

# PDH Academy

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## ACCESSIBLE ASSEMBLY AREAS

**Course #: AIAPDH277**

**1 LU | HSW Hours**

## ACCESSIBLE ASSEMBLY AREAS

### FINAL EXAM

- 1. If there is a luxury box at an NFL stadium that has 52 fixed seats, how many wheelchair spaces must be provided within that luxury box?**
  - A. 1
  - B. 2
  - C. 3
  - D. 4
- 2. How many wheelchair spaces are required in the team seating area of a high school soccer field?**
  - A. 0
  - B. 1
  - C. 2
  - D. It depends on the capacity of the team seating area.
- 3. What percent of the total number of aisle seats must be accessible for those who have a hard time walking?**
  - A. 2%
  - B. 5%
  - C. 10%
  - D. None
- 4. How many seats must a public entity make available for purchase in the same row that are contiguous with the wheelchair space?**
  - A. 1
  - B. 2
  - C. 3
  - D. 4
- 5. Which of the following statements is true for restaurants?**
  - A. 5 percent of dining surfaces must be accessible.
  - B. The tops of dining surfaces must be between 28 and 34 inches above the ground.
  - C. 50 percent of self-service shelves must be within the accessible reach ranges.
  - D. All of the above.
- 6. How many receivers are required if the assembly area has 533 seats?**
  - A. 2
  - B. 20
  - C. 21
  - D. 35
- 7. What is the required width of a single wheelchair space?**
  - A. 30
  - B. 33"
  - C. 36"
  - D. 48"
- 8. The shoulder alignment point of a companion seat is measured \_\_\_ inches from the wheelchair space's front edge.**
  - A. 30"
  - B. 36"
  - C. 48"
  - D. 60"
- 9. Which of the following benches would meet the size requirements for an accessible bench going in a fitting room?**
  - A. 16 inches deep x 42 inches long
  - B. 18 inches deep x 36 inches long
  - C. 20 inches deep x 36 inches long
  - D. 24 inches deep x 48 inches long
- 10. In the case study presented, how many seats were in the lecture hall?**
  - A. Between 101 and 150
  - B. Between 151 and 200
  - C. Between 201 and 250
  - D. The case study did not include a lecture hall.

## ACCESSIBLE ASSEMBLY AREAS

### Course Description

The 2024 *International Building Code* defines assembly occupancies as ‘the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic, social, or religious functions; recreation, food or drink consumption, or awaiting transportation’. Examples include restaurants, theaters, churches, and arenas. This course covers what must be accessible within assembly occupancies and how to make those elements accessible. A case study provides good and bad examples of accessibility for an assembly occupancy.

### Learning Objectives

Learning objectives include the following.

1. Recognize an assembly occupancy.
2. Identify which elements within an assembly occupancy must be accessible per the scoping requirements outlined in Chapter 2 of the *ADA*.
3. Understand how to design accessible elements for assembly occupancies within the perimeters of the *ADA*.
4. Observe a case study of a constructed assembly occupancy and understand how to apply the *ADA Standards* to note accessible and inaccessible design features.

## COURSE

The Americans with Disabilities Act (ADA) was signed into law in 1990. Even though that was more than thirty-five years ago, many design professionals and owners still have questions about what needs to be accessible and how to make those elements accessible. This course answers those questions for assembly occupancies.

### Assembly Occupancy Defined

Assembly occupancies are one of the most common building occupancy types. The 2024 *International Building Code* defines assembly occupancies as ‘the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic, social, or religious functions; recreation, food or drink consumption, or awaiting transportation’. There are five different assembly groups defined by the code. Group A-1 occupancy includes uses with fixed seating, such as motion picture theaters, symphony/concert halls, television and radio studios with audiences, and theaters. Group A-2 occupancy is used for food/drink consumption. They include banquet halls, gaming areas of casinos, nightclubs, restaurants, and other dining facilities, and bars. Group A-3 occupancy is other assembly occupancies intended for worship, recreation, or amusement. Amusement arcades, art galleries, bowling alleys, community halls, courtrooms, dance halls, exhibition halls, funeral parlors, greenhouses, gymnasiums, indoor swimming pools without spectator seating, indoor tennis courts without spectator seating, lecture halls, libraries, museums, places of religious worship, pool and billiard parlors, and waiting areas in transportation terminals are considered Group A-3. Group A-4 occupancy is assembly areas intended for viewing indoor activities, such as arenas, skating rinks, swimming pools, and tennis courts. The final Group A-5 occupancy is assembly areas intended for viewing outdoor activities, such as amusement park structures, bleachers, grandstands, and stadiums.

Now that we know what constitutes an assembly occupancy, how do we know what must be accessible within it? The 2010 *ADA Standards for Accessible Design*, or *ADA Standards*, for short, tells you what must be accessible in Chapter 2. It contains the scoping requirements and answers the following questions.

1. What elements of a building need to be accessible?
2. How many of those elements must be accessible?
3. Are there any exceptions to those requirements?

