TOWN OF
WEST HARTFORD

NEIGHBORHOOD STREET TRAFFIC CALMING PROGRAM

March 2022

Table of Contents

Introduction

West Hartford relies on its safe and efficient transportation network and recognizes it as a defining characteristic of a community in which people want to live and conduct business. The town's multi-modal system permits all users (motorists, pedestrians, bicyclists, and transit riders) to safely navigate streets in order to reach one's destination without excessive stress or delay. West Hartford's Complete Streets policy reinforces the Town's commitment to safety on our roadways and protecting vulnerable users. This is an on-going challenge, especially with distracted drivers and even distracted pedestrians. We need innovative solutions to alter driver behavior, reduce the negative effects of motor vehicle use, and improve conditions for non-motorized street users. Traffic calming employs non-physical (education and enforcement efforts) and self-enforcing physical features to accomplish these goals.

The Town has successfully implemented traffic calming projects in select locations, but a formal program is necessary to establish the framework and provide guidance to help residents understand the process. This program manual also provides an overview of traffic calming methods that can be used to mitigate neighborhood traffic issues and standardizes the Town's process for systematically evaluating traffic calming needs, identifying appropriate solutions, and prioritizing implementation.

Objective

The intent of this program is to establish a systematic and collaborative process to evaluate, design, implement, and maintain measures that are effective in calming traffic and enhancing the neighborhood environment. Traffic calming measures are intended to accomplish the following goals:

- Encourage safe and appropriate travel speeds
- Lower the frequency and severity of crashes
- Improve driver behavior
- Promote pedestrian and cycling use
- Maintain the functionality of the street network without significantly diverting traffic to other local streets or neighborhoods
- Reduce cut-thru traffic on local roads (promote the use of preferred arterials and collectors)
- Limit impacts to emergency vehicle response
- Reduce the need for police traffic enforcement
- Enhance neighborhood appearance

Definitions

Average Daily Traffic (ADT) Volume – The average number of vehicles per day traveling on a particular street within a 24-hour period.

Cut-thru Traffic – Traffic without an origin or destination within a neighborhood and using a local residential street to avoid congestion on a higher functional class street.

85th Percentile Speed – Commonly referred to as the prevailing speed, it reflects the speed at which 85 percent of vehicles traveling on a street operate at or below and generally considered to be reasonable. Nationwide studies have shown the 85th percentile speed on residential street is typically around 32 miles per hour.

Legal Traffic Authority (LTA) – The town manager, the chief of police, or any legally elected or appointed official to adopt regulations establishing a uniform system of traffic control signals, devices, signs and markings, as required by State statute (§ 14-297). In the case of West Hartford, the Town Manager is the LTA, with the Town Engineer acting as their designee.

Peak Hour Volume (PHV) – The one-hour period within a 24-hour period with the highest traffic volume.

Traffic Calming – Physical and non-physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users while enhancing the environment of the neighborhood.

Vulnerable User – a pedestrian; highway worker; a person riding or driving an animal; a person riding a bicycle; a person using a skateboard, roller skates or in-line skates; a person operating or riding on an agricultural tractor; a person using a wheelchair or motorized chair; and a blind person and such person's service animal.

Program Overview

In order for a transportation system to work efficiently, different types of streets must prioritize a different function, and the physical characteristics of a street must be consistent with its function. There are three main functional classes of roadways as defined by the Federal Highway Administration: arterial, collector, and local.

- **Arterial roads** are generally designed to provide the fastest method of travel, accommodate higher traffic volumes, and typically have low accessibility from other roadways. Arterials are usually designed for long-distance travel and include interstates, State highways, and major roadways.
- **Collector roads** provide a connection between local roads and arterial roads. They provide a balance between access and mobility.
- **Local roads** or neighborhood streets are designed to have high accessibility to connect to collector and arterial roads and are typically not used for through traffic. On neighborhood streets, efficiency is much less of a concern because of the limited traffic demand. Instead, the primary concern is livability.

This program was developed specifically for neighborhood streets and is **not** intended for use on State highways, arterial streets, collector streets, emergency response routes, or transit bus routes. These roadways must be designed and maintained with sufficient capacity and appropriate operating conditions to accommodate the efficient movement of through traffic. Many traffic calming techniques are inconsistent with the primary function of arterial and collector streets and the evaluation and implementation process would be much different. The Town is not opposed to considering appropriate traffic calming measures on higher classification of roads (ie. North Main Street – road diet), but the implications are much greater as they will affect a larger roadway network. Complete Streets concepts are more applicable when there is a demonstrated need to reduce speeding and improve the safety on a major roadway. Refer to the town's Complete Streets policy for more information.

In addition to the system's physical attributes, individual driver behavior has a tremendous impact on the network's safety, for other drivers as well as pedestrians, bicyclists, and transit riders. Safe driver behavior can be promoted through coordinated efforts using the three "E's": Education, Enforcement, and Engineering. Education includes the public outreach necessary to alter driver's behavior through neighborhood involvement. Enforcement primarily involves police department resources to improve compliance with established speed limits and other traffic regulations. Engineering involves designing the roadway and appropriate traffic calming measures to fit the specific situation. These engineered changes reduce the need for enforcement, allowing police resources to be focused on arterial and collector roadways where they will have a greater impact. When combined, these coordinated efforts can have a significant impact on driver behavior and the overall safety of the transportation system.

Traffic Calming Measures

Traffic calming measures work effectively in specific situations and under certain conditions. They generally fall into three categories: travel speed reduction, traffic volume reduction, and pedestrian/bicyclist safety. Some of the measures can impact one or more categories. The table below outlines the measures that can be evaluated and implemented. A detailed explanation of each feature is included in appendix A. The physical treatment measures are engineered to be self-enforcing. By voluntarily modifying driver behavior the need for repetitive Police enforcement can be reduced, allowing resources to be re-allocated to other locations and tasks.

Travel Speed Reduction	Traffic Volume Reduction	Pedestrian/Bicyclist Safety
Education/Public Awareness	Diagonal Diverter	Pedestrian Refuge/Median
Enforcement	Semi-Diverter/One-Way Traffic	Curb Extension
Electronic Speed Sign	Median Barrier	Raised Crosswalk
Speed Hump	Cul-de-sac	Stamped Crosswalk
Traffic Circle/Roundabout	Entrance Treatment	Raised Intersection
Chicane/Lateral Shift	Choker/Narrowing	Sidewalk Extension
Roadside Trees	Right In/Right Out Island	Bike Lanes

While traffic calming measures can be effective in addressing specific problems, they can produce unintended consequences. These may include longer emergency vehicle response times, loss of on-street parking, routine street maintenance challenges, drainage issues, environmental impacts, and complicating the navigation of the street network. Determining appropriate streets for traffic calming involves an understanding of the roadway network.

Traffic signals and stop signs are important regulatory measures to determine right-of-way, but they are **not** traffic calming measures. Laws and national standards govern the use of these measures and do not allow their installation for speed control. Traffic signals and stop signs installed at inappropriate locations generally do not produce the desired outcome and often create unintended safety issues.

Eligibility

Traffic calming measures should only be implemented when there is a demonstrated need and should **not** be influenced by unsubstantiated/persistent requests or pressures that may arise due to inconvenience that these measures may cause some individuals.

Streets or street segments meeting any of the following criteria will **not** be eligible for traffic calming:

- State highways
- Arterials or collectors
- Direct emergency response routes
- Transit bus routes
- Cul-de-sacs/ dead-ends/ no outlets
- Total length or distance between existing "STOP" signs less than 900 feet
- Poor horizontal geometry
- Steep grades (over 5%)
- Adjacent to a commercially zoned area
- Traffic volumes less than 500 vehicles per day or more than 3,000 vehicles per day
- Posted speed limits greater than 30 mph
- 85th percentile speed 33 mph or less

The *Town Traffic Calming Eligibility* map shows "eligible" and "may be eligible" streets – see appendix B. The map is intended to be a general guide and is based on a preliminary review of roadway classification, geometric features, network connectivity, and primary emergency response routes based on input from the Town's Fire and Police Departments. Traffic volume and speed data was not considered as this initial assessment.

Process for Requesting/Evaluating Traffic Calming

The following steps outline the evaluation, planning, and implementation process. A flow chart is also provided at the end of this section to illustrate the process. The typical time frame for the whole process is between 6 to 12 months, which may vary depending on the time of year, resources, and funding.

1. Report a Problem - The process is initiated when a resident or neighborhood group (requestor) submits a request to the Engineering Division to investigate speeding, traffic volumes, or other traffic safety related concerns within a neighborhood. The Town's Legal Traffic Authority (LTA) may also initiate the process when they have identified a traffic related concern that may potentially be alleviated by traffic calming practices, or in advance of a planned roadway reconstruction or resurfacing project.

2. Eligibility Review – The Engineering Division will review the request, which will include checking the town Traffic Calming Eligibility map, evaluating the roadway features, and performing traffic counts.

   If it is determined that traffic calming practices are not applicable, the Engineering Division will notify the requestor and provide recommendations for appropriate educational or enforcement strategies.

3. Needs Assessment - Neighborhood streets will be evaluated and prioritized based on the scoring criteria outlined below, which considers travel speeds, traffic volumes, peak hour volume, crash history, presence of sidewalks, and proximity to pedestrian generators. The maximum score is 25 points.

   Limited funding is available for traffic calming through the Capital Improvement Program and is intended to be allocated to those areas with the greatest need and where the use of traffic calming measures can have the greatest effect. Approval from the LTA will be required prior to proceeding to Step 4. Traffic calming requests that are not selected for funding in the upcoming fiscal year will remain eligible for funding in future years. Requests more than five years old may need to be re-evaluated, as adjacent properties may have changed ownership during this time.

   - Tier 1 - Streets receiving a score of five points or less will be recommended for educational measures. These measures are easily implemented, low-cost solutions such as neighborhood traffic safety campaigns, traffic signage, or pavement markings.

