



Decorative Crosswalk Case Study Series

JUNE 2023



A Community of Transportation Professionals

ITE INFORMATIONAL REPORT

ABOUT ITE

Founded in 1930, ITE is an international membership association of transportation professionals who work to improve safety and mobility for all transportation system users and help build smart and livable communities. Through its products and services, ITE promotes professional development and career advancement for its members, supports and encourages education, identifies necessary research, develops technical resources including standards and recommended practices, develops public awareness programs, and serves as a conduit for the exchange of professional information. Through meetings, seminars, publications, and a network of more than 17,000 members working in 78 countries, ITE connects members to a world of ideas, people, and resources.

Institute of Transportation Engineers

1627 Eye Street, NW, Suite 550

Washington, DC 20006 USA

Telephone: 202-785-0060

www.ite.org

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This report was developed by the Pedestrian and Bicycle Standing Committee of the ITE Complete Streets Council. ITE would like to specifically thank the following main authors for their dedication and collaboration:

Authors:

Josh Green, Toole Design Group

Tyler Wong, Toole Design Group

Reviewers:

Sarah Abel, Toole Design Group

Mike Cynecki, Lee Engineering, LLC

Ransford S. McCourt

Claude Strayer, Fehr & Peers

Intern: Chris Hume

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INTRODUCTION

This case study series from ITE demonstrates a few ways in which public agencies have implemented decorative crosswalks that meet their community's desires for enhanced urban environments without sacrificing pedestrian safety. Community-driven decorative crosswalks have arisen across the United States, including in cities such as Austin, Texas; Baltimore, Maryland; Des Moines, Iowa; Seattle, Washington; and Memphis, Tennessee. The case studies illustrate similar ways in which communities have worked with local agencies to add artistic features to crosswalks in a safe and effective manner and highlight the nuances involved in their planning and prioritization, installation and implementation, and maintenance and upkeep. Design considerations and policy decisions are also discussed regarding current federal guidance.

ITE acknowledges that most if not all the decorative crossing treatments covered in the following case studies are inconsistent with the 2009 *Manual on Uniform Traffic Control Devices* (MUTCD) as well as the current MUTCD provisions and proposed changes in the December 2020 Notice of Proposed Amendments (NPA). However, each of the case studies presented provides an example of how public agencies are improving public space through decorative crosswalk treatments.

ITE also acknowledges that FHWA is completing an evaluation of aesthetically treated crosswalks in 2023. Findings from this study will provide information related to road users' recognition and behavior at crosswalks. When released, this study will be helpful in clarifying key questions that have been raised related to decorative crosswalks.

One of the key aspects of decorative crosswalks was highlighted in ITE's comments on the MUTCD NPA in 2021 in a joint letter with NACTO. In those comments, ITE made a clear distinction related to context and characteristics in the potential application of decorative crosswalks, recommending possible applications be limited to those situations with positive control and to local streets with speed limits of 25 mph or less where positive control is not present. Until the 11th edition of the MUTCD is published, it is unknown how FHWA will respond to this input.

What Are Decorative Crosswalks?

Decorative crosswalks are marked pedestrian crossings across a roadway that include a colored and/or textured pattern, aesthetic, or artistic mural element within its horizontal white boundaries. They can also be referred to as art crossings or creative crosswalks. The crosswalks, created because of city-community partnerships primarily for aesthetic enhancement, may also be implemented to emphasize and alert roadway users of the designated pedestrian crossing.



Figure 1. Example of a decorative crosswalk located in Seattle, Washington.

Source: Toole Design Group.

What Does the MUTCD Currently Say About Decorative Crosswalks?

The Federal Highway Administration (FHWA) responded to a request for interpretation from the New York State Department of Transportation regarding decorative crosswalks in “Interpretation Letter 3(09)-8 (I) - Colored Pavement Treatments in Crosswalks,” posted in 2011. This response is understood to be FHWA’s Official Rulings and interpretation of current MUTCD guidelines which states, “patterns or colors that degrade the contrast of the white transverse pavement markings establishing the crosswalk are to be avoided,” and that aesthetic treatments between crosswalk lines should be “devoid of retroreflective properties” and should not “diminish the effectiveness of the legally required white transverse pavement markings.” The issue noted in this letter specific to Buffalo, New York, was that bright colors in decorative crosswalk designs where it is prominently visible to road users both during daylight and nighttime conditions has “significant potential to distract road users and thereby reduce safety.” This official ruling from FHWA implies that artistic crosswalks should not be allowed with the understanding that “traffic control device uniformity, and the safety benefits such uniformity provides, must take precedence.” However, the letter notes “previous interpretations have deemed it acceptable to use brick pavers, granite paving stones, and similar pavement treatments within a crosswalk as part of an urban streetscaping treatment.” The interpretation letter is linked below.

https://mutcd.fhwa.dot.gov/resources/interpretations/3_09_8.htm

History/Evolution of Decorative Crosswalks

North America – United States

In response to local demand in several cities to enhance street aesthetics in the late 1990s, colored and patterned treatments—generally implemented between legally marked transverse lines of crosswalks—were introduced. The early treatments generally used paving materials (brick, colored concrete, stamped patterns) within the crosswalk area. These treatments evolved through developments in pavement marking retroreflectivity in the mid-2000s, which led to the marketing of aesthetic treatments to increase pedestrian visibility within the crosswalk. Stemming from this, 2004 and 2005 rulings from the FHWA designated retroreflective crosswalks as official traffic control devices due to their reflectivity and conspicuity. The increased use of new decorative crossing designs led to a misconception (according to the FHWA) that if the legally mandated horizontal lines were present, flexibility was permitted within the crossing area. This conflicted with the MUTCD according to FHWA, which the 2011 Official Ruling stated that “any freeform design would degrade the contrast of the white transverse lines against the composition of the pavement beneath it.” In deviating from previous Official Rulings on the matter that concluded an increased factor of safety and decreased number of pedestrian deaths were not evident after installation, this 2011 Official Ruling stated, “the use of crosswalk art is actually contrary to the goal of increased safety and most likely could be a contributing factor to a false sense of security for both motorists and pedestrians.” Since this ruling, FHWA has repeatedly asked localities which have constructed artistic crossings to either remove them or lose federal funding on the roads which contain them. The official ruling from FHWA is linked below.

https://mutcd.fhwa.dot.gov/resources/interpretations/3_09_24.htm

However, demand for art and placemaking that represents the larger community culture and promotes equitable growth and sustainable transportation modes has continued to grow. Several cities around the country, including some of those highlighted in the case studies series, have introduced policies and programs adopting specific guidelines for the installation of decorative crosswalk treatments. Adopted policies from other cities not highlighted in the following case studies can be found at the links on the following page.