In this course, the *italic* numbers in parentheses list the referenced *ADA Standards* section numbers. All images are taken from the 2010 *ADA Standards for Accessible Design* unless noted otherwise. A free downloadable version may be found at [www.ada.gov](http://www.ada.gov). Remember that the Administrative Authority for local jurisdictions can modify the provisions and interpretations, so always check with the local governing authority for their specific requirements.

### Scoping Requirements

#### Accessible Seating Numbers

Section 221, Section 35.151 of CFR Part 35, and Subpart D of 28 CFR Part 36 provide the scoping requirements for assembly areas. One of the only items addressed specifically for assembly areas in the scoping requirements of the *ADA Standards* is accessible seating. The number of wheelchair spaces is based on the total number of seats provided in the assembly area. Table 221.2.1.1 provides those amounts. The wheelchair seats for each individual suite or box at stadiums are calculated separately. (221.2.1.2) So, if there is a luxury box at an NFL stadium that has 28 fixed seats, no less than two (2) wheelchair spaces must be provided within that luxury box.

Table 221.2.1.1 Number of Wheelchair Spaces in Assembly Areas

NUMBER OF SEATS	MINIMUM NUMBER OF REQUIRED WHEELCHAIR SPACES
4 to 25	1
26 to 50	2
51 to 150	4
151 to 300	5
301 to 500	6
501 to 5000	6, plus 1 for each 150, or fraction thereof, between 501 through 5000
5001 and over	36, plus 1 for each 200, or fraction thereof, over 5000

For boxes at performing arts centers, the number of wheelchair spaces is calculated based on the total number of seats across all boxes. (221.2.1.3) The required wheelchair spaces must be dispersed among twenty percent (20%) of the boxes provided. For example, a performing arts center at a university has five (5) boxes with twenty (20) seats each. There are one hundred (100) box seats total, so four (4) wheelchair spaces are required in the boxes. At least one (1) box must have wheelchair seats. ( $.20 \times 5 = 1$ )

### Team Seating

Team seating areas are NOT exempt from having wheelchair spaces. No less than one (1) wheelchair space must be provided in each team seating area of sport activity. (221.2.1.4) If a player is injured and requires the use of a wheelchair, they should not be excluded from sitting with their team, even if they cannot play. There may be staff needing accommodations, as well.

### Wheelchair Spaces

One specific requirement in the *ADA Standards* is that wheelchair spaces must be an integral part of the seating plan. (221.2.2) The wheelchair spaces and their associated companion seats cannot be located outside of the defined seating areas of the standard seats. At least one companion seat must be provided for each required wheelchair space. (221.3)

Another requirement is that the lines of sight are dispersed. (221.2.3) Spectators must be offered options for seating locations and viewing angles. The wheelchair space and companion seat options must be substantially equivalent to, or better than, those provided to all other spectators. (This does not apply to wheelchair spaces at team seating areas.) The dispersion requirement includes both horizontal and vertical dispersion. There are exceptions for assembly areas with 300 or fewer

seats. If the wheelchair and companion seats are positioned within the 2<sup>nd</sup> or 3<sup>rd</sup> quartile of the total row length, further horizontal dispersion is not required in assembly areas with 300 or fewer seats. However, if there is not enough length to position all required wheelchair and companion seats within the 2<sup>nd</sup> or 3<sup>rd</sup> quartile, those that do not fit may be placed in the 1<sup>st</sup> or 4<sup>th</sup> quartile of the row. (221.2.3.1) If vertical viewing angles for wheelchair and companion seats are equal to or better than the average viewing angle in an assembly area with 300 or fewer seats, vertical dispersion is not required. Bleachers only require wheelchair spaces on the same row as the point of entry, such as cross aisles, concourses, vomitories, and entrance ramps and stairs to the seating. (221.2.3.2)

Please note that in assembly areas with fixed seating that are required to have wheelchair seats, an accessible route is not required to the fixed seating where there are no accessible wheelchair spaces. (206.2.4, Exception 2)

### Companion Seats

In addition to providing wheelchair seats and companion seats, 5 percent of the total number of aisle seats must be accessible and located near accessible routes for those who have a hard time walking. (221.4)

### Lawn Seats

Any lawn seats and exterior overflow seating areas without fixed seating must be connected to an accessible route. (221.5)

### Additional Code of Federal Regulations Requirements

§35.151(g) of 28 CFR Part 35 and Subpart D of 28 CFR Part 36, §36.406 (f) outlines a few extra requirements for assembly areas.

- (1) In stadiums, arenas, and grandstands, wheelchair spaces and companion seats are dispersed to all levels that include seating served by an accessible route;
- (2) In assembly areas that are required to horizontally disperse wheelchair spaces and companion seats by section 221.2.3.1 of the 2010 Standards and that have seating encircling, in whole or in part, a field of play or performance, wheelchair spaces and companion seats are dispersed around that field of play or performance area;
- (3) Wheelchair spaces and companion seats are not located on (or obstructed by) temporary platforms or other movable structures, except that when an entire seating section is placed on temporary platforms or other movable structures in an area where fixed seating is not provided, in order to increase seating for an event, wheelchair spaces and companion seats may be placed in that section. When wheelchair spaces and companion seats are not required to accommodate persons eligible for those spaces and seats, individual, removable seats may be placed in those spaces and seats;
- (4) In stadium-style movie theaters, wheelchair spaces and companion seats are located on a riser or cross-aisle in the stadium section that satisfies at least one of the following criteria—
  - (i) It is located within the rear 60% of the seats provided in an auditorium; or
  - (ii) It is located within the area of an auditorium in which the vertical viewing angles (as measured to the top of the screen) are from the 40th to the 100th percentile of vertical viewing angles for all seats as ranked from the seats in the first row (1st percentile) to seats in the back row (100th percentile).

