

**(1<sup>st</sup> Draft) Final Report - Chapters 1 to 4**  
**US Access Board**  
**Rail Vehicles Access Advisory Committee**  
**March 19, 2015**

**(4/15/15 Changed by adding comments and draft Chapter 5)**  
**(4/21/15 Changed by adding additional comments)**

**Overall Review Note:** Strikeouts and underlines are used in Chapters 2 through 4 to reflect draft changes made to subcommittee reports by the committee at its meeting of February 26-27, 2015. Each chapter may have an additional review note to help readers understand a chapter's formatting or alert readers to other matters. The committee was asked to provide comments on this first draft by April 10, 2015, to then be reviewed at the April 23-24, 2015 committee meeting. Comments have been added to the draft after each applicable section or chapter title. At the beginning of each comment, the commenter's name is highlighted in green and bracketed by braces { }. Chapter 1 has been modified by Access Board staff using strikeouts and underlines. One comment was also added to the chapter. The hyperlinks have been deactivated in the chapters to avoid confusion over underlines but when the report is finalized and placed on the RVAAC website, the links will be activated. Also, (draft) Chapter 5 has been added. This updated first draft final report was sent to the committee on April 15, with a further update (with more comments) provided on April 21.

### **Draft Chapter 1. Introduction**

{**Bob Reuter Comment**}. Chapter 1 - Should restate that ALL rail vehicles must be Accessible at ALL stops which they serve. (uniform interface at all stops) (San Francisco is currently planning on buying new light rail vehicles that will not be accessible at all stops.)

**Statutory Authority, Scope, and Objectives of the Committee.** The Rail Vehicles Access Advisory Committee (RVAAC) of the Architectural and Transportation Barriers Compliance Board (Access Board) was established on May 23, 2013, in accordance with the Federal Advisory Committee Act (FACA). The committee was established in the public interest to support the Access Board in performing its duties and responsibilities under Section 504 of the Americans with Disabilities Act (ADA) and Section 502 of the Rehabilitation Act which ~~authorizes~~requires the Board to establish and maintain accessibility guidelines ~~under titles II and III of~~for transportation vehicles subject to the ADA.

The Access Board issued accessibility guidelines for transportation vehicles in 1991 and amended the guidelines in 1998 to include additional requirements for over-the-road buses (i.e., buses characterized by an elevated passenger deck located over a baggage compartment). The Access Board's transportation vehicle guidelines are codified at 36 CFR part 1192. The guidelines apply to the acquisition of new, used, and remanufactured transportation vehicles, and the remanufacture of

existing transportation vehicles to the extent required by regulations issued by the Department of Transportation (DOT). [The guidelines were adopted by DOT as standards on September 6, 1991 \(56 FR 45584\) and are codified at 49 CFR 38.](#) The portion ~~is~~ of the guidelines addressing transportation vehicles using fixed guideway systems (e.g., rapid rail, light rail, commuter rail, and intercity rail) has not been revised or updated since 1991. The Committee was established to advise the Access Board on matters related to the revision and update of the guidelines addressing transportation vehicles using fixed guideway systems subject to the ADA. The Committee acted solely in an advisory capacity to the Access Board and did not exercise any program management responsibility nor make decisions directly affecting the matters on which it provides advice.

The Access Board published a notice of intent in the February 14, 2013, Federal Register (78 FR 10581) to establish this advisory committee and to seek nominations from a variety of stakeholder organizations, including:

- Manufacturers of transportation vehicles that operate on fixed guideway systems;
- Transportation providers that operate fixed guideway systems;
- Organizations representing individuals with disabilities; and
- Other entities whose interests may be affected by the accessibility guidelines.

The February 2013 notice indicated that the number of Committee members would be limited so that the Committee's work can be accomplished effectively and that the Committee would be balanced in terms of interests represented. The advisory committee members would not be considered special government employees and therefore would not need to file confidential financial disclosure reports. Each meeting would be open to the public and during subcommittee meetings anyone could participate as a subcommittee member.

Notices announcing each committee meeting were published in the Federal Register at least 15 days beforehand. All meetings and subcommittee meetings were also announced on the RVAAC website ([www.access-board.gov/rvaac](http://www.access-board.gov/rvaac)). Material used in committee meeting and subcommittee meeting can be found in the RVAAC electronic docket (<http://www.regulations.gov/#!docketDetail;D=ATBCB-2013-0006>) in the section titled Supporting Documents.

**RVAAC Membership.** In the May 23, 2013 Federal Register (78 FR 30828) the U.S. Access Board published the list of 24 organizations selected for representation on the committee. After the first meeting (November 13-14, 2013) in response to petitions for memberships, three organizations were added to the RVAAC membership: Hearing Loss Association, Metropolitan Transportation Authority of the State of New York, and New Jersey Transit.

Below are listed the 27 organizations comprising the committee membership. The Federal Railroad Administration served as an ex officio member.

- 1) Alstom Transportation

- 2) American Council of the Blind (ACB)
- 3) Association of Programs for Rural Independent Living (APRIL)
- 4) Bombardier Transportation
- 5) California Department of Transportation, Division of Rail
- 6) Center for Inclusive Design and Environmental Access
- 7) Community Transportation Association of America
- 8) Disability Rights Education & Defense Fund (DREDF)
- 9) Federal Railroad Administration
- 10) Hearing Access & Innovations (Hearing Access Program)
- 11) Hearing Loss Association
- 12) International Centre for Accessible Transportation
- 13) Maryland Transit Administration
- 14) Metra & Northeast Illinois Regional Commuter Railroad Corporation
- 15) Metropolitan Transportation Authority of the State of New York
- 16) National Association of the Deaf
- 17) National Association of Railroad Passengers
- 18) National Council on Independent Living
- 19) National Disability Rights Network (NDRN)
- 20) National Railroad Passenger Corporation (Amtrak)
- 21) New Jersey Transit
- 22) Parsons Brinckerhoff
- 23) RailPlan International
- 24) Ricon Corporation
- 25) South West Transit Association
- 26) Talgo, Inc.
- 27) United Spinal Association

[The advisory committee charter was renewed on March 18, 2015 and announced in the March 23, 2015 Federal Register \(80 FR 15189\).](#)

**Committee Process.** The committee held the following six meetings and presented its report to the Board on July 29, 2015. The committee's operating procedures were approved at the first meeting and can be found in the RVAAC electronic docket.

- 1st Meeting (November 13-14, 2013)
- 2nd Meeting (January 9-10, 2014)
- 3rd Meeting (April 10-11, 2014)
- 4th Meeting (September 11-12, 2014)
- 5th Meeting (February 26-27, 2015)

- 6th Meeting (April 23-24, 2015)

The committee was chaired by Mr. Billy Altom (representing APRIL).

Besides these six meetings, the committee held numerous subcommittee conference calls. Information on those calls can be found in the RVAAC electronic docket (link provided above). The bulk of the committee's work was done by four subcommittees:

- Boarding and Alighting Subcommittee  
Chaired by Ms. Marilyn Golden (representing DREDF)
- Onboard Circulation and Seating Subcommittee  
Chaired by Mr. Joseph (Blair) Slaughter (representing Amtrak)
- Rooms and Spaces Subcommittee  
Chaired by Mr. Dennis Cannon (representing NDRN)
- Communications Subcommittee  
Chaired by Ms. Terry Pacheco (representing ACB)

**Committee Approval of the Final Report.** \_\_\_\_\_

## Draft Chapter 2 – Boarding and Alighting

**Review Note:** In chapter 2, bracketed [ ] text below indicates sections that include new material that differs from the current Access Board Guidelines.

{Janice Lintz Comment}. I would also like to recommend that the order of the document is changed so that Communications is first. Hearing and vision access is rarely addressed. Even in this document, there are four chapters devoted to physical access and the last chapter is hearing and vision. The implication once again is NOT "last but not least" but "in order of importance." Wheelchair access may require more details, but the information on communication access also tends to be skimpy. There's no escaping that implication - and this order simply reinforces what we encounter all that time - that people don't consider hearing loss a "real" disability. By placing Communications at the top of the list, it will finally provide legitimacy to access for those with hearing loss which is routinely an afterthought if considered at all.

{Bob Reuter Comment}. Chapter 2 - Needs the addition of standards for minority transit systems as included in Chapter 3 on board circulation. including for incline plans, funiculars. Must be able to board and alight from all stops (at least one in the country claims accessibility as one can ride it, but boarding and alighting can only be done at the same stop one boarded, hardly transportation between stations). Historic and heritage vehicles are more likely to be high platform and use lifts. Standards for onboard and/or lineside lifts are needed. Replica and restored cars are likely to be similar requirements as historic cars, although Replica cars should be held to a higher standard (on board lifts/high level boarding). Monorails, ALRT, AGRT, Skytrains, etc. should be required to be level boarding only. Cable Tramways (not cable cars in San Francisco, they are exempt from ADA) but rather Aerial tramways such as NYC Roosevelt Island tramway should require level boarding. Cog Railways should require level boarding or level change devices to handle boarding and alighting. Maglev should be level boarding. PRT or personal rapid transit should be level boarding.

I. Full length level [or near-level](#) boarding should be the highest priority and most preferred method of boarding on all rail modes, whether light rail, rapid rail, intercity rail, and/or commuter rail.

{Frank Banko Comment}. Recommend adding “intercity rail, [high-speed rail](#), and/or commuter rail.”

II. When full length level [or near-level](#) boarding is not required or possible, boarding should be, as often as possible, by ramp or bridge-plate as the primary 100% reliable and quick means for boarding. Mechanical lifts should be a back-up alternative when necessary. Where mechanical lifts are needed, they should be car-borne, not station-based.

{Frank Banko Comment}. All discussion below is pertaining to the [automatic](#) deployment of ramps/bridgeplates/gap mitigation devices. 100% reliability is impractical to achieve from a technical/engineering perspective. This means absolutely zero failures for something that potentially is a complex system, and has many moving components.

{Frank Maldari Comment}. Do not believe the statement 100% reliable is necessary. Nothing is 100% reliable. The intent of this paragraph should be to require ramps or bridge plates when the specified gap cannot be met. Suggest paragraph II above be reworded to read as follows: “When full length level or near-level boarding is not required or possible, ramps or bridge-plates shall be provided to allow persons wheeled mobility devices to board and alight the train. Mechanical lifts should be a back-up alternative when necessary.” With respect to mechanical lifts being car-borne or station based, you must consider the considerable cost (loss of seats and cost of device) to a transit operation that has a large vehicle fleet and requires the device at only a few stations. The mitigation method should be flexible to allow the best solution for each transit operation. Consequently, please consider removing the last statement in this paragraph. With respect to automatic deployment, I thought it was agreed that it would not be required, and it should not be required for the reason outlined in my white paper. Please remove the requirement for automatically deploying bridgeplates.

### III. Scoping

- [General.]

1. [Rapid rail (e.g., subway) and High-speed rail cars purchased after the effective date of these requirements (to be determined by DOT) shall be designed for full-length platform level or near-level boarding ~~using the same definition of level entry boarding as in the DOT ADA regulation issued in 2011~~ and meet the provisions of this section. In stations constructed on or after January 26, 1992, all car doors through which passengers board and alight shall meet the gap requirements set forth below. In stations constructed prior to January 26, 1992, at least one door serving each on board seating area for wheelchairs and mobility aids shall meet these requirements.]

Rationale: This was essentially required under the current regulations but is being restated to show the somewhat differing requirements for different modes. Rapid rail and high speed rail have the most stringent requirements for boarding all cars for the full length of the platform with minimal horizontal and vertical gaps.

{Blair Slaughter Comment}. This is a bit chicken and egg but there will likely be newer vehicles operating into older stations and vice-versa for many years where one or the other is compliant but not both. There should be some discussion or note to that effect. Of course we can only deal with the trains here, not stations.

2. [All doors on light rail cars and commuter rail cars operating exclusively at level or near-level boarding station platforms shall comply with the gap requirements. At least one door through which passengers board and alight on each side serving each on-board seating area for wheelchairs and mobility aids of intercity rail cars, and

commuter rail cars operating at mixed high and low platforms, shall meet these requirements.]

Rationale: This requires all new light rail cars and commuter cars to be designed to meet gap requirements and have at least one accessible door which provides access to the on-board seating area for wheelchair and mobility aid users. The requirement recognizes that platforms on many existing light rail and commuter rail lines will have a mix of high and low platforms and mini-highs.

3. [All doors on AGT (people mover) cars operating at speeds of 20 mph or slower shall meet the requirements for “people movers” set forth below.]

- [Boarding and Alighting. All new rail and fixed guideway vehicles shall be compatible with level or near-level boarding. All steps shall incorporate a trap to cover the steps and bring the car floor level to the doorway. Doorways shall have a minimum vertical clearance of 74 inches from the closed trap ~~to the lintel.~~ ]

{Frank Banko Comment}. Is there a need to dictate vertical clearance height of the door?

- [Gaps. Wherever either or both of the conditions in (1~~+~~) and (2~~+~~) are met, a car-borne ramp or bridgeplate or a car-borne lift shall be employed:

{Frank Banko Comment}. Please consider the addition of “gap mitigation devices” to this list.

1. the horizontal gap between the boarding platform and the vehicle floor exceeds 2 inches
2. the vertical difference between the boarding platform height and the vehicle floor exceeds plus or minus 5/8 inches.]

{Frank Maldari Comment}. Please consider 3” for horizontal gap it has been achieved at most subway platforms. 2” is not achievable consistently. I think it may be better to have a 3” gap with no bridge plate or ramp than it is to always require a bridge plate or ramp every time the gap exceeds 2”. Having a 3” requirement encourages authorities to maintain small gaps of no more than 3” whenever possible. Setting the standard too tight, removes the incentive to maintain small gaps and may result in more, larger gaps. Although it has been stated that 2” was achieved at WAMATA, it was not verified at every door of every station and it does not mean that it can be achieved at all transit authorities. Each transit authority has its legacy infrastructure that may limit the size of the gap. Additionally to date there has been no justification for the 2” requirement other than it is smaller than 3” and smaller is better.

