Presentation to the Board of Selectmen
December 17, 2013

Chatham Town Hall Annex
4:00 P.M.
Overview

- Process to date
- Project goals
- Data collection results
- Proposed concept
- Comment results
- Abutter meeting results
- Design change responses
- Next steps
- Q&A / Public Comment
Design Process to Date

- 4/2013 – Initial public information meeting
- 4/2013 – Office hours
- 6/2013 – Presentation to BOS
- 6/2013 – Detailed Data collection
- 7-8/2013 – Further observations
- 9-10/2013 – Concept design work
- 9-10/2013 – technical input from Town, MassDOT & CCC
- 11/12/2013 – Presentation to BOS
  - 11/12-12/10/2013 – Comment period.
- 12/17/2013 – Tonight’s meeting
Project Goals

Everyone seems to agree:

- What we knew in April:
  - Reduce speed on Rte. 28
  - Improve pedestrian and bicycle accommodations.
  - Improve intersection safety and operations.
  - Clear, easy access to businesses.
  - Better streetscape.

- What we learned through outreach:
  - Preserve local businesses.
  - Avoid urban appearance.
  - Green Route 28 in West Chatham.
  - Ensure efficient traffic operations.
Study Area
Data Collection Elements

- **Public involvement**
  - Office hours
  - Email/telephone correspondence

- **Detailed survey of study area**

- **Extensive pedestrian, bicycle & vehicle counts**
  - Automated traffic recorder counts (“tubes” in roadway)
  - Manual turning movement counts
  - Video

- **Observations**

- **Crash history analysis**

- **Speed data**

- **Sight distance analysis**
Data Collection Results I

- Traffic and speed are seasonal:
  - April volumes are 50% of summer volumes.
  - Travel speeds increase when volumes drop.
  - Most drivers obey the speed limit; a small group do speed.

  - Frequent near misses.
  - 1 crash with a cyclist.
  - 2 severe crashes in summer 2013.
  - *Current configuration leaves the door open to more severe crashes.*
Data Collection Results II

- The corridor lacks adequate bicycle and pedestrian accommodations.
- Sight distances are poor at many locations.
- There are private encroachments in the public right-of-way.
- CCRTA buses have no safe space for pick-up/drop-off operations.
- *Route 28 in West Chatham is design deficient.*
Existing Conditions

**Corridor**
- No sidewalk on south side of roadway
- Narrow sidewalk (4') on north side
- No bicycle accommodations
- Narrow shoulder
- Posted speed limit higher than 85th percentile speed
- Wide curb cuts
- Private signs, landscaping, etc. in SHLO

**Route 28/George Ryder Road**
- Skewed geometry
- No crosswalks
- Side street delay (LOS F) and driver frustration

**Route 28/Barn Hill Road**
- Barn Hill Rd. delay (LOS F)
- Offset alignment conflicts with TWTL
Recommendation
Recommended Design

**CORRIDOR**
- NEW 10’ MULTI-USE PATH ON NORTH SIDE
- NEW 6’ SIDEWALK ON SOUTH SIDE
- WIDENED SHOULDERS
- IMPROVED SIGHT LINES
- ENHANCED PEDESTRIAN & BICYCLE CONDITIONS
- SHORTENED PEDESTRIAN CROSSINGS
- POTENTIAL FOR SPEED REDUCTION

**ROUTE 28/GEORGE RYDER ROAD**
- ELIMINATE ANGLE & HEAD-ON CRASHES
- REDUCED DELAY (OVERALL LOS C, 15.2 SEC/VEH)
- COMPACT ROUNDABOUT DESIGN
  MINIMIZES IMPACTS TO ABUTTERS
- DESIGNED FOR OPERATING SPEEDS
  OF 15-20 MPH

**ROUTE 28/BARN HILL ROAD**
- ELIMINATE ANGLE & HEAD-ON CRASHES
- REDUCED DELAY (OVERALL LOS C, 17.3 SEC/VEH)
- COMPACT ROUNDABOUT DESIGN
  MINIMIZES IMPACTS TO ABUTTERS
- DESIGNED FOR OPERATING SPEEDS
  OF 15-20 MPH
The Minimalist Approach

- "Why can’t we just put in a sidewalk and some trees?"

