



# CROWELL ROAD INTERSECTION DESIGN PROJECT

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Main Street/Crowell Road/Queen Anne Road/Depot Road

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CHATHAM | BOARD OF SELECTMEN

NOVEMBER 14, 2017



**HOWARD STEIN HUDSON**

Engineers + Planners





# Agenda

CROWELL ROAD INTERSECTION DESIGN PROJECT

- Project Area
- Current Project History
- Existing Field Observations
- 2017 Design Concepts (HSH)
- Right-of-Way Graphics
- Next Steps
- Questions and Comments

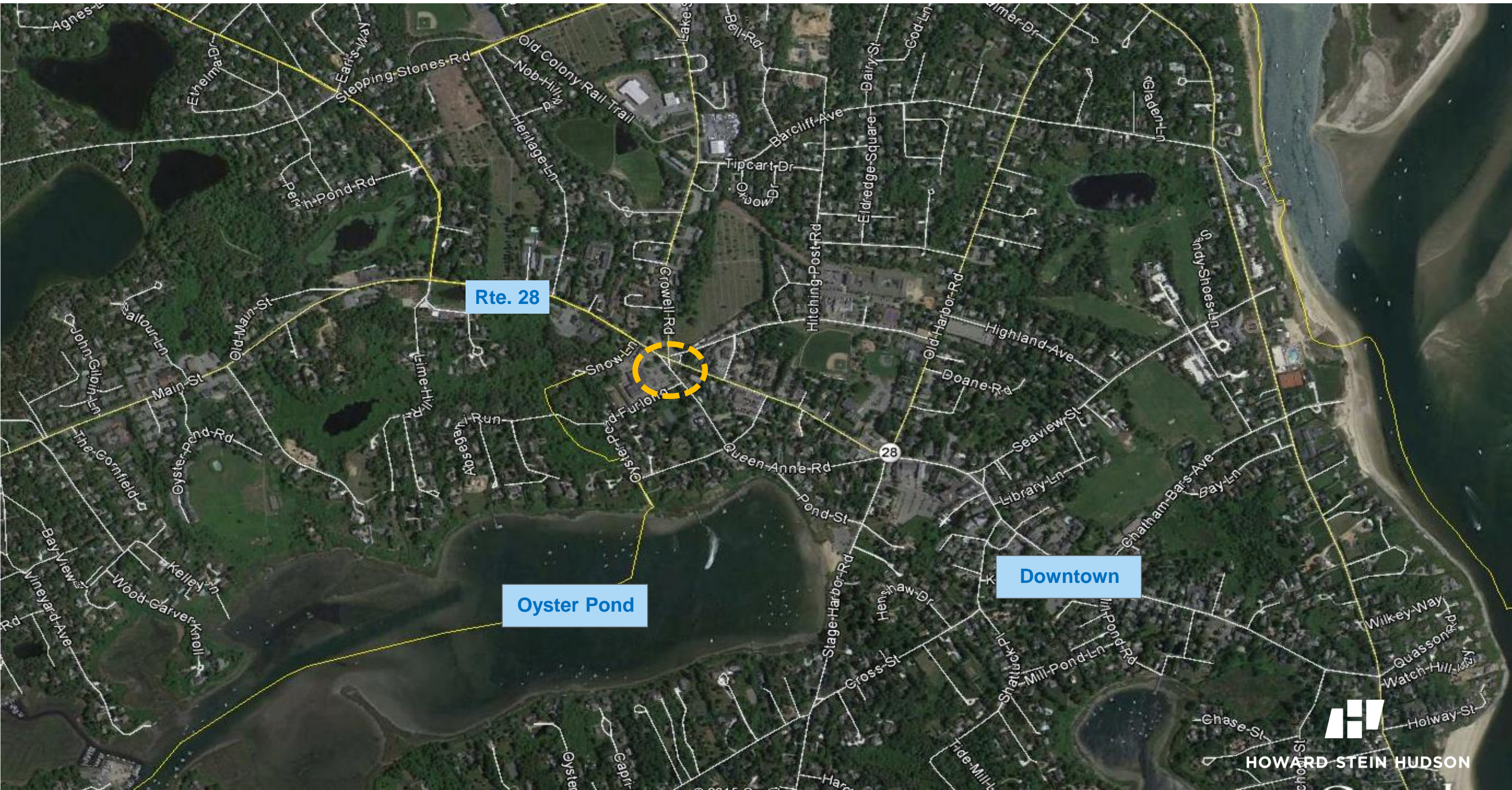






# Project Area

CROWELL ROAD INTERSECTION DESIGN PROJECT



Rte. 28

Oyster Pond

Downtown



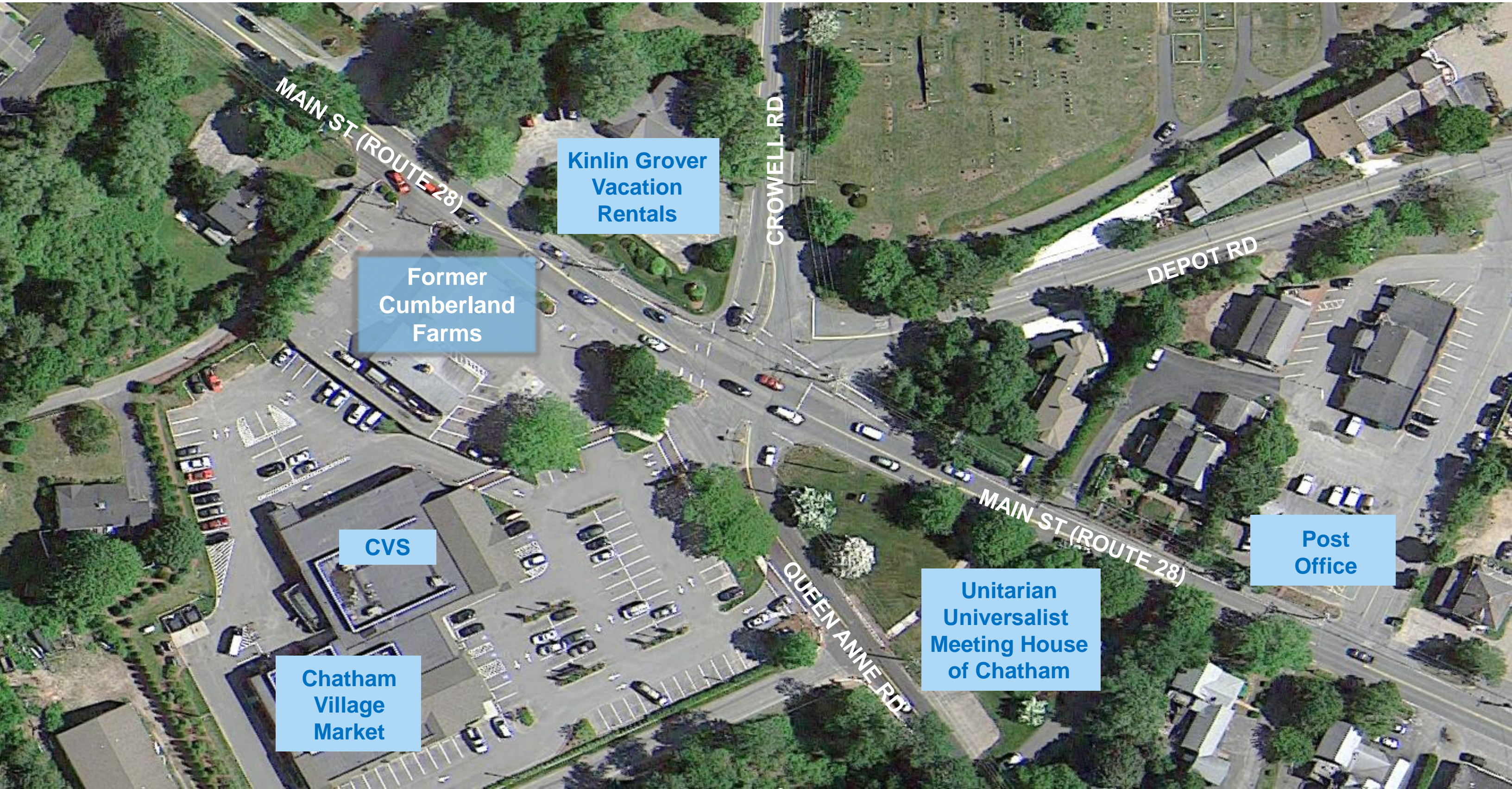
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# Project Area

CROWELL ROAD INTERSECTION DESIGN PROJECT



**Kinlin Grover  
Vacation  
Rentals**

**Former  
Cumberland  
Farms**

**CVS**

**Chatham  
Village  
Market**

**Unitarian  
Universalist  
Meeting House  
of Chatham**

**Post  
Office**





# Current Project History

CROWELL ROAD INTERSECTION DESIGN PROJECT



- **Town's Comprehensive Plan (2003)**
  
- **TIP Process Initiated (2009-2013)**
  - Project Need (PNF)/Project Initiation (PIF) Forms
  - MassDOT PRC Project Eligibility Determination
  