~~(i) and (ii) is level boarding~~

Rationale: This recognizes the reality that the gaps in the original accessibility regulations were difficult to achieve in intercity, commuter rail and some light rail systems and requires intercity, commuter, ~~and~~ light, and high speed rail cars to provide a car-borne ramp or bridgeplate to mitigate the gap.

{Blair Slaughter Comment}. Given the long life of cars, the need for some sort of station based lift will exist for decades. Also, given that recent developments have proven the validity of substantial station based translating platforms for the management of safer boarding and alighting by all passengers, some consideration should be made to allow for boarding innovations not currently in general use. This may mean that an operator must demonstrate an orderly and system of passenger management that does not rely solely on portable station lifts. This comment is based on my strong belief that the fixed translating platforms present a far more safe, dependable and ambiguous solution than car-borne lifts and plates, at least for intercity rail.

- **[People Movers.** The horizontal gap between platform and car floor shall not exceed 1 inch (25 mm). The vertical difference between platform and car floor shall not exceed plus or minus 5/8 inch.]

Rationale: Because of the nature of people movers which operate on exclusive right of ways and travel at lower speeds, they should be able to be designed and constructed to meet these tolerances.

- **[Operation.** Where car doors open automatically at platforms designed for level or near-level boarding, ramps and bridgeplates shall deploy automatically. Deployment shall be integrated with door opening and closing. Manually deployed ramps and bridgeplates shall be permitted where doors are opened by train personnel and where the horizontal gap exceeds 12 inches (300 mm).]

{Frank Banko Comment}. Recommend rephrasing to “ramps, bridgeplates, or other gap mitigation devices.” Recommend adding, “if needed” at end of sentence. Intent is to not mandate a vehicle attribute, if not necessarily needed.

{Frank Maldari Comment}. Do not agree with operation requirement for automated bridge plates. I believe that are more of a hazard to passengers than manually deployed bridge-plates. Please refer to my white paper on automated bridge plates for additional details. Also need to define what automatically opening means; does it mean that a crew member pushes button, or does it mean that there is no door operator. It should mean the latter.

**[Advisory Operation,** The Committee recognizes that any gap between a rail vehicle and a platform can be a safety hazard for all travelers. The Committee recommends

that the Board require all entries on new vehicles to have automated bridgeplates or ramps where gaps exist at platforms by the year 2020.]

{Frank Maldari Comment}. Do not agree with advisory for automated bridge plates. I believe that are more of a hazard to passengers than manually deployed bridge-plates. Please refer to my white paper on automated bridge plates for additional details. Additionally there should be some discussion on gap mitigation devices and bridge-plates. The current wording, I believe allows for any type of automatic gap mitigation device which would bring the gap to within the requirements stated above. Bridge-plates should only be required when the car (including any car borne automatic gap mitigation devices) and the platform result in a gap larger than the requirement. Which, I believe the current wording allows, but should be verified through discussion. In addition there should not be a date mentioned in the regulation as the regulations should apply to only new equipment ordered after the application date. Please remove 2020 reference.

Rationale: Based on examples of automated ramps or bridgeplates being used in some European rail systems, the majority of the committee felt that automated ramps or bridgeplates for new rail cars beginning in the third decade of the 21<sup>st</sup> century were not beyond reach. The majority of committee members felt that based on videos they had seen of automated ramps or bridgeplates on European equipment, provision of automated ramps or bridgeplates would increase safety for all passengers (by mitigating the vertical and horizontal gaps) and would speed boarding and alighting and therefore reduce dwell time.

You Tube Videos of automated ~~mitigation devices~~ gap fillers from some European Trains.

Gap ~~mitigation devices~~ fillers in use are visible at beginning of each of these videos:

Liepzig - <https://www.youtube.com/watch?v=xSwPYrkzUyc#t=4m51s>

Stuttgart - [https://www.youtube.com/watch?v=dv\\_Dp6i8ev0](https://www.youtube.com/watch?v=dv_Dp6i8ev0)

Vienna - <https://www.youtube.com/watch?v=-yjbkrcBCQ#t=0m30s>

{Frank Banko Comment}. Please consider the edits provided to clarify the intent and to be consistent with the prior requested edits. Section will say: You Tube Videos of automated gap mitigation devices (i.e., gap fillers) from some European Trains. The devices in use are visible at the beginning of each of these videos.

{Frank Maldari Comment}. The videos refer to gap mitigation or gap fillers exclusively. The above paragraphs discuss ramps and bridge plates. The devices are different. Consequently, the videos do not justify the requirements for ramps and bridge plates, and should not be included in this section. Considering the issues identified in my white paper and that evidence of an automatic bridge plate with 100% reliability in service has not been shown to the committee, it should not be a requirement of the regulation.

#### IV. OBJECTION/CONCERN REGARDING AUTOMATED RAMPS OR BRIDGEPLATES

Rationale: At least one large transit authority that operates both commuter rail and rapid rail raised strong concerns that automated ramps or bridgeplates would pose safety hazards to both passengers on the platforms and passengers on the rail cars. The concerns involved keeping passengers on the platforms away from the deploying ramp or bridgeplates. The agency also raised technical concerns that an automated ramp or bridgeplate would be difficult to design to meet the largest vertical and horizontal gaps in the system. The agency raised concerns that elements of an automated ramp or bridgeplate within the car could present a tripping hazard in the car. The agency also raised technical concerns about the complexity, cost, weight, reliability (particularly in adverse weather conditions), and safety interlockings of what it envisioned to be a complicated mechanism provided to every door of a commuter rail or rapid rail car.

## V. Ramps and Bridgeplates

- **General.** Ramps and bridgeplates shall comply with this section. Ramps and bridgeplates shall be permitted to fold or telescope if all the technical requirements are met.

Rationale: The Boarding and Alighting Subcommittee considered gap fillers (car-borne or station-based devices or materials that are used to reduce the horizontal and/or vertical gap between the platform and the vehicle). Discussion revealed considerable concerns related to their maintenance as well as incidents of entrapment. The Subcommittee encourages further development on these devices to resolve these problems.

- **Design Load.** The design load of ramps and bridgeplates 30 inches (760 mm) or more in length shall be [800 pounds (364 kg) minimum]. The design load of ramps and bridgeplates less than 30 inches (760 mm) in length shall be [4600 pounds (182 kg) minimum]. Ramps and bridgeplates shall have a design safety factor of at least 3, based on the ultimate strength of the material.

{Blair Slaughter, Frank Banko and Linda Martin Comments}. This should be 400 lbs.

**Advisory Design Load.** The design load is the weight the ramp or bridgeplate is designed to support without damage or permanent deformation. Some deflection may occur under maximum load.

{Frank Banko Comment}. Should this be "... may occur up to the under maximum load?"

Rationale: The increase in design load reflects the research that the combined weight of power wheelchairs and users is increasing and the industry is providing higher capacity lifts and higher capacity lifts will likely be provided in the new Access Board's non-rail vehicle accessibility guidelines.

- **Handrails.** Handrails complying with (fill in latest version of specifications for Handrails, Stanchions, and Handholds) shall be provided on ramps and bridgeplates where the horizontal gap between the platform and car floor exceeds 12 inches (300 mm).]

Rationale: This recognized that in some circumstances longer ramps and bridgeplates are necessary and thus handrails are needed in these situations. (i.e. Amtrak set-back platforms in Maine have a considerable horizontal gap to provide clearance for freight trains using the same track)

- **Clear Width.** The ramp and bridgeplate clear width shall be [32 inches (800 mm) minimum].

**Advisory Clear Width.** A wider ramp or bridgeplate is recommended because it is more usable by passengers who use wheelchairs, and accommodates a broader range of passengers with disabilities. [The ramp or bridgeplate can be nearly as wide as the door.]

- **Attachment.** When used for boarding and alighting, ramps and bridgeplates shall be firmly attached to the vehicle, shall not be subject to displacement from the vehicle, and shall overlap the platform. [Ramps and bridgeplates shall engage to the vehicle in such a manner that they may not be dislodged by horizontal or vertical movement until actively disengaged by a member of the crew.]

{Blair Slaughter Comment}. I suggest some expanded performance criteria that will account for the stop-start dynamics of someone in a powered device that stops at any point on the ramp and then starts again. It is that combination that has been problematic.

Rationale: This was added based on some experience of wheeled mobility device users who reported situations when ramps and bridgeplates were not securely connected to the rail car.

{Frank Maldari Comment}. The attachment requirement appears to be requiring that the bridge plate not dislodge when it is moved. I believe the intent can be better articulated with revised wording which had been suggested previously. Suggest the second sentence of the attachment requirement be change to read as follows: "Ramps and bridge plates shall engage to the vehicle in such a manner that they will not be dislodged when used by a wheeled mobility device and can only be removed when actively disengaged by a member of the crew"

- **Manual Operation.** Power operated ramps and bridgeplates shall be capable of being operated manually and in a manner that is safe for the occupant and operator if the power fails.

- **Surfaces.** Ramp and bridgeplate surfaces shall comply with (fill in latest version of specifications for Surfaces), and shall be uninterrupted from edge to edge.
  - Advisory Surfaces.** Ramp and bridgeplate surfaces must be uninterrupted from edge to edge to accommodate three-wheel scooters. Expanded metal or perforated materials are permitted, as long as the openings comply with (fill in latest version of specifications for Openings).
- **Edge Barriers.** The edges of ramps and bridgeplates shall have barriers 2 inches (51 mm) high minimum extending from the vehicle doorway to 6 inches from the outer end, and shall taper down smoothly.
- **Slope.** Ramps and bridgeplates shall have slopes not steeper than 1:8 (12.5 percent) when deployed to station platforms, measured at 50 percent passenger load.
  - Advisory Slope.** The Department of Transportation regulations at 49 CFR 37.165(f) requires vehicle operators to assist passengers with disabilities with the use of boarding devices, even if the vehicle operators must leave their seats. Providing ramps and bridgeplates with the least possible slope accommodates a broader range of passengers with disabilities and minimizes the need for assistance.
- **Transitions.** Surface discontinuities at transitions from boarding and alighting areas to ramps and bridgeplates shall comply with (fill in latest version of specifications for Surface Discontinuities).
- **Visual Contrast.** The perimeter of the ramp and bridgeplate surface shall be outlined. The outline shall be 1 inch (25 mm) wide minimum and shall contrast visually with the rest of the ramp and bridgeplate surface either light-on-dark or dark-on-light.
- **Gaps.** When deployed for boarding and alighting, gaps between the ramp or bridgeplate surface and vehicle floor, [and the ramp or bridgeplate surface and the station platform,] shall not permit passage of a sphere more than 5/8 inch (16 mm) in diameter.
- **[Stowage.** Where portable ramps or bridgeplates are permitted, a compartment, securement system, or other method shall be provided within the vehicle to stow the ramps and bridgeplates when not in use. When stowed in passenger areas, portable ramps and bridgeplates shall be enclosed and protected from the elements, shall not pose a hazard to passengers, and shall not interfere with the maneuvering of wheelchairs.]

{Blair Slaughter Comment}. FRA should weigh in here and advise if this must be secured to meet the g force requirements for things attached in the car.

{Kenneth Shiotani Comment}. In the current report, we have language that the stowage for a portable bridgeplate or ramp should be covered and protected from the elements. I think protected from the elements is enough. In the Bombardier bi-level cars, having bridgeplate stowed in a covered location would be overkill and would discourage usage. Having it out in plain view I think is better. Situation could be different in other types of rail cars and if there was a large vestibule in a new car that was not weatherproof then maybe covered stowage would be appropriate but the “protected from the elements would be fine.” See two photos below.



Northstar Bombardier bi-level coach bridgeplate. Kenneth Shiotani, National Disability Rights Network, took this photo and there are no restrictions on the use of this photo.



Northstar Bombardier bi-level coach doorway & bridgeplate. Kenneth Shiotani, National Disability Rights Network, took this photo and there are no restrictions on the use of this photo.

## VI. Lifts

### General.

- **Design Load.** The lift design load shall be [800 pounds (364 kg) minimum]. Load carrying components that are subject to wear shall have a design safety factor of at least six, based on the ultimate strength of the material. Other components that are not subject to wear shall have a design safety factor of at least three, based on the ultimate strength of the material.

Rationale: Same as above for ramps, consistency with proposed regulations for non-rail vehicles.

### Controls.

- **Interlocks.** Lift controls shall be interlocked with the vehicle brakes, transmission, propulsion system, or door, or shall provide other systems to prevent the vehicle from moving when the lift is not stowed. Lift controls shall not be operable unless the interlocks are engaged.
- **Sequence.** Lift controls shall be of a momentary contact type requiring continuous manual pressure. Lift controls shall permit the operator to change the operation sequence. Lift controls shall not permit the lift platform to be folded, retracted, or stowed when occupied, unless the platform is designed to be occupied when stowed in the passenger area of the vehicle.

**Advisory Sequence.** A rotary lift is an example of a lift platform that is designed to be occupied when the platform is rotated into a stowed position in the passenger area of the vehicle.

- **Manual Operation.** Lifts shall be capable of being operated manually if the power to the lift fails. The manual operation shall be safe for the occupant and operator when operated according to the manufacturer's instructions. When operated manually, the lift platform shall deploy and lower to the boarding and alighting area or the roadway with an occupant; shall rise to the vehicle floor without an occupant; and shall stow. The lift platform shall not fold, retract, or stow when occupied, unless the platform is designed to be occupied when stowed in the passenger area of the vehicle. Doors that must be opened to allow the lift to operate shall have interior and exterior manual releases.

