The New ARC Hudson River Passenger Rail Tunnels:

The Hoboken Alternative

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Prepared by

George Haikalis
President, Institute for Rational Urban Mobility
One Washington Square Village, Suite 5D
New York, NY 10012
212-475-3394 geo@irum.org www.irum.org

Why via Hoboken?

Routing the new Access to the Region's Core (ARC) Hudson River passenger rail tunnels by way of Hoboken Terminal – the Hoboken Alternative – allows existing rail infrastructure to be used more productively. When combined with "Penn Station First" -- a simpler and more direct Penn Station connection in Manhattan -- the Hoboken Alternative holds the promise of reducing construction cost of the new tunnels and its essential related component -- the Portal Bridge Capacity Expansion project -- by more than $8 billion or 70% of the total $11.4 billion cost.

Even in good times this option merits serious consideration, but in light of the growing economic difficulties facing New Jersey and New York it is extremely important to give fair and impartial consideration to credible options.
The simpler construction also results in speeding completion of an operational "first phase", saving four years or more off the projected eight year time frame in the current plan, before any additional trains can be handled across the Hudson.

Other Important benefits of the Hoboken Alternative

Significant environmental gains would be realized as well. Since the Hoboken Alternative routes trains over existing underutilized tracks and bridges through the Hackensack Meadowlands, no wetlands would be destroyed. A less costly construction scheme will greatly reduce the project's carbon footprint as well. The route better serves the waterfront, providing motorists with a more attractive alternative and reducing congestion which is at critical levels.

Routing the new tunnels by way of Hoboken offers significant savings in operating cost, while providing a much higher level of rail service to New Jersey's economic engine – the massive concentration of commercial and residential development on the Jersey City and Hoboken waterfront.

