



DELIVERING SAFETY IMPACTS FROM ASPHALT ART AND OTHER QUICK-BUILD PROJECTS

June 13, 2024

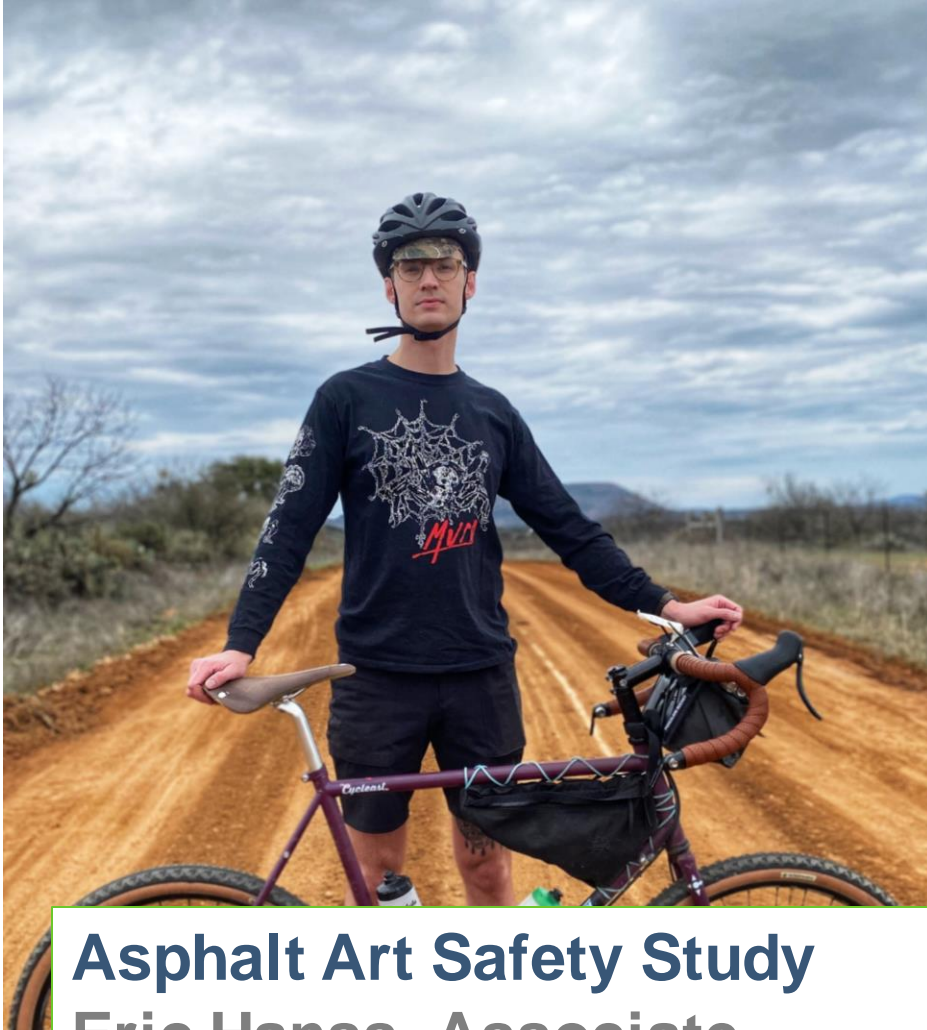
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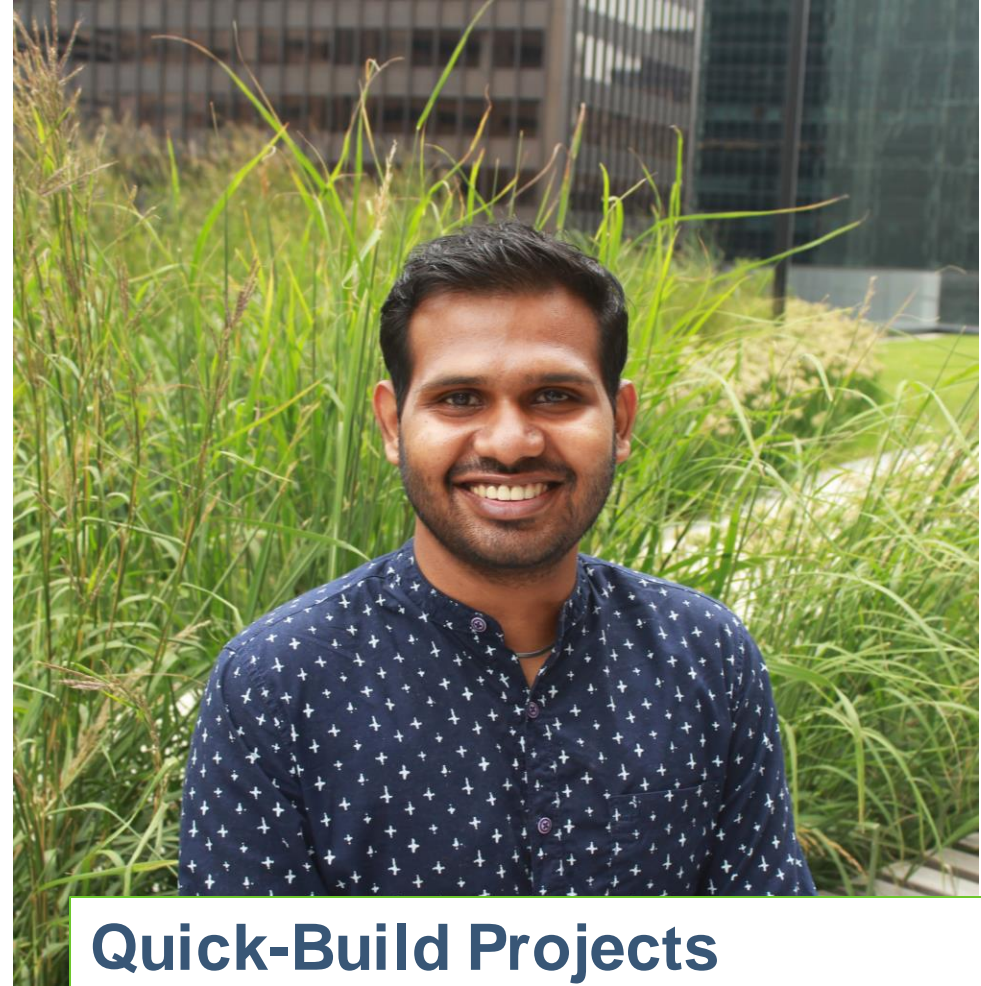
Metropolitan Washington
Council of Governments