### Lift Platforms.

- **Surfaces.** Lift platform surfaces shall comply with general provisions for accessible routes (fill in latest version of specifications for Surfaces).
- **Size.** The lift platform clear width shall be [32 inches (800 mm) minimum] measured from the platform surface to 40 inches (1015 mm) minimum above the platform surface. The lift platform clear length shall be [54 inches (1372 mm) minimum measured] from the platform surface to 40 inches (1015 mm) above the platform surface.

Rationale: Same as above for ramps, consistency with proposed regulations for non-rail vehicles.

- **Edge Barriers.** Lift platforms shall have edge barriers complying with (fill in latest version of specifications for Lift Edge Barriers) to prevent the wheels of wheelchairs from rolling off the

platforms. Openings between lift platform surfaces and raised barriers shall not permit passage of a sphere 5/8 inch (16 mm) in diameter. Edge barriers shall not interfere with the maneuvering of wheelchairs.

- **Gaps.** When the lift platform is at the vehicle floor level and any edge barrier is lowered, the gap between the platform surface and the vehicle floor shall not permit passage of a sphere 5/8 inch (16 mm) in diameter.
- **Threshold Ramps.** Threshold ramps from boarding and alighting areas to lift platforms and edge barriers used as threshold ramps shall have slopes not steeper than 1:8 (12.5 percent) for a rise of 3 inches (75 mm) maximum. The slope shall be measured when the lift platform is level. Surface discontinuities at transitions from boarding and alighting areas to threshold ramps shall comply with (fill in latest version of specifications for Surface Discontinuities).
- **Visual Contrast.** The perimeter of the lift platform surface shall be outlined. The outline shall be 1 inch (25 mm) wide minimum and shall contrast visually with the rest of the platform surface either light-on-dark or dark-on-light.
- **Deflection.** When occupied, lift platforms shall be permitted to deflect 3 degrees ~~maximum~~ in any direction with respect to the platform's unloaded position, exclusive of vehicle roll or pitch. [Some deflection may occur under load.](#)

{Blair Slaughter Comment}. This highlighted area confuses the first sentence. When occupied and under load should be the same.

{Frank Maldari Comment}. Do not remember discussing deflection criteria at any meeting and question the relevance of 3 degrees. I only remember discussion that there should be an allowance for deflection. Considering the high load requirement and large safety factor, do not believe that a criteria needs to be defined.

- **Movement.** Lift platform movement shall comply with the following:

**Normal Operating Conditions.** When occupied, lift platforms shall move at a rate of 6 inches/second (150 mm/second) maximum, and the horizontal and vertical acceleration shall be 0.3g maximum under normal operating conditions. When folding, retracting, or stowing, lift platforms shall move at a rate of 12 inches/second (306 mm/second) maximum under normal operating conditions, unless the platform is folded and stowed manually.

**Power or Equipment Failure.** In the event of a power failure or single failure of any load carrying component, lift platforms that are occupied or are stowed in a vertical position shall move at rate of 12 inches/second (306 mm/second) maximum.

- **Boarding Direction.** Lift platforms shall permit passengers who use wheelchairs to board the platforms facing either toward or away from the vehicle.
- **Standees.** Lift platforms shall be usable by passengers who use walkers, crutches, canes, or braces or who otherwise have difficulty using steps. Lift platforms shall be permitted to be marked to indicate a preferred standing position.
- **Handrails.** Lifts platforms shall have handrails complying with general provisions for handrails (refer to latest version of specifications for Handrails, Stanchions, and Handholds) on two sides of the platform that move in tandem with the platform to provide support for passengers in a standing position. Handrails shall have a usable gripping surface 8 inches (205 mm) long minimum. The gripping surface shall be 30 inches (760 mm) minimum and 38 inches (965 mm) maximum above the lift platform surface. Handrails shall not interfere with the maneuvering of wheelchairs.

## Draft Chapter 3 – Onboard Circulation and Seating

{Bob Reuter Comment}. Chapter 3 - Should be restated at some point "mobility device tie downs are not required on rail vehicles and if provided it shall be the riders decision as to whether or not to use devices and cannot be required to use a tie down.

### I. Doorway Width, Exterior (Side Doors)

Minimum clear doorway opening: 32 inches.

This requirement is for all rail vehicles and all side doors that are on the path to accessible areas of a car or on cars that may provide the only exterior access to an accessible car that does not have side doors as in a car that might be coupled to an intercity diner.

### II. Bi-parting Side Doors

To insure that passengers can readily board and alight from vehicles, particularly during heavy travel periods and when alternative doorways are not available, the following recommendations are made:

1. At least one leaf of the door pair should provide a 32" clear opening. "Should" instead of "must" here because larger panels can create unintended conditions. An absolute requirement for the 32" leaf may inhibit more efficient, reliable and safe designs.
2. Door leaves should be interlocked with a single drive to insure that the maximum clear opening is achieved. "Should" versus "must" here because individual leaves with their own motors may operate more reliably than one motor driving two doors.
- ~~1-3.~~ When door leaves are interlocked, each door must have an independent emergency release from the operator to allow manual operation. Placement of release actuators must be within the defined reach range of someone using a wheelchair.

{David Martinez Comment}. Metra fully understands the intent of this provision, however, our concern is that placing an actuator at the level currently recommended could create an unanticipated safety hazard. For example, the actuator placed at approximately 4 feet from the floor could lead to an undesired opening of the doors by someone other than an adult. This can be especially worrisome since not all the doors of a train are currently not staffed by a railroad employee for the duration of the trip. Metra is currently in the process of installing a Passenger Emergency Intercom System (PEIS) which will alert a member of the crew to the exact car number, location in the car A end or B end of the car. Therefore, in case of an emergency a crew member will know who is need of assistance and there location on the train.

4. Door systems must include the following communication devices.
  - i) Doors in failure mode, i.e. fail to open when the system demands, should be indicated on the exterior and interior of the vehicle by a lighted sign or light with an explanatory sign

and by an appropriate method in the operators cab. Placement and design of the exterior indicators must be such that they are not confused with other side-of-car indicators when viewed by passengers or operators.

{Frank Maldari Comment}. Do not agree with this requirement (failure mode indication). It does not make sense. If the door operator is failed, which is the most likely reason the door will not open how does illuminate a light indicating that it cannot respond to the open command? Currently most equipment has red, door open lights on the interior and exterior of the train. These lights are used by the crew to identify doors that have not opened or closed. Some authorities, like LIRR also have green indicating lights indicating that the doors are closed and locked. It is the train crews' responsibility to identify non- operating doors. Since they are the ones controlling that door operation, they are really the only ones that can do this.

†ii) Doors that have been locked out due to failure must have indicators on the exterior of both sides of the vehicle so that a person who wishes to board will know that the door on the opposite side of the vehicle is not available for exiting. An example could be a stacked set of lights that indicate red or green depending on the condition. When viewed from the platform the lower indicator would apply to the door on that side and the upper indicator would apply to the door on the opposite side. These indicators can be the same as the failed door indicators.

{Andrew Phillips Comment}. Under "II. Bi-parting Side Doors" and under #4 Section ii. I'd add "Doors that have been locked out due to failure must have VISUAL indicators on the exterior..." I'd like to add something for blind people but I'm not sure what.

{Frank Maldari Comment}. Door lock out lights should be separate from door operation lights. There should be one on the inside of the car adjacent to the door and one on the outside of the car adjacent to the door. The lights should illuminate when the door is locked out by the train crew. We currently have these devices on LIRR. In order to clearly distinguish these lights from other lights, and to call attention to them, they blink. I can supply pictures if necessary.

iii) Interior side doors that are remotely activated by the vehicle operator must have, in the event of a door failing to open, a device that allows a passenger to immediately notify the operator that a door has failed to open and the location of that failed door within the consist. (The location indicator can either be at the operator's desk or the indicators defined in (i). The system must have a two-way feature that lets the passenger know that the message has been acknowledged by the operator. The notification device or button shall provide positive tactile and visual feedback that it has been properly activated. The button must be located in compliance with the ADA. The notification system shall be designed so that it will only work when the door system has been actively commanded to open by the operator. The intent of this requirement is that the notification device is

integrated into the door system which already has traction interlock features that prevent doors opening when the train is moving and prevent train movement if doors are open. Further, the intent is that activation of the button when the train is in motion and no door open command is active will create no alarm to the operator.

{Frank Maldari Comment}. Strongly disagree with the connection of the communication device with the door operator. We currently have these devices and they are independent of the door operator. They are not only used for door operator failure, but more importantly when there is an emergency (medical or safety) that requires passengers to contact the crew. These devices have been used to alert the crew to passengers with medical problems and are an important part of passenger safety. Additionally, question the need to provide tactile feedback of operation. It will be difficult to achieve reliably and is not essential to the function of the communication device, because there will be audio feed back from the crew when the device is activated. Currently activation is achieved by pressing and releasing the button, so there is no opportunity for tactile feedback. Currently there is a lighted button on our equipment which illuminates to indicating actuation, but it is not necessary. Additionally this type of feature is called out in two other committees recommendations. This one is not necessary as it is already required by the Communication Sub Committee, and that requirement is more appropriate.

~~Bi-parting doors with individual leaves that provide less than 32" clear opening were raised as an issue particularly on rapid rail systems where, should a single leaf not open, the passenger may not be able to exit the train and be forced to the next station and beyond. The Subcommittee offers the following:~~

~~Possible recommendations:~~

- ~~a. Bi-parting doors should have at least one leaf that opens to a clear width of 32"~~
- ~~b. Door leaves interlocked so that a functioning door always opens both leaves~~
- ~~c. Both leaves must have an emergency release feature in case one leaf is obstructed or damaged so that it cannot open~~
- ~~d. Communication method / device provided at the door area to alert the driver/operator to ensure passengers do not get stuck on the car because of inoperative doors. (Device location must comply with requirements for reachability of controls from a wheelchair.)~~

#### Discussion

1. The Subcommittee would like industry input from door and vehicle manufacturers to determine the most practical and reliable solution based on the issues listed below, primary issues.
2. The key issue of this issue is that passengers can get stuck on trains and carried to distant stations and returning to the intended station can be difficult and/or dangerous. Regulating the size of door components may not solve the problem since any door opening system can and will fail in time. The key to avoiding the problem of getting trapped is to have immediate communication available between the passenger and operator so that the passenger can be let out of the car and the door locked out until it can be serviced. The Subcommittee would

like to solicit comment from industry representatives in order to make final recommendations.

3. [Comment received by at least on transit operator and one car builder was that the imbalance of different sized doors could make the opening process less reliable and having the door of a certain size did nothing to address the core problem of not being able to get passed a failed door.](#)

### III. Doorway Width, Between Cars (End Doors)

#### Minimum clear doorway **opening: 32 inches**

This requirement is for all rail vehicles except for the ~~operator's cab~~ ends of transit cars such as subways, MU (Multiple-Unit) cars and commuter cars that have legitimate conditions that impact the end doorway. Those conditions are: system clearance, structural requirements, the operator having appropriate physical space and the operator's safe field of vision.

Proposed [Exceptions](#): The Cab ends of vehicles that may be used coupled within a train:

1. MU cars, [trailer cars](#) and Cab Cars, regardless of mode may have end doors of 30" if:
  - a. There is a legitimate issue for the vehicle operator having appropriate space and creating a wider path adversely impacts the operator's safe field of vision. Agencies must demonstrate that restrictive clearance, structural requirements and operator ergonomics justify the use of the 30" dimension as opposed to the 32" typical dimension.
  - b. Movement through this doorway shall not be necessary for an individual to get to accessible seating space.
  - c. [The path to the door is less than 32" because of seating arrangements.](#)
  - ~~c.d.~~ [Intercity and full width commuter cars may only apply this exception to the cab-end of cars.](#)

{[Frank Maldari Comment](#)}. Currently the requirement for door width does not apply when the aisle width is less than 30". This make sense since have a door wider than an aisle that must be passed to get to the door does not add value. Currently many commuter cars, unlike intercity cars, have aisle that are about 24" wide and utilize 5 across seating to provide the most seating space for passengers. If the aisle space needs to be increased, one seat from every row of seats will need to be removed, and it will result in a significant loss of passenger seats (approximately 20%) to require a 30" or 32" aisle. This will have a significant impact on available seating cost of additional equipment required and cause issues on operations with limited equipment and operations such as certain train routes (like Penn Station) where train capacity is limited. Strongly suggest that current allowance (49CFR Part 38.93.a.2) for smaller doors and smaller aisles be allowed, provided there is an accessible path to wheel chair seating on every car as is currently required.

### IV. Overlap of Clear Path Between Cars.

Safety devices or appliances required for the safe operation of the train [such as the handbrake, railings or latches](#) may overlap the clear path as follows:

1. Protrusions into the clear aisle /doorway between cars must be at least 34" above the floor of the vehicle and may protrude no more than 4" (See 36CFR1191, appendix A, 404.2.3).

2. On cars where the doorway is 30" wide protrusions may overlap the path through the doorway by a maximum of 2" at or above 34" minimum from the floor.
3. Protrusions into the path may not continue for more than 12" longitudinally and may not occur simultaneously on the opposite side of the path.
4. Protrusions must be separated longitudinally by a minimum of 20". This assumes two coupled cars with the same end configuration.
- ~~4. Vehicle operating agencies and/or vehicle manufacturer must formally justify to their respective regulatory agency (FRA or FTA) why the devices must protrude into the clear width of the doorway.~~

Discussion: Safety devices for use by railroad crews are often located at the ends of cars and in some cases such as lever type hand brakes, have geometric dimensions and locations that are critical to safe operation particularly during emergencies. One such device is the lever type hand-brake that has a maximum pivot height determined by other governing bodies. Agencies should be prepared to present legitimate reasons why such devices cannot or should not be located elsewhere. The dimensions of items 3 and 4 should be verified and revised if needed.

