Memo

45

To: **Mayor, and City Council**

From: **Damion Pregitzer, Traffic Engineer**

Subject: **Progress Update on City of Ames Complete Streets Plan**

On August 8, 2017, the City of Ames hired **Tool Design Group (TDG)** to begin work on a Complete Streets Plan for the City of Ames. TDG specializes in walkable/bikeable design and are considered to be national experts on modern multimodal design.

To guide the project, two committees were established; a **Technical Advisory Committee (TAC)** and a **Community Advisory Committee (CAC)**. The TAC is made up of professional staff from City of Ames Planning, Engineering, Traffic, Operations, CyRide, and Parks & Recreation, as well as, professional staff from Iowa State University and the Ames Area Metropolitan Planning Organization. The CAC is comprised of stakeholders that represent the interests of the Ames community. The committee has representatives from Downtown and Campustown Business Districts, Biking/Walking Advocacy Groups (Ames Bicycle Coalition), Health-Living / Active-Transportation Advocacy (Healthiest Ames), ISU Student Government and Student transportation advisory members, Story County, and Ames Development Community members.

Since the beginning of the project, there has been a Public Open House, and several Committee meetings with City Staff and TDG, while TDG familiarizes themselves with the Ames community. Work on the project to date has focused on educating the community on current Complete Streets design and for TDG to gain input form the committees and community. TDG has also been diligently developing the major technical components of the plan and reviewing them with the Committees for comment and refinement.

If you will recall, when TDG was hired, City Council expressed concern regarding the potential cost impacts of implementing Complete Streets concepts. Therefore, City Council asked to be updated when the draft technical design standards and associated costs had been developed. Since we are now at that point in the project development, staff will present the draft materials at the April

24th meeting for concurrence or further direction before the materials are available for public feedback.
Final draft materials will incorporate all feedback received from City Council and the advisory committees (which is still underway) before publishing the draft documents for general public comment. The next Public Meeting is anticipated to be held in June 2018. The overall plan is still on schedule for adoption in Fall 2018.

Complete Streets Ames

DRAFT STREET DESIGN FRAMEWORK & STREET TYPES

APRIL 2018

Transportation Function

DRAFT

Transportation function exists on a spectrum between:

Access to destinations and individual properties. Typically lower speed with higher levels of foot traffic.

Throughput, which means the efficient movement of people. Typically higher speeds with fewer people accessing destinations along the street.

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?

