

# Stafford Street Reconstruction and Safety Improvements

**April 22, 2024**



The City of  
**WORCESTER**

Department of  
Transportation & Mobility

Department of  
Public Works & Parks

# STAFFORD STREET

## Project Overview

### 1. Street Resurfacing

### 2. Sidewalk Reconstruction and Missing Sections

### 3. Pedestrian Safety & Access Improvements

- Eliminate gaps in the sidewalk network
- Provide additional crosswalks across Stafford St and sidestreets
- Improve ADA compliance
- Add curb extensions at primary crossings
- Install Rapid Flashing Beacons (RRFBs) and improved signage

### 4. Pavement Marking Plan

- “Right size” travel lanes
- Define and clarify curbside parking locations
- Establish bicycle accommodations
- Identify bus stops & improve transit service

### 5. Future Needs

- Improvements at James St and Main St/Park Ave intersections.



# STAFFORD STREET

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1. Street Resurfacing – **Occurs at the end of the project**
2. Sidewalk Reconstruction and Missing Sections – **Began Dec. 2023/ongoing**
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# STAFFORD STREET

## Existing Conditions



Photo: Google Streetview

# STAFFORD STREET

## Roadway Characteristics

- Right-of-way
  - Generally, 64 ft wide
  - 40 to 44 feet “curb to curb”
  - Two 22’ travel lanes.
  - Non-defined parking lanes on each side.
- Sidewalks on both sides
  - Generally poor condition
  - Lacks ADA compliance
  - Gaps in sidewalk network
  - No street trees
- Few crosswalks
- No bike accommodations



*Photo: Worcester Telegram & Gazette Collection*



# STAFFORD STREET WRTA Bus Service

- Bus routes 27 and 825
- Closely spaced bus stops
- Lack of crosswalks
- Stop locations are not ADA compliant
- Previous Shelter near Webster Sq Plaza blocks sidewalk



Photo: Google Streetview



# STAFFORD STREET

## Roadway Characteristics

- Minor Urban Arterial
- Regulatory (posted) Speed limit is 35 mph (25 mph at James St intersection)
- Designated Truck Route

	Avg Daily Traffic	Avg Speed	85 <sup>th</sup> Percentile*
Leicester TL – Ludlow St	6,450	39 mph	44 mph
Ludlow St – James St	11,920	32 mph	37 mph
James St – Heard St	10,520	34 mph	40 mph
Heard St – Main St	12,200	32 mph	38 mph

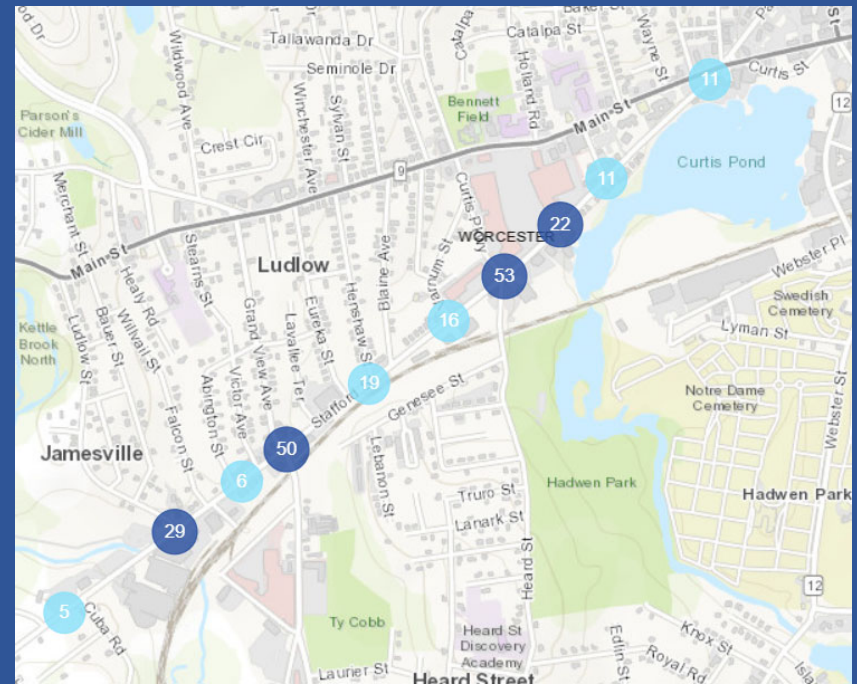
*\*Speed at which 15% of traffic is traveling at or above*



