

# MUTCD Update #4

## Crosswalks

August 29, 2024



# This meeting will be recorded



- A recording and copy of the slides will be shared with NACTO members and those registered for today's meeting.
- If you don't want to be on the recording, please keep your camera off.

# Post-Webinar:



- All questions will be documented and answers will be sent as a follow up.
- Receive AICP credit for attending today's session
- NACTO is unable to provide specialized accreditation for specific licenses and degrees.
  - Email [events@nacto.org](mailto:events@nacto.org) for a certificate of participation

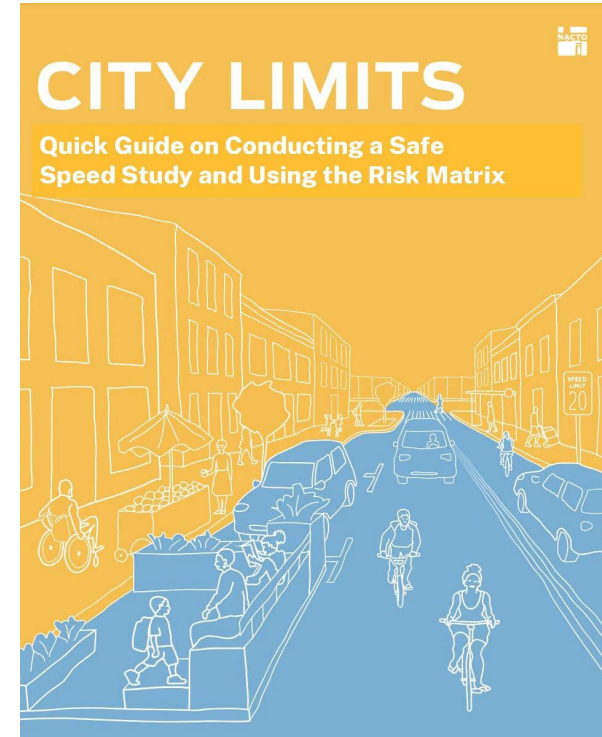
# NACTO's MUTCD Webinar Series



- February 27 - MUTCD 11th Edition Overview
- April 24 - *City Limits* and Speed Limit Changes
- June 26 - City Approaches to Setting Speed Limits
- **August 29 - Crosswalks**
- October -
  - Part 9: Bikes Overview
  - City Examples
- November - Transit
- December - Signal Warrants

# MUTCD Webinar Follow-Ups

- Distributing *City Limits* Quick Guide for setting speed zones on corridors.
- If you need any of the recordings or materials from the previous MUTCD webinars, please contact [josh@nacto.org](mailto:josh@nacto.org)



# Webinar Speakers



Venu Nemani,  
City of Seattle



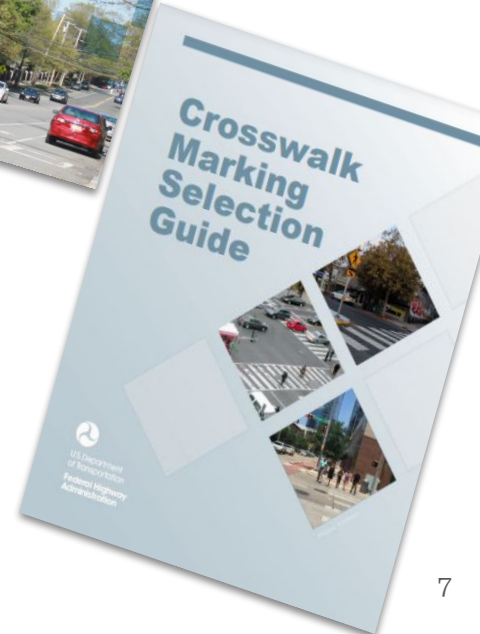
Nicholas Mosquera,  
Bloomberg Associates



Stefanie Seskin,  
NACTO

# 11th Edition MUTCD: Crosswalk markings

- 11th Edition MUTCD is now aligned with the [FHWA STEP Guide](#)
  - If the street is too fast, busy, or wide for a marked crosswalk alone, MUTCD supports making it slower, narrower, or raised.
- Multilane crosswalks shall provide a:
  - traffic control signal with a pedestrian signal head,
  - pedestrian hybrid beacon,
  - pedestrian-actuated rectangular rapid flashing beacon, **or**
  - raised crossing.
- Many types of crosswalk markings are allowed
  - [Recent FHWA guidance](#) supports using higher-visibility crosswalks, provides guidance on which types to use



# New! Sidewalk Extensions

- The MUTCD describes sidewalk extensions in both the definitions and in the Markings chapter
  - “A pedestrian facility at an intersection or midblock crosswalk which extends the sidewalk by physically and visually narrowing the roadway.” (Section 1C.02)
  - “...Reclaim a portion of the roadway, sometimes including a portion of parking lanes, shoulders, and/or the traveled way, and repurpose that area for non-vehicular uses. They extend the sidewalk or other pedestrian space, shorten pedestrian crossing distances, alter the roadway geometry for speed management or channelizing, or serve other purposes.” (Section 3J.07)

# Sidewalk Extensions and Channelizing

- Use *double white lines* to communicate the intention to create pedestrian space; the paved area within the sidewalk extension not part of the roadway. Pedestrians are expected here.
- Areas formed by *single white lines* are **not intended as pedestrian areas**, are part of the roadway, and pedestrians are not expected to be in that space.

# Sidewalk Extensions” and accessibility



- The MUTCD does not provide information on the placement of accessible surface treatments.
  - Section 3J.07, paragraph 13: “Accessibility provisions at sidewalk extensions designated by pavement markings are outside the scope of this Manual.”
  - Figures are *supplemental* and more akin to *examples* than requirements. Standards, guidance, options, and support provided in text must be referenced.
  - It’s ok to ignore the figures!

- MUTCD definition of island: “A defined area between traffic lanes for control of vehicular movements, for toll collection, or for pedestrian or bicyclist refuge. It includes all end protection and approach treatments. Within an intersection area, a median or an outer separation is considered to be an island.” (Section 1C.02, page 20)
- Areas formed by single white lines are not intended as pedestrian areas, are part of the roadway, and pedestrians are not expected to be in that space. Confusing language versus diagrams:
  - Channelizing line (3B.08)
  - Edge line (3B.09)
  - Diagonal Markings (3B.25)

# Asphalt art is explicitly allowed, with some rules



## Section 3H.03 Aesthetic Surface Treatments

**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.**

# NACTO's Next Steps



- Working on additional clarification from FHWA on aesthetic treatments and pedestrian treatments
- Share best or “emerging” practices on crosswalks, sidewalk extensions and DWS
- Working on comments on the USDOT PROWAG NPRM  
– Comments due September 23
- Get involved with NACTO's National Standards Committee - email [josh@nacto.org](mailto:josh@nacto.org)
- UBDG 3.0 - January 2025 - Pre-Order Now!