- **Public Outreach Meeting #1 – June 22, 2015**
  
- **Abutter Interviews – June 2015**
  
- **Town of Chatham and MassDOT Agency Coordination Meetings**
  - May 5, 2015
  - January 18, 2017







# Current Project History

CROWELL ROAD INTERSECTION DESIGN PROJECT



- **Appearance before Board of Selectmen – August 15, 2017**
  - Voted to support Alternative 3 – Signalized Intersection
  - 60-day comment period – extended to October 30, 2017
  
- **Public Outreach Meeting #2 – October 16, 2017**
  
- **Staked State ROW on Main Street – November 4-5, 2017**
  
- **Comment period extended to November 8, 2017**
  
- **Appearance before the Board of Selectmen – November 14, 2017**







# HSH 2014 Data Collection

CROWELL ROAD INTERSECTION DESIGN PROJECT

- Survey Information
- Turning Movement Counts (TMCs)
  - Thursday, Jun. 19, 2014
  - Saturday, Jun. 21, 2014
  - Saturday, Aug. 23, 2014
  - Saturday, Jul. 25, 2015
- Automatic Traffic Recorder (ATRs)
  - 3-day: Jun. 19-21, 2014



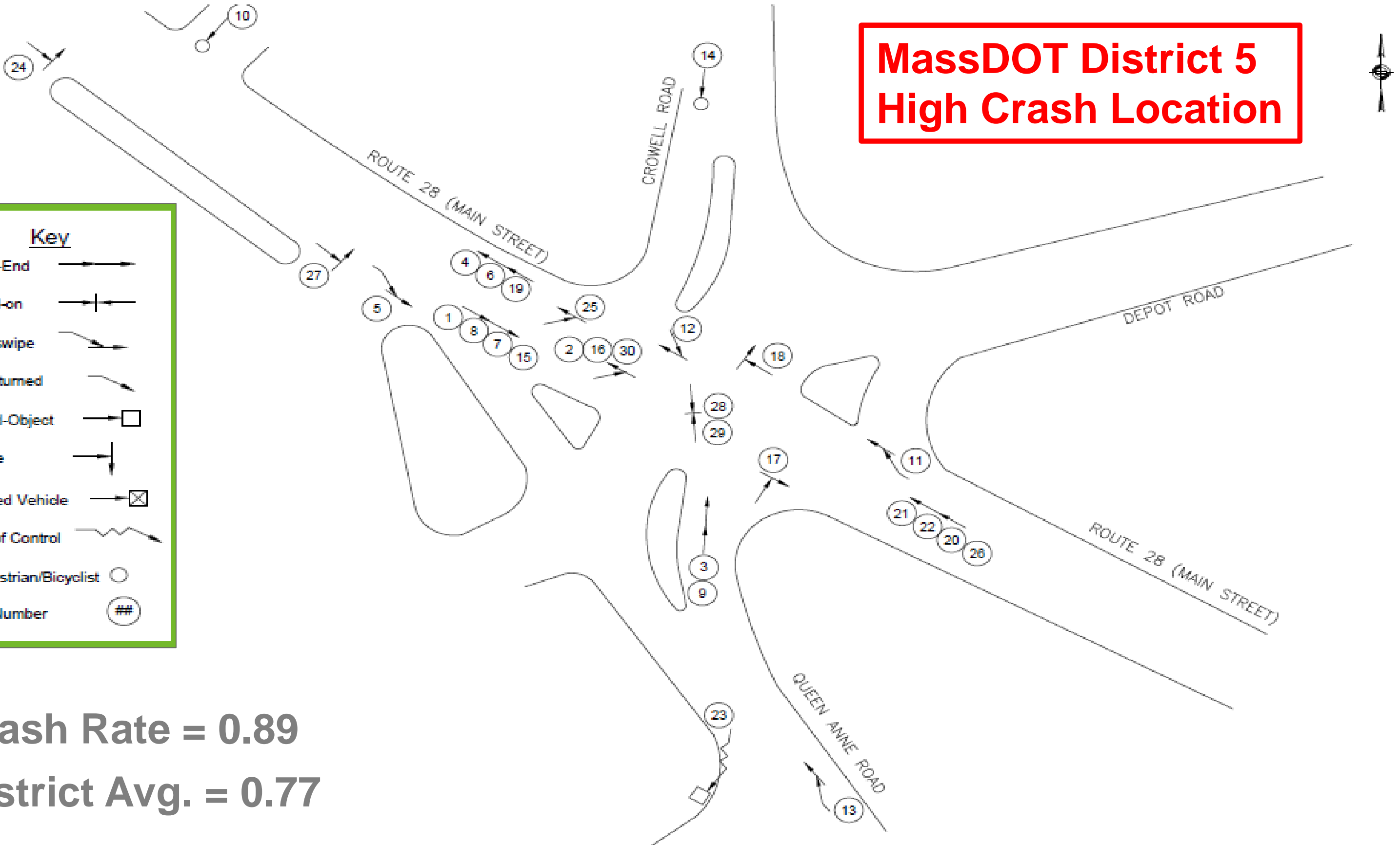
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# Collision Diagram (01/2009 – 08/2014)

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**Crash Rate = 0.89**

**District Avg. = 0.77**





# Collisions: Key Characteristics

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- **Data obtained via:**
  - MassDOT records
  - Chatham Police Records
- **30 crashes in the 6-year study period**
- **Rear-end crash clusters on Route 28 approaches**
- **Wide assortment of crash types indicative of motorist confusion**
- **Pedestrians and cyclists hit during study period**







# FIELD OBSERVATIONS

## Main Street Looking East

CROWELL ROAD INTERSECTION DESIGN PROJECT

Extensive Queuing  
*“It’s impossible to turn left during the summer”*



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# FIELD OBSERVATIONS

## Main Street Looking East

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No Left-turn Lanes  
Signal Indication Visibility





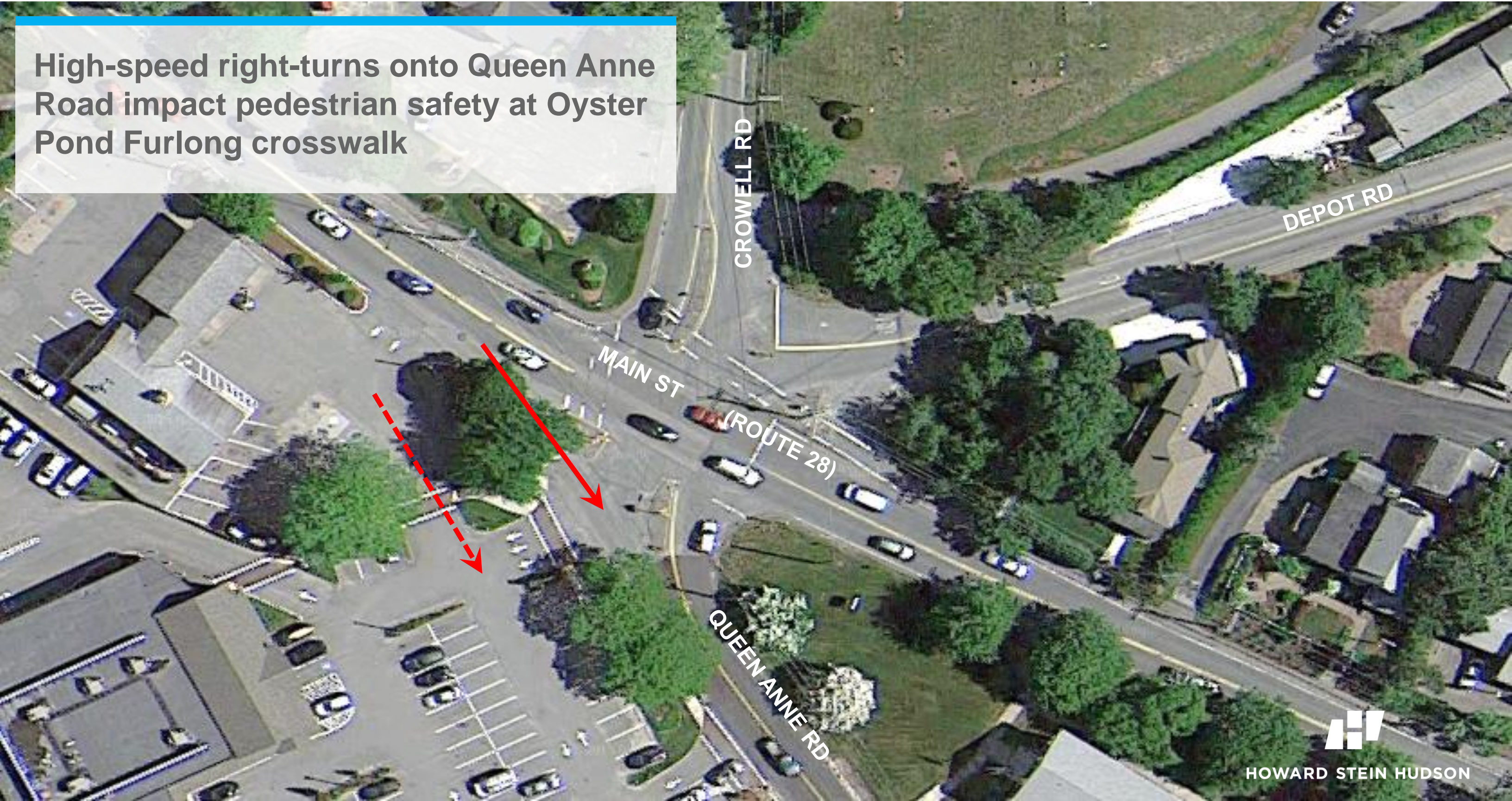


# FIELD OBSERVATIONS

## Aerial View

CROWELL ROAD INTERSECTION DESIGN PROJECT

High-speed right-turns onto Queen Anne Road impact pedestrian safety at Oyster Pond Furlong crosswalk



