

## **EBD 3.3 INCREASED CAPACITY VERSIONS OF ENTRANCEWAY AND CAR BODY DESIGN EBD 3.1 - FOR LL PLATFORMS ONLY**

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### 1. Abstract

This car body design provides the following features:

- The basic EBD 3.1 carbody design has advantage over conventional double deck designs with vertical clearance limitations (such as in tunnels in the Northeastern U.S.) of providing full aisle headroom for all passengers, and providing effortless access for ADA passengers at both HL and LL platforms. With wide 2+2 seating, it has capacity for 121 to 126 passengers (plus 4 more in narrow bench seats near the doorways) with two double lane doors for each platform level.
- When all platforms are LL, the elimination of the HL entranceway enables a modest reconfiguration that increases capacity more than through just substituting seats where entranceways had been.
- With wide seats only (typical of 2+2 seating in conventional cars), the LL platform - only car will seat about 129 to 134 passengers with two double-lane doors.
- If only one two-lane door per side is provided, capacity increases to 147 seats, and to 144 if the door is three lanes wide.

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## 1. Basic Design and Capacity

The basic design is shown in Figure 1. It is similar to EBD 3.1, but the HL doors have been eliminated. This provides space for one more row of seats on level 2. Also, the LL doors can be shifted closer to the end of the car, because a wheelchair lift is no longer required between levels 1 and 2. This also increases the number of seat rows in level 1. The capacity of this configuration, with seats only (i.e., no space taken for wheelchairs, toilet, etc.) is:

Level 1: 11 rows x 3 seats/row = 33 seats  
 Level 2: 5 rows/end x 2 ends x 4 seats/row = 40 seats  
 Level 3: 14 rows x 4 seats/row = 56 seats  
 Total = 129 seats

As in the case of EBD 3.1, if all seats in the center of level 1 are side-facing, seats for 17 can be provided. This increases capacity to 134 seats. This compares to 121 to 126 for the original HL and LL platform version with all wide seats.

It is important to note that all of these seats are of the wide variety. Also, all aisles have full headroom.

## 2. Mobility Impaired Access and Accommodations

Since all platforms are LL, level 1 is used for wheelchairs, and there is no need for a lift between levels. Wheelchairs would be carried in spaces on this level.

## 3. Design Options

One variation that might prove quite popular is to have just one entranceway per side. It is likely that this would be a three-lane door, as is used on gallery cars. In this case, the stairs to level 3 are provided at the door end only, permitting more seats on that level. This increases the seating to:

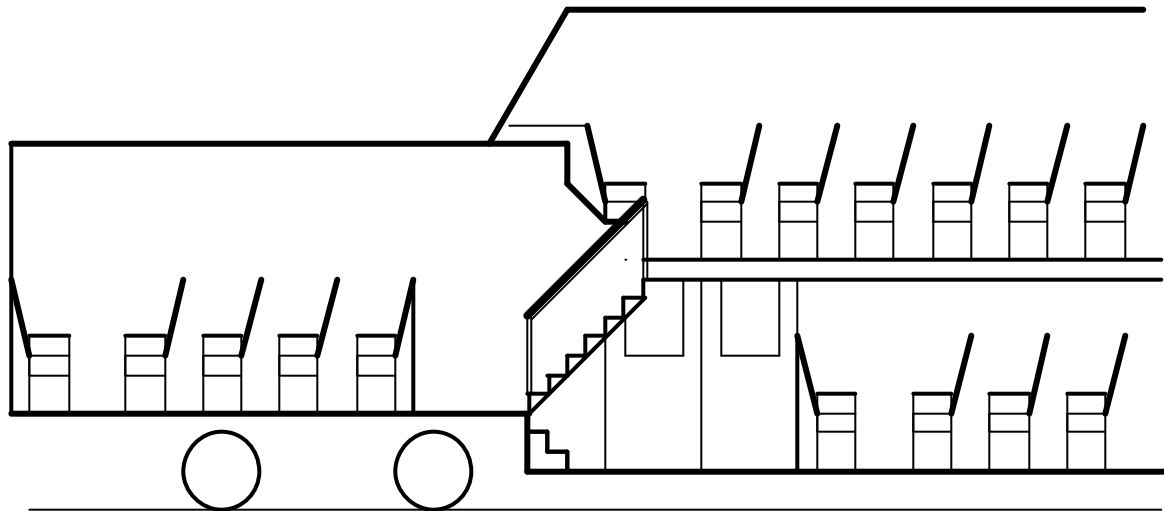
Level 1: 12 rows x 3 seats/row = 36 seats  
 Level 2: 5 rows/end x 4 seats/row + 6 rows/end x 4 seats/row = 44 seats  
 Level 3: 16 rows x 4 seats/row = 64 seats  
 Total = 144 seats

With a two-lane door, one more row on level 1 is permitted, for a capacity of 147 seats.

