Street Type Selection and Design Parameters

June 15, 2018

Complete Streets Ames

Overview

The conventional approach to street design is based primarily on a roadway's functional classification (arterial, collector, local, etc.), which is a surrogate for motor vehicle traffic volume and speed. Higher classifications (e.g., arterial streets) tend to carry higher volumes of traffic at higher speeds, whereas lower classifications (e.g., local streets) tend to carry lower volumes of traffic at lower speeds. There are several limitations to this approach:

- **Lack of Context Sensitivity** – The current approach lacks a consistent method for making street designs respond appropriately to the surrounding context. South Duff Street and Lincoln Way at Campustown are both classified as arterial streets, but exist in vastly different contexts and should thus be designed differently. Under the current approach, it can be challenging to design major streets that support walkable, vibrant places.
- **Access Versus Throughput** – The current approach assumes a constant relationship between the amount of car traffic and the function of the street. However, two streets can carry the same amount of traffic but serve different functions. A street through downtown might emphasize access and lower speeds, while a suburban street might emphasize throughput (the quick and efficient movement of people) at higher speeds.
- **Preparing for the Future –** As Ames continues to grow, it is important that streets are designed to be compatible with new development types, such as walkable mixed use. The current street design approach is less conducive to designing streets that respond to and support such development patterns.

New Approach

The new approach to street design looks first at the context of the surrounding area and the intended function of the street, then results in streets designed to serve all anticipated users. Three new concepts comprise this new approach:

- **Place types** represent the context of the surrounding area and are simplified categories that combine land use, development patterns, and density. Although not tied to zoning, each place type encompasses several zoning and future land use categories. Place types determine transportation function. For example, in dense mixed-use areas, transportation function emphasizes access and circulation over throughput.
- **Transportation function** exists on a spectrum with one end emphasizing throughput and the other end emphasizing local access and small-scale, localized circulation. Transportation function is determined first and foremost by place type and secondarily by conventional factors (e.g., traffic demand). Transportation function is a continuum, but may be classified for simplicity.
- **Street types** represent common combinations of place types and transportation functions in Ames. Street types are shortcuts to the most common street design situations in the city. They serve as starting points for street design and include a range of design parameters and set of priorities for the inclusion of various street elements (e.g., bike lanes versus on-street parking).

The relationship between these three concepts is shown in Figure 1. Street types are selected by first identifying the appropriate place type for the context, choosing the appropriate transportation function, and then selecting the resulting street type produced by the matrix. In some situations, multiple street type options are appropriate. Selecting between the multiple options requires considering the fine-grained context and constraints within the corridor.

Figure 1: Street Type Selection Matrix

Place Type	Transportation Function: Emphasizes Access	Transportation Function: Balances Access and Throughput	Transportation Function: Emphasizes Throughput
Activity Center	Shared Street, Mixed Use Street	Mixed Use Avenue	n/a
Urban Mix	Shared Street, Mixed Use Street, Neighborhood Street	Mixed Use Avenue	n/a
Residential	Shared Street, Neighborhood Street	Avenue	Thoroughfare, Boulevard
Large-Scale Commercial	Industrial Street	Avenue	Thoroughfare, Boulevard
Industrial	Industrial Street	Avenue	Boulevard

Street Types

What is Access? What is Throughput?

Access describes peoples' ability to reach destinations and individual properties along a street by any mode. Access-oriented streets are typically lower-speed with higher levels of foot traffic.

Throughput describes the efficient movement of people at greater distances, often at higher speeds. Safely maximizing throughput typically requires physically separating modes and limiting the number of intersections and driveways.

Transportation function is determined by answering several questions:

- Are there many destinations along the street?
- Is there much foot or bike traffic (currently or potentially)?
- Is the street an important link for cross-town travel?

Place Types

Place types represent the context of the surrounding area and are simplified categories that combine land use, development patterns, and density. Identifying the most appropriate place type—considering the existing and future context of an area—is the first step in selecting an appropriate street type. Individual street projects may pass through multiple place types, which may mean transitioning between multiple street types along the corridor.

Summary of Place Types

Common development patterns, land uses, and character of the five place types in Ames are illustrated in the table below. These place types relate to, but do not replace, the City's zoning classification system.

Table 1: Place Type Descriptions

Place Type	Description	Development Density	Typical Land Uses	Building Distance from Street	Amount of Walking, Bicycling, and Transit Trips Generated	Examples
Activity Center A	Areas with high amounts of circulation across and along streets, with a high proportion of people accessing buildings by walking or on bike	Moderate to High	Housing Retail Education Office Parking	Close Setbacks between buildings	High	Downtown, Campustown, Somerset Village
Urban Mix U	Areas or corridors with a mix of uses, with people accessing buildings using multiple modes of transportation	Moderate	Housing Retail Education Office Parking	Close to Moderate Buildings attached or detached and 1-3 stories	Moderate to High	Lincoln Way Corridor, Hospital/Medical District, ISU Research Park
Residential R	Areas with single and multi-family homes, oftentimes with adjacent schools and parks	Low to Moderate	Housing Education Parks	Close to Moderate Setbacks between buildings	Moderate	Numerous neighborhoods throughout Ames
Large Scale Commercial C	Areas oriented toward automobile traffic, with parking lots placed between streets and buildings	Low to Moderate	Retail Office Parking	Moderate to Far Setbacks between buildings	Low to Moderate	North Grand Mall, South Duff Corridor,
Industrial I	Areas with small to large, often sprawling buildings used for manufacturing and employment	Low	Industrial Retail Office	Far Setbacks between buildings	Low	East Side Employment District / Dayton Avenue Corridor

Street Types

Street types are unique to the conditions and contexts of Ames and provide a starting place for the design of individual streets in a way that implements the objectives of the Long Range Plan, Comprehensive Plan, individual area or corridor plans, and urban design goals. The street types ensure that all modes of travel are safely accommodated, while some prioritize different modes. For example, Mixed Use Streets prioritize walking while Thoroughfares prioritize transit and driving.

Multiple Typologies Within One Project

Because land use contexts (and therefore place types) can change throughout the length of a corridor, multiple street types may be applied to different segments of a single roadway project. For example, a corridor may be categorized primarily as an Avenue, however a commercial node along it may result in a segment being classified as a Mixed Use Avenue. Street design elements will change accordingly, reflecting the designated street type and its economic and mobility objectives.

