

Hudson-Bergen Light Rail Transit System Joint Occupancy–Joint Use

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Light rail systems share their rights-of-way with most other modes of ground transportation. The proposed Hudson-Bergen Light Rail Transit System and the planned and potential joint use and joint occupancies are described. Transportation systems and modes that will or could share the light rail transit route are freight railroads, commuter railroads, roadway vehicles, pedestrians, bicycles, and utilities. Methods of accommodating other kinds of transportation are also discussed.

Light rail transit (LRT) can share its operating alignment with most other forms of land-based transportation. Many, if not all, light rail systems in operation share their alignments with one or more forms of transportation. New Jersey's proposed Hudson-Bergen Light Rail Transit System (H-BLRTS) is being designed to share its right-of-way (ROW) with a number of other transportation systems. This paper discusses the proposed multimodal uses of the H-BLRTS right-of-way.

PROPOSED SYSTEM

The H-BLRTS is a proposed 33-km light rail system composed of three branches that will radiate from the yard and shop site (Figure 1). The yard and shop site and one of the major park and ride lots will be located adjacent

to the Exit 14C toll plaza on the New Jersey Turnpike Extension. This major junction is referred to as Gateway.

One branch will extend north from Gateway to the southern and eastern edges of downtown Jersey City for about 2.5 km. The branch will then continue 2 km through easements provided by three Waterfront developers to Hoboken. Upon leaving the easement area, the alignment will cross New Jersey (NJ) Transit's Hoboken rail yard into the city of Hoboken. In Hoboken the alignment will run 4.6 km on the east side along local roads. Most of the Hoboken alignment follows streets on the former Hoboken Shore Railroad, much of it on the west edge of the Hudson River.

North of Hoboken the alignment will follow the former Consolidated Rail Corporation (Conrail) River Line 4.0 km to and through the Weehawken Tunnel. After leaving the west portal of the tunnel, the light rail tracks will occupy the to-be-acquired Conrail Northern Branch for about 3.4 km to 83rd Street. From 83rd Street the LRT will occupy jointly with Conrail on the Northern Branch until the alignment reaches the New York Susquehanna & Western's Edgewater Branch. From there, it will turn west to run 1.2 km jointly along that branch, cross 0.2 km of wetlands and the New Jersey Turnpike Eastern Spur, and terminate at the Vince Lombardi park and ride. The total length of the Northern Branch of the LRT is 19.2 km.

A second branch will extend from Gateway south 9.6 km on the NJ Transit Bayonne Branch to the tip of the

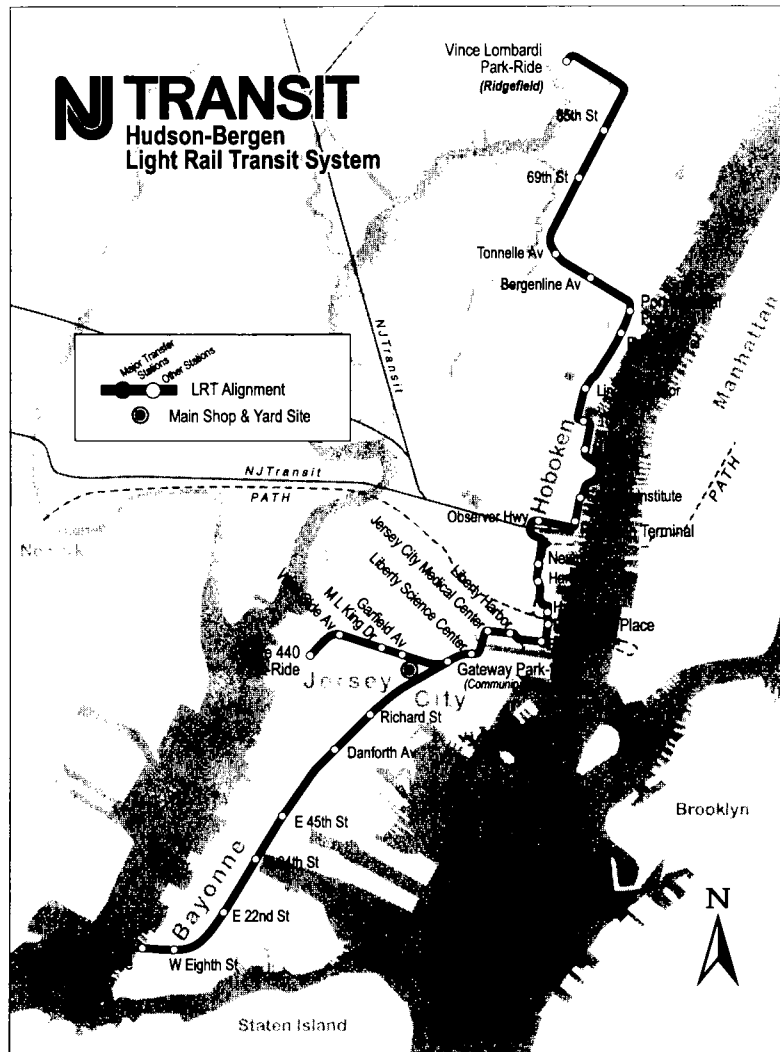


FIGURE 1 Proposed Hudson-Bergen LRT system.

city of Bayonne. This line would then extend west along the Conrail Avenue "A" Industrial Track to a terminus at a major (1,000 cars) park and ride.