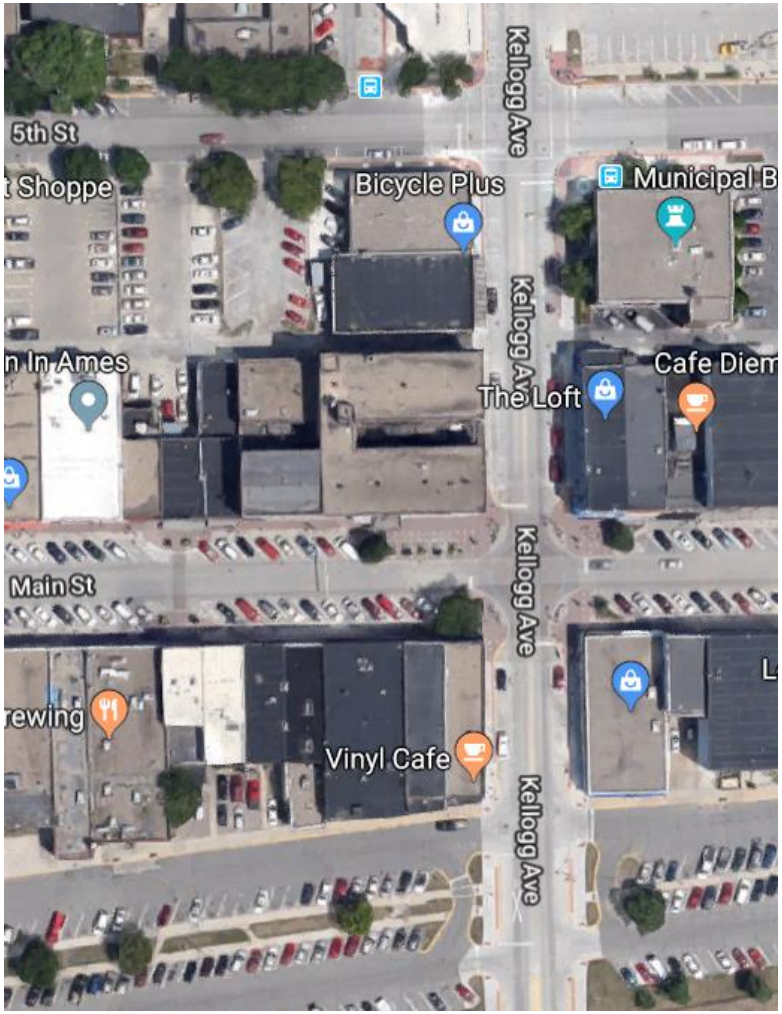
DRAFT

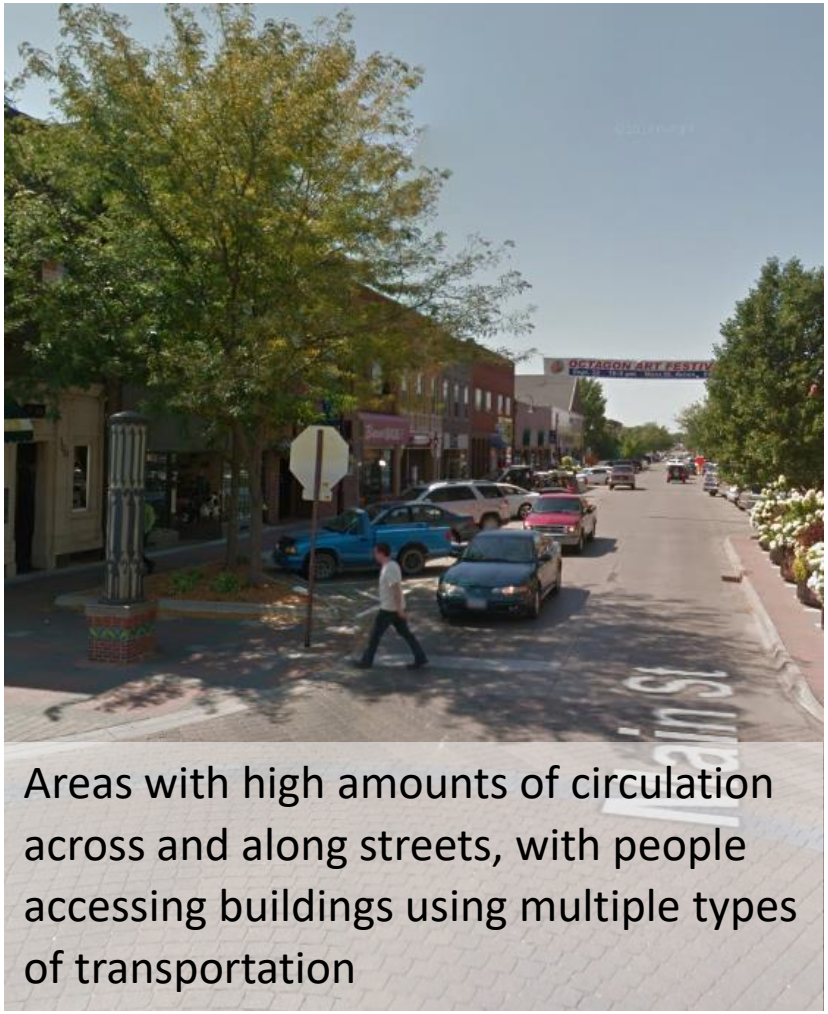
Place Types

Common development patterns, land uses, and character of the five place types are illustrated on the following pages, with descriptive summary tables at the end of this section.