- Rte. 28 in West Chatham is design deficient.
- MassDOT requires a complete streets approach:
  - 2006 MassHighway adopts complete streets.
  - 2009 MassHighway engineering directive mandates bicycle/pedestrian improvements
  - 2012 MassDOT mode shift goal.
- Adding a sidewalk triggers complete streets requirements.
Design Elements Considered

- **Route 28 Corridor**
  - Retain Two-Way Left Turn Lane (TWTL)
  - Reduce TWTL to turning pockets
  - Reduce corridor to 2 lane profile

- **Route 28/George Ryder Road**
  - Retain existing configuration
  - Signalize intersection
  - Replace with modern roundabout

- **Route 28/Barnhill Road**
  - Retain existing configuration
  - Signalize intersection
  - Replace with modern roundabout
Route 28 Corridor – Left-turns

- Left-turn volumes are low throughout corridor (typ. <10 vehicles per hour)
- Most commercial uses located on south side of corridor
- Highest driveway left-turn volumes:
  - 22-42 per hour WB at post office driveway
  - 36 per hour EB into Ocean State (Sat only)
Route 28 Corridor - TWTL

- Does not meet minimum criteria for TWLTL:
  - Left-turns of at least 70 turns per ¼ mile during the peak hours and/or 20% of total volume.
- Poor transition between 2 and 3 lane cross-sections contributes to motorist confusion at intersections.
- Video observations show that TWTL provides minimal time savings.
Route 28 Corridor - TWTL

- Generally used incorrectly.
- Encourages poor driver behavior:
  - Lefts from travel lane
  - High speed passing
  - 2-stage lefts not made
  - Right turn encroachment
Route 28 – Existing Cross-section
TWTL: A Challenge to Meeting Our Goals

- Potential for pedestrian courtesy crashes not addressed.
- Competes with installation of
  - DOT standard bicycle infrastructure.
  - DOT standard pedestrian infrastructure.
  - Green space.
- Increased pedestrian exposure on longer crossing – particularly for those with limited mobility.
- For the space it occupies, the TWTL conveys minimal benefits.
## Design Elements Dismissed - Intersections

<table>
<thead>
<tr>
<th>Element</th>
<th>Reason for Dismissal</th>
</tr>
</thead>
</table>
| Signalize Route 28/George Ryder Road/George Ryder Road South | • Not warranted year round.  
• Queuing and operations.  
• Abutter impacts for equipment and turning lanes.  
• Contributes to urban appearance.  
• Intersection off-set requires additional equipment. |
| Signalize Route 28/Barnhill Road             | • Not warranted year round.  
• Queuing and operations  
• Abutter impacts for equipment and turning lanes.  
• Contributes to urban appearance. |
| Provide seasonal signalization               | • Typically not permitted by MassDOT.  
• No bicycle/pedestrian protection when off. |
## Design Elements Incorporated I

<table>
<thead>
<tr>
<th>Element</th>
<th>Reason for Incorporation</th>
</tr>
</thead>
</table>
| Reduction of corridor to 2 lanes with adequate shoulders. | • Addresses safety issues.  
• Improves ped/bike infrastructure.  
• Improves streetscape/greens roadway.  
• Ensures efficient, but calm traffic flow.  
• Maintains business access.  
• Allows vehicles to pass left turners in controlled manner.  
• Maintains emergency access. |
| Modern roundabout at Rte. 28/George Ryder Road | • Ensures efficient, but calm traffic flow year round.  
• Improves exit onto Route 28.  
• Improves ped/bike infrastructure.  
• Improves streetscape/greens roadway.  
• Avoids “urban appearance.”  
• Maintains emergency access. |
# Design Elements Incorporated II

<table>
<thead>
<tr>
<th>Element</th>
<th>Reason for Incorporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modern roundabout at Rte. 28/Barnhill Road</td>
<td>• Ensures efficient, but calm traffic flow year round.</td>
</tr>
<tr>
<td></td>
<td>• Improves exit onto Route 28.</td>
</tr>
<tr>
<td></td>
<td>• Improves ped/bike infrastructure.</td>
</tr>
<tr>
<td></td>
<td>• Improves streetscape/greens roadway.</td>
</tr>
<tr>
<td></td>
<td>• Avoids “urban appearance.”</td>
</tr>
<tr>
<td></td>
<td>• Maintains emergency access.</td>
</tr>
<tr>
<td>Dual roundabout</td>
<td>• Allows convenient reversing; <em>never take another left if you don’t want to.</em></td>
</tr>
</tbody>
</table>
# Roundabout vs. Signal - Safety

