
# 3.0 STREET DESIGN PROCESS

# 3.1 PROCESS OVERVIEW

## USING THE DESIGN MANUAL TO DESIGN COMPLETE STREETS

Designing public streets is a complex process, doubly so when designing complete streets that strive to be safe, accessible, and comfortable for all users of the street and sensitive to the surrounding land use context.

This section of the design manual provides guidance on how to use the manual itself as a tool for designing streets.

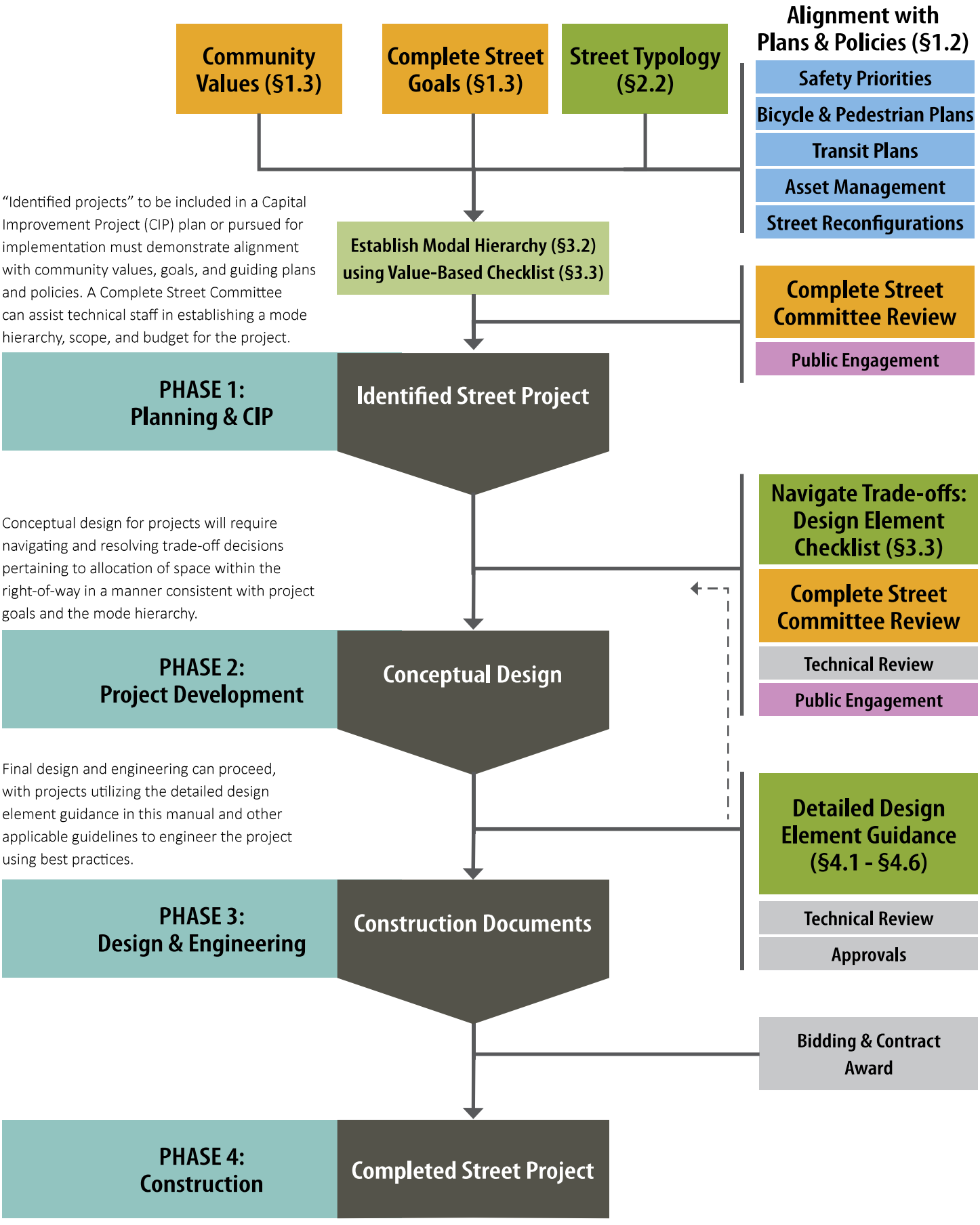
### The Life of a Complete Street Project

The digram on the next page provides an overview of how complete street projects should be identified, conceptualized, designed, engineered, and implemented. The digram provides references to specific sections of this street design manual, where information and guidance can be provided at each step in the process. In addition, this section and section 3.2 (Design Strategies) can be utilized to provide high-level guidance during the design process.

The bullet points below provide additional guidance on navigating the chart on the following page:

- **Community Values and Goals:** Complete street projects must be implemented in accordance with established community goals and values. Goals and values should be stated and reinforced throughout the design process.
- **Street Typology:** The street typology in section 2.2 provide an effective starting point for thinking about a given street's design—including consideration of the range of users, roadway condition, and what types of treatments might be needed to provide safe access for all users.
- **Alignment with Plans and Policies:** Street projects are often identified through one specific "source," such as a non-motorized plan or an asset management plan that indicates a need for a infrastructure repair or upgrade. Each project should examine all related plans at the onset to identify needs and opportunities for leveraging joint funding.
- **Establish Mode Hierarchy and Using the Value-Based Checklist:** These are fundamental tools in the street design process that should be used to help scope a particular project, ensure that user needs are met, and that the project is in alignment with goals, values, and related plans.
- **Complete Street Committee Review:** The complete street committee should be engaged twice during a street design process, once as the project scope is being established and once as part, of determining a conceptual design. The committees role is to ensure that projects are in alignment with and fully realize community goals and values.
- **Public Engagement:** Public engagement should include communication, as well as direct engagement with project stakeholders and users to understand their needs and identify opportunities.
- **Detailed Design Guidance:** Once a conceptual design direction is established, Chapter 4 of this manual provides detailed guidance to aid during the engineering phase. This guidance should be consulted as needed in earlier phases as well to ensure that conceptual designs are feasible.

# THE LIFE OF A COMPLETE STREET PROJECT



# STREET PROJECTS: PUBLIC PROCESS

Regardless of origin and whether public or private, every project that impacts the street is required to follow the Kalamazoo Street Design Manual. Small- and large-scale projects should be examined and considered for opportunities to advance the vision and goals of the Kalamazoo Street Design Manual.

For public projects, the design manual provides a process showing how a street project moves from a planning-level phase into project development, design and engineering, and eventually construction and operation. This process is defined in order to provide consistency and transparency of decision-making for city staff, agency partners, and the community at large.

The digram below shows the four primary phases of work, which are described in more detail on the following pages.

