Traffic Calming Town Hall Meeting

January 22, 2019

Agenda

- Program Overview (5 minutes)
- Traffic Calming Basics (10 minutes)
- Traffic Calming Techniques (10 minutes)
- Discussion
- Woodward Heights Workshop (30 minutes)

cityofpleasantridge.org/lsvr_document/traffic-calming/

Program Overview

Traffic Calming Manual

- Establish a formal traffic calming process
- Pleasant Ridge streets are safe, but improvements can always be made

Traffic Calming Reality

- Lowering speeds requires increasing the friction that drivers feel
- Requires changing the design of our streets
- Will be unpopular with some or many
- What's stronger = desire to slow traffic, or preserve status quo
- No silver bullets

City Initiated Projects

- Volume higher than 2,500 vpd
- 85% speed greater than 32 mph
- Specific areas where a safety hazard for pedestrians or bicyclists exists
- Qualifying streets:

  Ridge & Woodward Heights

  Oakland Park & Oxford (upon resident petition)

Demonstration Project

Demonstration Project

Interim Installation

Demonstration Project

Permanent Improvement

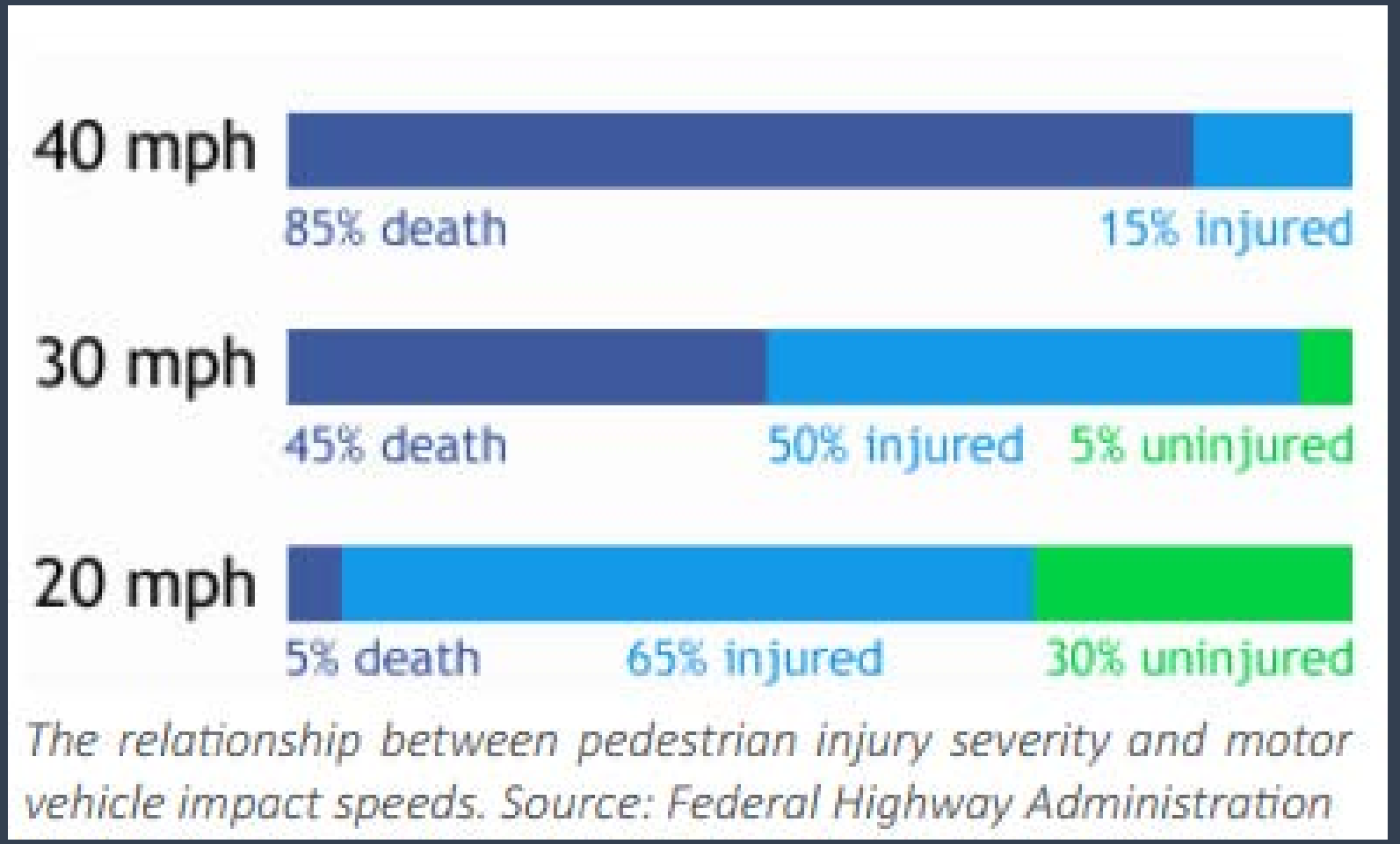
Resident-Initiated Process

- Resident petition – 66%(?) of households on street
- Review traffic calming options and costs
- Residents determine desired course of action
- Field test options
- Residents vote to make options permanent
- Cost responsibility somewhat or totally on residents (tbd)

Traffic Calming Basics

Street	Date	Location	Average Weekday Volume	Average Weekend Volume	Average Vehicle Speed	85th Percentile Speed
Ridge	2015.10	100 ft. S of Cambridge	4,724	3,778	29.5	32.9
Ridge	2014.12	100 ft. S of Oakland Park	3,549	3,257	28.5	32.3
Oakland Park	2015.09	800 ft. E of Ridge	2,624	2,156	28.4	32.1
Oakland Park	2015.08	800 ft. E of Ridge	2,827	2,286	27.9	32.1
Oxford	2015.10	850 ft. W of Woodward	913	951	27.6	32.1
Ridge	2015.11	100 ft. S of Cambridge	4,735	4,064	26.8	30.8
Ridge	2018.09	100 ft. S of Oakland Park	3,601	3,115	26.8	30.4
Ridge	2018.10	100 ft. S of Oakland Park	--	--	26.6	29.8
Woodward Heights	2015.04	400 ft. E of Indiana	2,854	2,068	26.2	29.9
Oxford	2015.05	850 ft. W of Woodward	1,152	888	26.2	30.3
Cambridge W	2014.12	300 ft. E of Oakdale	525	227	26.2	30.7
Sylvan	2015.08	250 ft. E of Woodward	1,256	867	25.7	29.8
Millington	2015.08	400 ft. E of Ridge	1,159	1,170	24.9	28.9
Elm Park Ave	2018.03	500 ft. W of Ridge	278	258	23.9	28.0
Maplefield	2015.05	150 ft. N of Cambridge	424	--	23.4	30.2
Hanover	2016.09	500 ft. W of Ridge	338	292	22.9	27.2
Indiana	2015.07	150 ft. N of Sylvan	892	730	21.4	26.0
Cambridge E	2017.07	250 ft. W of Woodward	891	--	20.9	24.8
Wellesley	2017.06	600 ft. E of Indiana	170	152	20.8	24.8
Woodward Alley	2018.07	Bet. D'shire & Kens'ton	284	215	18.0	20.6
Gainsboro	2015.07	150 ft. S of Wellesley	90	79	18.0	21.8