Presented by:





Asphalt Art Safety Study
Eric Hanss, Associate

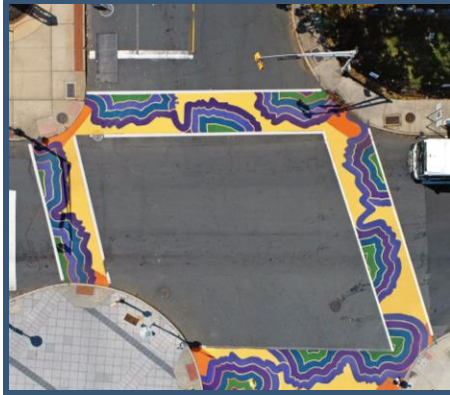


Quick-Build Projects
Sid Shah, Senior Planner

What is Asphalt Art?



Intersections



Crosswalks



Vehicle or Parking Lanes



Plaza / Pedestrian Space



Other Infrastructure

Images courtesy of Bloomberg

What is Asphalt Art?





Lancaster, PA



Cincinnati, OH

Volunteer Painting Days



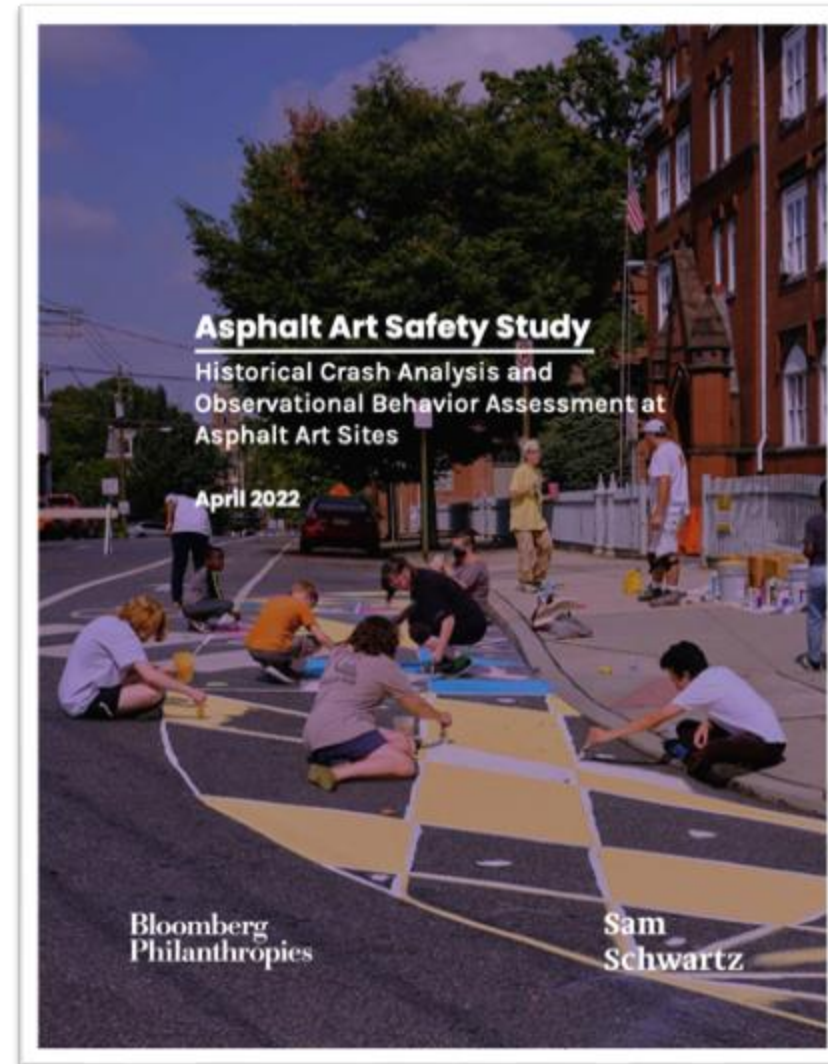
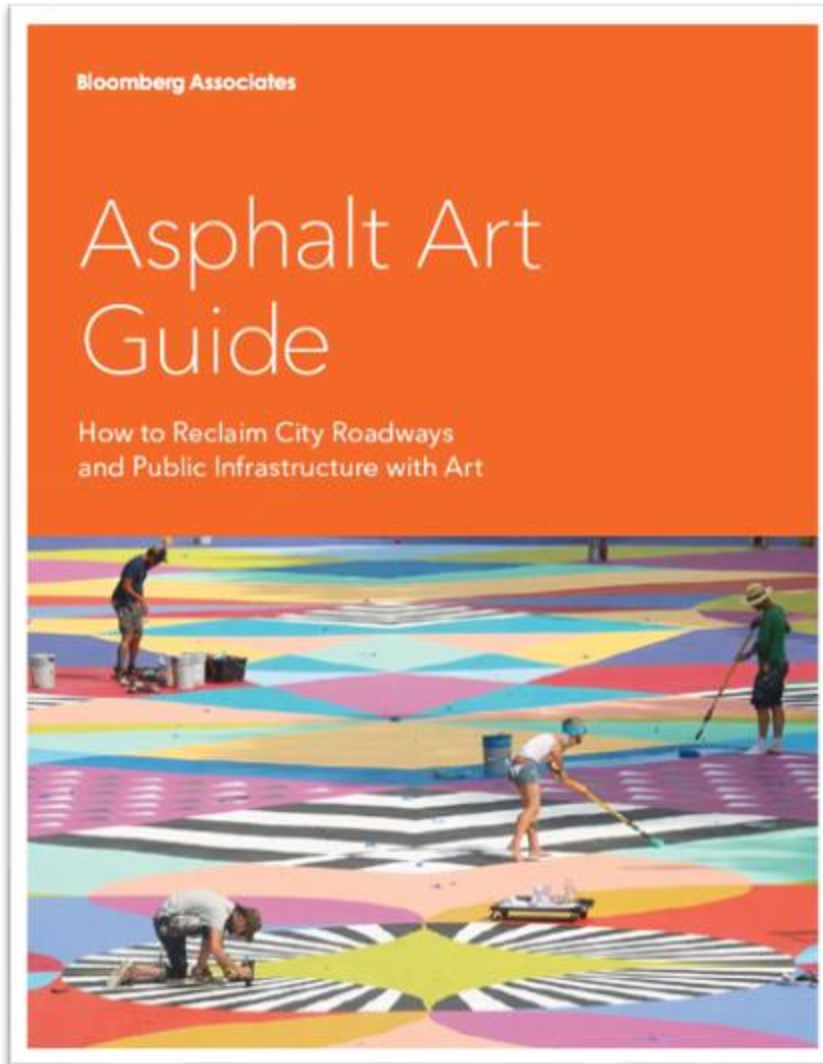
Pittsburgh, PA