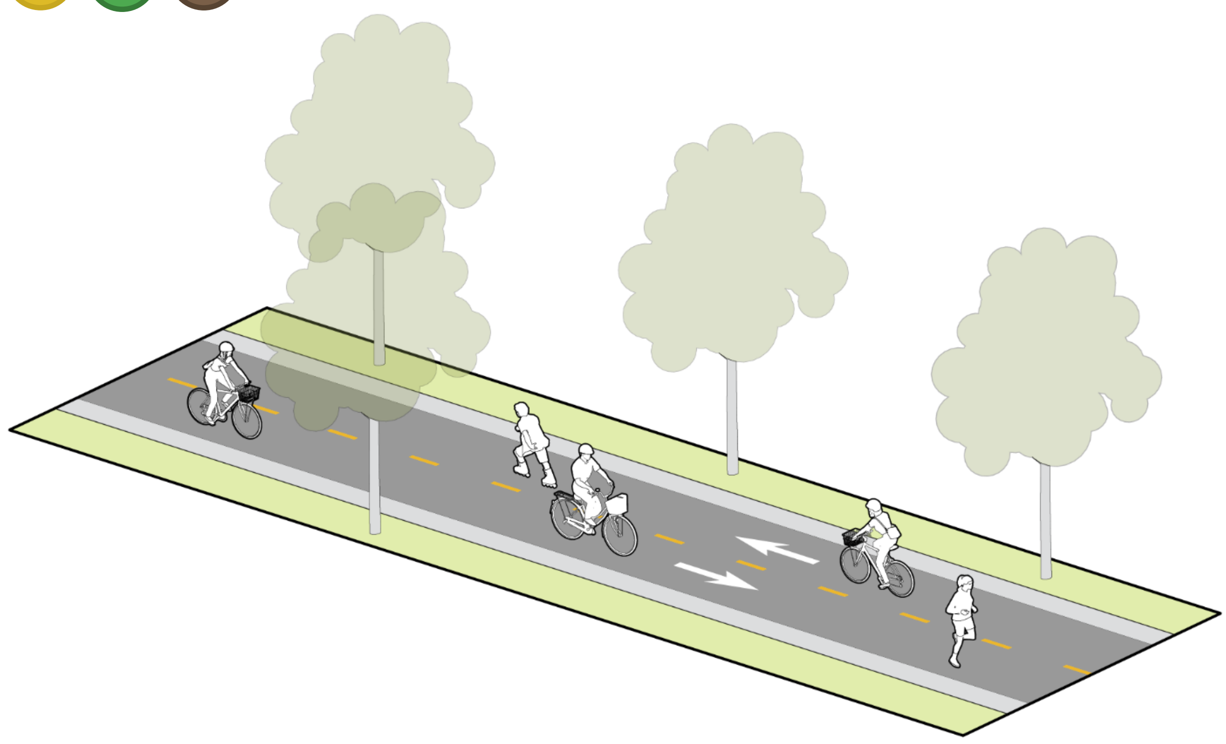
Summary of Street Types

There are nine street types that are used as starting points for street design projects. **Street type is determined by place type and transportation function**. Each street type is flexible, and provides guidance for the overall design of a street. The Greenway street type is included because—although it is not a type of street—greenways are important elements of Ames' multimodal transportation system.

	Street Type	Description	Transportation Function	Relevant Place Types
	Greenway	Although not actually a type of street, shared use paths in independent alignments are important parts of the multimodal network. The preferred width for paths is 10 to 12 feet (8 feet minimum in constrained environments) with 3-foot-wide clear zones on each side. Ideally, paths will have at least 8 feet of clearance on each side from buildings or other hard vertical elements.	Emphasizes nonmotorized throughput; Pedestrian and bicycle only	All
Access Emphasis	**Shared Street**	A street or alley with no curbs or separate areas for various types of transportation.	Emphasizes nonmotorized access; Pedestrians have priority	Activity Center, Urban Mix, Residential
	Mixed Use Street	A street with high amounts of a diverse mix of retail, housing, office and/or education, with people using several types of transportation to circulate.	Emphasizes access	Activity Center, Urban Mix
	Neighborhood Street (including Bicycle Boulevard variant)	A low traffic street with housing and separated walkways, sometimes with on-street parking. A variation called "Bicycle Boulevard" is available, which optimizes the street for bicycle traffic through traffic calming and diversion; also includes pedestrian enhancements	Emphasizes access Bicycle Boulevard variations increase the emphasis on nonmotorized throughput	Urban Mix, Residential
	Industrial Street	A low-traffic street, often with a high percentage of truck traffic, accessing centers of manufacturing and large-scale retail.	Emphasizes access and freight movement	Industrial, Large Scale Commercial
Balance of Access and Throughput	**Mixed Use Avenue**	A street with high amounts of a diverse mix of retail, housing, office and/or education, with people using several types of transportation to circulate, but with increased transit and motor vehicle demand compared to that of a Mixed Use Street	Balances access and throughput	Activity Center, Urban Mix
	Avenue	A street with a moderate amount of traffic, wider than a Neighborhood Street. These may include on-street parking and bike lanes.	Balances access and throughput	Residential, Large Scale Commercial
Throughput Emphasis	**Thoroughfare**	A street with moderate to high amounts of traffic, used most often used for longer distance travel and automobile oriented uses.	Emphasizes throughput	Residential, Large Scale Commercial
	Boulevard	A street with moderate to high amounts of traffic, with a landscaped median used to separate lanes of traffic and provide refuge for crossing pedestrian and bicycle traffic.	Emphasizes throughput	Residential, Large Scale Commercial, Industrial

