

Park Avenue Tunnel at 33rd Street



Purpose

- Improve pedestrian safety
- Make intersection more predictable for pedestrians and drivers

Outreach

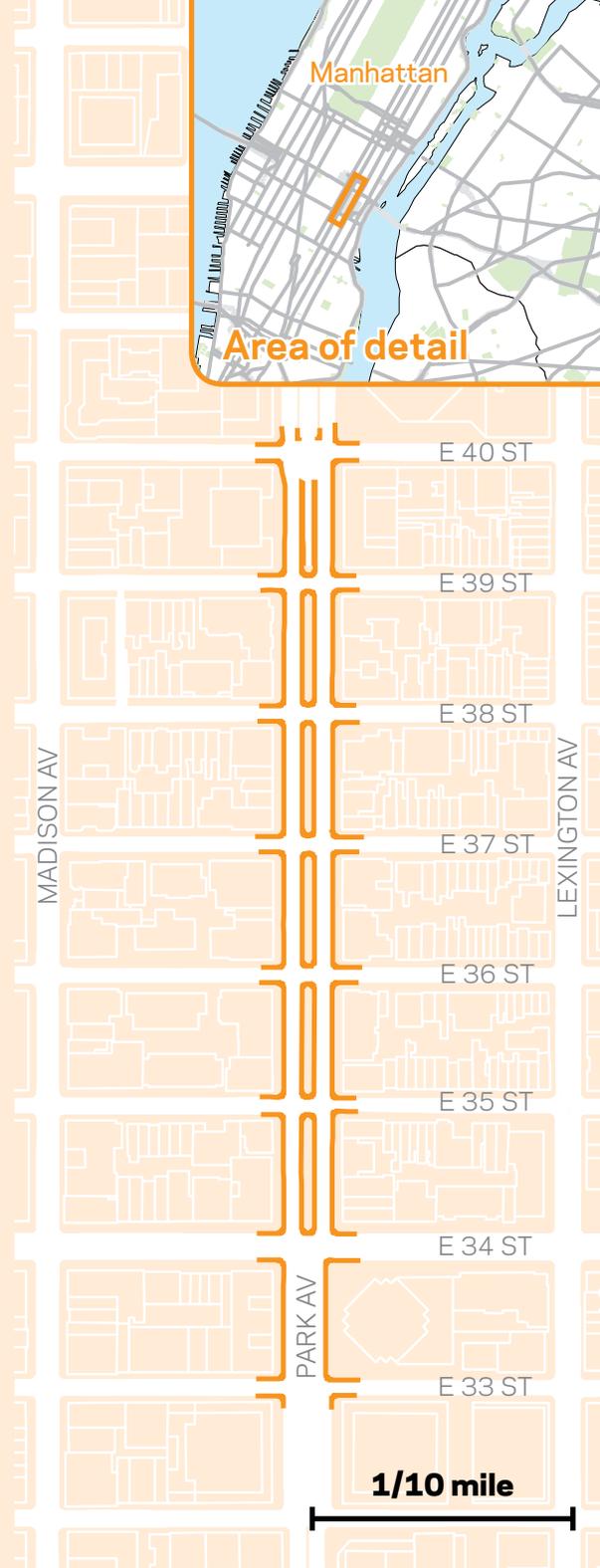
- Shared plans for new design with elected officials and City agencies
- Discussed new plans with 34th Street Partnership and Grand Central Partnership in April 2008
- DOT presented plans to Manhattan's Community Boards 5 and 6 in May 2008

Approach

- Converted two-way Park Avenue tunnel to one-way, northbound only
- Provided pedestrian islands in crosswalk; extended curbs
- Redistributed southbound traffic onto surrounding streets

Results

- 77% reduction in total crashes involving injuries at Park Avenue and E. 33rd Street
- 50% reduction in the number of pedestrians crossing against the signal at E. 33rd Street
- 25% of motorists shifted route or mode
- Southbound travel times increased marginally



Park Avenue is a major north-south roadway with high volumes of pedestrians and motor vehicles, especially in Midtown. While most of the roadway is at grade, there is a tunnel between E. 33rd and E. 40th Streets, which leads to the viaduct that carries traffic around Grand Central Terminal between E. 40th and E. 46th Streets.

In the past, the intersection of Park Avenue and E. 33rd Street consistently experienced a high number of crashes, directly attributable to its location at the terminus of the Park Avenue Tunnel. In addition, there have been a number of fatalities at this location. Beginning in 1999, DOT implemented several safety measures including improved signage, barriers and flexible delineators to separate the northbound and southbound lanes at the E. 33rd Street tunnel entrance and exit. These changes improved safety and reduced the number of crashes, but pedestrian accidents at this location continued to be among the highest in the city.

The continuing problems at this intersection led DOT to reevaluate the intersection and focus on the basic problem of visibility for southbound drivers exiting the tunnel. As drivers emerged from the tunnel, the change in light and grade severely limited their ability to see pedestrians and motor vehicles at E. 33rd Street. The changing light and grade also made it difficult for these drivers to merge with vehicles traveling on the surface Park Avenue lanes.

Safety for pedestrians crossing Park Avenue at E. 33rd Street was affected both by drivers' lack of visibility and by the complexity of the traffic pattern with traffic merging from the tunnel and surface streets. Pedestrians' difficulty with navigating the intersection was compounded by the limited refuge space where the traffic direction changes in the middle of the crosswalk.