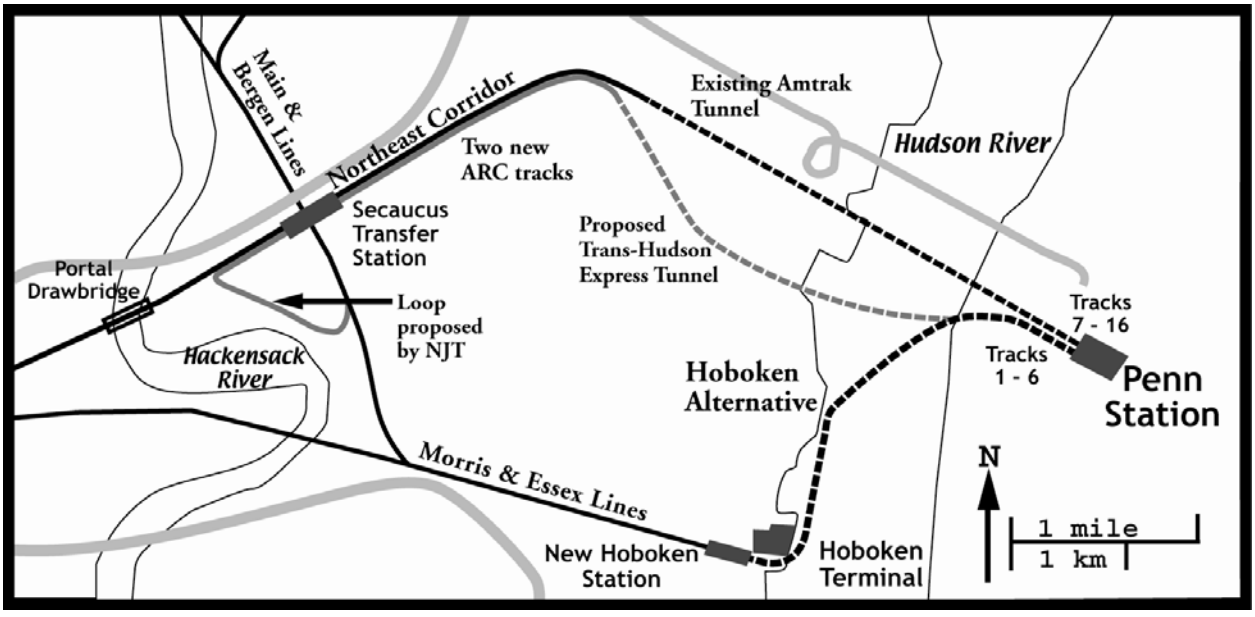

Figure One - The Hoboken Alternative

The state would gain a much higher return on its valuable waterfront properties. By converting Hoboken Terminal into a “way” station, a simple four-track through station could readily handle projected traffic needs for passengers boarding or alighting at Hoboken. Should more detailed studies indicate that greater capacity is needed, the station could be expanded to six or even eight tracks.

As a through station, no trains would terminate at this location. All of the existing tracks and servicing facilities at Hoboken Terminal would be eliminated. Other existing NJ Transit facilities, located inland would be used, and expanded if needed. Except for the new station itself, the entire Hoboken waterfront terminal could be sold and re-used as a valuable development site. However, the historic train shed and terminal building should be preserved and incorporated into new development at this site.

While a change of direction will require additional environmental and procedural filings, all of the impacts on the New Jersey side of the tunnel will be experienced on NJ Transit-owned property, eliminating objections form nearby property-owners. Environmental stakeholders who are concerned about the Meadowlands wetlands can be expected to become strong supporters of the change in route.

Background

The Hoboken Alternative was offered by rail advocates in early 2005 after NJ Transit proposed a revised alignment for its tunnels in the summer of 2004. In order to gain additional depth under the riverbed, NJ Transit proposed that instead of building its new tunnels parallel to the existing century-old PRR tunnels, they would curve southwest under Manhattan’s West Side before turning west, reaching the New Jersey shoreline in the northern portion of Hoboken. The tunnels would then curve northwest reaching a portal in