Street Type Typical Graphics

Greenway A U R C I



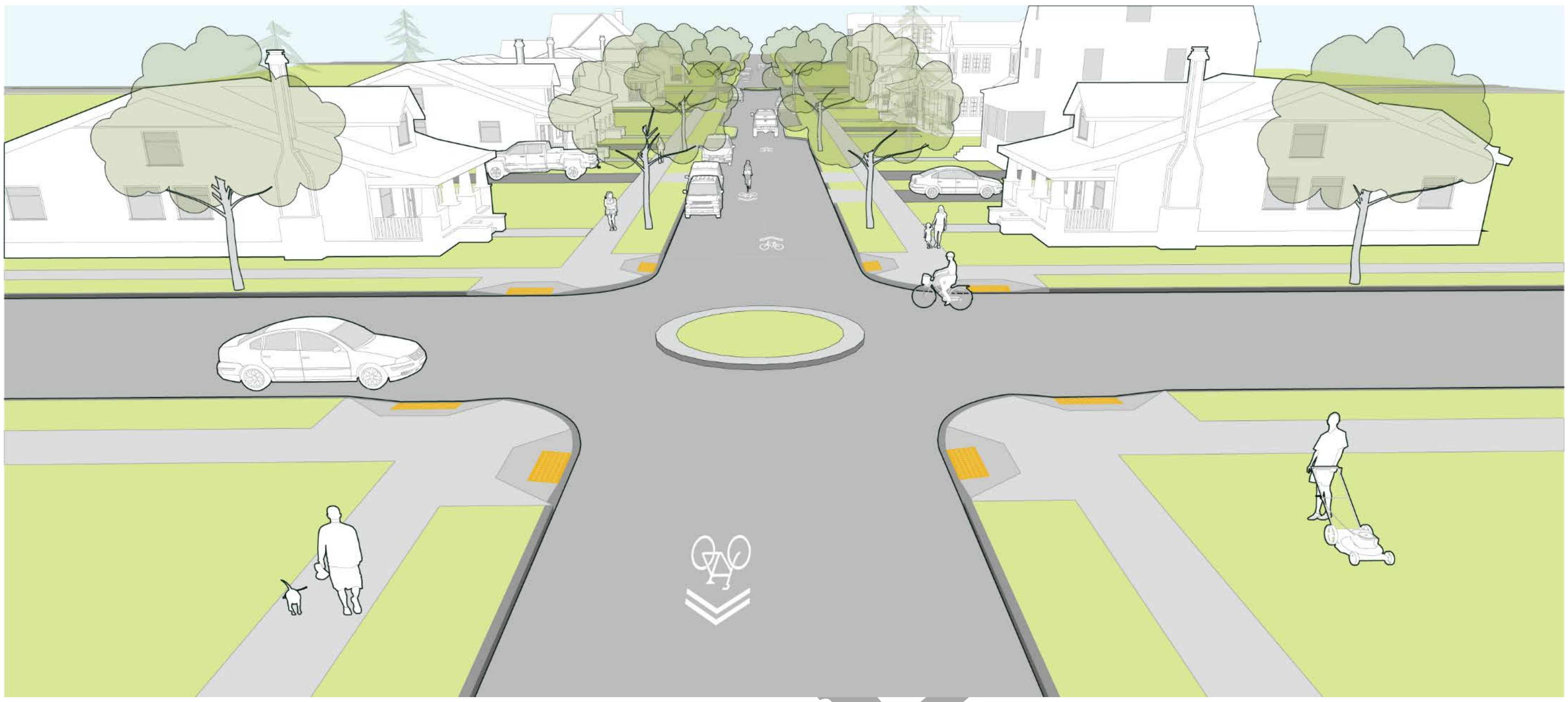
Shared Street A U R

Mixed Use Street A U

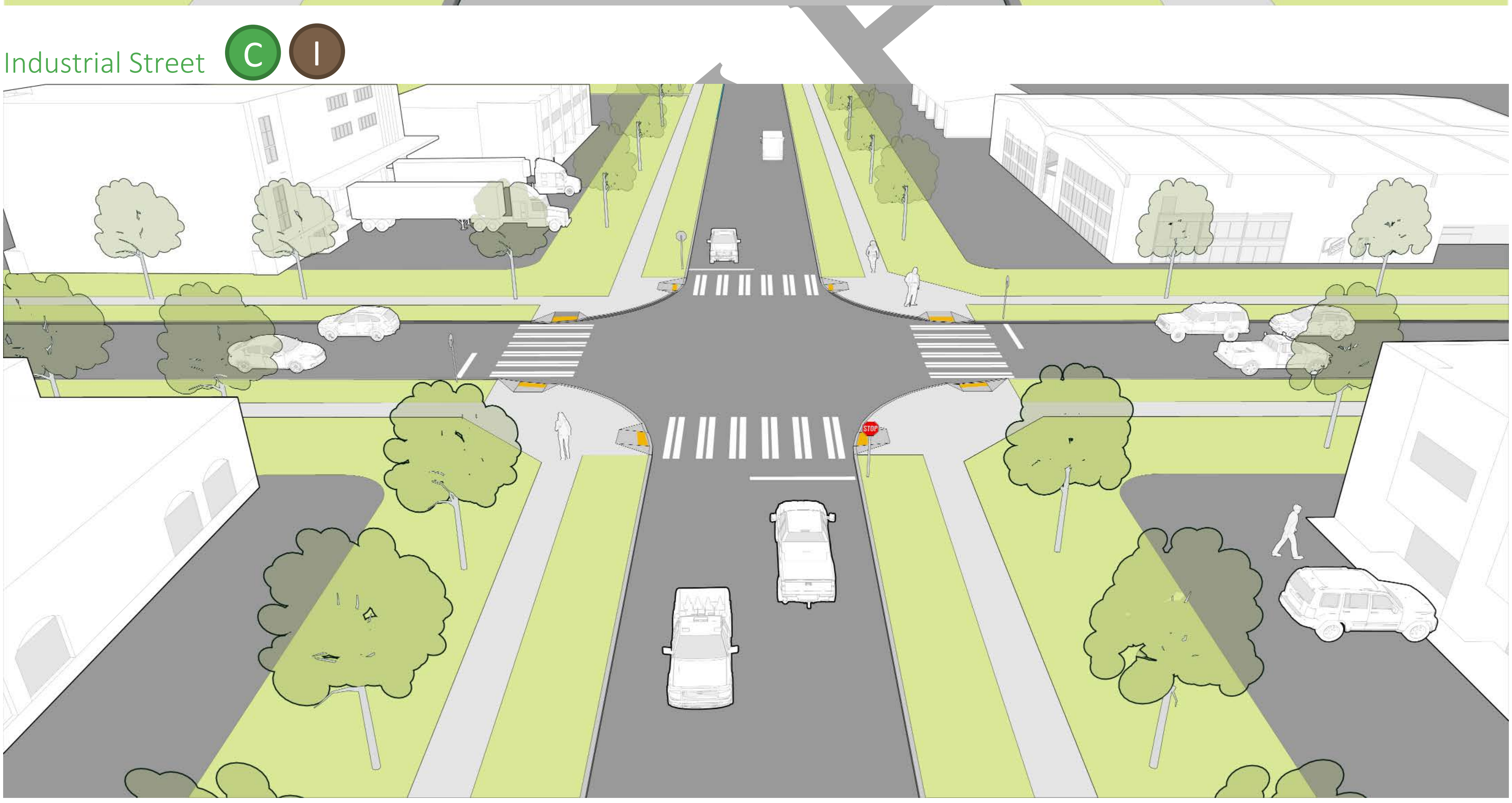
Complete Streets Ames

Neighborhood Street U R

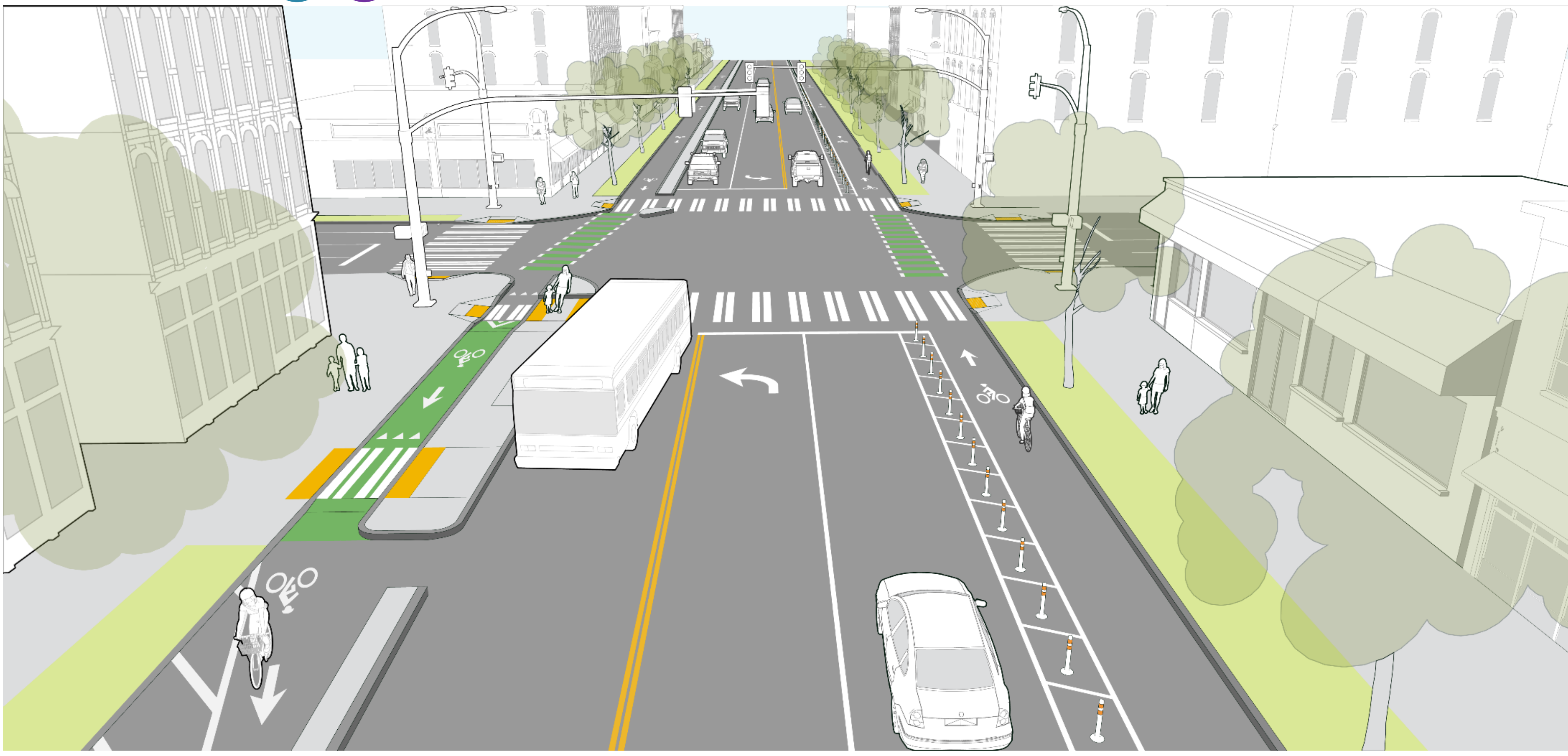
Neighborhood Street (Bicycle Boulevard Variant) U R



