Hamden Plains, Wintergreen and East Side Traffic Calming Study

Hamden, CT

November 2013

South Central Regional
Council of Governments

Fitzgerald & Halliday Inc.

Contents

Introduction.....1

East Side Study Area.....5

- Davis Street
- Foote Street
- Hartford Turnpike
- Park Road
- Ridge Road
- Sebec Street

Hamden Plains, Wintergreen Study Area.....27

- Benham Street
- Brook Street/Lane Street
- Circular Avenue
- Gilbert Avenue
- Pine Rock Avenue
- Wintergreen Avenue
- Woodin Street

Implementation.....49

Toolbox.....51

- Crosswalks
- Crosswalk Signage
- Speed Limits and Speed Limit Signage
- Narrow Travel Lanes
- Speed Humps
- Mini Traffic Circles
- Roadway Center Lines
- Sharrows
- Bicycle Lanes

Itemized Cost Estimate.....61

Non-Infrastructure Recommendations.....65

Introduction

Introduction

The Hamden Plains, Wintergreen and East Side neighborhoods of Hamden, located in the southern part of Hamden, vary from dense suburban neighborhoods to streets that are more rural in nature. As such, the roadway facilities vary greatly with sidewalks and on-street parking located on some corridors, and other corridors comprised only of a narrow roadway.

Given that Hamden Plains and Wintergreen are contiguous, they are grouped as one study area for the purpose of this plan. It should be noted that this study area also includes a section of Dunbar Hill. The East Side study area, which also includes sections of Ridge Hill and Spring Glen is grouped as a unique study area within this report.

The primary concerns which brought about this study include the lack of bicycle and pedestrian facilities and speeding within the neighborhoods. Speeding is a greater concern given the lack of continuous sidewalks in both study areas. Where sidewalks are absent, pedestrians have to share the roadway with speeding traffic, thus diminishing the quality of their walking environment and decreasing their perception of safety.

In response to these concerns and the need for a strategic plan of improvement for the neighborhood, the South Central Regional Council of Governments (SCRCOG), on behalf of the Town of Hamden, engaged Fitzgerald & Halliday Inc. (FHI) to complete a traffic calming study of the Hamden Plains, Wintergreen, and East Side neighborhoods.

This study presents transportation system opportunities for improving safety, increasing accessibility, maximizing travel by all modes, and enhancing the quality of life within all three neighborhoods. Dixwell Avenue (Route 10) and State Street (Route 5) were excluded from this effort as they are State roadways managed by the Connecticut Department of Transportation. Improvements to these corridors would require separate corridor studies given the function and complexity of these roadways.

Prior Traffic Calming Efforts

The Town has received requests for traffic calming and traffic safety improvements in all three neighborhoods. The Spring Glen Association (which abuts the East Side), and the Dunbar Hills Association (located partially within the Wintergreen neighborhood) have been active in collecting feedback from residents and planning for traffic calming and transportation improvements. This study builds upon those efforts to develop and actionable traffic safety and traffic calming plan for the neighborhoods.

DRAFT – May 5, 2010

REPORT

ON
SPRING GLEN
RESIDENTS' TRAFFIC CALMING PREFERENCES

TO
THE MAYOR

DUNBAR HILL CIVIC ASSOCIATION'S TRAFFIC CALMING ISSUES AND RECOMMENDED SOLUTIONS

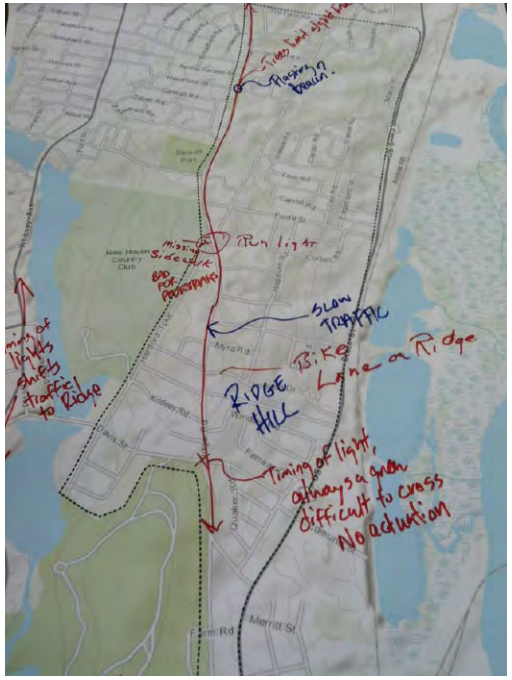
NEIGHBORHOOD	CATEG	LOCATION	ISSUE	SOLUTION	CONTACT
DUNBAR HILL	VEHICULAR	CHERRY HILL AT CIRCULAR AND URSINI DR	LIMITED VISIBILITY	REDESIGN INTERSECTION	BARBAR S
DUNBAR HILL	VEHICULAR	BENHAM AT CIRCULR AVE	DOWNHILL SPEEDING	PAVEMENT MARKINGS	BARBARA S.
DUNBAR HILL	VEHICULAR	ON COOPER AT DUNBAR HILL	DANGEROUS INTERSECTION	REDESIGN INTERSECTION OR STOP SIGN AT COOPER	BARBARA S
DUNBAR HILL	PEDESTRIAN	DUNBAR HILL-BENHAM FIRE HOUSE AND CHURCH	DANGEROUS-PARK ON THE STREET AND WALK ACROSS TO CHURCH OR FIRE HOUSE	SIGNAGE	BARBARA C
DUNBAR HILL	VEHICULAR	BENHAM -GILBERT	STOP SIGN NOT SEEN	SIGNAGE	BARBARA C
DUNBAR HILL	VEHICULAR	HINDINGER FARM DUNBAR HILL	DANGEROUS TRACTORS CROSSING	STEET MARKINGS SIGN-TRACTOR COSSING	BARBARA S

Public Workshop

On May 22nd, 2013 FHI conducted a presentation and workshop that was open to the public. The workshop was held at the Hamden Miller Complex and representatives from Hamden Plains, Wintergreen, and the East Side neighborhoods were invited to attend. The workshop was promoted via a press release provided to and issued by the Town of Hamden, postings on the Town website and social media sites and postings on the Hamden Patch. FHI performed direct outreach to neighborhood representatives and Town Council members to generate interest in the project and boost participation in the workshop.

Stakeholders from all three neighborhoods attended the workshop as well as representatives from the Town of Hamden. Attendees participated in an interactive survey and were given a presentation summarizing existing conditions findings such as traffic volume, traffic speeds and crash data. The presentation was followed by a break-out session whereupon attendees were divided into groups by neighborhood and participated in a mapping exercise to identify issues within the neighborhoods and brainstorm solutions.

The primary concerns identified by the interactive survey included the lack of bicycle facilities, maintenance of roadways and sidewalks, lack of sidewalks, and traffic volume. The streets within Hamden Plains and Wintergreen that were identified as priorities for inclusion in this study included Benham Street, Brook Street, Circular Street. The streets within the East Side study area ranking highest as priorities for improvement included Ridge Road, Hartford Turnpike, and Park Road. While other streets were identified, these streets were ranked as the highest priority.



Forty percent of attendees reported that their neighborhood needs improvements for bicyclists and pedestrians with 25% reporting that those improvements are only needed in a few locations and 35% reporting that bicycle and pedestrian improvements were not needed in their neighborhoods.

Seventy percent of attendees believed that traffic safety improvements were a medium or high priority for the town, while 30% of attendees believed that traffic safety improvements were not a high priority.

Presentation of Findings and Draft Recommendations

On June 26th, 2013 the initial findings and from this study were presented to the public at the Miller Center in Hamden. In attendance were representatives from the Town of Hamden, Hamden Plains, Wintergreen, and East Side neighborhoods.

The presentation provided a review of the key traffic issues in the study areas, a synopsis of the survey results, and the rational behind the selection of the study corridors.

The presentation was open to comments and questions. Discussion and comments received included:

- *Speeding is a common concern throughout the neighborhoods.*
- *Gaps in the sidewalk network and lack of adequate crossings are a big concern.*
- *How would implementation be done? How would the town finance and manage the recommended improvements?*
- *The need for extension of the Woodin Street sidewalk west towards Wintergreen Avenue due to a high number of children who walk to school in this area.*
- *Traffic calming techniques recommended such as speed humps, chicanes, and traffic circles were favorable received by attendees.*
- *On-street parking needs to be carefully managed in the study areas so as not to prohibit parking where there is demand.*

The recommendations were favorably reviewed by those attending and generally perceived as appropriate to the neighborhoods.

East Side

East Side Survey

An extensive outreach process was used to engage residents and other stakeholders to identify the corridors they deem most appropriate for inclusion in this study. Press releases were submitted to local media, many of which ran stories about the study and the survey. The Town posted a link on its website and on social media sites managed by the Town. In addition, letters were sent home with students at the neighborhood elementary schools, informing families of the study and encouraging them to respond to the survey.

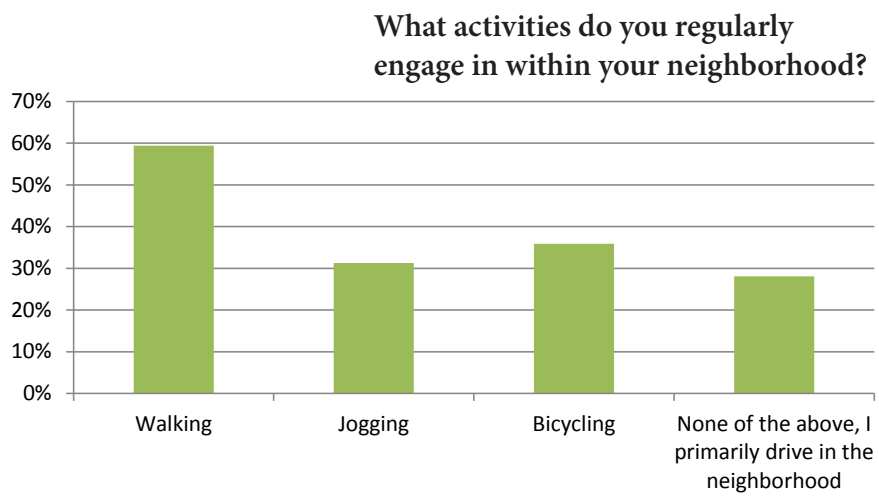
An online traffic calming survey was posted and kept open for feedback for two months. Over 60 responses were collected from residents on 40 different streets. The streets with the most respondents included: Ridge Road, Vineyard Road, Corbin Road, Daniel Road, Davis Street, Hesse Road, Windsor Road and Hartford Turnpike. The six streets that respondents were most concerned about, ranked in descending order, are as follows:

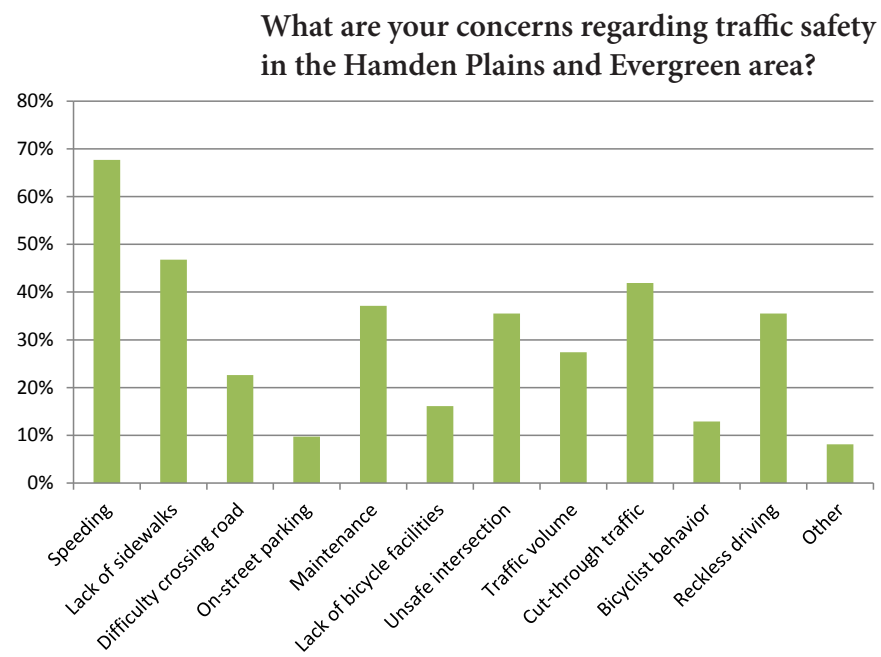
1. Ridge Road
2. Hartford Turnpike
3. Davis Street
4. Foote Street
5. Park Road
6. Sebec Street

While the study was originally scoped to include five corridors for further review and recommendations, the study was expanded to include six corridors, thereby including Sebec Street which many respondents expressed concern about.

When asked what activities that respondents regularly engaged in within the neighborhood, 59% of respondents reported that they walk in the neighborhood on a regular basis and 36% of respondents bicycle on a regular basis. Only 28% of those surveyed responded that they primarily drive in the neighborhood.

The most significant issues identified by respondents included speeding and lack of sidewalks. Additional concerns included cut-thru traffic, maintenance, unsafe intersections, and reckless driving.

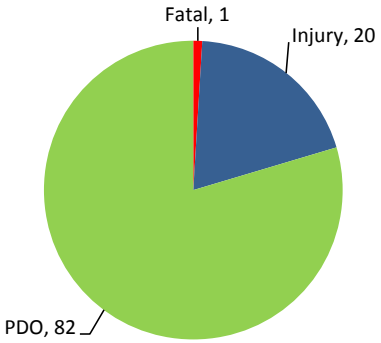




East Side Crash Analysis

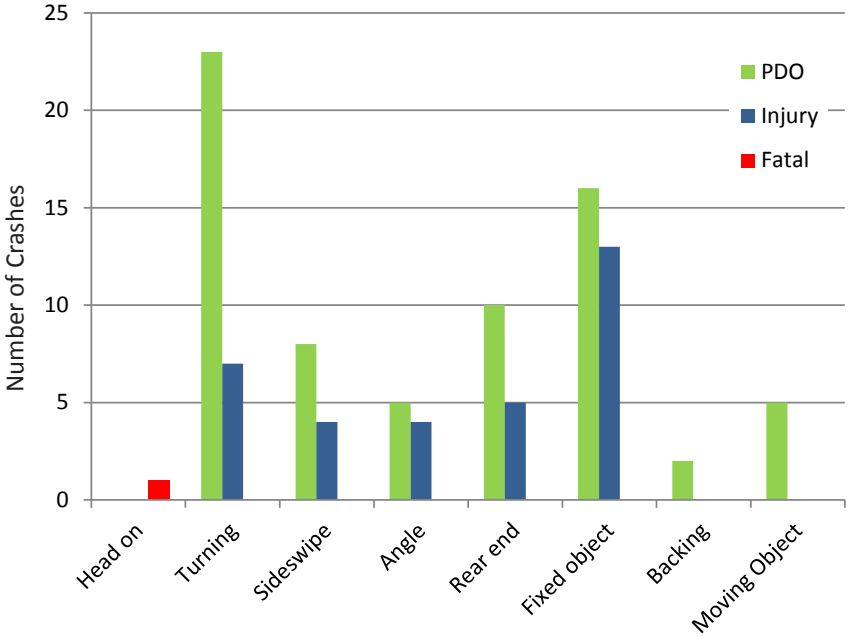
Crash data for the study corridors was reviewed for a four year period between 2008 and 2011. This date range represented the most recent data available from the Connecticut Crash Data Repository. Of the 103 crashes reported within that four year period, more than 80% were property damage only (PDO) crashes and slightly less than 20% crashes resulted in injury. One fatal crash was reported during that period. The fatal crash was due to loss of control of the vehicle and did not involved a pedestrian. No pedestrians crashes occurred in the four year period.

A majority of crashes involved only two vehicles with most crashes involving a turning movement or hitting a fixed object such as utility pole or tree. The most common contributing factors to crashes were loss of vehicle control, speed, failure to grant right-of-way, following to closely, and slippery road surface. Many of these factors, such as loss of control, are typically related to speed.

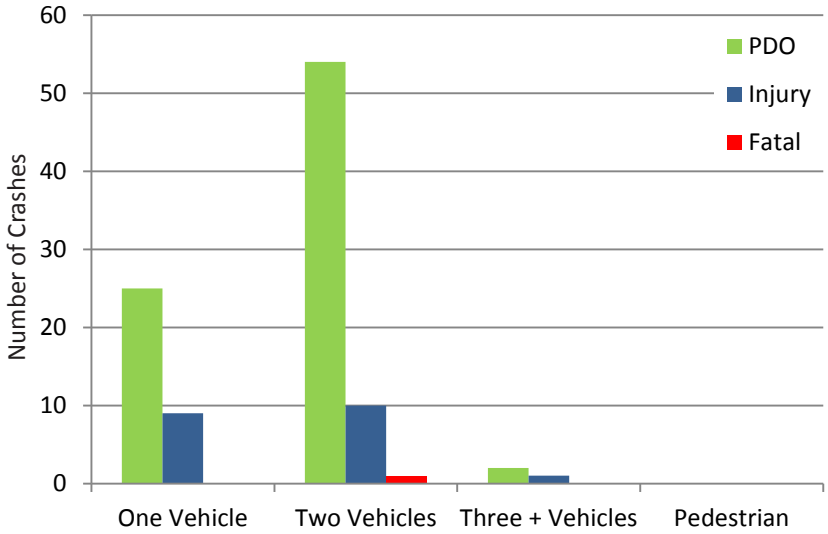


Crash Severity

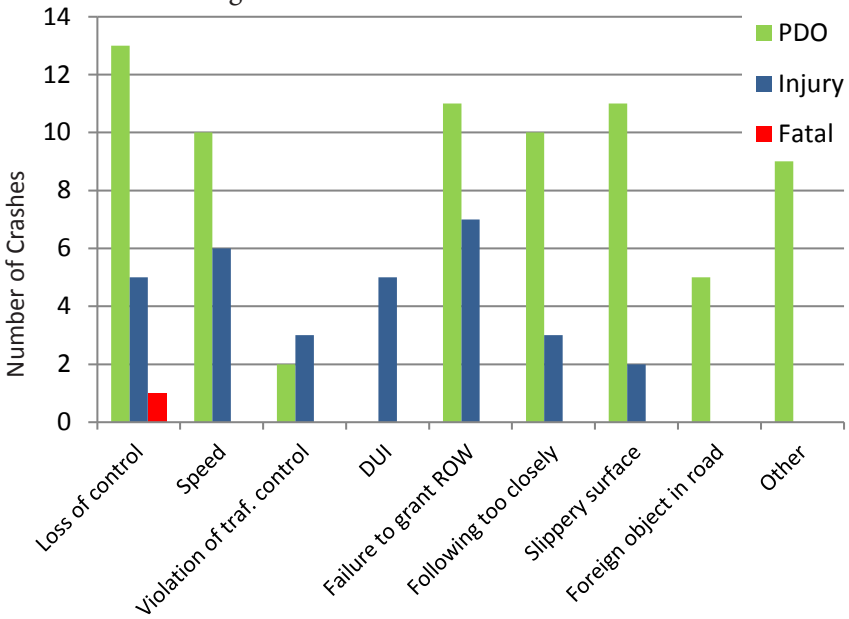
Crash Type 2008-2011



Crashes by Number of Occupants or Pedestrians 2008-2011



Contributing Factor 2008-2011



East Side Study Corridors

This study recommends improvements to six corridors in Hamden's East Side. The traffic safety assessment, neighborhood association reports, public survey, and public workshop input contributed to the selection of these corridors. These corridors are identified in the graphic to the right and include:

- Davis Street
- Foote Street
- Hartford Turnpike
- Park Road
- Ridge Road
- Sebec Street

Many of these roads are classified as arterial or collector roadways (see graphic at right). This classification denotes the function that a roadway serves within a community and is typically associated with design standards that are unique to that type of road. For instance, an arterial roadway (such as Ridge Road) is expected to facilitate the flow of traffic and accommodate public safety vehicles, truck traffic, and school buses Local roadways carry traffic from neighborhing homes and businesses and typically have less traffic and lower posted speed limits.

Given the function of arterial roadways, traffic calming techniques that may be applied should be carefully considered due to the nature of the traffic on these roadways. The use of traffic calming measures such as speed humps, raised crosswalks and mini traffic circles are typically excluded from arterial roadways as they do not perform well with high levels of traffic.

East Side Corridor Attributes and Issues

The following table provides a summary of study corridor attributes and documented issues. These corridors are comprised of local and arterial roadways with traffic volumes that range from 2,400 vehicles per day on sections of Ridge Road to 8,300 vehicles per day on Davis Street. Roadway width varies considerably across these corridors with sections of Sebec Street as narrow as 24 feet and Hartford Turnpike as wide as 32 feet.

Corridors such as Ridge Road connect local destinations that include Bassett Park, East Rock Park. Ridge Hill School, located off of Hepburn Street is accessed by Foote Street and other local roads that connect to Ridge Road.

Speed limits are 25 or 30 mph on all corridors, although observed speed limits ranged from 38 to 46 mph. Despite the suburban nature of the study area, sidewalks are limited and there are no on-street bicycle facilities. Stakeholders identified speeding as a concern on most corridors and this concern is exacerbated by discontinuous sidewalk facilities.