The third branch would proceed west along the former West Side Industrial Track and then southwesterly on the former West Side Connector Track to a terminus at a moderate size park and ride. Length of this branch will be 3.6 km.

The total system will occupy 22.2 km of existing or former ROW—6.6 km of it running in or alongside city streets—and 4.2 km of easements through development properties.

SHARED FACILITIES

The proposed H-BLRTS will have joint occupancy of rights-of-way with railroad freight, both mainline and

local; roadway traffic on highways, arterials, and local streets; and pedestrian traffic both crossing and walking parallel to the system. There are plans for possible future joint occupancy with passenger trains. Potential exists to share a portion of the NJ Transit-owned ROW with a bike path.

At station locations the proposed system will interface with a number of transportation modes. Transfers to the Port Authority Trans-Hudson (PATH) system will occur at three locations (Hoboken, Pavonia, and Exchange Place). Transfers to commuter buses, transit buses, and taxis will be provided at a number of stations. Transfers to automobiles will be provided at 13 park and ride lots and via kiss-and-ride at a number of other stations. Transfers to commuter rail will be provided for at Hoboken and potentially to the proposed West Shore Railroad.

Sharing with Freight Railroads

Joint occupancy (separate tracks on the same right-of-way) use will occur on the southern branch and on the northern branch (Figure 2). Conrail will cross the LRT southern branch at-grade near the Jersey City/Bayonne border and have a single track on the east side of the two LRT tracks, to be installed on the Bayonne Branch. Near the point where the NJ Transit property joins the Conrail Avenue "A" Industrial Track, there is a Conrail yard served by the track running along the east side of the Bayonne Branch. The LRT will pass through the west side of the yard.

Conrail offered joint use (operation on the same track) of the Avenue "A" Industrial Track at the south end of Bayonne. However, review of its operations indicated that the easterly portion of their track is needed

for use as a yard lead many hours a day. NJ Transit proposes to build a track parallel to the lead portion of the Conrail track and then connect into it for joint use past the lead. Conrail has been asked to consider providing operating windows so its track can be used to provide a two-track operation during the peak hours.

West of the Weehawken Tunnel the LRT will be located between Conrail's River Line and the New York, Susquehanna and Western (NYS&W) mainline, on the current Conrail Northern Branch. LRT use of the Northern Branch will be achieved by creating a connection between the River Line and the Northern Branch at 83rd Street in North Bergen. Such a connection will allow Conrail to shift its Northern Branch traffic onto its River Line and abandon the Northern Branch between 48th Street (Weehawken Tunnel) and 83rd Street for use by the LRT (Figure 3).