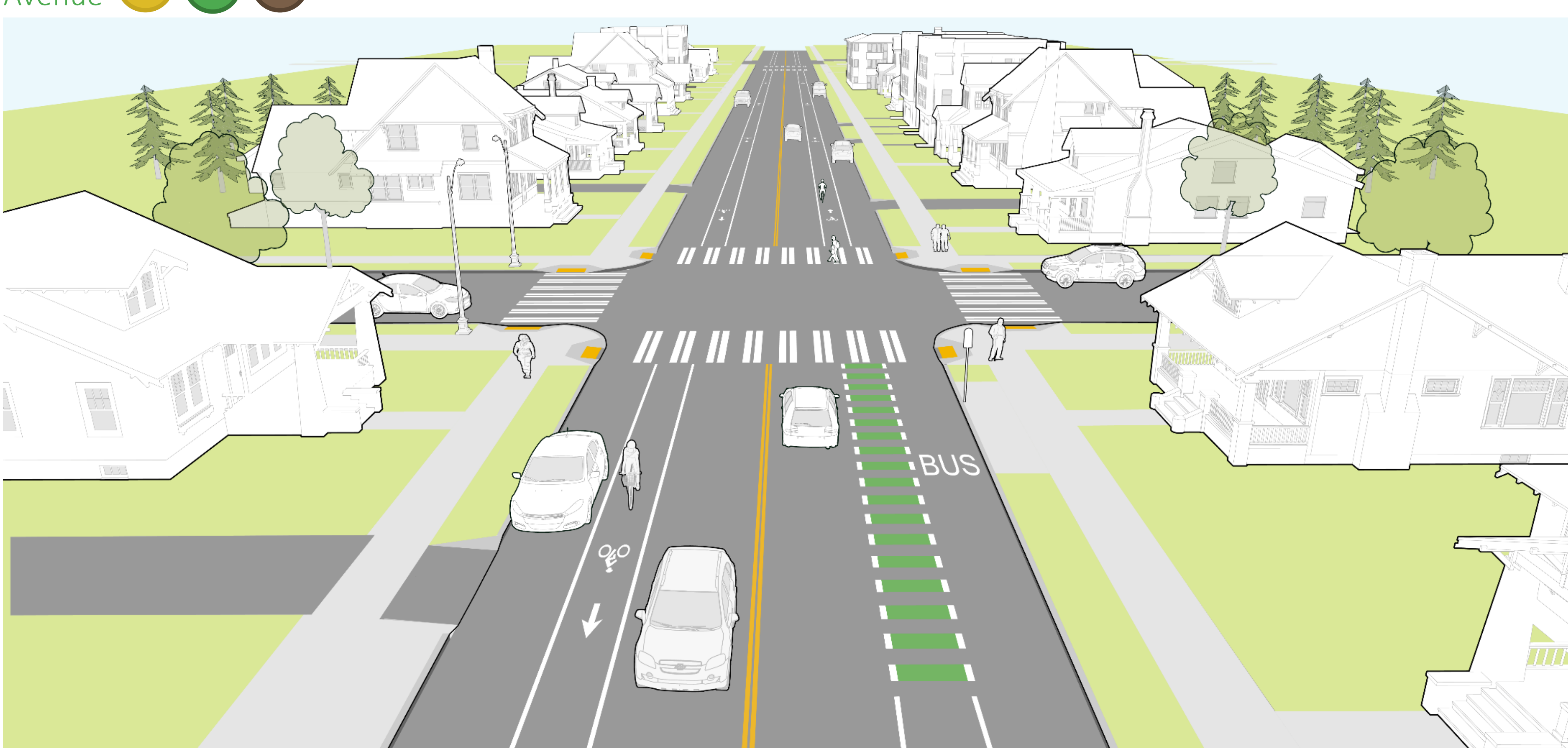
Industrial Street C I



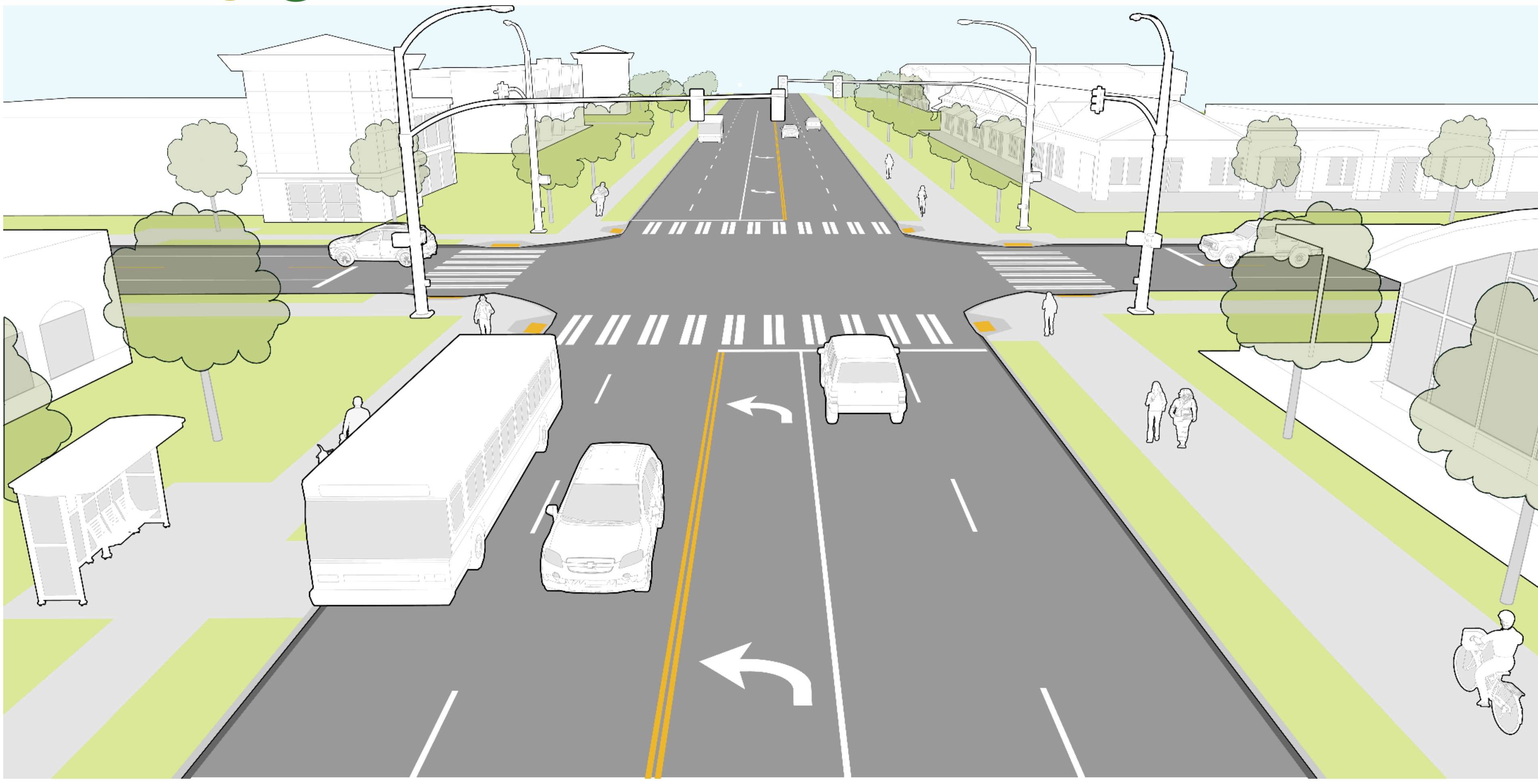
Mixed Use Avenue A U



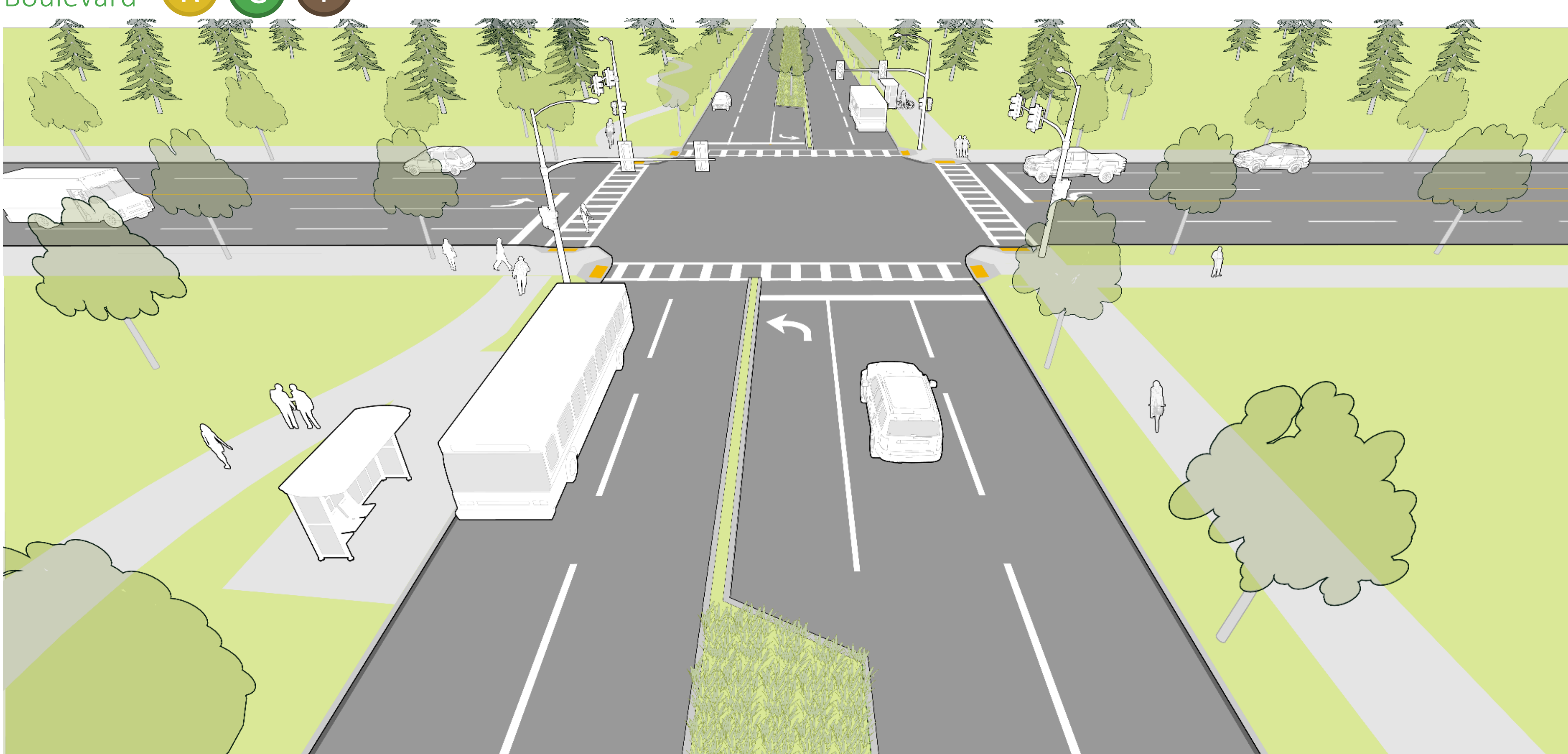
Avenue R C I



Thoroughfare R C



Boulevard R C I



Roadway Parameters

Roadway parameters for individual street types are determined using the table below and the accompanying footnotes and clarifications. Deviation from the ranges specified should be carefully considered and occur rarely. When deviations occur, they will be documented appropriately.

Typology	Total Pedestrian Zone Width		# of Travel Lanes[1]	Traveled Way / Lane Width[2]				Center Turn Lane / Median[3]	Default Bikeway Type[4]	Default On-Street Parking[5]	Target Speed[6] (miles per hour)	Corner Radii[7]		Typical ADT[8]
	Pref.	Min.		Min.	Bus Route Min.	Pref.	Max.					Pref.	Max.	
Shared Street	N/A	N/A	No centerline	20' Total	N/A	Varies	N/A	Not compatible	N/A	None	10	0'	10'	<500
Mixed Use Street	22'	8'	No centerline	20' Total	25' Total	25' Total	30' Total	Not preferred	Shared roadway	Parallel preferred, Reverse angled acceptable	20	5'	15'	<3,000
