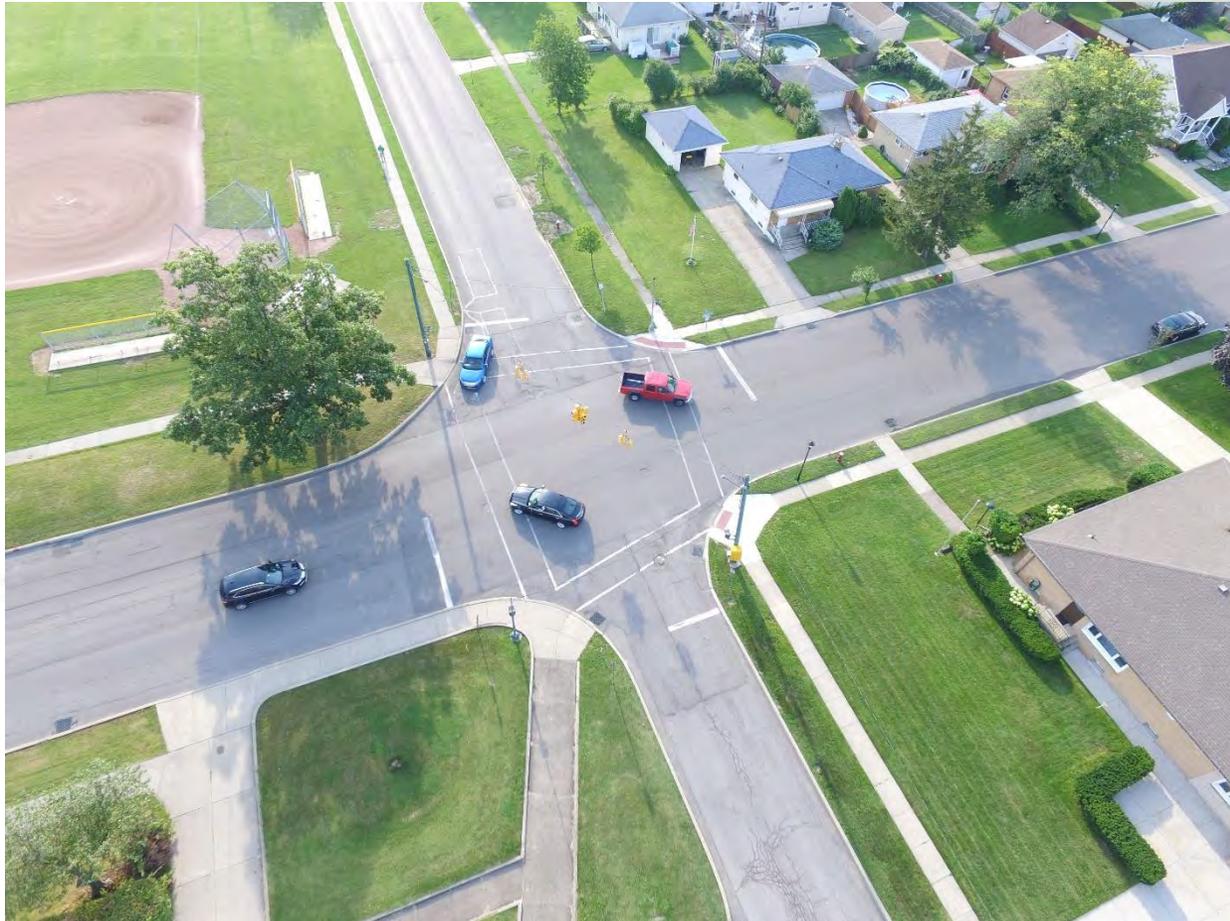


Parker Boulevard Mini-Roundabout



**2017 ITE NY Upstate Section Annual Meeting.
September 21 & 22, 2017, Rochester, NY**

James Jones, P.E.
Town Engineer
Town of Tonawanda

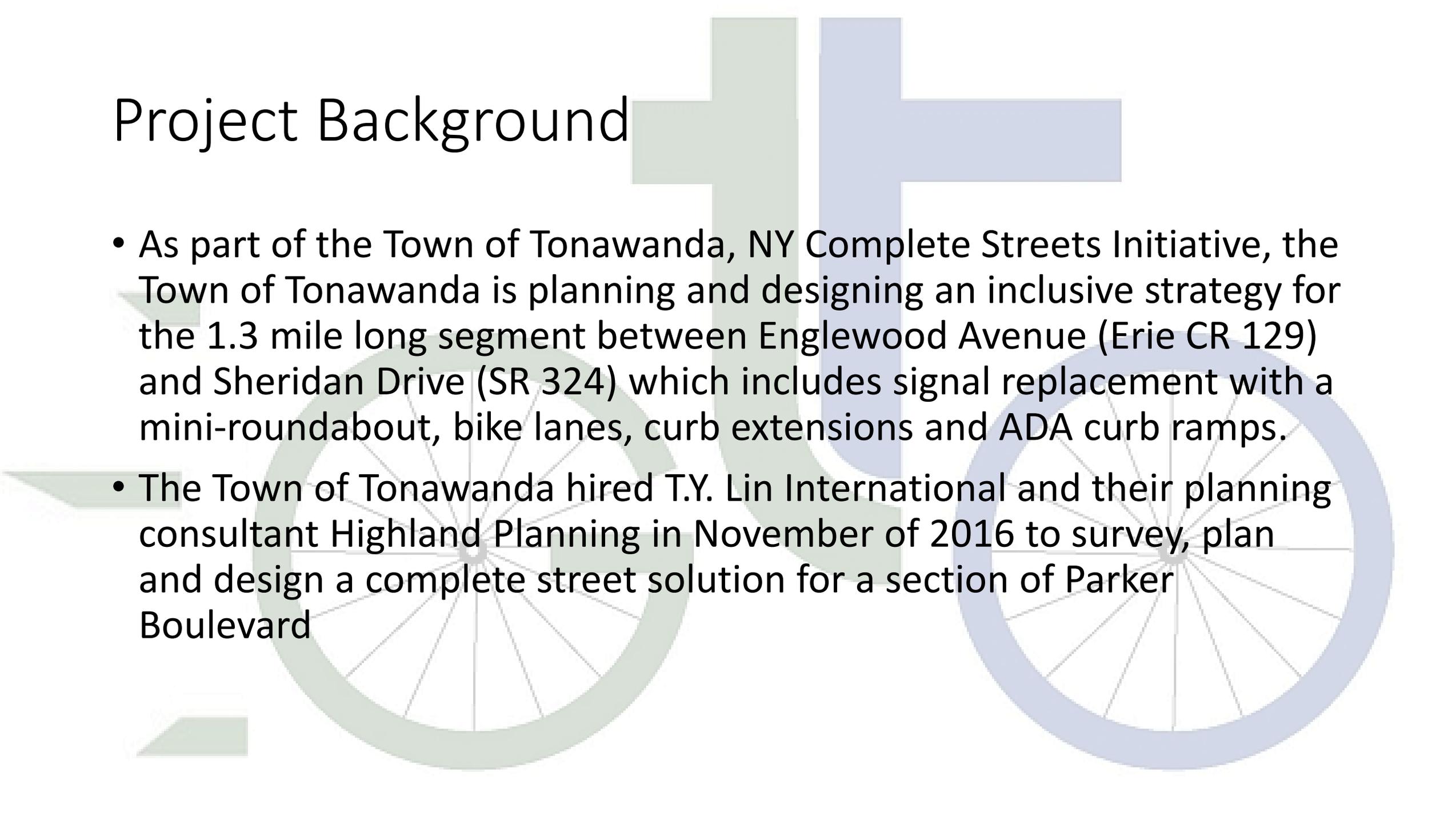
Christopher M. Sargeant, PE
Project Engineer
T.Y. Lin International

Project Objectives

- COMPLETE STREETS
- The Town of Tonawanda plans to adopt their Complete Streets policy in the fall of 2017. They are going ahead on their 1st project on Parker Boulevard to demonstrate the value of context sensitive solutions which provide equitable benefit to all legal users of the street space.
- Walkability
- Bikeability
- Traffic Calming
- ADA Compliance
- Placemaking

