

North Beverly

Neighborhood Traffic Calming Study



City of Beverly
Michael P. Cahill, Mayor

Thursday, April 7, 2016

WORLDTECH
ENGINEERING

AGENDA

- **Introduction**
- **Project Background**
- **Community Concerns**
- **Traffic Calming Alternatives**
- **Data Collection & Findings**
- **Feedback**
- **Next Steps**



PROJECT BACKGROUND



Signalized Intersection



Side Street Stop-controlled

PROJECT BACKGROUND

- **Henry's Corner Signalized Intersection**
 - **Long queues and delays.**
- **Drivers using the neighborhood network as cut-through to avoid congested intersection.**
- **By request of neighborhood residents through Councilor Martin over traffic concerns, City of Beverly conducted a Traffic Calming Study.**



COMMUNITY CONCERNS

- **Arterial traffic now using local streets.**
- **Speeding through the neighborhood.**
- **Safety of pedestrians and children walking within the neighborhood.**





TRAFFIC CALMING

“The combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users” (*ITE Journal*, July 1997)

“An attempt to strike a balance between vehicular traffic and everyone else who uses the street” (*Slow Down, You’re Going Too Fast! The Community Guide to Traffic Calming*, Public Technology, Inc., 1998)

“Restore streets to their intended function” (*ITE Canadian Guide to Neighbourhood Traffic Calming*, December 1998)



TYPES OF TRAFFIC CALMING

- **Vertical Deflection**
- **Horizontal Deflection**
- **Narrowings**
- **Volume Control Measures (Closures)**
- **Non-Physical Measures**



VERTICAL DEFLECTION

Speed Bumps

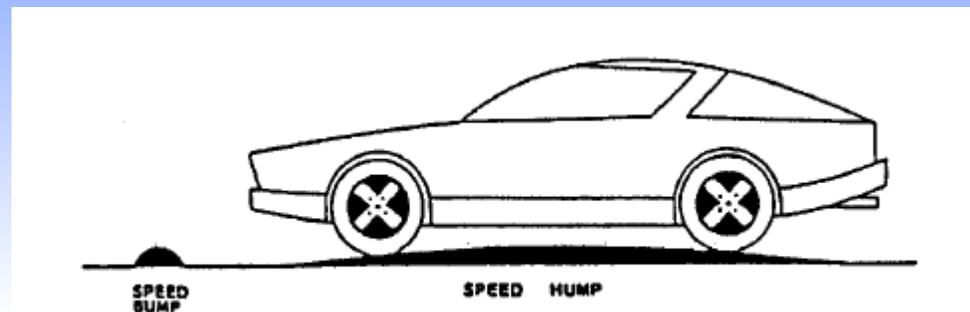
- Circular bump forcing a near-stop condition
- Design speed ≤ 5 mph
- **Suited to driveways, parking lots**
- **Not for roadways**



VERTICAL DEFLECTION

Speed Humps

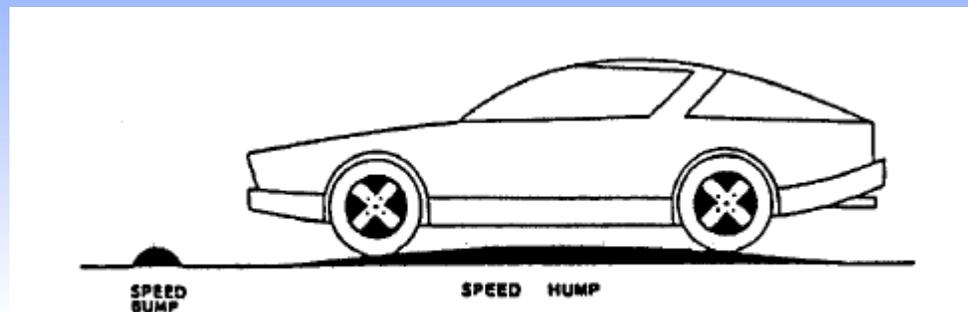
- Parabolic hump forcing significantly slower speed
- Used in sequence
- Best suited to local streets, collectors