Richmond, VA

Images courtesy of Bloomberg

Bloomberg Asphalt Art Resources



Safety Study: Part I

Context

- Lack of comprehensive analysis of asphalt art installations
- Lack of clarity in guidelines and standards like the MUTCD



Safety Study: Part I

2009 MUTCD: silent on asphalt art, “Application of Colored Pavement” memo of interpretation from 2013 caused some consternation

Conclusion: Chapter 3G of the 2009 MUTCD contains provisions regarding the use of colored pavements. If colored pavement is used to regulate, warn, or guide traffic or otherwise attempts to communicate with the roadway user, the colored pavement constitutes a traffic control device. Agencies cannot intentionally exclude elements of retroreflectivity as part of a systematic process to classify the color pavement as a purely aesthetic treatment in order to circumvent the provisions of Chapter 3G.

Paragraph 3 of Section 3G.01 in the MUTCD limits the use of colored pavement used as a traffic control device to the colors yellow and white. Interim Approval IA-14 permits the use of green colored pavement for marked bicycle lanes. All other colors for use on highway pavement in the right-of-way are either disallowed or are experimental as described above, unless the colored pavement is a purely aesthetic treatment and makes no discernible attempt to communicate with a roadway user.

Safety Study: Part I

Goal

- Assess the effectiveness of asphalt art as a safety improvement
 - Historical crash analysis
 - Observational behavioral assessment



Image courtesy of Bloomberg

Figure 2: Trenton, NJ - Before



Figure 3: Trenton, NJ - After



Figure 12: Lancaster, PA - Before



Figure 13: Lancaster, PA - After



Safety Study: Part I



17 sites

for
before/after
crash
analysis

#	City	State	Crosswalk Art	Roadway Art (Center of intersection or intersection approach)	Other Improvements/Notes
1	St Petersburg	FL		✓	
2	Miami	FL		✓	
3	Ft Lauderdale	FL	✓	✓	Sidewalk improvements
4	Ft Lauderdale	FL	✓	✓	Sidewalk improvements
5	Pinecrest	FL		✓	
6	Pinecrest	FL		✓	
7	Atlanta	GA	✓		Rapid development, nearby bike network expansion, bike & pedestrian volume growth
8	Decatur	GA	✓		Raised crosswalks
9	Decatur	GA	✓		Bollards/sidewalk improvements
10	Decatur	GA	✓		Raised crosswalks
11	Cambridge	MA	✓		
12	Rahway	NJ	✓		
13	Maplewood	NJ	✓		
14	NYC (Brooklyn)	NY		✓	Restricted turning movement, intersection leg closure
15	NYC (Manhattan)	NY	✓		
16	Tampa	FL		✓	
17	New Brunswick	NJ	✓		Art within marked parking spaces
COMBINED SITES		#	11	8	8
		%	65%	47%	29%

Safety Study: Part I



17 sites

for
before/after
crash
analysis

Sites	Crash Type	Analysis Period (Months)		Quantity		Crash Rate (Crashes/Year)		
		Before	After	Before	After	Before	After	Difference
Average Crash Rate (All Sites Aggregated)	Total	821	560	233	157	3.41	3.36	-1.2%
	Vulnerable Users	821	560	13	6	0.7	0.0	-32.3%
	Injury	821	560	60	28	0.5	0.3	-31.6%
Average Crash Rate (Aggregated, Excluding High and Low sites)	Total	710	502	163	80	2.75	1.91	-30.6%
	Vulnerable Users	710	502	9	3	0.15	0.07	-52.9%
	Injury	710	502	46	19	0.78	0.45	-41.6%