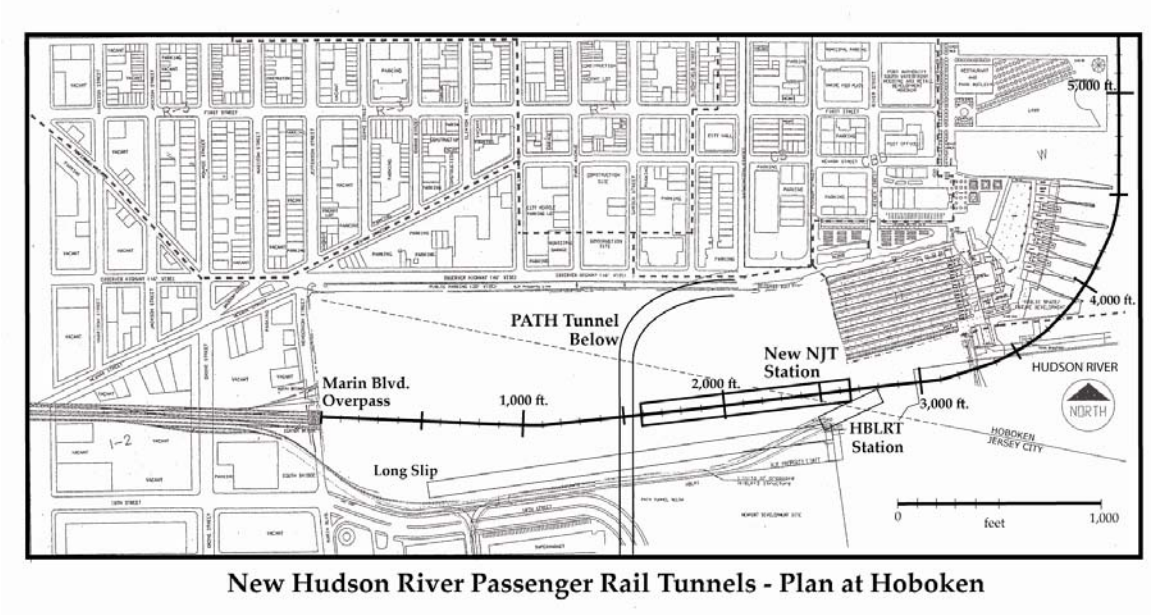

Figure Two – Detailed Plan at Hoboken

the vicinity of the existing tunnel portals in North Bergen. The bow in the tunnel adds approximately 0.3 miles to the tunnel's length, compared to a straight-line alignment of the current tunnels.

Since NJ Transit's new alignment was heading toward the Hoboken Terminal before turning north it occurred to rail advocates that an alternative of continuing southwest and then turning west at Hoboken terminal was feasible, as shown in Figure One.

For the Hoboken Alternative the distance between Penn Station, New York and Penn Station, Newark is the same as the current route via Secaucus. The Hoboken route saves about 0.4 mile over the Secaucus loop route for Bergen and Rockland County destinations and avoids the sharp curves, offering the potential for travel time savings.

During the EIS proceedings, the Mayors of Jersey City and Hoboken and the owner of the largest development site adjacent to the Hoboken Terminal -- the Lefrak Organization -- all endorsed the routing through Hoboken. In its submittal Jersey City outlined a more ambitious alignment than the one contained in this report. In the EIS, NJ Transit criticized Jersey City's suggested alignment but made no comment on the alignment offered by rail advocates, which was also entered into the record.

Two concerns, other than questions about alignment details, were raised by NJ Transit in the EIS process. The first was that in the longer term, capacity limitations would occur. Waterfront-bound and Lower Manhattan-bound passengers from points further west in the state would pre-empt space on trains from Manhattan-bound passengers, limiting the full use of the Hudson River tunnels. This is a longer term concern. The optimistic forecasts of ridership are unlikely to be realized for many years, because of the downturn in the economy. Should ridership reach projected levels there are other options for accommodating West of Hudson passengers heading to the Exchange Place area or Lower Manhattan. These passengers would be better served if they could transfer to PATH further west, and avoid the Hoboken Terminal entirely. Plans for a transfer from the Morristown Line to PATH at Harrison, and for an extension of PATH to Secaucus were developed in 1962 as part of the agreement with the Port Authority to acquire the Hudson Tubes. These plans could be re-examined as part of a future capacity enhancement analysis.

The second concern was the greater length of the underwater segment of the tunnels, and whether adequate ventilation facilities could be constructed. While clearly this issue must be addressed during the detailed design effort, it can hardly be called a fatal flaw, since many subaqueous rail tunnels of much greater length have been constructed around the world.

Engineering Feasibility

While a number of options for connecting existing NJ Transit tracks at Hoboken with the new Hudson River rail tunnels are possible, and should be carefully analyzed by NJ Transit's engineering team, this report focuses on what seems to be the most

promising scheme -- ramping down from the embankment east of the Palisade tunnels, beginning with the last highway underpass at Marin Boulevard, before reaching the Hoboken Terminal complex. The overall plan is shown in Figure Two and the accompanying profile is shown in Figure Three.

Two grade options – 2% and 3% -- were considered in this analysis, as they were in the track connection plan to Penn Station in Manhattan described in the February 2007 DEIS. A 3% grade has less impact on the riverbed, but is more challenging in terms of train performance and capacity. Modern high-powered electric trains can easily negotiate a 3% grade. MTA's LIRR East Side Access Project, now under construction, includes a 4,200 foot long segment of 3% grade in Long Island City where the tracks rise from the 63rd Street tunnels to meet existing LIRR tracks on an elevated embankment in Sunnyside. For the Hudson River Hoboken routing both grade options are feasible.