Safety Thresholds



The relationship between pedestrian injury severity and motor vehicle impact speeds. Source: Federal Highway Administration

10-15 MPH

Driver's peripheral vision
Stopping distance
Crash risk

20-25 MPH

Driver's peripheral vision
Stopping distance
Crash risk

30-35 MPH

Driver's peripheral vision
Stopping distance
Crash risk

What is Traffic Calming?

- Environmental cues influence driver behavior

  design speed

  posted speed

  operating speed

- Design speed traditionally higher than posted speed

  provide a “safety cushion”

- Operating speed usually = design speed

Traditional Approach

- Design Speed > Posted Speed
- Operating Speed = Design Speed
- Operating Speed > Posted Speed

Traffic Calming Approach

- Design Speed = Target Speed
- Posted Speed = Target Speed
- Operating Speed = Design Speed
- Operating Speed = Posted Speed

Change driver behavior through design

Limitations

- Legal restrictions

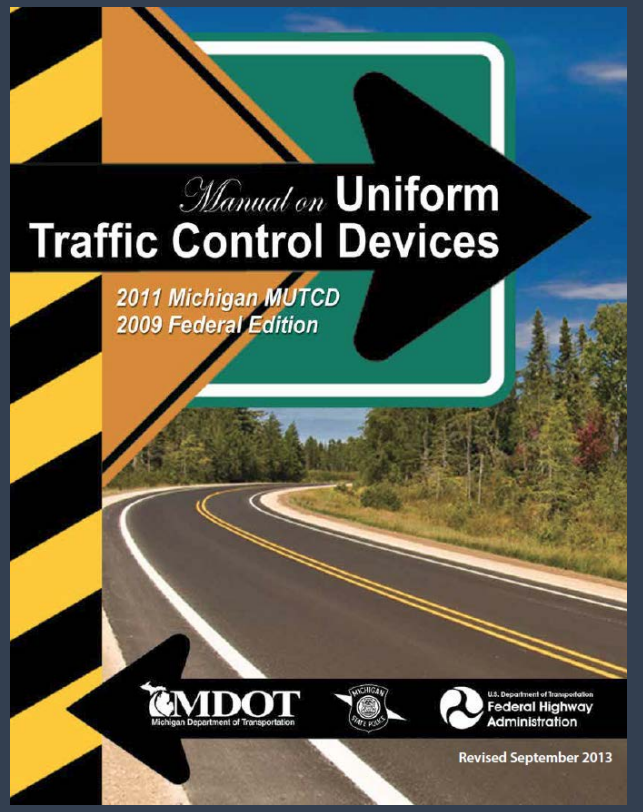
  25 mph speed limit

- Manual on Uniform Traffic Control Devices

  Stop signs are not traffic calming

- Design manuals

  AASHTO Green Book, NACTO design guides



Design Speed Geometric Factors

- Lane width

  Wider lanes encourage higher speeds

- Number of lanes

  More lanes = higher speed

- Curb radius

  Larger curb radii encourage higher speeds

- Straight street segments

  Straight segments without horizontal deflection encourage higher speeds

Traffic Calming Techniques

Traffic Calming Elements

- Generally two kinds: horizontal and vertical elements
- Horizontal elements

  Constrict width of street

  Create deflections

- Vertical elements

  Bumps, humps, tables require vehicles to slow down at a specific point

Chicane

Traffic Circle/Mini-Roundabout

Choker/Pinch Point

Center Median

Bike Lanes/Paint

Corner Bump-Outs

Street Parking/Yield Street

Speed Humps

Active Feedback Signs

Things that Aren’t Traffic Calming

- Enforcement
- Road closures
- Stop signs

Can’t The Police Just Solve This?

- 990 citations issued Q4 2018
- Woodward Heights:
  - *153 total citations*
  - *19 trucks*
  - *117 stop signs*
  - *17 other (speeding, parking, OWI)*

Stop Signs

- ARE intersection control
- ARE NOT speed control

  Stop signs do not influence vehicle speed

  Unwarranted stop signs can create higher speeds downstream

Stop Signs

- Must meet specific criteria by law before they can be installed
- Stop signs that do not meet the specific criteria must be removed
- Unwarranted stop signs do not increase safety, can decrease safety

Research Basis

Multi-way Stops - The Research Shows the MUTCD is Correct!

W. Martin Bretherton Jr., P.E.(M)

Abstract

This paper reviewed over 70 technical papers covering all-way stops (or multi-way stops) and their success and failure as traffic control devices in residential areas. This study is the most comprehensive found on multi-way stop signs

The study looked at how multi-way stop signs have been used as traffic calming measures to control speed. There have been 23 hypotheses studied using multi-way stop as speed control. The research found an additional 9 hypotheses studied showing the effect multi way stops have on other traffic engineering problems.

The research found that, overwhelmingly, multi-way stop signs do NOT control speed except under very limited conditions. The research shows that the concerns about unwarranted stop signs are well founded.

Research Findings

- Multi-way stops do not control speeds (22 studies)
- Stop compliance is poor at unwarranted stop signs (19 studies)

  Drivers feel the sign has no purpose – no reason to stop because there are usually no vehicles on the minor street

Research Findings

- Stop signs do not reduce speeds on residential streets (19 studies)
- Unwarranted stop signs increase speed more than 150 feet away from the intersection (15 studies)
- Pedestrian safety is decreased at unwarranted multi-way stops (13 studies)

  Pedestrians expect vehicles to stop, but many drivers are in the habit of running the unwarranted stop

Research Findings

- Stop signs increase noise in the vicinity of an intersection (5 studies)

  Vehicle braking noise, acceleration back up to travel speed

Stop Sign Warrants

- Intersection of a less important street with a busier street
- Intersection of intersecting streets with equal volumes
- 5 or more crashes in 12-month period susceptible to correction by a multi-way stop (right-turn and left-turn collisions)

Summary & Discussion

- Traffic calming is opt-in
- Manual provides information about possibilities
- City partners with residents when requested

Woodward Heights Traffic Calming Options

January 22, 2019

Understanding of Issues

- Traffic volume & speed
- Through traffic
- Intersection safety
- What else?