# Enhanced Pedestrian Crossings An Overview of Seattle's Policy

Venu Nemani, P.E.  
Chief Transportation Safety Officer/City Traffic Engineer  
August 29, 2024



# Our Vision, Mission, Values, & Goals

Seattle is a thriving equitable community powered by dependable transportation. We're on a mission to deliver a transportation system that provides safe and affordable access to places and opportunities.

## Core Values & Goals:

Equity, Safety, Mobility, Sustainability, Livability, and Excellence.

**Departmental goal** Make vigorous progress on Vision Zero and reimagine community safety to eliminate injuries, deaths, and disparate impacts.

# Presentation Outline

- Crosswalk Guidance in MUTCD 11<sup>th</sup> Edition
- Seattle's Enhanced Crossing Policy
  - Policy Goals – Why we have this?
  - Tier 1 Pedestrian Generators
  - Tier 2 Pedestrian Generators
  - All other locations – Outside of Tiers 1 and 2
- Policy Update
  - 2024 look ahead
- Ongoing Policy Evaluation



# MUTCD 11<sup>th</sup> Edition - Guidance

- An engineering study **SHOULD** be performed before a marked crosswalk is installed at uncontrolled approaches
- Lists the following criteria for consideration
  - Total number of approach lanes,
  - The presence of a median,
  - The distance from adjacent signalized intersections **or other controlled crossings**,
  - **Projected pedestrian and bicyclist** volumes,
  - **Pedestrian and bicyclist paths of travel**,
  - **Pedestrian ages and abilities**,
  - **Pedestrian and bicyclist** delays,
  - **Location or frequency of public transit stops**,
  - Average daily traffic (ADT),
  - Speed limit or the 85th-percentile speed,
  - The **horizontal and vertical** geometry of the crossing location,
  - The possible consolidation of multiple crossing points,
  - The availability of street lighting, and
  - Other appropriate factors.

**Highlighted text** is additional guidance provided in the 11<sup>th</sup> edition compared to the 2009 edition



# My thoughts on the new Guidance

- Make it easier to mark crosswalks with a caveat
- Explicitly states to consider:
  - Bicyclist volumes and delays,
  - Pedestrian and bicyclist paths of travel
  - Pedestrian ages and abilities
- Still leaves room for engineering judgement
- May be viewed as ambiguous in the decision-making process
- Still need additional guidance for marking crosswalks proactively and consistently



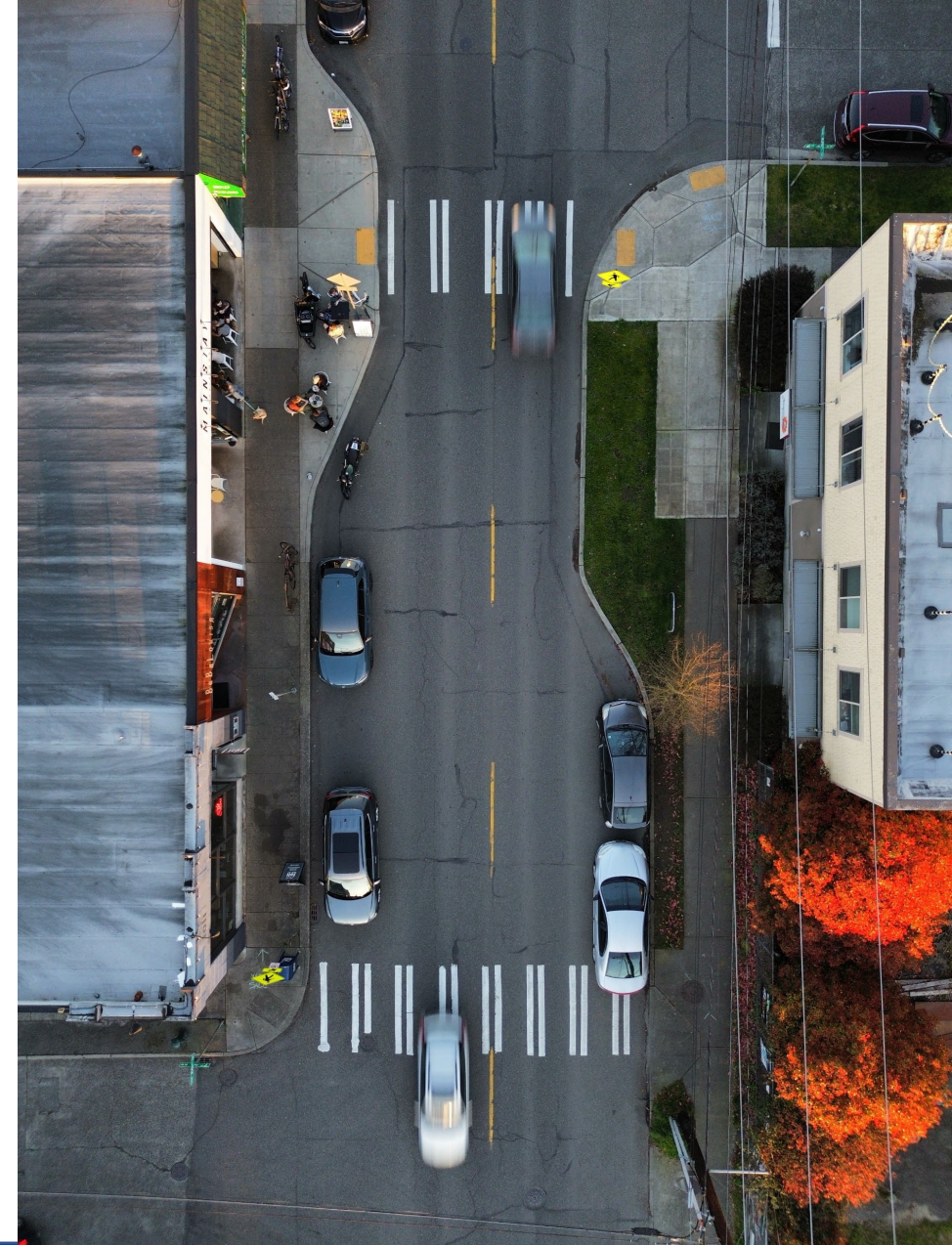
# Enhanced Crossings not Crosswalk Markings