§35.138(d) of 28 CFR Part 35 and 28 CFR Part 36, §36.302 (f)(4)(i) expands to include ticketing requirements that affect the design of rows for accessible wheelchair seats. A wheelchair space must have an additional three (3) contiguous seats in the same row available for purchase.

### Purchasing multiple tickets.

- (1) **General.** For each ticket for a wheelchair space purchased by an individual with a disability or a third-party purchasing such a ticket at his or her request, a public entity shall make available for purchase three additional tickets for seats in the same row that are contiguous with the wheelchair space, provided that at the time of purchase there are three such seats available. A public entity is not required to provide more than three contiguous seats for each wheelchair space. Such seats may include wheelchair spaces.
- (2) **Insufficient additional contiguous seats available.** If patrons are allowed to purchase at least four tickets, and there are fewer than three such additional contiguous seat tickets available for purchase, a public entity shall offer the next highest number of such seat tickets available for purchase and shall make up the difference by offering tickets for sale for seats that are as close as possible to the accessible seats.
- (3) **Sales limited to less than four tickets.** If a public entity limits sales of tickets to fewer than four seats per patron, then the public entity is only obligated to offer as many seats to patrons with disabilities, including the ticket for the wheelchair space, as it would offer to patrons without disabilities.
- (4) **Maximum number of tickets patrons may purchase exceeds four.** If patrons are allowed to purchase more than four tickets, a public entity shall allow patrons with disabilities to purchase up to the same number of tickets, including the ticket for the wheelchair space.
- (5) **Group sales.** If a group includes one or more individuals who need to use accessible seating because of a mobility disability or because their disability requires the use of the accessible features that are provided in accessible seating, the group shall be placed in a seating area with accessible seating so that, if possible, the group can sit together. If it is necessary to divide the group, it should be divided so that the individuals in the group who use wheelchairs are not isolated from their group.

### Dressing, Fitting, and Locker Rooms

Accompanying many assembly occupancies are dressing, fitting, and locker rooms. The scoping requirements for those spaces may be found in Section 222. At least 5 percent must be accessible. The 5 percent rule applies to each type of use within each group of rooms that are near each other. It is not 5 percent of the total number of dressing, fitting, or locker rooms within the building or on the site.

### Performance Areas

If there is a circulation path directly from the performance area to a seating area, there must also be an accessible route that directly connects both. (206.2.6) An accessible route must also connect performance areas to ancillary areas that are used by performers unless exempted elsewhere in the code. The exceptions that may apply are the ones noted in Section 206.2.3. If the performance area is in a private building that is less than three stories or that has less than 3000 square feet per story, it could be exempt from needing an accessible route to it. If a two-story public building has a private story with an occupant load of five or fewer people, the low-occupancy story is not required to have an accessible route to it. Other exceptions involve detention facilities, residential facilities, transient lodging, air traffic control towers, and historic buildings.

### Assistive Listening Systems

Another requirement for assembly areas is that where audible communication is necessary to the use of the space, then an assistive listening system must be provided unless audio amplification is not provided (other than in courtrooms). Receivers must be provided for assistive listening systems in each assembly area per Table 219.3. At least two receivers or twenty-five (25) percent of the receivers, whichever is greater, must be hearing-aid compatible. The number of

receivers can be based on the total number of seats in all of the assembly areas combined if they are under the same management and usable with all systems. Induction loop assistive listening systems do not need to be hearing-aid compatible. (219)

**Table 219.3 Receivers for Assistive Listening Systems**

CAPACITY OF SEATING IN ASSEMBLY AREA	MINIMUM NUMBER OF REQUIRED RECEIVERS	MINIMUM NUMBER OF REQUIRED RECEIVERS REQUIRED TO BE HEARING-AID COMPATIBLE
50 or less	2	2
51 to 200	2, plus 1 per 25 seats over 50 seats <sup>1</sup>	2
201 to 500	2, plus 1 per 25 seats over 50 seats <sup>1</sup>	1 per 4 receivers <sup>1</sup>
501 to 1000	20, plus 1 per 33 seats over 500 seats <sup>1</sup>	1 per 4 receivers <sup>1</sup>
1001 to 2000	35, plus 1 per 50 seats over 1000 seats <sup>1</sup>	1 per 4 receivers <sup>1</sup>
2001 and over	55, plus 1 per 100 seats over 2000 seats <sup>1</sup>	1 per 4 receivers <sup>1</sup>

1. Or fraction thereof.

### Restaurants, Bars, and Other Dining Facilities

Group A-2 occupancies include restaurants, bars, and other dining facilities. Section 206.2.5 requires that an accessible route be provided to all dining areas, including raised or sunken dining areas, and outdoor dining areas. There are a few exceptions. If a mezzanine is not required to have an accessible route, it has less than 25 percent of the total area for seating, and the same décor and services are provided in an accessible area, an accessible route is not required to the mezzanine dining area. If a space is being altered, the raised or sunken dining areas do not have to be made accessible if the same services and décor are provided in accessible dining areas. The tiered dining areas that are required to be accessible in sports facilities only require accessible routes to 25 percent of the dining areas as long as the same services are provided on each tier.

