Analysis of Temporary Roundabout at Broadmoor Drive and Nash Street

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December 28, 2015

Traffic Engineering “Basics”

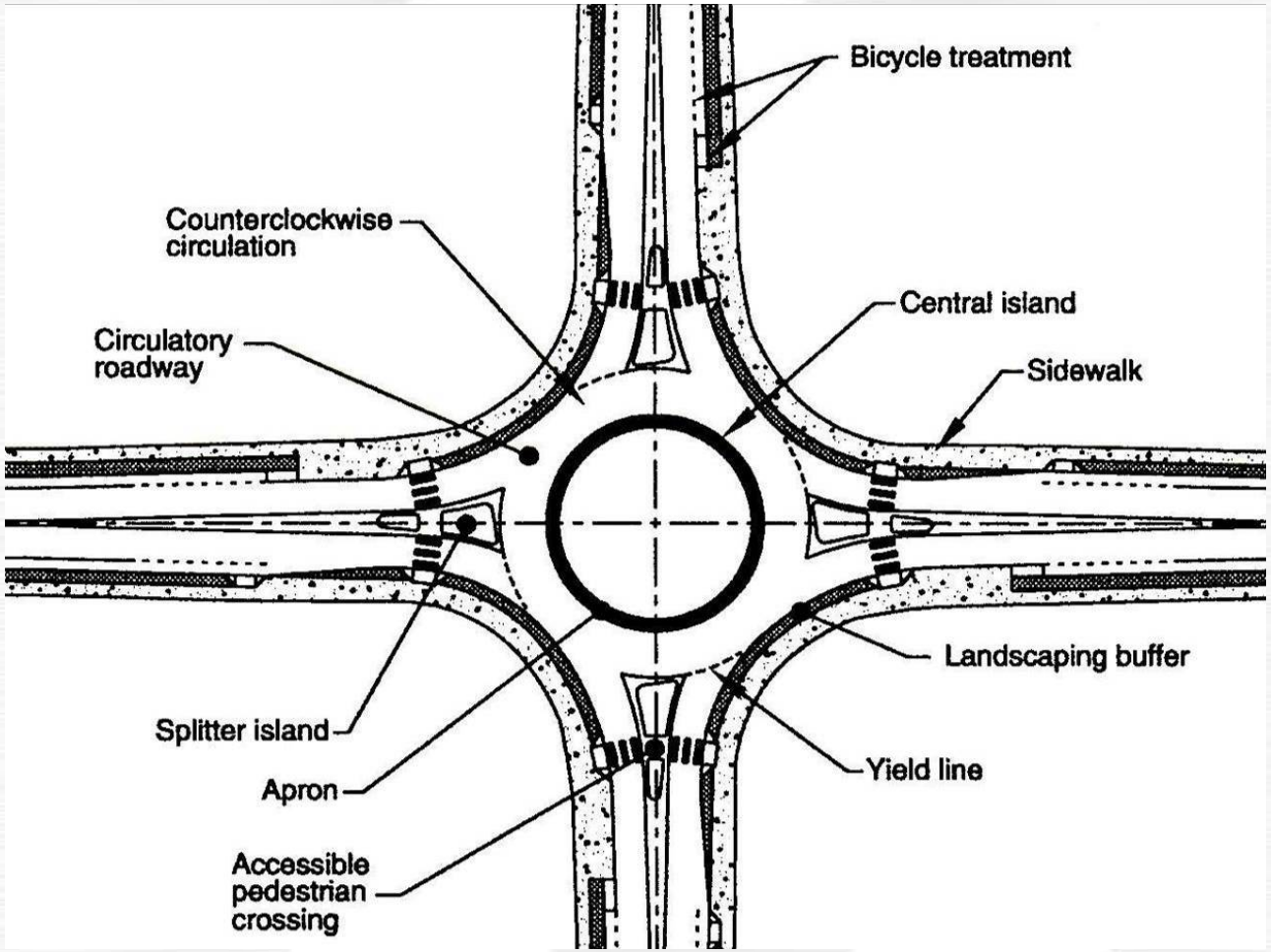
- **Mobility** - Safe and efficient movement of people and goods within a transportation system
- **Traffic** - Includes all roadway users
  - Pedestrians
  - Bicyclists
  - Transit riders
  - Motorists
  - Ridden or herded animals[1]

[1] Texas Transportation Code §541.301

Traffic Engineering “Basics”

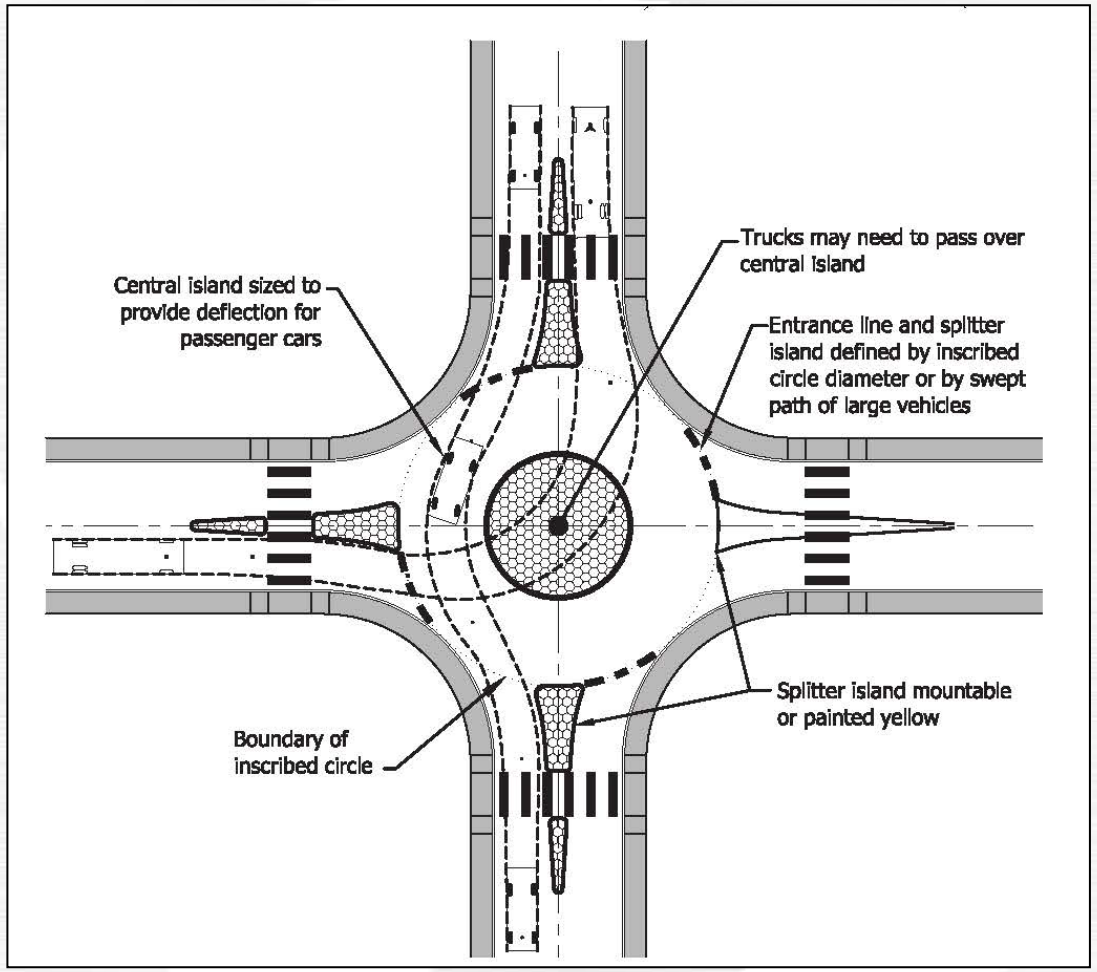
- **Corridor Capacity** — Defined by efficiency of intersections
  - Roadways — Up to 1,900 vehicles/hour/lane
  - Intersections
    - All-Way Stop — Up to 400 vehicles/hour/approach
    - Traffic Signal — Up to 600 vehicles/hour/lane
    - Roundabout — Up to 1,200 vehicles/hour/lane

Modern Roundabouts



From *Roundabouts: An Informational Guide*, Federal Highway Administration, 2010

Mini Roundabouts



From *Mini Roundabouts Technical Summary,* Federal Highway Administration, 2013

Advantages of Modern Roundabouts

- Safer than traditional intersections
- Efficient (high capacity/low delay)
- Serves all roadway users
- Geometric flexibility
- Gateways or focal points

Modern Roundabouts: A Safer Choice

Modern Roundabouts in Service

College Street – Asheville, North Carolina
(Images from www.iihs.org)

~ 105 Ft. ICD

Modern Roundabouts in Service

Jefferson/Webb/Coffey Roundabout – Daingerfield, Texas (Before)
(Image courtesy of Brown & Gay, Inc.)

