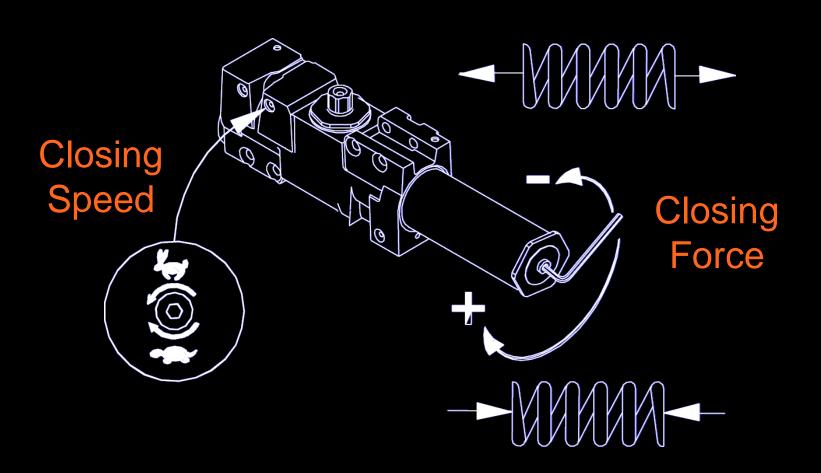
- **404.2.8 Door-Opening Force.** Fire doors shall have the minimum opening force allowable by the appropriate administrative authority. The force for pushing or pulling open doors other than fire doors shall be as follows:
 - Interior hinged door: 5.0 pounds (22.2 N) maximum
 - Sliding or folding door: 5.0 pounds (22.2 N) maximum

These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position.





Adjustments of a Door Closer



404.2.9 Door Surface. Door surfaces within 10 inches (255 mm) of the floor, measured vertically, shall be a smooth surface on the push side extending the full width of the door. Parts creating horizontal or vertical joints in such surface shall be within $\frac{1}{16}$ inch (1.6 mm) of the same plane as the other. Cavities created by added kick plates shall be capped.









EXCEPTIONS:

- Sliding doors shall not be required to comply with Section 404.2.9.
- Tempered glass doors without stiles and having a bottom rail or shoe with the top leading edge tapered at no less than 60 degrees from the horizontal shall not be required to comply with the 10-inch (255 mm) bottom rail height requirement.
- Doors that do not extend to within 10 inches (255 mm) of the floor shall not be required to comply with Section 404.2.9.

404.2.10 Vision Lites. Doors and sidelites adjacent to doors containing one or more glazing panels that permit viewing through the panels shall have the bottom of at least one panel on either the door or an adjacent sidelite 43 inches (1090 mm) maximum above the floor.

EXCEPTION: Vision lites with the lowest part more than 66 inches (1675 mm) above the floor shall not be required to comply with Section 404.2.10.





- 404.3 Automatic Doors. Automatic doors and automatic gates shall comply with Section 404.3. Full powered automatic doors shall comply with ANSI/BHMA A156.10 listed in Section 105.2.4. Power-assist and low-energy doors shall comply with ANSI/BHMA A156.19 listed in Section 105.2.3.
 - **EXCEPTION:** Doors, doorways, and gates designed to be operated only by security personnel shall not be required to comply with Sections 404.3.2, 404.3.4, and 404.3.5.
 - 404.3.1 Clear Width. Doorways shall have a clear opening width of 32 inches (815 mm) in power-on and power-off mode. The minimum clear opening width for automatic door systems shall be based on the clear opening width provided with all leafs in the open position.

Power-Operated Doors

 Full-Power Operated automatic doors – comply with ANSI/BHMA A156.10



Power-Operated Doors

 Power-Assist and Low Energy – comply with ANSI/BHMA A156.19

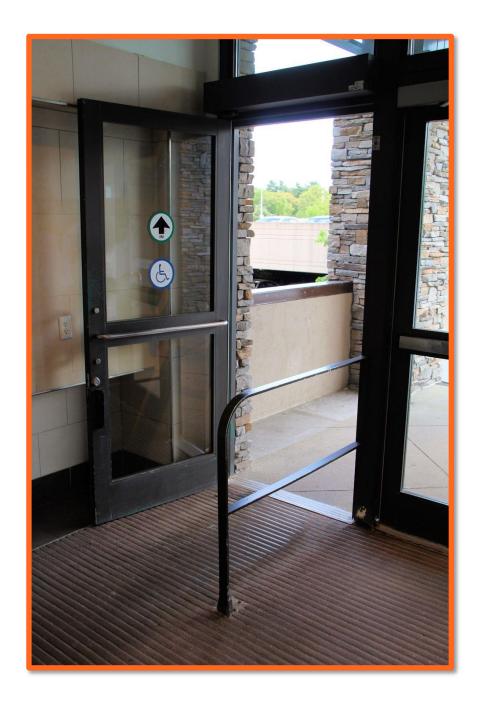


Requirements of A156.19 for low energy operators

- Initiated by a "knowing act"
 - Wall- or jamb-mounted push button
 - Touchless switches
 - Opening the door
 - Access control keypad, card reader, keyswitch