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FIELD OBSERVATIONS

# Chatham Village Market/CVS Looking North

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Steep Grade



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# FIELD OBSERVATIONS

## Main Street Looking West

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Lack of left-turn lanes lead to queueing and driver aggression/confusion



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# FIELD OBSERVATIONS

## Main Street Looking West

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No Southern Sidewalk  
Narrow Shoulder  
Steep Grade  
Signal Visibility  
Queuing Conditions



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# FIELD OBSERVATIONS

## Depot Road Looking West

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### Emergency Vehicle Access







FIELD OBSERVATIONS

# Pedestrian Crossing at Main Street

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No Accessible Ramps  
No Pedestrian Phase/  
Signal Equipment



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# FIELD OBSERVATIONS

## Crowell Road Looking South

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Limited Pedestrian Accommodations  
Raised Islands  
Signal Indications







# FIELD OBSERVATIONS

## Signal Equipment

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**Pavement Condition**  
**Antiquated signal equipment limits signal ability/fails when wet**



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# FIELD OBSERVATIONS

## Cyclists on Main Street

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Limited Bicycle  
Accommodations



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# 2015 Abutter Interviews

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- **General pedestrian concerns**
  - Especially for senior citizens crossing to the Village Market and at Oyster Pond Furlong
  
- **Seasonal shopping traffic arrives by both car and bicycle**
  
- **Strong desire for:**
  - Clarification of intersection movements – “who should be where when”
  - Bicycle and pedestrian improvements
  - A signal which does not fail under wet weather conditions
  - Maintenance of existing access to Chatham Village Market and CVS







# 2017 Design Concepts

HSH Design started in 2014



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# Alternative 1 – No-Build

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- **The status quo**
- **No changes to:**
  - Roadway geometry
  - Signal equipment
  - Pedestrian accommodations
- **All documented concerns remain as today**
- **MassDOT maintenance project would include:**
  - Repaving
  - ADA compliance
  - No input from Town



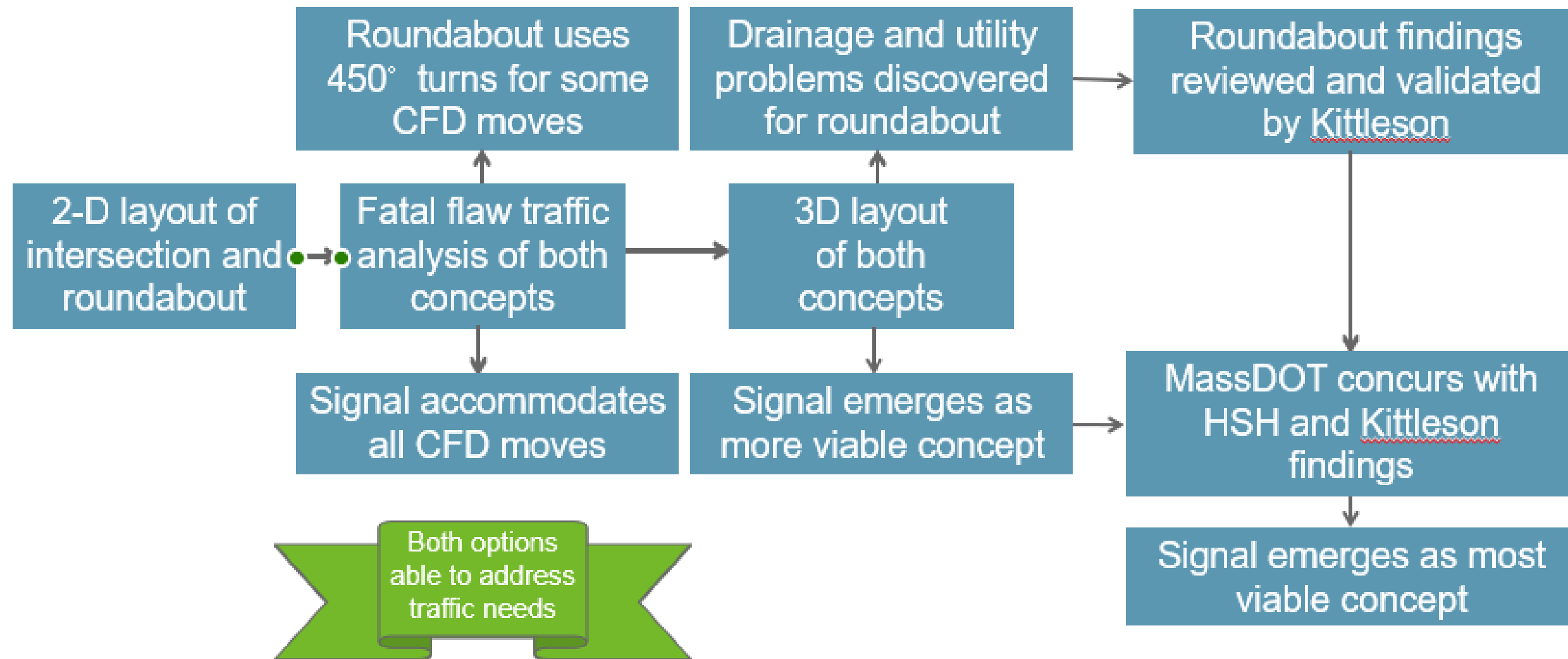




# Developing the Concepts: 2015-2017

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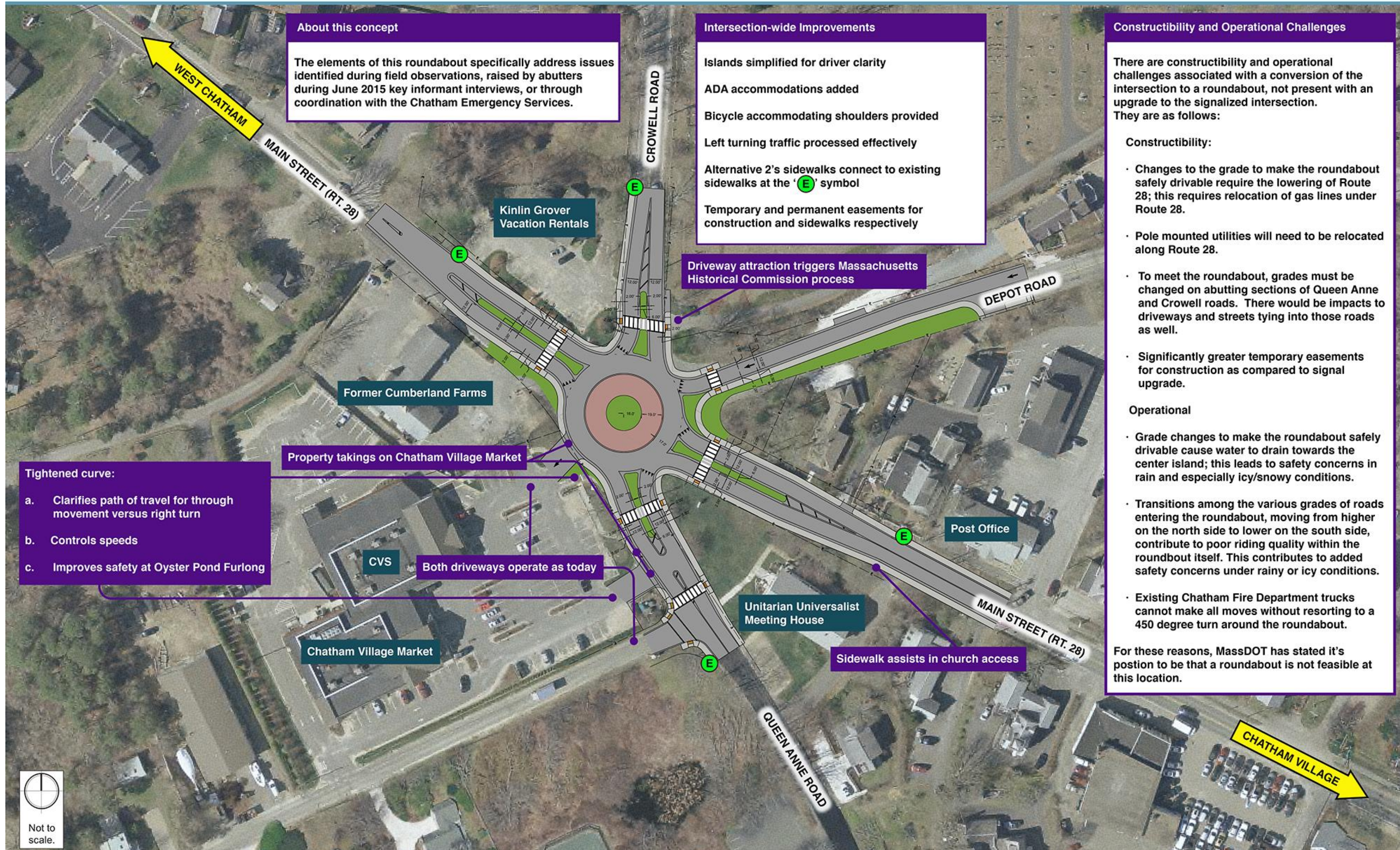
## Design Path to Preferred Alternative







# Alternative 2 - Roundabout



**About this concept**

The elements of this roundabout specifically address issues identified during field observations, raised by abutters during June 2015 key informant interviews, or through coordination with the Chatham Emergency Services.

