COMPLETE GREEN STREETS GUIDE

TOOLE DESIGN

EQT by design

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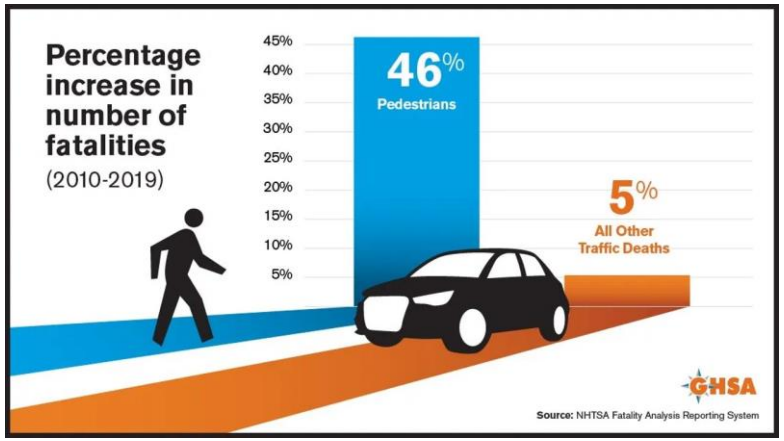
CITY OF MADISON TRANSPORTATION

WHAT ARE WE TRYING TO ADDRESS?



The conventional approach to street design focuses on moving traffic – everything else is squeezed into the remaining space. This results in:

- More driving (no less traffic)
- More severe crashes
- Fewer mobility choices
- Impacts on neighborhoods
- Water and air pollution
- Inconsistent solutions
- Inequities

As a result, consistently creating streets that meet non-driving needs well is a challenge.

HOW COMPLETE GREEN STREETS CHANGES STREET DESIGN

The new approach presented here provides a consistent process for planning, designing, building, and operating streets in a way that better reflects our community values and increases safety and equity. When we use the word "street," we are referring to the sidewalks, terraces, roadway, and everything in between.

Complete Green Streets provides:

- A process centered in community values

- Clear direction on priorities

- Defined street types to use as starting point for design

- Explicit equity framework and associated process

- Flexible tool that will evolve over time as Madison evolves

This process builds upon and supports the City's work around Vision Zero, bike lanes and sidewalks, traffic calming, urban forestry, and green infrastructure.

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PROJECT TIMELINE

Winter 2021/2021
Project Initiation and "Street Stats" Analysis

Spring 2021
"Let's Talk Streets" Campaign Launch

Summer 2021
Understanding Community Values

- Street Values

Fall 2021
Confirming Priorities

- Street Use Hierarchy

Fall 2021 - Spring 2022
Translating Values to Decision Tools

- Street Typology
- Overlays and Modal Priority Networks
- Equity Framework & Process
- Tree Canopy and Green Infrastructure Guidance

Summer 2022
Ironing Out the Details

Fall 2022
Finalization and Plan Adoption

- Key Engagement Milestone
- Key Deliverable

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COMPLETE GREEN STREETS GUIDANCE

1. **Street Values & Modal Hierarchy**
2. **Key Project Elements**
3. **Process Overview**
4. **Project Element Charts**
5. **Tree & Green Infrastructure Decision-Making**
6. **Project Checklist**

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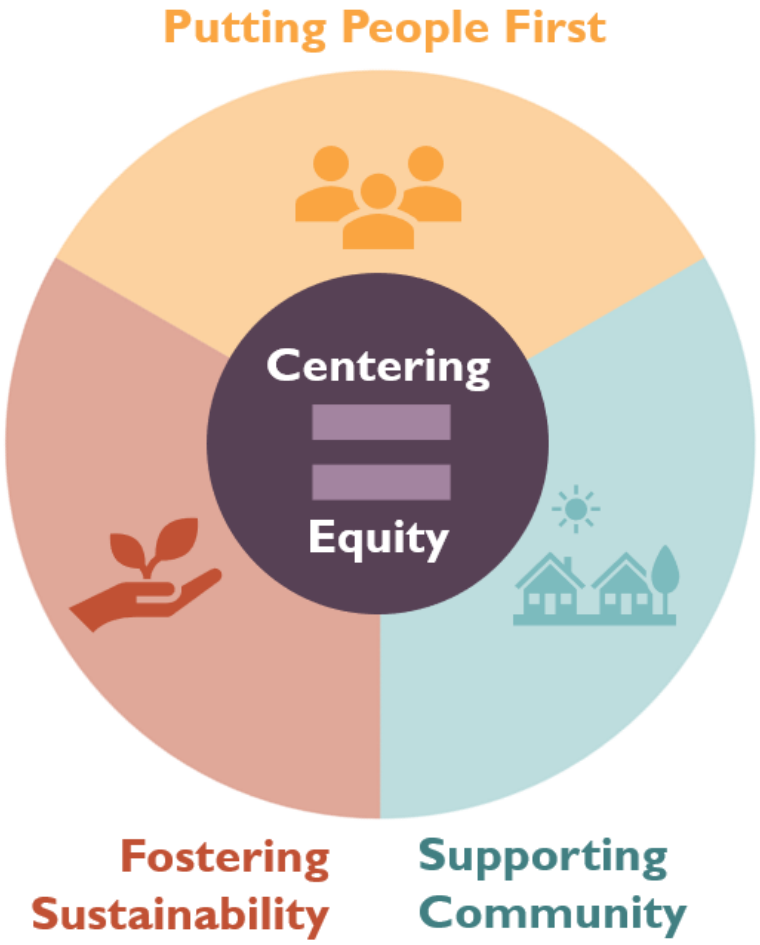
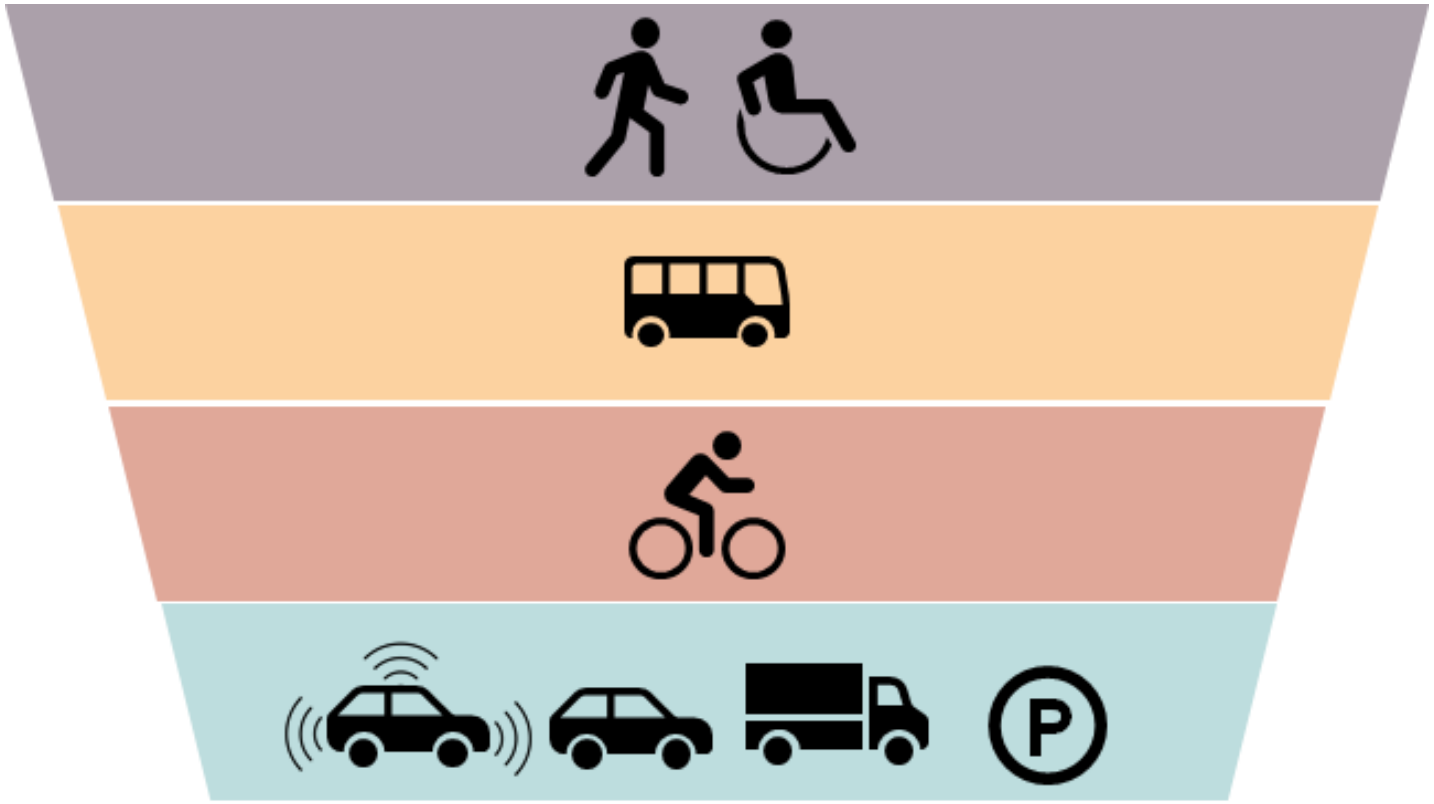
STREET VALUES & MODAL HIERARCHY





