SAFE STREETS FOR ALL

# Appendix C: Quick-Build Guide

# What is a Quick-Build Project?

A quick-build project provides a bridge between when a community transportation need is observed and the time it takes to complete a traditional capital project with permanent materials to fix the need. Quick-build projects can be implemented in a fraction of the time using low-cost materials (paint, signage, delineators, and the like) to show a proof-of-concept and build support for a more permanent solution.

Agencies throughout the MAPA region already implement quick-build projects when community needs arise. Examples include the following:

- Additional signage, pavement markings, and retroreflective backplates installed at signalized intersections where recent crash history dictates a need.
- Painted intersection curb extensions with delineators and longer pedestrian crossing times installed at an intersection with increased pedestrian activity due to neighborhood revitalization.

Generally, these projects have been geared toward community-driven concerns or implemented on an as-needed basis as issues arise. Recently, cities have become more proactive with their approach to safety needs. They understand that budgets can only stretch so far, and the potential safety benefits of a quick-build project far outweigh the cost of sustaining high-crash-risk conditions while waiting until funds are available for a traditional capital-intensive project.

# Types of Quick-Build Projects

Several countermeasures have been developed for MAPA Safe Streets for All, shown in **Chapter 04 (Vision Zero Toolbox)**. Some projects require reconstruction or significant capital investment (e.g., adding a traffic signal or adding turn lanes at an intersection). Others have the opportunity for a quick-build project that may be followed up by a more permanent solution, provided the proof-of-concept shows tangible benefits. Available quick-build countermeasures are listed in the following section; the list does not contain all available options and will evolve as more countermeasure research is completed or post-installation data is acquired.

# Quick-Build Countermeasures for MAPA's Comprehensive Safety Action Plan

## Segment Countermeasures

1. Roadway reconfiguration
2. Lane narrowing
3. Buffers/on-street parking
4. Horizontal traffic calming
5. Raised medians and access management

## Intersection Countermeasures

6. Roundabouts (single lane or mini)
7. All-way stop control conversion
8. Systemic traffic signal modifications
9. Intersection daylighting and curb extensions
10. Left-turn hardening

## Countermeasures for Pedestrians and Bicyclists

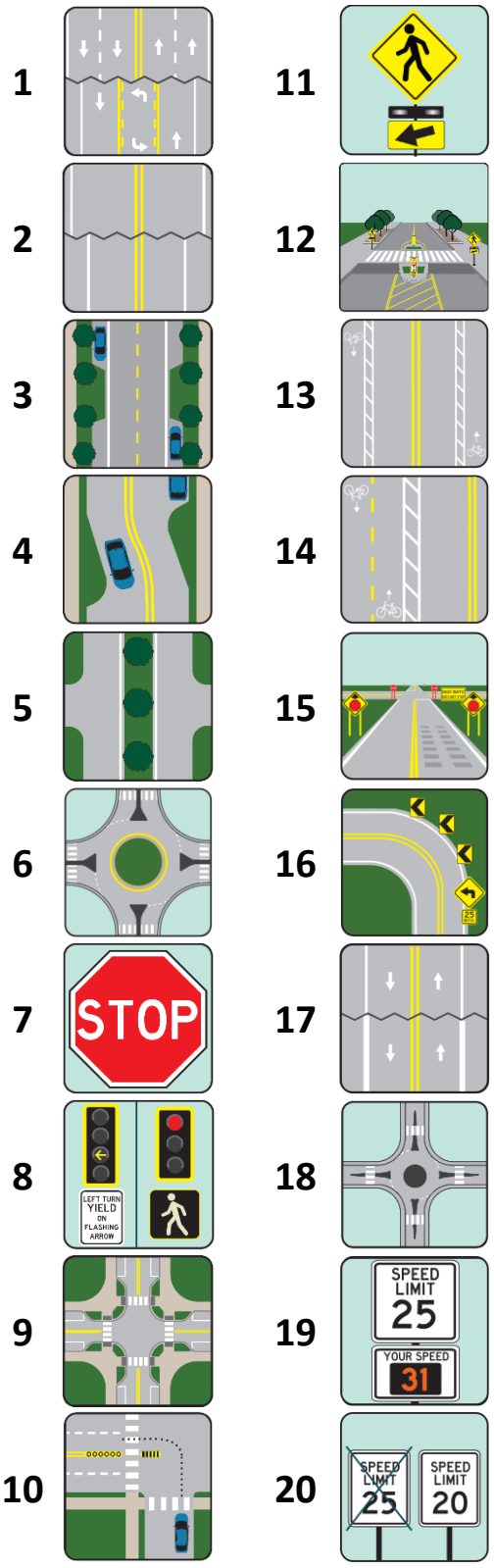
11. Rectangular rapid-flashing beacon
12. Systemic crossing modifications
13. Bicycle lanes
14. Protected bicycle lanes/cycle tracks