Corridor	Street Type	Volume (AADT)	Typical Width	Speed Limit	85% Speed	Attributes	Issues
Davis Street	Arterial/ Local	7,600-8,300	26-30’	25	40	Short arterial street connecting Ridge Road to Hartford Turnpike	No sidewalks west of Ridge Road. Heavy traffic. No pedestrian connection to park
Foote Street	Local	N/A	30’	25	N/A	Connector street between Hartford Turnpike and Route 5. Heavily used by school children walking to Ridge Hill School.	Limited sidewalks
Hartford Turnpike	Arterial/ Local	2,400-3,800	32’	30	46	North/south arterial road connection North Haven to New Haven	Limited sidewalks, no sidewalks north of Sebec Street, no sidewalks between Ridge Road and Davis Street. High traffic speeds
Park Road	Arterial	2,800	28’	25	38	Residential road, has entrance to East Rock Park.	Limited sidewalks, cut-thru traffic from Ridge Road
Ridge Road	Arterial/ Local	5,100-6,000	32’	30	43	North/south arterial road	No sidewalks north of Dessa Drive
Sebec Street	Local	N/A	24-36’	25	N/A	Wide at western end, steep slope and narrow at eastern end	Steep slope at eastern end, sidewalks absent from this segment

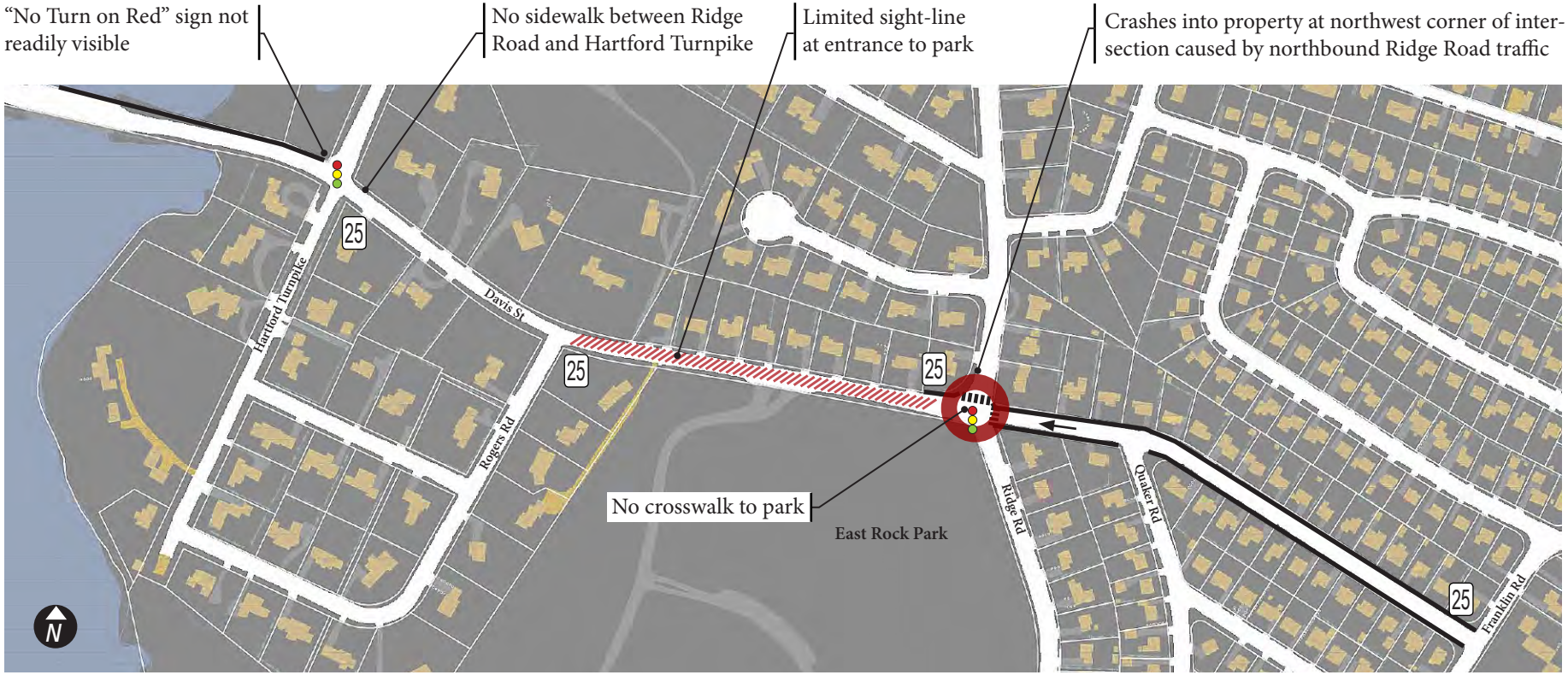
N/A: Not Available

Davis Street: Existing Conditions

Davis Street connects the East Side of Hamden to Whitneyville via a bridge across Lake Whitney. As one of only a few crossings over the lake, Davis Street is a critical connection for auto, bicycle and pedestrian traffic. Within the East Side, Davis Street connects the southern ends of Hartford Turnpike and Ridge Road, as well as providing a connection to East Rock Park. West of Ridge Road, Davis Street carries approximately 8,000 vehicles per day, which is a moderate volume of traffic given its designation as an arterial roadway. East of Ridge Road, Davis Street is a low-volume, one-way local road.

The traffic safety issues on Davis Street are primarily related to its lack of pedestrian facilities. Without sidewalks between Hartford Turnpike and Ridge Road, pedestrians are more vulnerable to speeding traffic and distracted drivers. The Ridge Road intersection, where sidewalks from Ridge Road meet sidewalks from the east end of Davis Street provides no pedestrian connection to East Rock Park which is at the southeast corner. Additionally, the entrance to East Rock Park is located at the top of a hill and sight-lines are limited, particularly for east-bound traffic.

Limited sight-line on the eastbound approach to the East Rock Park entrance on Davis Street

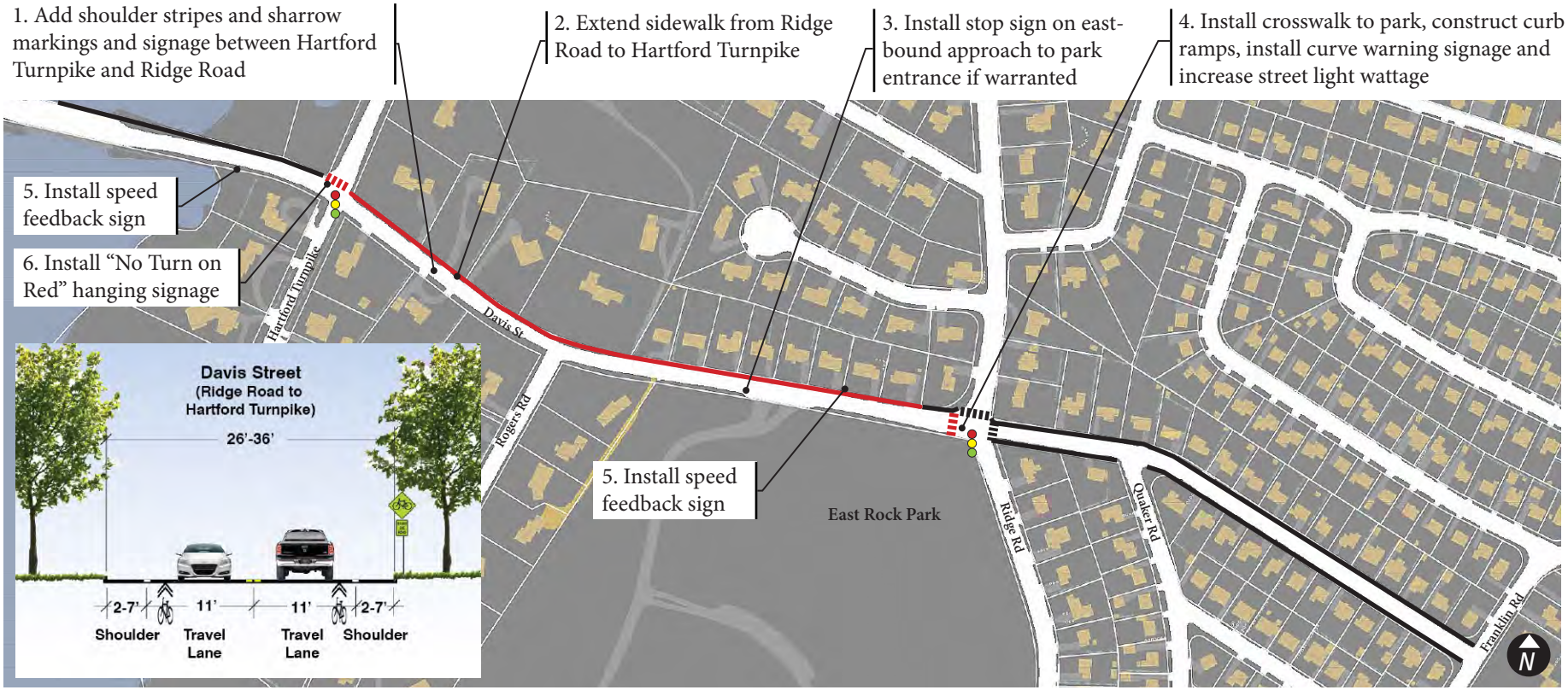


Davis Street: Recommendations

The proposed improvements for Davis Street are focused upon bridging the gap in the pedestrian infrastructure between Hartford Turnpike and Ridge Road. The construction of a sidewalk on the north side of Davis Street would provide a pedestrian connection between the East Side of Hamden and Whitneyville where a sidewalk network extends west to Route 10 and Hamden Plains. Likewise, the installation of sharrow markings on Davis Street would provide bicycle connectivity to Whitneyville where a sharrow is now present on Putnam Avenue. The installation of a sidewalk at this location would, however, be challenging given mature trees, steep slopes, and utility poles in the area.

Additional improvements proposed for Davis Street include the installation of a stop sign, if warranted, on the eastbound approach to the East Rock Park entrance, where the sight-line is limited. The intersection at Ridge Road would also benefit from the installation of a crosswalk to East Rock Park to provide a pedestrian connection from sidewalks on Ridge Road. Warning signage and lighting improvements are also needed on the northwest corner of the intersection due to collisions by northbound Ridge Road traffic.

4. Install crosswalk to park, curb ramps and curve warning signage



Foote Street: Existing Conditions

Foote Street is a low volume local road that connects Hartford Turnpike, Ridge Road and State Street. The western segment is one-way eastbound between Ridge Road and Hartford Turnpike. Most of the traffic on this road is on the segment between Hartford Turnpike and State Street, which is two-way and connects to Hepburn Road which carries traffic to Ridge Hill Elementary School. The speed limit on Foote Street is 25 mph although residents report that traffic speeds are perceptively much higher.

Sidewalks on Foote Street are limited to a segment between Hepburn Road and Leo Road. The lack of sidewalks are not a significant issue given low traffic volume and a relatively wide roadway which provides space for walking on the roadway. A yellow center line is present on the roadway despite Foote Street being a low volume local road with no significant curves or sight line issues. This center line forces traffic closer to the edge of the roadway and closer to on-street parking and pedestrians who walk on the shoulder of the roadway due to the lack of continuous sidewalks.

Westbound view looking uphill on Foote Street. School zone crosswalk sign present despite no crosswalk within close proximity.

Foote Street: Recommendations

The recommendations for Foote Street are focused on reducing vehicles speeds and providing more space for pedestrians and parked vehicles on the roadway. As a low volume local road, Foote Street is a good candidate for speed humps. The town of Hamden should collect traffic speed data to confirm that observed traffic speed is more than 5 mph above the posted speed limit. If speeding is confirmed, temporary speed humps should be installed for several months. If found to be effective and acceptable to local residents, permanent asphalt speed humps should subsequently be installed.

An additional recommendation is the removal of the yellow roadway center line. This line is not required or necessary on the roadway. The removal or absence of a yellow center line on a low volume roadway is proven to provide a traffic calming effect as drivers proceed more cautiously in what is percieved to be a shared space rather than a dedicated lane. In the absence of a center line, drivers also stay closer to the center of the roadway, providing more space at the shoulder for on-street parking and pedestrians.

New curb ramps and crosswalk signs are also needed at the Hepburn Road crosswalk. The lack of curb ramps at this location is a particular concern given the use of this crosswalk by school children.

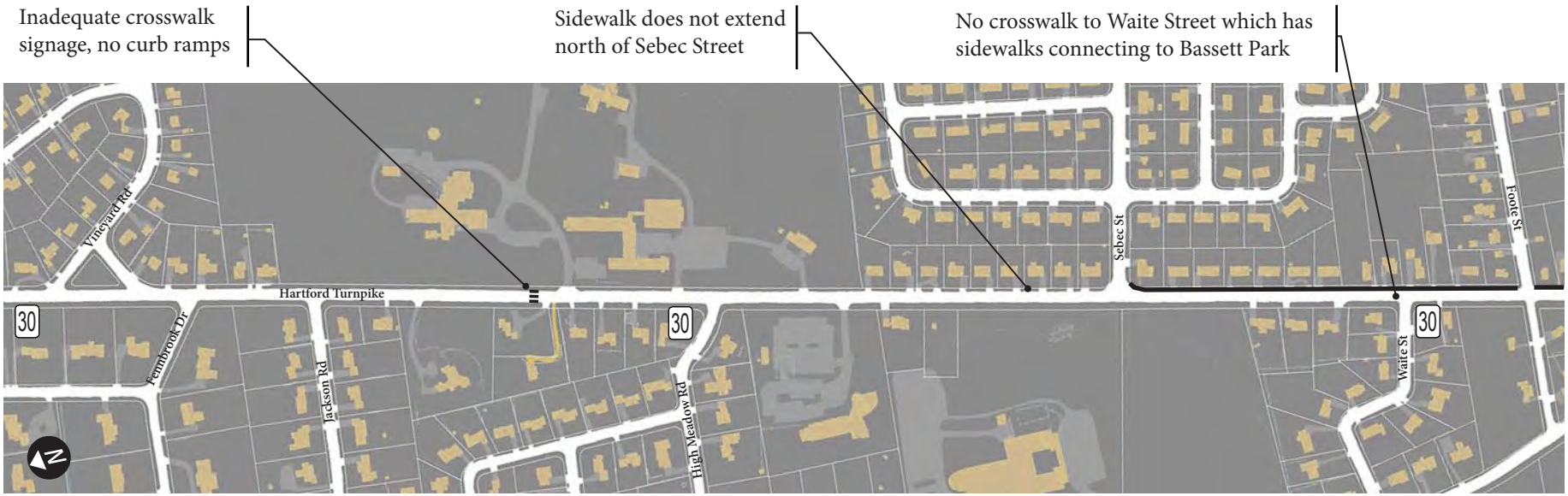
1. Remove yellow centerline
2. Install crosswalk signage and curb ramps
3. Install speed humps

Hartford Turnpike (north segment): Existing Conditions

Hartford Turnpike is a long, straight, and relatively flat arterial corridor that parallels State Street and crosses Ridge Road. As such, traffic speeds are high, with 85th percentile speeds measured at 46 mph, exceeding the posted 30 mph speed limit by 16 mph. The roadway averages 32' in width, which includes two 16' wide travel lanes in each direction. Due to the absence of sidewalks from much of the corridor, the roadway shoulders are used by pedestrians. Bicycle traffic is also present on the roadway where bicyclists take advantage of the wide lanes and relatively flat grades.

Crosswalks across Hartford Turnpike are few, with only one crosswalk present along the entire corridor. That crosswalk is located at the DCF facility between Jackson and High Meadow Roads. The crosswalk at that location lacks curb ramps and the crosswalk signage is not clearly visible. A marked crosswalk is also lacking at the intersection of Waite Street, where the sidewalk on the east side of Hartford Turnpike would otherwise connect to sidewalks on Waite Street which lead directly to Basset Park.

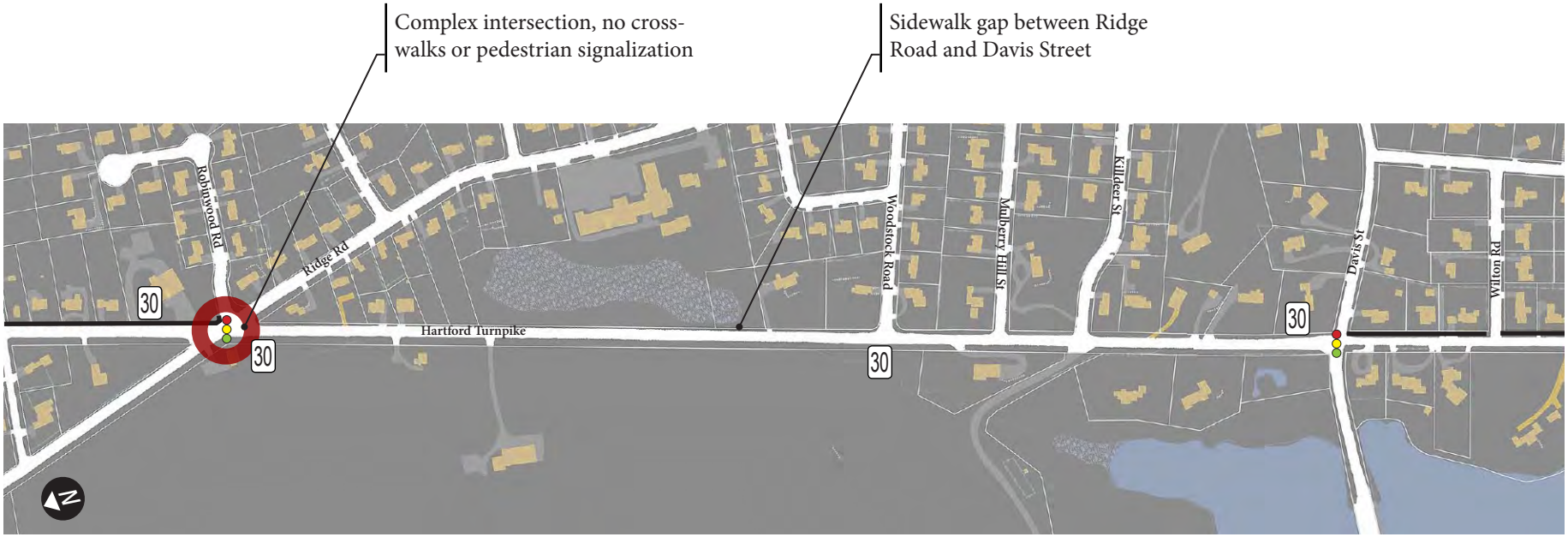
Southbound view near Jackson Road. Crosswalk in distance is barely visible, warning signage is partially obscured by vegetation.



Hartford Turnpike (south segment): Existing Conditions

The southern segment of Hartford Turnpike is similar to the segment north of the Ridge Road intersection. A lack of sidewalks and crosswalks are an issue on this segment, and high traffic speeds have also been documented. The greatest opportunity for improving this segment of the corridor would be improvements to the intersection of Hartford Turnpike and Ridge Road. This intersection is large and complex and lacks crosswalks despite sidewalks on Hartford Turnpike and Ridge Road. The signal system at this location is outdated, the magnetic detection loops at one or more of the approaches are out of service, and there are no pedestrian signal heads or push button actuators.

Hartford Turnpike and Ridge Road intersection. Wide intersection without crosswalks despite nearby sidewalks.



Hartford Turnpike (north segment): Recommendations

The recommended improvements for Hartford Turnpike are focused upon providing space on the roadway for bicyclists and pedestrians, and improving crossing opportunities for pedestrians.

Given the roadway width, 5' wide bicycle lanes can be accommodated on both sides of the roadway while still providing 11' wide travel lanes. The provision of bicycle lanes would require the installation of a shoulder stripe on both sides of the roadway. By narrowing the travel lane with a shoulder stripe, vehicles speeds will likely be reduced by 3-4 mph. This bicycle improvement thereby induces a traffic calming effect on the roadway. It is also anticipated that the bicycle lane would be used by pedestrians given the lack of sidewalks on much of the corridor. The shoulder stripe would assist in moving traffic away from the edge of the roadway where pedestrians may be present.

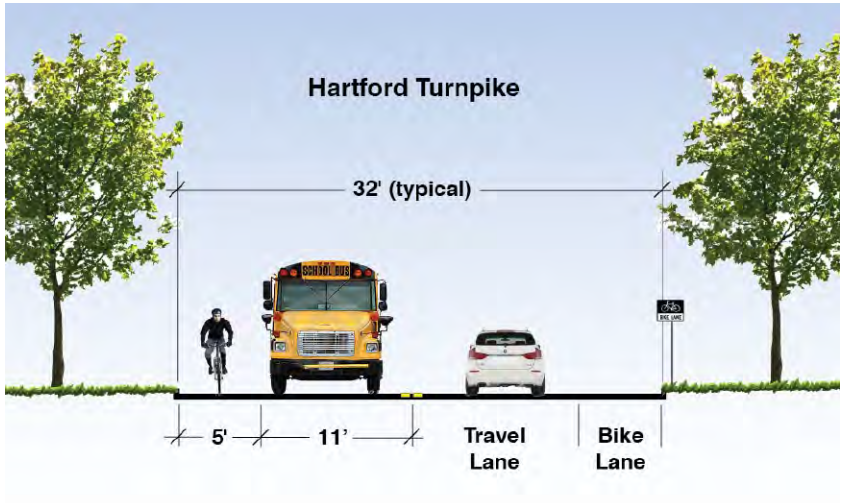
An additional area of improvement would be the installation of crosswalks at Waite Street and at the Ridge Road intersection. The Ridge Road intersection also requires the installation of a new signal system that would benefit pedestrians and auto traffic alike.