- Marking crosswalks is not an isolated decision
- About improving the entire crossing experience
- We call, “enhanced crossings”
- Two-part decision:
  - Whether to enhance or not – location policy
  - If enhancing, what treatments to pair – treatment policy
- Enhanced Crossing policy improves on MUTCD guidance
- Also working on improving FHWA STEP guidance



# Enhanced Crossing Policy Background

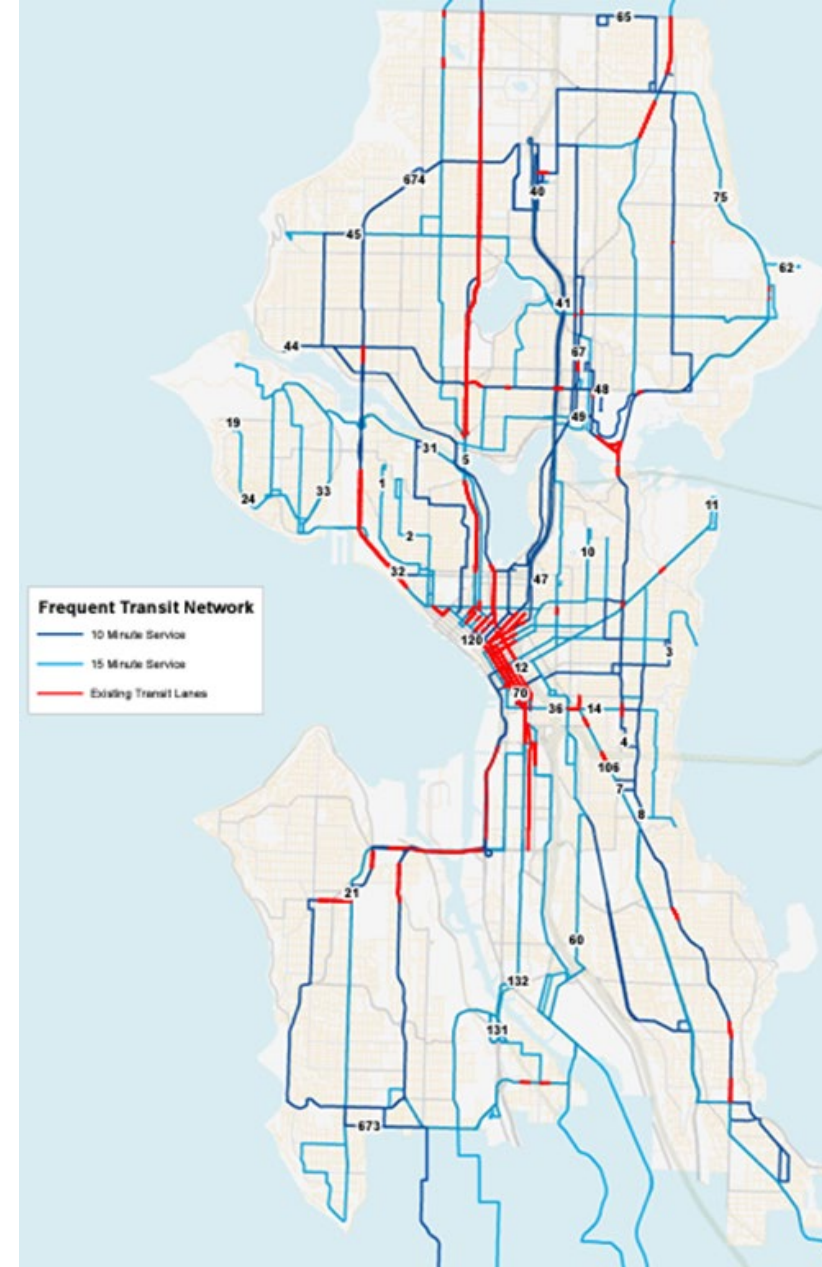
- Seattle historically based enhancements on observed ped volumes
- Policy goals:
  - Allow **proactive installation** of enhanced crossings
  - Facilitate a **predictable and intuitive pedestrian network** that scales to ped demand
  - Reduce ped travel distance and **encourage the use of more enhanced crossings.**
- Crossing guidance divided into two separate policies:  
**location policy, treatment policy**



# Tier 1 Pedestrian Generators

Enhanced crossings should be proactively provided across arterials at:

- Trail crossings
- Neighborhood greenway crossings
- Direct connections to school parcels
- Transit stops within Seattle's "Frequent Transit Network"



# Tier 2 Pedestrian Generators

Enhanced arterial crossings should be **considered for proactive installation** with additional documentation at:

- Transit stops outside of the Frequent Transit Network
- Main park entrances
- Senior centers/living facilities/meal sites, health care facilities, childcare centers
- Libraries, food banks, community centers, places of worship
- Universities and colleges
- High-density retail and commercial office developments



# Considerations for Tier 2 Enhanced Crossings

- Roadway characteristics:
  - Traffic volumes/speeds
  - Number of lanes and channelization
  - 5-year collision history
- Planned and existing land uses
- Observed or anticipated pedestrian demand
- Vulnerable demographics served by crossing enhancements (e.g., older adults, children, mobility disability users)
- Prioritization justification (e.g., participatory budgeting)



# All Other Crossings

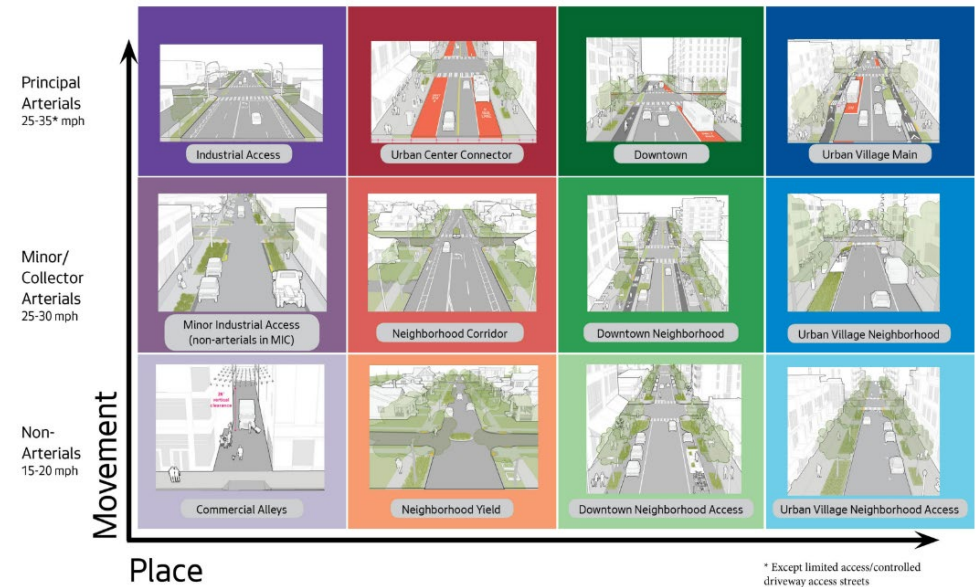
If a location does not connect to Tier 1 or 2 ped generators, crossing **may be enhanced based on ped volumes:**