## Project Types

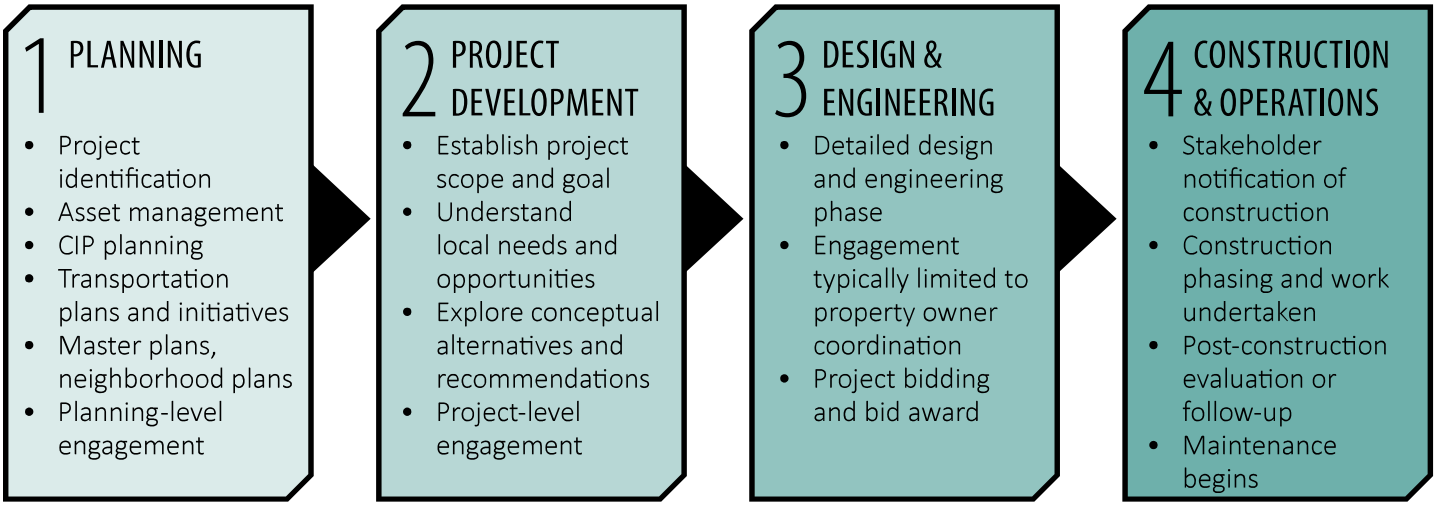
Kalamazoo's Complete Street Policy notes that all types of street and transportation projects are an opportunity to advance complete streets goals and values.

While full street reconstruction projects typically affords the greatest opportunity to transform streets and make improvements for all users, even simpler maintenance projects (like resurfacing or re-striping projects) are an opportunity to change the form and function of streets.

All projects identified in the city's CIP process should be reviewed for potential complete streets enhancements consistent with this design manual. This includes:

- **Full street reconstructions:** These projects typically include replacement and/or relocation of curbing and drainage structures, which affords the greatest opportunity to re-think street cross-section and allocation of uses. These projects are typically triggered by major utility projects, such as waterman or sanitary replacements.
- **Street reconfiguration projects:** These projects include things like road diets, two-way restoration projects, or others that reconfigure travel lanes. Often these project can be implemented through pavement markings, and are an opportunity to incorporate bicycle lanes or other amenities.
- **Streetscape projects:** Streetscape projects may be implemented purely "back of curb" or may be part of a larger full reconstruction. Opportunities for improving the amenity zone, street lighting, stormwater management, and pedestrian areas are often the focus.
- **Bikeway and non-motorized projects:** These projects range from implementation through re-striping to streetscape or full construction, depending on the type of facility and level of user stress that is desired.
- **Road resurfacing and re-striping:** These projects are often routine maintenance type projects. When these projects are advanced, they should always be used as opportunity to revisit striping patterns in the roadway to better align with best practice.

## PHASES OF STREET DESIGN PROCESS - PUBLIC PROJECTS



# 1 PLANNING PHASE

## Overview

The planning phase is primarily focused on identifying potential street projects at city-wide level, drawing on planning, asset management, or capital improvement processes that are used by the City, as outlined below.

## Inputs

- Transportation plans (local/regional) that identify mobility, transportation, and infrastructure projects.
- Projects identified through asset management programs, such as road surface condition, and utility condition assessments.
- Annual city staff meeting to discuss and CIP planning.
- Master plans, neighborhood plans, and other community-driven plans that identify mobility projects.
- City-wide analyses and assessments, such as safety studies, parking studies, non-motorized plans.

## Tasks & Outcomes

- **Coordination:** Cross-departmental coordination is essential for ensuring that prospective street projects are considered all departments. Coordination with funding agencies is essential.
  - » **Complete Streets Review Process** requires the Complete Street Committee to review projects
  - » **Planning Commission** may also be engaged in the identification and review of potential projects.
- **Analysis:**
  - » Establish a process for regular analysis of city-wide transportation data (such as pedestrian/bicycle/vehicle volumes, safety/crash data, traffic stress, transit ridership, parking utilization, etc.) to support project identification and efforts for funding.
  - » Establish a modal hierarchy to help drive the scope and support decision-making on the project. Use street design tools (checklist and element matrix – section 3.3) to navigate design decisions.
- **Community Engagement:** Community engagement typically occurs through established parallel planning processes, such as community-wide or neighborhood planning efforts.
  - » Utilize city's Public Participation Plan and toolkit to review potential projects or CIP plans with the community.
  - » Coordination with the Disability Network
- **Products**: Identification of priority projects in CIP plans or other processes.

# 2 PROJECT DEVELOPMENT PHASE

## Overview

Once a project has been identified, the project development phase is an opportunity to dig further into an assessment of opportunity, needs, and constraints for a specific project. This commonly entails targeted stakeholder engagement and specific analysis tasks or studies necessary for establishing a clear scope of work and project budgets.

## Inputs

- Corridor specific studies, potentially including: safety assessments/audits, volume counts and traffic analysis for pedestrians, cyclists, and vehicles.
- Exploration of conceptual alternatives and evaluation relative to project goals.

## Tasks & Outcomes

- **Coordination:** Cross-departmental coordination continues to be essential during this phase of work. It is during this phase, as project budgets and timelines are established, where developing a shared scope and clear understanding of project needs is most critical.
- **Permitting:** This phase of work typically identifies needed project permits and approvals
- **Community Engagement:** Engaging residents and stakeholders along the study corridor is essential for understanding local needs and opportunities at the start of this phase, and where feasible to garner input on preferred options or directions for the project. Engagement primarily focused on reconstruction projects or where other significant changes are anticipated.
- **Products:** Project scope documents, conceptual cost opinions to establish budgets, conceptual design direction.

# 3 DESIGN & ENGINEERING PHASE

## Overview

The design and engineering phase typically proceeds in a more straightforward manner. Once a clear project scope, budget, and design direction has been established (Phase 2), then the design work can begin in detail.

## Inputs

- Findings from Phase 2
- Geotechnical and environmental investigations
- Topographic survey of the corridor

## Tasks & Outcomes

- **Coordination:** Design team is typically established in this phase (may carry over from the prior phase). The design team should continue to engage identified partners to keep them informed of the state of the design and continue coordination on technical aspect of the project.
- **Analysis:** Design and engineering phase tasks usually include stormwater/hydraulic modeling, establishing signal timing plans, maintenance of traffic plans, other technical requirements of the project.
- **Permitting:** Required permits are applied for and worked through the approval process during this phase. Departmental/internal review of projects to be identified and scheduled during this phase.
- **Community Engagement:** Engagement is not typically part of this phase of work. May be targeted coordination to key stakeholders (i.e. adjacent property owners) as part of design and engineering work.

  Engagement usually focused around communicating the status of the design work and informing the public about what changes to expect, the timeline for construction, and construction impacts.
- **Products:** Construction drawings, specifications, completed permit applications, bidding documents.

# 4 CONSTRUCTION & OPERATIONS PHASE

## Overview

This phase includes the bidding and construction process, as well as operational and maintenance efforts once the project construction is completed.

## Inputs

- Design and engineering documents, bid documents, final pricing from selected contractor, construction phasing and schedule.