#### **V. Clear Width ~~from door to mobility aid seating location~~ of Accessible On-board Circulation Path (ACBP)**

Minimum ~~aisle~~ width 32 inches.

This requirement is for all rail vehicles ~~3~~.

{Frank Maldari Comment}. Need to be more clear on what ACBP is. Currently many commuter cars, unlike intercity cars, have aisles that are about 24" wide and utilize 5 across seating to provide the most seating space for passengers. If the aisle space needs to be increased, one seat from every row of seats will need to be removed, and it will result in a significant loss of passenger seats (approximately 20%) to require a 30" or 32" aisle, which will require 25% more cars. This will have a significant impact on available seating cost of additional equipment required and cause issues on operations with limited equipment and operations such as certain train routes (like Penn Station) where train capacity is limited. As an example of the cost to procurement; a new order is being solicited for 170 cars that will cost an estimated \$532 Million. The cost for 25% more cars will be an additional \$133 Million, which is a significant increase. Strongly suggest that current allowance (49CFR Part 38.93.a.2) for smaller doors and smaller aisles be allowed, provided there is an accessible path to wheel chair seating on every car as is currently required.

#### **VI. Vestibule Width**

Minimum width 44 inches ~~minimum~~.

This applies to vehicles with vestibules, wind screens, modesty panels or other partitions that establish an entrance or "vestibule" area separate from the occupied passenger space. Vehicles that have defined walls that establish a "vestibule" separate from passenger occupied space should be 44" wide over the most restrictive protrusion where 90 degree or similar turns are required immediately upon entering the vehicle. If the vestibule is arranged to allow a free-flowing path into

the passenger area or aisle leading to that area, then the most restrictive width of the vestibule near the door may be less than 44" but in no case can the [accessible on-board circulation path](#) ~~unobstructed path to the accessible seating area~~ be less than 32". (An example would be a space defined by angled or rounded walls that provide a progressively broader path). [Protrusions such as handrails and other devices shall follow the requirements for the Overlap of Clear Path Between Cars.](#)

## **VII. Entrance Width for Cars Without Vestibules**

[Minimum width](#) 44 inches ~~minimum~~.

Vehicles that do not have vestibules or otherwise physically defined separation between entrance areas and passenger occupied areas and require 90 degree or similar turn to reach the accessible seating space must have a clear path dimension across the vehicle free from panels or stanchions at least 44" wide. This path should be a straight line across the doorways on opposite sides of the vehicle.

Discussion: The intent of this definition is to insure that people in mobility devices can quickly move onto the vehicle but at the same time not over defining vertical stanchions to the point that ambulatory safety is compromised.

The opinion expressed generally by community members is very much in favor of recommending the clear projected space 44" wide across the vehicle, assuming that the doors are directly across from each other as is most common. The most expressed concern is that during heavy loadings it can be difficult or impractical for passengers using wheelchairs to move into designated spaces or move off of the train efficiently. Stanchions (poles) that accumulate standees make maneuvering into the car very difficult. Unfortunately the courtesy that might be afforded to passengers in certain regions or communities cannot be predicted or relied upon. Regulation is often an unfortunate necessity to insure that what should be basic courtesy in civilized society is guaranteed, particularly when some people may not be able to exercise the options available to the general public. We have seen during the course of the RVAAC's work that while one provider has found that removing or rearranging stanchions improved overall circulation other systems are concerned that safety may be compromised. While it is most likely that the subcommittee and full committee would recommend the clear 44" dimension across the car, perhaps the Access Board could best serve the community and providers by considering studies, modifications and procurements that are underway before generating the proposed rule for this situation. Often changes that seem impractical or inefficient create unintended positive consequences such as those experienced by the Washington, DC Metro. Other providers and builders are seeing a shift to reducing vertical stanchions in door areas to improve general passenger flow on and off of the cars.

Two particularly good comments during the 12-11-14 meeting were "Design can work against controversy" and "Defined positions encourage bad habits).

## **VIII. Clear Space for Mobility Aid Seating Location**

32" x 54"/32" x 59" minimum.

32" x 54" minimum is required where the space is confined on no more than two sides.

32" x 59" is required when the space is confined on 3 sides to insure adequate maneuvering space.

[Bounding of a mobility aid seating location by walls or other restrictive objects perpendicular to the long wall or bounding element by 15" establishes the requirement for the 59" dimension.](#) The rules for the overlap of [seating clear](#) space by fixed objects apply to this dimension.

{[Frank Maldari Comment](#)}. I believe that the current wording allows for a 15" wide wall on one of the 3 sides to maintain the 32" X 54" requirement. Please confirm.

Discussion: The increase from the original ADA definition is to accommodate larger and differently configured mobility aids and ensure that space for maneuvering is provided.

## IX. Overlap of Seating Clear Space

This applies to all rail vehicles. The required Clear space for mobility aid seating location may be overlapped by a maximum of 6 inches at [a minimum or above](#) height of 12 inches above the floor.

{[Frank Maldari Comment](#)}. Min. 12" vertical clearance results in a reduction in seat foam for the seated passenger. Please consider reducing the value to 11". Currently the requirement is 9" so at 11" it would still be a significant increase.

## X. Number of Mobility Aid Seating Positions [for Coach Cars.](#)

Minimum of 2.

[Mobility aid seating positions may either be permanently arranged or created by manipulating seats. If seating positions are established by converting seats, the seating position must not overlap the regular travel path of the vehicle.](#)

[When a vehicle contains seating that allows passengers to choose their direction of travel then one half of the accessible seating locations must allow for travel facing the direction of travel.](#)

Additional Accessible Seating:

Some quantity of seats should be easily removable or convertible to temporarily accommodate groups of individuals using wheelchairs.

Discussion: There should be some definition of the quantity of seats that should be removable [or perconvertible per](#) vehicle by mode. Removing or converting seats should not generate conflict with other requirements for accessibility and where conflict occurs the applicable requirement should be waived. Depending on the mode, convertible seats may have reduced functionality. This is especially true of more complex seats used in intercity trains where the added mechanical function interferes with other comfort features. The convertible seats will likely fall into the area where the seats need to be transfer seats. There should be language to address this possibility. [The quantity of convertible and / or removable seats should be a percentage of the vehicle or train set.](#)

{Frank Maldari Comment}. Additional seating especially for commuter service is not practical operationally for the reasons outlined below. Suggest this requirement be removed.

[What is a Coach? Traditional definitions of coaches have changed with innovative designs across multiple modes. As an example, throughout much of the 20<sup>th</sup> century coach cars in intercity and commuter service ranged from 40 to 90 feet in length. At the creation of the ADA virtually all intercity and commuter coaches exceeded 80 feet long. Contemporary developments have individual cars in train sets at 40+feet and trainsets that may be produced from foreign designs for use in the U.S. could have coaches that are well under 85' in length. Regulation based solely on "per vehicle" requirements will yield more mobility aid seating space than is needed while simultaneously reducing overall seating capacity. Some thorough study should be made that can allow establishment of a percentage of accessible seating spaces relative to the passenger capacity of the train set, individual vehicle and mode.](#)

Operational practices are not part of the RVAAC responsibility, however by requiring removable or convertible seats there is an implied, if not defined, requirement for a provider to offer a seat removal plan and service. Depending on the mode or the nature of the operation, the impact to the provider could be substantial. In the absence of a policy for the provision of service, equipping vehicles is irrelevant. As an example, many but not all of Amtrak's cars use a seat track system that allows for seats to be easily removed but the policy for removing seats for groups has not been consistent. In the case of Tier II trains the structural requirements for attaching seats makes removing seats especially difficult. In the case of transit systems where vehicle availability and seat volume is more time-of-day critical the logistical problems of managing a car with missing seats could dramatically impact the system's ability to provide its service. Examples of what type of group movements should be reviewed and community and industry input solicited in order to craft more defined language for the NPRM.

## **XI. Handrails and Stanchions**

1. Size: 1.25 - 1.5 inches.
2. Knuckle clearance: 1.5 inches minimum.
3. Handrails, hand holds or similarly functional devices should be included on passenger seats. The purposes of such devices are:
  - a. Provide a discreet firm point for passengers to safely navigate to their seat or other amenities while the train is in motion.
  - b. Provide a safe condition for standees when other railings, loops or stanchions are unavailable.
  - c. Assist passengers in standing up from their seats.
4. Depending on the Mode, vertical stanchions should be included adjacent or as part of the seat at every other seat. Modes not subject to standee conditions as part of normal operation or where rotating or changeable seats are used are not required to include vertical stanchions.

5. Handholds, whether vertical or horizontal, provided adjacent to doors to aid boarding and alighting passengers whether in wheelchairs or ambulatory may be at the 32” minimum or 6” less than the clear door opening apart, whichever is greater.
6. Vertical handholds intended as boarding aids that project into the clear door opening should terminate no lower than 34” from the floor unless the device is intended as an aid to employees boarding from the ground or as an aid to passengers evacuating to the ground.

{Frank Maldari Comment}. With respect to item 3 above: Should clarify that every seat does not need a hand hold but handholds which perform the functions listed should be provided. With respect to item 4 above: Do not believe that vertical stations should be required at every seat or every other seat. On typical subway cars they are not located that frequently, however there are other handrails or straps for the standing rider. Adding these additional handrails, when not necessary will adversely affect passenger flow in the cars. It would be better to specify that handholds shall be provided for standing passengers when standees are expected as part of normal operation.

## **XII. Farebox Guard**

Required ~~for light rail systems only~~ only when fareboxes are available for use.

## **XIII. Maneuverability Near Doors**

See items IV, VI and VII. The intent of the referenced items is to insure that the space near the doors is preserved for maneuverability.

## **XIV. Maneuvering Space at Wheelchair Seating Locations**

A 60” maneuvering circle must be provide at each Mobility Aid Seating Location.

This requirement is for all rail vehicles to ensure that the passenger can maneuver the wheelchair into the seating location. The circle may overlap the aisle, Mobility Aid Seating Location and other maneuvering locations. The purpose of the maneuvering circle is to ensure that a passenger can turn to face their desired direction of travel and exit the Mobility Aid Seating Location toward the door in which they entered the vehicle.

{Frank Maldari Comment}. Need to allow the tuning circle to occupy other mobility aid seating locations, otherwise it will be very difficult to fit two seating areas adjacent to each other.

Discussion: While the 60” circle is thought appropriate questions were raised about requiring a 67” circle or using dimensions for “T” or “L” turns. An illustration explaining the overlap relation of maneuvering space to seating space and path of travel is needed.

## **XV. Service Animal Spaces**

A minimum of two (2) spaces ~~measuring 14" w x 38" l x 16" h~~ must be provided for service animals out of harm's way but appropriately close to their person.

This requirement is for all rail vehicles.

{David Martinez Comment}. Metra believes that if space is to be provided for service animals that there be a defined requirement as it relates to dimensions. This would avoid confusion when in the process of procuring new equipment and not have this space be defined differently by the respective suppliers. Also, it might be beneficial to define what a service animal is in this requirement, so as to avoid any confusion with respect to the definition.

Service Animal space may be overlapped by fixed objects by 6" at 12" H and 12" at 16" H. Service Animal Space may overlap other defined floor space by a maximum 6" longitudinally and transversely.

{Frank Maldari Comment}. Do not believe that we have done enough home work to ensure that a specific size can be easily achieved and is appropriate. We had discussed this issue at least once and could not agree on the size. Additionally the service animal will want to be next to its owner, who may be in a typical fixed seat, and will not want to separate from their service animal. Suggest the wording be left as currently defined.

Service Animals may not be expected to occupy passenger foot space.

Service Animal space may not be adjacent to heated surfaces that might harm the animal.

Service Animal space may not overlap the regular walking path.

Where an animal may be partially or wholly under a seat, the seat must be configured so no portion of the seat can injure or trap the animal.

A sign identifying service animal space should be applied (this may be over defining again since a person who may not need the space defined as "accessible seating" may choose to sit anywhere in the vehicle with enough space for them and the animal.

Discussion: This should be reviewed physically to make sure that the measurements are appropriate. A short study involving live animals and their owners should be performed to make sure that the space is comfortable and safe for the animal and passengers. Likewise if the space is found to be oversized then the overlap dimensions might be increased.

## **XVI. Transfer Seat Details**

1. For all vehicles, seats considered transfer seats regardless of mode or car type must have a seating surface that is at least 17" - 19" above the finished floor. Bolsters or other cushion features must not extend above 19" to avoid hindering transfer. No portion of the seat frame or shrouds may extend beyond the passenger surfaces of the seat bottom or back.
2. For all vehicles, seats considered transfer seats with armrests must include armrest that rotate out of the way so as not to inhibit transfer. When rotated out of the way, the armrest must be at least ½ inch behind the surface of the seat back. Armrests must be designed to remain in the upright or down position during normal train motion.

Discussion: This should be reconciled with building research to make sure that the dimensions are correct.