COMPLETE GREEN STREETS – KEY PROJECT ELEMENTS

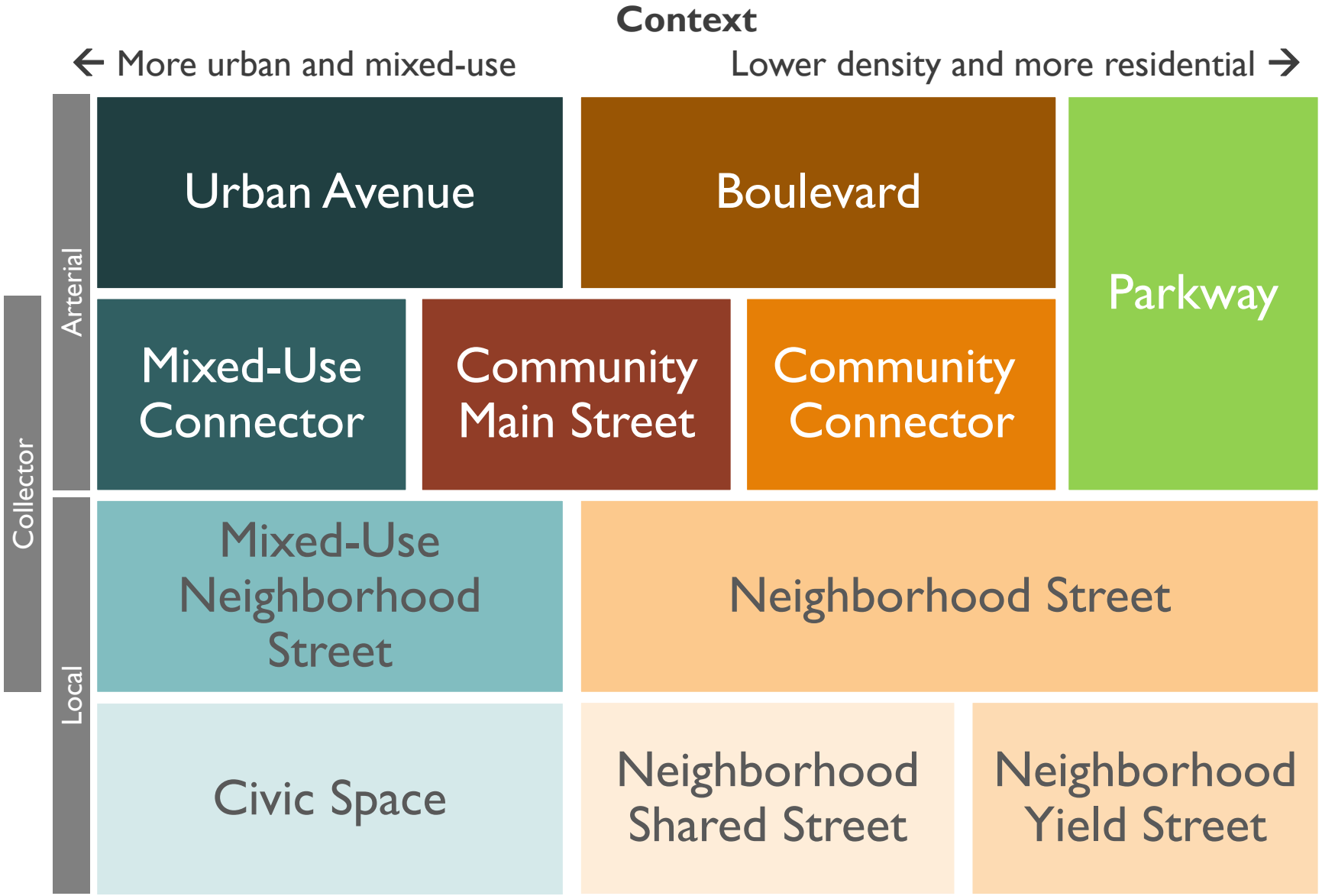
1. **Street Types**
2. **Street Zones & Zone Priorities**
3. **Overlays**
    a) **Modal Priority Networks**
    b) **Trees & Distributed Green Infrastructure**
    c) **Equity Priority Areas**
4. **Technical Design Details**

STREET TYPES

CGS is built around a collection of 11 street types (the typology) that describe the spectrum of current and future streets in Madison. They serve as starting points for street design.

The types are based on context and the amount of varied activity occurring.

They are intended to be aspirational.



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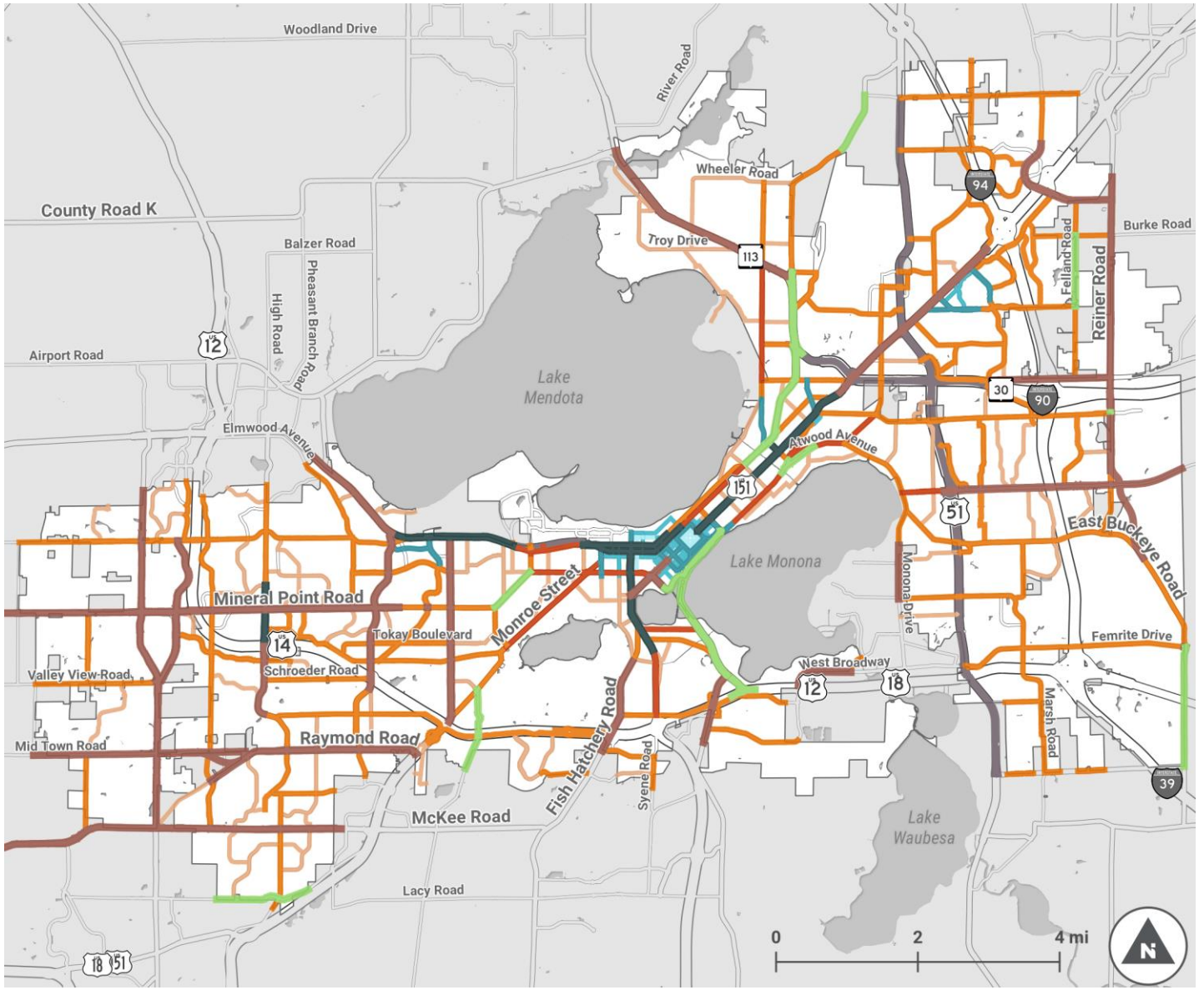
Draft Map

Urban Avenue	Boulevard	Parkway
Mixed-Use Connector	Community Main Street	Community Connector
Mixed-Use Neighborhood Street*	Neighborhood Street*	
Civic Space*	Neighborhood Shared Street*	Neighborhood Yield Street*

*Most or all of these are not mapped, unless applied on a collector or bike boulevard. No streets are currently mapped for the Neighborhood Shared Street or Neighborhood Yield Street types.



