Figure 3 – Two-way cycle track using quick-build materials

Cycle Tracks

Cycle tracks are two-way protected mobility facilities. These include a vertical separation barrier in the buffer space.

Cycle Track	
Preferred width	12′
Min width	8′
Min buffer from vehicular traffic	3′

Shared Use Paths

Shared use paths move bicycles to sidewalk level and are considered separated mobility lanes. See "Shared Use Path" under "Pedestrian Facilities".

Personal Mobility Lanes (Minor Separation)

Other personal mobility facilities are typically one-directional painted lanes parallel to the roadway.

Buffered Mobility Lanes

Buffered mobility lanes include horizontal buffer without a physical barrier.

Buffered Bike Lanes	
Preferred width	5′
Min width	4′
Min horizontal separation from vehicular traffic	3′

Traditional Mobility Lanes

Traditional mobility lanes are directly adjacent to vehicle traffic.

Conventional Mobility Lanes	
Preferred width	5′
Min width	4′

Bicycle Boulevards

Use of Bicycle Boulevards

Bicycle boulevards combine bicycle and vehicle traffic in shared lanes. Implementing a bicycle boulevard typically involves signage and "sharrow" pavement markings. Bicycle boulevards are only suitable for low-speed, low-volume streets. They should be implemented in combination with traffic calming measures where feasible.

Signage

Designers should refer to the MUTCD for full guidance on personal mobility (bicycle) signage. On bicycle boulevards, Bikes May Use Full Lane (R4-11) signs are preferred to Share the Road (W16-1) signs, which may force cyclists into the gutter pan or dooring zone.

Transit and Freight Traveled Ways

Accommodation for Transit Vehicles

Accommodation for transit stops is dependent on the level of transit service, which is determined by the KCATA. This guidance is intended to aid designers in allocating space. Where possible, designers should seek to co-locate transit stops with shared mobility devices (bike share) and other amenities to create "mobility hubs". Designers should also consider a BU-40 design vehicle on streets with heavy transit traffic.

Designated Transit Lanes

Dedicated transit lanes can improve the reliability of transit service and are appropriate when headways are 8 minutes or less (often designated as BRT service). This can include:

- Curbside transit lanes, which prohibit parking but may allow vehicles for right-turn movements at intersections.
- Center transit lanes, which can be combined with left-turn restrictions to remove driveway conflicts. These lanes use center stations and typically require less right-of-way.
- Peak-only transit lanes, which accommodate shorter headways during peak periods. During off-peak times, these lanes can be used for parking or loading.
- Contraflow transit lanes, applicable on one-way streets.

Especially where transit streets intersect, the urban form may be characterized by Transit-Oriented-Development (TOD). Street designers should refer to Kansas City's TOD Policy for more information on these areas.

Bus Stops

Accessible Passenger Loading Zones	
Minimum dimensions	8′ x 8′

Streetcar Stops

Any facilities designed on streets that also contain KC Streetcar features shall require coordination with the KC Streetcar.

KC Streetcar	
Min. length of stop platform	27′
Min. width of stop platform for side stops	8′
Min. width of stop platform for one-sided median stops	10′
Min. width of stop platform for dual-sided median stops	12′
Height of platform above rail	14′

Accommodation for Freight Vehicles

Unloading Areas

At off-peak times, travel lanes, bus lanes, or on-street parking can be used as unloading space for freight vehicles. Designers should seek to prevent freight vehicles from parking in personal mobility lanes or at street corners, where they may obstruct visibility.

Corner Aprons

As discussed in Safety Concepts, curb radii should be limited to the practical minimum. In areas with heavy freight traffic, corner aprons can slow passenger vehicles while allowing large vehicles to mount the curb. Alternatively, large trucks can be encouraged to reach their destinations using left-hand turns.

Figure 4 – Corner apron

Recessed Stop Bar

For large vehicle movements that will encroach on an opposing travel lane, the stop bar should be set back from the intersection. If on-street parking is present, it should also be set back. If either approach is uncontrolled, designers should consider implications for sight distance.

Figure 5 – Recessed stop bar

Vehicular Traveled Ways

Please refer to the Street Typologies section for guidance on the following elements of design:

- Design Speed
- Design Vehicle
- Lane Count

Cross Section

Pavement and Curb

Lane widths should generally be 11 feet. Designers should be using the minimum total pavement width. In rural areas, shoulders should be 6–10 feet. Roadways utilizing curbs should follow the curb dimensions set forth in the City's Standard Drawings.

Clear Zone

Clear zone is the unobstructed and traversable roadside area that allows a driver to stop safely or regain control of a vehicle that has left the roadway. For roadway sections with shoulders, the width of the clear zone is determined by several factors that include traffic volumes, speeds, and slopes. Clear zone area begins at the edge of the roadway and includes any shoulders present on the road. Clear roadsides consider both fixed objects and terrain that may cause vehicles to roll over. For roadway sections with curb and gutter, 2.5 feet is recommended behind the face of the curb.

Clear Zone Slopes	Max Slope
Foreslope	3:1*
Backslope	4:1

**4:1 preferrable*

***Slopes can be exceeded where protected or beyond clear zone*

Guardrail and Barrier

Guardrails and barriers are used on the roadside to protect drivers from roadside hazards within the clear zone. It is generally preferred to remove hazards from the clear zone instead of using a guardrail or barrier.

Horizontal Alignment

Pavement Cross Slope

Roadway	Cross Slope
All roadways ≤3 lanes in each direction	2%

Horizontal Curves and Superelevation

Superelevation will be very rare on City streets. Generally, the need to superelevate a roadway is dependent on speed, the radius of the horizontal curve, and the surrounding environment. Designers should consider opportunities to reduce vehicle speeds before opting to superelevate the roadway on a curve. Designers should refer to the following sections of the AASHTO Green Book for curve design:

Urban Context	Resource
Low speed urban areas	AASHTO Green Book Table 3-13: Minimum Radii and Superelevation for Low-Speed Streets in Urban Areas
All other areas	AASHTO Green Book Table 3-10: Minimum Radii for Design Superelevation Rates, Design Speeds, and emax = 4%

Horizontal Sight Distance

As discussed in "Safety Concepts", clear sight lines are critical to street safety. Refer to the following to determine sight distance on horizontal curves:

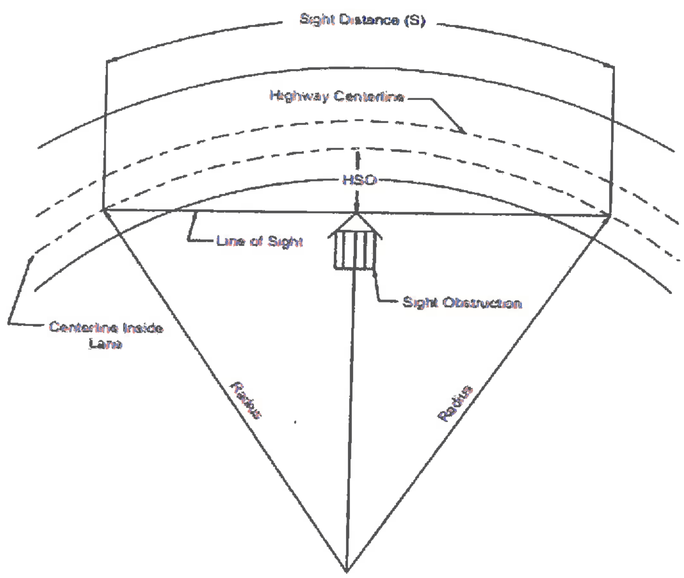


Figure 3-13. Diagram Illustrating Components for Determining Horizontal Sight Distance

U.S. Customary

$$HSO = R\left[1 - \cos\left(\frac{28.65S}{R}\right)\right]$$

where:

HSO = Horizontal sight line offset, ft

S = Sight distance, ft

R = Radius of curve, ft

Figure 6 – Horizontal Sight Distance on a Curve (AASHTO A Policy on the Geometric Design of Highways and Streets)

Vertical Alignment

Crest and Sag Vertical Curves and Stopping Sight Distance

Design Speed	Min Stopping Sight Distance	Crest Vertical Curve K Value	Sag Vertical Curve K Value*
15 mph	80′	3	10
20 mph	115′	7	17
25 mph	155′	12	26
30 mph	200′	19	37
35 mph	250′	29	49

**K values can be lessened to half their reported value under lit conditions*

Source: AASHTO Green Book

Vertical Clearance

Facility under bridge	VC
Interstate or principal arterial routes	16.5′
State routes with volumes ≥ 1700 vpd	16.5′
State routes with volumes < 1700 vpd	15.5′
Other streets*	14.5′
Railroads**	23′
Pedestrian facilities***	8′
KC Streetcar facilities	19′

**use 15.5′ over roadway in commercial zones*

***up to 23.5′ required for BNSF/UPRR lines*

****7′ clearance is allowable if 8′ is not feasible*

Source: MoDOT Engineering Policy Guide

Vertical Grades

Typology	Min Grade	Max Grade	Absolute Max Grade
Neighborhood streets		10%	13%
Connector streets	1%*	8%	10%
All other streets		6%	

**Absolute minimum grade in uplands is 0.8% and 0.5% in river bottoms if concrete pavement used and engineer can show drainage is adequately collected*

Source: KCMO 5200

Vehicle Parking

On-street parking can serve as a traffic-calming measure and provide convenient access to land uses. Parking should be set back at least 20 feet longitudinally from intersections and crossings to allow for clear sight lines.

Parallel Parking

Parallel Parking	
Min width of parking spaces	8′
Min length (end space)	20′
Length (regular space)	22′–26′

Angled and Reverse-Angled Parking

Reverse-angled parking is generally preferred to angle parking, especially:

1. On one-way streets
2. If a personal mobility facility separates travel lanes from parking lanes

Reverse-angled parking should be 45°—refer to City Standards. See Municode section 70-525 for designation of streets for angle parking.

Parking Angle (degrees)	Stall Width	Stall Depth	Stall Length	Distance between stall and adjacent traffic lane
45	8.5′	18.7′	18′	3.5′
60	8.5′	19.8′	18′	3.5′

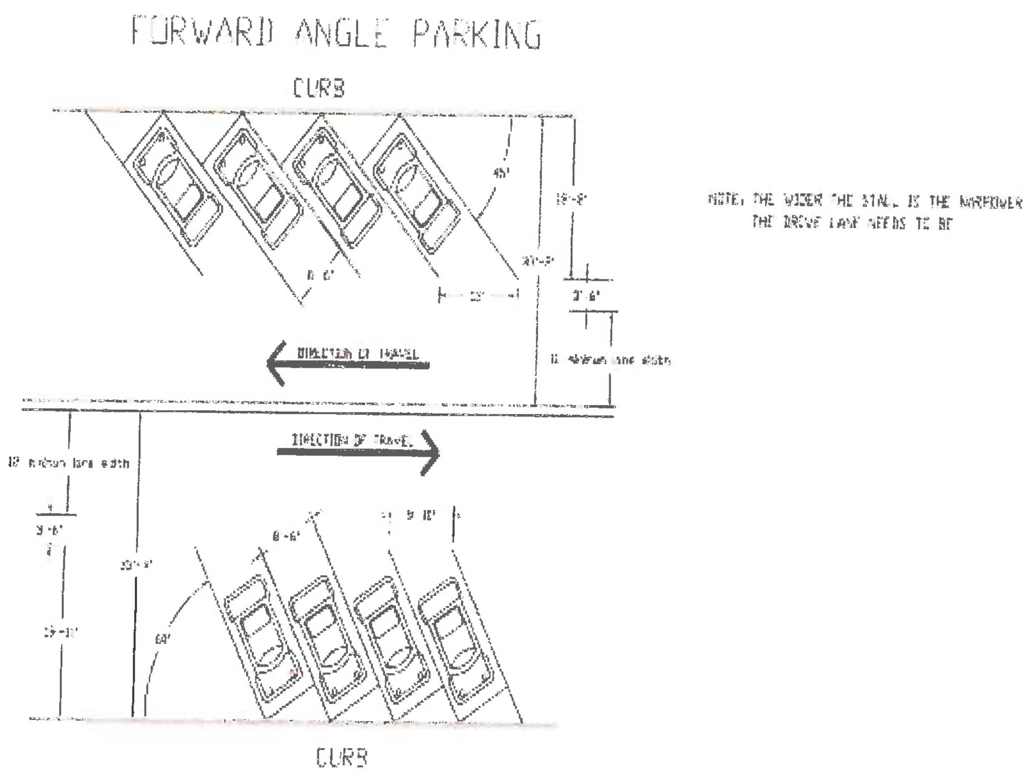


Figure 7 – Example of 45° and 60° Angle Parking Pavement Marking Layout (KCMO Traffic Engineering and Operations Manual)

Parking Meters/Kiosks

Parking meters and parking pay stations that serve accessible parking spaces should comply with ADA PROWAG requirements. A clear space must be located such that, at no more than 40 inches above the center of the clear space, any display or information on parking meters is visible.

ADA On-Street Parking

The appropriate amount of ADA-designated parking is defined in the ADA PROWAG:

Total Number of Metered or Designated Parking Spaces	Minimum Required Number of Accessible Parking Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 and over	4 percent of total

Figure 8 – Required Number of ADA On-Street Parking Spaces (ADA PROWAG)

Traffic Calming

Road Diets

"Road Diets" are a Proven Safety Countermeasure that typically convert four travel lanes into two travel lanes with a two-way left-turn lane. The extra right-of-way can be converted into buffer or space for other modes. Road diets are not recommended for facilities which carry more than 25,000 vehicles per day. Refer to the TEOM for guidance on the evaluation of streets for road diets.

Speed Cushions, Bumps & Humps

Speed cushions, bumps, and humps reduce speeds by vertically deflecting vehicles. They should generally be limited to low-speed streets with curb and are not suitable for collectors with a double-yellow centerline. Designers should ensure that drainage functions are not compromised by speed cushions, bumps, or humps.

Speed Cushions, Bumps & Humps	
Height	3"
Preferred deflector spacing	250'–600'
Min. distance from unsignalized intersections	125'
Min. distance from driveways	15'
Max. recommended volume	1,500 vpd
Max. street grade	8%

Curb Extensions

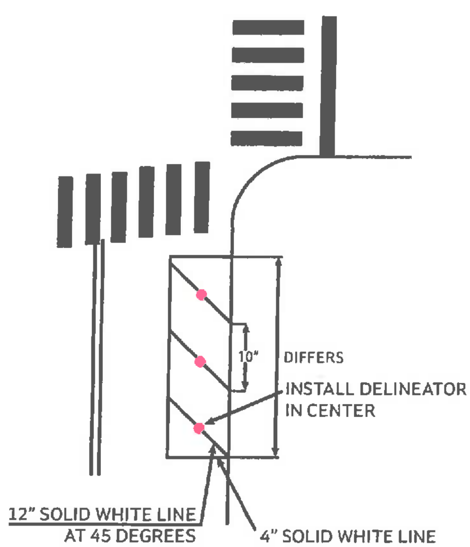
Curb extensions—which can be applied at midblock or as corner bulb-outs at intersections—slow vehicles, shorten crossing distance, and make pedestrians more visible.

Curb Extensions	
Min. separation from travel lane	1.5′
Approach/exit angle to curb extension in areas with snow for plows	45°
Min. length in approach direction	20′
Min. length in exit direction	5′
Max. mountable barrier element spacing	10′
Min. width	2′
Min. space between curbs	20′
Typical width*	8′
Max. curb radius	15′
Min. curb radius	10′

**shall not be greater than 1′ less than the width of adjacent parking stalls*

Intersection daylighting treatments, primarily intended to improve sight distance, are similar to curb extensions. These can be painted (double solid lines) or built in concrete. If delineators are used to prevent parking at intersection corners, they should allow for turning movements with a 30-foot inside radius and 50-foot outside radius.