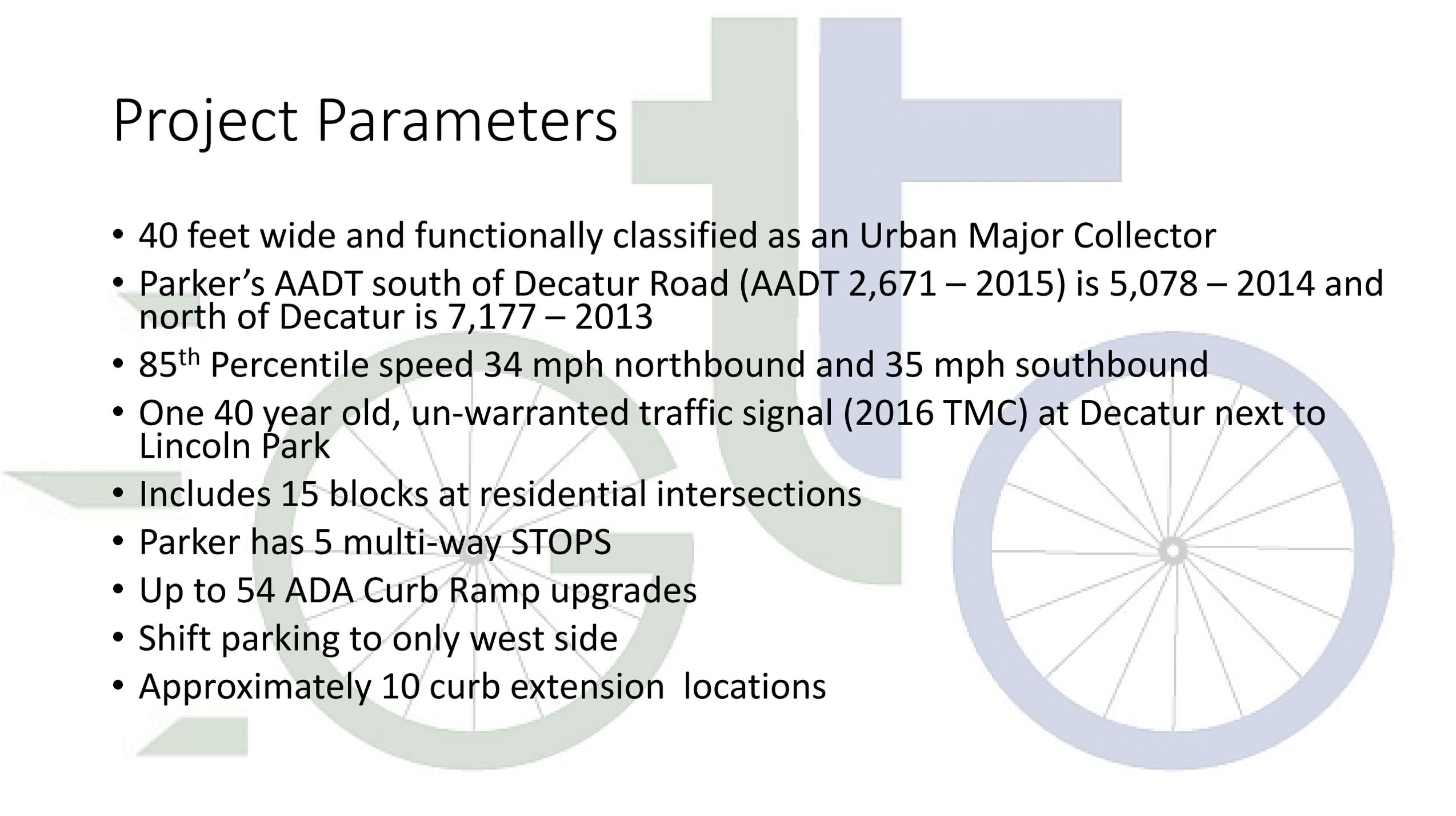


Project Background



- As part of the Town of Tonawanda, NY Complete Streets Initiative, the Town of Tonawanda is planning and designing an inclusive strategy for the 1.3 mile long segment between Englewood Avenue (Erie CR 129) and Sheridan Drive (SR 324) which includes signal replacement with a mini-roundabout, bike lanes, curb extensions and ADA curb ramps.
- The Town of Tonawanda hired T.Y. Lin International and their planning consultant Highland Planning in November of 2016 to survey, plan and design a complete street solution for a section of Parker Boulevard

Project Parameters



- 40 feet wide and functionally classified as an Urban Major Collector
- Parker's AADT south of Decatur Road (AADT 2,671 – 2015) is 5,078 – 2014 and north of Decatur is 7,177 – 2013
- 85th Percentile speed 34 mph northbound and 35 mph southbound
- One 40 year old, un-warranted traffic signal (2016 TMC) at Decatur next to Lincoln Park
- Includes 15 blocks at residential intersections
- Parker has 5 multi-way STOPS
- Up to 54 ADA Curb Ramp upgrades
- Shift parking to only west side
- Approximately 10 curb extension locations

Project Parameters Cont.

- Convert two-way STOP at Harrison to 2nd mini-roundabout
- Convert two 20 foot travel lanes
- Modify Lincoln Park Loop Trail Crossing to raised crosswalk
- This crossing will have Rectangular Rapid Flashing Beacons (RRFB) as part of ongoing Lincoln Park Green Initiative project
- Add RRFB to north leg raised crosswalk of Parker-Decatur mini-roundabout
- Transition Parker bicycle lanes off-street through mini-roundabout
- Relocate one residential driveway from Parker to Decatur



TOWN OF TONAWANDA STREETSCAPE



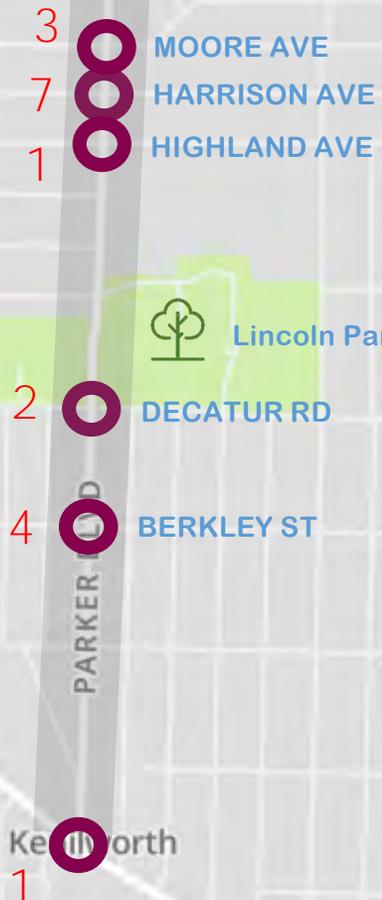
Parker Boulevard Accident Summary

■ Total Incidents Reported:	40
■ Detail Sufficient to Determine Cause:	18
■ Intersection-Related:	14 (78%)

Contributing Factors

■ Failure to Yield or Disregarding Traffic Control:	61%
■ Driver Inattention:	33%
■ Alcohol or other Impairment:	11%
■ Winter Weather:	6%

- 73% occurred during daylight.
- 71% occurred on dry pavement.

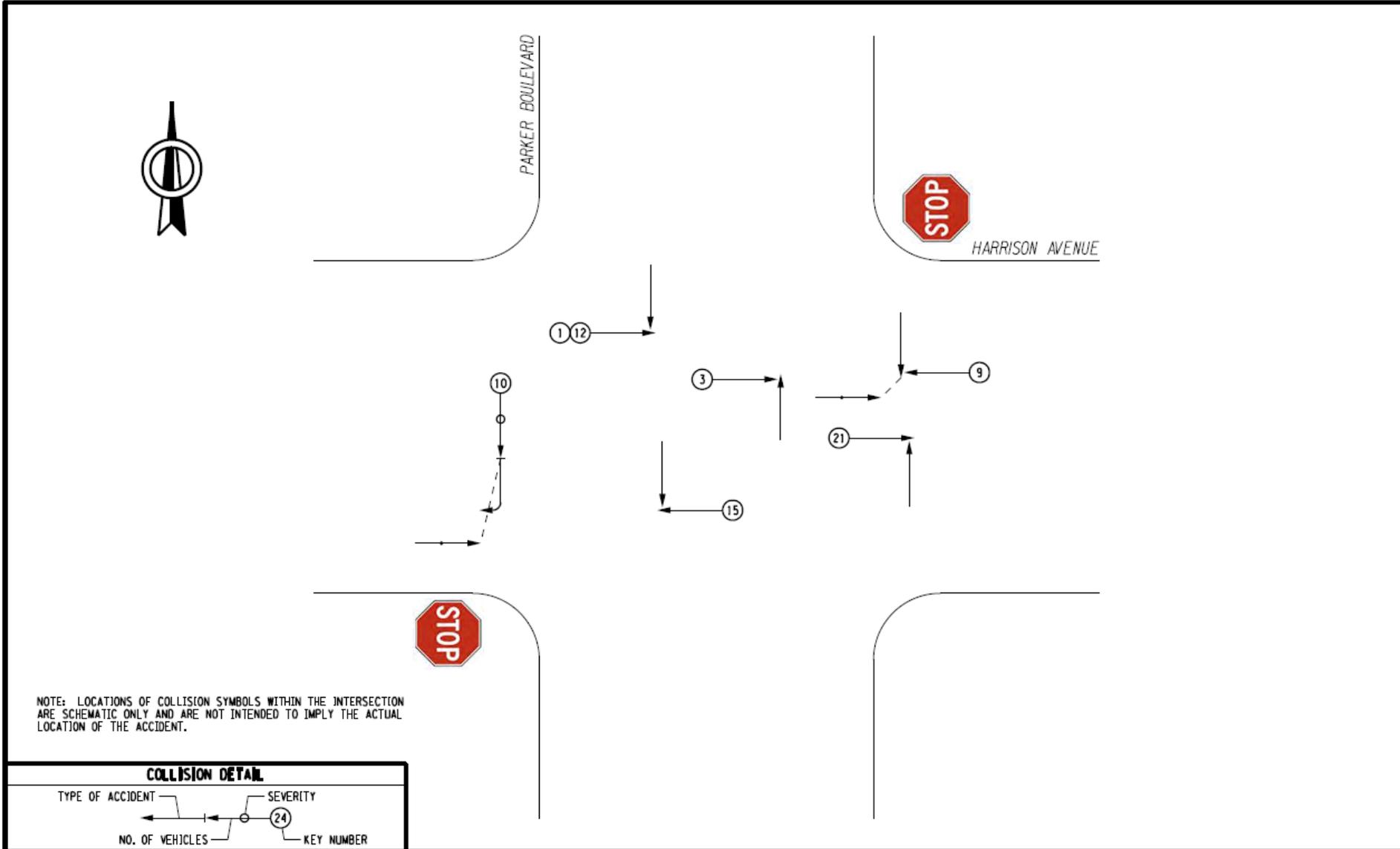


Accident Types

■ Right-Angle:	55%
■ Rear-End:	15%
■ Left-Turn:	10%

- 6 of the 7 collisions at Harrison Ave were right-angle.