Activity Center

DRAFT

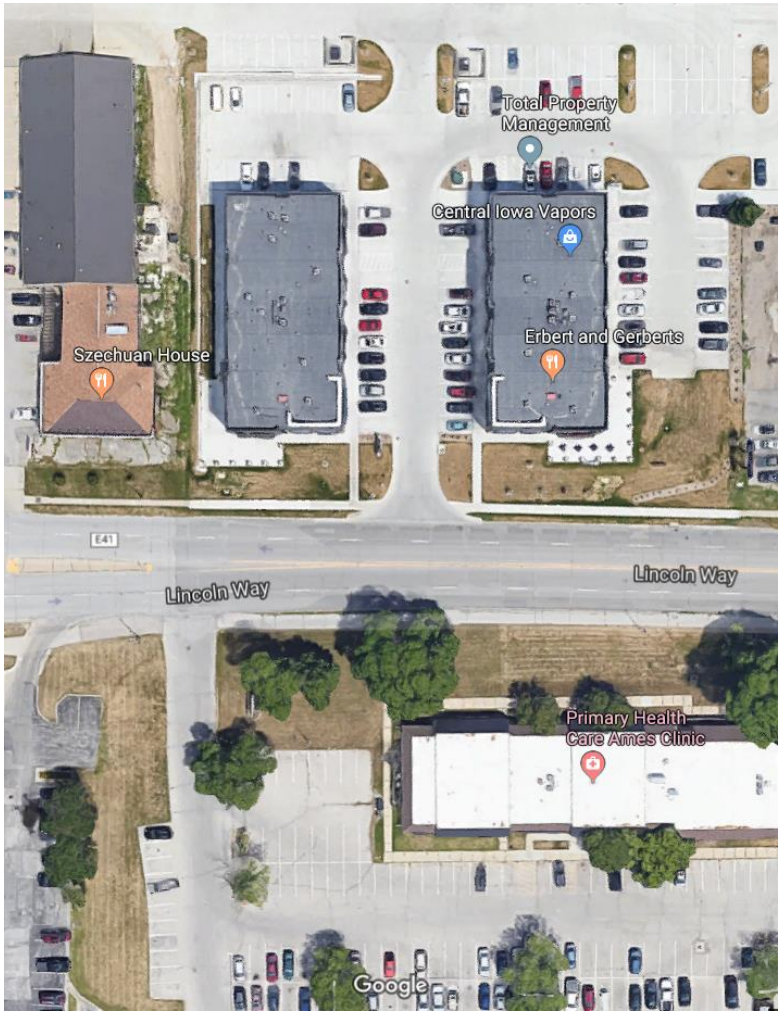


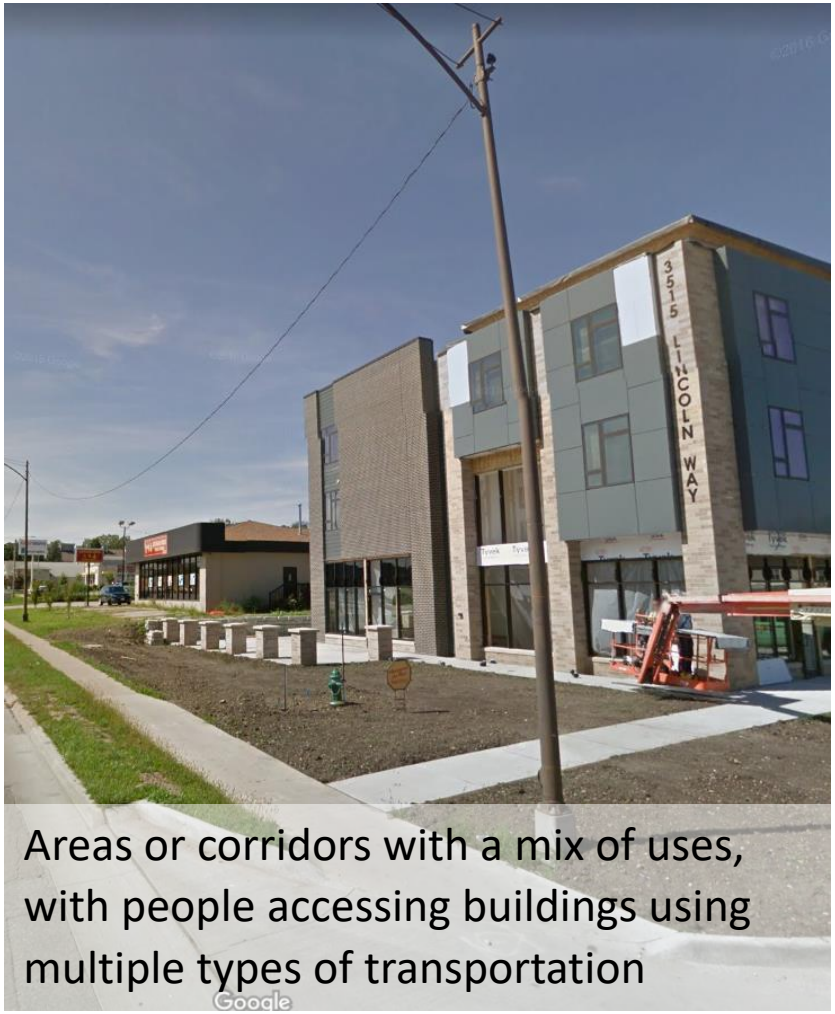


Areas with high amounts of circulation across and along streets, with people accessing buildings using multiple types of transportation

