

JASON L. MAMMONE, P.E.
DIRECTOR OF ENGINEERING

NATHAN S. BUTTERMORE, P.E.
INFRASTRUCTURE ENGINEER

RONALD I. LAWRENCE
PROJECT ENGINEER

EMAN SAYEGH
GIS MANAGER

TOWN OF DEDHAM
Commonwealth of Massachusetts



55 RIVER STREET
DEDHAM, MA 02026-2935

(781) 751-9350
FAX (781) 751-9359

www.dedham-ma.gov

DEPARTMENT OF INFRASTRUCTURE ENGINEERING

INITIAL TRAFFIC EVALUATION

TO: Transportation Advisory Committee

FROM: Jason L. Mammone, P.E., Director of Engineering

DATE: February 3, 2020

SUBJECT: Traffic Calming Request #2019-006 – Madison St/Circuit Rd/Shiretown Rd Intersection

Purpose

The Transportation Advisory Committee (TAC), at their 12/10/19 meeting, reviewed the traffic calming request form (#2019-006) submitted by Carly Wilcox of 13 Circuit Road. Based upon the information provided in the form Ms. Wilcox's concerns are the speed at which vehicles travel, pedestrian and bicycle safety, difficulty crossing the street, sign placement and high traffic volumes for Madison Street, particularly in the immediate intersection of Madison Street, Circuit Road, and Shiretown Road. The TAC determined that this request warranted an initial evaluation and requested that the Engineering Department investigate this matter. This report summarizes the findings of the Engineering Department.

Initial Evaluation performed for Select Board

At the Select Board's (SB) meeting held on 07/18/19, the SB reviewed a request from Ms. Wilcox to install stop signs on Madison Street at its intersection with Circuit Road and Shiretown Road. The request was referred to the Engineering Department for a traffic study.

The Technical Memorandum submitted to the Town Manager for the SB is attached to this Initial Evaluation. Since the traffic study was recently performed in September 2019, the data collected will be utilized in this Initial Evaluation.

Based upon the results of the data collected, Madison Street did not meet warrant criteria as set forth in the latest version of the Manual On Uniform Traffic Control Devices (MUTCD) and therefore could not be recommended to be turned into a multi-way stop controlled intersection.

Although Stop signs could not be installed on Madison Street at this intersection, we did determine that the crosswalk across Madison Street and Shiretown Road at the intersection was

lacking in the appropriate crosswalk signage. The appropriate crosswalk signage is to be installed by the DPW.

Also, it was observed that during pick up times, cars park within the immediate intersection including on sidewalks, within and next to crosswalks and within No Parking zones. To improve safety at this intersection “No Parking Anytime” restrictions were proposed within 50 feet of the intersection to keep the intersection open for pedestrians and allow adequate sight distance for pedestrian and motorists negotiating the intersection. The SB approved the “No Parking Anytime” restrictions. These signs are not going to be installed until after the winter. You are referred to the attached Technical Memorandum for detailed information.

Observations (Speed, Volume, Crash Data & Pedestrian Counts)

You are referred to the attached Technical Memorandum for all Observations.

GIS Data (Pedestrian Generators & Residential Density)

The Engineering Department utilized our latest Geographic Information System (GIS) data to collect the types of pedestrian generators and determine the residential density located within a 1,000 foot buffer of the study area.

Pedestrian generators are those facilities that are considered points of interest that pedestrians travel to, such as parks, community centers, Town/neighborhood centers, libraries, public transit stations, churches and public schools. Based upon the available data, there are 2 pedestrian generators (Oakdale Elementary School and Oakdale Square) within the 1,000 foot buffer area.

Based upon the available data, the 1,000 foot buffer area has approximately 1 Three-Family Residential Dwelling, 26 Two-Family Dwellings and 466 Single-Family Dwellings.

Scoring

According to the latest version of the Town’s Traffic Calming Policy, for a roadway to qualify for traditional traffic calming measures, the petitioned roadway must score more than 50 points utilizing the scores calculated from the 6 criteria including; Speed, Volume, Pedestrian Route, Traffic Collisions, Pedestrian Generators and Residential Density. The table below summarizes the scoring for each criterion.

