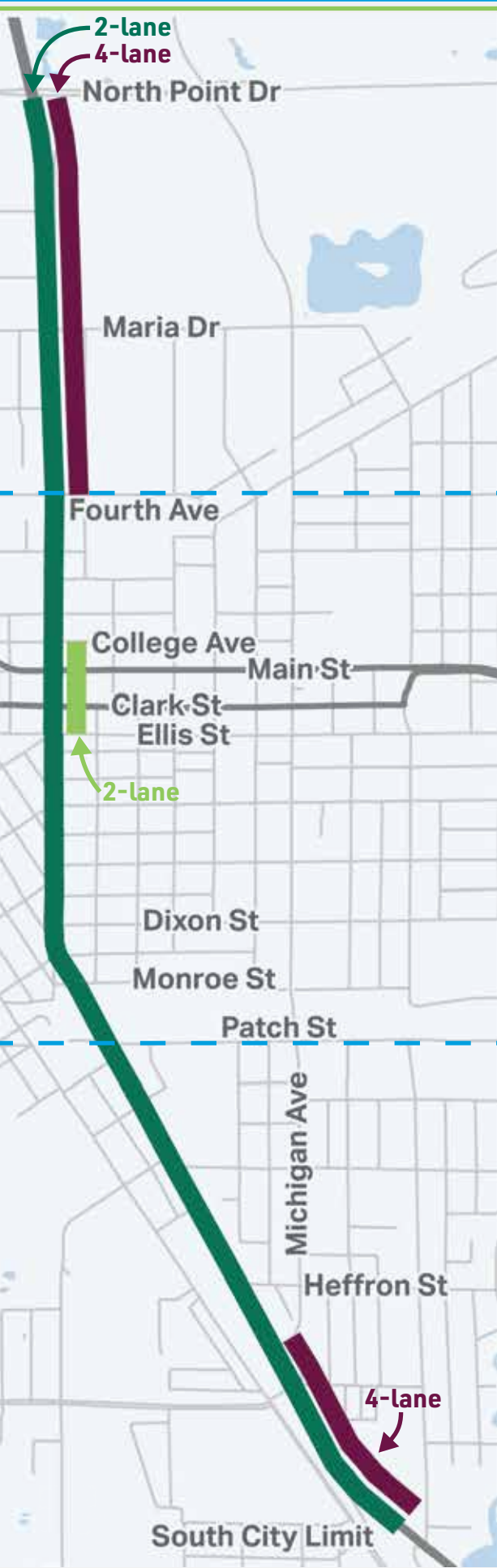




# Detailed Alternatives Comparison



|   | <b>2-lane</b><br>Raised Median           | <b>4-lane</b><br>Raised Median           |
|---|--|--|
| <b>Right-of-Way Needed</b><br><i>Option: Fourth Ave. Roundabout</i>   | <b>0.2 acres</b><br>+ 0.03               | <b>0.2 acres</b><br>+ 0.03               |
| <b>Total Buildings Required</b>                                       | <b>0</b>                                 | <b>0</b>                                 |
| <b>Access Points Removed</b>  | <b>18</b>                                | <b>18</b>                                |
| <b>Hazardous Material Sites Impacted</b>                              | <b>2</b>                                 | <b>2</b>                                 |
| <b>Estimated Cost (2025)</b><br><i>Option: Fourth Ave. Roundabout</i> | <b>\$10.1 million</b><br>+ \$0.1 million | <b>\$10.8 million</b><br>+ \$0.1 million |