Gameplan

- Identify measures to test
- Test projects
- Evaluate
- Review
- Implement permanently

Gameplan

- Identify measures to test
- Test projects
- Evaluate
- Review
- Implement permanently

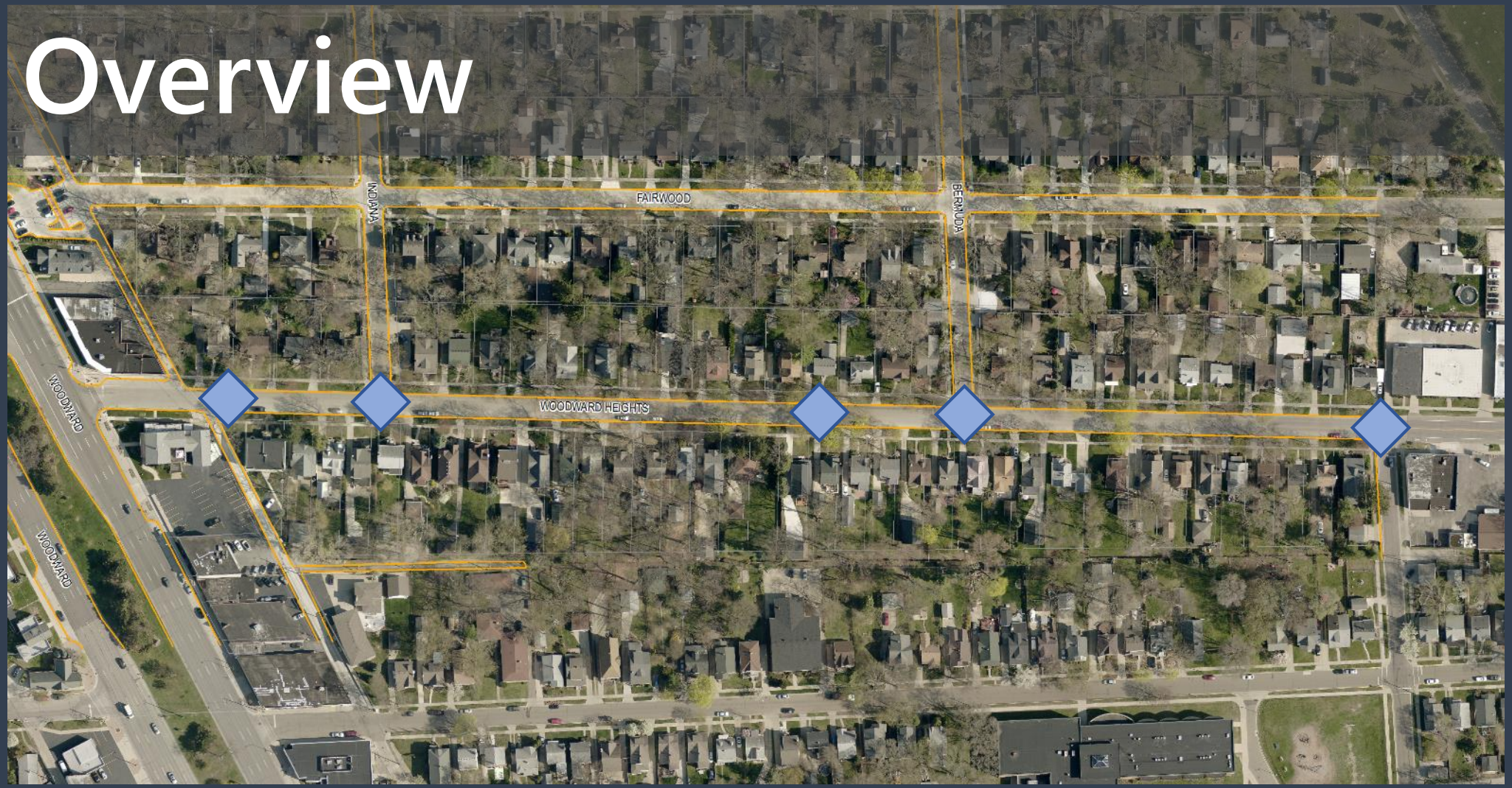
Project Goals

- Reduce vehicle speeds 2-5 mph (8-20%)
- Improve crosswalk safety
- Reduce pedestrian crossing time
- Improve intersection safety
- Improve aesthetic appearance
- Strengthen residential identity

Overview


FAIRWOOD
INDIANA
BERMUDA
WOODWARD HEIGHTS
WOODWARD
WOODWARD

Overview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INDIANA
BERMUDA
WOODWARD HEIGHTS
WOODWARD
WOODWARD