VERTICAL DEFLECTION

Speed Lumps

- Variation on Speed Hump
- Less severe deflection
- Wheel paths allow emergency vehicles to pass through
- Best suited to local streets, collectors



VERTICAL DEFLECTION

Speed Tables (Raised Tables)

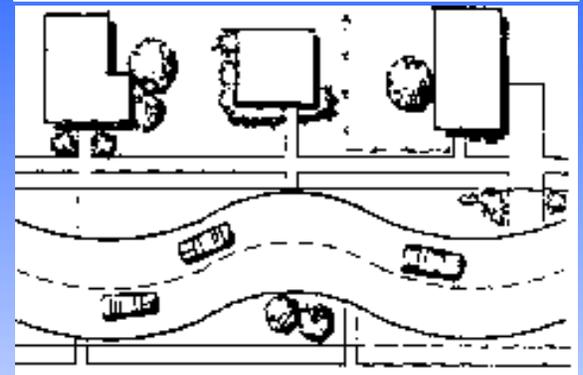
- Like speed humps, but used at intersections and in areas of high pedestrian activity
- Higher speed than speed humps; can be used on minor arterials
- Also Raised Crosswalks, Raised Intersections



HORIZONTAL DEFLECTION

Chicanes/Lateral Shifts

- Diversion in Roadway Alignment
- Deflection at least 45° , one lane width
- Can be accomplished with parking
- Best suited to local streets, CBDs



HORIZONTAL DEFLECTION

Chokers

- Reduce two-lane roadway to a single lane
- Similar to Chicanes
- Appropriate for local streets



HORIZONTAL DEFLECTION

Neighborhood Traffic Circle

- Diversion in horizontal alignment at an intersection
- Little or no modification to corner radii
- Restricted to intersections; little impact on midblock speeds
- Appropriate for local streets



HORIZONTAL DEFLECTION

Roundabouts

- Circular intersection, typically 100 to 250 ft in diameter
- Incoming traffic yields to circulating traffic
- Single lane or multi-lane
- Circulating speeds of 15 to 25 mph
- Appropriate for collectors and arterials



NARROWINGS

Neckdowns / Curb Extensions

- Reduce speeds through driver perception of reduced roadway width
- Occupies normally unused space
- Shortens crossing distances



NARROWINGS

Gateway

- Combination of Neckdowns & Median
- Communicates a change in speed, area type, or functional classification
- Can be used for landscaping/wayfinding





VOLUME CONTROL MEASURES

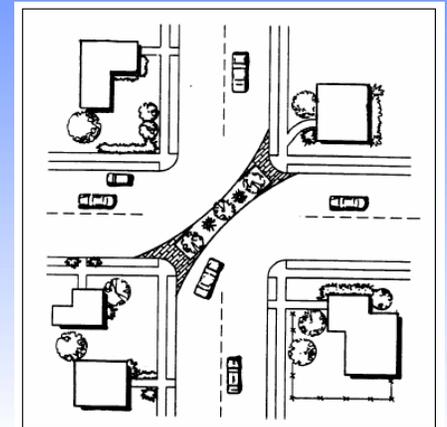
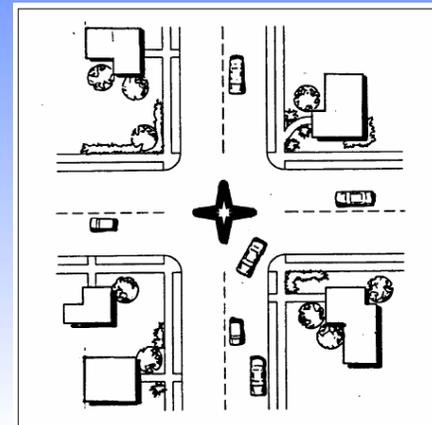
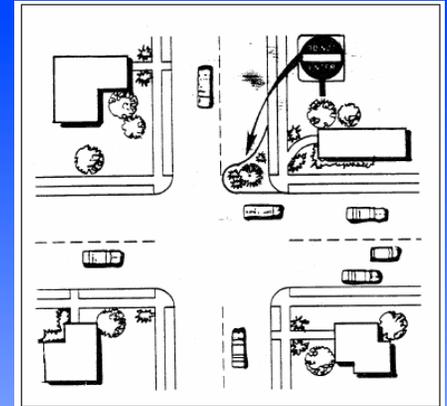
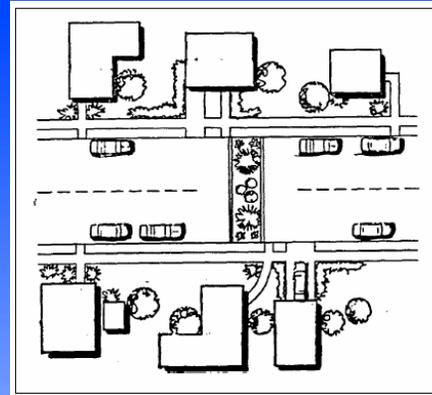
One-Way Streets