- Milwaukee, Wisconsin
 - City of Milwaukee Department of Public Works. (n.d.). “Decorative Crosswalk Permit Specifications.” <https://city.milwaukee.gov/ImageLibrary/Groups/cityDPW/divisions/administrative/docs/specialevents/DecorativeCrosswalkApplication.pdf>
- Los Angeles, California
 - Los Angeles Department of Transportation. 2018-2019. “Special Application Cycle 2018-2019: Decorative Crosswalk.” <https://centralsanpedronc.org/wp-content/uploads/2019/01/2018DecorativeCrosswalkforweb.pdf>

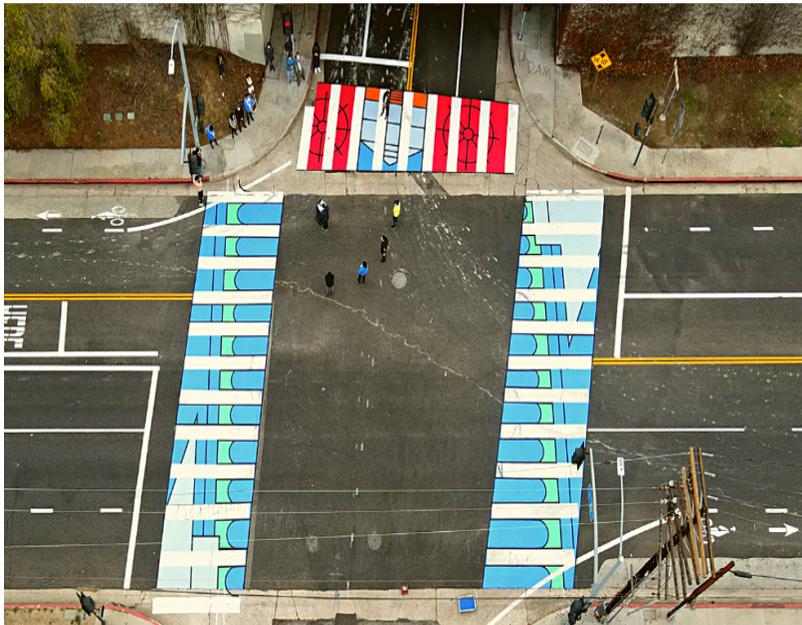


Figure 2. Example of decorative crosswalks at an intersection in Los Angeles, California.

Source: Randy McCourt, ITE.

ITE has encouraged FHWA to grant additional flexibility to use these treatments to support community needs for a variety of contexts and characteristics. This includes supporting the notion that current guidelines should evolve as the transportation system continues to evolve and should support innovation without limiting the ability of agencies to adapt to changing conditions, updated practices, and new research.

North America – Canada

Decorative crosswalks are relatively new in Canada, with the first permanent decorative rainbow crosswalk installation occurring in 2013. Apart from a few localities, such aesthetic treatments have been more widely accepted as compared to the United States and guidelines vary by province and locality. Generally, decorative crosswalk designs are allowed, given that the treatment is contained within the two white standard crosswalk lines. Cities such as Vancouver, British Columbia have developed their own set of design and technical guidelines for public crosswalk projects and is provided at the link below.

- British Columbia, Canada
 - Driving and transportation - province of British Columbia. (n.d.). Retrieved October 20, 2022. <https://www2.gov.bc.ca/assets/gov/driving-and-transportation/transportation-infrastructure/engineering-standards-and-guidelines/technical-circulars/2022/t02-22.pdf>
 - British Columbia Active Transportation Infrastructure Grants. (n.d.). Retrieved October 20, 2022. <https://protect-us.mimecast.com/s/n27TCpYWRDtQw0McPUIBL?domain=gov.bc.ca>

Europe

Like Canada, decorative — or “art” — crosswalks have only recently begun to be developed in Europe, with projects such as Christo Guelov’s “Funnycross” in Madrid and Better Bankside in London launching in 2015. Projects are usually funded and commissioned by local authorities, as when the City Council of Torreldones funded “Funnycross” and Transport for London, through the office of the mayor, funded the Better Bankside project. Decorative crosswalks are developed on a case-by-case basis and, unlike those in North America, are usually not generated through direct community input. Demonstrating the difference in crosswalk implementation by locale, an artistic 3-D Zebra crossing in Schmalkalden, Germany was removed in 2018 by the Thuringian government as it was found to violate road traffic regulations, failing to “ensure that motorists brake in front of it.” This points to potential need for guidance between benign community art and potential to affect road user safety.

The links below give insight on the benefit and effectiveness of decorative crosswalks across the globe. They also highlight how the functionality of decorative crosswalks can create positive change and are perceived to increase pedestrian safety in areas with high foot traffic. Additional information for decorative crosswalks in Europe is provided at the links below.

- Geveko Markings. 2017. “Creative and colourful crosswalk in Rotterdam.” Geveko Markings, May 26, 2017. <https://www.geveko-markings.com/cases/decomark-creative-and-colourful-crosswalk-in-rotterdam/>
- Perry, Francesca. 2016. “Creative crosswalks around the world-in pictures.” The Guardian, July 14, 2016. <https://www.theguardian.com/cities/gallery/2016/jul/14/creative-crosswalks-pedestrian-zebra-crossings-around-world-in-pictures>

- Nguyen D. Todd. 2019. “Beyond the black and white. Exploring 5 creative crosswalks around the world that make good places.” LinkedIn, August 13, 2019. <https://www.linkedin.com/pulse/beyond-black-white-exploring-5-creative-crosswalks-around-nguyen/>
- Island Press. 2016. *Global Street Design Guide*. <https://globaldesigningcities.org/publication/global-street-design-guide/designing-streets-people/designing-for-pedestrians/>
- Asphalt Art Guide. (n.d.). Retrieved October 20, 2022. <https://asphaltart.bloomberg.org/guide/>

Recent Research

Communities around the world have implemented a variety of artistic pedestrian crosswalk treatments that tie together conventional engineering safety principles with civic pride and community stewardship. However, in the United States, the abundant use of artwork in pedestrian crosswalks is being perceived as contrary to the goal of increased safety and could contribute to a false sense of security for all roadway users. There has been anecdotal evidence of artistic street applications that can encourage safer behavior among road users, but an evaluation of the safety performance of these projects is not well understood, for a variety of reasons.

To address this issue, Bloomberg Philanthropies conducted an impact analysis in 2022 that compared crash rates and observed pedestrian and motorist behavior before and after artistic interventions were installed in public street space. The study compared historical crash data for 17 different projects and assessed behavioral changes for five different projects within the United States. Most of the sites were lower speed, residential, or business district sites, but the study generally concluded that roadway safety was improved across a variety of performance measures for these projects.

Highlights of the historical crash analysis for the 17 study locations include the following:

- 50 percent decrease in the rate of crashes involving pedestrians or other vulnerable road users (understanding that this finding was skewed by one NYC site; 12 of the 17 sites had no change or an increase)
- 17 percent decrease in the total crash rate and 37 percent decrease in the rate of crashes leading to injuries (understanding that half the sites had no change, and the results are weighted by two sites, one of which no longer has the decorative paving)

Similarly, highlights of the behavioral assessment for the five study locations include the following:

- 25 percent decrease in pedestrian crossings involving a conflict with drivers
- 27 percent increase in frequency of drivers immediately yielding to pedestrians with the right-of-way
- 38 percent decrease in pedestrians crossing against the walk signal

For the entire safety study, visit the link below.