**North Segment**  
**Central Segment**

|   | <b>2-lane</b><br>TWLTL     | <b>2-lane</b><br>Raised Median & TWLTL |
|---|----------------------------|--|
| <b>Right-of-Way Needed</b><br><i>Option: Fourth Ave. Roundabout</i> | <b>1.2 acres</b><br>+ 0.02 | <b>1.3 acres</b><br>+ 0.02             |
| <b>Total Buildings Required</b>                                     | <b>4</b>                   | <b>4</b>                               |
| <b>Access Points Removed</b>  | <b>3</b>                   | <b>3</b>                               |
| <b>Existing/Proposed Historic District Properties Impacted</b>      | <b>4</b>                   | <b>9</b>                               |
| <b>Hazardous Material Sites Impacted</b>                            | <b>3</b>                   | <b>3</b>                               |
| <b>Estimated Cost (2025)</b>  | <b>\$19.2 million</b>      | <b>\$19.2 million</b>                  |

**Central Segment**  
**South Segment**

|   | <b>2-lane</b><br>TWLTL                                  | <b>4-lane</b><br>Raised Median & 2-lane TWLTL             |
|---|---|---|
| <b>Right-of-Way Needed</b><br><i>Option: Rice St. realignment</i><br><i>Option: Patch St. realignment</i>               | <b>0.3 acres</b><br>+ 1.5<br>+ 1.6                      | <b>1.7 acres</b><br>+ 1.5<br>+ 1.6                        |
| <b>Total Buildings Required</b><br><i>Option: Rice St. realignment</i><br><i>Option: Patch St. realignment</i>          | <b>0</b><br>+ 1<br>+ 1                                  | <b>2</b><br>+ 1<br>+ 1                                    |
| <b>Access Points Removed</b><br><i>Option: Patch St. realignment</i>  | <b>36</b><br>+ 1  | <b>35</b><br>+ 1  |
| <b>Hazardous Material Sites Impacted</b><br><i>Option: Rice St. realignment</i><br><i>Option: Patch St. realignment</i> | <b>4</b><br>+ 1<br>+ 1                                  | <b>5</b><br>+ 1<br>+ 1                                    |
| <b>Estimated Cost (2025)</b><br><i>Option: Rice St. realignment</i><br><i>Option: Patch St. realignment</i>             | <b>\$16 million</b><br>+ \$2 million<br>+ \$2.3 million | <b>\$19.1 million</b><br>+ \$2 million<br>+ \$2.3 million |



# Detailed Alternatives Comparison

## Traffic Flow Comparison

### Intersection Operations

In an urban corridor such as Business 51, traffic operations are measured by the amount of delay at signalized intersections. Both the **2-lane** and **4-lane** alternatives proposed will improve traffic operations by providing dedicated turn lanes and proper signal timing at signalized intersections.

### Intersections with Likely Recurring Congestion

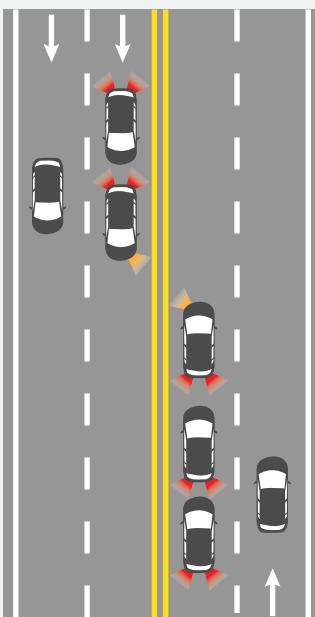
|   |                      |                       |
|---|----------------------|-----------------------|
| Existing Roadway  | 8%<br><i>AM Peak</i> | 17%<br><i>PM Peak</i> |
| <b>2-Lane Alternatives</b><br>Two-way-left-turn lane (TWLTL) or raised median | 0%<br><i>AM Peak</i> | 0%<br><i>PM Peak</i>  |
| <b>4-Lane Alternative</b><br>Raised median                                    | 0%<br><i>AM Peak</i> | 0%<br><i>PM Peak</i>  |

*Note: Intersections with likely recurring congestion experience greater than 35 seconds of delay at unsignalized intersections and 55 seconds of delay at signalized intersections.*

### Travel Lane Operations

The existing 4-lane undivided road does not have dedicated turn lanes for left-turning vehicles. This causes left-turning vehicles to block the inside lane of traffic while they are waiting to turn. A **2-lane with a two-way-left-turn-lane (TWLTL) or a raised median** and **4-lane with a raised median** would provide dedicated turn lanes for left-turning vehicles.