# STAFFORD STREET Crash Locations

## ➤ 2019-2023 5-year crash history

- 223 crashes 2019-2023
  - 41% angle crashes
  - 22% rear-end crashes
  - 8% single vehicle
  - 5% head-on
- 4 pedestrians struck by vehicles
  - 1 child in a crosswalk killed by vehicle
- 20% at night
- 28% of crashes resulted in injury

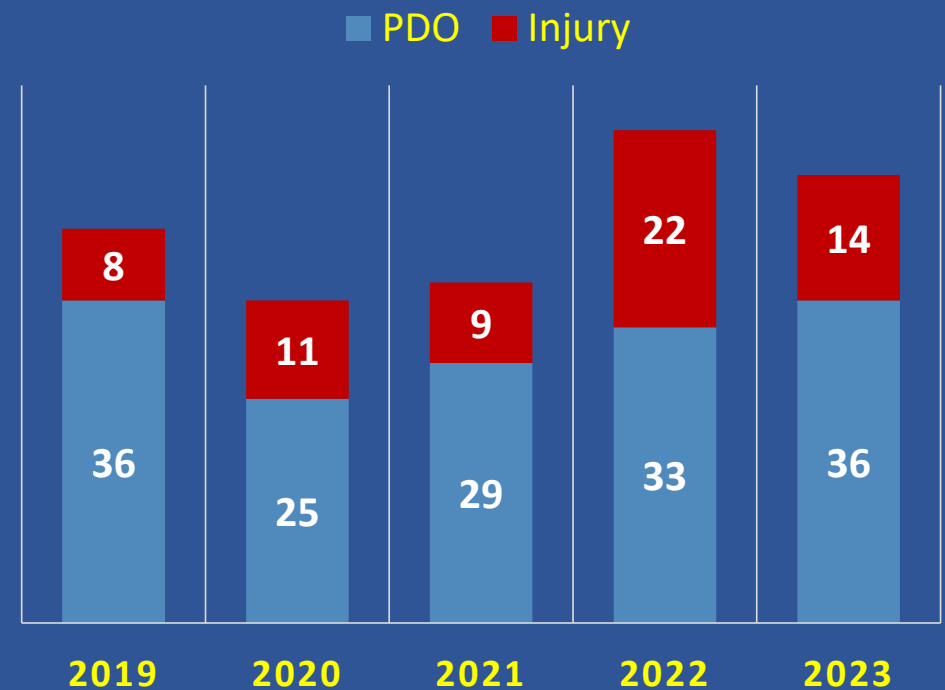




# STAFFORD STREET Crash Locations

## ➤ 2019-2023 5-year crash history

- MassDOT Crash Portal
- 8.47 crashes per million vehicle-miles (CPMVM)
- 284% higher than statewide average for Urban Minor Arterials (2.98 CPMVM)
- 29% of crashes resulted in injury
- Top 5% intersection crash clusters
  - Heard St 2018-2020
  - Main St/Park Ave 2017-2019
  - James St 2016-2018

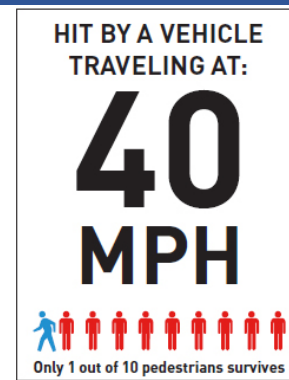
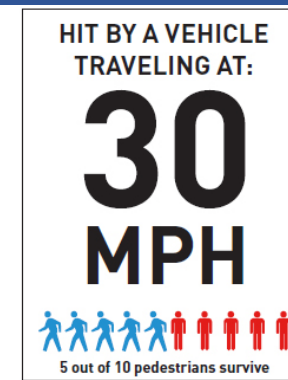
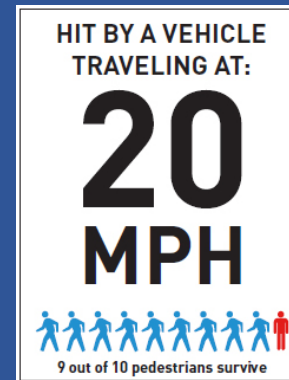


# STAFFORD STREET

## Existing conditions and deficiencies

### ➤ Safety Concerns (*'Dangerous by Design'*)

- Roadway width contributes to high motor vehicle speeds and high crash rate
- Despite 22' width, vehicles park on sidewalk to avoid speeding vehicles
- Crosswalks lack ADA compliant ramps
- Lack of safe crosswalks, including at public transit stops
- Gaps in sidewalk network and some sidewalk segments in poor condition
- No dedicated space for cyclists