Part 1:
Parking or Edge Stripes

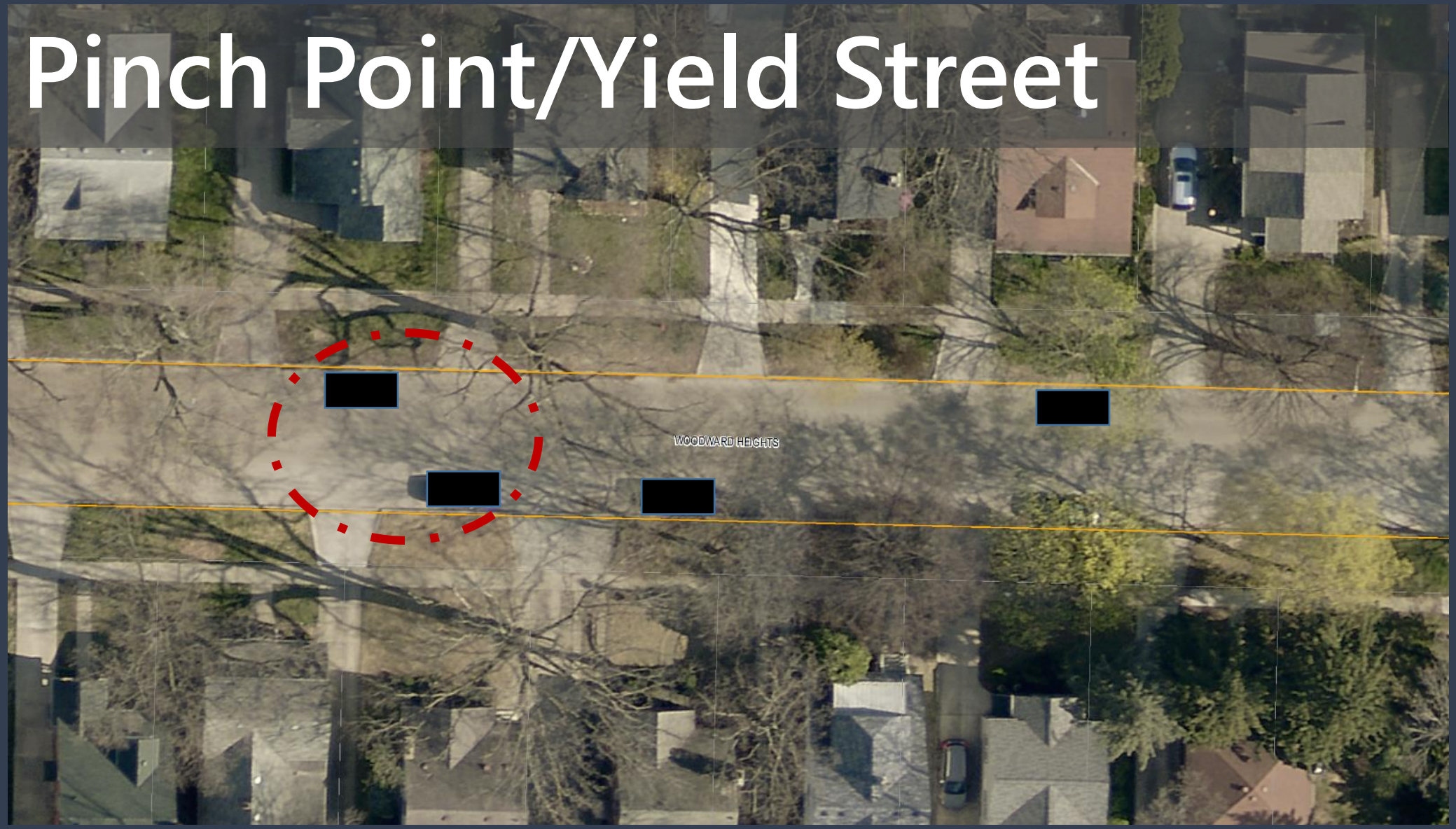
Parking on Both Sides

Parking on Both Sides

Parking on Both Sides

- Street width: 30 feet
- Parking lane width: 8 feet
- Current carriageway: 22 feet
- Potential carriageway: 14 feet
- Naturally creates many traffic calming measures

Pinch Point/Yield Street



Chicane

Parking on Both Sides

- Pros:
  - *Cost (it's free)*
  - *Effective - naturally implements traffic calming measures along entire street*
  - *More effective when residents are home and more cars are parked on the street*
  - *Easy to test, easy to reverse*
- Cons:
  - *May run counter to preference*
  - *No bike infrastructure*

Alternating Side Parking

Alternating Side Parking

Alternating Side Parking

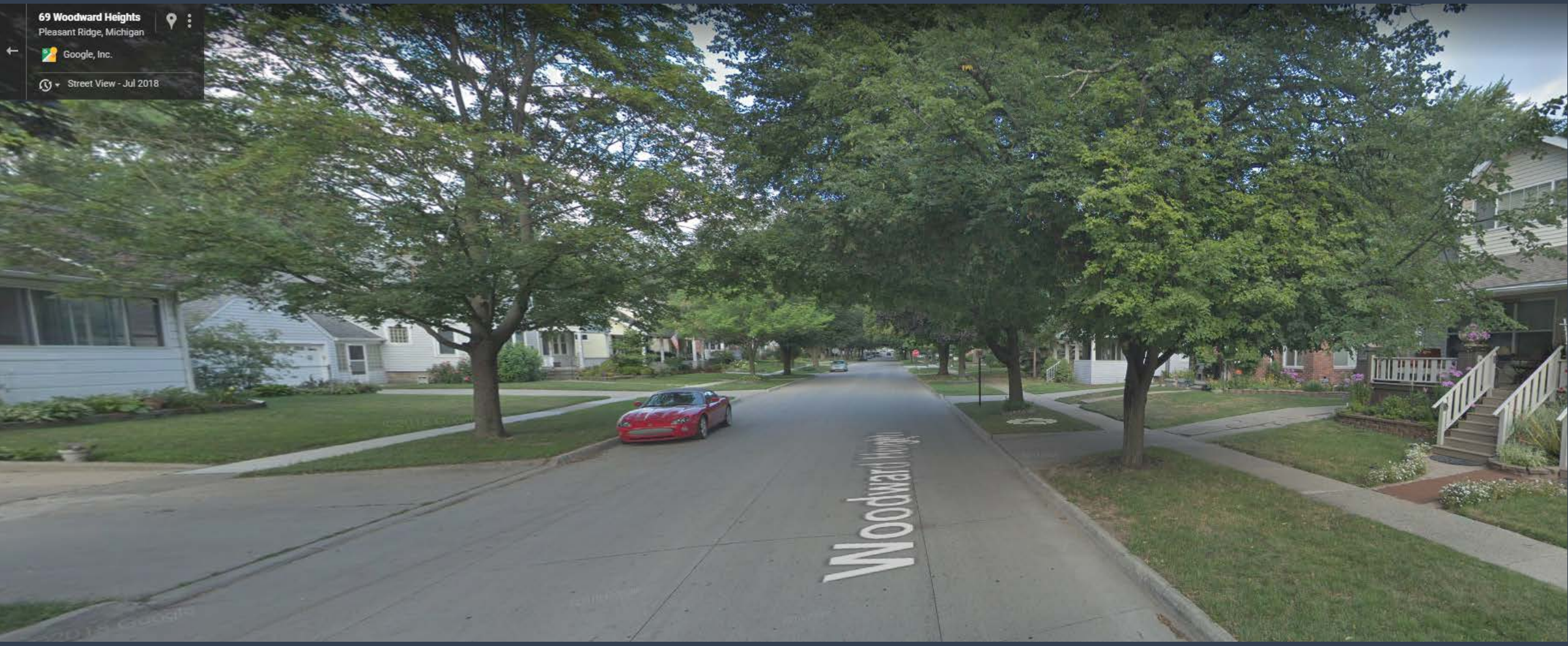
- Creates horizontal deflections
- Does not naturally create as many calming measures as both-side parking
- No protected space for bike lanes

Alternating Side Parking

- Pros:
  - *Cost (it's nearly free)*
  - *Implements chicanes along street*
- Cons:
  - *May run counter to resident preference*
  - *Maintains two travel lanes*