Full/Half Closures

Diverters

Right-in / Right-out

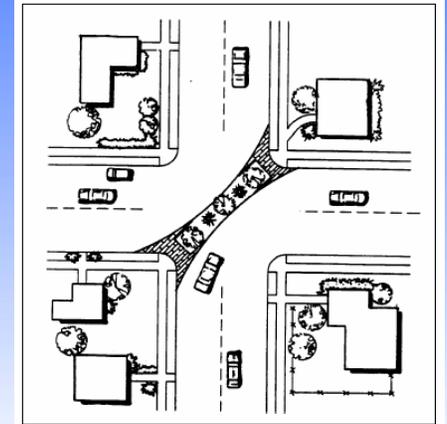
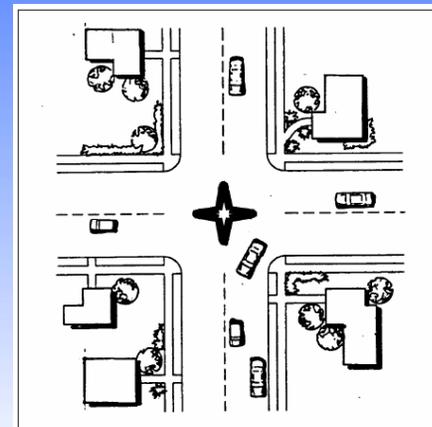
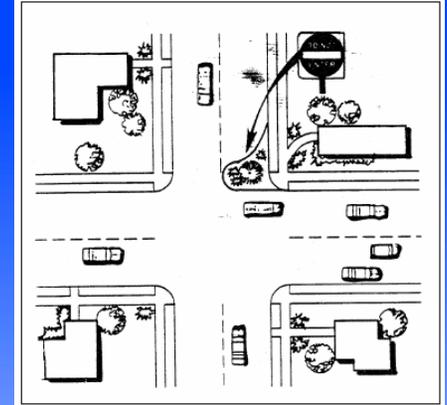
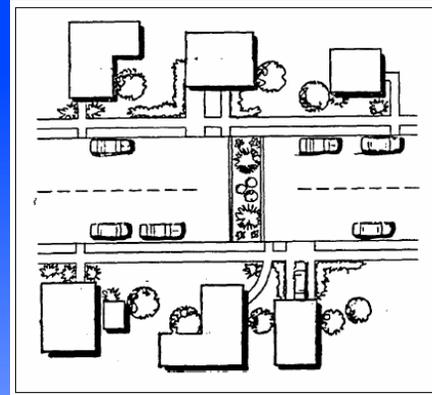
Cul-de-Sacs





VOLUME CONTROL MEASURES

- Discourages cut-through traffic
- May inconvenience residents
- Must have viable alternate routes



NON-PHYSICAL MEASURES

Radar feedback signs

- Captures drivers' attention
- Appropriate for any roadway class
- Useful at speed transition zones
- Should be used to address specific concerns (existing speeding problem, speed-related crashes, curves, School/Work Zones)
- Data collection and real-time monitoring



NON-PHYSICAL MEASURES

Enforcement

- Consumes valuable resources
- Cannot be active 100 percent of the time



NON-PHYSICAL MEASURES

STOP Signs

- NOT an effective traffic calming measure
- MUTCD: “YIELD or STOP Signs should not be used for speed control.”
- Massachusetts Amendments: “STOP or YIELD signs are not intended for and shall not be used for speed control.”