Modern Roundabouts in Service

Jefferson/Webb/Coffey Roundabout – Daingerfield, Texas (After)
(Image courtesy of Brown & Gay, Inc.)

~130 Ft. ICD

Modern Roundabouts in Service

Roundabout near Main Street Middle School – Montpelier, Vermont
(Image from Google Earth)

~100 Ft. ICD

Modern Roundabouts in Service

Roundabout near Main Street Middle School – Montpelier, Vermont
(Image from the New London Show presentation, NE Roundabouts)

~100 Ft. ICD

Modern Roundabouts in Service

Roundabout at Cotton Elementary School – San Antonio, Texas
(Image from Google Earth)

~90 Ft. ICD

Modern Roundabouts in Service

Roundabout at Cotton Elementary School – San Antonio, Texas
(Photo by Gary Schatz)

~90 Ft. ICD

Modern Roundabouts in Service

10th Street & Rio Grande Street – Austin, Texas
(Image from Google Earth)

~70 Ft. ICD

Modern Roundabouts in Service

10th Street & Rio Grande Street – Austin, Texas
(Photo by Gary Schatz)

~70 Ft. ICD

Modern Roundabouts in Service

Huge Oaks Street & Westwood Drive – Houston, Texas
(Image from Google Earth)

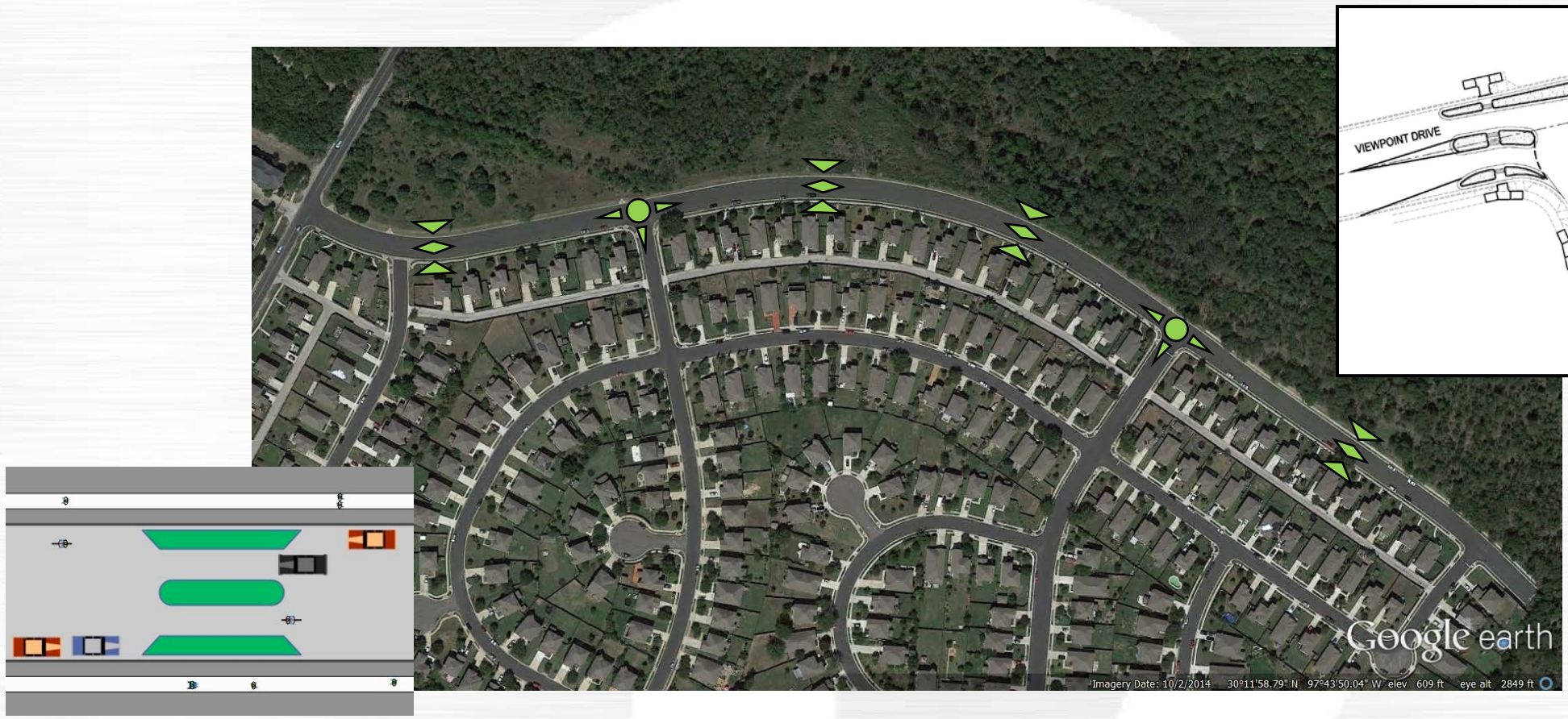
~60 Ft. ICD

Modern Roundabouts in Service

Huge Oaks Street & Westwood Drive – Houston, Texas
(Photo by Gary Schatz)

~60 Ft. ICD

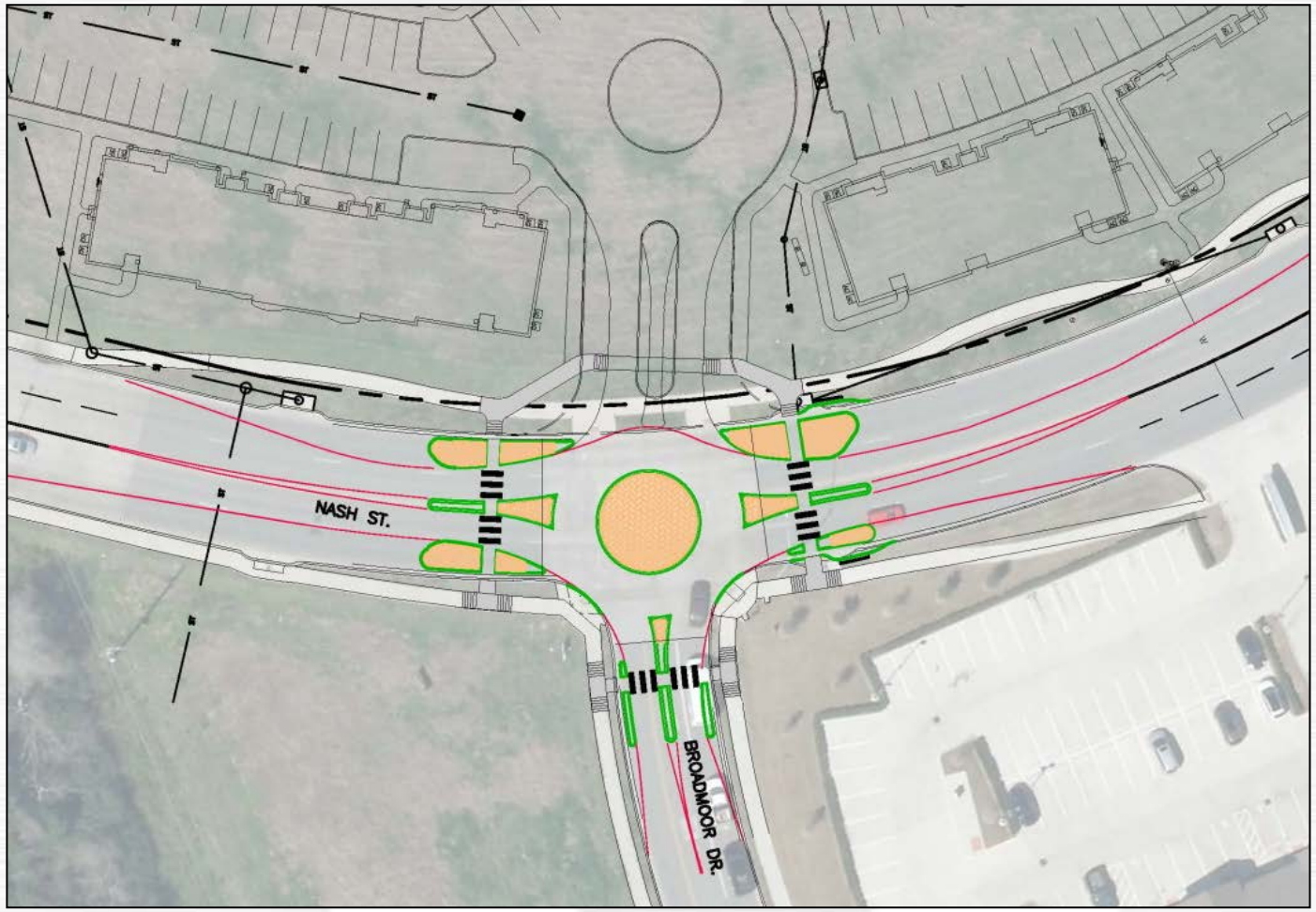
Modern Roundabouts in Service



Viewpoint Drive – Austin, Texas
(Image from Google Earth)

