Standardized Technical Specification

Bi-Level Passenger Rail Cars
for
Intercity Corridor Service

Chapter 9

Interior

Revision L
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9.0 Interior

9.1 Overview

This chapter defines the interior design and configuration for the upper and lower level revenue seating areas of coach, café/lounge and cab/baggage cars, including vestibules, toilet rooms, stairways and overhead luggage storage bins. All car types are bi-level with entry from station platforms through twin bi-parting doors on the lower level, and access between cars on the upper level, through single leaf sliding end doors.

All cars shall be equipped with an accessible toilet room, two lower level vestibules, stairways for access to the upper level, and seating areas with overhead luggage bins, curtains, workstation tables and convenience outlets. Cab/baggage cars shall be equipped with a lower level baggage/bicycle storage area. Coach and cab/baggage cars shall have a unisex toilet room on the upper level. Café/lounge cars shall have a revenue seating area at the B-end of the upper level, and a lounge area at the A-end of the upper level. For details regarding the lounge area, galley, elevator and food service equipment on the café/lounge car (see Chapter 14). Cab/baggage cars shall have a locomotive control cab at the F-end of the upper level (see Chapter 16).

9.2 General Requirements

This chapter shall describe the basic interior configuration of all car types in this specification, and each car type shall include all requirements for ADA accessibility and general seating arrangements that provide comfort and amenities such as electrical outlets, task lighting, and individual work trays or tables.

The interior of the car shall be designed and constructed for maximum safety, comfort, convenience and service to the passenger, and shall be fully ADA compliant. Walls, ceiling panels and window masks shall be designed and constructed to form a safe and attractive environment. Curtains shall be provided on a track located above each window. Visible fasteners shall be minimized. Windscreens shall be placed at strategic locations to dampen noise in the passenger seating areas.

All systems requiring maintenance shall be easily accessible and removable for cleaning and repair.

A conceptual floor plan for all car types is provided for use by the Contractor as guidance to design the general layout of the car on both levels. These conceptual interior layouts shall serve as general guideline for the development of the interior of the cars. Final interior layouts shall be reviewed and approved by the Customer during design review.

9.3 Basic Features of All Car Types

Whenever possible, common components shall be used in all car types.

Strength of all interior fittings and their attachment to the carbody shall meet APTA Standard SS-C&S-006-98 and 49CFR Section 238.233.
All car types shall include the following:

- Accessible Toilet Room (ATR) – lower level
- Wheelchair parking location – lower level
- Wheelchair storage area – lower level
- Accessible transfer seat – lower level
- Mechanical wheelchair lift – B-end lower level (one on each side), with an option for installation of a bridge plate in lieu of a wheelchair lift (see Chapter 4)
- Single and pair standard coach seating, facing seat pairs with workstation tables
- One Unisex Toilet Room (UTR) – upper level (except café/lounge car)
- 120 Volt Alternating Current (VAC) electrical outlets adjacent to each seat or seat pair on the sidewall (see Chapter 13)
- Trash receptacles and recycle bins on each level and at both ends of the cars
- Emergency tool lockers
- Electric locker
- Public Address (PA) system (See Chapter 12)
- Passenger Information System (PIS) (see Chapter 12)
- Heating, Ventilation and Air Conditioning (HVAC) system (see Chapter 10)
- Lighting system (see Chapter 11)
- Low-Level Emergency Path Markings (LLEPM)
- Emergency lighting (see Chapter 11)
- Emergency and non-emergency windows (see Chapter 4)
- Passenger information signage and service markings
- Window curtains
- Drinking water station (except café/lounge car) (see Chapter 15)
- Racks for promotional materials
- Enclosed overhead luggage bins
- Two lower level vestibules with side entry doors
- Two stairways, except the café/lounge, which shall only have a staircase at the B-end
- Two end doors/passageways

The above configuration will represent the “basic” coach car for this specification.

Refer to Figure 9-1 through Figure 9-3 for car interior conceptual drawings.
9.3.1 Coach Car

9.3.1.1 Basic Car – Upper Level

See Figure 9-1.

Upper level passenger seating will be provided in single- and double-seat arrangements. There will be nine tables with seat facing pairs, with a maximum seating of 72 on the upper level. The seats shall have a nominal seat pitch of 41 in., unless specified otherwise by the Customer (see Chapter 23). Seats shall be located to line up with window pillars to maximize the passengers’ view through the side windows and minimize obstructed views.

The stairways at both ends of the cars shall be surrounded on three (sides with floor-to-ceiling partitions, the upper portion of which is clear Lexan. These transverse walls shall be equipped with the upper level Passenger Information Signs, facing the opposite end of the car. See Chapter 12.

There will be a chilled drinking water station at the B-end of the car that is equipped with a drain and a cup dispenser. The water station shall have a push-button-style faucet with auto turn-off.

An emergency tool locker shall be accessible by a latch door mechanism. See Chapter 17.

Equipment lockers shall be provided at A-end left and B-end right corners of car to enclose respective end door operator and provide space for trash and recycle receptacles.

A luggage rack shall be located at each end of the upper level of the car. The racks shall have two shelves for storing carry-on luggage, and shall have a capacity of 250 lbs per shelf.

Enclosed overhead luggage bins shall be designed to hold a standard airline sized suitcase (13.38 in. by 18 in. by 22 in.), inserted longitudinally into the bin. The luggage bin door shall be opened with a latch mechanism and will stay open with hinges and supported with gas struts.

A unisex toilet shall be located at the B-end of the car adjacent to the luggage rack (except the café/lounge car).

Clear Lexan windscreens 0.38 in. thick shall be located at Customer approved intervals to reduce noise levels in the passenger seating areas.