SELECTING TRAFFIC CALMING FEATURES

1. Problem Definition

- **Speeding**
- **Cut-through Traffic**
- **Safety**
- **Context**
- **Micro vs. Macro**



SELECTING TRAFFIC CALMING FEATURES

1. Problem Definition

2. Roadway Classification

- **Local / Collector / Arterial**
- **Transit / Emergency Response Routes**



Traffic calming on major streets

Traffic calming device	Major arterial	Minor arterial	Major collector	Neighborhood collector
Roundabouts	Yes	Yes	Yes	Yes
Traffic circles	No	No	No	Yes
Raised crosswalks	No	No	Yes	Yes
Curb extensions	No	Yes	Yes	Yes
Parking bays	Yes	Yes	Yes	Yes
Chicanes	No	Yes	Yes	Yes
Street closure	No	No	No	No
Half diverter	No	No	No	No
Diagonal diverter	No	No	No	No
Star diverter	No	No	No	No
Raised median	Yes	Yes	Yes	Yes
Pavement surface modification	Yes	Yes	Yes	Yes
Speed actuated signing	No	No	No	No
Speed humps	No	No	No	No
Speed tables	No	No	No	Yes
Landscaped roadway	Yes	Yes	Yes	Yes
Midblock neckdown	No	No	Yes	Yes
Angled slow point with median	No	No	Yes	Yes



SELECTING TRAFFIC CALMING FEATURES

- 1. Problem Definition**
- 2. Roadway Classification**
- 3. Scope / Budget of Project**
 - **Low Cost/Quick Fix**
 - **Long Term Reconstruction**
 - **Spot Treatment or Area wide**