3. Extend Waite Street sidewalk to Hartford Turnpike, install curb ramps on both sides of road and install crosswalk and crosswalk warning signage

1. Stripe shoulders to provide 5' wide bicycle lane on both sides of roadway

2. Install crosswalk warning signage at existing crosswalk

Hartford Turnpike (south segment): Recommendations



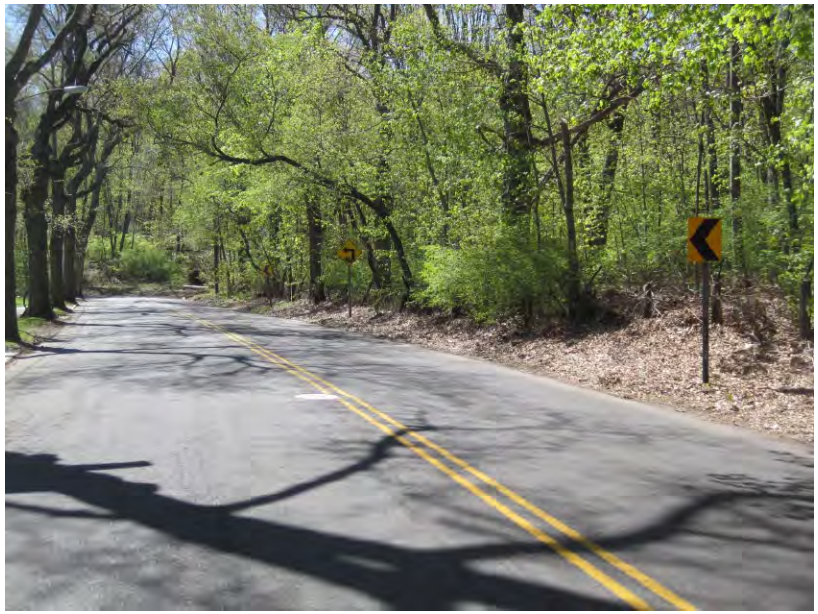
1. Stripe shoulders on Hartford Turnpike to provide 5' wide bicycle lanes on both sides of the roadway.

4. Crosswalk improvements at Ridge Road intersection. 4.1 Upgrade signal system to include a pedestrian actuated exclusive pedestrian phase.

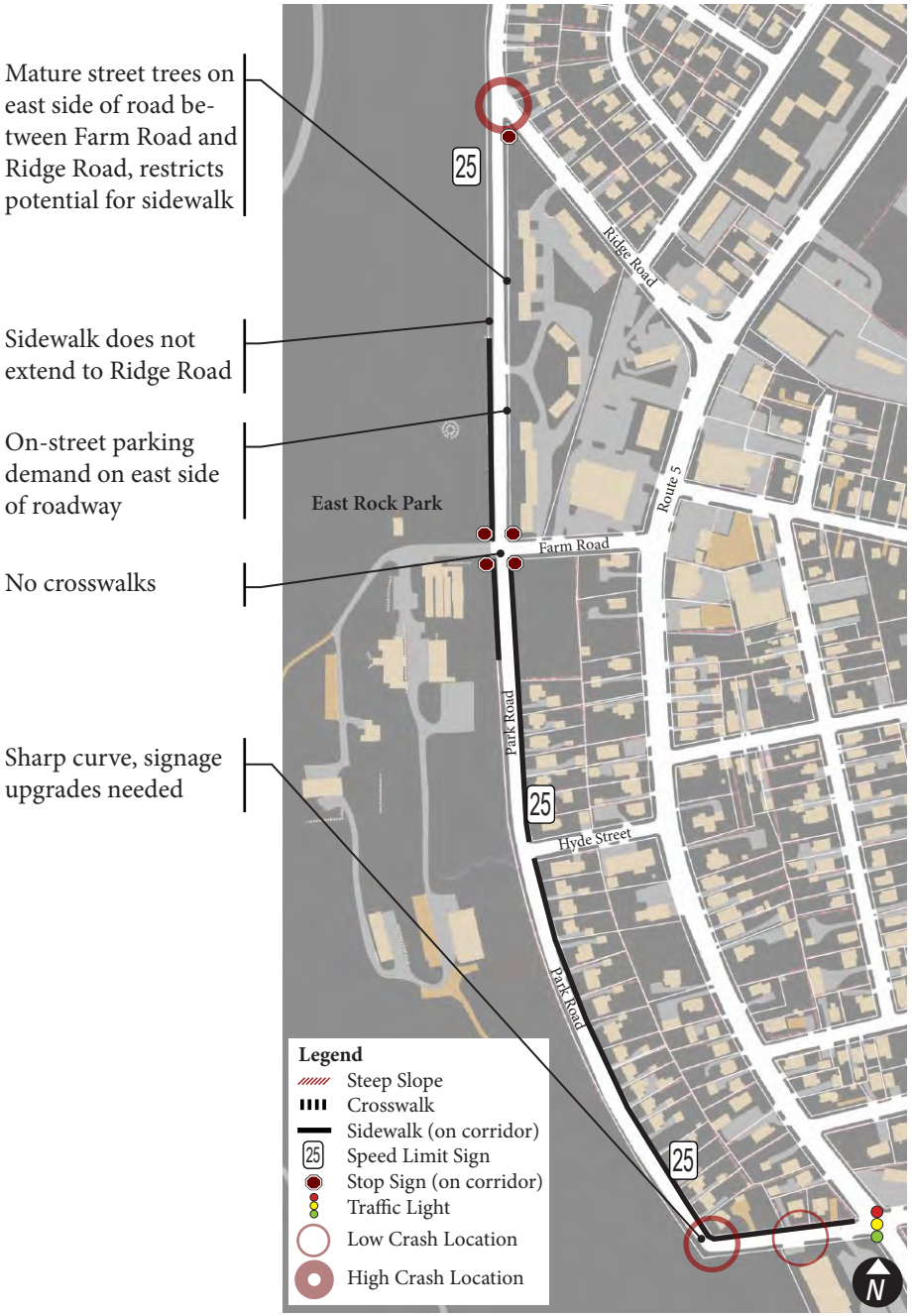
Park Road: Existing Conditions

Park Road is an arterial residential street which is used as a cut-thru between Ridge Road and Route 5. This cut-thru traffic contributes to the approximately 2,800 vehicles per day on Park Road. With several homes and apartment buildings on the east side of the street, there is a demand for on-street parking and pedestrian facilities. While sidewalks are present on the east side of the street south of Farm Road, the network does not extend north to Ridge Road.

Much of the thru-traffic is attributed to Park Road's alignment with Ridge Road. Drivers traveling southbound on Ridge Road continue straight on Park Road, with few cues to bear left at the intersection to remain on Ridge Road. Other drivers likely find Park Road to be a convenient alternative to State Street (Route 5).



Warning signage is not readily visible approaching the curve at the south end of Park Road.

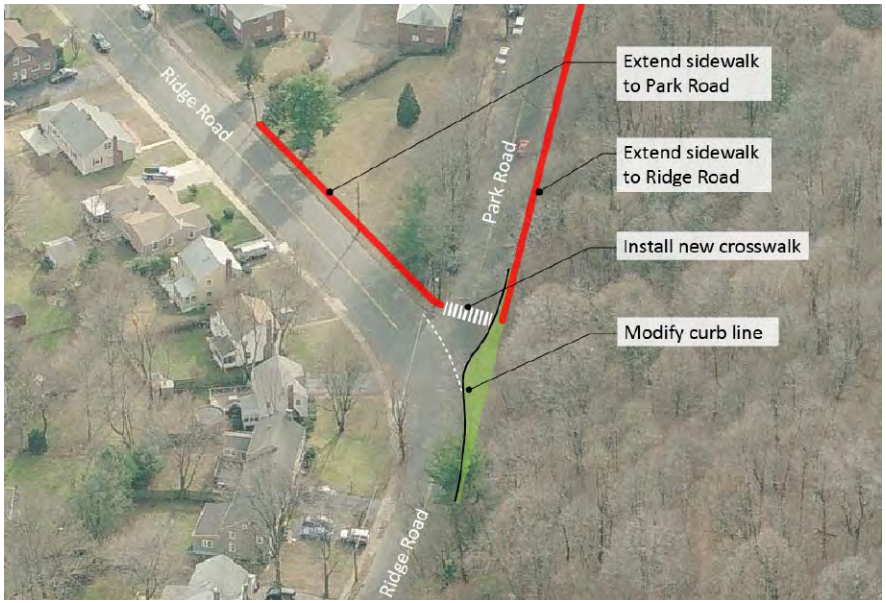


Park Road: Recommendations

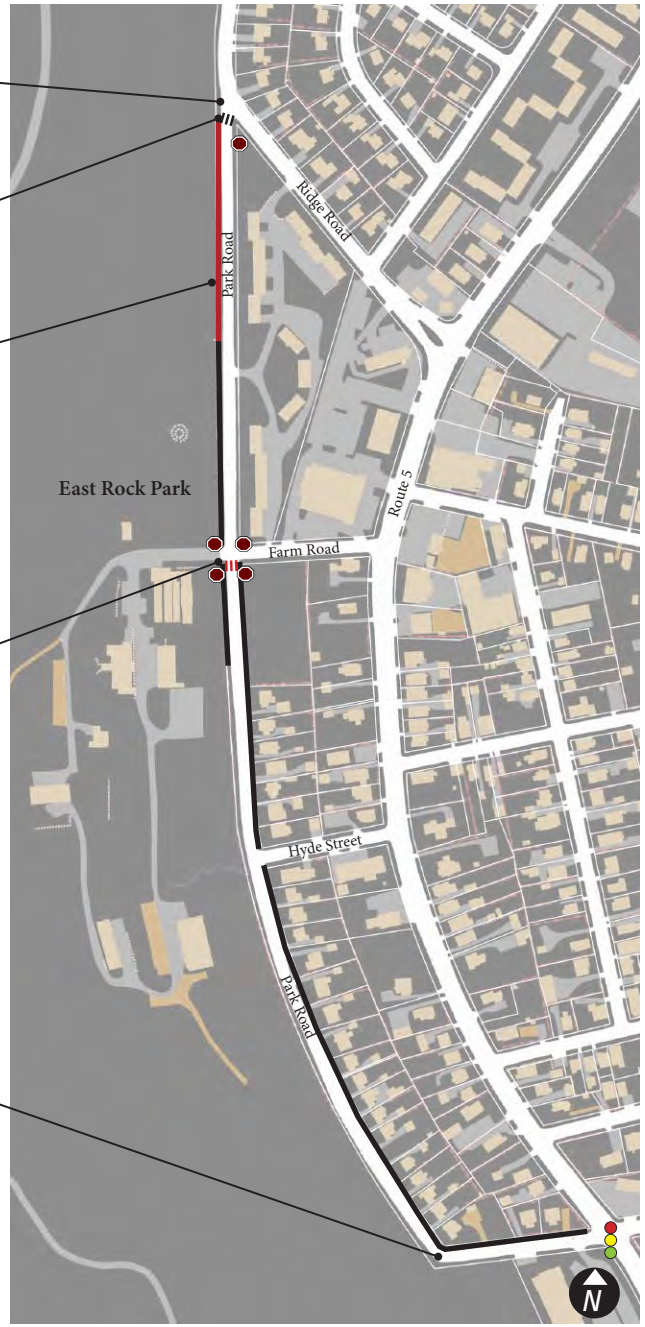
A priority improvement for Park Road is to discourage cut-thru traffic from Ridge Road by modifying the curb at the intersection of the two roads. From discussion with Town officials, it is understood that the intersection used to be delineated by an asphalt curb which had since been paved over. Modifying the intersection by extending the curb line to create a bump-out would thereby likely restore the historical alignment.

Sidewalk construction on Park Road is also recommended as a means of providing a continuous sidewalk network along the entire corridor from State Street to Ridge Road. This would provide a pedestrian connection from Ridge Road to East Rock Park and the Pardee Rose Garden. Limited sidewalk construction would also be necessary on Ridge Road to complete this network. Crosswalk improvements and new crosswalks are also needed at Farm Road and at the Ridge Road intersection upon construction of sidewalks.

New curve warning signage is needed at the southern end of the roadway where crashes, related to the road's curve, have been documented.



5. Realign curb at Ridge Road. Install curb ramps and crosswalk. Extend existing sidewalk on Park Road to Ridge Road.

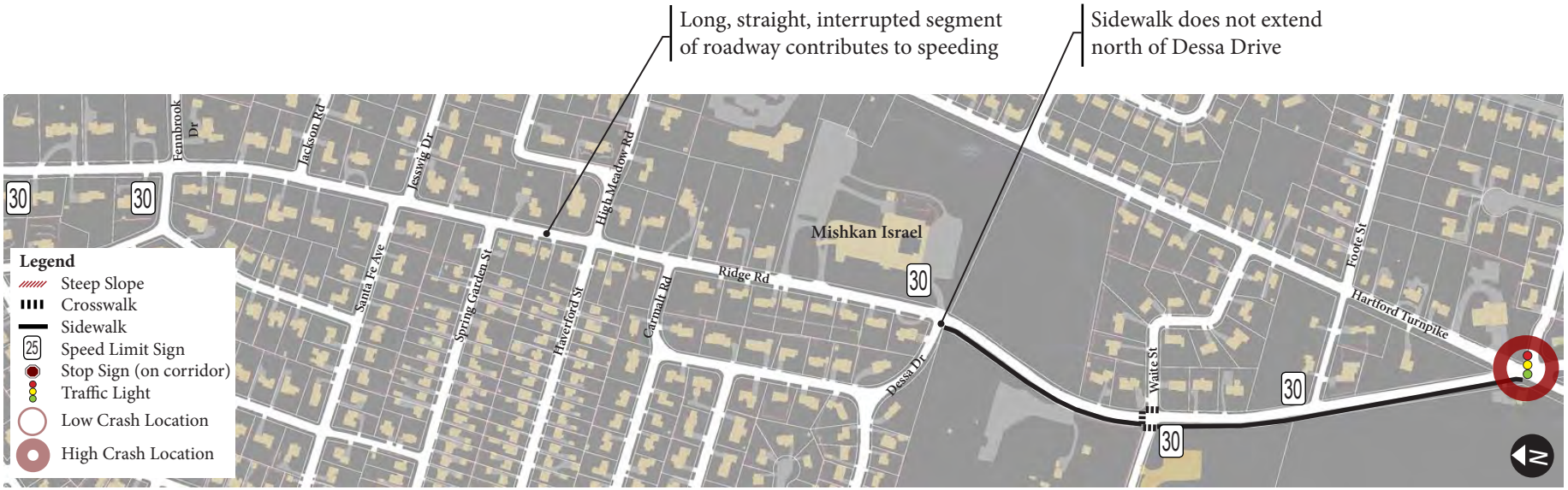


Ridge Road (north segment): Existing Conditions

Ridge Road is a winding arterial roadway that acts as the "main street" of Hamden's East Side, connecting Spring Glen to Ridge Hill. With residential development lining both sides of the street for much of the corridor, pedestrians and bicyclists are common-place along and crossing Ridge Road. Despite this pedestrian activity, sidewalks are not continuous and crossing opportunities are few. Compounding this lack of pedestrian facilities are 43 mph 85th percentile traffic speeds (the speed at which 85% of vehicles are traveling at or below) within a zone that is posted at 30 mph.

Ridge Road is 32' wide and carries between 5,100 and 6,000 vehicles per day. This traffic volume is moderate for an arterial roadway and is low enough to enable the provision of bicycle facilities on the roadway.

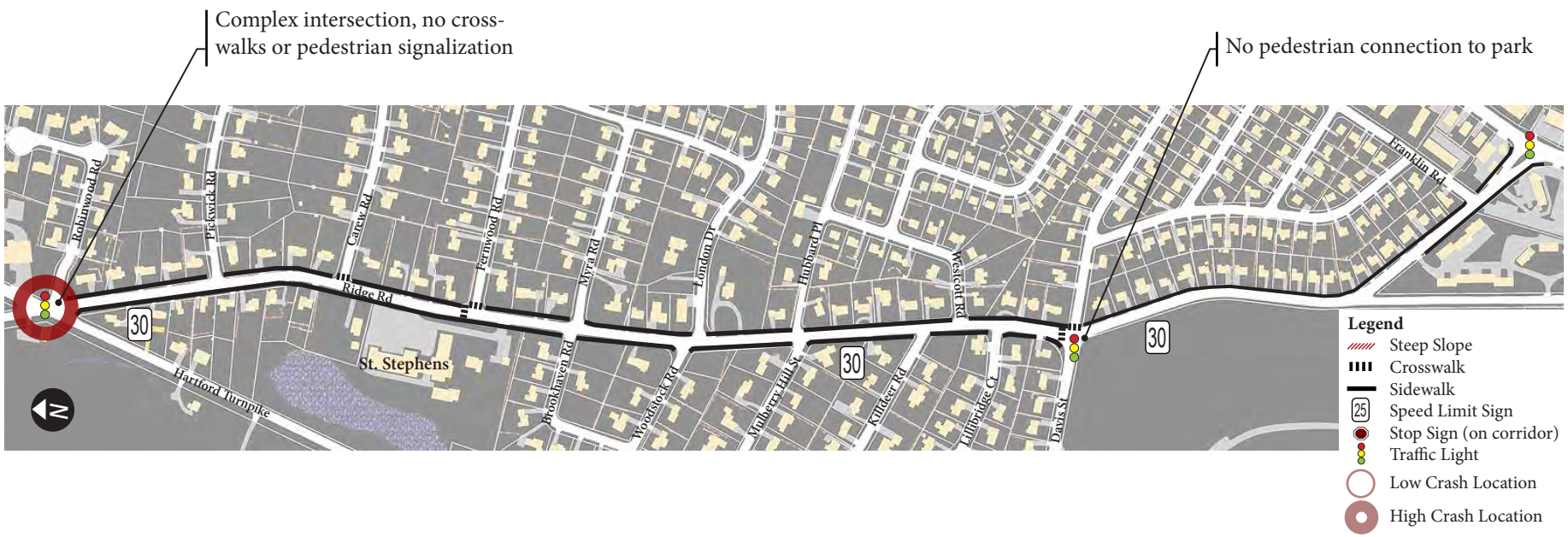
Southbound view near Underhill Road. Sufficient space is available on the roadway to accommodate bicycle lanes.



Ridge Road (south segment): Existing Conditions

The southern segment of Ridge Road has continuous sidewalks from State Street to Hartford Turnpike. Crosswalks are notably absent at the Hartford Turnpike intersection and at Davis Street where there is no pedestrian connection to East Rock Park. Like the northern segment, the roadway is 32' wide and could readily accommodate bicycle facilities.

Ridge Road at St. Stephen's Church and School. New crosswalk signage is highly visible.



Ridge Road (north segment): Recommendations

The extension of sidewalks on the west side of Ridge Road from Dessa Drive to Sante Fe Avenue is recommended as a means of improving pedestrian connectivity within a dense residential neighborhood. Sidewalk construction along this segment would connect numerous residential streets to Bassett Park and Mishkan Israel. Crosswalks should be installed at Jeswig Drive and at Mishkan Israel to provide connections to the east side of Ridge Road.

Bicycle lanes should also be installed on both sides of the roadway. Five foot wide bicycle lanes can be accommodated along with 11' wide travel lanes. The installation of a shoulder stripe for the bicycle lane would provide a traffic calming effect on Ridge Road traffic, provide operating space for bicyclists, and provide space for pedestrians in the absence of a sidewalk.

1. Install speed feedback sign

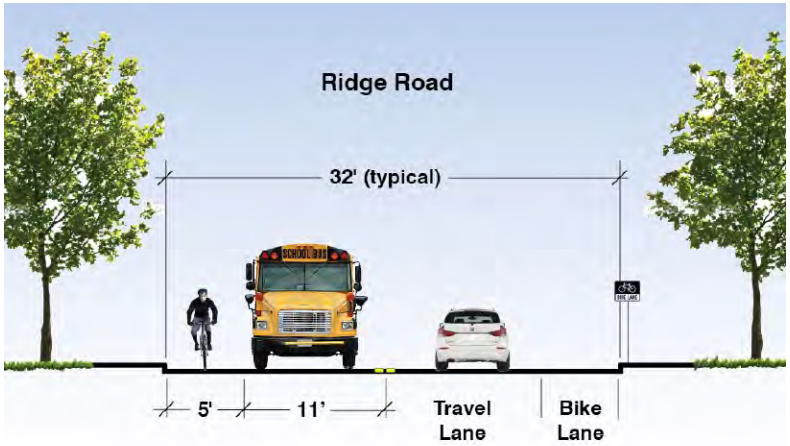
2. Install crosswalks and crosswalk signage

3. Extend sidewalk north to Santa Fe Avenue

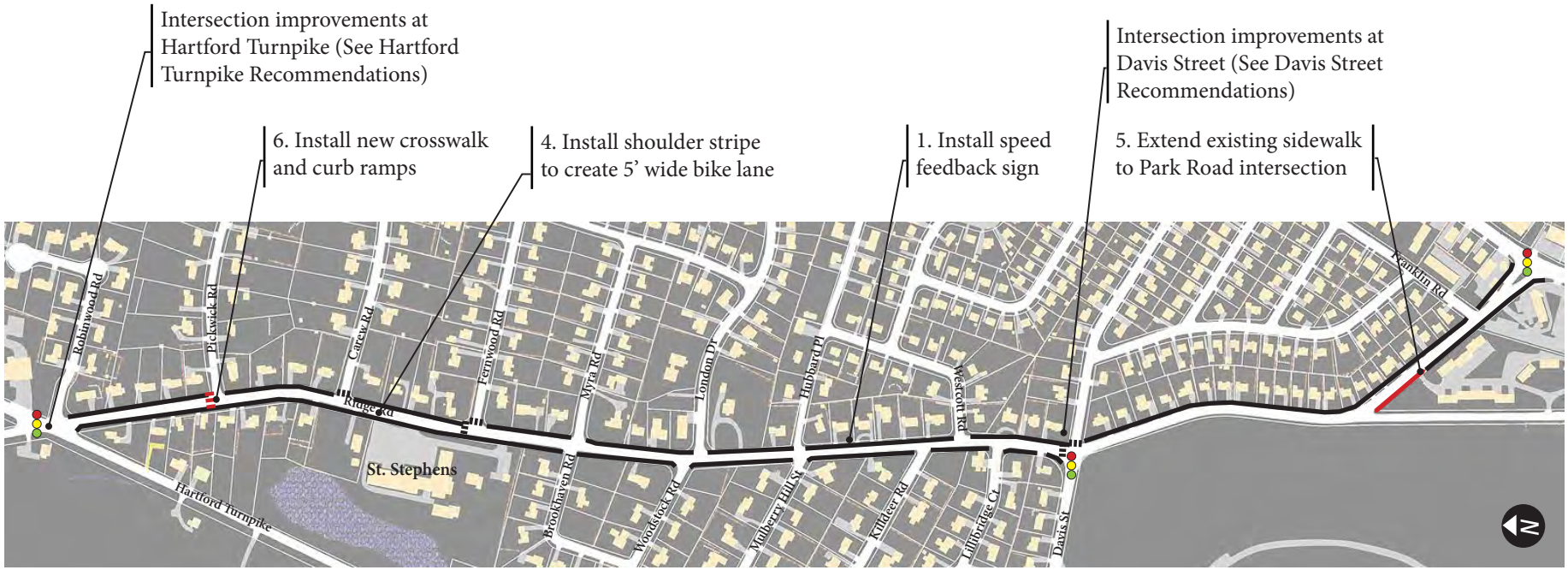
Ridge Road (south segment): Recommendations

Bicycle lanes are recommended for the southern segment of Ridge Road so as to provide a continuous bicycle facilities on Ridge Road from north to south. Additional improvements recommended include an extension of the sidewalk on the west side of the road at the southern end of the corridor. Extension of this walkway would provide a connection to Park Road and would, upon the construction of a sidewalk on Park Road, create a continuous sidewalk to the East Rock Park entrance on Park Road.