9.3.1.2 Basic Car – Lower Level

See Figure 9-1.

Lower level seating shall be provided between the side door vestibule areas, with a maximum seating capacity of 18. Lower level seating will be double- and single-seat arrangements with a nominal seat pitch of 41 in. There will be at least one workstation table located between facing double seats.
Twin bi-parting pocket side doors open into car-width vestibule areas, which provide access to the lower level as well as the stairways to the upper level. Hand holds shall be provided on both sides of both entrance doors on both ends on all cars.

The B-end entrance shall be designed for wheelchair accessibility to accommodate either two wheelchair lifts or portable bridge plates.

Partition walls shall separate the A-end vestibule from the passenger seating area. A passageway shall permit access from the vestibule to the seating area. This passageway shall be no less than 32 in. wide. The partition walls shall be clear Lexan on the upper half.

An ATR shall be provided on the lower level at the B-end of the car and be adjacent to the wheelchair seating and storage area.

A wheelchair seating area and a wheelchair storage area shall be provided adjacent to the ATR restroom.

A chilled drinking water station shall be located in the B-end vestibule area.

An emergency tool locker shall be accessible by a latch door mechanism in the B-end vestibule. See Chapter 17.

A storage area with two luggage shelves and four bike racks shall be located at the lower level A-end of the cab/baggage and coach cars. This area shall be convertible from a luggage rack to a bike rack by raising the shelves.

9.3.1.3 A-end Vestibule

At the A-end vestibule there shall be:

- Side entrance doors
- Bicycle/luggage racks
- Stairway to upper level
- Partition windscreen
- Recycling and trash receptacles

9.3.1.4 B-end Vestibule

At the B-end vestibule there shall be:

- Side entrance doors
- Door control panels
- Electric locker
- Wheelchair lifts
- Emergency equipment locker
- ATR
- Stairway to upper level
9.3.2 **Cab/Baggage Car**

See Figure 9-2.

The cab/baggage car shall be configured as the basic coach car with the following differences:

- The cab area of the car shall be located at the F-end (the end opposite the B-end) of the
car on the upper level and shall be a full-width control cab for push/pull operations.
(See Chapter 16)
- A checked baggage storage area shall be located on the lower level of the F-end of the
car.

The baggage storage area shall be configured with walls and a lockable door of sufficient
durability to provide security for passenger checked baggage. The room shall contain folding
baggage shelves on both sides of central aisle that allows converting individual sections into
bicycle racks. The door into this area shall be secured with a coach key lock mechanism.

The general seating on both levels of the car will follow the coach configuration except for the
space needed for the cab control area and the baggage area.

The F-end side doors can be operated via trainline, allowing passengers to self-load bikes or
luggage; or doors can be operated locally only, allowing luggage to be checked by crew. See
Chapter 8.

The upper level of the F-end cab car stairwell entrance shall be equipped with a gate that
latches to the inside, to deter passenger use of the stairwell when the lower level is used for
checked baggage storage. This gate shall be capable of latching open when the lower level is
used for bicycle loading. The gate, along with the structure supporting it and the piano hinge
used to secure it to the partition, shall be robust to endure rough service by crews. The
structure on the free end of the gate shall be robust to successfully sustain the impact of the
gate slamming closed. A bumper shall be provided to cushion the gate at the full-open
position. The gate shall use a self-latching latch to secure it when closed.

9.3.3 **Americans with Disabilities Act (ADA)**

The lower level of all car types shall be fully compliant, at the time of manufacture, with all
rules and regulations of the Americans with Disabilities Act of 1990. Review of the car’s
accessible features shall be conducted with the Customer as part of the mockup review. DR

A parking location shall be provided in the accessible section of the car which shall permit a
wheelchair passenger to remain in their wheelchair while on board the car and be compliant
with ADA. Wheel restraints are not required.

A storage area for unoccupied, folded wheelchairs, 48 in. long, 20 in. wide and 40 in. high,
shall be provided.
9.4 Interior Structure

The coach car shall serve as the base for the interior for all car types. Interior colors, design, patterns and finishes of materials shall be developed by the Contractor as part of the conceptual design and mockup process to be approved by the Customer.

Easy access shall be provided for all items that require periodic maintenance or replacement. Tape or other material that prevents squeaking or chafing shall be used between linings and any structure to which they are attached or in which they may come into contact. Linings covering apparatus requiring maintenance or servicing shall be fastened with approved fasteners in a manner that permits ready removal and replacement by technicians, but is secure from passengers.

All interior surfaces that are of fiberglass shall have a high-gloss finish with a minimum gloss meter measurement of 82. Color shall be applied as a gel coat surface. Interior liners and partitions shall be fiberglass or equivalent using fire retardant resins.

9.4.1 Stairways

Each car, except the café/lounge car, will have two stairways, one at each end. The café/lounge car will only have one stairway located at the B-end.

Each stairway shall be equipped with handrails on both sides with a minimum clear width of 32 in. between handrails. These shall attach with positive locking machine screws directly to car structure for strength.

The stairway framing, step treads and risers shall be constructed of stainless steel. Stairway side walls shall be made of similar materials as interior wall panels throughout the car. As required, hinged access panel(s), secured closed with stainless steel fasteners, shall be provided to give access to car side door tracks/mechanisms for maintenance.

Flooring material identical to that used in the vestibules shall be used on the stair treads and upper stairway landing. All steps shall have a bright yellow nose rubber for visual demarcation of the stairway. All stair way flooring materials shall be adhered to the stairway structure using a waterproof, durable epoxy on vertical and horizontal surfaces.