40 reported accidents between 2014-2016, approx. 80% confirmed intersection-related



NOTE: LOCATIONS OF COLLISION SYMBOLS WITHIN THE INTERSECTION ARE SCHEMATIC ONLY AND ARE NOT INTENDED TO IMPLY THE ACTUAL LOCATION OF THE ACCIDENT.

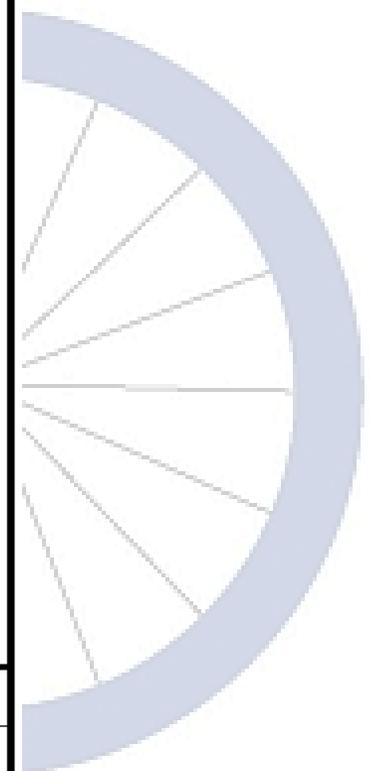
COLLISION DETAIL	
TYPE OF ACCIDENT	SEVERITY
NO. OF VEHICLES	KEY NUMBER

SYMBOLS	
← MOVING VEHICLE	← P PEDESTRIAN
←→ BACKING VEHICLE	← B BICYCLE
←→ STOPPED VEHICLE	← M MOTORCYCLE
▭ PARKED VEHICLE	○ PERSONAL INJURY
□ FIXED OBJECT	● FATAL
← A ANIMAL	⊗ NON-REPORTABLE

MANNER OF COLLISION	
←→ REAR-END	→→ HEAD-ON
←→ SIDE-SWIPE	↘ LEFT-TURN
←→ OUT OF CONTROL	↗ RIGHT-ANGLE
←→ SKIDDING	↻ U-TURN
←→ OVERTURNED	
←→ OVERTAKING	

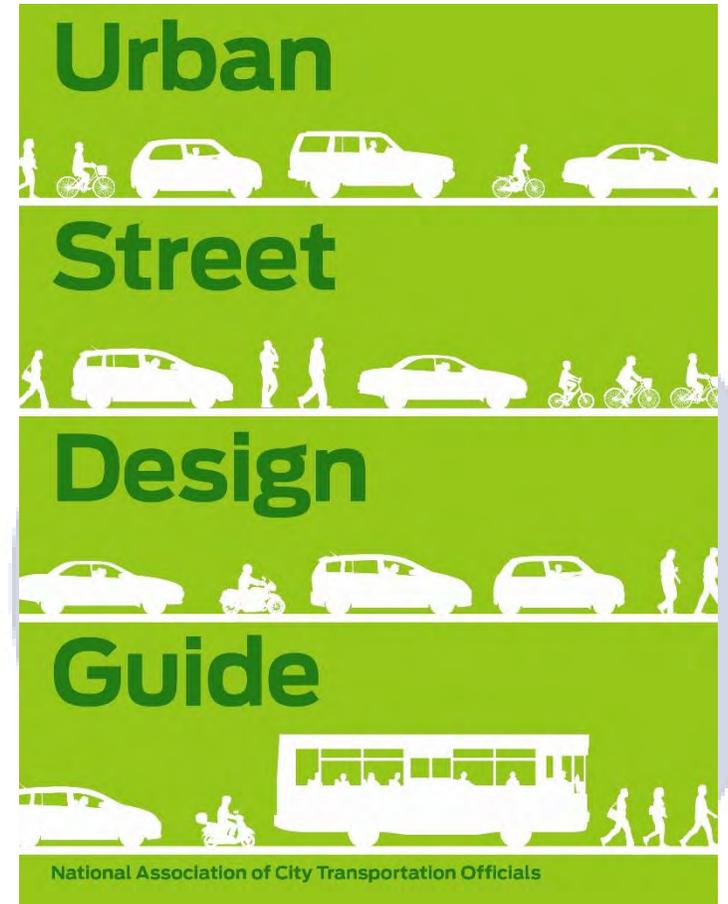
INTERSECTION			
PARKER BOULEVARD & HARRISON AVENUE			
MUNICIPALITY: TOWN OF TONAWANDA			
COUNTY: ERIE	PERIOD: 3 YRS.	FROM: 01/01/14	TO: 12/31/16

COLLISION DIAGRAM		
DWG. NO. C-5	SCALE: N.T.S.	DATE: 06/27/17
TYLIN INTERNATIONAL		



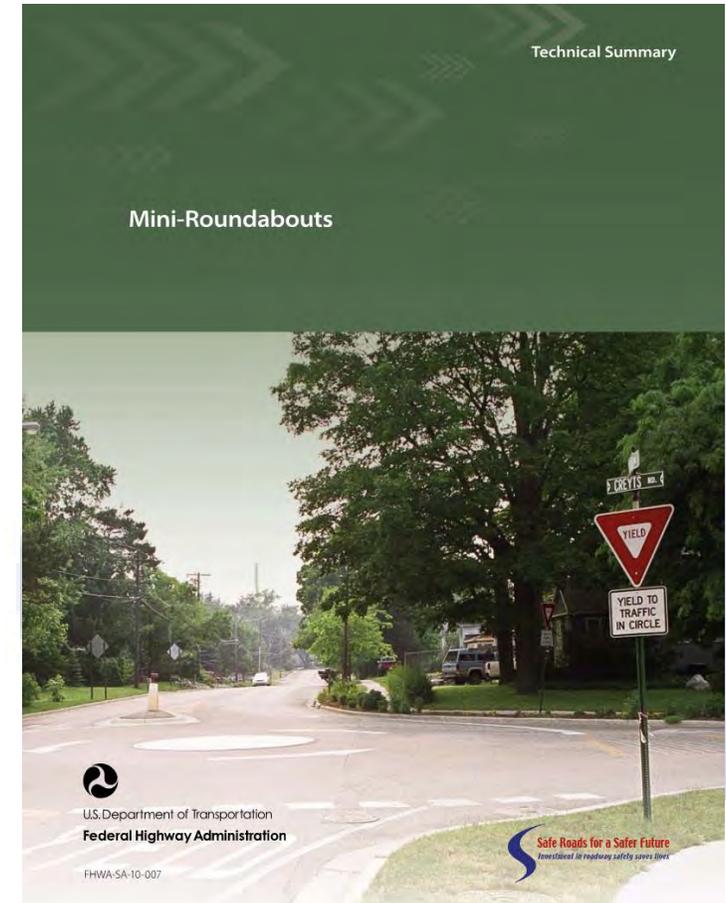
National Association of City Transportation Officials

- Urban Street Design Guide
- Mini roundabouts and neighborhood traffic circles lower speeds at minor intersection crossings and are an ideal treatment for uncontrolled intersections. Mini roundabouts may be installed using simple markings or raised islands, but are best applied in conjunction with plantings that beautify the street and the surrounding neighborhood. Careful attention should be paid to the available lane width and turning radius used with traffic circles.