~~2. For intercity rail vehicles only, seats in sleeping cars, food service cars and dining cars, or other seats intended for occupancy by persons who wish to transfer from a wheelchair, must be at least 17" 19" above the finished floor. No portion of the seat frame or shrouds may extend beyond the passenger surfaces of the seat bottom or back.~~

## **XVII. Mode Details for Less Prevalent Rail Vehicles**

1. Historical or Heritage vehicles are included in light rail.
2. Replica and rehabilitated cars with a capacity of "x" or less are the same as light rail except for seating locations. Cars with a capacity of more than "x" are the same as light rail (Industry comment and recommendations are requested to generate a valid capacity and or vehicle size. This should include recommendation for loading definition such as normal, crush loading etc.)
3. Monorails in transit service are subject to the same requirements as light rail systems. Some exception may be needed for wheel intrusion on straddle beam vehicles.
4. Automated Light Rail Transit (ALRT), Automated Guideway Transit, (AGT), Skytrains, etc. are subject to the same requirements as light rail systems.
5. Cable Tramways services are subject to the same requirements as light rail systems.
6. Cog Railways are subject to the same minimum requirements as light rail systems
7. Incline planes / funiculars with 16 or fewer passenger must have one accessible seating location; vehicles with more than 16 passengers are subject to the same minimum requirements as light rail systems
8. Maglev (Magnetic levitation and propulsion) with capacity of more than 16 passengers and operation exceeding 60 MPH will comply with the requirements of intercity rail. Vehicles on systems with vehicle capacity of 16 passengers or less and /or operating less than 60MPH must comply with the requirements for Automated Guideway Transit (AGT).
9. Personal Rapid Transit (PRT). Each car must be accessible with 32" entry doors and one accessible seating location. Otherwise PRT's will comply with Light Rail requirements.
10. Other Modes not defined here must be accessible and the level of accessibility reviewed and established with the appropriate regulating body in a manner similar to the requirements for equivalent facilitation.
- ~~9-11. Privately Owned Heritage Vehicles not operating in scheduled service and / or offering transportation for sale to the general public are not required to be accessible. Common carriers routinely offering transportation for sale that lease or rent a Privately Owned Heritage vehicle to offer a service whether temporary or permanent must make arrangements for an equivalent service in an adjacent car or make arrangements accommodate passengers with disabilities on the Heritage car. If the vehicle is routinely leased for service to common carriers then it must comply with the ADA as already established for cars available for lease.~~

## **XVIII. Intercity, High speed and Articulated Vehicle Restrooms**

This applies to all vehicles that are required to or otherwise have accessible restrooms. Vehicles that are semi-permanently coupled or otherwise provide coupled diaphragm passageways that provide continuous floor surfaces and that create no vertical or lateral shearing conditions found in conventional cars with individual diaphragms may be arranged so that only one of the vehicles contains an accessible restroom. Each car must have the required number of accessible seats. Further, only one of the cars must have a vestibule and side doors. In all conditions, the pathways between accessible spaces, vestibules and restrooms must meet the minimum requirements set forth for accessibility. (According to 42 USC 12162(a) (3) Intercity (Amtrak) coaches must have accessible seating spaces AND an accessible restroom. This does not eliminate the possibility of a car builder or Amtrak from applying for equivalent facilitation.)  
[Further guidance should be solicited from industry.](#)

### **XIX. Vertical Movement on Intercity Long-Distance Bi-Level Cars**

Following are draft recommendation for vertical movement of passengers with disabilities between the levels of new intercity (Amtrak) passenger cars.

#### **APPLICABILITY:**

This applies to new bi-level intercity lounge cars built for Amtrak and any bi-level [equipment-lounge car](#) used by successors to an Amtrak route acquired by another operating entity or company as sanctioned under PRIAA. FURTHER, cars operated by private companies in scheduled intercity long distance service shall comply. Lounge means any car with a primary function that is to enhance the passenger experience beyond the purchased coach or sleeper accommodation and is so designed to enhance viewing from the second level. This requirement extends to any bi-level car, with or without food service, except diners, [and in interstate service](#) that ~~has none~~ [does not include](#) revenue seating [and is](#) available to all passengers on the train on a first come basis.

Open platform observation areas that are accessible to passengers at no extra charge and those provided for an extra fare must be made accessible to passengers using mobility devices. Full service Diners with a lower level kitchen that is not designed for passenger use are not required to have built-in vertical access.

While not considered true bi-level cars, single level cars traditionally known as “dome cars” that offer an elevated area designed for viewing scenery, with or without food service must have a number of accessible seating spaces and vertical access to reach the viewing level. Accessible spaces in the dome car may be convertible for use by other passengers when passengers using wheelchairs are not present.

#### **Possible Additional Applicability:**

1. All bi-level Intercity Long Distance bi-level coaches.
2. All bi-level Intercity Long Distance sleepers. (Key points are the number of rooms accessible per car, the type of room, upstairs and downstairs etc.)

3. All bi-level Intercity Long Distance Diner cars. Accessible from the adjacent car or dining tables are provided in the Lounge car. (The entire lower level of the diners is consumed by the kitchen.)

#### GUIDING PRINCIPALS

1. Features providing access for people with disabilities must be equivalent to those provided others in terms of functionality and aesthetics, and must not segregate individuals with disabilities.
2. Accessible features should be the norm for everyone.
3. There may not be restrictions on using any facilities or features until the train is stopped.
4. Safety concerns must be balanced with the underlying civil rights principles of the ADA.
5. Establishing policy mandates will drive the development of improved generations of technology.
6. All train cars should be accessible.
7. Access Board guidelines should promote the development of technology, and not freeze current technology in place.
8. Every circulation path used by the public needs an accessible route.
9. We must consider the growing demographics (the graying of America) when we establish scoping for accessible features.

#### REQUIREMENTS

New intercity bi-level passenger trains have some means of transferring passengers using mobility aids, or who otherwise cannot negotiate stairs, between the levels. The goal is to expand the full rail travel experience for passengers who might otherwise miss out on key features of train travel. The following features and requirements apply:

1. All vertical load bearing features designed with a safety factor of three.
2. Accessible path from the vehicle entrance to the lift device.
3. Accessible path from the lower level accessible spaces, restrooms etc. to the lift device.
4. Accessible path from the lift device to upper level accessible spaces.
5. Lift device shall not require backing in or backing out.

{Robert Carlson Comment}. I suspect that one would be required to either back in OR back out unless it is a "passthrough" lift design of some sort.

6. Lift must function with or without Head End Power and include a manual function in the case of total power loss.
7. Appropriate electrical and or mechanical safety devices to insure that the lift cannot operate unless the user is safely aboard the lift.
8. Gates, doors, guards, etc. must include interlocks to insure safe operation yet have sufficient tolerance and latitude to prevent system faults due to train motion and normal wear of components.
9. Lift platform shall be the same size as required for wayside and car borne lifts
10. The lift may be a vertical style or an inclined platform lift but the lift may not impede the stairway use.

11. The lift must include a fold down seat and horizontal and vertical hand rails on at least one side of the lift “car”.
12. If the lift does not allow for direct entrance then the dimensions for boarding the lift must be at least equal to the requirements for maneuvering a wheelchair into an alcove.
13. The lift must operate normally at the maximum track superelevation with the train stopped (approximately 7 degrees).
14. Lift must operate in emergency mode to within x degrees of the car’s rollover angle. (This must be studied to see how the movement within the car affects the vehicle’s center of gravity in extreme cases.) (The concept of this performance requirement is so that as long as a car is not on its side or in eminent danger of falling over that the lift can provide safe movement to the lower level.)
15. The lift frame must be of sufficient strength or otherwise so designed and installed as to function when the car is at its maximum designed diagonal misalignment (end-to-end twist).
16. Gates, doors, guards, hand rails etc. must be designed to contain the maximum load required for the lift when subject to the FRA required loading of 4g vertical, 4g lateral and 8g longitudinal and remain functional after the event. (For FRA does this mean when the device is loaded to its maximum capacity?)
17. Emergency stop devices must be available on-board the device and on both levels.
18. The maximum travel time between levels is X seconds.
19. The lift system should have soft starts and stops.
20. The lift system should have obstruction detection.
21. The lift must work reliably whether the train is in motion or not.

#### ANCILLARY REQUIREMENTS:

1. Cars with upper level restrooms must have an accessible restroom if the car includes vertical access or is available by design from a car with vertical access.
2. Cars with vertical access with restrooms on the lower level are not required to have upper level restrooms. (This is stated because PRIIA bi-level cars have non-ADA restrooms on the second level and a reduced number of restrooms on the lower level. The net number of toilets remains the same and seating is expanded on the lower level and reduced on the upper level. The reason for restrooms on the second level is that negotiating the stairs is a growing problem for ambulatory passengers primarily due to age. If the upper level and lower level must have the accessible restrooms then the primary function of the car as an enhancement to travel is greatly reduced because the number of passengers that can use the car is reduced.)

{Linda Martin Comment}. If possible this item should be further clarified. Content is not entirely factual. The PRIIA bi-level cars have an accessible restroom on the lower level but the sentence states “...non ADA restrooms...and a reduced number of restrooms on the lower level,” which can be taken to mean that there are no ADA restrooms on lower\* level either. Also, the content within the parenthesis can be taken as PRIIA cars having vertical access on the upper level for mobility aids but no ADA restrooms.

3. The quantity of accessible spaces should be on one level or divided between levels but the final quantity should not be greater than cars without vertical access. Convertible seating should be used to maximize the available seating space when persons using wheelchairs are not present.

#### ECONOMIC RISKS:

1. Applying vertical access to non-revenue cars has limited economic impact and may in fact encourage passengers who cannot use stairs to choose the train for travel. The primary costs are an extra cost for the equipment and maintenance over time.
2. Applying vertical access to revenue cars, i.e. coaches and sleepers will have a direct effect in lost revenue capacity. The physical impact and corresponding fiscal impact must be reviewed prior to NPRM.
3. There is a very real possibility that the economics will no longer justify building new bi-level Intercity Long Distance cars. The advent of bi-level cars on intercity long distance trains is driven by multiple economic goals. The enhancement of viewing due to the extra height was nice but the bi-level intercity car came about just before the number of airline passengers surpassed train passengers and railroads were trying to maintain service. Bi-level cars allowed the railroad to increase the number of passengers per car. The capital and operating investment per passenger on a higher capacity car is lower and thus the profit (or loss reduction) is greater. There is a huge risk that the economic efficiencies of bi-level intercity cars will be lost to accessible features. This comment does not apply to Lounge cars as defined at the front of this document. A proper study should be made.
4. The details governing the construction of lifts should be done with guidance from requirements in the built environment with full consideration that weight and space are big concerns for rail cars. This does not mean that safety or utility is compromised but following requirements for the built environment could unduly consume space or otherwise threaten the viability of the device in a rail car.

#### PHYSICAL RISK:

1. Dynamic factors during normal train operation will affect the operational reliability of the system. Unlike the built environment, railcars experience lateral, vertical, longitudinal and torsional movement. These movements can occur suddenly with no planning or warning.
2. The effects of train operation today at 90mph and at PRIAA specified speeds of 125mph on the integrity and safety of a lift system are not known.
3. The compact environment of a passenger car coupled with the dynamic effects may present challenges for independent operation that need to be resolved.

## Draft Chapter 4 – Rooms and Spaces

{Robert Carlson Comment}. Restrooms - Some consideration regarding toilet seat length needs to be made. The "nearly round" common configuration of train commodes is problematic for seating stability. Also protruding object immediately above and behind the seat need to be prohibited. A seat width to length ratio need to be set as more like that in building restrooms.

### I. Restrooms

**Ia. Scoping:** Each new Amtrak car shall have a restroom meeting the technical requirements, except dining and lounge cars where no restroom is provided for the general public. Where restrooms for the public are provided in a car, a restroom meeting the following requirements shall be provided. A car, other than provided by Amtrak, with no public restroom shall not be required to have an accessible restroom. Accessible restrooms shall be in close proximity to seating spaces for persons using wheelchairs and mobility aids and shall be connected to those spaces by an accessible on-board circulation path. In fixed-consist trains, not provided by Amtrak, where a restroom for the public is not provided in a specific car, an accessible restroom shall be permitted to be provided in an adjacent car provided: a) required wheelchair spaces in the car without a restroom are located in the end of the car closest to the connection with the car that has an accessible restroom; b) the accessible restroom is as close as practicable to the connection between cars; c) doors along the path are automatic; and d) the floor surface across the transition complies with the requirements for an accessible on-board circulation path (see Surfaces).

{Blair Slaughter Comment}. As stated below the ADA defines "intercity rail" as Amtrak and vice-versa. With the advent of PRIIA 209 private companies and other entities can compete with and take over routes operated by Amtrak. Already private operating companies with old equipment have won contracts and claimed that they are not Amtrak and do not have to comply with the same accessibility requirements as Amtrak. This condition, unforeseen when the ADA was crafted, presents a condition that is unfair to Amtrak and detrimental to the cause of accessibility.

#### Discussion:

The ADA defines "intercity rail" as service provided by the National Railroad Passenger Corporation (Amtrak) and sets specific requirements for an accessible car. [See **Addendum A** attached at the end of this chapter.] In particular, each car must have space for a person to remain in a wheelchair or mobility device, transfer seat, space to store a folding wheelchair, and an accessible restroom (see section (a) ~~(B)~~ of [Addendum A](#)). On the other hand, the section on Commuter Rail explicitly states that an accessible restroom is not required in a car which does not have a restroom for the general public.

When the guidelines were originally written, the only intercity and commuter systems in operation were composed of traditional rail cars, coupled together, pulled or pushed by locomotives. Cars can be uncoupled and arranged in various configurations and the coupled connection has significant horizontal and vertical freedom of motion. The result

can be a dangerous shearing motion between the openings of adjacent coupled cars when trains are moving. During discussions while crafting subpart B of title II, members of Congress were concerned about allowing persons with disabilities, especially wheelchair users, to move between cars unless the train was stopped in a station.

Since the original guidelines were issued, some “fixed consist” trains, similar to ones operated in Europe [or Japan](#), have been introduced or proposed in the USA. In these trains, the cars are permanently connected to each other and cannot be re-arranged. The connection between cars allows them to pivot, but there is little or no horizontal or vertical movement between cars and no dangerous shearing. In addition, many of these cars are Electric Multiple Units (EMU) which have motors in each. With a variety of motors and other electrical components underneath, there is little extra space for water and waste tanks needed for a restroom. As a result, restrooms for the general public may only be provided in every other car. The subcommittee believes that providing an accessible restroom in every other car in a fixed consist train provides accessibility equivalent to a restroom in every car under the conditions set above: the path between cars must comply with the requirements for an on-board accessible path, including width and surface characteristics, doors must be automatic, and the spaces for wheelchairs must be at the ends closest to the restroom.