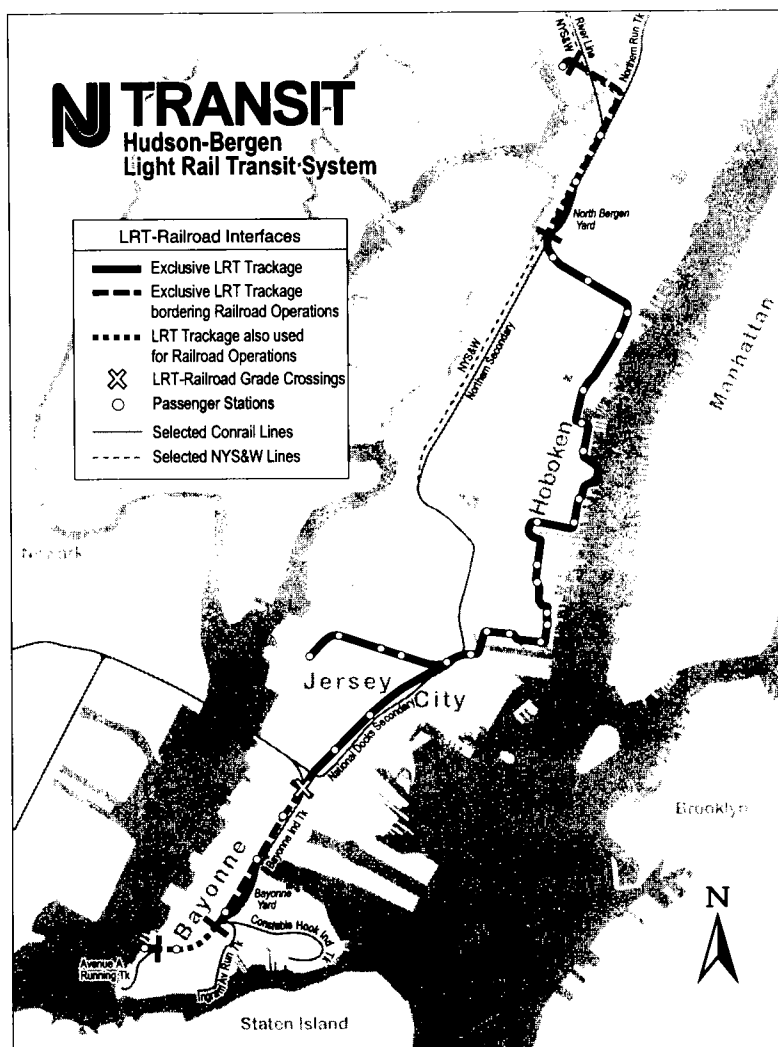


FIGURE 2 Railroad joint use and occupancy.

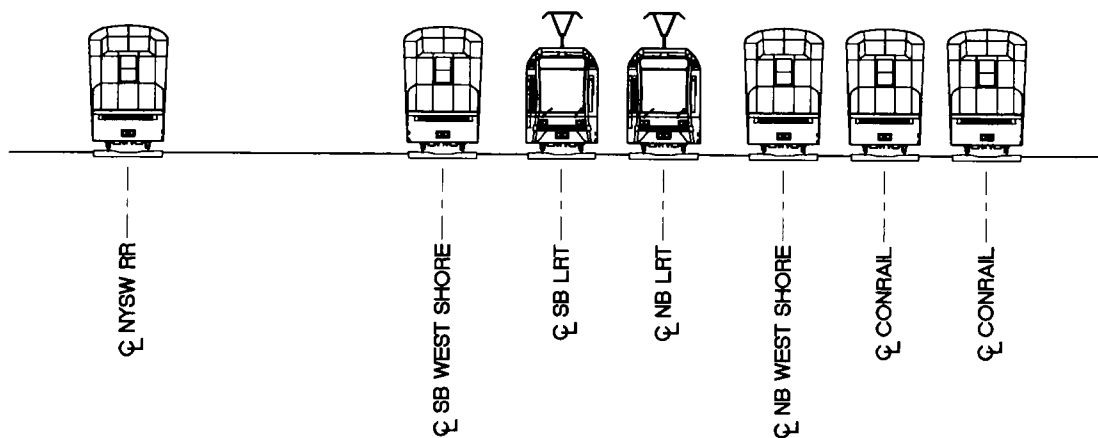


FIGURE 3 LRT in railroad corridor (looking north).

To accomplish this freeing up of the freight rail line for LRT use will involve an agreement for a capital investment in trade for the real estate.

North of 83rd Street the LRT will occupy the same ROW as the Conrail Northern Branch freight track. The tracks will run parallel for about 0.3 km. Additional rights-of-way will be acquired in order to provide sufficient room for two LRT tracks, a freight track, a siding track (for part of the distance), and a station platform (Figure 4).

The LRT will turn west and rise to occupy the NYS&W Edgewater Branch. The present single-track

line will be developed into a three-track alignment for use by the LRT (two tracks) and freight (one track). The alignment will follow the Edgewater Branch for about 0.4 km until it veers away to cross wetlands and the New Jersey Turnpike Eastern Spur to the Vince Lombardi park and ride (Figure 5).

On joint occupancy properties (13.8 km), the clearance between the freight track and the nearest LRT track will be 5.2 m (17 ft) centerline-to-centerline, and between the centerlines a fence with intrusion alarms will be installed. In joint use track (1.0 km) the track would have operating windows for freight and LRT.