TYPICAL DETAIL
INTERSECTION DAYLIGHTING



Chicanes

Chicanes reduce vehicle speeds and focus driver attention by disrupting an otherwise straight roadway. They may be achieved with curb extensions, pavement markings and delineators, temporary curbs, or planters. The max return angle for Chicanes should be 45°.

Traffic Circles

Traffic circles or "mini roundabouts" reduce vehicle speeds by forcing all approaches to slow at minor intersections.

Traffic Circle (Permanent)	
Inscribed circle diameter	45′–90′
Central island requirements	Fully Traversable

Traffic Circles can also be accomplished with temporary materials. For these, center islands should be demarcated with a 4-inch retroreflective yellow stripe.

Traffic Circle (Temporary)	
Min. clear distance between curb and center island feature	15′
Center island recommended diameter	10′

Intersections and Crossings

Intersection Configuration

Intersection Sight Distance

Proper intersection sight distance should be provided at unsignalized intersections as defined by AASHTO's A Policy on the Geometric Design of Highways and Streets, Chapter 9.

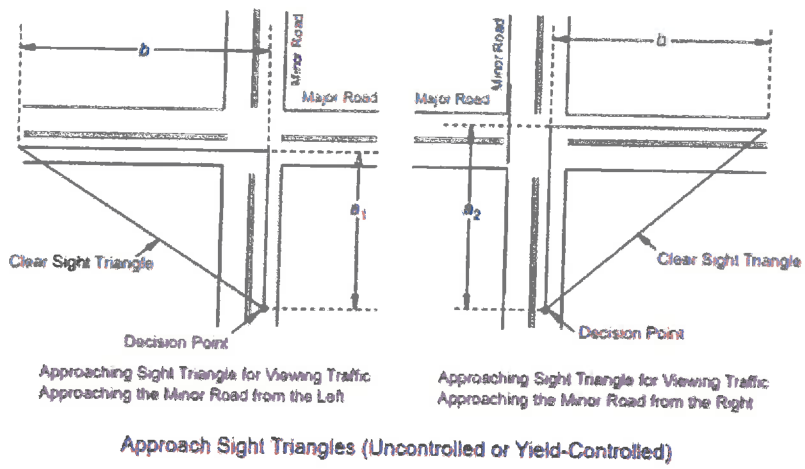


Figure 9-16—Approach Sight Triangles at Intersections

Figure 9 – Intersection Sight Distance (AASHTO A Policy on the Geometric Design of Highways and Streets)

Intersection Angle

Intersection Angle	
Preferred angle	90°
Minimum angle for skewed intersection*	75°

**skewed intersections should be avoided if possible*

Implications for Pedestrians and Cyclists

Vehicle speed at an intersection significantly impacts vulnerable road user safety. As stated in "Geometry" under "Safety Concepts", designers should seek to minimize curb radii to achieve lower turning speeds.

Similarly, the layout of an intersection will impact vulnerable users. While turn lanes have several safety and operational benefits, they also increase crossing distance. To the extent possible, designers should minimize intersection size and complexity. Right-turn "slip lanes" allow high-speed turns and should not be used.

Pedestrian Crossings

Crosswalks

Kansas City uses continental and parallel line style crosswalk markings. All crosswalks must be a minimum of 6 feet wide with the stop bar at least 4 feet from the crossing. Crosswalks should be wider in areas with higher volumes of pedestrian traffic.

Midblock Pedestrian Crossings

Warning signage and marked crosswalks are necessary for any midblock pedestrian crossing. Where possible, solar power should be used for crossing devices.

Applicability of Midblock Crossings			
Device	**Lane Count**	**Vehicle Speed**	**Volume**
Rectangular Rapid Flashing Beacon	≤ 2	≤ 40 mph	≤ 15,000
Pedestrian Hybrid Beacon	≥ 3	Any	≥ 9,000

Curb Ramps

Individual concrete curb ramps should be designed for each direction of pedestrian travel that crosses another street. Ramps that appear to combine 2 directions of pedestrian travel with a diagonal configuration should be avoided if at all possible since those ramps effectively and errantly direct the visually impaired pedestrians into the center of the intersection. Design of sidewalk curb ramps is regulated by the ADA with full details in the ADA PROWAG.

Personal Mobility (Bicycle) Crossings

Personal Mobility Accommodation at Intersections

At intersections, personal mobility paths should remain to the right or left of vehicular lanes. Designers should avoid designs which mix cars and personal mobility devices at intersections or place personal mobility devices between vehicular lanes. Designers should not "drop" personal mobility lanes on the intersection approach. Compared to midblock sections of the travelway, equal or greater separation for personal mobility devices is necessary at intersections. If vehicles must merge with personal mobility space, ensure that cyclists have clear right-of-way.

In general, designers should maximize the visibility of bicycles at intersections. They can accomplish this with:

- Two-stage turning areas
- Bike boxes or forward queuing areas (minimum 10 feet deep)
- Larger "visibility zones": where a driver can see the personal mobility path without obstructions (such as on-street parking)

Pavement Markings

Personal mobility paths should be marked through the intersection.

	Primary Street:					
Cross Street:	**Arterial**	**Collector**	**Major Driveway**	**Minor Driveway**	**Local > 40'**	**Local ≤ 40'**
Arterial	Green	Green	Green	Chevron	Chevron	None
Collector	Green	Chevron	Chevron	None	None	None
Local > 40'	Green	Dashes	None	None	None	None
Local ≤ 40'	Green	Dashes	None	None	None	None

In general, green markings should be used where bicycles mix with a high volume of vehicles. Personal mobility lanes and cycle tracks, along arterials, should include green paint in shared right turn lanes and mixing zones approaching the intersection. Chevrons or sharrows are suitable for these applications on collector streets. Shared use paths should follow the recommendations for pedestrian crossings.

Track Crossings

Streetcar rails can be a hazard for bicycle tires. Personal mobility paths should be positioned to meet the track at a 60–90-degree angle. Warning signage for bicycles in advance of track crossings may also be appropriate.

Traffic Signals

In general, shorter signal cycles benefit pedestrians and cyclists by creating frequent crossing opportunities, especially when pedestrian signals are actuated. Designers should minimize the number of phases and total cycle lengths where possible.

Pedestrian recall and extended walk are encouraged, especially in areas of higher pedestrian activity. Kansas City's Traffic Engineering and Operations Manual has more guidance on these timing elements.

Pedestrian Leading Interval

Leading Pedestrian Interval	
Recommended interval before vehicle green	3–7 s

No Turn on Red (NTOR)

When turning right at red lights, drivers are likely to focus on oncoming traffic instead of hazards where they seek to turn. Prohibiting this behavior improves pedestrian safety in the crosswalk and is especially beneficial in combination with a leading pedestrian interval.

Bicycle Green Phasing

Bicycle Green Phasing	
Yellow change interval	3–6 s
Cycle Lengths	60–90 s
Lead Bike Interval	3 s

Transit Signal Priority

On transit corridors, especially where designated transit lanes are provided, designers should consider signal priority for transit vehicles, which will improve service reliability. This might include detecting approaching transit vehicles or coordinating signal timing for their running speed.

Roundabouts

Refer to the TEOM for guidance on the evaluation of intersections for roundabouts.

Roundabout Sizing

Configuration	Design Vehicle	Inscribed Circle Diameter Range
Single-lane roundabout	B-40	90′–120′
	WB-40	100′–130′
	WB-50	105′–150′
	WB-67	130′–180′
Two-lane roundabout	WB-40	135′–160′
	WB-50	150′–220′
	WB-67	165′–220′
Three-lane roundabout	WB-50	200′–250′
	WB-67	220′–300′

Personal mobility facilities in roundabouts should meet or exceed facilities on the approaches. Personal mobility facilities in roundabouts should have a minimum buffer of 2 feet from vehicles (6 feet preferred).

Access Management

Raised Medians

Medians control vehicle access points and reduce vehicle speeds by introducing friction. Typically, space within the median is planted or filled with stamped concrete or bricks.

Medians	
Minimum width	4′
Width for pedestrian refuge	6′
Width for bicycle crossing	8′
Two-way left-turn lane width	10′

Right-in-Right-Out Control

This guidance is intended only for right-in-right-out driveways and does not encourage "slip lanes" or "right bypass lanes" at intersections. Restricting left turns into and out of driveways can be a common design that helps control the number of potential conflict points at each driveway, thus improving safety. This can be achieved with the geometry of the driveway and adding in a "porkchop" island to restrict left turns or by utilizing a median on the street itself.

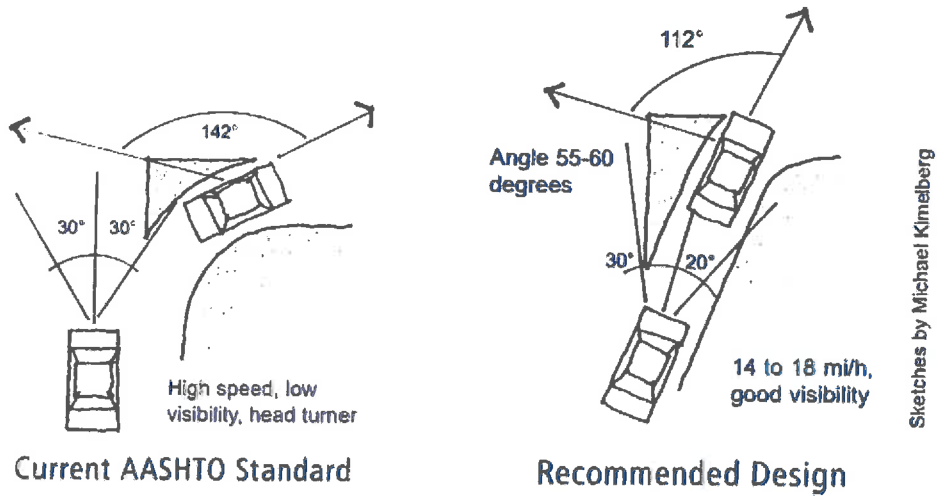


Figure 10 – Principles of Limiting Left Turns at Driveways (FHWA)

Driveway Spacing

Driveway Spacing	
Min neighborhood to neighborhood road CL offset	100′
Min connector to connector road CL offset	200′
Maximum deflection from right angle	20°

Commercial Driveways

	Standard Width		Divided Width **		Median Width (ft)	Driveway Radii ****	
Type of Use	Min	Max	Min	Max		Min	Max
Commercial/ Industrial	24′	30′	14′ *	24′	6′	24′	30′
Trucks	24′	30′ ***	18′ *	30′	6′	24′	30′
Special	18′	30′	24′	30′	2′	18′	30′
Passenger Vehicle	24′	30′	14′ *	24′	6′	24′	30′

**applies to one-way drives only*

***width on each side of median*

****35′ for 3 lanes with approval (1 in and 2 out)*

*****radii should be justified by plotting vehicle travel path*

Driveway grades shall conform to the typical section of the street within the right of way. Any deviations shall be approved by the City with the following limitations:

1. Driveways shall attain a minimum elevation of six inches above the gutter elevation within the right of way with a maximum grade of 8%
2. The maximum algebraic difference in grades within the right of way shall be 8% on crest drives and 12% on sag drives
3. The maximum driveway grade outside right of way shall be 15%

Typology	Min Apron Length	Desirable Grade Change	Max Grade Change Allowed
Industrial	25′–30′	2%–3%	3%–4%
Suburban Commercial Thoroughfare	20′	4%	5%
Downtown Core Urban Mixed-Use Connector	15′	5%	6%

Residential Driveways

Residential Driveway Breakover	Algebraic Difference in grades
Max. sag breakover	12%
Max. crest breakover	8%
Max driveway grade (in R/W)	8%
Max driveway grade (outside R/W)	15%

***requirement: maintain 6" vertical gutter capacity minimum with driveway design*

Cul-De-Sacs

At locations where streets are to be terminated and a vehicular connection between adjacent streets is not required, the termination shall be a cul-de-sac. Such cul-de-sac shall be constructed with a minimum radius of 50 feet to the back of the curb if there are no islands located in the cul-de-sac. Cul-de-sacs should allow the turn of an SU-30 vehicle without reversing.

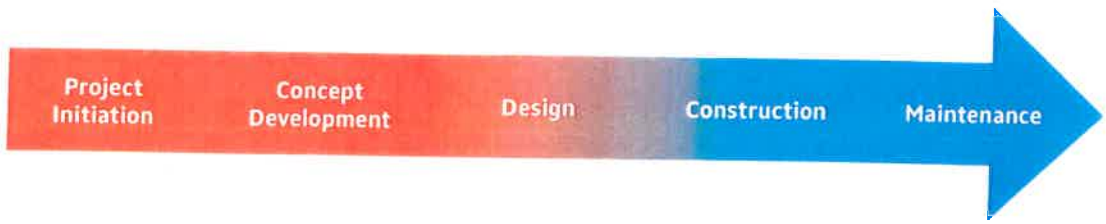
Fine-grained connectivity will benefit pedestrians and cyclists. Designers should consider if a cul-de-sac is suitable for a bicycle or pedestrian cut-through to an adjacent street.

Implementation

Applying the Streets Design Guide

When to Use the Streets Design Guide

At every stage of project development there are opportunities to improve street safety. The following graphic presents five stages of the project life cycle with corresponding safety-focused outcomes. The "Opportunities" represent areas to achieve this outcome, and the "Inputs" help to prioritize vulnerable road users, create walkable and bikeable corridors, provide transit opportunities, support economic development, and minimize the likelihood and severity of traffic crashes.



Desired Outcome	Shared understanding of purpose and need that prioritizes safety	Selection of preferred alternatives that serves all users	Incorporation of design elements that minimize crash and injury risk	Work Zones that minimize safety risk to workers and road users	Decreased disruption of operations due to infrastructure degradation and obstructions
Opportunities	• Make safety a focus of the project from the outset • Expand definition of user groups	• Half-improvements • Road diets • Using crash prediction methodologies to compare benefits of alternatives	• Inclusion of pedestrian lighting, street furniture, and other amenities • Traffic calming measures	• Accommodation for vulnerable road users during construction • Improved guidance for road users • Traffic calming	• Faster clearance of obstructions, especially for sidewalks and transit stops
Inputs	• Crash history • Current and projected traffic volumes • Land use / zoning • Community engagement	• Project context and street typology • SDG Safe Streets Principles • KC Spirit Playbook • Community engagement	• SDG Design Guidance • Multi-disciplinary plan review • Traffic and speed study findings	• Physical constraints • Schedule constraints • Traffic control and detour plans • Improvement needs for detour routes	• Maintenance policies and schedules • Public reporting of maintenance concerns • Public reporting of safety concerns

The "Typologies" section of this Streets Design Guide represents target conditions. Today, Kansas City Streets match these conditions to varying degrees. The purpose of this guide is to:

1. Recognize opportunities to create safer streets
2. Set the desired characteristics of Kansas City streets
3. Guide designers toward the desired characteristics at every opportunity

The following table shows safety-specific design elements discussed in the SDG and how each project type may consider them. In general, if a project significantly impacts one of these design elements, designers should consider improving it to the target condition (as described in the typology tables), especially if such a change does not require utility relocation or additional right-of-way. Consult the TEOM for more information about traffic calming projects and strategies related to traffic control enhancements.

