PATCO Description

Opened in 1969, the Port Authority Transit Corporation (PATCO) Hi-Speed Line, runs 23 km (14.3 miles) from Lindenwold, New Jersey to Philadelphia, Pennsylvania. It utilizes a previous line from the 1930's, which runs on both sides of the Benjamin Franklin Bridge over the Delaware River. The five Philadelphia stops are underground subway stations. The first two stops in New Jersey after the bridge are also subway stations in Camden. The remaining seven stops in New Jersey are elevated and in the more populous areas, the line travels on a viaduct. In Philadelphia, there are walkway connections with two other subway lines and a subway/elevated line (only one is shown in the ROS railway – Broad-Ridge Spur). In New Jersey, there are transfer connections with a surface line to Trenton, New Jersey and another at the Lindenwold terminus that travels East to shore points via New Jersey Transit (shown in the ROS railway) formerly Amtrak formerly Pennsylvania-Reading Seashore Lines.

The Franklin Square station in Philadelphia was closed in September 1979, but is planned to re-open in late 2022. The Woodcrest station in New Jersey opened in February 1980.

For the curious Google Earth fans:

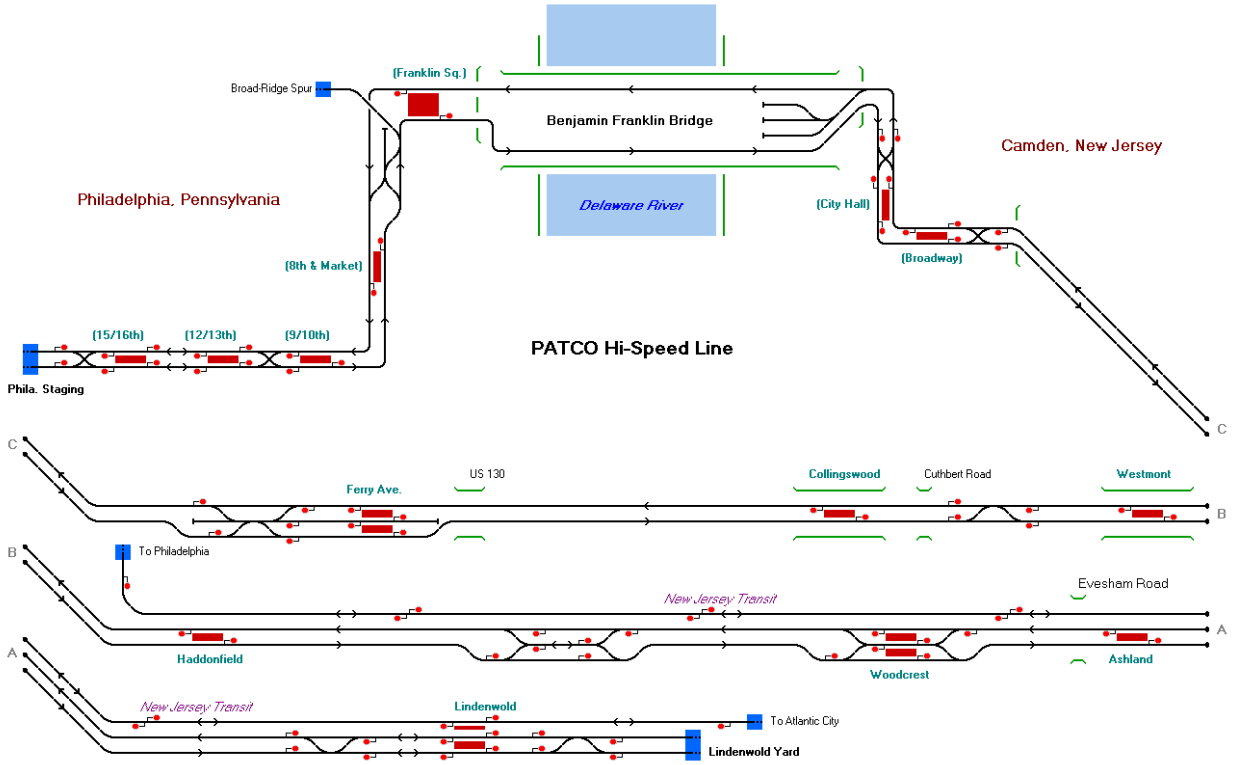
- **Lindenwold Yard and Shops** is at Latitude: 39.833172° Longitude: -74.997927°
- **Benjamin Franklin Bridge** is at Latitude: 39.952880° Longitude: -75.134632°