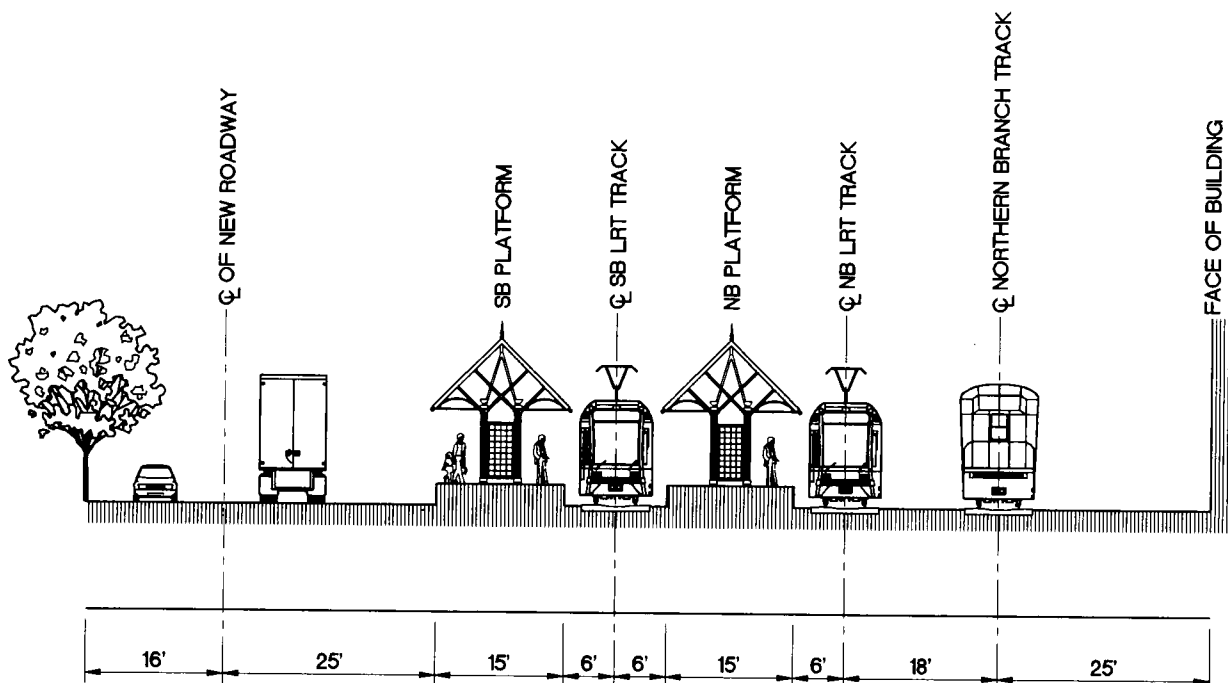


FIGURE 4 LRT adjacent to relocated northern branch (looking north).