## Rural and Highway Countermeasures

15. Systemic stop-control modifications
16. Curve delineations modifications
17. Wider edge lines
18. Roundabouts

## Behavioral Countermeasures

19. Roadway feedback signs
20. Speed limit reduction or slow zones



# Quick-Build Timeline

## General Timeline Range

Agencies throughout the country have developed their own timelines for quick-build projects. MAPA's team coordinated with the agencies in the region to establish a general timeline. Depending on the complexity or size of the quick-build project, the implementation timeline can vary from the following list.

**1 | Need Identification and Prioritization (2 Weeks)**

- What is the need?
- How urgent is the need?
- Quick-Build Consideration Form

**2 | Strategy Development and Screening (1 to 2 Months)**

- Data collection and analysis
- Countermeasure selection
- Agency screening (does the opportunity move forward?)

**3 | Plan Development (4 to 8 Months)**

- Design and plan development
  - Submittals and reviews
  - Level of design effort and detail
  - Design treatment options/products
  - Checks
  - Implementation and installation plan
- Public engagement

**4 | Construction (<1 Week)**

- Traffic control
- Installation

**5 | Maintenance (Ongoing Post-Construction)**

- Restripe paint markings
- Replace/manage broken or damaged materials
- Adjust signal timings (if applicable)

**6 | Evaluation and Monitoring (1 Year Post-Construction)**

- Data collection
- Evaluation summary and consideration for permanent solution

# Quick-Build Stage Details

This section outlines the steps and considerations for each stage during the quick-build project development process. These details provide agencies with a reference guide to implement their own process to fit their community needs and available resources.

## 1 | Need Identification and Prioritization

### Need Identification

Each agency generally has a library of planning study recommendations that can be transformed into a quick-build project. Stage 1 includes one of the following:

- Confirming that the need for the previous project recommendations still exists.
- Confirming that a community observation or need should be investigated further.

As part of the MAPA Comprehensive Safety Action Plan (CSAP), the study team developed a list of recommendations that should be considered along with local previous planning study recommendations. The CSAP recommendations focus on strategies to reduce fatal and severe injury crashes in the region and should be considered first. The complete list of recommendations is summarized in **Chapter 05 (Priority Safety Projects)**. An online version of the recommendations can be found here: MAPA SS4A - Project Prioritization Review.

### Prioritization

Agencies do not have the immediate resources to provide a solution for every CSAP recommendation, past project, or community need. Instead, agencies must prioritize solutions based on available data, severity of need, public perception of potential solution(s), cost of implementation, available funding, and other factors.

Regardless of the process local agencies use to prioritize quick-build solutions, it must be transparent. Communities have been impacted by traffic-related injuries, and each agency must provide a rationale for its selected quick-build location. For example, if an agency does not address a location where recent fatalities and serious injuries have occurred and adds a safety enhancement project elsewhere, the public should be offered the “why” or rationale for priorities and strategies and a potential timeline for when there might be improvements.

This document recommends a process that addresses the highest benefit-cost areas first, moving down the list of CSAP recommendations. For each project, there may be supplemental improvements near the area that should be considered and combined when logical.

Additionally, agencies should pick some "easy wins" and implement quick-build projects that can help build support for additional projects.

### Quick-Build Consideration Form

This form should be used to quickly highlight the project area and need and help answer "why" this project should be considered. The form can provide a summary for the roadway design and traffic engineering leads to review and approve before the potential project can progress to Stage 2. An example template can be found in **Attachment 1**.

This form is intended for simple project review after new crash data is available and new trends emerge. In upcoming years, the form could be as simple as referring to MAPA's CSAP and listing the project recommendation and any supplemental projects in the vicinity that should be tied with the main project.