Crosswalk improvements are also needed at the Hartford Turnpike and Davis Street intersections (see Hartford Turnpike and Davis Street recommendations). Additionally, a speed feedback sign should be installed north of Davis Street as a means of tempering traffic speed northbound on Ridge Road. A speed feedback sign should also be installed at the northern end of the corridor near Fennbrook Drive so as to lower southbound travel speeds.



4. Stripe shoulders on Ridge Road to provide 5' wide bicycle lanes on both sides of the roadway.

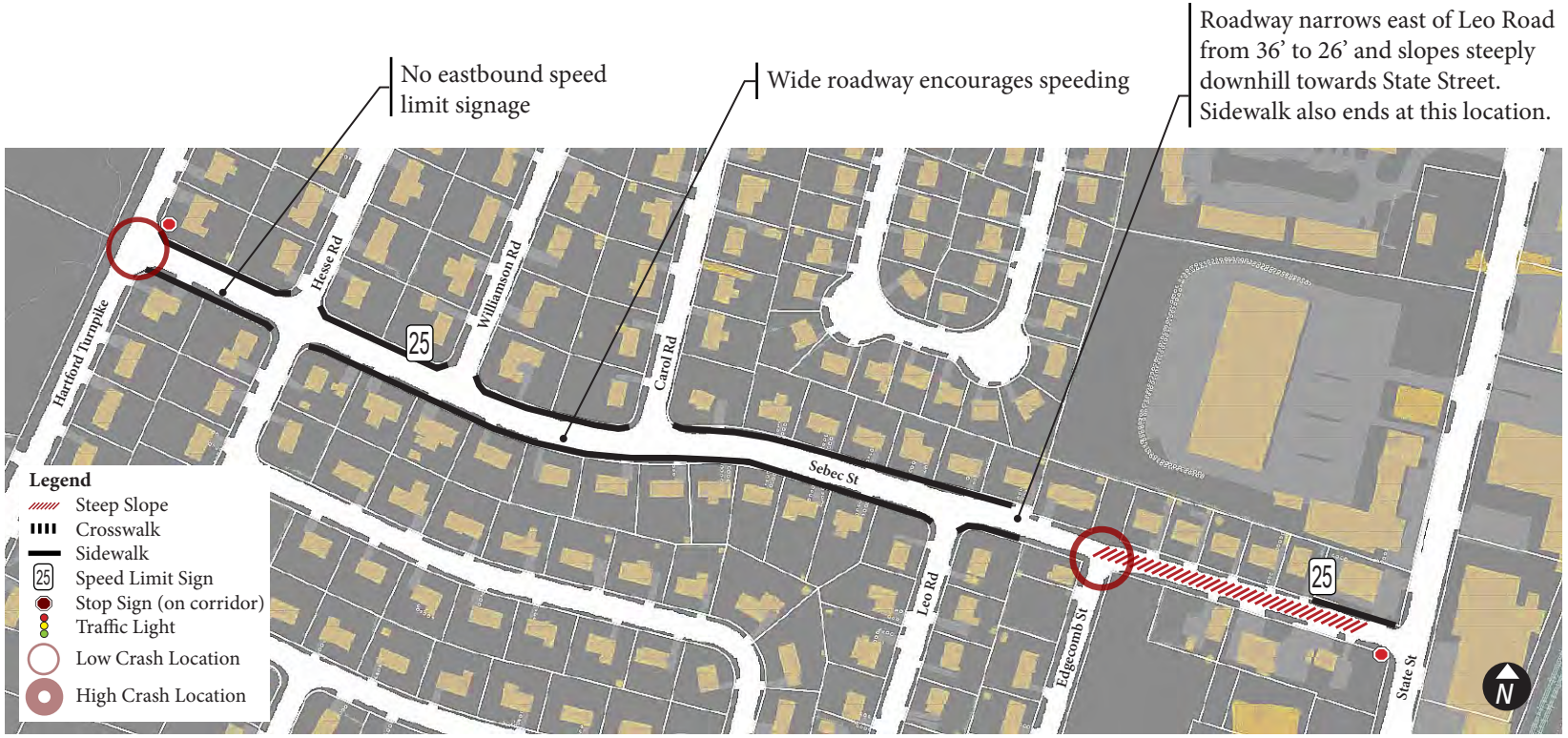


Sebec Street: Existing Conditions

Sebec Street is a local, low volume residential street that, like Foote Street, connects Hartford Turnpike to State Street. This road has sidewalks on both sides of the roadway for most of the corridor. The sidewalk ends near Leo Road where the road narrows from 36' to 24' before heading steeply downhill as it approaches State Street. Residents report that traffic speeds regularly exceed the 25 mph speed limit. Speeding on the roadway is likely a contributing factor to crashes at the Edgecomb Street intersection where sight-lines are limited by adjacent trees and the narrow roadway provides little margin for error.

Sebec Street has a yellow center line which was painted within the last five years as evidenced from historical aerial photography. Being a local, low volume street, the yellow center line is not required nor is it necessary along the entire corridor.

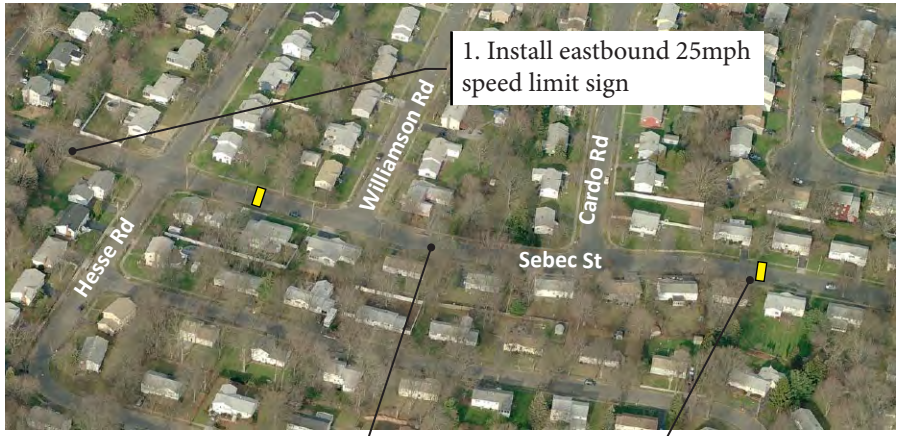
Westbound view on Sebec Street near Leo Road. Roadway narrows before heading downhill on approach to State Street.



Sebec Street: Recommendations

The recommendations for Sebec Street are focused upon reducing vehicles speeds and providing more space for bicyclists and parked vehicles on the roadway. As a low volume local road, Sebec Street is suitable for speed humps. The town of Hamden should collect traffic speed data to confirm that 85th percentile traffic speed is 5 mph or greater than the posted speed limit. If speeding is confirmed, temporary speed humps should be put in place for several months. If found to be effective and acceptable to local residents, permanent asphalt speed humps should subsequently be installed.

An additional recommendation is the removal of the yellow roadway center line for most of the corridor (with the exception of the block between Leo Road and Edgecomb Street where sight-line is limited). This line is not required nor is it necessary on the entire roadway. The removal or absence of a yellow center line on low volume roadways is proven to provide a traffic calming effect as drivers tend to proceed more cautiously. In the absence of a center line, drivers also stay closer to the center of the roadway, providing more space at the shoulder for on-street parking and bicyclists. Once the center line is removed, "No Parking" signs should be installed on the south side of Sebec Street between Leo Road and State Street where the roadway is too narrow for parking on boths sides of the road.



This page left intentionally blank

Hamden Plains & Wintergreen

Hamden Plains & Wintergreen Survey

The scope of this study requires that five corridors in Hamden Plains and Wintergreen be identified for study and the development of recommendations. An extensive outreach process was used to engage residents and other stakeholders to identify the corridors they deem most appropriate for inclusion in this study.

Press releases were also submitted to local media, many of which ran stories about the study and the survey. The Town posted a link on its website and on social media sites managed by the Town. In addition, letters were sent home with students at the neighborhood elementary schools, informing families of the study and encouraging them to respond to the survey.

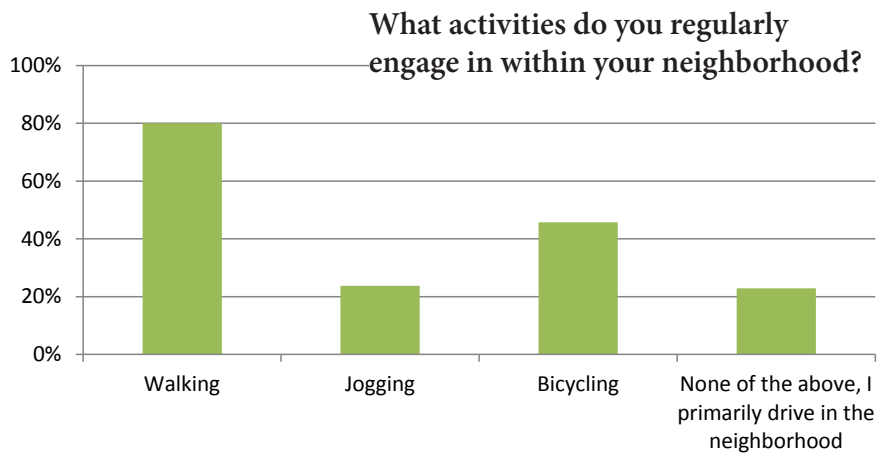
An online traffic calming survey was posted and kept open for feedback for two months. Over 100 responses were collected from residents on 52 different streets. The streets with the most respondents included: Gilbert Avenue, Wintergreen Avenue, Lane Street, Woodin Street, Arcadia Ave and Plains Road. The seven streets that respondents were most concerned about,

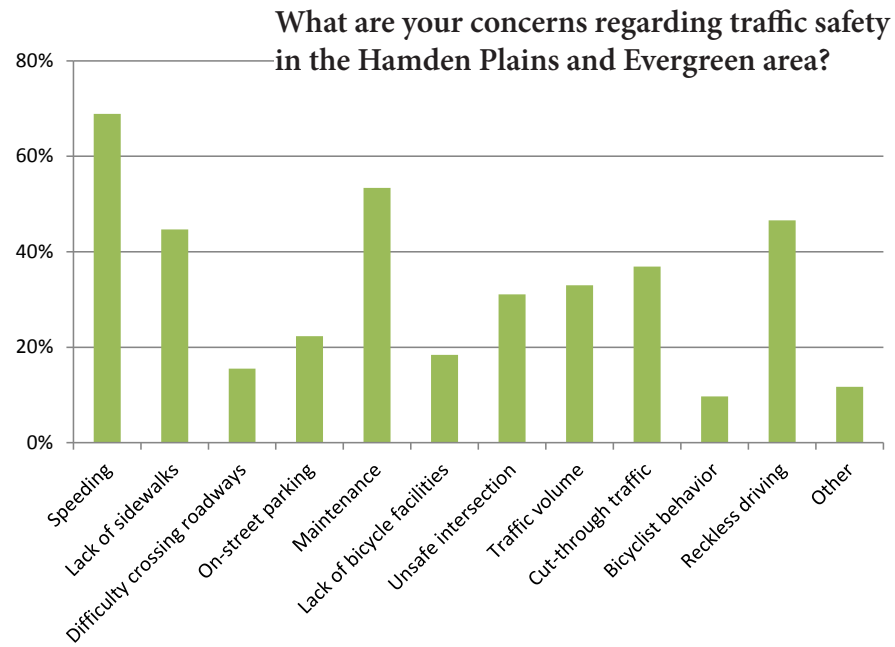
1. Benham Street
2. Circular Avenue
3. Gilbert Avenue
4. Lane Street
5. Wintergreen Avenue
6. Woodin Street
7. Pine Rock Avenue

While the study was originally scoped to include five corridors for further review and recommendations, the study was expanded, in response to requests from local residents, to include seven corridors.

When asked what activities that respondents regularly engage in within the neighborhood, 80% of respondents reported that they walk in the neighborhood on a regular basis and 46% of respondents bicycle on a regular basis. Only 23% of those surveyed responded that they primarily drive in the neighborhood.

The most significant issues identified by respondents included speeding, maintenance, reckless driving and the lack of sidewalks. Additional concerns include cut-thru traffic, traffic volume, unsafe intersections, and on-street parking.

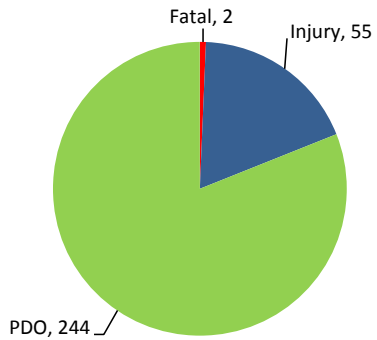




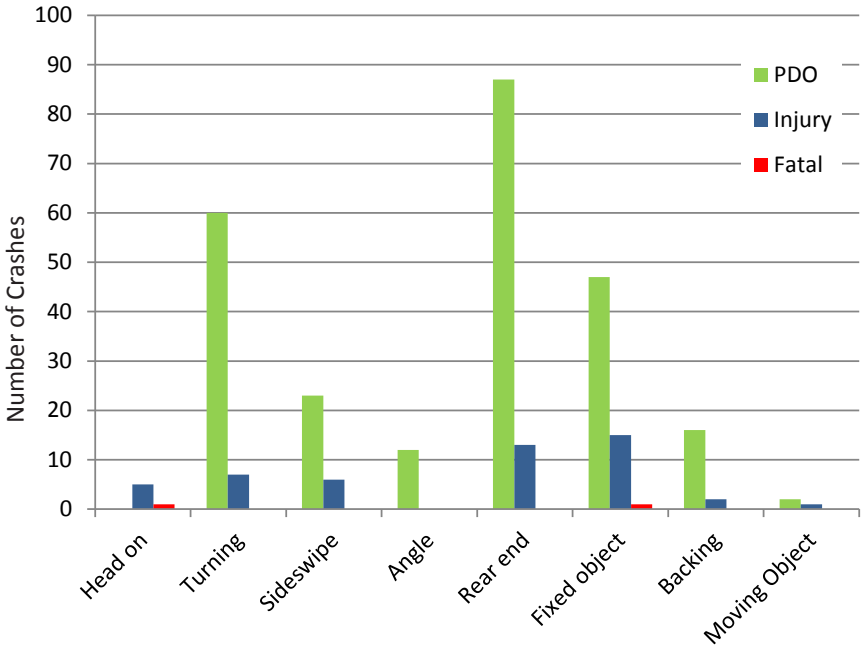
Hamden Plains & Wintergreen Crash Analysis

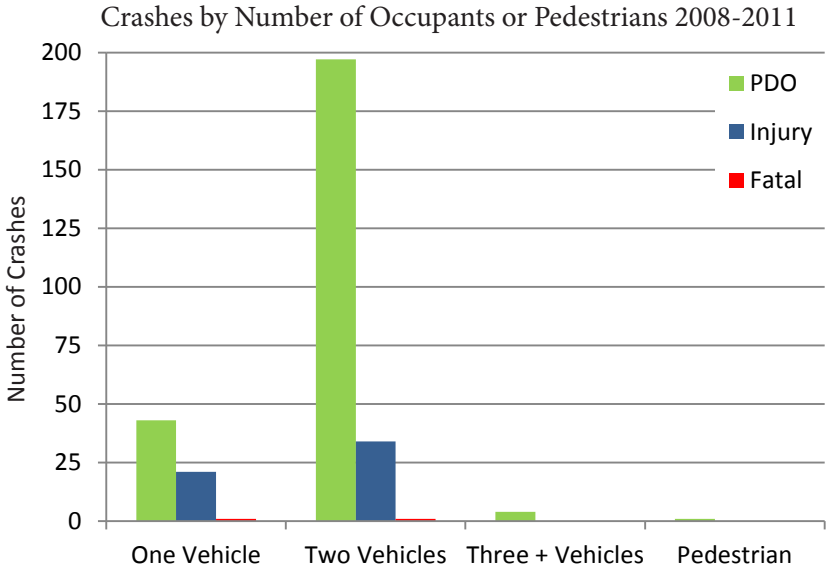
Crash data for the study corridors was reviewed for a four year period between 2008 and 2011. This date range represented the most recent data available from the Connecticut Crash Data Repository. Of the 301 crashes reported within that four year period, almost 20% of crashes resulted in an injury and slightly more than 80% were property damage only (PDO) crashes. Two fatal crashes were reported during that period. The fatal crashes were attributed to speeding and driving under the influence.

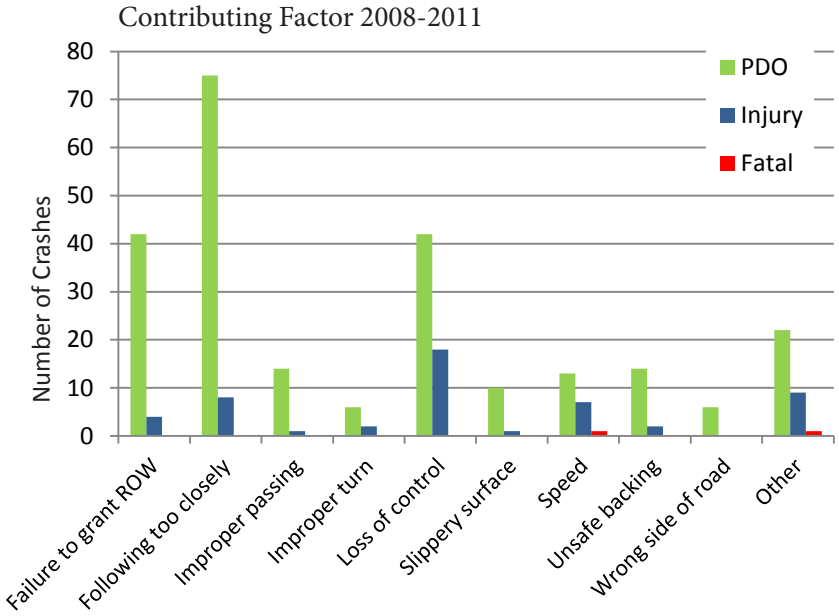
Most crashes involved two vehicles with less than 25% involving only one vehicle. Two non-injury pedestrian crashes occurred during the four year period. Most crashes were rear end collisions, turning movement or fixed object crashes. The most common contributing factors to crashes were following to closely, failure to grant right of way (ROW) and loss of control. While very few crashes were attributed to speeding, speeding is a factor in collisions due to loss of control and following too closely.



Crash Severity







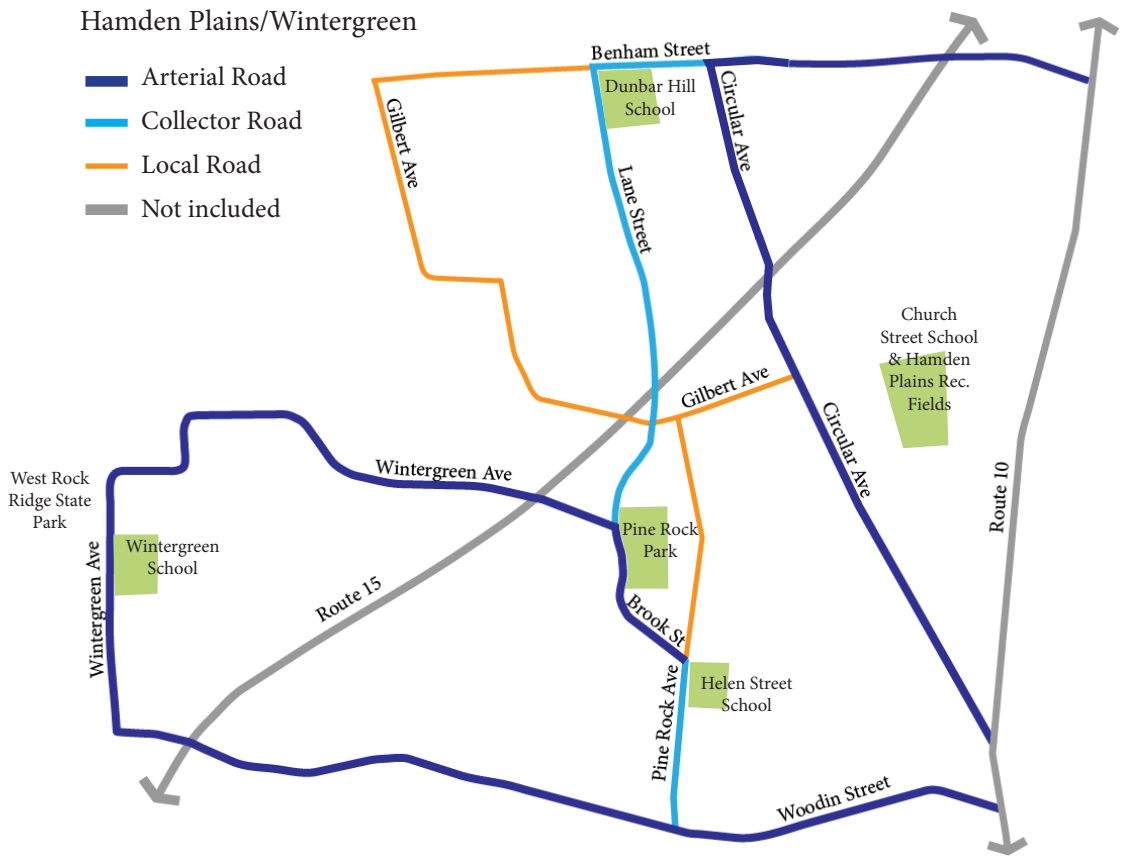
Hamden Plains/Wintergreen Study Corridors

This study recommends improvements to seven corridors in the Hamden Plains and Wintergreen neighborhoods. The traffic safety assessment, neighborhood association reports, the public survey, and public workshop input informed the selection of these corridors. These corridors are identified in the graphic to the right and include:

- Benham Street
- Circular Avenue
- Gilbert Avenue
- Lane Street/Brook Street
- Pine Rock Avenue
- Wintergreen Avenue
- Woodin Street

Many of these roads are classified as arterial or collector roadways (see graphic at right). This classification denotes the function that a roadway serves within a community and is typically associated with design standards that are unique to that type of road. For instance, an arterial roadway (such as Woodin Street) is expected to facilitate the flow of traffic and accommodate public safety vehicles, truck traffic, and school buses. Collector roadways, to a lesser extent, serve the same function, but also convey traffic from arterial roads to local roads.

