



TRANSPORTATION RESEARCH BOARD / NATIONAL RESEARCH COUNCIL

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on the Internet!

This is the second edition of the Transportation Research Board's *LRT News* on the Internet. The newsletter's nameplate and purpose—to review and report on “new developments in light rail transit planning, technology, and operations”—remain the same, but the format has changed to be more readable on screen. The table of contents offers links directly to each article, or you can scroll down to read the entire newsletter. To receive *LRT News*, please bookmark the TRB on-line publications page <http://www4.nationalacademies.org/trb/onlinepubs.nsf>.

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C O N T E N T S

Light Rail to the Airport, Part 2 2

LRT Project Progress Report Table 6

Karlsruhe—in Reverse 8

Houston Serious About Light Rail 8

Related Transit Links 9

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ALSO IN THIS ISSUE

[Light Rail to the Airport,
Part 2](#)



[LRT Project Progress
Report Table](#)



[Karlsruhe—in Reverse](#)



[Houston Serious
About Light Rail](#)



[Related Transit Links](#)



LIGHT RAIL TO THE AIRPORT, PART 2

JFK Light Rail “AirTrain” System Under Way

The long-planned light rail system (LRS) at New York’s John F. Kennedy International Airport (JFK) is taking shape. After nearly 1½ years of construction, virtually all piles have been driven on the airport; the elevated guideway is rising; rail is being welded into long strands for imminent installation; and the operations, maintenance, and storage facility is being built.

The LRS is part of a \$9 billion investment now under way at JFK that includes new roadways, new and renovated terminal buildings, and other infrastructure improvements. Anthony Cracchiolo, Director of Priority Capital Programs for the Port Authority of New York and New Jersey (PANYNJ), described the light rail project in the July 1997 issue of *LRT News* (Vol. 12, No. 1). At that time five proposals had been received to build the system under a design, build, operate, and maintain procurement, but no award had been made.

In May 1998 PANYNJ awarded a contract to the AirRail Transit Consortium, which is composed of Slattery Skanska (USA), Inc., Bombardier Transportation, Perini Corporation, and Koch Skanska, Inc. Slattery Skanska, the team leader, is one of the top construction companies in the United States, while Bombardier is a world leader in providing rail equipment and systems. STV, Inc., a leading consulting firm, is providing engineering design and construction inspection services to the consortium. The official groundbreaking ceremony took place on September 16, 1998.

Definitional purists can debate whether the LRS project is light rail. The JFK system, however, is not unlike the London Docklands Light Railway or the Los Angeles Green Line, should it be automated.

The 10-station JFK LRS, now called AirTrain, is a 13.5-km (8.4-mi) automated, driverless, standard gauge steel-rail, steel-wheel system operating over an exclusive, mostly elevated, guideway. The system comprises a 3.2-km (2-mi) double-track loop around the central terminal area (CTA) with six stations linking the nine passenger terminals, a 5.3-km (3.3-mi) extension from the CTA to the Howard Beach subway station

ALSO IN THIS ISSUE

[Light Rail to the Airport,
Part 2](#)



[LRT Project Progress
Report Table](#)



[Karlsruhe—in Reverse](#)



[Houston Serious
About Light Rail](#)



[Related Transit Links](#)



located at the edge of the airport, and a 5-km (3.1-mi) branch north to Jamaica.

The Howard Beach leg will have three stations; the Jamaica leg will have one station. At Howard Beach, travelers can access New York City Transit's (NYCT's) A line subway trains for continuing service to Brooklyn, parts of Queens, and Manhattan. At Jamaica, travelers can connect with all but one of the nine lines of the Long Island Rail Road (LIRR) and NYCT E, J, and Z subway lines.

Service within the airport will be free. A yet-to-be-determined fare will be charged to enter or exit the system at the two intermodal gateway terminals. The \$1.5 billion project is being financed by \$1.2 collected in passenger facility charges (PFCs), a \$3 surcharge on departing air passenger tickets, and \$300 million in PANYNJ funds. Thus, this light rail system is not an FTA project but an FAA project. The Metropolitan Transportation Authority's (MTA's) Howard Beach and Jamaica stations will be remodeled to achieve convenient and seamless intermodal connections with AirTrain. The feasibility of baggage check-in at Jamaica is being explored.

The consortium selected a linear induction motor (LIM) traction system and vehicles based on Bombardier's Advanced Rapid Transit MK II vehicle, a larger car than the MK I vehicle used in Vancouver, Detroit, and Scarborough (Toronto). The 32 vehicles will be 17 602 mm (57 ft 9 in.) long, 3200 mm (10 ft 6 in.) wide, and 3048 mm (10 ft 0 in.) wide over the door thresholds. Vehicles can be operated in one-to-four-car consists. Stations will be fully enclosed and climate controlled. The high-level platforms will be 73 m (240 ft 0 in.) long to accommodate four-car trains and will have platform screen doors matching vehicle doors.