- Schwartz, Sam. 2022. “Asphalt Art Study: Historical Crash Analysis and Observational Behavior Assessment at Asphalt Art Sites.” Bloomberg Philanthropies, April 2022. <https://assets.bbhub.io/dotorg/sites/43/2022/04/Asphalt-Art-Safety-Study.pdf>

For additional background on the topic and safety anecdotes from other cities, visit the link below.

- DiMiceli, Vince. 2019. “Feds Keep Cracking Down on Crosswalk Art.” Streetsblog USA, September 30, 2019. <https://usa.streetsblog.org/2019/09/30/feds-keep-cracking-down-on-crosswalk-art/>

MUTCD proposed provisions and changes have recognized that flexibility for aesthetic treatment within crosswalks is possible. The extent to which this flexibility is incorporated into the final rule-making by FHWA is not known currently. This has led FHWA to evaluate how these treatments may or may not improve the safety or operations at and around the crosswalk, while maintaining the recognition of the crosswalk. The FHWA kicked off the Evaluation of Aesthetically Treated Crosswalks Project in June 2020 with the Texas Transportation Institute which “evaluates the impact aesthetically treated crosswalks have on road users’ recognition and behavior at crosswalks, looking specifically at rainbow crosswalks.” The evaluation has yet to be published as of the time of this writing. Information on the project can be found at the following link. <https://highways.dot.gov/research/projects/evaluation-aesthetically-treated-crosswalks>.

ITE’s MUTCD NPA Comment on Decorative Crosswalks

The FHWA released the Notice of Proposed Amendment for the proposed 11th edition of the MUTCD in December of 2020. Included in the proposed amendment was a section “Aesthetic Treatments in Crosswalks” (Section 3H.03) outlining use, roadway speed threshold, color, and pattern. ITE provided a comment in its response to the NPA specifically referring to this new section. Their comment said that the new section was “unnecessarily restrictive and the designs provided in the figure seem arbitrary and inconsistent with aesthetic treatment already permitted by many agencies that have not found them to cause safety issues.” They provided their support for creative crosswalks saying that “aesthetic treatments in crosswalks on low speed, low volume roads should be permitted unless they create a documented safety issue.” This association between context and characteristics is necessary in addressing decorative crosswalks as they may be appropriate in certain settings while not being appropriate in others.

For the full statement in the NPA, visit the link below.

<https://www.federalregister.gov/d/2020-26789/p-874>

For ITE’s full MUTCD NPA response, visit the link below.

<https://www.ite.org/ITEORG/assets/File/public/MUTCD%20NPA%20Letter%20-%20final.pdf>

The following sections highlight five case studies of agencies addressing decorative crosswalks including guidelines, references, and lessons learned from their experience.



Figure 3. Decorative Crosswalks at 20th Street and Franklin Street in Oakland, California.
Source: Randy McCourt, ITE.

CASE STUDY #1: AUSTIN, TEXAS, UNITED STATES

In This Case Study You Will Learn:

- How the city of Austin, Texas utilized a decorative crosswalk program to engage their community
- An example of a transportation department’s decorative crosswalk program

Background

On July 21, 2016, the Austin Transportation Department (ATD) installed the city’s first “Creative Crosswalk” on Lake Austin Boulevard. The crosswalk, the first creation as part of the Creative Crosswalk Pilot Program, was designed and put forward by artists Mery Collet Godigna and Luis Guitierrez. The program was created to “install safe, cost efficient and low-maintenance painted crosswalks by using a combination of colors, textures, scoring patterns to liven up an existing marked crosswalk.” The program in Austin is currently on hold at the time of this writing due in large part to staffing and consolidation of the program with other divisions within ATD.



Figure 1. “Crosswalk on the Lake” on Lake Austin Boulevard is the first crosswalk designed as part of Austin’s Creative Crosswalk Pilot Program. The design uses water imagery, echoing the nearby lake and adjacent offices of the Lower Colorado River Authority.

Source: Josh Green, Toole Design Group.



Figure 2. Rainbow Crosswalks at 4th Street and Colorado Street in Austin, Texas.
Source: Josh Green, Toole Design Group.

Implementation and Outcomes

The City of Austin’s Creative Crosswalk Pilot Program was created to showcase the culture and history of neighborhoods by livening existing marked crosswalks. The pilot program was designed to accept online applications and provided communities with a PDF guidebook outlining the proper conditions and limitations of creative crosswalk design. As program funding was limited, ATD encouraged neighborhood organizations to identify their own funding sources such as grants or donations. Maintenance of creative crosswalks became a growing issue in heavily traveled locations across the city and the program was ultimately placed on hold as the expansion of autonomous vehicle testing technology, which has increased on city streets, led to safety concerns for how driverless technology and artificial intelligence mapping technology would detect decorative crosswalk colors and patterns. As regulation for this type of technology remains unclear, the City has implemented other visual art infrastructure programs, such as the Art in Public Places (AIPP) program and is seeking other alternatives to expand decorative crosswalks safely in Austin.

Design Guidelines and Process Requirements

ATD published a creative crosswalk guidelines document in June of 2018 which outlines the cost and funding options, design guidelines, and application process of the program. Prior to the program hold, the City's policy stated that creative crosswalks should adhere to the following:

- Be installed where existing crosswalk markings have a continental style.
- Be added only between the bars (10 feet wide x 2 feet deep, 4 feet between the bars) of the continental style.
- Be colorful, with simple patterns. Show specific colors. These will be reviewed by ATD staff for availability and appropriateness.
- Always include the reflective white parallel bars, in continental or standard layout.
- Not include shapes such as octagons, triangles, or any text, logos, or colors that can be confused with standard traffic control devices or legends.
- Not include commercial advertising or logos.
- Anticipate the need to create stencils for placement of the design. To ensure a quality installation, freehand painting is not allowed.
- Only be installed where pavement is in good condition, allowing the materials to bond well.
- Creative crosswalks may be implemented in conjunction with other partnerships programs such as the following:
 - Art in Public Places (AIPP) program of the City of Austin
 - Neighborhood Partnering Program (NPP) administered by Public Works Department
 - Implemented via a separate (new) ATD administered program. ATD may choose to solicit proposals from interested parties, neighbors, community organizations or the public to implement creative crosswalks on streets that are important to the city pattern, on key commercial and mixed-use areas, at entries to residential areas, etc.