Given the function of arterial roadways, traffic calming techniques that may be applied should be carefully considered due to the nature of the traffic on these roadways. The use of traffic calming measures such as speed humps, raised crosswalks and mini traffic circles are typically excluded from arterial roadways as they do not perform well with high levels of traffic.



Hamden Plains & Wintergreen Corridor Attributes and Issues

The following table provides a summary of study corridor attributes and documented issues. The corridors are comprised of local, collector and arterial roadways with traffic volumes that range from 1,200 vehicles per day on sections of Wintergreen Avenue to 11,900 vehicles per day at the east end of Benham Street. Roadway width varies considerably across the corridors with sections of Pine Rock and Wintergreen Avenue as narrow as 24 feet and Brook Street as wide as 38 feet.

The study area varies from high density suburban development in the southeast corner (Hamden Plains) to low density suburban/rural in the northwest corner (Wintergreen).

Four Hamden schools are located within the study area, these include: Dunbar Hills School, Wintergreen School, Helen Street School and Church Street School.

Speed limits are 25 or 30 mph on all corridors. Observed speeds were higher with 85th percentile speeds (the speed at which 85% of drivers are at or below) varying from 35 to 42 mph where measured. Despite the suburban nature of much of the study area, sidewalks are limited and there are no on-street bicycle facilities. Stakeholders identified speeding as a concern on all corridors and this concern is compounded by limited and discontinuous sidewalk facilities.

Corridor	Street Type	Volume (AADT)	Typical Width	Speed Limit	85% Speed	Attributes	Issues
Benham Street	Arterial/ Collector	8,000-11,900	32-36’	25	42	Wide street with steep slopes. Traffic is heavy at eastern end but diminishes towards the western end.	High traffic speeds, significant downhill slope approaching Dunbar Hill School. Discontinuous sidewalks.
Brook Street	Arterial/ Collector	2,900	30-38’	30	N/A	Wide curving street, connects Pine Rock Ave, Wintergreen Ave, Gilbert Ave, and Lane Street. Abuts Pine Rock Park.	Discontinuous sidewalks.
Circular Avenue	Arterial	1,800-8,000	29-34’	30	35	North/south arterial street that connects Dunbar Hill to Hamden Plains.	Multiple intersections, limited pedestrian crossing opportunities. Demand for on-street parking.
Gilbert Avenue	Local	N/A	25-30’	25	N/A	Local road with steep slopes and sharp curves.	Inadequate curve warning signage. Sidewalks absent from most of corridor.
Lane Street	Collector	4,800	36’	25/30	42	Wide collector street, connects to Dunbar Hill School	High traffic speeds in proximity of school. Discontinuous sidewalks.
Pine Rock Avenue	Collector/ Local	2,700-4,500	24-30’	25	38	Connects Woodin Street, Brook Street, and Gilbert Avenue. Provides access to Helen Street School.	High traffic speeds. Narrow and steep slope north of Brook Street.
Wintergreen Avenue	Arterial	1,200-1,800	24-36’	25	38	Low volume rural route with multiple sharp turns. Connects to Wintergreen School.	High traffic speeds, limited sidewalks, limited sight-lines, multiple curves.
Woodin Street	Arterial	4,600-4,900	28-32’	25	35	Arterial street with multiple intersections, high pedestrian activity, multiple bus stops and demand for on-street parking	Sidewalks absent from western end of corridor. High pedestrian traffic and transit use, limited crossing opportunities.

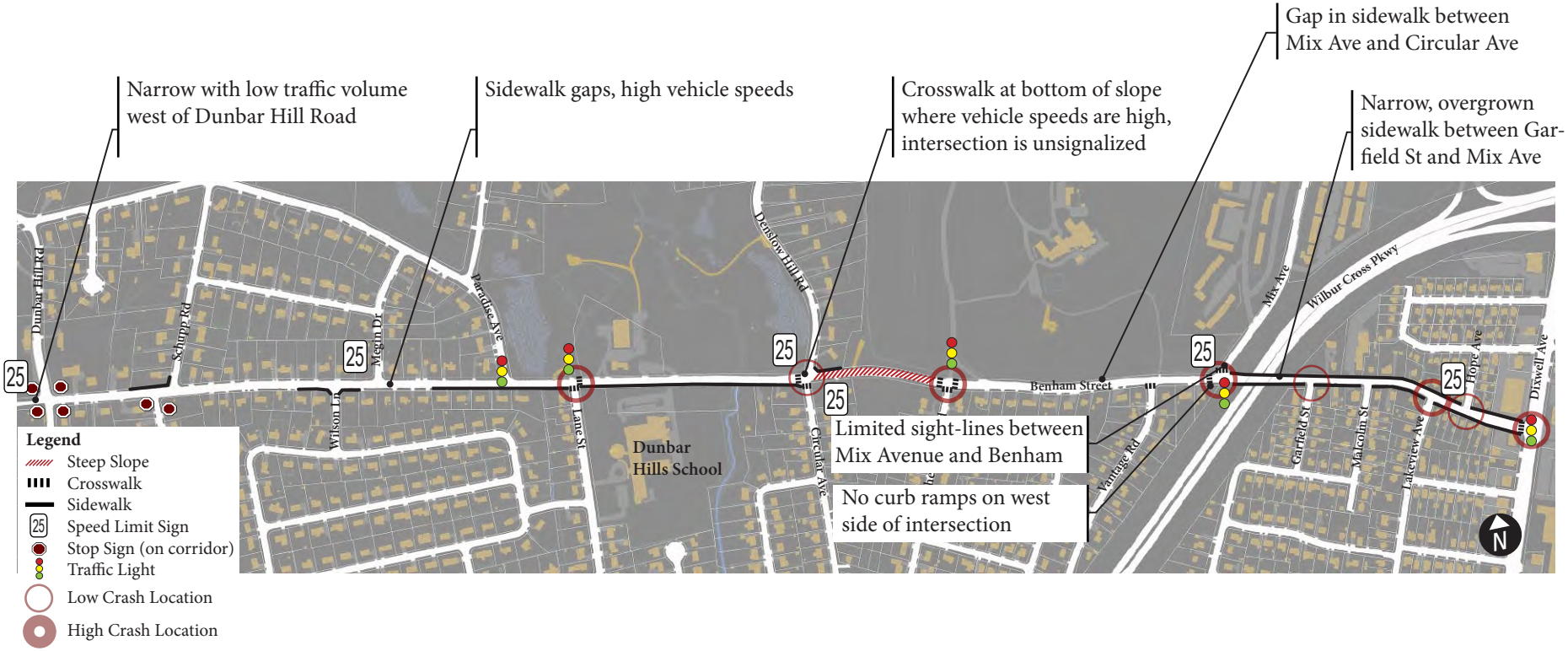
N/A: Not Available

Benham Street: Existing Conditions

Benham Street travels east/west in the Dunbar Hills area and connects Dixwell Avenue to Main Street at the western edge of Hamden. Between Dixwell Avenue and Circular Avenue, Benham Street is an arterial roadway, reducing to a collector roadway between Circular Avenue and Lane Street and further reducing to a local street west of Lane Street. Traffic volume follows this progression with 11,900 vehicles per day at the eastern end and 8,000 vehicles per day between Lane Street and Circular Avenue. The speed limit on Benham Street is 25 mph but 85th percentile traffic speeds have been measured at 42 mph, 17 mph in excess of the posted speed limit.

Benham street is 32' to 36' wide east of Dunbar Hills Road. West of Dunbar Hills Road, the roadway is narrow, winding and has a much lower traffic volume and density of development. Sidewalks are present on the roadway although significant gaps are present between Circular and Mix Avenues and west of Paradise Avenue. Sidewalks are present in the proximity of Dunbar Hills School, but do not connect to the neighborhoods east of Circular Avenue.

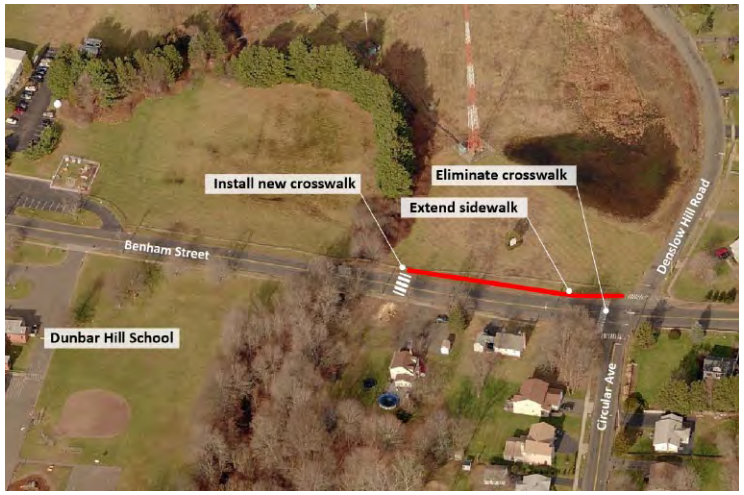
Eastbound view at Denslow Hill Road. Crosswalk is located at the base of a steep hill.



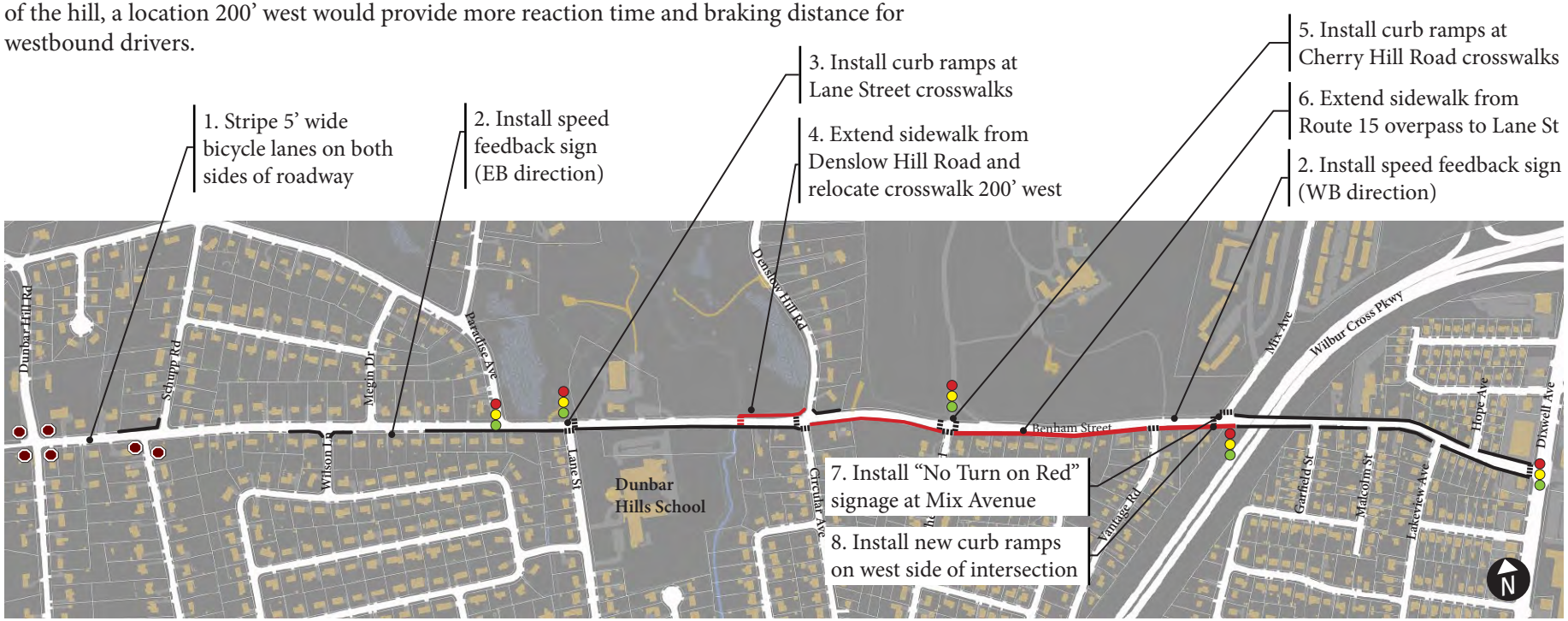
Benham Street: Recommendations

The recommended improvements for Benham Street are focused upon improving pedestrian facilities and providing accommodations for bicyclists. As one of few east/west connections in the Hamden Plains and Wintergreen study area, this connection is critical to pedestrians and bicyclists, particularly given the location of Dunbar Hill School on the corridor. Being 32' to 36' wide, the roadway can accommodate 5' wide or greater bicycle lanes on both sides of the roadway between Dixwell Avenue and Dunbar Hills Road. Constraining the travel lane to 11' with a bicycle lane/shoulder stripe would channelize traffic and reduce travel speeds.

Sidewalk improvements are also recommended including the installation of a sidewalk on the south side of Benham Street from Mix Avenue to Circular Avenue. This sidewalk would provide a connection from Dunbar Hills School to the neighborhood east of Route 15 and to Dixwell Avenue. The existing crosswalk at Denslow Hill Road and Circular Avenue should also be relocated 200' west in order to provide a safer crossing than its existing location. That location has high westbound vehicle speeds due to its location at the base of the hill, a location 200' west would provide more reaction time and braking distance for westbound drivers.



4. Extend sidewalk 200' west of Denslow Hill Road and relocate crosswalk to that location. Install crosswalk signage.



Circular Avenue: Existing Conditions

Circular Avenue is an arterial residential street that connects Benham Street to Dixwell Avenue. The roadway, which carries 1,800 vehicles per day at the northern end and 8,000 vehicles per day at the southern end is relatively flat and straight. The posted speed limit is 30 mph although 85th percentile speeds were measured at 35 mph. Circular Avenue is frequently intersected by local residential streets as well as Route 15 which it passes beneath.

Circular Avenue has a complete sidewalk network with the only gap on the east side of the roadway north of Cherry Hill Road. Crosswalks across Circular Avenue are limited to the Benham Street, Gilbert Avenue, Church Street, and Dixwell Avenue locations. The high density of homes on the street also contributes to a demand for on-street parking. Bus stops are located on both sides of the roadway and are spaced several hundred feet apart.

The multiple intersections on Circular Avenue and the higher than posted travel speeds contribute to several reoccurring crash locations on the roadway. Of these, Gilbert Avenue and Benham Street have the highest frequency of crashes. Crashes at these locations are most often property damage only and are rear-end or turning movement collisions. Contributing factors include speeding and following too closely.

Circular Avenue at Church Street

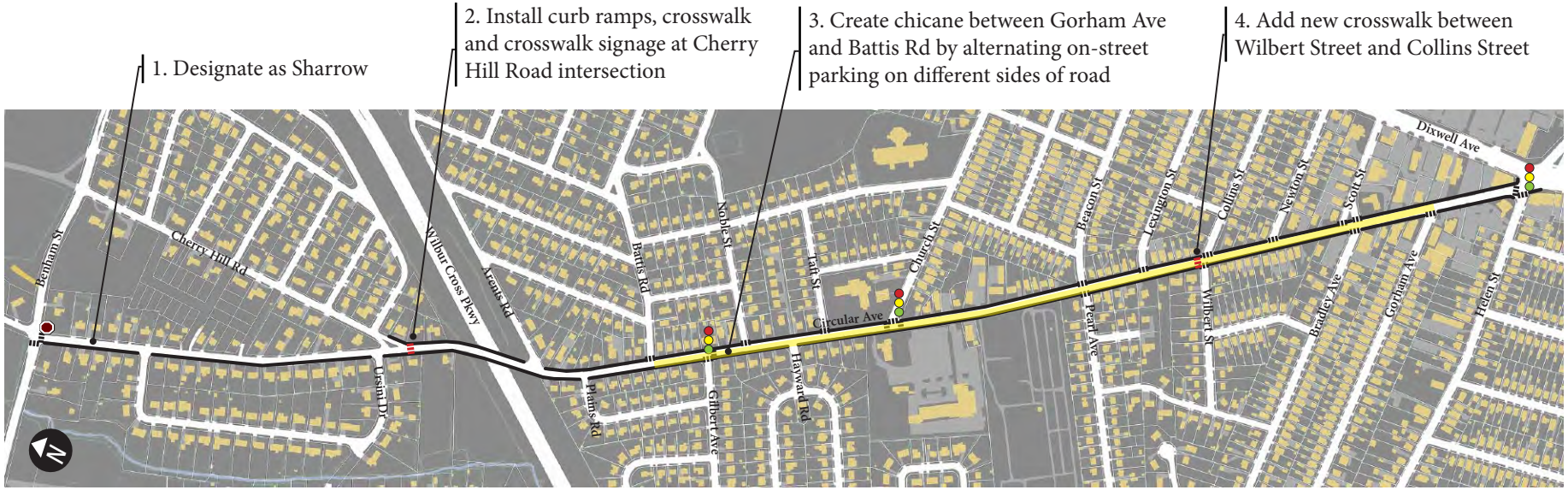
Circular Avenue: Recommendations

The goals for Circular Avenue are to slow vehicles speeds and to improve bicycle and pedestrian facilities. Slower vehicle speeds will likely reduce the number of crashes on the roadway and make conditions safer for bicyclists and crossing pedestrians.

As an arterial roadway with moderately high levels of traffic at its southern end, traffic calming techniques such as speed humps are not appropriate for the roadway. Horizontal deflection techniques such as a chicanes are the preferred method of calming traffic speeds on this type of roadway. The chicane can be created by striping on-street parking and alternating that parking from one side of the street to the other block by block.

Additional crosswalks should also be installed at Cherry Hill Road and Wilbert Street and the roadway should be signed and marked as a shared use roadway "sharrow".

3. Create chicane between Gorham Ave and Battis Road by alternating on-street parking on different sides of road. 4. Add new crosswalk and curb ramps at Wilbert and Collins Streets.



Gilbert Avenue: Existing Conditions

Gilbert Avenue is a local, residential roadway that connects Circular Avenue to Benham Street and Hamden Plains to the Wintergreen area of Hamden. At a width of 25' to 30' wide, the roadway is relatively narrow and pavement conditions are in fair to poor conditions on the northwest segment of the roadway. Less than 200' of sidewalks line the roadway and there are no crosswalks present. East of Brook and Lane Streets, Gilbert Avenue travels through a neighborhood that has a higher density of homes than the area north and west of Route 15. As such, these roadways have very little in common. The crash locations with significant frequency of collisions are at the intersection at Circular Avenue and at the intersection of Brook and Lane Streets. No significant crash patterns were identified on the sloped and curving segments of the roadway.

Southbound view of Gilbert Avenue from Benham Street. Roadway is narrow and pavement quality is poor.

Sharp curve, inadequate warning signage

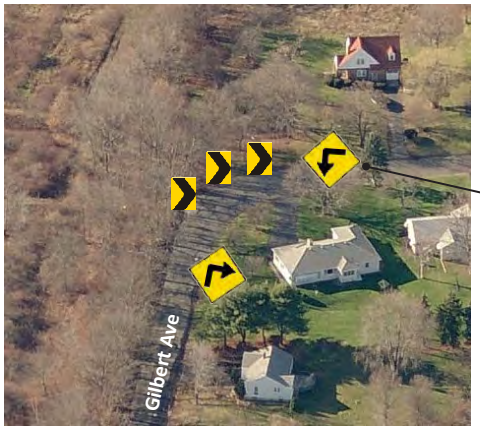
Newly paved segment of roadway

Dense residential area with no sidewalks

Large stop controlled four-way intersection, vehicles often fail to come to complete stop

Gilbert Avenue: Recommendations

The recommended improvements for Gilbert Avenue are focused on the segment east of Brook and Lane Streets. This segment has a greater density of homes and more traffic, yet does not have sidewalks. Calming traffic speeds at this segment will improve the safety of pedestrians who walk in the roadway due to the lack of sidewalks. As a low volume local road, speed humps would be the most effective method of calming traffic. The placement of three speed humps between Pine Rock Avenue and Plains Roadway should be considered. Temporary devices should be installed as an interim measure to gauge their effectiveness and the receptiveness of neighboring residents to this measure. Additionally, a traffic circle should be constructed at the intersection with Lane and Brook Streets. The installation of a circle would prevent stop sign running at this location and mitigate against the collisions that are document at that location due to failure to stop at the intersection. West of Lane and Brook Streets, new curve warning signage should be installed at two locations where 90 degree curves are present in the roadway.