## Tasks & Outcomes

- **Coordination:** Continue cross-departmental coordination. Plan for a post-construction follow-up to understand project outcomes and impacts from different perspectives and inform future street designs.
- **Monitoring:** Opportunities to monitor projects and/or conduct post-occupancy evaluations and analyses should be considered whenever feasible. Conducting post-construction traffic assessments (for example) may help inform and refine future analysis efforts.
- **Community Engagement:** Engagement leading up and during construction should be focused on clearly conveying construction sequencing, impacts to accessing properties, and timelines for completion.
  - » Winter before construction: reminders and notices go out to the community and neighborhood. Opportunity to reiterate benefits of the project.
  - » 1-3 weeks before construction starts: door hangers and/or postcards distributed to target to provide notice of traffic detours, service interruptions, and points of contact.
  - » Consider post-construction surveys or engagement to better understand impacts and resident attitudes. Helps inform future projects.
- **Products:** Completed street project. Follow-up studies and assessment reports.

# STREET PROJECT: PRIVATE PROCESS

Private development projects often impact the street during construction. It is important that streets are rebuilt or restored in a manner consistent with their designated street typology, which may differ from the design of the street prior to development impacts.

The site plan review process within CPED includes Projects meetings, pre-application, and site plan review meetings. It is through this process that projects impacting public streets will be reviewed and approved by CPED, Public Services (e.g. traffic and utilities), and the Fire Marshall.

**CONCEPTUAL STAGE:** Prior to beginning the formal process and steps outlined below, developments impacting public ROWs should review the Kalamazoo Street Design Manual (this document), determine if their project falls within a TIF district, brownfield, or other public improvement location. Potential street and ROW restoration elements may be reimbursed and/or may be opportunity for aligning public and private projects to advance complete street implementation.

The general process, with specifics called out relative to street design, is described below:

**STEP 1 - PRE-APPLICATION MEETING:** Private projects can meet with city staff as parts of a "Project Meeting" which can help align the scope of the private project with needs from a site plan review, and ultimately street design, standpoint.

- Review site plan review checklist.
- Consideration of adjustments to property/right-of-way lines, establishing any building frontage zones, desired width for pedestrian areas relative to building placement and anticipated curb location.
- Consideration of whether the project also requires approval of boards and commissions (e.g. planning commission).

**STEP 2 - SITE PLAN DOCUMENTATION:** The private entity is required to develop site plans for review. Site plans must adhere to the site plan review checklist and any specifics identified in the pre-application meeting for full documentation. Fees submitted.

**STEP 3 - SITE PLAN REVIEW COMMITTEE MEETING:** Submit site plans for review by city staff across multiple departments. A review meeting is held, following city-review, to discuss feedback.

- Committee comments provided back to the applicant in advance of the review meeting, allowing the applicant to consider feedback in advance of meetings.

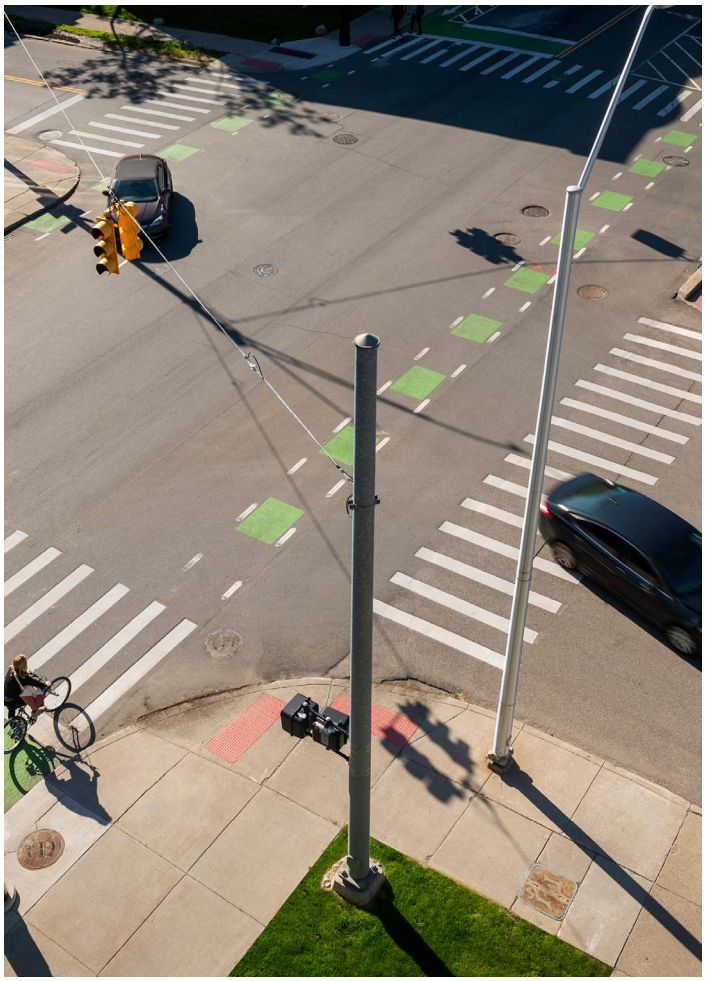
**STEP 4 - REVISED SITE PLAN:** Plans must be revised to appropriately respond to committee comments. If resubmitted within one month, final review will occur within five business days.

**STEP 5 - FINAL SITE PLAN:** Final approval of plans with an accompanying letter and signed.

- Once all approvals are in place, construction permits can be issued.

# 3.2 DESIGN STRATEGIES

This section describes a series of overarching strategies and guiding principles. These strategies should be reviewed and well-understood by team members and partners working to implement transportation projects in the City of Kalamazoo, so that there is a shared approach and understanding of important needs and methods of work.



## ESTABLISH A MODAL HIERARCHY

### What is a modal hierarchy?

A Modal Hierarchy is a ranking of how different street users are prioritized. This ranking is a tool to help navigate trade-off decisions in the design of a complete street. The modal hierarchy is based on an understanding of which users are most vulnerable and most in need of facilities from an equity perspective.

### How to determine user priority for a street project?

- When a project is first identified, during the planning or project development phase, the street design checklist (see ***Section 3.3***) should be used. This checklist identifies basic and/or more in-depth analysis that will aid in determine the user priorities and if deviations from the priorities identified for a street's typology are warranted.
- Engage with key stakeholders on the corridor, especially residents, property owners, and business owners.
- Review relevant city-wide and regional transportation plans, including non-motorized plans and transit plans, to understand both current and anticipated user and their needs. Street designs are especially successful when they can anticipate future needs and/or build in flexibility.
- Align street design decisions with zoning and the adjacent land use context in an aspirational manner. Consider what land uses are desired and/or likely in the future, and focus on how street designs can support those transformations.

## EQUITY & STREET DESIGN

Creating a City where mobility and transportation infrastructure drive equity and are implemented in an equitable manner is essential to realizing the vision and goals set forth in the Imagine Kalamazoo 2025 Master Plan.

Fundamental to the city's process and to achieving equity is listening, understanding community values, and shaping a vision and solutions through co-creation. It goes beyond balancing needs and prioritizing the most vulnerable populations to actively planning and designing to compensate for long-term disinvestment, and providing opportunities to disadvantaged populations.