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STREET ZONES

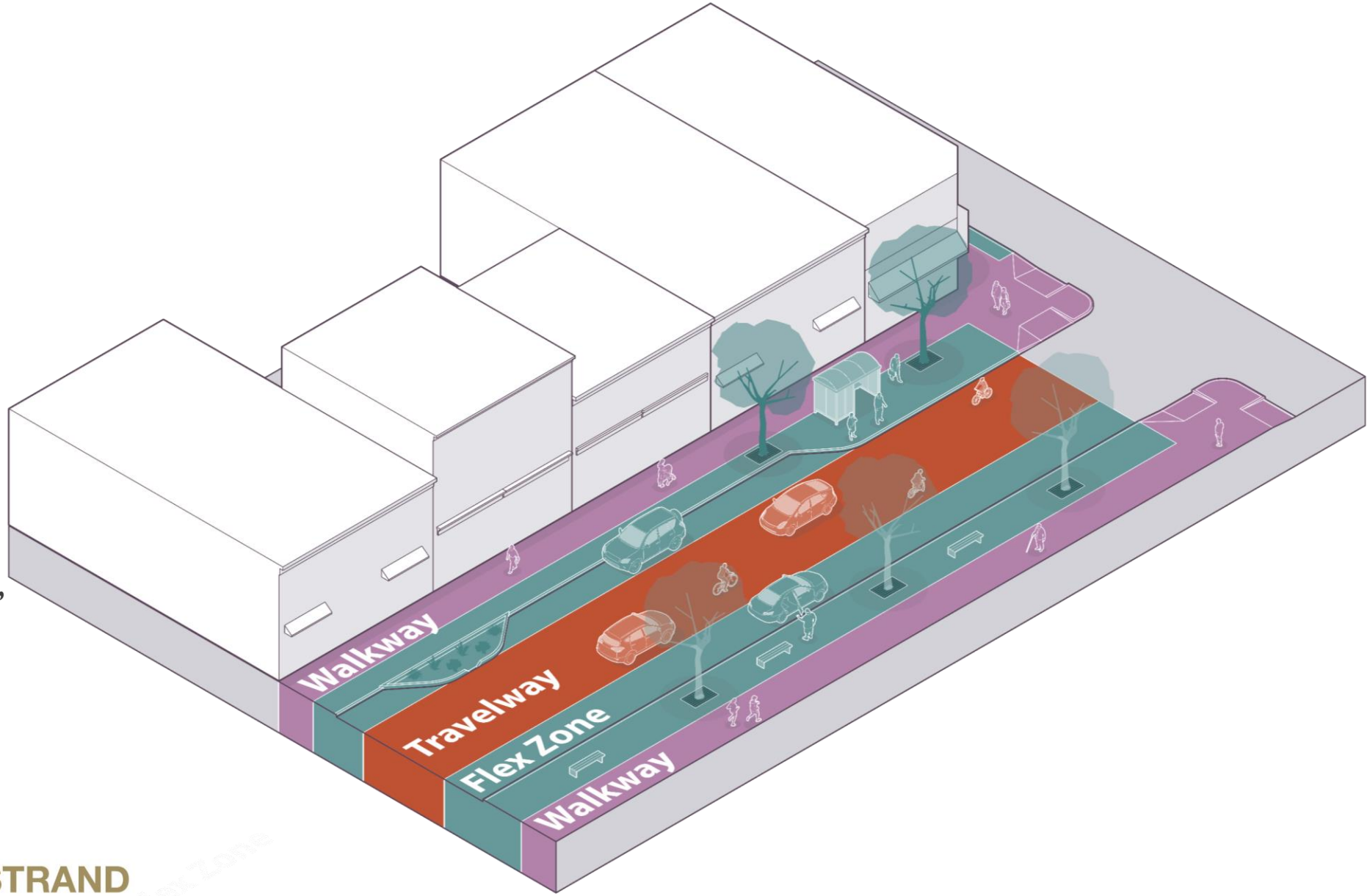
Each street type is divided into zones.

Movement (walking, biking, driving) happens in the walkway and travelway.

Bike facilities might be part of the travelway (lanes or cycletrack) or part of the walkway (a path).

Stationary uses (parking, cafes, trees) occur in the flex zone.

The flex zone can be terrace or part of the roadway.

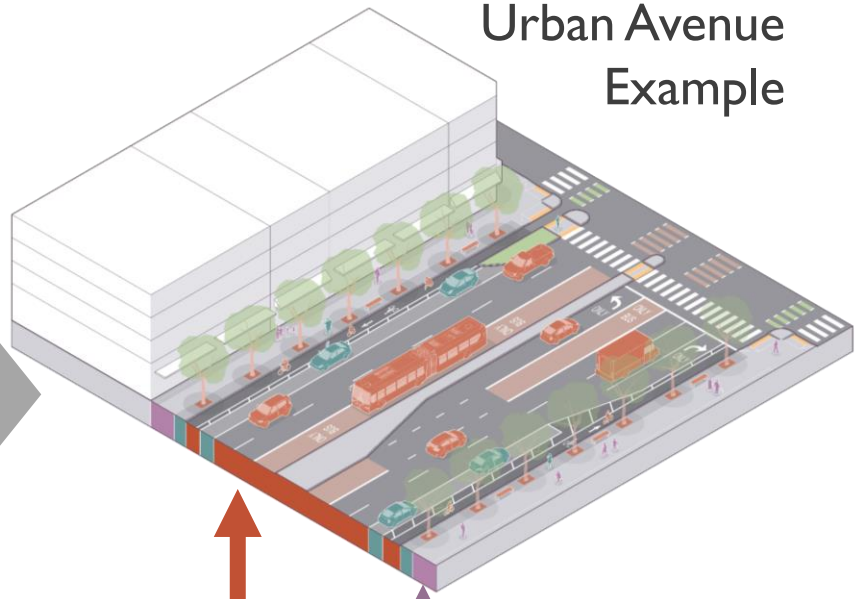


STREET ZONES

Each street type graphic identifies the location and relative size of each street zone, with color-coding.

Each street type describes the relative priority of each zone, as well as what is typically provided in each zone, specific to that street type.

Urban Avenue Example

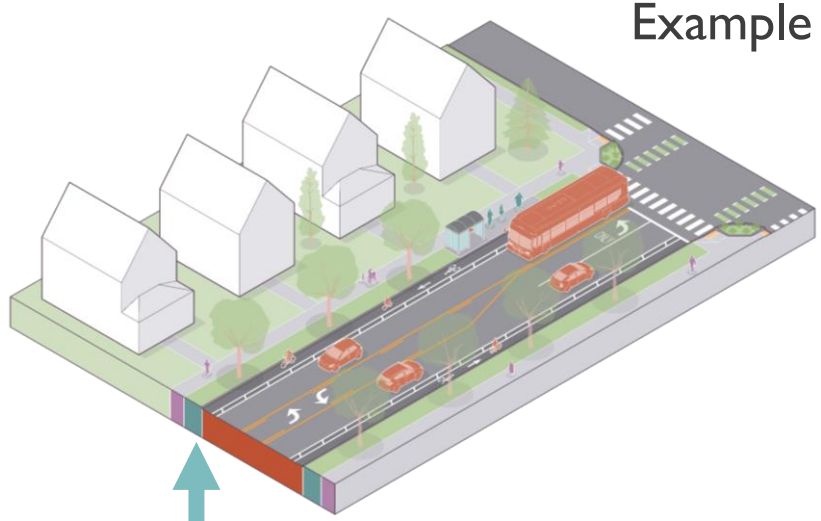


Walkway
High Priority
Wider sidewalks with buildings close to or touching the sidewalk.