Section 226 provides the scoping requirements for dining surfaces. Once again, 5 percent is the general rule of thumb here. 5 percent of the seating and standing space dining surfaces must be accessible. Please note that this only applies to *fixed* seating and standing spaces.

Section 227.4 addresses food service lines. 50 percent, but no less than one, of each type of self-service shelf must be within accessible reach ranges.

### REVIEW QUESTIONS

- Are lawn seats required to be connected to an accessible route?
  - Yes
  - No
  - Only if there is no other type of seating than lawn seating
  - Only if the wheelchair spaces are designed within the lawn seating area
- If there are 10 women’s dressing rooms within the same area of the building, how many must be accessible?
  - 1
  - 2
  - 3
  - 4

- If a new restaurant has four (4) dining areas that each offer a different type of dining experience, how many must have an accessible route to them?
  - 5%
  - 25%
  - 50%
  - 100%

### Technical Requirements Accessible Seats

Now that we know what needs to be accessible within assembly areas, it is helpful to understand the requirements for making those elements accessible. Accessible seats in assembly areas must be located on level ground that is stable, firm, and slip-resistant with a slope no greater than 1:48. There is an exception for those seats located in the areas of sports activities. (802.1.1; 302) The width of a single wheelchair space is 36 inches minimum. If two wheelchair spaces are designed to be directly next to each other, that width may go down to 33 inches. (802.1.2) The depth of the wheelchair space depends on how you enter it. If it can be entered from the rear, the space needs to be at least 48 inches deep. If you can only access it from the side, it must be at least 60 inches deep. (802.1.3)

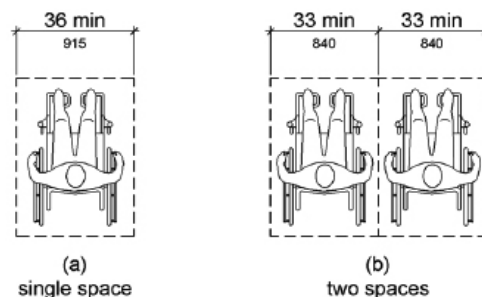


Figure 802.1.2 Width of Wheelchair Spaces in Assembly Areas

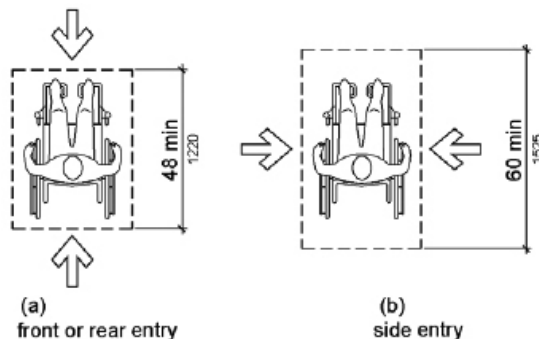


Figure 802.1.3 Depth of in Assembly Areas Wheelchair Spaces

In case it is not obvious, the *ADA Standards* require wheelchair spaces to be on an accessible route. Neither the accessible route nor the required circulation paths may overlap the wheelchair spaces. Access to one wheelchair space cannot be through another wheelchair space.

The *ADA Standards* also address visual access to the screen, performance area, or playing field for spectators sitting in designated wheelchair spaces. Wheelchair users must be afforded similar views as non-wheelchair users. If the standard seats were designed so that seated spectators can see over the heads of those sitting directly in the row in front of them, the wheelchair spaces must be designed the same way. (802.2.1.1) If the standard seats were designed so that seated spectators must look between the heads of the seated spectators

directly in front of them, it is acceptable for the wheelchair users to do the same. (802.2.1.2) The same concept is true for events with standing spectators. The wheelchair users must be afforded similar views as the standing spectators. This would require that the wheelchair spaces with rows in front of them be at a higher elevation for standing spectators than for seated spectators. If a venue is designed for both types of events, it should be designed for standing spectators.