~60 Ft. ICD

“Temporary” Roundabout



“Temporary” Roundabout – Broadmoor Drive & Nash Street
(Image courtesy of Bleyl & Associates, Inc.)

ICD = 70 Ft.

“Temporary” Roundabout

“Temporary” Roundabout – Broadmoor Drive & Nash Street
(Photo by Gary Schatz)

ICD = 70 Ft.

“Temporary” Roundabout

- Driver Education
  - Website – www.bryantx.gov/latm
  - Flyer (1,000 handed out)
  - Signage
  - Experience

CITY OF BRYAN
The Good Life, Texas Style.

Customer Satisfaction Survey

Testing of a Temporary Roundabout:
Broadmoor Drive at Nash Street

ROUNDABOUT

On November 1, 2015, the City of Bryan installed a temporary roundabout at the intersection of Broadmoor Drive and Nash Street. This project is in response to community concerns regarding traffic associated with the apartment complex now under construction on the north side of Nash Street. The roundabout is intended to moderate the flow of traffic while also providing a safer and more efficient intersection for everyone. Your feedback will assist us in developing the final design of the permanent roundabout. Construction is anticipated to be complete by mid-2016.

We would love to hear your opinion regarding the temporary roundabout. Please consider taking our online survey at www.bryantx.gov/roundabout. If you prefer to complete the survey by phone, please call (979)209-5030.

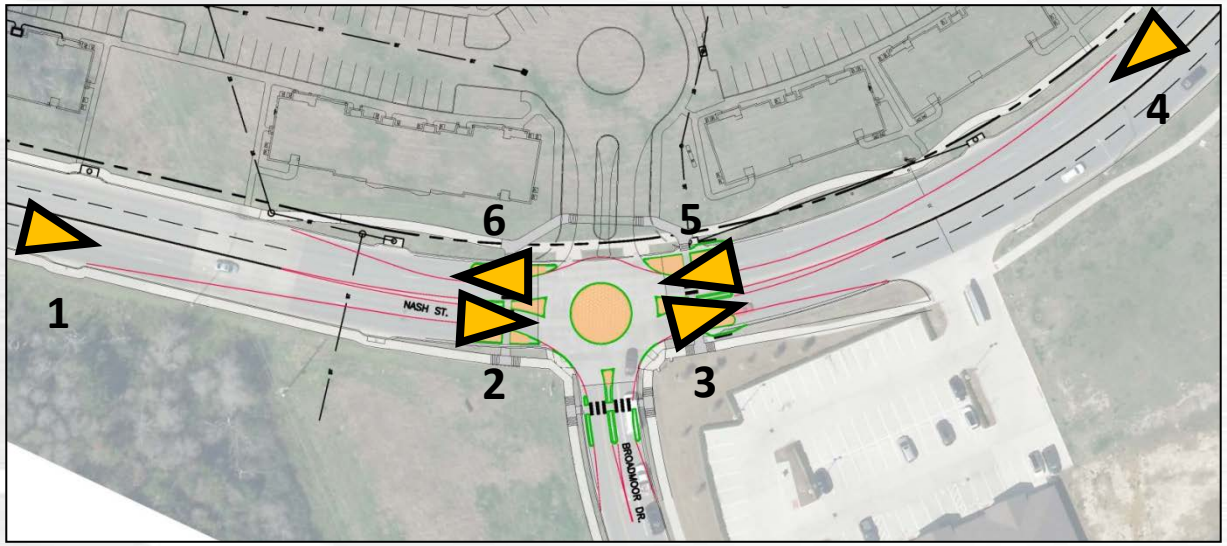
After completion, this will be the sixth roundabout located in the City of Bryan. While this type of intersection may be new to some motorists, roundabouts are in widespread use across Texas and the

“Temporary” Roundabout

- Observations
  - Overall very positive
  - Driver behaviors improving
  - Failure to yield behaviors lessening but still an issue
  - Driver decisiveness improving

Improving Safety by Reducing Travel Speeds

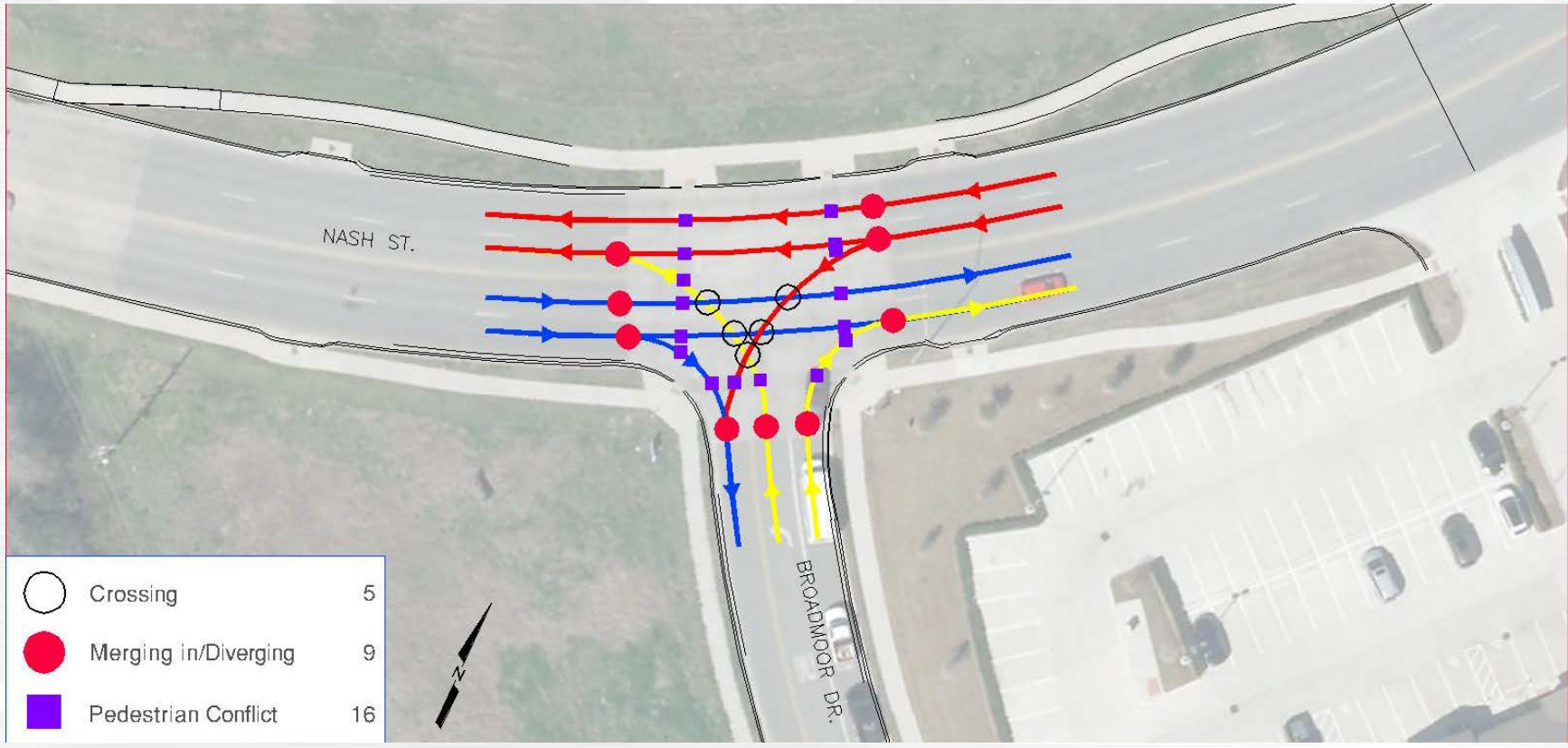
- Observations
  - Count Locations: 1
  - Traffic speeds reasonable overall
  - WB higher due to “flatter” path
  - Only four (4) vehicles at 30-34 MPH
  - No vehicles at 35 MPH or higher