Flex Zone
Medium Priority
Street trees, bike racks, and enhanced transit stops. Parallel on-street parking. Loading zones, if needed, should be provided around the corner on intersecting minor streets.

Travelway
High Priority
Dedicated transit lanes, separated bike lanes, often 2 travel lanes per direction, and medians.

Community Connector Example



Walkway
High Priority
Standard sidewalks, with buildings offset from the sidewalk by landscaping.

Flex Zone
Low Priority
Landscaped terrace with street trees. On-street parking may be provided in some locations.

Travelway
Medium Priority
1 travel lane per direction with bike facilities, often with medians or center turn lane. Appropriate transit accomodations.

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OVERLAYS

- Overlays influence design decisions and the priority of various elements.
- Each street type describes the influence of each overlay.

Equity Priority Areas
(includes additional process elements)

Transit Priority Network
(prioritizes transit on high frequency transit routes)

All Ages and Abilities Bike Network
(key corridors to prioritize high-comfort bikeways)

Tree Canopy Priority Areas
(includes detailed decision matrix)

Green Infrastructure Priority Areas
(includes detailed decision matrix)

NHS* & Truck Routes
(higher traffic streets)

*National Highway System – major roadways typically controlled by the state department of transportation.

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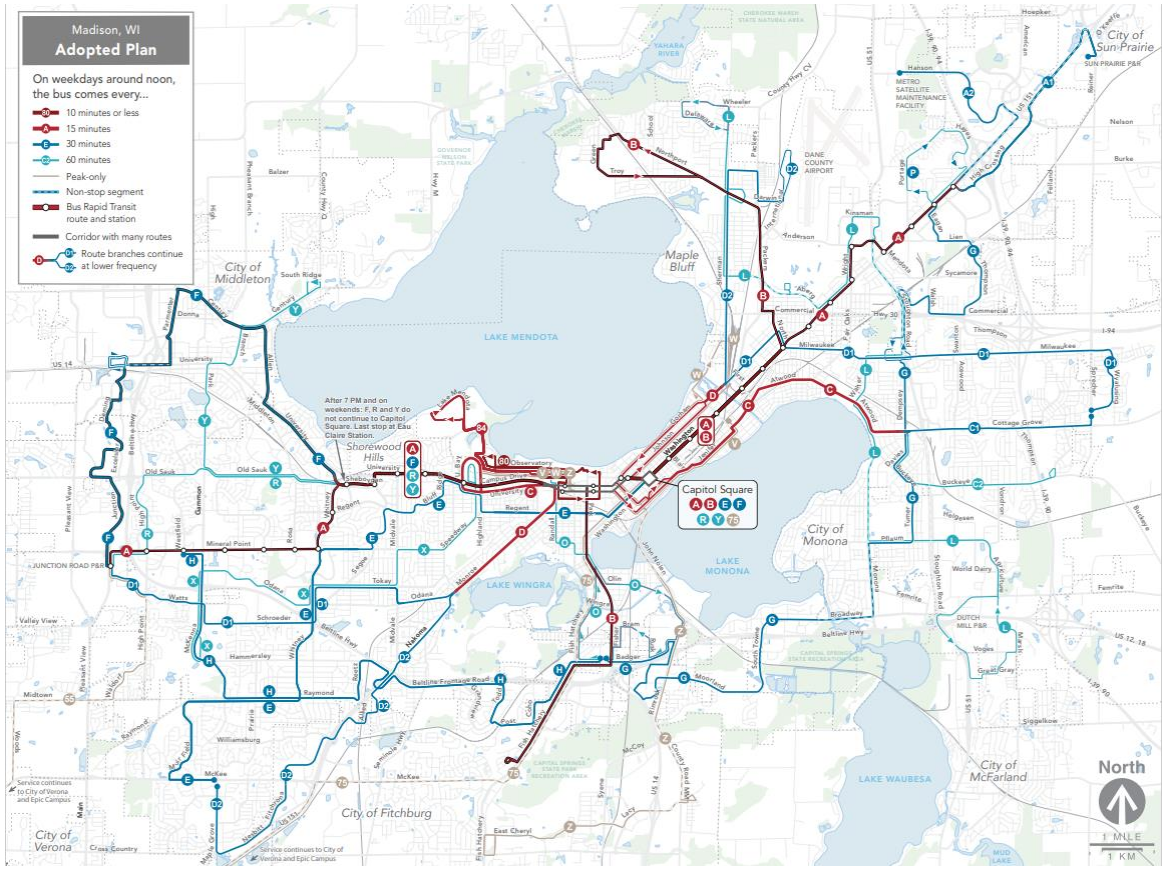
Transit Priority Network
(prioritizes transit on high frequency transit routes)

Purpose & Goals

- Metro Transit high-frequency routes (BRT routes and other routes with 15-minute frequency)
- Identify and preserve key corridors to provide high quality transit service

What does this mean?

- Ensure maximum efficiency for transit operations and access to transit stops for people walking. Ensure other priorities do not negatively impact transit operations or safety of accessing stops.
- May include removing parking, dedicated transit lanes, transit signal preemption, pedestrian and crossing enhancements, etc.



Future transit plan updates will trigger changes to the CGS Transit Priority Network

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All Ages and Abilities Bike Network
(key corridors to prioritize high-comfort bikeways)

Purpose & Goals

- Complete bike network between neighborhoods, key destinations, and to adjacent communities
- Context-based designs emphasizing projected bike lanes, paths, and low-traffic streets
- Map is a long-term planning document and aspirational concept for a complete system – will be updated regularly
- Map helps focus efforts toward most important connections, supports working with WisDOT and others, helps with grant applications

Future bike plan & area plan updates will trigger changes to the CGS AAA Bike Network

What does this mean?

- **Streets on the network:**
  - Considered most critical for creating a complete network. "Line in the sand" when it comes to tradeoffs.
  - Designed for all ages and abilities.
  - May include removal of on-street parking, creating Bike Boulevard with traffic diversion, etc.
- **Streets NOT on the network:**
  - Modal Hierarchy still applies (biking above driving)
  - Still try to achieve all ages and abilities conditions, but may have tradeoffs for other modes or street uses.
  - Goal is for most streets to be bike-friendly.