{**Frank Banko Comment**}. Recommend rephrasing second sentence to “In these trains, the cars are [semi](#)-permanently connected to each other and can [only not](#) be re-arranged [in a maintenance facility setting](#).”

{**Kenneth Shiotani Comment**}. Per the following three photos, I think folks think the Acela and Talgo configurations are good. Not sure what folks think about the VRE Nippon Sharyo Gallery car restroom toilet. Restroom floor space is pretty narrow. The comment may apply to the following technical requirements.



Acela restroom interior. Kenneth Shiotani, National Disability Rights Network, took this photo and there are no restrictions on the use of this photo.



Talgo restroom. Kenneth Shiotani, National Disability Rights Network, took this photo and there are no restrictions on the use of this photo.



VRE Nippon Sharyo Restroom interior. Kenneth Shiotani, National Disability Rights Network, took this photo and there are no restrictions on the use of this photo.

{Kenneth Shiotani Comment}. The following set of four photographs are of toilets on various railcar to illustrate the diagonal configuration and shrouds (I think that is the phrase used) that prevent side transfer and provide no toe clearance space (not sure if that is the correct term). The comment may apply to the following technical requirements.



Amfleet accessible restroom. Kenneth Shiotani, National Disability Rights Network, took this photo and there are no restrictions on the use of this photo.



Amtrak Superliner Accessible Bedroom restroom side. Kenneth Shiotani, National Disability Rights Network, took this photo and there are no restrictions on the use of this photo.



Northstar Bombardier bi-level coach #701 restroom interior. Kenneth Shiotani, National Disability Rights Network, took this photo and there are no restrictions on the use of this photo.



Amtrak #10004 Inspection car American View restroom. Kenneth Shiotani, National Disability Rights Network, took this photo and there are no restrictions on the use of this photo.

## **Ib. Technical Requirements:**

### **1. Provide a 60" turning circle within the restroom.**

#### **Discussion:**

A 60" circle is a bare minimum. Given that the committee is requiring a larger wheelchair "footprint" than the current regulation. A larger turning circle may be needed. The physical constraints of a rail car may make that impractical. The Board should solicit comments from car designers and manufacturers as to the feasibility of providing larger maneuvering space. The Board should also solicit comments from wheelchair and mobility aid users as to whether there are configurations without a turning circle which are nevertheless usable

{Frank Maldari Comment}. A 60" turning circle within a typical commuter rail car will result in the loss of at approximately 4-6 seats, which is significant. Additionally the rest room will block a clear view of the aisle preventing the train crew from looking down the length of a train from the aisle, which is a safety concern. During the last meeting it was suggest that the aisle space adjacent to the restroom be considered part of 60" turning circle, provided the door opening was wide enough. This appears to be a good compromise to provide the necessary space while not causing the removal of passenger seats. Suggest the wording be changed to allow for the aisle space to be part of the 60" turning circle.

### **2. Allow side approach to toilet/water closet (WC).**

- **Clear floor space of 32" by 54". Thirty-two inches to be measured from the outer edge of toilet bowl rim; 54" to be measured from the back wall of the toilet, extending parallel to the center line of the toilet.**

{Frank Maldari Comment}. Do not remember discussing this interpretation of the dimensions during any conference call. Do not believe that 32" from the outer edge of the bowl is practical for most commuter cars as it will result in excessively wide water closet, which will have a significant impact on passenger seating. Should remove the new interpretation.

#### **Discussion:**

The restroom specified in the current guidelines is unusable by many as it requires a 180-degree transfer. A side transfer is the most common maneuver, as has been recognized for years by the accessible toilet stall requirements for buildings and facilities. Facilitating the correct transfer method is even more critical in a moving vehicle.

The spacial requirements set forth incorporate the new recommended wheelchair or mobility aid size. Many rail car toilet designs have a shroud that projects beyond the toilet rim. Some also have a wall or bulkhead that protrudes from the back wall

beside the toilet. These prevent a person from positioning a wheelchair for a direct side transfer. Again, all maneuvers are complicated by the motion of the vehicle.

### **3. Provide a power door**

- **Controls shall comply with Controls and Operating Mechanisms.**
- **Controls shall be located 12” minimum from inside corner (does not apply to manual handle/latch for use when power fails).**

{Frank Maldari Comment}. Need to be more clear on the requirements for “Controls and Operating Mechanisms”. On rail cars, as opposed to buildings, there are tight space requirements and a limited window of controller placement to provide accessibility to passengers. Typically controls are placed on walls and need to be recessed or covered to nuisance activation from people leaning on the walls. Consequently mushroom head buttons are a problem. Please consider removing some of these requirements to allow for best practices depending on the particular application and risk of unintended activation.

#### **Discussion:**

Power doors are common in rail cars between seating areas and vestibules. Rocking and swaying cars make manually opening sliding doors difficult. Opening and closing such doors is especially difficult for a wheelchair user in a moving rail car. It is even harder to securely latch and unlatch a sliding door when the latch mechanism is in a corner. Wheelchair footrests often preclude a close approach.

### **4. Provide grab bars on side and behind water closet (use buildings and facilities requirements).**

#### **Discussion:**

Grab bar placement is especially important in a moving rail car. In general, more is better. The provisions for toilet rooms in buildings and facilities should be the starting point with a request for comment on additional requirements. The subcommittee was made aware that ANSI is working on specifications for vertical grab bars. The Board should investigate whether adding those specifications is appropriate..

### **5. Provide a grab bar along front of lavatory (may serve as WC side grab bar).**

#### **Discussion:**

This grab bar is needed to provide stability in a moving car.

### **6. Fold-down grab bar permitted on open side of WC, provided it meets force requirements for folding/deploying and does not intrude into required clear floor space when not deployed.**

#### **Discussion:**

Folding grab bars have been controversial because many of them have been difficult to deploy and fold. While they must be easy to deploy, they must not deploy or fall because of rail car movement. Some have also been difficult to lock in place for use and may require significant dexterity to lock and unlock. The connection to wall or floor may require significant extra bracing and may have a high maintenance requirement. Nevertheless, if properly designed, they offer significant advantages where space is constrained.

**7. Lavatory faucet controls (and soap dispenser, if provided) shall be proximity (e.g., infra-red) activated.**

**Discussion:**

Water on a train is limited. Therefore, it is not practical to have faucets that can be left on. The solution has usually been spring-loaded levers or buttons that must be continually pressed. This may be difficult or impossible for some persons with disabilities, especially if he or she needs to hold on to a grab bar because of train motion.

**8. Where feasible, lavatory should be within reach of person seated on WC.**

{Blair Slaughter Comment}. The clarification letter issued by DOT concerning items not defined in the rail requirements brought about discussion for roll under access for lavatories. Traditionally Amtrak has tried to have lavatories that were accessible from the WC even if not roll-under accessible. Achieving both accessible conditions in a rail car geometry may not be practicable but the sanitation implications of one versus the other should be carefully weighed. The thought for years was that given the train motion, it might be easier and more sanitary for an individual to wash up prior to transferring to their wheelchair. There may be no firm “best way” but it would be more valuable to users and designers to clarify this for the future.

**Discussion:**

Some persons with disabilities find it convenient to be able to reach and use the lavatory while seating on the toilet. On the other hand, placing the lavatory too close to the toilet may make it difficult to approach the lavatory from a wheelchair.

**II. Single-level dining car**

**Ila. Technical Requirements:**

**1. Provide table space for two wheelchairs, transfer seats for two (storage?).**

**Discussion:**

The current guidelines specify “at least one, but no more than two” from the statutory language. Most cars provide only one space of each type. This means that two wheelchair users who wish to remain in their chairs cannot ride together in the same

car or eat together in the dining car. The subcommittee is proposing that the scope specify two in all cases.

{Blair Slaughter Comment}. From a user's view this makes perfect sense but from a provider's view this becomes very onerous. The scenario of a person on each side of a table seated in wheelchairs is very difficult to achieve without a significant impact on the seating capacity of the vehicle. Based on the recent design developments with Amtrak's new single level diners, the only practical solution to achieve a table that could be used by someone in a wheelchair and a space to store a wheelchair was to remove an entire table and a total of 6 seats. To double this condition a total of two tables and 12 seats (25%) of the car capacity would be removed. In the course of -- dinner seating this -- would require an entire extra dinner seating. The economic impact of this has to be balanced against convertible space. Convertible conditions were generally frowned upon because the activity associated with the conversion was felt to "make a spectacle of" the person using the space.

## **2. Table top 34" maximum**

- **29" minimum under table, extending 17" minimum back from seating position edge.**
- **32" minimum width.**

### **Discussion:**

Most of these numbers are taken from the requirements for buildings and facilities.

## **III. Sleeping compartment**

**IIIa. Scoping:** at least one compartment in each sleeping car shall meet the technical requirements below.

### **Discussion:**

This is the current requirement. In single level sleeping cars, the compartment must be configured longitudinally to allow a passageway for other passengers to reach the non-accessible compartments. (A sketch of a possible configuration is shown below) In a bi-level sleeping car, an accessible compartment can be placed on the lower level across the entire car. This may allow some more spacious designs.

## **IIIb. Technical requirements:**

### **1. Side transfer to toilet, shower chair; meet requirements for restrooms above.**

#### **Discussion:**

An accessible restroom must be included within the compartment. The restroom shown in the current guidelines is not usable by many persons with a disability. It requires a 180-degree transfer to the WC. The technical requirements for the restroom presented here are the same as the restroom in a coach car. An accessible restroom in a single level sleeper is constrained by the need for an aisle for other

passengers. This probably means that a turning circle larger than 60 inches is not feasible.

**2. 60” turning circle in sleeping area with bed deployed.**

{Blair Slaughter Comment}. Suggest that this be changed to allow for designs that do not need the same level of mobility when “made down” for the evening. The burden would be on the designer to prove the level of accessibility is maintained. Also, the diagram in the current guideline has doors that swing into the clear space. There should be some language that prohibits doors swinging into the floor space if that door is needed to access another feature of the room or to exit.

**Discussion:**

The diagram included in the current guidelines does not allow a wheelchair user to turn around or maneuver when the bed is deployed. This often means the occupant can’t access the restroom or reach some controls and operating mechanisms.

**3. Controls for all lights, HVAC, call button, [power outlet](#), etc., within reach ranges (allow duplicate controls; tethered remote also allowed)).**

**Discussion:**

A typical compartment has many light controls, some intended for use by a person in the upper bunk. This is obviously desirable, but if those lights are turned on by someone who is not immediately available, the wheelchair user can’t turn them off. Duplicate controls must be available in an accessible location. One way would be to provide a tethered control “wand” or panel. Bluetooth controls could also be provided. [Power wheelchair users will need a conveniently located power outlet to plug in their chairs.](#)

**4. Positive door latch, operable from outside by train personnel.**

**Discussion:**

A positive door latch is necessary to prevent the compartment door from opening due to rail car movement. Train personnel must be able to unlatch the door from the outside, both to provide service and in case of emergency.

**5. Bed at wheelchair seat height (17” to 18”).**

**Discussion:**

Beds which are too high or too low present problems for transferring. [Cushions should not compress below 17 inches.](#)

**6. Table usable by wheelchair user: 34” maximum top height; 29” minimum under clearance to 17” from approach edge; 32” minimum width under approach edge.**

### Discussion:

The current guidelines do not provide requirements for tables in sleeping compartments. The tables provided in current sleepers are too low to allow knee clearance. A wheelchair user must lean very far forward and the table surface is very low. The sway and roll of a moving rail car makes its use virtually impossible. The specifications here are the same as dining cars.

VIA Rail Accessible Sleeper/Uwe Rutenberg (Not to be used for commercial purposes)

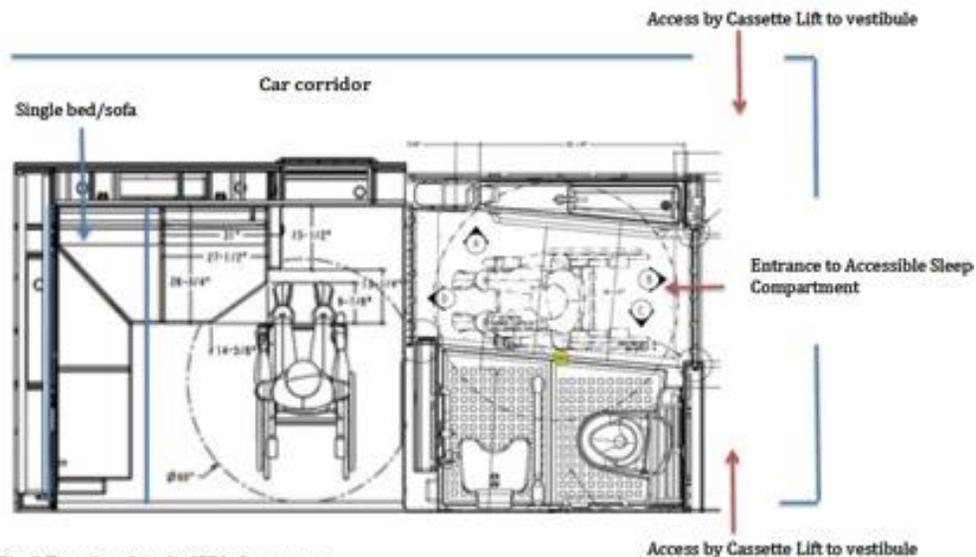


Fig. 1 Top view A end of VIA sleeper car

Overall dimensions for restroom/shower combined with sleeper compartment  
Length VIA: 15'7"      Length Amtrak: 9'5"  
Width VIA: 8'5"      Width Amtrak: 6'9"

## IV. Lounge car

**IVa. Scoping:** single-level lounge cars shall comply with the following technical requirements. Bi-level lounge cars shall comply on the lower level. Bi-level lounge cars shall have direct access to station platforms on the lower level. Where vertical access is provided, accessible seating spaces shall also be provided on the upper level. Where a bi-level dining car is provided, an accessible bi-level lounge car shall be directly coupled to it.

