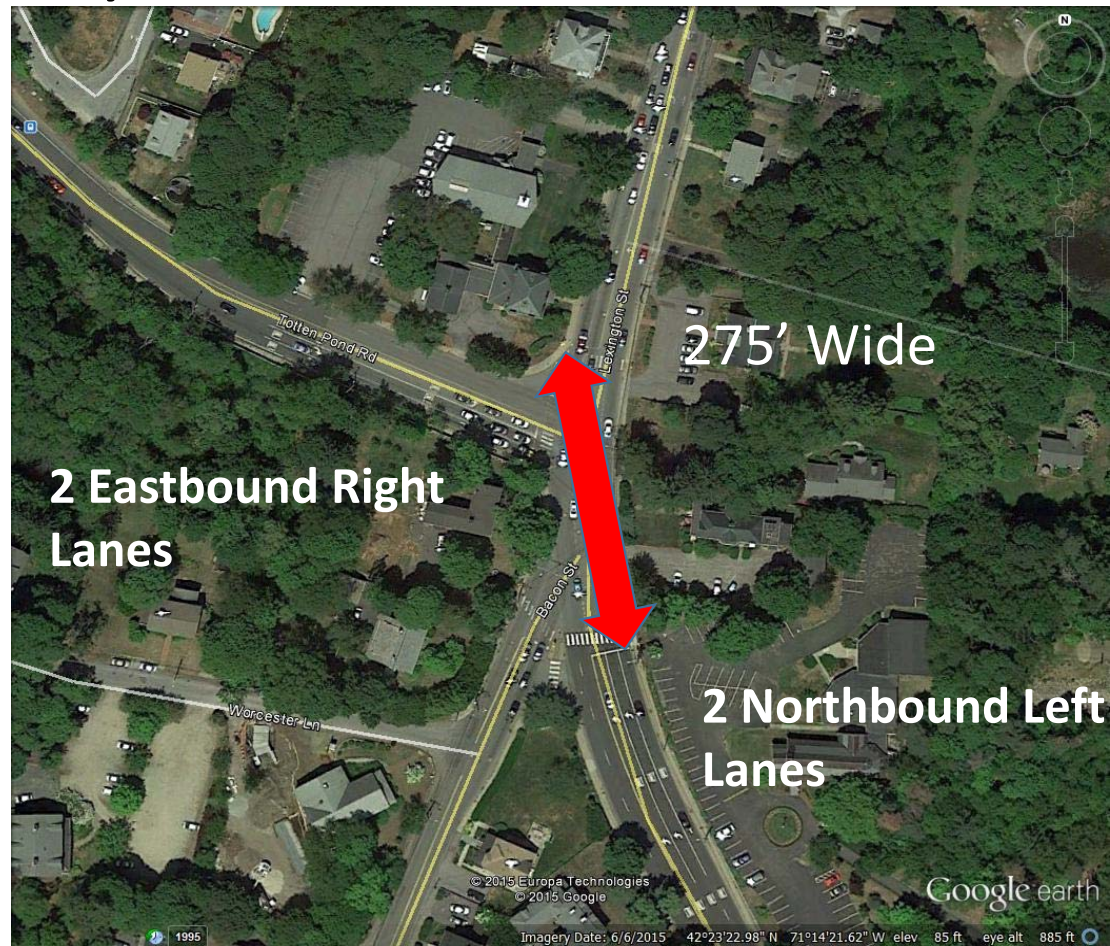


Piety Corner Intersection Options

Lexington Street/Totten Pond Road/Bacon Street – March 2016

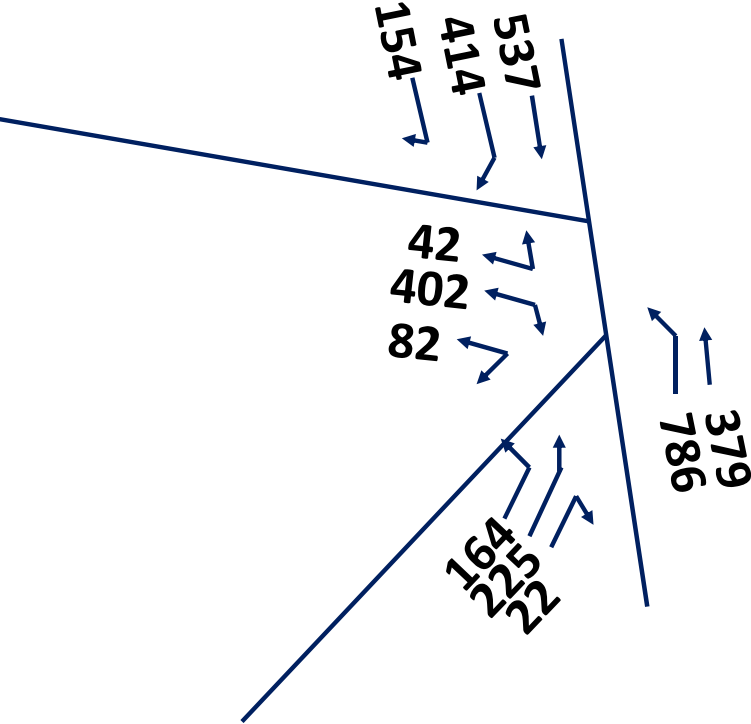


Existing Layout

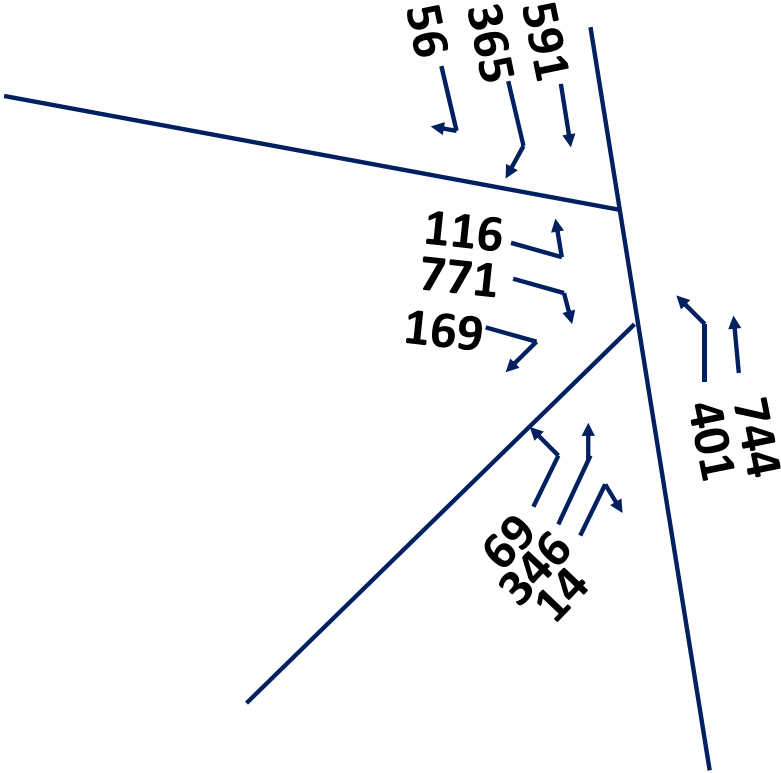


Traffic Volumes

AM Peak Hour



PM Peak Hour



Traffic Signal Timing & Operation



Safety

Accidents Per Year

2011 = 22

2012 = 17

2013 = 21

Average = 20/year

Accident Type

Angle = 7%

Rear End = 27%

Side-swipe = 57%

Other = 9%

Accident Severity

Property Damage Only = 89%

With Injuries = 11%

Intersection Crash Rate = 1.41 accidents per million entering vehicles

Statewide Average (at signals) = 0.80 accidents per million entering vehicles

4th Highest Crash Rate in Waltham (after Main/Moody; Moody/Carter/Felton; and Main/Fiske)