ROS Railway of PATCO

This Railway Operation Simulator rendition of the PATCO Hi-Speed Line is fairly accurate as to scale and position of trackwork. Some of it will never be used in the simulator and not signaled, but I wanted to show it nevertheless. It will give you a chance to make a mistake and send a train into the little yard under the east end of the Ben Franklin Bridge or off the route onto the Broad-Ridge Spur, which in real life would be removed trackage as the underground connection has been ripped up. The gaps on diagonal portions show the relatively southeast direction into New Jersey. The average track segment is 85 m in length with some variations to accommodate the simulator's track linkage. Track speeds vary from 32 kph to 48 kph (20 mph to 30 mph) in the subway portions of the route, but in New Jersey, after the bridge and tunnels, the maximum speed is 120 kph (75 mph).

Station names in parentheses (15/16th) are below ground subway stations. This also gets me around the fact that station names in ROS cannot start with a number! At the middle left is a non-named station location of "Phila. Staging". In real life there are two buffers there, but I needed an entry point to simulate a train waiting to depart at the 15/16th street station at the start of my first timetable. The section of New Jersey Transit that is shown and signaled will probably be used in future rush-hour timetables.

Train reporting numbers in timetables for this simulation always begin with a "P" followed by the 3-digit car number of the leading unit. PATCO does not use head codes or reporting numbers for their trains. As this is a line in the United States, trains normally run on the right-hand side of the double tracks. Usually, trains heading into Philadelphia, after stopping at 9/10th street station, will crossover from the right-hand side (Track 2) and use the left-hand side (Track 1) for the remaining two stations. That way it is ready to depart on the proper side. The same goes for trains heading east into Lindenwold. They will use the cross-overs before the station for the same reason. However, during heavy traffic, this is not always possible.



Timetables

The first timetable is ***P261-Sunday-0000-0600.ttb – Sunday Graveyard Shift***

Difficulty Level 2 – Run time: 45 minutes at 8x clock speed.

You are the dispatcher on the Sunday morning "graveyard" shift from midnight to 0600 hours. This is perhaps the quietest time of the week as only two trains are on the system at the same time. In real life, the trains are a 2-car pair as not many passengers are expected, but could be 4 or 6 cars (2 or 3 pairs) at the start if there was a sporting event or concert in South Philadelphia late the night before. Train P261 comes in from the yard and departs Lindenwold at midnight (24:00), while Train P277 starts from the 15/16th street station at 24:05. Due to limited speeds in the subways, the trains will usually meet at Broadway station in Camden, but only twice during the entire shift. The one-way trip takes 27 minutes. Train P261 will change direction and start its return trip 7 minutes after reaching 15/16th. Train P277, however, will wait 28 minutes before returning to Philadelphia from Lindenwold.

This back-and-forth scenario is repeated 6 times, the trains switching their roles, with only a slight variation when Train P261 departs Lindenwold on its last leg at 29:30 (5:30 AM), 31 minutes earlier than usual.

The tricky part of this timetable (hence the difficulty level 2) is the 1-minute difference between departures and arrivals at Lindenwold 5 times during the shift. I've included a hint[1] at the end of this document that will help you avoid having to hold up at the signal before the crossover approaching Lindenwold for a minute or two that will cause a few late arrivals and departures later on.

Here's a timetable snippet from an actual PATCO schedule (December 2021) for this Sunday shift. Train P261 highlighted in yellow and Train P277 highlighted in green:

WESTBOUND *to* PHILADELPHIA

LINDENWOLD	ASHLAND Voorhees	WOODCREST Cherry Hill	HADDONFIELD	WESTMONT	COLLINGSWOOD	FERRY AVENUE Camden	BROADWAY Camden	CITY HALL Camden	8TH & MARKET Philadelphia	9/10TH & LOCUST Philadelphia	12/13TH & LOCUST Philadelphia	15/16TH & LOCUST Philadelphia
12:00 A	12:02 A	12:03 A	12:06 A	12:08 A	12:10 A	12:12 A	12:16 A	12:18 A	12:23 A	→	12:26 A	12:27 A
1:00 A	1:02 A	1:03 A	1:06 A	1:08 A	1:10 A	1:12 A	1:16 A	1:18 A	1:23 A	→	1:26 A	1:27 A
2:00 A	2:02 A	2:03 A	2:06 A	2:08 A	2:10 A	2:12 A	2:16 A	2:18 A	2:23 A	→	2:26 A	2:27 A
3:00 A	3:02 A	3:03 A	3:06 A	3:08 A	3:10 A	3:12 A	3:16 A	3:18 A	3:23 A	→	3:26 A	3:27 A
4:00 A	4:02 A	4:03 A	4:06 A	4:08 A	4:10 A	4:12 A	4:16 A	4:18 A	4:23 A	4:25 A	4:26 A	4:27 A
5:00 A	5:02 A	5:03 A	5:06 A	5:08 A	5:10 A	5:12 A	5:16 A	5:18 A	5:23 A	5:25 A	5:26 A	5:27 A
5:30 A	5:32 A	5:33 A	5:36 A	5:38 A	5:40 A	5:42 A	5:46 A	5:48 A	5:53 A	5:55 A	5:56 A	5:57 A