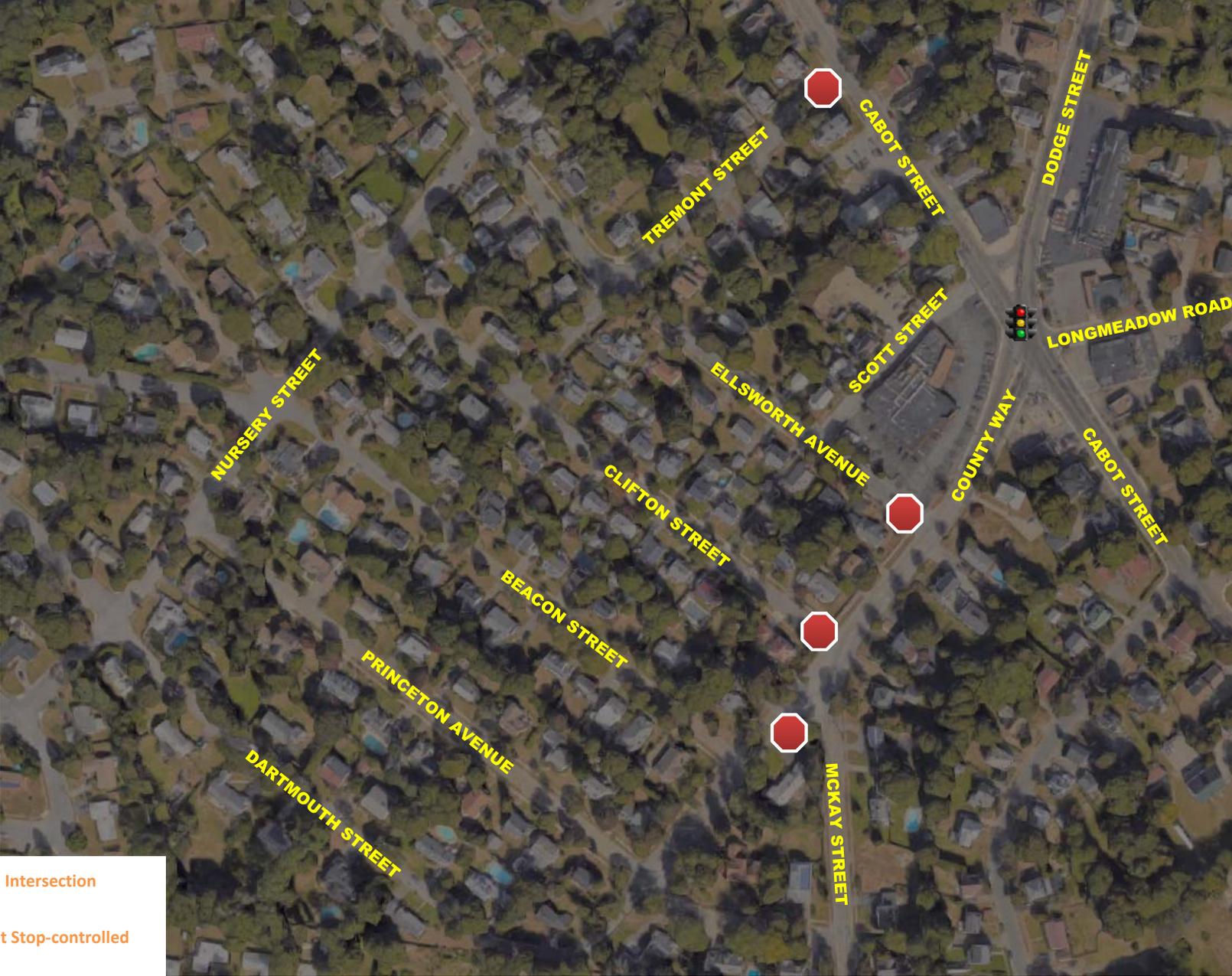


SELECTING TRAFFIC CALMING FEATURES

- 1. Problem Definition**
- 2. Roadway Classification**
- 3. Scope/Budget of Project**
- 4. Monitoring and Follow-up**
 - **Immediate, 6 month, 12 month**
 - **Volume, Speed, Crashes**
 - **Emergency Response Times**