	Project Type				
Consideration	New Construction	Reconstruction	Resurfacing	Utility Work	Traffic Safety
Obtain ROW	Yes, consult MSP	No, unless alignment is changing	No	No, unless utility ROW will change	No
Change Pavement Width	NA: select pavement width to accommodate required elements	Yes, consider reducing pavement width if possible	No	No, unless utility work requires significant reconstruction	No
Add / Improve Pedestrian Facilities	Yes, 10' sidewalks on both sides with buffer	Yes, match typology guidance	No	No, unless work requires rebuilding sidewalk	No
Add / Improve Mobility Facilities	Yes, match typology guidance	Yes, match typology guidance	Yes, match typology guidance	Yes, through road diets	Yes, through road diets
Traffic Safety Enhancements	Yes	Yes	Yes, use temporary materials	Yes, use temporary materials	Yes
Improve Intersections	NA: design intersections for design vehicle and protect pedestrians and cyclists	Yes, make ADA compliant and consider improved crossings, mobility facilities, and new traffic control	Yes, make ADA compliant and consider improved crossings and mobility facilities with temporary materials	Yes, make ADA compliant and consider improved crossings and mobility facilities with temporary materials	Yes, use temporary materials

New Construction

New streets on greenfield sites present the most flexibility for designers and should be built to match their typology. New construction provides the opportunity for designers to fully address the needs of all user groups, prioritizing safety for vulnerable and disadvantaged road users. With a more inclusive view of potential modes, designers can establish, as a default:

- A low design speed that matches the desired travel speed of the roadway
- Features that reinforce that target speed and warn drivers of potential conflicts
- Safely spaced facilities for pedestrians and cyclists
- Infrastructure for transit services
- Amenities that enhance the street environment

The typical constraint for new construction is project budget. If a design was completed, but not constructed, prior to adoption of this streets design guide, then the City Council members for that district and Public Works Director should be consulted on whether to re-design the road in accordance with this guide or keep the previous design.

Reconstruction

Reconstructed streets are also relatively easy to align with their typology. However, compared to new construction, they are more likely to be constrained by:

1. Available right-of-way
2. The design of adjacent roadway sections

Regardless of right-of-way constraints, designers must prioritize the safety of vulnerable road users. When sufficient space to separate vulnerable road users is not readily available within the right of way, designers should first look to re-allocate vehicle space to create more separation and/or reduce the target speed so that less separation is necessary.

Design consistency along a corridor helps users understand the street environment and its expectations; therefore, designers may choose to modify the target conditions in a given typology to achieve a thoughtful transition from one segment of a corridor to the next. When making such modifications, designers should consider the likelihood adjacent segments will soon be improved—poor design on adjacent segments is not an excuse to rebuild a poorly designed street.

Resurfacing

Resurfacing projects are focused primarily on the pavement surface, but also present the opportunity for safety improvements, often at low cost. For example, by changing the location of pavement markings, designers can:

- Reduce the width of unnecessarily wide lanes
- Add a painted median or buffer zone
- Add personal mobility or turn lanes

Utility Work

When water or other utilities work requires disruption to the pavement or roadside, a Vision Zero review may identify opportunities for enhanced safety. Such improvements require close coordination between City departments and will likely depend on the extent of pavement impacted by the utility work. Every project that impacts street right-of-way should consider possible safety improvements. Even utilities projects with small footprints may provide an opportunity to meet ADA standards, increase access management, provide a midblock crossing, add a speed hump, or enhance signing and striping. Over time, this approach will help bring improved geometric design elements, traffic operations, access, and mode choices to the transportation network throughout the City.

Traffic Safety Projects

The City can implement systemic safety across its transportation network outside of other capital projects through the City's annual allocation for Vision Zero improvements. These projects can bring impactful safety measures to many locations at once, often at a low cost.

This may include traffic calming treatments, such as:

- Speed humps, bumps, and cushions
- Chicanes
- Curb extensions
- Road diets

It may also include systemic safety treatments, such as:

- High-visibility crosswalk markings
- Traffic signal improvements
- Intersection lighting

When to Vary from the Streets Design Guide

Applicability of Design Variances

Design variances or exceptions may be requested to modify street design elements outside Kansas City standards and/or the SDG. This variance process applies to designs developed by the City and designs developed by external partners. The City will formally review requests for variances—both at the conceptual phase and completion of 60% plans—to ensure the design will still meet the goals of the SDG.

Requirements to Request a Design Variance

The following information shall be provided with any requests for a design variance:

1. The location and typology of the street segment
2. The desired variance or exception from the SDG
3. A summary of alternatives considered
4. A justification for the variance or exception which considers:
   a. Safety impacts
   b. Mobility impacts to pedestrians and bicyclists
   c. Mobility impacts to emergency and transit vehicles
   d. Project cost and life cycle maintenance impacts
   e. Environmental impacts
5. Mitigation measures for any negative impacts identified above

Variances go to the Transportation and Development Committee.
See the website for more information: https://www.kcmo.gov/city-hall/departments/public-works/public-works-design-construction-standards/transportation-and-development-committee

Standard Guidance

- A sidewalk width of 10 ft is preferred. Additional space for pedestrians shall be prioritized over additional through lanes and parking lanes.
- An amenity zone, minimum of 4 ft wide, shall be provided between the motor vehicle travel way and sidewalk.
- Parking lanes, where present, should not exceed a width of 8 ft.
- Turning lanes, where present, should not exceed a width of 11 ft.

Exceptions to these requirements:

- If the roadway lanes are 10 ft (or 11 ft on bus routes), then an exception can be made to the 10 ft minimum sidewalk width requirement.
- If in the following street types: Downtown Core, Urban Mixed Use and Connectors, the utility and furnishing zone may encroach up to 4 ft into the sidewalk width to provide a minimum of a 6 ft continuous walking space along the entirety of the street. In this scenario, the widths of the travel and parking lanes shall not exceed the minimums.
- If a 10 ft sidewalk has been provided outside of the amenity zone, then wider than minimum parking lanes and or turning lanes may be considered.
- If there is no opportunity to narrow or remove driving/parking lanes, a pedestrian sidewalk may be constructed at less than 6 ft of continuous clear walking space but not less than 5 ft.

Supplemental Resources for Street Design

Coordination Partners

For designs that involve	Coordinate with
Parkways, Boulevards, or Trails	KCPRD and KC Parks Board
Transit Facilities	KCATA
Green Stormwater Infrastructure	KC Water

Supporting Documents

The following documents were foundational to the Streets Design Guide, and designers are encouraged to refer to them when this guide is unclear. Generally, documents are listed in order of preference for consideration. Documents in bold should take precedence over this guide where conflicts exist.

When designing	Refer to
Any Street	• KCMO Vision Zero Action Plan • KCMO Complete Streets Ordinance (No. 170949) • NACTO Urban Street Design Guide • NCHRP Human Factors Guide • ITE Trip Generation Manual
Pedestrian Facilities	• **ADA PROWAG** • AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities • Kansas City Sidewalk Prioritization Plan • Pedestrian Level of Traffic Stress Assessment (PLTS)
Micromobility Facilities	• NACTO Urban Bikeway Design Guide • AASHTO Guide for the Development of Bicycle Facilities
Transit Facilities	• **KCATA Standards** • NACTO Transit Street Design Guide
Vehicular Traveled Ways	• KCMO Pavement Manual • AASHTO Highway Safety Manual • AASHTO "Green Book" (Policy on Geometric Design of Highways and Streets) • AASHTO Roadside Design Guide
Boulevards and Parkways	• KCMO Boulevard and Parkway Standards
Green Stormwater Infrastructure	• **KCMO Green Stormwater Infrastructure Manual** • NACTO Urban Street Stormwater Guide
Markings, Signing, Lighting, and Devices	• KCMO Traffic Engineering and Operations Manual • APWA 5800

KCMO Safe Streets for All - Streets Design Guide

November 2025

KANSAS CITY

Kansas City

414 E. 12th Street
Kansas City, MO
64106

Legislation Text

File #: TMP-6669 260341

ORDINANCE NO. TMP-6669

Adopting an updated Major Street Plan, Streets Design Guide, and an updated Kansas City Vision Zero Action Plan to include supplemental planning documents required by the Safe Roads and Streets for All grant agreement between the City of Kansas City and the U.S. Department of Transportation; and directing the City Clerk to file certain documents with the appropriate offices. (CD-CPC-2025-00151)

WHEREAS, a Major Street Plan for Kansas City was adopted by Ordinance No. 110249, passed October 23, 2011; and

WHEREAS, further changes were recommended and approved by Ordinance No. 141059, passed December 18, 2014; Ordinance No. 160336, passed June 23, 2016; Ordinance No. 160865, passed December 1, 2016; Ordinance No. 210837, passed September 23, 2021; Ordinance No. 220661, passed on August 25, 2022; Ordinance No. 220884, passed October 6, 2022; Ordinance No. 230217, passed June 8, 2023; Ordinance No. 230499, passed June 15, 2023; Committee Substitute Ordinance No. 240343, passed June 27, 2024; Ordinance No. 240653, passed September 12, 2024; and

WHEREAS, the City adopted a complete streets policy with the adoption of Committee Substitute for Ordinance No. 170949 which specified that the City shall incorporate complete street elements and principles into public strategic plans, capital improvement plans, design standards, manuals, rules, regulations, and programs; and

WHEREAS, the City adopted a Vision Zero goal in 2020 per Committee Substitute for Resolution No. 200019; and

WHEREAS, a Vision Zero Action Plan was adopted in 2022 per Committee Substitute for Resolution No. 220660 specifying a need for updated engineering design guidance and standards; and

WHEREAS, the City received a Safe Roads and Streets for All grant from the U.S. Department of Transportation for supplemental planning activities to conduct a speed limit study, update the Major Street Plan, and create a Streets Design Guide with a Vision Zero Focus; and

WHEREAS, revenue in the amount of $880,000.00 was appropriated to the Citywide Safe Roads and Streets for All – Planning Study Project and the Director of Public Works was authorized to expend $220,000.00 of appropriated funds to satisfy the City's local match requirement for the Safe Roads and Streets for All grant from the U.S. Department of Transportation per Ordinance No. 230841; and

WHEREAS, further review and revisions have been initiated by the Directors of City Planning and Development, Parks and Recreation, and Public Works Departments to update the Major Street Plan and develop a Streets Design Guide; and

WHEREAS, the Public Works Department conducted stakeholder engagement and public meetings via a community survey, meetings and open houses for inputs to the proposed update to the Major Street Plan and Streets Design Guide; and

WHEREAS, the Major Street Plan identifies streets which are designated as parkways and boulevards that are maintained by the Parks and Recreation Department, and the Parks and Recreation Board of Commissioners passed Resolution No. 33121 on February 10, 2026, recommending approval of the updated Major Streets Plan and Street Design Guide; and

WHEREAS, the City Plan Commission reviewed the proposed Major Street Plan and, pursuant to public notice and hearing, did on February 18, 2026, recommend approval of the updated Major Street Plan and Streets Design Guide; NOW, THEREFORE,

BE IT ORDAINED BY THE COUNCIL OF KANSAS CITY:

Section 1. That the Major Street Plan of Kansas City is hereby repealed and an updated Major Street Plan and Streets Design Guide, attached as Exhibit A and incorporated by reference, are hereby adopted.

Section 2. That the Kansas City Vision Zero Action Plan is updated and adopted to include the supplemental living planning documents, including the KCMO Safe Streets and Roads for All Comprehensive Speed Limit Review, updated Major Street Plan, and Streets Design Guide.

Section 3. That the City Clerk is hereby directed to file such documents in the offices of the Recorder of Deeds for Cass County, Missouri; Clay County, Missouri; Jackson County, Missouri; and Platte County, Missouri.

Section 4. That the Council hereby finds and declares that before taking any action on the proposed updated Major Street Plan, all public notices and hearings required by law have been given and had.

File #: TMP-6669 260341

I hereby certify that as required by Chapter 89, Revised Statutes of Missouri, the foregoing Major Street Plan was duly advertised and public hearings were held.

Sara Copeland, FAICP
Secretary, City Plan Commission

Approved as to form:

Sarah Baxter
Senior Associate City Attorney

Authenticated as Passed

Quinton Lucas, Mayor

Marilyn Sanders, City Clerk

APR 23 2026

Date Passed

Table of Contents

Introduction

Kansas City's Streets Design Guide (SDG) was developed through a Safe Streets for All (SS4A) grant awarded to Kansas City by FHWA to conduct supplemental planning efforts to help implement the City's Vision Zero Action Plan. The purpose of the SDG is to help focus Kansas City's (the City's) street design, construction, maintenance, and rehabilitation projects on safety, multimodal access, context sensitivity, and speed management. This Streets Design Guide is an effort to update city design standards in accordance with the Vision Zero and Complete Streets policies and to bring them into a single document for use by City staff and design consultants.

In 2020, the City Council passed the Vision Zero resolution to eliminate traffic fatalities and serious injuries on Kansas City streets by 2030, while increasing safe, healthy, equitable mobility for everyone. This document will support and expand the work already underway across the City's transportation network to reduce fatalities and injuries by standardizing practices that reduce speeds; reduce conflict points; provide safer facilities for pedestrians, cyclists and other vulnerable road users; and provide clearer guidance to drivers and other roadway users.

This document updates and replaces the City's previous 5200 Street Design Criteria. It also introduces new roadway typologies, replacing those previously shown in the Major Street Plan. This document also references design standards for Boulevards and Parkways, trails, personal mobility lanes (also known as bike facilities), and transit corridors from other City documents.

Organization of the Streets Design Guide

The Streets Design Guide is organized into four sections:

1. **Safe Streets Principles** provides the foundational framework for reducing the likelihood and severity of crashes on the street network and the justification for the City's design standards.
2. **Street Typologies** illustrates the street categories for which design guidance and standards are to be applied.
3. **Design Guidance** presents standards and guidance for the design of common corridor and intersection elements in accordance with safe streets principles.
4. **Implementation** guides the reader through the process of prioritizing and executing different project types in accordance with safe streets principles and the City's design standards and policies.

How to Use the Streets Design Guide

The Streets Design Guide serves several audiences and purposes, all centered around promoting a culture of safety within every project on the transportation network.

For design consultants: The Design Guidance section of the SDG serves as a one-stop-shop for the City's street design standards, policies, and guidance. The Street Typologies section provides guidance for additional design choices based on roadway typology.

For City project managers: The Design Guidance section provides the standards that designers and consultants are required to follow and should be verified by project managers. The Street Typologies section provides guidance for design choices for which designers may seek guidance. The Safe Streets Principle section documents the City's priorities and rationale for the design guidance presented in later chapters.

For City Public Works staff: The implementation guidance in the Implementation section points to safety improvements that can be incorporated during executes public works projects that require street maintenance activities.

For City Parks and Recreation staff: Design standards for Boulevards and Parkways are set by the Parks and Recreation department and have historically been centered around preserving a specific look and feel for those corridors. The Street Typologies section of the SDG includes Boulevards and Parkways as street typologies, acknowledging their historical context while adding best practices for safer operations and multi-modal access.

For maintenance crews: The design standards presented in the Design Guidance section illustrate changes to the way common corridor and intersection elements are designed. Maintenance activities often provide an opportunity to update some street elements in alignment with new standards. Before rebuilding a facility to its previous design, maintenance crews should verify their projects meet updated city policies and practices.

For construction contractors: As projects are let, design elements may be different than what contractors are used to building. The Design Guidance section can be referenced to verify unexpected design elements are correct and the Street Typologies section can be referenced to learn more about justification for the changes.

For elected officials: The Street Typologies section, and the associated City Street Typologies map, can be shared with constituents to show them the intended functionality of their streets and the design standards the City will be using to update their streets over time. The entire document can also be used to highlight the City's commitment to transportation safety and the standards and policy changes being implemented to reduce fatal and serious injury crashes.