## 2 | Strategy Development and Screening

Stage 2 focuses on data gathering, additional analyses (if necessary), countermeasure selection, and a determination of whether the opportunity should move forward into design.

### Data Gathering

To gain public support for the proof-of-concept quick-build projects, each agency should collect field observations and photography, speed data, and multimodal counts (if applicable) along the project corridor. This data can be used to compare the effectiveness of the quick-build countermeasures in a before-and-after study in Stage 6.

### Analyses

Some countermeasures do not need an analysis and may simply need a review of recent crash data and speeds. Others may need to update signal timings to account for changes in roadway capacity. Analyses should be simple and straightforward and aid in countermeasure selection.

### Countermeasure Selection

Countermeasure recommendations from MAPA CSAP should be a starting point for potential solutions in the area of interest. Depending on the severity or type of need, multiple countermeasures should be considered and combined to develop a holistic solution.

During the countermeasure selection process, early communication and touch points with potential vendors should be started to understand pricing and the lead time needed for purchasing and to vet potential options internally. Routine maintenance for countermeasure selection should be considered during this step.

# 3 | Plan Development

Stage 3 is all about efficiently developing easy-to-read plans that local agencies can use to implement a variety of quick-build projects.

## Design and Plan Development

The level of detail in quick-build design plans depends on the complexity of the project and the expertise of the agency's construction crews. For example, City of Omaha crews can update pedestrian ramps without unique plans, using only standard plates. Cities could develop similar protocols for quick-build countermeasures like curb extensions to minimize the need for unique plans.

### Submittals and Reviews

Submittals and reviews are a large part of the time required for a capital project. For design completed in-house, a preliminary and final set of plans and reviews should be sufficient. A "champion" for the quick-build process should be identified for plan development and for the review process. For outsourced design, three submittals and reviews may be considered (30 percent, 90 percent, and final).

### Level of Design Effort and Detail

The level of design effort for a quick-build project should be significantly lower than for a capital improvement project. A majority of quick-build projects can be designed using aerial imaging. A survey would only be needed at isolated locations of vertical design needs, and even vertical design needs can often be handled with notes or a standard plan (i.e., curb ramp construction). Instead of using alignments and stationing, many projects can be designed and constructed using curb offsets. Other construction needs should be handled with notes where possible.

### Plans

Because design effort is reduced, the number of plan sheets needed for design and subsequent implementation can also be reduced. Because there is less construction work per sheet, several sheet types can be combined. Additionally, many sheets types are not needed. Typical sheet needs include a cover, general information, quantities, removals/product placement, and traffic/striping.

## Design Treatment Options/Products

A growing number of products tend to be favored for quick-build projects. They can range from temporary to semipermanent, depending on the need and duration of the implementation. A non-comprehensive list of these products follows.

### Modular Medians and Roundabouts

Modular medians and roundabouts provide agencies with an alternative option to concrete construction materials. Panels are made of durable composite rubber that anchor together and to the pavement. These modular systems are generally supplemented by delineators to increase their visibility

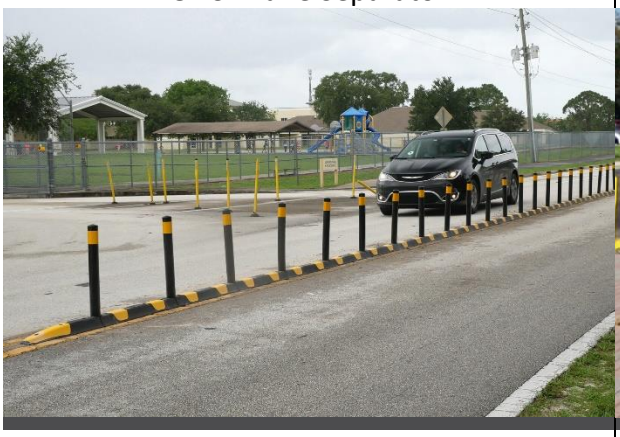
RediPave Modular Median

Vortex Roundabout System


## Modular Lane Separators

Modular lane separators are used for a variety of safety applications. They can provide physical separation from bike facilities and vehicular travel lanes, turn-hardening treatments at intersections, or to re-orient an intersection configuration without major reconstruction.