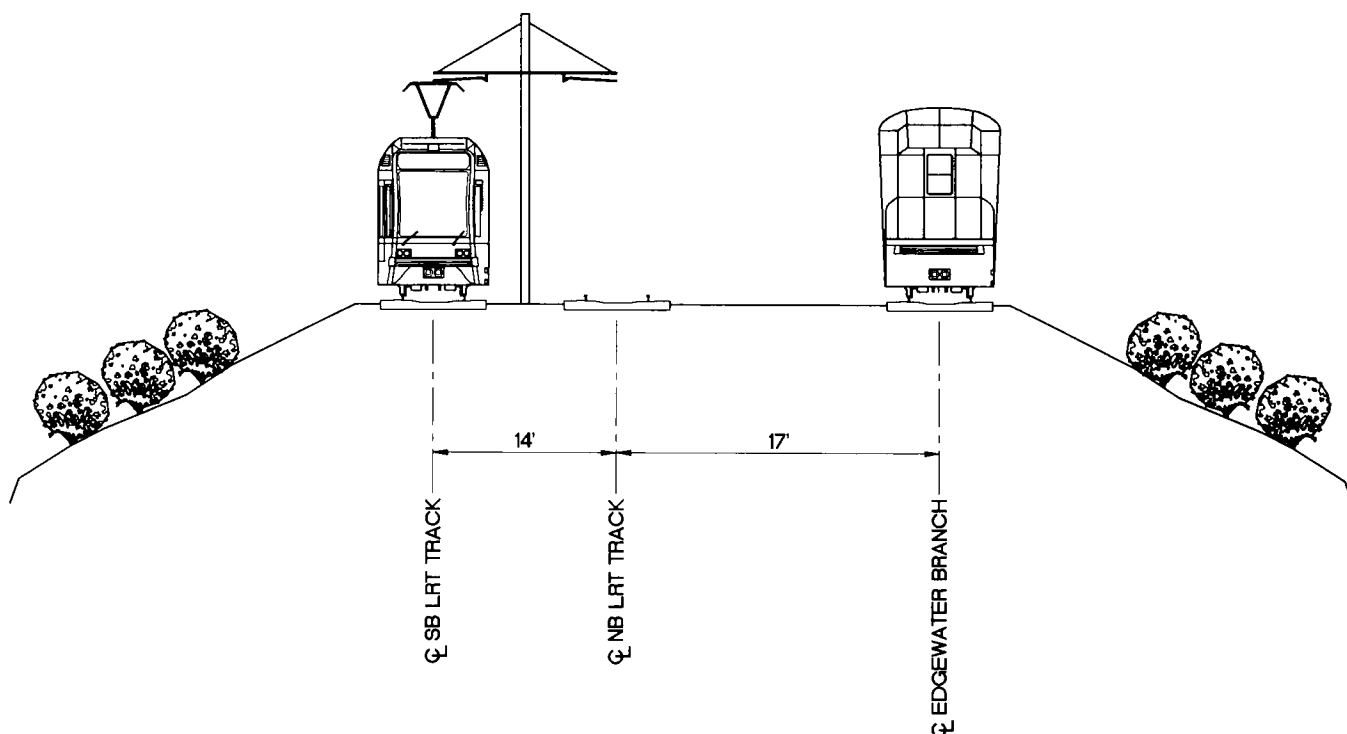


FIGURE 5 LRT on NYSW Edgewater branch.

Joint use track will be controlled by operating windows and by central control of the switches and track involved. Control of these track areas will be either by the Conrail dispatcher or by the LRT operation control center, depending on the location and the final agreement.

NJ Transit is fortunate that it has existing trackage rights agreement with Conrail. This agreement defines the relationship between the parties, particularly the major issues of liability and cost sharing. NJ Transit will include the joint occupancy/joint use areas in the existing trackage agreement. Such inclusion is possible because much of the joint occupancy area is owned by NJ Transit, and Conrail has trackage rights over the property.

Freight railroads are not interested in moving passengers and look upon such operations as being high risk and having the potential for interfering in their operations. Also, most existing trackage rights agreements use the speed-factored gross tonnage methodology to assign costs; freight railroads do not generally consider this a fair model. Therefore, agencies planning to operate over railroad-owned property in joint occupancy or joint use with a freight railroad must institute discussions with the railroad as soon as possible. Such negotiations could be long and difficult because a freight railroad is generally not inclined to accommodate a pas-

senger operation on its property and generally cannot be forced to accept such joint occupancy or use.

A state or local agency dealing with a railroad for purchase or use of its ROW generally must develop a negotiated agreement with the rail line because the agency's power of eminent domain against a railroad is either very limited or nonexistent. This puts the railroad in a very strong bargaining position.

Issues important to the railroad will include liability, indemnification, facility separation (barrier and/or distance), control of the operations, maintenance responsibilities, capital costs, and operating costs.

Sharing with Commuter Railroads

The LRT will occupy the west end of the Hoboken Commuter Rail Yards. In addition the portion of the Conrail Northern Branch freed up by the connection of the Conrail River Line with its Northern Branch would provide for the LRT and two tracks of the originally proposed restoration of the West Shore Railroad route for commuter operations. Clearances between the LRT and the commuter rail would have been 4.4 m (14 ft 5 in.) centerline-to-centerline if this route were chosen. A joint-use passenger station could be developed at 69th Street in North Bergen.

Should NJ Transit decide to have its proposed West Shore and LRT share the same right-of-way, it is simply a policy decision. However, an agency charged with implementing an LRT on a commuter railroad and having no existing operating and trackage rights agreement will face basically the same issues as with a freight railroad. The agency may be more amenable to such occupancy and probably could be subject to some form of forced joint use or occupancy because it is state level or lower. Again risk and cost sharing would be the most significant issues.

Sharing with Roadway Rights-of-Way

Of the proposed system, 6.6 km will occupy road/street rights-of-way of existing or future streets. Most of the occupancies will be either in a median (0.5 km) or on the side of the road (5.7 km). A small amount of the occupancy (0.4 km) will involve street running with vehicular traffic.

Median occupancies will be separated from the adjacent travelways by curbing, landscaping, and other treatments (Figure 6). Side occupancies will involve the LRT being raised above the travelway and generally behind the public walkway. The LRT would be separated from the public walkway and the adjacent property by fencing and/or landscaping (Figure 7).

The LRT will share the travelway for about three blocks (0.4 km) and at existing future grade crossings. At most areas the LRT movement and that of the road traffic will be controlled by traffic control devices. Following current U.S. practice, the LRT will be controlled by white bar signals. The general design consultant, Parsons-Brinckerhoff, is now evaluating the need for signal preemptions or progression in downtown Jersey City and Hoboken.

In-street and generally at crossings, embedded girder rail, or standard rail with bolted-on strap guard, will be installed. At crossings other than city street intersections, normal preformed rail crossing material will be used.

Gates and other railroad-type warning devices will be used if they will not cause unacceptable delays to roadway traffic and if the higher LRV speed is allowed (35 mph).

Occupancy and use of local road rights-of-way will be established by easement agreements with the counties and municipalities involved. These agreements deal with defining property interest, allocating ability, establishing indemnification, providing mechanism for reimbursement of local force account costs, and defining responsibility of the parties for funding, inspection, and acceptance of construction.