   - Tier 2 - Streets receiving a score of 10 points or less will be recommended for enforcement and/or educational measures. Enforcement measures include deployment of an electronic speed sign or targeted police enforcement details.

   - Tier 3 - Streets receiving a score of 11 points or more will be recommended for engineering, enforcement, and/or educational measures, which may include physical changes to the roadway designed to modify driver behavior.

Traffic Calming Evaluation Criteria

Criteria	Description	Value	Points (25 max.)
Travel Speed	Points are assigned based on the 85th percentile speed. Alternatively, 10 points will be assigned if the 90th percentile speed is 40 mph or greater.	≤33 mph	0
		34 mph	2
		35 mph	4
		36 mph	6
		37 mph	8
		>38 mph	10
Traffic Volume	Points are assigned based on the average daily traffic (ADT) for the roadway. Data will be recorded for a minimum of seven days and will not include holidays or school closings. Data collected during the summer months may be re-counted during the school year, if necessary.	<500	0
		500 - 600	1
		600 - 800	2
		800 - 1,000	3
		1,000 - 1,500	4
		1,500 - 3,000	5
Peak Hour Volume (PHV)	Points are assigned based on the traffic volume during the highest one-hour period.	< 100	0
		100 - 150	1
		150 - 250	2
		> 250	3
Crash History	Points are assigned for the number of crashes over the most recent three year period that are related to traffic issues that may be addressed by traffic calming practices. Alternatively, 1 point will be assigned for each crash (up to 2) involving a vulnerable user.	0 - 2	0
		3 -5	1
		6 +	2
Sidewalks	Points are assigned for the absence of sidewalks along the majority of the subject street (project limits), thereby requiring pedestrians to walk in the roadway.	Both sides	0
		Only one side	1
		No sidewalks	2
Pedestrian Generator	Points are assigned for the nearest pedestrian generator (school, park, library, or community center) measured from the midpoint of the subject street (project limits) along the actual walking path to the closest property line of the pedestrian generator.	>1 Mile	0
		½ Mile - 1 Mile	1
		¼ Mile - ½ Mile	2
		<¼ Mile	3

Table 1

4. Planning discussion will be conducted with the requestor to further define the traffic related concerns and goals and to establish the boundaries of the study area. This discussion also provides an opportunity for town staff to outline the process and explain the format and requirements of a petition.

   Determining appropriate streets for traffic calming involves an understanding of the roadway network. Traffic calming measures implemented to address a specific speeding or cut-thru concern may shift the problem to an adjacent street as drivers seek alternate routes. Streets laid in a grid pattern tend to disperse cut-through traffic by providing multiple options. This makes it difficult to apply physical speed reduction techniques to one street without expanding it to adjacent streets as well. Unless all neighboring streets are provided similar modifications, aggressive drivers will divert to the unmodified street(s). For this reason, traffic calming should be addressed with neighborhood support, which may include adjacent streets.

5. Community Support – Submit a petition (see Appendix C for sample) with support of 75 percent of the property owners to the Engineering Division for review and validation.

6. Neighborhood Involvement – Conduct a meeting with the neighborhood to present and discuss potential traffic calming measures to address the specific concern(s) and receive feedback.

7. Neighborhood Feedback Survey – Following the neighborhood meeting, the Town will distribute a survey (see Appendix D for sample) to the affected property owners. The survey will outline applicable traffic calming measures and will ask the neighborhood to indicate preferences and potential of measures installed in front of or within 100 feet of their property. The responses will be reviewed, summarized, and posted on the Town's website: www.westhartfordct.gov/trafficcalming.

8. Develop a Conceptual Neighborhood Traffic Calming Plan - Plan will address the reported concerns based on the Neighborhood Feedback Survey. The Traffic Calming Review Committee, which is comprised of representatives from various Town Departments including: Engineering, Fire, Police, Public Works, and School Transportation, will review the concept plan. Pending feedback from the Traffic Calming Review Committee, the plan will then be reviewed and approved by the LTA. The plan should also be shared with the Town's Pedestrian and Bicycle Commission and with utility companies to confirm the installation will not affect upcoming utility/construction projects.

9. Concept Plan Concurrence – The Town will mail and/or e-mail a summary of the Neighborhood Feedback Survey responses (see Appendix E for sample) along with the Conceptual Neighborhood Traffic Calming Plan, which incorporates the traffic calming features most preferred by the neighborhood. If 60% or more of the property owners are in support of the proposed concept plan the project will be advanced to design and construction. An exception may be made if a proposed measure, intended to address a documented safety issue, is not supported by at least 60% of the property owners. In those instances the LTA may decide to implement the proposed measure in the interest of public safety.

   If the concept plan is supported by less than 60% of property owners then Tier 1 or 2 solutions will be recommended and no physical modifications will be made to the roadway. This same outcome would occur if a concept plan could not be developed due to a lack of consensus or lack of feasibility due to support from adjacent property owners implementing calming measures near their property. A

neighborhood may request to be evaluated again after a period of five years from the date that the Community Support petition was submitted.

10. Trial Installations and Evaluations – Trial installations of certain traffic calming measures may be considered at the discretion of the Department of Public Works and the Engineering Division when it is determined that it may be difficult to predict the effects of a traffic calming plan. Trial installations utilize temporary materials and are intended to simulate the effect of a permanent improvement. Trials should be evaluated over a three to six month period. This provides an opportunity to revise the design if the plan does not correct the issue, negatively impacts traffic patterns, or is not generally supported by the neighborhood.

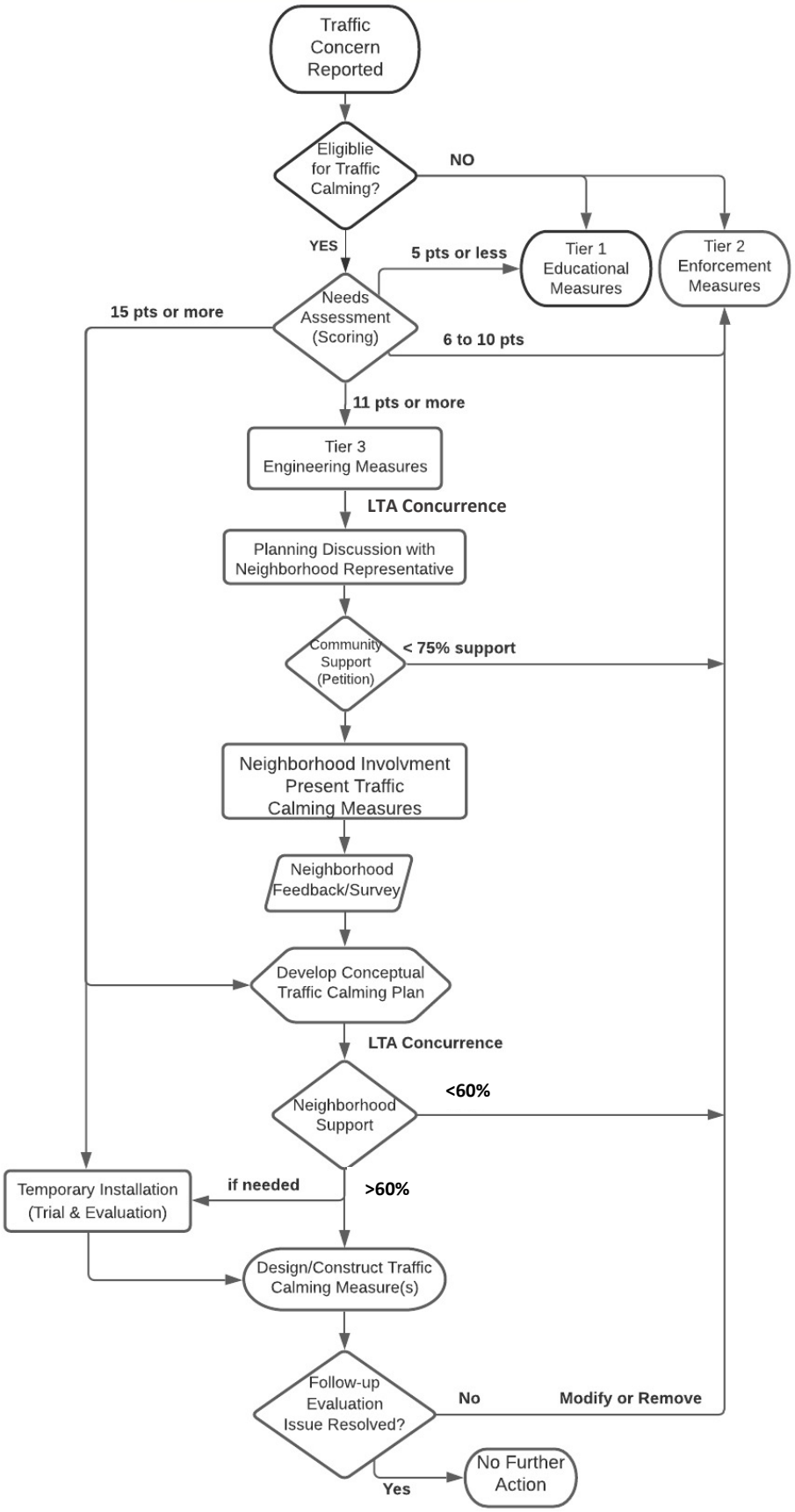
11. Design and Construction of Permanent Installation - Traffic calming measures should be designed using recognized standards and practices of the Institute of Transportation Engineers (ITE), American Association of State Highway and Transportation Officials (AASHTO), and the Connecticut Department of Transportation. Traffic calming measures shall also conform to the Manual on Uniform Traffic Control Devices.

12. Follow-up Evaluation - One-year Look Back - Upon completion of the implementation of a traffic calming plan, the Town will conduct a post construction evaluation to determine the effectiveness of the project. The evaluation will include the collection of traffic speed, volume, crash data and feedback from residents and property owners on the performance of the traffic calming plan.

    A summary of the Neighborhood Street Traffic Calming Program will be documented and reported at the end of each calendar year to the LTA and/or Town Council in the Annual Compete Streets report.

