

ADA-Compliant Passenger Rail Car Designs To Maintain  
Full Freight Service (including Excess Dimension Load)  
Clearances And Meet Restrictive Northeastern Passenger Rail Line  
Vertical Clearances

by  
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Technical Report

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EBD Compendium 8Aug03 updated 9Feb04

## INTRODUCTION AND ACKNOWLEDGEMENTS

### Project Description

There is a rapidly emerging problem in the railroad system of the Northeast. The essence is that without action it will be impossible to continue to provide both freight and passenger service on many railroad lines. On the one hand, passenger systems, including commuter operators and Amtrak, are installing high level station platforms at many stations, in order to meet ADA requirements for wheelchair accessibility, and also to speed service by reducing dwell time at stations. On the other hand, many standard freight cars will not safely pass such platforms, and excess dimension loads, carried on many lines, simply can not pass such platforms.

A family of basic designs and concepts for resolving this conflict, by retrofitting or redesigning cars and platforms, has been developed. Research is needed on the costs and benefits of such solutions to all stakeholders: freight carriers, passenger carriers, passengers (including the mobility impaired traveler), and shippers. Resolution will require that the needs of all be satisfied. Additional work on refining solutions is also needed to bring them to the point where railroad car builders and others can implement them. To this end, Mr. John Dunn, Principal of the firm that designed the double deck cars for the long Island Rail Road and many cars – multi-level and single level for Australian and European railroads, has developed the structural features of the basic design to meet U.S. safety requirements.

### This Report

This compendium presents the various designs. It consists of individual reports describing each individual design along with discussion of its salient features. Individual designs are designated Entranceway and Body Design (EBD) 1., 2., etc. Variations in the basic design are designated 1.1, 1.2, etc.

Research evaluating these designs, identifying the benefits and costs that would be incurred from their use, has been undertaken. Some results are presented in this report, but detailed technical presentation of that work is reported in journal articles and other technical reports. That work covers impacts with respect to safety, operating cost, speed, and related performance features of rail service. These are listed on the website:

<http://www.seas.upenn.edu/sys/morlokpage/rsdproject.html>

### Acknowledgements

Although the designs presented here were developed as an independent activity, the evaluation of these designs, and assessment of their benefits and costs, is the subject of a formal research program. This research is partly supported by a grant from the U. S. Department of Transportation through the Mid-Atlantic Universities Transportation Center, and by the UPS Foundation Professorship in Transportation at the University of Pennsylvania. This support, however, implies no endorsement of the ideas or conclusions. Many individuals, too numerous to list, from railroads and public-sector transportation agencies (including most notably Conrail, Norfolk Southern, DVRPC, SEPTA, and Transit Design Pty.), provided considerable feedback and support, and this is gratefully acknowledged.

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#### EBD 1.1 Car Entranceway for HL and LL Platforms

Compatible with mini-high level (HL) platforms; ADA-compliant at HL platforms

#### EBD 2.1 ADA-compliant Car Entranceway for both LL and HL Platforms

Preserves full Freight Service Clearances at low level (LL) platforms

#### EBD 2.1 Perspective drawing only

#### EBD 3.1 High Capacity Tri-Level Rail Car for Northeastern Vertical Clearances

With full headroom on all aisles

#### EBD 3.1 Perspective drawing only

#### EBD 3.2 High Capacity Tri-Level Rail Car for Northeastern Vertical Clearances and High-Level Platforms Only

#### EBD 3.3 High Capacity Tri-Level Rail Car for Northeastern Vertical Clearances and Low-Level Platforms Only

#### EBD 4.1 and 4.2 Variations on EBD 3.1 with Reduced Overall Height and Increased Underfloor Space for Structural Members

High capacity tri-level rail car with gallery or Hedley-Doyle (longitudinal) seating options, with 14 ft 6 in roofline and lower floor approximately 25 in above rail