Equitable mobility tailors solutions to address the unique needs of a community and addresses the triple bottom line while recognizing that not all communities are starting from an equal playing field. Some specific strategies include the following:

- Prioritizing projects in areas where people have limited mobility choices or where the economic impact of those mobility choices represents a larger percentage of household income.
- Prioritizing the needs, safety, and comfort of vulnerable users and under-served populations.
- Working closely with neighborhood residents and local leaders to understand unanticipated project impacts and hardships, and establish a plan for addressing those concerns as part of the project.
- Directing resources to areas where disproportionate amounts of the accidents, fatalities and/or injuries occur among minority populations.
- Assessing the balance of road types available in disadvantaged communities and developing specific plans to compensate for disparities.
- Understanding the needs of a community outside of transportation infrastructure and mobility and align programs to address those benefits to the extent possible.
- Developing specific metrics to address outcomes and measuring to ensure that they are actually being obtained and benefits being received, especially in communities of color and disinvestment.
- Listening to community voices early and often to check assumptions, align values, and determine desired outcomes. This often means going to the community versus asking the community to come to you.
- Aligning job opportunities and other economic and social benefits with projects to build community capacity and economic mobility.

# COMMUNITY ENGAGEMENT: SUPPORTING TRANSPARENT & DEFENSIBLE DECISION-MAKING

Everyone that lives, works, or recreates in Kalamazoo utilizes public streets directly or indirectly. They have a significant impact on how people experience the city and how they access destinations every day. As part of the city's public infrastructure, city residents and businesses must have a voice in how the design of streets can meet local needs, as well as the broader needs of the entire community and the greater Kalamazoo area.

The City of Kalamazoo Public Participation Plan outlines requirements and recommendations for how to meaningfully and equitably engage stakeholders. In addition, Section 3.1 of this design manual identifies typical steps in the street design process and where stakeholders should be engaged.

This section provides general recommendations and strategies to consider for engaging the community on transportation related topics.

- **Education and Communication:** Streets are complex places with many competing uses. Establishing and using a general education campaign around transportation safety and best practices should be pursued in order to grow the community's level of understanding and ability to engage deeply on transportation topics. In order to build transparency, incorporating local transportation data and trends into the communication program can be beneficial.
- **Community-Wide Plans and CIP Planning:** Broad community engagement is important when establishing community-wide transportation plans and discussing how those plans can translate into actionable projects. Understanding how the community would like to get around via different modes of travel, barriers they experience, and priorities they may have are important. A few techniques to consider for advancing regular conversations at the community-wide level:
  - » Yearly transportation focused public meetings or workshops, where information can be shared and public input solicited.
  - » Interactive mapping tools and/or surveys where community ideas and priorities can be tracked and shared over time.
  - » Dedicated transportation "idea boards" in a public location where people can share ideas and desires.
  - » Public meetings and presentations as part of developing CIP plans, allowing citizens to review projects, add to the list, and shape priorities.
- **Project-Specific Engagement:** All project types, during the project development and scoping process is an opportunity to garner public input, in a manner aligned with the City's Public Participation Plan (PPP). Feedback from stakeholders in close proximity to the corridor is especially important for determining localized needs. Consider the following approaches:
  - » Engage business area organizations, neighborhood organizations, block groups, and school PTO's as a mechanism for connecting with local stakeholders. Reach out early before the project scope is fully defined to discuss needs and establish any bounds or parameters for the project.
  - » Provide a clear location (e.g. project page) that tracks the current status of the project and makes it easy for stakeholders to share their ideas or concerns.
  - » Engage the stakeholders in a conversation around their values in order to inform decisions regarding preferred alternatives, when there are tough trade-offs to or design alternatives .

# DESIGN FOR ALL-AGES & ABILITIES

Designing for all ages and abilities means, in particular, that pedestrian spaces and bicycle facilities be designed for and usable by all members of a community.

From a pedestrian standpoint, projects must minimally meet Americans with Disabilities Act (ADA) guidelines. However, more enabling designs that utilize universal design principles should be pursued on all street projects to the extent possible.

An all ages and abilities bicycle network is one where all bicycle-willing people feel safe and comfortable on that network. While conventional bicycle lanes have been instrumental in advancing adoption of dedicated bicycle facilities in communities across the country, they often fail to provide a suitable facility for more cautious and/or less confident bicycle riders. As such, communities are placing increased emphasis on building "low stress" bicycle facilities that are comfortable for a broader range of users.

Facilities comfortable for a broader range of users can increase the share of people cycling in a community. This can help realize a greater range of benefits through positive public health outcomes, reduced transportation costs, improved safety for all roadway users, and equitable access to transportation choices.

The 2017 NACTO design guide *Designing for All Ages & Abilities* provides guidance on the types of bicycle facilities that should be considered based on roadway conditions and achieving an all ages and abilities goal. Table 2.1.1. provides a decision-making tool that considers the speed of the roadway, traffic volumes, numbers of vehicle lanes, and other critical considerations. These considerations inform a minimum level of facility that should be used to serve all ages and abilities.

See **Section 4.3 - Bicycle Facility Section** for additional guidance.

**Contextual Guidance for Selecting All Ages & Abilities Bikeways**

| Roadway Context | | | | All Ages & Abilities Bicycle Facility |
|---|---|---|---|---|
| Target Motor Vehicle Speed* | Target Max. Motor Vehicle Volume (ADT) | Motor Vehicle Lanes | Key Operational Considerations | |
| *Any* | | *Any* | *Any of the following:* high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts‡ | **Protected Bicycle Lane** |
| < 10 mph | Less relevant | No centerline, or single lane one-way | Pedestrians share the roadway | **Shared Street** |
| ≤ 20 mph | ≤ 1,000 – 2,000 | | < 50 motor vehicles per hour in the peak direction at peak hour | **Bicycle Boulevard** |
| ≤ 25 mph | ≤ 500 – 1,500 | | | |
| | ≤ 1,500 – 3,000 | Single lane each direction, or single lane one-way | Low curbside activity, or low congestion pressure | **Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane** |
| | ≤ 3,000 – 6,000 | | | **Buffered or Protected Bicycle Lane** |
| | Greater than 6,000 | | | **Protected Bicycle Lane** |
| | Any | Multiple lanes per direction | | |
| Greater than 26 mph† | ≤ 6,000 | Single lane each direction | Low curbside activity, or low congestion pressure | **Protected Bicycle Lane, or Reduce Speed** |
| | | Multiple lanes per direction | | **Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed** |
| | Greater than 6,000 | *Any* | *Any* | **Protected Bicycle Lane, or Bicycle Path** |
| High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts | | *Any* | High pedestrian volume | **Bike Path with Separate Walkway or Protected Bicycle Lane** |
| | | | Low pedestrian volume | **Shared-Use Path or Protected Bicycle Lane** |

**Table 2.1.1 - All Ages & Abilities Bikeways (NACTO – Designing for All Ages and Abilities, 2017)**

# TACTICAL PROJECTS

Tactical projects, sometimes called quick-build or temporary installation projects, can be an effective tool for "testing" changes to streets and roadways before full implementation. This "try before you buy" approach can provide more real world feedback for how changes might operate, and can even be lower cost than paying for expensive modeling and analysis.

Different types of tactical projects can be utilized, which are described below.

## Demonstration Projects

The primary purpose of Demonstration Projects are to showcase and raise awareness of the idea.

- Demonstration projects are the shortest lived type of tactical projects. These projects may by installed for as little time as a day up to a few weeks (although longer term demonstrations are possible).
- Typically low cost, using cheap non-permanent and flexible materials.
- Typically do not have robust data collection and pre- and post-analysis. Focused on communication instead.