**Intersection-wide Improvements**

- Islands simplified for driver clarity
- ADA accommodations added
- Bicycle accommodating shoulders provided
- Left turning traffic processed effectively
- Alternative 2's sidewalks connect to existing sidewalks at the 'E' symbol
- Temporary and permanent easements for construction and sidewalks respectively

**Constructibility and Operational Challenges**

There are constructibility and operational challenges associated with a conversion of the intersection to a roundabout, not present with an upgrade to the signalized intersection. They are as follows:

**Constructibility:**

- Changes to the grade to make the roundabout safely drivable require the lowering of Route 28; this requires relocation of gas lines under Route 28.
- Pole mounted utilities will need to be relocated along Route 28.
- To meet the roundabout, grades must be changed on abutting sections of Queen Anne and Crowell roads. There would be impacts to driveways and streets tying into those roads as well.
- Significantly greater temporary easements for construction as compared to signal upgrade.

**Operational**

- Grade changes to make the roundabout safely drivable cause water to drain towards the center island; this leads to safety concerns in rain and especially icy/snowy conditions.
- Transitions among the various grades of roads entering the roundabout, moving from higher on the north side to lower on the south side, contribute to poor riding quality within the roundabout itself. This contributes to added safety concerns under rainy or icy conditions.
- Existing Chatham Fire Department trucks cannot make all moves without resorting to a 450 degree turn around the roundabout.

For these reasons, MassDOT has stated it's position to be that a roundabout is not feasible at this location.

**Tightened curve:**

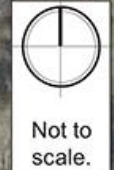
- Clarifies path of travel for through movement versus right turn
- Controls speeds
- Improves safety at Oyster Pond Furlong

Driveway attraction triggers Massachusetts Historical Commission process

Property takings on Chatham Village Market

Both driveways operate as today

Sidewalk assists in church access

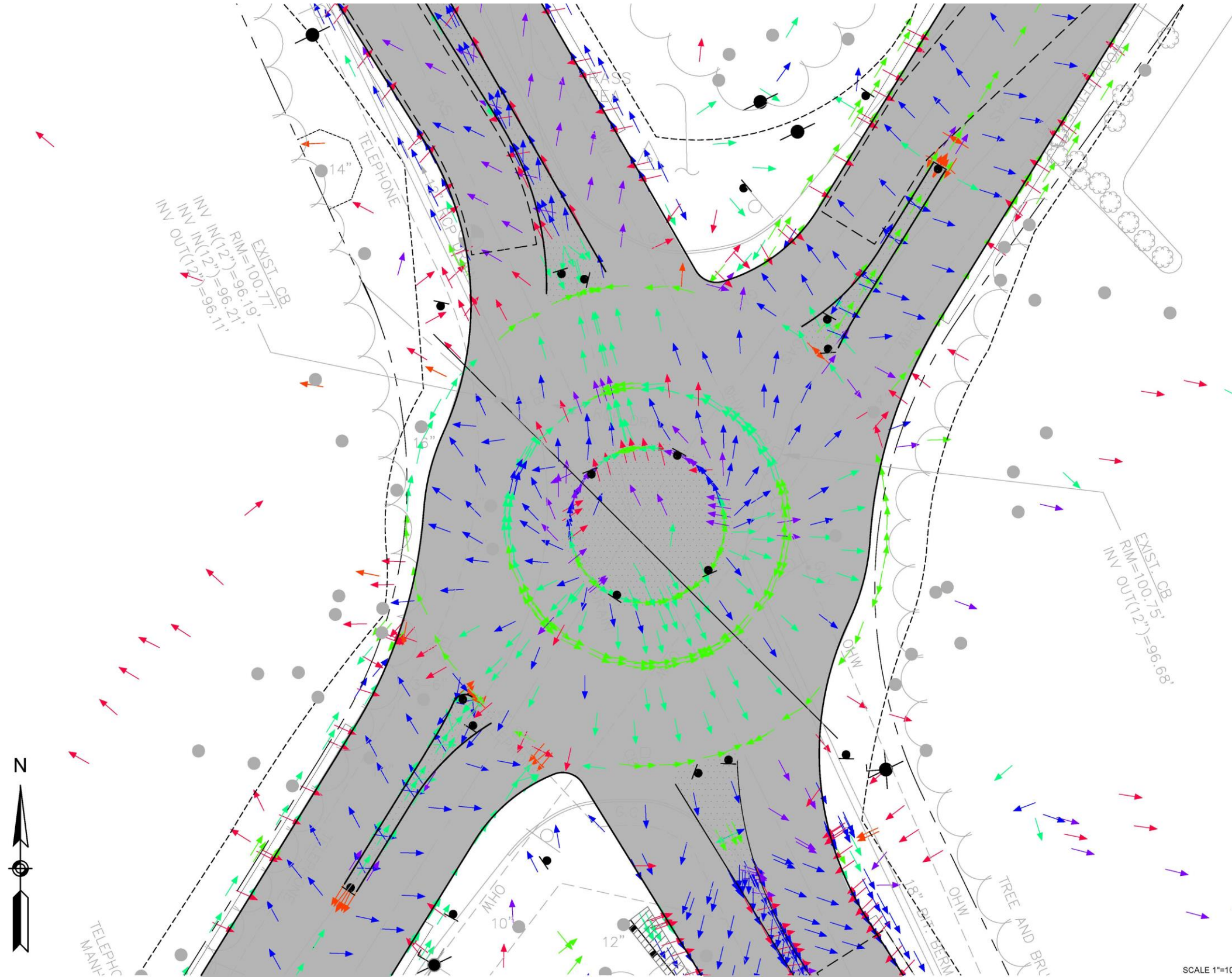






# Typical Roundabout Grading

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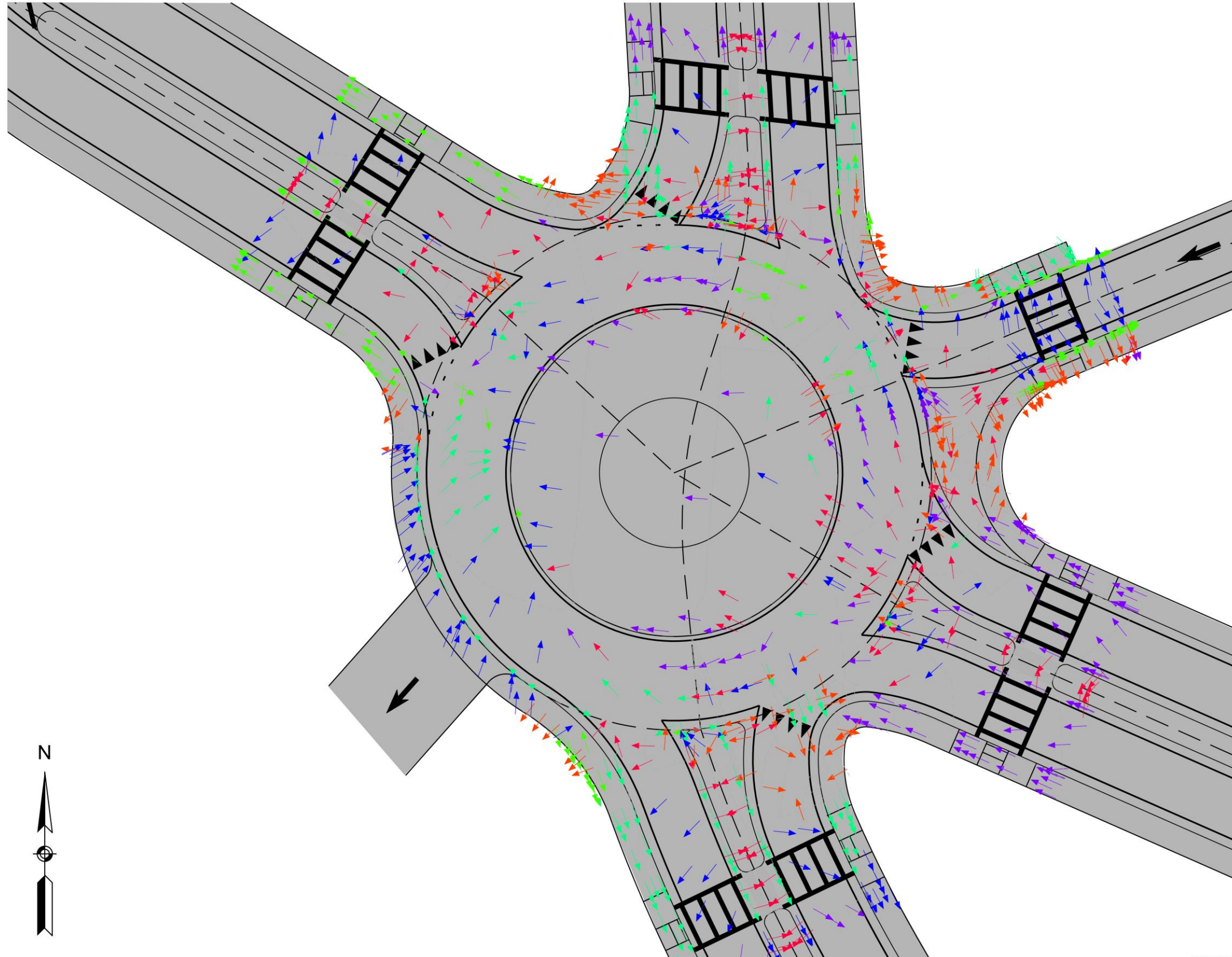