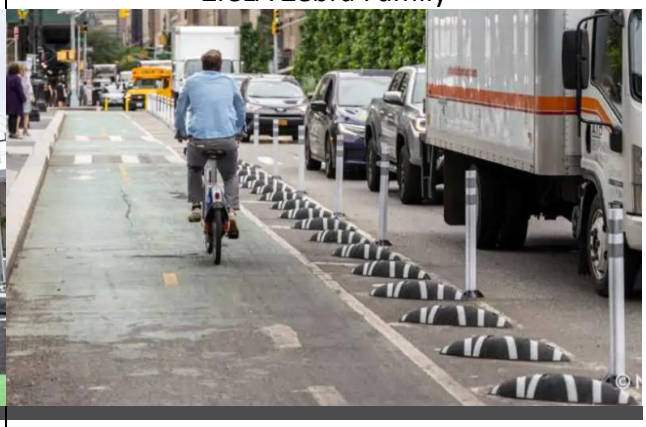
ORCA Lane Separator



Tuff Curb

ZICLA Zipper

ZICLA Zebra Family



Traffic Logix CycleLane

DezignLine BikeRail

**Modular Lane Separators - *Continued***

Barco Protected Bike Lanes

QWICK KURB Traffic Lane Separator

Shur-Curb Traffic Separator

Parking Stops (multiple vendors)

**Delineators**

Selection of a delineator vendor should follow the guidelines from the Manual of Uniform Traffic Control Devices (MUTCD) for color, height, and retroreflectivity requirements. Vendors with project experience and MUTCD compliance include the following:

- PEXCO Channelizer Posts and Flexible Bollards
- ULINE Flexible Delineator Posts
- RoadSafe Surface Mount Delineator
- RoadSafe Flat Top Ground Mount Posts
- Safe-Hit Flexible Delineators
- ZICLA Pointer

Note that some delineators are designed to fit with modular lane separators (i.e., Tuff Curb are designed to accept post and panels from its patented assembly).

The selection and installation of delineators comes down to cost, aesthetics, and agency preference on pavement installation. Some agencies may want to use an adhesive application for its roadways to reduce the number of holes drilled into pavement. Vendors generally provide a surface-mount option for pavement (epoxy/adhesive or mechanical anchors) or ground-mount options for applications outside the roadway.

Delineator spacing should follow MUTCD guidelines. Guidelines generally provide minimum spacing requirements, and a shorter distance between delineators can be recommended per engineering judgment. It is important to not block certain modes (i.e., bikes) even if a bicycle facility does not exist.

## Curbs

Traffic Logix SuperFlex Curbing

Traditional Paving

Curb areas that may be struck by turning vehicles should consider a more permanent solution to reduce routine maintenance.

Agencies can also use modular lane separators for curb applications – to neck down roadways, reconfigure an atypical intersection, or provide pinch points for mid-block crossings.

## Signage and Paint

Agencies should continue to use their preferred vendors for MUTCD-compliant signage and paint applications. The use of colored paint for art installations at intersections or along roadways is a recent trend.


*Source: Bloomberg Philanthropies*

Quick-build art installations can help cities create a sense of place and activate their streets. In Chapter 3H, the Manual on Uniform Traffic Control Devices for Streets and Highways (11th Edition) provides guidance about aesthetic treatments for colored pavement and emphasizes that aesthetic surface treatments should not interfere with traffic control devices.

## Design Treatment Options/Products Summary

Vendors are continually adding, modifying, and updating quick-build products. Agencies should coordinate with each other to determine preferred vendors and lessons learned from the previous products lists.

Images and vendors listed in this section can be found on vendor websites in the Helpful Links section at the end of this guide.

### Interdisciplinary Review and Coordination

As with all design, several other public works disciplines should be consulted throughout the project to provide approval of plans prior to implementation.

***Utilities***

Utility impacts are a concern for any subsurface construction. GIS and utility as-built requests can be utilized for design, and one-call should be used prior to construction.

***ADA Impacts***

The Public Right-of-Way Accessibility Guidelines provides guidance that address access to sidewalks and streets, crosswalks, on-street parking, and other components of public right-of-way. All proposed improvements should be compliant with the Americans with Disabilities Act (ADA). Many quick-build projects will not have an impact on accessibility, but this should always be verified. Quick-build project may overlap with MAPA's system and should be coordinated with staff to ensure that design treatments do not preclude users from accessing transit stops.