# STAFFORD STREET

## How do we improve safety?

- Reduce traffic speeds
  - Define travel lanes & proper width with pavement markings
  - Curb extensions
  - Periodically shift travel lanes (chicaning) for parking
- Provide dedicated space for all modes
- Improve Pedestrian Facilities
  - ADA compliant sidewalks & ramps
  - Curb extensions
  - Signage
  - Rectangular Rapid Flashing Beacons at crosswalks



Photo: Google Streetview



# STAFFORD STREET

## How do we improve operations?

- Proper travel lane widths
- Improved Lane management at intersections
- Dedicated curbside parking lanes
- Define dedicated space for all modes
  - Carry bike lane through intersection with high visibility green markings
- WRTA Bus Service
  - Define stop locations with signage and pavement markings



Photo: Google Streetview



# LOCAL POLICY GUIDELINES

## COMPLETE STREETS POLICY (2017)

- Incorporates Complete Streets principles into the planning, design, construction, maintenance, and operation of its streets, transportation infrastructure, and transportation services
- Applies to all street and transportation projects requiring funding or approval by the City, and to the extent allowed by law, those projects funded by state and federal government sources.
- Requires the accommodation of all travel modes, including but not limited to walking, cycling, motor vehicles, etc.
- Provides for the safe and convenient use by people of all ages, economic status and abilities.
- Implemented through a combination of coordinated actions, ranging from incremental changes to major capital improvements.

## MOBILITY ACTION PLAN (2024)

## GREEN WORCESTER PLAN (2021)

- ACTION ITEM 3: Connectivity: Make connected networks an explicit goal of City of Worcester transportation planning. Maximize connectivity to move people – not just vehicles – between destinations.
- ACTION ITEM 12: Complete Streets Policy: Implement the policy by developing a priority plan for designing roadway space for all users.
- ACTION ITEM 13: Micromobility Plan: Develop and Implement a Pedestrian, Bicycle, and Micromobility Plan.
  - Identify and implement bicycle networks to support non-commuter short trips under 3 miles to central and neighborhood commercial areas, parks, and other neighborhood destinations.
  - Use safety data to identify and prioritize for improvements to the most hazardous routes and intersections that discourage routine travel by bicyclists and pedestrians, and include education for motorists.

## VISION ZERO PLAN (2024)



# DESIGN GUIDANCE

- **Federal Highway Administration**
  - Manual on Uniform Traffic Control Devices (MUTCD), Safe System Approach Guidance, Guide for the Planning, Design, and Operation of Pedestrian Facilities, other policies and directives
- **United States & Massachusetts Architectural Access Boards**
  - Americans with Disabilities Act (ADA) Accessibility Standards, Public Rights-of-Way Accessibility Guidelines (PROWAG)
- **National Association of City Transportation Officials (NACTO)**
  - Transit Street Design Guide, Urban Street Design Guide, Urban Bikeway Design Guide
- **American Association of State Highway and Transportation Officials (AASHTO)**
  - Guide for the Planning, Design, and Operation of Pedestrian Facilities, A Policy on Geometric Design of Highways and Streets
- **Massachusetts Department of Transportation (MassDOT)**
  - Procedures for Speed Zoning on State Highways and Municipal Roads, Safe Speeds Technical Toolkit, Separated Bike Lane Planning & Design Guide, other guidance policies and directives
- **Industry Best Practices**
  - Institute of Transportation Engineers (ITE), AARP Livable Communities, Arbor Day Foundation, WHO Age-friendly Cities Framework



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# STAFFORD STREET

## Pedestrian Safety & Access

- Eliminate gaps in the sidewalk network
  - Extend sidewalks to Kettle Brook/Worcester Academy Fields (north side)
  - Connect sidewalks between Ludlow St and Abington St (north side)