Eastbound 85%ile Speeds, MPH			*Westbound 85%ile Speeds, MPH*	
Location 1	31		***Location 4***	32
Location 2	16		***Location 5***	19
Location 3	19		***Location 6***	19

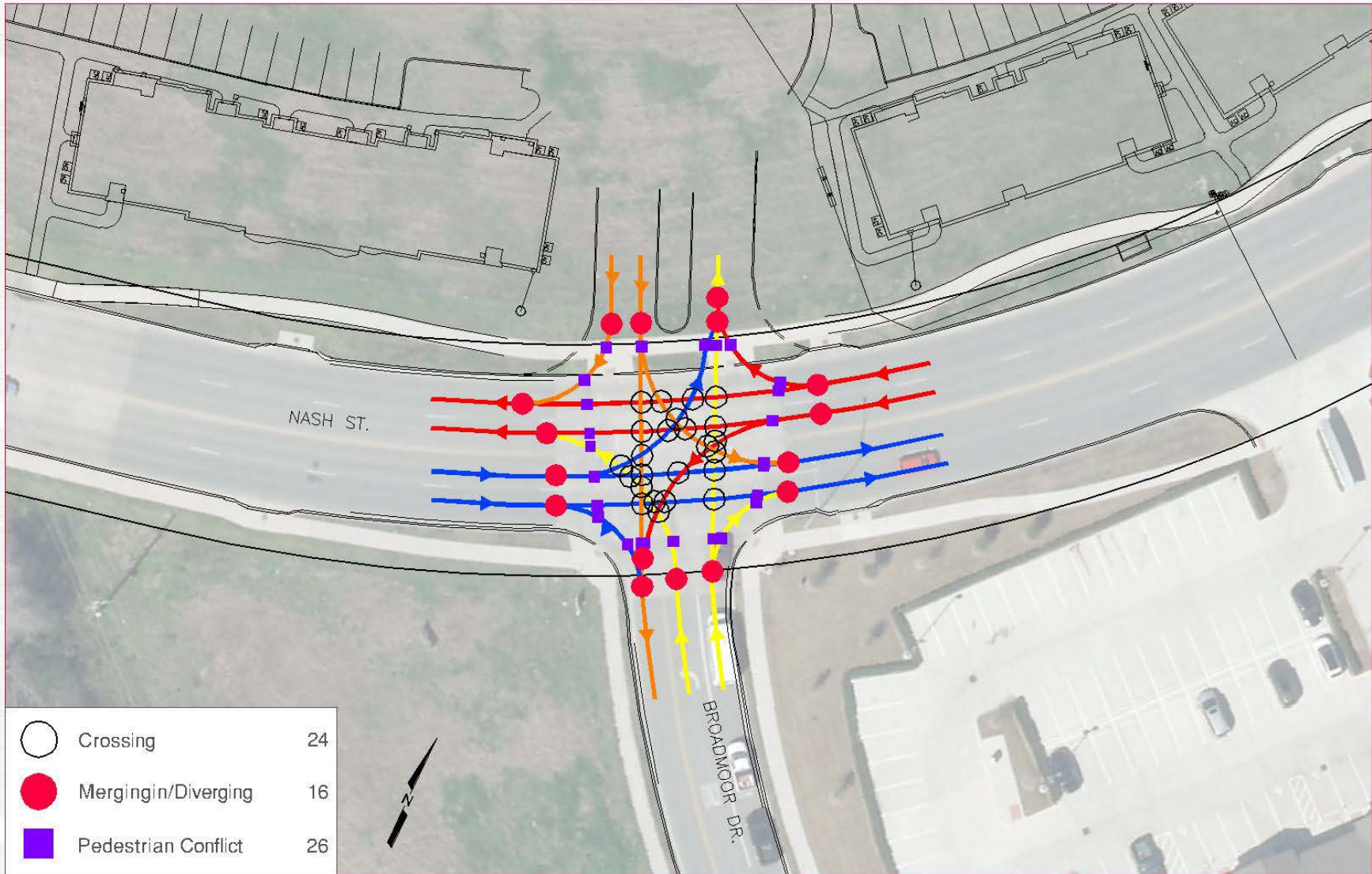
Improving Safety by Reducing Conflict Points

Existing Intersection



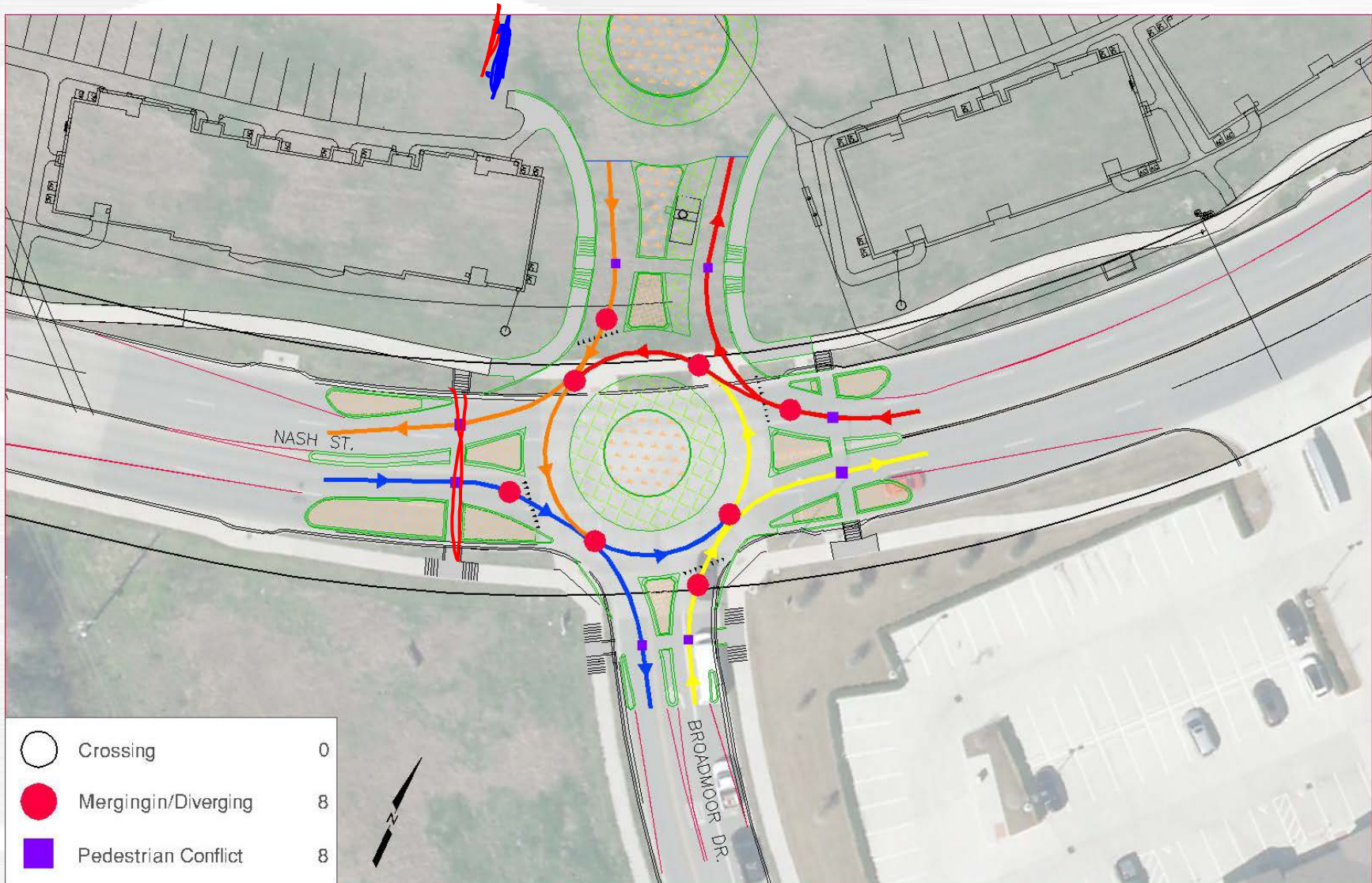
Improving Safety by Reducing Conflict Points