Relatively straightforward cut-and-cover construction is envisioned in Hoboken. The challenge is to descend from the Marin Boulevard overpass, pass over the Hoboken-bound PATH tunnel and still clear the river bottom with sufficient cover to permit soft-soil tunnel boring machine construction. The extent to which fill must be placed in the river bed in Hoboken depends on the degree that silting has already occurred around the Hoboken ferry slips and pilings. NJ Transit's plans to restore some of the ferry slips for cross-Hudson service must be

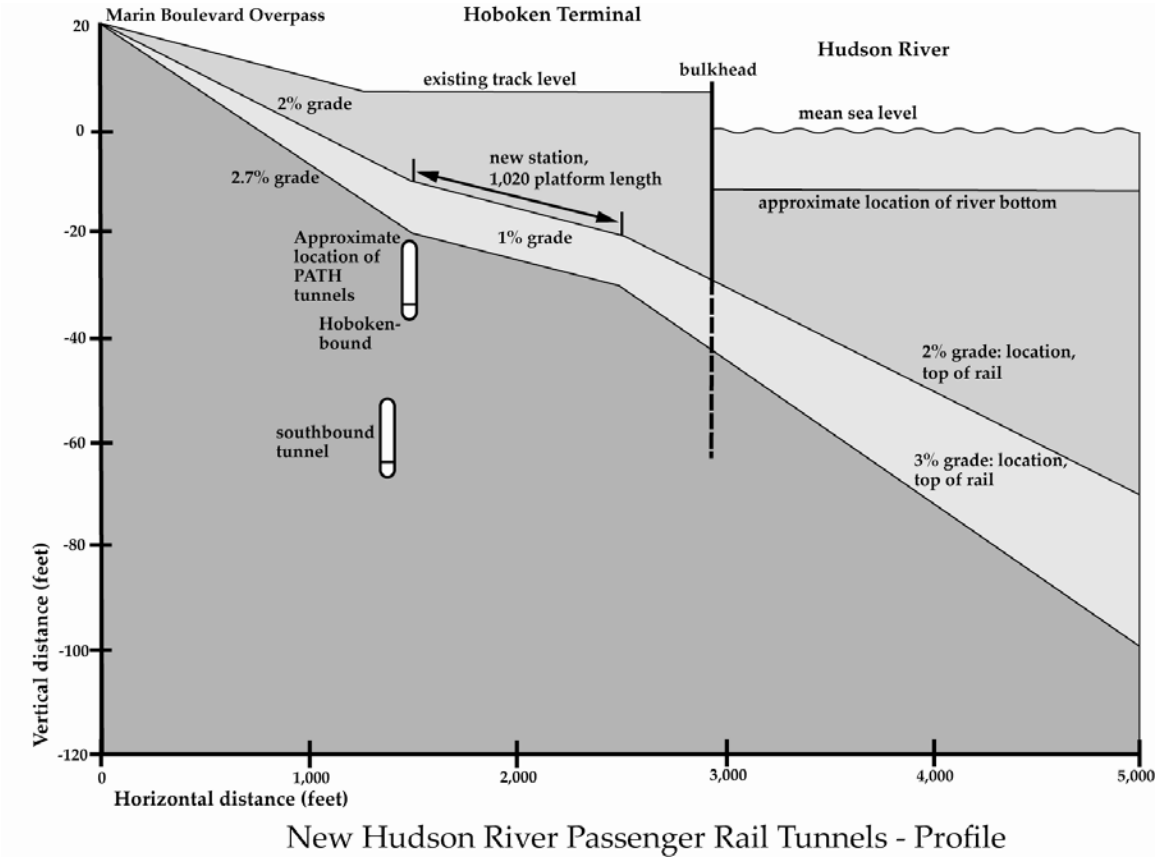

Figure Three – Detailed Profile at Hoboken

coordinated with the new tunnel construction.