Table 3 - Scoring

Criteria	Score (Madison Street)
Speed – Based upon how many mph the combined 85 th percentile speed is over the speed limit. 2 points awarded for each mph over the speed limit from 1 to 5 mph over the speed limit and 4 points awarded for each mph over the speed limit starting at 6 mph and greater over the speed limit	0
Volume – 1 point awarded for every 100 vehicles of average daily traffic (ADT)	7
Pedestrian Route – 10 points awarded if no continuous sidewalk exist on both sides of the roadway or 5 points awarded if there is only a continuous sidewalk on one side of the roadway	5
Traffic Collisions – 2 points awarded for each preventable collision in a 3 year period that occurred along the subject roadway. 8 points awarded if a collision involved a pedestrian or bicyclist.	0
Pedestrian Generators – 3 points awarded for every park, community center, library, public transit station or church located within 1,000 feet of the subject roadway. 10 points awarded for each public school within 1,000 feet of the subject roadway	13
Residential Density – 1 point awarded for every 50 dwelling units within 1,000 feet of the subject roadway	10
TOTAL SCORE	35

Conclusion

Traffic calming is not recommended for the Madison Street/Circuit Road/Shiretown Road intersection or Madison Street based upon the following conclusions.

- This intersection/roadway does not meet the eligibility requirements for traditional traffic calming measures since it did not score greater than 50 points based upon the criterion listed in Table 3.
- This intersection/roadway experiences an 85th percentile speed of 22 mph which indicates that there is not a speeding issue.

As mentioned earlier, based upon the traffic study performed in September 2019, a “No Parking Anytime” restriction within 50 feet of the immediate intersection of Madison Street, Circuit Road and Shiretown Road was proposed and approved by the SB. This along with increased police presence should mitigate cars parking on the sidewalk and within and/or near the crosswalk, keeping it open for the kids and parents that utilize this intersection providing better sight lines for those negotiating the intersection.

Although the Engineering Department does not recommend traditional traffic calming measures for Madison Street, we do recommend the following low-cost traffic calming measures that could be utilized and/or taken on by the concerned residents and neighbors of these roadways

- Purchasing a Step2 Kid Alert Visual Warning System – These can be purchased at Toys R’ Us, Wal-Mart, Amazon.com and other similar retail and online stores for about \$25 to \$35. The Step2 Kid should be placed at the end of your driveway so it is visible to motorists. This should only be placed out during times when kids are actually outside playing in the yard. By having it out all the time, it will reduce its effectiveness. Studies have shown that when used properly, it usually aids in the reduction of vehicle speeds.



Photo of Step 2 Kid Alert

- Work with your neighbors to park your cars on either side of the street in a staggered fashion as to reduce the openness of the roadway while still allowing for the safe passage of emergency response vehicles (i.e. Police, Ambulance, Fire Engine). This measure physically narrows the roadway making the motorist slow down to negotiate by the parked vehicles.
- Coordinate with the Police Department to see if they can place their mobile “Your Speed Is” indicator sign on Madison Street a couple of time throughout the year.