1. Install curve warning signage

2. Install speed humps between Pine Rock Ave and Plains Road

3. Construct traffic circle at Lane St/Brook St intersection

2. Install speed humps between Pine Rock Ave and Plains Road. 3. Construct traffic circle at Lane St/Brook St intersection.

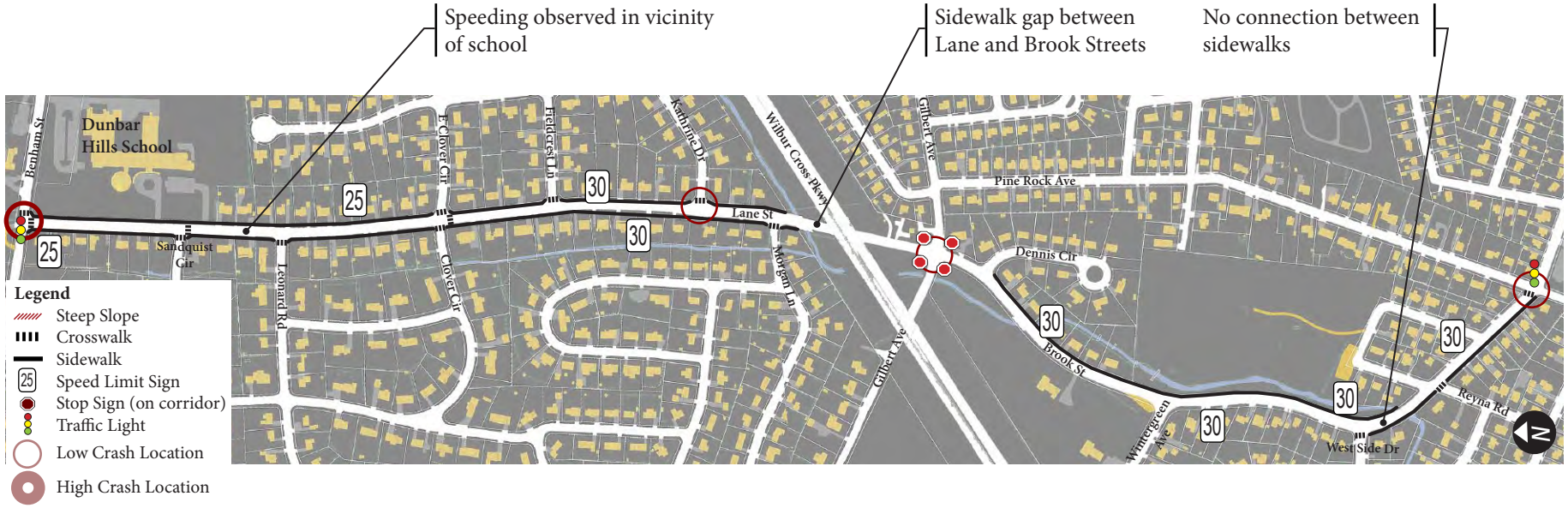
4. Remove yellow centerline marking between Lane/Brook Street and Circular Ave

Lane & Brook Streets: Existing Conditions

Lane and Brook Streets, despite different names, act as one continuous corridor between Benham Street and Pine Rock Avenue, connecting Dunbar Hill to Hamden Plains. Lane Street, which is the segment north of Gilbert Avenue, is a collector roadway that carries approximately 4,800 vehicles per day. Brook Street is an arterial roadway at its southern end, becoming a collector roadway north of Wintergreen Avenue, it carries 2,900 vehicles per day. The posted speed limit on most of the corridor is 30 mph, this reduces to 25 mph as Lane Street approaches Dunbar Hill School near the intersection of Benham Street. The observed 85th percentile travel speeds on Lane Street were measured at 42 mph.

Lane Street has continuous sidewalks on both sides of the roadway, with multiple crosswalks. These sidewalks end at the brook just short of the Route 15 overpass. Brook Street has sidewalks that alternate from the east to the west sides of the roadway, but these facilities are not connected by a crosswalk. Both Lane and Brook Street are relatively wide roadways. Lane Street averages 36' wide and Brook Street varies between 30' and 38' in width.

Southbound view of Lane Street approaching the Gilbert Avenue intersection. Stop sign is obscured by trees.

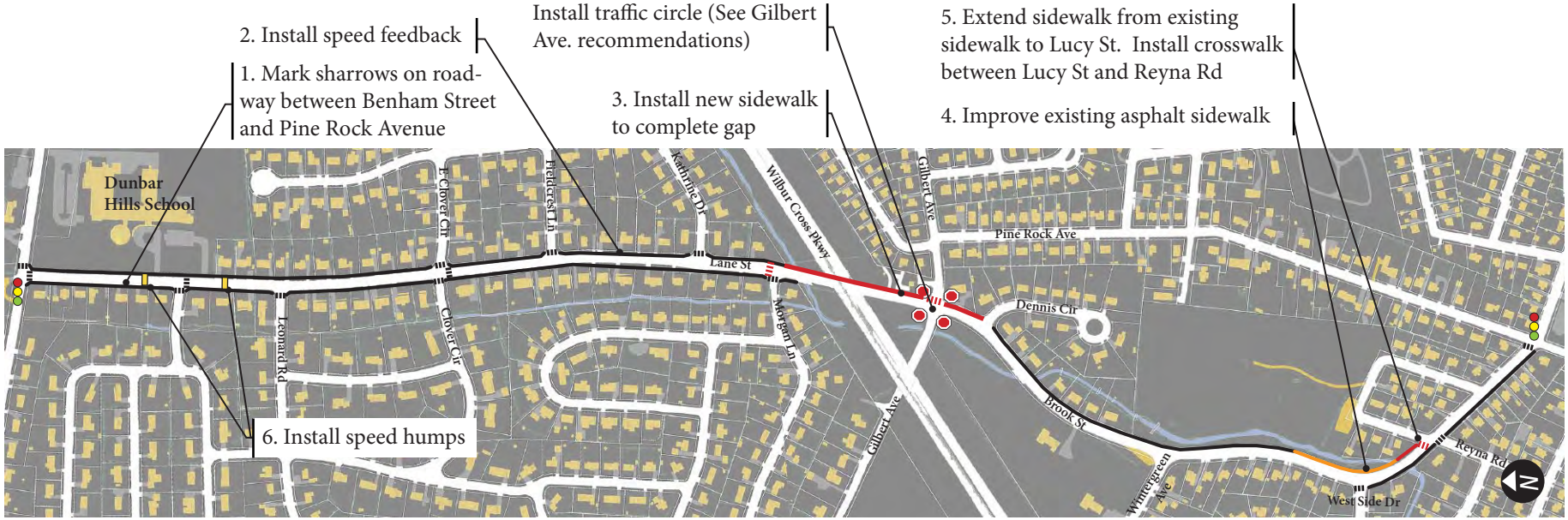


Lane & Brook Streets: Recommendations

The recommendations for Lane and Brook Streets are focused upon improving the pedestrian and bicycle infrastructure and slowing vehicular speeds in the vicinity of Dunbar Hill School. As a collector roadway with school bus traffic, traditional 16' speed humps are not advisable on Lane Street. Due to the long wheel base of busses, 22' speed humps are recommended in lieu of 16' speed humps. One speed hump should be installed north and one installed south of the crosswalk at Sandquist Circle as a means of slowing speeds through the crosswalk and increasing vehicular yielding to crossing pedestrians.

The sidewalk network should also be completed between Lane and Brook Streets. This requires the construction of 700' of sidewalk on the east side of the corridor and the installation of a crosswalk across Gilbert Avenue to connect the two segments. Further south, the sidewalk on the east side of Brook Street should be improved and extended to Lucy Street where a crosswalk can be installed that would connect to the existing sidewalk on the west side of the street. Additionally, both roadways should be marked and signed as a shared roadway (sharrow).

6. Speed humps on Lane Street



Pine Rock Avenue: Existing Conditions

Pine Rock Avenue is a collector street south of Brook and Gorham Streets and a local roadway north of that point. Traffic varies between 2,700 vehicles per day on the northern segment to 4,500 vehicles per day on the southern segment. The posted speed limit on the roadway is 25 mph but observed 85th percentile speeds are 38 mph. Pine Rock Avenue is relatively narrow varying between 30' wide at the southern segment and 24' wide at the northern segment. Sidewalks and crosswalks are present throughout the corridor, on both sides of the roadway.

Pine Rock Avenue connects Woodin Street to Pine Rock Avenue and provides access to Helen Street School. A steep slope is located immediate north of Helen Street School approaching the Brook and Gorham Streets intersection. This slope contributes to speeding in the southbound direction on the approach to the school. Given the density of housing on Pine Rock Avenue, there is a demand for on-street parking. Although not restricted, there is little space for parking within the striped travel lane.

Southbound view on Pine Rock Avenue approaching Helen Street School.

Pine Rock Avenue: Recommendations

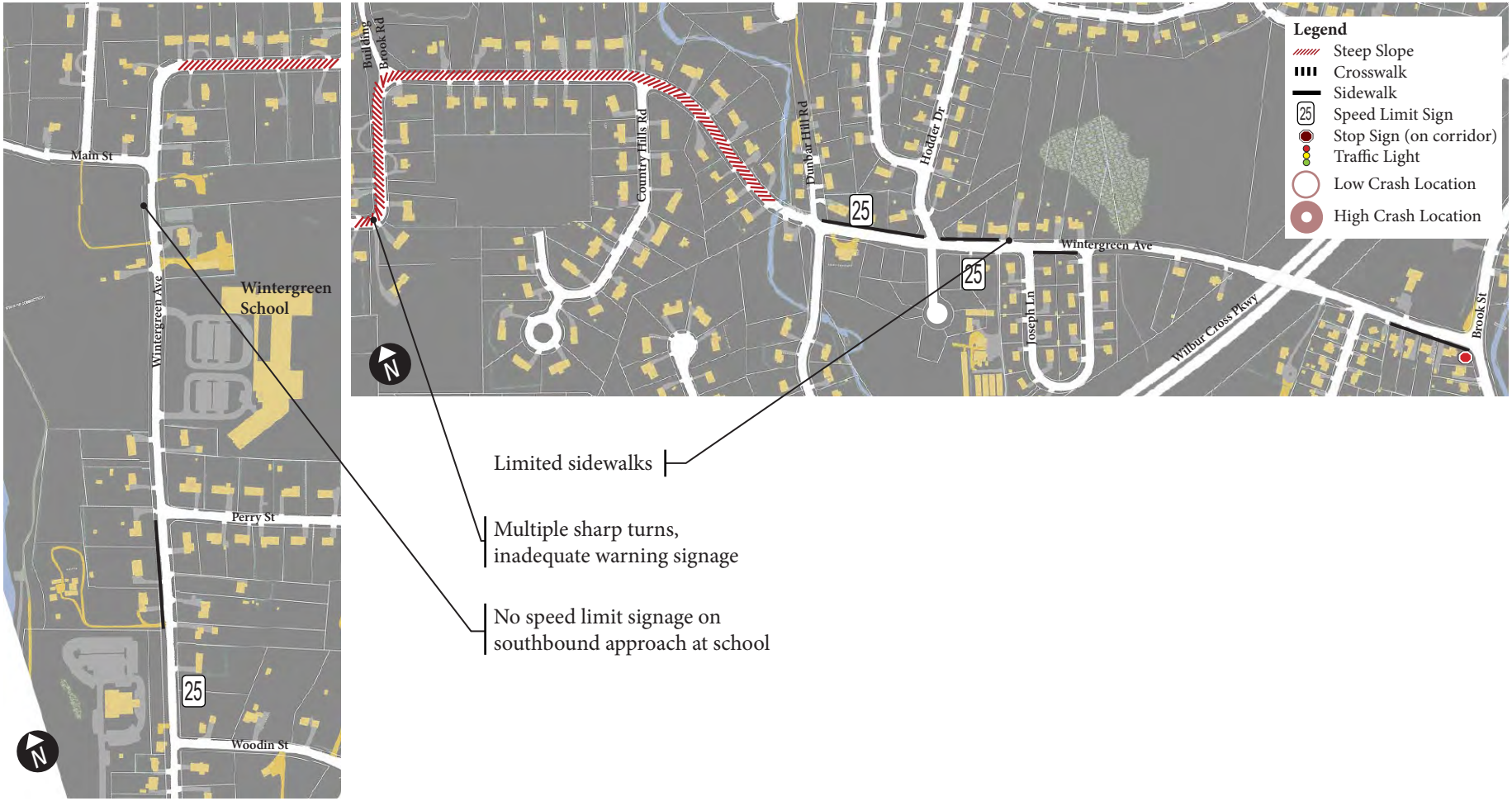
The recommended improvements for Pine Rock Avenue are focused on slowing travel speeds on the roadway. This can be accomplished by installing speed humps on the northern segment of the roadway, which is a low volume local street. The yellow center-line stripe should be removed from this segment to provide additional space on the roadway for on-street parking on either side of the roadway. The absence of a striped travel lane will also provide additional space on the roadway for bicyclists. Speed feedback signs should be installed on the northern and southern approaches to Helen Street School in order to reduce travel speeds in the vicinity of the school. Warning signage should also be install at the terminus of the roadway on Gilbert Avenue.

Wintergreen Avenue: Existing Conditions

Wintergreen Avenue is a low volume arterial roadway that extends from Brook Street to Woodin Street and extends throughout the Wintergreen area. Traffic volume on the roadway varies from 1,200 to 1,800 vehicles per day and the area is low density residential. Wintergreen Avenue is posted at 25 mph but 85th percentile traffic speeds were measured at 38 mph.

Wintergreen Avenue slopes steeply downhill from just north of Main Street to Stanley Road. Several hundred feet of sidewalk lines the roadway but these segments are not connected and there is no continuous pedestrian network on the roadway. Wintergreen School is located on the western segment of the roadway, but the school is a magnet school and does not attract a significant number of neighboring students who would be expected to walk to school.

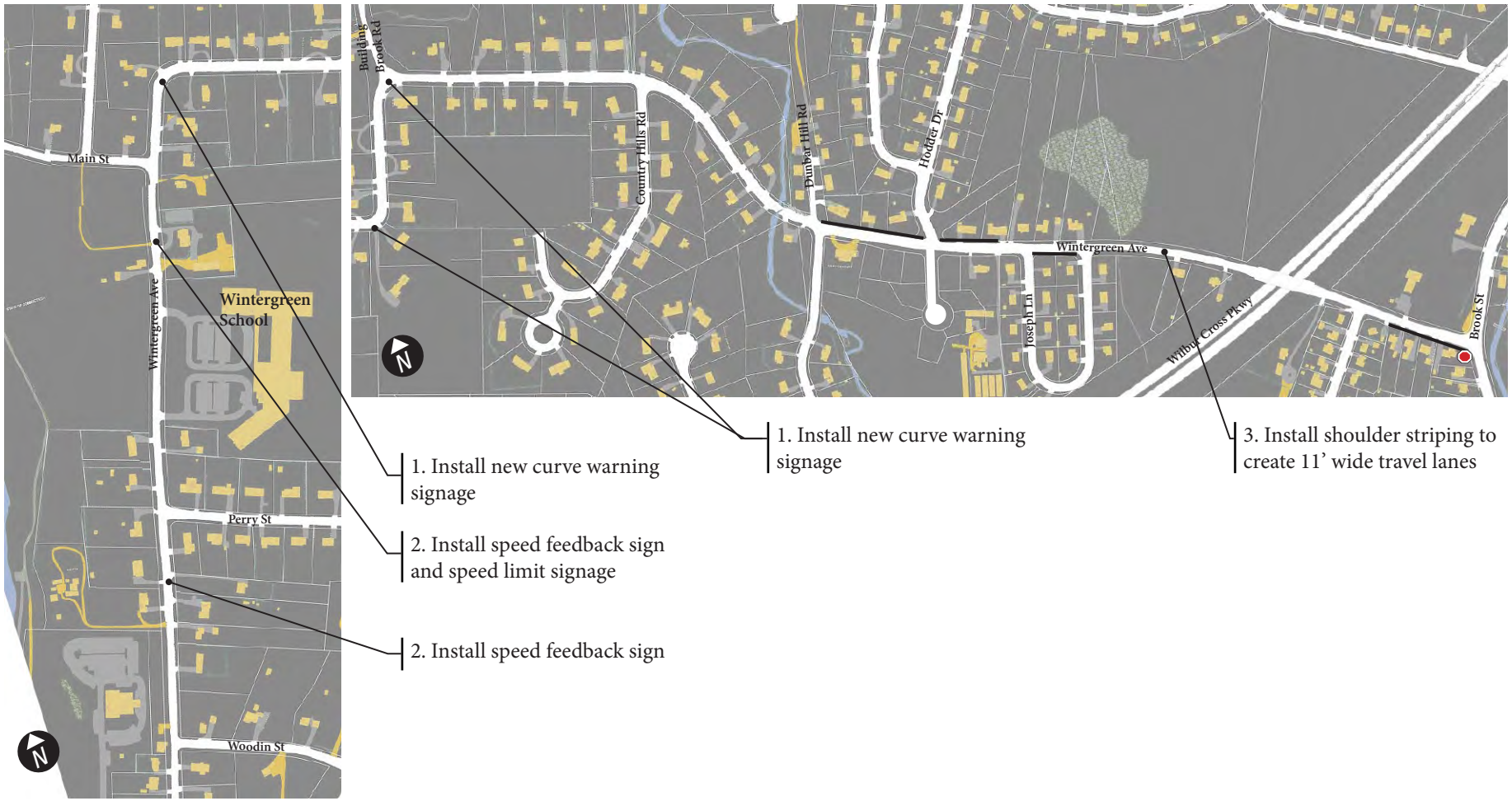
Sharp turn in roadway, warning signage is inadequate.



Wintergreen Avenue: Recommendations

As an arterial roadway that carries school buses and emergency vehicles, the options for calming traffic speeds on Wintergreen Avenue are limited. Given the low density of residential development, pedestrian demand for sidewalk facilities is low. The recommendations are therefore focused on slowing travel speeds in the vicinity of Wintergreen School, and improving safety on the winding segment of roadway. In support of this, speed feedback signs should be installed near Wintergreen School, curve warning signage should be installed to replace and/or supplement existing signage, and shoulder stripes should be installed through the length of the corridor to guide traffic and slow vehicle speeds.

1. Curve warning and guidance signage on Wintergreen Avenue between Main Street and Building Brook Road. Typical signage pattern consisting of curve ahead and chevron signs shown at right.

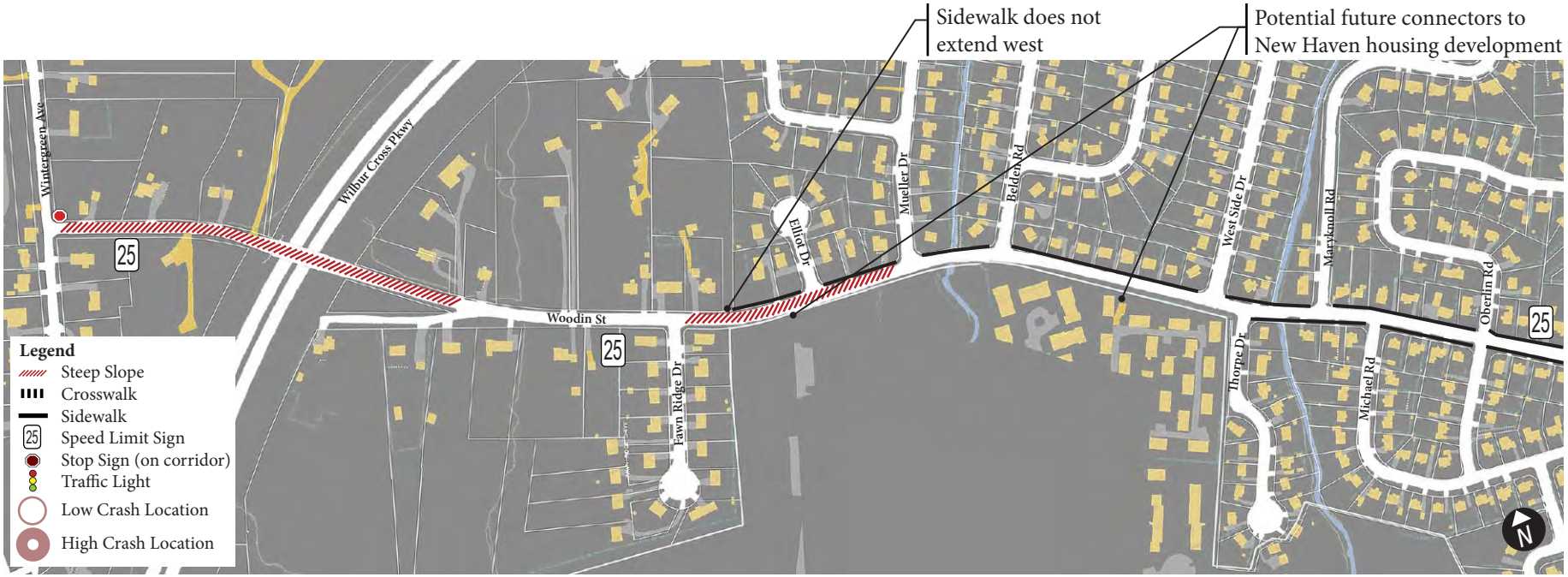


Woodin Street (west segment): Existing Conditions

Woodin Street is an arterial roadway that connects Hamden Plains to Wintergreen. The street carries between 4,600 and 4,900 vehicles per day. The posted speed limit on Woodin Street is 25 mph but 85th percentile travel speeds have been measured at 35 mph. The roadway varies between 28' and 32' wide with significant slopes at the western end near Wintergreen Avenue and the Route 15 bridge. Wintergreen Avenue has sidewalks on both sides of the roadway but the sidewalk on the south side does not extend west of Thorpe Drive and the sidewalk on the north side stops short of Fawn Ridge Drive.