The existing yards and platforms at Hoboken Terminal are less than ten feet above river level. The new alignment will begin its descent at the Marin Boulevard overpass, the beginning of the numbering of 1,000 foot intervals shown in the figures. After reaching grade, the lines will continue to descend in an open cut to be built in a “bath-tub” design with adequate drainage. A new four track thru station will be constructed just south of the existing platforms and tracks at Hoboken Terminal. For both grade options, the station could be open to daylight with natural ventilation, with canopies over the platforms. Within the 12-car, 1,000 foot long station a 1% grade would be maintained. East of the station the tunnels would begin, with a construction shaft for launching the soft soil TBMs toward Manhattan. Depending on a more detailed design analysis and construction scheduling plan, the existing Hudson-Bergen light rail station might be temporarily relocated.

With the new thru station in place all of the tracks and train servicing facilities would be removed. A new site plan for redeveloping this valuable NJ Transit-owned parcel would be developed. The historic train shed and terminal building would be preserved and appropriate new uses considered. A covered pedestrian path from the new station to the existing PATH Hoboken Station would be included in the new development and a new alignment for the light rail line through the site should be considered that

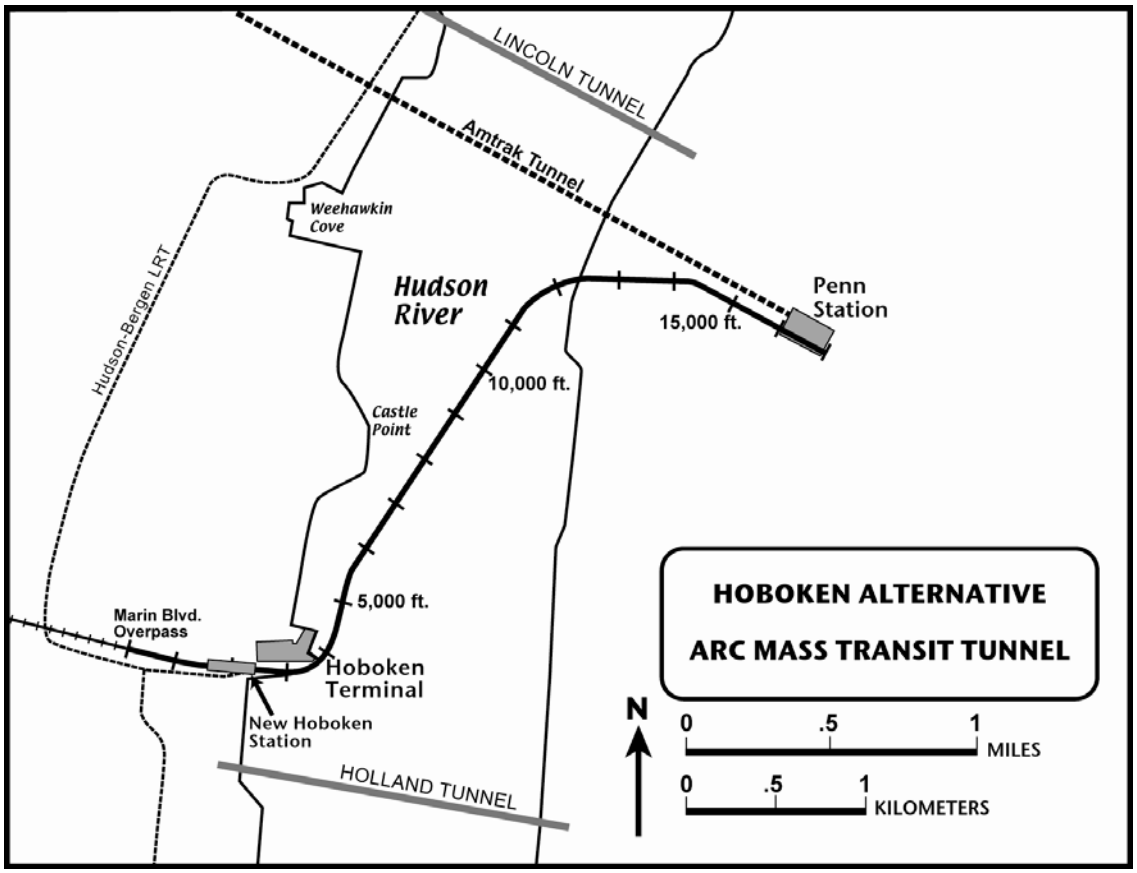

Figure Four – Full Plan – Hoboken-Penn Station

would bring the line closer to the center of Hoboken. It is important that new development plans for the Hoboken Terminal be prepared in consultation with elected officials in Hoboken and Jersey City.

The existing four track rail line between the Marin Boulevard overpass and the Palisade tunnels provides double the capacity of the two-track Hudson River crossing. A short segment of fifth main track is in place and could be used to enhance capacity in the near term. In the longer term, it might make sense to operate the Palisade tunnels as two separate two-track lines, with the northern pair of tracks linking only to the Bergen lines and the southern pair only to the Morristown and Northeast Corridor lines. The layout just west of the Bergen tunnels could be simplified, permitting much higher operating speeds. In this case consideration should be given to adding a flyover to permit separation of inbound and outbound movements.

Several additional systems issues should be addressed. At Harrison a new flyover is needed to separate the westbound PATH trains from westbound Northeast Corridor trains that come via Hoboken. An additional westbound rail track is needed thru the Harrison Station. Space is available for this track, but an expansion of the embankment will be needed.

At the Manhattan end, the cut-and-cover Penn Station direct track connection described in the February