***Drainage***

Most quick-build projects will not impact sewer infrastructure, so full drainage analyses are likely not needed. However, when adding physical implements to the surface, such as curb extensions, engineers should verify that they are not disrupting drainage flows to inlets. Drainage paths should continue around or through the newly introduced impediments.

***Intersection Sight Distance***

Intersection sight distance is the distance at which motorists can see approaching vehicles before their sight is blocked. While some instances of quick-build projects will improve sight

distance (i.e., adding curb extensions), others could reduce sight distance. Engineers should verify that appropriate sight distances are still met.

- Allowing lefts from through lanes – If a left turn from a main road is blocked in one direction but not the other and lefts are allowed from the through lane, a car waiting to turn left could limit the sight distance of oncoming through vehicles.
- Adding parking as buffer – While parked vehicles are not accounted for in sight distance calculations, the reality is that a parked vehicle impedes sight distance. Engineers should verify that parked vehicles are kept back from an intersection to allow proper sight distance for vehicles turning onto a major road – a practice known as daylighting.

***Turning Templates***

Many quick-build projects include narrowing of driving lanes, adding physical impediments like curb extensions or delineators, or left-turn hardening. In each case, vehicle turning templates should be run to verify that the appropriate design vehicle can make all necessary movements.

## Public Engagement

Public engagement is usually not typical across projects due to the variability in project type, location, and size. However, because quick-build projects tend to be smaller in scale, a robust public engagement effort may not be needed at each installation. These projects should still follow due diligence in reaching out to members of the public by assessing who will be affected by the project and in what manner. Ultimately, a programmatic approach to building community awareness and reassurance of the use of facilities post-quick build may be beneficial.

Unless specifically needed, most quick-build projects do not require a full public open house. If there are several projects in a similar vicinity, a public open house could be held to encompass all projects.

Stakeholder and property owner meetings are recommended for those directly adjacent to improvements. Additionally, an effort should be made to contact and meet with any neighborhood or business improvement districts in the area. Depending on the location of the project, the Urban Design Review Board, improvement districts, or other organizations may also need to be contacted.

A recent trend for construction projects is to highlight “why” a project was constructed. Because many improvements are for active transportation users, cities could develop signage that is included with quick-build projects to highlight that the project was constructed for safety and provide a link to relevant website materials.

# 4 | Construction and Implementation

It is anticipated that these projects can be implemented/constructed using in-house crews or on-call contracts. Selecting prior alternatives over the common design-bid-build process can maximize the timeline and keep costs to a minimum. Using the same crews for similar projects can also help reduce costs.

Construction and post-construction photos are recommended to document before/after and to help with ongoing public outreach for quick-build projects.

# 5 | Maintenance and Post-Construction Observations

## Up-Front Maintenance Considerations

Many quick-build projects use temporary or semipermanent design treatment options, such as delineators, rubber curbs, and modular medians. However, these products may not be as robust or permanent as concrete construction and can add to maintenance activities, including snow removal and regular maintenance checks. Design for quick-build projects should attempt to minimize additional maintenance activities where possible.

### Project Lifetime Maintenance

Continued maintenance needs will occur over the life of the project. Paint markings will need restriping, especially if the markings are different from previous or unexpected to drivers. Additionally, the design treatment options may need to be replaced or repaired, often after snow removal events. This should be considered in yearly maintenance programs.

## Adjust Signal Timings (if applicable)

Traffic signal modifications may be needed for some quick-build projects. Many quick-build improvements will result in behavior changes (increased number of pedestrians and increased bicyclists, slower vehicular speeds/turning speeds). Areas near signals should be monitored intermittently after the quick-build implementation for potential changes. These can generally be made through field observations, and a full corridor retiming is not typically needed.

# 6 | Evaluation and Monitoring

## Data Collection

Most data collection, including speed data, can be obtained through visual observations pre- and post-construction. Additionally, agencies may want to count (vehicular, pedestrian, and bicycle) and monitor any crashes in the area post-construction.

For speed and pedestrian/bicycle data, it is important for data collection to occur after users in the area are familiar with the quick-build improvements. This guide recommends waiting about 1 year after construction for data collection.

Additional site photos are recommended to document the maintenance and durability of quick-build materials.