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Roundabout</th>
<th>Signal</th>
<th>Safety Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimizes frequency &amp; severity of crashes</td>
<td>✓</td>
<td>X</td>
<td>Roundabout</td>
</tr>
<tr>
<td>Eliminates potential for head-on and angle crashes</td>
<td>✓</td>
<td>X</td>
<td>Roundabout</td>
</tr>
<tr>
<td>Lower vehicle speeds are safer for pedestrians</td>
<td>✓</td>
<td>X</td>
<td>Roundabout</td>
</tr>
<tr>
<td>Lower vehicle speeds reduce potential for fatalities</td>
<td>✓</td>
<td>X</td>
<td>Roundabout</td>
</tr>
</tbody>
</table>

*Sources: Insurance Institute for Highway Safety, Federal Highway Administration, Transportation Research Board, Minnesota DOT.*
## Roundabout vs. Signal – Additional Benefits

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Roundabout</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handles U-turns efficiently</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>Efficient traffic flow on and off peak periods</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>Reduction in idling traffic and hard accelerations.</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>Reduced maintenance cost to owner (bulbs, paint, electricity)</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>Rural appearance without poles or signal equipment boxes.</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>Land takings to implement</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Sources: Insurance Institute for Highway Safety, Federal Highway Administration, Transportation Research Board, Minnesota DOT.*
Why Two Roundabouts on Route 28?

- Current configuration operates poorly during peak conditions.
- Potential for serious crashes if left as-is.
- Signals are not warranted year round.
- Dual roundabouts control speed through design.
- Roundabouts operate with shorter queues and less delay than signals.
- Roundabouts provide safe, year-round pedestrian protection.
- Dual roundabouts eliminate need for left turns.
- Adequate queuing distance between intersections.
George Ryder Road – Proposed Roundabout
Route 28 – Recommended Cross Section
Public Comments

11/12/13 – 12/10/13
### Community Concerns I

<table>
<thead>
<tr>
<th>Comment Theme</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior study data outdated</td>
<td>New, finer-grained data collected in 2013 and shared with community on 11/12/13.</td>
</tr>
<tr>
<td>Data collected at wrong time of year/type of day.</td>
<td>Data collected per Town/DOT/CCC. Information gathered each month since April, 2013 in all weather conditions.</td>
</tr>
<tr>
<td>Extreme accidents are not exemplary of Route 28 traffic conditions.</td>
<td>This appears to be true, however, the current design leaves the door open to such extreme accidents.</td>
</tr>
<tr>
<td>TWTL is required to access local business.</td>
<td>Design allows:</td>
</tr>
<tr>
<td></td>
<td>• Through vehicles to pass left turners in a controlled manner.</td>
</tr>
<tr>
<td></td>
<td>• Dual roundabout allows all future lefts to be made as more efficient right turns if desired.</td>
</tr>
</tbody>
</table>
## Community Concerns II

<table>
<thead>
<tr>
<th>Comment Theme</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWTL prevents congestion.</td>
<td>Data gathered does not support this statement.</td>
</tr>
<tr>
<td>TWTL is required for safe operation on Route 28 between George Ryder Road &amp; Barnhill Road.</td>
<td>Data gathered shows TWTL is:</td>
</tr>
<tr>
<td></td>
<td>• Not used correctly and invites dangerous driver behavior – lane encroachments, high speed passing, U-turns etc.</td>
</tr>
<tr>
<td></td>
<td>• A challenge to crossing pedestrians; particularly those with limited mobility.</td>
</tr>
<tr>
<td>We have said we want the TWTL. Why won’t you just leave it?</td>
<td>Date gathered shows that TWTL:</td>
</tr>
<tr>
<td></td>
<td>• Presents a safety risk.</td>
</tr>
<tr>
<td></td>
<td>• Uses substantial real estate for minimal benefit.</td>
</tr>
<tr>
<td></td>
<td>• Is used incorrectly.</td>
</tr>
</tbody>
</table>
## Community Concerns III

<table>
<thead>
<tr>
<th>Comment Theme</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>The TWTL is in keeping with the character of Chatham.</td>
<td>The TWTL is 1,200 feet of 3-lane profile. The rest of Route 28 in Chatham is 2-lanes. The TWTL represents the anomaly.</td>
</tr>
<tr>
<td>Preference for seasonal signal.</td>
<td>Seasonal signals are not allowed by MassDOT and would offer no pedestrian protection when turned off. Roundabouts are inherently more flexible and respond better to Chatham’s seasonal traffic peaks and valleys</td>
</tr>
</tbody>
</table>
| Signals require no takings.          | Any significant changes will trigger takings to:  
  - Include space for bicycle/pedestrian accommodations.  
  - In the case of signals, provide space for signal equipment/turning lanes.                                                                                                                                  |
<table>
<thead>
<tr>
<th>Comment Theme</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotaries are dangerous.</td>
<td>Nobody is proposing a rotary for West Chatham. The concept design includes single lane modern roundabouts.</td>
</tr>
<tr>
<td>Signals are safer than roundabouts.</td>
<td>Not true. Motorists can run signals; the design of roundabouts prevents this. Signals also help to speed up traffic; roundabouts slow it down.</td>
</tr>
<tr>
<td>Roundabouts are confusing.</td>
<td>All modern roundabouts are equipped with explanatory signage and pavement markings. Their geometry makes driver pathways clear.</td>
</tr>
</tbody>
</table>
## Community Concerns V