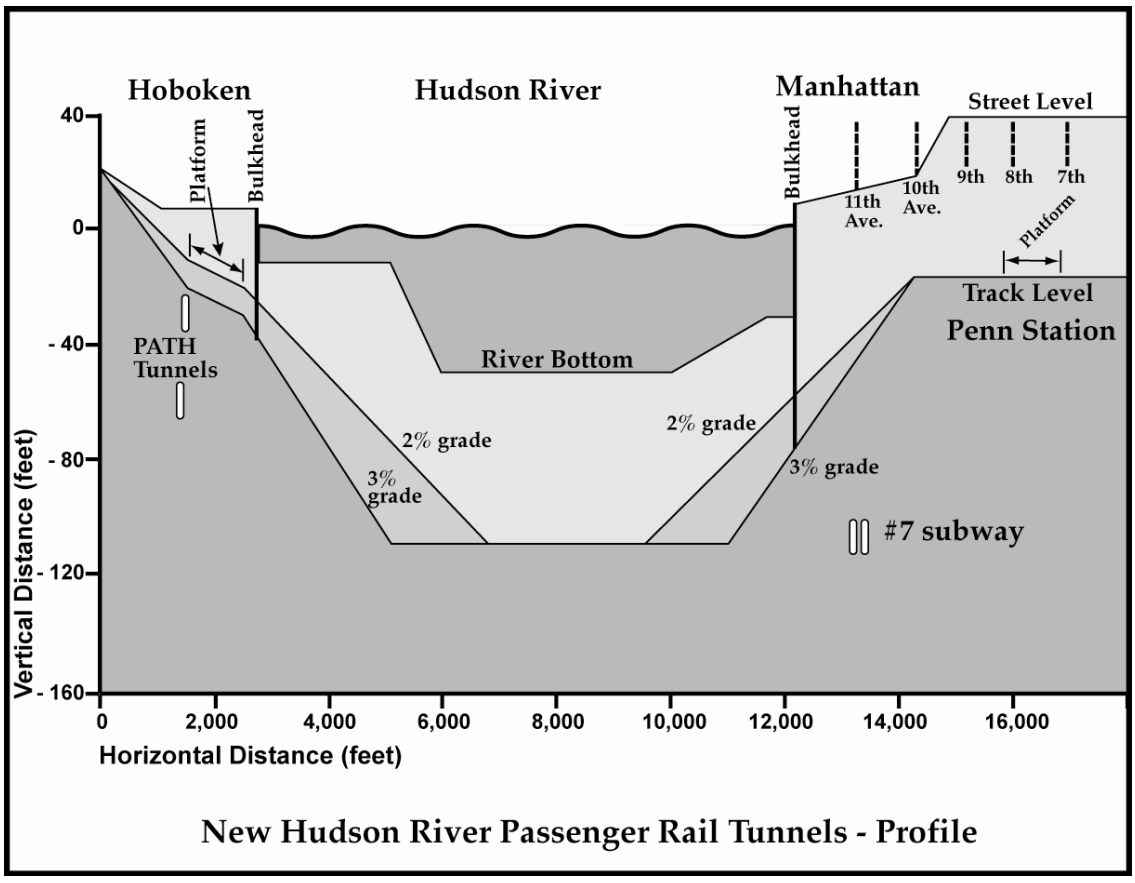

Figure Five – Full Profile – Hoboken-Penn Station

2007 Draft Environmental Impact Study (DEIS) report would be advanced and the deep cavern station 175 feet below 34th Street would be eliminated from the plan. As described in the DEIS, the link would extend from the bulkhead at 12th Avenue and 28th Street to the western retaining wall of the Penn Station complex, just east of 10th Avenue. Only a two-track cut-and-cover connection is needed, reducing the width of the sub-surface easement. This easement would be beneath properties slated for future development. Plans for new residential and commercial structures have been postponed because of the economic downturn, and can be modified to allow construction over the easement.

The alignment and the profile between Hoboken Terminal and Penn Station are shown in Figures Four and Five. The station to station distance (midpoint to midpoint of stations) is 2.8 miles. The soft soil tunnel, from bulkhead to bulkhead, is 1.8 miles in total for each tube. Cut and cover two-track approach links are about 0.5 miles each, on either side of the river.

The detailed route in Manhattan is shown in Figure Six. East of 10th Avenue the new tunnels connect into existing tracks west of Penn Station. With the existing track configuration already in place full interconnectivity from the new tunnels to most existing platform tracks is possible. A more careful analysis would be needed to justify higher speed turnouts or new switches. Clearly, within the station itself additional stairways and widened concourses will be needed. Even without the new track connection, these passenger flow enhancements would be needed over the next eight years as part of an expansion of Moynihan/Penn Station.