## Pilot Projects

Pilot Projects are generally more involved than demonstration and strive to actually test, analyze, or evaluate the performance of an idea in a low-cost manner before more significant investments are made.

- Remains in place long enough for behaviors to normalize around the pilot project so that data can be collected. Typically one to two months at a minimum.
- Typically low cost and quick to install. Use pavement markings, semi-attached materials, planters, temporary curbing, signage.

## Interim Installations

The last category relates to projects that are installed using an initial lower cost set of treatments, that are intended to remain in place long-term until more permanent changes can be made.

- Remains in place indefinitely until upgraded to a full installation or the project is determined to be undesired and/or ineffective.
- Design and layout should be observed and assessed regularly, with adjustments and fine tuning made on regular basis to improve the operation. Establish clear process for determining long-term outcome.

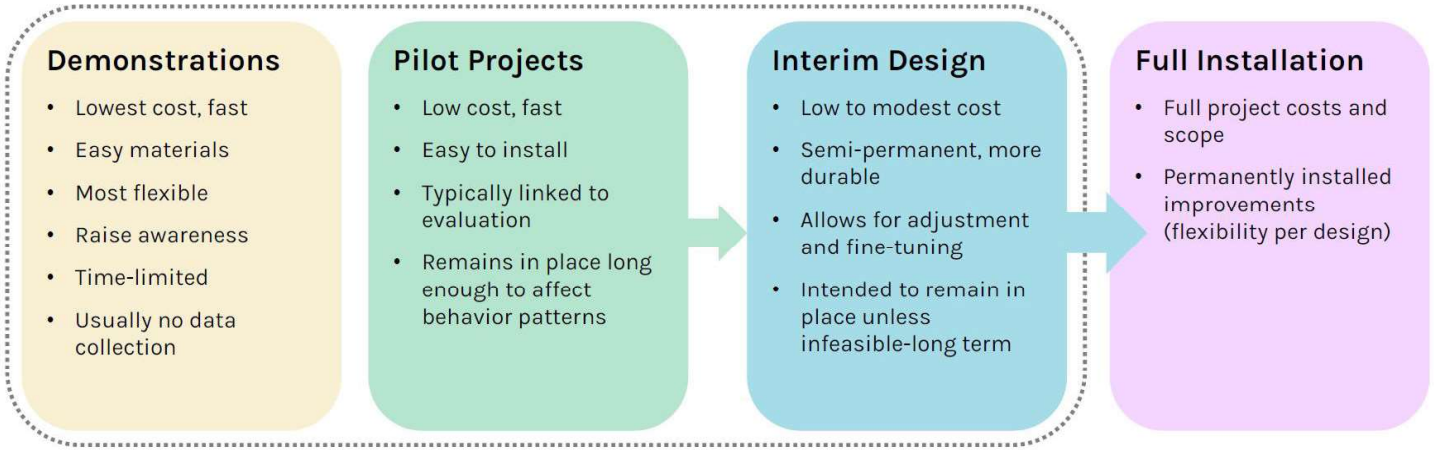
## Tactical Project Considerations

The following types of projects are good candidates for tactical projects:

- Re-purposing curbside lanes for other uses (i.e. expanded pedestrian area or bikeways)
- Crosswalk improvements and crossing length reductions (e.g. temporary bumpouts or mid-block crossings)
- Separated bikeways
- Traffic lane reconfigurations (e.g. testing road diets)
- Public art installations

Best practices to consider for tactical projects:

- Have a clear communication plan and signage in place before and during the project to explain the purpose and expectations to potential users and stakeholders.
- Establish measures for success. Know what data or attributes are being analyzed and how follow-up decisions will be made.
- Be nimble and flexible. While construction costs may be low, staff time for monitoring, adjusting/maintaining, observing, and following up on tactical projects can be considerable.



# ADDITIONAL GUIDING PRINCIPLES

Designing streets is a complicated process and must balance the need of many different street users across a diversity of land use contexts. As public or private development projects are identified, designed, and reviewed, a number of key strategies can be utilized to aid the design process and make informed, holistic decisions regarding the future of Kalamazoo streets.

1. **Be honest about trade-offs.** We are so used to thinking about streets as places to move cars that we often fail to notice when the trade-offs we are negotiating are only between the non-auto elements. We often make tough choices between quality pedestrian facilities, trees, parking, bicycle facilities or transit accommodation, while failing to scrutinize vehicle demands, to the same extent. While vehicles are an important and even vital user of Kalamazoo streets, giving equal consideration to each street user type will lead to a more balanced network and better streets overall.

2. **Integrate street and urban design.** The best streets compliment what is on the pavement and what is along the block. High vehicle volume is kept out of quiet neighborhoods, adequate lighting is provided on heavy pedestrian streets, large canopy trees are provided on high speed streets, crosswalks are on all streets, on-street parking is available for storefront commercial, driveways are restricted along destination commercial streets. Street and urban design must compliment one another.

3. **Strive for consistency.** Consistency in facility design increases the legibility of a street and makes it more predictable and inviting for travelers. However, the context of a street commonly changes as it transitions from one area of Kalamazoo to another. The street design may also change along the corridor. If implementation is incremental, as through maintenance or development projects, ensure transitions are logical and intuitive.

4. **Understand the circulation network.** Streets do not exist in isolation. They are part of networks, such as stormwater drainage, bus routes, shopping district, bicycle routes. If a particular element does not "fit" on a particular street, perhaps it can be moved to another. Conversely, some elements are necessary to complete a network. Working in multiple scales helps to understand a street and its network.

5. **Consider maintenance.** Each of the elements includes consideration of maintenance, but good street design must consider the maintenance of the total street design as a whole. Does it introduce any complications for snow removal? Will it add additional cost when the street must be repaved? How many pavement markings, signs, signals and lights are there that must be kept up? Are there opportunities for efficiencies? Are there partnerships in place to maintain landscaping, art or other unique elements?

6. **Consider maintenance tasks.** Maintenance tasks include snow clearing, sweeping, waste management, repairs, patching, utility maintenance, cleanouts, landscape care, furnishings upkeep, pavement markings repainting.

7. **Phase in funding.** Streets are expensive and budgets are limited, but with strategic phasing, collaboration, and creative approaches to design, budget constraints do not have to preclude street improvements. Pavement markings and non-permanent fixtures (e.g. bicycle corrals, planters, and rubber curbing) dramatically change the character of a street quickly and at relatively low cost. More permanent improvements can be phased over time as development projects come on line, utility upgrades are conducted, or routine maintenance projects advance.

8. **Design for future adaptation.** Wherever possible, streets should be designed with flexibility and adaptability in mind. Where safety, accessibility, and other project goals can be achieved, minimizing permanent improvements and/or designing flexible spaces that respond to changing needs overtime can reduce infrastructure costs and allow for greater resilience.

9. **Control traffic stress based on the target users**. The amount of traffic stress influences the way people use streets and the modes by which they travel. Streets should be designed to control traffic stress for the target users.

10. **Establish design vehicles for each street project.** The type of design vehicle (and the occasionally "accommodated vehicle) that is chosen should be driven by the specifics of the project. Generally single passenger cars or Single Unit 30-foot Truck (SU-30) are appropriate for most streets . However, streets on transit routes or where heavier truck traffic is anticipated, may require different design vehicles to be considered.

11. **Plan for emergency vehicles and access.** Fire, police, and ambulance routes should be considered.