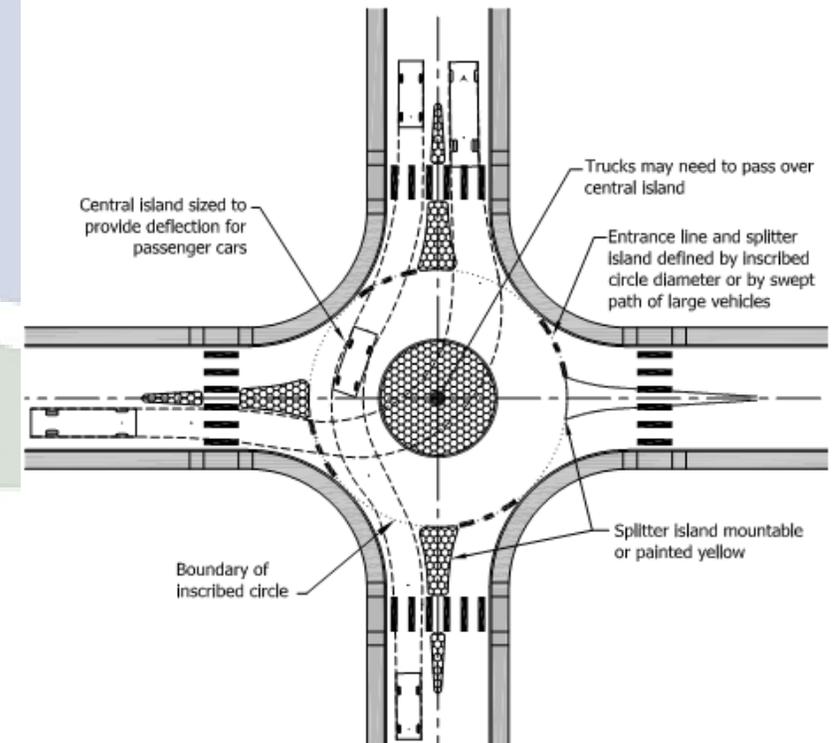
FHWA Mini-Roundabout

- Technical Summary FHWA-SA-10-0073
- A mini-roundabout is a type of roundabout
- Differences vs. conventional roundabouts:
 - Smaller diameter – typically less than 90 feet
 - Central and splitter islands are typically flush or mountable
 - Best suited for low speed areas, replacement of 4-way stops, and where constraints would make a conventional roundabout cost-prohibitive
- Common in the United Kingdom (U.K.) and France
- Emerging in Germany and the United States (particularly Maryland and Michigan) as well as other countries



Mini-Roundabout Design Considerations

- Approach channelization is especially important since the center island not as prominent
- Design vehicle is usually a passenger car (P)
- Design vehicle is ideally a bus (B), but this may result in less optimal geometry
- Central island can be flush, but ideally raised with a maximum height of 5 inches and a grade of 5% to 6%
- Splitter islands can be flush or raised. Flush islands may allow more optimal geometry with the trade-off being compromised pedestrian refuge (pedestrians may have to cross the entire leg in one movement)
- Pavement markings and signing are simplified
 - Can't place signs in the central island
- Lower operating speeds: 15 mph typical



Shakopee, MN Example

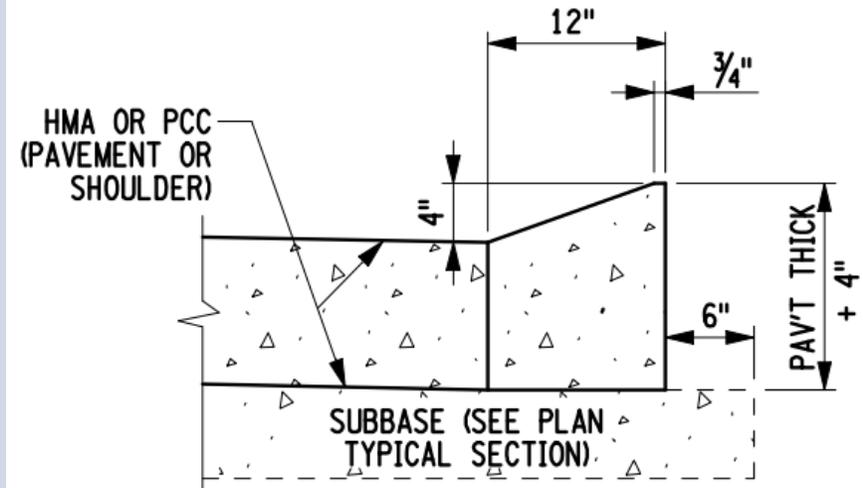


City of Elmira Example



Mini-Roundabout: Parker & Decatur

- Inscribed Circle Diameter = 75 feet
- Circulatory Roadway Width = 15 feet
- Center Island Diameter = 45 feet
 - NYSDOT Type T100 (traversable) curb: 4" rise
- Throat widths vary
 - Approach = 12 feet
 - Departure = 10 to 12 feet
- Mountable Splitter Islands
 - NYSDOT Type M100 curb: 4" rise
 - Crosswalk Setback = 20 feet
- Design Speed = 15-20 mph



TYPE T100
(TRAVERSABLE CURB)