STUDY AREA



Signalized Intersection



Side Street Stop-controlled

EXISTING CONDITIONS

Cabot Street at Dodge Street, County Way, Longmeadow Road, Scott Street



Southbound queues extend through Route 128 Interchange

Poor Drainage

All Approaches LOS E or F during peak periods

No Crosswalk

Narrow Sidewalks, No Separation w/Gas Station

Crosswalk length - 103 ft

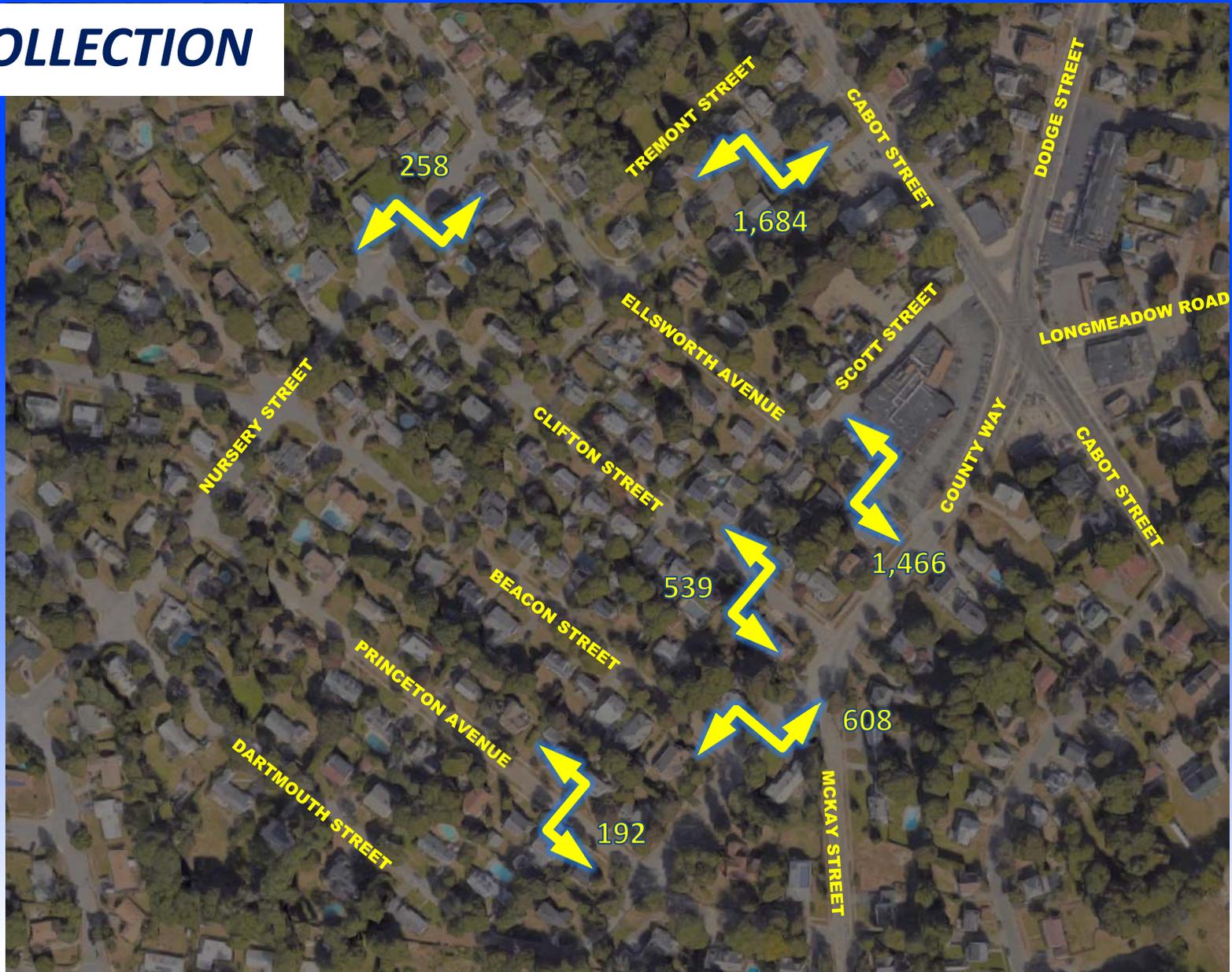
No Crosswalk

Poor Signal Head Alignment

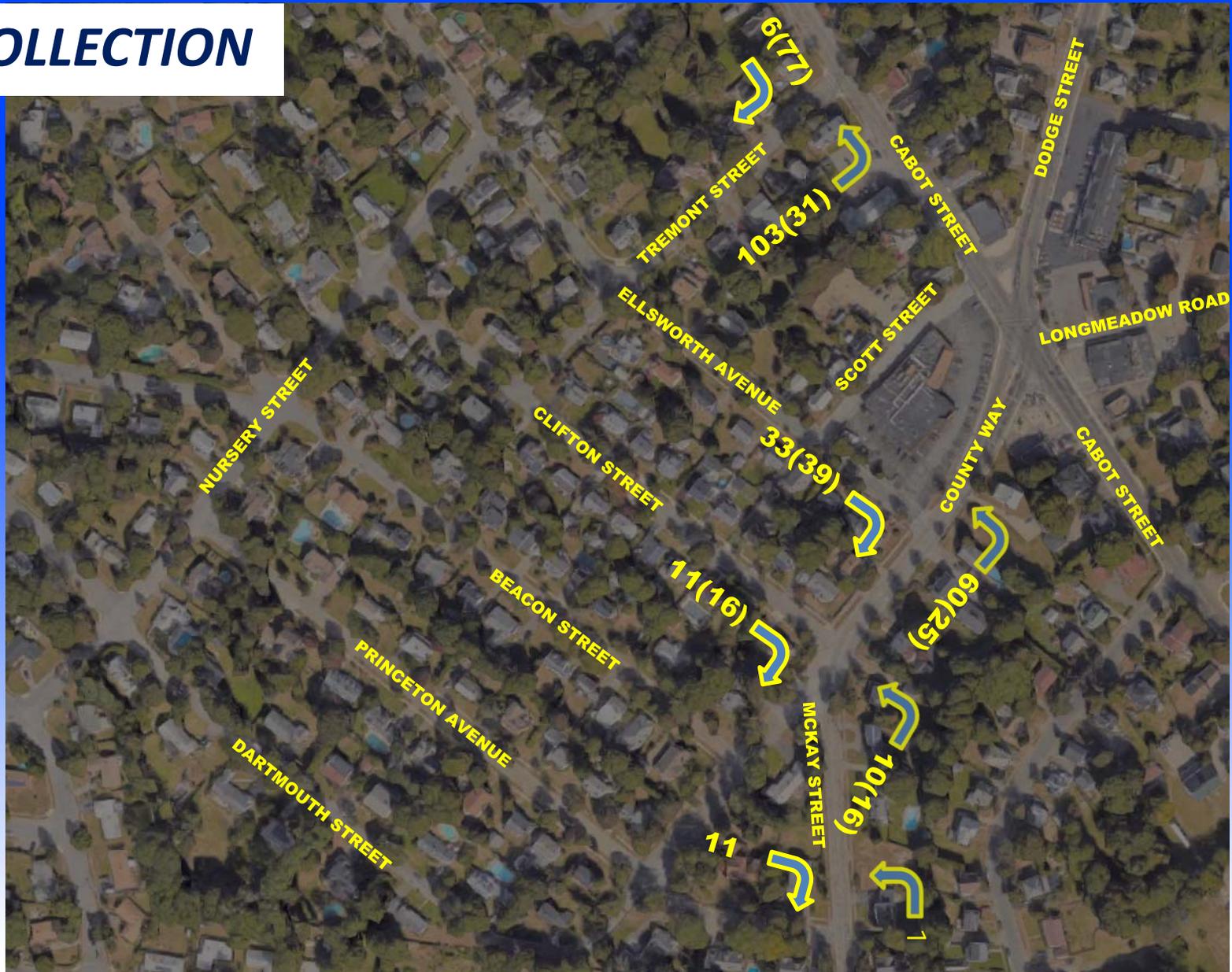