Edge Stripes

Edge Stripes


69 Woodward Heights
Pleasant Ridge, Michigan
Google, Inc.
Street View - Jul 2018
Woodward Heights


69 Woodward Heights
Pleasant Ridge, Michigan
Google, Inc.
Street View - Jul 2018
Woodward Heights

Edge Stripes

- Street width: 30 feet
- Parking lane width: 8 feet
- Current travel way: 22 feet
- Potential travel way: 19 feet
- Creates 3-ft wide pseudo-bike lane

Edge Stripes

- Pros:

  Low cost

  Low impact to status quo

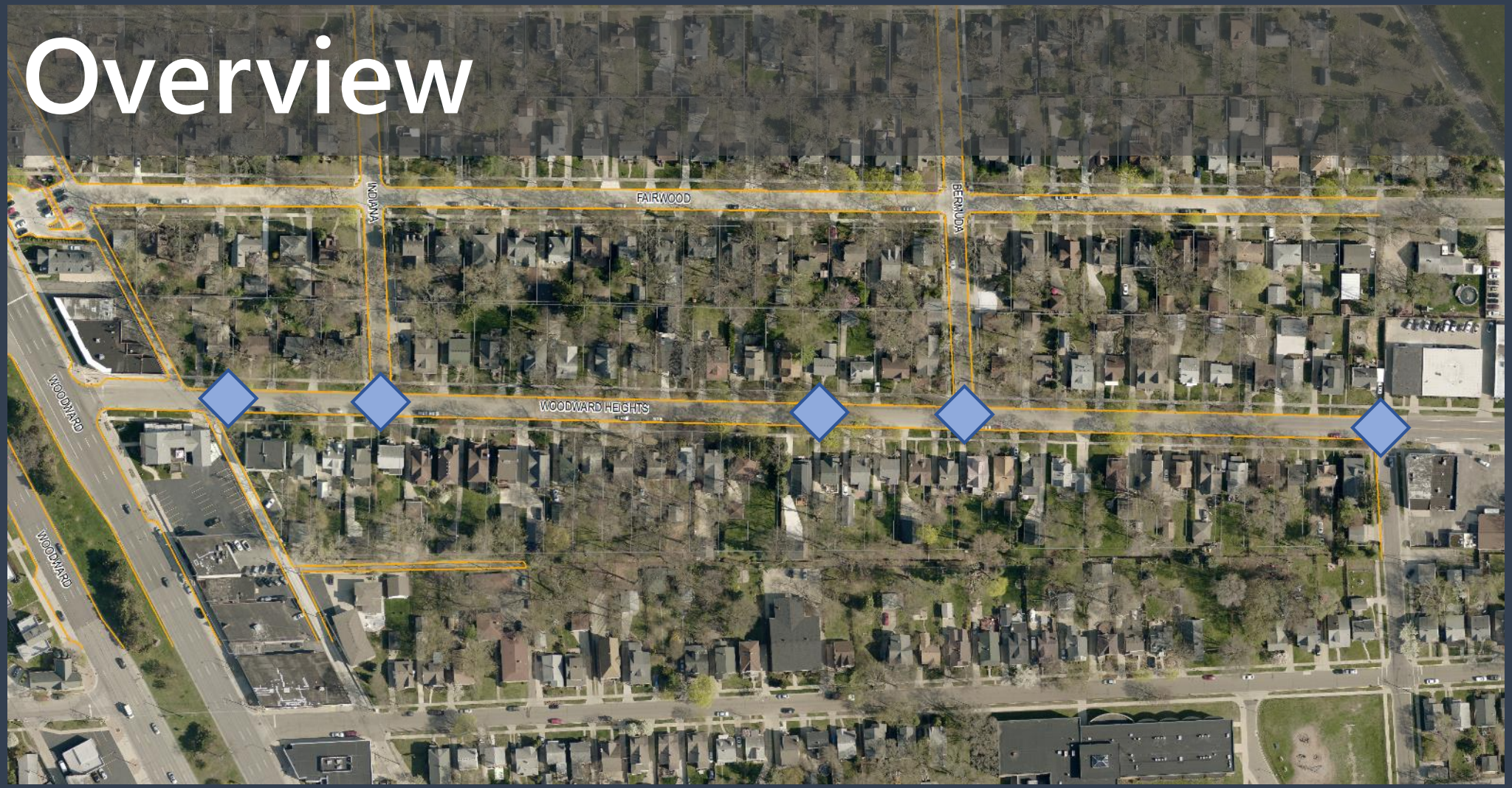
  Creates unofficial bike lane

- Cons:

  Best used in conjunction with other measures (increases cost)