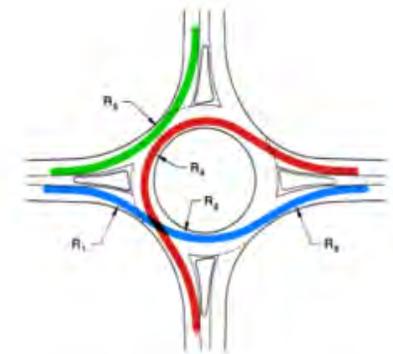
Check Speed Consistency

$R_2 - R_1$: -0.8 mph → Acceptable

$R_3 - R_2$: 5.4 mph → Ideal

R_1 vs. R_4 : 3.6 mph → Ideal

R_4 vs. R_5 : 3.0 mph → Ideal



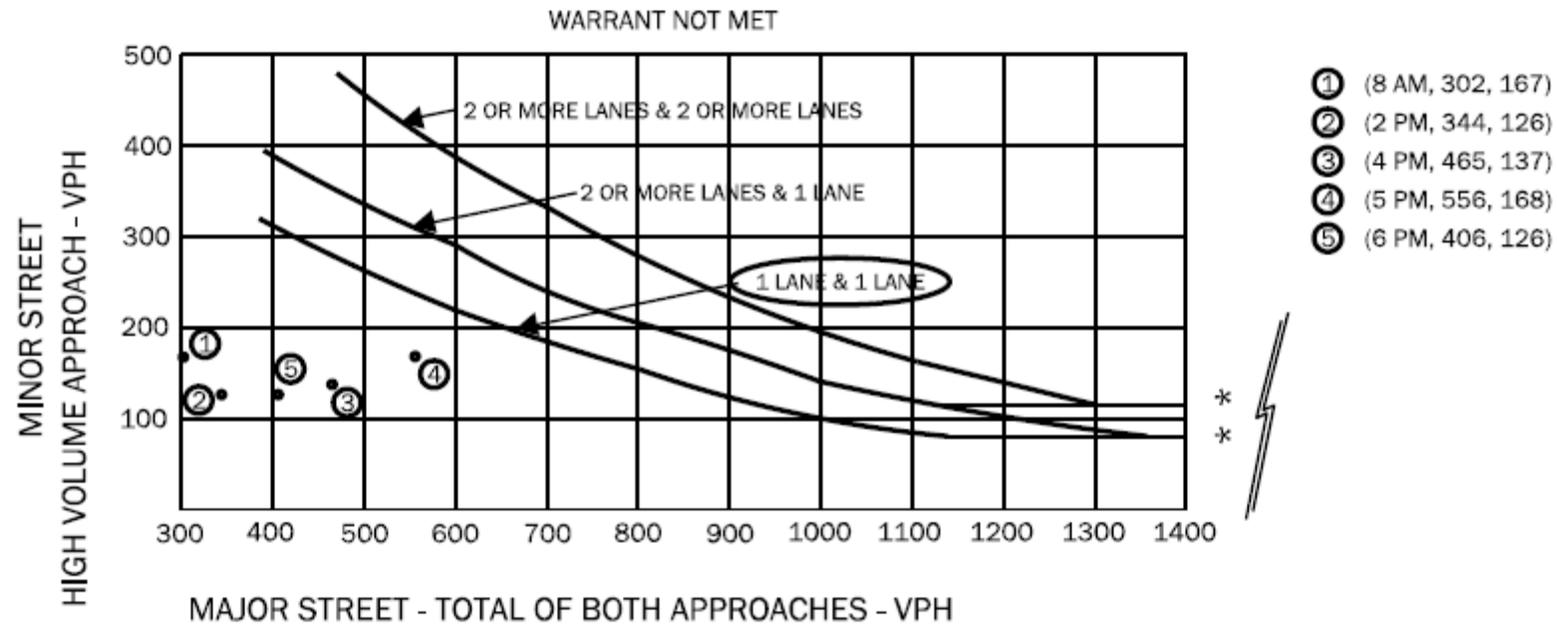


05.13.2014 14:01

Signal Warrant Analysis

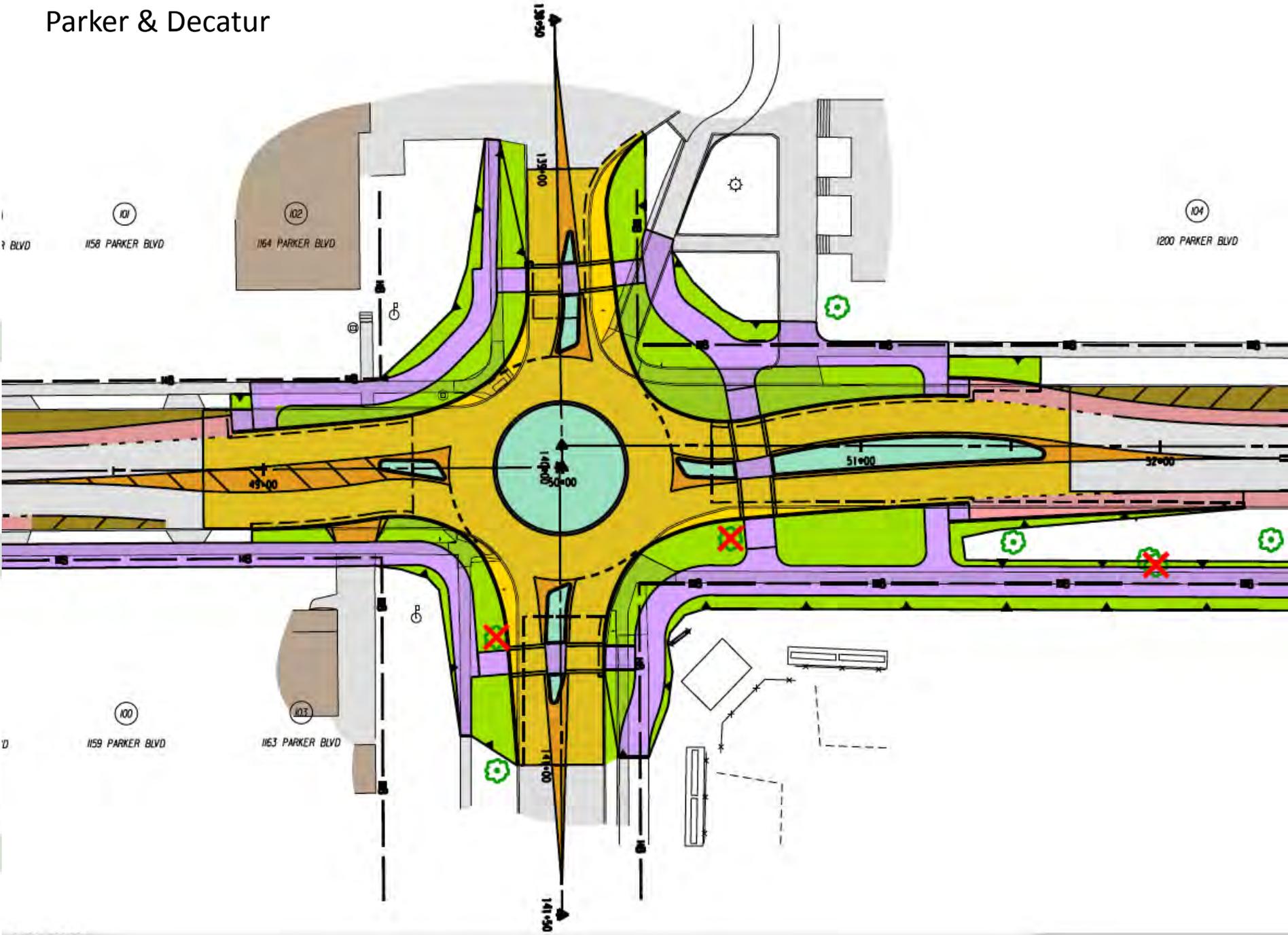
COMPLETE STREETS FOR PARKER BOULEVARD
MAJOR STREET: PARKER BOULEVARD
MINOR STREET: DECATUR ROAD

FIGURE 4C-1
WARRANT # 2 - FOUR HOUR VOLUME WARRANT



* NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Parker & Decatur



Mini-Roundabout: Parker & Decatur

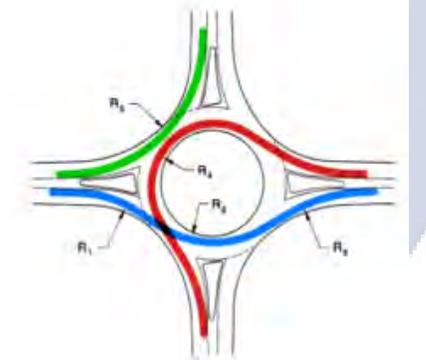
- Full reconstruction of intersection
 - Roughly holds to existing curb lines but with widening as appropriate
- Wide existing north leg: Traffic-calming reverse curve and extended splitted island
- Residential driveway vs. crosswalk on south leg
- “Loop Trail” Crossing on north leg
 - Proximity to Lincoln Park and existing high pedestrian usage
 - Raised crosswalk and RRFB for added visibility
- Prime location for landscaping and neighborhood “place-making”

Mini-Roundabout: Parker & Harrison

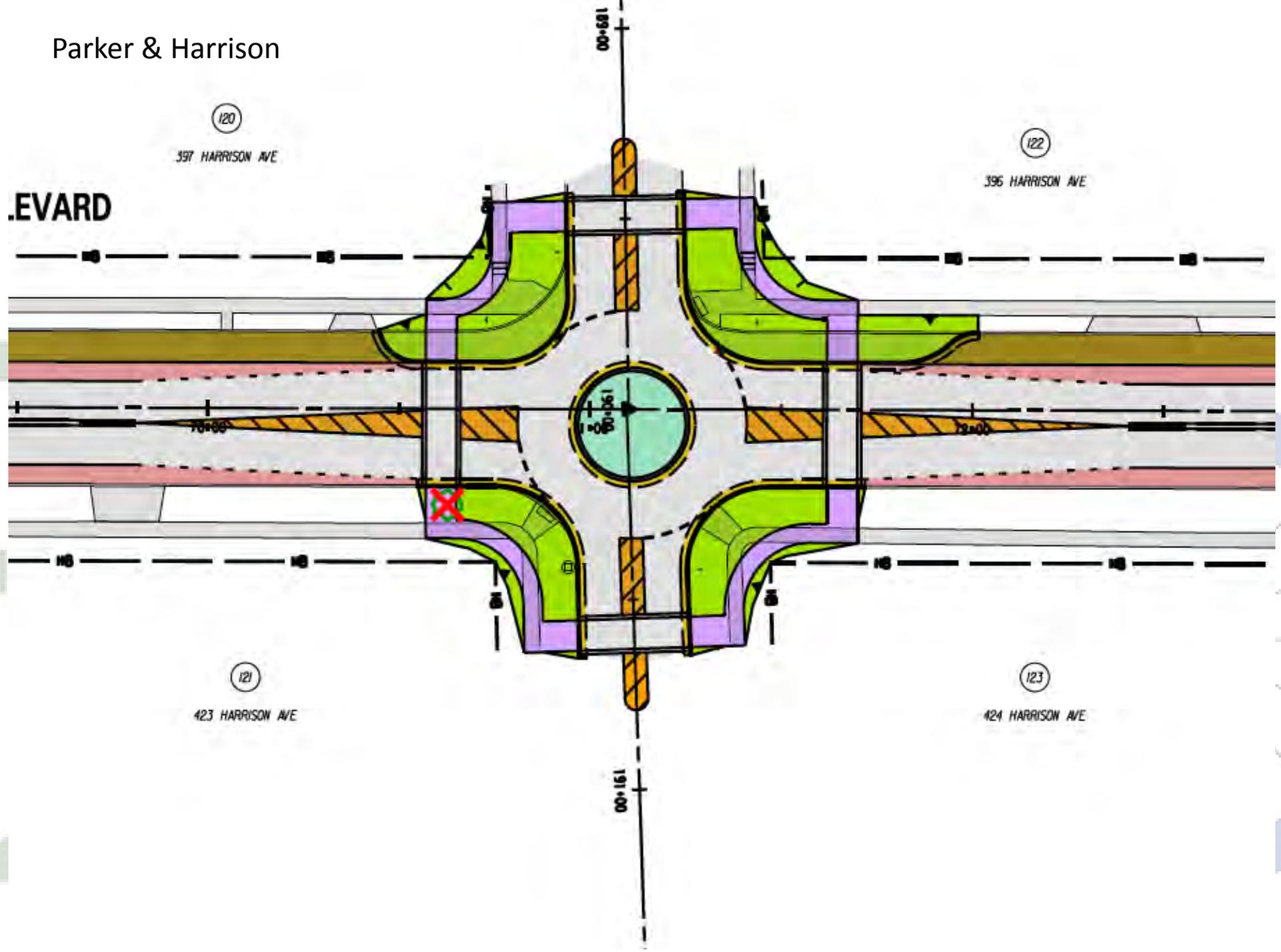
- Inscribed Circle Diameter = 60 feet
- Circulatory Roadway Width = 15 feet
- Center Island Diameter = 30 feet
 - NYSDOT Type T100 (traversable) curb: 4" rise
- Throat widths vary 10-12 feet
- Flush Splitter Islands
 - Crosswalk Setback = 20 feet
 - 6 foot minimum refuge width
- Design Speed = 15 mph

Check Speed Consistency

$R_2 - R_1$:	-0.9 mph	→	Acceptable
$R_3 - R_2$:	2.1 mph	→	Ideal
R_1 vs. R_4 :	3.5 mph	→	Ideal
R_4 vs. R_5 :	2.1 mph	→	Ideal



Parker & Harrison



Mini-Roundabout: Parker & Harrison

- Fits within existing curb lines
 - No new pavement area; curbs will be reconstructed to fit the design and achieve ADA compliance
 - Majority earthwork will involve new outer curb lines
 - “Curb extensions” on west side
- Perception of danger backed up by a high incidence of right-angle collisions
- Flush splitter islands are required to accommodate B and SU vehicle movements

Public Outreach

- [Complete Streets web site](#)
- Facebook
- May 31, 2017, 75 attendees
- June 27, 2017, 30 attendees
- Tactical Urbanism Demonstration

Event August 22-24, 2017

Berkley to Darlington (0.23 mi.)