# 3.3 DECISION-MAKING TOOLS

## A VALUES-BASED CHECKLIST

This checklist provides a comprehensive set of questions for the project team (whether public or private) to ask when changes to a street are considered. Organized around the six values that align the city's efforts, this checklist helps to identify data and analysis tasks that can support defensible decision-making aligned with best practices and ensures that both aspirational, as well as more practical and operational considerations, are fully explored.

Each value-based set of questions are further organized around the four phases of the street design process—planning, project development, design and engineering, and construction and operations—to help guide the process. These questions can and should, however, be used iteratively throughout the life of a project to check assumptions, ensure needed data and metrics are generated, and create outcomes that advance the city's values.

Checklist items with a diamond (♦) indicates those questions that can help determine what the modal hierarchy for a project should be, which in turn will help determine priorities when making scoping and design trade-offs.

## A Connected City

- **Strong connections between a diverse range of people and places**
- **A city networked for walking, biking, riding, and driving**
- **A reliable, accessible, and affordable public Transportation system**

### Phase 1: Planning and CIP

- ☐ (♦)**What is the desired modal hierarchy for the street?** Will this modal hierarchy achieve the goals of the project and support the desired land uses? Will it provide the desired level of safety for the identified users?
- ☐ (♦) **PEDESTRIANS:** Is the street a high pedestrian traffic area? Are there pedestrian generators present such as parks, schools, libraries, health care facilities, etc? Are there special populations such as youth, seniors, people with disabilities present? Pedestrians are the most vulnerable users, and their safety should be prioritized. Is there any compelling reason to not prioritize pedestrians?
- ☐ (♦) **BICYCLES:** Is the street part of the city's, Michigan Transportation Planning Association (MTPA) or Kalamazoo Area Transportation Study (KATS) non-motorized network? Is it a target for a low stress connection? Do bicycle lanes already exist? As vulnerable users, is there enough safety measures provided to make cyclists of all ages feel comfortable?

- ☐ (♦) **TRANSIT:** Does the street have designated bus routes? Is there a multi-modal transit hub within the project area? What is the frequency of service? The number of transit lines? Is the project near a train station? Are there regional/national buses serving the area? Transit riders are also pedestrians, how might this impact their prioritization?
- ☐ (♦) **TRUCKS:** Does the street carry or allow truck traffic? Is it a designated truck route? Are there major distribution or industrial uses that require heavy truck traffic? Is there frequent on-street loading required? Are there loading zones present, and if so, how many? Can loading be accommodated off-street or on side streets?
- ☐ (♦) **PASSENGER VEHICLES:** What is the current and projected average daily traffic (ADT) in the corridor and at cross streets? Is it consistent throughout the corridor? Do the number of vehicles per lane mile exceed the maximums allowed? If so, how often? How does the average and 85th percentile travel speeds compare to the posted speed limit? Is there an odd or even number of lanes? Is it a high crash corridor? What types of accidents are occurring and where? Are high crash intersections located within the project area?
- ☐ (♦) **MICRO-MOBILITY/SHARED-USE VEHICLES:** Are there shuttle services operating in the project area? Is there a car share service nearby or on street? Is this a location with frequent taxi or on-demand transportation stops or stands? Are bicycle share stations present? Are scooters present? Is their a mobility hub located in the corridor?
- ☐ (♦) **Who are the primary roadway users?** Who are the most vulnerable roadway users?

## Phase 2: Project Development

- ☐ **CURBSIDE USES: What unique curbside uses are present?** Valet? Outdoor café's? Loading zones? Standing zones? Drop-off/pick-up zones? Parklets? On street parking?
- ☐ **BICYCLE VOLUMES:** Have bicycle counts or observations been conducted to determine current level of use? If so, what level of protection does existing infrastructure provide and is it adequate for the need and desired outcome?
- ☐ **PEDESTRIAN VOLUMES:** Are there pedestrian counts? If not should counts be performed? What is the experience of a pedestrian walking along the corridor? Crossing streets? How far apart are stop controlled intersections?
- ☐ **TRANSIT RIDERSHIP:** What are the boardings and alightings at bus stops? Are shelters present? Is there good lighting, signage, and pavement? Can you easily cross the street to access?
- ☐ **VEHICLE TRAFFIC:** How do traffic volumes vary during the day, throughout the week? Is the design being driven by peak hour traffic or persistent volumes throughout much of the day? Does ADT justify the number of existing/proposed lanes, or is it more important to accommodate turning movements, loading, and bus stops to mitigate traffic concerns and allow for reduced or similar travel lanes?
- ☐ **ON-STREET PARKING:** Is street parking present and, if so, how often is it being utilized? What is the turnover rate? Is it the highest and best use of public space for the area?

## Phase 3: Design and Engineering

- ☐ **SIDEWALK GAPS:** Are there gaps in the sidewalk network? Are the sidewalks wide enough?
- ☐ **DESIGN VEHICLE:** What is your design vehicle?
- ☐ **BUS TURNING:** Are buses turning onto or off of the roadway? Have turning movements been designed to allow for safe bus turning?

## Phase 4: Construction

- ☐ If there are existing bicycle lanes, have safe accommodations been made for cyclists during construction?
- ☐ Are pedestrian paths maintained during construction? If a sidewalk must be closed, are pedestrians forced to cross the street?
- ☐ Are bus stops clearly marked and safe waiting areas maintained?

# Equity and Opportunity for All

- **Street design informed by a neighborhood shared decision-making process**
- **Streets capable of being used by people of all ages and mobility levels**
- **Multi-modal networks that are equitably accessible to all neighborhoods**

## Phase 1: Planning and CIP

- ☐ **NEIGHBORHOOD CONTEXT:** Is the street located in a disadvantaged neighborhood?
- ☐ **NEIGHBORHOOD/BUSINESS ASSOCIATIONS:** Are their neighborhood or business associations (or other potential partners) to engage? Are underserved and disinvested parts of the community receiving improvements that address their needs and provide them with economic opportunity, access to services, improved safety, and strengthen beauty and community?
- ☐ **CIP ALIGNMENT:** How does the project align with other CIP projects in the corridor or on nearby streets? Does it build networks to improve access?


## Phase 2: Project Development

- ☐ **STAKEHOLDER ENGAGEMENT:** What property, business owners, and residents need to be involved in the process (planning, design, review, implementation correspondence?) What strategies will be required to give everyone a chance to provide input into the process?
- ☐ What Traffic Control Orders (TCO) will be needed?

## Phase 3: Design and Engineering

- ☐ **ADJACENT PROPERTIES AND CONSTRUCTION EASEMENTS:** How will the project affect adjacent properties? What construction easements or grading permits are needed? Are they disproportionately effecting communities of color?
- ☐ **BIKEWAY USERS:** Are bicycle lanes comfortable for all ages and abilities for the roadway typology and design?
- ☐ **ADA ACCESSIBILITY:** Do the sidewalks, crosswalks, signals, and curb ramps meet ADA requirements?

## Phase 4: Construction

- ☐ What is the anticipated construction phasing and timeline? Who will be most impacted, and have steps been taken to mitigate that impact?
- ☐ Have temporary curb ramps been put in place to maintain accessibility during construction?

