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DEPARTMENT OF INFRASTRUCTURE ENGINEERING

TRAFFIC CALMING NEEDS ASSESSMENT

TO: Transportation Advisory Committee

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

DATE: August 31, 2022

SUBJECT: Traffic Calming Request #2021-005 – Curve Street

Purpose

The Transportation Advisory Committee (TAC), at their 03/08/2022 meeting, reviewed the Initial Evaluation for the traffic calming request for Curve Street (#2021-005) submitted by Keith Mahoney of 142 Curve Street. Based upon the results of the initial evaluation, the TAC voted unanimously that the Curve Street request for traffic calming merited further consideration and requested that the Engineering Department to prepare a Traffic Calming Needs Assessment Report. This report summarizes the findings of the Engineering Department.

Primary Roadway

Curve Street (Maverick Street to Washington Street):

This section of Curve Street is a north/south thickly settled residential through street with a pavement width of approximately 19 to 25 feet. This section is approximately 1,800 feet (0.34 miles) in length extending from Maverick Street to Washington Street. There is a continuous sidewalk on the easterly side of the roadway that extends for the entire length of this section of Curve Street. Many of the residents utilize Curve Street for on-street parking and during the time of our evaluation it was observed that many residents park their vehicles either partially or fully mounted onto the sidewalks forcing pedestrians into the roadway at many locations.

This section of Curve Street is considered an emergency response route for the Town's fire and EMS.

Curve Street is regulated by Special Speed Regulation (SSR) No. 7035 Issued by MassDOT on April 8, 1981. This SSR has an established a speed limit of 20 mph for Curve Street, in its entirety, for both the northbound and southbound directions.

There is an existing "No Parking" parking restriction along the easterly side of Curve Street from Washington Street to 261 feet southerly of Washington Street.

Primary Roadway - Observations (Speed & Volume)

For the initial evaluation, Town of Dedham utilized a Jamar radar recorder to log the speed and volume of vehicles during the period beginning November 15, 2021 and ending November 18, 2021. The radar was installed on a utility pole in between #132 and #138 Curve Street at approximately Station 15+00 (See Attached Locus Map).

The combined average speed for both directions was found to be 23 mph for this section of Curve Street. The combined 85th percentile speed for both directions was found to be 29 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, the 85th percentile speed is 9 mph over the speed limit with approximately 80% of the vehicles driving at speeds greater than 20 mph, approximately 40% of the vehicles driving speeds greater than 25 mph and approximately 8% driving at speeds greater than 30 mph.

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

Table 1 – Traffic Data Station 15+00

Direction of Traffic	***ADT***	***Peak Hour Volume***	***Peak Volume Time***	***Speed Limit***	***85th Percentile Speed***	***Average Speed***
Northbound	1118 (77%)	102	3 - 4 pm	20 mph[a]	29 mph	24 mph
Southbound	326 (23%)	32	3 - 4 pm	20 mph[a]	28 mph	22 mph
Combined	1,475	134	3 - 4 pm	20 mph[a]	29 mph	23 mph

[a] – MassDOT Special Speed Regulation No. 7035 issued 4/8/81.

Curve Street appears to experience a slightly higher than normal volume of vehicles considering its location to a minor arterial roadway (Washington Street) and the volume of residential properties in the neighborhood. It appears that this section of Curve Street is likely being used as a cut-through in the northbound direction for those seeking easier access to Washington Street.

Primary Roadway - Crash (Traffic Collisions) & Traffic Enforcement Data

The Engineering Department analyzed crash data utilizing the most recent 2018-2021 data available from the Dedham Police Department and MassDOT to determine if the subject area was experiencing a higher-than-normal rate of accidents.

Table 2 – Crash Data

Road	***Total # of Crashes***	***Crashes Per Year***
Curve Street	1	0.3

The one crash did not involve a pedestrian and/or bicyclist. The incident involved a hit and run accident with a parked car. Based upon this data, there are no overriding roadway geometric safety issues.

The Police Department issued a total of 42 speeding citations on Curve Street over the past 5 years (2017 through 2021). The citations issued per year are shown in the table below and consist of both written warnings and civil.

Table 3 – Speeding Citations

Timeframe	***# of Citations Issued***
2017	26
2018	9
2019	6
2020	0
2021	1

Affected Area

Traffic calming measures not only affect those that directly abut the public right-of-way where a measure is proposed to be installed but can also potentially affect any side streets that intersect the roadway where the measures are to be installed.