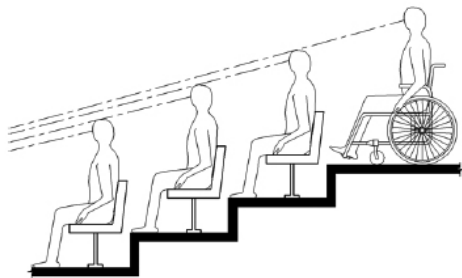


Figure 802.2.1.1 Lines of Sight Over the Heads of Seated Spectators

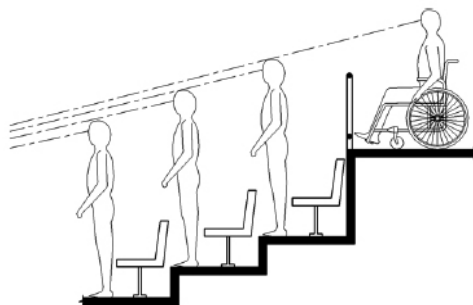


Figure 802.2.2.1 Lines of Sight Over the Heads of Standing Spectators

### Companion Seats

As mentioned in the scoping section, each wheelchair space must have a companion seat. (221.3) The specific requirements for companion seats may be found in Section 802.3. Companion seats must be directly next to the wheelchair space so that the shoulders of the two are aligned. The shoulder alignment point is measured 36 inches from the wheelchair space's front edge. Both the wheelchair space and the companion seat must have the same floor elevation. Companion seats must be comparable to the other seats in that general area. They cannot be of different caliber in terms of size, quality, comfort, and amenities.

### Designated Aisle Seats

The other type of accessible seat in assembly areas is the designated aisle seat intended for people who have difficulty walking. These are often used by patrons using walkers and canes. An individual in a wheelchair may also choose to transfer to an aisle seat rather than remain in their wheelchair during the event. The only difference between accessible aisle seats and other aisle seats is that accessible aisle seats have folding or retractable armrests and signs identifying them. (802.4) They also need to be near an accessible route.



Designated Aisle Seat (Photo by Course Author)

### Assistive Listening Systems

There are only a few technical requirements for assistive listening systems in Section 706. The receiver jacks must be a 1/8-inch standard mono jack. The hearing-aid compatible receivers must interface with telecoils in hearing aids through the provision of neckloops. A sound pressure level of 110 dB minimum and 118 dB maximum with a dynamic range on the volume controls of 50 dB must be provided with the assistive listening systems. The signal-to-noise ratio (SNR) for internally generated noise in assistive listening systems must be at least 18 dB. The peak clipping cannot exceed 18 dB of clipping relative to the peaks of speech.

The ADA Standards includes an informative advisory for this section for those of us who are not well versed in the terminology.

*Assistive listening systems are generally categorized by their mode of transmission. There are hard-wired systems and three types of wireless systems: induction loop, infrared, and FM radio transmission. Each has different advantages and disadvantages that can help determine which system is best for a given application. For example, an FM system may be better than an infrared system in some open-air assemblies since infrared signals are less effective in sunlight. On the other hand, an infrared system is typically a better choice than an FM system where confidential transmission is important because it will be contained within a given space.*

*The technical standards for assistive listening systems describe minimum performance levels for volume, interference, and distortion. Sound pressure levels (SPL), expressed in decibels, measure output sound volume. Signal-to-noise ratio (SNR or S/N), also expressed in decibels, represents the relationship between the loudness of a desired sound (the signal) and the background noise in a space or piece of equipment. The higher the SNR, the more intelligible the signal. The peak clipping level limits the distortion in signal output produced when high-volume sound waves are manipulated to serve assistive listening devices.*

*Selecting or specifying an effective assistive listening system for a large or complex venue requires assistance from a professional sound engineer. The Access Board has published technical assistance on assistive listening devices and systems.*

### Dressing, Fitting, and Locker Rooms

What makes a dressing, fitting, or locker room accessible? It will have a turning space. This would either be a 60-inch diameter circular space or a T-shaped space within a 60-inch square, as shown in Figure 304.3.2. (803.2) Doors cannot swing into the room unless a 30-inch x 48-inch clear floor space is provided beyond the arc of the door swing. (803.3)

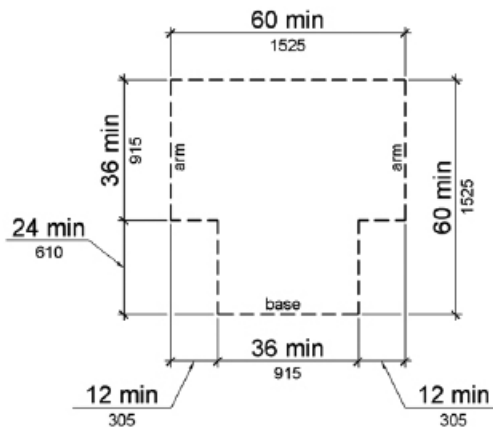


Figure 304.3.2 T-Shaped Turning Space

Something that gets flagged time and time again during accessible plan reviews and inspections is the requirement for accessible benches in

the accessible dressing, fitting, and locker rooms. (803.4) For a bench to be accessible, it must have a 30-inch by 48-inch clear floor space at the end of it. It should be parallel to the short side of the bench, so a person in a wheelchair can park beside the bench and transfer onto it. The seat must be between 20 and 24 inches deep, at least forty-two inches long, and 17 to 19 inches above the floor. If the bench is not attached to the wall, a back support at least forty-two inches long is required. It cannot be positioned with more than a 2-inch vertical gap or a 2 1/2-inch horizontal gap between the seat and the back support. See Figure 903.4. (903)