Projected Level of Service – by 2024

AM Peak Hour

Level of Service = **F**

Average Delay = **285** seconds per vehicle

Long delays and queues, especially Lexington Street southbound

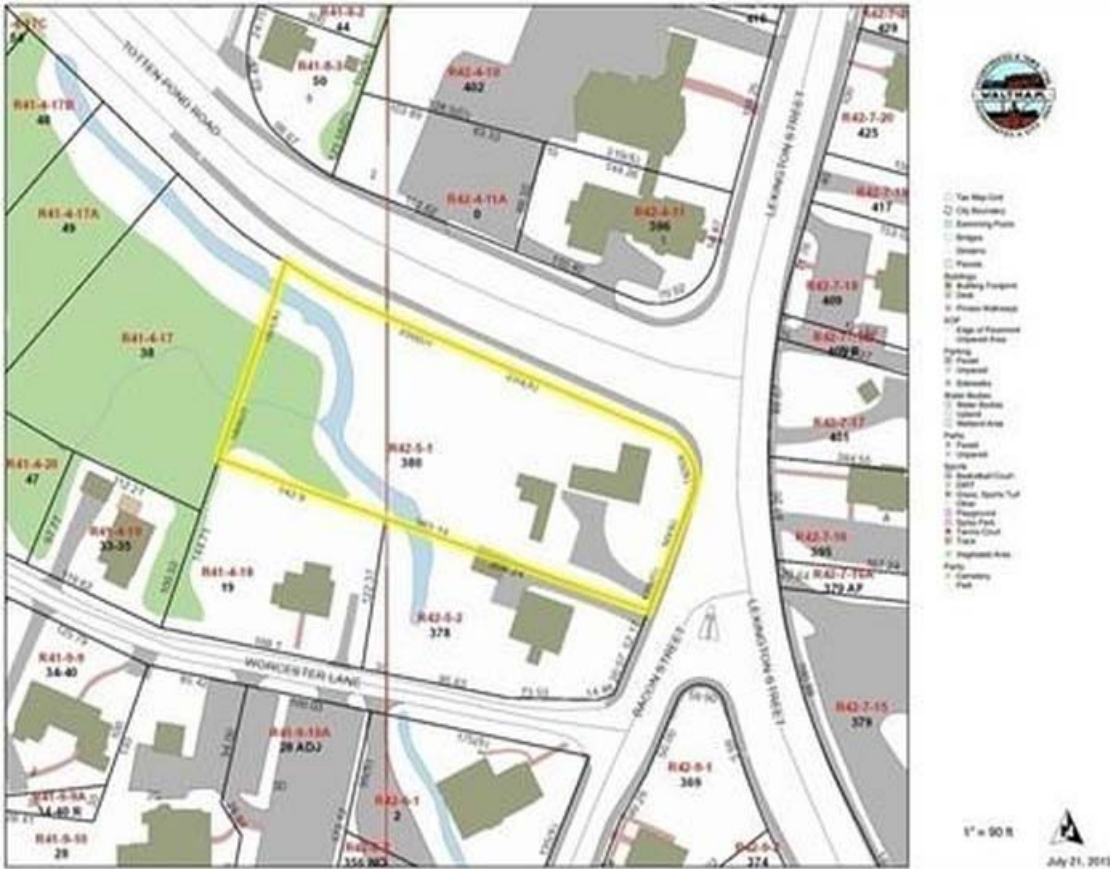
PM Peak Hour

Level of Service = **F**

Average Delay = **586** seconds per vehicle

Long delays and queues, especially Totten Pond Rd eastbound and Lexington St. southbound

What to do?



Options:

1. Keep existing alignment; adjust lane use and signal timing (no property taking)
2. Realign Totten Pond Rd; smaller traffic signal
3. Roundabout
4. One Way Bacon St

1. Keep Existing Alignment

Revise Lane Use on Lexington St:

- One additional Southbound lane
- One fewer Northbound receiving lane

Optimize signal timing

Results

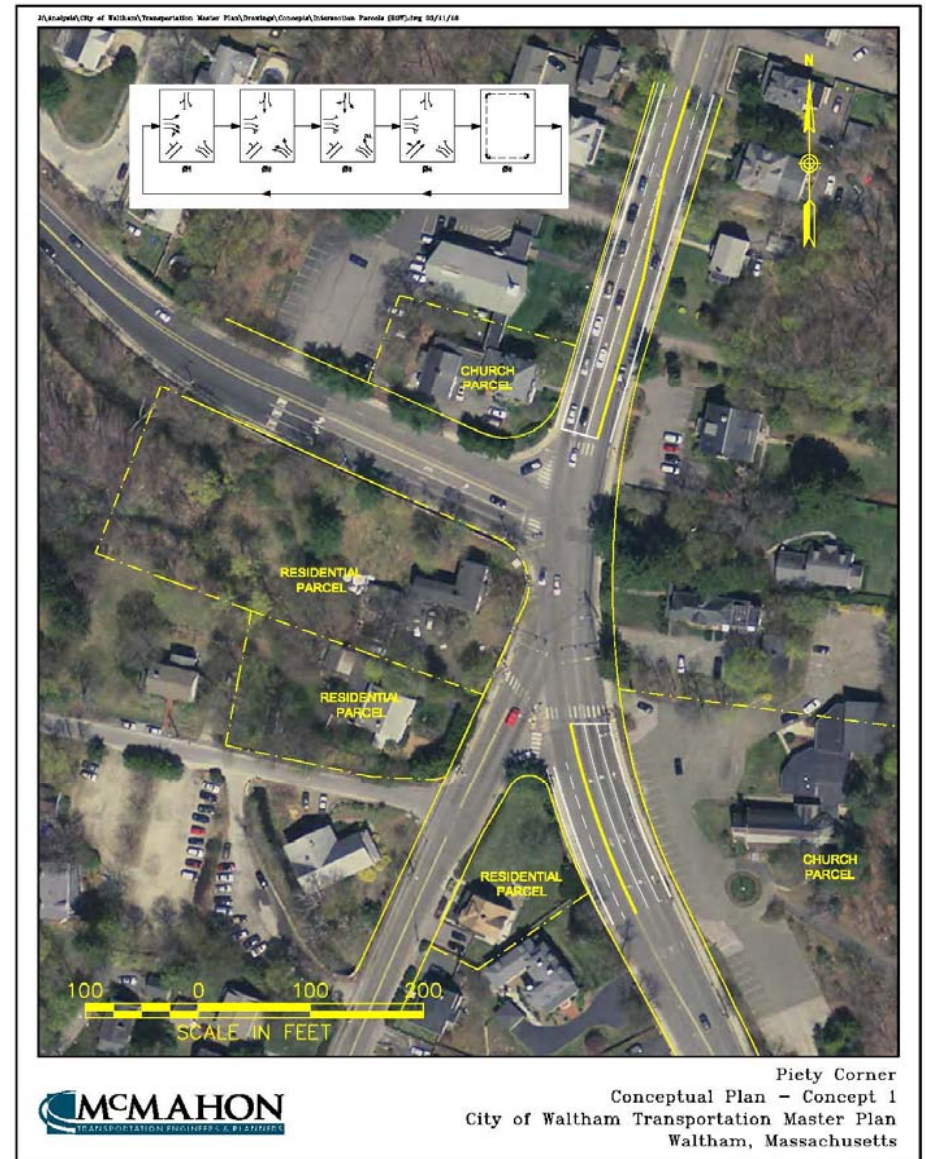
AM Peak Hour:

- Existing Condition: LOS F (285 sec/veh)
- Option 1: **LOS F (130 sec/veh)**

PM Peak Hour:

- Existing Condition: LOS F (586 sec/veh)
- Option 1: **LOS F (166 sec/veh)**

Doesn't address safety concern



2. Realigned Road w/ Traffic Signal

Take property on corner, demolish house
Realign Totten Pond Rd, reduce intersection
From Totten Pond Rd: one left turn lane,
two lanes to Lexington St SB, one lane to
Bacon St

Results

AM Peak Hour:

- Existing Condition: LOS F (285 sec/veh)
- Option 2: **LOS E (75 sec/veh)**

PM Peak Hour:

- Existing Condition: LOS F (586 sec/veh)
- Option 2: **LOS E (60 sec/veh)**

Dramatically reduces number of side swipe accidents



3. Two-Lane Modern Roundabout

Take property, demolish house

Realign Totten Pond Rd, create two lane modern roundabout

Results

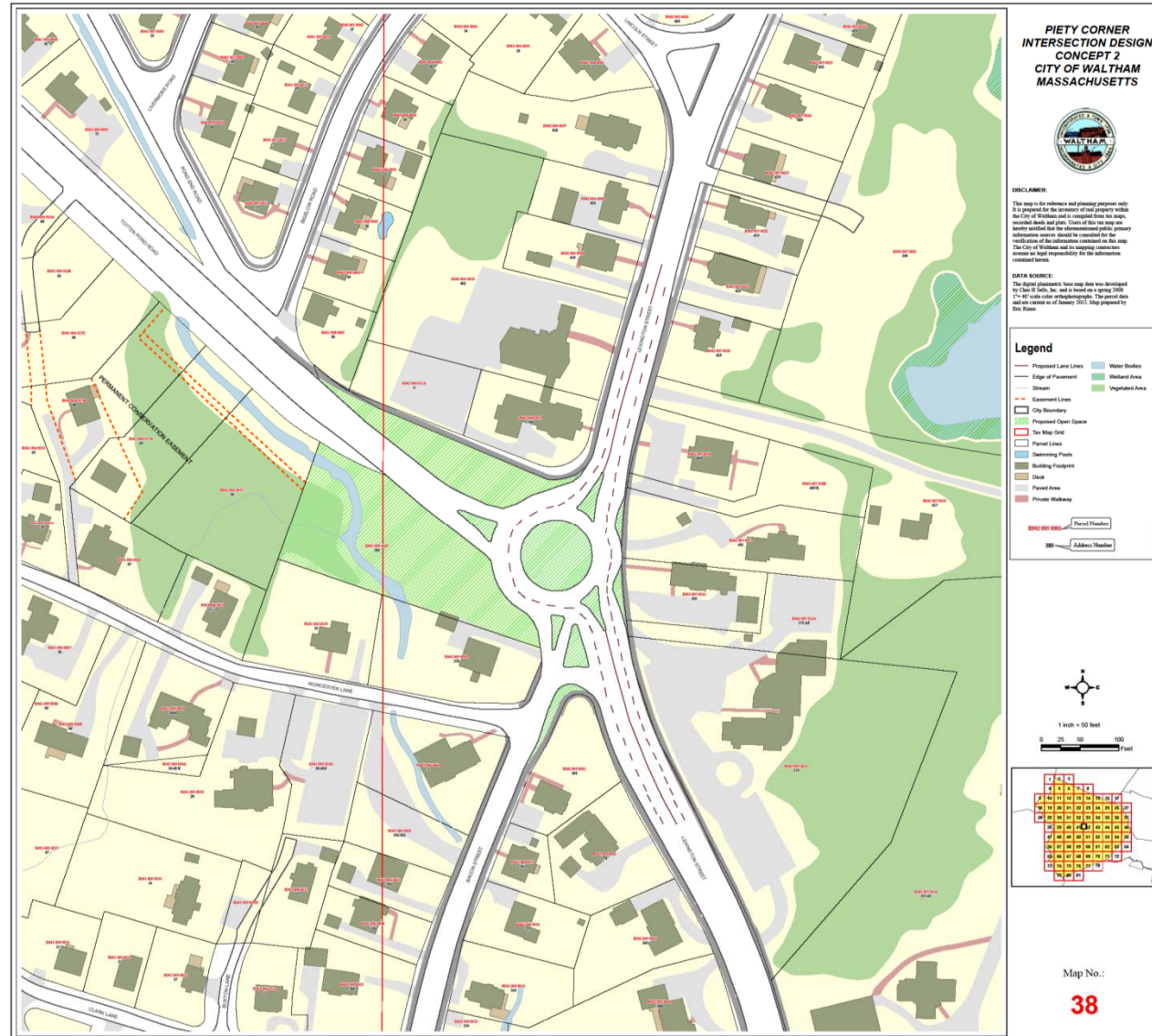
AM Peak Hour:

- Existing Condition: LOS F (285 sec/veh)
- Option 3: **LOS F (63 sec/veh)**

PM Peak Hour:

- Existing Condition: LOS F (586 sec/veh)
- Option 3: **LOS F (57 sec/veh)**

Some approaches will experience long delays. **NOT RECOMMENDED**



4. One Way Bacon Street

Convert Bacon Street to one-way southbound. Eliminates one phase of the traffic signal, improving operations.

4a Results: Existing Alignment

AM Peak Hour:

- Option 1: LOS F (130 sec/veh)
- Option 4a: **LOS F (79 sec/veh)**

PM Peak Hour:

- Option 1: LOS F (148 sec/veh)
- Option 4a: **LOS E (70 sec/veh)**

4b Results: Realigned Rd w/ Signal

AM Peak Hour:

- Option 2: LOS E (75 sec/veh)
- Option 4b: **LOS D (46 sec/veh)**

PM Peak Hour:

- Option 2: LOS E (60 sec/veh)
- Option 4b: **LOS D (40 sec/veh)**

However, **not recommended** since Northbound Bacon St traffic will be diverted to Dale St and Lexington St

Recommended Option:

2. Realigned Road w/ Traffic Signal

- This option will require the City to purchase the property at 380 Lexington Street and remove the existing structure.
- The traffic operational and safety benefits of this option are very significant.
- This is the best opportunity we have to address one of the top traffic problem intersections in the City.



Construction Cost

Estimated construction cost for Option 2 (“Compact Signal”):

\$2,000,000

(not including cost to acquire property)

Comparable construction costs of recent traffic signal projects in Waltham:

- Main/Newton: \$280,000
- Forest/Trapelo: \$1,300,000
- Smith/Trapelo: \$1,600,000