PUBLIC MEETING

PARKER BLVD REDESIGN

WEDNESDAY

MAY 31, 2017
5:30PM-7:00PM

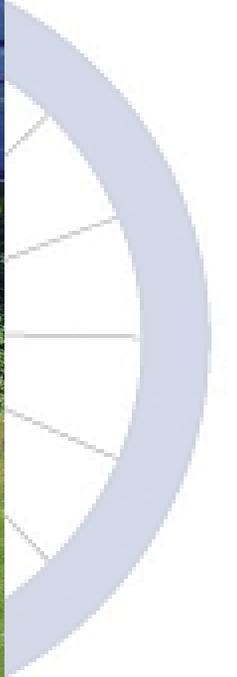
DFK PAVILION

LINCOLN PARK
PARKER BOULEVARD
TONAWANDA, NY, 14223

Parker Boulevard is being redesigned to enhance the pedestrian and bicycling safety and experience. Public input is essential to the design process. This public meeting will be an opportunity to learn about the project and share your thoughts.

TOWN OF TONAWANDA DEPARTMENT OF PLANNING AND DEVELOPMENT

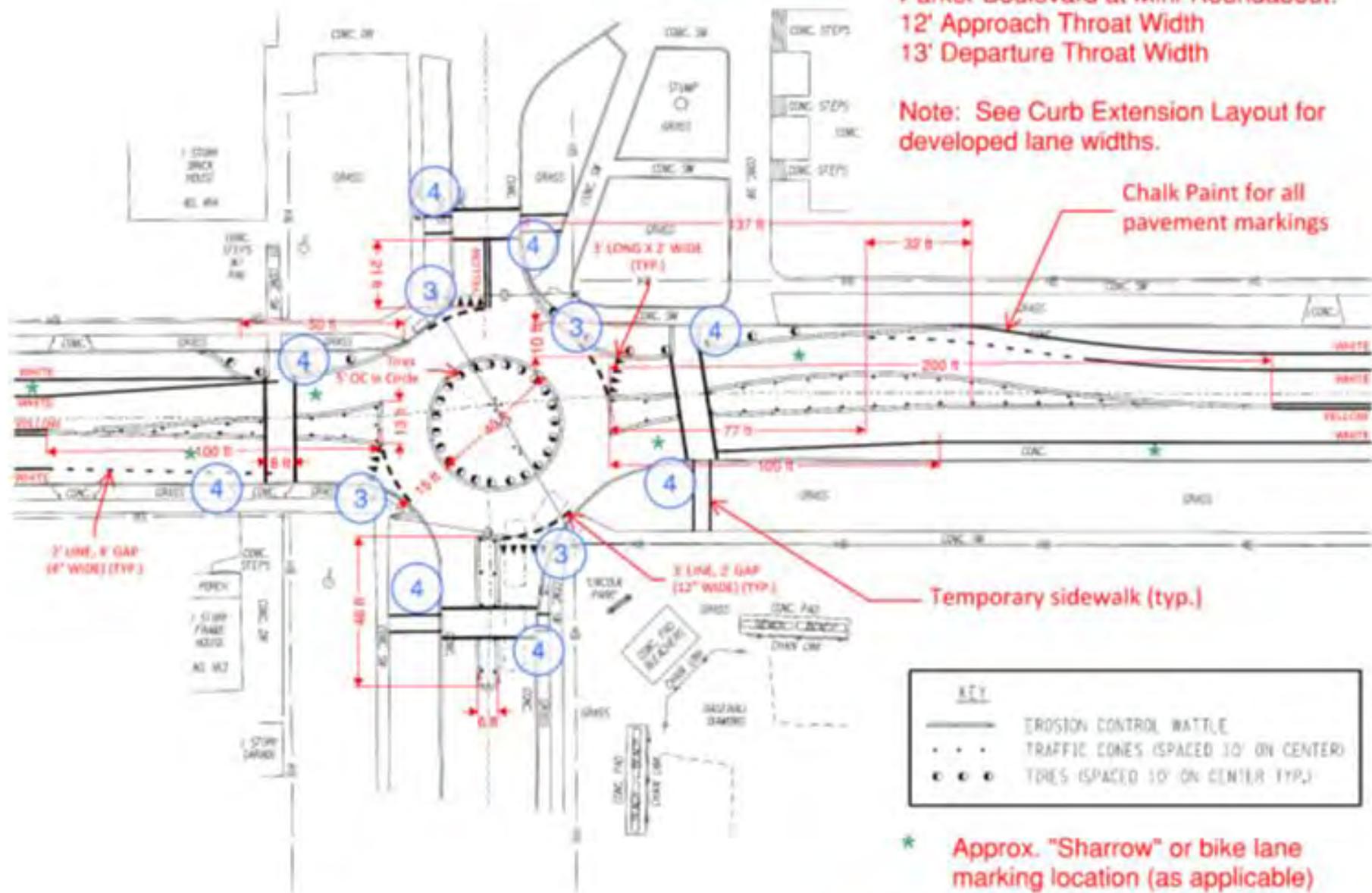
Tactical Urbanism



Demonstration Event - Mini Roundabout Decatur Street

**Parker Boulevard at Mini-Roundabout:
12' Approach Throat Width
13' Departure Throat Width**

**Note: See Curb Extension Layout for
developed lane widths.**



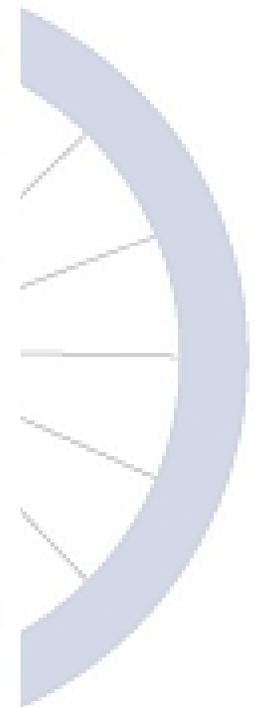
Chalk Paint for all pavement markings

Temporary sidewalk (typ.)

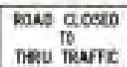
KEY	
—	EROSION CONTROL WATTLE
• • •	TRAFFIC CONES (SPACED 10' ON CENTER)
- - -	TIRES (SPACED 10' ON CENTER TYP.)

* Approx. "Sharrow" or bike lane marking location (as applicable)

X Sign location text no. (see table)



SIGNING

TEXT NO. (T)	LOC. NO. (L)	NO. OF LOCS	TEXT OR GRAPHIC	MUTCD NO.	COLOR CODE	PANEL SIZE (IN)		PANEL AREA (SF)		MOUNTING		REMARKS	ESTIMATED QUANTITY		
						W	H	NOM.	TOT.	TYPE	PYMT. FACT.		645.5101	645.5102	645.81
1		2		W23-02	B	36	36	9.0	18.0	GROUND	2	PLACE 200-500 FEET BEFORE DEMONSTRATION AREA	-	18.0	4
2		4		W16-15P	B	24	12	2.0	8.0	GROUND	2	PLACE 200 FEET BEFORE ROUNDABOUT	9.2	33.2	8
				W2-6	B	30	30	6.3	25.2						
				W13-1P	B	18	18	2.3	9.2						
3		4		R1-2	C	36	36	3.9	15.6	GROUND	1	PLACE AT ROUNDABOUT YIELD LINE	-	40.8	4
				R6-5P	A	30	30	6.3	25.2						
4		12		W11-2	D	30	30	6.3	75.6	GROUND	2	PLACE AT EACH CROSSWALK	-	99.6	24
				W16-7P	D	24	12	2.0	24.0						
12	WZTC	2		R11-4	A	60	30	12.5	25.0	BARRICADE	1	OPTIONAL LEGEND "ROAD CLOSED LOCAL TRAFFIC ONLY"	-	25.0	-
												SUBTOTAL	9.2	216.6	40
												ROUNDING	0.8	3.4	-
												TOTAL	10.0	220.0	40