Certain types of traffic calming measures are more drastic in changing driving habits than others. When traffic calming measures are severe, it can sometimes push traffic from the roadway that has the measures installed onto the side streets that intersect this roadway in an attempt to avoid the traffic calming measure(s). Certain types of traffic calming measures can also be considered a nuisance to those that live in the neighborhood that must negotiate the installed measure(s) on a daily basis. Based upon the Town's Traffic Calming Policy, the TAC is required to acknowledge these potentially affected areas and allow them the opportunity to comment on any proposed measures to be installed.

For this section of Curve Street, it appears that the potentially affected side streets would be Columbia Terrace, Harvey Drive, Hitchins Drive, Lilac Lane, Oak Street, Nancy Road, Ridge Street, Schiller Road and Sunset Avenue (See attached Affected Roadways Map). The Engineering Department recommends to the TAC that these roadways be considered the "affected area" as they proceed through the needs assessment process.

Affected Roadways - Observations (Speed & Volume)

Should traditional traffic calming measures be installed on this section of Curve Street, it is very likely that the alternate route of travel on Curve Street would be Oak Street to Washington Street.

Oak Street is north/south residential/local roadway within a thickly settled residential area. The pavement width along this Oak Street ranges from 20 feet to 24 feet. There is a continuous sidewalk on both sides of the roadway that extends for the entire segment length. Vehicles utilize

on-street parking on both sides of the roadway. Due to the width of Oak Street, vehicles usually mount the existing sidewalks as to avoid being hit by traveling vehicles. Vehicles that utilize on-street parking, typically mount the sidewalk not leaving enough room for pedestrians. Pedestrians are then forced to enter the street to get around these parked vehicles creating potentially unsafe situations and increasing their exposure to collisions.

To understand the current conditions on Oak Street, the Town utilized a Jamar Radar recorder to log the speed and volume of vehicles during the period beginning August 1, 2022 and ending August 5, 2022. The radar was installed on the utility pole in front of #120 Oak Street (See Attached Oak Street Locus Map).

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

Table 4 – Oak Street - Traffic Data Station 14+92

Direction of Traffic	***ADT***	***Speed Limit***	***85th Percentile Speed***	***Average Speed***
Northbound	186 (23%)	25 mph[a]	26 mph	21 mph
Southbound	617 (77%)	25 mph[a]	28 mph	23 mph
Combined	813	25 mph[a]	27 mph	23 mph

[a]- Statutory Speed Limit

Based upon this initial data, it appears Oak Street experiences a slightly higher than normal volume of vehicles for a residential/local roadway considering its location to a minor arterial roadway (Washington Street) and the volume of residential properties in the neighborhood. Oak Street experiences cut-through traffic in the opposite direction as compared to Curve Street. This is likely attributed to the fact that both Curve Street and Columbia Terrace have “No Right Turn” restrictions from Washington Street, leaving the only way for traffic to get into this neighborhood/section of Town from Washington Street is by Oak Street. Although the 85th percentile speed is 2 mph above the statutory speed limit of 25 mph it does not appear to have a significant speeding issue.

Affected Roadways - Crash (Traffic Collisions) & Traffic Enforcement Data

The Engineering Department analyzed crash data utilizing the most recent 2019-2022 data available from the Dedham Police Department and MassDOT to determine if the subject area was experiencing a higher than normal rate of accidents.

Table 6 – Crash Data

Road	***Total # of Crashes***	***Crashes Per Year***
Oak Street	0	0

There have been no crashes along this roadway in the past 3 years.

The Police Department issued a total of 0 speeding citations on Oak Street over the past 5 years (2017 through 2021). The citations issued per year are shown in the table below and consist of both written warnings and civil.

Table 7 – Speeding Citations

Timeframe	***# of Citations Issued***
2017	0
2018	0
2019	0
2020	0
2021	0

CONCLUSIONS/RECOMMENDATIONS

Based upon the information provided in this report and our study of Curve Street and the affected area, we have development the following conclusions:

- Curve Street is a viable candidate for traditional traffic calming measures.
- The 85th percentile speed based upon our study is approximately 8 to 9 mph over the regulated speed limit of 20 mph.
- Any proposed traffic calming measures utilized for Curve Street will likely result in an increase in volume on Oak Street as a result of vehicles avoiding the traffic calming measures installed on Curve Street. It is likely that speeding will increase along this roadway as well due to driver frustration. Therefore, traffic calming is being proposed along this roadway to mitigate these potential issues.
- Curve Street is a Town emergency response route and as such the Fire Chief, suggests that certain traffic calming measures not be used along Curve Street as they will have a significant impact on their emergency response. Those traffic calming measures include any type of consistent vertical deflection, (i.e. speed humps, speed table) and one-way restrictions.