13. Modification and Removal of Traffic Calming Measures - Traffic calming measures that are ineffective or produce unsatisfactory results may be modified or removed with the approval of the LTA. Written notice of such modification or removal will be sent to the neighborhood and posted on the Town's website: www.westhartfordct.gov/trafficcalming

Process for Traffic Calming Evaluation



Program Revisions

This Neighborhood Traffic Calming Program will be revised from time to time based on experience with the implementation of traffic calming plans within the Town of West Hartford and as traffic calming practices evolve.

Funding

Funding for the implementation and maintenance of traffic calming measures will be allocated through the Capital Improvement Program (CIP) budget or grant funding, if available. In order to best utilize the limited budget and personnel resources of the Town, the priority scoring guidelines given in Table 1 will be utilized to select areas with the greatest need and where traffic calming measures can have the greatest impact. Traffic calming requests that are not selected for funding in the upcoming fiscal year will remain eligible for up to four (4) additional years.

References

1. American Planning Association, 2009, U.S. Traffic Calming Manual.
2. City of Burlington, VT, Stantec, 2020, Traffic Calming Manual.
3. City of New Britain, CT, TO Design, LLC, 2013, Bicycle Connectivity and Traffic Calming Study.
4. City of Norwalk, CT, Transportation Management Plan.
5. City of Stamford, CT, Urban Engineers, Stamford Neighborhood Traffic Calming Final Report.
6. Institute of Transportation Engineers (ITE) New England Section Technical Committee, June 2016, Traffic Calming Guidelines.
7. Institute of Transportation Engineers (ITE) – Technical Resources: Traffic Calming Measures https://www.ite.org/technical-resources/traffic-calming/traffic-calming-measures/
8. Local Government Commission Center for Livable Communities, Dan Burden, April 2000, Streets and Sidewalks, People and Cars The Citizen's Guide to Traffic Calming.
9. South Central Region Council of Governments (SCRCOG), June 2008, Traffic Calming Resource Guide.
10. Town of Bloomfield, CT, January 2021, Traffic Calming Manual
11. Town of Concord, MA, Concord Public Works, Engineering Division, Concord Police Department, March 2011, Traffic Calming Policy.
12. Town of Farmington, CT, 1999, Traffic Calming Program.
13. Town of Madison, CT, Department of Public Works, Engineering Division, October 2010, Neighborhood Traffic Calming Program.
14. Town of Windsor, CT, January 2010, Traffic Calming Program.

Appendix A

Traffic Calming Measures

Travel Speed Reduction	Traffic Volume Reduction	Pedestrian/Bicyclist Safety
Education/Public Awareness	Diagonal Diverters	Pedestrian Refuges/Medians
Enforcement	Semi-Diverters/One-Way Traffic	Curb Extensions
Electronic Speed Sign	Median Barriers	Raised Crosswalks
Speed Humps	Cul-de-sacs	Stamped Crosswalks
Traffic Circle/Mini-Roundabout	Entrance Treatments	Raised Intersections
Chicanes/Lateral Shift	Choker/Narrowing	Sidewalk Extensions
Roadside Trees	Right In/Right Out Island	Bike Lanes

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Education/Public Awareness

Description:

- Neighborhood safety campaign (lawn signs, social media, etc.)
- Traffic signage and pavement marking upgrades/replacement
- Neighborhood speed watch program

Applications:

- Raise awareness and promote a more leisurely lifestyle
- Educate your neighborhood about the risks of speeding
- Document persistent speed limit violators and provide information to the Police Department
- Residents should NEVER gesture or confront motorists
- Upgraded signage/markings can improve visibility, especially at night

(Source: National Highway Traffic Safety Administration)

(Source: wwww.DriveLikeYourKidsLiveHere.com)

Implementation:

- Neighborhood toolkits provide marketing materials, media tools, and ideas on speed management.
- Lawn signs must be placed on private property and subject to Town Ordinance § 155-27 Erection of signs within street lines - *No sign of any description shall be placed or permitted to exist within any street line, except those that may be so placed by the state or a governmental subdivision thereof or as otherwise specifically permitted by law.*

Neighborhood Resources:

- https://portal.ct.gov/-/media/DOT/documents/dstc/SpeedLimitsFAQpdf.pdf
- https://icsw.nhtsa.gov/newtsm/tk-speeding/
- https://www.drivelikeyourkidslivehere.com/
- https://www.keepkidsalivedrive25.org/makeadifference

Potential Impacts:

- Motorists may disregard private lawn signs
- Lack of full support may create divisions within the neighborhood

Emergency Response Issues:

- No impact on non-emergency access

Typical Cost (2021 dollars):

- Neighborhood programs are privately funded. Lawn signs are fairly inexpensive ($15 to $25 per sign).
- Traffic signage and pavement upgrades would be funded by the Town. A typical traffic sign cost approximately $200 (installed).

Traffic Calming Fact Sheets

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Enforcement

Description:

- The West Hartford Police Department's Traffic Division is the primary unit responsible for traffic safety and the enforcement of motor vehicle laws in town.
- Residents can call the Traffic Division to share concerns of a traffic problem, or a location where you would think traffic enforcement would be beneficial.
- Utilizing laser and radar technologies, license plate readers, motorcycles, unmarked vehicles, and other creative measures, the Traffic Division works to improve driver behavior by deterring hazardous driving offenses through enforcement.

Applications:

- Stationary patrols use marked or unmarked vehicles stopped at roadside to monitor traffic speeds.
- Mobile patrols use marked or unmarked vehicles traveling with traffic to detect specific violators in the immediate vicinity of a moving patrol car.
- Highly visible enforcement strategies use marked patrol cars to remind the public that enforcement is present and to increase the actual and perceived risk of detection among the driving public.
- Stealth methods use unmarked, unconventional, or hidden vehicles to monitor and apprehend speeders.

(Source: West Hartford, Police Department)

(Source: www.policechiefmagazine.org)

Design/Installation Issues:

- Highly visible enforcement strategies help to deter speeding by reminding the public that enforcement is present.
- The level and frequency of enforcement is difficult to maintain at a level to achieve sustained deterrence.
- The allocation/availability of personnel and equipment for speed enforcement.
- Reporting enforcement efforts to the Town Council and the general public in terms of the number and types of actions and speed and crash reduction may help sustain or increase the program's budget.

Potential Impacts:

- Deployment at localities and times when speeding is most likely to occur, made highly visible to the public, and maintained for more than a year is likely to successfully deter speeding.
- Enforcement conducted at low to medium intensity in a random pattern and sustained over a long period of time at various speed enforcement sites can also be effective.

Typical Cost (2021 dollars):

- The Police Department's Traffic Division performs enforcement as part of their routine job function.
- Grant funding is sometimes available to perform targeted enforcement (distracted driving, DUI, etc.).

Traffic Calming Fact Sheets

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Electronic Speed Sign

Description:

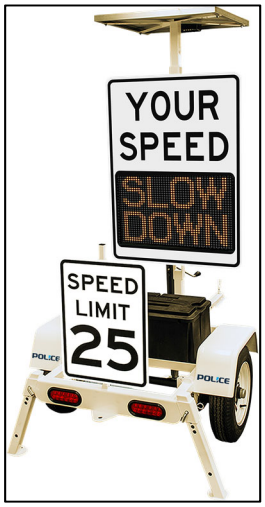
- Electronic Speed Signs, also referred to as Driver Feedback Signs are interactive signs that draw motorists' attention to their speed and the road's legal speed limit
- The LED digital display improves visibility and attracts motorists attention

Applications:

- Utilized to increase driver speed awareness and improve road safety
- Signs can be deployed on residential streets to advise drivers of their speed
- West Hartford currently maintains 15 electronic speed signs

(Source: ABC News Video Clip)

(Source: West Hartford, CT)



(Source: www.TraffiCalm.com)

Design/Installation Issues:

- Solar powered sign requires sufficient exposure which sometimes restricts install locations
- The trailer allows for Radar Speed signs to be quickly and easily deployed wherever needed.
- In addition to travel speed, the signs can be configured to display "Too Fast", "Slow Down", "☺", or "☹".
- Electronic Speed Signs collect traffic speed and volume data to which can be used to understand traffic patterns and targeted speed enforcement

Potential Impacts:

- Prevailing speeds have been found to drop about 2-5 mph when these devises are in use
- Installations should last between four to six months as the signs lose their effectiveness if maintained in the same location for extended periods of time
- Motorists' compliance is voluntary and enforcement may still be necessary
- Irresponsible motorists may speed-up to see how fast the sign will display their speed, but the signs can be configured to prevent this behavior by limiting the speed display above a certain threshold

Emergency Response Issues:

- None

Typical Cost (2021 dollars):

- Cost ranges between $3,500 and $6,000 for each sign, including solar panel, batteries, control cabinet, and mounting hardware

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Speed Hump

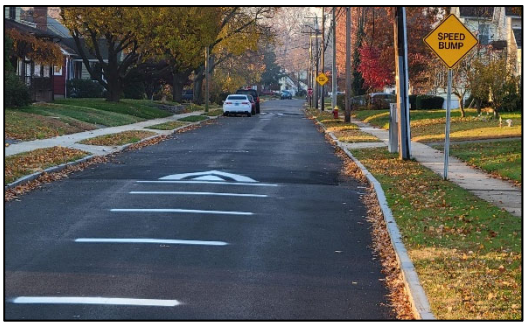
Description:

- Rounded (vertically along travel path) raised areas of pavement typically 12 to 14 feet in length
- Often placed in a series (typically spaced 350 to 500 feet apart)
- Speed bumps or speed dips are different and are NOT recommended for use

Applications:

- Appropriate for residential local streets
- Not typically used on major roads, bus routes, or primary emergency response routes
- Not appropriate for roads with 85th-percentile speeds of 45 mph or more
- Appropriate for mid-block placement, not at intersections
- Not recommended on grades greater than five percent
- Work well in combination with curb extensions
- Can be used on a one-lane one-way or two-lane two-way street

(Source: Whetten Road, West Hartford, CT)