Material	Location	Alternate Measurement	Quantity	Unit	Cost Extended	Supplier	Comment
For Incorporation							
Tires	Curb Extensions				\$ -	\$ -	
	Berkley & Darlington	240LF	50EA		\$ -	\$ -	ToT Highway 5' Spacing
	Decatur	225LF	45EA		\$ -	\$ -	ToT Highway 5' Spacing
Erosion Control Wattles	Mini-Roundabout Islands				\$ -	\$ -	
	Splitter Islands	710LF			\$ -	\$ -	Lincoln Park Contractor
	Central Island	125LF			\$ -	\$ -	Lincoln Park Contractor
Traffic Cones	Mini-Roundabout Islands				\$ -	\$ -	10' Spacing
	Splitter Islands	710LF	71EA		\$ -	\$ -	ToT Highway
	Central Island	125LF	13EA		\$ -	\$ -	ToT Highway
Plywood	Sidewalks	50LF			\$ -	\$ -	ToT Parks 3/4" from Rich
Chalk Paint	Yellow Lane Stripes (4")	3200LF	43cans		\$ 4.20	\$ 180.60	ToT Police 25 SF/can
	White Lane Stripes (4")	4000LF	54cans		\$ 4.20	\$ 226.80	ToT Police 75' of 4" line/can
	Crosswalks (12")	900LF	36cans		\$ 4.20	\$ 151.20	ToT Police Cost - Midway Supply
	Stop Bars & Yield Lines (18")	200LF	11cans		\$ 4.20	\$ 46.20	ToT Police
	Symbols				\$ -	\$ -	
	Shark's Teeth	16EA	2cans		\$ 4.20	\$ 8.40	ToT Police 2 SF each
	Sharrows	4EA	2cans		\$ 4.20	\$ 8.40	ToT Police
	Bike Lane w/ Arrow	8EA	2cans		\$ 4.20	\$ 8.40	ToT Police
Reflective Tape	Tires & Wattles		2rolls		\$ 50.00	\$ 100.00	ToT Police, Grainger 30' Rolls
Sign Panels			230SF		\$ -	\$ 2,096.00	M Squared Signs Vinyl on 5mm CorraPlas
Sign Supports			24EA		\$ -	\$ -	ToT Highway Sign supports w/ temp bases
Variable Message Boards			2EA		\$ -	\$ -	Erie County DPW
Temporary Lighting			2EA		\$ 75.00	\$ 150.00	ToT Police Home Depot LED Outdoor
Type III Barricades			8EA		\$ -	\$ -	ToT Highway
Miscellaneous							
Pop-Up Tent	Information Kiosk		1EA		\$ -	\$ -	Jim Hartz
Table & Chair(s) Set	Information Kiosk		1EA		\$ -	\$ -	Jim Hartz
Misc. Office Supplies	Information Kiosk		1EA		\$ -	\$ -	Jim Hartz
Videography	Recording/Documentation		1EA		\$ 1,500.00	\$ 1,500.00	Jim Hartz, ToT Parks Nickel City Studios
Video Camera/Setup	Recording/Documentation		1EA		\$ 1,217.00	\$ 1,217.00	CountingCars CountCam Mini2
Tape Measure	Setup		2EA		\$ -	\$ -	Jim Jones
Chalk Line	Setup		2EA		\$ -	\$ -	Jim Jones
Walk-Behind Striper	Setup		2EA		\$ -	\$ -	ToT Police, ToT Parks

Point	Coordinates		Ties			
	Northing	Easting	Pole	Dist.	Pole	Dist.
Center of Roundabout	1082054.1394	1080096.3986	SE	41.55	SW	42.94
South Leg - Exit Nose	1082019.9508	1080088.9088	SE	35.35	SW	35.55
South Leg - Entry Nose	1082019.5649	1080101.8419	SE	22.57	SW	47.54
East Leg - Exit Nose	1082047.5766	1080130.7804	SE	25.28	NE	30.81
East Leg - Entry Nose	1082053.5611	1080131.3964	SE	31.23	NE	24.80
North Leg - Exit Nose	1082088.8386	1080100.9801	NW	44.04	NE	35.51
North Leg - Entry Nose	1082088.4296	1080089.3880	NW	32.65	NE	46.60

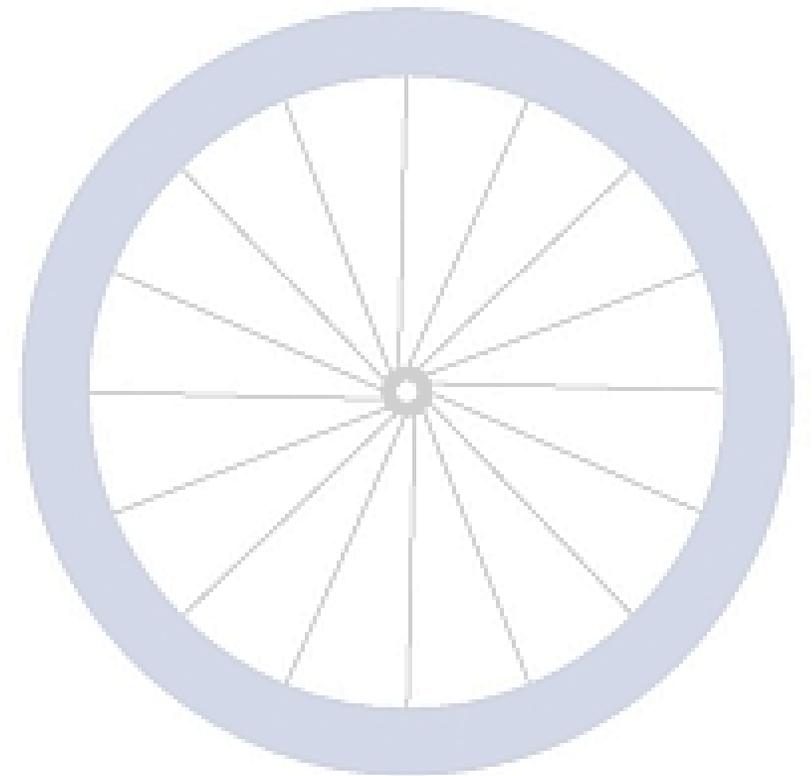
Materials

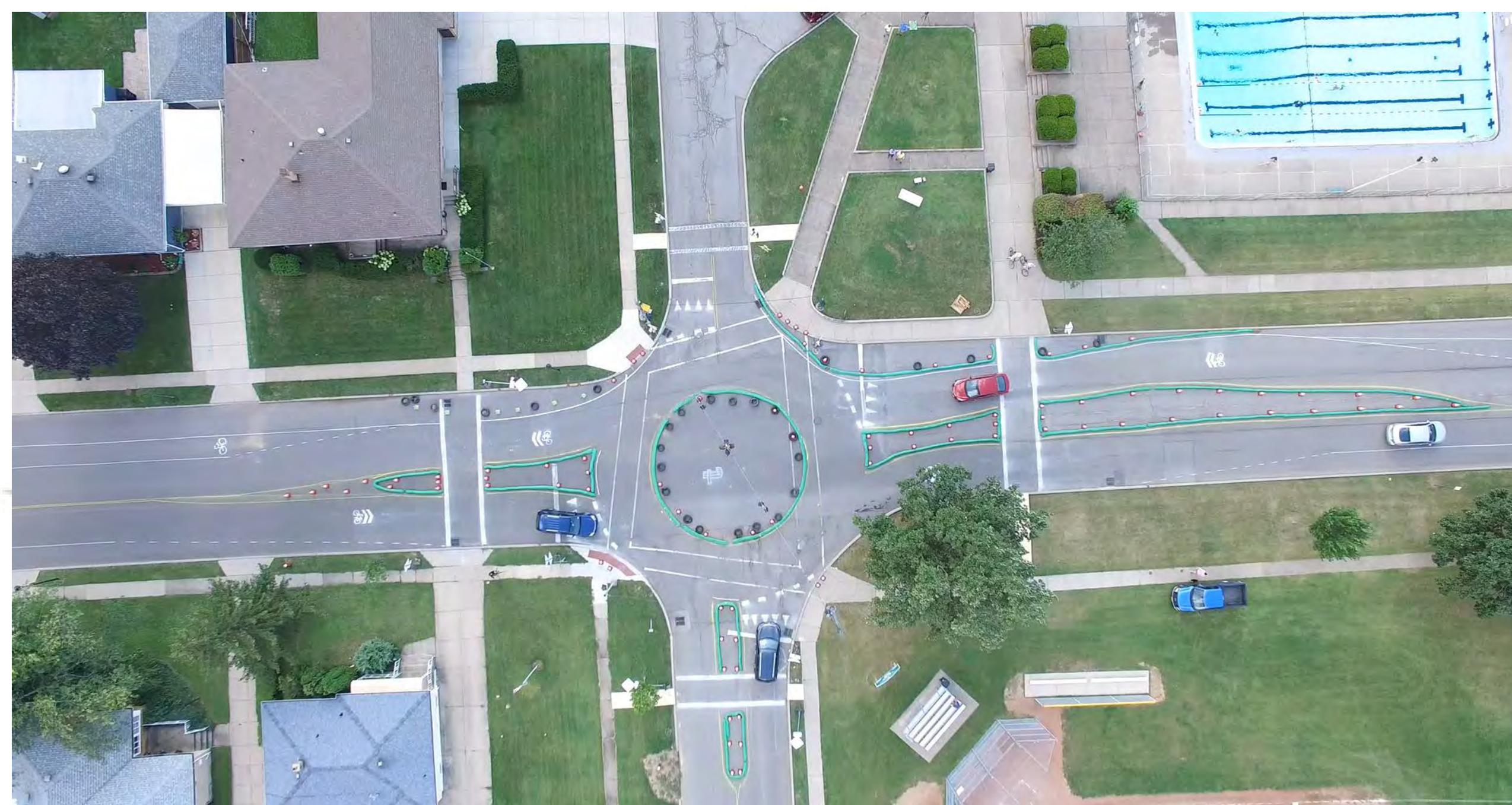
- 8" Silt sock (stormwater management waddle), 1,000 Feet
- Old tires
- Cones
- Krylon Chalk Paint, Upside down spray cans
- 5mm CorrPlast signs
- LED Outdoor Security Lights
- Reflective Tape
- Variable Message Board