For safety advocates: The SDG carries forward the recommendations from the City's Vision Zero Action Plan, which was developed by a multi-disciplinary group and informed by thorough community engagement. It shows a shift in focus from efficiency for automobile trips to safety and accessibility for all users. Safety advocates can use the document to take pride in the work completed to date and to push for continued safety improvement on our streets.

Safe Streets Principles

The principles discussed here are the foundation of design standards and guidance presented later in this document. They draw on industry knowledge—including from the National Association of City Transportation Officials (NACTO), the American Association of State Highway and Transportation Officials (AASHTO), and the National Cooperative Highway Research Program (NCHRP)—as well as key resources developed by the City, including the 2022 Vision Zero Action Plan and the Complete Streets Ordinance (Ordinance No. 170949).

This Guide continues well-established practices and procedures for street design but increases focus on access and safety for all users. Acknowledging that too many citizens are being killed and injured on our streets, this Street Design Guide employs strategies for speed management, increases the priority of pedestrian and personal mobility facilities, and makes it easier for designers to include safety features in their projects. The guidance presented is based on decades of traffic safety research and experience.

Streets are important public spaces that can create a sense of place, provide mobility, and support economic vitality. This Guide acknowledges that street design involves delicate management of competing needs and limited resources. No set of design standards can be sufficiently comprehensive as to address every circumstance. In cases that are not covered explicitly or where engineering judgement determines a standard is not appropriate or applicable, the principles discussed in this section can be used as a foundation for decision-making during the design process.

Many effective safety techniques can be applied quickly and easily to any project, especially when using a "quick build" or incremental design approach. Some of the most common scenarios include when:

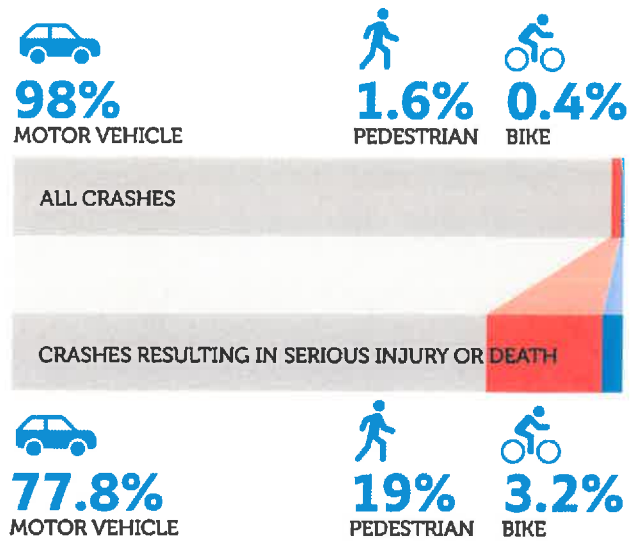
- citizens bring specific safety concerns to the City's attention;
- safety analysis from the City or its consultant identifies an acute safety concern;
- a new street is constructed;
- an existing street is reconstructed;
- an ADA project is planned;
- a maintenance or pavement project is scheduled;
- a utility project is planned within the street right-of-way; or
- a planning or engineering study is being conducted.

Application concepts are discussed further in the Implementation chapters of this document. Incorporating safety into every project shows a commitment to a culture of safety and maximizes the benefit of safety investments.

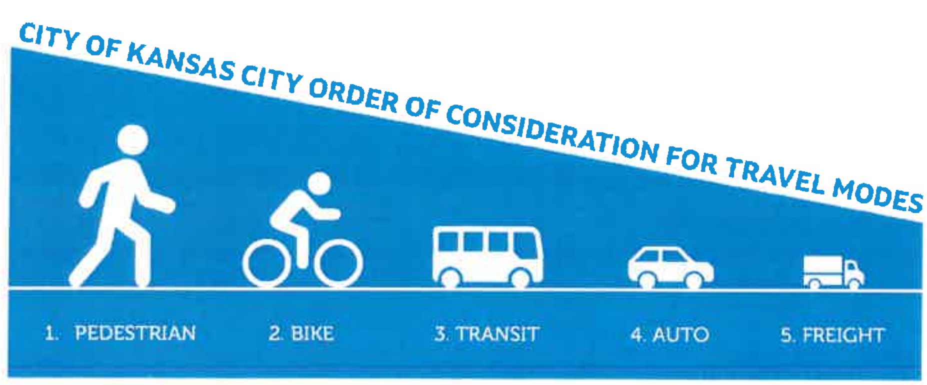
Street Users

All street users deserve streets that are safe and convenient, regardless of which mode they choose. Streets have historically been designed to prioritize the movement of traffic, focusing first and foremost on motor vehicles. Today, designers can better quantify crash risk and are more likely to consider safety in their design choices. This benefits people using the transportation system, whether they are walking, rolling, or in a vehicle.

A safety focus means fatal and serious injury crashes are a higher priority than fender-benders. And, because pedestrians and cyclists are more vulnerable to serious injury when involved in a crash, designers must prioritize the reduction of crash risk for those groups. In Kansas City, pedestrians and cyclists make up only 2% of crashes, but these vulnerable users are involved in 22% of crashes resulting in serious injury or death.



While personal vehicles are the most common mode on city streets, they generally create more risk for vulnerable users than they experience. Operational considerations for motor vehicles are important but should be considered after the safety needs of all other users have been considered and addressed to the extent possible.



Pedestrians

Pedestrians are the most vulnerable street users and can include people with unique needs: children, the elderly, or users with limited mobility or vision. Everyone is a pedestrian at times: when they traverse a parking lot, go from their home to a transit stop, or cross the street in a shopping district. All streets should provide dedicated space for pedestrians. Locations with frequent pedestrian traffic, or near residential areas, schools, churches, or shopping/dining districts should emphasize lower vehicle speeds, connected pedestrian sidewalks or paths, high-visibility crossings, lighting, and other amenities to increase comfort, such as benches and shade.

Streets that are primarily designed to accommodate faster-moving vehicles should prioritize separation between vehicle traffic and pedestrians. Where right-of-way is constrained, consideration should be given to reducing pavement width and accommodations for motor vehicles before reducing sidewalk width or buffer space. Additionally, enhanced crossing treatments should be prioritized, at both intersections and mid-block locations, with median refuge areas, actuated pedestrian beacons or signal phases, long sight distances, and advanced signing. Beyond meeting regulatory and design guidance, care should be taken to accommodate pedestrians with mobility or visual limitations where they are expected, including by enhancing the visibility of pedestrians and increasing crossing time.

Shade trees, benches, pedestrian-level lighting, wayfinding, and other features create a sense of place and make users feel more safe and secure. However, maintenance of pedestrian infrastructure and amenities is essential. Sidewalk cracks and trip hazards can make it difficult or impossible to move in a wheelchair or push a stroller, and some features may block the view of pedestrians for motor vehicle drivers. Plantings should be designed so as to prevent roots pushing up on sidewalks, minimize sight obstructions between motor vehicles and pedestrians, and help manage storm water. Where right-of-way is limited, street designers should pay special attention to roadside elements (such as utilities or light poles) that may infringe on pedestrian space.

At intersections, street designers should be cautious of vehicle turn lanes or other features that increase pedestrian crossing distance or allow higher turning speeds. Where street intersections are widely spaced or where trip generators exist at midblock locations, consideration should be given to providing midblock crossing locations with high-visibility pavement marking and signs, and rectangular rapid flashing beacons or pedestrian signals where appropriate.

Bicycles and Other Micromobility Devices

Bicyclists—as well as those on scooters and other micromobility devices—are the next most vulnerable street users. Like pedestrians, bicyclists need more separation from motor vehicle traffic as vehicle speeds increase. On low-speed, low-volume facilities, bicyclists may be able to ride in the lane with motor vehicle traffic; on high-speed, high-volume streets, bicyclists should be separated entirely from the roadway.

Bicyclists, scooter users and other micromobility users can be especially sensitive to topography. Where traffic moves uphill, bicyclists can be expected to move slower relative to vehicles and should receive greater protection. At intersections, bicyclists should be conspicuous to vehicles and be given traffic signal or physical priority (in bike boxes, for example) to establish their presence.

Transit

Increasing the share of residents who use transit improves safety, supports urban density, and reduces emissions. For transit to be effective, it must be reliable and frequent. Operation of transit vehicles in mixed traffic increases the risk of delays, especially at peak times. Designated transit lanes and transit priority at intersections can reduce this risk and make transit more attractive.

The transit network is dependent on the pedestrian, personal mobility (bike), and micromobility/microtransit networks because total trip time includes time getting to and from transit stops. Street designers should be thoughtful about modal connections to transit stops and amenities provided to waiting riders.

Freight

Freight movement is necessary to support economic activity. Freight vehicles are likely to be constrained by the geometry of the roadway and may require additional space for turning movements. These space demands are often similar to those of emergency services and maintenance vehicles and school buses. In areas with pedestrians and/or cyclists, designers should consider elements that balance the needs of both large vehicles and vulnerable users, such as mountable curbs, truck aprons, and recessed stop bars that accommodate wider turns into the opposing lane of traffic.

In denser areas, freight vehicles may also require loading/unloading space along the street. This may be achieved in shared space with other features, such as street parking; however, freight vehicles should never occupy designated pedestrian or bicyclist space. Common freight vehicles will vary by roadway typology and context. Time-of-day restrictions on truck parking and loading/unloading can limit freight conflict with other modes.

Passenger Vehicles

On much of the City's transportation network, passenger vehicles are the most common user type. However, geometric and traffic control elements designed to reduce vehicle delay can have unintended safety consequences. Street designers should choose street elements that reinforce the intended speed (see "Speed" below). Because of motor vehicle size and speed, the roadway environment should be designed to help drivers see other users, especially through the provision of clear sight lines to pedestrians, bicyclists, and other vehicles at intersections and crossings.

As the motor vehicle fleet continues to incorporate new technologies that increase automation and connectivity, the roadway design should support such technologies. This suggests a focus on design consistency and highly visible pavement markings and traffic control devices.

Safety Concepts

While "safer roads" is only one element of five in a safe system approach, it is the primary tool for designers to mitigate crash risk. Street design should vary according to adjacent land uses and expected users. This section addresses the various elements that establish a street's character. The use of design elements within particular contexts is explained in "Typologies".

Speed

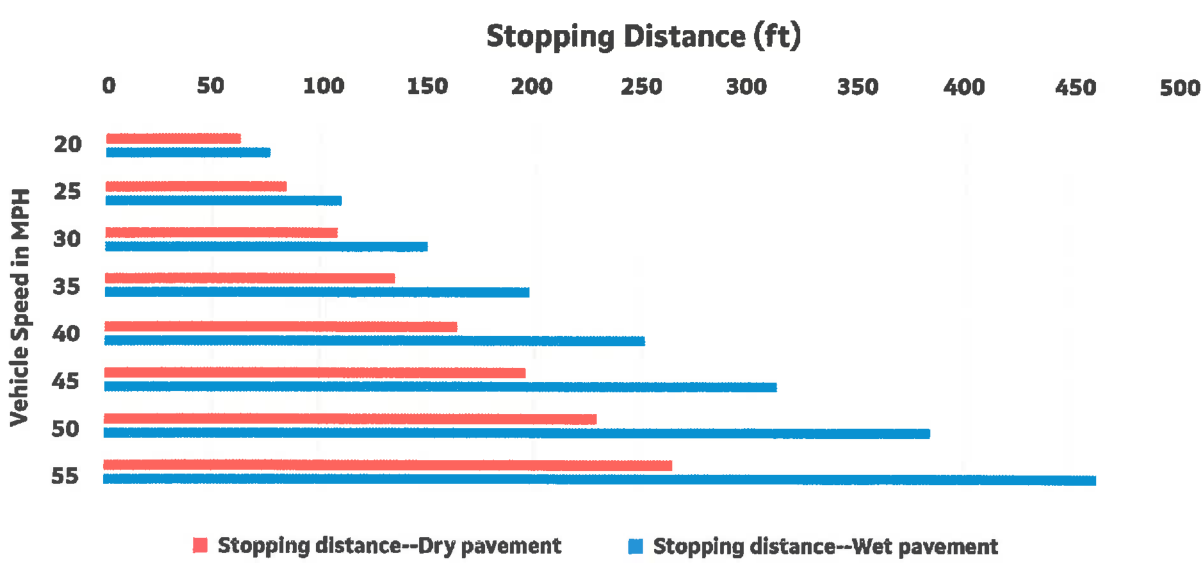
Implications for Safety

Speed management is a critical component of street safety. Traffic speeds are directly related to crash likelihood and severity because they impact:

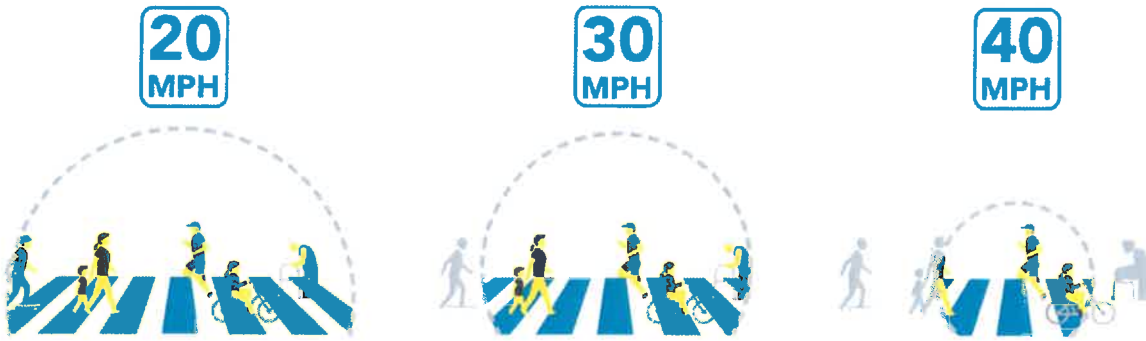
- The energy transferred in a crash, with energy being proportional to the square of speed
- The distance traveled while a driver perceives and reacts to a hazard or risk
- The size of the driver's visual field (the area where a driver can observe and interpret visual information)

Moderate increases in speed can substantially increase the risk of a fatal crash. A street user's likelihood of surviving being struck by a motor vehicle is 90 percent at 23 mph, 50 percent at 42 mph, and only 10 percent at 58 mph. Children and the elderly are much more likely to be killed at all speeds.

Furthermore, high vehicle speeds can make crashes more likely, as faster cars move greater distances before drivers can perceive hazards, brake, and come to a stop. The figure below shows average stopping distances, including driver reaction distance and braking distance, at increasing speeds for passenger vehicles on dry and wet pavement. It shows, for example, that a passenger vehicle traveling at 40 mph requires more than double the stopping distance of the same vehicle traveling at 25 mph. For heavy vehicles, stopping distance is even greater that what is shown in this chart.



Higher driving speeds also narrow a driver's field of vision, making it more difficult to see an approaching animal, pedestrian, cyclist, or vehicle approaching from the side, as illustrated below.



Source: Vision Zero Network (https://visionzeronetwork.org/resources/safety-over-speed/)

Designing to Manage Speeds

Ideally, streets are "self-enforcing": their design and surrounding land use convey the appropriate travel speed even in the absence of speed limit signs. Because drivers have a lot of visual information to process (especially in dense, urban areas), and speeds are not posted on every block, they rely on clues—often subconsciously—to help them choose their travel speed. Such clues might include lane width; how congested the street is; proximity of objects such as trees, signs, and utility poles to the street; the presence of pedestrians and cyclists; nearby playgrounds, schools, and other indications that children use the street; the frequency of residential and commercial driveways; the allocation of pavement width to parking, transit lanes, personal mobility lanes, or medians; and, perhaps most importantly, the speed of other drivers on the road.