Urban Mix

DRAFT

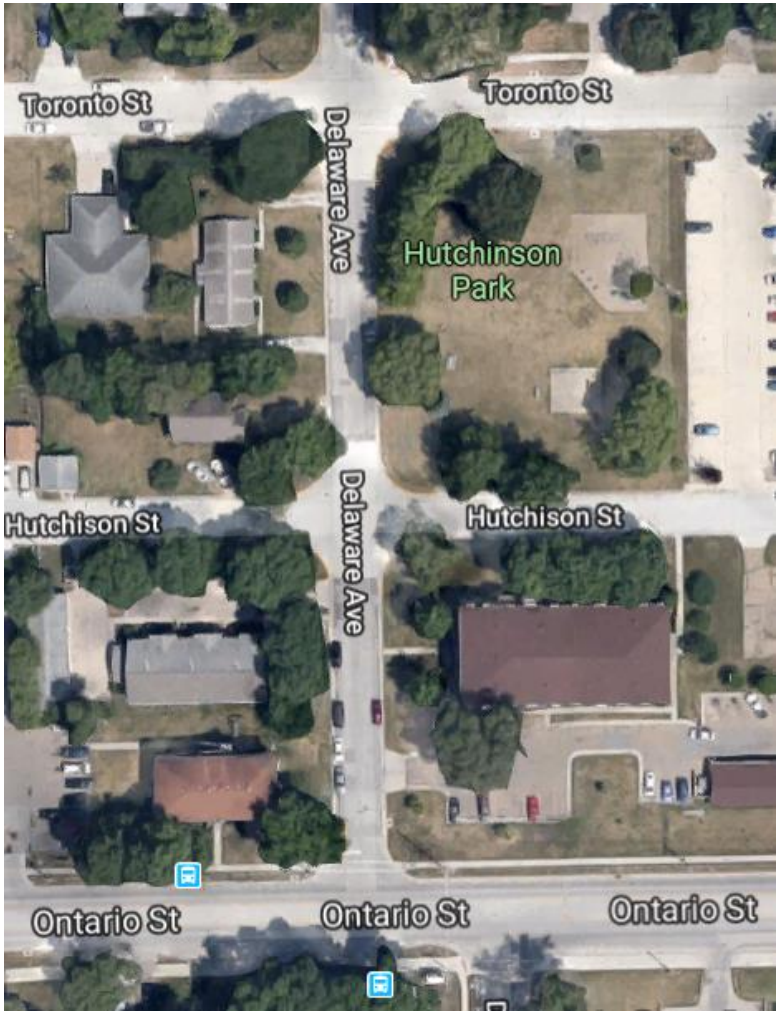




Areas or corridors with a mix of uses, with people accessing buildings using multiple types of transportation