Cc: Select Board

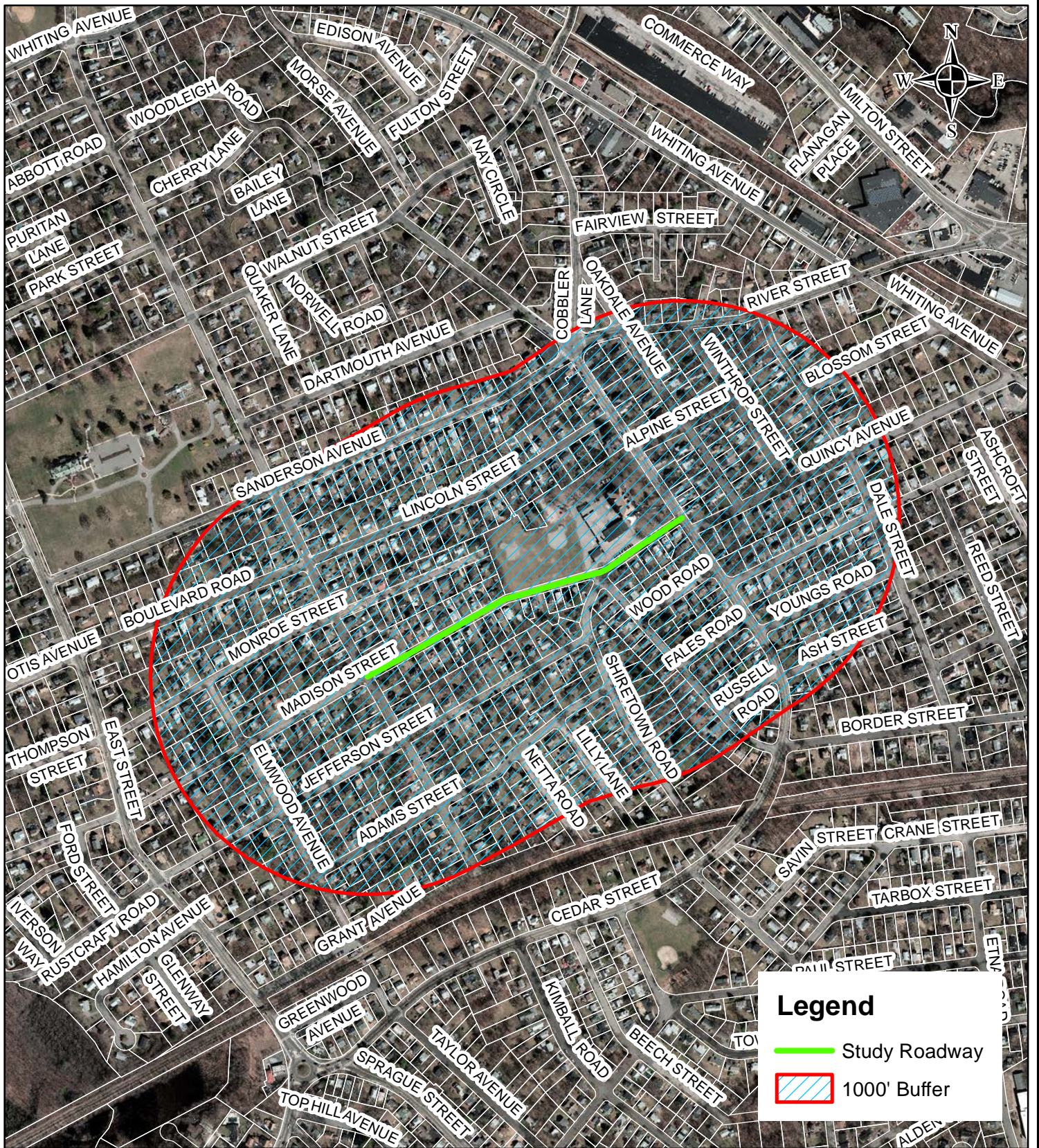
Attachments: Madison Street Locus Map
Madison Street Neighborhood Map
Technical Memorandum 10/01/19



**MADISON STREET
REQUEST #2019-006
LOCUS MAP**



TOWN OF DEDHAM, MASSACHUSETTS



**LOCUST MAP
MADISON STREET NEIGHBORHOOD MAP
JANUARY 2020**



TOWN OF DEDHAM, MASSACHUSETTS

JASON L. MAMMONE, P.E.
DIRECTOR OF ENGINEERING

NATHAN S. BUTTERMORE, P.E.
INFRASTRUCTURE ENGINEER

RONALD I. LAWRENCE
PROJECT ENGINEER

EMAN SAYEGH
GIS MANAGER

TOWN OF DEDHAM
Commonwealth of Massachusetts



55 RIVER STREET
DEDHAM, MA 02026-2935

(781) 751-9350
FAX (781) 751-9359

www.dedham-ma.gov

DEPARTMENT OF INFRASTRUCTURE ENGINEERING

TECHNICAL MEMORANDUM

TO: Leon Goodwin, Town Manager

FROM: Jason L. Mammone, P.E., Director of Engineering

DATE: October 1, 2019

SUBJECT: Madison Street Stop Sign Request

Purpose

The Select Board (SB), at their 07/18/19 meeting reviewed a request from Ms. Carly Wilcox of 13 Circuit Road to install Stop Signs on Madison Street at its intersection with Circuit Road and Shiretown Road.