Self-enforcing roads are most effective when roadway characteristics consistently align with the posted speed limit. A comprehensive speed limit review across the City showed that posted speed limits signs did not strongly correlate with mean and 85th-percentile speeds. Instead, features such as on-street parking were much more correlated with driving speeds that were aligned with posted speed limits. Additionally, since drivers rely on their cumulative driving experience to choose travel speed, reducing speed limits as a safety treatment on only some streets may lead to driver confusion about what driving speed is safe and appropriate in a given context.

Rather than using a design speed that exceeds anticipated driving speed or posted speed limit, street designers should set a target speed (see "Elements of Design") that aligns with the context of the roadway and its expected users. This target speed should be reflected in geometric features, access control, signal timing, modal accommodations and the posted speed limit, which, in turn, are aligned with adjacent land use, development, and density. The Target Speed on a road may not match the existing posted speed limit. The design speed and posted speed limits should be re-evaluated based on the Streets Design Guide and the assigned Street Typology's Target Speed each time a roadway project occurs.

However, even the best-designed streets can provide inconsistent clues to drivers. For example, some streets may be congested during certain times of day but clear at others. Pedestrians may be present immediately before and after school but infrequent otherwise. The proximity and density of the streetside landscape may feel different during the spring and summer when foliage is in full bloom than when leaves are absent and sight distance is increased.

Traffic calming measures can bring consistency to travel speeds by creating conditions that require driver awareness and careful control of the vehicle. The following strategies, which can often be accomplished with lower-cost interim treatments, can reduce speeds on an existing street:

- Road diet (from 4 lanes to 3)
- Reduced lane width and intersection corner radii
- Traffic calming devices (speed humps, raised medians)
- Coordination of traffic signals to support traffic progression at a slower speed and prioritize pedestrians and bicyclists (such as leading pedestrian intervals)
- Roundabouts at intersections
- On-street parking and curb extensions
- Street enhancement features (textured pavement, street trees)
- Elimination of slip lanes, channelized right-turn lanes, and other features that encourage faster speeds at conflict points

Traffic calming can be implemented either as a correction to observed high speeds or as an intentional feature on new and reconstructed streets. When implemented as a remedy for an observed speeding problem, they are frequently initiated in response to requests from the public. The process for selecting locations for traffic calming measures and choosing the appropriate measure is detailed in the Traffic Engineering and Operations Manual.

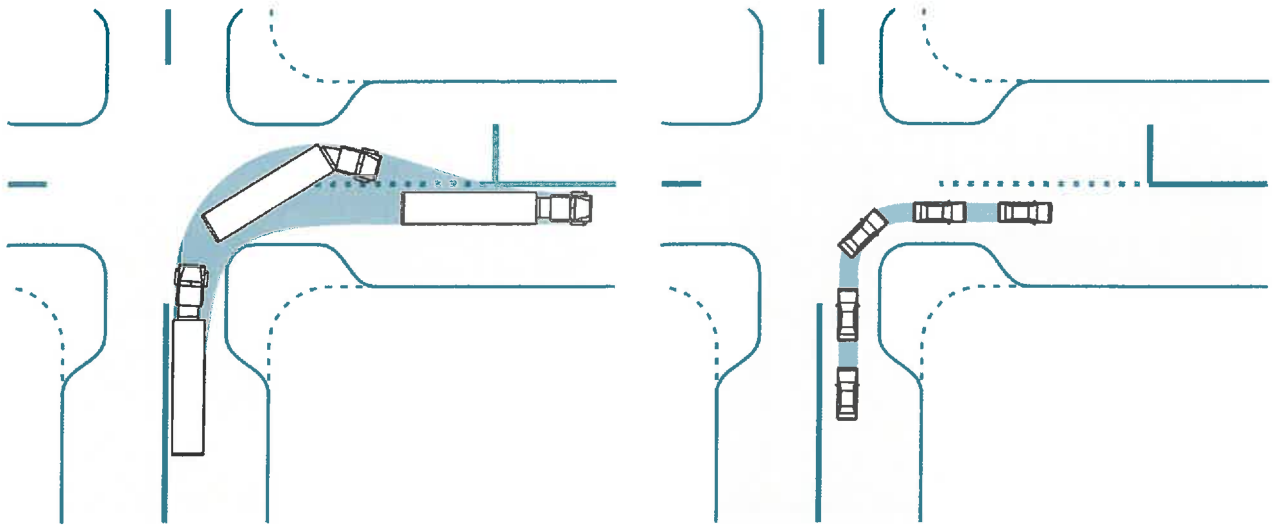
Geometry

In many cases, street designs intended to reduce the likelihood of conflicts and crashes (such as wider lanes or gentler curves) actually encourage faster driving speeds, because they make drivers feel comfortable going faster. These overdesigned streets often result in more severe crashes. Accordingly, designers should seek to use geometric design to balance the risk of collisions with the potential severity of crashes.

Design and Control Vehicles

A related concept is the distinction between a "design vehicle" (the largest vehicle commonly expected on the street) and a "control vehicle" (the largest vehicle ever expected on the street). A typical design vehicle might be a smaller box truck, while a typical control vehicle might be a large combination freight truck, school bus, or fire engine.

Unlike the design vehicle, the control vehicle can use additional space for turning movements, including the adjacent and opposing travel lanes or mountable curbs, as shown in the figure below. Street designers should select the smallest appropriate design vehicle. This distinction allows designers to reduce the geometry of the roadway, especially by tightening curb radii, which will encourage slower speeds, shorten crossing distances, and improve comfort for pedestrians and bicyclists.



Source: NACTO Urban Street Design Guide (2013)

Effective Radius

Designers should pay special attention to the effective radius of corners. Where vehicles are offset from the curb (by on-street parking or personal mobility lanes, for example), their effective turning radius will be much larger than the radius of the corner. Designers should minimize the effective radius to discourage high-speed turns.

Visibility

Sight Distance

Allowing street users to see each other is essential to safety. Geometric design standards should accommodate required sight distance along vertical and horizontal curves and at intersections; however, changes in the built or natural environment can sometimes limit sight lines, increasing crash risk. Special care should be given to high-volume driveways, ensuring that sufficient sight distance is available to make all allowable movements. Areas where pedestrians stand waiting to cross the street should be visible to motorists and not blocked by signs, trees, poles, or parking.

Lighting

Crash rates are consistently higher under low-light conditions. In addition, lighting can deter crime and make vulnerable road uses feel more safe and secure. Intersection lighting and pedestrian-level corridor lighting are recommended in areas with transit, higher pedestrian and cyclists volumes, or unusual geometric or roadside conditions. Refer to the Traffic Engineering and Operations Manual and APWA 5800 for information on lighting design.

Conflict Points

Conflict points are locations where street users cross paths. These locations hold the potential for severe collisions when users fail to perceive, react to, or obey signs and signals, or when such devices malfunction or are missing. As the number of lanes entering an intersection increases, so do conflict points, and as entering speeds increase, so do crash severities.

Designers should look for opportunities to manage conflict points by limiting right-angle crossing points. Roundabouts, for example, nearly eliminate the possibility of high-speed right-angle collisions and significantly reduce fatal and serious injuries. Features such as raised medians and split signal phasing can also help reduce conflict points, slow drivers down, and make decisions easier for all road users by limiting the number of hazards each person must evaluate before making stay-or-go decisions.

Intersections

Intersections present the most complexity and the greatest number of conflict points for all street users. In the most recent available crash data (2019-2023), crashes at intersections accounted for approximately 64% of all fatal and serious injury crashes in Kansas City. At all intersections, access and safety for the most vulnerable users should be prioritized. Pedestrians and cyclists should be made highly visible to motor vehicles, both through positioning in the driver's field of vision and through appropriate lighting. At higher-volume, higher-speed intersections, mode separation in space or time (such as grade separated pedestrian crossings or pedestrian-only signal phases) may be appropriate.

Motor vehicle speeds should be managed near intersections to reduce the risk of severe crashes with pedestrians and cyclists. Improvements to signs and pavement markings that increase visibility or clarity for users can increase compliance with traffic control. Bike boxes and leading pedestrian intervals establish the presence of vulnerable users to motor vehicle drivers. Raised crosswalks and raised intersections can slow motor vehicles as they approach the intersection and make them more aware of the presence of other users.

Figure 1 – Kansas City Vision Zero intersection improvements at Prospect Avenue and 31st Street. Improvements included high visibility crosswalks, pedestrian refuge islands and curb bump outs.

Pedestrian Crossings

Crossing safety for pedestrians is impacted by distance to the crossing from pedestrian traffic generators, street width, corner radius, sight lines, vehicle volume and speed, lighting, and consistency of driver and pedestrian expectations from one crossing location to the next.

Intersections in residential and neighborhood commercial areas, near schools and churches, near parks and recreation spaces, and in any other area where pedestrians may wish to cross the street should include well-marked crosswalks. Signalized intersections should provide sufficient time for pedestrians to cross the street at a comfortable pace; this pace will be slower for young children, older adults, and people using mobility assistance devices. Restricting right turns on red and using leading pedestrian intervals can help establish the presence of pedestrians and reduce the likelihood of them being struck in designated crossing areas at intersections.

To encourage pedestrians to use safe crossings, designers should take care to provide crossings at a reasonable frequency. Pedestrians often prioritize convenience when choosing a path to cross the street. If intersection crossings are spaced too far apart, pedestrians may choose to ignore them. In urban areas, crossings should generally be provided every 400–600 feet; however, appropriate crossing frequency will vary based on land use and specific pedestrian generators.

In many situations, midblock crossings should be provided. They should include highly visible pavement markings and advanced warning signs. Where volumes and/or speeds are higher, additional treatments, such as an actuated pedestrian signal, pedestrian hybrid beacon (PHB), or rectangular rapid flashing beacon (RRFB) may be appropriate.

Where mid-block crossings cannot be safety provided, consideration can be given to adding median treatments such as tall barriers and fencing that physically prevent or strongly discourage pedestrians from crossing away from intersections or other designated crossing.

Where crossings span multiple lanes in each direction of travel, or where signalization is not provided, a refuge island can improve safety by allowing pedestrians to break their crossing into two stages, which allows them to focus on one direction of approaching traffic at a time.

Pedestrian crossings should connect pedestrian paths; a crossing should never lead a pedestrian to a location without a sidewalk, trail, or multiuse path. However, the lack of pedestrian infrastructure does not suggest a crossing should not be provided—it suggests that additional infrastructure be built to support the pedestrian network.

Lateral Separation of Modes

Many pedestrians and cyclists are uncomfortable near fast-moving vehicles. Often, strategies to shield vulnerable road users from vehicles are limited by a constrained right-of-way. Designers can balance this by considering features that buffer vulnerable users from vehicles.

For example, if the minimum required buffer between curb and sidewalk cannot be provided, the presence of a personal mobility lane or on street parking might function as a buffer and make a reduced pedestrian buffer more acceptable. Similarly, on-street parking can be used as a buffer between a personal mobility lane along the curb and motor vehicle traffic. Designers should consider the speed of the roadway when selecting buffer types and widths. It is not appropriate to minimize buffer when pedestrians or cyclists are adjacent to high-volume or high-speed traffic.

Visual separation can also increase safety for vulnerable road users. Buffered personal mobility lanes with vertical delineators, for example, will likely be more comfortable than buffered personal mobility lanes without, even if the buffer width remains constant. For sidewalks especially, the buffer area should be visually distinct. If it is not practical to use a grassed/planted buffer, designers should consider alternate materials or, especially if space is restricted, a barrier (such as bollards). Where the full recommended width of sidewalk and buffer cannot be provided, designers should seek to provide some physical and visual buffer, even if it requires some minimal reduction of the sidewalk. As discussed, reducing travel lane width is preferred over reducing sidewalk or personal mobility lane width.

Access Management

Access type and density can vary significantly across street typologies, from limited-access freeways to full-access downtown streets. Street designers should be thoughtful about the placement of access drives, which represent conflict points for all users, especially when uncontrolled or near an intersection. On higher-volume streets, modifying internal traffic circulation, providing shared driveways, or adding access streets can limit or consolidate access points.

Access can be restricted with raised medians in the driveway ("pork chop islands") that limit specific movements or with raised medians in the major road, which can have the same effect while providing refuge for crossing pedestrians and calming adjacent traffic.

Where continuous medians are used, U-turn lanes and roundabouts can provide opportunities for drivers to change directions and access destinations on the other side of the street. While two-way left-turn lanes are acceptable, medians with structured turning movements are preferred. The design should support turning speeds of under 15 mph.

On very low-volume streets, frequent access points can signal to drivers that slower speeds are required to accommodate entering and exiting traffic.

Considerations for Street Designers

Street design should match the context of the roadway, including its users, its relationship to the transportation network, the current and future adjacent land use, nearby population density and demographics, desired aesthetic, and community priorities. The following are important considerations for designers as they make choices.

Connectivity

Connectivity indicates how conveniently and comfortably users can travel to their desired destinations. Accommodation for modes or user groups, such as personal mobility lanes or bus lanes, should not be considered individually for each project, but instead in a coordinated manner across the network. When the transportation system provides a connected and convenient network for each user group, it encourages a stratification of modes that makes it easier to accommodate each of them safely.

As new development occurs, providing multiple routes between origins and destinations will improve the connectivity and resilience of the network. Frequent connections allow for easier mobility when a street is closed, and multiple paths reduce demand on any given route, allowing for fewer lanes.

Timescale

Remaining design life, as well as pavement condition, may impact the types of treatments that are considered for a specific corridor. If a street is likely to be replaced in the short term, temporary improvements may be preferred in the interim. Temporary improvements can be an effective tool to make a street safer while reducing costs. They also provide an opportunity to generate feedback from the public and make adjustments to address any unforeseen concerns before installing permanent infrastructure. The following are common examples of temporary treatments:

- curb corners extended with planters or paint and vertical delineator posts
- prefabricated speed humps and tables
- trailer-mounted speed feedback signs

When estimating trip generation in future years, designers should consider the potential for modal shift away from vehicle trips. The Kansas City Climate Protection and Resiliency Plan includes strategies to shift trips to bicycling, walking, and transit trips by expanding networks for these modes. This Streets Design Guide provides guidance to support the implementation of these strategies.

Wider than necessary streets lead to higher speeds and potentially dangerous conditions for vehicles and vulnerable users. Instead, where growth is anticipated, street designers should purchase right-of-way for the future projected need while restricting the initial street to the fewest lanes needed. The street should be built to one side of the right-of-way to reduce the need to relocate utilities and drainage in the future. Medians and adjacent shared use paths can be built on the remaining right-of-way until traffic volumes warrant additional lanes.

Level of Service

Level of Service (LOS) has historically been a quantitative assessment of vehicle speed, delay, and congestion. LOS for motor vehicles ranges from A, in which vehicles have minimal delay and can freely travel at or above the speed limit to F, in which vehicles experience "breakdown" congestion (i.e. stop-and-go conditions).

This measure focuses on driver comfort and convenience; however, Level of Service A is associated with a higher crash rate than LOS C or D. Conditions that constrain free flow speed and require drivers to be more attentive when changing lanes or making turning maneuvers can reduce the frequency and severity of crashes. Moderate traffic flows with limited speeds (LOS C and D) tend to have the lowest crash rates.

Research conducted for Kansas City's Vision Zero Action Plan shows the relationship between congestion and fatal and serious injury crash risk. Streets with lower volume-to-capacity ratios were consistently more likely to experience fatal and serious injury crashes.