Traffic on the western segment of Woodin Street is likely to increase as a result of the pending construction of connector roads from New Haven to Hamden between Fawn Ridge Drive and West Side Drive. This would serve a local New Haven housing development and a planned Southern Connecticut State University parking garage. Traffic would most likely travel in the eastbound direction from New Haven as this route provides the most direct connection to Dixwell Avenue from that area. Additional traffic calming should be considered on Woodin Street if traffic generated as a result of the new roadways shows an increase in 85th percentile travel speeds. The plan for the new connector roadways has not been finalized or approved at the time of this report.

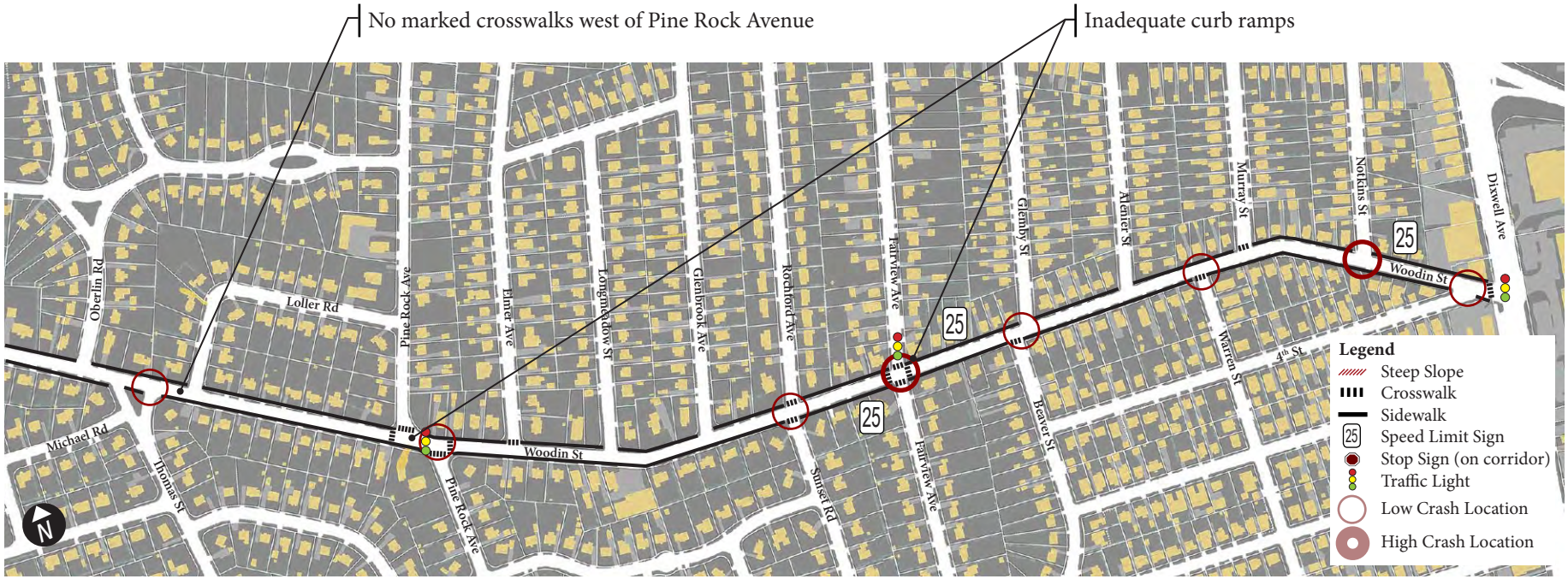
Eastbound view near Fawn Ridge Drive. Sidewalk ends 200' short of several homes on Fawn Ridge Drive.



Woodin Street (east segment): Existing Conditions

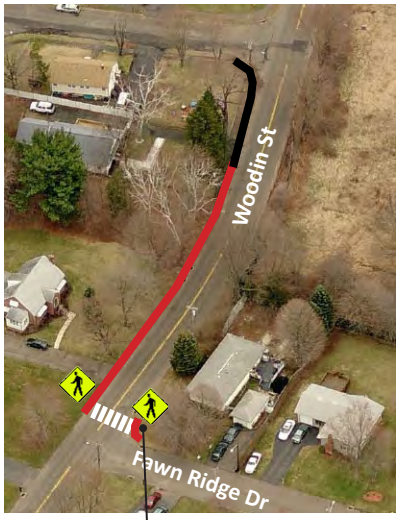
The eastern segment of Woodin Street travels through a densely developed neighborhood that has numerous intersecting streets and multiple curb cuts for driveways. This area is also frequented by bicyclists, pedestrians, and has several bus stops along the corridor. Because of the dense residential development, there is a demand for on-street parking which is limited to the south side of the roadway between Alenier Street and Pine Rock Avenue and is unregulated west of Pine Rock Avenue. Additionally, the Fairview Avenue and Pine Rock Avenue intersections lack ADA accessible curb ramps.

Eastbound view at Pine Rock Avenue. Curb ramps are absent at crosswalks.



Woodin Street (west segment): Recommendations

The recommendations for the western segment of Woodin Street are focused upon improving connectivity for bicyclists and pedestrians. The roadway should be marked with a shoulder stripe to reduce the travel lane to 11' wide which would slow vehicle speeds and create additional space at the edge of the roadway for bicyclists and pedestrians. The roadway should also designated as a shared use roadway "sharrow". The sidewalk on the north side of the roadway should be extended west to Fawn Ridge Drive and a crosswalk should be installed at that location so as to provide a pedestrian connection to residences on Fawn Ridge Drive. An additional crosswalk and crosswalk signage should be installed at Oberlin Road to assist pedestrians in crossing the roadway. A speed feedback sign should be installed in the eastbound direction at the western end of the corridor.



2. Pavement striping and sharrow markings on western segment of Woodin Street.

3. Extend sidewalk west to Fawn Ridge Drive, install crosswalk to Fawn Ridge Drive

1. Designate roadway as shared use "Sharrow"

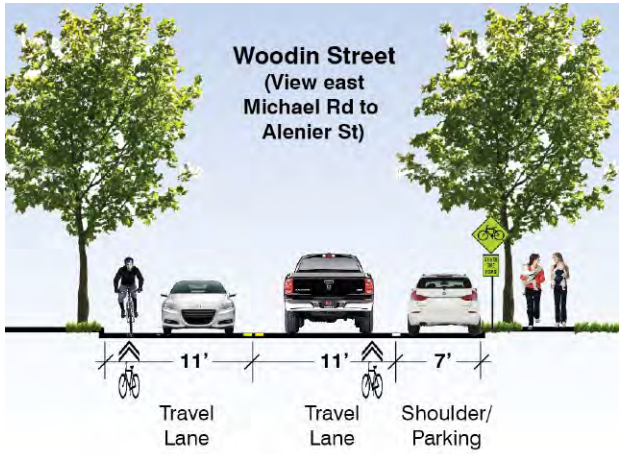
2. Stripe 11' wide travel lanes with 4' wide shoulders on both sides of roadway

8. Install speed feedback sign

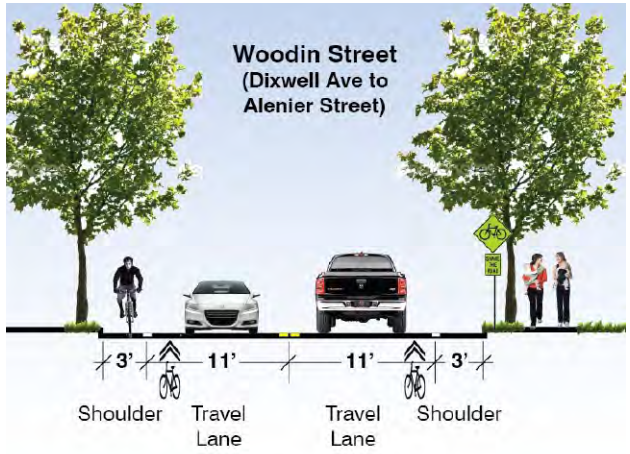
4. Install crosswalk and crosswalk signage at Oberlin Road

Woodin Street (east segment): Recommendations

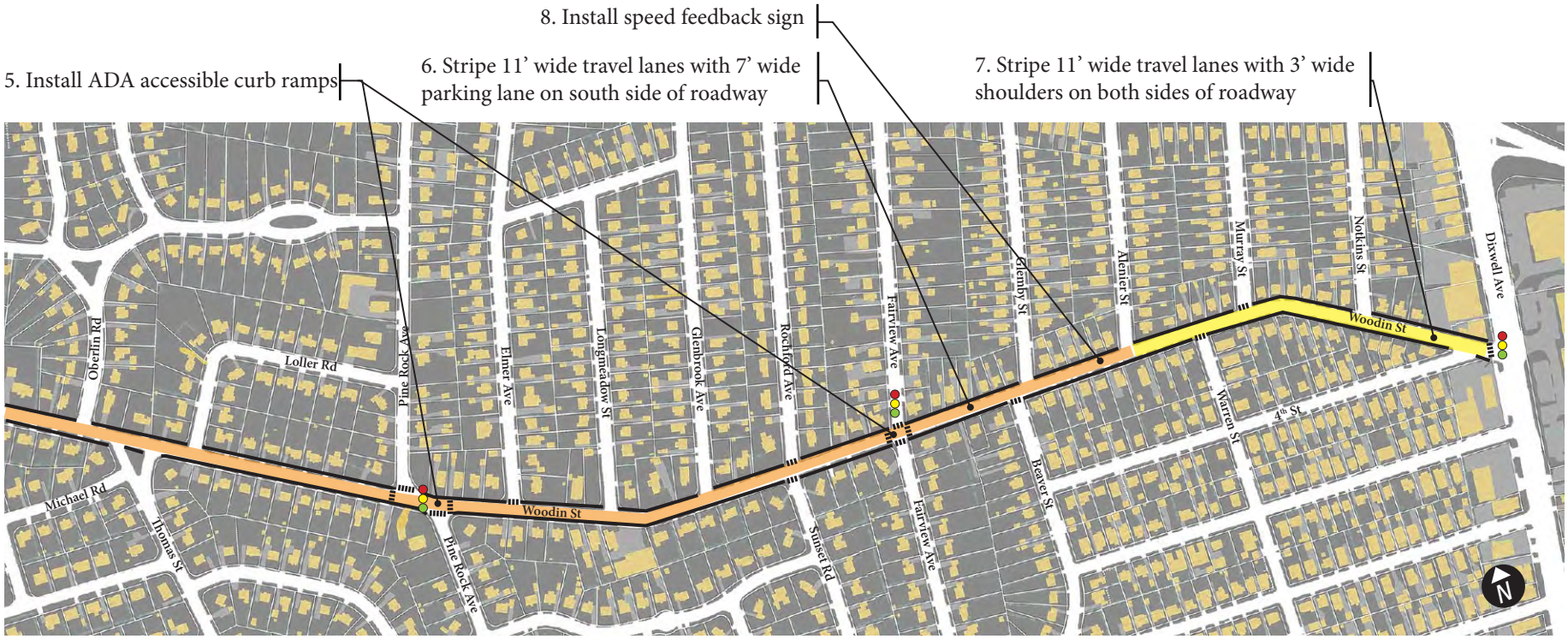
Recommendations for the eastern segment of the roadway include striping a parking lane between Michael Road and Alenier Street in order to accommodate and manage the demand for parking. Sharrow markings and "Share the Road" signage should also be installed throughout the length of the corridor. Curb ramps at Pine Brook Avenue and Fairview Avenue should be upgraded to ADA accessible curb ramps. East of Alenier Street, the roadway should be marked with shoulder stripes to discourage parking and provide space for bicyclists. A speed feedback sign should be installed in the westbound direction at the eastern end of the corridor.



6. Pavement striping and sharrow markings on middle segment of Woodin Street.



7. Pavement striping and sharrow markings on eastern segment of Woodin Street.



This page left intentionally blank

Implementation

Implementation

The total cost of proposed improvements within both study areas is $1,449,700. This cost estimate reflects typical construction and installation costs of the recommended measures in this plan. This estimate represents 2013 construction costs and is intended for planning purposes only. An itemized cost estimate is available on page 61 of this report.

Cost per Corridor - East Side	
Davis Street	$162,200
Foote Street	$18,800
Hartford Turnpike	$270,900
Park Road	$65,900
Ridge Road	$211,200
Sebec Street	$13,000
Total Cost	**$742,000**

Cost per Corridor - Hamden Plains/Wintergreen	
Benham Street	$304,600
Circular Avenue	$41,400
Gilbert Avenue	$38,400
Lane Street/Brook Street	$156,700
Pine Rock Avenue	$19,800
Wintergreen Avenue	$20,800
Woodin Street	$106,000
Total Cost	**$687,700**

Cost per Improvement Type	
Bicycle facilities	$125,600
Pedestrian facilities	$1,085,400
Traffic calming and traffic safety	$238,700
Total Cost	**$1,449,700**

Improvements should be phased in a five year period to allow for the budgeting of capital improvement funds. Low cost improvements items should be considered for short term improvements, with more capital intensive improvements scheduled for the long term. A proposed five year phasing schedule is included here.

Speed hump recommendations are subject to traffic speed data collection prior to implementation. Collected data must confirm that speeding is an issue as reported (85th percentile speeds must exceed the posted speed limit by 5 mph or greater). Upon documentation of speeding, temporary speed hump devices should be deployed. If these devices prove effective at lowering speeds, and are agreeable to residents, permanent devices should be considered for implementation.

Year 1 **$134,700**

- Warning and regulatory signage improvements
- Speed feedback sign installation
- Temporary traffic calming devices
- Curb ramp upgrades
- Installation of new stand-alone crosswalks

Year 2-3 **$482,000**

- Permanent traffic calming devices
- Installation if bicycle lanes and sharrows
- Roadway chicanes and re-striping
- Shoulder striping
- Removal of center line striping

Year 4-5 **$833,000**

- Ridge Road/Hartford Turnpike intersection improvements
- Construction of sidewalks on Ridge Road, Benham Street, Davis Street, Park Road, Woodin Street, Lane & Brook Streets

Toolbox

Marked Crosswalks

Marked crosswalks are a critical component of the pedestrian network. They guide the pedestrian to the safest crossing of the roadway and alert drivers to the expected presence of pedestrians. The "piano key" style crosswalk, which consists of multiple white bars aligned perpendicular to the walking path, is currently in use in Norwalk and should be used for crosswalk locations identified in this plan.

"Crosswalk markings provide guidance for pedestrians crossing the roadway by defining and delineating the most appropriate crossing path. Crosswalk markings also alert road users to a pedestrian crossing point not controlled by traffic signals or stop signs. At non-intersection locations, these markings legally establish the crosswalk." *–Institute for Transportation Engineers - Traffic Safety Toolbox*

"In general, crosswalk markings at unsignalized intersections appear to have several positive effects and no observed negative effects. Specifically, drivers appear to be aware that pedestrians are in a marked crosswalk and drive slightly slower. Crosswalks also have the positive benefit of channeling pedestrians to the intersection. Also, there appears to be no evidence to support the contention that pedestrians feel protected in marked crosswalks and act more carelessly. In conclusion, it appears that marking pedestrian crosswalks at relatively narrow, low-speed, unsignalized intersections is a desirable practice."*-Federal Highway Administration -RD-00-103*

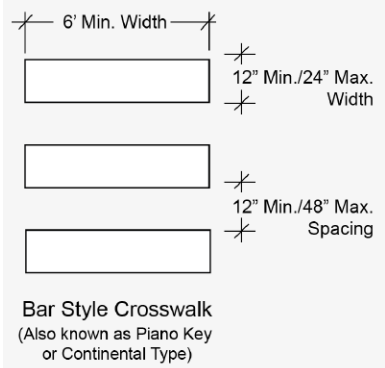
"Crosswalks can be raised or can be designed in conjunction with speed tables, medians, crossing islands, curb extensions, and other supplemental measures. With these measures, unsignalized crossings may be feasible at additional location types." *–Institute for Transportation Engineers - Traffic Safety Toolbox*

Benefits

- Encourages pedestrians to cross the street at regular locations.
- Improves visibility of pedestrians, alerts drivers to the presence of pedestrian traffic.

Application

- Crosswalk locations should be located approximately 300 feet apart. Increased distances decrease pedestrian conformity, decreased distances may decrease driver conformity.
- Crosswalks should be a minimum 6 feet wide to 10 feet wide or width of sidewalk if greater.
- Curb ramps, if present, should be aligned with crosswalk.
- Crosswalks are most effective when crossing roadway at a right angle.
- Crosswalks should be accompanied by signage or signalization where conditions warrant.



Crosswalk Signage

Crosswalk signage should be used at all crosswalks where traffic is not controlled by a traffic light or stop sign. This signage may also be used to supplement crosswalks at locations where sight-lines are an issue or where drivers fail to yield to pedestrians despite stop signs or traffic lights. The most common application of this sign would be a mid-block crosswalk. When located within a school zone, the school crossing sign should be used in lieu of the pedestrian crossing sign. The Manual for Uniform Traffic Control Devices (MUTCD) provides the following guidance:

> *Non-Vehicular Warning (W11-2) signs may be used to alert road users in advance of locations where unexpected entries into the roadway might occur or where shared use of the roadway by pedestrians might occur. These conflicts might be relatively confined, or might occur randomly over a segment of roadway.*
>
> *If used in advance of a pedestrian crossing, the W11-2 signs should be supplemented with plaques with the legend AHEAD or XX FEET to inform road users that they are approaching a point where crossing activity might occur.*
>
> *The W11-2 and W11-9 signs and their related supplemental plaques may have a fluorescent yellow-green background with a black legend and border.*
>
> *When a fluorescent yellow-green background is used, a systematic approach featuring one background color within a zone or area should be used. The mixing of standard yellow and fluorescent yellow-green backgrounds within a selected site area should be avoided. Crossing signs should be used only at locations where the crossing activity is unexpected or at locations not readily apparent. - Pedestrian relevant excerpts from MUTCD Section 2C.5*

Benefits

- Increases driver awareness
- Assists pedestrians in locating crosswalks

Application

- Signage typically used at mid-block crossing locations
- Signage must not interfere with sidewalk function
- School crossing sign should be used when crosswalk is located within a school zone or has a high number of students in route to school

School Crossing Sign
S1-1 sign with
W16-7P arrow

Pedestrian Crossing Sign
W11-2 sign with
W16-7P arrow

Speed Limits and Speed Limit Signage

Speed limits and speed limit signs are a critical component of the roadway infrastructure. Speed limits are set at a speed deemed appropriate for the roadway conditions and are established to move traffic in a uniform and safe manner. Signage communicates this critical information to roadway users.

In Connecticut, the Office of State Traffic Administration (OSTA), in conjunction with the Local Traffic Authorities (LTA) of the individual towns/cities, establishes speed limits for all public roads.

The OSTA sets regulatory speed limits on state and local roads based on an engineering investigation. Principal factors considered are:

- Road type and surface (curve, hill, etc.)
- Location and type of access points (intersections, entrances, etc.)
- Existing traffic control devices (signs, signals, etc.)
- Accident history
- Traffic volume
- Sight distances
- Test drive results
- Radar observations

Radar speed observations are an important part of the traffic investigation. When choosing a speed, drivers take many roadway environment factors into consideration. Therefore, the speed that the majority of people consider prudent is an important value. Data is collected by performing radar checks at selected locations on the roadway under ideal driving conditions. A technical analysis is done on the results to determine the 85th percentile speed. This is the value indicating the speed under which most (85%) drivers are travelling. Experience has shown that a posted speed limit near this value is the safe and reasonable speed. However, there are exceptions (high accident frequency, volumes, etc.).

Ultimately, the traffic investigator must use sound engineering judgement and knowledge of nationally accepted principles to assign the safe speed to a given roadway.

Narrow Travel Lanes

"Although lane widths of 3.6m (12') are desirable on both rural and urban facilities, there are circumstances that necessitate the use of lanes less than 3.6m (12') wide. In urban areas where right-of-way and existing development become stringent controls, the use of 3.3m (11') lanes is acceptable. Lanes 3.0m (10') wide are acceptable on low-speed facilities. Lanes 2.7m (9') wide are appropriate on low-volume roads in rural and residential areas." *-American Association of State Highway and Transportation Officials*

"The lane widths can be reduced (to 9, 10, or 11 ft.), with excess asphalt then striped with a bicycle lane or paved shoulders. Travel lanes cab be removed, and the street can be physically narrowed by extending sidewalks, landscaped areas, or by adding on-street parking within the former curb lines. This can often reduce vehicle speeds along a roadway section and enhance movement and safety for pedestrians." *-Institute for Transportation Engineers - Traffic Safety Toolbox*

Benefits

- Reduces vehicle speed
- Provides additional space for non-motorized roadway uses

Application

- Use 11' travel lanes on high volume arterial and collector streets
- Use 10' travel lanes on local streets and low volume collector streets
- Edgelines shall be placed on paved rural arterials with a traveled way of 20 feet or more and an ADT of 6,000 vehicles per day or greater. Edgelines may also be placed on any paved street or highway where an engineering study indicates a need and does not show that edgelines would decrease safety.