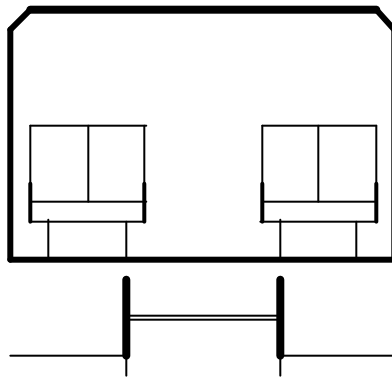
In principal, it would be possible to have narrow width seating on all levels of this car, in which case the number of seats would increase considerably. However, the narrow seats with the 3+2 arrangement are generally unpopular, and few commuter agencies are choosing this type of car.

It should be noted that all the design options discussed for EBD 1.1, 2.1 and 3.1 and their variations apply to this design as well—including sleeper, dining, and parlor seating. In particular, there may be some situations where end vestibule style doors—such as design EBD 1.1-- would be desired. Any of these variations would be applicable to intercity cars used on lines operating (partly or entirely) in the Northeast where limited clearances are found but where the enhanced accommodations now found only on bi-level cars are desired.

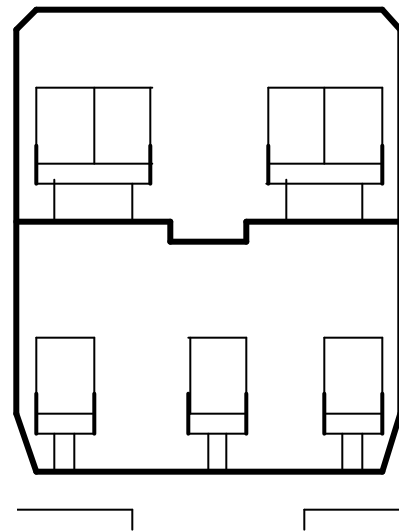
Attachments:  
Figures 1 and 2



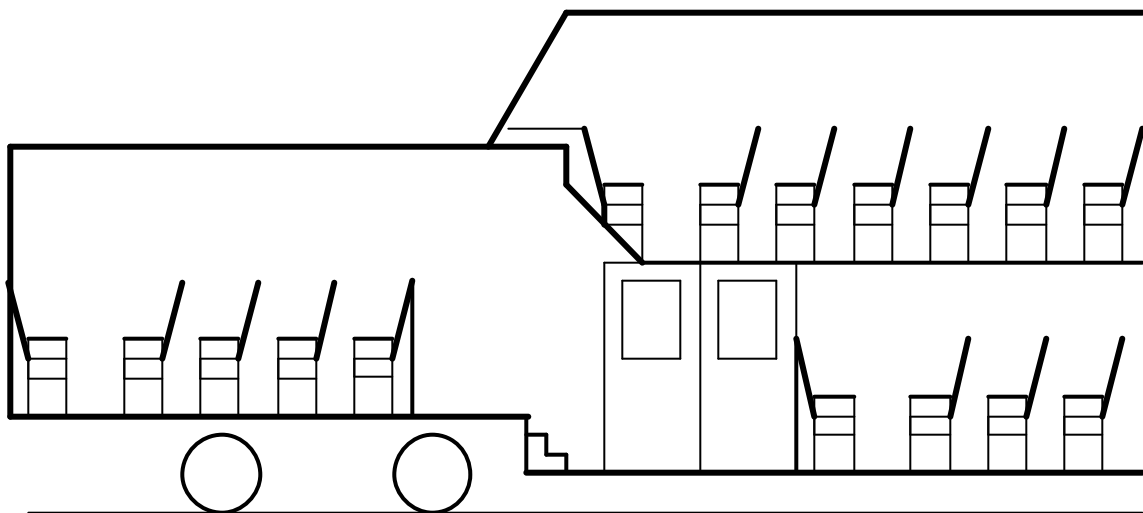
(a) Side elevation cross section through center aisle.



(b) Cross section through level 2 (above).