Traditional intersection with new driveway



Improving Safety by Reducing Conflict Points

Modified Roundabout with new driveway

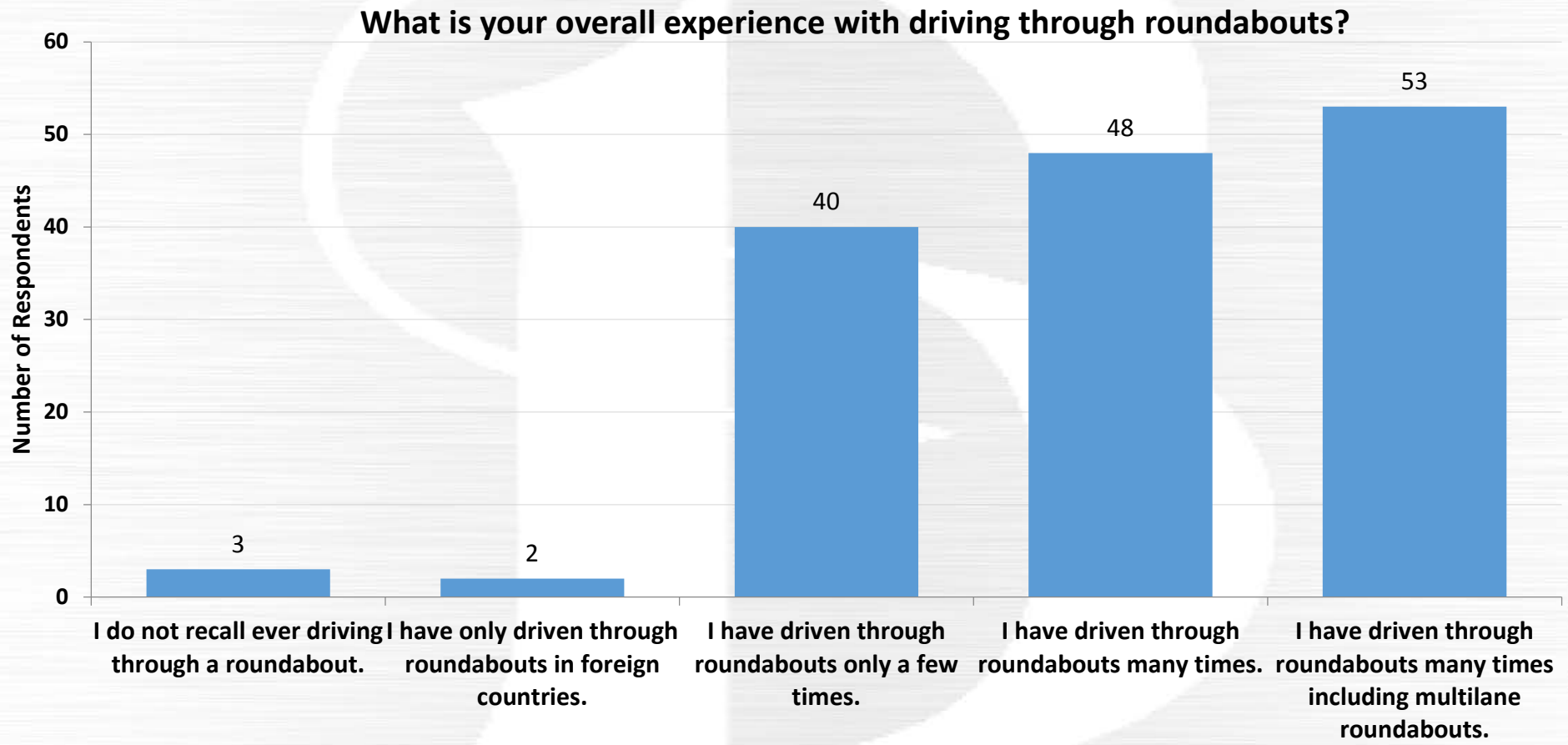


“Temporary” Roundabout

- Customer Satisfaction Surveys
  - 146 Responses – Thank You!
  - Overall mixed but not unexpected
  - Positive and negative comments from all age groups