Lane reduction, Ridgefield, CT

Speed Humps

"Speed humps are paved (generally asphalt), approximately three to four inches high at their center, and extend the full width of the street. There are several designs for speed humps. The traditional 12-ft. hump has a design speed of 15 to 20 mph. The 14-ft. hump has a design speed of a few mph higher. A 22ft. table has a design speed of 25 to 30 mph. The longer humps are gentler for larger vehicles." *-Institute for Transportation Engineers - Traffic Safety Toolbox*

"A speed table is an elongated speed hump or a flat topped speed hump. At the top of the flat version, a pedestrian crossing (sometimes with a marked crosswalk) is often provided for people to walk across the road." *-Institute for Transportation Engineers - Traffic Safety Toolbox*

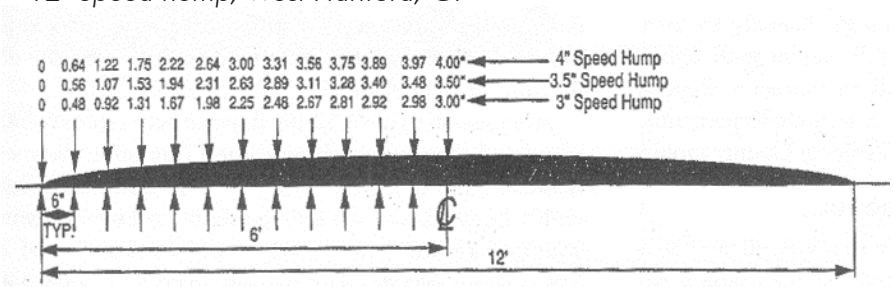
Benefits

- Slows vehicle speeds
- Table provides crossing area for pedestrians
- Table discourages parking in crosswalk

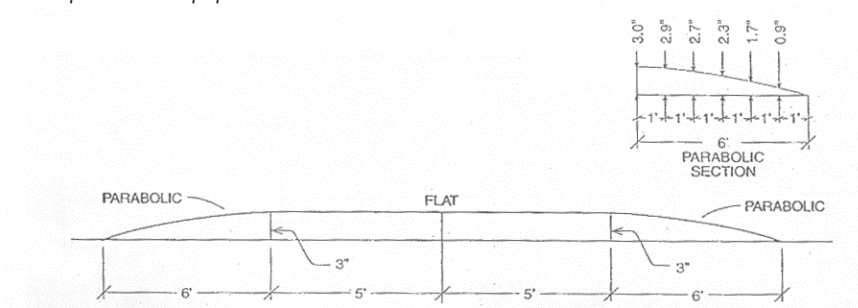
Application

- No more than two travel lanes or 40-foot pavement width
- Horizontal curve of 300-foot radius or more
- Vertical curve with adequate stopping sight distance
- Grade of 8 percent or less
- Posted speed limit of 30 mph or less
- No more than 5 percent long-wheelbase vehicles
- Not a primary emergency response route or bus route
- Spacing: 150' - 600' apart
- Use 22' humps on high volume streets

12' Speed hump, West Hartford, CT



12' Speed hump profile



22' Speed hump profile

Mini-Traffic Circles

"Mini circles are raised circular islands that are constructed in the center of residential street intersections to reduce vehicle speeds. They are sometimes used instead of stop signs. They force motorists to maneuver around them and have been found to reduce motor vehicle crashes. Drivers making left turns are directed to go on the far side of the circle (not the near side) before making the turn. Signs may be installed within the circle to direct motorists to proceed to the right of the circle before passing through or making a left turn." *-Institute for Transportation Engineers - Traffic Safety Toolbox*

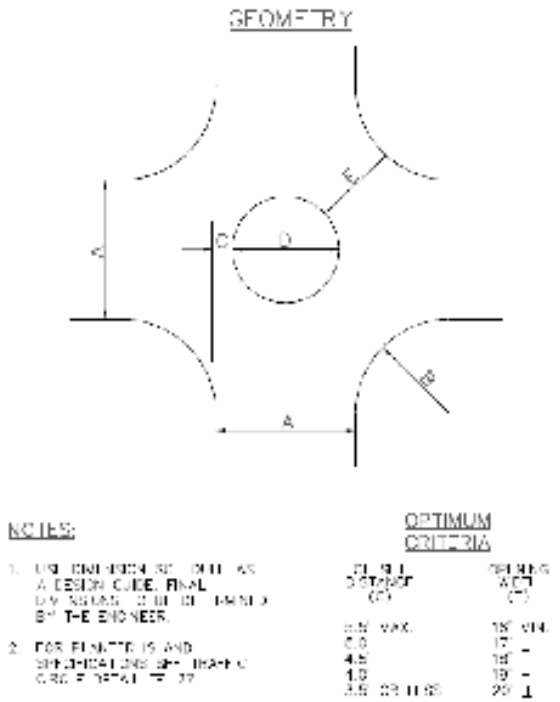
Traffic Circle

Benefits

- Prevents red-light or stop sign running
- Slows vehicle speeds through intersection

Application

- For use on local streets and low volume collector streets
- Replaces four-way stop or low volume signalized intersection
- Landscaping cannot interfere with driver visibility, can be maintained by residents



DIMENSIONS

A	B	C	D	E

Roadway Center Line

Center line pavement markings are yellow pavement markings used to delineate the separation of traffic lanes that have opposite directions of travel on a roadway. Center line pavement markings may be placed at a location that is not the geometric center of the roadway. On roadways without continuous center line pavement markings, short sections may be marked with center line pavement markings to control the position of traffic at specific locations, such as around curves, over hills, on approaches to grade crossings, at grade crossings, and at bridges.

Benefits

- Guides traffic along roadway
- Separates traffic travelling in opposite directions

Application

- Center line markings shall be placed on all paved urban arterials and collectors that have a traveled way of 20 feet or more in width and an ADT of 6,000 vehicles per day or greater.
- Center line markings shall also be placed on all paved two-way streets or highways that have three or more lanes for moving motor vehicle traffic.
- Center line markings should be placed on paved urban arterials and collectors that have a traveled way of 20 feet or more in width and an ADT of 4,000 vehicles per day or greater.
- Center line markings should also be placed on all rural arterials and collectors that have a traveled way of 18 feet or more in width and an ADT of 3,000 vehicles per day or greater.
- Center line markings should also be placed on other traveled ways where an engineering study indicates such a need.
- Engineering judgment should be used in determining whether to place center line markings on traveled ways that are less than 16 feet wide because of the potential for traffic encroaching on the pavement edges, traffic being affected by parked vehicles, and traffic encroaching into the opposing traffic lane.
- Center line markings may be placed on other paved two-way traveled ways that are 16 feet or more in width.
- If a traffic count is not available, the ADTs may be estimates that are based on engineering judgment.

Sharrows

Shared lane pavement markings (or "sharrows") are bicycle symbols carefully placed to guide bicyclists to the best place to ride on the road, avoid car doors, and remind drivers to share the road with cyclists. Unlike bicycle lanes, sharrows do not designate a particular part of the street for the exclusive use of bicyclists. They are simply a marking to guide bicyclists to the best place to ride and help motorists expect to see and share the lane with bicyclists. These facilities are used where roadways are to narrow for dedicated bicycle lanes and when traffic speeds and volumes allow bicyclists to safely mix with traffic.

Benefits

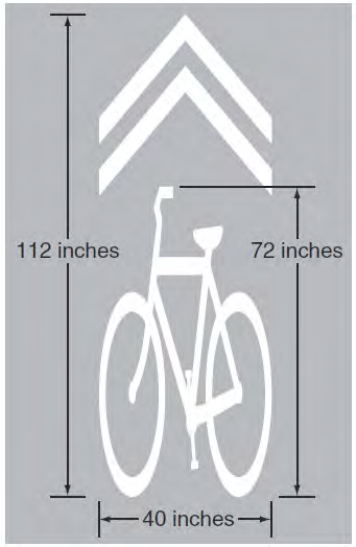
- Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist's impacting the open door of a parked vehicle
- Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane
- Alert road users of the lateral location bicyclists are likely to occupy within the traveled way
- Encourage safe passing of bicyclists by motorists
- Reduce the incidence of wrong-way bicycling

Application

- The sharrow should not be placed on roadways that have a speed limit above 35 mph.
- Sharrows shall not be used on shoulders or in designated bicycle lanes.
- If used in a shared lane with on-street parallel parking, sharrows should be placed so that the centers of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb.
- If used on a street without on-street parking that has an outside travel lane that is less than 14 feet wide, the centers of the sharrows should be at least 4 feet from the face of the curb, or from the edge of the pavement where there is no curb.
- The sharrow should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.
- "Share the Road" signage should be placed at the beginning of a shared roadway and proceeding major intersections within that roadway.

Shared lane roadway

Share the road signage



Sharrow pavement marking

Bicycle Lanes

Dedicated bicycle lanes are the preferred facility for most bicyclists. These lanes are often found at the edge of the roadway and would otherwise appear to be a roadway shoulder. They are marked by a white edgeline separating the bicycle lane from the traffic lane and by bicycle pavement markings within the lane. Signage is typically used at the beginning of the corridor and intermittently to inform drivers and bicyclists of the presence of the bicycle lane.

Bicycle Lane Safety Benefits - City of Cambridge, MA

Bike lanes help define road space, decrease the stress level of bicyclists riding in traffic, encourage bicyclists to ride in the correct direction of travel, and signal motorists that cyclists have a right to the road. Bike lanes help to better organize the flow of traffic and reduce the chance that motorists will stray into cyclists' path of travel. Bicyclists have stated their preference for marked on-street bicycle lanes in numerous surveys. In addition, several real-time studies (where cyclists of varying abilities and backgrounds ride and assess actual routes and street conditions) have found that cyclists are more comfortable and assess a street as having a better level of service for them where there are marked bike lanes present.

The Purpose of Bicycle Lanes - Connecticut Statewide Bicycle and Pedestrian Plan

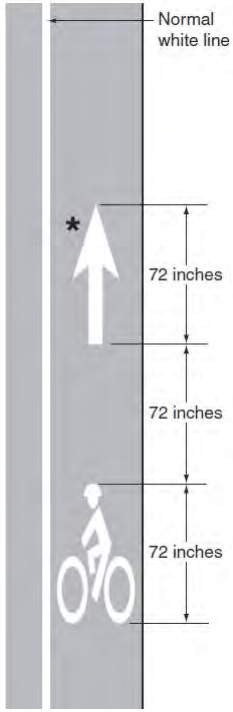
- *Create on-street separated travel facilities for bicyclists.*
- *Provide space for vehicles to safely overtake bicyclists.*
- *Reduce or prevent problems associated with bicyclists overtaking vehicles in congested or narrow streets.*
- *To encourage lower motor vehicle speed by narrowing available lanes.*

Application

- For use on collector and arterial roadways, or local streets in urban areas where bicyclists cannot safely ride with traffic.
- Bike lanes should be one way facilities carrying bicyclists in the same direction as adjacent traffic and located on the right side of the travel lane.
- Bike lanes generally should be installed in both directions of the roadway. Bike lanes installed on only one side of the roadway may encourage riding in the wrong direction.
- In some instances, on one-way roads, the bike lane may be installed on the left side of the travel lane if this provides better safety to the bicyclist.
- 4 feet wide minimum
- 5 feet wide if vehicle speeds exceed 50 mph or the lane is adjacent to a guardrail or tall barrier
- When placed adjacent to on-street parking, the left hand lane stripe (the stripe that separates the bicycle lane from the travel lane) should be no less than 12 feet from the curb. If parking volumes are substantial or turnover is high, such as downtown locations or streets with metered parking, this width should be increased to 14 feet so as to avoid collisions in the door zone of parked cars.
- Bike symbol pavement marking should be spaced every 500 feet and can be used more frequently in dense urban setting.
- Bicycle lane signage should be used at the beginning at the lane and spaced every mile or at significant intersections.

Bike Lane

Bike Lane Sign



Pavement Marking

Cost Estimate

Itemized Cost Estimate

This cost estimate reflects typical construction and installation costs of the recommended measures in this plan. This estimate represents 2013 construction costs and is intended for planning purposes only.

Davis Street			
Item	Improvement	Improvement Items	Cost
1	Shoulder stripe and sharrows	1,500 lf roadway shoulder striping, 12 sharrow markings, 2 "Share the Road" signs	$ 5,800
2	Extend sidewalk	1,500 lf concrete sidewalk	$ 150,000
3	Stop sign (if warranted)	1 stop sign and post	$ 200
4	Intersection improvements at Ridge Road intersection	1 curb ramp, 1 crosswalk, warning signage, lighting improvements	$ 4,000
5	Speed feedback signs	2 speed feedback signs	$ 2,000
6	"No Turn on Red Sign"	1 hanging No Turn on Red Sign	$ 200
			$ 162,200

Foote Street			
Item	Improvement	Improvement Items	Cost
1	Remove yellow centerline	2,400 lf roadway centerline grinding	$ 2,400
2	Install crosswalk signage and curb ramps	2 concrete curb ramps, 2 crosswalk signs	$ 6,400
3	Install two speed humps	2 speed humps and warning signage	$ 10,000
			$ 18,800

Hartford Turnpike			
Item	Improvement	Improvement Items	Cost
1	Shoulder stripe and bicycle lane signs	8,800 linear roadway feet of shoulder striping, 4 bicycle lane signs, 36 bicycle lane pavement markers	$ 25,600
2	Crosswalk warning signage	2 crosswalks signs	$ 400
3	Extend sidewalk, construct two curb ramps and install marked crosswalk and crosswalk signage	50 lf concrete sidewalk, 2 curb ramps, 1 crosswalk, 2 crosswalk signs	$ 11,900
4	Crosswalk improvements at Ridge Road intersection	80 lf concrete sidewalk, 5 curb ramps, 4 crosswalks	$ 33,000
4.1	Traffic signal improvements	Exclusive pedestrian actuated phase with push buttons and signal heads	$ 200,000
			$ 270,900

Park Road			
Item	Improvement	Improvement Items	Cost
1	Realign curb at Ridge Road	100 lf asphalt curb and landscaping, curve warning signage	$ 5,000
2	Extend sidewalk to Ridge Road	500 lf concrete sidewalk	$ 50,000
3	Curb ramp and crosswalk at Ridge Road	1 curb ramp, 1 crosswalk, 1 crosswalk sign	$ 3,700
4	Curb ramps and crosswalk at Farm Road and park entrance	2 curb ramps, 1 crosswalk	$ 6,500
5	Curve warning signage	2 curve ahead signs, 3 chevron signs	$ 700
			$ 65,900

Ridge Road			
Item	Improvement	Improvement Items	Cost
1	Speed feedback signs	2 speed feedback signs	$ 2,000
2	New crosswalks and crosswalk signage	2 crosswalks, 4 crosswalk signs	$ 2,700
3	Extend sidewalk north to Sante Fe Ave	1500 lf concrete sidewalk, 6 curb ramps	$ 168,000
4	Shoulder striping and bicycle lanes	11,000 linear roadway feet of shoulder striping, 44 bicycle lane pavement markings, 6 bicycle lane signs	$ 32,000
5	New sidewalk southeast of Park Road	200 lf concrete sidewalk	$ 20,000
6	Curb ramps and crosswalk at Pickwick Road	2 curb ramps, 1 crosswalk	$ 6,500
			$ 231,200

Sebec Street			
Item	Improvement	Improvement Items	Cost
1	Speed limit signage	1 speed limit sign	$ 200
2	Remove yellow centerline	2,200 lf centerline grinding	$ 2,200
3	Install two speed humps	2 asphalt speed humps, 4 warning signs	$ 10,000
4	"No Parking" signage	3 "No Parking" signs	$ 600
			$ 13,000

Benham Street			
Item	Improvement	Improvement Items	Cost
1	Shoulder striping and bicycle lanes	7,700 linear roadway feet of shoulder striping, 30 bicycle lane pavement markings, 8 bicycle lane signs	$ 23,000
2	Speed feedback signs	2 speed feedback signs	$ 2,000
3	Curb ramps at Lane Street	3 curb ramps	$ 9,000
4	Extend sidewalk 200' west of Denslow Hill Road, curb ramp and crosswalk	200 lf concrete sidewalk, 2 curb ramps, 1 crosswalk, 2 crosswalk signs, eliminate existing crosswalk	$ 27,400
5	Curb ramps at Cherry Hill Road	4 curb ramps	$ 12,000
6	Sidewalk between Rt 15 and Lane St	2100 lf concrete sidewalk, 5 curb ramps	$ 225,000
7	"No Turn on Red Sign"	1 "No Turn on Red" sign	$ 200
8	Install two curb ramps	2 concrete curb ramps	$ 6,000
			$ 304,600

Circular Avenue			
Item	Improvement	Improvement Items	Cost
1	Install sharrow marking and "Share the Road signage"	60 sharrow pavement markings, 6 "Share the Road" signs	$ 13,200
2	Crosswalk and curb ramps at Cherry Hill Road	2 curb ramps, 1 crosswalk, 2 crosswalk signs	$ 6,900
3	Chicane between Gorham Ave and Battis Rd	3,000 lf shoulder striping, 3,700 lf new centerline striping, grinding of 3,700 lf existing centerline striping, 20 "No Parking" signs	$ 14,400
4	Crosswalk, curb ramps and cross-walk signage at Wilbert/Collins St	2 curb ramps, 1 crosswalk, 2 crosswalk signs	$ 6,900
			$ 41,400

Gilbert Avenue			
Item	Improvement	Improvement Items	Cost
1	Curve warning signage	4 curve ahead warning signs, 6 chevron signs	$ 2,000
2	Speed humps	3 speed humps and 6 warning signs	$ 15,000
3	Traffic circle	1 landscaped traffic circle with signage	$ 20,000
4	Remove roadway centerline	1,400 lf centerline pavement marking grinding	$ 1,400
			$ 38,400

Lane & Brook Street			
Item	Improvement	Improvement Items	Cost
1	Sharrow pavement markings and "Share the Road" signage	50 sharrow pavement markings, 4 "Share the Road" signs	$ 10,800
2	Speed feedback sign	Install speed feedback sign northbound on Lane Street between Kathrine Drive and Fieldcrest Road	$ 1,000
3	New sidewalk	700 lf concrete sidewalk, 4 curb ramps, 2 marked crosswalks	$ 83,000
4	Improve asphalt sidewalk	350 lf concrete sidewalk	$ 35,000
5	Extend sidewalk to Lucy Street, install curb ramp and crosswalk	100 lf concrete sidewalk, 2 curb ramps, 1 crosswalk, 2 crosswalk signs	$ 16,900
6	Install speedhumps on Lane Street	Two 22' speed humps and warning signage	$ 10,000
			$ 156,700

Pine Brook Avenue			
Item	Improvement	Improvement Items	Cost
1	Warning signage at northern terminus of roadway	1 "W1-7" warning sign	$ 300
2	Remove yellow centerline	2,400 lf roadway centerline grinding	$ 2,400
3	Install speedhumps	3 speed humps and 6 warning signs	$ 15,000
4	Speed feedback signs	2 speed feedback signs	$ 2,000
5	On Coming Traffic warning sign	1 "Oncoming Traffic Does Not Stop" warning sign	$ 100
			$ 19,800

Wintergreen Avenue			
Item	Improvement	Improvement Items	Cost
1	Curve warning signage	6 curve ahead warning signs, 9 chevron signs	$ 1,800
2	Speed feedback signs and speed limit sign	2 speed feedback signs, one 25mph speed limit sign	$ 2,200
3	Shoulder striping	8,400 linear roadway feet of shoulder striping	$ 16,800
			$ 20,800

Woodin Street			
Item	Improvement	Improvement Items	Cost
1	Designate roadway as Sharrow	Install 70 sharrow pavement markings, 6 "Share the Road" signs	$ 15,200
2	Shoulder striping- 4' wide shoulders	4,000 linear roadway feet of shoulder striping	$ 8,000
3	Extend sidewalk west to Fawn Ridge Drive	300 lf concrete sidewalk	$ 30,000
4	Crosswalk, curb ramps and cross-walk signage at Oberlin Road	2 curb ramps, 1 crosswalk, 2 crosswalk signs	$ 6,900
5	Install curb ramps at Fairview Ave and Pine Rock Ave intersections	10 curb ramps	$ 30,000
6	Stripe parking lane on south side of roadway	3,900 lf shoulder striping, grind existing roadway centerline and stripe new centerline	$ 11,700
7	Shoulder striping- 3' wide shoulders	1,100 linear roadway feet of shoulder striping	$ 2,200
8	Speed feedback signs	2 speed feedback signs	$ 2,000
			$ 106,000

This page left intentionally blank

Non-Infrastructure Recommendations

Non-Infrastructure Recommendations

Physical improvements to the roadway network in Hamden Plains, Wintergreen and East Side Neighborhoods will address roadway deficiencies and contribute to a more equitable transportation network. Infrastructure improvements should also be accompanied by programs that seek to educate and inform drivers and residents about the need for roadway safety and responsible driving. The recommendations below are examples taken from the Hamden Traffic Calming committee.

1. **Develop a tagline and logo.** Used together, a traffic-calming tagline and logo would create a visual identity, for a Traffic Calming program. The tagline/logo:

- signals to viewers that the Town has a comprehensive, focused plan for traffic calming;
- encourages the uninitiated to learn more about the program, or at least to be aware of it;
- reminds those "in the know" that safe driving is expected in Hamden;
- and allows for a clear message to be disseminated simply to many different audiences.

2. **Develop a website** dedicated to the Traffic Calming Program that exists as a sub-site of Hamden.com. The website would:

- be accessible to many different audiences;
- provide information about the Town's traffic calming efforts
- provide educational material regarding traffic safety and calming
- support other communications and education efforts such as publicity, brochures, Facebook posts, etc. (efficiency).

3. **Generate publicity** in (or aimed at) print, online, radio, and TV media. Publicity – stories about Hamden's traffic calming efforts – supports the Plan's objectives by reaching many different audiences cost-effectively. PR tools include press releases, photographs, interviews with key players, op-ed pieces and articles about Hamden's experiences with traffic calming, messaging on Facebook and Twitter, press kits, etc.

4. **Conduct events and presentations.** Some of these can be initiated by the Town (such as press conferences, ribbon-cuttings) or conducted in government settings, such as meetings of Town boards and commissions or regional government agencies.

5. **Develop marketing tools.** Includes brochures, flyers, posters, banners, trash can stickers, signs at various gateways (town lines, entrances to various neighborhoods), bumper stickers, lawn signs, etc. All can display the TC tagline and/or logo and the URL for the traffic-calming section of the Town's website.

6. **Collaborate.** Collaborating with others on communications and education, can cost-effectively maximize awareness of the program while increasing citizen participation and the community's commitment to traffic safety. In presentations, on the website, and in select marketing materials, specify how individuals and organizations can help make Hamden streets safer.