Neighborhood Street (including Bicycle Boulevard variant)	15'	7'	No centerline	20' Total	N/A	25' Total	35' Total	Not compatible	Shared roadway or bicycle boulevard	Non-delineated	20	5'	15'	<3,000
Industrial Street	11'	7'	2	25' Total	25' Total	25' Total	36' Total	Optional	Shared roadway	None	25	20'	35'	<3,000
Mixed Use Avenue	22'	7'	2-4	10' Lanes	11' Outer Lanes	11' Lanes	11' Lanes	Optional	Bike lanes or separated bike lanes	Optional, parallel preferred	25	5'	20'	3,000 to 25,000
Avenue	16'	7'	2	10' Lanes	11' Outer Lanes	11' Lanes	11' Lanes	Optional	Bike lanes or separated bike lanes	Optional	25	10'	25'	1,000 to 15,000
Thoroughfare	14'	7'	2-4	10' Lanes	11' Outer Lanes	11' Lanes	12' Lanes	Standard	Separated bike lanes or shared use path	None	35	15'	30'	10,000 to 25,000
Boulevard	18'	9'	2-6	11' Lanes	11' Outer Lanes	12' Lanes	12' Lanes	Median standard	Separated bike lanes or shared use path	None	35	15'	30'	>3,000

[1] Number of Travel Lanes:

- Specified number of travel lanes represents the default or typical configuration. Street designs can deviate (e.g., a four-lane Mixed Use Avenue) if warranted by unique context or constraints. Thorough documentation should be provided for any deviations.

