West Houston Street

Safietio

Raffetto's ante

ONE WAY

Purpose

- Improve pedestrian and motorist safety
- Simplify complex intersections
- Enhance streetscape

Outreach

- Project recommendations developed from NYU-Wagner Graduate School of Public Service report in late 1990's
- DOT and Department of Design and Construction (DDC) met with the Transportation Committees of Manhattan's Community Boards 2 and 3 (CB2 and CB3) from 2001 to 2004 to present project plans, receive feedback, and to address community concerns
- CB2 passed resolution in support of project in June 2004
- Construction began in August 2005 and finished in June 2009

Approach

- Installed pedestrian refuge islands, pedestrian ramps, bell bollards and corner extensions to improve pedestrian safety
- Built raised, widened, landscaped median along Houston Street from Sixth Avenue to Broadway to allow for inclusion of left-turn bays to reduce crashes and to discourage mid-block crossings by pedestrians
- Widened sidewalks on the south side of Houston Street from Varick Street to West Broadway
- Created Bedford Triangle Park by eliminating slip road at Houston Street and Bedford Street intersection
- Installed benches and trees throughout the project area
- Selected amenities and materials to enhance the historic characteristics of the project area



Results

- 24% reduction in total crashes involving injuries along Houston Street from West Street to Bowery
- Travel times decreased by as much as three and half minutes during the weekday afternoon peak in the westbound direction and increased by as much as one minute and twenty-four seconds during the weekday afternoon peak in the eastbound direction
- Fewer lanes have not caused congestion
- Improved street aesthetics through landscaping and use of historical materials

Houston Street is a major east-west corridor connecting the FDR Drive to West Street (West Side Highway) in Manhattan and is used by motorists to access the Holland Tunnel via Varick Street. Houston Street passes through several neighborhoods such as SoHo, Greenwich Village and the East Village. Each neighborhood has its own unique style and history while all are popular destinations for shopping, eating and nightlife.



Houston Street is one of Manhattan's busiest crosstown roadways. Between West Street and Sixth Avenue, Houston Street is one-way westbound with two lanes and parking along most blocks. The rest of Houston Street is bidirectional with three travel lanes in each direction separated by a median. Parking is also permitted on most blocks. In partnership with the DDC, DOT reconstructed Houston Street from West Street to Bowery. The reconstruction included transportation improvements, utility upgrades and landscape enhancements.

The planning process for reconstructing Houston Street extended over a decade and involved significant community outreach and participation. Recommendations from the planning study were published by the NYU-Wagner Graduate School of Public Service in the late 1990's and were incorporated into the design and reconstruction of Houston Street. Community outreach for the design portion of the project began in July 2001 and culminated in June 2004 with CB2 passing a resolution in support of the project. DOT and DDC met with CB2 and CB3 many times to present project plans, address community concerns and receive feedback. In September 2002; DOT and DDC met with CB2 to discuss a new park planned at the intersection of Bedford Street and Houston Street, and follow-up meetings were held in February and August 2003. The New York City Landmarks Preservation Commission also provided input to the project since historic districts are located within the project limits. Construction for the project began in August 2005 with a phased approach that finished in June 2009.

The roadway geometry of Houston Street underwent significant transformations. The number of moving lanes was changed from three to two along eastbound Houston Street between Sixth Avenue and West Broadway to accommodate wider medians and wider sidewalks on the south side of Houston Street. DOT removed parking along westbound Houston Street from Bedford Street to Varick Street to provide an additional moving lane and widened sidewalks on the south side of Houston Street.

Prior to reconstruction, there was a significant number of rear-end crashes to vehicles waiting to make a left turn from Houston Street. As a result, a raised, widened median was built along Houston Street between Sixth Avenue and Broadway to allow for the inclusion of left-turn bays. The median also improves safety for pedestrians by discouraging mid-block crossings and provided an opportunity for landscaping.

Bedford Triangle Park was created at the intersection of Houston Street and Bedford Street to improve the aesthetics and safety of the intersection. The intersection, which also crosses Sixth Avenue, was simplified by eliminating the one-way slip road between Bedford Street and Houston Street. The new park includes historic-style lamp posts, tinted sidewalks, and granite curbs. These historic amenities are also located throughout the project area.