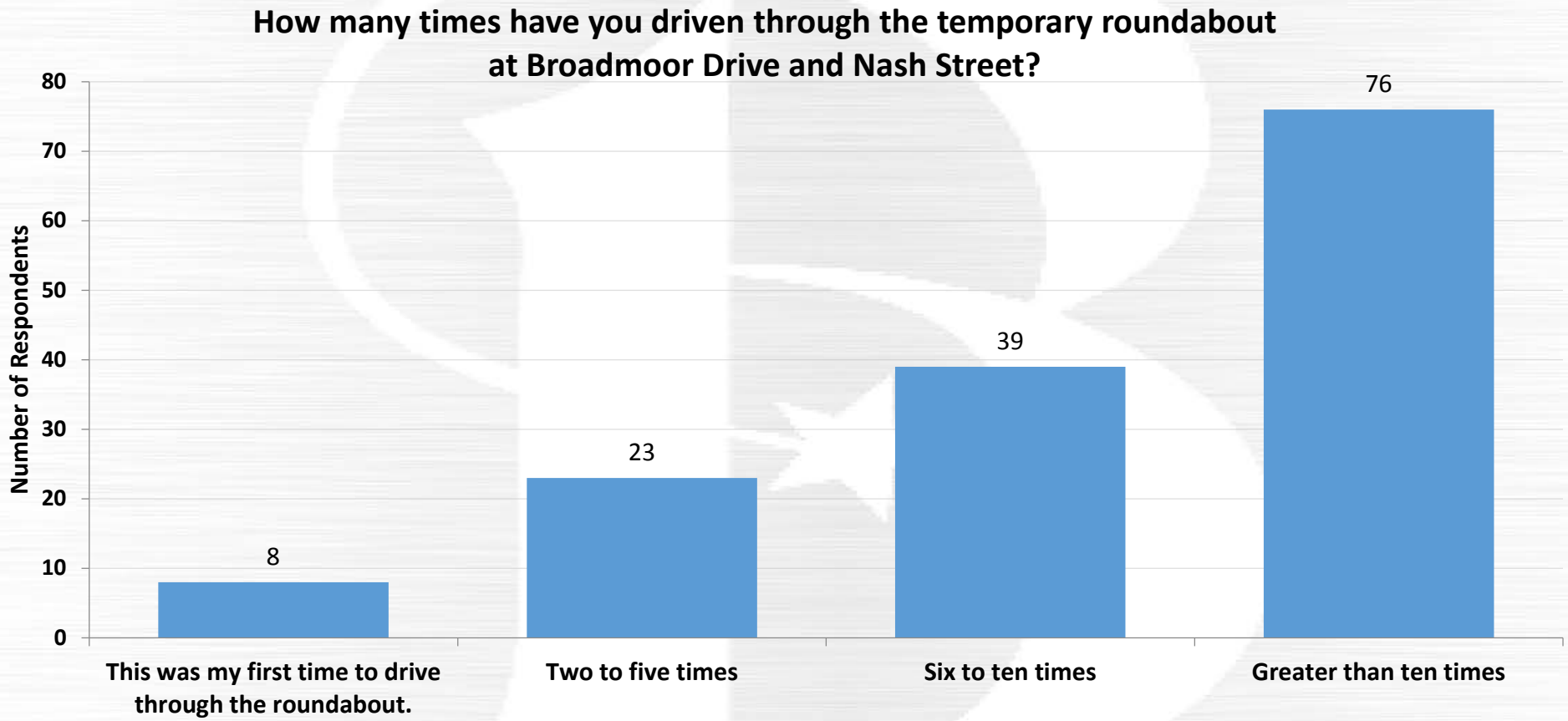
“Temporary” Roundabout

- Customer Satisfaction Surveys



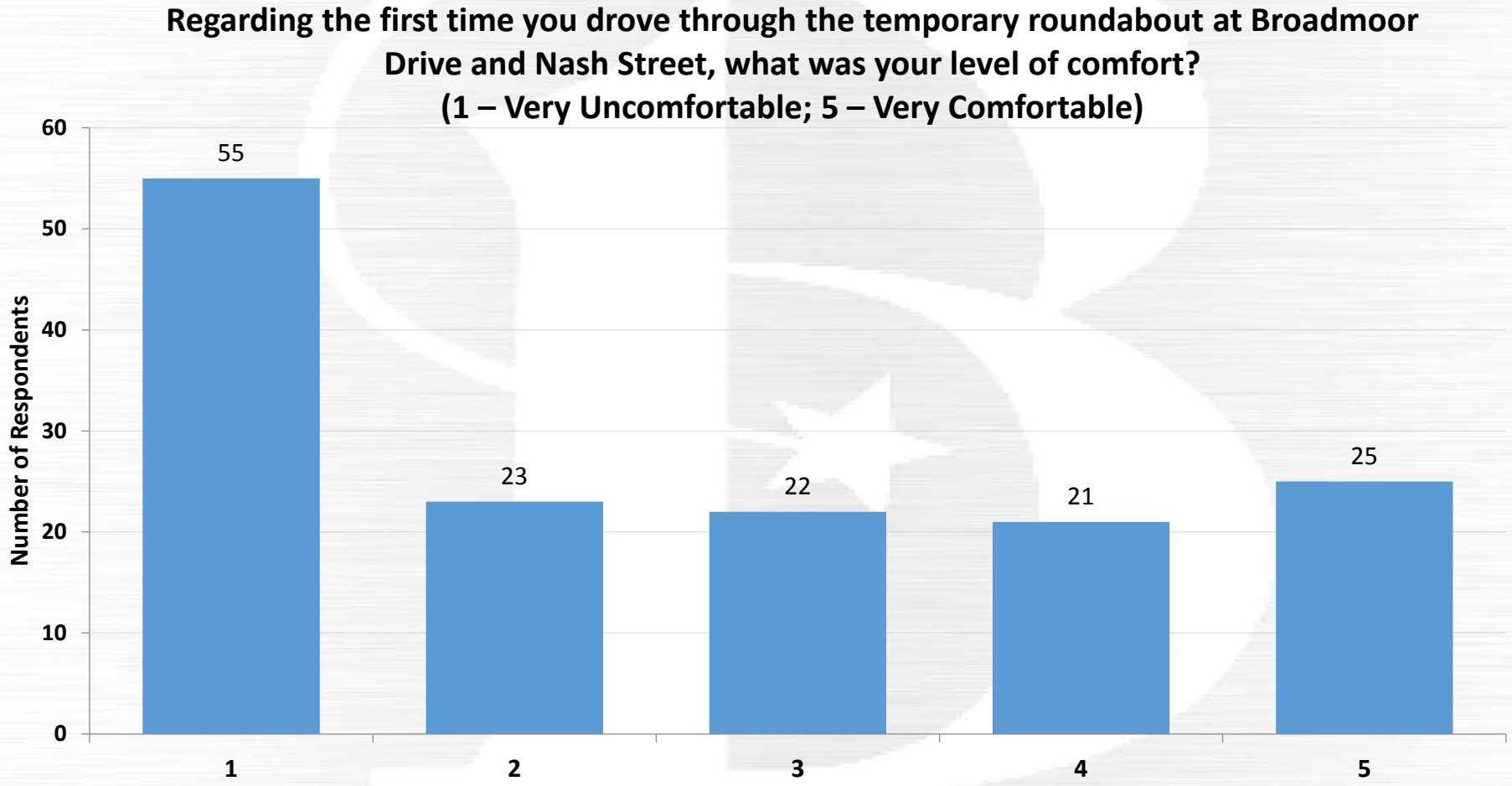
“Temporary” Roundabout

- Customer Satisfaction Surveys



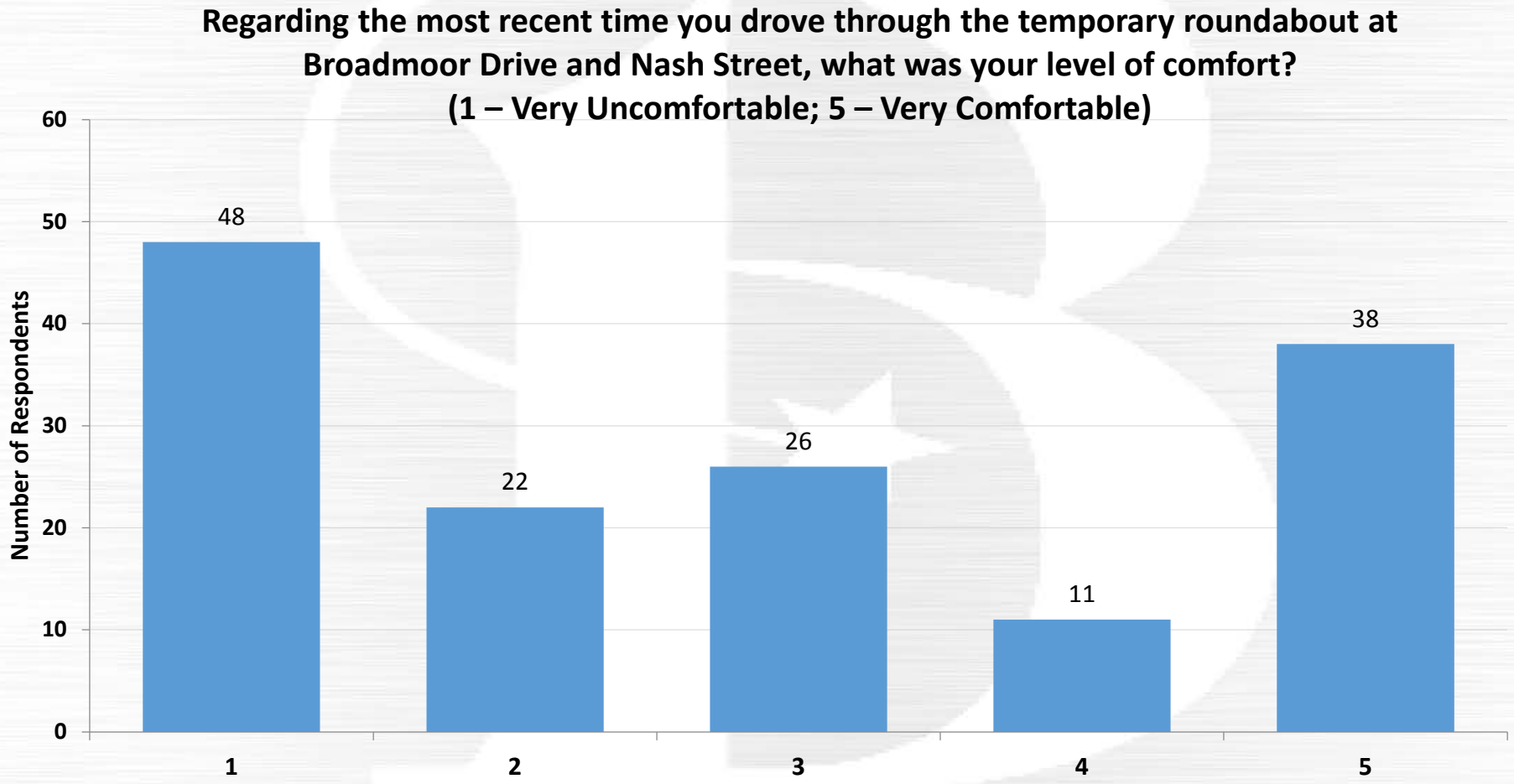
“Temporary” Roundabout

- Customer Satisfaction Surveys



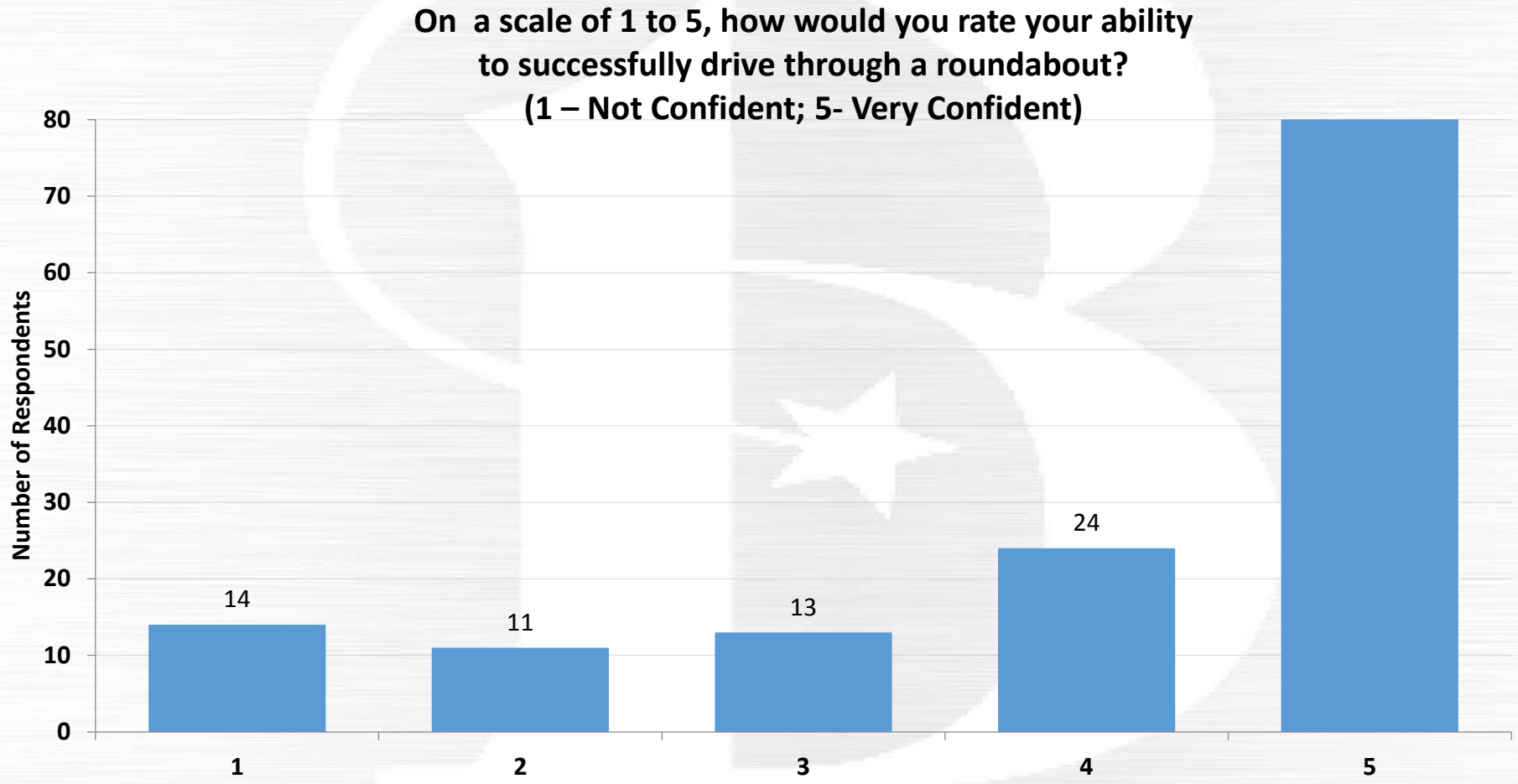
“Temporary” Roundabout

- Customer Satisfaction Surveys



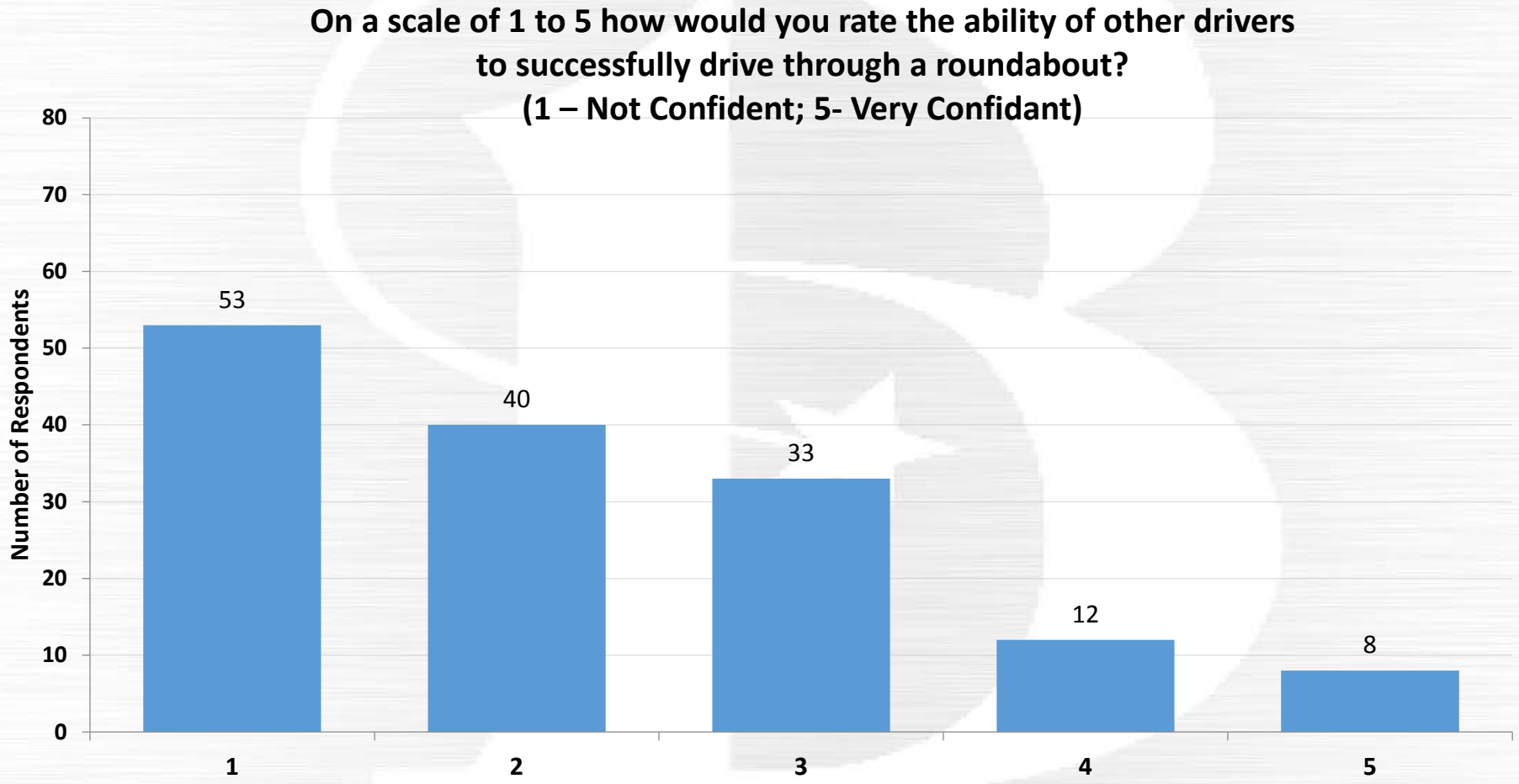
“Temporary” Roundabout

- Customer Satisfaction Surveys



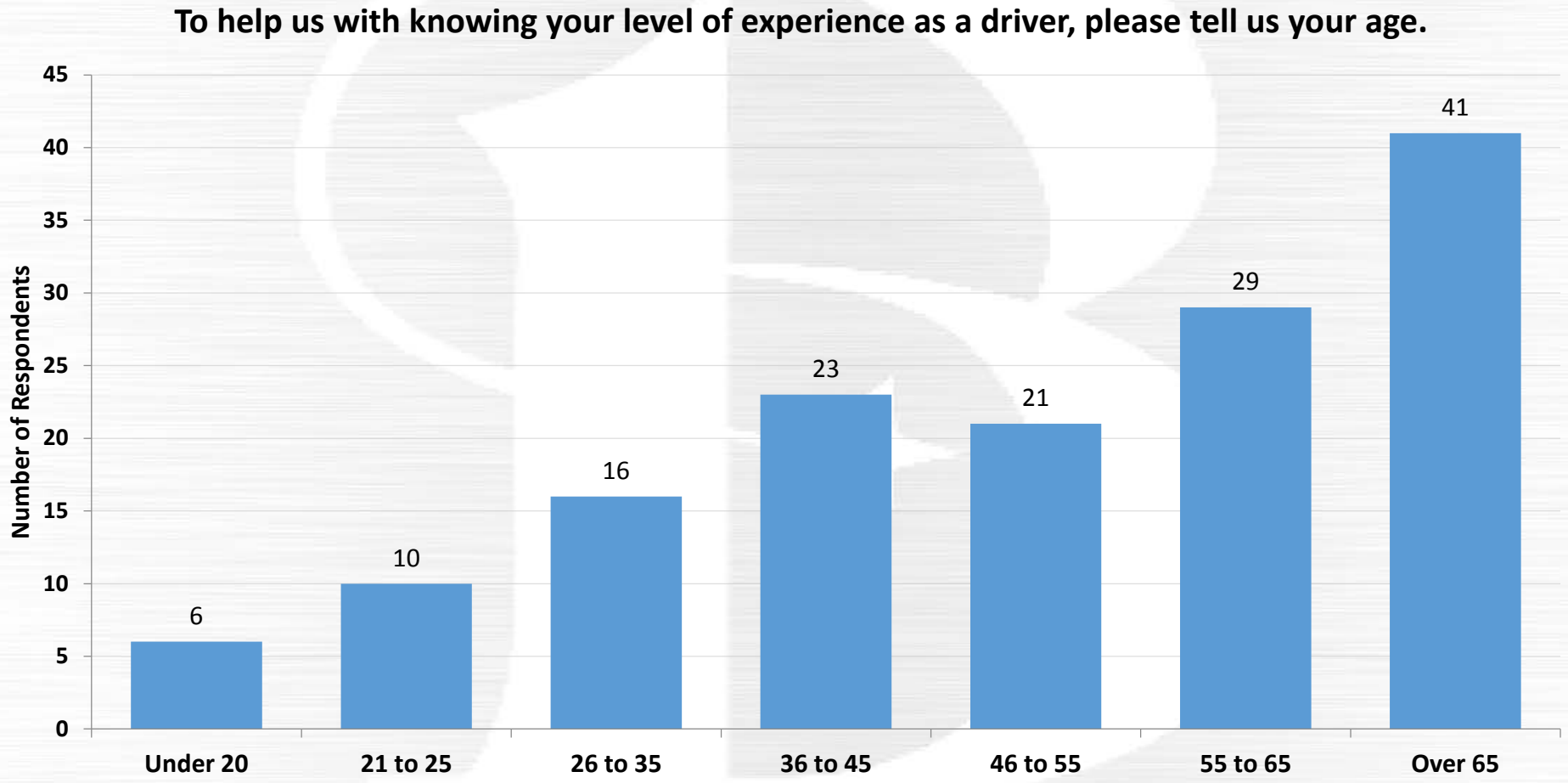
“Temporary” Roundabout

- Customer Satisfaction Surveys



“Temporary” Roundabout

- Customer Satisfaction Surveys



“Temporary” Roundabout

- Customer Satisfaction Surveys – What we heard from comments
  - Roundabout too small – Permanent roundabout larger (ICD = 85 Ft.)
  - Need more lanes – Not justified by volumes nor recommended
  - Seems tight – Permanent roundabout has same lane widths to keep speeds down