[2] Lane Width:

- For Mixed Use Street, Neighborhood Street, and Industrial Street, total width is for the traveled way exclusive of on-street parking.
- The bus route minimum width applies to designated bus lanes, the outside lane on bus routes, or the total traveled way width on bus routes along Mixed Use Streets and Industrial Streets.
- The maximum lane width may be used on truck routes. The following typologies are not compatible with truck routes: Shared Street, Neighborhood Street, Mixed Use Street, and Avenue. The Mixed Use Avenue typology may be applied to truck routes with careful consideration of impacts on bicycle and pedestrian modes.

[3] Center Turn Lane / Median:

- Center turn lanes and medians are not preferred for Mixed Use Streets because they increase crossing distances for pedestrians and consume right-of-way that could otherwise be used for sidewalk cafés, etc. To facilitate intersection operations, on-street parking can be removed to allow left turn lanes as needed in order to maintain LOS E or better during peak periods.
- For typologies in which a median is not preferred or optional, it may still be beneficial to provide crossing islands or non-continuous centerline traffic-calming islands in certain locations.

[4] Default Bikeway Type:

- The default bikeway type indicated the type of bikeway that is typically most appropriate for the street typology. This does not indicate a minimum or maximum standard. Designers should consider traffic speeds and volumes when selecting a bikeway. If speeds or volumes differ from the ranges identified in the table for the selected street type, alternative bikeway treatments should be considered.
- Shared Streets do not separate modes; therefore, no dedicated bikeway type is needed.
- Shared lanes or bicycle boulevards are generally appropriate on streets with traffic volumes at or below 3,000 vehicles/day and posted speeds at or below 25 mph. These conditions are often comfortable for a wide range of bicyclists and thus they may be designated as bicycle routes to complement or comprise a large percentage of a bicycle network in a community. For the purposes of bikeway selection, it is assumed that posted speeds are approximately the same as operating speeds. If operating speeds differ from posted speeds, then operating speed should be used instead of posted speed. However, dedicated bikeways may be warranted in special circumstances, such as near elementary schools.
- Bike lanes are the preferred facility type when traffic volumes are between 3,000 to 6,000 vehicles/day and posted speeds are 25 to 30 mph. Within this range, buffered bike lanes are preferred in order to provide spatial separation between bicyclists and motorists, especially as volumes or speeds approach the limits. Bike lanes should be a minimum of 6 feet wide where adjacent to on-street parking. Bike lanes may be 5 feet wide where on-street parking does not exist or in constrained environments.

- Separated bike lanes and shared use paths are the preferred facility type as traffic volumes exceed 6,000 vehicles/day or vehicle speeds exceed 30 mph. However, because many higher-traffic streets (especially Thoroughfares) have very constrained rights-of-way, it may be infeasible to provide these facilities. In constrained corridors, the solution will often be to provide parallel routes or Bicycle Boulevards on lower-traffic streets.
- Shared use paths may be acceptable design solutions in lieu of separated bike lanes in land use contexts where both walking and bicycling volumes are relatively low and are expected to remain low. The shared use path may be located on one or both sides of the street, depending upon bicycle and pedestrian network connectivity needs. As volumes increase over time, the need for separation should be revisited. Where land use is anticipated to add density over time, right-of-way should be preserved to allow for future separation of bicyclists and pedestrians.
- If the Ames Mobility 2040 Long Range Transportation Plan or any future bike plans specify a bikeway facility that differs from the default facility shown in the table, then the facility which provides the highest level of service for bicyclists should be provided.

[5] Default On-Street Parking:

- The table indicates the typical treatment of on-street parking for each typology. Other options for on-street parking can be explored for each typology so long as alternative configurations are compatible with the modal priority and goals for the project.
- The default width for parallel parking lanes is 7 feet. Wider (8-foot) lanes may be appropriate where adequate pavement is available. Decisions regarding parking lane width when adjacent to bike lanes should consider the amount of parking, parking turnover rates, and vehicle types. When parallel parking and bike lanes are provided adjacent to each other, the minimum combined width of the two is 15 feet, with15 feet preferred.
- Shared Streets may include on-street parking in randomly-spaced stalls. Street designs should avoid continuous rows of cars.
- Avenue streets may include on-street parking if sufficient space is available.
- Thoroughfares and Boulevards may include on-street parking in urban contexts (Activity Center, Urban Mix).

[6] Target Speed:

- Target speed is the speed at which people are expected to drive. The target speed is intended to become the posted speed limit. Per the Institute of Traffic Engineers (ITE; *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*, 2010), the target speed should be set at "the highest speed at which vehicles should operate on a thoroughfare in a specific context, consistent with the level of multimodal activity generated by adjacent land uses to provide both mobility for motor vehicles and a safe environment for pedestrians and bicyclists." In other words, target speeds—and by extension posted speed limits and design speeds—should balance the needs of all anticipated street users based on context.
- Design speed is a tool used to determine the various geometric features of the roadway. When designing a roadway, it is preferable for the design speed to equal the target speed. However, in some cases a design speed higher than the target speed is necessary, whether due to existing roadway geometric features (in the case of reconstruction) or design vehicle requirements. For example, a residential street's design speed should typically not exceed its target speed, whereas in an industrial area some leeway should be possible to accommodate turning movements of heavy vehicles. Generally, people will naturally drive at approximately the design speed of the roadway, regardless of the posted speed limit. As is feasible, measures (examples of which are listed below) should be considered to reduce the design speed to match the target speed.
- ITE outlines 10 measures that can be used to lower design speeds and thereby achieve appropriate target speeds:
    - Setting signal timing for moderate progressive speeds from intersection to intersection;
    - Using narrower travel lanes that cause motorists to naturally slow their speeds;
    - Using physical measures such as curb extensions and medians to narrow the traveled way;
    - Using design elements such as on-street parking to create side friction;
    - Minimal or no horizontal offset between the inside travel lane and median curbs;
    - Eliminating superelevation (banking of the roadway);
    - Eliminating shoulders in urban applications, except for bicycle lanes;
    - Smaller curb-return radii at intersections and elimination or reconfiguration of high-speed channelized right turns;
    - Paving materials with texture (e.g., crosswalks, intersection operating areas) detectable by drivers as a notification of the possible presence of pedestrians; and
    - Proper use of speed limit, warning, advisory signs and other appropriate devices to gradually transition speeds when approaching and traveling through a walkable area.

[7] Corner Radii:

- The values in this column refer to the actual radii of curb returns. In many cases, the effective corner radii will be significantly greater than these values. For example, a street with a 5-foot curb return and on street parking and bike lanes may have an effective corner radius in excess of 25 feet.
- Small corner radii are an effective way to make design speed match target speed. Historically, increased corner radii are often considered in locations where a significant number of trucks, buses, and other large vehicles make right-hand turns. However, a better solution is to incorporate truck aprons to increase the effective corner radii for heavy vehicles while retaining the traffic-calming effect of smaller corner radii for passenger vehicles.
- The values in this column assume that right-turn slip lanes are not present. If a radius over the maximum value for a street in the Thoroughfare, Boulevard, or Industrial Street typology is deemed necessary, a right-turn slip lane should be provided and a refuge (or "pork chop" island) should be included. The design of right-turn slip lanes should create a 55 to 60 degree angle between motor vehicle flows and should either be stop-controlled or have a raised crossing.

[8] Typical ADT:

- The values in this column represent the typical average daily traffic volume (ADT) compatible with each typology. Traffic volumes higher or lower than the typical value may be appropriate depending on context and ability to adequately control speeds and maintain operational efficiency. A traffic study should be performed for streets nearing the upper limits of these ranges.