Due to the limited width of the Right-of-Way for Curve Street, the existing geometry of the intersections, the narrowness of the existing roadway, the locations of existing driveways and the number of vehicles per household, there is only one option for traffic calming measures that should mitigate speeds while maintaining emergency response times to this section of Town. Therefore, the Engineering Department recommends the following temporary traffic calming measures for Curve Street to be studied over a minimum 6-month period:

- Installation of speed cushions. Speed cushions have comparable dimensions as speed humps. The primary difference is that a speed cushion has gaps between the raised areas to enable a vehicle with a wide track, such as a fire engine, to pass through the feature without significant vertical deflection. Speed cushions have many of the same pros and cons as speed humps with the exception that they do not significantly slow

down emergency response times for fire engines/EMS or other wide track vehicles (pro) and restrict on-street parking within the immediate area of the speed cushions (con).

It is recommended to install 5 temporary speed cushions along Curve Street. Locations have been determined based upon design guidelines and locations of existing driveways and intersecting roadways. The placement of speed cushions will take away from on-street parking in the immediate area of the speed cushions. This is required to make sure there are no accidents by motorists trying to place their wheels in the gap along the curb line and parked cars and to provide unimpeded access to negotiate the speed cushions by emergency response vehicles. Temporary "No Parking" restrictions will be installed at each speed cushion assembly location. Temporary flexible plastic delineators will be installed within the "No Parking" area to keep vehicles from parking in these areas. Should permanent speed cushions be recommended following the temporary study period, the delineators will be replaced with 6" vertical granite curbing to mitigate the potential for vehicle to mount the sidewalks and park within these restricted areas. Please refer to the attached "Proposed Curve Street Design" maps for approximate locations of the speed cushions and "No Parking" restriction areas.

The Engineering Department also recommends the following temporary traffic calming measure for Oak Street to be installed at the same time as the speed cushions on Curve Street for the same 6-month study period:

- As discussed earlier, it is likely that with temporary speed cushions being installed on Curve Street, will likely use Oak Street as a result. Since Oak Street is not considered an emergency response route, it is recommended to install temporary speed humps to mitigate the speeds along this roadway. Speed humps are typically recommended for use on residential streets where the desired operating speed is 25 mph. Speed humps are typically installed across both travel lanes and have a length of 12 to 14 feet and a height of 3 inches. To adequately keep vehicles near the statutory speed limit of 25 mph, we are recommending 4 speed humps be installed at the locations as shown on the attached "Proposed Oak Street Design" maps.

As with any traffic calming measure there are pros and cons. The pros are they reduce vehicular speeds and are relatively inexpensive to install and maintain. The cons are they can create noise from trucks driving over them or increased engine noise from motorists trying to make up for perceived lost time, slow down emergency response times, create cut throughs onto other residential streets trying to avoid them and can be considered a nuisance to residents in the affected area.

The proposed temporary speed cushions for Curve Street will cost approximately $5,000 per location which includes asphalt, delineators, signage and police details. It is recommended to install speed cushions at 5 locations for a total cost of approximately $25,000. For the proposed temporary speed humps recommended for Oak Street, it typically costs about $8,000 per location to install a speed hump which includes asphalt, signage and police details. For the 4 proposed speed humps the approximate total cost would be $32,000.

If recommendations outlined above are approved by the TAC and the Select Board, the Engineering Department would recommend that the $57,000 be requested by the DPW on behalf of the TAC and Select Board through a capital request for FY2024.

It should be noted that should the temporary traffic calming measures be determined to effectively and efficiently mitigate speeds and also are approved by the residents within the Affected Area following the latest version of the Town's Traffic Calming Policy, there may be a need for a future capital request of approximately $100,000 for the installation of vertical granite curbing and reconstruction of the existing sidewalks along Curve Street within the restricted "No Parking" areas to keep these traffic calming areas free of on-street parked vehicles for adequate emergency response by fire and EMS. The Engineering Department will revisit this cost estimate should the need for additional funding be realized.

Finally, should the TAC and Select Board agree to these recommendations, it is recommended, when available, for the police department to establish as presence along this section of Curve Street to assist in mitigating speeds until funding is approved for the installation of the temporary speed cushions and speed humps. Based upon the study performed as part of the initial evaluation, the best times for enforcement during the work week is from 7 AM to 9 AM and from 3 PM to 5 PM.

Should the TAC agree with any or all of the recommendations as presented in this assessment, before anything can be implemented, the TAC's recommendations must be provided to the Select Board for their approval.