# Alternative 2 – Roundabout – Grading Issues

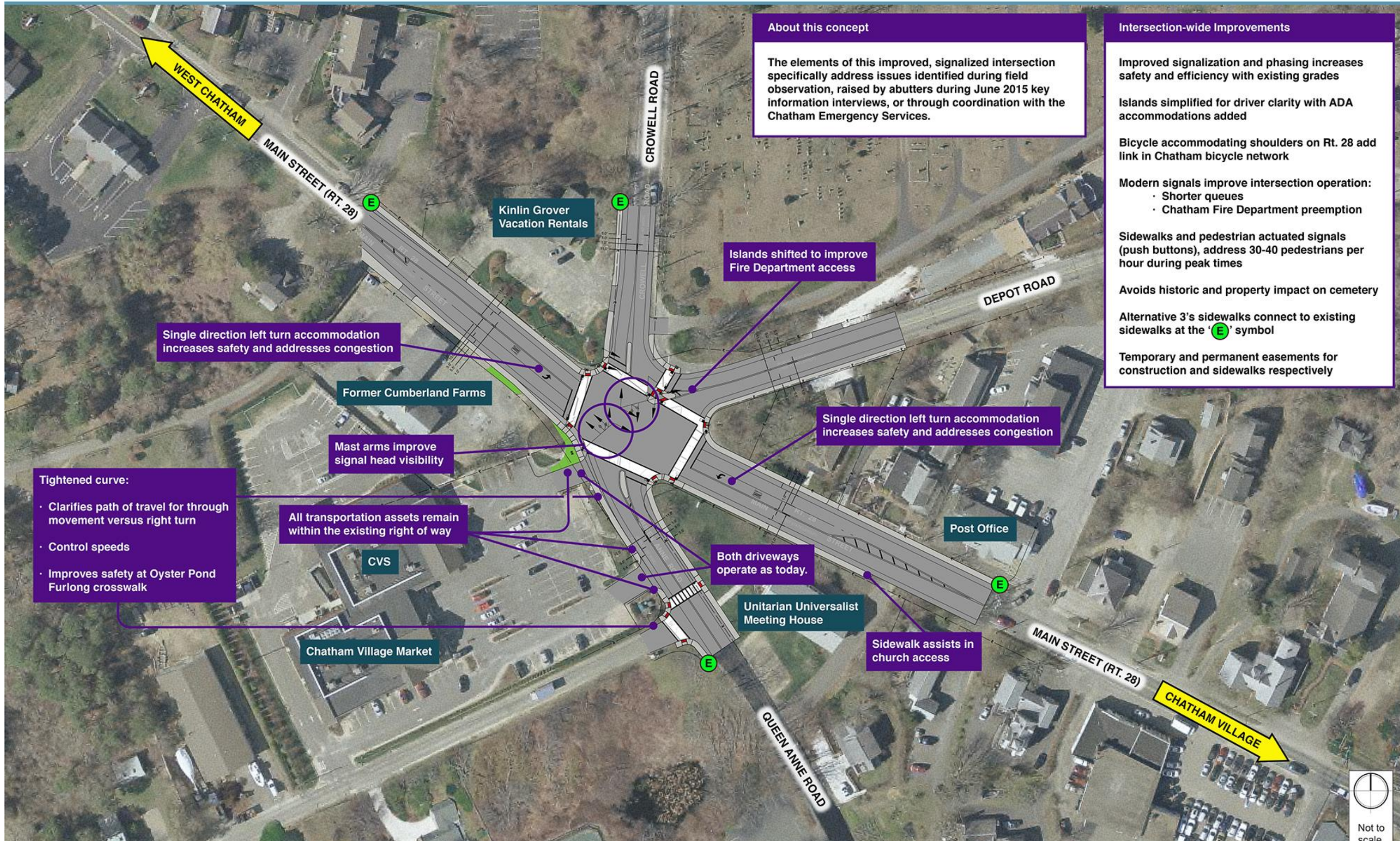
CROWELL ROAD INTERSECTION DESIGN PROJECT







# Alternative 3 - New Signal



**About this concept**

The elements of this improved, signalized intersection specifically address issues identified during field observation, raised by abutters during June 2015 key information interviews, or through coordination with the Chatham Emergency Services.

**Intersection-wide Improvements**

- Improved signalization and phasing increases safety and efficiency with existing grades
- Islands simplified for driver clarity with ADA accommodations added
- Bicycle accommodating shoulders on Rt. 28 add link in Chatham bicycle network
- Modern signals improve intersection operation:
  - Shorter queues
  - Chatham Fire Department preemption
- Sidewalks and pedestrian actuated signals (push buttons), address 30-40 pedestrians per hour during peak times
- Avoids historic and property impact on cemetery
- Alternative 3's sidewalks connect to existing sidewalks at the 'E' symbol
- Temporary and permanent easements for construction and sidewalks respectively

Single direction left turn accommodation increases safety and addresses congestion

Islands shifted to improve Fire Department access

Single direction left turn accommodation increases safety and addresses congestion

**Tightened curve:**

- Clarifies path of travel for through movement versus right turn
- Control speeds
- Improves safety at Oyster Pond Furlong crosswalk

Former Cumberland Farms

Mast arms improve signal head visibility

All transportation assets remain within the existing right of way

Both driveways operate as today.