### Discussion:

The ADA exempts bi-level dining cars from any accessibility requirements. The statute, and the DOT regulations, does address providing dining service in a lounge car. If a bi-level lounge car is provided, it must be placed adjacent to a bi-level dining car so that dining service can be provided in the lounge car. The current requirement for a lounge car is that it has a wheelchair space, a transfer seat, and an accessible restroom on the lower level. If vertical access is provided, accessible service must also be provided on the upper level.

### IVb. Technical requirements:

1. Table space for 2, same as dining car.

**Discussion:**

Current guidelines do not include specifications for tables. The specifications for dining cars [presented earlier](#) are used here.

**2. Accessible restroom.**

**Discussion:**

An accessible restroom is required by the current guidelines. The technical requirements presented in this report are applied here.

**3. Self-serve area meets ABA/ADA Guidelines for cafeteria**

**Discussion:**

There are currently no specifications for self-service food areas in rail cars. This provision would apply the requirements for cafeterias and similar spaces of the buildings and facilities guidelines.

**4. Vending machines meet ADA/ABA guidelines ([moved up from below](#)).**

**Discussion:**

There are currently no specifications for vending machines in rail cars. Due to car movement, vending and similar machines in rail cars are fixed.

**V. Controls and Operating Mechanisms**

**Va. Definition**

**Operable part.** A component of a device or system used to insert or withdraw objects, or to activate, deactivate, adjust, or connect to the device or system. Operable parts include, but are not limited to, buttons, levers, knobs, smart card targets, coin and card slots, pull-cords, jacks, data ports, electrical outlets, and touch screens.

**Discussion:**

This definition is adapted from the ADA/ABA Guidelines and is intended to include all the kinds of controls that might be found in a new rail car.

**Vb. Scoping:** the technical requirements apply to operable parts at wheelchair and transfer seating locations, restrooms, sleeping compartments, and dining and lounge car seating locations. If operable parts are provided for the public at any seating location, equivalent operable parts shall be provided at wheelchair and transfer seating locations. On intercity (Amtrak) train cars, call buttons to summon train personnel shall be provided at wheelchair and transfer seating locations, within sleeping compartments and within restrooms. In sleeping compartments, controls for all lights and HVAC shall meet the technical requirements.

**Discussion:**

The locations are intended to cover all the places where a person with a disability might ride a rail car. It is also intended to ensure that persons with disabilities have access to all the amenities provided to the general public. For example, if electrical outlets and USB ports are available to general passengers, they must be available at accessible locations.

**Vc. Technical requirements:**

**1. Location:**

- **The height of operable parts shall be 24” minimum and 48” maximum above the vehicle floor (see figure below).**

**Discussion:**

These reach ranges are derived from research from SUNY Buffalo

- **The lateral position shall be a maximum of 6” in front of, or behind, the centerline of the wheelchair seating space and clear floor space in sleeping compartments.**

**Discussion:**

The placement of controls and operating mechanisms is at the approximate longitudinal center of wheelchair seating areas. This is because a wheelchair user may wish to face in either direction. He or she may wish to sit facing away from other seating if that is the direction the train is traveling. On the other hand, if he or she is traveling with someone occupying the transfer seat, he or she will probably want to face that seat, regardless of the travel direction.

- **Operable parts shall be 10” maximum from the vertical plane adjacent to the side of the wheelchair or mobility aid closest to the operable part.**

**Discussion:**

This provision is the “reach distance” from the side of a wheelchair or mobility device to the control, probably mounted on the rail car wall. It is consistent with requirements for buildings and facilities.

- **Controls 12” minimum from inside corner (does not apply to manual door handle/latch for use when power fails).**

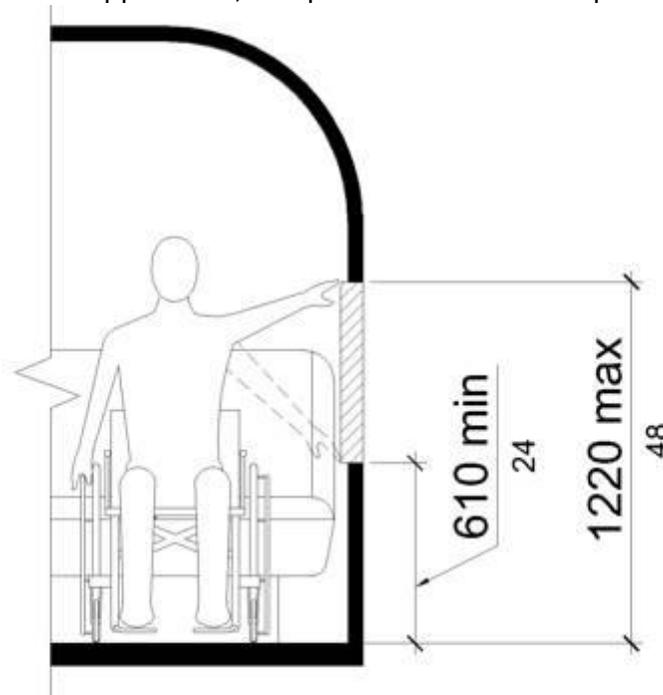
**Discussion:**

Wheelchair footrests extend forward and often prevent a user from reaching controls mounted close to an inside corner. This is especially true for persons with limited arm strength and dexterity. Manual door latches may need to be located near an inside corner, so they are not required to comply.

**2. Redundant controls are permitted (e.g., on a tethered or wireless remote).**

**Discussion:**

Where it makes sense to locate controls in an inaccessible location, such as light controls for an upper bunk, a duplicate control can be placed in an accessible location.



{Access Board Comment}. Figure is from where? Any restrictions on its use?

**3. 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 lb. maximum.**

**Discussion:**

This provision is taken from the ABA/ADA Guidelines. In particular, manual door hardware must be a lever type.

**4. Power door buttons shall be 2" across minimum.**

**Discussion:**

Small buttons are especially problematic for persons with limited dexterity. Buttons to open and close power doors in restrooms and compartments must be easy to activate, especially in an emergency.

**5. Controls shall meet section 508 standards.**

**Discussion:**

The 508 standards cover many particulars too numerous to re-state here.

- 6. Controls shall be tactilely discernable without activation (e.g., raised buttons or have surrounding border raised 1/32" minimum).**

**Discussion:**

A person with limited vision should be able to locate a button by touch [without inadvertently activating it](#). This also helps someone who may need to locate a call button in a dark compartment.

- 7. Two-state controls (e.g., on/off, hi/low, etc.) shall provide visual and tactilely discernable indication of their state (e.g., toggle, slide, pushbutton which remains depressed when activated).**

**Discussion:**

Similar to the above requirement, a person with limited vision should be able to determine the state of a control by touch.

- 8. Call button shall have audible and visual indication that call has been received/responded to.**

**Note: some buttons light up and buzz when activated, then flash and have intermittent tone or voice message when personnel answer.**

{Frank Maldari Comment}. This provision and the one provided for contacting the crew from the side door should be the same, as they essentially provide the same function. This wording is more consistent with existing design and is practical, as compared to the wording for the door call button which required a tactile feedback that the call has been answered.

**Discussion:**

This provision is similar to systems provided in elevators under the ABA/ADA Guidelines for buildings and facilities.

{Andrew Phillips Comment}. 8 - Might there be other information that can be shared such as "Help is on the way" or other pre-recorded messages that can be added?

## **VI. Surfaces**

**Via. Scoping:** The technical requirements for surfaces below apply to circulation paths, lift platforms, ramps and bridgeplates, wheelchair and mobility aid seating spaces, and step treads.

**Discussion:**

These requirements apply to all the areas that are part of an accessible on-board circulation, as well as step treads. In particular, these requirements apply to the path between cars of a fixed consist train. The technical requirements below are taken from the ABA/ADA Accessibility Guidelines.

**Vib. Technical requirements:**

1. Surfaces shall be firm, stable and slip resistant.
2. Openings in surfaces shall not allow the passage of a sphere more than 5/8" diameter. Elongated openings shall be placed so that the long dimension is perpendicular to dominant direction of travel. Lift platforms that are folded and stowed manually, and ramps and bridgeplates that are deployed manually shall be permitted to have a cut-out in the surface 1½" maximum by 4½" maximum for the operator to grasp the surface.

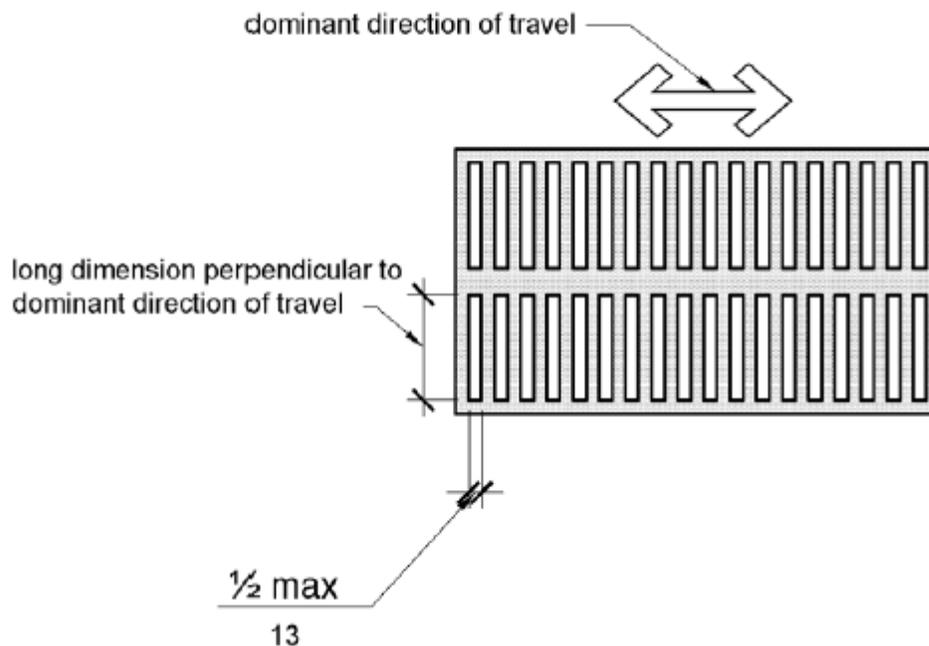
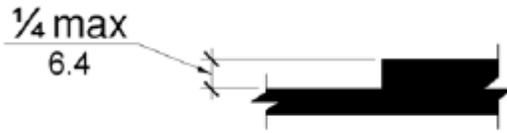


Figure is from ADAAG. No restrictions on its use.

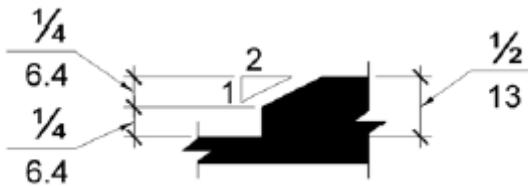
3. Protrusions on surfaces shall be permitted to be ¼" high maximum.
4. Carpet or carpet tile shall be securely attached and shall have a firm cushion, pad, or backing or no cushion or pad. Carpet or carpet tile shall have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. Pile height shall be ½" maximum. Exposed edges of carpet shall be fastened to floor surfaces and shall have trim on the entire length of the exposed edge.
5. Surface discontinuities:

1. Changes in level of  $\frac{1}{4}$ " high maximum shall be permitted to be vertical.



[Figure is from ADAAG. No restrictions on its use.](#)

2. Changes in level between  $\frac{1}{4}$ " high minimum and  $\frac{1}{2}$ " high maximum shall be beveled with a slope not steeper than 1:2.



[Figure is from ADAAG. No restrictions on its use.](#)

3. Changes in level greater than  $\frac{1}{2}$ " high shall be ramped, and shall with a slope 1:12 maximum.

## Addendum A To Chapter 4

### ADA Statutory Language

**Review Note:** The “less than symbol” and “greater than symbol” <> are used to bracket certain sections and words highlighted in yellow in this Addendum which were originally underlined to draw attention to these parts of the statutory language.

#### SUBPART II - PUBLIC TRANSPORTATION BY INTERCITY AND COMMUTER RAIL

##### Sec. 12161. Definitions

As used in this subpart:

(1) Commuter authority

The term "commuter authority" has the meaning given such term in section 24102(4) (FN1) of title 49.

(2) Commuter rail transportation

The term "commuter rail transportation" has the meaning given the term "commuter rail passenger transportation" in section 24102(5) (FN1) of title 49.

(3) <Intercity rail transportation>

The term "intercity rail transportation" means transportation <provided> by the <National Railroad Passenger Corporation>.

(a) <Intercity rail transportation>

(1) One car per train rule

It shall be considered discrimination for purposes of section 12132 of this title and section 794 of title 29 for a person who provides intercity rail transportation to fail to have at least one passenger car per train that is readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs, in accordance with regulations issued under section 12164 of this title, as soon as practicable, but in no event later than 5 years after July 26, 1990.

(2) New intercity cars

(A) General rule

Except as otherwise provided in this subsection with respect to individuals who use wheelchairs, it shall be considered discrimination for purposes of section 12132 of this title and section 794 of title 29 for a person to purchase or lease any new rail passenger cars for use in intercity rail transportation, and for which a solicitation is made later than 30 days after July 26, 1990, unless all such rail cars are readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs, as prescribed by the Secretary of Transportation in regulations issued under section 12164 of this title.

(B) <Special rule for single-level passenger coaches> for individuals who use wheelchairs

Single-level passenger coaches shall be required to -

- (i) be able to be entered by an individual who uses a wheelchair;
- (ii) have space to park and secure a wheelchair;
- (iii) have a seat to which a passenger in a wheelchair can transfer, and a space to fold and store such passenger's wheelchair; and
- (iv) <have a restroom usable by an individual who uses a wheelchair>, only to the extent provided in paragraph (3).