Safety Study: Part I



5 sites
for
behavioral
analysis

#	City	State	Intersection	Traffic Control	Setting	Summary
1	Trenton	NJ	South Clinton Ave & Barlow St/ R Wallenberg Ave	Signal	Urban Core	Painted crosswalks
2	Richmond	VA	W Marshall St & Brook Rd	Signal	Urban Core	Curb extensions, bollards, painted intersection
3	Durham	NC	Club Blvd & Glendale Ave	Signal	Suburban	Painted crosswalks, painted intersection
4	Pittsburgh	PA	Roup Ave, S Fairmount St & Harriet St	Stop	Neighborhood Residential	Curb extensions, additional/revised marked crosswalks
5	Lancaster	PA	Strawberry St & Vine St	Stop	Urban Core	Curb extensions, bollards

Safety Study: Part I



Crossings involving a conflict

5 sites

for
behavioral
analysis



**from 4.7%
to 3.5%**

Safety Study: Part I



Crossing against signal or outside of marked crosswalk

5 sites

for
behavioral
analysis



**from
27.1% to
16.8%**



**from
15.7% to
11.5%**

Safety Study: Part I



Driver yielding rates

5 sites

for
behavioral
analysis



**from 50%
to 63.4%**

Safety Study: Part I

2023 MUTCD: Chapter 3H. Colored Pavement

Page 622

MUTCD 11th Edition

CHAPTER 3H. COLORED PAVEMENT

Section 3H.01 Standardization of Application

Support:

- 01 Colored pavements consist of differently-colored road paving materials, such as colored asphalt or concrete. Other surface treatments can be applied to the surface of a road, island, or area outside the traveled way to simulate a colored pavement.
- 02 If non-retroreflective colored pavement is used as a purely aesthetic surface treatment (see Section 3H.03) within the provisions of this Chapter and are not intended to communicate regulations, warnings, guidance, or other information to road users, the colored pavement is not considered to be a traffic control device, even if it is located between the lines of a crosswalk.

Standard:

- 03 **If colored pavement is used within the traveled way, on flush or raised islands, or on shoulders to communicate regulations, warnings, guidance, or other information to road users, or if retroreflectivity is used, the colored pavement shall be considered a traffic control device and shall be limited to the colors and applications specified in this Chapter.**
- 04 **Except as provided in Paragraph 5 of Section 3H.07, colored pavement shall only be used if the corresponding regulations, warnings, or guidance are applicable at all times.**

Safety Study: Part I

2023 MUTCD: Chapter 3H. Colored Pavement

Section 3H.03 Aesthetic Surface Treatments

Support:

- 01 Aesthetic surface treatments are sometimes used between the transverse lines within a crosswalk, in islands, in medians, in shoulders, within sidewalk extensions designated by pavement markings, or in other areas outside of the traveled way.

Standard:

- 05 Aesthetic surface treatments shall not interfere with traffic control devices.
- 06 Aesthetic surface treatments shall not be of a surface that can confuse pedestrians with vision disabilities that rely on tactile treatments or cues for navigation.
- 07 Colors used for aesthetic surface treatments shall be outside the chromaticity coordinates that define the ranges of acceptable colors for traffic control devices.
- 08 Patterns that constitute a purely aesthetic surface treatment shall be devoid of advertising and shall not contain elements of retroreflectivity.
- 09 Patterns that constitute a purely aesthetic surface treatment for the interior area of a crosswalk shall not be designed to encourage road users to remain in the crosswalk, engage or interact with the pattern, or otherwise inhibit users from crossing the street in a safe and efficient manner.

Safety Study: Part II



14 Sites

focused on
curb
extensions
with asphalt
art



72 hours

before/after



Behavioral analysis

using
computer
vision



Near misses

over- speeding,
lane
encroachment,
crossing
outside marked
crosswalk

Safety Study: Part II



Images courtesy of City of Minneapolis



Material Success

Designing Durable Bikeways | March 2023

Quick Build Implementation: Strategy for Success

Global Quick Build Adoption



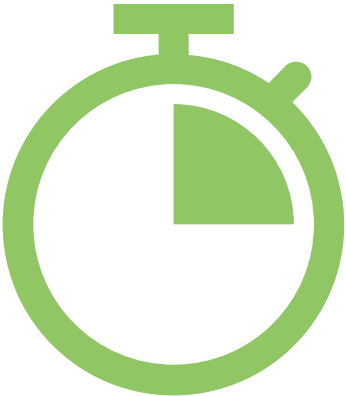
What Goals Can Quick Builds Achieve?