Based on this preliminary analysis the Hoboken Alternative connection seems doable, and has the potential of saving as much as 80% of the cost of the Hudson River tunnel project.

Next Steps

With new leadership in Trenton there is a critical opportunity to change direction and conduct a fair and impartial review of a more cost-effective and passenger- friendly plan for the new Hudson River tunnels. All construction contracts for the current plan should be put on hold until the engineering feasibility and constructability of the Hoboken Alternative is assessed. The expertise of the existing consultant team, currently under contract to NJ Transit, is already available and can be put to use immediately.
Concurrently, NJ Transit, in cooperation with MTA, should devise a full service implementation plan for thru-running at Penn Station, building on the successful “football specials” pilot program begun this fall. Thru-running has the potential to increase peak hour train capacity at Penn Station in the near term by 25% or more. To handle this increased ridership, additional stairways and widened concourse are needed as part of a plan to remake Moynihan/Penn station into a more fitting gateway to NYC.

The Hoboken Alternative and the “Penn Station First” direct track connection plan are part of a longer range plan for an interconnected Regional Rail system. A subsequent

step is the connection between Penn Station and Grand Central Terminal. Critical information about this connection is contained in the full 1,600 page 2003 ARC Major Investment Study, which must be released.

By moving forward on the Hoboken Alternative, the new Christie administration can show its commitment to advancing bold, yet cost-effective strategies in the face of New Jersey's unprecedented fiscal crisis.