# Environmentally Responsible and Sustainable

- **A mobility network that is sustainable and resilient, and reduces vehicle miles traveled**
- **Street trees and landscaping provide ecological services as well as buffers and beautification**
- **Reduced stormwater runoff and urban heat island**

## Phase 1: Planning and CIP

- ☐ **FLOODPLAIN:** Is the project in the floodplain? Will it require a floodplain permit through Michigan Department of Environment, Great Lakes, and Energy, (EGLE)?
- ☐ **IMPERVIOUS AREAS:** Is the project in an area of high imperviousness where urban heat island effects are likely to be a concern?
- ☐ **HEAVY TRAFFIC:** Is the project in an area that receives heavy industrial traffic that generates noise, dust, roadway debris?

## Phase 2: Project Development

- ☐ **STORMWATER MANAGEMENT TARGET:** What is the target level of stormwater management that is needed? What level is desired?
- ☐ **GREEN INFRASTRUCTURE TYPE:** Is the project an opportunity for above ground, below ground, or both types of green infrastructure?
- ☐ **TREE CANOPY:** What is the condition and extent of tree canopy along the corridor?
- ☐ **ELECTRIC VEHICLE (EV) CHARGING:** Can EV charging be accommodated?

## Phase 3: Design and Engineering

- ☐ What sizes and types of new street trees are suitable for the project?
- ☐ What type of soils are present? What is the infiltration rate?
- ☐ How much runoff can be retained? Detained? Can it be sent to a storm sewer versus a sanitary sewer and if so can it be cooled and cleaned first?
- ☐ Is LED lighting an option?
- ☐ Can high recycled content and low cement pavement mix designs be used?
- ☐ Can permeable pavements be used?
- ☐ What measures are being used to maximize tree soil volumes and ensure a mature tree canopy?

## Phase 4: Construction

- ☐ Are there trees that will be impacted and/or removed by construction? Are any of these landmark or otherwise protected trees? Is existing vegetation being properly protected?
- ☐ Are streams and stormwater drains protected during construction?
- ☐ Are their dust control measures in place?
- ☐ How can construction waste be diverted from landfill?
- ☐ Can materials be procured locally?

# Complete Neighborhoods

- **Connective access to neighborhood amenities**
- **Neighborhood commercial nodes are walkable and accessible by all modes**
- **Neighborhood streets are safe and walkable**

## Phase 1: Planning and CIP

- ☐ (♦) **LAND USE:** What is the existing and proposed/ future land use? Is it changing from existing conditions?
- ☐ (♦) **NODES:** Is the project in an identified Neighborhood or Commercial Node? Is the project in a Commercial or Neighborhood Node? Is the project in downtown?
- ☐ **SCHOOLS:** Do children play and walk to school along the street?

## Phase 2: Project Development

- ☐ **PAVEMENT WIDTHS:** Are there areas of excess pavement (e.g. overly wide travel lanes, over-sized turning areas)? Can excess pavement areas be repurposed (e.g. converted to additional sidewalk space, bicycle lanes, landscape buffers)?
- ☐ Are additional turn lanes warranted and/or is there an opportunity to repurpose turn lanes?
- ☐ Is there an opportunity to advance a road diet or lane narrowing project?
- ☐ How does traffic flow, generally, through intersections? Is there evidence for frequent disruptive backups? Is it because of traffic volumes, signal timing or lack of turning lanes?
- ☐ What are the neighborhood trip generators? Destinations?

## Phase 3: Design and Engineering

- ☐ How is the curb lane being utilized? Does it balance the needs of the different users? Is it designed for a single purpose or is it customized to achieve multiple objectives? Does it allow for flexibility to accommodate changing needs over time?
- ☐ Can all modes safely access and traverse commercial nodes?
- ☐ Will the design slow cars down so they are more likely to travel at or below the speed limit? Will it improve sight lines for all users?
- ☐ Will crossing distances be minimized?

## Phase 4: Construction

- ☐ Are businesses loading and delivery needs able to be accommodated during construction?
- ☐ Are limits on working hours and types of work prescribed to minimize noise levels in the mornings and evenings?
- ☐ Is construction phased in a rolling operation to minimize closures in front of businesses and homes?

# Vibrant Places

- **Streets support a diversity of life, culture, and activity**
- **Streets support formal and informal social exchanges**
- **Streets support a variety of retail, restaurants and entertainment venues**

## Phase 1: Planning and CIP

- ☐ (♦) **COMMERCE:** Are their businesses along the street that want to conduct commercial activity on the sidewalk (e.g. outdoor dining or retailing)?
- ☐ (♦) **EVENTS:** Is the road currently or anticipated to be used for special events, street closures, festivals, etc.?
- ☐ Is there a partner organization to support maintenance and activation?

## Phase 2: Project Development

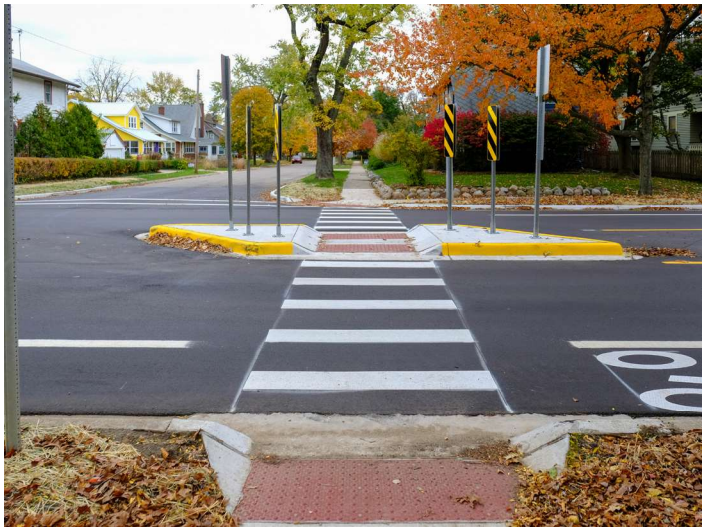
- ☐ Are there opportunities for new public art installations?
- ☐ Is there a desire or opportunity/need for pocket parks, parklets, plazas or gathering spaces?
- ☐ Is there a desire or need for outdoor seating? How frequent?
- ☐ Are there opportunities and/or a desire for specialty lighting?
- ☐ How can decorative planting best be accommodated within the project? Planters? Pots? Parkway? Hanging baskets?
- ☐ Have travel paths and desired lines been investigated? Are there places where people regularly jaywalk? If so can a mid-block crosswalk be added in that location?

## Phase 3: Design and Engineering

- ☐ Is there a desire for banner poles and banners to be used along the corridor? Is there a need for banners to stretch across the street?
- ☐ Is there special signage (beyond required regulatory signage) that is needed or desired? Branding? Gateways?
- ☐ Are wayfinding signs and information displays needed?
- ☐ Is there real time transit information available?
- ☐ Is there space for shared-use mobility and a mobility hub?
- ☐ Is there existing public artwork in the corridor that must be protected and/or relocated?
- ☐ Are there special, existing materials (paving, historic curbs, markers, plagues, etc.) that need to be maintained, salvaged, or reinstalled?
- ☐ Can transit accommodations be added or enhanced?
- ☐ Are corners and sidewalks generous enough to support conversation, a range of amenities, and a feeling of safety?
- ☐ Do the amenities and street configuration create a sense of place and pride?

## Phase 4: Construction

- ☐ Do special events need to be accommodated during construction? Do they need to be relocated?
- ☐ Can outdoor dinning be maintained during construction?
- ☐ Has there been careful coordination with existing businesses to understand their hours of operation, are ramps and other features provided to maintain access during construction?