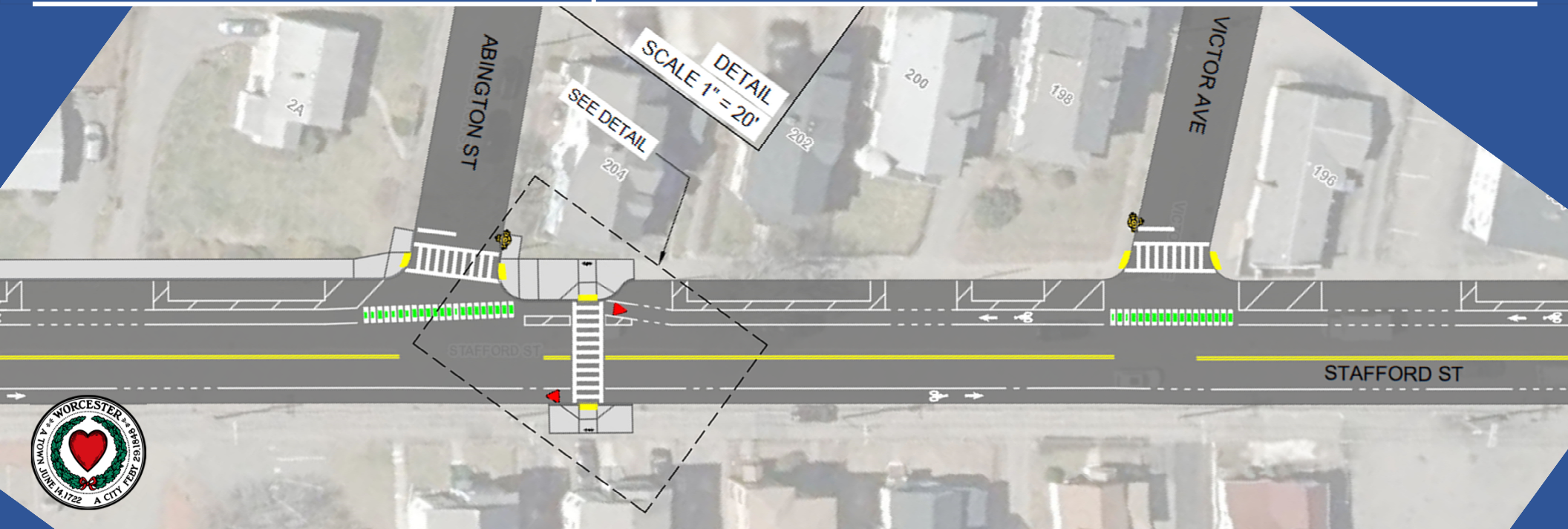
Photo: Google Streetview





# STAFFORD STREET Pedestrian Access & Safety

- Crosswalks and ADA ramps
  - Crosswalk painted for all side streets
  - New Stafford St crosswalks and MUTCD compliant signage at Ludlow St, Abington St, Eureka St.
  - ADA compliant ramps at all intersections and crosswalks



# STAFFORD STREET Pedestrian Access & Safety

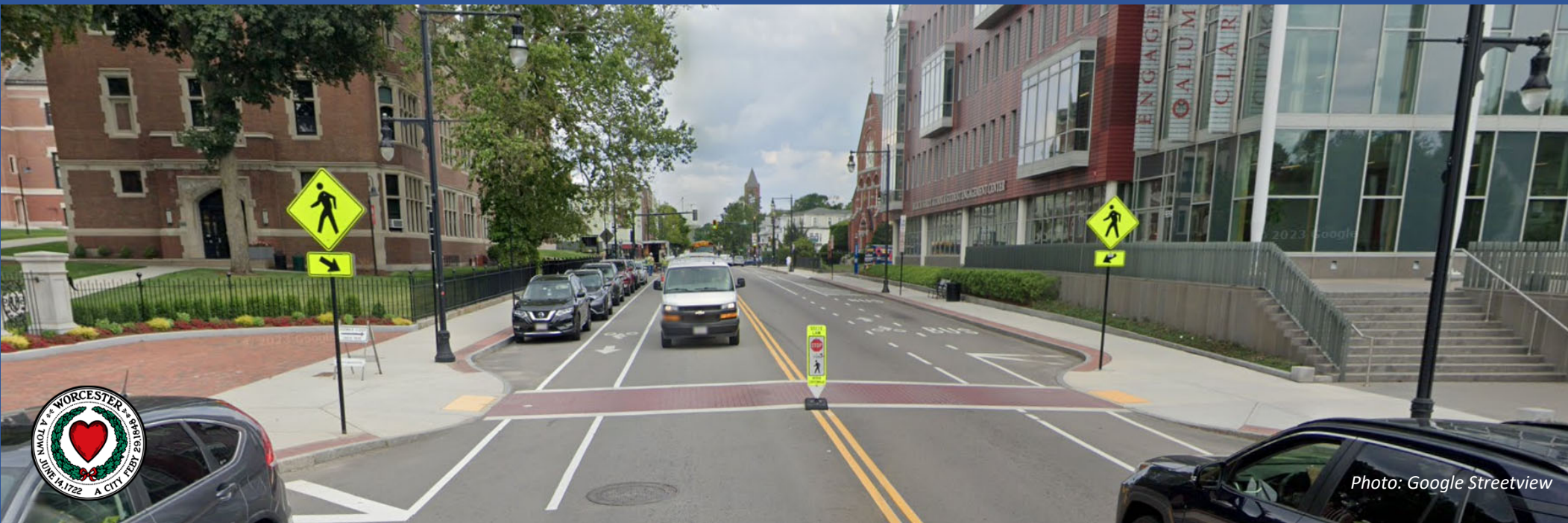
- Crosswalks and ADA ramps
  - Remove crosswalk at Webster Square Plaza near Heard St (coordinate with bus stop location).