  - Drivers not yielding or driving too fast – Larger ICD results in greater horizontal deflection for WB traffic and thus slower speeds; deflection for EB traffic is about the same
  - Install all-way stop control – Not recommended due to significant delays and queues that will result along Nash Street; roundabout is safer and more efficient than all-way stop control
  - Install traffic signal – Not justified as this is a relatively minor intersection; roundabout is safer and more efficient than a traffic signal

“Temporary” Roundabout

- Customer Satisfaction Surveys – What we heard from comments
  - Opposed to roundabout – Acknowledged. Experience shows roundabouts generally face 2:1 opposition before implementation and then enjoy 3:1 support afterwards. The overall theme of the survey responses is consistent with what could be expected from a temporary installation.
  - Confusing – Agreed as temporary devices were used. The permanent design will pay close attention to aesthetics.
  - Driver competence – Survey indicates drivers are experienced and confident in their skills but do not believe other drivers are; however, all drivers are “the other driver” to other drivers.

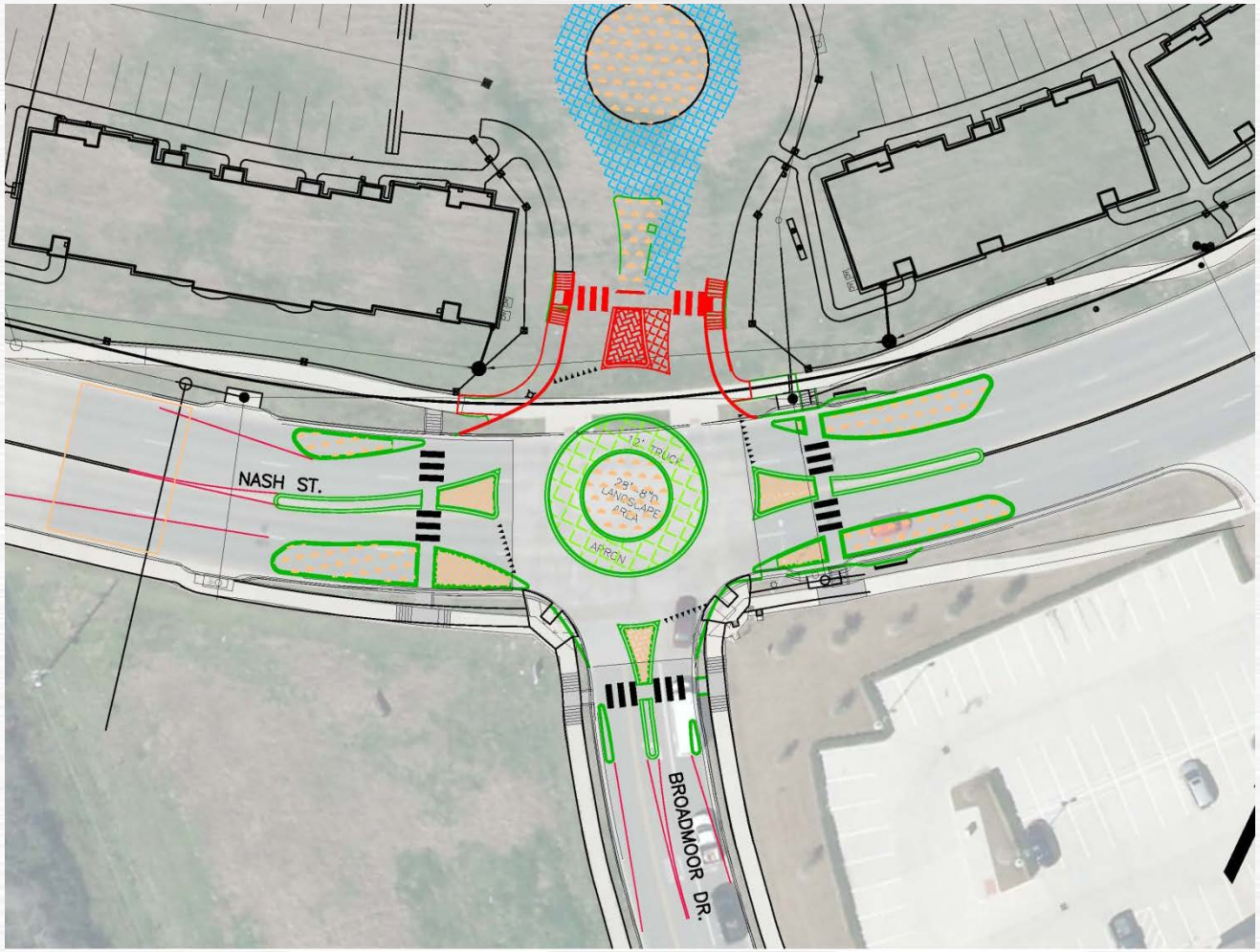
Findings

- Roundabout believed to be technically feasible
- Traveling public has stated and demonstrated adequate competency
- Roundabout is safer and more efficient option

Recommendations

- Construct single lane modern roundabout Summer 2016
  - Requires full closure of intersection for 30 days
  - Adding landscaping and hardscaping opportunities
  - Designing for landscaped central island

Recommendations



Proposed Permanent Roundabout – Broadmoor Drive & Nash Street
(Image courtesy of Bleyl & Associates)

ICD = 86 Ft.

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