The stairway shall be illuminated with stairway lighting that meets the requirements of Chapter 11.

9.4.2 Bulkheads

Bulkhead walls at the end of each passenger seating area shall be constructed of melamine-faced aluminum panels or fiberglass panels for durability and to be pleasing to the passenger. All fiberglass material shall be covered with a high gloss gel coat. All seams will be sealed, using appropriate sealing materials. Fasteners shall not protrude from the wall panels, but countersunk to be flush with the wall panels.
9.4.3 Side Walls

The sidewalls shall be designed and constructed to minimize the number of joints, with all joints being properly sealed. Floor heating cover panels shall be designed and installed to withstand the temperatures and maintenance of the heating system without removal of adjacent components. The vendor shall provide recommended cleaning instructions as part of the Service and Inspection manual (see Chapter 22).

The wainscot fabric shall be a woven loop pile weave using 100% wool face yarn incorporating static control and have a synthetic backing material. An approved stain resistant chemical shall be applied to the wainscot carpet material. Wainscot fabric shall be applied to the wainscot panel using a manufacturer-approved adhesive. The wainscot carpet shall comply with the following requirements:

- Pitch: 216 P. O. B.
- Rows per Inch: 10.5
- Pile Height: 0.14 in.
- Weight: 20.0 oz/square yard
- Width: 12 ft, slit to 6 ft

9.4.3.1 Window Masks

The window masks shall be either Fiberglass Reinforced Plastic (FRP) or thermoformed plastic. The window edge should incorporate openings for heating vents at the window. Sidewall heat vents may be separate powder coated aluminum (as appropriate for the mask to window interface), or integral to the window mask. The window masks must not readily collect dust/dirt, and shall be easy to clean without removal or special tools.

9.4.3.2 Sidewall Heat

Passenger seating areas as well as the café/lounge car passage at the galley shall be equipped with side wall heat. With this approach, air is warmed by the floor heater elements at the base board and rises by convection through the hollow car side wall behind the wainscot and emerges from vents in or just below the window mask below the windows. See Chapter 10.

The sidewall materials, as well as any materials attached to them, shall be of sufficient temperature rating that it does not discolor, become brittle or otherwise deteriorate for the life of the car from the warm air. The openings at the window level shall be easy to clean and not readily accumulate dirt. The top surface shall be tilted slighting inward into the car body to discourage placing items on it.
9.4.4 Diffusers and Grilles

Supply and return air diffuser grilles shall be stainless steel and integrated into the surrounding surfaces. An arrangement using adjustable regulating registers and grilles shall be provided. Regulating registers shall be hidden by these grilles and shall be removable for cleaning periodically. These grilles shall be configured to be easily removed for cleaning. Diffusers shall be designed to be easily adjusted to set car air balance without having to drop ceiling panels. It shall be possible to drop ceiling panels without having to disturb supply air diffusers.

Grilles shall be designed to minimize drafts onto passengers. Regulating registers shall be designed to eliminate rattles and noise levels associated with high velocity air supply systems.

Grilles or suitable openings (such as a gap below the door) shall be provided as necessary to provide a return path for air through enclosed spaces, such as the engineer’s cab, baggage room and galley (when it is secured). The restroom doors shall have a grille at a low location to allow air to enter the room, to be exhausted from that space by the exhaust system. Grilles that are subject to impact from luggage, such as that on the electric locker, shall employ a guard for protection.

Baseboard heating shall run essentially the entire length of the passenger seating section of the cars as well as along the passage adjacent the café galley. The heater grilles shall be constructed of brushed stainless steel, formed and perforated appropriately to perform their ventilating function.

Heater grille length should correspond approximately to heater element length. A minimum number of grille lengths shall be used and like units shall be interchangeable. All heater elements shall be accessible without having to remove seats, or other components, except as approved by the Customer.

9.4.5 120V Outlet Strip

Convenience outlets utilizing duplex 120VAC receptacles shall be located between the window mask and wainscoting. The conduit base shall be integrated into the surrounding surfaces. A duplex receptacle shall be provided for each seat, including those at tables, in all car types. Receptacles shall be located approximately 24 in. forward from the front of the seat back, 16 in. forward of the seat back for those seats located at tables. Two duplex receptacles shall be installed at each table, located such that the table or seat does not interfere with access to the outlet. A 120 VOLTS label, in accordance with Amtrak Specification 697, shall be installed on the conduit cover at each outlet location, 0.50 in. from outlet, between the outlet and the seat facing the outlet. The raceway shall be securely attached to the carbody structure so it does not work loose from repeated use. Refer to Chapter 13 for further requirements.

9.4.6 Central Ceilings

Ceiling panels shall be designed and constructed and installed to allow easy individual removal for maintenance and repair of any components included in the ceiling design, such as air ducts. Ceiling panels shall be constructed of fiberglass covered with a high gloss gel coat.

Where the car ceiling panels form the bottom of the HVAC duct, they shall be hinged along one side to allow them to be easily opened for periodic duct cleaning. The panels shall be sealed
against air leaks around their entire perimeter, with the seal on the carbody side of the joint. The panels shall be secured closed with captive threaded fasteners; each panel will include a passive safety catch. Ceiling panel size shall allow a single person to open/close the panels safely, unaided. Self-engaging safety catches shall be included to prevent accidental panel openings. These safety devices shall be stainless steel and be configured so as not to rattle in service.