The BOS referred the request to the Engineering Department for a traffic study.

Study Area

Madison Street in the area of its intersection with Circuit Road and Shiretown Road is an east-west, two lane public road located within a residential area and school zone. Madison Street at this location has an average paved roadway width of 25 feet.

Sidewalks exist on both sides of Madison Street on the westerly side of the intersection extending from Circuit Rd/Shiretown Rd to Mount Vernon Street. There are no contiguous sidewalks on either side of Madison Street on the easterly side of the intersection. There is a section of sidewalk that exists on the north side of Madison Street extending approximately 170' west from its intersection with Cedar Street.

There is an existing marked crosswalk on the westerly side of the intersection going across Madison Street and there is a second marked crosswalk within this intersection going across Shiretown Road (See attached Locus Map).

Circuit Road is a north-south, two lane public road located with a residential area and has an average paved roadway width at its approach to the intersection of 25 feet. A contiguous sidewalk exists on the west side of Circuit Road extending the entire length of the roadway from Madison Street to Cedar Street. There are sporadic lengths of sidewalk on the east side of the road. Circuit Road is currently controlled by a Stop Sign at its intersection with Madison Street.

Shiretown Road is a north-south, two lane public road located in a residential area and has an average paved width at its approach to the intersection of 25 feet. A contiguous sidewalk exists on both sides of Shiretown Road for its entire length from Madison Street to its dead end. Shiretown Road is currently controlled by a Stop Sign at its intersection with Madison Street.

Observations & Data Collection

The intersection is at its busiest during the morning and afternoon pick up and drop off times to Oakdale School during the week. The intersection has a dedicated crossing guard that works there for both the morning drop off and afternoon pickup times.

Manual traffic and pedestrian counts were taken at the intersection on September 19, 2019 during the afternoon pick up time for Oakdale School from 2:30 to 3:30 PM. We counted the amount of vehicles entering the intersection from all approaches and the amount of pedestrians that crossed the intersection at the marked crosswalks across Madison Street and Shiretown Road and also the pedestrians that crossed the intersection across Madison Street and Circuit Road where there are no sidewalks or marked crosswalks. The results of our traffic count are shown in the Table 1 below.

Table 1 – Manual Traffic Counts Entering Intersection - 09/19/19

<i>Location</i>	<i>Approach</i>	<i>Traffic Count</i>	<i>Pedestrian Count</i>	<i>Time</i>
Madison Street	West	37	0	2:30 – 3:00 PM
Madison Street	East	30	79*	2:30 – 3:00 PM
Circuit Road	North	11	3	2:30 – 3:00 PM
Shiretown Road	North	14	46*	2:30 – 3:00 PM
TOTALS		92	128	

**Location of marked crosswalk*

During the time of our manual counts we observed that traffic was cautiously entering the intersection either looking for a parking spot, due to the presence of pedestrians crossing the street or due to the presence of the crossing guard. We also notice that parents that were parking to pick up their kids from school were illegally parking. One vehicle parked on top of the crosswalk going across Madison Street, 4 vehicles parked within 20' of the intersection, one was parked in a "No Parking" area, one was parked in a handicap spot without a handicap placard showing and numerous vehicles were parked more than halfway onto the sidewalks preventing full access to the sidewalks by pedestrians.

A Jamar Radar Recorder was used to log the speed and volume of vehicles during the period beginning Monday, 9/23 through Friday, 9/27. This radar was located on Madison Street on a utility pole at station 3+07 which is in front of #24 Madison Street (See Attached Locus Map).