Residential

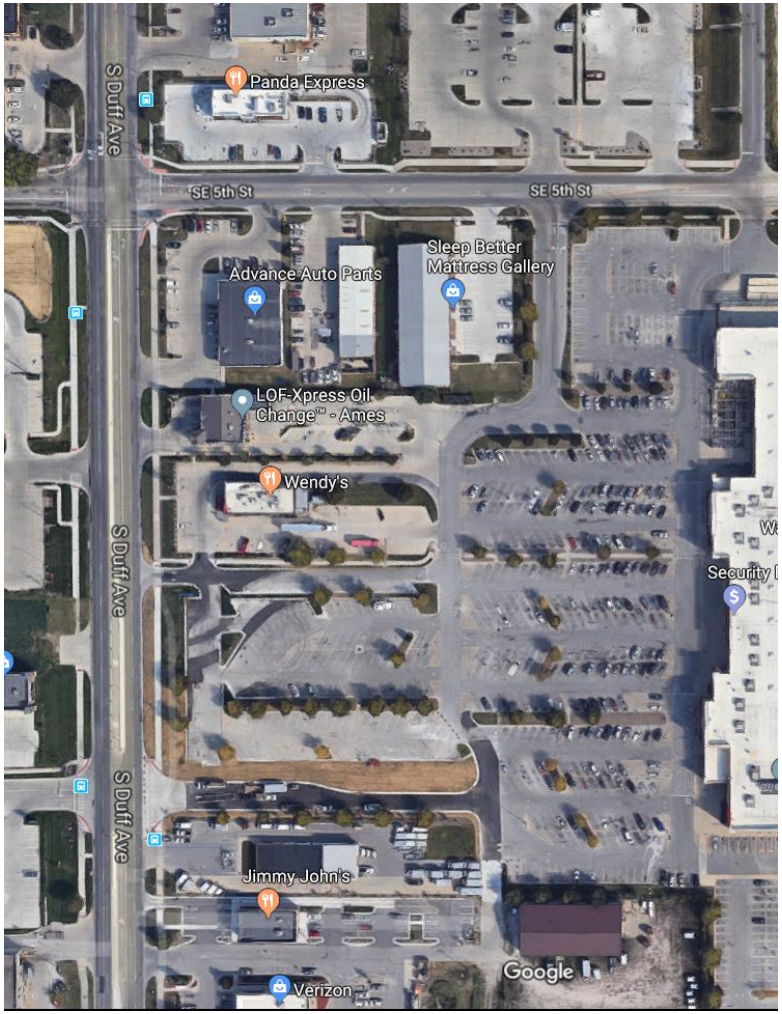
DRAFT

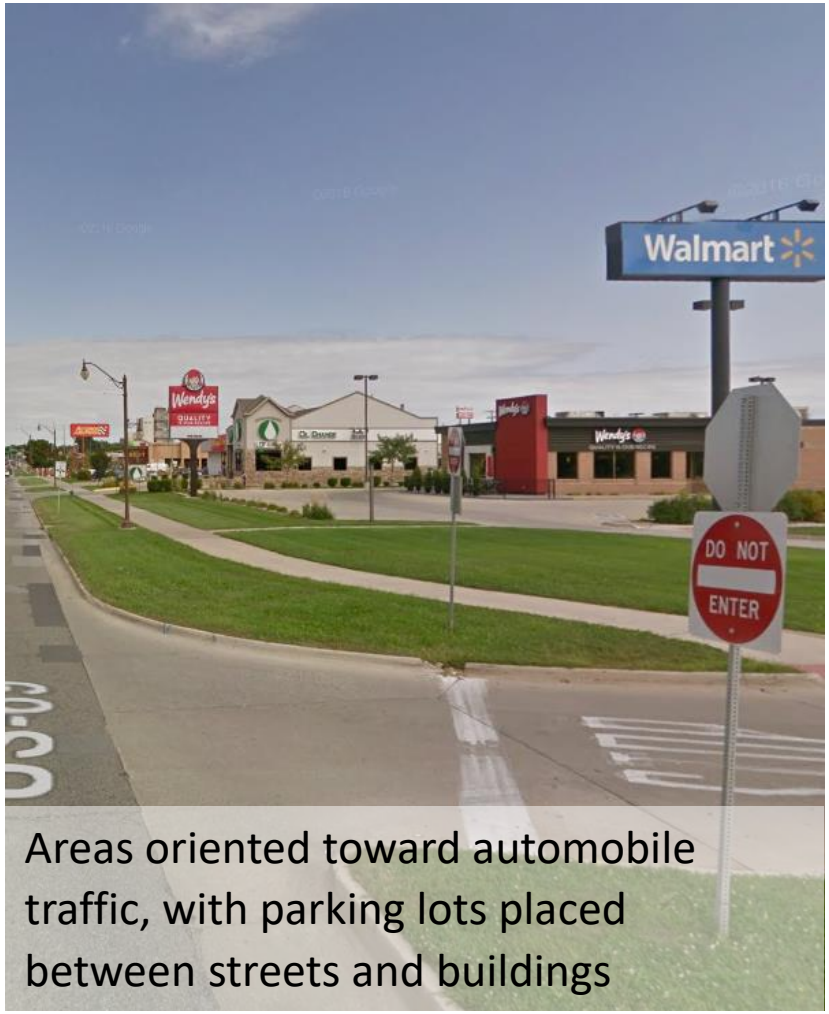


Areas with single and multi-family homes, oftentimes with adjacent schools and parks