Other safety improvements included the installation of pedestrian refuge islands, bell bollards, pedestrian ramps, and neck-downs. Pedestrian refuge islands were created by extending the median into crosswalks. Bell bollards were added at each pedestrian refuge island to block vehicles from entering the pedestrian area. Ramps were installed at corners throughout the project area to improve mobility for older pedestrians and those using strollers or wheelchairs. Neck-downs (or corner extensions) were implemented along the project corridor to shorten pedestrian crosswalk distances and to slow motorists turning onto side-streets.

Enhancements along the corridor included the installation of benches in each pedestrian refuge area and extensive landscaping in the medians. Seventy-four trees were planted within the project area to green the corridor and improve the street aesthetics.

Before and after traffic volumes were collected at several locations along Houston Street in both directions. The before and after volume comparison may be influenced by several factors such as changes in land use and travel patterns over the years of construction along Houston Street or the new construction ongoing along the eastern section of Houston Street. The additional westbound lane between Bedford Street and Varick Street did not induce more vehicular volume as that particular section saw a decrease or no change in volumes during all time periods except the morning peak. The roadway capacity was reduced along eastbound Houston Street between



Typical safety improvements along Houston Street included the installation of pedestrian refuge islands, bell bollards, pedestrian ramps, and left-turn bays.



Bedford Triangle Park was created at the intersection of Houston Street and Bedford Street and includes historic amenities such as lamp posts, tinted sidewalks, and granite curbs.

The total number of crashes involving injuries along Houston Street from West Street to Bowery decreased by 24%, a statistically significant reduction in crashes.

Thompson Street and West Broadway yet volumes were down during all peak periods in this section. And thus, the removal of one travel lane did not create congestion.

Travel time runs were completed along the corridor in both directions before and after project implementation. Westbound travel times improved in the morning and afternoon peak periods. Travel time savings in the afternoon peak period were more than three and a half minutes. Travel times during the westbound weekday evening and weekend afternoon peak periods increased by over one minute and by 21 seconds, respectively. In the eastbound direction, travel times increased during the weekday peak periods and decreased during the weekend afternoon peak period. The increase in travel time was not due to the reduction of capacity as the volumes in this section decreased. The increase was most likely due to construction.

The crash analysis for the reconstruction of Houston Street includes the three years before construction began – July 2002 to June 2005. Crash data from July 2005 through

June 2009 were not included in the analysis because it coincided with the construction period. The total number of crashes involving injuries along Houston Street from West Street to Bowery decreased by 24% from an average of 84.3 per year during the three years prior to construction to an annual rate of 63.8 since the project was completed. This decline represents a statistically significant reduction in crashes (for crash analysis methodology, see page 72). In addition, the annualized crash rate after implementation was lower than the number of crashes in any of the seven prior years.

The eastern section of Houston Street from Bowery to the FDR Drive is currently undergoing reconstruction as a DOT/DDC capital project. Project completion is scheduled for 2013.

Eastbound Houston Street Average Peak Period Travel Times Sixth Avenue to Bowery

	Before	After	Change	% Change
Weekday 7-10 a.m.	03:24	03:44	00:20	10%
Weekday 12-2 p.m.	03:43	05:07	01:24	38%
Weekday 4-7 p.m.	04:13	05:03	00:50	20%
Saturday 11 a.m2 p.m.	07:47	06:23	-01:24	-18%

Before data collected in October 2004. After data collected in November 2010. Times shown in minutes, seconds.

Westbound Houston Street Average Peak Period Travel Times Bowery to West Street

	Before	After	Change	% Change
Weekday 7-10 a.m.	08:52	08:34	-00:18	-3%
Weekday 12-2 p.m.	11:00	07:28	-03:32	-32%
Weekday 4-7 p.m.	08:28	09:45	01:17	15%
Saturday 11 a.m2 p.m.	08:40	09:01	00:21	4%

Before data collected in October 2004. After data collected in November 2010. Times shown in minutes, seconds.

Crashes with Injuries along Houston Street West Street to Bowery

	Before* (t	After				
Total Crashes with Injuries	107	77	69	63.8		
Number of Crashes with Injuries to:						
Motor Vehicle Occupants	63	36	33	30.8		
Pedestrians	27	29	20	24		
Bicyclists	19	12	17	11.3		

*Before columns show the crash history for each of the three years immediately prior to project construction. After column shows number of crashes since implementation (through October 2010) 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.