Vision Zero – Systemic and Corridor Safety Enhancements

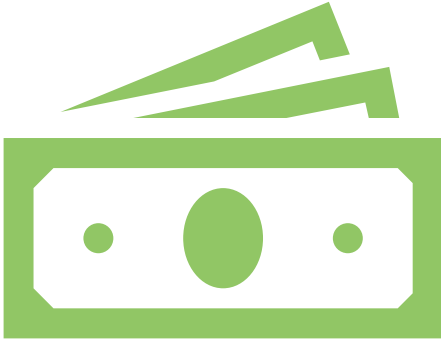
All Ages and Abilities Networks – Expansions, Closing Gaps, and Upgrades

Place Activations – Plazas, Parklets, and Art

Why Choose Quick Builds?



**Rapid
Installation**



**Lower
Cost**



**Demonstration
Opportunity**



**Unique
Benefits**

Quick Build Toolkit



Pavement Markings



Vertical Delineation



Physical Protection



Quick Build - Material Success Strategy

Pick materials that meet design needs

Reduce implementation complexity

Anticipate maintenance

Pick materials that meet design needs

Streets with high speeds

- Provide continuous non-mountable vertical separation

Streets with high incursion risk

- Block or discourage vehicle entry

Streets with parking demand

- Indicate where parking is allowed
- Avoid door zone conflicts
- Provide accessible pedestrian access



Reduce implementation complexity

Leverage in-house capacity for operations

Use on-call contracts and maximize the available resurfacing contracts

Bundle multiple locations in single procurement



Anticipate maintenance



Maintenance
Frequency



Low



Periodic



High

Maintenance
Intensity



High



Moderate to
high



Low to
moderate

Graphics Source: NACTO

Can I Use Quick Builds?