(Source: Grove Street, West Hartford, CT)

Design/Installation Issues:

- ITE recommended practice - “Guidelines for the Design and Application of Speed Humps”
- Typically 12 to 14 feet in length; other lengths (10, 22, and 30 feet) reported in practice in U.S.
- Speed hump shapes include parabolic, circular, and sinusoidal
- Typically spaced no more than 500 feet apart to achieve an 85th percentile speed between 25 and 35 mph
- Hump heights range between 2 ½ and 4 inches, with trend toward 2 ½ - 3 inches maximum
- Require associated signing (advance warning sign before first hump in the series)
- Typically have pavement markings (zigzag, shark's tooth, chevron, zebra)
- Taper edge near curb to allow gap for drainage and bicyclists

Potential Impacts:

- Minor impact on non-emergency access
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)
- Increased noise from braking/accelerating, suspensions, heavy trucks/trailers
- Increased wear and tear of vehicles (brakes, suspensions, etc.)
- Increased air pollution and fuel consumption
- Average speeds between humps reduced between 20 and 25 percent
- Speeds typically increase (0.5-1 mph) midway between humps for each 100 feet of separation.
- Traffic volumes diversion estimated around 20 percent; average crash rates reduced by 13 percent

Emergency Response Issues:

- Approximate delay between 3 and 5 seconds per hump for fire trucks and up to 10 seconds for ambulances with patients

Typical Cost (2021 dollars):

- Cost ranges between $3,000 and $4,500 per speed hump

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

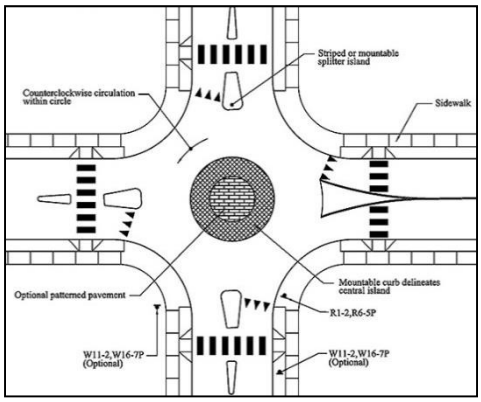
Traffic Circle/ Mini Roundabout

Description:

- Raised islands, placed in unsignalized intersections, around which traffic circulates
- Motorists yield to motorists already in the intersection
- Require drivers to slow to a speed that allows them to comfortably maneuver around them
- Center island of mini roundabout is fully traversable, splitter islands may be fully traversable

Applications:

- Intersections of local and/or collector streets, typically with only one lane on each approach
- Intersections with high crash rates; motorists must reduce speed to maneuver around the circle, which helps reduce the frequency and severity of crashes
- Not typically used at intersections with high volume of large trucks or buses turning left
- Appropriate for low-speed settings



(Source: Delaware DOT)

(Source: Gary Schatz)

Design/Installation:

- See NCHRP Report 672 for design details
- Typically circular in shape, but may be an oval shape
- Controlled by YIELD signs on all approaches with pedestrian crosswalks
- Can be applied to road with on-street parking
- Can be applied to roads both with and without a bicycle facility
- Raised center islands are preferred to painted traffic circles, which can be easily ignored
- Key design features are the fastest paths and path alignment

Potential Impacts:

- Slight speed reduction. A coordinated system of multiple traffic circles provides greater benefit
- Raised traffic circles may impact snow plowing operations
- Little diversion of traffic
- Bicycle and motorist will share lanes at intersections because of narrowed roadway
- Large vehicles/buses usually drive over the center island for left turns
- Pedestrian crossings are moved away from the intersection and are unprotected by stop signs or signals
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)

Emergency Response:

- Emergency vehicles maneuver using the center island at slow speeds

Typical Cost:

- Cost between $10,000 and $50,000, depending on configuration and surface treatments
- Cost increases if pedestrian ramps and curb lines need to be modified

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Chicane/ Lateral Shift

Description:

- A series of alternating curves or lane shifts that force a motorist to steer back and forth instead of traveling a straight path
- Realignment of an otherwise straight street that causes travel lanes to shift inat least one direction

Applications:

- Appropriate for local, collector, or arterial roadways
- Appropriate for mid-block locations or in several locations on longer roadways
- Appropriate speed limit is typically 35 mph or less
- Most effective with equivalent low volumes on both approaches
- Typically, a series of at least three landscaped curb extensions
- Can be used with or without a bicycle facility
- Appropriate along bus transit routes

(Source: Google Maps Westphal St, W. Hartford, CT)

(Source: Google Maps Arnoldale Road, W. Hartford, CT)

Design/Installation Issues:

- Chicanes may still permit speeding by drivers cutting straight paths across the centerline
- Minimize relocation of drainage features and should not require utility relocation
- May force bicyclists to share travel lanes with motor vehicles
- Maintain sufficient width for ease of emergency vehicles and truck throughput
- Applicable only to mid-block locations
- Location near streetlights preferred

Potential Impacts:

- No effect on access, although heavy trucks may experience challenges when negotiating
- Without islands, motorists could cross the centerline to drive the straightest path possible
- Limited data available on impacts on speed, volume diversions, and crash risk
- Minimal anticipated volume diversion from street
- May require removal of some on-street parking
- Provides opportunity to enhance the streetscape
- Bus passengers may experience discomfort due to quick successive lateral movements
- Features may become a hazard in the case of reckless or inattentive drivers
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)

Emergency Response Issues:

- Appropriate along primary emergency vehicle routes

Typical Cost (2021 dollars):

- Reported costs range between $10,000 and $25,000 per chicane

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Roadside Trees

Description:

- Trees planted in the grassed area between the curb and the sidewalk which creates a narrowing effect which helps to slow traffic
- Trees provide a variety of economic, social, and environmental benefits
- Tree-lined streets have a natural calming effect, subconsciously lowering driver's stress levels
- Roadside trees may reduce crashes and injuries on urban roadways

Applications:

- Appropriate for local roads with or without curbs and sidewalks
- Landscaping increases motorists' awareness and can help define a neighborhood identity
- Improve the pedestrian environment, providing shade from the sun and cover from rain
- Trees reduce stormwater runoff by capturing and storing rainfall in their canopy and releasing water into the atmosphere

(Source: www.strongtowns.org)

(Source: www.fullyarticulated.com, Middleton Hills, WI)

(Source: Falls River Ave, Raleigh, NC)

Design/Installation Issues:

- Minimum width of 5 feet would be required between the back of curb and sidewalk
- Select appropriate species to avoid impacts with utilities (overhead and below ground) and sidewalks
- Diversity of species is important to avoid impacts from infestation and disease

Potential Impacts:

- No impact on non-emergency access
- Initial impact may be minimal, but the long term benefits will improve as trees mature
- Increase property values and neighborhood aesthetics
- Increase maintenance for property owners
- Mature tree canopies may block streetlights

Emergency Response Issues:

- None

Typical Cost (2021 dollars):

- Cost ranges between $300 and $500 per tree.

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

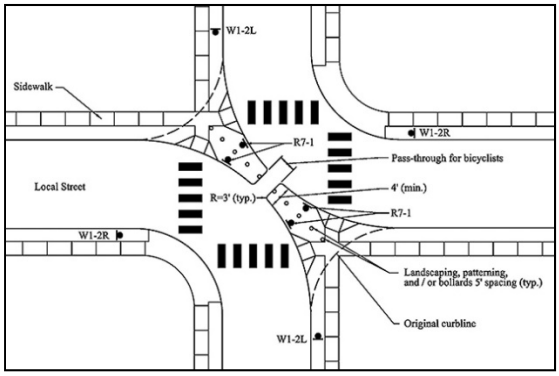
Diagonal Diverter

Description:

- Barriers placed diagonally across four-legged intersections, blocking through movements while allowing right-turn movements from two of the approaches and left turn movements from the other two approaches.
- Sometimes called full diverters or diagonal road closures

Applications:

- Typically applied only after other measures are deemed ineffective or inappropriate
- Provisions are available to make diverters passable for pedestrians and bicyclists
- Often used in sets to make travel through neighborhoods more circuitous



(Source: Delaware Department of Transportation)

(Source: PennDOT Local Technical Assistance Program)

Design/Installation Issues:

- Possible legal issues associated with closing public streets (e.g., business and/or emergency access)
- Can be used on both one-way and two-way streets
- Typically found on a roadway with curbing
- Typical maximum appropriate speed limit is 25 mph
- Maintain drainage as necessary to mitigate potential flooding
- Corner radii should be designed to allow full-lane width for passing motor vehicle traffic
- Openings for pedestrians and bicyclists should allow movement between all intersection legs
- Barriers may consist of landscaped islands, walls, gates, side-by-side bollards, or any other obstruction that leave an opening smaller than the width of a typical passenger car

Potential Impacts:

- Concern regarding impacts to emergency response, street network connectivity, and capacity
- Should consider traffic diversion patterns and associated impacts
- No significant impacts on vehicle speeds beyond the approach to the diverter
- Not appropriate for bus transit routes
- Improves pedestrian and bicycle safety
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)

Emergency Response Issues:

- Restricts emergency vehicle access through intersections
- Should not be used on roads that provide access to hospitals or primary emergency services
- Can be designed with removable/breakaway delineators or bollards, gates, mountable curbs, etc.

