



February 12, 2021

Town of Watertown
149 Main Street
Watertown, MA 02472

Reference: Reconstruction of Waverley Avenue, from Orchard Street to Belmont Street
Overview of Design Alternatives
Committee on Public Works

To the Committee on Public Works:

As you may be aware, Waverley Avenue between Orchard Street and Belmont Street has been scheduled for future reconstruction. As part of the design process, we have developed two options for reconstruction that are described further below.

Watertown's Complete Streets Policy, adopted in 2017, applies to all transportation infrastructure, street design, and construction projects funded by the Town. It obligates the Town to integrate Complete Streets planning into all types of projects and urges greater separation of motor vehicles and non-motorized users by implementing multi-modal improvements such as buffered bicycle lanes and conventional bicycle lanes.

Therefore, the purpose of the Town of Watertown's Complete Streets Policy (Policy) is to accommodate all road users by creating a roadway network that meets the needs of individuals utilizing a variety of transportation modes. It is the goal of the Town to formalize the planning, design, operation, and maintenance of streets so that they are safe for users of all ages and abilities as a matter of routine.

The Policy applies to all transportation infrastructure, street design, and construction projects requiring funding or approval from the Town of Watertown, including approved private developments.

As part of the recently adopted Watertown Bicycle & Pedestrian Plan by the Town Council, Waverley Avenue was identified as a priority link in establishing a bicycle connection between Main Street and Belmont Street. Prioritizing this north-south corridor would provide opportunities to connect the Watertown Middle School and the Community Path to the northwest quadrant of Watertown.

Rather than trying to make each street perfect for every traveler, the Town aims for a comprehensive network of streets that emphasize different modes of transportation, while still providing access for each one. The Town shall continuously seek out opportunities to ensure safe and efficient passage for all transportation network components.

Along roadway segments, greater separation of motor vehicle and non-motorized users should be considered by implementing cycle tracks, buffered or conventional bicycle lanes, bicycle boxes, usable shoulders, and buffered sidewalks.

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Background

Currently, Waverley Avenue lacks curbing to provide a defined roadway width, however in areas where limited curbing is provided and/or measuring between gutter lines, the road is just under 35-feet wide.

- Existing sidewalks vary between 4- and 5-feet, with a combination of asphalt and concrete materials. There are pedestrian ramps across Waverley Avenue at Harnden Avenue, but they are not currently signed or striped.
- There are no bicycle facilities on this section of Waverley Avenue. The lower section of Waverley Avenue is marked with sharrows and “share the road” signage. To the north, Waverley Avenue connects with White Street in Belmont, which does not have dedicated bicycle facilities either.
- Parking is provided on both sides of the street. Per the Traffic Rules and Orders (TROs), there is a “no parking” restriction on the east (northbound) side from Orchard Street to #241 Waverley Avenue, but this is not currently signed. Per the TROs, parking along the remainder of the street is classified as “2-hour parking”. There are approximately 37 parking spaces along this segment of the corridor. Many properties also directly abut side streets that provide additional on-street parking.
- Traffic data was collected in January 2020 (pre-COVID). The 85th-percentile speed was 31.3 MPH, indicating 85% of vehicles were traveling at or under 31.3 MPH. The average weekday daily traffic was about 8,500 vehicles per day during that period.

Waverley Avenue is classified by DPW as a connector road and as an Urban Collector by FHWA (Federal Highway Administration). Per the Town’s Curb and Sidewalk Ordinance, adequate lane width is deemed to be 10-feet on collectors and local roads. A collector road with two-way traffic, like Waverley Avenue, must have a minimum of two separate travel lanes. An adequate parking lane width is 7-feet in residential areas along all classes of roads and 8-feet within commercial areas, where higher parking turnover is expected.

The surrounding land use is primarily residential, consisting of single and two-family housing. There are two businesses near Orchard Street. The abutting properties have off-street parking.

A three-year review of the Watertown Police Department (WPD) records system (10/26/2017 to 10/26/2020) revealed approximately 41 traffic collisions on Waverley Avenue, all on lower Waverley Avenue, thus no reported collisions in the section between Orchard Street and Belmont Street.

Parking counts were taken on Tuesday, March 3, 2020 and Friday, March 6, 2020 (pre-COVID). The counts were taken at approximately 8:00 AM, 11:00 AM, 2:00 PM, 5:00 PM, and 8:00 PM to obtain a sense of variation in parking utilization throughout the day. The maximum number of parked vehicles observed in the study area at any given time was four (4) vehicles. The maximum number of vehicles parked on any one side of the street at a given time was four (4) vehicles. On-street parking is significantly underutilized.

The northbound side of Waverley Avenue is lined with utility poles located along the backside of existing curb, or in the gutter line in areas without a defined curb. Each design alternative presented herein assumes the poles will be retained in their current locations. Our design objective, similar to Mount Auburn Street, is based on costs associated with relocating the poles, unpredictable time frames set by each utility provider to relocate their infrastructure, and the burden placed on residents of the abutting properties. The location of the existing poles, and our desire to retain them, were key components in establishing the horizontal layout of each option presented.