Eligible for SS4A, SRTS/TAP, Public Health Funding

Implementable through Pavement Marking/Resurfacing Projects

Utilize Standard Materials

Enabled in the 11th Edition of the MUTCD

Incorporate FHWA Proven Safety Countermeasures

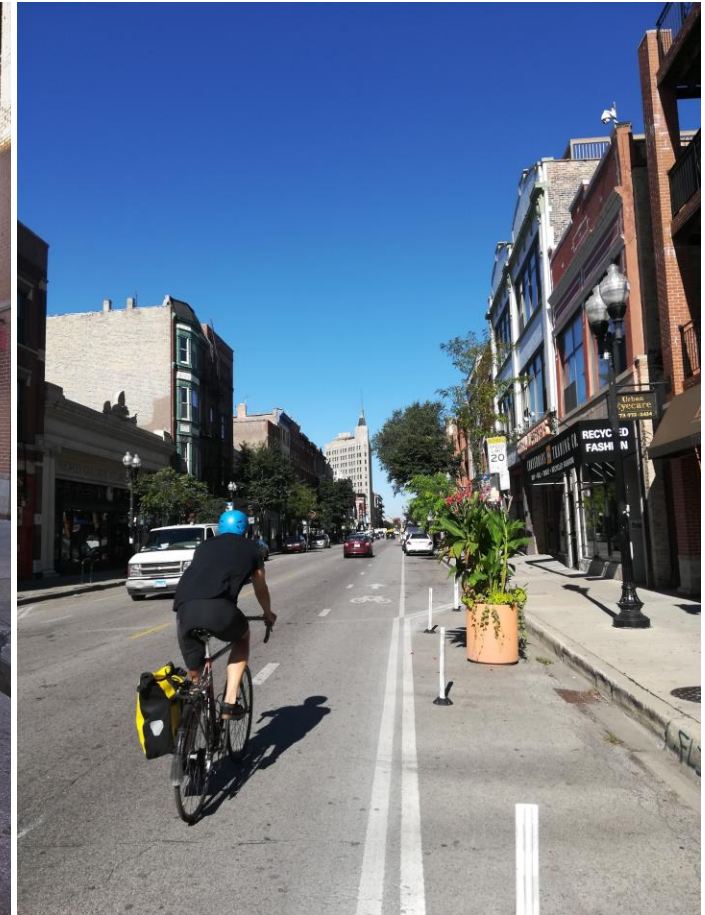
43% fewer people driving over 30 mph

52% fewer people biking in door zone

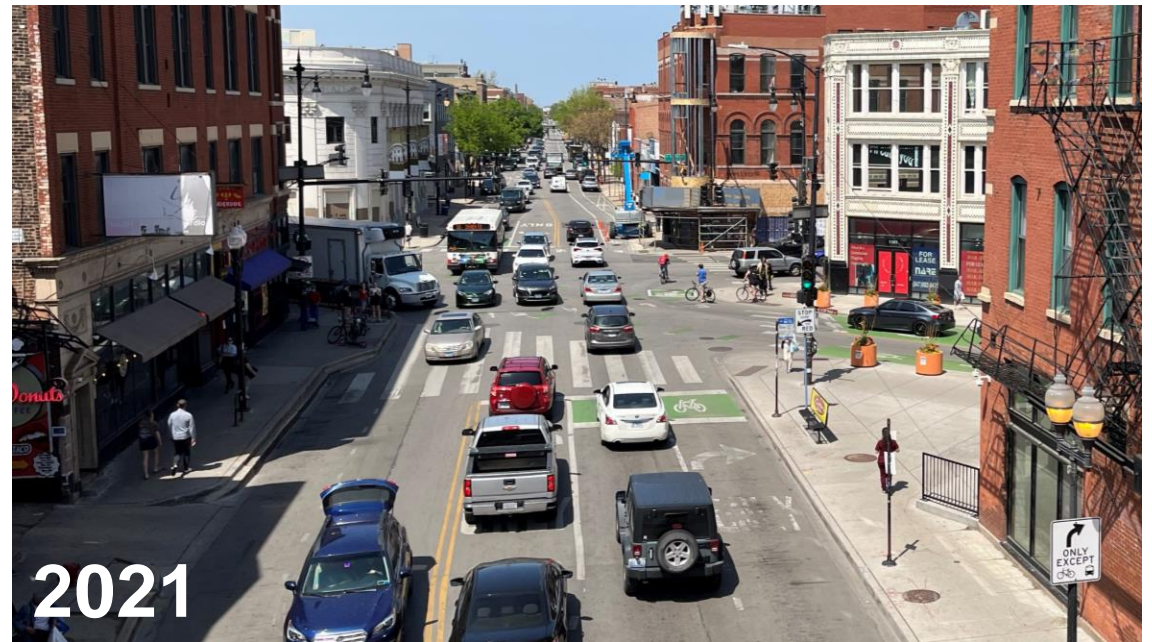
42% fewer people failing to stop for pedestrians in uncontrolled crosswalks