Typical Cost (2021 dollars):

- Typical cost of $10,000 for diverter with limited drainage modifications

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Semi-Diverter/ One-Way Traffic

Description:

- Barriers that block travel in one direction (creates a one-way street) for a short distance on otherwise two-way streets; commonly referred to as a semi-diverter
- Changing one or more roadways or segments of roadways from two-way to one-way to alter travel patterns within neighborhoods

Applications:

- Typically applied only after other measures have failed or are deemed inappropriate or ineffective
- Appropriate for local streets
- Typically found on a roadway with curbing
- Can be applied with and without dedicated bicycle facilities and on roads with on-street parking
- Often used in sets to make travel through neighborhoods more circuitous and discourage cut-through traffic
- Not appropriate along bus transit routes

(Source: Google Maps, Whiting Lane, W. Hartford, CT)

(Source: Rosedale Road, W. Hartford, CT)

Design/Installation Issues:

- Include the surrounding roadway network when evaluating traffic circulation changes
- Traffic diversion to adjacent streets is expected
- Barriers may consist of landscaped islands, walls, gates, side-by-side bollards, or other obstructions that result in openings smaller than the width of a typical passenger car
- May require modifications to maintain surface drainage capacity

Potential Impacts:

- Can be confusing and create more circuitous travel routes for valid destinations within neighborhoods
- Creates inconveniences to residents of neighborhood and are often controversial
- Potential legal concerns
- Closing a street(s) within a neighborhood network may divert a significant amount of traffic to nearby streets
- Parallel roadways without closures can suffer both higher travel speeds and increased traffic volumes
- Street closures only reduce vehicle speeds in the immediate vicinity of the closed block
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)
- Bicyclists may have to share vehicular travel lanes near the semi-diverter or use the sidewalk/crosswalk

Emergency Response Issues:

- Closures can increase response times and should not be used on roads/streets that provide access to hospitals or emergency medical services; semi-diverters allow for a higher degree of emergency vehicle access than full closures

Typical Cost (2021 dollars):

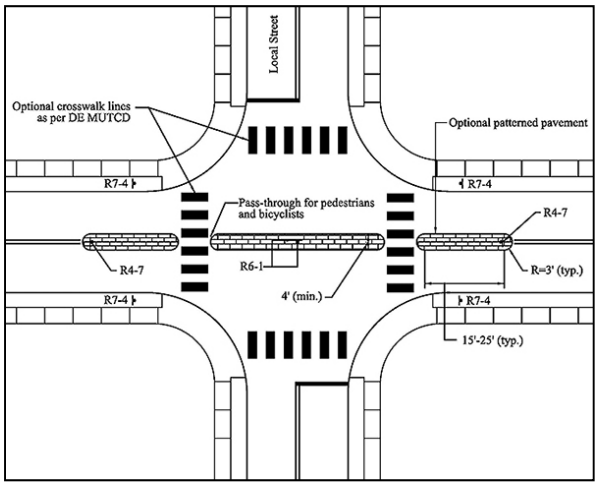
- Cost can be relatively inexpensive using basic traffic signage
- $15,000 for simple semi-diverter, to $40,000 for complex closures with drainage modifications.

Traffic Calming Fact Sheets
2021 Town of West Hartford Revision

Median Barrier

Description:
- Raised islands along the centerline of a street and continuing through an intersection that block the left-turn movement from all intersection approaches and the through movement from the cross street; also called median diverter, intersection barrier, intersection diverter, and island diverter

Applications:
- For use on arterial or collector roadways to restrict access to minor roads or local streets and/or to narrow lane widths
- Typically applied only after other measures have failed or been deemed inappropriate/ineffective
- Barriers are made passable for pedestrians and bicyclists
- Often used in sets to make travel to/through neighborhoods more circuitous



(Source: Delaware Department of Transportation)

Design/Installation Issues:
- Potential legal issues associated with blocking a public street (e.g., business/emergency access)
- Placed on major roads on approaches to and across intersections with minor roads
- Should extend beyond the intersection to discourage improper/illegal turn movements
- Barriers may consist of landscaped islands, mountable features, walls, gates, side-by-side bollards, or any other obstruction that leave an opening smaller than the width of a passenger car

Potential Impacts:
- May divert traffic volumes to other parallel and/or crossing streets
- May require removal or shortening of on-street parking zones on approaches/departures
- May impact access to properties adjacent to intersection
- No significant impacts on vehicle speeds beyond the approaches to intersection
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)
- May be difficult for bicyclists to traverse

Emergency Response Issues:
- Restricts emergency vehicle access using minor street
- Can be designed to allow emergency vehicle access

Typical Cost (2021 dollars):
- Cost between $3,000 and $25,000, depending on length and width of barriers

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Cul-de-sacs

Description:

- Closing a through street by creating cul-de-sac or dead end and eliminating through-traffic
- Full-street closures retroactively installed to previously open streets are often reserved for locations where all other calming attempts have failed

Applications:

- Reduces or eliminates cut-thru traffic
- Appropriate for local roads

(Source: Google Maps: Stratford Road, W. Hartford, CT)

Design/Installation Issues:

- Traffic diversion to adjacent streets is expected
- Include the surrounding roadway network when evaluating traffic circulation changes
- Consider leaving a pathway open for bicyclists and pedestrians when designing a new cul-de-sac

Potential Impacts:

- Can be confusing and create more circuitous travel routes for valid destinations within neighborhoods
- Creates inconveniences to residents of neighborhood
- Often controversial
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)
- Concerns regarding street network connectivity and capacity
- Closing a street(s) within a neighborhood network may divert a significant amount of traffic to nearby streets
- Parallel roadways without closures can suffer both higher travel speeds and increased traffic volumes

Emergency Response Issues:

- Closures can increase response times and should not be used on roads/streets that provide access to hospitals or emergency medical services; semi-diverters allow for a higher degree of emergency vehicle access than full closures
- Can be designed to allow emergencyvehicle access with removable or breakaway delineators or bollards, gates, mountable curbs, etc.

Typical Cost (2021 dollars):

- Costs for constructing a new cul-de-sac range between $25,000 to $50,000

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Entrance Treatment

Description:

- Raised island located near the beginning of the roadway and along the street centerline.
- Provides a visual queue to motorists that they are entering a neighborhood.
- Aesthetic enhancement to the neighborhood.

Applications:

- Appropriate for local roads; mid-block or at intersections, with/without crosswalks
- Can be used on a one-lane one-way or two-lane two-way street
- Can be applied both with and without sidewalks or dedicated bicycle facilities

(Source: Google Maps, Beverly Rd, West Hartford, CT)

(Source: Google Maps, Arnoldale Rd, West Hartford, CT)

Design/Installation Issues:

- Typically installed on a roadway with curbing
- Can be applied on roads with or without sidewalks and/or dedicated bicycle facilities
- Maximum appropriate speed limits vary by locale
- Typically not appropriate near sites that attract large combination trucks

Potential Impacts:

- May impact access to properties adjacent to islands
- No impact on non-emergency access
- Speeds reductions may be minimal, especially beyond the median
- Little impact on traffic volume diversion
- Bicyclists may have to share vehicular travel lanes near the median
- Loss of parking in vicinity of median
- Increased maintenance (if landscaped/planted)
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)

Emergency Response Issues:

- None

Typical Cost (2021 dollars):

- Cost ranges between $6,000 and $8,000 per median depending on the length and width
- Higher costs for brickwork, stamped asphalt, landscaping, and other enhancements.

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Choker/ Narrowing

Description:

- A lateral horizontal extension of the curb into the street, resulting in a narrower roadway section
- Drivers naturally go more slowly when navigating the curvature through the narrowed travel lanes

Applications:

- Appropriate for local roads
- Can be created by a pair of curb extensions, often landscaped
- Encourages slower speeds by funneling traffic through the pinch point
- Discourages cut-thru traffic
- One-lane choker forces two-way traffic to alternate
- Emphasizes a change in roadway characteristics when used at key intersections
- Can be located at any spacing desired
- May be suitable for a mid-block crosswalk

(Source: Google Maps, Grove St, W. Hartford, CT)

(Source: Google Maps, Hamilton Ave, W. Hartford, CT)

Design/Installation Issues:

- Can be used on a one-lane one-way and two-lane two-way street
- Most easily installed on a roadway with curbing
- Applicable on streets width, and can be used to protect on-street parking
- Typical width of 6 to 8 feet; offset from through traffic by approximately 1.5 feet
- Locations near streetlights are preferable
- Length of choker island should be at least 20 feet

Potential Impacts:

- Can result in shorter pedestrian crossing distances if a mid-block crossing is provided
- May force bicyclists and motor vehicles to share the travel lane
- May require the removal of some on-street parking
- May require relocation of drainage features and utilities
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)

Emergency Response Issues:

- Retains sufficient width for ease of use for emergency vehicles

Typical Cost (2021 dollars):

- Between $2,500 and $25,000, depending on length and width of barriers

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

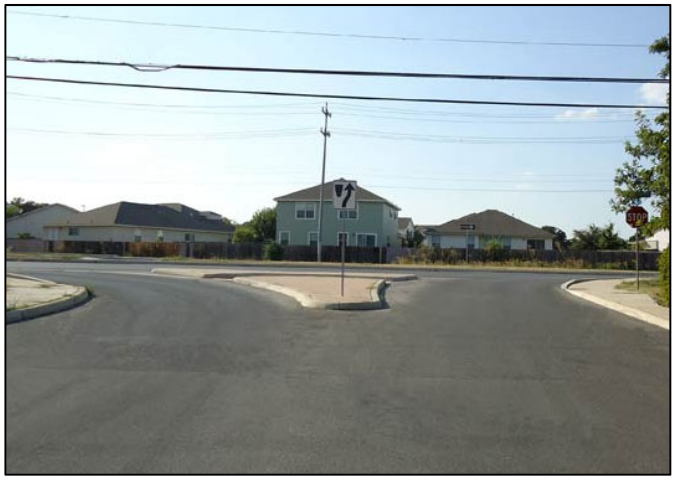
Right-In/Right-Out Island

Description:

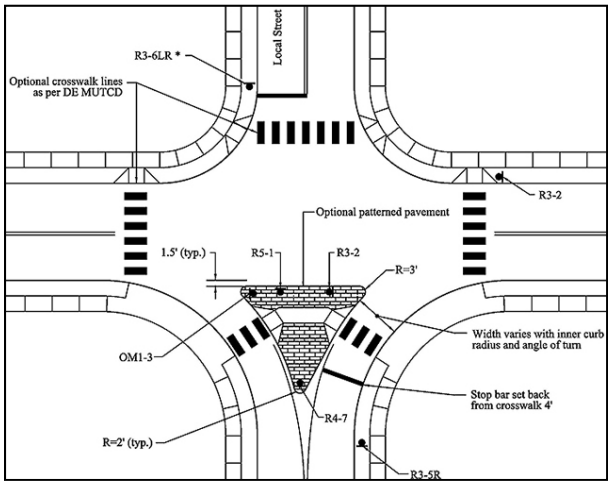
- Raised islands that forces right turns in and out, blocks the left-turn movement from the cross street and also the through movement