Existing 4-Lane Undivided



2-Lane with a TWLTL



4-Lane with a Raised Median



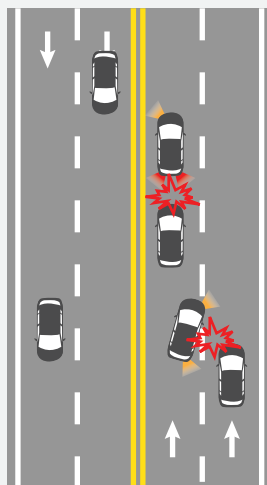
# 51 Detailed Alternatives Comparison

## Vehicular Safety Comparison

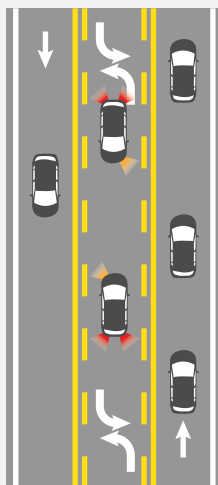
### Crashes

Compared to the existing 4-lane undivided road, a **2-lane with a TWLTL or a raised median** and a **4-lane with a raised median** would reduce rear-end, sideswipe, and left-turn crashes by providing a dedicated lane for left-turning vehicles.

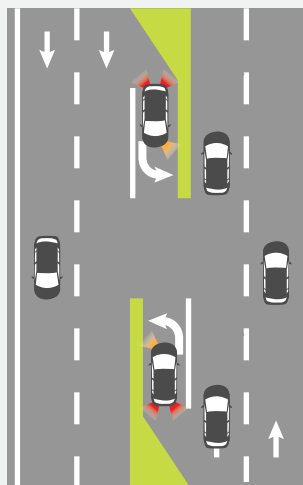
Existing 4-Lane Undivided



2-Lane w/ TWLTL



4-Lane w/ Raised Median



 Raised medians are safer than TWLTLs because they provide a physical separation between opposing traffic.

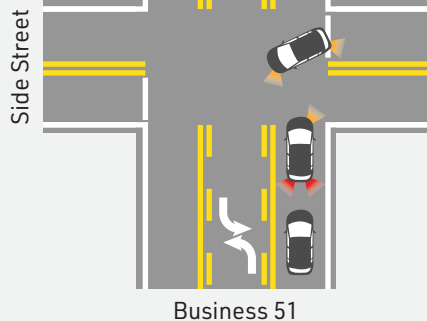
### Intersection Crashes

An additional benefit of **2-lane alternatives** is that they also reduce the potential for right-angle crashes because side street motorists only cross two lanes of traffic instead of four.