Supporting Transit in Complete Streets

CyRide operates on all street types in Ames. Due to the size and operational characteristics of buses, it is often necessary to adjust the geometric design, pavement markings, or traffic control of a street to accommodate transit effectively. However, some of the design treatments to accommodate transit (e.g., wider lanes or larger corner radii at intersections) may have an "anti-traffic calming" effect of encouraging higher passenger vehicle speeds. As such, transit-accommodating design treatments should be applied only where transit operates or may operate in the future, and are not applied wholesale to the street typologies in the Complete Streets Plan.

Case-by-case design flexibility is incorporated into the Complete Streets design process and will apply to bus routes by shifting design parameters to accommodate transit. This may include wider lanes, larger corner radii, lane encroachment areas, alternative bikeway treatments, and more. The design parameters for each street type include ranges of values, which in most cases will provide satisfactory results for transit. In cases where values outside of the parameters are necessary or desirable to accommodate transit, the design engineer should consider and balance the needs of all modes while emphasizing the safety of all users, especially pedestrians and bicyclists.

Bus Stops and Bikeways

Transit stops should be safe and efficient for all users, with minimal negative impacts on transit operations. One area of particular interest is the design of bus stops located along bike lanes and separated bike lanes. The goal in these locations is to reduce conflicts and minimize delays. Bus stops should be provided curbside (against a curb) in most instances, as this is the most functional location for a bus stop. Designs that require passengers to cross bike lanes when boarding or alighting should be avoided. Designs that require buses to pull out of the flow of motorized traffic are also not desirable.

Based on common roadway and bikeway configurations, transit operations, and other considerations, two primary bus stop designs exist (with multiple variations possible):

1. Conventional Bus Stop with Interrupted Bike Lane (bus enters/crosses bikeway)
2. Floating Bus Stop (bikeway is directed behind passenger waiting area)

Conventional Bus Stop with Interrupted Bike Lane

Conventional bus stops with interrupted bike lanes are traditional curbside bus stops adjacent to an on-street bikeway. At these stops, buses enter or cross the bike lane in order to pull to the curb. Bike lanes can have solid or dashed lines and green pavement can be used to increase awareness of potential conflicts. When a bus is blocking the bike lane, bicyclists stop and wait until the bus proceeds, or merge into the motor vehicle travel lane.

Conventional bus stops with interrupted bike lanes require less space than floating bus stops, but provide less separation between buses and bicyclists. This type of stop is best utilized at locations with lower boarding/alighting levels and/or on streets with lower speed and lower volume traffic.

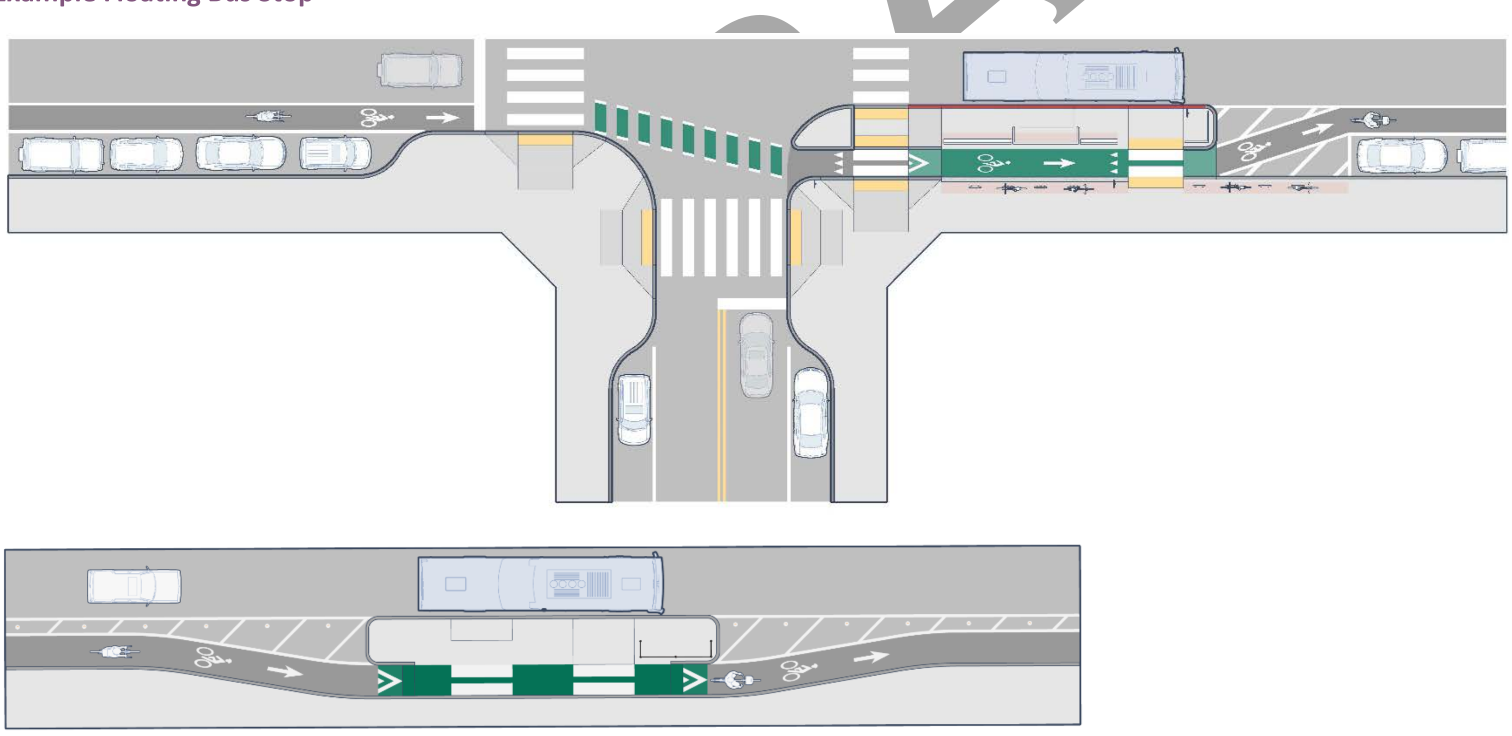
Example Conventional Bus Stop with Interrupted Bike Lane

Floating Bus Stops

Floating bus stops are sidewalk-level platforms built between the bikeway and the roadway travel lane. Floating bus stops direct bicyclists behind the bus stop, reducing or eliminating most conflicts between buses and bicyclists, and expanding available sidewalk space. By eliminating bus and bicyclist interaction, floating bus stops have safety benefits for bicyclists. This design can also benefit pedestrians, as the floating bus stop doubles as a pedestrian refuge, which if designed efficiently, can shorten crossing distances and enable shorter signal cycles.

Floating bus stops are recommended for use with separated bike lanes, but can also be used with standard and buffered bike lanes.

Example Floating Bus Stop



Pedestrian Zones

The pedestrian realm is one of the most vibrant and active portions of the right-of-way. Throughout the city, these areas play a critical role in the character, function, enjoyment and accessibility of neighborhoods.

The function and design of the pedestrian realm significantly impacts the character of each street. Extending from curb to building face or property line, this area includes sidewalks, street trees, street furniture, signs, green stormwater infrastructure (GSI), street lights, bicycle racks, and transit stops. They are places of transition and economic exchange as restaurants engage the public space and retailers attract people to their windows and shops.

The pedestrian realm is not a singular space, but is composed of distinct usage zones performing unique functions in the overall operation of the street. Although boundaries between zones may blur and blend, the overall function of each zone generally remains consistent.