9.4.7 Drinking Water Stations

Each car type shall be equipped with an upper and lower level drinking station at the B-end of each car. Each station will consist of:

- Chilled water cooling unit (see Chapter 15);
- Recessed chilled water dispenser with drain;
- Recessed cup dispenser for 100 - 4 oz paper cups, with durable springs to secure cups in the unit;
- An access side panel secured with quarter-turn fasteners for access to the water cooler for maintenance;
- Lower level drinking water station that shall be ADA compliant; and
- Clearly marked trash container for disposal of used cups.

9.4.8 Electrical Locker

The electrical equipment and switch locker shall be located as appropriate at the B-end of the car.

Locker walls shall be of melamine faced aluminum panel construction with substructure as appropriate to support components. Longitudinal walls facing into the vestibule shall be decorated with melamine or other factory-manufactured laminate material.

The door lock shall be a coach key style lock with interior release latch.

The electrical locker shall be positively pressurized by conditioned air as part of the HVAC system to prevent dust from entering and accumulating in the electrical locker. Air shall only be allowed to vent from the electrical locker through gaps and voids where dust may enter. There shall not be a vent or grille in the door to the electrical locker. If the return air path for the B-end lower level passes through the electric locker space, it shall do so within an air duct and not use the electric locker space as part of the return air system.

The locker shall include a metal pocket or rack to hold the car defect report book, which is approximately 8.5 in. wide by 11 in. tall by 1 in. thick. Likewise, an 8.5 in. wide by 11 in. tall metal surface shall be provided on the inside face of the door for FDA inspection form and stickers.

9.4.9 Recycling and Trash Receptacles

Recycling and trash receptacles shall be provided on both levels of each car type, on the upper level at the end passageways and at the top of each stairway, and in or adjacent to each vestibule on the lower level. They shall meet all FDA and NSF requirements for trash containers and their materials. Each set of receptacles shall include two separate openings
and respective bins: one for trash, and one for recyclables (cans, bottles and newspapers). Openings for these receptacles shall be designed to encourage passengers to use the proper receptacle for disposing of trash and recyclables, through the use of distinctive opening designs and signage. The recycling and trash receptacles shall be side-by-side in a row. To the extent possible, these receptacles will be designed to accommodate the Amtrak standard trash container, per Amtrak Drawing C-96-7591. The receptacles shall be labeled with an icon for type of contents, in accordance with Amtrak Specification 697. The locker shall include appropriate brackets and/or guides to properly index the containers with the openings, and as required, to keep them upright. The containers shall be rounded to protect staff handling the containers or servicing the end door from injury.

Toilet rooms shall only contain a trash receptacle, sized to provide the maximum trash capacity and receptacle opening permissible by the toilet room design.

Recycling and trash receptacle lockers shall be of panel construction with substructure as appropriate to support components. Panel construction shall be the same as bulkheads when transverse walls serve as bulkheads. Longitudinal walls shall be of the same construction as the bulkhead walls except that there will be no wainscot carpeting.

Trash and recycling locker door panels shall have melamine or factory-applied laminate. Alternatively, panels may be constructed of honeycomb or plymetal wall materials. The door shall be secured closed with a pencil latch and shall include a knob or handle to be used to pull the door open when unlatched.

Visible hardware and fasteners shall be minimized to aid cleaning, reduce build-up of contaminants and provide for pleasing aesthetics.

Vertically-oriented recycling and trash receptacles shall include a hinged self-closing door flap, which shall be as large as practical. These flaps shall be held closed by gravity without requiring the use of springs. Horizontally oriented recycling and trash receptacles shall have clear openings without flappers.

The inside of the trash locker shall be easy to clean and be sealed at all joints for good sanitation and to meet FDA requirements.

### 9.4.10 Enclosed Overhead Luggage Bins

Enclosed overhead luggage bins shall be provided above all revenue seating. The luggage bins shall consist of modular units bolted to the sidewall and roof car structure and extend the entire length of the passenger-seating compartment. The bins shall accommodate carry-on luggage of up to 13.38 in. by 18 in. by 22 in. in size. The door opening shall provide at least 14 in. open vertical clearance. Length of bin modules shall match the window pitch so that the bin dividers are located centered on the pillar between windows. Design of the bins shall include as few obstructions as possible for manipulating luggage into and out of the bin.

The bin shall incorporate a raised lip along the longitudinal edge of the luggage support surface. The lip shall be of a sufficient height to mitigate the potential of any luggage resting on the bottom surface of the bin from sliding out of the bins when the doors are opened.

Luggage bin doors shall be robustly hinged at the top with a stainless steel piano hinge. Doors shall contain a positive latching device to secure the door in the closed position and retain luggage inside the bin in accordance with FRA securement requirements. Under no conditions shall the door latch self-disengage during train operation. The doors shall be self-opening.
when the door latch is released. The mounting of hinges, latches, keepers, dampers and self-opening mechanisms shall be via steel tapping plates, which are integral with the rack and door structure, so that hardware does not work loose or cracks develop in the parent material. Design of the bins shall take into account the likely rough handling by passengers in the course of normal service life, including repeated loading and unloading of luggage. The luggage bins shall be designed, manufactured and installed to prevent rattles resulting from car movement at any speed. Reliability and robustness of the luggage bin system shall be demonstrated to Customer satisfaction. A 50,000-cycle endurance test shall be conducted on the door and all associated hardware (latch, hinges, self-opening mechanism, etc.) to demonstrate reliability and freedom from wear. See Chapter 19.

The luggage bearing surface shall be durable and not require replacement or refurbishment for the life of the car. The lower edge of the rack at the aisle shall incorporate a smooth convex radius to mitigate passengers bumping their heads against the underside of the luggage bin. The luggage bin facia shall be fiberglass faced or approved alternative. The underside of the luggage bin facia shall integrate the upper curtain track above the side windows.