Confusing lane assignment

Ramps not ADA Compliant

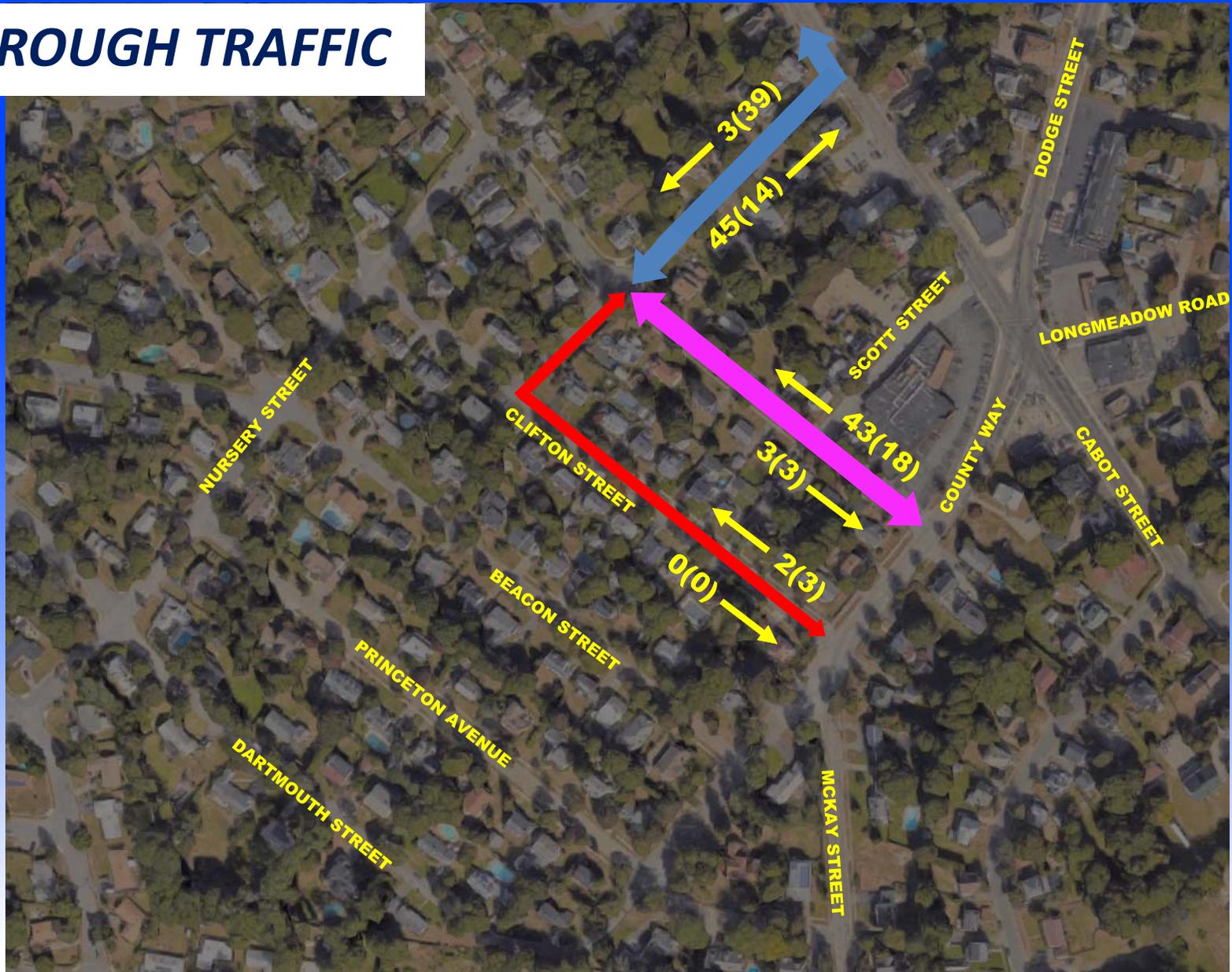
DATA COLLECTION



DATA COLLECTION



CUT-THROUGH TRAFFIC



TRAVEL SPEEDS

STREET	Direction	Average Speed (MPH)	85 th –ile Speed (MPH)	Prima Fascie Speed Limit
Princeton Ave	WB	22	26	30
	EB	20	22	
Tremont St	NB	21	23	30
	SB	22	25	
Ellsworth Ave	WB	24	27	30
	EB	24	28	
Clifton Ave	WB	20	23	30
	EB	20	23	
Nursery St	NB	18	20	30
	SB	19	21	
Dartmouth St	NB	18	22	30
	SB	21	27	



NEXT STEPS

1. Henry's Corner Intersection project update
 - Work on this intersection has been approved by the Project Review Committee,
 - Evaluated by Boston Region MPO, Scored 66 out of 134 points, project ranked #6 in the region,
 - Survey / Design pending. Multi-year process.
2. Needs Assessment Report for Neighborhood
 - Data presented today,
 - Crash Data, Parking, Pedestrian Volumes, etc.
3. Traffic Calming Report
 - Evaluation of Traffic Calming Alternatives,
 - Construction and Maintenance Cost.
4. Conceptual Plans



Discussion / Questions