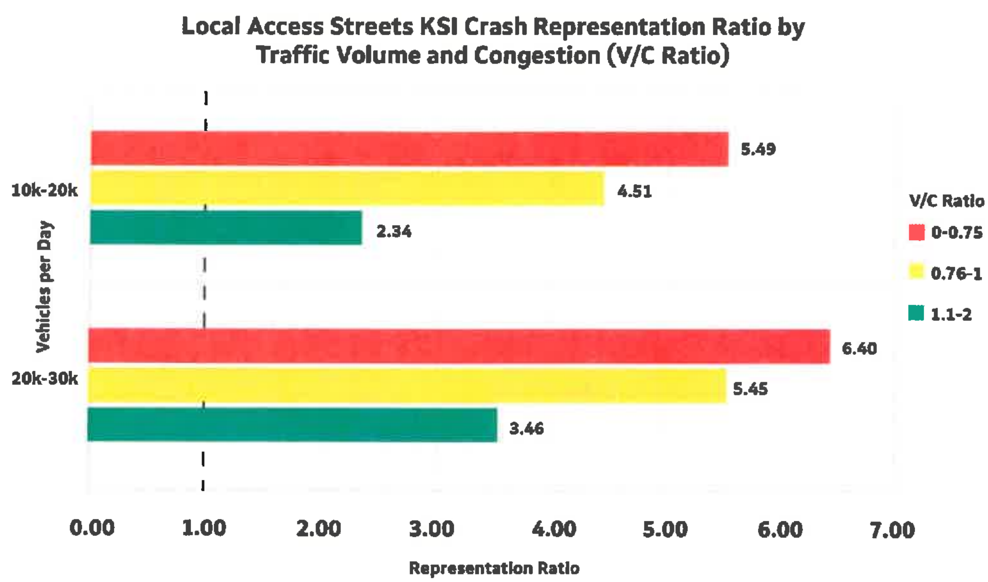


Figure 2 – Crash Representation Ratio by V/C Ratio (See KCMO VZ Action Plan Page 47)

Newer metrics such as Pedestrian Level of Service (PLOS) and Bicycle Level of Service (BLOS) can measure the comfort and convenience of other user groups. The Level of Service of Safety (LOSS) is a measure of a street's safety performance, comparing its observed crash history to predicted crashes for a street with similar characteristics. To meet City Vision Zero and Complete Streets goals, **these measures should take precedence on City streets over the traditional LOS measure for motor vehicles**. Additional guidance for determining LOS for all modes is provided in Sections 2.3 and 2.4 of the Highway Capacity Manual and the Federal Highway Administration (FHWA) Guidebook for Developing Pedestrian and Bicycle Performance Measures.

In addition to these quantitative metrics, designers should use surveys, walk audits, and other engagement strategies (either in coordination with a project or on a regular basis) to provide insight into the experience of street users and to improve a street's perceived level of service.

Human Factors

How well a street operates is determined by how well users understand and comply with its intended use. Human factors describe how roadway users perceive and react to information in their environment and are impacted by sight distance; lighting; sign spacing, size, and reflectivity, marking visibility, placement, and design; clear zone width; fixed object type and density; speed and volume of traffic; and other elements of the roadway environment.

Especially at complex intersections, street designers should take care to minimize driver workload and maximize clarity of expectations. Best practices include providing sufficient sight distance, proper lighting, retroreflective signs and markings, wayfinding guidance, and consistency in street cross-section and traffic control.

In other locations with lower complexity—where drivers can be prone to inattentive driving—it may be helpful to introduce elements that require drivers to pay more attention to their speed. Signs and striping can be used to make drivers more aware of their speed in relation to the roadway context. Design elements like lane shifts, pinch points, and mini roundabouts can be used on low-speed routes to help drivers maintain focus.

Equity

The Kansas City, Missouri (KCMO) Vision Zero Action Plan identifies clear inequity in the transportation system, especially with respect to safety. Black residents face the highest risk of death and serious injury on Kansas City streets.

Historically, disadvantaged communities have been disrupted or destroyed by the development of the transportation system. These populations are still exposed to streets that endanger vulnerable users and adversely affect their health with noise and pollution. In response, street designers must take special care to include neglected perspectives and consider how the costs and benefits of their project are distributed.

Land Use and Placemaking

The development surrounding a corridor defines the purpose and activity of the street. The density of development increases as you move from rural areas with large lots and low activity; through suburban areas with higher activity and single use development; and into the urban core with high levels of street activity, mixed use developments, and shorter block lengths. These factors influence modes of travel and uses of the public right-of-way.

Streets contribute to a sense of place. Landscaping, human-scale lighting, art, and furniture along the street can add value to adjacent development. By contrast, harsh lights, noise, and high vehicle speeds can depress value. Street design tells users who is welcome and can support or discourage foot traffic, bicycling, recreational trips, and deliveries. Pleasant streets for all users are economic engines: they attract customers and connect businesses to the freight network.

Sustainability and Climate Resilience

More than 30% (2.9 million MTCO2) of Kansas City's greenhouse gas emissions come from motor vehicles. The City's Climate Protection and Resiliency Plan established multiple goals regarding mobility, including:

1. Reducing vehicle miles traveled
2. Shifting trips to lower emissions options
3. Reducing idling and congestion
4. Increasing transit trips

Designers should approach street projects with a sustainability focus. Broadly, streets should be designed to promote more transit, walking, and bicycle trips to improve local air quality. On a smaller scale, individual devices (for lighting, signaling, etc.) should use solar power where possible. During construction, designers should seek opportunities to preserve pavement and incorporate recycled materials.

Street designers should also consider how each street interfaces with natural systems, including weather, wildlife, and environmental landmarks. It is increasingly important that our infrastructure is resilient to both acute natural disasters and more gradual changes in climate. Kansas City expects increasing rainfall volumes, which will further tax the existing combined sewer infrastructure and worsen water quality. Kansas City also expects higher average temperatures and more frequent heat waves.

A key component of resiliency is green stormwater infrastructure. Designers can use simple strategies (such as curb cuts or trench drains) to bring water that would otherwise be treated as waste to street trees and native landscaped areas. Additionally, larger excavations, improved soil media, and proprietary soil cell systems will enhance the health and longevity of street trees. Landscaped areas also help to reduce urban heat island effects. Green stormwater infrastructure may also be referred to as post-construction stormwater, best management practices, stormwater control measures, nature-based solutions, or stormwater treatment facilities.

The City of Kansas City, Missouri, established a Climate Protection and Resiliency Plan in 2022. Several strategies included in the plan can be achieved through pursuing complete street design such as expanding the network of trees (Strategy N-1) and using natural systems to manage stormwater runoff (Strategy N-4). Street features that manage water—including swales and planted elements—can make the street more attractive while managing increased rainfall. Where possible, street designers should minimize the use of impervious surfaces. Both strategies build resilience to extreme heat and flooding.

CLIMATE ACTION SECTIONS AND STRATEGIES

MOBILITY

M-1: Reduce vehicle miles traveled (VMT) through coordinated and planned development

M-2: Shift trips to bicycling and walking by expanding a network of safe and accessible routes

M-3: Shift trips to transit by building efficient and effective transit systems and mobility hubs

M-4: Reduce vehicle emissions from idling by reducing congestion and improving parking management

M-5: Reduce vehicle emissions through low- and no-emission vehicles

Source: KCMO Climate Protection & Resiliency Plan

Street Typologies

Street typologies are categories used to define streets by their function, design and usage. This section provides the definitions, characteristics and cross sections for the following street typologies:

- Downtown Core
- Urban Mixed Use
- Suburban Commercial
- Thoroughfare
- Connector
- Neighborhood
- Industrial / Business Park
- Boulevards
- Parkways

The street typologies in this section of the Streets Design Guide correspond to an online, interactive Streets Design Guide Map, which assigns each street in Kansas City to a typology. This map can be found on the City's website at https://www.kcmo.gov/city-hall/departments/public-works/major-streets-plan.

Each street typology will have a unique approach to the allocation of space. While the building environment limits the available right-of-way, the existing right-of-way can be redistributed to satisfy the changing needs of a community or neighborhood.

When considering how to allocate available right-of-way, the priority is the safety of vulnerable road users because pedestrians and cyclists are more vulnerable to serious injuries than drivers when involved in a crash. The next is accommodating other user groups in accordance with established personal mobility (bike) and transit networks. This can sometimes mean reducing the number or width of standard travel lanes to provide pedestrian space, personal mobility lanes, transit lanes, or medians.

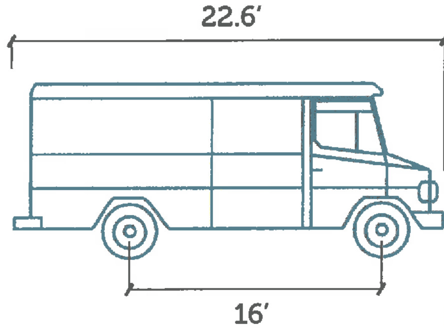
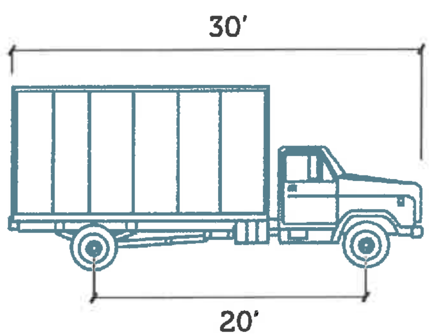
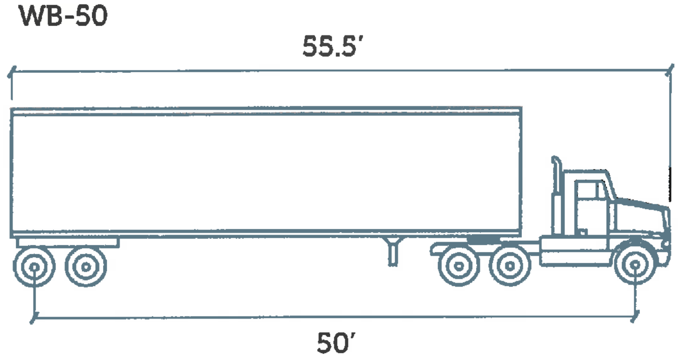
When allocating right-of-way, City goals of reducing traffic fatalities, reducing carbon emissions by encouraging mode shift to reduce miles traveled by single-occupancy passenger cars, and increasing healthy communities should be prioritized.

The space adjacent to street curbs can be used for motor-vehicle parking, ride-share loading and unloading, transit stops, bikeshare parking, electric vehicle charging, deliveries, green stormwater infrastructure, and public spaces like street cafes. Each of these amenities can contribute to access, placemaking and safety. Decisions about curbside management should be made to align with the street typology and adjacent development, providing flexibility to allow changes as needs change. Motor vehicle traffic should be slower near areas with heavy curbside activities and these zones should be made visible to approaching traffic.

Elements of Design

Each typology provides a table of key characteristics. Definitions for these characteristics and other terms included in this section are defined in the table below.

Target Speed	The highest speed at which vehicles should operate in a specific context. Target speed, design speed, and posted speed should be equal.
Design Vehicle	The largest vehicle that is likely to use the facility with considerable frequency, whose selection will determine road geometry. See the following page for examples of design vehicles.
Control Vehicle	The largest vehicle that will infrequently use the street.
Right-of-Way Width	Public space designated for travel. On established streets, this space is typically fixed. For new construction, designers should refer to the recommended ranges for a particular typology.
Lane Width	The width of travel lanes.
Pedestrian Facilities	Pedestrian facilities, generally known as the sidewalk, is the space allocated for pedestrians between the street curb and the edge of the right-of-way, which includes both the pedestrian and amenity zone. The "pedestrian zone" space is allocated to unobstructed pedestrian through movement. The "amenity zone" includes landscaping, green infrastructure, utilities, transit stops, loose funishings or street furnishing zone in the area between the street and the "pedestrian zone."
Curbside Uses	Utilities, amenities, landscaping, transit stops, or green stormwater infrastructure that occupy the curbside use within the roadway space occupied by vehicles.
Micromobility Facilities	Space allocated for the operation of bicycles and other micromobility devices (scooters, etc.), which may be separated from or shared with motor vehicles and other modes.
Transit Facilities	Space allocated for transit services, either within the roadway or at the curb.
# of Travel Lanes	The number of lanes for vehicle through movement.
Parking	Space within the ROW allocated for motor vehicle parking. This may include parallel, angled, reverse-angled (preferred to angled), or traffic lanes designated for parking during certain days/times.
Green Stormwater Infrastructure	A holistic approach to stormwater management that collects and stores rainwater where it falls by mimicking the natural water cycle. Guidance for stormwater infrastructure is in the KCMO Green Stormwater Design Guide. Trees and landscaping present can help reduce the urban heat island effect.
Street Activation	The level of activity between pedestrians and buildings along the street.
Place Type	The land use character typically adjacent to the street.
Access Control	Restrictions on driver movements, especially with driveways that intersect the street. This may also include raised medians or signage.

Street Typology	Vehicle Type
Neighborhood Boulevards Parkways	DL-23  *Source: NACTO*
Downtown Core Urban Mixed Use Suburban Commercial Thoroughfare Connector	SU-30  *Source: NACTO*
Industrial / Business Park	WB-50  *Source: NACTO*

Downtown Core

Downtown Core streets fall within areas of high development density such as a central business district. They accommodate low motor vehicle speeds, high pedestrian volumes, enhanced transit connections, and freight delivery activity. See Area Plans areaplans.kcmo.gov and KC Spirit Playbook for more information.

Many downtown core streets have been studied in the past. These previous studies should be heavily considered when looking at those particular streets. Here is a list of known studies that represent downtown core streets.