The bin structure and attachment to carbody shall have sufficient strength to support a load of 250 lbs, applied over a 10 in. by 10 in. area, midway between adjacent supports with a deflection not to exceed 0.25 in. (including rack itself and its attachment to carbody) and without fracture or permanent deformation. The load-bearing surface shall be inclined upward from the horizontal toward the center of the car at an angle of approximately three degrees. The complete and fully-loaded luggage bin and its attachment to the carbody shall be designed to resist loads, without failure or door opening, due to accelerations of 8g longitudinally 4g laterally and 4g vertically. The Contractor shall demonstrate the strength and luggage retention capability of the luggage bins during the design review.

Track-mounted reading light assemblies, as described in Chapter 11 shall be mounted on the underside of the bins, with the entire installation conducted from the bottom side of the bins. The design shall allow the light fixture units to be moved in small increments longitudinally along the luggage rack so as to allow it to be centered above each passenger seat pair, regardless of seat pitch. The luggage rack shall be equipped with a wiring chase or equivalent that provides the flexibility in wiring to achieve this.

A means to retain conductor seat checks shall be provided on the luggage rack. This may be individual parts, a continuous strip or part of the reading light assembly. The seat check holders shall hold seat checks in plain view of the conductor, looking along the length of the car. Seat check holders shall be positioned so that seat checks are not easily struck by passengers using the luggage rack edge to steady themselves. The design of the seat check holders shall be integrated into the design of the luggage bins.

### 9.4.11 Luggage Racks

A luggage rack shall be provided at both ends of the car near the top of the stairs, upper level. It shall be of robust tubular brushed stainless steel construction and include shelves. Bumper guards shall be mechanically attached to the wall panels within the luggage rack to prevent damage to walls or luggage.

The racks shall have sufficient strength to support a load of 250 lbs midway between adjacent supports with a deflection not to exceed 0.25 in. and without permanent deformation. The load-bearing surface shall be not less than 24 in. wide and shall be inclined upward from the horizontal toward the center of the car at an angle of approximately three degrees.
9.4.12 vestibule luggage racks

A luggage/bike rack area shall be located on the lower level at the A-end of each car type, except for the café/lounge cars. The walls shall be constructed for durability in handling heavy luggage and various sizes of bicycles. All exposed fasteners in the luggage rack area shall be countersunk or flush mount types to preclude any damage to passenger luggage. The luggage racks shall be constructed of brushed stainless steel material in a robust tubular form. The racks can be lowered or raised depending on usage for luggage or bicycles. Airline-style quarter-turn latches shall be used to secure the racks in the up position.

Bicycle racks shall be capable of storing no less than four bicycles in an upright fashion without any bicycle component interfering with passenger circulation in the vestibule, stairway or side entry doors. Bike racks shall have the capability to lock the frame of a bicycle to the rack assembly using a standard U-shaped Cryptonite-type lock. Bike racks shall be designed to accommodate bicycles with tires up to 2.5 in. wide.

The luggage rack shall consist of two shelves that can be raised or lowered, to create three levels of luggage storage (the two shelves and the floor). Lower and upper shelves will be approximately 21 in. to 24 in., and 48 in. to 52 in. above the floor, respectively. Luggage racks shall have sufficient strength to support a load of 250 pounds midway between adjacent supports with a deflection not to exceed 0.25 in. and without permanent deformation. The load-bearing surface shall be not less than 24 in. deep and shall be inclined upward from the horizontal toward the center of the car at an angle of approximately three degrees.

9.4.13 baggage room

A separate area shall be provided in the F-end half of the lower level of the cab/baggage car for storing checked baggage and passenger-loaded bicycles. This storage room shall be a minimum of 19 ft long (including the F-end vestibule) from the transition bulkhead at the F-end to the interior partition wall separating the baggage room from the seating area. The baggage room shall consist of five sets (two on each longitudinal wall and one in the F-end vestibule area) of flip-up luggage shelves, similar to those used in the A-end vestibule luggage rack/bike rack on coach cars. Each set of shelves shall consist of two shelves that can flip up to access a wall-mounted bike rack. Each set of shelves on the longitudinal walls shall be approximately 66 in. long, with a structural frame between them. The shelves in the F-end vestibule shall be identical to those in the A-end vestibule of coach cars. The baggage room shall be designed to hold a minimum of 16 bicycles. The bicycle racks used in the baggage room shall be identical to those used in the A-end vestibule of coach cars.

The baggage room shall be separated from the lower level seating area by a wall with a lockable entry door. The partition wall shall be plymetal and shall span the width and height of the car. The door shall have a grille in the lower portion for air circulation, and shall be 32 in. wide. The door lock shall be operated with a standard Amtrak coach key. This door shall be labeled NOT AN EXIT in accordance with emergency exit pathway marking requirements.

The side entry doors in the baggage room shall be operated using a Door Control Panel-Local, and shall have the capability of being controlled via a trainline command, or only from the local door control panel. The Door Control Panel-Local and Trainline/Local switch shall be located adjacent to door 7. See Chapter 8.
9.5 Toilet Rooms

9.5.1 Accessible Toilet Room (ATR)

The Accessible Toilet Room (ATR) must be compliant with all applicable ADA requirements, and shall have the following features:

- The restroom shell shall be constructed primarily of FRP or thermoformed plastic with a high gloss gel coat finish on surfaces exposed to the public.
- Trash bins shall be sized to use Amtrak standard 30 gal trash liners and have a large bin opening.
- There shall be two toilet paper roll dispensers that shall accommodate at least two full rolls each.
- A polished stainless steel mirror with a minimum 20 in. by 30 in. viewing area shall be mounted above the sink. The mirror shall be removable to allow access to the equipment behind the wall for maintenance.
- A water-resistant, fluorescent light fixture shall be mounted over the toilet vanity mirror.
- A motion-activated hand dryer/blower.
- A sliding pocket door with lock shall be provided. The lock shall be operable from the outside with a standard Amtrak coach key. A TOILET ROOM OCCUPIED indicator shall be provided on the outside of the toilet room, and a DOOR IS LOCKED WHEN LIT indicator shall be provided on the inside of the toilet room, activated when the door is locked (see Chapter 11). A decal shall provide door lock operation instructions.
- All controls, switches and amenities shall be readily accessible and operable by passengers with disabilities.
- Minimum ATR dimensions shown by 49CFR38 Subtitle A, Figure 4 Intercity Rail Car (with accessible restroom) shall be met or exceeded.
- A toilet stand with shroud assembly (see Chapter 15) shall be located in the toilet room.
- An automatic electronic flush mechanism shall be incorporated into the toilet. A back-up manual flush button shall be obvious and convenient to the user. Toilet shroud shall be constructed of stainless steel, brushed finish. The toilet seat and cover shall be constructed of reinforced fiberglass.
- A sink with a faucet to automatically blend hot and cold water shall be located convenient to the toilet. The sink shall have a one-gallon capacity and a permanently mounted strainer. The faucet shall be motion activated.
- Sink and sink base shall be constructed of brushed finish stainless steel.
- A 120VAC Ground Fault Circuit Interrupter (GFCI) duplex receptacle shall be located near the sink.
- A Celeste foam soap dispenser base shall be mounted on the countertop in compliance with ADA regulations.
- A coat hook, toilet seat cover dispenser and baby changing table (that can support 75 lbs) with child belt shall be provided.
• An Amtrak standard facial tissue dispenser shall be provided.

9.5.2 Unisex Toilet Room (UTR)

The Unisex Toilet Room (UTR) shall have the following features:

• The restroom shell shall be constructed primarily of FRP or thermoformed plastic with a high gloss gel coat finish on surfaces exposed to the public.
• 30 gal capacity trash bins with large bin opening.
• There shall be one toilet paper roll dispenser that shall accommodate two full rolls.
• A polished stainless steel mirror with a minimum 20 in. by 30 in. viewing area shall be mounted above the sink. The mirror shall be removable to allow for access to the equipment behind the wall for maintenance.
• A water-resistant, fluorescent light fixture shall be mounted over the toilet vanity mirror.
• A motion-activated hand dryer/blower.
• A sliding pocket door with lock shall be provided. The lock shall be operable from the outside with a standard Amtrak coach key. A TOILET ROOM OCCUPIED indicator shall be provided on the outside of the toilet room, and a DOOR IS LOCKED WHEN LIT indicator shall be provided on the inside of the toilet room, activated when the door is locked (see Chapter 11). A decal shall provide door lock operation instructions.
• A toilet stand with shroud assembly (see Chapter 15) shall be located in the toilet room.
• An electronic flush mechanism shall be incorporated into the toilet. A back-up manual flush button shall be obvious and convenient to the user. Toilet shroud shall be constructed of stainless steel, brushed finish. The toilet seat and cover shall be constructed of reinforced fiberglass.
• A sink with a faucet to automatically blend hot and cold water shall be located convenient to the toilet. The sink shall have a one-gallon capacity and a permanently mounted strainer. The faucet shall be motion activated.
• A 120VAC GFCI duplex receptacle shall be located near the sink.
• A Celeste foam soap dispenser shall be mounted on the countertop.
• A coat hook and toilet seat cover dispenser shall be provided.
• A standard facial tissue dispenser shall be provided.

9.5.3 Toilet Room Pan and Flooring

The floor pan of the toilet room modules shall be FRP with a stainless steel overflow pan under the toilet module. The purpose is to prevent fluids from wicking beneath the toilet room flooring, both for hygiene and also to prevent degradation of the subflooring materials. (The subfloor materials are described in Chapter 4) This pan shall be watertight and have raised edges of at least 2 in. in height. The pan's exposed edges shall be folded for safety and to provide stiffness. The floor pan shall be installed over the subfloor of the car, and the perimeter of the pan shall be fully sealed to prevent moisture from seeping under the pan. Attachment points to secure the floor pan to the subfloor shall be in the sides, rather than the bottom surface, and be watertight. The floor pan joint at the door opening shall be waterproof to the subfloor. Floor penetrations shall be avoided when possible, but where required, sealed
both to make the joint waterproof and also with an appropriate material to prevent flame propagation from underfloor flame sources.

A seam-free, skid-resistant rubber floor covering shall be used in the toilet room floor area. Color and pattern selection shall be as specified in Chapter 23. The floor covering shall be coved a minimum 4 in. up the sidewalls to form the inside scuff/kick plate. The edges shall be sealed to form a watertight seal and seams shall be cold-welded.

9.6 Interior Décor

The Contractor shall develop and provide to the Customer for approval, at the interior design review stage, no less than six storyboard palettes proposing a coordinated and comprehensive concept for the major elements of the décor for the interior of each car. The elements to be proposed on this palette shall include the colors, patterns, textures and gloss levels of the:

- Seat fabric (revenue seats)
- Seat fabric (lounge area booths)
- Carpet
- Curtain fabric
- Wainscot fabric
- Melamine laminates for use on wall panels and table tops
- Fiberglass panels
- Acrylic countertops
- Thermoform plastic panels
- Rubber flooring for stairs, vestibules, toilet rooms, passageways and other non-carpeted areas
- Powder coated or anodized metal items

The Contractor’s selection of these items shall be based on the development of a comprehensive décor for the car interiors that utilizes commercial and industrial design to create a contemporary and pleasant car interior. The Contractor shall present to the Customer, at the preliminary design review, the criteria that will be used to select the elements of the interior décor. The six storyboards shall be based on adequate differences so that the Customer has a wide variety of interior concepts from which to choose. Additional Customer considerations or requirements that will guide the development of the storyboard palettes are included in chapter 23. The Customer shall select the storyboard of its choice prior to the final design review.