### Evaluation Summary and Consideration for Permanent Solution

The evaluation summary should provide recommendations for a path forward. It should be brief but provide enough information to help decision-makers going forward. The summary should help answer the following questions:

- Did the quick-build project meet project objectives? (provide before/after data)
- Questions related to costs:
  - What was the cost of the quick-build project?
  - What is the annual maintenance of the quick-build project (how often will materials need to be replaced if the quick-build is perpetuated)?
  - What is the planning-level cost for a permanent solution?
- Does the public, maintenance crews, or public works have any concerns/comments?
- Can this solution be left as-is long term, or do changes need to be made?

## Next Steps

The intent for any guide is to be implemented at the local level. Sometimes, a report's appendix can be hard to find and cannot be updated regularly. The team recommends future iterations of the quick-build guide for MAPA to include the following information.

### Web-Based Tool

As shown in the Helpful Links section, a web-based tool can provide agencies a one-stop portal for all things related to quick builds. This can help keep resources relevant, increase transparency, and provide information like project successes or completed projects to date.

### Include Recent Quick-Build Successes

The best tool to begin the journey toward quick-build implementation in a community are project pictures and lessons learned from recent projects. This photo gallery could be continually updated in a web-based tool.

### Example Project Case Studies

Providing a walk-through of forms, design plans, installation videos, and evaluation and monitoring notes can reduce the barrier-to-entry for an agency trying this for the first time.

### Preferred Vendor List

A centrally located list of recommended vendors can be useful. Generally, quick-build projects are visible in the public eye, and agencies do not want an initial poor product experience to diminish the benefits of quick-build projects to the public. Over time, data and observations from the public, public works, and maintenance staff can be helpful when picking products for quick-build implementation.

## Helpful Links

### Quick-Build Guide Examples

#### City of Orlando – Quick Build Project Guide

The City of Orlando created a quick-build guide that was used as a primary reference to create this guide. It focused on the overall process and steps necessary to successfully implement a quick-build project.

#### Flint Hills MPO – Demonstration Projects

The Flint Hills MPO developed a web-based tool for agencies to use to create and develop their own quick-build project. This website provides a one-stop shop for examples of how to implement a demonstration project.

#### AARP Pop-Up Placemaking Tool Kit

AARP teamed up with Team Better Block to develop a visual guide to highlight tactical urbanism that can be used to make a community more active, livable, and safe. Many pop-ups are meant for demonstration purposes with an end goal in mind – to inspire change by showing the community the benefits of a small improvement.

#### Quick-Build Guide

Alta Planning + Design and the California Bicycle Coalition developed a comprehensive guide to inexpensively create safe places for vulnerable road users on public streets.

## Links to Treatment Options

The following lists linked treatment options. Some vendors sole-source their own products, while others go through a centralized vendor. Agencies should continue to test the effectiveness and durability of many products before a preferred vendor is selected.

### Modular Medians and Roundabouts

- RediPave Modular Median
- Vortex Roundabout System

### Modular Lane Separators

- ORCA Lane Separator
- Tuff Curb
- ZICLA Zipper
- ZICLA Zebra Family
- Traffic Logix CycleLane
- DezignLine BikeRail
- Barco Protected Bike Lanes
- QWICK KURB Traffic Lane Separator
- Shur-Curb Traffic Separator
- Parking Stops (concrete or rubber; multiple vendors)

### Delineators

- PEXCO Channelizer Posts and Flexible Bollards
- ULINE Flexible Delineator Posts
- RoadSafe Surface Mount Delineator
- RoadSafe Flat Top Ground Mount Posts
- Safe-Hit Flexible Delineators
- ZICLA Pointer

### Curbs

- Traffic Logix SuperFlex Curbing

### Signage and Paint

Agencies should continue to use their preferred vendors for MUTCD-compliant signage and paint applications.

