

Standardized Technical Specification

PRIIA Single-Level Passenger Rail Cars
Trainset
and
Standalone Car

Requirements Document

Issue Revision 1.0

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1.0 Introduction [Informative]

The requirements in this document describe the desired features for single level equipment and train sets. Specific features or functions that are deemed appropriate by the Technical SubGroups shall have priority over these requirements and shall be reflected by specific language in the vehicle specification. Such exceptions must be identified by the Technical SubGroups and are subject to review and approval by Executive Board

The following requirements are derived from the PRIIA 305 mandate.

Technical:

- 125 mph capability.
- For operation in corridor service (routes up to 600 miles in length).
- Standardization – consider areas such as:
 - vehicle structure for common platform for all vehicle types within the fleet; 8” ATOR
 - component attachments (e.g. truck, seats, tables, HVAC);
 - components at a fit/form/function/input/output level (e.g. truck, wheels, axles, couplers, cab controls / displays, seats, cab seats, intercar jumpers, intercar gangways, HVAC units, static inverters, batteries, lighting, tables, door systems, etc.);
 - seek commonality in components between PRIIA vehicle types where appropriate (bi-level, single level, locomotive, etc.).
- New Technology – consider areas such as:
 - Crash Energy Management (energy absorbing coupler, deformable anticlimber, collapsible structural members, trigger levels, interior fixtures (energy absorbing tables), etc.);
 - Environmentally responsible (energy efficient, low weight, low noise and vibration, consideration of recycled materials / material recyclability, low impact HVAC refrigerant, energy efficient lighting, etc.);
 - Train data networks (Ethernet, IP address based components, etc.).
- Interoperable with existing single level vehicles in mixed consist to be specified by the purchaser and the following Amtrak vehicles: Amfleet, Viewliner, Long Distance Single-Level Car, Horizon etc., including motive power of purchaser.
- Compliance with all applicable regulations.
- Compliance with Americans With Disabilities Act and relevant regulations.
- Reliability and Maintainability Requirements - Cost effective to operate and maintain.

Process:

- Inclusive development to include key stakeholders:
 - Amtrak
 - States
 - FRA

- Industry, such as
 - Vehicle Suppliers;
 - Component / System Manufacturers.
- Live specification with change management.
- Configuration management for vehicle development and specification leading to conformed specification.
- Traceability of such processes to support PRIIA 305 Executive Committee approval.

Requirements [Normative unless otherwise indicated] indicated]

2.1 Car Types and Arrangements

2.1.1 Key Requirements

- a. All car types shall be based on a standardized design that facilitates tailoring of interior equipment arrangements and functionality to meet the needs of purchasers, Amtrak, different state agencies and classes of service.
- b. Car designs shall be modular to the extent practical in order to minimize the amount of additional design required to adapt to the needs of different state agencies and classes of service.
- c. With the possible exception of the cab control car, carbody and attachment points shall be designed to permit any car type defined in this specification to be converted to any other car type defined in this specification without requiring modifications to the carbody.
- d. The carbody or trainset shall be fully compliant with FRA's requirements for structural strength, crashworthiness and testing per 49CFR Part 238, as follows:
 1. The carbody or trainset shall meet or exceed 49CFR Part 238 Tier 1 structural requirements.
 2. The carbody or trainset shall meet or exceed APTA Standard SS-C&S-034-99 for the Design and Construction of Passenger Rolling Stock.
- e. The design of the carbody or trainset shall incorporate collision energy management (CEM) features.
- f. Cars and trainsets shall be designed for a service life of 40 years.
- g. Cars and trainsets shall comply with all applicable ADA requirements.
- h. High/Low Platform Boarding
 1. Trainset: Trainsets shall be designed for low-level platform boarding.
 2. Standalone car: Standalone cars shall have capability for both high and low platform boarding.
- i. Standardization
 1. Car or trainset design shall provide for standardization with other PRIIA passenger rail cars to the maximum extent practical.
- j. Tilting capability:

1. Trainset: Trainsets may incorporate tilting capability as required to meet the desired trip times.
2. Standalone car: Tilting is optional .

2.1.2 Car Types

The following generic car types shall be considered (functionality of interiors may be combined):

- a. Standard Coach
- b. Business Class Coach
- c. Café / Food Service Car
- d. Cab Control Car
- e. Baggage Car or Bag Area

2.2 Capacity and Consist Performance

2.2.1 Consist Configurations

- a. Standalone car: Normal operation:
 1. All trainlined functions shall operate as specified for consist lengths of up to 18 cars plus 2 locomotives.

2.2.2 Consist Performance

- a. Maximum speed: 125 mph under existing Tier 1 equipment requirements, bi-directional running.
- b. Duty cycle
 1. Normal duty:
 - i. Continuous operation for up to 20 hours and 1200 miles per day.
 - ii. Representative operating profile shall be defined by the purchaser.
- c. Operating range with 10% reserve of all fluids (supply and waste) and supplies:
 1. Distance: 600 miles
 2. Duration: 20 hours

2.3 Dimensions, Clearances and Track Geometry

2.3.1 Overall Carbody Dimensions

- a. Car and trainsets shall fully conform to Amtrak's standard single level clearance diagram (drawing D 05-1335, latest revision)

2.3.2 Track Geometry

- a. The cars shall be designed and tested for passenger operation at all appropriate speeds up to 125 mph, on all classes of track from FRA Class 1 to Class 7.
- b. Track quality shall be assumed to be minimally compliant for each class of track, per FRA regulations and AREMA standards.
- c. Ride quality standards and testing methods shall be as specified in ISO 2631 (most recent version).

2.4 Environmental Conditions

The cars shall be designed to operate within the environmental extremes defined in Amtrak Specification 963 (most recent version). All systems must function normally at elevations up to 9200 ft. above sea level.

2.5 Carbody

- a. All exterior doors, vestibules, and diaphragms be designed to prevent ingress and buildup of rain, snow and ice.

2.6 Interiors

- a. Interiors will provide a modern attractive appearance to customers in line with Purchaser's requirements.
- b. Power outlets shall be provided at every passenger seat.
- c. Interior will comply with all ADA regulatory requirements.

2.7 Electrical

- a. All cars are equipped with MU (push – pull) control trainline jumper cable.

2.8 Food Service

- a. Food service and all vestibules permit easy, safe movement and negotiation by wheel chairs.
- b. Provision, at the election of the purchaser for food storage, food carts, or vending machines (un-manned service)

2.9 Water and Waste

- a. Bathrooms are well ventilated and bathroom exhaust is directed away from Passenger exterior side doors.
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