Frontage Zone　　Clear Zone　　Amenity Zone

Pedestrian Zone Parameters

Typology	Frontage Zone[1] Door swings, awnings, café seating, retail signage and displays, building projections, planters, landscape areas		Clear Zone[2] Clear space for pedestrian travel, should be clear of any and all fixed obstacles.		Amenity Zone[3] Street lights, utility poles, street trees, landscaping, bike racks, parking meters, transit stops, street furniture, signage		Total Pedestrian Zone Width[4] Excluding setback	
	Preferred	Minimum	Preferred	Minimum	Preferred	Minimum	Preferred	Minimum
Shared Street	Shared Streets do not have defined zones. Rather, amenities, greenscape, and clear zones suitable for pedestrian, bicycle, and very low-speed motor vehicle traffic are intermingled.						Varies	Varies
Mixed Use Street	4’	0’	10’	6’	8’	2’	22’	8’
Neighborhood Street	2’	0’	5’	5’	8’	2’	15’	7’
Industrial	2’	0’	5’	5’	4’	2’	11’	7’
Mixed Use Avenue	4’	0’	10’	5’	8’	2’	22’	7’
Avenue	2’	0’	6’	5’	8’	2’	16’	7’
Thoroughfare	2’	0’	6’	5’	8’	2’	14’	7’
Boulevard	2’	0’	6’	5’	8’+	4’	18’+	9’

[1] Frontage Zone:

- Frontage zone is measured from edge of right-of-way to the edge of the clear zone.
- Where buildings are located against the back of the sidewalk and constrained situations do not provide width for the Frontage Zone, the effective width of the clear zone is reduced by 1 foot as pedestrians will shy away from the building edge.
- Wider frontage zones are acceptable where conditions allow. The preferred width of the Frontage Zone to accommodate sidewalk cafes is 6 to 8 feet.

[2] Clear Zone:

- In locations with severely constrained rights-of-way, it is possible to provide a narrower clear zone. The Americans with Disabilities Act (ADA) minimum 4-foot wide clear zone can be applied using engineering judgement and should account for a minimum 1-foot shy distance from any barriers. If a 4-foot wide clear zone is used, 5-foot wide passing zones are required every 200’. Driveways meet the criteria of ADA-compliant passing zones.
- For any sidewalk intended to also convey bicycle traffic (i.e. shared use path), the clear zone should be a minimum of 10 feet wide. For short segments through constrained environments, 8-foot wide shared use paths are acceptable.

[3] Amenity Zone:

- The minimum width necessary to support standard street tree installation is 7 feet.
- Utilities, street trees, and other sidewalk furnishings should be set back from curb face a minimum of 18 inches.
- Green Stormwater Infrastructure (GSI) features typically require a minimum of 7 feet of width. The final dimensions—if GSIs are to be included—will be established based on the context of each landscape area.
- Where on-street parking is not present, a wider Amenity Zone should be prioritized over the width of the Frontage Zone.
- The preferred width of the Amenity Zone to accommodate sidewalk cafes is 6 to 8 feet.
- Shared Streets include lighting, landscaping, bike racks, furnishings, and other elements, but not in a defined zone.

[4] Total Width:

- The minimum total width for any street with transit service is 8 feet (preferably 10 feet) in order to provide space for a minimum 5-foot wide by 8-foot deep landing zone.
- The total width for Shared Streets is from façade to façade and serves pedestrian, bicycle, and motor vehicle traffic.

Street Type Priorities

The following matrix provides guidance for designers when weighing tradeoffs when faced with budgetary constraints, limited right-of-way, and operational challenges. Judgments regarding the inclusion of certain design elements (e.g., bike lanes) or where to allocate additional width where right-of-way allows should be based on the priorities outlined in this matrix depending on typology. **Features that are indicated to be medium or lower priorities should not be dismissed from inclusion unless constraints make it infeasible to include all default elements for the typology.**

If beneficial, we could add numbers to each cell in the matrix below to indicate a more fine-grained ranking of priorities.

	Pedestrian Realm & Crossings						Roadway				
Typology	Frontage Zone	Pedestrian Clear Zone	Amenity Zone	Curb Extensions, Parklets, and other Buffers	Crossing / Refuge Islands	Marked Crosswalks*	Traveled Way / Lane Width	On-Street Parking	Dedicated Bikeway	Median / Center Turn Lane	Traffic Calming / Speed Management Features
Shared Street	Medium	Higher	Medium	Not Compatible	Not Compatible	Lower	Lower	Lower	Not Compatible	Not Compatible	Higher
Mixed Use Street	Higher	Higher	Higher	Higher	Lower	Higher	Lower	Higher	Lower	Not Compatible	(grey)
Neighborhood Street	Lower	Higher	Medium	Higher	Lower	Lower	Lower	Medium	Lower	Not Compatible	(grey)
Industrial Street	Lower	Higher	Medium	Medium	Medium	Medium	Higher	Lower	Medium	Lower	Lower
Mixed Use Avenue	Higher	Higher	Medium	Higher	Medium	Higher	Lower	Medium	Higher	Medium	Medium
Avenue	Lower	Higher	Higher	Medium	Higher	Higher	Lower	Medium	Higher	Medium	Medium
Thoroughfare	Lower	Higher	Higher	Lower	Higher	Higher	Higher	Lower	Lower	Medium	Lower
Boulevard	Medium	Higher	Higher	Lower	Higher	Higher	Higher	Lower	Higher	Higher	Lower

Higher Priority | Medium Priority | Lower Priority | Not Compatible

*Marked Crosswalks are a high priority in school zones, regardless of street type.

Performance Measures

Performance measures can be tracked and reported to determine the effectiveness of the Complete Streets Plan and its implementation. A variety of measures can be tracked, but the ones that are chosen should be relatively easy and inexpensive to collect and that relate to the vision and objectives of the plan. Prior to committing to specific metrics, the City should determine what data is readily available or can easily be collected. In addition to data the City already collects, the City will likely need to use data collected by other agencies, such as the Iowa DOT, U.S. Census, local school districts, or Story County Public Health Department.

The following table lists **recommended** performance measures for consideration by the City of Ames. It may not be feasible or necessary for the City to track each of these measures. Selecting measures for tracking necessitates identifying data availability for each measure.

Questions Being Addressed	Measures
Are people walking, biking, taking transit, and carpooling more than they used to? Are people driving less?	Mode shift
	Mode shift for trips under 1 miles, and between 1 and 3 miles
	Vehicle miles traveled (VMT) per capita
Are students walking and biking to school more than they used to?	Number of K-12 students who walk or bike to school
Are Complete Streets increasing safety?	Citywide crash reduction (total crash reduction, reduction by mode, and reduction by crash severity)
	85th percentile speed compared to target speed (aggregate of all streets/projects; measures whether people are speeding)
Have Complete Streets designs created delays for driving or transit?	Travel time along key corridors
Are Complete Streets benefiting everyone?	Crash reduction, mode shift, and person miles traveled for Environmental Justice* (EJ) populations versus non-EJ populations.
	Household and employment proximity to bicycle and pedestrian facilities
	EJ population proximity to bicycle and pedestrian facilities
Are Complete Streets effectively increasing opportunities for biking and walking?	Miles of on-street bicycle facilities, sidepaths, and sidewalks
	Bicycle Network Analysis (BNA) score
Are Complete Streets supporting economic activity?	Commercial vacancies along Complete Streets
Is investment in Complete Streets supporting the City's asset management objectives?	Pavement Condition Index (PCI)

Over time, the City should provide targets for these outcome measures.