BEFORE



AFTER



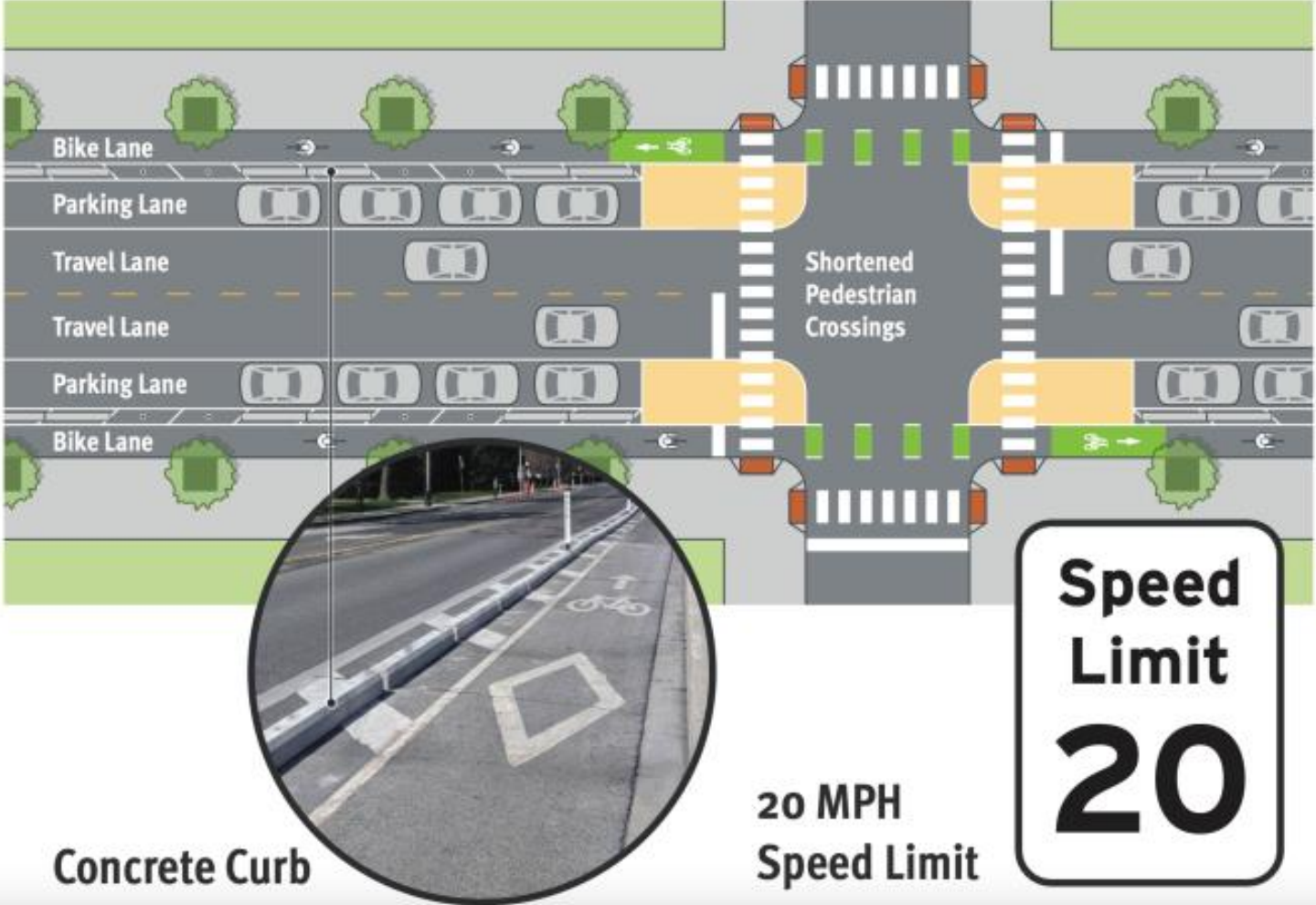
Pop-up to permanent: Milwaukee/North/Damen



Pop-up to permanent: State/Kinzie



Quick Builds in Practice: Augusta Blvd, Chicago, IL



35% decrease in people driving over 30 mph

29% increase in people driver slower than 20 mph

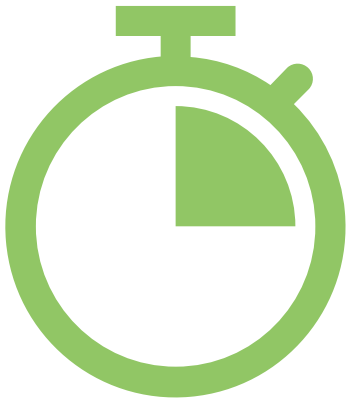


BEFORE

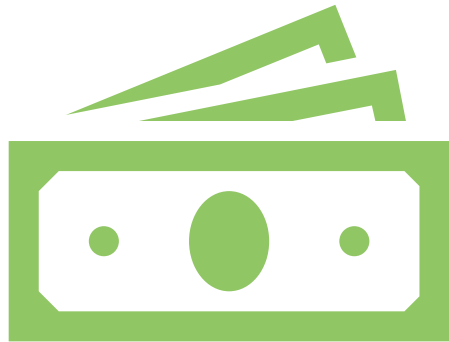


AFTER

Why Choose Quick Builds and Asphalt Art?



**Rapid
Installation**



Low Cost



**Demonstration
Opportunity**



**Unique
Benefits**



**SS4A
Eligible**

THANK YOU!

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Asphalt Art - for more info, visit:

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