One reason for the selection of the LIM is to allow single cars to negotiate steep grades up to 5.35 percent. The sharpest curve has a 72-m (235-ft) radius. Traction power will be 750 Vdc distributed via a typical NYCT/LIRR third rail. The vehicles are designed for passengers with luggage, and luggage carts will be allowed on board. Each car will have two doors 1829 mm (72 in.) wide and 26 seats, plus two wheelchair positions. Without luggage, cars can hold 205 passengers—179 standing and 26

ALSO IN THIS ISSUE

[Light Rail to the Airport,
Part 2](#)



[LRT Project Progress
Report Table](#)



[Karlsruhe—in Reverse](#)



[Houston Serious
About Light Rail](#)



[Related Transit Links](#)



seated (AW3 loading). Cars are designed for a maximum operating speed of 100 km/h (62 mph). The cars are currently being fabricated, and on-site vehicle testing is scheduled to start in October 2000.

Passenger service will begin on the CTA and Howard Beach sections in fall 2002 and on the Jamaica leg in 2003. Three services will be operated. One will begin at the Howard Beach terminal, run around the outer CTA loop counterclockwise, and return to Howard Beach. A second will begin at the Jamaica terminal and also run around the CTA outer loop in a counterclockwise direction and then return to Jamaica. Round-trip cycle time will be 24 min: 8 min from either terminal to the first CTA station, 8 min around the loop, and 8 min return. Peak headway on these two services will be 4 min (2 min on the combined section in the CTA); both will serve car rental facilities at the Federal Circle station. The Howard Beach leg will also serve remote public and employee parking lots. The third service will run continuously around the CTA loop in a clockwise direction on the inner track.

The project is expected to carry an average of 34,000 passengers per day at the start, of whom 22,000 will be traveling between points in the airport and 11,000 will be employees and air passengers traveling to or from the airport. These figures are averages; the project will show its worth on busy summer and holiday travel days when the roads accessing the airport are congested and the parking lots and garages are full.

The project has been controversial from the beginning and can provide transportation planners with a case study of the difficulties in implementing a project in an urban setting. The project has survived New York City's Uniform Land Use Review Procedure, which involves approvals by community boards and the city council, disputes with the mayor, a vote of the City Planning Commission, opposition from an assortment of critics, and a lawsuit challenging the use of PFC funding.

Especially controversial is the Jamaica leg, an aerial structure to be constructed over the narrow median of the Van Wyck Expressway, a busy six-lane freeway that is 90 to 120 m (300 to 400 ft) wide. Although preliminary work has begun on this leg, another lawsuit is attempting to derail it. This leg is

ALSO IN THIS ISSUE

[Light Rail to the Airport,
Part 2](#)



[LRT Project Progress
Report Table](#)



[Karlsruhe—in Reverse](#)



[Houston Serious
About Light Rail](#)



[Related Transit Links](#)

important to the success of the operation because of the connections that will be provided to the regional rail systems at Jamaica station.

The other criticism is the lack of a one-seat ride to Manhattan. The JFK LRS, however, has been deliberately designed to be compatible with the regional rail systems to allow an operation over the LRS and either subway or LIRR tracks to Manhattan in the future (without the LIM). This will be a challenge, and a new vehicle will have to be designed and built for through service. If LIRR tracks are used for the one-seat ride, the trains must be FRA compliant, and all the issues associated with track sharing must be resolved.

One problem in achieving a one-seat ride is the lack of capacity in existing tunnels under the East River to Manhattan for airport trains. The key is to complete the LIRR's East Side Access project, which will bring LIRR trains into Grand Central Terminal through the unused lower level of the 63rd Street tunnel. This project is under design and could be operational as early as 2009, at which time space could be freed for airport service in Penn Station. The architects designing the conversion of the Farley Post Office to an Amtrak station are considering



Erected guideway at Howard Beach Wetlands section.



**ALSO IN
THIS ISSUE**

[Light Rail to the Airport,
Part 2](#)



[LRT Project Progress
Report Table](#)



[Karlsruhe—in Reverse](#)



[Houston Serious
About Light Rail](#)



[Related Transit Links](#)



incorporating an airport access component. Meanwhile, MTA is conducting a study of one-seat ride options.

Progress is also being made on improving access to other New York/New Jersey airports. The monorail at Newark Airport is being extended to a new station under construction on the Amtrak/New Jersey Transit Northeast Corridor line, and NYCT has initiated a study of extending rail access to LaGuardia Airport. Meanwhile, the region's other light rail line, the Hudson-Bergen Light Rail Transit System, is readying for the opening of its initial segment.