# STAFFORD STREET

## Pedestrian Access & Safety

- Curb extensions & Signage
  - Curb extensions provided at crosswalk locations where a parking lane is present
    - Abington St (north side), Eureka St (south side), Verner St (north side), Webster Sq Plaza (south side), Young St (north side), Washburn House (north side).
  - Signage to improve visibility of the crosswalk



# STAFFORD STREET Pedestrian Access & Safety

- Rapid Flashing Beacons (RRFBs)
  - Studies indicate 98% increased yield rate by motor vehicles and 47% reduction in pedestrian crashes.
    - RRFBs at Kettle Brook/Energy Athletics (privately funded), Abington St, Eureka St, Webster Square Plaza, Young St.
    - “Installation ready” at other crosswalk locations.



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# STAFFORD STREET Lane Markings

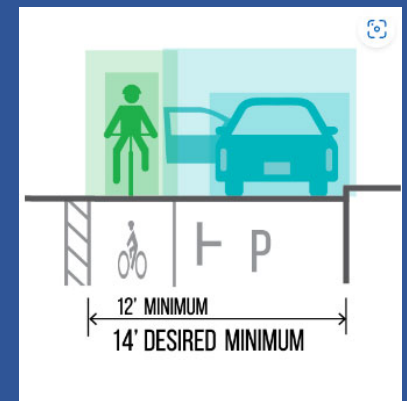
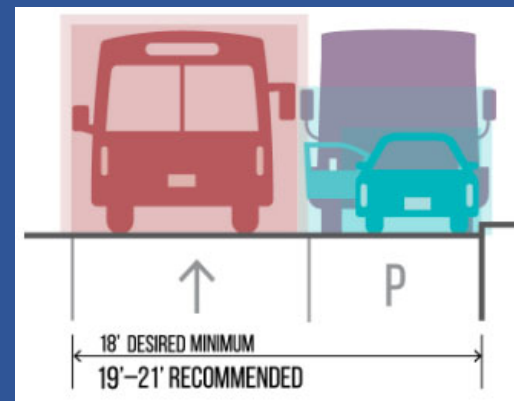
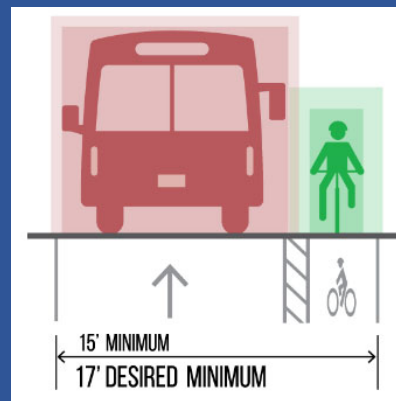
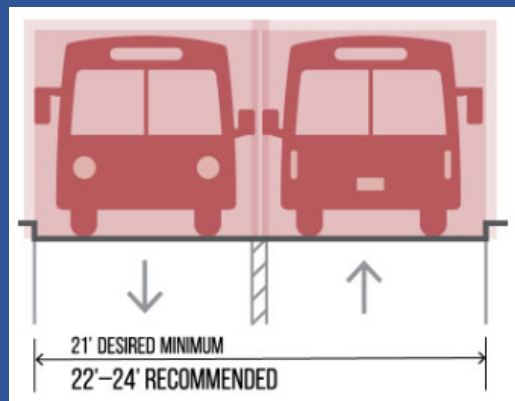
- “Right Size” Travel Lane width
  - Current best practice is to use 10 to 11 ft wide lanes on urban streets.
  - Current lanes are unmarked and 22 ft wide.