Sharing with Buses

Transit buses will provide local feeder service to a number of station locations. Commuter buses will provide longer-distance service to major transfer points with the LRT (Port Imperial, Hoboken, Exchange Place, and Gateway).

Buses will loop at major transfer points. At Gateway the buses will circulate on internal park-and-ride roadways to platforms next to the LRT platforms. At Exchange Place the LRT will cross the base of the loop, and a traffic signal will control the bus and LRT moves. At Hoboken the LRT will cross through the middle of a bus loop. Because both the buses and the LRT will be operated by professional drivers, there is less need for protective devices, that is, traffic signals. The final level of protection at Hoboken has to be established. At Port Imperial the configuration still needs to be developed.

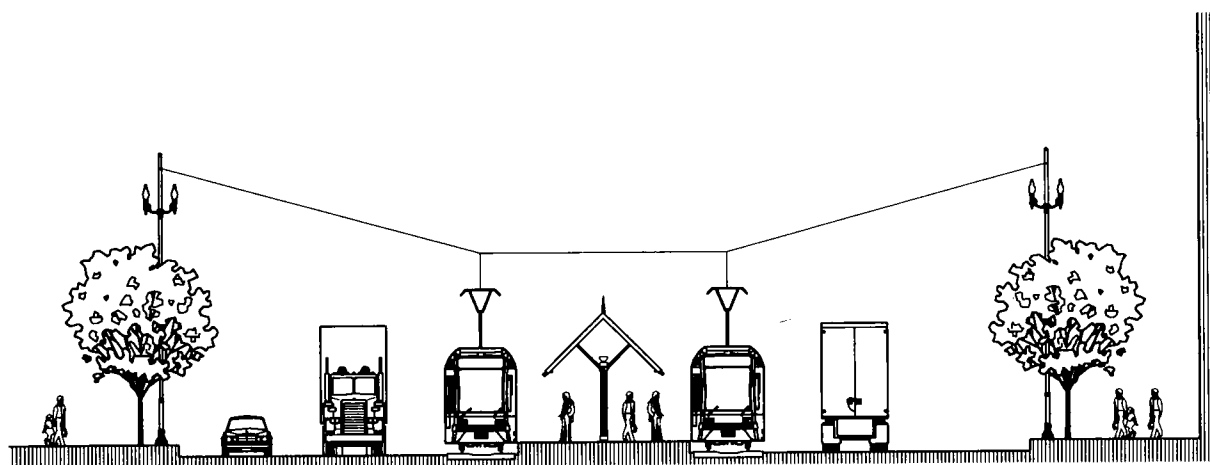


FIGURE 6 LRT in roadway median.