Using the approved interior décor palette, the Contractor shall provide at the final design review a series of computer-generated conceptual images that represent the simulated appearance of the car interiors, including the fabrics, textures and patterns selected by the Customer. These images shall include (but are not limited to) several views of each of the following areas of the cars:

- Passenger seating area
- Toilet rooms
- Vestibules
• Lounge area
• Galley area

These images shall be provided to the Customer in both electronic and large-format print. The Customer may use these images for purposes of public relations or other pre-production activities.

9.6.1 Floor Covering

9.6.1.1 Carpeting

All carpet shall be designed per Customer specification and shall be designed to provide maximum passenger comfort and safety as dictated by ergonomic requirements. The carpet shall be classified as slip resistant under ADA guidelines. See Chapter 23.

9.6.1.2 Rubber Flooring

Seam-free, skid-resistant hammer finish rubber disc floor covering, shall be used in vestibules, end passageways, operator’s cab compartment, restrooms, baggage room, galley areas and other utility areas where carpet is not installed.

The floor covering shall have an integral cove of 4 in. radius where specified for easy cleaning, and shall extend from 2 in. to 6 in. up the wall, depending on application.

Transition strips shall be provided between rubber flooring and carpeted areas. Transitions between flooring types shall produce level changes in flooring surfaces less than 0.25 in.

The trim strip between the wall lining and the floor covering shall be sealed to prevent harborage, accumulation of debris, or incursion of water and cleaning fluids.

Floors in vestibules and end passageways shall have a 3 in. wide high-contrast visibility strip directly adjacent to door openings to delineate the door opening for visually impaired passengers. The high-contrast strip at the side entry doors may be made of high-performance photoluminescent material so that it is integrated into the LLEPM system for exit pathway marking.

All flooring shall be installed using an adhesive system that is approved by the flooring manufacturer.

9.6.2 Seats and Tracks

9.6.2.1 Seats

Seats shall be provided in the upper and lower levels of all car types in accordance with the conceptual drawings shown in Figure 9-1, Figure 9-2 and Figure 9-3. Seats shall have a pitch of 41 in., unless specified otherwise in Chapter 23. See Chapter 23 for Customer specifics regarding seats, seat fabrics and other details.

9.6.2.2 Seat Tracks
Revenue seats shall be mounted in seat tracks on the floor and wall of the upper and lower levels of all car types. Seat tracks shall be installed per Caltrans Drawing D-9-901 (see Chapter 4). A rubber extrusion shall be inserted in all seat tracks (wall and floor) between seat pedestals. Seats shall be mounted to the seat track in accordance with the strength and crashworthiness requirements of APTA Standard SS-C&S-016-99.

9.6.2.3 Workstation Tables

For facing seat pairs, a fixed workstation table shall be provided, in accordance with the respective car floor plans. The table top edges facing the passengers shall be constructed using current energy absorption technology that is intended to reduce injury potential through the use of shock-absorbing crushable elements within the table top. A review of this technology shall be part of the design review process for the tables. The top shall have dimensions that allow easy access to the seats from the aisle. The table top shall have a melamine laminate top surface and composite edge machined smooth and free of sharp edges and burrs. The top shall have a raised perimeter to retain spilled liquids.

Workstation tables employing energy absorption design shall be mounted to the carbody structure such that the table shall not detach from the carbody under an accident scenario that produces 8g deceleration forces longitudinally against one side of the table. The carbody mounting point shall not deform under these conditions. Deformation shall be restricted to the table frame.

Conventional tables not employing energy absorption, if used, shall be attached to the carbody via the wall table track and to the floor seat track on the aisle end. The table leg shall be round, with a minimum 2.5 in. diameter. Locations of mounting holes and tolerances shall be consistent so any leg can be used with any table with no modifications required; likewise for the mounting to the floor seat track.

9.6.3 Curtains

A curtain track shall be provided at the top of the window area, along the length of the car for curtain installation. The curtains shall be free hanging at the bottom, but secured in the open position with a tie-back of the same fabric that is permanently attached to the curtain and secured with heavy duty Velcro-style hook and loop fastener.

Color and pattern of the curtains is specified in Chapter 23.

The fabric shall comply with the following test requirements:

<table>
<thead>
<tr>
<th>Test</th>
<th>Method</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>ASTM D3776-96</td>
<td>6.8 oz/square yard</td>
</tr>
<tr>
<td>Width</td>
<td>ASTM D3774-96</td>
<td>54.0 in.</td>
</tr>
<tr>
<td>Fabric Count</td>
<td>ASTM D3775-03a</td>
<td>Warp: 88.8 ends per in.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fill: 46.0 picks per in.</td>
</tr>
</tbody>
</table>

The curtain shall be able to withstand normal cleaning without stretching, pilling, puckering, shrinking, rippling, zippering, fading or other adverse effect to its appearance or function. Curtains shall be machine cleanable using water and detergent followed by machine drying. The vendor shall provide recommended cleaning instruction in the service and inspection manual. The curtains shall not require dry cleaning.
9.7 Signage and Labels

The Contractor will equip each car with adequate signage to provide passengers and crew information about the amenities and safety-related features of the cars. The signage to be provided shall include, but is not limited to, the following:

- Location of safety equipment
- Hazards such as high voltage or heat sources
- Operation of emergency exit pathway equipment
- Operation of on-board equipment such as doors and door latches/locks
- Amenities such as trash and recycling containers, potable drinking water, 120VAC outlets, etc
- Toilet room amenities
- Seat numbers
- Capacities for storage locations such as luggage racks and overhead luggage bins
- Service-related signs for maintenance and inspection
- Exterior signage for service points

The interior and exterior signage shall conform to Amtrak Specification 697, National On-Board Signage Manual. The artwork, material, location and specifications for each sign shall be submitted to the Customer for approval at the design review.  