- 20+ peds crossing in one hour
- 15+ peds crossing in any three hours
- Children, older adults, and people with mobility devices count double



# 2024 Look Ahead

- Still challenging to ensure consistent enhanced crossing spacing along corridors
- Developing next iteration of policy:
  - Provide flexibility in using crossing enhancement proactively, especially within school zones
  - Create recommended spacing guidelines based on arterial classification, land use designation, and street characteristics



“Crosswalk spacing criteria should be determined according to the pedestrian network, built environment, and observed desire lines. In general, *if it takes a person more than 3 minutes to walk to a crosswalk, wait to cross the street, and then resume his or her journey, he or she may decide to cross along a more direct, but unsafe or unprotected, route.* While this behavior depends heavily on the speed and volume of motorists, it is imperative to understand crossing behaviors from a pedestrian’s perspective.”

– NACTO Urban Street Design

# Ongoing Evaluation

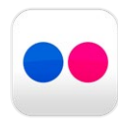
- Review decisions made using the policy on a quarterly basis
- Learn from challenges during the decision-making process and identify any gaps
- Examples of such policy enhancements are:
  - Extend to larger network of Frequent Transit Stops with the similar needs
  - Reduced the pedestrian volume threshold for locations outside of Tier 1 and Tier 2
  - Working on a spacing guideline for enhancing crossing locations
  - Working on better guidance on crossing treatment selection



# Questions?

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[www.seattle.gov/transportation](http://www.seattle.gov/transportation)