EASTBOUND *to* LINDENWOLD

15/16TH & LOCUST Philadelphia	12/13TH & LOCUST Philadelphia	9/10TH & LOCUST Philadelphia	8TH & MARKET Philadelphia	CITY HALL Camden	BROADWAY Camden	FERRY AVENUE Camden	COLLINGSWOOD	WESTMONT	HADDONFIELD	WOODCREST Cherry Hill	ASHLAND Voorhees	LINDENWOLD
12:05 A	12:06 A	12:07 A	12:09 A	12:14 A	12:15 A	12:18 A	12:20 A	12:22 A	12:24 A	12:27 A	12:29 A	12:32 A
12:34 A	12:35 A	→	12:38 A	12:43 A	12:44 A	12:47 A	12:49 A	12:51 A	12:53 A	12:56 A	12:58 A	1:01 A
1:34 A	1:35 A	→	1:38 A	1:43 A	1:44 A	1:47 A	1:49 A	1:51 A	1:53 A	1:56 A	1:58 A	2:01 A
2:34 A	2:35 A	→	2:38 A	2:43 A	2:44 A	2:47 A	2:49 A	2:51 A	2:53 A	2:56 A	2:58 A	3:01 A
3:34 A	3:35 A	→	3:38 A	3:43 A	3:44 A	3:47 A	3:49 A	3:51 A	3:53 A	3:56 A	3:58 A	4:01 A
4:34 A	4:35 A	4:36 A	4:38 A	4:43 A	4:44 A	4:47 A	4:49 A	4:51 A	4:53 A	4:56 A	4:58 A	5:01 A
5:35 A	5:36 A	5:37 A	5:39 A	5:44 A	5:45 A	5:48 A	5:50 A	5:52 A	5:54 A	5:57 A	5:59 A	6:02 A

You'll notice that 9/10th street station in Philadelphia is passed in the wee hours of the morning. This is due to low ridership during that time.

Coming Next

- I will add more timetables, some during rush hours, which will have many more trains running simultaneously than the early Sunday shift.
- I have obtained some vintage timetables from 1973 (before Woodcrest station was built) and 1976 (when Franklin Square station was in use) and would like to do some of these for ROS.
- I live about 58 km (36 miles) from the PATCO High-Speed Line, so I'd like to include some custom photographs of the system in this documentation.

Sources

- Vigrass, J. William. *The Lindenwold Hi-Speed Line (The First Twenty Years of the Port Authority Transit Corporation)*. West Jersey Chapter, National Railway Historical Society, 1990.
- Wikipedia. *PATCO Speedline*, en.wikipedia.org/wiki/PATCO_Speedline. Accessed February 2022.
- PATCO. *PATCO (Port Authority Transit Corporation) Speedline*, www.ridepatco.org/. Accessed February 2022.
- www.nycsubway.org. *PATCO High-Speed Line*, www.nycsubway.org/wiki/PATCO_High-Speed_Line . Accessed February 2022.
- Google Earth. https://earth.google.com/

Hints

[1] ***P261-Sunday-0000-0600.ttb*** – As stated earlier, PATCO trains usually crossover to the opposite track when arriving at terminus stations so they can depart on the correct side. At Lindenwold for this timetable, that isn't always possible because trains arrive and depart within a minute of each other. If you find that your Lindenwold departing train is on the incorrect side and you need to cross over right after departing (it usually happens to me at 26:00 and 28:00), signal your arriving train first to cross over before as it approaches Lindenwold. Your departing train will start before the arriving train gets in. Pre-select your departing Lindenwold station signal and the signal before the crossover. Select this signal again and wait until the arriving train track is clear, then quickly select the second opposite track signal at Ashland (using the crossover). If you do it quick enough, your departing train will not have to slow down for the crossover signal and you should not lose any time. I hold my mouse cursor right over the opposite track signal at Ashland and click it as soon as the arriving train track is clear. This is the only way I have been able to score 100 % on my performance log. While there are crossovers in the middle of the route, if you try and use these, you'll be bucking the preferred directions. In addition, middle of the route stations are only signaled one way.