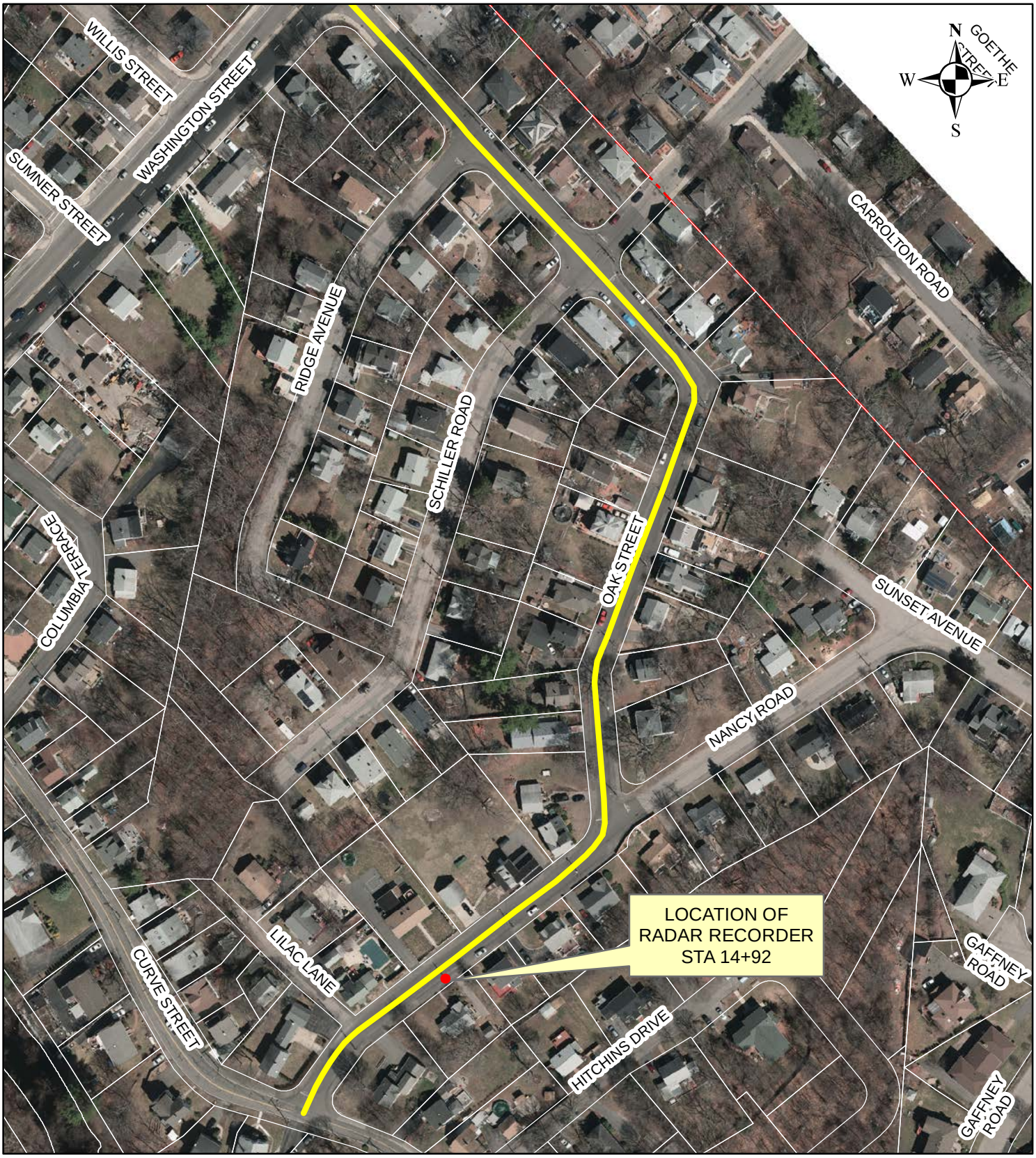
Cc: Select Board
Chief Spillane, Fire Chief

Attachments: Locus Map – Curve Street
Locus Map – Oak Street
Affected Roadways Map
Proposed Speed Cushions – Curve Street – Section 1 Map
Proposed Speed Cushions – Curve Street – Section 2 Map
Proposed Speed Humps – Oak Street – Section 1 Map
Proposed Speed Humps – Oak Street – Section 2 Map