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OVERLAY EXAMPLE

Legend

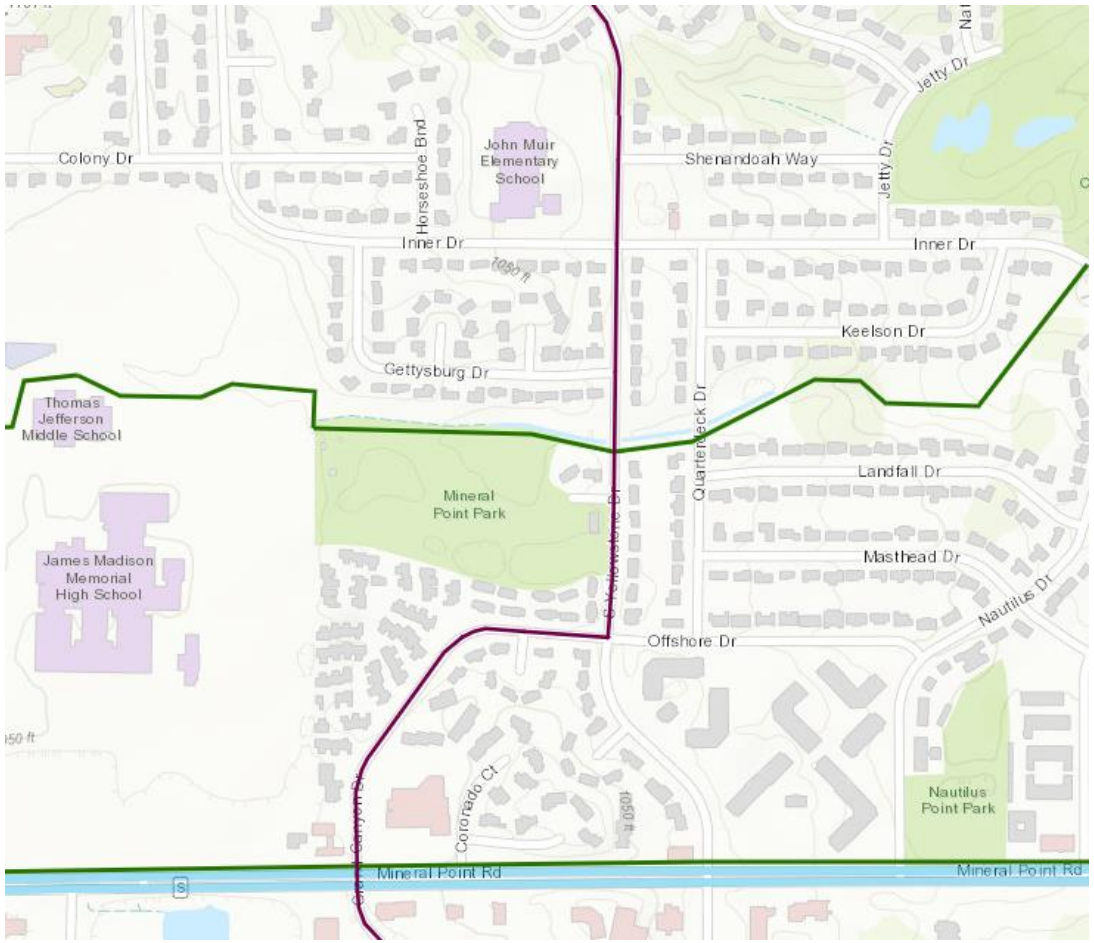
Streets in the Bike Priority Network

Bike Priority Street

Paths in the Bike Priority Network

Part of bike priority network

Transit Priority Streets



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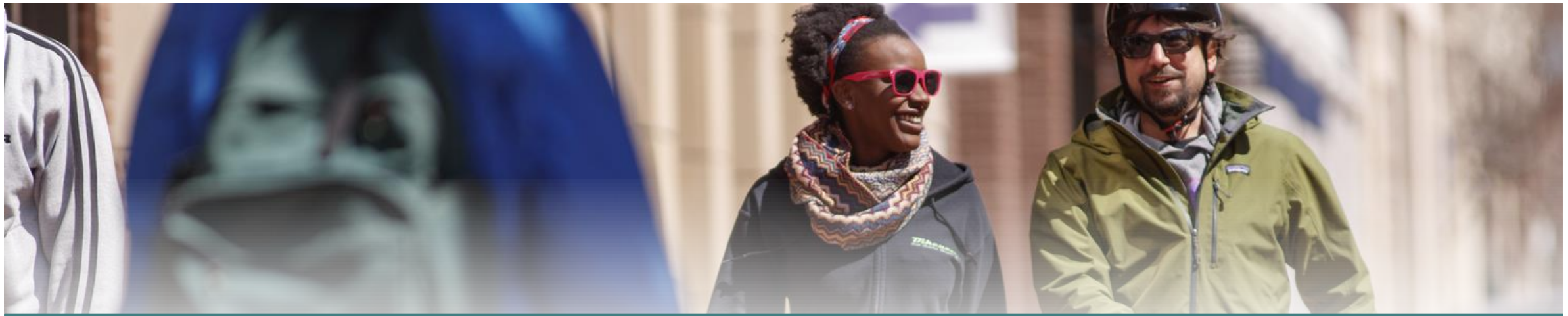
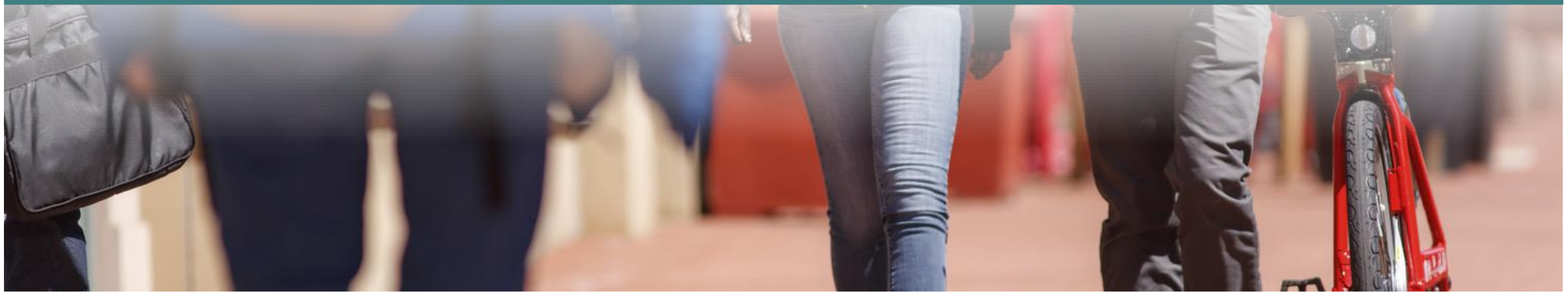


PROCESS OVERVIEW



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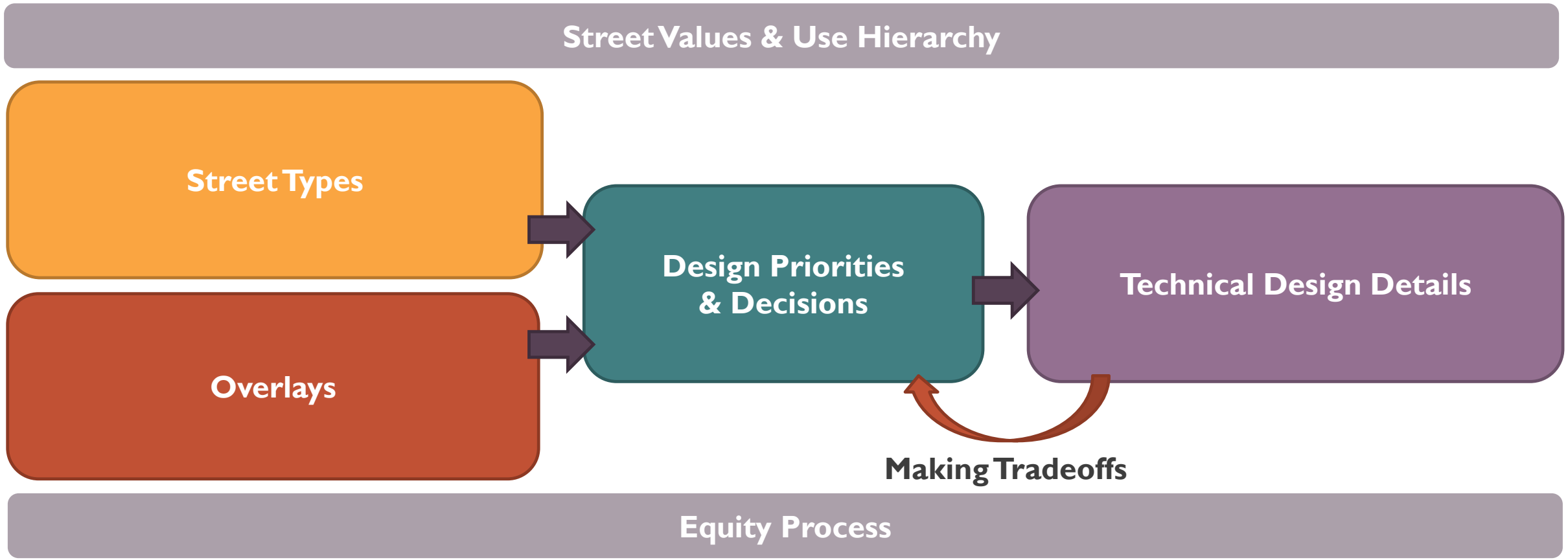
COMPLETE GREEN STREETS PROCESS AND ELEMENTS

The process is built around the key elements shown below. Street values, street use hierarchy, and the equity process influence all elements.

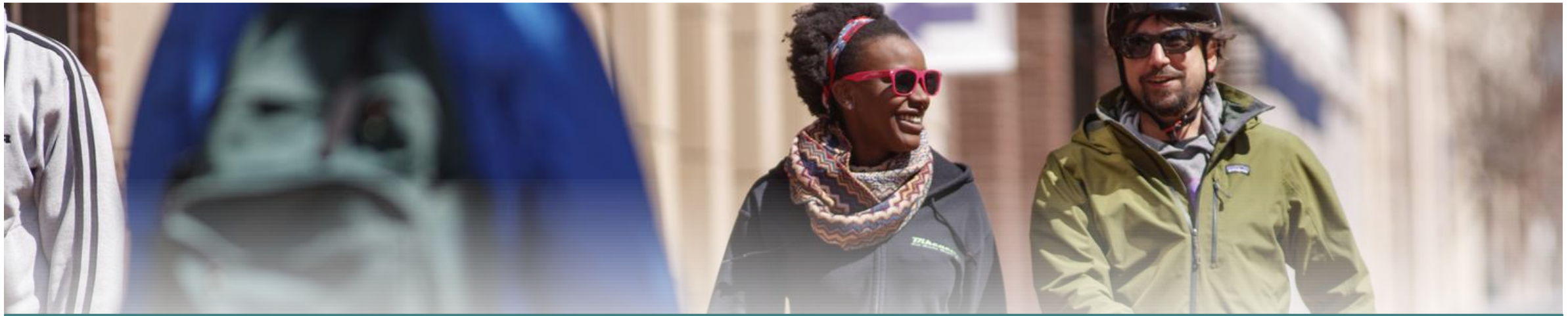
- **Street types** and **overlays** reflect context and modal network & green infrastructure needs to guide **design priorities and decisions**.
- **Technical design details** identify minimum, maximum, and preferred values for things like sidewalk and terrace widths.
- When constraints require making tradeoffs, the **design priorities** should be reassessed in consultation with the **street types** and **overlays**.