Photo: Google Streetview

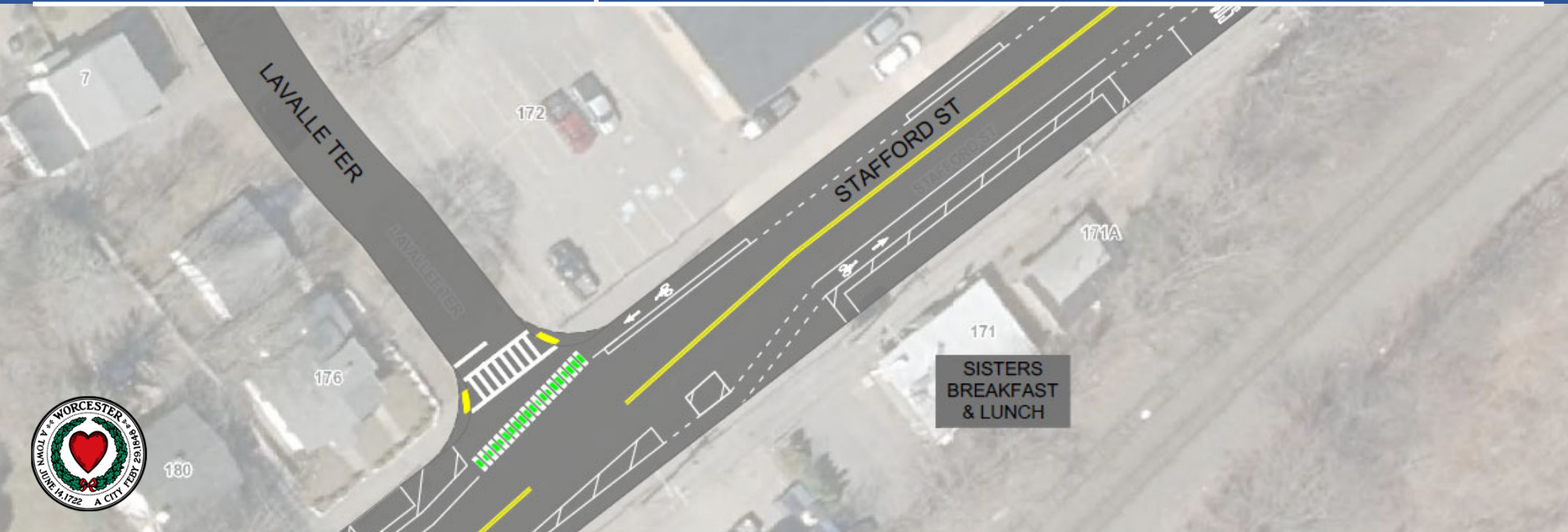
# STAFFORD STREET Lane Markings

- “Right Size” Travel Lane width
  - Stafford St accommodates both truck and bus traffic.
  - Proposed design utilizes lanes at 10 ½ ft or 11 ft depending on available width use of adjacent space.



# STAFFORD STREET Lane Markings

- Parking
  - Provide on one side
  - Marked parking spaces
  - Alternates side to side to best match demand.





# STAFFORD STREET Lane Markings

- **Bike & Micro-Mobility Accommodations**
  - 4 Types of People as it relates to biking:
    - Strong and Fearless (<1%), Enthused and Confident (7%), Interested but Concerned (60%), No Way, No How (33%)
  - The degree of separation (distance) and physical protection (barriers) between cyclists and moving vehicles directly relates to the safety and comfort of cyclists
  - Not a one size fits all, they are context sensitive



**Conventional Bike Lanes**

*Photo: Planetizen*



**Buffered Bike Lanes**

*Photo: Boston Magazine*



**Separated or Protected Bike Lanes**

*Photos: Kansas City Star (left), Unknown (right)*



**Safer and more comfortable**

# STAFFORD STREET Lane Markings

- **Bicycle Accommodations**
  - Door Zone Buffered bicycle lanes with green pavement markings at intersections.
  - 5 ft to 6 ft bike lane width.
  - Buffers 2.5 to 3 ft in door zones.
  - Where space permits, 1.5 to 3.5 ft buffers between bike and travel lanes on non-parking side.