# Asphalt Art Initiative

**Helping cities use art and community engagement to improve street safety and revitalize public space.**

# New York City Origins



# What is Asphalt Art?



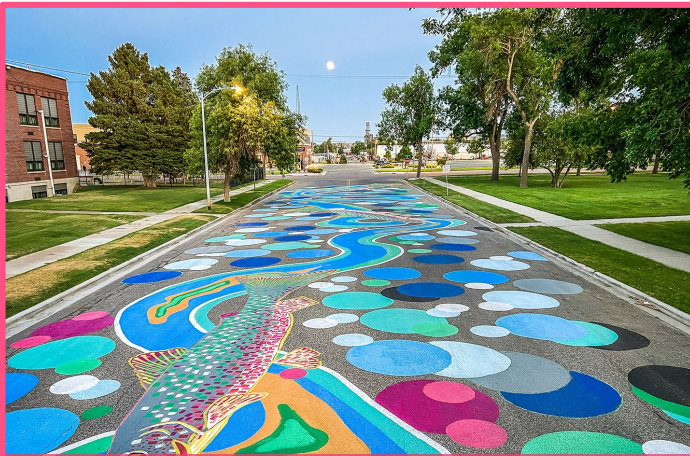
Curb Extensions



Intersections



Crosswalks



Vehicle or Parking Lanes



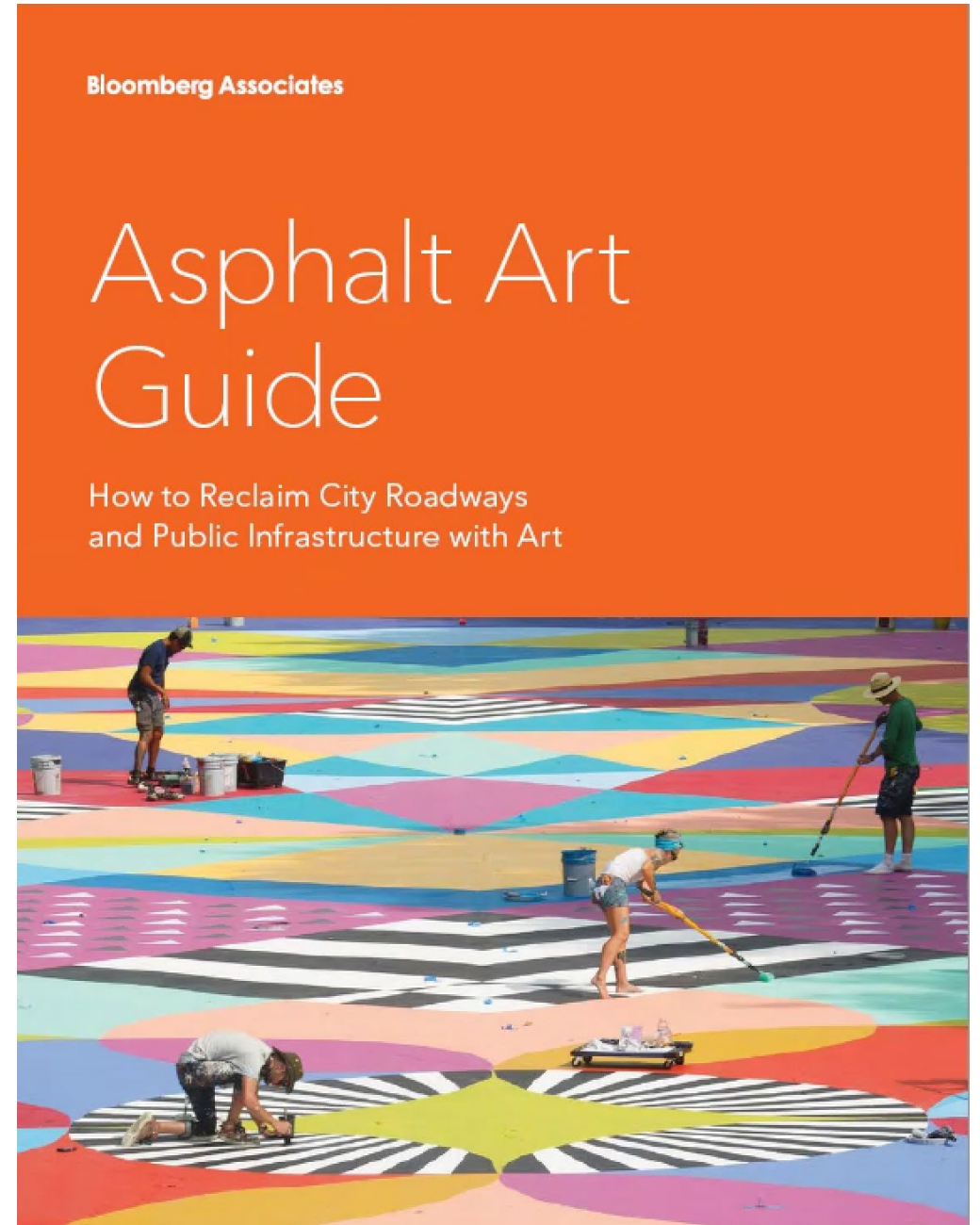
Plaza / Pedestrian Space



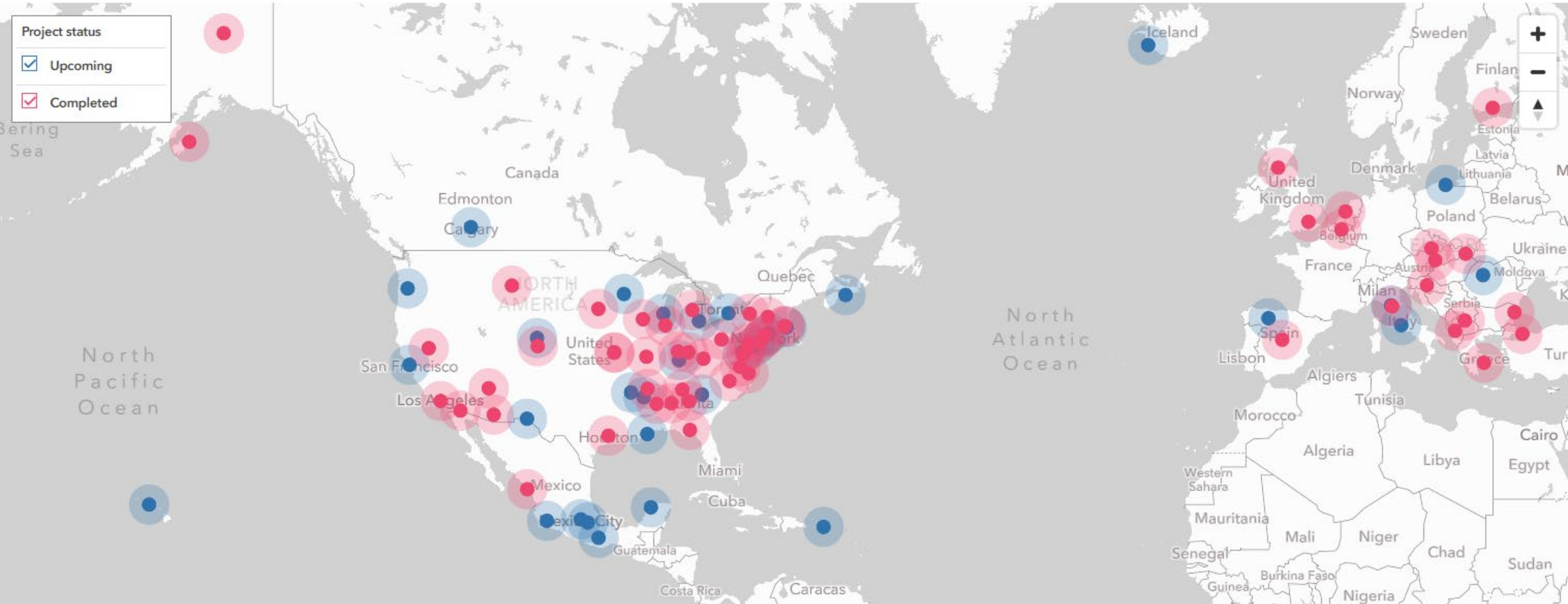
Other Infrastructure

# Asphalt Art Guide

Offering inspirational case studies and a step-by-step manual for creating art on roadways and public spaces