The AirTrain will be a milestone for New York. It will introduce advanced technology and operating concepts to a region noted for its conservative approach to transportation. It will be interesting.

— Robert A. Olmsted, P.E.

LRT Project Progress Report Table
(As of November 1999)

Focus City ^a	Planning or Conceptual Design	In Final Design	Under Construction	In Operation
Baltimore	E	-	U	S
Boston	-	U	-	S
Buffalo	E	-	-	I
Calgary	E	-	-	S
Cleveland	E	-	-	S
Dallas	E	E	E	S
Denver	S	-	E	I
Edmonton	E	-	-	S
Fort Worth	-	-	-	I ^b
Jersey City	S	E	I	-
Kansas City	I	-	-	-
Louisville	I	-	-	-
Los Angeles	S	E	-	S
Memphis	E	-	-	I ^c
Miami	I	-	-	-
Milwaukee	I	-	-	-

**ALSO IN
THIS ISSUE**

Light Rail to the Airport,
Part 2



LRT Project Progress
Report Table



Karlsruhe—in Reverse



Houston Serious
About Light Rail



Related Transit Links



LRT Project Progress Report Table (continued)
(As of November 1999)

Focus City ^a	Planning or Conceptual Design	In Final Design	Under Construction	In Operation
Minneapolis	I	-	-	-
New Orleans	E	E	-	S
New York	I	-	-	-
Newark	E	-	E	I
Orlando	I	-	-	-
Philadelphia	E/U	-	-	S
Phoenix	I	-	-	-
Pittsburgh	E/U	U	-	S
Portland	S	E	E	I
Sacramento	E	U	U	S
St. Louis	E	-	-	I
Salt Lake City	S	-	I	-
San Diego	E	E	E	S
San Francisco	E	E	E	S
San Jose	E	E	E	S
Seattle	S	-	-	I ^c
Tacoma ^d	I	-	-	-
Toronto	E	-	-	S
Total	34	11	11	23

Legend:

E = expansion of existing facilities (extension, new route, added trackage, etc.)

I = initial or basic one-corridor line

S = system (more than one corridor)

U = upgrading of existing facilities (same basic route)

^a The corridor or system may extend well beyond the boundaries of the named city into or beyond adjacent corridors.

^b Available for public use, but no fares charged.

^c The vintage trolley lines in these cities, which were built and intended as a tourist attraction, have evolved to serve daily passengers. For that reason they have been included in this table.

^d Eventually, this line will be connected with and absorbed into a regional system focused on Seattle.

This progress table is published periodically as part of *LRT News*. The content was reviewed and updated shortly before publication. Readers having fresh information or wishing to comment on the table, please contact Jack W. Boorse, Parsons Brinckerhoff, 1528 Walnut Street, Suite 400, Philadelphia, PA 19102 (phone 215-790-2306, fax 215-735-1462).

ALSO IN THIS ISSUE

[Light Rail to the Airport,
Part 2](#)



[LRT Project Progress
Report Table](#)



[Karlsruhe—in Reverse](#)



[Houston Serious
About Light Rail](#)



[Related Transit Links](#)

KARLSRUHE—IN REVERSE

The practice of “transit” and “railroad” operators to run portions of different types of service over the same set of rails—now sometimes called the “Karlsruhe model” and reported in previous issues of *LRT News*—usually refers to operating LRT over “heavy” railroad tracks. However, if LRT can operate on railroad tracks, can a railroad train operate over LRT tracks?

Not waiting for an answer to the question that was bound to come up, a new service was started on May 30 that is doing precisely this. Regionalbahn trains from Vogtland now operate to a new island platform station at Gluck-Auf-Center to be shared with local tram service. Then the Regionalbahn trains continue to the Zentrum terminus in Kornmarket, passing by local stops to be served only by the tram service.

For more details, see the August 1999 issue of *Railway Gazette International*.

HOUSTON SERIOUS ABOUT LIGHT RAIL

After many years of study of a wide variety of concepts and routes, Houston appears to have decided in favor of light rail. The Board of Directors of METRO in Houston, Texas, unanimously approved the plan for a light rail line between the downtown center and the Astrodome. Preliminary engineering is under way, and construction of the 12-km line is to begin in 2001, with a target for initial service of 2004.



**ALSO IN
THIS ISSUE**

Light Rail to the Airport,
Part 2



LRT Project Progress
Report Table



Karlsruhe—in Reverse



Houston Serious
About Light Rail



Related Transit Links

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<http://gulliver.trb.org/publications/newsline/nlv25no2.pdf> (Sept. 1999)

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<http://gulliver.trb.org/publications/newsline/nlv24no3.pdf> (Oct. 1998)

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