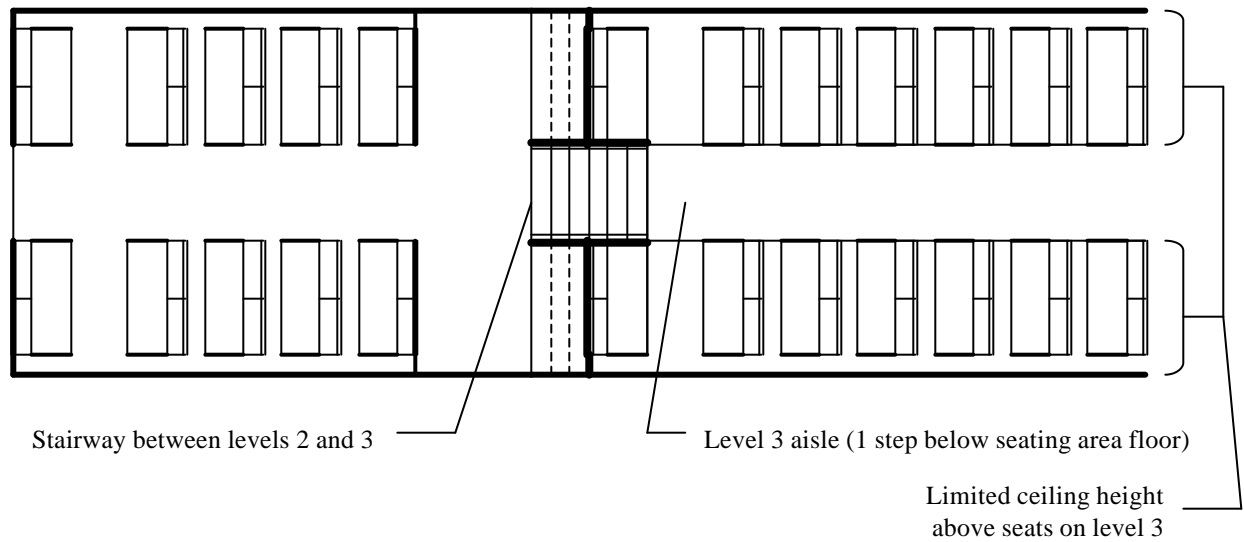


(c) Cross section through levels 1 and 3 (to right).



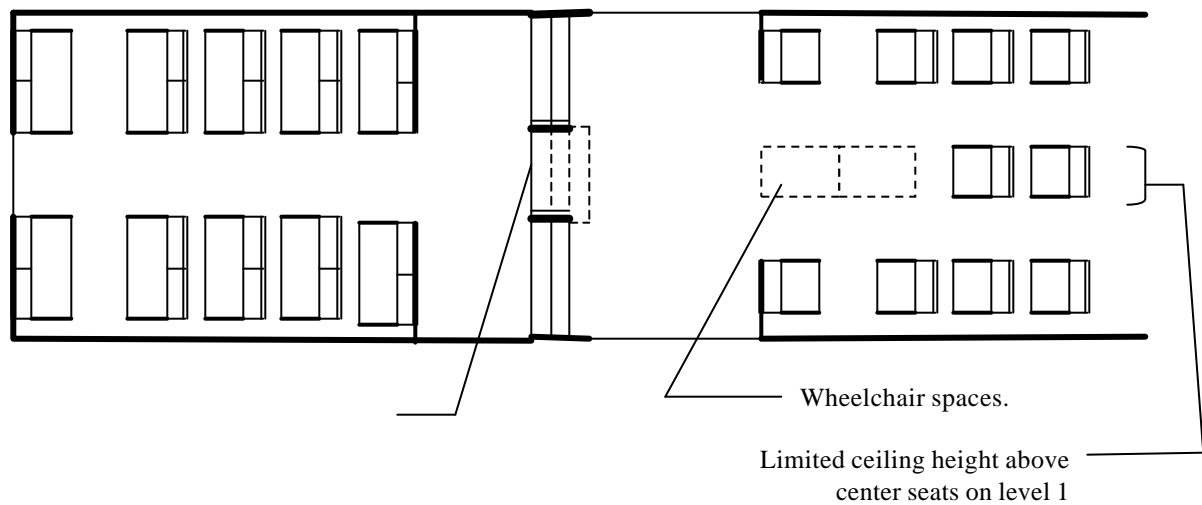
(d) Side elevation through far side seats.

Figure 1. Three level car body design for LL platforms only (EBD 3.3).



Note: Stairway between levels 1 and 2 shown in dashed lines above.

(a) Top elevation cross section just above level 3 seats, also showing level 2 area.



(b) Levels 1 and 2, showing single seats and spaces for wheelchairs.

Figure 2. Top elevations of levels 1, 2, and 3 for LL platform only car (EBD 3.3).