Intersection	W 4th Street at Colorado Street	2246 Guadalupe Street	3701 Lake Austin Boulevard
Control Type	Four-leg signalized intersection.	Signalized midblock pedestrian crossing.	Midblock Pedestrian Hybrid Beacon.
Street Characteristics	Two-lane road with parking/two lane road with parking and left turn pockets, 25 MPH.	Four-lane road with parking protected bike lane, 30 MPH.	Two-lane road with bike lanes and street parking, 35 MPH.
Adjacent Land Use	Downtown, commercial.	Urban university campus with commercial frontage.	Edge of residential neighborhood with office park building frontage and small commercial section.
Design	Lateral rainbow stripes behind white continental crosswalk.	Continental bars colored to reflect the “native Texas landscape” end capped with white.	Blue wave-like lines behind (and extending beyond) white transverse lines.
Background	The design celebrates LGBT+ pride. The rainbow crosswalks were highly criticized by local business owners when first proposed in 2014 due to safety and legal concerns, but such concerns were determined to be unfounded, and the surrounding area is pleased with their new crosswalks.	The crossing is located over a main street along the University of Texas at Austin campus with an extra wide crosswalk (85’) and was designed by a student at the university.	The first creative crosswalk in Austin uses the surrounding land use (Lower Colorado River Authority) as inspiration for the design.
Install Year	2021	2017	2014

Note: While a comprehensive safety study has not been conducted at any of the creative crosswalk locations, crash data from the City indicate that 0 crashes have been recorded between 2018 and October 2022.

Lessons Learned

- Creative crosswalks can visually represent unique community goals and can provide a symbol of cultural progress. ATD installed decorative rainbow crosswalks in a prominent downtown location in commemoration of National Coming Out Day. The symbolism of the decorative treatment is important, as the crosswalks include black and brown stripes that represent people of color, and baby blue, pink, and white, which represents the Transgender community.
- Transportation technology and advancement in autonomous vehicles may impact pedestrian safety goals and may dictate what public space looks like in the future.

References and Further Information

1. Austin Transportation Department. 2018. “Program Guidelines, Creative Crosswalks.” Updated June 5, 2018. https://www.austintexas.gov/sites/default/files/files/Transportation/Creative_Crosswalk_Guidelines_6-5-18.pdf
2. Estlund, David. 2014. “Price Crosswalk Update: Council unanimously passes motion to consider rainbow crosswalks.” *The Austin Chronicle*, Austin, TX. September 26, 2014. <https://www.austinchronicle.com/daily/qmmunity/2014-09-26/pride-crosswalk-update/>
3. Dupree, Will. 2021. “City Leaders unveil rainbow crosswalks at downtown Austin intersection.” KXAN. October 8, 2021. <https://www.kxan.com/news/local/austin/rainbow-crosswalks-going-in-monday-at-downtown-austin-intersection/?ipid=related-recirc>
4. GAF. 2018. “Pavement Coatings Project Profile: Creative Crosswalks, Austin, TX.” May 2018. <https://www.gaf.com/en-us/commercial-case-studies/pavement-coatings-projects/creative-crosswalks>
5. King, Trinity. 2017. “West Mall Crosswalk Gets a Facelift Thanks to Two COFA Students.” University of Texas at Austin, College of Fine Arts. December 19, 2017. <https://finearts.utexas.edu/feature/news/west-mall-crosswalk-gets-facelift-thanks-two-cofa-students>

CASE STUDY #2: BALTIMORE, MARYLAND, UNITED STATES

In This Case Study You Will Learn:

- How the City of Baltimore started by integrating decorative crossings into multiple projects without a dedicated program or division and eventually used that experience to build out a formal program.
- How cities and locales develop guidelines for decorative crosswalks with assistance from local educational institutions.

Background

In December 2013, as part of an effort to increase the amount of art in public spaces, the City of Baltimore's Office of Promotion and the Arts installed artistic crosswalks on all legs of two downtown intersections; one location designed with white zippers opening within the transverse lines, and the other with hopscotch paths through the ladder crosswalks. Since then, numerous decorative crosswalks have been developed around the city, most notably near elementary schools and many in partnership with local firm Graham Projects. Decorative crosswalks were originally installed circumstantially rather than being developed as part of a dedicated Baltimore City initiative. As the movement grew and there was more interest in decorative crosswalks and other placemaking, the City formalized their Community-Led Placemaking Program.



Figure 1. Reverberations Crosswalk, Graham Projects.

Source: Public Artist Graham Coreil-Allen, <https://grahamprojects.com>.

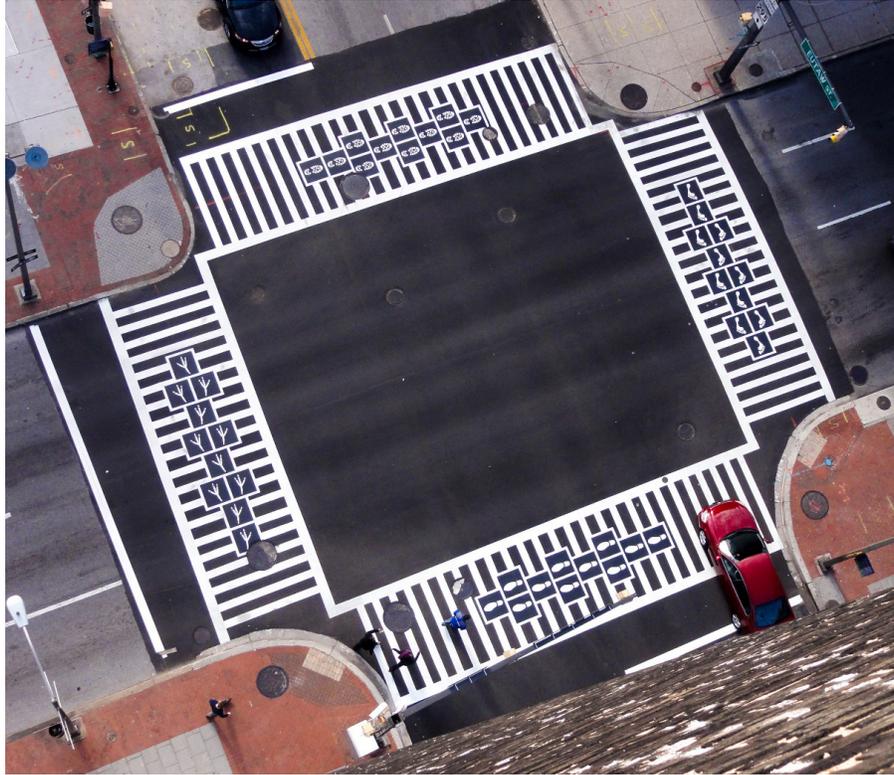


Figure 2. Hopscotch crosswalk.

Source: Public Artist Graham Coreil-Allen, <https://grahamprojects.com>.