Large Scale Commercial

DRAFT

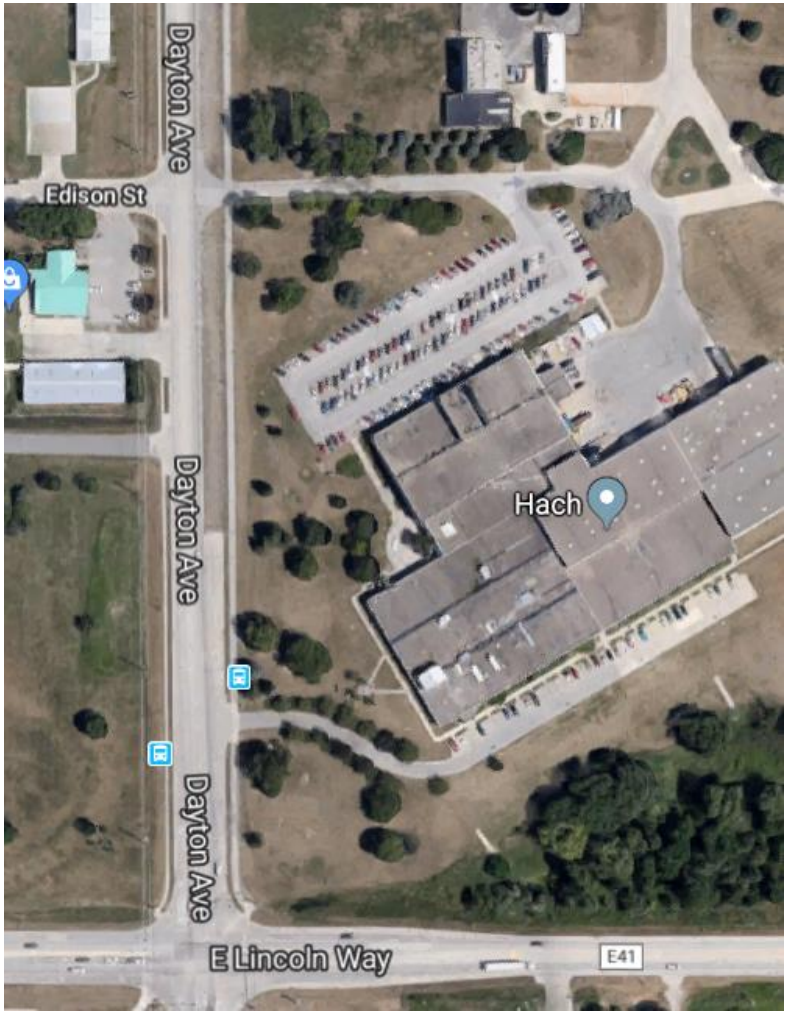




Areas oriented toward automobile traffic, with parking lots placed between streets and buildings

Industrial

DRAFT



Areas with large, sprawling buildings used for manufacturing and employment

DRAFT

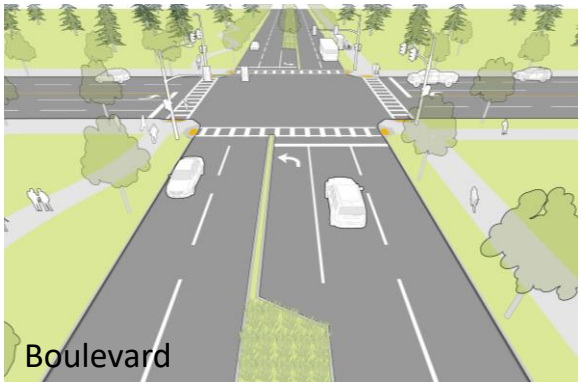
Street Types

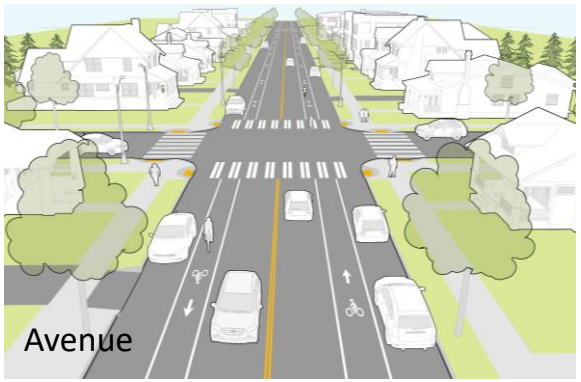
The street types are illustrated and described on the following pages, with a descriptive summary table at the end of this section.

