February 13, 2015

Rooms and Spaces Subcommittee Report

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).

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 document.] 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)). 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, 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.

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

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.**

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)**

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**

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

IIa. 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.

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**

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, 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.

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.

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.

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 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.

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

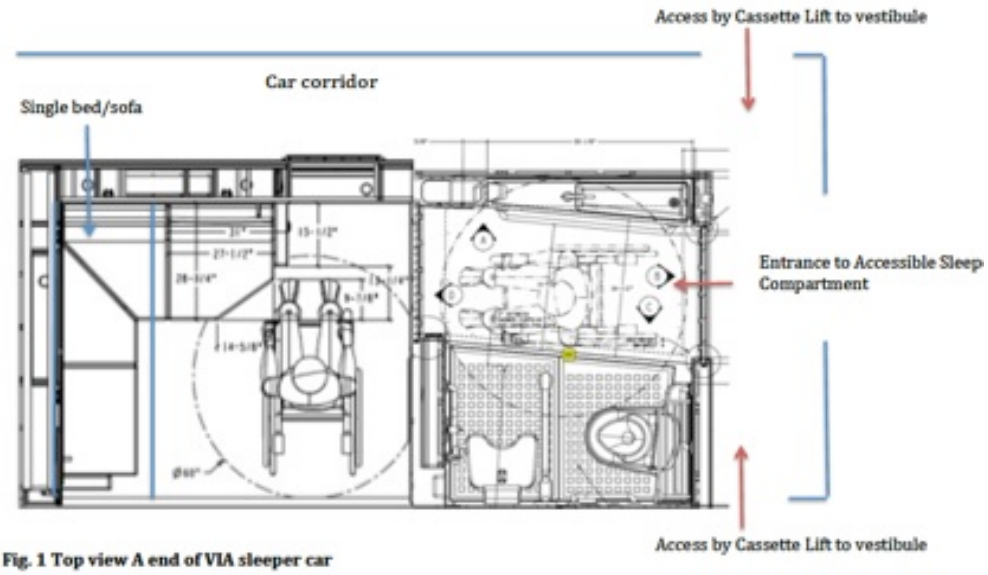


Fig. 1 Top view A end of VIA sleeper car

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"

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)**

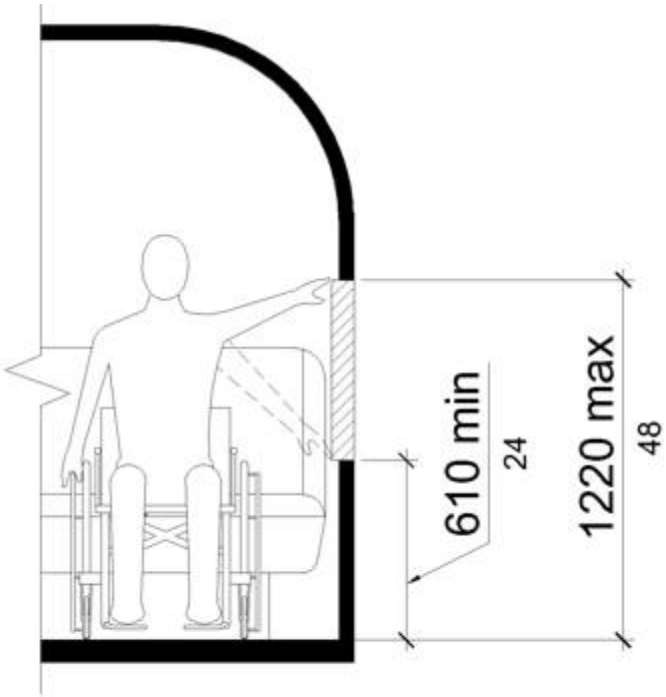
Discussion:

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 place in an accessible location.



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. 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.

   Discussion:

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

Vd. Vending machines meet ADA/ABA guidelines

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.