<table>
<thead>
<tr>
<th>Comment Theme</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trucks cannot use roundabouts.</td>
<td>The proposed roundabouts have been modeled with the largest standard trucks, CFD trucks, and large boat trailers. All vehicles are accommodated by the roundabout.</td>
</tr>
<tr>
<td>Roundabouts do nothing to green the corridor.</td>
<td>Roundabout center islands can be planted as can splitter islands greening and softening their appearance. Signal equipment is far more urban in character.</td>
</tr>
</tbody>
</table>
| “It’s not broken, don’t fix it.”                                              | It is broken. The current configuration:  
  • Leaves the door open to potentially severe crashes.  
  • Has significant limitations on sight distance.  
  • Offers sub-standard bicycle or pedestrian accommodations.  
  • Is not used as designed.                                      |
# Community Concerns VI

<table>
<thead>
<tr>
<th>Comment Theme</th>
<th>Response</th>
</tr>
</thead>
</table>
| “The problems are not severe enough to warrant the cost.”                    | The current configuration is a problem because it:  
• Is a barrier to full access by all modes.  
• May cause some customers to stay away                                        |
| “I’ve expressed my opinion, why hasn’t the project been changed/stopped?”   | Data collection has shown that a problem exists on Route 28 in West Chatham and should be addressed. Simply stopping the project does not solve the problem. Typically, the Commonwealth of Massachusetts does not make transportation decisions by public referendum. Data-driven comments on the proposal are welcome. |
| “The project includes land takings; I am against them.”                      | Any positive change in the corridor is likely to trigger some takings. The concept design includes smaller takings than were envisioned by the prior planning process. Through our abutter meetings we are further reducing the amount of land needed. *Any impacted owners will be compensated by DOT.* |
## Community Interests I

<table>
<thead>
<tr>
<th>Comment Theme</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data collection was sound and thorough.</td>
<td>The data collection was performed at times agreed-upon by the Town, DOT and CCC in accordance with professional standards.</td>
</tr>
<tr>
<td>Area is currently dangerous for bicyclists and pedestrians</td>
<td>The concept design has been developed to reduce the cross-section, lower speeds, and improve pedestrian crossings.</td>
</tr>
<tr>
<td>Area is currently dangerous for motorists entering Route 28</td>
<td>The roundabouts are designed to provide a calm, efficient flow of traffic onto and off of Route 28 and its major adjoining side streets.</td>
</tr>
<tr>
<td>The TWTL can be safely removed</td>
<td>The data gathered shows that the TWTL is used infrequently and sometimes unsafely. For the space it occupies it confers minimal benefit.</td>
</tr>
<tr>
<td>TWTL removal greens corridor</td>
<td>Removing the TWTL allows us to repurpose the space it currently occupies for several uses including bicycle/pedestrian amenities and new green buffers.</td>
</tr>
<tr>
<td>Comment Theme</td>
<td>Response</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Roundabouts are a progressive traffic control.</td>
<td>Roundabouts have been successful across the world, United States and closer to home in Massachusetts. They are promoted by the FHWA and state DOT’s as safe traffic controls which substantially improve pedestrian conditions.</td>
</tr>
<tr>
<td>Compact roundabouts have reduced takings as compared to previous designs.</td>
<td>The Town and project team are sensitive to the issue of takings and are working to reduce them even further as we move towards the 25% design.</td>
</tr>
<tr>
<td>Emergency vehicles will be able to safely traverse roundabouts without loss of response time.</td>
<td>Computer models using the dimensions of the existing and future CFD fleet show all emergency vehicles will be able to navigate the roundabouts safely.</td>
</tr>
<tr>
<td>Comment Theme</td>
<td>Response</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Modern roundabouts are less expensive to maintain.</td>
<td>Roundabouts have landscape maintenance costs, but do not incur the long-term, 24/7/365 cost of electricity, bulbs and paint when compared with signals.</td>
</tr>
<tr>
<td>The placement of these two roundabouts within 1,700 feet of each other is not problematic.</td>
<td>Research shows that roundabouts implemented and in design in Massachusetts have been and will be placed within 200 feet of each other. 1,200 is plenty of room given project traffic volumes in West Chatham.</td>
</tr>
<tr>
<td>Roundabouts are newer and frequently experience community resistance in planning &amp; design.</td>
<td>Our research shows that communities often resist roundabouts during planning, only to embrace them fully once implemented.</td>
</tr>
</tbody>
</table>
Abutter Meetings