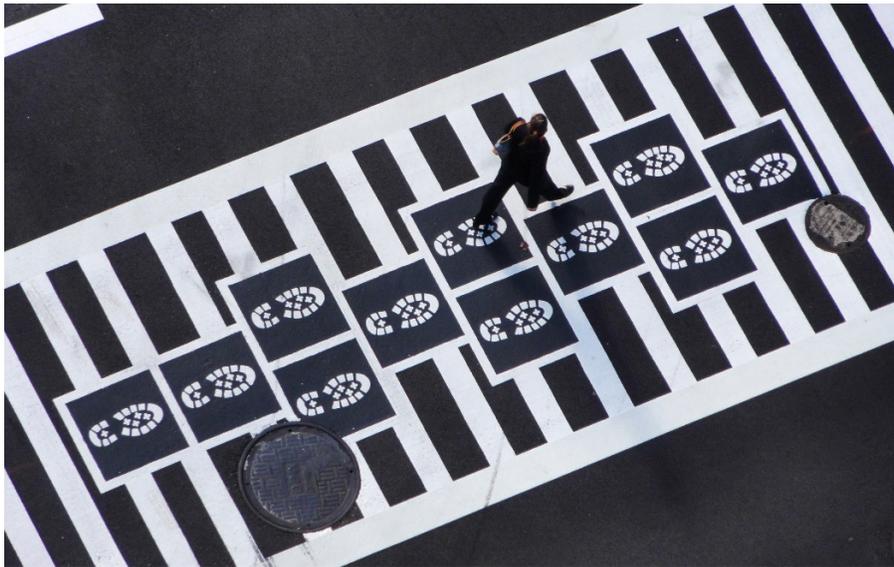


Figure 3. Hopscotch crosswalk.

Source: Public Artist Graham Coreil-Allen, <https://grahamprojects.com>.

Implementation and Outcomes

Since the installation of the first two artistic crosswalks in 2013, several decorative crosswalks such as the Reverberations Crosswalk by Margaret Brent School (June 2019) have been installed around the city. The Reverberations Crosswalk was created to “enhance pedestrian safety for children and residents...while celebrating the school’s art education focus.” The design includes icons inspired by student’s designs representing “arts, love, and beauty.” The decorative crossings are supplemented with painted curb extensions to enhance the visibility at the crossing locations via parking restrictions and they include a continuation of the design.

In 2017, although the City did not have a comprehensive program for the development of decorative crosswalks, a few historic neighborhoods (Otterbein and Federal Hill neighborhoods) as part of the South Baltimore Gateway Complete Streets Plan wove in the installation of decorative crosswalks. The plan noted certain intersections that needed high-visibility treatments and extra attention and it laid out steps to get them implemented, which included surveying community members as to where decorative crosswalks (and new standard crosswalks) should be implemented. The City worked with residents living adjacent to the new locations to receive input on the design and implementation.

In 2020, the City formalized the process for the installation of community-led placemaking with a new program and request form. The program includes creative crosswalks as well as other artistic painting on streets and sidewalks, plantings, barriers for traffic calming, community gateways, parklets, and other unique urban designs.

Design Guidelines and Process Requirements

The City’s guidelines are on their Community-Led Placemaking Program website and community members can apply to install creative placemaking projects through an online form that requires a design rendering, the location of the project, the materials to be used, letters of support from 60 percent of the occupants of the block, and a maintenance plan. The City also partnered with the MICA Center for Social Design to create a Made You Look Toolkit, providing a five-step guidance plan for designs including location, design creation, documents needed, materials, and installation tips. The toolkit also provides a timeline and checklist presenting the necessary steps.

Intersection	26th Street and St. Paul Street	Eutaw Street and Fayette Street	Eutaw Street at Lombard Street
Control Type	T-intersection with stop-control on minor leg and uncontrolled school crossing over main road.	Four-leg signalized intersection.	
Street Characteristics	Two-lane road with parking/two lane road with parking and left turn pockets, 25 MPH.	Three-lane, one-way road with bus only lane and parking, 30MPH/2 lane road with center turn lane and left turn pocket 30 MPH.	Three-lane road with parking, 30 MPH/4 lane one-way road with bus lane, 30 MPH.
Adjacent Land Use	School and residential.	Downtown, commercial.	
Design	White icons inspired by student drawings outlined with concentric lines on multicolored base within white transverse lines and white edge lines.	Zippers opening within white transverse lines.	Hopscotch paths with various footprint styles, inlaid in ladder crosswalk.
Background	Graham Projects, a design build agency, led the process for the Reverberation’s crosswalk. The agency worked with the community, adjacent school, local organizations, and the City DOT to design, approve and install the creative crosswalks along with tactical curb extensions.	The creative crosswalks were installed by the Baltimore Office of Promotion and the Arts. A spokesperson for the agency stated that the crosswalks were installed “with a review panel including a representative from the Department of Transportation to approve the designs for the Crosswalk Project. We think it is always nice for residents to engage public art; however, all pedestrians need to be mindful of the traffic, crosswalk signals and traffic lights.” (NPR)	
Install Year	2019	2013	

Note: Comprehensive safety data was not available during review of the listed decorative crosswalk locations.

Lessons Learned

- Decorative crosswalks can be developed without a dedicated city program and the initial projects can set the groundwork for the eventual creation of a formal program.
- Cities can work with local institutions to form guidelines and standards for the design and approval of the street elements rather than attempting to build them out on their own.
- Continuous, meaningful engagement with the surrounding community throughout the development process, like the process laid out in the South Baltimore Gateway Complete Streets Plan which encourages a focus on community involvement within their crosswalk development initiative, is essential to community buy-in and success of the project.

References and Further Information

1. Baltimore City Department of Transportation. Community-Led Placemaking Program Information & Application. Accessed April 12, 2023. <https://transportation.baltimorecity.gov/community-led-placemaking-program-information-application>
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CASE STUDY #3: DES MOINES, IOWA, UNITED STATES

In This Case Study You Will Learn:

- The unique method and collaboration between partnerships and other supporting organizations
- A program of public art spearheaded by a nonprofit to develop decorative crossings within Des Moines
- How creative crosswalks can be installed and included as part of a larger placemaking program

Background

While decorative crosswalks in other cities are primarily developed by and for community members, the City of Des Moines signed a 4-year agreement in 2017 with the Greater Des Moines Public Art Foundation as part of its “Art Route” for the development of “pieces of art that were installed as crosswalks.” The agreement stipulated that at the agreement’s expiry, the crosswalks be reverted to their original form. The crosswalks, which all have the same design as the ones shown below, were developed by Canadian artist Roadsworth, who has implemented similar works in Montreal in 2001. The Art Route project stretches into the neighboring city of West Des Moines with the same creative crosswalks added within that jurisdiction.



Figure 1. Crosswalk design developed by Roadsworth.
Source: Matt Greiner, Greater Des Moines Public Art Foundation.