DOT developed a plan built around addressing southbound drivers' limited visibility and the length of the pedestrian crossing distance. The plan included making the tunnel one-way northbound (thus removing the southbound vehicles from the tunnel) and reducing the pedestrian crossing distances with refuge islands and curb extensions. Eliminating the southbound traffic exiting the tunnel at E. 33rd

Street and increasing pedestrian refuge islands in crosswalks was intended to make the intersection safer for all users.

In April and May 2008, DOT met with elected officials, members of the 34th Street Partnership and the Grand Central Partnership as well as Community Board 5 (CB5) and Community Board 6 (CB6). A resolution in support of the plan was adopted by CB5. CB6 committee members agreed that they did not need to take a position on the project because it was mostly in CB5's district.

To measure the impact of these changes on vehicles and pedestrians, DOT conducted analysis of data collected before and after implementation. This included pedestrian counts, including counting the number of people who crossed the street against the traffic signal. Travel speeds and vehicle volumes were also collected to measure the impacts on motor vehicle movements on this corridor. DOT also analyzed the number of crashes involving injuries at the main intersection.

These changes improved safety on this corridor. The total number of crashes involving injuries at Park Avenue and E.33rd Street decreased by 77% from an average of 10.3 per year during the three years prior to implementation to an annual rate of 2.4 since the project was completed. This decline represents a statistically significant reduction in crashes from the 10 year trend (for crash analysis methodology, see page 72).

In the three years prior to implementation there was an average of seven crashes per year involving injuries to pedestrians. Since the project was completed, that number has been reduced to an annual rate of 1.6 crashes, a statistically significant reduction.



A 10 ft wide refuge island was installed on the south side of E. 33rd Street at Park Avenue to provide safer environment for pedestrians.



The curb extension on the southeast corner shortens the crossing distances and aligns the curbs to make for a safer crossing.

77% reduction in total crashes involving injuries at Park Avenue and E. 33rd Street.

The number of pedestrians crossing against the signal at E. 33rd Street decreased by 50%. Pedestrians have regularly been observed using the pedestrian refuges. Illegal pedestrian crossings did increase during all time periods at 40th Street.

Improvements to intersection safety came with a marginal impact on travel time. Southbound travel times between E. 40th and E. 33rd Streets increased by approximately 20 seconds during the morning peak period and 50 seconds during the evening periods. These delays led to increased queuing of vehicles on the elevated viaduct, which is separate from the main roadway and does not affect traffic on the crosstown streets.

Overall, there was a 19% reduction in traffic volumes on the southbound at-grade Park Avenue viaduct, indicating that about one-fifth of motorists switched to

a different avenue or changed to a different mode. The rate of diversions was highest during the late afternoon and evening. The primary diversion routes are Fifth and Lexington Avenues, both of which saw increases in vehicle volumes. Fifth Avenue saw a 15% increase, or an additional 192 vehicles per hour, during 4-6 p.m., from an average of 1,248 vehicles per hour in the spring to 1,440 in fall 2008. The largest increase on Lexington Avenue occurred during the noon-2 p.m. period with an additional 90 vehicles per hour. This is a 9% increase from 1,005 vehicles per hour on average in the spring to an average of 1,095 vehicles per hour in the fall.

Park Avenue Travel Times

	Southbound Park Avenue from E. 40 th Street to E. 33 rd Street		
	Before	After	Change
7-10 a.m.	02:21	02:40	+0:19
12-2 p.m.	02:25	02:46	+0:21
4-6 p.m.	02:16	02:42	+0:26
6-8 p.m.	02:01	02:52	+0:51

* All After times are based on three month averages.

Crashes with Injuries at Park Avenue and E. 33rd Street

	Before* (three previous years)			After
Total Crashes with Injuries	9	13	9	2.4
Number of Crashes with Injuries to:				
Motor Vehicle Occupants	3	5	2	0.8
Pedestrians	7	6	8	1.6
Bicyclists	0	2	0	0.0

* Before columns show the crash history for each of the three years immediately prior to project implementation. After column shows number of crashes since implementation (through November 2009) at annual rate. See page 72 for further information on crash data source and analysis methodology. The sum of the three specific categories may not equal "Total Crashes with Injuries" because some crashes involved injuries in multiple categories.

Southbound Park Avenue Traffic Volumes Viaduct at E. 40th Street (average vehicles per hour)

	Before	After	% Change
7-10 a.m.	748	641	-14%
12-2 p.m.	902	744	-18%
4-6 p.m.	967	803	-17%
6-8 p.m.	1,123	859	-24%

Before data collected in April and May 2008. After data is an average of volumes collected in September and October 2008. Volumes shown in vehicles per hour.

Southbound Fifth Avenue Traffic Volumes E. 39th Street to E. 35th Street (average vehicles per hour)

	Before	After	% Change
7-10 a.m.	1,364	1,400	3%
12-2 p.m.	1,323	1,348	2%
4-6 p.m.	1,248	1,440	15%
6-8 p.m.	1,583	1,609	2%

Before data collected in April and May 2008. After data is an average of volumes collected in September and October 2008. Volumes shown in vehicles per hour.

Southbound Lexington Avenue Traffic Volumes E. 39th Street to E. 35th Street (average vehicles per hour)

	Before	After	% Change
7-10 a.m.	1,242	1,288	4%
12-2 p.m.	1,005	1,095	9%
4-6 p.m.	1,075	1,107	3%
6-8 p.m.	1,236	1,330	8%

Before data collected in April and May 2008. After data is an average of volumes collected in September and October 2008. Volumes shown in vehicles per hour.