Photo: Google Streetview



Photo: Unknown Source

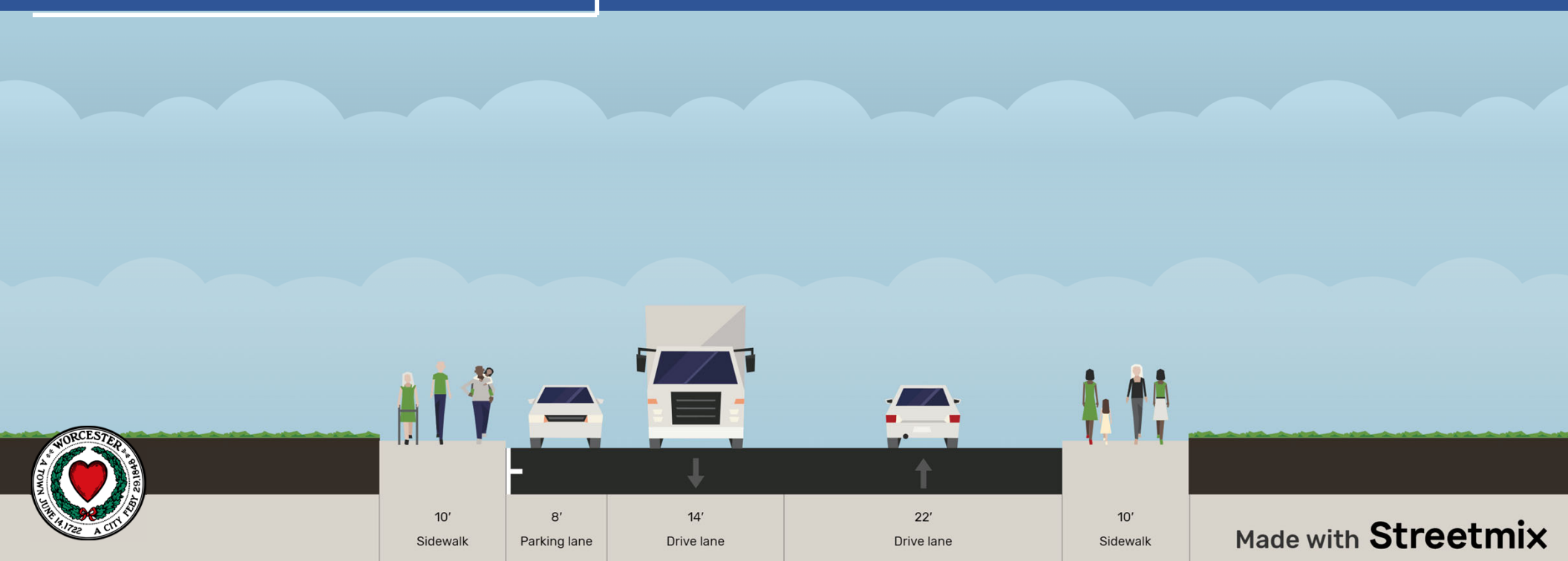


# STAFFORD STREET

## Typical Cross-section Main St to James St

65 ft right-of-way  
44 ft curb to curb

Existing



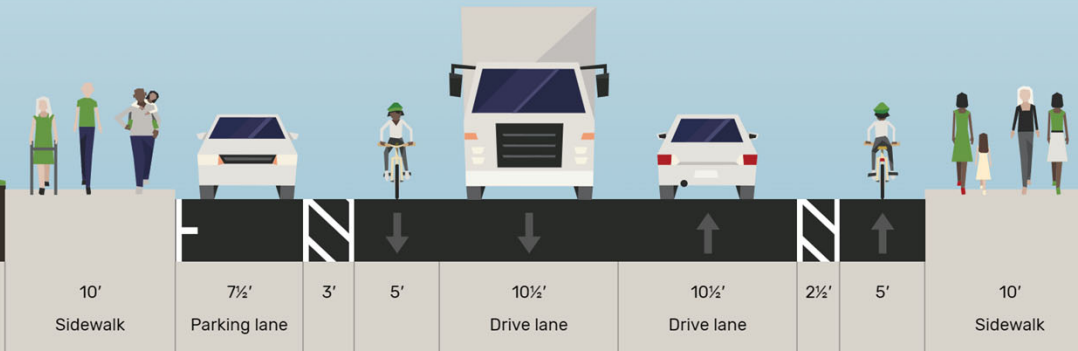
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# STAFFORD STREET