# Asphalt Art Initiative: 90 Grants to Date



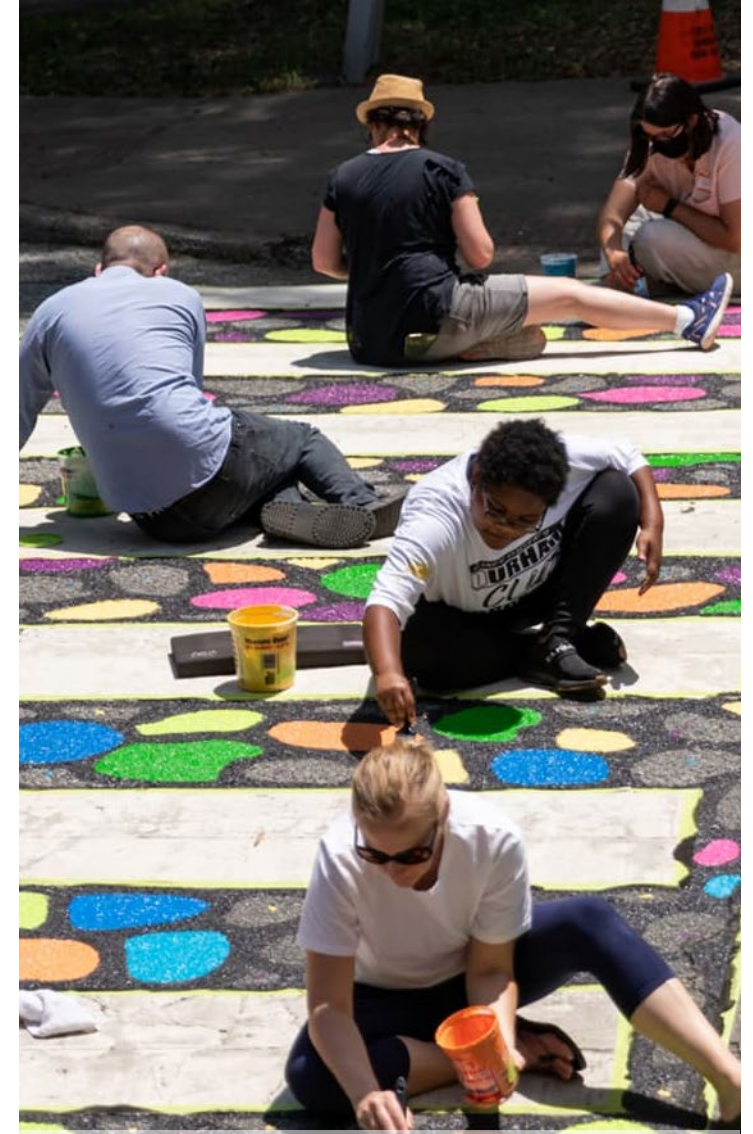
# Asphalt Art Initiative Goals



**Improving Pedestrian Safety**



**Activating Public Space**



**Promoting Community Engagement**

## Tips and answers to common inquiries about creating asphalt art, expanding on our Asphalt Art Guide.

[Design Guidelines](#) [Planning + Design](#) [Preparing + Painting](#) [After Painting](#)

ON THIS PAGE

[Choosing paint type](#) [Resurfaced asphalt](#) [Preparing site](#) [Volunteer painting day](#)

### Q: What type of paint should I use?

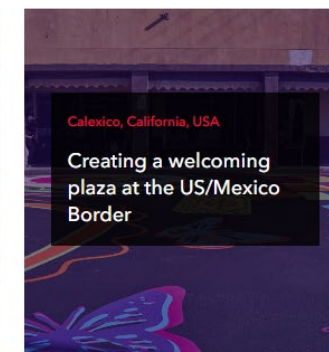
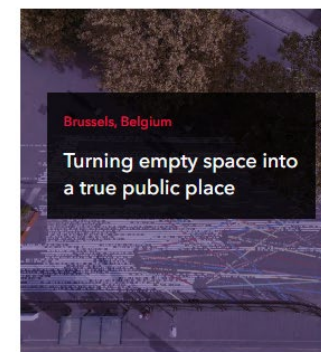
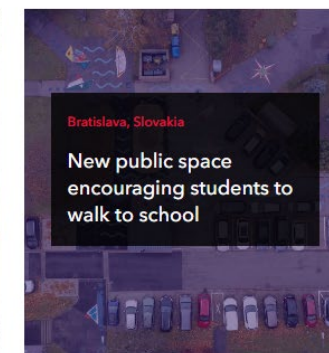
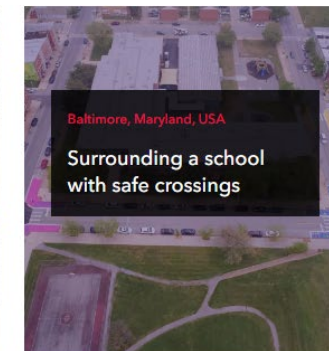
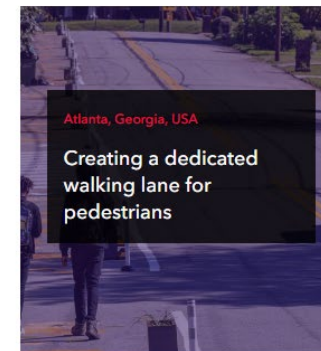
Choosing a type of paint depends on the desired duration of the project, expected level and type of traffic, and the maintenance capacity of the project team. Shorter term paints will wear faster, but likely cost much less. Discuss expectations with project partners early on in the process so that all are aware of the relationship between cost, durability, and anticipated wear.

When evaluating paint types, consider the level of traffic that will be experienced across the surface being painted. For crosswalks where there will be heavy traffic (over 20,000 ADT), thermoplastic or epoxy treatments will wear better than paint. For curb extensions that will not see a significant amount of traffic, paint may wear less fast, but will still collect debris and get dirty.

[See sample photos of the longevity of different paint types here.](#)



# Asphaltart.Bloomberg.org



# MUTCD 2009 Edition: Asphalt Art in a Gray Area

- 2009 Edition said almost nothing about aesthetic treatments
- 2013 Interpretation Letter muddied the waters
  - “The FHWA’s position has always been...that aesthetic treatments...are permissible”
    - But also:
  - “the use of crosswalk art is actually contrary to the goal of increased safety”
- Unsigned 2009 Edition FAQ went furthest
  - “Intersection murals and street artwork have a potential to compromise motorist safety by interfering with, detracting from, or obscuring official traffic control devices.”
  - “Past practices of intersection murals and street art have compromised the veracity of the crosswalk.”
- End result: many cities were willing to embrace asphalt art while others steered clear