[Video - Tactical Urbanism – Parker & Decatur mini-roundabout setup](#)
[August 22, 2017](#)

[Video - Tactical Urbanism – Parker & Decatur mini-roundabout operation](#)
[August 23, 2017](#)









08.23.2017 11:11



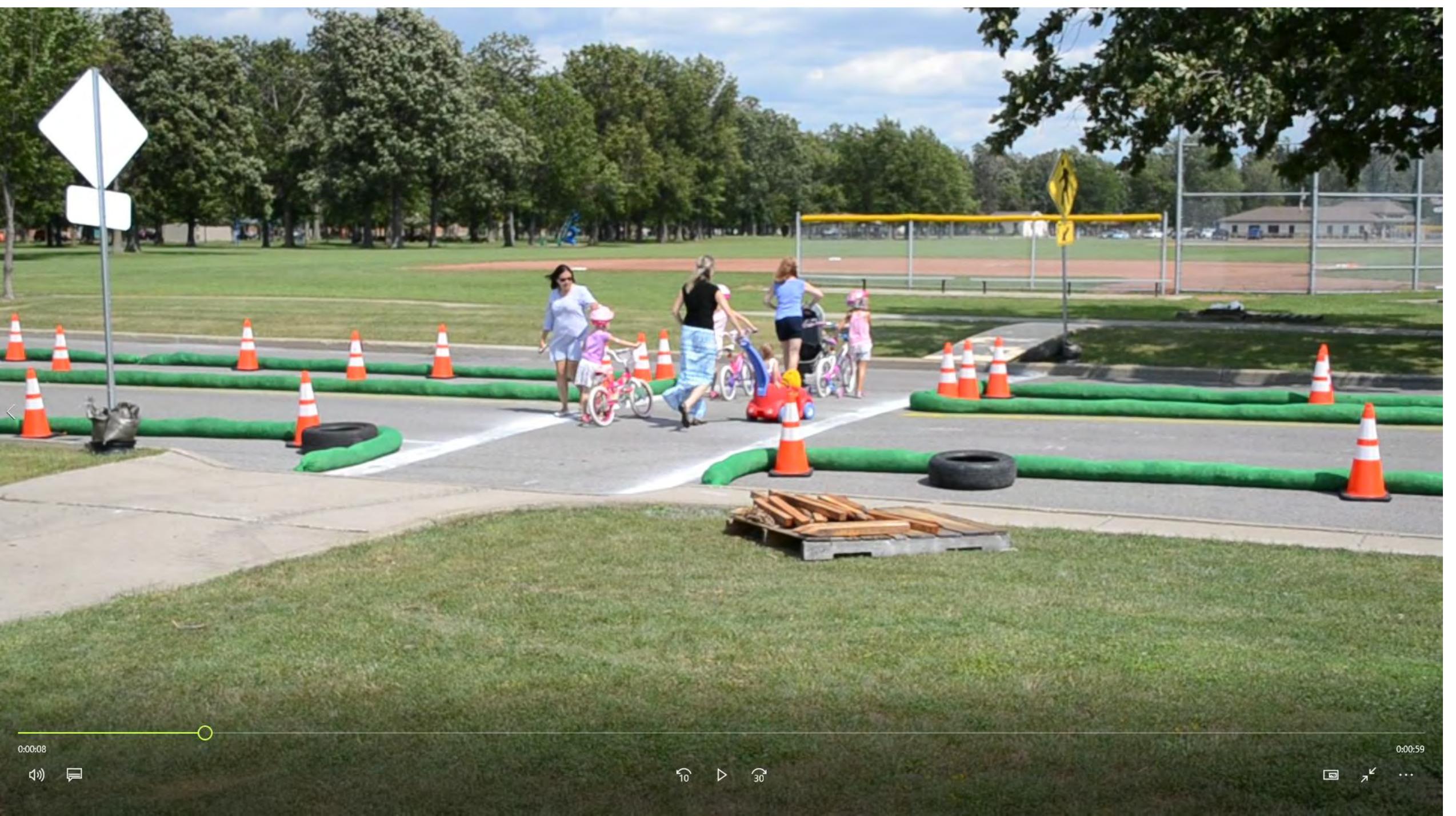
08.22.2017 15:53



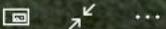
08.23.2017 21:23



08.24.2017 07:34



0:00:08

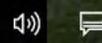


0:00:59



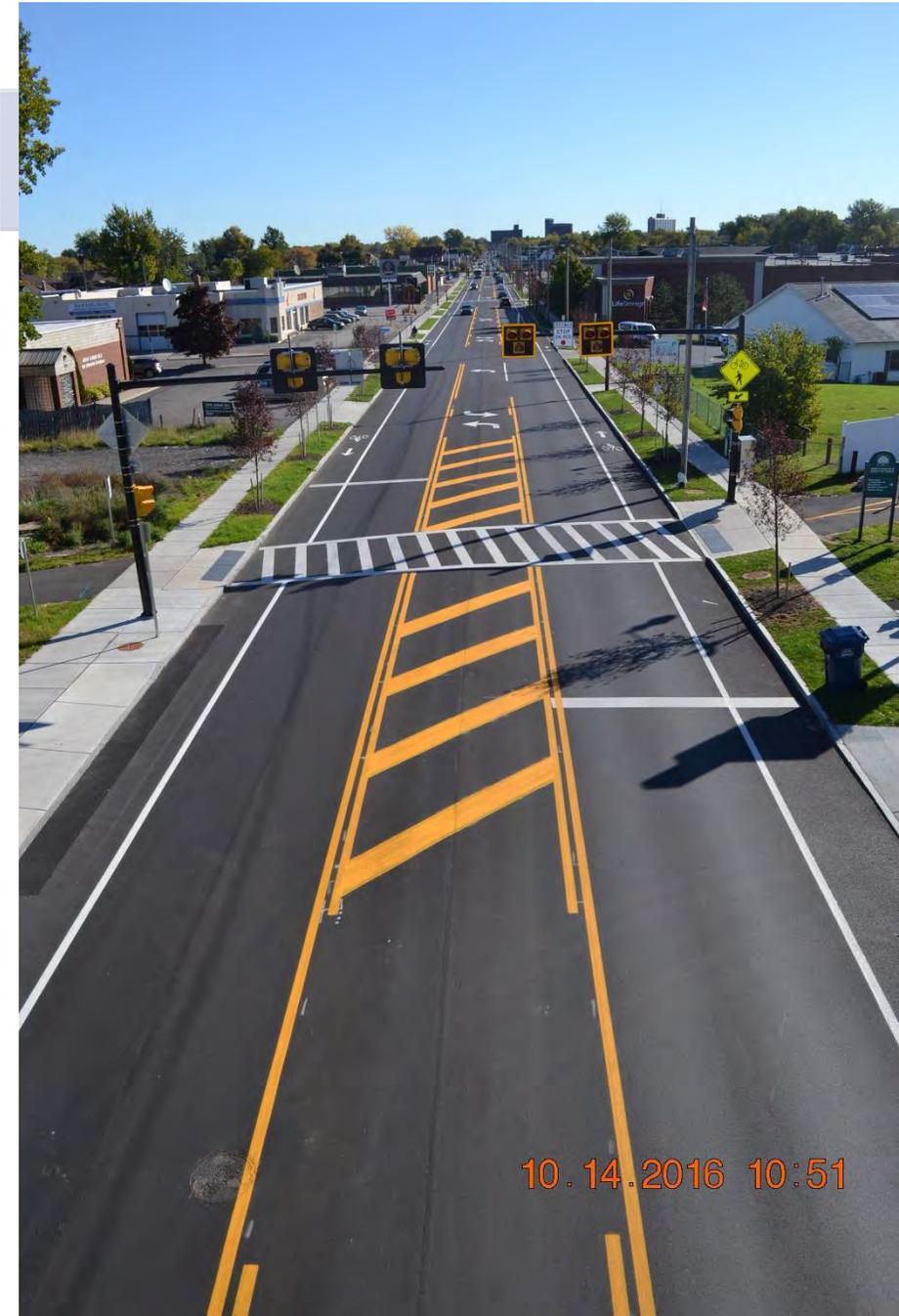
0:00:25

0:00:32



Related projects and initiatives

Tonawanda Rail Trail



Related projects and initiatives

Lincoln Park Green Initiative



Related projects and initiatives

Tonawanda Rail Trail Enhancements



10.25.20

Q & A

- What is the difference between a traffic circle and roundabout?
- What distinguishes a mini-roundabout from a traditional roundabout?
- Name 5 objectives of the Parker Boulevard Complete Street Initiative
- How many traffic signal warrants are met for Parker-Decatur?
- Which accident types are reduced by use of roundabouts?