Applications:

- Used to prevent through movements and interrupt the traffic grid
- Reduces cut-thru traffic
- May improve intersection safety by prohibiting specific maneuvers which may have been problematic
- Islands are made passable for pedestrians and bicyclists



(Source: San Antonio, TX - www.sanantonio.gov)



(Source: Delaware Department of Transportation)

Design/Installation Issues:

- Potential legal issues associated with blocking a public street (e.g., business/emergency access)
- May require modifications to maintain surface drainage capacity
- Should consider traffic diversion patterns and associated impacts
- Possible to make diverters passable for pedestrians and bicyclists

Potential Impacts:

- Concerns regarding street network connectivity and capacity
- May create frustration for motorists confused by the irregular traffic pattern
- The shift in traffic patterns can have unintended consequences
- Parallel roadways without islands can suffer both higher travel speeds and increased traffic volumes
- Can improve pedestrian crossing safety
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)

Emergency Response Issues:

- Restricts emergency vehicle access using minor street
- Can be designed to accommodate emergency vehicle access

Typical Cost (2017 dollars):

- Cost between $15,000 and $50,000

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Pedestrian Refuge/Median

Description:

- Raised island located along the street centerline that narrows the travel lanes at that location
- Also called median diverter, intersection barrier, intersection diverter, and island diverter

Applications:

- For use on arterial, collector, or local roads
- Reduce speeds by narrowing drivable travel lane widths
- Medians can provide a visual enhancement or gateway to promote neighborhood identity
- Can often double as a pedestrian/bicycle refuge islands if a cut in the island is provided along a marked crosswalk, bike facility, or shared-use trail crossing
- If placed through an intersection, considered a median barrier

(Source: Google Maps, North Steele Road, W. Hartford, CT)

(Source: Google Maps, New Britain Avenue, W. Hartford, CT)

Design/Installation Issues:

- Potential legal issues associated with blocking a public street (e.g., business or emergency access)
- Barriers may consist of landscaped islands, mountable facilities, walls, gates, side-by-side bollards, or any other obstruction that leave an opening smaller than the width of a passenger car
- Provide signage, delineators, and pavement markings to clearly identify raised medians
- Can be placed mid-block or on the approach to an intersection
- Typically installed on a roadway with curbing
- Can be applied on roads with or without sidewalks and/or dedicated bicycle facilities
- Typically not appropriate near sites that attract large combination trucks

Potential Impacts:

- May impact access to properties adjacent to medians
- No significant impact on vehicle speeds beyond the island and little impact on traffic volume diversion
- Safety can be improved without substantially increasing delay
- Shortens pedestrian crossing distances
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)
- Bicyclists may have to share vehicular travel lanes near the island
- May require removal of some on-street parking
- May require relocation of drainage features and utilities

Emergency Response Issues:

- Appropriate along primary emergency vehicle roads or streets that provides access to hospitals/emergency medical services

Typical Cost (2021 dollars):

- Cost between $5,000 and $20,000, depending on length and width of island

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Curb Extension

Description:

- Horizontal extension of the sidewalk into the street, resulting in a narrower roadway section
- If located at a mid-block location, it is typically called a choker

Applications:

- Appropriate for arterials, collectors, or local streets
- When combined with on-street parking, a corner extension can create protected parking bays
- Reduces pedestrian crossing distances and increase pedestrian visibility
- Installed only on a roadway with curbing
- Adequate turning radii must be provided to use on bus routes
- Reduces speeds of turning vehicles

(Source: Google Maps, Farmington Ave, W. Hartford, CT)

(Source: Google Maps, Boulevard, W. Hartford, CT)

Design/Installation Issues:

- Must check drainage due to possible gutter realignment
- Major utility relocation may be required, especially drainage inlets
- Typical width between 6 and 8 feet
- Typical offset from travel lane at least 1.5 feet
- Should not extend into bicycle lanes

Potential Impacts:

- Effects on vehicle speeds are limited due to lack of deflection
- Can achieve greater speed reduction if combined with vertical deflection
- Smaller curb radii can slow turning vehicles and require large turning vehicles to cross centerline
- May require some parking removal adjacent to intersections
- Minor challenges for routine street maintenance activities (trash collection, street sweeping, snow plowing)
- Curb extensions must be well identified to avoid being hit by less-attentive drivers

Emergency Response Issues:

- Retains sufficient width for ease of emergency-vehicle access

Typical Cost (2021 dollars):

- Cost between $2,500 and $25,000, depending on length and width of barriers

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Raised Crosswalk

Description:

- A raised crosswalk is essentially an elongated speed hump with a flat section in the middle and ramps on the ends; sometimes constructed with brick or other textured materials on the flat section

Applications:

- Appropriate for local roads at mid-block or at intersections
- Can be used on a one-lane one-way or two-lane two-way street
- Not appropriate for roads with 85th percentile speeds of 40 mph or more
- Typically long enough for the entire wheelbase of a passenger car to rest on top or within limits of ramps
- Work well in combination with textured crosswalks, curb extensions, and curb radius reductions
- Can be applied both with and without sidewalks or dedicated bicycle facilities

(Source: Google Maps, Farmington Ave, W. Hartford, CT)

(Source: www.pedbikeimages.org)

Design/Installation Issues:

- Can be used at intersections or mid-block but should only be used in high pedestrian travel areas
- ITE recommended practice – "Guidelines for the Design and Application of Speed Humps"
- Most common height is between 3 and 4 inches (reported as high as 6 inches)
- Ramps are typically 6 feet long (reported up to 10 feet long) and are either parabolic or linear
- Careful design is needed for drainage
- Posted speed typically 30 mph or less

Potential Impacts:

- Speeds reductions typically less than for speed humps (25 to 27 miles per hour)
- Increase pedestrian visibility and likelihood of driver yield compliance
- Generally not appropriate for bus routes
- Clearly designated crosswalks are important for pedestrian safety
- "Yield to Pedestrian in Crosswalk" signs can be installed at crossings with heavy pedestrian traffic
- May be difficult for bicyclists to traverse

Emergency Response Issues:

- Typically preferred by fire departments over speed humps, but not appropriate for primary emergency vehicle routes; typically less than 3 seconds of delay per table for fire trucks

Typical Cost (2021 dollars):

- Cost ranges between $2,500 and $15,000 for asphalt tables; higher for brickwork, stamped asphalt, concrete ramps, and other enhancements sometimes used at pedestrian crossings

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Stamped Crosswalk

Description:

- A thermoplastic surfacing system applied within a crossing location to provide a contrasting textured, highly attractive and durable surface
- The variety of color and texture improves motorist's visibility of the crosswalk

Applications:

- Appropriate for collector or arterial roadways
- Reserved for higher volume crossings or in close proximity to schools

(Source: Fern St, W. Hartford, CT)

(Source: King Philip Dr, W. Hartford, CT)

Design/Installation Issues:

- Pavement should be in good condition, otherwise the area to be stamped may need to be resurfaced prior to the installation of the stamped asphalt treatment
- The surface of the material may contain factory applied anti-skid/anti-slip element
- Stamped asphalt surface is a safer than bricks or pavers which sometimes settle or become dislodged

Potential Impacts:

- No impact on non-emergency access
- Increase crosswalk visibility and likelihood of driver yield compliance

Emergency Response Issues:

- None

Typical Cost (2021 dollars):

- Cost ranges between $5,000 and $10,000 depending of the dimensions of the crosswalk
- Costs may be higher if the existing pavement is in poor condition and requires resurfacing in advance of the stamped asphalt treatment

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

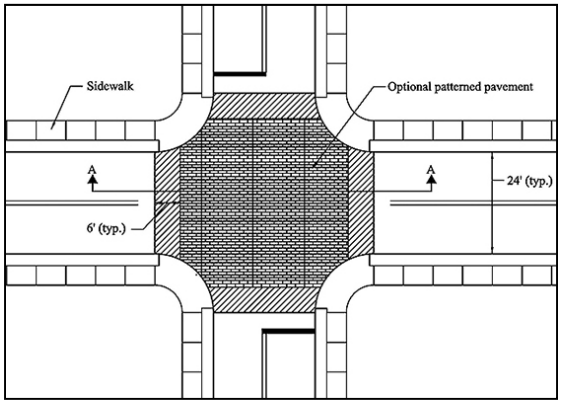
Raised Intersection

Description:

- Flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section and ramps
- Sometimes referred to as raised junctions, intersection humps, or plateaus

Applications:

- Intersections of collector, local, and residential streets
- Typically installed at signalized or all-way stop controlled intersections with high pedestrian crossing demand
- Works well with curb extensions and textured crosswalks
- Often part of an area-wide traffic calming scheme involving both intersecting streets in densely-developed urban areas



(Source: Delaware Department of Transportation)

(Source: Goggle Maps, Northwest Dr, Plainville, CT)

Design/Installation Issues:

- Used at intersections with a maximum speed limit of 35 mph
- Typically rise to sidewalk level; appropriate if crosswalks exist on all four legs
- Appropriate if a dedicated bicycle facility passes through the intersection
- Detectable warnings and/or color contrasts must be incorporated to differentiate the roadway and the sidewalk
- May require bollards to define edge of roadway
- Storm drainage/underground utility modifications are likely necessary
- Minimum pavement slope of 1 percent to facilitate drainage

Potential Impacts:

- Reduction in through movement speeds likely at intersection
- Reduction in mid-block speeds typically less than 10 percent
- No impact on access
- Can make entire intersections more pedestrian-friendly
- No data available on volume diversion or safety impacts

Emergency Response Issues:

- Slows emergency vehicles
- Appropriate for primary emergency vehicle routes and streets with access to a hospital or emergency medical services

Typical Cost (2021 dollars):

- Costs range between $20,000 and $100,000

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

Sidewalk Extension

Description:

- The construction of a public sidewalk to connect to an existing section or sections of sidewalk in an effort to improve connectivity and pedestrian safety
- A public sidewalk gap is a missing section of sidewalk up to 500 feet in length along a roadway

Applications:

- Subject to the requirements/process outlined in the Town of West Hartford - Public Sidewalk Policy
- The sidewalk gap is near a school, place of worship, park, shopping center, or along a CT Transit route
- The roadway characteristics in the vicinity of the sidewalk gap limit visibility of pedestrians who are walking in the roadway

(Source: Westmoreland Drive, West Hartford, CT)

(Source: West Hartford, CT)

Design/Installation Issues:

- Requires sufficient room within the public street right of way
- Sidewalks on grades steeper than five percent require additional consideration

Potential Impacts:

- No impact on non-emergency access
- Improves pedestrian safety by provide a safer place to walk
- May require tree trimming and/or removal
- May require utility poles to be relocated
- Creates a burden to abutting property owners in terms of winter maintenance
- Gap elimination benefits the community and is supported by the Town's Complete Streets Policy

Emergency Response Issues:

- None

Typical Cost (2021 dollars):

- Cost ranges between $50 to $75 per linear foot

Traffic Calming Fact Sheets

2021 Town of West Hartford Revision

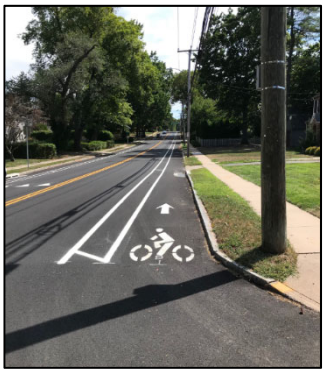
Bike Lanes

Description:

- Designating a portion of the existing roadway cross-section for bicycle use
- Travel lanes are typically narrowed to accommodate bike lanes which generally slows travel speeds

Applications:

- Appropriate for arterial, collector, and local roads
- Can be used on a one-lane one-way or two-lane two-way street



(Source: Fern St, W. Hartford, CT)

(Source: Webster Hill Blvd, W. Hartford, CT)

Design/Installation Issues:

- Refer to AASHTO Guide for the Development of Bicycle Facilities
- Refer to NACTO Urban Bikeway Design Guide
- Recommended width is five feet minimum
- Requires center and edge line pavement markings
- Restriping the pavement often reduces the width of the travel lanes and the remaining portion of the road is used to create bicycle lanes
- Buffered bike lanes should be considered in areas with heavy on-street parking

Potential Impacts:

- No impact on non-emergency access
- May result in a loss of on-street parking
- Heavy on-street parking may create “dooring” hazard for cyclists
- Lane lines and stencil markings require additional maintenance

Emergency Response Issues:

- None

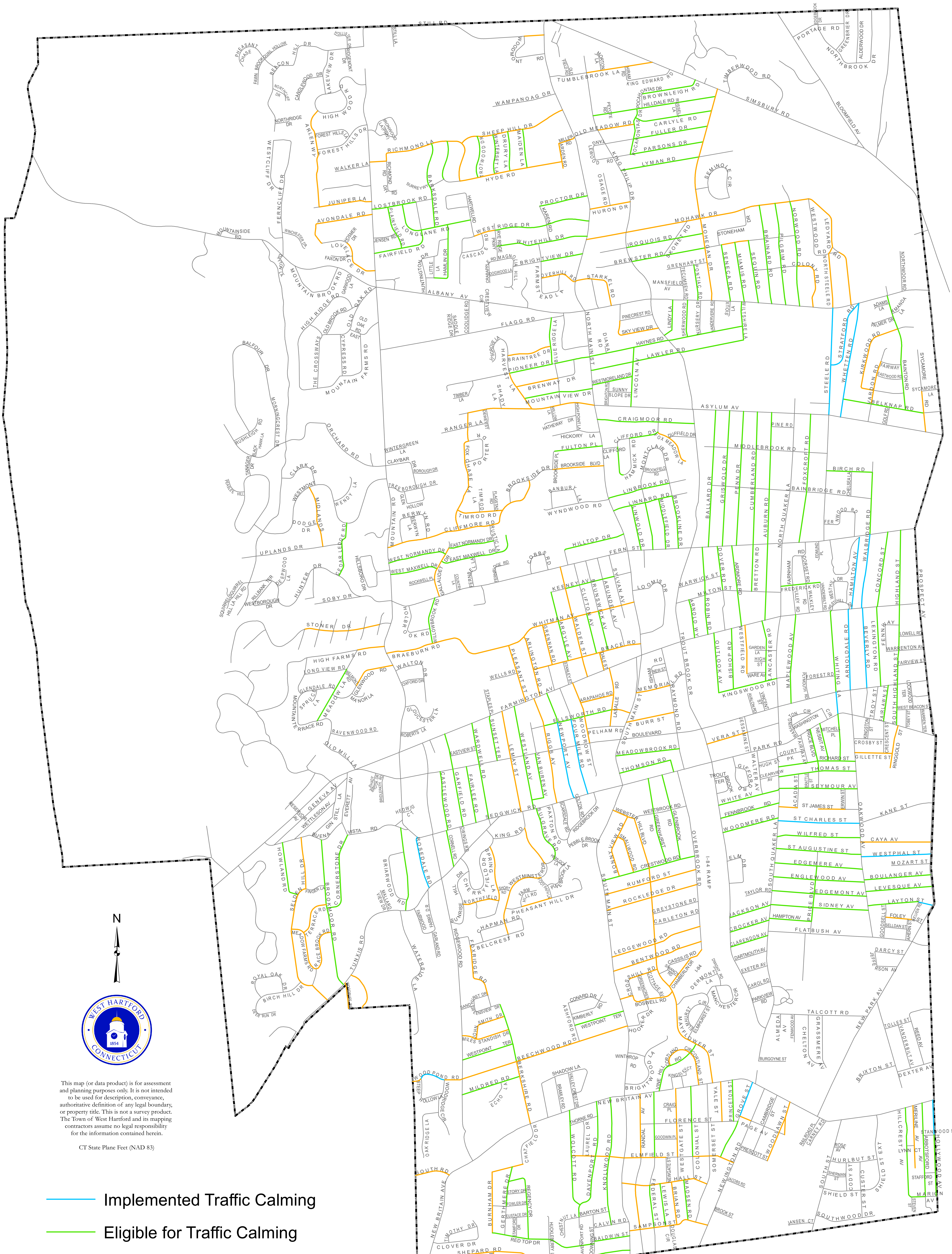
Typical Cost (2021 dollars):

- Costs are approximately $1 per linear foot of bike lanes

Appendix B

Traffic Calming Eligibility Map

Traffic Calming Program
Town of West Hartford



This map (or data product) is for assessment and planning purposes only. It is not intended to be used for description, conveyance, authoritative definition of any legal boundary, or property title. This is not a survey product. The Town of West Hartford and its mapping contractors assume no legal responsibility for the information contained herein.

CT State Plane Feet (NAD 83)

- Implemented Traffic Calming
- Eligible for Traffic Calming
- Might be Eligible for Traffic Calming
- Not Eligible for Traffic Calming

Scale:

0 500 1,000 2,000 3,000 Feet

* Factors Considered for Eligibility Include; Road Classification, Geometry, Length and Connections to Other Roadways

Map Produced by the Engineering Division. March, 2022.

Appendix C

Petition for
Traffic Calming Measures

(SAMPLE)

Petition for Traffic Calming Measures

Subject street and/or neighborhood:_____

Contact person (name, phone #, address, e-mail):_____

_____

_____

Purpose of the Petition:

The purpose of this petition is to request the evaluation and potential implementation of traffic calming measures in an effort to alter driver behavior, reduce vehicle speeds, and improve the safety on the subject street and/or neighborhood.

The traffic concern to be calmed:

The subject street and/or neighborhood is a residential street. There are no sidewalks to ensure the safe passage of pedestrians. Pedestrians are forced to use the roadway, placing themselves in dangerous close proximity to vehicular traffic. In recent years, the neighborhood has seen an increase in the number of children and pedestrians, and at the same time the flow and speed of vehicular traffic has increased.

Request for evaluation:

The undersigned property owners who live on the subject street and/or neighborhood identified above, hereby petition the Town of West Hartford to perform the necessary evaluation, and if appropriate, recommend traffic calming measures, and schedule a neighborhood meeting to discuss traffic calming measures to implement on the subject street/neighborhood.

Possible traffic calming measures may include items denoted by an "X", but are not limited to the following:

	Travel Speed Reduction		**Traffic Volume Reduction**		**Pedestrian/Bicyclist Safety**
	Education/Public Awareness		Diagonal Diverter		Pedestrian Refuge/Median
	Enforcement		Semi-Diverter/One-Way Traffic		Curb Extension
	Electronic Speed Sign		Median Barrier		Raised Crosswalk
	Speed Hump/Table		Cul-de-sac		Stamped Crosswalk
	Traffic Circle/Roundabout		Entrance Treatment		Raised Intersection
	Chicane/Lateral Shift		Choker/Narrowing		Sidewalk Extension
	Roadside Trees		Right In/Right Out Island		Bike Lanes
	Other(s): _____				

By signing this Petition each signatory certifies and/or agrees that:

1. I am a real property owner of land that is adjacent to the street or neighborhood being considered;
2. I agree to attend a meeting scheduled by the Town of West Hartford to determine whether permanent traffic calming measures are recommended on the subject street or neighborhood, and if one or more measures are recommended, to discuss the implementation of those measures;
3. I agree to participate in the meeting to provide feedback on the proposed traffic calming measure(s);
4. I agree that if I should fail to appear at the scheduled meeting and do not provide written feedback to the Town, that I waive my right to participate and be heard concerning the proposed traffic calming measure(s).