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Whenever possible, existing Amtrak signs shall be used. Where new sign designs are required the Contractor shall develop artwork per the Amtrak Onboard Signage Guidelines for approval by the Customer. The Contractor will provide a signage application drawing for Customer approval identifying all signs and labels used on each car type, including text, as well as the mounting location.

LLEPM shall be installed in accordance with APTA Standard SS-PS-004-99. The LLEPM system shall be passive and shall not utilize electric components. The LLEPM system shall be charged and maintain charge under all lighting conditions except Emergency. See Chapter 11.

9.8 Doors and Latches

All interior doors shall be constructed of melamine-faced plymetal to match interior walls, and shall be built of robust materials to withstand repeated use without deforming or losing adjustment. Doors shall have a minimum of three stainless steel heavy-duty hinges, and shall open outward into the interior of the car unless specified otherwise. Access panel doors shall have a stainless steel piano hinge and shall not open upward. Doors shall close securely without requiring the use of a key, and shall remain closed without rattling or becoming loose during operation. Cab compartment, galley access, baggage room and utility locker doors shall have a grille located in the lower half of the door panel for air circulation.

Doors that shall use a standard coach key to open:

- Electrical locker
9.9 Noise and Vibration

9.9.1 Interior Noise Levels (Passenger Areas)

When a single, completely assembled and operating car shall be moving at any speed up to 80 mph on tangent, at-grade, ballast-and-tie track with clean, smooth rail, with all auxiliaries operating simultaneously at normal conditions and with the vehicle operating in any specified mode of acceleration, deceleration, or coasting, the noise level in the car’s interior (without passenger load) shall not exceed 70 Decibels (Acoustic) (dBA) in seating areas, 75 dBA in vestibules (referred to 0.0002 microbar) at any point not less than one foot from the ceiling, floor, end walls, or side walls. Compliance with this requirement shall be demonstrated using a Type 2 sound level meter as defined by ANSI Standard S1.4: American National Standard Specification for Sound Level Meters, using the slow meter scale.

9.9.2 Vibration

All vehicle equipment shall be designed to operate without damage or degradation of performance when subjected to vibration and shocks encountered during normal service.

All newly designed equipment and auxiliaries mounted anywhere on the car, car body, or trucks shall not cause vertical or horizontal vibrations anywhere on the car floor, walls, ceiling panels, and seat frames in excess of 0.10 in. peak-to-peak amplitude, in excess of 0.01 acceleration due to gravity (g) peak acceleration for the frequency range from 5 Hertz (Hz) to 14 Hz, and in excess of 0.045 in. per second peak vibration velocity for the frequency range above 14 Hz.

Carbody-mounted components shall be designed to withstand vibrations of not less than 0.2 g at frequencies up to 100 Hz and randomly oriented shock loads of 2 g.
9.10 Mockup Requirements

Full-scale mockups of select portions of the interior shall be constructed by the Contractor as part of the design review process. The areas to be mocked up shall include, but are not limited to, the following:

- Accessible toilet room, including wheelchair circulation in the adjacent vestibule;
- Cross-section of the upper level seating area, including side walls and windows, overhead luggage bins and reading lights, facing seat pairs and workstation table, convenience outlets and curtains;
- Fully functional overhead luggage bin, including latch and hinge mechanism, mounted at the actual height above the floor;
- Bike rack/luggage shelf area in the lower level A-end vestibule; and
- Portions of the café/lounge and cab/baggage cars, per Chapters 14 and 16, respectively.

Details regarding the requirements for the construction and review of the mockups can be found in Chapter 3.
Figure 9-1: Coach Car Interior
Figure 9-2: Cab/Baggage Car Interior
CAFE/LOUNGE CAR LAYOUT

**Lounge End**
21 Seats

- 2 Person Lounge Seat
- 1 Person Lounge Seat
- Elevator
- Serving Counter
- Galley
- Trash Receptacle
- 4 Person Booth Seat
- Condiment Station
- 4 Coach Seats (6 Total)

**Upper Level**
30 Seats, 10 Tables

- Enclosed Overhead Luggage Bins Above All Coach Seats (Not Shown)
- 2 Coach Seats
- Side entry Door
- Wheelchair Lift
- Electric Locker
- Staircase to Upper Level
- Emergency Tools & Wheelchair Lift
- ADA Restroom

**Lower Level**
11 Seats, 1 ADA SEAT, 4 Table

- ADA Space with Energy Absorbing Half Table
- Crew Entry Door
- Trash & Recycling Receptacles
- Service Galley Area
- Crew Entry Door
- Table Reserved For Crew
- 4 Coach Seats (2 Total)

**Revenue Seating End**
28 Seats, 6 Tables

- Passageway Door
- 4 Coach Seats with Energy Absorbing Half Table
- Elevator
- Side entry Door
- ADA Space with Energy Absorbing Half Table

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**Figure 9-3: Café/Lounge Car Interior**

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