The volume of traffic expressed as average daily traffic (ADT) and the speed data collected for Madison Street is shown below in the following table:

Table 2 – Traffic Data Station 3+07

<i>Direction of Traffic</i>	<i>ADT</i>	<i>Peak Hour Volume</i>	<i>Peak Volume Time</i>	<i>Speed Limit</i>	<i>85th Percentile Speed</i>	<i>Average Speed</i>
Eastbound	392 (50%)	39	7 - 8 am	25 mph ^a	23 mph	18 mph
Westbound	399 (50%)	56	8 - 9 am	25 mph ^a	22 mph	17 mph
Combined	793	88	5 – 6 pm	25 mph ^a	22 mph	18 mph

^a – Prima Facie Speed Limit

The combined average speed for both directions was found to be 18 mph for Madison Street. The combined 85th percentile speed for both directions was found to be 22 mph. The 85th percentile speed is the speed at or below which 85 percent of vehicles travel and is the national standard utilized to determine if the speed on a given roadway is in excess, at or below the speed limit. Based upon the data, there is not an apparent speeding issue occurring within the immediate area of the intersection.

Crash data from the Dedham Police Department and MassDOT were analyzed for the intersection for the past 10 years (2009 – 2019). One accident occurred within the intersection. No accidents involved bicyclists or pedestrians. Based upon the crash data, it appears as though vehicles and pedestrians are safely negotiating the intersection.

Conclusion

According to the Massachusetts amendments to the latest version of the Manual On Uniform Traffic Control Devices (MUTCD), in order to turn an intersection into a multi-way stop, the intersection must meet the warrant criteria as outlined in the MUTCD.

Based upon the latest version of the MUTCD, one of the following warrant criteria shall be met in order to allow for a multi-way stop:

- A. Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.
- B. Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.
- C. Minimum Volumes:
 - 1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and
 - 2. The combined vehicular, pedestrian and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but

3. If the 85th percentile speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.
- D. Where no single criterion is satisfied, but where Criteria B, C.1 and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

Based upon the data collected, Madison Street did not meet any one criterion to warrant the installation of a multi-way stop and is therefore not recommended by the Engineering Department.

Although the Engineering Department was unable to recommend that this intersection become a multi-way stop, there are a few recommendations that could be considered to improve how pedestrian and motorists negotiate the intersection.

- During the time of our manual counts, it was observed that the existing marked crosswalks on Madison Street and Shiretown Road were without appropriate crosswalk signage that is typically installed at marked crosswalks to alert motorists that they are approaching a crosswalk at this location and should be aware for pedestrians. The Engineering Department will work with the Department of Public Works to install the appropriate crosswalk signage at this location (See attached Crosswalk Signage Map).
- Increased police presence is also recommended during school pick up and drop off times to ensure that all cars are parking legally, providing free and unobstructed use of the marked crosswalks, intersection and sidewalks. According Massachusetts State Law, it is illegal to park a vehicle within 20 feet of an intersection. This is to allow proper sight lines for vehicles negotiating the intersection and to provide better visibility for pedestrians utilizing marked crosswalks. As mentioned earlier, there were several vehicles parked within 20 feet of the intersection during the time we performed our manual counts as well as a vehicle parked on top of the crosswalk. Police can enforce this parking restriction as a matter of right since it is a State Law without the need for signage. However, to improve visibility at this intersection we recommend that a “No Parking Any Time” restriction be put in place at each approach to the intersection at 50 feet from the intersection. Due to its proximity to the Oakdale School, increasing the open space distance of the intersection from 20 feet to 50 feet would provide additional visibility of and for pedestrians wanting to use the crosswalks (See attached Proposed “No Parking” Map).

Should the Select Board wish to pursue the “No Parking Any Time” recommendation as mentioned above, we can provide the appropriate language for the SB to make a motion to amend the traffic regulations at one of their upcoming meetings.