CURVE STREET
REQUEST #2021-005
LOCUS MAP

DEDHAM GIS

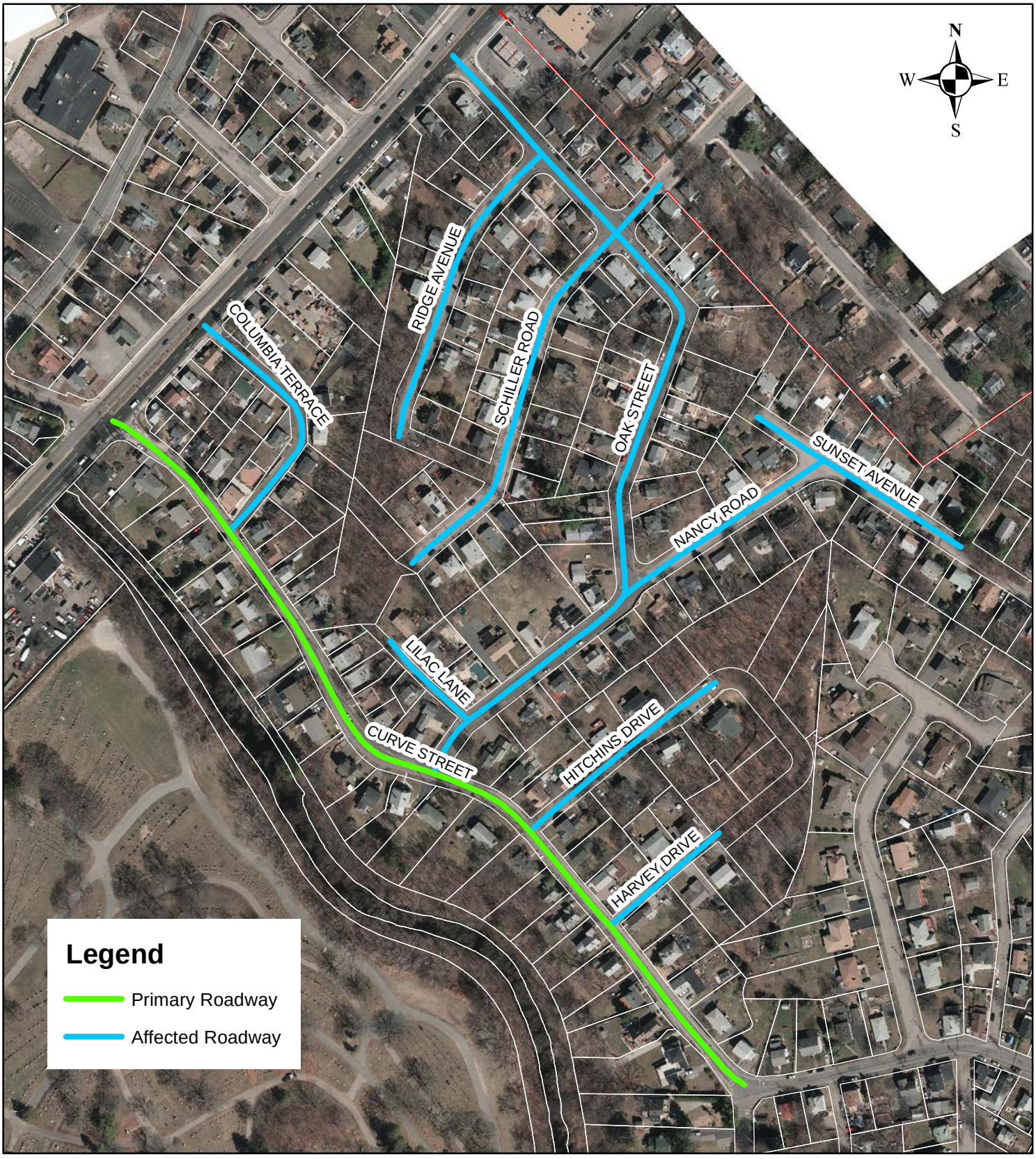
TOWN OF DEDHAM, MASSACHUSETTS



OAK STREET
LOCUS MAP

DEDHAM GIS

TOWN OF DEDHAM, MASSACHUSETTS



CURVE STREET
REQUEST #2021-005
AFFECTED ROADWAYS MAP

DEDHAM GIS

TOWN OF DEDHAM, MASSACHUSETTS

PROPOSED SPEED CUSHIONS
CURVE STREET - SECTION 1
AUGUST 2022

DEDHAM GIS

TOWN OF DEDHAM, MASSACHUSETTS

PROPOSED SPEED CUSHIONS
CURVE STREET - SECTION 2
AUGUST 2022

DEDHAM GIS

TOWN OF DEDHAM, MASSACHUSETTS

PROPOSED SPEED HUMPS
OAK STREET - SECTION 1
AUGUST 2022

DEDHAM GIS

TOWN OF DEDHAM, MASSACHUSETTS

PROPOSED SPEED HUMPS
OAK STREET - SECTION 2
AUGUST 2022

DEDHAM GIS

TOWN OF DEDHAM, MASSACHUSETTS