Low energy operators not initiated by a knowing act must follow the requirements of A156.10.



Knowing Act Switches

- 1' to 5' from door preferred,
 12' maximum
- Accessible from swing side with door open
- User not in path of moving door
- User in full sight of door when activating switch
- 34" to 48" a.f.f.
- Some jurisdictions require high and low actuators



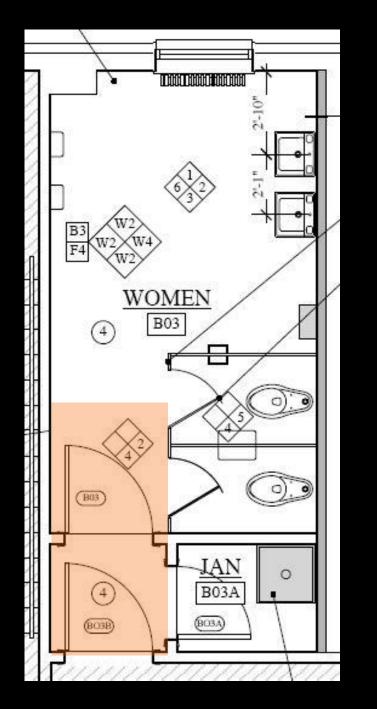
2010 ADAAG – Automatic Doors (not in A117.1)

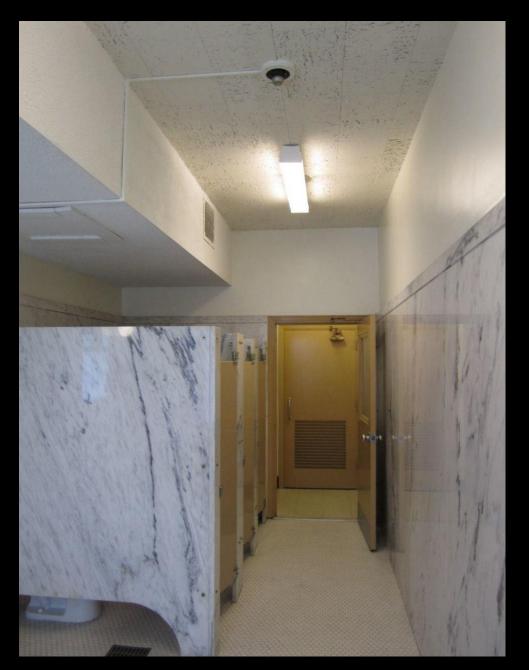
404.3.1 Clear Width. Doorways shall provide a clear opening of 32 inches (815 mm) minimum in power-on and power-off mode. The minimum clear width for automatic door systems in a doorway shall be based on the clear opening provided by all leaves in the open position.

404.3.2 Maneuvering Clearance. Clearances at power-assisted doors and gates shall comply with 404.2.4.

Clearances at automatic doors and gates without standby power and serving an accessible means of egress shall comply with 404.2.4.

EXCEPTION: Where automatic doors and gates remain open in the power-off condition, compliance with 404.2.4 shall not be required.





Session 1 – Intro & Accessibility

- Overview of codes and standards
- Who is the AHJ?
- Resources for code information.
- How codes affect the door and hardware industry
- Code development process and tragic fires that have shaped current codes.

- A117.1 vs. ADA vs. UFAS
- Clear Width
- Maneuvering Clearance
- Hardware & Thresholds
- Closing Speed & Opening Force
- Flush Bottom Rail
- Vision Lite Location
- Automatic Operators

Thank You!

This concludes the American Institute of Architects Continuing Education Systems Program





Thank You

- Thank you for attending.
- Largest online campus fire safety resource center
- New interactive website
- Get involved Membership & CenterNet
- Save the Date: Forum 2014, Wyndham Hotel, Sunny Orlando, Nov 10-13.
- Next week same time!