# Improving Road Safety: Kansas City, Missouri

Average traffic speeds dropped by **45%**

Traffic noise decreased by **14%**



# Improving Road Safety: Baltimore, Maryland

% of drivers yielding to pedestrians rose from **37%** to **78%**



# Improving Road Safety: Tucson, Arizona

% of drivers yielding to pedestrians rose from **32%** to **69%**



# Improving Road Safety: Durham, North Carolina

% of people who felt unsafe fell from **85%** to **6%**



# Revitalizing Public Space: Reno, Nevada

**18,000** of public space created on formally barren concrete

**10** new or relocated events on new downtown hub



# Engaging Community: Saginaw, Michigan

**500** community volunteers and **29** artists collaborated on the installation

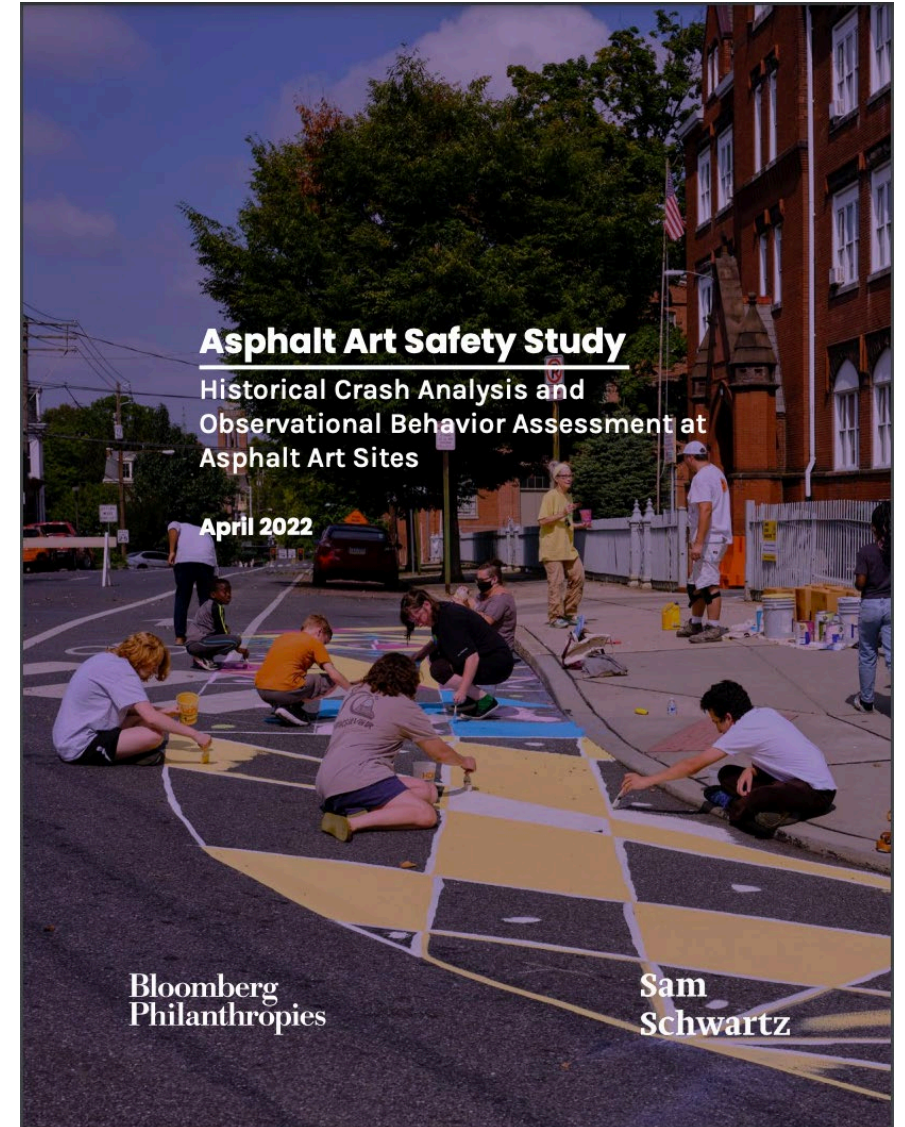
**100%** satisfaction from visitor surveys

**83%** of business owners cited a benefit to their business



# Asphalt Art Safety Study

- Partnership: Bloomberg Philanthropies, Sam Schwartz, Street Plans
- Review of Crash Rates at 17 asphalt art projects
  - Total Crashes
  - Vulnerable user crashes
  - Fatal and injury crashes
- Review of driver and pedestrian behavior via before-after video from 5 AAI projects
  - Near misses
  - Driver yielding/stopping behavior
  - Compliance with traffic controls



# Asphalt Art Safety Study: Results

**50%** decrease in traffic crashes involving pedestrians or bikers

**37%** decrease in injury crashes

**27%** increase in drivers yielding to pedestrians with the right of way

**25%** decrease in serious conflicts between drivers and pedestrians

Pittsburgh, PA

Figure 10: Pittsburgh, PA - Before



Figure 11: Pittsburgh, PA - After



# Asphalt Art Safety Study: Considerations

- First multi-city review of asphalt art projects
- Limited sample size – 17 analyzed for crash histories and 5 for driving behavior
- Manual analysis of video footage
- Not yet a distinction between impact of typical tactical elements versus artwork

Lancaster, PA

Figure 12: Lancaster, PA - Before

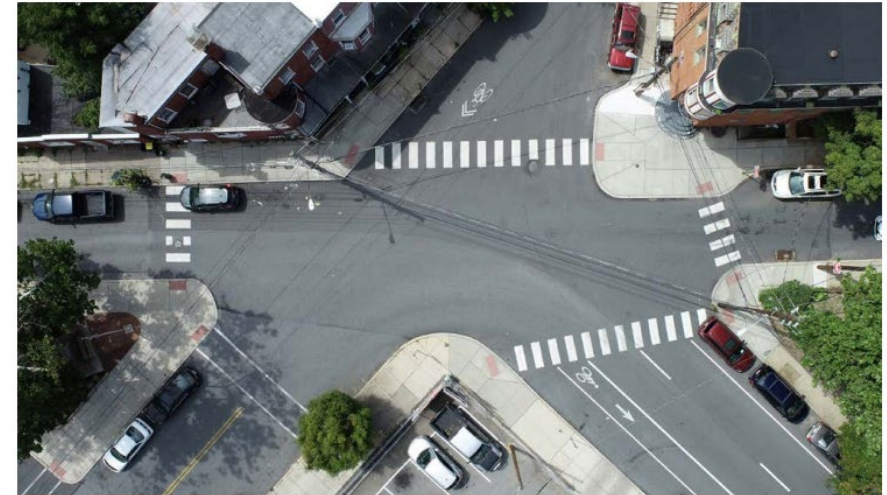


Figure 13: Lancaster, PA - After



# Asphalt Art & MUTCD 11<sup>th</sup> Edition: Takeaways

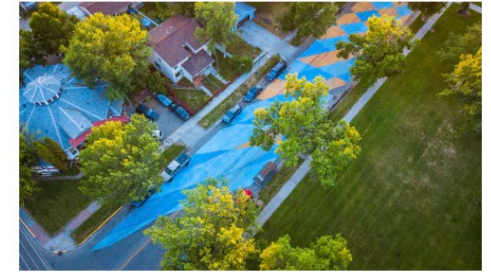
- Explicitly allows asphalt art on US roadways for the first time, “in” or “outside the roadway”
- Provided explicit design details for aesthetic crosswalk projects – e.g. 6” away from transverse
- Confirmed tactical sidewalk extensions are not roadway
- Rulemaking document cited Asphalt Art Safety Study, called for further research
- FHWA colorful crosswalk study underway but under-wraps

## Q: Where can we create asphalt art?

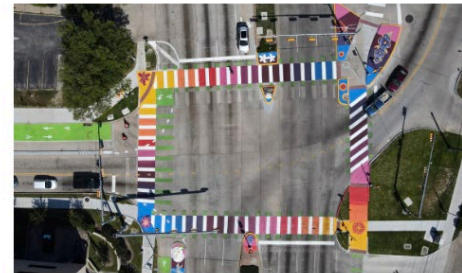
Section 3H.03 (pages 622-623) of the MUTCD allows “aesthetic surface treatments” (aka asphalt art):