Cc: Board of Selectmen
Nancy A. Baker, Assistant Town manager
Joseph M. Flanagan, Director of Public Works
Michael J. D'Entremont, Chief of Police

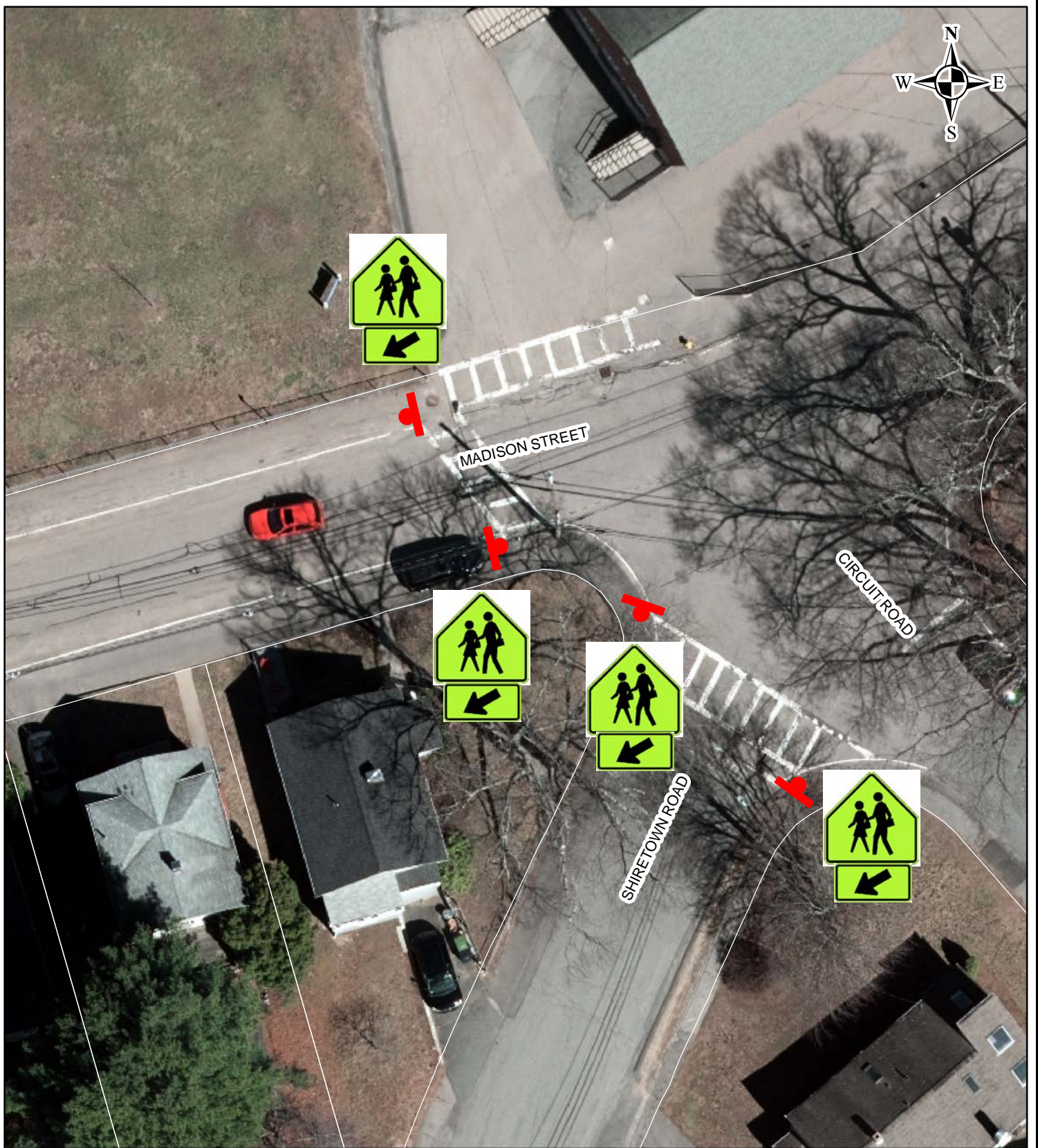
Attachments:

Madison Street Locus Map
Crosswalk Signage Map
Proposed "No Parking" Signs Map



**MADISON STREET
LOCUS MAP
SEPTEMBER 2019**

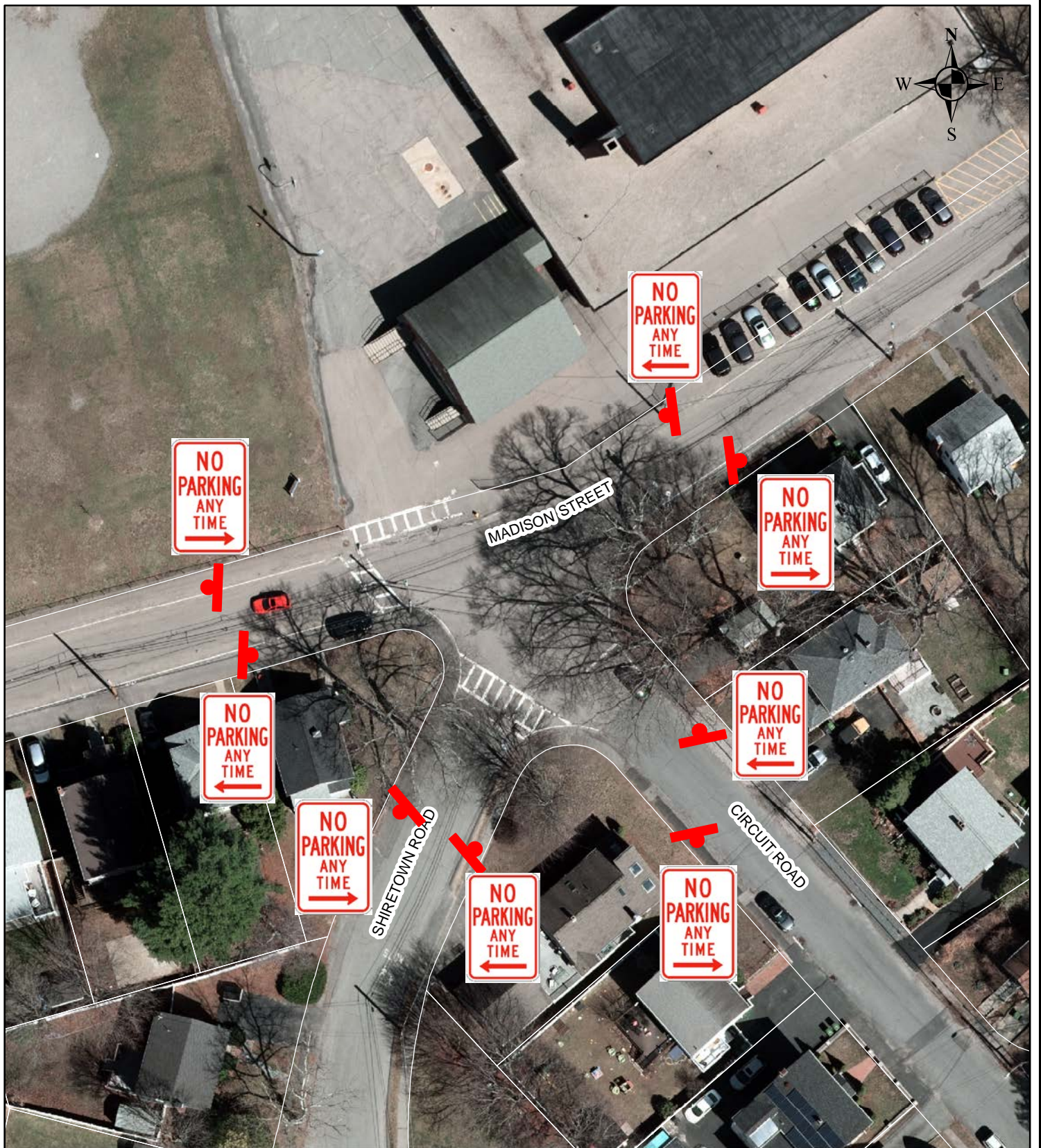




**MADISON STREET
CROSSWALK SIGNAGE MAP
SEPTEMBER 2019**



TOWN OF DEDHAM, MASSACHUSETTS



**MADISON STREET
PROPOSED "NO PARKING" SIGNS MAP
SEPTEMBER 2019**



TOWN OF DEDHAM, MASSACHUSETTS