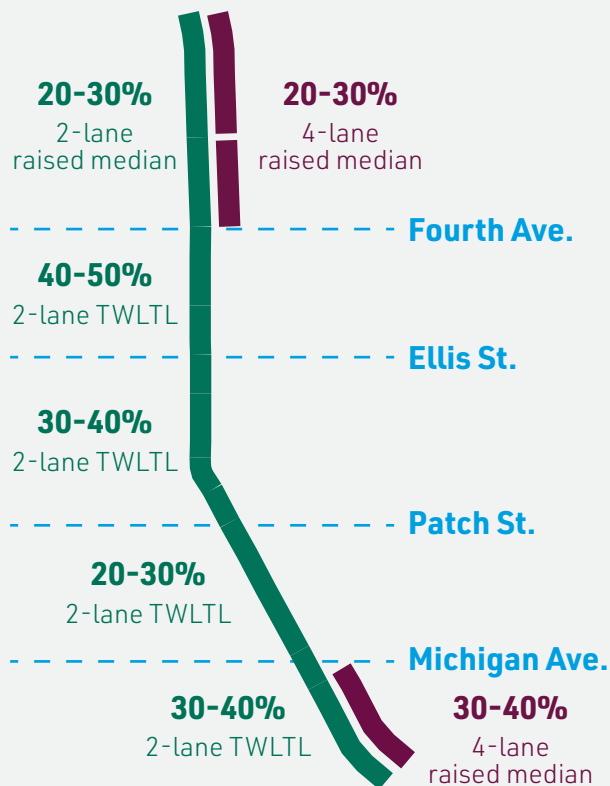
Existing 4-Lane Undivided



2-Lane w/ TWLTL



### Anticipated Crash Reductions



Source: Federal Highway Administration Interactive Highway Safety Design Model

# 51 Detailed Alternatives Comparison

## Pedestrian Safety Comparison

### Traffic Conflicts

A **4-lane** road requires pedestrians to cross four through lanes of traffic when crossing Business 51. A road featuring a **2-lane with a TWLTL or a raised median** only requires pedestrians to cross two through lanes of traffic when crossing Business 51.

Existing 4-Lane Undivided



Location: Near Portage Street

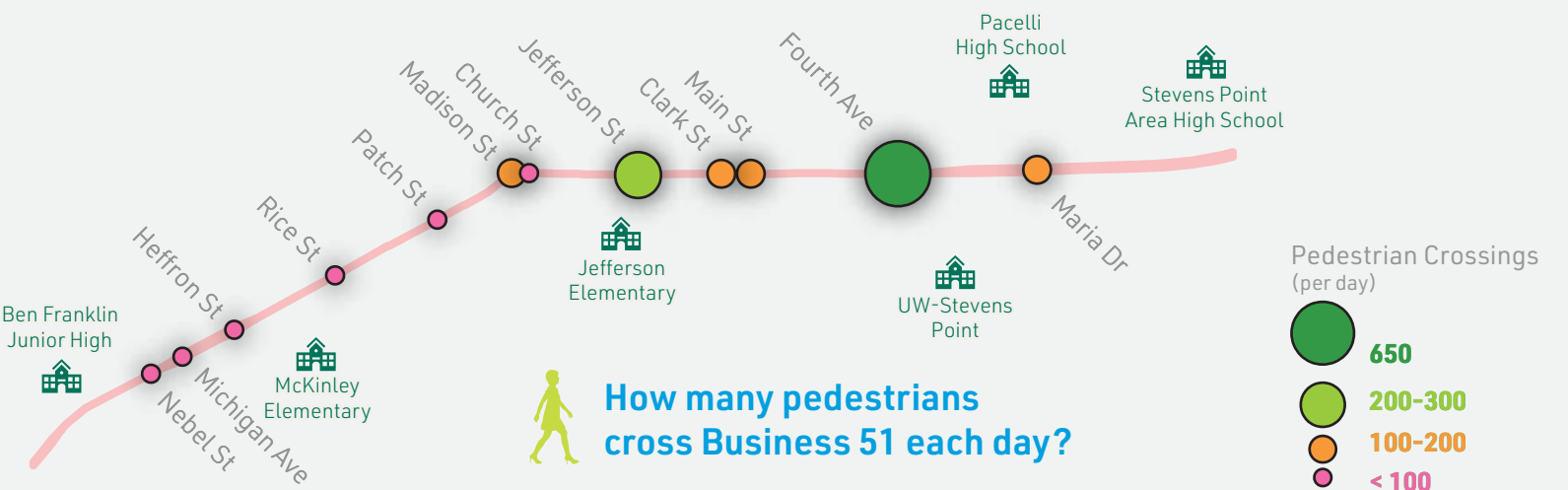
2-Lane w/ TWLTL



Location: Near Portage Street

### Pedestrian Islands

In the Central Segment, between Patch Street and Fourth Avenue, a **2-lane with a TWLTL** allows pedestrian islands to be included within the roadway in some locations. These islands allow pedestrians to only cross one direction of traffic at a time.