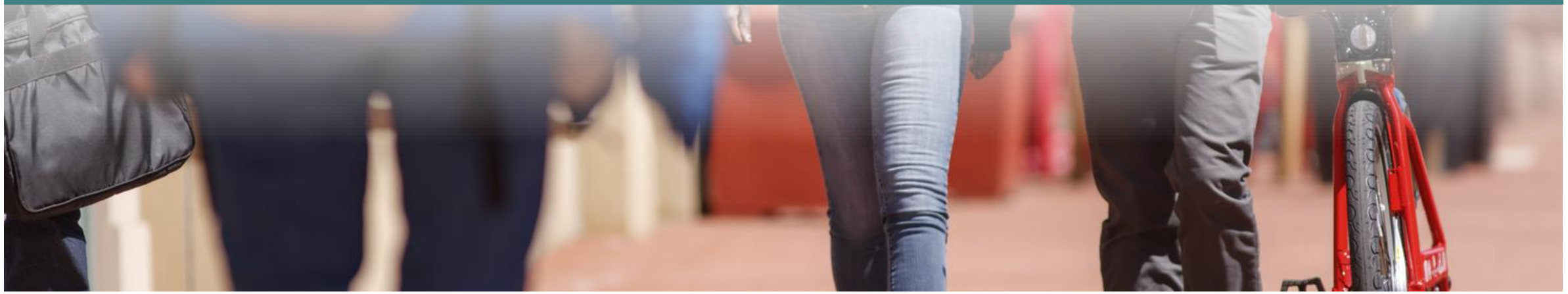
DECISION-MAKING PROCESS STEPS

Here are the basic steps for making decisions on an individual street design project:

1. Look at the **street type map** and identify what type applies to the street project.
2. Look at the **overlay maps and decision-making tools** and identify which overlays are present.
3. Look at the **street type descriptions** to understand what typical elements to include and how **overlays** should **influence the design** or process.
4. Look at the **technical design details parameters tables** to understand min/max/preferred values for various elements (e.g., lane width, design speed, trees/green inf, multi-modal facilities, etc.)
5. If tradeoffs must be made, go back to the **street type descriptions** and **overlay maps** and determine the priority between street zones.



PARAMETERS TABLES



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DESIGN DETAILS

	Travelway						
Street Type	Typical # of Travel Lanes	Lane Width			Center Turn Lane / Median	Target Design Speed (mph)	Typical ADT (motor vehicles)
		Max.	Pref.	Min.			
Urban Avenue	4	11’	10’	10’	Median Standard	25	>20,000
Boulevard	4	11’	10’	10’	Median Standard	25-30	>20,000
Parkway	2-4	11’	10’	10’	Median Standard	25-30	>10,000
Mixed-Use Connector	2	10.5’	10’	10’	Center Turn Lane Optional	25	3,000 to 20,000
Community Main Street	2-4	10’	10’	10’	Center Turn Lane Optional (not common)	25	10,000 to 25,000
Community Connector	2-3	10’	10’	10’	Center Turn Lane Optional	25	3,000 to 20,000
Mixed-Use Neighborhood Street	2 lanes often no centerline	If centerline, typical 10’			Not preferred	20	<3,000
Neighborhood Street	2 lanes often no centerline	If centerline, typical 10’			Not preferred	20	<3,000
Neighborhood Yield Street	No centerline		N/A		Not compatible	15-20	<1,000
Civic Space	2 lanes often no centerline	If centerline, typical 10’			Not compatible	15	<2,000
Neighborhood Shared Street	N/A		N/A		Not compatible	10	<500

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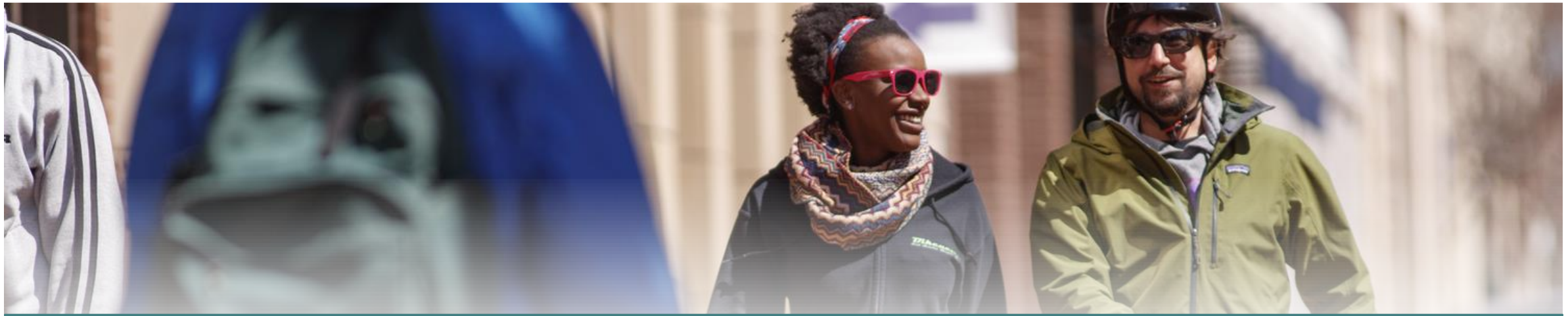
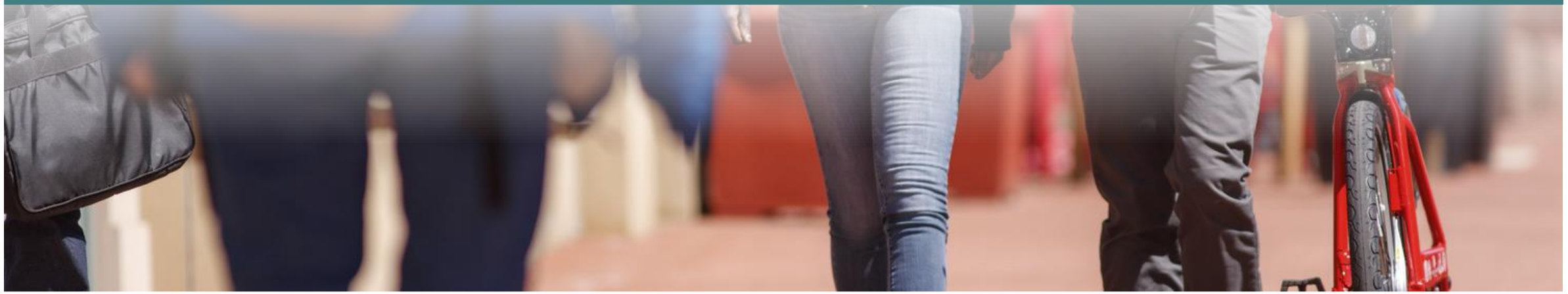
Street Type	Total Pavement Width (Curb to Curb midblock)		Typical # of Travel Lanes & other considerations
	Max	Typical Min	
Urban Avenue	102’	74’	96’ with 2 motor vehicle lanes & a transit lane each direction includes one-way protected bike lanes and median with trees
Boulevard	102’	72’	74’ with 4 motor vehicle lanes and protected bike lanes and 12' median
Parkway	86’	26’	46’ with 4 motor vehicle lanes with no median 66’ with four motor vehicle lanes and median with trees (bicycle facility typically a shared-use path)
Mixed-Use Connector	56’	38’	38’ with one-way street, motor vehicle lanes and parking protected bike lane; 56’ with protected bike lanes and parking both sides
Community Main Street	60’	38’	56’ with protected bike lanes and parking both sides (no peak hour lane); 60' with peak hour lane 50’ with center turn lane, protected bike lane and no parking
Community Connector	66’	24’	66’ with 2 motor vehicle lanes, center turn lane, buffered/protected bike lane and parking 54’ with 2 motor vehicle lanes, buffered/protected bike lanes and parking both sides 24’ with 2 travel lanes and no parking (bicycle facility a shared-use path)
Mixed-Use Neighborhood Street	38’	30’	38’ with 2-way travel, bus route and parking both sides 36’ with 2-way travel, not a bus route, parking both sides 30’ with 2-way travel and parking on one side
Neighborhood Street	38’	30’	38’ with 2-way travel, bus route and parking both sides; 36’ with 2-way travel, not a bus route, parking both sides 30’ with 2-way travel and parking on one side (low frequency transit only)
Neighborhood Yield Street	30’	18’	30’ with 2-way travel and parking both sides; 24’ with 2-way travel and parking on one side (22’ if houses only on 1 side) 18’ with 2-way travel and no parking (limit distance at 18’)
Civic Space	52’	18’	Project Specific: Base width on travel, parking and event needs of street. May include contraflow lanes for bikes if one-way street.
Neighborhood Shared Street (Woonerf)	N/A	N/A	No travel lanes designated; shared space which is all considered part of Flex Zone