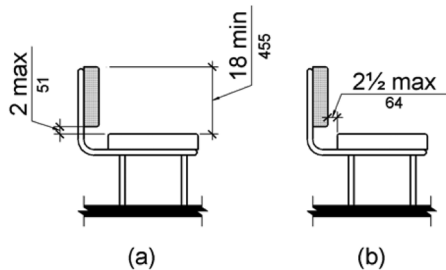


Figure 903.4 Bench Back Support

There is a requirement for accessible coat hooks and shelves in dressing, fitting, or locker rooms, if provided. If there are no individual compartments in the room, at least one of each type must be located within an accessible reach range within the room. (222.2, 803.5) If there is no obstruction in front of the coat hook, the accessible reach range is 15 to 48 inches above the ground. If there are obstructions, the reach depth may not be greater than 25 inches. The reach height can be reduced based on the reach depth. See Figures 308.2.2, 308.3.1, and 308.3.2. Accessible shelves must be installed between 40 and 48 inches above the ground. (803.5) If there are individual changing compartments in the room, the accessible coat hooks and shelves must be placed in the compartments that have accessible benches. (222.2)

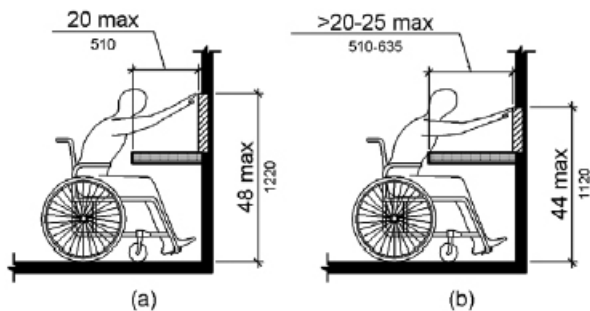


Figure 308.2.2 Obstructed High Forward Reach

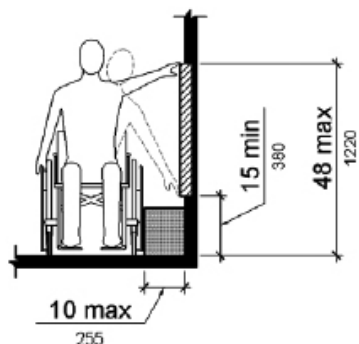


Figure 308.3.1 Unobstructed Side Reach

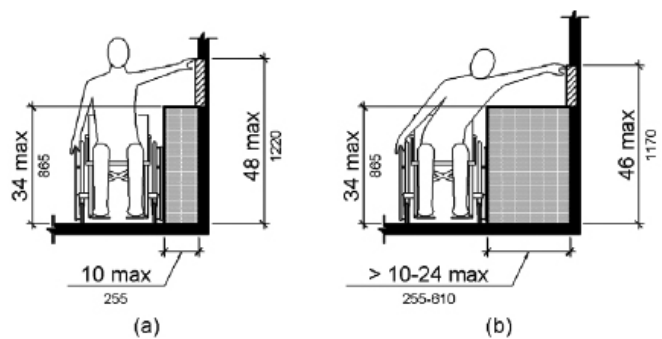
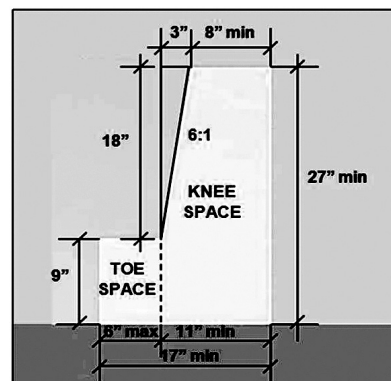


Figure 308.3.2 Obstructed High Side Reach

### Restaurants – Dining Surfaces

We learned in the scoping section that 5 percent of dining surfaces must be accessible. To be accessible, it must have a 30-inch x 48-inch clear floor space positioned for a forward approach. (902.2) This requires adequate knee and toe clearance under the dining surface. Toe clearance is considered the space under an element from the ground up to 9 inches above the ground that extends a minimum of 17 inches and a maximum of 25 inches under an element. Knee clearance is the space under an element between 9 and 27 inches above the ground that extends a minimum of 17 inches and a maximum of 25 inches under an element. From the leading edge of the dining surface beyond a depth of 8 inches, the 27-inch-high knee clearance can be reduced 18 inches to the 9-inch toe space over a 3-inch span. See the Knee and Toe Clearances figure for clarification.



Knee and Toe Clearances (Access Board's ADA Guide)

In addition to providing adequate knee and toe clearance, the tops of the dining surfaces must be between 28 and 34 inches above the ground. (902.3) If the dining surface will primarily be used by children, the height may be reduced to between 26 and 30 inches above the ground. (902.4.2)