# Resilient Infrastructure and Good Governance

- **Use an integrated design approach and coordinate with utilities**
- **Leverage government grants, private funding and foundation support to maximize and coordinate street and mobility improvements**
- **Ensure that private development and institution-lead initiatives support the city's goals for vibrant streets that are walkable and multi-modal**

## Phase 1: Planning and CIP

- ☐ Is there major utility work planned in the area in the next 5 years?
- ☐ Has major utility work recently been completed?
- ☐ Are there improvements that need to be made to the sanitary sewer, storm, or water infrastructure?
- ☐ Do water mains need to be upsized and/or is there an opportunity to upsize? Is there an opportunity to consolidate water main services in the corridor?
- ☐ What is the condition of the roadway paving? Can it accommodate new pavement markings without being resurfaced?
- ☐ Are underground building or large utility vaults present?
- ☐ What is the proposed funding source(s) for the project? Are there objectives/requirements of the funding source? If so, what are they?
- ☐ Is this project eligible for state or federal funds? Is the project looking to use state or federal funds?
- ☐ Is the project privately funded? Are there private funds that can be leveraged?
- ☐ What cost share agreements are needed with project partners?
- ☐ Are there upcoming development projects that are an opportunity to coordinate public infrastructure improvements?

## Phase 2: Project Development

- ☐ What is the condition of water mains and other utilities? Should they be televised?
- ☐ Do vaults need to be maintained?
- ☐ Is street flooding present or frequent? Do basement back ups or adjacent property flooding occur regularly during major rain events?
- ☐ Is the project in a location where more consistent and/or brighter pedestrian-level lighting is needed? What are existing street light levels? Do they need to be improved?
- ☐ Is the project identified by the city's IT infrastructure plan? Does IT conduit need to be provided?
- ☐ What resurfacing treatments/methods would be used to restore the pavement condition to an acceptable level?
- ☐ What overhead utilities (power lines, telecom, fiber optics etc.) are present? Does the project provide an opportunity to bury overhead lines?
- ☐ Who will be responsible for the maintenance of this project? Doe the stewardship of the project require public/private/non-profit partnerships?

## Phase 3: Design and Engineering

- ☐ Do existing fire hydrants provide proper coverage? Are new fire hydrants needed? How do these impact the layout and/or curb side uses?
- ☐ Can existing lighting circuits be used for supplying power? Are new electrical supply connections needed?
- ☐ Can new utilities be placed in an utility trench to minimize future roadway/utility maintenance costs and durations?

## Phase 4: Construction

- ☐ How is property access and safety being addressed when vaults are being repaired or filled in?
- ☐ How is utility work impacting the phasing and duration of the project and its impacts to local residents and businesses? Has this been minimized and coordinated in advance?

# DESIGN ELEMENT CHECKLIST

This table provides a checklist for all design elements covered in Chapter 4, and identifies how a given element applies to each street typology.

- **Required:** Design element must be included as part of the street design process and appropriately follow the detailed guidance in Chapter 4.
- **Recommended:** The design element recommended in all applicable cases, as described in the detailed guidance. Justification for not utilizing recommended elements must be clearly stated as part of the project documentation.
- **Optional/Situation:** The design element may be utilized based on applicable site conditions or at the discretion of the project team. Typically good to have and should be closely considered.
- **Limited/Restricted:** The design element is generally not suitable to the street typology and is discouraged. Justification for including the element should be documented and well supported based on site conditions or other requirement.

KEY — Required | Recommended | Optional/Situational | Limited/Restricted | N/A

## PEDESTRIAN ELEMENTS

| | Urban Center | Event/Festival | Main Street | Neighborhood Business | Commercial Business | City Connector | Network Neighborhood | Enhanced Neighborhood | Local Neighborhood |
|---|---|---|---|---|---|---|---|---|---|
| **Pathways** | UC | E/F | MS | NB | CB | CC | NN | EN | LN |
| Pedestrian Areas & Sidewalks | | | | | | | | | |
| Crosswalks | | | | | | | | | |
| Curb Ramps | | | | | | | | | |
| Mid-Block Crossings | | | | | | | | | |
| Pedestrian Refuge Islands | | | | | | | | | |
| Bumpouts | | | | | | | | | |
| Pedestrian Signals | | | | | | | | | |
| **Amenities & Uses** | UC | E/F | MS | NB | CB | CC | NN | EN | LN |
| Public Art | | | | | | | | | |
| Public Seating | | | | | | | | | |
| Waste Receptacles | | | | | | | | | |
| Sidewalk Occupancy | | | | | | | | | |

## CURBSIDE ELEMENTS

| | UC | E/F | MS | NB | CB | CC | NN | EN | LN |
|---|---|---|---|---|---|---|---|---|---|
| Curbside Occupancy: Platforms & Parklets | | | | | | | | | |
| Commercial Parking & Loading | | | | | | | | | |
| Drop-off Zones | | | | | | | | | |
| Neighborhood Parking | | | | | | | | | |
| Metered Parking | | | | | | | | | |

KEY — Required | Recommended | Optional/Situational | Limited/Restricted | N/A

## BICYCLE ELEMENTS

| **Bicycle Facilities** | UC | E/F | MS | NB | CB | CC | NN | EN | LN |
|---|---|---|---|---|---|---|---|---|---|
| Bicycle Facility Selection | | | | | | | | | |
| Sidepaths | | | | | | | | | |
| Separated Bicycle Lanes | | | | | | | | | |
| Buffered Bicycle Lanes | | | | | | | | | |
| Conventional Bicycle Lanes | | | | | | | | | |
| Advisory Bicycle Lanes | | | | | | | | | |
| Sharrows | | | | | | | | | |
| **Bicycle Intersections** | UC | E/F | MS | NB | CB | CC | NN | EN | LN |
| Bicycle Boxes | | | | | | | | | |
| Two-Stage Turn Queues | | | | | | | | | |
| Protected Intersections | | | | | | | | | |
| Bicycle Signals | | | | | | | | | |
| **Mobility Support** | UC | E/F | MS | NB | CB | CC | NN | EN | LN |
| Bicycle Racks | | | | | | | | | |
| Bicycle Corrals | | | | | | | | | |
| Micro-Mobility | | | | | | | | | |

## TRANSIT ELEMENTS

| | UC | E/F | MS | NB | CB | CC | NN | EN | LN |
|---|---|---|---|---|---|---|---|---|---|
| Bus Queue Jumps | | | | | | | | | |
| Transit Lanes | | | | | | | | | |
| Bus Stops & Shelters | | | | | | | | | |
| Bus Bulbs | | | | | | | | | |

## ROADWAY ELEMENTS

| | UC | E/F | MS | NB | CB | CC | NN | EN | LN |
|---|---|---|---|---|---|---|---|---|---|
| Travel Lanes | | | | | | | | | |
| Corner Geometry & Design Vehicles | | | | | | | | | |
| Driveways & Curb Cuts | | | | | | | | | |
| Medians | | | | | | | | | |
| Volume & Speed Management | | | | | | | | | |
| Intersection Strategies & Traffic Signals | | | | | | | | | |

KEY Required Recommended Optional/Situational Limited/Restricted N/A

## STREETSCAPE & INFRASTRUCTURE

| | UC | F/E | MS | NB | CB | CC | NN | EN | LN |
|---|---|---|---|---|---|---|---|---|---|
| Street Lighting | | | | | | | | | |
| Street Trees | | | | | | | | | |
| Stormwater Management | | | | | | | | | |
| Landscape/Lawn Panels | | | | | | | | | |
| Landscape Planters | | | | | | | | | |
| Utilities | | | | | | | | | |

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