Part 2:
Point Elements

Overview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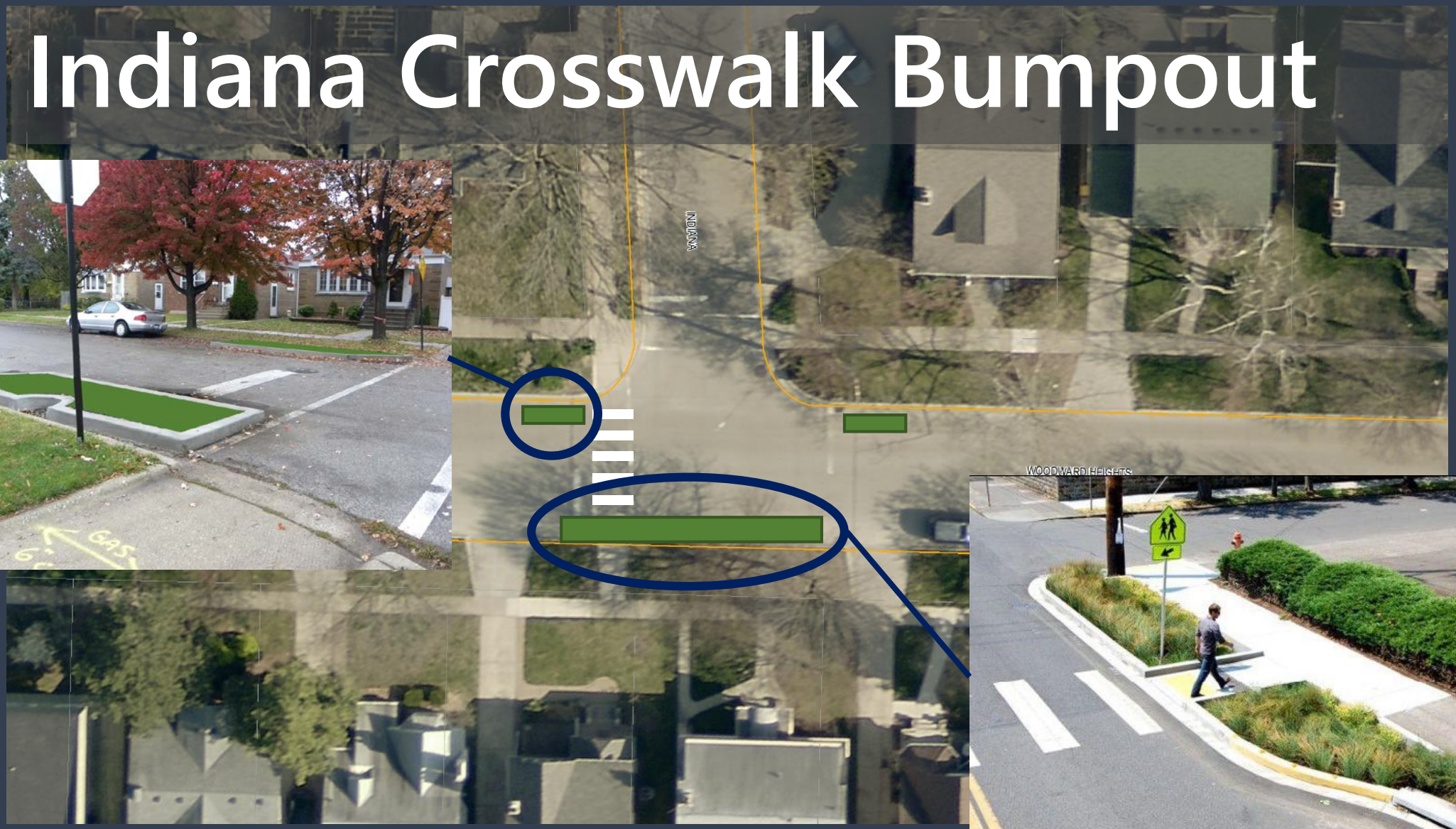
Entrance Gateway

Indiana Crosswalk Bumpout

Indiana Crosswalk Bumpout




GAS

Stop Signs


FAIRWOOD
INDIANA
BERMUDA
WOODWARD HEIGHTS
WOODWARD
WOODWARD
STOP
STOP
STOP
STOP
STOP
STOP
STOP

Traffic Volumes

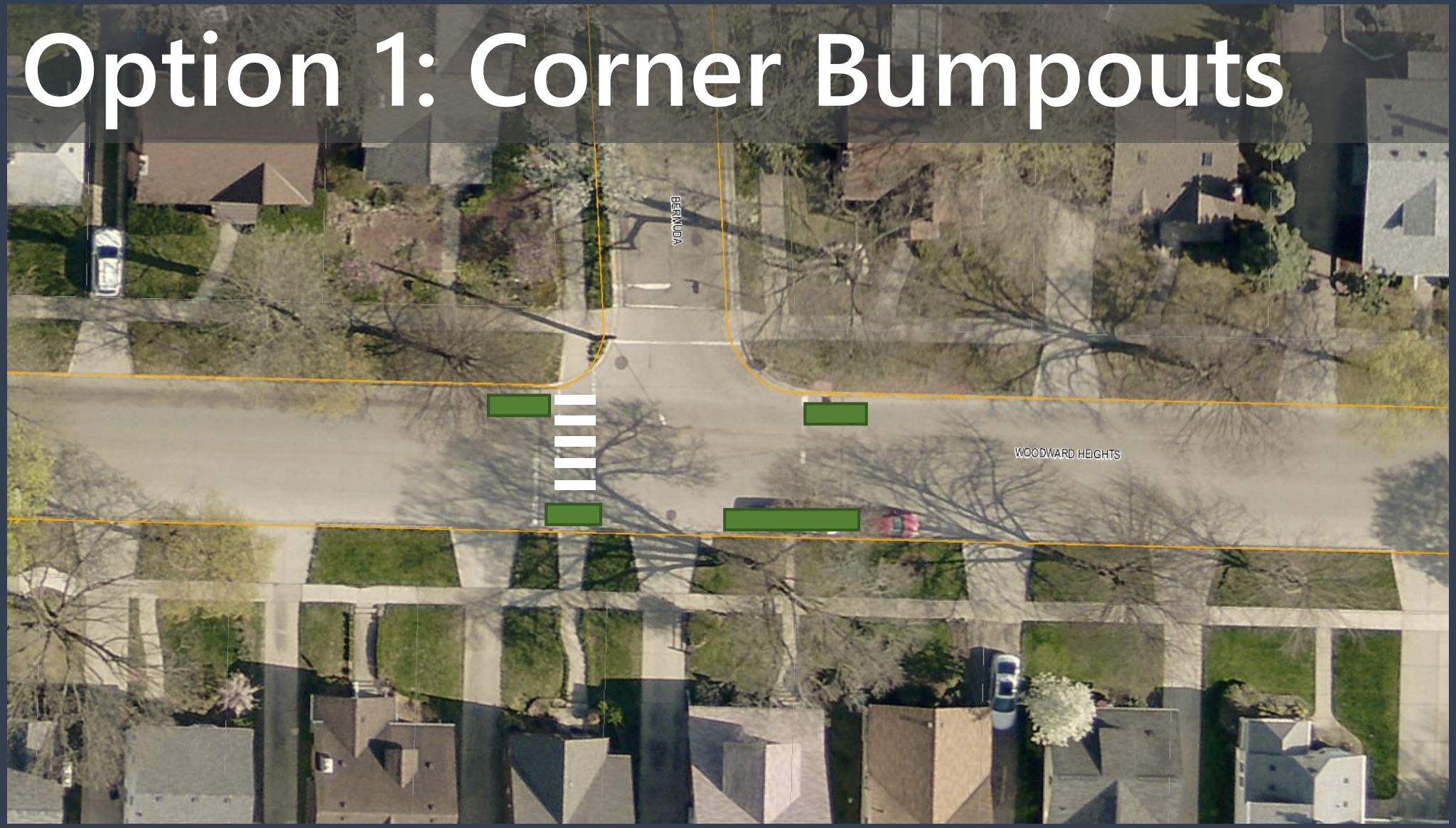
Stop Signs


FAIRWOOD
INDIANA
BERMUDA
WOODWARD HEIGHTS
WOODWARD
WOODWARD
STOP
STOP
STOP
STOP
STOP
STOP
STOP

Bermuda N Crosswalk

- Current peak hour analysis: 80 traffic gaps of > 15 seconds
- Crossing time about 6 seconds
  - *4 ft./second walking pace*
  - *2.7 to 3.3 mph comfortable walking speed range*
  - *24 foot crossing distance*
- Very similar to crossing Ridge