### Restaurants – Food Service Lines

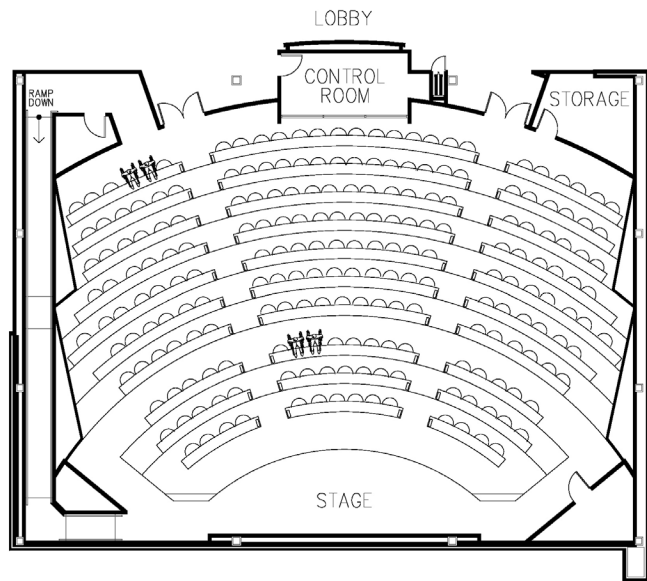
Some restaurants, especially fast-food restaurants, have self-service areas where you may obtain your own tableware and condiments. If so, the self-service shelves and dispensing devices must be within the accessible reach ranges as outlined above. Tray slides have the same height requirements as dining surfaces, between 28 and 34 inches above the ground. (227.4)

### Case Study

A university student submitted a complaint because he is temporarily confined to a wheelchair after a vehicular accident and does not think that there are enough seating options in his English 101 class. A Facilities Department architect has been tasked with determining whether the room is accessible under the 2010 ADA Standards or if modifications are required.

First, the architect finds a floor plan of the room to review. (See graphic *University Lecture Hall Plan*.) She notes that there are a total of 216 seats. Four (4) seats are shown as being wheelchair accessible. How many are required? The architect references *Table 221.2.1* in the *ADA Standards* and discovers that five (5) seats are required to be wheelchair accessible if the total number of seats is between 151 and 300. She notes to confirm the number of standard and wheelchair accessible seats in the room.

After skimming through *Sections 221.2.1.2, 221.2.1.3, and 221.2.1.4*, the architect determines that they do not apply because the room is in a classroom building, not a sports venue. *Section 221.2.2* identifies the seating integration requirements for the accessible seats; they must be an integral part of the seating plan. On the plan, she found that it appears to be the case, so there should not be any issues there.



*University Lecture Hall Plan*

The highlights noted from the next sections in the *ADA Standards (221.2.3, 221.2.3.1, and 221.2.3.2)* include:

1. Wheelchair spaces must be dispersed and provide seating options that are equivalent to the seats other students have.
2. Horizontal dispersion is required of the wheelchair seats unless there are 300 or fewer seats, AND the wheelchair/companion seats are located in the 2nd or 3rd quartile of the total row length.
3. Vertical dispersion is required for the wheelchair spaces unless there are 300 or fewer seats AND the wheelchair spaces provide viewing angles equal to, or better than, the average viewing angle provided.

The architect notes that the wheelchair spaces on the plan are shown to be dispersed vertically. There are fewer than 300 seats, so the dispersion exceptions may apply. After rereading *Section 221.2.3.1*, she determines that the horizontal dispersion exception does not apply because the seats at the back of the lecture hall are NOT within the 2<sup>nd</sup> and 3<sup>rd</sup> quartiles of the total row length.

After reading *Section 221.3*, the plan is reviewed for companion seats. Each wheelchair space shown has a companion seat next to it, so the architect will confirm that those seats are there in person, as well.

The architect then walks to the room so she can confirm the actual conditions match the floor plan. (See image *Lecture Hall – View 1*.) Immediately, she notices that two chairs in the back row are mobile. So, those must be the allocated wheelchair seats. The distance between the table at the wheelchair spaces and the parallel rear wall is 5'-4". The table is 1'-6" deep. The horizontal distance at the table for the wheelchairs between the posts is almost 6'-0" wide.



*Lecture Hall – View 1*

After scribbling the dimensions on the plan, the architect walks around the corner to find the ramp that she spotted. (See image *Ramp – View 2*.) It is a carpeted ramp that is 3'-9" wide and has handrails on both sides of it. (Per *Section 405.5*, the clear width of a ramp run and, where handrails are provided, the clear width between handrails shall be 36 inches minimum. Handrails are required on both sides of the ramp according to *Section 505.2*.) The slope appears to be no greater than 1:12, but she plans to put a smart level on it later. (*Section 405.2* requires that the slope of a ramp run not be steeper than 1:12.) There are multiple 60-inch deep landings on the ramp. (*Section 405.6* allows a maximum rise of 30 inches for any ramp run.)

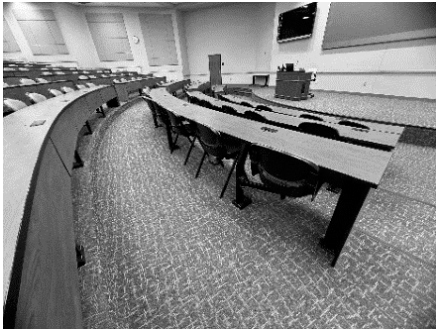


*Ramp – View 2*

The ramp exits to a level area where you can either go straight to continue to the stage/teaching platform, or you can turn left to go to the seating. (See image *Ramp, Bottom Landing – View 3*.) From that vantage point, she sees no additional wheelchair seats. So, she proceeds to walk up the row of seating that is at the same level as the ramp landing. As shown on the plan, there are two (2) mobile seats in the third row in the middle section that indicate the wheelchair seats. There are fixed companion seats on either side of the two wheelchair seats. The cross-aisle leading to the wheelchair seats is 4'-2" wide. The space between the table legs where the wheelchair spaces are located is 5'-6" wide. The tables are 18" deep. (See image *Accessible Seating – View 4*.)