## Typical Cross-section Main St to James St

65 ft right-of-way  
44 ft curb to curb

Proposed



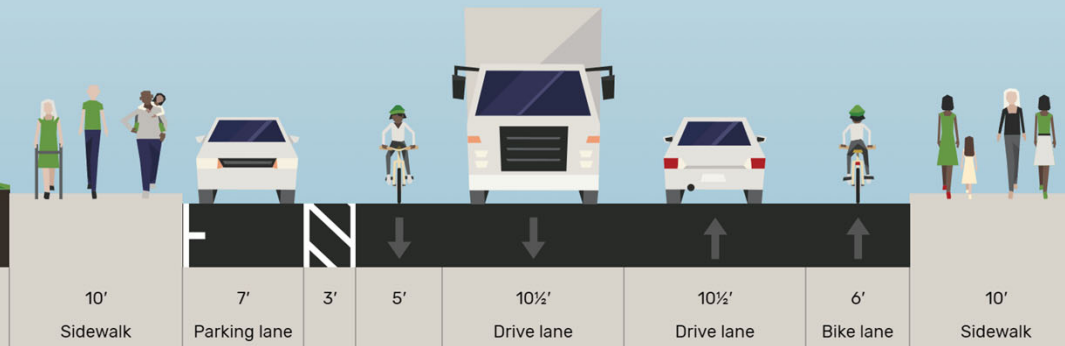
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# STAFFORD STREET

## Typical Cross-section Ludlow St to James St

65 ft right-of-way  
42 ft curb to curb

## Proposed – Constrained Sections



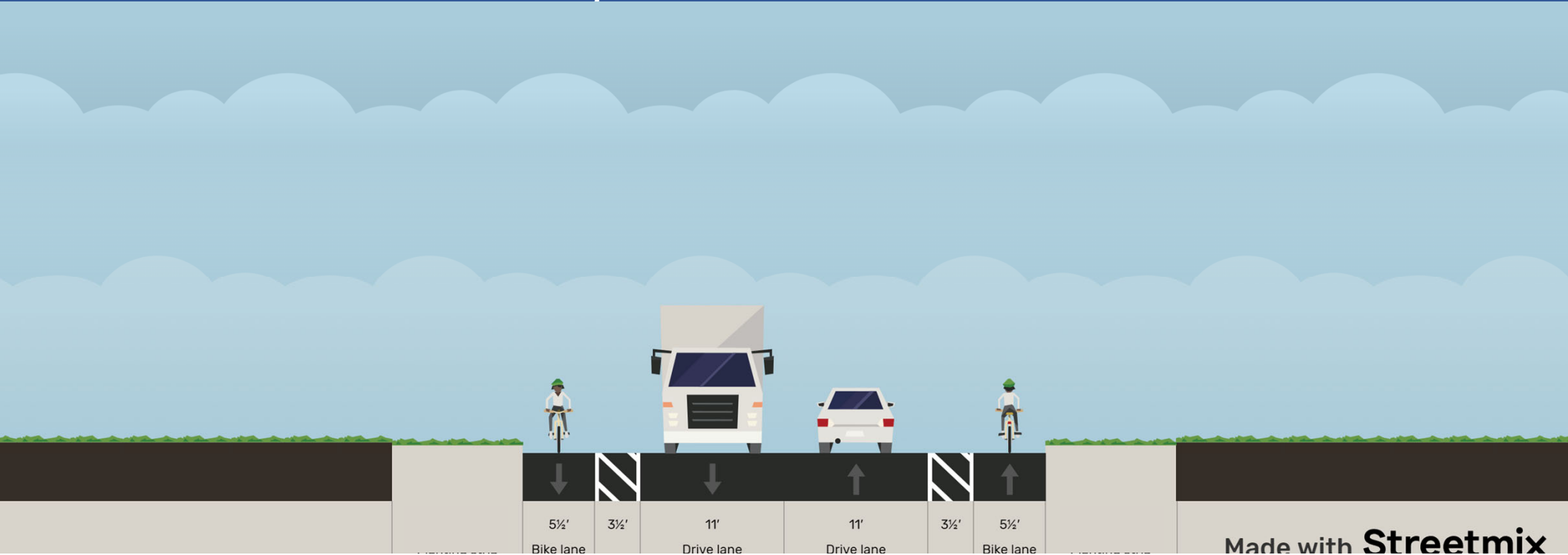
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# STAFFORD STREET

Typical Cross-section  
Leicester to Ludlow St

65 ft right-of-way  
42 ft curb to curb

Proposed – Rural Section



# Stafford Street Reconstruction and Safety Improvements

## Q & A

[www.worcesterma.gov/mobility](http://www.worcesterma.gov/mobility)



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