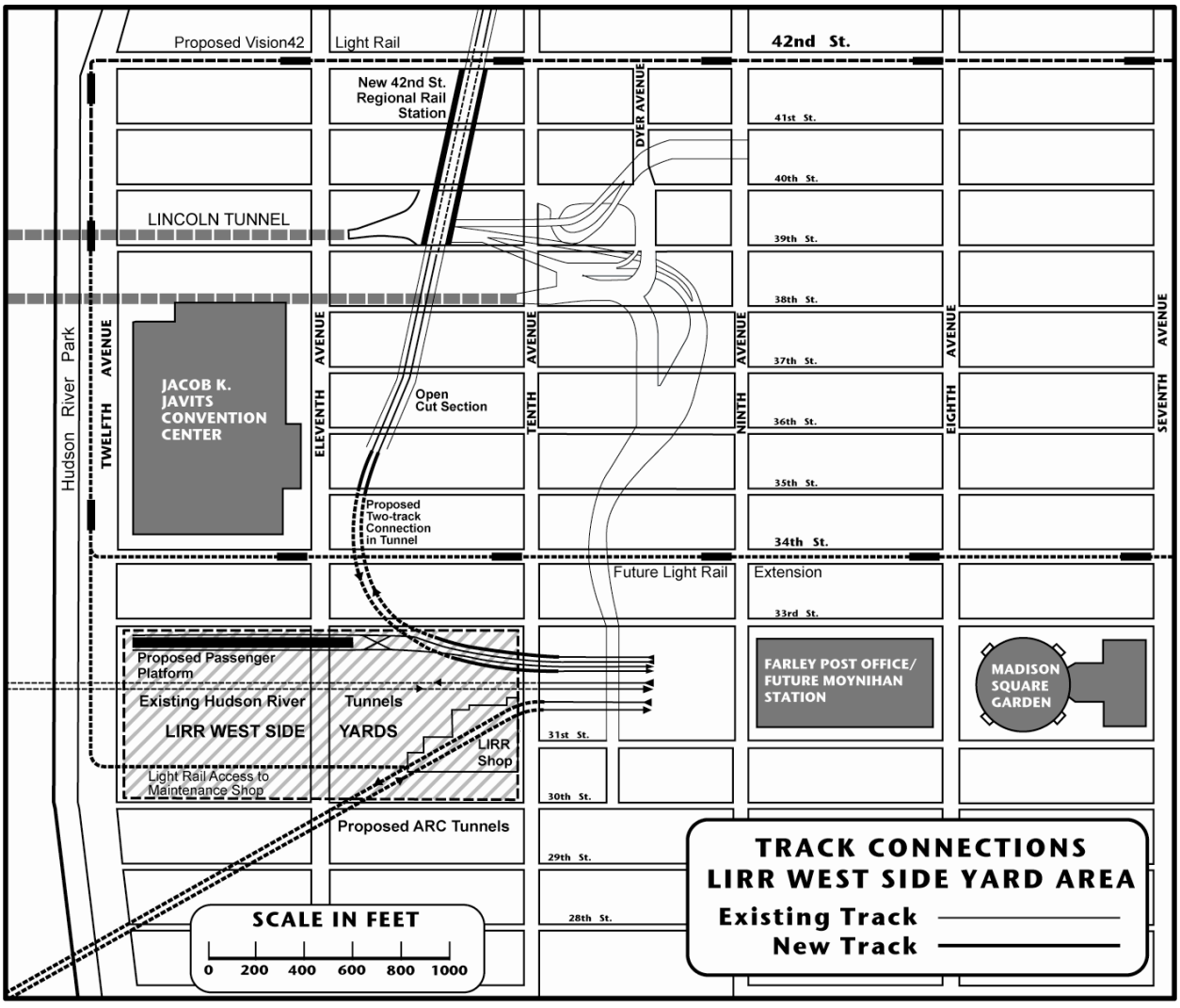

Figure Six – Plan at West Side Yard