Street Type	Total Flex Zone Width (per side)		Motor Vehicle Parking
	Typical	Typical Minimum	
Urban Avenue	12’	8’	Add 8’ (6’+ 2’ gutter) for each side for streets that will include parking
Boulevard	12’	8’	Add 8’ (6’+2’ gutter) for each side for streets that will include parking
Parkway	12’	8’	Parking not typical on Parkway
Mixed-Use Connector	18’	5’	18’ includes parking but may be only on one-side of street, inset into terrace or not needed based on development. If parking included, review if space needed for parking meters
Community Main Street	10’	5’	Parking would be provided as part of travelway if street has a peak hour only travel lane; Add 8’ (6’+2’ gutter) for each side of street needing parking if no peak hour lane. Consider if only on one side of street, inset into terrace or not needed. If parking included, review if space needed for parking meters
Community Connector	12’	6’	Add 7-8' (5-6’+2’ gutter) for each side for streets that will include parking
Mixed-Use Neighborhood Street	18’	6’	18’ includes parking & gutter but may be only on one-side of street, inset into terrace or not needed based on development; review if space is needed for parking meters
Neighborhood Street	17’	6’	17’ includes parking & gutter but may be only on one-side of street, inset into terrace or not needed based on development
Neighborhood Yield Street	17’	6’	17’ includes parking & gutter but may be only on one-side of street, inset into terrace or not needed based on development
Civic Space	18’	10’	18’ includes parking & gutter but may be only on one-side of street, inset into terrace or not needed based on development; review if space is needed for parking meters.
Neighborhood Shared Street (Woonerf)	Varies based on features	Varies based on features	Parking would occur in defined areas only and serve as a traffic calming feature. Any parking will be considered along with other included features such as trees, green infrastructure, placemaking, etc. Travel happens in the Flex Zone as this is shared space.

Street Type	Total Walkway Width (per side including buffer to ROW edge)		Typical sidewalk or path width*
	Preferred	Typical Minimum	
Urban Avenue	9’	6'	Sidewalk: 8’ preferred, 5’ minimum
Boulevard	7’	6’	Sidewalk: 6’ preferred, 5’ minimum
Parkway	14’	6’	Shared-Use Path: 12’ preferred, 17’ where provide separate walk/bike space, 8’ minimum. Clear zone of 2-feet on each side of path. Sidewalk: If have shared-use path only on one side and sidewalk on opposite side, 5’ minimum
Mixed-Use Connector	9’	6’	Sidewalk: 8’ preferred, 5’ minimum
Community Main Street	9’	6’	Sidewalk: 8’ preferred, 5’ minimum
Community Connector	7’	6’	Sidewalk: 6’ preferred, 5’ minimum
Mixed-Use Neighborhood Street	9’	6’	Sidewalk: 8’ preferred, 5’ minimum
Neighborhood Street	6’	6’	Sidewalk: 5’ typical
Neighborhood Yield Street	6’	6’	Sidewalk: 5’ typical
Civic Space	13’	10’	Sidewalk: 12’ preferred, 9’ minimum
Neighborhood Shared Street (Woonerf)	6'	6'	Pedestrian Zone: Accessible pedestrian area without obstacles or mode conflicts. Typical 5’ depending on context with appropriate tactile indicators if not a traditional sidewalk.



GREEN INFRASTRUCTURE



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GREEN OVERLAYS

Tree Canopy Priority Areas
(includes detailed decision matrix)

Green Infrastructure Priority Areas
(includes detailed decision matrix)

A companion report was created including:

- Detailed analysis of tree planting and green stormwater infrastructure solutions
- Robust guidance on decision-making and engineering solutions
- Decision-making charts
- Online at Complete Green Streets website

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Tree Canopy Priority Areas

Purpose & Goals

- Reach citywide goal of 40% tree canopy coverage.
- Identify areas with low amounts of existing tree canopy coverage to prioritize space in Flex Zone for trees
- Identify appropriate solutions for planting trees while reducing conflicts with other right-of-way priorities.

Tree Canopy Priority	Existing Percent Tree Canopy in ROW	Tree Equity Score[1]
High	<15%	40 to 75
Moderate	15% to 35%	75 to 90
Low	>35%	90 to 100

[1]Madison Score: https://www.treeequityscore.org/map/#11/43.0699/-89.4111)
[2]Methodology: https://www.treeequityscore.org/methodology/

Table 1 Tree Canopy Priority

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		Street Typology	Optimal Tree Size (No Overhead Utility Conflicts[2])	Recommended Terrace Width (ft)[1]	Terrace Minimum Width (ft)[3]	Suspended Pavement Use ○: Yes ●: Maybe ■: No
Collector	Arterial	Urban Avenue	Small, Medium	12	8	●
		Boulevard	Small, Medium	12	8	■
		Parkway	Small, Medium	10 to 12	8	■
		Mixed-Use Connector	Small, Medium, Large	10 to 12	8	●
		Community Main Street	Small, Medium, Large	10 to 12	8	○
		Community Connector	Medium, Large	10 to 12	8	■
	Local	Mixed-Use Neighborhood Street	Small, Medium	10	8	●
		Neighborhood Street	Medium, Large	10	8	■
		Neighborhood Yield Street	Medium, Large	10	8	■
		Civic Space	Small, Medium	10	8	○
		Neighborhood Shared Street[4]	Small, Medium	NA	NA	●

Note: ft=feet

[1]2019 *Urban Forestry Task Force Report*

[2]Maximum Height of Tree if Have Overhead Utility Conflict=25 feet

[3]Terrace Minimum Width should be no less than 8 feet without the use of suspended pavement.

[4]Consider curb extensions with street trees or private property tree planting if trees desired.

Table 2 Tree Size, Terrace Width, and Suspended Pavement Appropriateness Per Street Type

Green Infrastructure Priority Areas

Purpose & Goals

- Identify appropriate and viable locations for distributed green infrastructure (DGI) for stormwater management and water quality improvement and appropriate engineering solutions.

What does this mean?

- Priority level for DGI is determined using the DGI flowchart.
- High priority areas are where green infrastructure should be prioritized over other Flex Zone uses (e.g., on-street parking, sidewalk cafes, etc.).