Subject street and/or neighborhood: _____

By signing this petition, I am showing my support to the Town of West Hartford's investigation of the above-mentioned subject street or area for potential traffic calming measures. I understand *75% or more* of the property owners with frontage on the subject street and/or neighborhood must show support to have the street evaluated for traffic calming measures.

Petition must be signed by all property owners listed on the deed.

Signature	Print name	Address	Date	E-mail

Subject street and/or neighborhood: _____

By signing this petition, I am showing my support to the Town of West Hartford's investigation of the above-mentioned subject street or area for potential traffic calming measures. I understand *75% or more* of the property owners with frontage on the subject street and/or neighborhood must show support to have the street evaluated for traffic calming measures.

Petition must be signed by all property owners listed on the deed.

Signature	Print name	Address	Date	E-mail

Appendix D

Property Owner Feedback Survey

(SAMPLE)

WEST HARTFORD
1854

Town of West Hartford – Department of Community Development
Engineering Division
50 South Main Street, Room 204, West Hartford, CT 06107
P: (860) 561-7540 F: (860) 561-7551 www.westhartfordct.gov

DATE

SUBJECT: Street or Neighborhood Name Traffic Calming
Property Owner Feedback Survey

Dear Property Owner(s):

In response to your neighborhood's request to consider traffic calming measures, the Town of West Hartford's Engineering Division hosted a public information meeting on DATE. During the meeting, several traffic calming measures were presented by the Town and subsequently discussed by residents. In response to that discussion, the Town is preparing a concept plan for Street or Neighborhood Name and is seeking additional input from you.

Please take a few minutes to complete the attached feedback survey so that a comprehensive plan can be developed that incorporates the traffic calming features most preferred by the neighborhood. Please return the feedback survey (one per property) to the Engineering Division (via mail, e-mail, or in-person) by DATE. Please note that due to COVID-19 restrictions, hand deliveries must be pre-arranged with the Engineering Division. A summary of the survey results will be posted on the Town's website: www.westhartfordct.gov/trafficcalming.

A brief summary of the applicable traffic calming measures are provided below.
(Limit the number of options to four or less - Delete measures that are not applicable)

Alternatively, depending on the number of potential features being considered, the applicable summary sheets from Appendix A could be included with the letter?

Electronic Speed Sign – Post or trailer mounted radar sign that displays approaching motorists' speed and the road's legal speed limit. Rotates on regular intervals (4-6 months) to other residential streets approved for traffic calming.

Speed Hump – Raised area of pavement typically 12 to 14 feet in length and stretching the width of the roadway, often placed in a series (typically spaced 350 to 500 feet apart).

Traffic Circle/Mini-Roundabout – Raised island, placed in un-signalized intersections, around which traffic circulates; Motorists yield to motorists already in the intersection.

Chicane/Lateral Shift – A series of alternating curves or lane shifts that force a motorist to steer back and forth instead of traveling a straight path.

Roadside Tree – Small to medium growth tree planted within the street right-of-way, typically between the curb and sidewalk which creates a narrowing effect.

Diagonal Diverter – Barrier placed diagonally across four-legged intersections, blocking through movements and restricting turning movements.

Semi-Diverter/One-Way Traffic – Barrier that blocks travel in one direction (creates a one-way street) for a short distance on otherwise two-way streets or converting an entire street segment from two-way to one-way traffic flow.

WEST HARTFORD
1854

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Median Barrier – Raised island along the centerline of a street and continuing through an intersection, preventing left-turns and the through movement from the cross street.

Cul-de-sac – A street segment with closed off access on one end which alters travel patterns within a neighborhood.

Entrance Treatment – Raised island located near the beginning of the roadway and along the street centerline. Provides a visual cue to motorists that they are entering a neighborhood.

Choker/Narrowing – A lateral extension of the curb into the street, which naturally slows speeds as drivers navigate the curvature through the narrowed travel lanes.

Right-In/Right-Out Island – Raised island that permits only right turns into the street and right turns out the street by blocking left-turn and through maneuvers.

Pedestrian Refuge/Median – Raised island located along the street centerline that narrows the travel lanes at that location and provides an area for pedestrians to wait to safely cross the street.

Curb Extension – Horizontal extension of the sidewalk into the street, resulting in a narrower roadway section and reduces pedestrian crossing distances while improving pedestrian visibility.

Raised Crosswalk – An elongated speed hump with a flat section in the middle and ramps on the ends; sometimes constructed with brick or other textured materials on the flat section.

Stamped Crosswalk – A thermoplastic surfacing system applied within a crossing location to improve visibility by provide a contrasting textured, highly attractive and durable surface.

Raised Intersection – Flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section and ramps.

Sidewalk Extension – The construction of a public sidewalk to connect to an existing section or sections of sidewalk in an effort to improve connectivity and pedestrian safety.

Bike Lanes – Designated portion of the existing roadway cross-section for bicycle use. Travel lanes are typically narrowed to accommodate bike lanes.

Traffic Calming Measures – Property Owner Feedback Survey

(one per property)

Name(s): _____

Street Address: _____

E-mail Address(es): _____

_____

Please fill in the circle to indicate your support for each of the potential traffic calming measures listed below.

(Delete any measures that are not applicable. Only potential measures should be shown.)

Traffic Calming Measure	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Would you support the feature if it was installed in front of or within 100 feet of your property?	
Speed Hump	O	O	O	O	O	Yes	No
Traffic Circle/Mini-Roundabout	O	O	O	O	O	Not applicable	
Chicane/Lateral Shift	O	O	O	O	O	Yes	No
Roadside Trees	O	O	O	O	O	Yes	No
Diagonal Diverter	O	O	O	O	O	Not applicable	
Semi-Diverter/One-way Traffic	O	O	O	O	O	Not applicable	
Median Barrier	O	O	O	O	O	Not applicable	
Cul-de-sac	O	O	O	O	O	Not applicable	
Entrance Treatment	O	O	O	O	O	Yes	No
Choker/Narrowing	O	O	O	O	O	Yes	No
Right-In/Right-Out Island	O	O	O	O	O	Not applicable	
Pedestrian Refuge/Median	O	O	O	O	O	Yes	No
Curb Extension	O	O	O	O	O	Not applicable	
Raised Crosswalk	O	O	O	O	O	Yes	No
Stamped Crosswalk	O	O	O	O	O	Yes	No
Raised Intersection	O	O	O	O	O	Not applicable	
Sidewalk Extension	O	O	O	O	O	Yes	No
Bike Lanes	O	O	O	O	O	Not applicable	

Comments: _____

_____

_____

_____

_____

Please return by DATE to:

e-mail@westhartfordct.gov

or

West Hartford Engineering Division
50 South Main Street, Room 204
West Hartford, CT 06107

Appendix E

Concept Plan Concurrence

(SAMPLE)

WEST HARTFORD
1854

Town of West Hartford – Department of Community Development
Engineering Division
50 South Main Street, Room 204, West Hartford, CT 06107
P: (860) 561-7540 F: (860) 561-7551 www.westhartfordct.gov

DATE

SUBJECT: Street or Neighborhood Name Traffic Calming Concept Plan Concurrence

Dear Property Owner(s):

Thank you for sharing your feedback on the traffic calming measures discussed during the public information meeting on DATE. A summary of the neighborhood's response is included below. Based on this feedback, the Engineering Division has developed a comprehensive plan for your review (see attached), which incorporates the traffic calming features most preferred by the neighborhood. If 60% or more of the property owners who responded are in support of the proposed concept plan the project will be advanced to design and construction. (if necessary, revise language to explain why a concept plan could not be developed due to a lack of consensus or lack of feasibility due to support from adjacent property owners implementing calming measures near their property.)

Please return the attached form indicating your concurrence (one per property) to the Engineering Division (via mail, e-mail, or in-person) by DATE. The results will be posted on the Town's website: www.westhartfordct.gov/trafficcalming

Summary of the Traffic Calming Measures – Property Owner Feedback Survey
Summarize neighborhood survey results in the table below. Delete measures which are not applicable

Traffic Calming Measure	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Speed Hump	%	%	%	%	%
Traffic Circle/Mini-Roundabout	%	%	%	%	%
Chicane/Lateral Shift	%	%	%	%	%
Roadside Trees	%	%	%	%	%
Diagonal Diverter	%	%	%	%	%
Semi-Diverter/One-way Traffic	%	%	%	%	%
Median Barrier	%	%	%	%	%
Cul-de-sac	%	%	%	%	%
Entrance Treatment	%	%	%	%	%
Choker/Narrowing	%	%	%	%	%

Town of West Hartford – Department of Community Development
Engineering Division
50 South Main Street, Room 204, West Hartford, CT 06107
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Right-In/Right-Out Island	%	%	%	%	%
Pedestrian Refuge/Median	%	%	%	%	%
Curb Extension	%	%	%	%	%
Raised Crosswalk	%	%	%	%	%
Stamped Crosswalk	%	%	%	%	%
Raised Intersection	%	%	%	%	%
Sidewalk Extension	%	%	%	%	%
Bike Lanes	%	%	%	%	%

*Add any additional relevant comments, respond to questions, and if necessary explain why a concept plan could not be developed due to a lack of consensus or lack of feasibility due to support from adjacent property owners implementing calming measures near their property.

Proposed Concept Plan – Property Owner Concurrence

(one per household)

Name(s): _____

Street Address: _____

E-mail Address(es): _____

_____

I/We have reviewed the proposed concept plan which was developed by the Town of West Hartford's Engineering Division and is based on the neighborhood's feedback.

Do you support the proposed concept plan?	Yes O	No O

If No, please indicate your objection or concern: _____

_____

_____

_____

_____

Do you have any questions/comments regarding the proposed concept plan: _____

_____

_____

_____

Do you feel a public information meeting to discuss the proposed concept plan is necessary?

Please return by DATE to: Yes O No O

e-mail@westhartfordct.gov

or

West Hartford Engineering Division
50 South Main Street, Room 204
West Hartford, CT 06107