Option 1: Corner Bumpouts



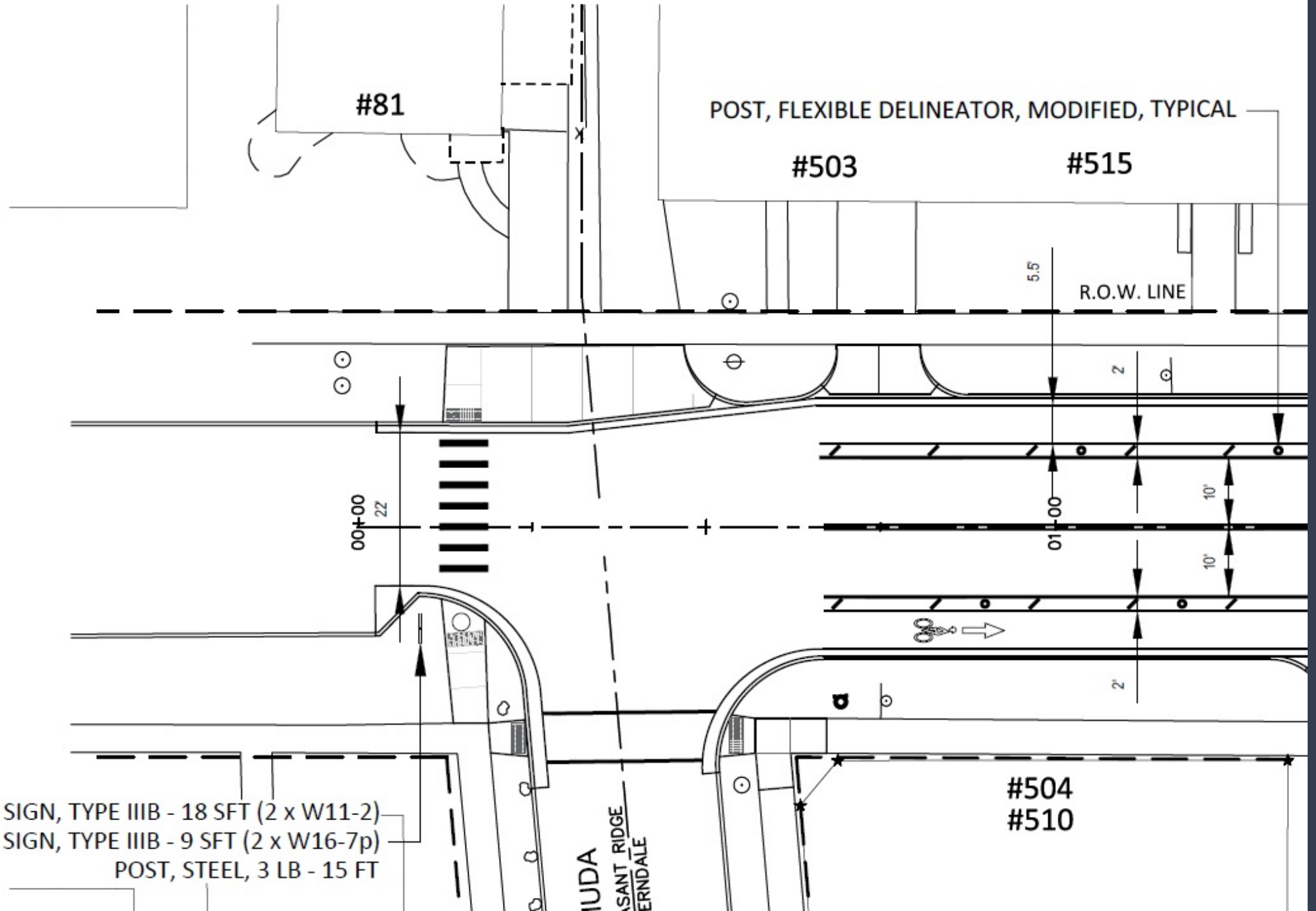

GAS


STOP
FOR
PEDESTRIANS

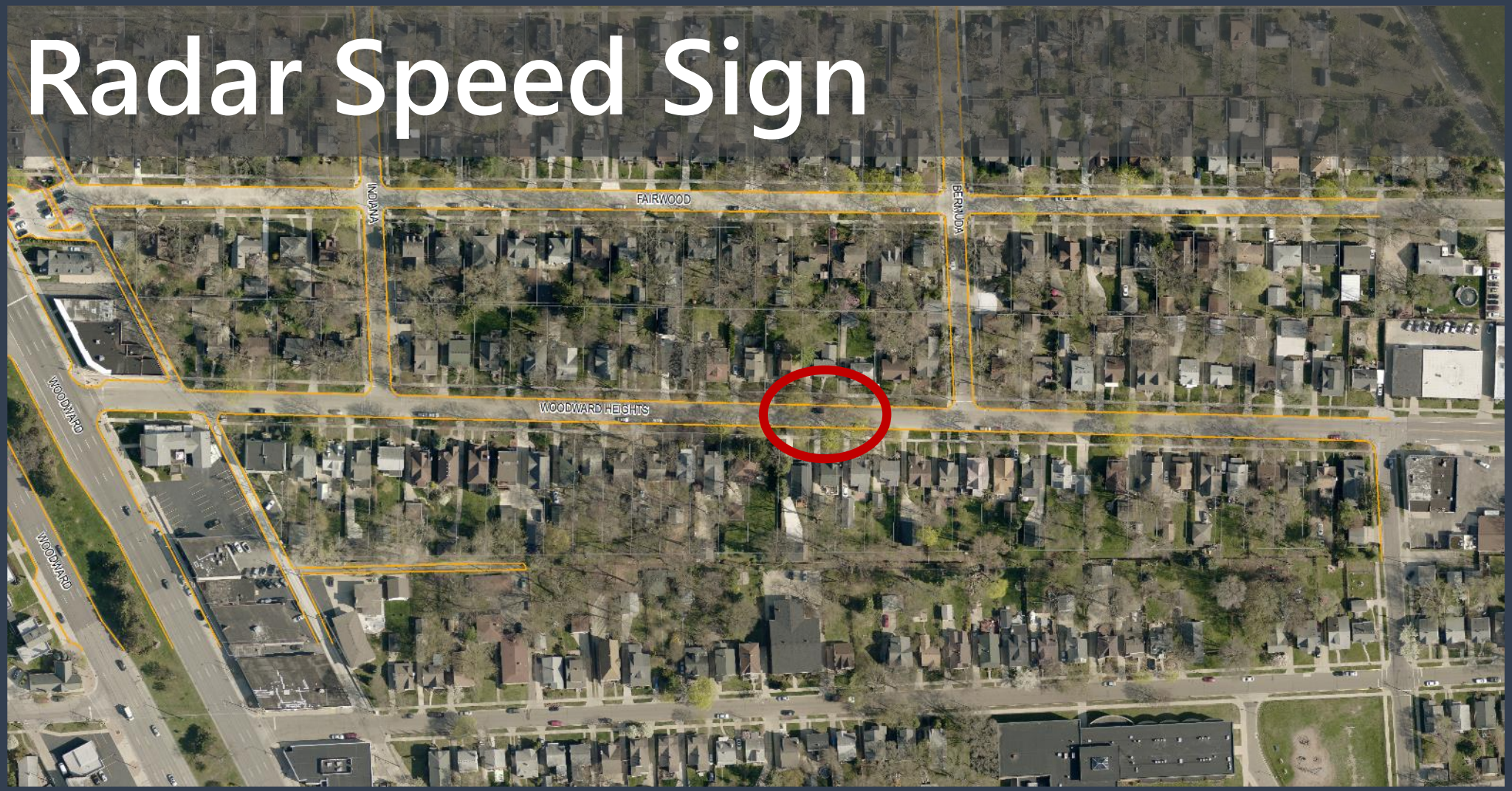
Option 2: Mini-Roundabout


YIELD

Bermuda (S) Crosswalk Bumpout

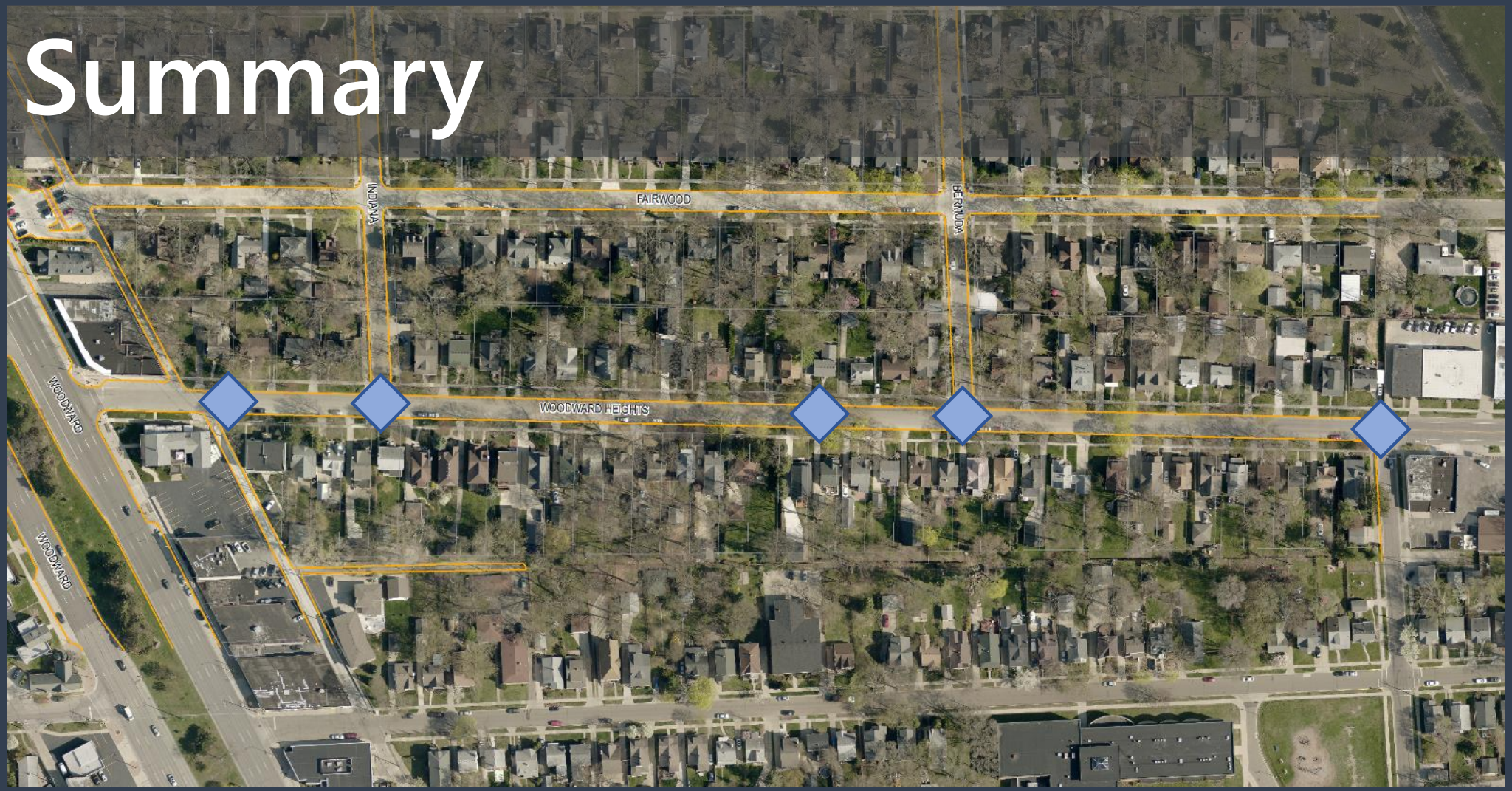

#81
POST, FLEXIBLE DELINEATOR, MODIFIED, TYPICAL
#503
#515
5.5
R.O.W. LINE
2
10'
10'
2'
00+00
22
01+00
#504
#510
SIGN, TYPE IIIB - 18 SFT (2 x W11-2)
SIGN, TYPE IIIB - 9 SFT (2 x W16-7p)
POST, STEEL, 3 LB - 15 FT
IUDA
SANT RIDGE
ERNDALE

Radar Speed Sign




SPEED
LIMIT
25
YOUR
SPEED
30

Summary


INDIANA
FAIRWOOD
BERMUDA
WOODWARD HEIGHTS
WOODWARD
WOODWARD

Discussion Items

- Choice 1:

  Parking both sides

  Alternate side parking

  Edge stripes

- Choice 2:

  Bermuda (N) crosswalk bumpouts

  Bermuda (N) mini-roundabout

Discussion Items

- Timing
- Anything else

City Commission Meeting

December 11, 2018