- River Market streetscape plan
- West Bottoms
- Downtown Loop streetscape plan
- Two-way conversion study 2024 – 7th Street, 8th Street, 9th Street, 10th Street
- Grand Boulevard - Making Grand Grand - 2011

Downtown Core Example Streets
Most streets within the downtown loop fit in the Downtown Core typology, including:

- 10th Street
- 11th Street
- 12th Street
- 13th Street
- 14th Street
- Oak Street
- Walnut Street
- Main Street
- Baltimore Avenue
- Wyandotte Street
- Central Street

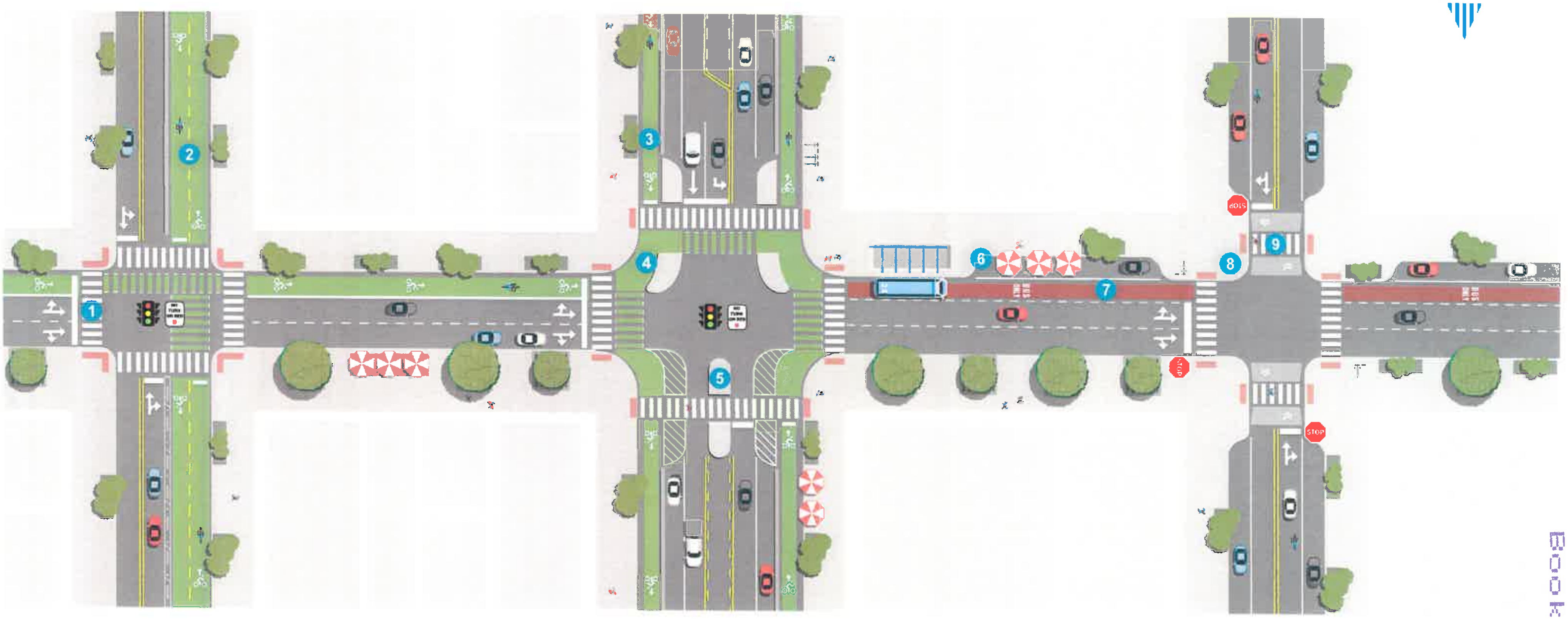
Downtown Core Key Characteristics

Target Speed	20 mph
Design Vehicle	SU-30
Control Vehicle	Aerial Fire Truck MM100
Right-of-Way Width	50'–100'
Lane Width	11' or 10' if no bus in the lane
Pedestrian Facilities	Pedestrian zone - 10'+ sidewalk preferred, 6' minumum, amenity zone - 4' minimum.
Curbside Uses	Loading zones, pedestrian amenities, bicycle parking, transit stops
Micromobility Facilities	Sharrows allowed under 15 mph / standard personal mobility lanes < 6,000 vpd / buffered or separated lanes $\geq$ 6,000 vpd, separate from sidewalk space
Transit Facilities	Transit service is very likely on Downtown Core streets. Refer to "Accommodation for Transit Vehicles" under Design Guidance.
# of Travel Lanes	2 for streets < 20,000 vpd, otherwise 4
Parking	On-street parking is allowed, both full-time and off-peak. Parking rates should be charged to encourage turnover. Reverse-angled parking is preferred, but angled or parallel parking is also allowed. Angled parking must be reverse-angle on one-way streets. Freight vehicles often use street space for unloading on downtown core streets. If only two travel lanes are provided, designers should designate parking space for freight unloading.
Green Stormwater Infrastructure	Native plantings in buffer areas or medians and street trees. Rain gardens in curb extensions or combined with street furniture
Street Activation	High level of street activation including heavy pedestrian, bicycle, and shared mobility travel; street vendors, street cafes; and parklets.
Place Type	Downtown Core, Downtown Mixed Use
Access Control	Driveways should be heavily restricted. Drive aprons shall be designed at their minimum width.

DOWNTOWN CORE

This conceptual roadway diagram illustrates a range of possible segments for the given street typology and is not intended to represent a continuous roadway condition.

KANSAS CITY



1 HIGH VISIBILITY CROSSWALK
A crosswalk that provides increased visibility to motorists through high-visibility pavement markings, signing and lighting.

2 TWO-WAY CYCLE TRACK
Separated bike lanes that allow bicycle movements in both directions on one side of the street.

3 PROTECTED BIKE LANE
Protected mobility lanes that provide a physical barrier between bicycle and vehicle traffic. Vertical elements like concrete curbs also provide a visual barrier.

4 PROTECTED INTERSECTION
Intersections that provide separated paths for bicyclists, pedestrians and vehicle traffic and that provide physical protect, improve visibility, and reduce crossing distances for bicyclists.

5 PEDESTRIAN REFUGE ISLAND
A median with a refuge area that provides pedestrians a protected area to cross a multilane road in two stages if necessary.

6 PARKLET
Public seating platforms that convert curbside parking spaces into lounge, dining and/or community space. These are often used to provide additional space in the pedestrian realm.

7 TRANSIT
Dedicated transit lanes that improve throughput of buses and reduce vehicle weaving on corridors. These lanes may sometimes be shared by bicyclists and/or right turn vehicles. Bus shelters are appropriate along transit lanes.

8 CURB EXTENSIONS
Curblines extended into the street, either with concrete or paint, at crossing locations to reduce the crossing distance for pedestrians, make pedestrians more visible to motorists, and provide space for street furniture, lighting fixtures, and traffic signal equipment.

9 RAISED CROSSWALK
Crosswalks that are elevated (similar to a speed hump or table) that limit turning speeds of vehicles and increase the visibility of crossing pedestrians.

Downtown Core Cross Section Options

80-foot ROW: Two-way segment with center turn lane, parking lanes, and separated mobility lane on both sides

60-foot ROW: One-way segment with transit-only lane and separated two-way mobility facilitiy

Downtown Core Cross Section Options

60-foot ROW: Two-way segment with parking

Urban Mixed-Use

Urban Mixed-Use streets are neighborhood-level commercial corridors outside of the central business district providing access to high-level trip generators such as retail, office, and restaurant space. These areas have a defining character and typically have a historic significance for the local community. The corridors are typically dense and walkable.

Urban Mixed-Use Example Streets

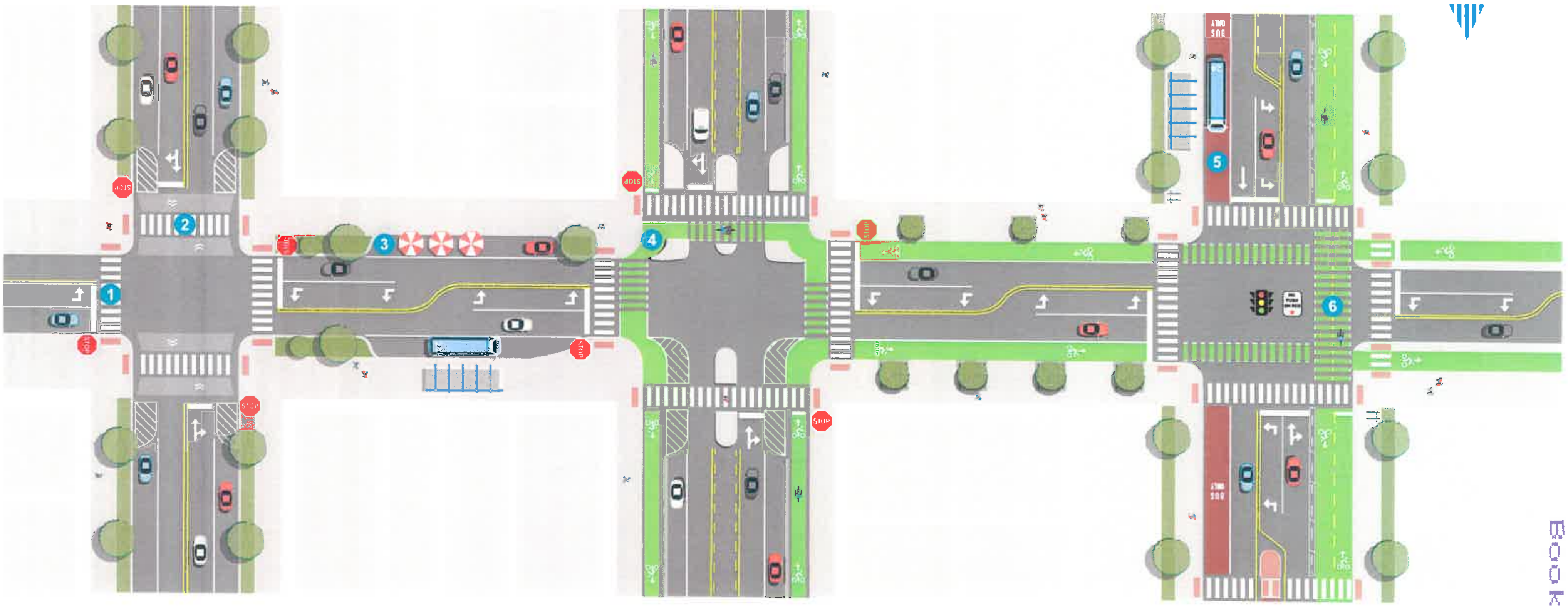
- 63rd Street between Wornall Road and Troost Avenue
- 39th Street from State Line Road to Gillham Road
- 31st Street from Oak Street to Troost Avenue
- 75th Street between Pennsylvania Avenue and Main Street

Urban Mixed-Use Key Characteristics

Target Speed	25 mph
Design Vehicle	SU-30
Control Vehicle	Aerial Fire Truck MM100
Right-of-Way Width	80'–120'
Lane Width	10' minimum; 11' when bus is present in that lane
Pedestrian Facilities	Pedestrian zone - 10'+ sidewalk preferred, 6' minumum, amenity zone - 4' minimum.
Micromobility Facilities	Buffered or separated lanes, separate from sidewalk space
Curbside Uses	Pedestrian amenities, bicycle parking, transit stops, landscaping
Transit Facilities	Transit service is very likely on Urban Mixed-Use streets. Refer to "Accommodation for Transit Vehicles" under Design Guidance.
# of Travel Lanes	2 for streets < 20,000 vpd, otherwise 4
Parking	On-street parking is allowed, both full-time and off-peak. Parking rates should be charged to encourage turnover. Reverse-angled parking is preferred, but angled or parallel parking is also allowed.
Green Stormwater Infrastructure	Native plantings in buffer areas or medians and street trees. Rain gardens in curb extensions or combined with street furniture
Street Activation	High level of street activation including heavy pedestrian, bicycle, and shared mobility travel; street vendors, street cafes; and parklets.
Place Type	Commercial, Mixed-Use Community, Mixed-Use Neighborhood, Mixed-Use Neighborhood, Mixed-Use Residential, Regional Center (RC), Community Center (CC), Neighborhood Center (NC)
Access Control	Driveways should be minimized by promoting local access roads, shared drive access, right-in/right-out only, and/or minor street access. Access for major generators should be evaluated for appropriate traffic control treatments. Drive aprons shall be designed at their minimum width.

URBAN MIXED USE

This conceptual roadway diagram illustrates a range of possible segments for the given street typology and is not intended to represent a continuous roadway condition.



1 HIGH VISIBILITY CROSSWALK
Using continental crosswalk marking increases the visibility of a crosswalk to motorists.

2 RAISED CROSSWALK
Raised crosswalks limit turning speeds of vehicles and increase the visibility of crossing pedestrians.

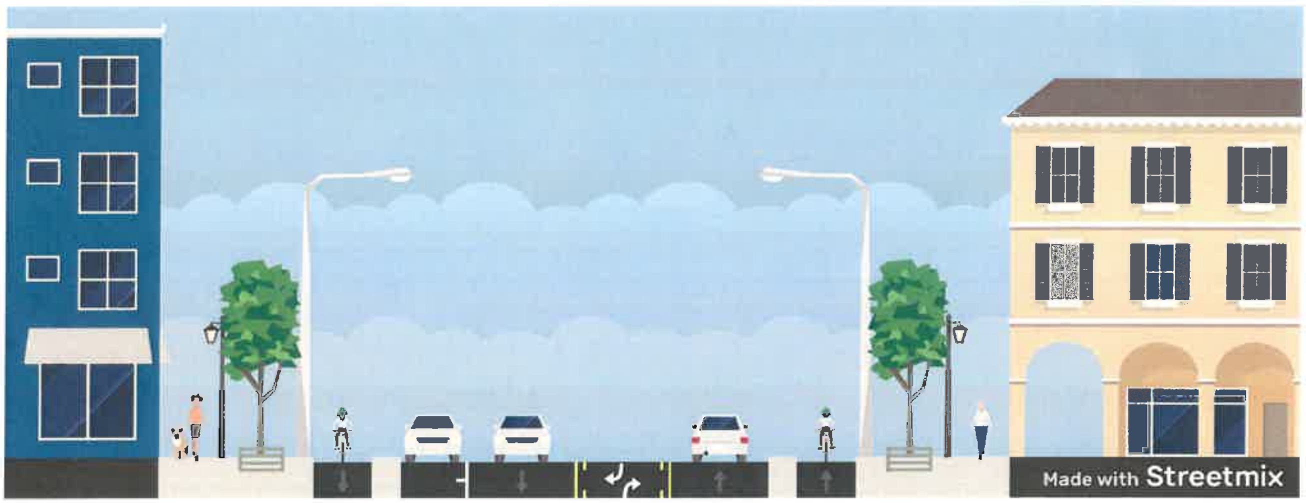
3 PARKLET
Public seating platforms that convert curbside parking spaces into lounge, dining and/or community space. These are often used to accommodate needed space in the pedestrian realm.

4 PROTECTED INTERSECTION
Protected intersections provide physical separation between bicyclists and vehicle traffic, improving sightlines, reducing crossing distances, and providing predictable movements through an intersection.

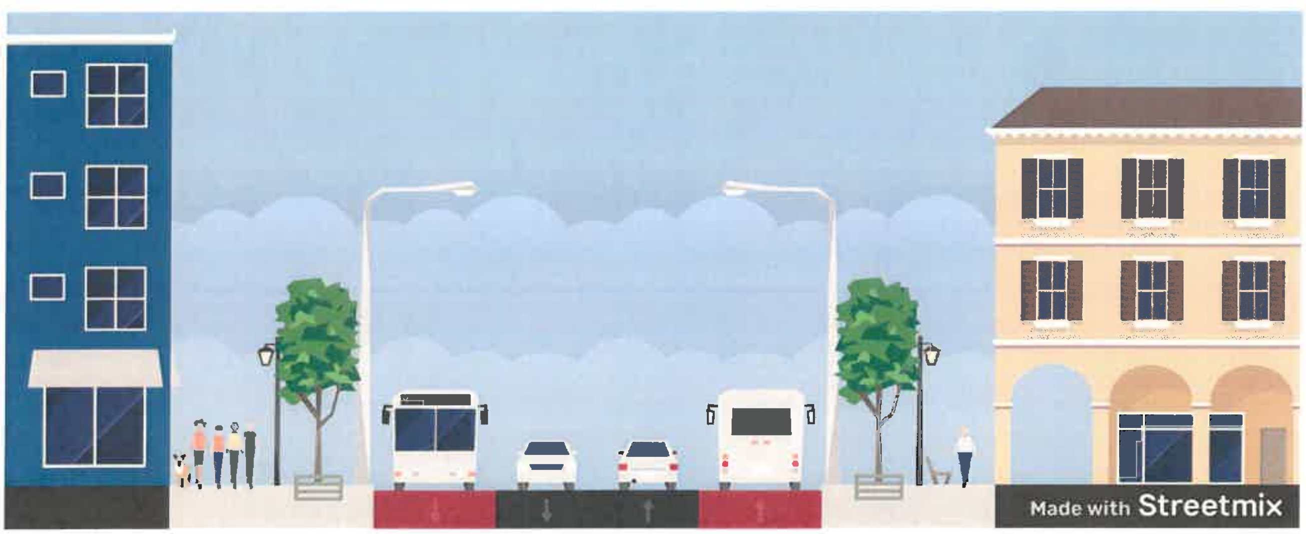
5 TRANSIT
Dedicated transit lanes that improve throughput of buses and reduce vehicle weaving on corridors. These lanes may sometimes be shared by bicyclists and/or right turn vehicles. Bus shelters are appropriate along transit lanes.