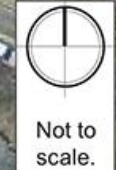
CVS

Unitarian Universalist Meeting House

Chatham Village Market

Sidewalk assists in church access

Post Office

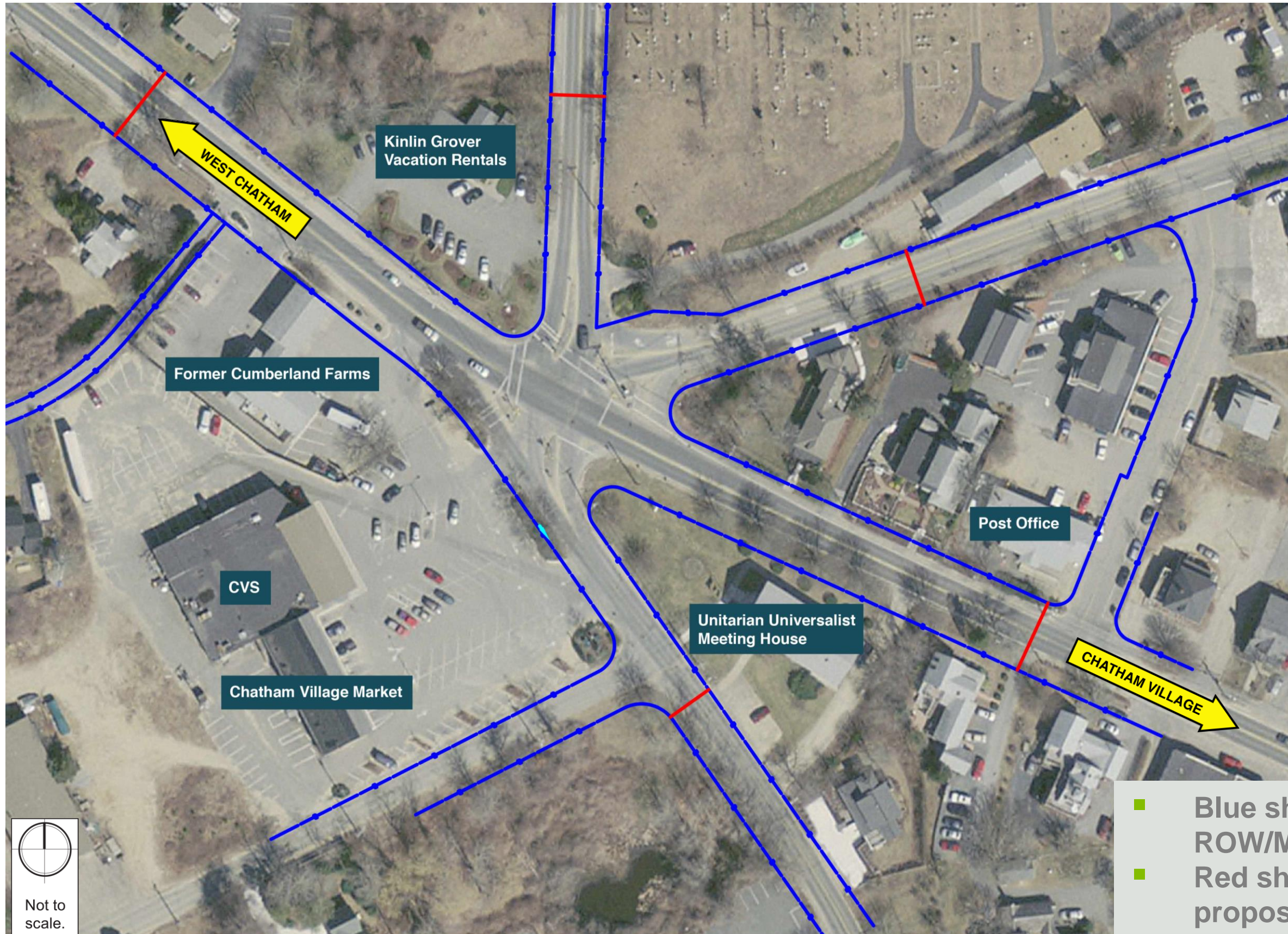






# The MassDOT Right-of-Way

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# The MassDOT Right-of-Way

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# The MassDOT Right-of-Way

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# The MassDOT Right-of-Way

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# The MassDOT Right-of-Way

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# The MassDOT Right-of-Way

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# The MassDOT Right-of-Way

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# Right of Way Impact Types

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- **Layout alteration/Fee taking**
  - Ownership of property is transferred in its entirety to MassDOT or the municipality
  - Needed for roadway, sidewalks, ADA compliant wheelchair ramps/level landings, traffic signal posts, etc.
  
- **Permanent easement**
  - Rights to install and maintain a permanent fixture on owner's land
  - Primarily used for utilities and drainage, can include guard rail, slope stabilization, and signage
  
- **Temporary easement**
  - Construction access for grading, typically taken for 5 years
  - Used to reconstruct to match into existing conditions

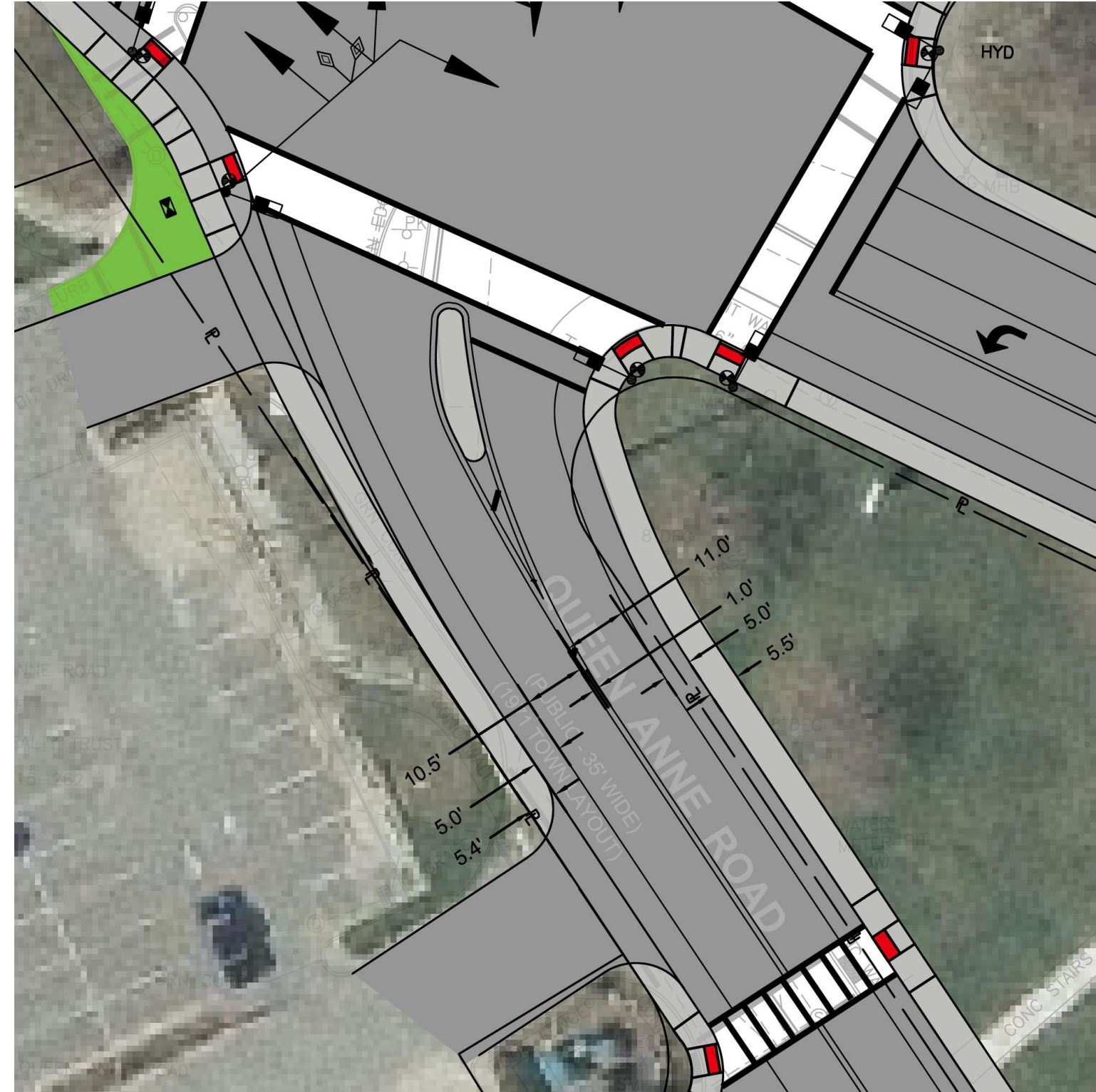
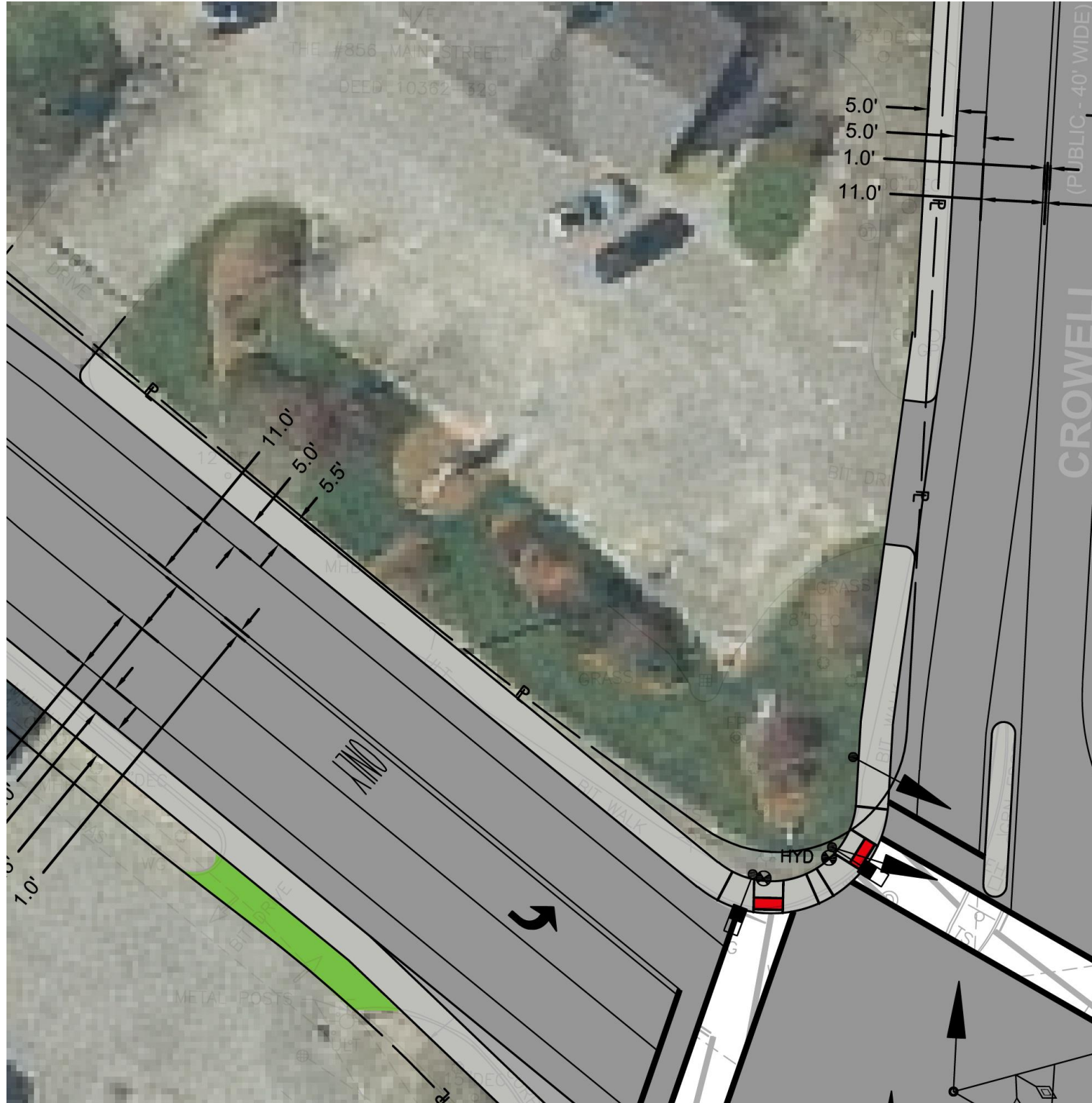