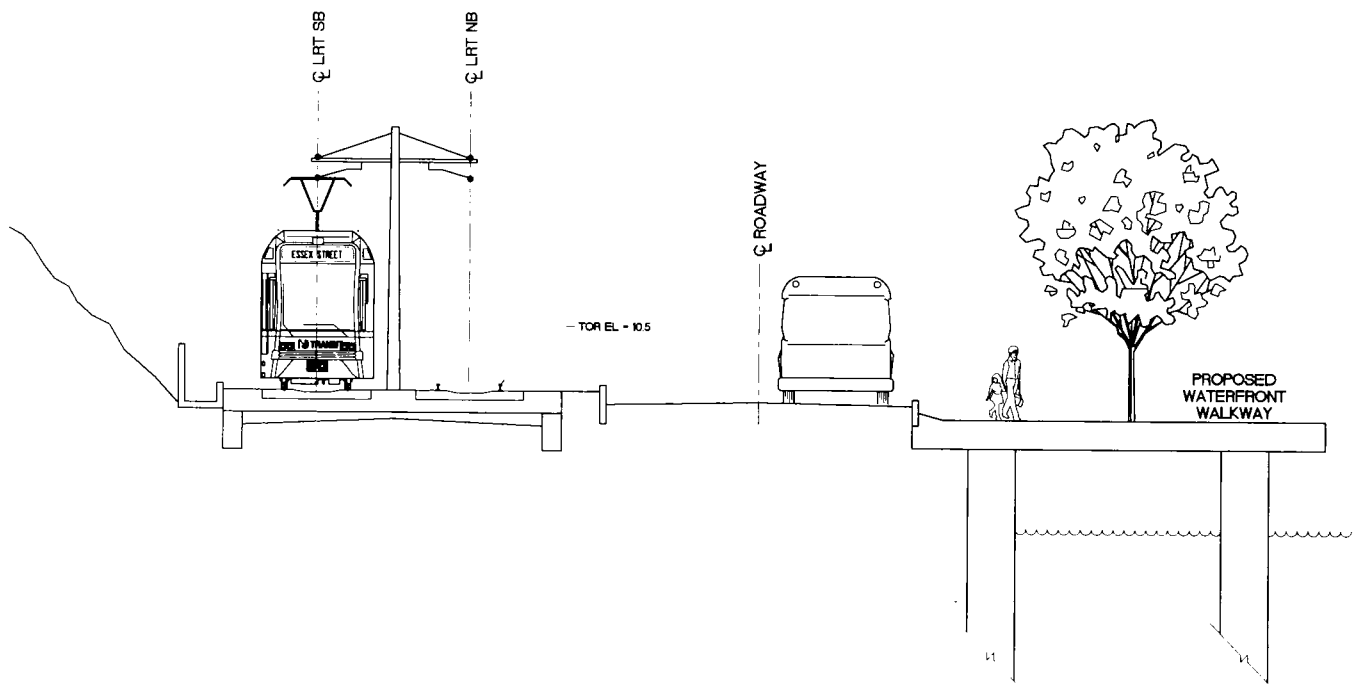


FIGURE 7 LRT alongside roadway.

Sharing with Pedestrians

The H-BLRTS, as with most systems, will share portions of its right-of-way with pedestrians. Primarily the pedestrian use of the ROW occurs where the system is in or along roadways and at stations.

In general the pedestrians' use of the right-of-way will be controlled by fencing, signage, pavement treatments, traffic signals, and other techniques. The needs for various control features are being evaluated in the design process. At the major transfer locations the volumes of pedestrians are so large (up to 3,600 pph) that the operation of station area/roadway intersections is being analyzed using several models. Models used will show on the computer monitor movements of pedestrian, roadway traffic, and LRTs through the intersection.

In some of the higher-speed LRT areas (55–90 kph) consideration is being given to providing walkways where there is a need for pedestrian moves parallel to the tracks. NJ Transit provides such walkways along its railroad where there are significant needs. For example, protected walkways along a track in one area provide a way for high school students to walk between their houses and school. Walkways along the LRT tracks could be as shown in Figure 8.

Providing walkways within the LRT right-of-way is a policy decision by the responsible agency. Risk and liability are probably going to be the primary factors in deciding to meet a possible need for such walkways.

As with walkways, the provision of bike paths along the LRT-owned ROW would be an agency policy decision weighing the public need against the potential risk and liability.

Sharing with Bicycles

Although there are no current plans to provide bike-ways parallel to the LRT tracks, the opportunity exists to develop such facilities on the system ROW. New Jersey's Department of Environmental Protection is charged with developing a waterfront walkway to extend from the George Washington Bridge south to the tip of Bayonne. A substantial portion of the proposed LRT system is parallel to and near the proposed walkway and, as such, the system ROW could provide a supplement to the walkway, particularly for bikes. The western branch could provide a possible bike feeder route to the walkway and waterfront. A potential configuration on an at-grade profile is shown in Figure 9.

Sharing with Utilities

Railroads and LRT routes are natural locations for utilities. Most utilities are transportation systems for energy, communications, or other resources. Utility occupancies of the ROW can be beneficial because they can generate income and also serve as a resource to the LRT

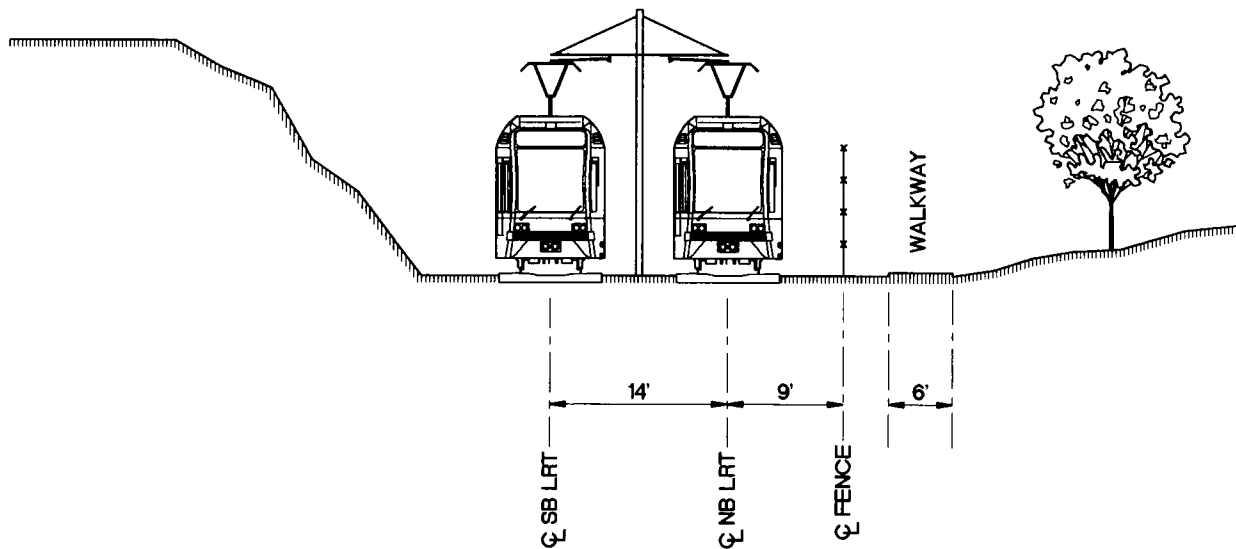


FIGURE 8 LRT shared with walkway.