VI. Surfaces

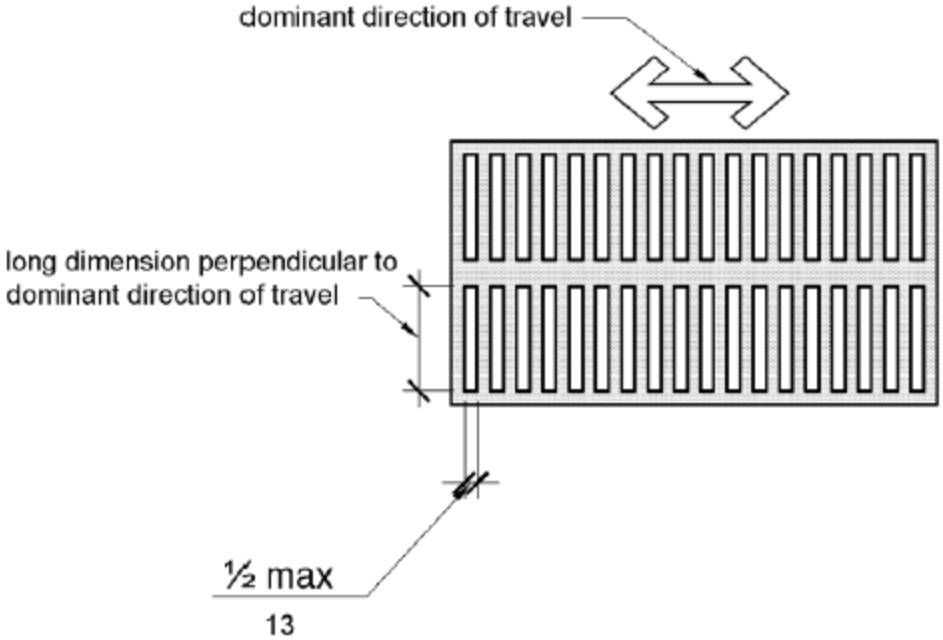
VIa. Scoping: The technical requirements for surfaces below apply to circulation paths, lift platforms, ramps and bridgeplates, wheelchair and mobility aid seating spaces, and step treads.

Discussion:

These requirements apply to the path between cars of a fixed consist train. The technical requirements below are taken from the ABA/ADA Accessibility Guidelines.

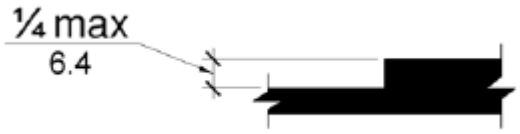
VIb. Technical requirements:

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.**

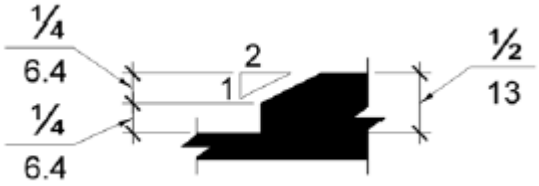


3. **Protrusions on surfaces shall be permitted to be ¼" high maximum.**
4. **Carpet or carpet tile shall be securely attached and shall have a firm cushion, pad, or backing or no cushion or pad. Carpet or carpet tile shall have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. 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 ¼" high maximum shall be permitted to be vertical.**



    2. **Changes in level between ¼" high minimum and ½" high maximum shall be beveled with a slope not steeper than 1:2.**



3. **Changes in level greater than ½" high shall be ramped, and shall with a slope 1:12 maximum.**

Addendum A

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) <u>Commuter rail transportation</u>

(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

<u>It shall be considered discrimination</u> for purposes of section 12132 of this title and section 794 of title 29 for a person <u>to purchase or lease any new rail passenger cars for use in commuter rail transportation,</u> and for which a solicitation is made later than 30 days after July 26, 1990, <u>unless all such rail cars are readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs,</u> 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, <u>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 -</u>

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

(ii) space to fold and store a wheelchair; or
(iii) a seat to which a passenger who uses a wheelchair can transfer.