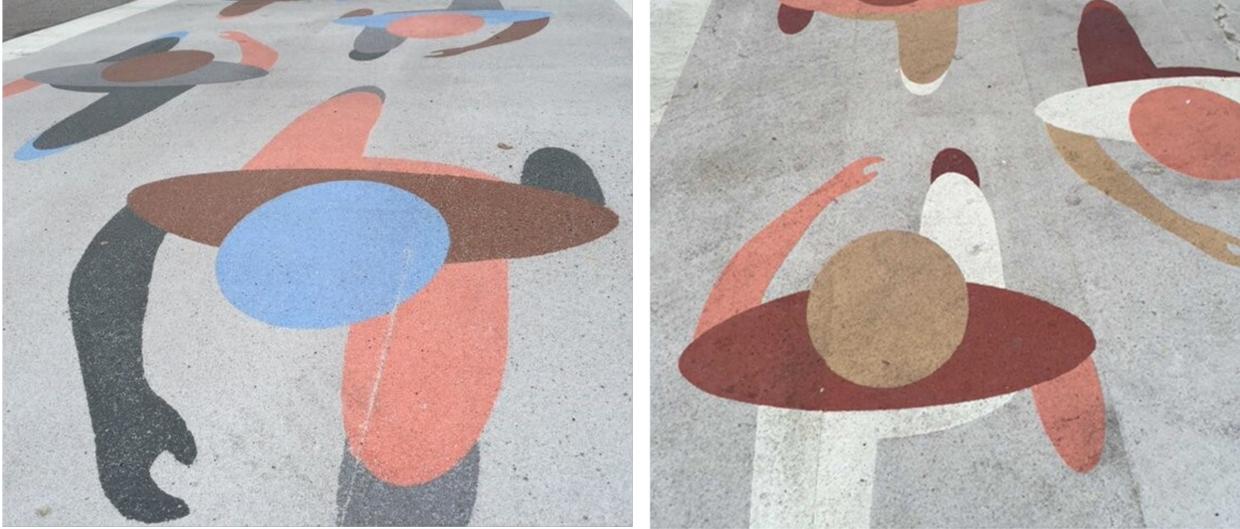


Figure 2 and Figure 3. Crosswalk design developed by Roadsworth.

Source: Matt Greiner, Greater Des Moines Public Art Foundation.

Implementation and Outcomes

Over the 4-year period contracted with the City of Des Moines, the Greater Des Moines Public Art Foundation painted artistic crosswalks at five different locations throughout downtown Des Moines. Such locations lay close to heavily traveled downtown areas, including the restaurant/bar district, residential and office areas, and close to the Civic Center and Iowa Events Center. The “Art Route DSM” initiative used creative crosswalks to further their goal to “unite public art in Greater Des Moines.” The route was selected after a survey found there was a disconnect for visitors in the city who wanted to find public art downtown. As a result, the Art Route DSM launched in 2016 as a 6-mile-long path painted on Des Moines downtown sidewalks and intersections that united 87 pieces of public art, connecting the State Capitol Building on the east to the Meredith Corporation on the west. The route consists of colored circles painted on the sidewalks, painted chevrons pointing to the works of art, and five decorative thermoplastic crosswalks.

Design Guidelines and Process Requirements

In a separate process from the crosswalks installed by the Public Art Foundation, the City of Des Moines also put together a crosswalk guideline during a working session of the City Council in December of 2019. The document outlines the City’s stance (as follows) on all crosswalks within its jurisdiction:

- Painted crosswalk murals do not conform to the *Manual on Uniform Traffic Control Devices* (MUTCD) requirements for crosswalk markings and therefore, cannot be considered a designated marked crosswalk.
- Painted crosswalk murals where white transverse crosswalk lines do not exist could give pedestrians a false sense of security.

- Painted crosswalk murals could cause confusion for roadway users; therefore, deterring from other traffic control devices or distracting users.
- The Federal Highway Administration (FHWA) has issued an official ruling on crosswalk art stating that only aesthetic treatments that simulate paving are allowed (such as brick or stamped asphalt/concrete).
- FHWA has also stated that the use of crosswalk art is contrary to the goal of increased safety and most likely could be a contributing factor to a false sense of security for both motorists and pedestrians. FHWA most recently states that the use of 3-D crosswalks that have been shown in the media has been studied and have shown “unintended – and potentially dangerous-effects” such as drivers swerving and braking abruptly.
- FHWA staff met with City staff about concerns with existing art route crosswalks.

The document also outlines the following additional considerations for expanding a street or sidewalk art program:

- Create a street painting program for low volume, residential streets like Portland, Oregon
- Administered through the existing Street Use Permit program
- Artwork would be installed and maintained by the applicant (neighborhood, community group, school, etc.)
- Artwork would not be considered a traffic control device and would not be placed near a traffic control device (median, crosswalk, etc.). As a result, it would not be in violation of the MUTCD and FHWA ruling.
- Requirements would likely include Art Foundation approval, approval by impacted departments (Engineering, Public Works, etc.), a petition/s from directly adjacent property owners.



Figure 4. Crosswalk design developed by Roadsworth.
Source: Matt Greiner, Greater Des Moines Public Art Foundation.



Figure 5. Crosswalk design developed by Roadsworth.
Source: Matt Greiner, Greater Des Moines Public Art Foundation.

Intersection	Locust Street at 10th Street	Grand Avenue and 6th Avenue	Locust Street at 3rd Street
Control Type	Four-leg signalized intersection.		
Street Characteristics	Two-lane, one-way road with parking/two lane, two-way road with parking, 25 MPH.	Four-lane, one-way road/two lane, one-way road with parking, 25 MPH.	Four-lane, one-way road/two lane, one-way road with parking, 25 MPH.
Adjacent Land Use	Downtown commercial, hotels, office, residential.		Downtown commercial, civic center.
Design	Grey fill within transverse lines with overhead view of pedestrians walking using blue, white, and muted red colors.		
Background	Creative crosswalks installed along the Art Route through an agreement with the Public Art Foundation for a 4-year period with stipulation for their removal at the end of the agreement.		
Install Year	2017-2021		

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Note: A total of 16 ped-related crashes were reported from 01/01/2009 to 03/31/2020 with six ped-related crashes reported since August 2017. There have been no fatal crashes at any of the five decorative crosswalk locations.

(Continued)

Intersection	Court Ave at 3rd Street	S 35th Street at Mills Civic Pkwy (West Des Moines)
Control Type	Four-leg signalized intersection.	T-intersection with stop-control on minor leg uncontrolled main road.
Street Characteristics	Two-lane, one-way road with parking/two lane, two-way road with parking, 25 MPH.	Three-lane minor approach with dedicated left and right lanes/four lane divided roadway with median and turn lanes at intersection, 35 MPH
Adjacent Land Use	Downtown commercial, office, residential, entertainment.	Low density residential.
Design	Grey fill within transverse lines with overhead view of pedestrians walking using blue, white, and muted red colors.	
Background	Creative crosswalks installed along the Art Route through an agreement with the Public Art Foundation for a 4-year period with stipulation for their removal at the end of the agreement.	
Install Year	2017-2021	

Note: A total of 16 ped-related crashes were reported from 01/01/2009 to 03/31/2020 with six ped-related crashes reported since August 2017. There have been no fatal crashes at any of the five decorative crosswalk locations.

Lessons Learned

- How vibrant public space can connect people to community and world-renowned artwork. The crosswalks were installed as part of an agreement between the City and a nonprofit organization to supplement a larger program focused on public art and walkability to promote health and wellness throughout the region.
- Commitment to a long-term option remains to be seen as maintenance agreements have since expired and the decorative crosswalks have been removed at four out of five intersections reviewed in this case study at the time of this writing.