# Project Right of Way Impacts

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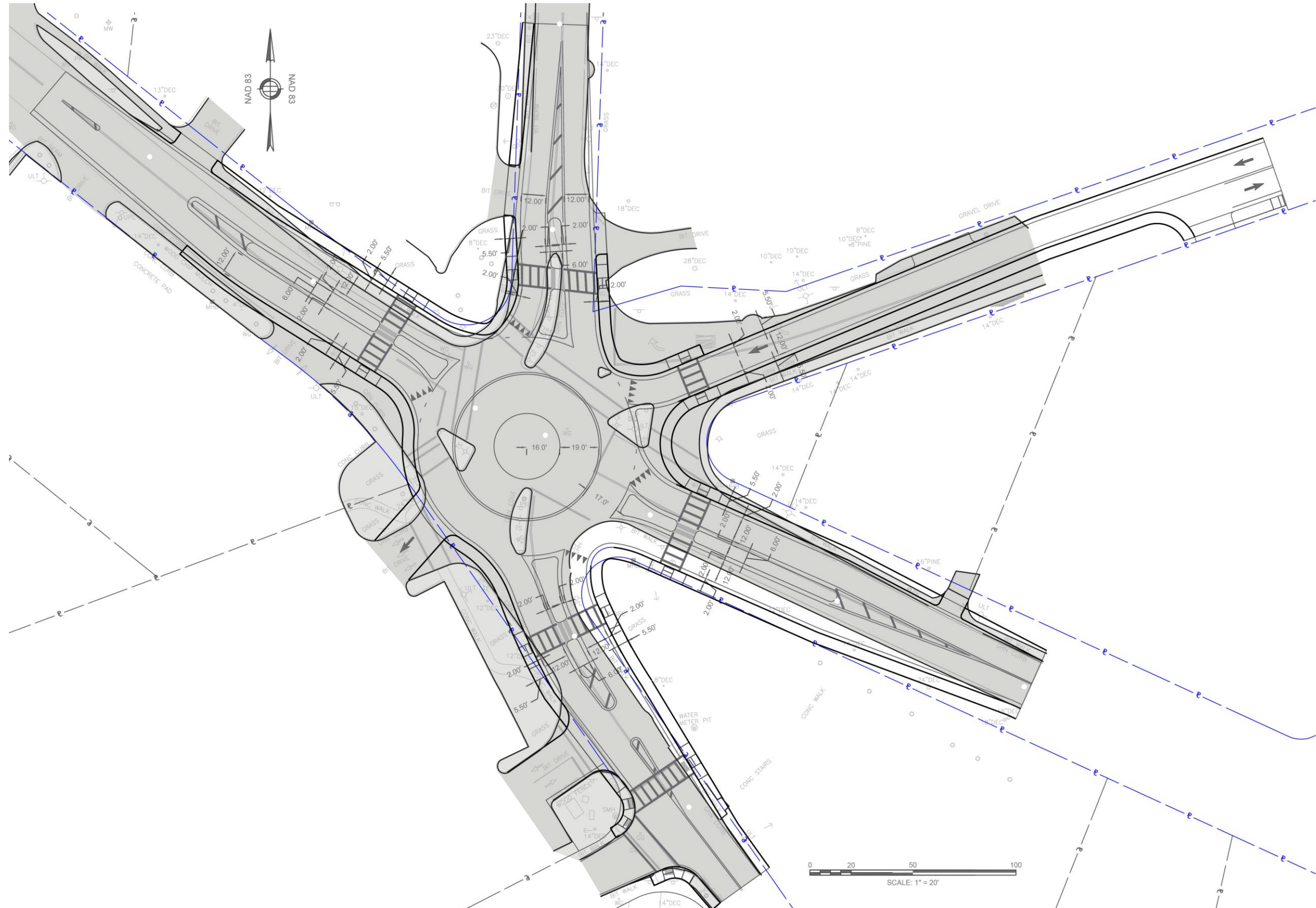






# Alternative 2 Compared to Existing

## CROWELL ROAD INTERSECTION DESIGN PROJECT

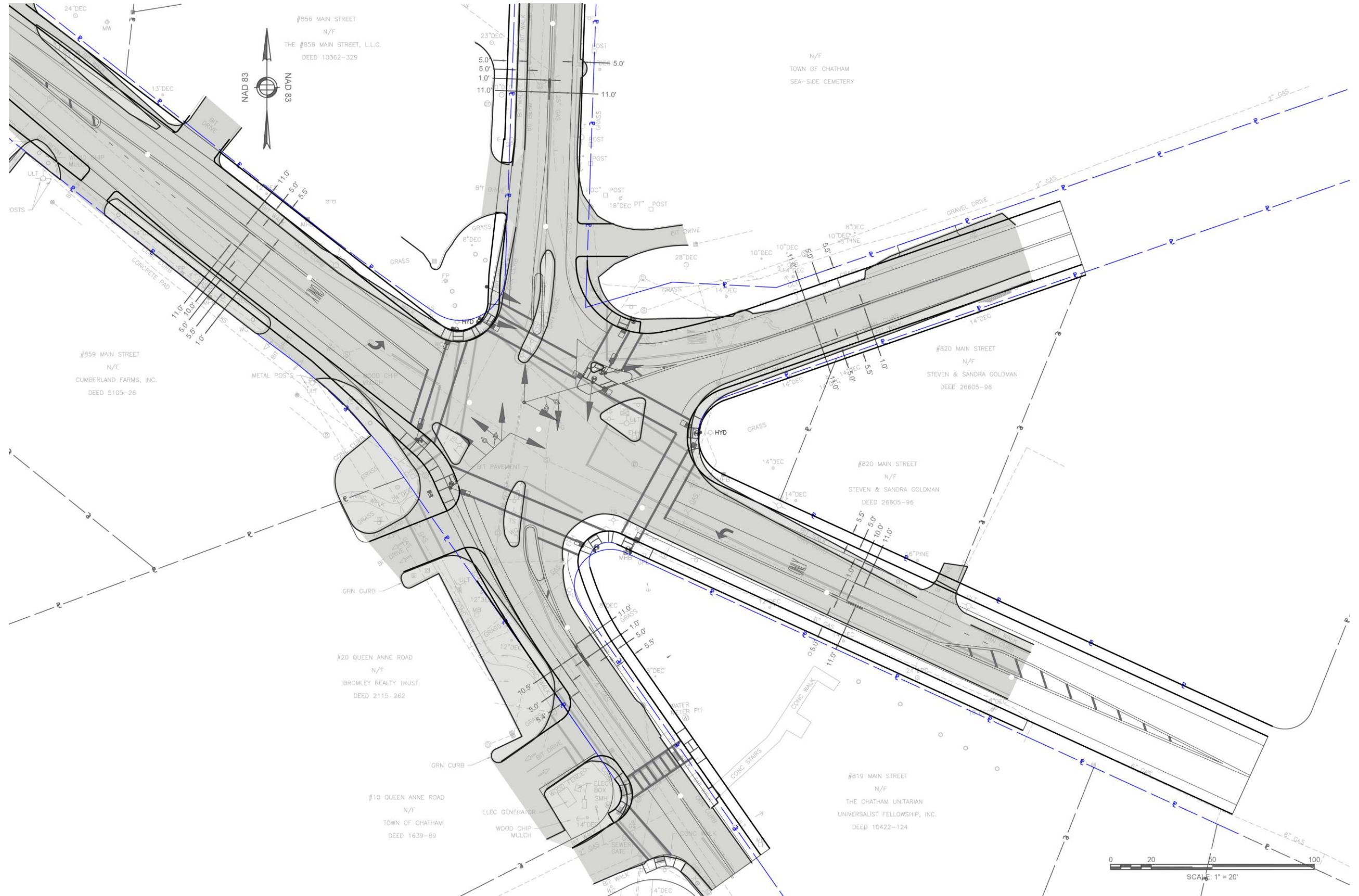






# Alternative 3 Compared to Existing

## CROWELL ROAD INTERSECTION DESIGN PROJECT







# Decorative Mast Arm Examples – Milton, MA

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# Decorative Mast Arm Example – Milton, MA

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# Decorative Mast Arm Example – Visco Corporation

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# FAQ – Based on Comment Period Input #1