system (i.e., use of part of a fiber optic occupancy for its communications). However, these shared uses can restrict the use of property, and a failure can disrupt operations.

Because NJ Transit has a railroad component, the use of the LRT real estate it now controls, or will control in the future, will be governed by "EP-2 Specifications for Pipeline Occupancy" and "EP-2 Specification for Aerial Occupancy." LRT real properties that were for-

mer railroads would have had past occupancies governed by similar standards. Use of such standards for ROW occupancies goes a long way in reducing the potential restriction of use by a proposed LRT system and possible disruption of LRT operations owing to a utility failure.

Obtaining copies of existing easements, licenses, and other property occupancy records is important in developing an LRT system. These property occupancies need to be located, and then ability to sustain LRT load-

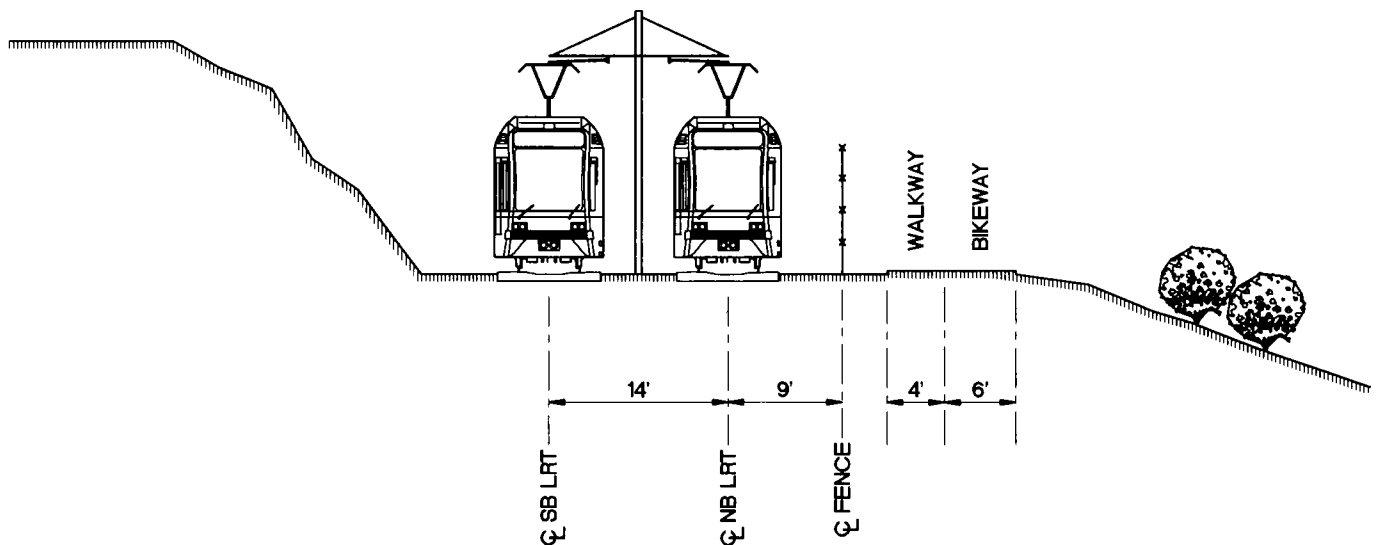


FIGURE 9 LRT shared with bikeway.

ings needs to be determined. Locating the occupancies will allow installation of an LRT system and facilities with the least amount of conflict and relocation. Evaluating the ability of a proposed utility to sustain loads will allow for necessary protection or relocation.

Property occupancies also lead to the need to evaluate stray current potential and the possible need for cathode protection to prevent long-term problems.

Utility use of an LRT right-of-way may result in an annual income (either formula or negotiated) or a lump sum negotiated one-time payment.

CONCLUSION

Light rail systems generally share their rights-of-way with many of the other ground transportation systems. The H-BLRTS will share its ROW, or route, with most other forms of ground transportation. Such shared uses are not only acceptable but should be encouraged. Successful sharing of a route with other forms of transportation requires careful planning, design, and property management to ensure that the joint occupancies can safely coexist.