# Detailed Alternatives Comparison

## Livability, Aesthetics, and Storm Water Comparison

**Why is livability important?**

Livability refers to the quality of life that a roadway creates for adjacent neighborhoods, businesses, and schools. Unlike I-39, Business 51 is a low speed roadway connecting community hubs such as the University, historic neighborhoods, and shopping centers. Improving transportation choice and the aesthetics of Business 51 helps to improve the livability of the area and attract new residents.

### 2-Lane with TWLTL



### Wide Terraces

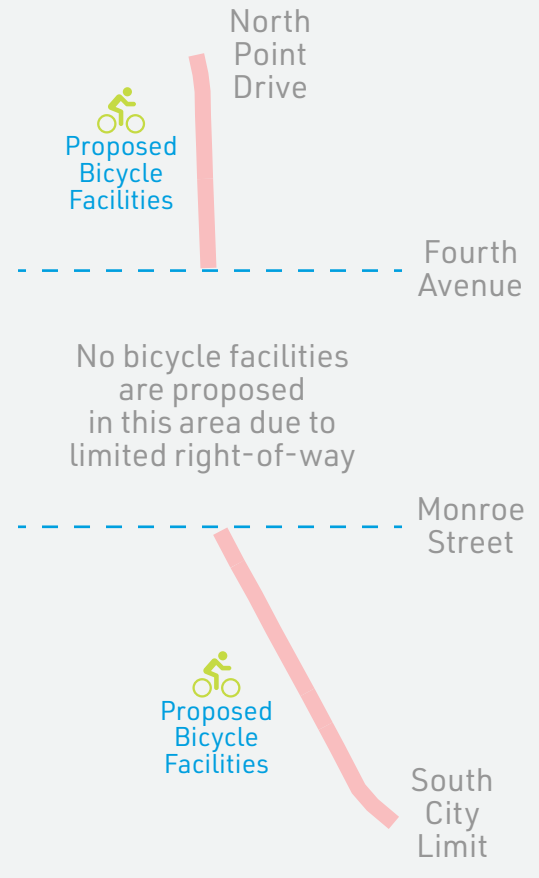
**2-lane** and **4-lane** alternatives would allow for wider terraces than what currently exists. The benefits of wider terraces are:

- > A wide buffer between pedestrians and traffic
- > Additional green space to increase storm water infiltration
- > A place to improve aesthetics using plantings and lighting
- > Room for snow storage and garbage collection

### 4-Lane with Raised Median



### Location of Proposed Bicycle Facilities



### Bicycle Facilities

Depending on the location within the corridor, both alternatives have the option to include bicycle facilities.

## Storm Water Management

**2-lane alternatives** require less pavement than **4-lane alternatives**. Reducing paved surfaces allows for more green space which helps to improve storm water infiltration and decrease chances of flooding.



# Detailed Alternatives Comparison

## Emergency Services and Transit Comparison

A **4-lane with a raised median** would allow emergency vehicles to use the inside or outside lane to bypass traffic during an emergency. Likewise, vehicles could use the inside lane to pass a city bus stopping for passengers.



**4-lane w/  
Raised Median**

**Location:  
South of Michigan Avenue**

A **2-lane with a TWLTL** would allow emergency vehicles to use the center turn lane to bypass traffic during an emergency. Some intersections would have small pedestrian islands within the TWLTL. Vehicles would be expected to pull ahead of these islands to allow emergency vehicles to pass. Vehicles would also be allowed to use the center turn lane to bypass a city bus stopping for passengers.



**2-Lane w/  
TWLTL**

**Location:  
South of Michigan Avenue**

## Emergency Vehicle Preemption

The reconstruction of Business 51 is proposed to include Emergency Vehicle Preemption (EVP) devices at signalized intersections. This technology allows emergency vehicles to control traffic signals to improve their response times and ability to navigate Business 51.