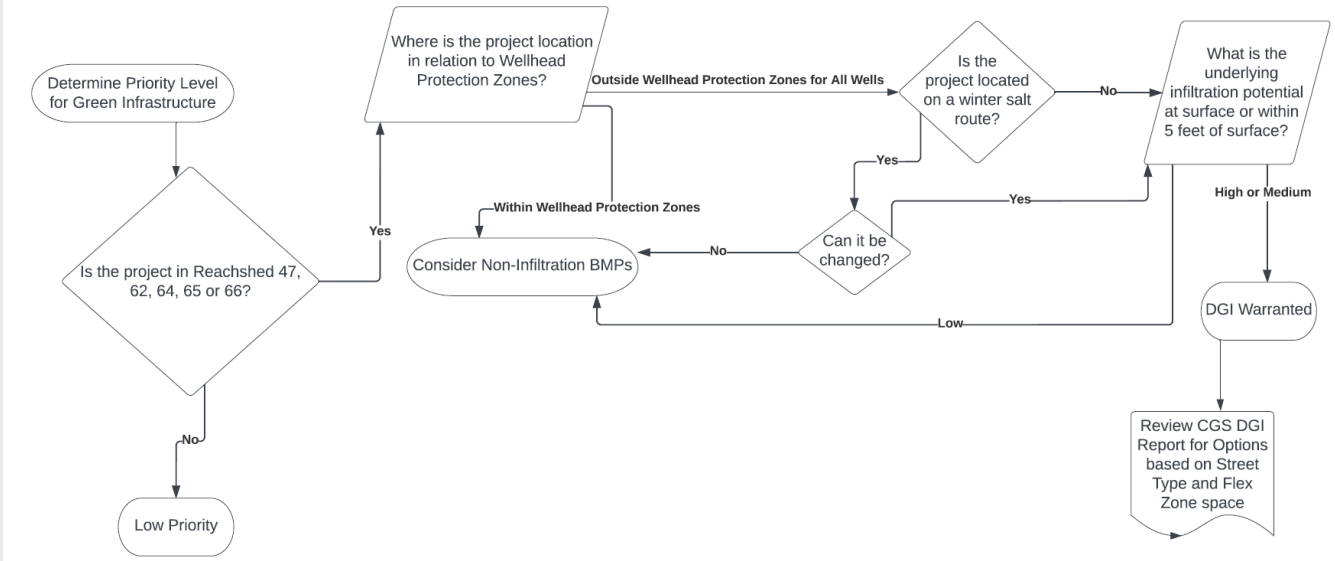

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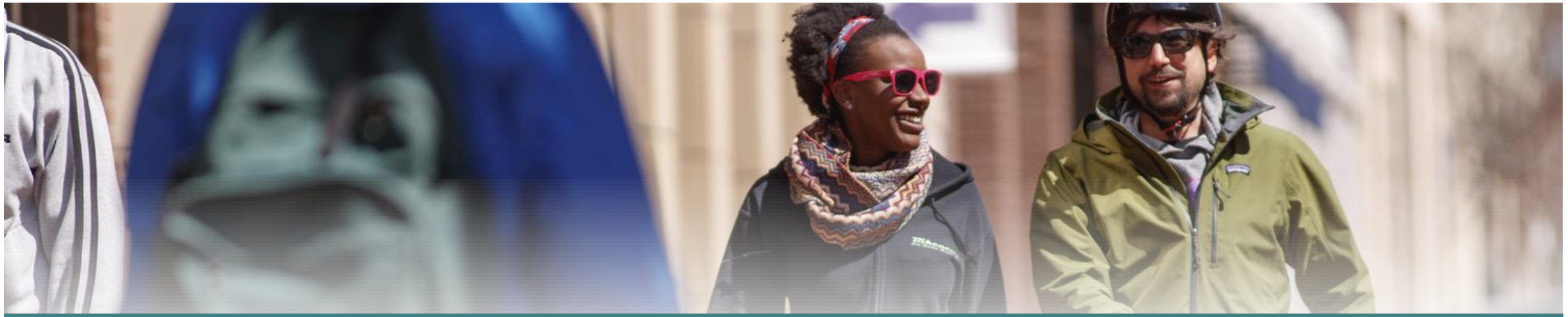
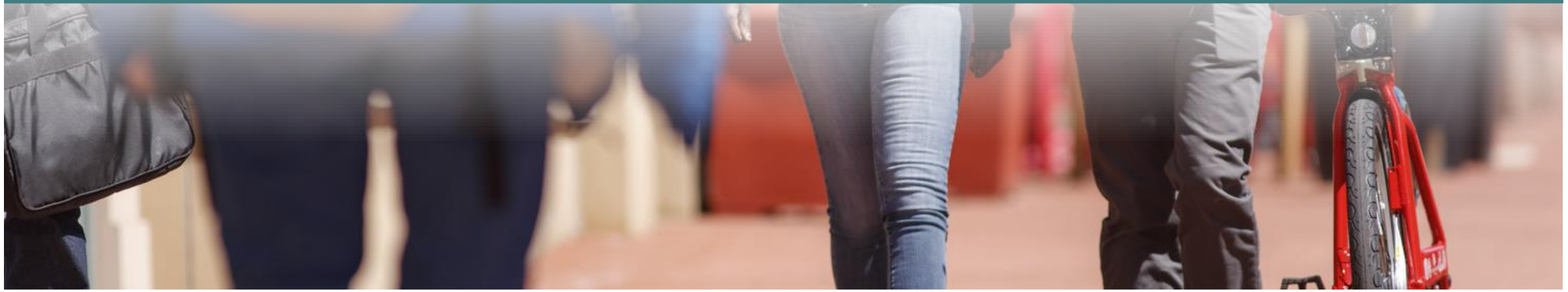
Table 14 Nonpermeable Pavement Green Infrastructure Use Per Street Type

		Street Type[1] ○ Yes ● Maybe ■ No	Bioretention Basin	Bioswale	Terrace Rain Garden	Traffic-Calming Rain Garden Bump Out	Rock Vault	Filter Strip	Stormwater Planter	Catch Basin	Coanda Screen	Stormwater Terrace
Collector	Arterial	Urban Avenue	●	■	■	■	■	●	●	○	○	■
		Boulevard	○	■	●	■	■	○	●	○	○	●
		Parkway	○	■	●	■	■	○	●	○	○	●
		Mixed-Use Connector	●	■	■	●	■	■	○	○	○	■
		Community Main Street	●	■	■	●	■	■	○	○	○	■
		Community Connector	●	●	■	●	■	●	●	○	○	■
	Local	Mixed-Use Neighborhood Street	●	●	○	○	●	●	○	○	○	○
		Neighborhood Street	○	●	○	○	○	●	●	○	○	○
		Neighborhood Yield Street	●	●	○	○	○	●	●	○	○	○
		Civic Space	○	●	○	○	●	●	○	○	○	○
		Neighborhood Shared Street	●	●	●	●	●	●	●	○	○	●

[1]Consult Table 13 and narrative in Section D. Nonpermeable Pavement Green Infrastructure for additional decision-making criteria for a specific site.



PROJECT CHECKLIST



TOOLE DESIGN

EQT by design

STRAND ASSOCIATES®

PROJECT CHECKLIST

- This checklist is designed to assist project managers oversee planning, design, and construction of transportation projects using the Complete Green Streets framework.
- The Project Manager is responsible for ensuring the checklist sections are completed as the project advances, on the project website and placed in Legistar when a project goes to a Board, Commission, Committee or Council.
- The checklist will be part of reviewing the Complete Green Streets guide outcomes

COMPLETE GREEN STREETS PROJECT CHECKLIST

Complete Green Streets Project Checklist

Project Name and Limits
Click or tap here to enter text.

Insert Project Map

Project Improvement Type
Click or tap here to enter text.

Alder District
Click or tap here to enter text.

Project Schedule
Click or tap here to enter text.

Project Website
Click or tap here to enter text.

Project Team
Click or tap here to enter text.

SECTION ONE: DATA GATHERING

- What is the Street Type for this project?
- What is the Right of Way Width?
- What are the Overlays for this project? (EPA, Transit, Bike, Tree, DGI, NHS/Truck)
- What type of facilities that will influence the street design are located within the project boundaries or within ¼ mile of the project?
- Insert current street cross section
- Details on current infrastructure such as current speed limit, traffic volumes, sidewalks, bicycle infrastructure, pavement rating, stormwater study information, tree canopy, transit service, parking policies & utilization and more
- List any recent area or neighborhood plans or other outreach efforts that can inform the project and the relevant information from those efforts.

SECTION TWO: ENGAGEMENT PLANNING

- List engagement activities such as mailings, meetings/events, surveys, etc.
- For Equity Priority Area, use the City's RESJII Public Participation Guide to assist the project team in developing an engagement plan appropriate for the project.
- List other City projects or private developments are happening within the project boundaries or in the neighborhood.
- For Equity Priority Area, list any opportunities to work together with other departments on engagement.

SECTION THREE: ENGAGEMENT OUTCOMES

- Were concerns raised during the engagement about the original Street Type designation? If yes, what were the concerns and is a new Street Type recommended?
- What are the top priorities or concerns expressed by residents during project engagement?
- What project elements address the top concerns raised during engagement? What concerns are not able to addressed with this project and why?
- What other project elements address concerns determined by reviewing data?

SECTION FOUR: DESIGN

- Insert initial proposed cross section
- Insert final approved cross section

SECTION FIVE: IMPACT & ACCOUNTABILITY

- After project approval, how will the final street design be communicated back to the neighborhood and people who provided input?
- For Equity Priority Area, did the City hear any feedback on the final design, project processes or communication that could improve the CGS process? If so, list.
- For Equity Priority Area, were there issues or concerns that were not addressed by this project? Were these shared with other department or staff? Are there current opportunities to address these concerns?
- List the final project design elements that support the goals of CGS.
- List any other project review information.

QUESTIONS & FEEDBACK

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