*Ramp, Bottom Landing – View 3*



Accessible Seating - View 4

The architect finishes walking the cross aisle to try to spot another accessible seat, but does not find one. She climbs the stairs on the opposite side from which she came into the room to the top row and does not find any additional accessible seats. So, she goes back to her office to compare her notes with the *ADA Standards*. Since she did not refresh her memory of the technical requirements before going to the classroom, she decided to start there in *Chapter 8*. First, she confirms that the wheelchair spaces meet the 33-inch width requirement. All of the wheelchair spaces may be entered from behind, so they only need to be 48 inches deep. *Section 802.1.4* causes concern because it states that the wheelchair spaces must be on an accessible route, and the accessible route cannot overlap the wheelchair spaces. At first, it appears that you would have to go through one wheelchair space on the third row to get to the adjacent wheelchair space. However, there is another accessible route through the stage area.

*Section 802.1.5* does not allow wheelchair spaces to overlap circulation paths. The advisory associated with this section notes that the circulation paths are the aisle widths required by applicable building or life safety codes. All wheelchair spaces are off of aisle accessways and not aisles. If the section was applicable to aisle accessways, there is still adequate width. Twelve (12) inches is required per the *2021 International Building Code, Section 1030.13.1.1*.

The architect's recommendation was to remove the fixed seat on the other end of the middle section of the third row to create the required fifth wheelchair seat. This would improve the horizontal dispersion, and it resulted in satisfying the student. He admitted that he was left-handed, and having a seat at the end of the row was more comfortable for him.

## CONCLUSION

There are many considerations for designing accessible assembly occupancies. Accessible wheelchair spaces are a primary concern. Some of the factors that go into the design of accessible wheelchair spaces include seating capacity, type of venue, lines of sight, and ability to provide companion seats. Designated aisle seats assist those who have difficulty walking. Assistive listening systems aid the hard-of-hearing. Auxiliary areas, such as dressing rooms, are not exempt from providing accessibility, as turning spaces and benches are required. Restaurants may have additional requirements to providing wheelchair spaces if there are self-serve areas and food service lines. After taking this course, we hope you have a better idea of what must be accessible in assembly occupancies and how to make it accessible.

## REVIEW QUESTIONS

4. **What is included in the requirements for a designated aisle seat?**
  - A. It has folding or retractable armrests
  - B. It has a sign identifying it
  - C. It is wider than a standard seat
  - D. Both A and B
5. **In the case study presented, how many wheelchair spaces were provided, and how many are required?**
  - A. 4 wheelchair spaces were provided, and 4 are required.
  - B. 5 wheelchair spaces were provided, and 5 are required.
  - C. 5 wheelchair spaces were provided, and 5 are required.
  - D. 5 wheelchair spaces were provided, and 6 are required.

## ANSWERS TO REVIEW QUESTIONS

1. **Are lawn seats required to be connected to an accessible route?**
  - A. **Yes; Correct. Section 221.5 states that any lawn seats and exterior overflow seating areas without fixed seating must be connected to an accessible route.**
  - B. No; Incorrect.
  - C. Only if there is no other type of seating than lawn seating; Incorrect.
  - D. Only if the wheelchair spaces are designed within the lawn seating area; Incorrect.
2. **If there are 10 women's dressing rooms within the same area of the building, how many must be accessible?**
  - A. **1; Correct. Section 222 requires that 5 percent be accessible.  $10 \times .05 = .5$ . So, 1 is required.**
  - B. 2; Incorrect.
  - C. 3; Incorrect.
  - D. 4; Incorrect.
3. **If a new restaurant has four (4) dining areas that each offer a different type of dining experience, how many must have an accessible route to them?**
  - A. 5%; Incorrect.
  - B. 25%; Incorrect.
  - C. 50%; Incorrect.
  - D. **100%; Correct. Section 206.2.5 requires that an accessible route be provided to all dining areas. The exceptions do not apply because each dining area offers a different type of dining experience.**
4. **What is included in the requirements for a designated aisle seat?**
  - A. It has folding or retractable armrests; Incorrect.
  - B. It has a sign identifying it; Incorrect.
  - C. It is wider than a standard seat; Incorrect.
  - D. **Both a and b; Correct. Section 206.2.5 requires that an accessible route be provided to all dining areas. The exceptions do not apply because each dining area offers a different type of dining experience.**
5. **In the case study presented, how many wheelchair spaces were provided, and how many are required?**
  - A. 4 wheelchair spaces were provided, and 4 are required; Incorrect.
  - B. **4 wheelchair spaces were provided, and 5 are required; Correct. There were 4 wheelchair spaces in the room. Table 221.2.1 requires 5 wheelchair spaces if the seating capacity is between 151 and 300.**
  - C. 5 wheelchair spaces were provided, and 5 are required; Incorrect.
  - D. 5 wheelchair spaces were provided, and 6 are required; Incorrect.