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CASE STUDY #4: SEATTLE, WASHINGTON, UNITED STATES

In This Case Study You Will Learn:

- Seattle’s initiative for community partnership through decorative crosswalks
- Method and implementation of such crosswalks, and the results from their development
- Federal opposition to decorative crosswalks, especially how it relates to Seattle

Background

Beginning in 2014, the City of Seattle installed enhanced aesthetically treated crosswalks at locations throughout Seattle area. The crosswalks were installed through partnerships with community organizations, leaders, and individuals, and had color and patterns which the City claimed, “help emphasize and alert roadway users of the designated pedestrian crossing.”



Figure 6. Pan African themed creative crosswalk in Central District neighborhood in Seattle.

Source: Seattle DOT.

Implementation and Outcomes

Decorative crosswalks in Seattle have continuously been developed since 2014. The first set of crosswalks were a set of 11 rainbow crosswalks in the Capitol Hill Neighborhood. Following the installation of the first set of crosswalks, the City formalized a program and process for the public to apply for and get new creative crosswalks approved. More than 40 crosswalk locations have been installed throughout the City with varying designs, themes, and community organizations spearheading the application and design process.

As stated in the introduction of this report, FHWA has stated that the markings do not comply with the MUTCD and as such has communicated to the City of Seattle that they will deny federal funding on roadway projects at locations with decorative markings, unless they are replaced with MUTCD compliant markings. A 2019 letter from then Seattle City Traffic Engineer Dongho Chang to FHWA reported that collision data from the 3 and a half- year period before and after the rainbow crosswalk installations indicated a 55 percent reduction in pedestrian collisions within the crosswalks with the treatment (9 vs 4), and a reduction of pedestrian collisions (20 vs. 17) in the entire intersection that had at least one leg with a rainbow crosswalk. Chang stated in his report that the crosswalks are “performing as intended.”

Design Guidelines and Process Requirements

The City allows community members to apply for a decorative crosswalk in their locale via the City’s online Neighborhood Matching Fund form and provides guidance on their program website on placement, design recommendations, and steps to approval. The proposed location must already have a marked and raised crosswalk or location where a vehicle is already required to stop. The crosswalks are required to keep standard transverse white line markings, which differs from the City’s standard of continental crosswalks. Other design guidelines stipulate the following:

- Images that convey messages appearing to advertise, or promote a private entity (corporation, neighborhood business, chamber of commerce, or other community organization) will not be accepted. No text or logos.
- Images that create a driver distraction or could be confused with traffic signs or traffic pavement legends will not be accepted.
- The design should contribute to the visual quality of the streetscape. For example, consider using a limited palette of colors and simple graphic images to avoid visual clutter. This will also keep costs down. If original artwork is being created, a lead artist/designer should be responsible for designing the images.

Communities are responsible for a matching neighborhood contribution of volunteerism, materials, and professional services. Alternatively, a Neighborhood Matching Fund (NMF) can cover the cost of the project. The City estimates that creative crosswalks can cost approximately \$25 per square foot.

Intersection	Pike Street and Broadway, Pine Street and Broadway	Alder Street at MLK Jr. Way
Control Type	Four-leg signalized intersection.	Four-leg intersection with pedestrian actuated half signal with stop signs on minor approach (Previously uncontrolled with flex post pedestrian island).
Street Characteristics	Two-lane road with two-way separated bike lane and green cross bike markings, parking, turn lanes, street-car, and 25 MPH /two lane road with one-way separated bike lanes, parking, turn lanes, and 25 MPH.	Three-lane road with two-way left turn lane and parking, 25 MPH/two-way unmarked road with parking, 20 MPH.
Adjacent Land Use	Commercial/Residential.	Residential.
Design	Rainbow	Pan African
Background	The first creative crosswalks were rolled out within the Capitol Hill neighborhood of the City. The designs reflect the LGBT+ community that have ties to the neighborhood. An additional nine locations were installed within the same neighborhood at other stop controlled and signalized intersections.	The first location with the Pan African flag came following a public DIY project that the City later formalized. The design originally used painted variable color continental lines but changed the design after monitoring to the current transverse pattern. An additional 10 locations were also installed at midblock school crossings, signalized intersection, and stop controlled intersections.
Install Year	2014	2016

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Intersection	Boren Ave at Howell Street	Westlake Avenue at 7th Avenue
Control Type	Four-leg signalized intersection.	Four-leg signalized intersection with Barnes dance exclusive pedestrian phase and diagonal crossing.
Street Characteristics	Four-lane road with turn lanes, 25 MPH/4 lane, one-way road with parking and bus lane, 25 MPH.	Two-lane one- way road with parking and separated bike lane and green bike cross markings, 25 MPH/Four lane road with bus/streetcar only lanes and parking, 25 MPH.
Adjacent Land Use	Downtown commercial.	
Design	White Deer	Topographic Map
Background	The crosswalk is part of a project implemented in collaboration by City departments and community groups to commemorate, share the story of a local master Native American woodcarver who was involved in a fatal police shooting at the location.	The crosswalk was a joint project by the City, Downtown Seattle Association, and businesses to update the intersection by installing the creative crosswalk.
Install Year	2016	2019

Note: Safety data from the City indicates reduced crashes occurring at decorative crosswalk locations.

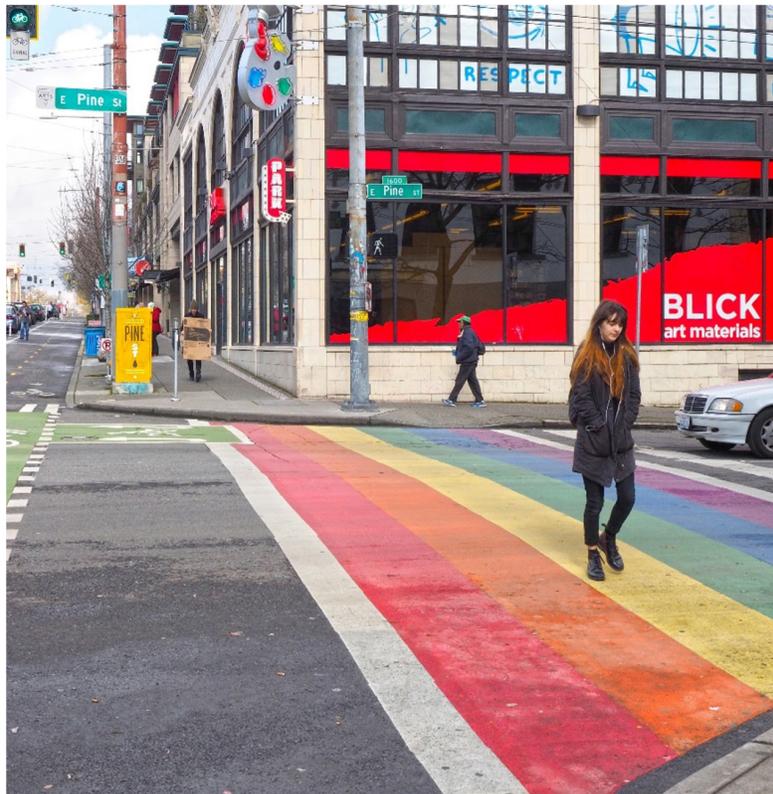


Figure 7. Decorative Crosswalks at Pine Street and Broadway in Seattle Washington.
Source: Toole Design Group.