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Pedestrian Facilities

An additional crosswalk would be provided at Lowell Avenue as this is an access point for pedestrians travelling to and from the Lowell School. A Rectangular Rapid Flashing Beacon (RRFB) would be installed to highlight the crossing, which is in close proximity to the signalized intersection at Orchard Street. Curb extensions (“bump-outs”) would be provided across Waverley Avenue, at the beginning and end of parking areas, to increase pedestrian safety by reducing crossing distances, increasing visibility, and providing better accessibility. The inclusion of bicycle lanes under Option 2 will limit our ability to install curb extensions to the downhill parking areas. The shifting of travel lanes, to include formal bike lanes, will provide a sight shelf for vehicle traffic and pedestrians utilizing the marked crosswalks.

The location of existing utility poles precludes providing a consistent 5-foot-wide sidewalk and planting strip on each side of Waverley Avenue within this segment of the corridor. Planting strips are provided under each alternative based on available sidewalk space and the ability to provide a planting strip suitable for street tree installation.

Option 1—Shared Lanes - No Bicycle Accommodations

This option would reconstruct Waverley Avenue by maintaining the existing configuration / layout of the street. Pavement markings would be used to delineate the parking lanes. This plan would provide an 11-foot travel lane in each direction and two 7-foot parking lanes, for a total road width of 36-feet. This cross-section is the same as the cross-section on the lower portion of Waverley Avenue, from Main Street to Orchard Street.

Bicycle accommodations would not be provided under this option, except for a short section of bicycle lane approaching Orchard Street in the southbound direction where insufficient space exists for legal parking adjacent to the intersection. The remaining segments of the corridor would encourage bicyclists to use the width of each travel lane (share the road), as they currently do. The travel lanes would be marked with shared use markings (“sharrows”) and supplemented with traffic signs, alerting motorists of the shared use condition. Existing, legal parking would be retained throughout the corridor.

This option:

- Creates consistency with the southern portion of Waverley Avenue (Main Street to Orchard Street).
- Allows for curb extensions on each side of the street between Orchard Street and Belmont Street, creating the shortest pedestrian crossings.
- Maximizes the number of legal on-street parking spaces (34).

However, it:

- Requires slow moving bicyclists to be in the travel lane, increasing conflicts with vehicles.
- Does not provide enough space for a planting strip on the west side of the street.
- Does not allow for new street tree plantings on the west side of the street between Harnden Avenue and Belmont Street, although existing trees would be retained.

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Option 2—Uphill Bicycle Lanes

This option would reconstruct Waverley Avenue and install limited segments of bicycle lanes by removing existing parking. This option would provide a standard 11-foot travel lane in each direction, a 7-foot-wide parking lane on one alternating side of the street, and a 5-foot-wide bike lane in the uphill direction.

- A bicycle lane is provided in the “uphill” direction of the street, with the crest of the hill near Hilltop Road. Doing so allows bicycles, travelling at a slower pace, to be out of the travel lane on the uphill climb, a favorable and safer configuration for cyclists.
- A planting strip can be provided on each side of the street, as well as street trees. The exception is the southbound segment of Waverley Avenue from Hilltop Road to Lowell Avenue where the sidewalk would be 5-feet in width adjacent to the parking area.
- On the downhill sections of the road, where there would be no bike lane, shared use markings (“sharrows”) would be provided.
- Approximately 22 parking spaces would be removed compared to the existing condition, resulting in 15 legal spaces remaining. This still compares favorably to the typical observed use of 4 spaces.

This option:

- Improves safety for bicyclists by providing a separate area for them in the uphill direction—when they will be traveling the slowest.
- Is a critical first step toward providing a dedicated north-south bicycle connection within Watertown, consistent with the recently adopted Bicycle & Pedestrian Plan.
- Allows for a planting strip on the majority of the west side of the street—reducing impervious area and providing opportunities for street tree plantings that would not interfere with overhead wires.

However, it:

- Is inconsistent design with the remainder of Waverley Avenue – this may cause driver confusion.
- Provides longer pedestrian crossings (compared to Option 1) as curb extensions cannot be provided where there is a bicycle lane.
- Requires the loss of 22 parking spaces compared to the existing condition.

Other Options Considered

We briefly considered providing a dedicated bicycle facility in both directions, however this would require removing all parking on the street, which we believed would create a hardship for abutters.

Recommendation

Both options provide much needed improvements to this section of Waverley Avenue. The project team recommends Option 2 – Uphill Bicycle Lanes as it provides an improved bicycle route without overly compromising the other transportation modes. The inclusion of bicycle lanes under Option 2 will create a critical north-south connection between Main Street and Belmont Street, while maintaining an adequate amount of on-street parking based on the available parking information. Providing a dedicated space for bicycle travel is one of the cornerstone principles of the Town’s Complete Streets Policy. The reduction in impervious area and greater opportunities for tree plantings compared to Option 1 – Shared Lanes – No Bicycle Accommodations is in line with the Town Council’s vision of increasing the tree canopy within Watertown. Reduction in impervious area, through additional planting strips, will present opportunities for groundwater recharge and reduce flow into the stormwater collection system.

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Recommendation (cont.)

Option 1 is also acceptable, as it maintains the on-street parking that is sometimes used for area residents. However, this alternative does not address the demand for dedicated bicycle facilities on critical corridors within the Town of Watertown and the vision outlined in the Watertown Bicycle & Pedestrian Plan adopted by the Town Council.