6 BIKE INTERSECTION MARKINGS
Green painted crossings that increase the awareness of motorists that bicycles may cross at this location. These marking also provide wayfinding for bicyclists.

Urban Mixed-Use Cross Section Options



80-foot ROW: Two-way segment with center turn lane, parking lane on one side, and separated mobility lane on both sides



80-foot ROW: Two-way segment with transit-only lane on both sides

Urban Mixed-Use Cross Section Options

60-foot ROW: Two-way segment with center turn lane

60-foot ROW: Two-way segment with parking lane on both sides

Suburban Commercial

Suburban commercial streets are heavy commercial corridors with standard suburban style commercial development. This may include malls, strip retail centers, drive-thru restaurants, gas/oil/tire stations, car washes, and other businesses.

Suburban Commercial Example Streets

- NW Prairie View Road
- N Ambassador Drive
- N Boardwalk Avenue
- N Oak Trafficway
- Wyandotte, Washington Street and Madison Avenue in Martin City

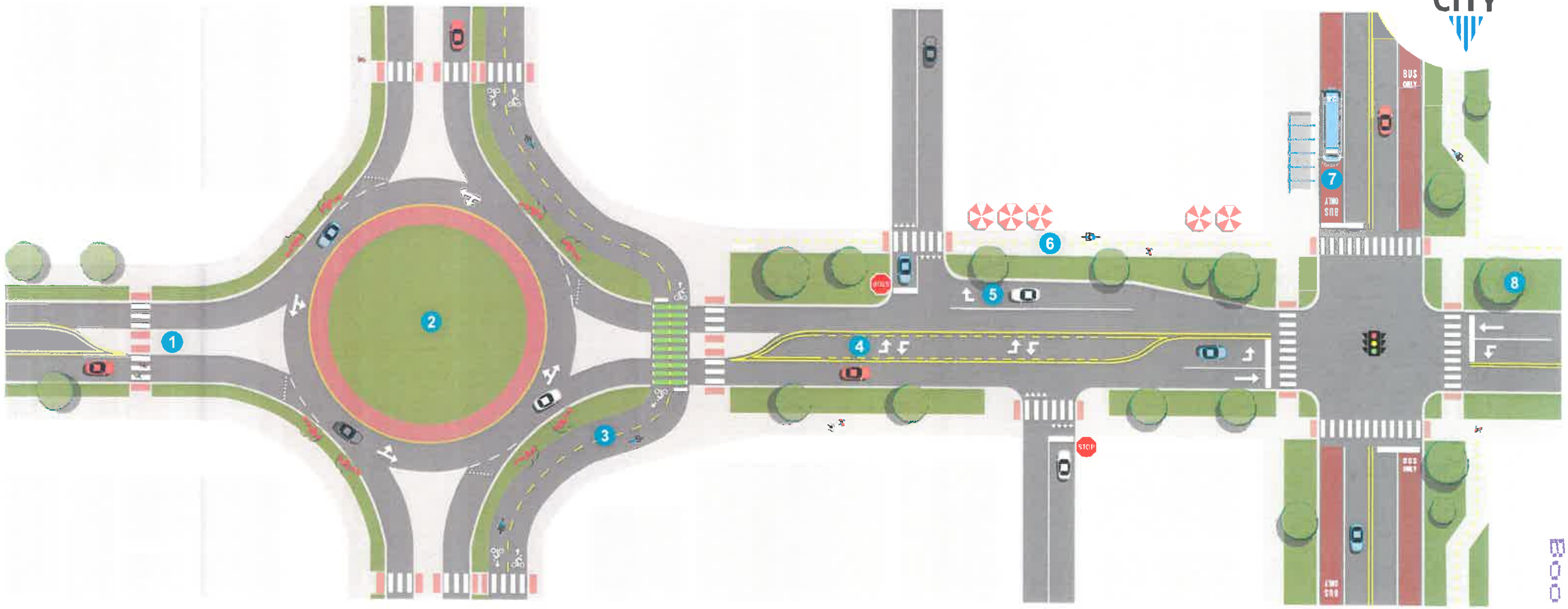
Suburban Commercial Key Characteristics

Target Speed	25 mph
Design Vehicle	SU-30
Control Vehicle	Standard Pump Fire Truck
Right-of-Way Width	80'–120'
Lane Width	10' minimum; 11' when bus is present in that lane
Pedestrian Facilities	Pedestrian zone - 10' minimum, amenity zone - 4' minimum and is typically green space.
Curbside Uses	Landscaping, wayfinding, and transit stops
Micromobility Facilities	Separated mobility lanes with a preference for being at sidewalk level. Shared use path with 12' width preferred.
Transit Facilities	Transit service is possible on Suburban Commercial streets. Refer to "Accommodation for Transit Vehicles" under Design Guidance.
# of Travel Lanes	2 for streets < 20,000 vpd, otherwise 4
Parking	No on-street parking
Green Stormwater Infrastructure	Native plantings in buffer areas and street trees placed behind the sidewalk
Street Activation	Low
Place Type	Open Space/Buffer, Commercial, Mixed Use Community, Mixed Use Neighborhood, Mixed Use Residential, Residential High, Residential Medium, Residential Low, Business Center (BC, IF, CC, NC, N3, N2)
Access Control	Driveways should be minimized by promoting local access roads, shared drive access, right-in/right-out only, and/or minor street access. Access for major generators should be evaluated for appropriate traffic control treatments. Drive aprons shall be designed at their minimum width.

SUBURBAN COMMERCIAL

This conceptual roadway diagram illustrates a range of possible segments for the given street typology and is not intended to represent a continuous roadway condition.

KANSAS CITY



1 PEDESTRIAN REFUGE ISLAND
A median with a refuge area that provides pedestrians a protected area to cross a multilane road in two stages if necessary.

2 ROUNDABOUT
Circular intersection that reduces vehicle speeds, improves traffic flow, and lowers the risk of serious right-angle collisions compared to traditional intersections.

3 TWO-WAY CYCLE TRACK
Separated bike lanes that allow bicycle movements in both directions on one side of the street.

4 TWO-WAY LEFT-TURN LANE
Center lane that provides separation between left-turning traffic and through traffic in areas with high density of access points. Allows drivers to make turns in two stages and wait for appropriate gaps.

5 RIGHT-TURN LANE
Auxiliary lane that provides space for right-turning vehicles to slow before turning onto a side street or driveway. Can reduce rear-end crashes.

6 SHARED USE PATH
A wide path designed for pedestrians, cyclists and other non-motorized travelers that promotes safe, active transportation away from traffic.

7 TRANSIT
Dedicated transit lanes that improve throughput of buses and reduce vehicle weaving on corridors. These lanes may sometimes be shared by bicyclists and/or right turn vehicles. Bus shelters are appropriate along transit lanes.

8 WIDE BUFFER AREA
The shoulder and green space provide a wide buffer between heavy vehicles and pedestrians and cyclists.

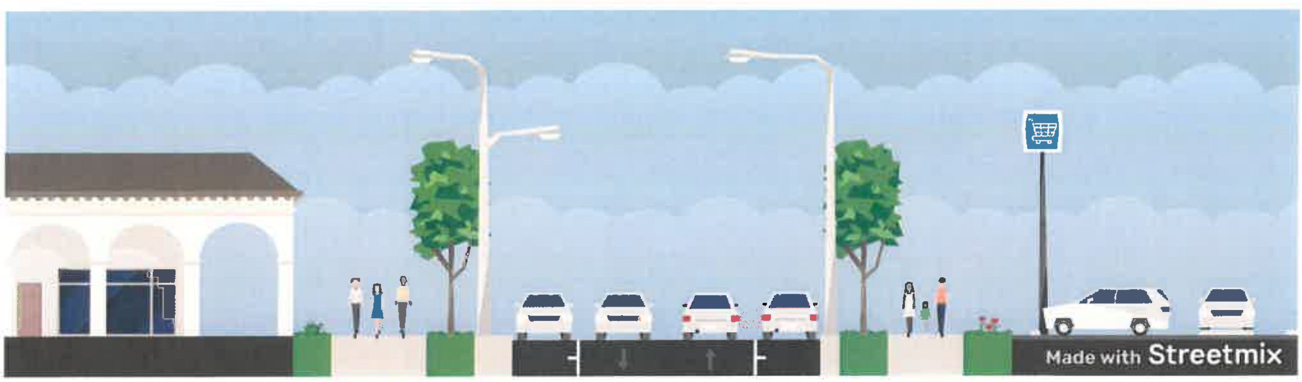
Suburban Commercial Cross Section Options

100-foot ROW: Two-way segment with median and protected two-way mobility lanes

120-foot ROW: Two-way segment with median and transit facilities on both sides

Suburban Commercial Cross Section Options

120-foot ROW: Two-way segment with center turn lane and separated two-way mobility lanes



100-foot ROW: Two-way segment with parking lane on both sides

Thoroughfare

Thoroughfares are longer corridor streets that connect major areas with limited access. They serve through trips and generally meet the definition of arterials.

Thoroughfare Example Streets

- Bannister Road East of I-435
- Troost Avenue South of 75th Street
- 63rd Street Trafficway east of Swope Parkway
- Southwest Trafficway
- NE Antioch Road

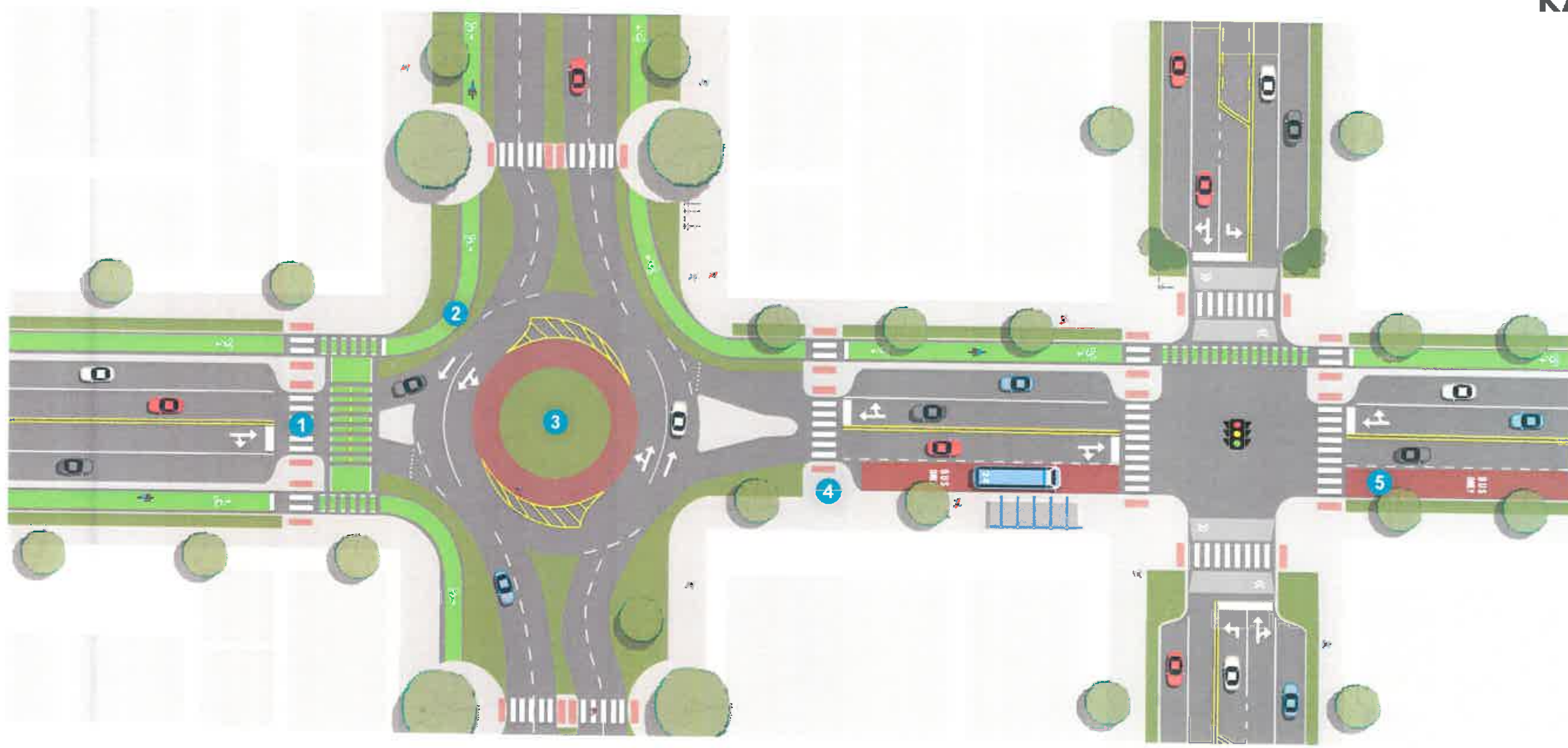
Thoroughfare Key Characteristics

	Typical	Rural Context
Target Speed	30 mph	40–50 mph, depending on access density
Design Vehicle	SU-30	Same
Control Vehicle	Standard Pump Fire Truck	Same
Right-of-Way Width	100′–120′	50′–80′
Lane Width	11′; 12′ when used by heavy trucks	Same
Pedestrian Facilities	Pedestrian zone - 10′ Amenity zone - 5-8′ minimum and is typically green space	Shared use path
Curbside Uses	Landscaping, wayfinding, and transit stops	NA
Micromobility Facilities	Separated mobility lanes	Shared use path
Transit Facilities	Transit service is likely on Thoroughfare streets. Refer to "Accommodation for Transit Vehicles" under Design Guidance.	N/A
# of Travel Lanes	2 for streets < 20,000 vpd, otherwise 4	Same
Parking	No on-street parking	Same
Green Stormwater Infrastructure	Native plantings in buffer areas and street trees placed behind the sidewalk	Ditch
Street Activation	Low	Very Low
Place Type	Light Industrial, Commercial (IF, BC)	Agricultural
Access Control	Driveways should be minimized by promoting local access roads, shared drive access, right-in/right-out only, and/or minor street access. Access for major generators should be evaluated for appropriate traffic control treatments. Drive aprons shall be designed at their minimum width.	Access points should be provided where adequate site distance exists.

THOROUGHFARE

This conceptual roadway diagram illustrates a range of possible segments for the given street typology and is not intended to represent a continuous roadway condition.

KANSAS CITY



1 HIGH VISIBILITY CROSSWALK
A crosswalk that provides increased visibility to motorists through high-visibility pavement markings, signing, and lighting

2 SEPARATED BICYCLE FACILITIES
Bike lanes that are physically divided from vehicle traffic offering a safer and more comfortable experience for cyclists

3 ROUNDABOUT
Circular intersection that reduces vehicle speeds, improves traffic flow, and lowers the risk of serious right-angle collisions compared to traditional intersections

4 CURB EXTENSIONS
Curblines extended into the street, either with concrete or paint, at crossing locations to reduce the crossing distance for pedestrians, make pedestrians more visible to motorists, and provide space for street furniture, lighting fixtures, and traffic signal equipment

5 TRANSIT
Dedicated transit lanes that improve throughput of buses and reduce vehicle weaving on corridors. These lanes may sometimes be shared by bicyclists and/or right turn vehicles. Bus shelters are appropriate along transit lanes