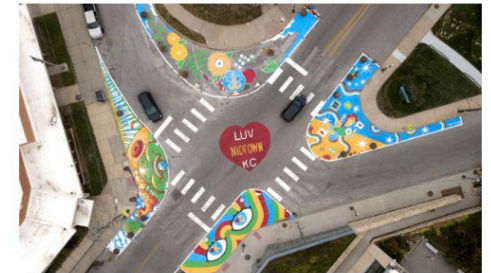
Inside intersections



Midblock

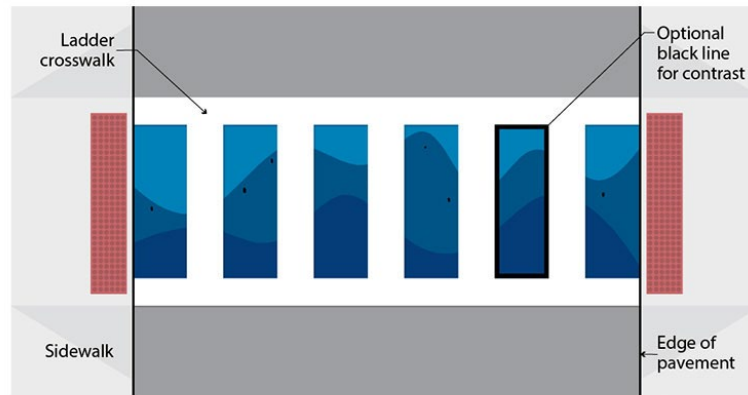
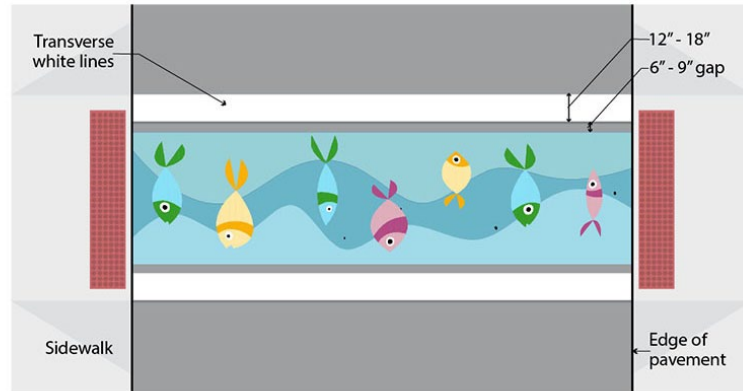


As part of crosswalks



In quick-build curb extensions, as well as other pedestrian-only areas like plazas

# Asphalt Art & MUTCD 11<sup>th</sup> Edition: Considerations



- No retroreflectivity or official colors (bike lane green, bus lane red, yellow/white striping, etc)
- State, local regulations still apply
- Don't make it difficult for blind, low vision pedestrians
- No advertising, "symbols," "pictographs," or "illustrations\*"
- Suggests – doesn't mandate or define – muted or "earth-tone" colors

# Asphalt Art & MUTCD 11<sup>th</sup> Edition: Curb Extensions

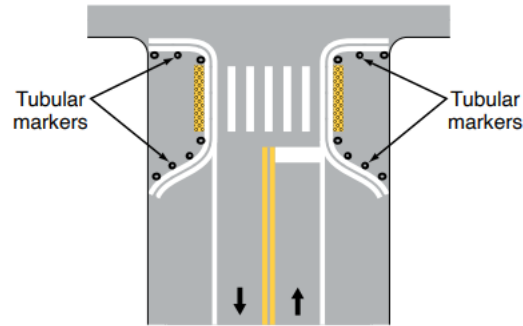
**Figure 3J-6. Examples of Sidewalk Extensions Designated by Pavement Markings and Channelization**

**A – Sidewalk extension to reduce the pedestrian crossing distance**

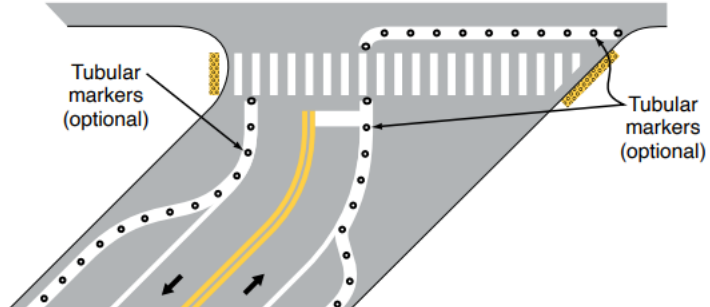


Legend

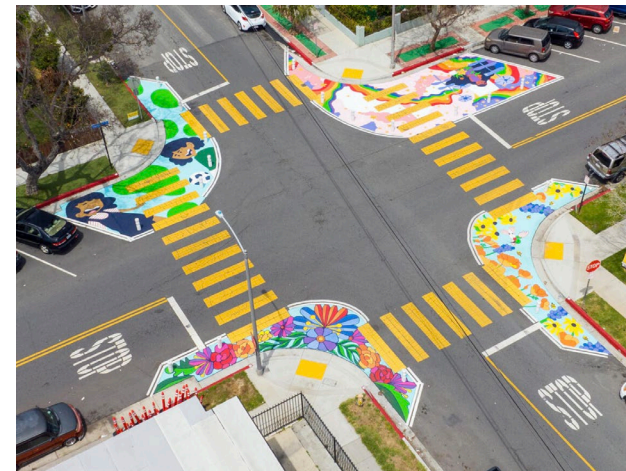
→ Direction of travel



**B – Channelizing for speed control and altered travel paths**



Fort Collins,  
CO



Long Beach,  
CA

# Newest AAI Projects: Minneapolis



# Newest AAI Projects: Flagstaff



# Newest AAI Projects: Passaic



# Asphalt Art Initiative: Next Steps

- Building out case studies, resources on [Asphaltart.Bloomberg.org](http://Asphaltart.Bloomberg.org)
- More innovative AAI projects coming online each week – e.g. new accessibility features in **Fort Collins**
- Further refinements to MUTCD language – e.g. “Illustrations” to “Illusions”
- All partnerships, analysis, welcome: materials, specific community impacts
- Expanded safety study underway with more sites, more footage and AI analysis
- Stay tuned for future research and grant opportunities





# Thank You

For more info, visit: [asphaltart.bloomberg.org](https://asphaltart.bloomberg.org)  
Or contact Nick Mosquera at [nmosquera@bloomberg.org](mailto:nmosquera@bloomberg.org)