# Case Studies

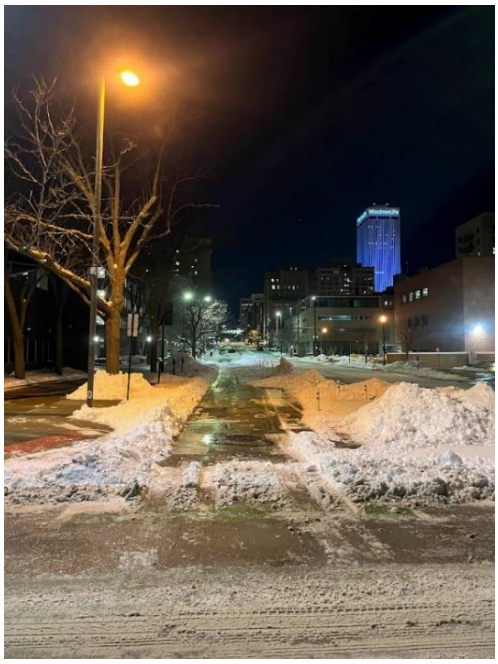
The following quick-build projects have been implemented in the City of Omaha in recent years. The city provided guidance about what could be improved, how routine maintenance was performed or impacted, public perception, and whether the quick-build project met the need and objectives.

## Market-to-Midtown Bikeway

One of the most visible quick-build projects in the Omaha area was the Market-to-Midtown Bikeway. Through a partnership with Metro Smart Cities and Bike Walk Nebraska, this pilot project provided a much-needed connection through downtown Omaha. A One-Year Evaluation Report was developed highlighting the project. Lessons learned during the pilot project include the following:

- Understand the visual impacts or appearance of quick-build materials. Some city employees did not approve of the amount of plastic bollards that were used.
- Account for maintenance. Snow clearance was the number one maintenance item in this project.
- If this is only a pilot project, understand public pushback when the pilot project is done and removed.

Through community feedback and generous donations from the Sherwood Foundation, the city plans to construct a permanent bikeway connecting midtown and downtown Omaha.



## 24th Street Modular Crossings

In 2024, the City of Omaha responded to safety concerns along 24th Street with the implementation of modular crossings at 24th and Oak Streets and 24th and B Streets. Observations from the modular crossings have shown increased pedestrian use. The city has dealt with multiple instances of signage in the median being hit and will continue to monitor the effectiveness of this quick-build implementation.

## St. Mary's Crossing – School

The area around Liberty Elementary School (St. Mary's Avenue west of 20th Street) can become hectic during pickup and drop-off. To help, the city added a midblock crossing, bump-outs, signage, and striping improvements across St. Mary's Avenue to allow parents to use the Omaha Children's Museum parking lot. The project has received major support from users.

## S. 13th (Little Bohemia) and William Streets Intersection

Recent revitalization of the Little Bohemia area on S. 13th Street, with new bars, restaurants, and shopping, has increased pedestrian activity at 13th and William Streets, with users parking their vehicles and visiting multiple business on either side of S. 13th Street. The city added painted curb extensions with delineators at all four corners of the intersection to enhance pedestrian safety by making pedestrians more visible while constricting the cross-section of the roadway to reduce vehicular speeds. The project has received positive feedback from users and business owners in the area.

## Ashland Modular Roundabout (US Highway 6/Nebraska Highway 66)

In 2023, the Nebraska Department of Transportation (NDOT) installed a modular roundabout in Ashland to address the safety needs at a two-way, stop-controlled intersection where crash rates were 3.5 times higher than the state average.

The innovative solution cost about 60 percent less than a concrete-only solution. NDOT used the modular median vendor Vortex, which is listed previously in the treatment options list.

*Source: NDOT*

# Attachment 1: Quick-Build Consideration Form

Please answer the following prompts and attach relevant information.

1. **Project Location |** List the project location and attach study area map.

2. **Project Champion |** List agency staff that will lead this project through completion.

3. **Project Purpose |** Provide a brief description of why a quick-build project is being considered at this project location.

4. **Existing Conditions |** Briefly describe any readily available data about the site (crash history, site observations, or community concerns). Attach relevant data (if applicable).

5. **Treatment Options |** Describe potential treatment options to address needs. Refer to MAPA SS4A **Chapter 04 (Vision Zero Toolbox)** and the Quick Build Design Guide for treatment options.

6. **Budget Estimate |** Provide an order of magnitude cost for potential improvements utilizing the following scale:
    - $ $0 – $10,000
    - $$ $10,000 - $50,000
    - $$$ $50,000 - $100,000
    - $$$$ $100,000+ *(Project may not be applicable for quick build guidance)*

7. **Outreach Needs |** Provide a list of businesses or properties adjacent to the project location that would need to be engaged to implement a successful project.

8. **Additional Notes |** Provide any additional data relevant to consider moving forward into the next stage.