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Comment Theme		Response
How does the proposal improve queuing observed during the summer?		<ul style="list-style-type: none"><li>• Dedicated east/west left-turn lanes and signal phases for Route 28 reduce queues and improve safety.</li></ul>
How does the proposal improve pedestrian conditions?		<ul style="list-style-type: none"><li>• Pushbutton triggered pedestrian signals</li><li>• New crosswalks</li><li>• ADA compliant ramps for all crosswalks</li></ul>
What happens to the right turn onto Queen Anne Road?		<ul style="list-style-type: none"><li>• Right turn to Queen Anne Road remains available but is tightened and formalized to control speeds on approach to Oyster Pond Furlong.</li><li>• Preliminary analysis shows suggests:<ul style="list-style-type: none"><li>• No loss of traffic throughput</li><li>• No removal of trees along Chatham Village Market</li></ul></li></ul>








# FAQ – Based on Comment Period Input #2

CROWELL ROAD INTERSECTION DESIGN PROJECT

Comment Theme		Response
Why not a roundabout?		<ul style="list-style-type: none"><li>• Topography:<ul style="list-style-type: none"><li>• Grading for the roundabout would cause drainage towards the center island triggering safety concerns in rain or icy conditions.</li><li>• Major utility impact of lowering Route 28 gas line.</li><li>• Grade changes to abutting roadways increase cost and impact.</li><li>• Grade changes in the roundabout mean poor ride quality and traction concerns in poor weather.</li><li>• CFD equipment cannot make all moves.</li></ul></li></ul> <p><b>For these reasons, MassDOT does not recommend a roundabout at this location.</b></p>
What are the construction impacts of each option?		<ul style="list-style-type: none"><li>• The intersection has fewer construction impacts than the roundabout due to grading and utility issues.</li></ul>
Which option processes traffic better?		<ul style="list-style-type: none"><li>• About the same - with improvement over today's conditions.</li></ul>








# FAQ – Based on Comment Period Input #3

CROWELL ROAD INTERSECTION DESIGN PROJECT

Comment Theme		Answer
What about “sidewalks to nowhere?”		<ul style="list-style-type: none"><li>• Of the sidewalks in the proposal:<ul style="list-style-type: none"><li>• Four provide connections to existing sidewalks</li><li>• The rest are in keeping with MassDOT Complete Streets policies.</li></ul></li></ul>
Why not a mini roundabout? FHWA guidance suggests one may be possible.		<ul style="list-style-type: none"><li>• Per FHWA guidance, mini roundabouts work best when:<ul style="list-style-type: none"><li>• There are 4 or fewer approaches</li><li>• Approaches are not tightly spaced – like Depot and Crowell roads</li></ul></li><li>• The shallow or flush island could tempt drivers to go straight over it in winter when traffic volumes fall leading to safety hazards.</li></ul>
“The intersection works. It’s not broken, don’t fix it.”		<ul style="list-style-type: none"><li>• The intersection has problems:<ul style="list-style-type: none"><li>• Abutter interviews</li><li>• Data collection</li><li>• Chatham Comprehensive Plan</li></ul></li></ul>








# FAQ – Based on Comment Period Input #4

CROWELL ROAD INTERSECTION DESIGN PROJECT

Comment Theme		Answer
Why not just introduce an exclusive pedestrian phase at the current signal?		<ul style="list-style-type: none"><li>• The current signal is 40+ years old and frequently fails when it rains.</li><li>• It lacks pedestrian signal heads.</li><li>• Its controller may be unable to handle their introduction.</li><li>• Simply adding pedestrian signal heads does not address ADA issues.</li><li>• Can add emergency pre-emption signals.</li></ul>
Can we solve the drainage issue by introducing a detention pond at the old Cumberland Farms site?		<ul style="list-style-type: none"><li>• Does not solve water draining towards the center island and associated safety issues.</li><li>• Increases project cost and impact.</li><li>• Environmental issues of placing drainage in an old gas station.</li></ul>
Signal mast arms look too urban		<ul style="list-style-type: none"><li>• In the 25% design phase, alternate forms of mounting signals will be investigated.</li></ul>
How can the cycling accommodations in the alternative be improved?		<ul style="list-style-type: none"><li>• These elements will be advanced through the 25% design process.</li></ul>
How can we save more trees?		<ul style="list-style-type: none"><li>• The 25% design will be used to try to save as many trees as possible.</li></ul>



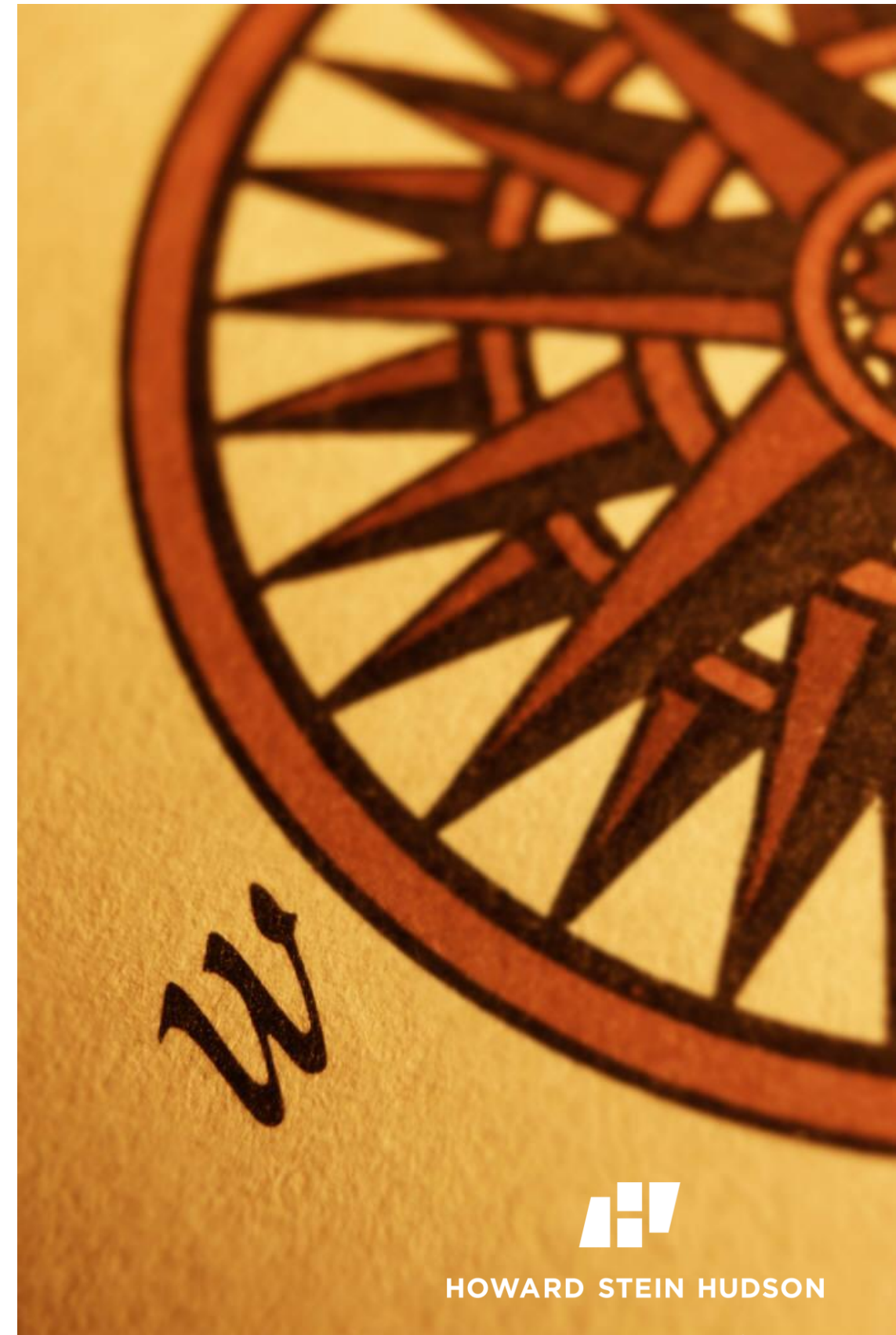




# Where Do We Go From Here?

CROWELL ROAD INTERSECTION DESIGN PROJECT

- **A 25% design is the next logical step to:**
  - Refine options to save trees
    - *Particularly the four large ones along the church property in the MassDOT ROW*
  - Identify opportunities to reduce pavement width
  - Refine options for bicycle accommodations
  - Develop details of signal timing and operations – including pedestrian signalization and seasonal timing
  - Pin down right-of-way details
- **Some of the work we have done for this meeting is more typical of a 25% design scope.**







# Next Steps

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CROWELL ROAD INTERSECTION DESIGN PROJECT

- **Request BOS authorization to proceed to 25% design**
- **Winter 2017/2018 – Submit 25% Design to MassDOT**
- **Spring 2018 – MassDOT 25% Design Public Hearing**
  - Opportunity for public comment
  - Opportunity to offer design refinements
  - Chance to ask questions
- **Winter 2020/2021 - Construction**







# Questions and Comments

CROWELL ROAD INTERSECTION DESIGN PROJECT

[www.chathamcrowellroad.info](http://www.chathamcrowellroad.info)

**Contact us:**

**Nathaniel Cabral-Curtis**, *Public Involvement Specialist*

Howard Stein Hudson

11 Beacon Street, Suite 1010

Boston, MA 02108

[ncabral-curtis@hshassoc.com](mailto:ncabral-curtis@hshassoc.com)

(617) 482-7080 x236



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Engineers + Planners