Late November – Early December
Abutter Meetings

- 1685 Main St.
- Ocean State
- Commercial Fishermen’s Alliance
- 1652 Main St.
- Shop Ahoy Plaza
- Dunkin’ Donuts

Abutter Meetings
Abutter Issues – George Ryder Road

- Driveway configuration
- Access by fuel deliveries
- Access by customers
- Access by personal vehicle
- Construction impacts

- Left-turn access to Rte. 28
- Size of ROW acquisition
- Retail Visibility
- Parking requirements per zoning

Takings
- Impact of takings on landscaping/retail display
- Loss of parking

Takings
- Construction impacts
- Loss of parking
Design Response – George Ryder Road

- Reevaluation of curb cut location & access on Rte. 28
- Confirm dimensions of personal vehicle
- Future construction mgmt. plan

- Exploring left-turn alternatives to Rte. 28
- Exploring lessening acquisition
- Planning/zoning relief regarding parking

- No impact to parking
- Future construction mgmt. plan

- No impact to parking
- Considering acquisition lessening/elimination
Abutter Issues – Barnhill Road

- Parking requirements per zoning
- Takings
- Access by deliveries
- Access by customers

Special events
Left turn access
Tree stump

Left turn access on Rte. 28
Access by deliveries
Design Responses – Barnhill Road

- Pull stump
- Explore scored concrete removal to facilitate lefts from Rte. 28
- Preserve parking/Reduce acquisition
- Exploring solutions to improve parking
- Planning/zoning relief regarding parking
- Maintain current delivery/customer access
- Consider driveway consolidation
Construction Management

- Many abutters are concerned about the construction period:
  - Several years away.
  - Construction will be timed to avoid peak tourism season.
  - *Through traffic will be maintained over duration of the project for full access to businesses.*
  - HSH experience with construction management.
  - Research into best practices for merchant protection begun.
  - Detailed traffic management plan to be developed for Town/DOT review.
Conclusion
## The Recommended Design responds to commonly shared goals

<table>
<thead>
<tr>
<th>Goal</th>
<th>Design Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce speed on Route 28</td>
<td>Roundabouts and reduced cross section will lower speeds through design – they are self-enforcing.</td>
</tr>
<tr>
<td>Improve pedestrian and bicycle accommodations</td>
<td>The recommended design includes sidewalk improvements, safer ADA-compliant crossings at major intersections and a multi-use pathway.</td>
</tr>
<tr>
<td>Improve intersection safety and operations</td>
<td>The roundabouts provide calm, but freely flowing traffic. Congestion and queuing are avoided.</td>
</tr>
<tr>
<td>Ease business access</td>
<td>Safer traffic operations mean more customers. The dual roundabout removes the need to make left turns entirely if a motorist wishes to do.</td>
</tr>
<tr>
<td>Improve streetscape/green Route 28 in West Chatham</td>
<td>The design introduces new green buffers and green space in the roundabout islands.</td>
</tr>
<tr>
<td>Preserve local business</td>
<td>The design minimizes takings.</td>
</tr>
<tr>
<td>Avoid an urban appearance</td>
<td>The design includes no signal equipment, mast arms or span wires.</td>
</tr>
</tbody>
</table>
What does this all mean?

- Route 28 in West Chatham is design deficient which presents a public safety hazard.
- Minimalist approach not feasible & fails to address documented roadway deficiencies.
- The concept:
  - Is an appropriate, context-sensitive response to documented safety issues.
  - Responds to what we have heard from the community and seen in our data.
  - Accommodates all users.
  - Is an appropriate response based on research into other communities.
Where do we go from here?

- We are in the process of refining the concept to address abutter concerns.
- 25% design is the next logical step providing for:
  - Further design refinements.
  - Continued abutter coordination.
  - Continued public involvement.
  - MassDOT review of the design.
  - MassDOT 25% design public hearing.
Next Steps

- Discussion tonight/direction to proceed to advance to 25%
- Ongoing abutter coordination
- Ongoing public involvement
- Concept to 25% design level (early 2014)
- 25% design public hearing (spring 2014)
Questions & Answers