Lessons Learned

- Community-driven projects can have functional benefits that provide community enhancement and placemaking. Seattle’s decorative crosswalk initiative represents a marriage between community engagement and pedestrian safety; communities can work with the City to enhance their environment through creating customized intersections, and such intersections can be effective in reducing pedestrian incidents as proven by the City’s before and after study.
- The data from the City of Seattle demonstrates that creative crosswalks can reduce crashes with pedestrians by 55 percent. Being sensitive to the context of decorative crosswalk applications (low speed and where vehicles are required to stop, or the crosswalk is raised) would appear to better balance the safety needs voiced by FHWA regarding ubiquitous prohibition.

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CASE STUDY #5: MEMPHIS, TENNESSEE, UNITED STATES

In This Case Study You Will Learn:

- How community development organizations can spur streetscape improvements to strengthen connections within the community.
- How streetscape improvements can create a more equitable, safe, and attractive environment for everyone.
- How quality public spaces can be redesigned through a collaborative approach that can rapidly change a community in a cost-efficient manner.

Background

The Memphis Medical District includes more than 24,000 employees and students and more than 10,000 residents located between Downtown and Midtown Memphis. The District is diverse and includes a variety of unique neighborhoods with rich histories that are situated in an area shared with several prominent medical and educational institutions. Together, the District is dedicated to using streets, parks, plazas, and green spaces as platforms for creating inclusive and vibrant public spaces through collaborative engagements within the community. Decorative crosswalks became a tool for improving the public realm. Using innovative approaches, the City of Memphis and the District have proved that implementing big ideas can be done with a budget of less than \$100,000.

Implementation and Outcomes

Partnering with the City of Memphis, the Manassas Street corridor was one phase of the District's streetscape enhancement project. The desire to provide quick build street enhancements would be included following the resurfacing of Manassas Street from April to June 2018. Ultimately, the City's resurfacing project reduced the existing roadway from five travel lanes to three travel lanes and included dedicated bike lanes which would connect existing and future bicycle routes in the City. As a result, the community united to include various street design aesthetics to create a more inviting space along this critical north to south connector in the City.

The focal point of the project is the decorative mid-block crossing located just north of Union Avenue on Manassas Street. While decorative crosswalk patterns and colors were installed, a complex centerpiece was included within the central portion of the intersection complete with planters and low-profile decorative bollards and pedestrian signage. Local Memphis artists Cat and Nick Peña designed the artwork which covers nearly 2,600 square feet of asphalt roadway, and were partnered with additional local artists Anthony Lee and Kaleob Elkins. Anecdotally, the artwork aids in calming the traffic traveling through the area and provides a safer mid-block crossing which is heavily used by pedestrians accessing the University of Tennessee’s Cancer Research Building to the west and the Health and Sciences Park to the east. The addition of on-street parking, bike lane buffer protection, and painted curb extensions have greatly improved the perceived comfort level for cyclists and pedestrians.



Figure 1. Manassas Street decorative mid-block crosswalks and intersection enhancements.

Source: Nicholas Oyler, City of Memphis.

The District used an approximate budget of \$70,000 to complete the work which included several coats of pavement, bond material, and traffic control operations. The selected material, which offers a low-maintenance, durable surface application that is slip and skid resistant, was installed in the Fall of 2018 and has been resistant to deterioration and fading since its inception. The City of Memphis has not experienced safety issues since completion of the project. In fact, this project has generated enthusiasm from other neighborhoods looking to highlight various cultural significances around the city.

From a maintenance standpoint, the City of Memphis has remained consistent on its stance to permit a private entity or community organization group the ability to demonstrate maintenance responsibilities prior to approval of specific street enhancements or decorative crosswalks with the expectation that no cost sharing will be undertaken. Additionally, the City requires any entity that wants to install artwork on a local street to possess minimum liability insurance coverage of \$1,000,000.

Design Guidelines and Process Requirements

The City of Memphis has developed guidelines centered on achieving community goals for creating artistic street installations. As of July 2017, the City's policy highlights the following requirements for installation of decorative, or artistic, crosswalk. These guidelines are for information only and are subject to change. General requirements are as follows:

- All decorative crosswalks shall have (2) transverse, white crosswalk lines bordering the design. The transverse lines shall be at least 6" wide (per City standards) and shall be retroreflective. There shall be a 6" buffer space between any colored pavement design and the transverse crosswalk lines. Without the (2) white lines the area is not technically a marked crosswalk.
- All crosswalks shall be at least 10' wide per City standards.
- All colored pavement surfaces shall be non-retroreflective. The use of retroreflective colored pavement surfaces would indicate that these markings are a form of traffic control and therefore would be non-compliant with the MUTCD.
- All colors would be allowed except those that would degrade the contrast of the white crosswalk lines with the pavement or that might be mistaken by road users as markings used for a traffic control application. The following colors will not be allowed (Red, Yellow, Green, Blue, and White (unless utilized in a ladder configuration consistent with the MUTCD)).
- Any colored pavement should be slip resistant and should not increase the slip hazard above that of typical asphalt pavement.
- Any text in crosswalk designs shall be minimal and easy to read. Crosswalk design text may broadly promote community, civic pride, and positive general messages. Crosswalk design text may not blatantly advertise a business, product, service, or political position.

Intersection	Manassas Street	Young Avenue and Cooper Street
Control Type	Unsignalized driveway.	Four-leg signalized intersection.
Street Characteristics	Three-lane road with left turn pockets and parking protected bike lanes, 25 MPH.	Three-lane road with center turn lane, sharrows/2 lane road with parking, 35 MPH.
Adjacent Land Use	Hospital, downtown commercial.	Residential, low-density neighborhood commercial.
Design	Streetbond colored pavement between white transverse crosswalk lines, multi-colored geometric shapes installed within center of intersection.	Rainbow with white transverse crosswalk lines.
Background	Artistic enhancements to the street bring a focal point to the intersection and improves awareness of pedestrian and bicycle activity in the area. Additionally, the enhancement aids in calming motor vehicle traffic using the street.	City Council members in the neighborhood wanted to embrace equality and inclusion efforts. Residents, business owners, and local organizations supported the installation.
Install Year	2018-2019	2019

Note: Comprehensive safety data was not available during review of the listed decorative crosswalk locations.

Lessons Learned

- The City of Memphis can allow certain neighborhoods to use cheaper materials for decorative treatments that may be cost intensive. This may provide an opportunity to change or modify a specific decorative treatment without costly removal.
- Decorative treatments along state owned roadways in Tennessee are not permitted.
- Some applicants may see prohibitive costs as a barrier for community expression, and since the City would not be agreeable to maintaining decorative treatments within the street, some neighborhoods can be sponsored or partnered with nonprofit organizations or a Community Development Corporation (CDC). This would increase the equity discussion surrounding where streets are permitted for artwork.
- Creating a more process-oriented implementation may provide better results. Allowing every property owner to be notified and to have an opportunity to review or comment on a proposed design would be crucial in identifying a larger community.

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