(C) Special rule for single-level dining cars for individuals who use wheelchairs

Single-level dining cars shall not be required to -

- (i) be able to be entered from the station platform by an individual who uses a wheelchair; or
- (ii) have a restroom usable by an individual who uses a wheelchair if no restroom is provided in such car for any passenger.

(D) <Special rule for bi-level dining cars for individuals who use wheelchairs

Bi-level dining cars shall not be required to -

- (i) be able to be entered by an individual who uses a wheelchair;
- (ii) have space to park and secure a wheelchair;
- (iii) have a seat to which a passenger in a wheelchair can transfer, or a space to fold and store such passenger's wheelchair; or
- (iv) have a restroom usable by an individual who uses a wheelchair.>

(3) Accessibility of single-level coaches

(A) General rule

It shall be considered discrimination for purposes of section 12132 of this title and section 794 of title 29 for a person who provides intercity rail transportation to fail to have on each train which includes one or more single-level rail passenger coaches -

(i) a number of spaces -

(I) to park and secure wheelchairs (to accommodate individuals who wish to remain in their wheelchairs) equal to not less than one-half of the number of single-level rail passenger coaches in such train; and

(II) to fold and store wheelchairs (to accommodate individuals who wish to transfer to coach seats) equal to not less than one-half of the number of single-level rail passenger coaches in such train, as soon as practicable, but in no event later than 5 years after July 26, 1990; and

(ii) a number of spaces -

(I) to park and secure wheelchairs (to accommodate individuals who wish to remain in their wheelchairs) equal to not less than the total number of single-level rail passenger coaches in such train; and

(II) to fold and store wheelchairs (to accommodate individuals who wish to transfer to coach seats) equal to not less than the total number of single-level rail passenger coaches in such train, as soon as practicable, but in no event later than 10 years after July 26, 1990.

(B) Location

Spaces required by subparagraph (A) shall be located in single-level rail passenger coaches or food service cars.

(C) Limitation

Of the number of spaces required on a train by subparagraph (A), not more than two spaces to park and secure wheelchairs nor more than two spaces to fold and store wheelchairs shall be located in any one coach or food service car.

(D) Other accessibility features

Single-level rail passenger coaches and food service cars on which the spaces required by subparagraph (A) are located shall have a restroom usable by an individual who uses a wheelchair and shall be able to be entered from the station platform by an individual who uses a wheelchair.

(4) Food service

(A) Single-level dining cars

On any train in which a single-level dining car is used to provide food service -

(i) if such single-level dining car was purchased after July 26, 1990, table service in such car shall be provided to a passenger who uses a wheelchair if -

(I) the car adjacent to the end of the dining car through which a wheelchair may enter is itself accessible to a wheelchair;

(II) such passenger can exit to the platform from the car such passenger occupies, move down the platform, and enter the adjacent accessible car described in subclause (I) without the necessity of the train being moved within the station; and

(III) space to park and secure a wheelchair is available in the dining car at the time such passenger wishes to eat (if such passenger wishes to remain in a wheelchair), or space to store and fold a wheelchair is available in the dining car at the time such passenger wishes to eat (if such passenger wishes to transfer to a dining car seat); and

(ii) appropriate auxiliary aids and services, including a hard surface on which to eat, shall be provided to ensure that other equivalent food service is available to individuals with disabilities, including individuals who use wheelchairs, and to passengers traveling with such individuals.

Unless not practicable, a person providing intercity rail transportation shall place an accessible car adjacent to the end of a dining car described in clause (i) through which an individual who uses a wheelchair may enter.

(B) Bi-level dining cars

On any train in which a bi-level dining car is used to provide food service -

(i) if such train includes a bi-level lounge car purchased after July 26, 1990, table service in such lounge car shall be provided to individuals who use wheelchairs and to other passengers; and

(ii) appropriate auxiliary aids and services, including a hard surface on which to eat, shall be provided to ensure that other equivalent food service is available to individuals with disabilities, including individuals who use wheelchairs, and to passengers traveling with such individuals.

(b) <Commuter rail transportation>

(1) One car per train rule

It shall be considered discrimination for purposes of section 12132 of this title and section 794 of title 29 for a person who provides commuter rail transportation to fail to have at least one passenger car per train that is readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs, in accordance with regulations issued under section 12164 of this title, as soon as practicable, but in no event later than 5 years after July 26, 1990.

(2) New commuter rail cars

(A) General rule

<It shall be considered discrimination for purposes of section 12132 of this title and section 794 of title 29 for a person to purchase or lease any new rail passenger cars for use in commuter rail

transportation>, and for which a solicitation is made later than 30 days after July 26, 1990, <unless all such rail cars are readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs>, as prescribed by the Secretary of Transportation in regulations issued under section 12164 of this title.

(B) Accessibility

For purposes of section 12132 of this title and section 794 of title 29, <a requirement that a rail passenger car used in commuter rail transportation be accessible to or readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs, shall not be construed to require -

(i) a restroom usable by an individual who uses a wheelchair if no restroom is provided in such car for any passenger>;

(ii) space to fold and store a wheelchair; or

(iii) a seat to which a passenger who uses a wheelchair can transfer.

## Draft Chapter 5 – Communications

**Review Note:** At the time Chapters 1 through 4 were distributed for committee member comments, Chapter 5 was not available, since the Communications Subcommittee was still working on its report. An updated draft report was received on April 13 and has been added to Chapter 5. Although this draft report has not been approved by the subcommittee, it has been added to the 1<sup>st</sup> draft of the final report, subject to committee review, modification (if necessary) and acceptance at the April 23-24 meeting. Strikeouts and underlines are used to note changes made to the draft report as the result of the March 26 conference call.

**As of April 13, 2015**

### 1. General: Audible and Visible Communications:

- A. Where audible announcements are provided to passengers via public address systems, they shall also be provided visually. Where visible announcements are provided via variable message signage systems, they shall also be provided audibly.
- B. Visible and audible are not required to be exactly the same if the equivalent information is provided.

{Janice Lintz Comment}. I don't understand B and I am not clear what the term "equivalent" means.

### 2. Variable Message Signs – VMS:

- A. Variable message signs shall be provided for all pre-recorded or "canned" audible announcements excluding advertisements.
- B. Variable message signs shall be provided for real time audible announcements to the extent practicable.

{Janice Lintz Comment}. Modify B: to the extent practicable if real time messages cannot be provided.

- C. All cars must provide variable message signs in at least two locations so that at least one sign is visible from every part of the car.
- D. Where high definition VMS is provided, audio description and ALS should also be incorporated.
- E. Where cars provide route map tracking, signs shall be provided in two locations so that at least one sign is audible and visible from every part of the car. Though there was disagreement within the sub-committee, the group did agree that it should also be audibly available. One recommendation was to provide an earphone jack for individual usage similar to that used with ATMs.

{Janice Lintz Comment}. Add at end of E: This is in addition to providing an induction loop and not a substitute for induction loops. I do not recall this being agreed to at the meeting and my concern is that someone will later argue that induction loops are not necessary.

- F. Standards for sound quality and visual aspects must be added here.
- G. [It is recommended to the Access Board](#) to do research on speech intelligibility and rail car acoustics
- H. Variable message signs legibility (e.g., font, case, style, and location) – Recommend referencing the ANSI A117.1 technical requirements for VMS Displays.

### 3. Induction Loops:

- A. Wherever audible announcements are provided, an induction loop system shall be provided.
- B. [Wherever audible announcements are provided, hearing assistive technology that has the capability of coupling directly, that is, without an additional receiver, to hearing aids and cochlear implants, or other personal hearing devices, \(e.g. hearing induction loops\), and future technologies benefiting deaf/person with hearing loss shall be provided.](#)
- C. The ~~induction loop system~~ [hearing assistive technology](#) shall be ~~accessible~~ [available](#) in at least two seating areas of each car where technically feasible.

{Janice Lintz Comment}. Add at end of C: [if it is not technically feasible to loop the entire car.](#)

- D. The Access Board should evaluate technical feasibility of induction loops on rail cars – a majority of the Subcommittee already thinks it is feasible.

### 4. Audible Announcements:

- A. When feasible, audible announcements, including stop announcements, shall be pre-recorded, high quality messages.
- B. Human announcements should be kept to a minimum. This is especially important with station stop announcements.

### 5. Lighting:

The sub-committee recommends that the Board do research on lighting as there is no requirements in the Standard for general or task lighting other than in elevators and at bus entry points. (See additional notes below.) [APTA Standard for lighting for the Board's reference and research is included here:](#)  
[PR-E-RP-012-99 Recommended Practice for Normal Lighting System Design for Passenger Cars.](#)

<http://www.apta.com/resources/standards/Documents/APTA-PR-E-RP-012-99.pdf>

### 6. Menus & Directories:

At least one menu or directory shall comply with the building accessibility standards for visual signage in each car where menus or directories are provided.

## 7. Service Animal Relief Area Signs:

- A. Information should be made available on an inside wall nearest to the locations where the ISA is required.
- B. We recommend that this sign should inform passengers to ask a crew member for the availability of this service. Service Animal relief area information should be available from train crew. Recommend DOT require crew be trained to know where they are.

## 8. Emergency Notification Announcements:

The following considerations and recommendations are made when alarms are provided. This is not a recommendation to require alarms.

- A. Emergency Notification Announcements via VMS shall be connected to the car's back-up power system.
- B. Visual emergency alerts (flashing fire alarms and such) in all parts of the rail cars -- compartments, main area, restrooms, etc. recommend NFPA 72 requirements with the use of VMS; what db level is in NFPA 72. Is it too loud? Alarms can cause disorientation and additional dangers to people who are blind or have cognitive disabilities.

## 9. Call Buttons:

- A. Any button used to communicate with rail car staff.
- B. These buttons should give audible and visual feedback to assure they have been activated.
- C. Tactile sign to identify the purpose ("emergency help", "steward", etc.)

## 10. Door announcements:

- A. An audible and visual notification shall be provided to indicate the door(s) that will be opening. Recorded human or digital voice is preferred. The notification should be made only once or twice, not constant.
- B. A second and different alarm shall be provided when a door is locked out and not going to open.
- C. Route tracking for Rapid and Light rail only and add in flexibility for this requirement.
- D. Include what doors will be opening in stop announcement prior to arrival in the station.

{Frank Maldari Comment}. With respect to item 10.B, this alarm should be visual only as it is not practical for it to be audible. With respect to 10.D, should not require which doors will open. Announcing which doors will open is typically not necessary, and complicates the VMS programming since (unlike WAMATA) it is common that the same doors do not open at every station. Many commuter trains do not stop in the same platform consistently. This is a luxury, than can only be done with certain operations and is not a necessity and should not be a requirement.

## 11. ISA Signs:

The ISA shall be provided at required wheelchair spaces and priority seating and shall be located 48"''' to 60" above the floor where most logical.

## **12. New Technologies:**

Recommend that DOT examine the potential for providing messages on hand-held devices such as smartphones – tri-mode communication.

{Janice Lintz Comment}. Add at end of 12: [This should not be a substitute for audible and visual messages on board. Not everyone has a smartphone, and we are all too familiar with our phone battery dying. Also, international visitors may not be willing to incur charges to use their data plans.](#)

**The following are recommendations for various types of primarily static signs not specified above that may be located throughout rail vehicles. Recommend using the Signage requirements from the building Standards.**

### **Signs that shall meet the Tactile and Visual requirements:**

Signs Designating Rooms and Spaces and Exit Signs at doorways (located 48" to 60" above the floor at doors or doorways)

Emergency Informational Signs (Recommend that DOT work on pocket signs, apps, web sites, etc. if you don't have the space.)

### **Signs that shall meet the Tactile and Visual requirements for size where practicable:**

Non-Emergency Operational Signs

Specifically where instructions for door latch/locks are provided they shall be both visual and tactile and be located next to the latch/lock but not more than 10 inches from the latch/lock.

Where a pictogram is provided for these instructions a tactile description shall be provided directly adjacent to it.

### **Signs that shall meet the Visual requirements:**

Directional Signs including directional Exit Signs

Emergency Operational Signs (Color alone shall not be used to designate elements. Recommend that DOT work on pocket signs, apps, web sites, etc. if you don't have the space.)

### **Signs that shall meet the Tactile and Visual requirements for size where practicable:**

Non-Emergency Informational Signs

Caution and Safety Signs (includes icons and logos)

### **Signs not required to meet accessibility Standards:**

Employee Only Signs

Designation Signs for Elements

### **Additional Notes & Recommendations to Access Board:**

- Examine what factors should be used to determine equivalency of audible and visible messages. Oral announcements need to have the same level of clarity as visual announcements. This is why pre-recorded announcements are generally better.

- Lighting in circulation areas, restrooms, sleeping compartments, step wells, and in any other areas. Step wells in particular raise issues: 1. Because they may or may not be level platforms; 2. It may or may not be a paved surface one is stepping down on to; 3. Distance to platform varies; and gaps may be difficult especially at night. [See Item 5 above.](#)
- Task lighting and on-demand passenger controls [See Item 5 above.](#)
- [Station announcements, including notification of door usage, train destination, and other pertinent information \(e.g. local or express route\), should be made available both audibly and visually not more than 5 minutes before arrival into station AND again upon stopping at the station. Announcements in the station should be available to passengers both entering and exiting the vehicle. Passengers should be able to hear and see the information from the platform as well as on board the train.](#)

{Janice Lintz Comment}. Add at end of above section: [An induction loop should be provided.](#)

\* This draft is based on 1. The recommendations and decisions of the sub-committee over the last several teleconferences; 2. Comments submitted following the posting of the first draft; and 3. Comments and discussions at the February 27<sup>th</sup> meeting of the RVAAC as a whole.