DRAFT

Street Types

Street types serve as starting points for street design. **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.


Boulevard


Avenue

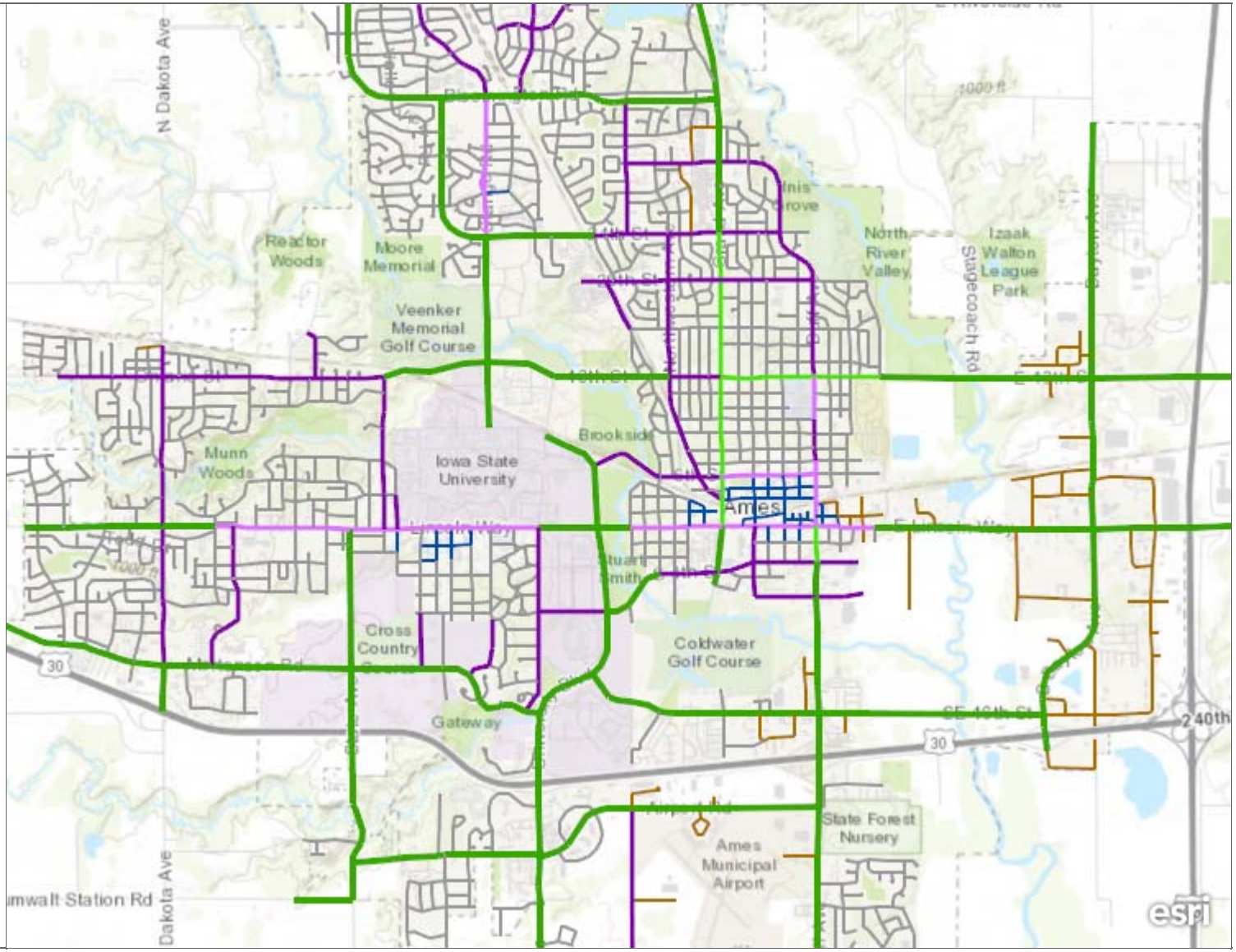

Mixed Use Street


Neighborhood Street

8049_StreetTypes

8049_StreetType_20180409

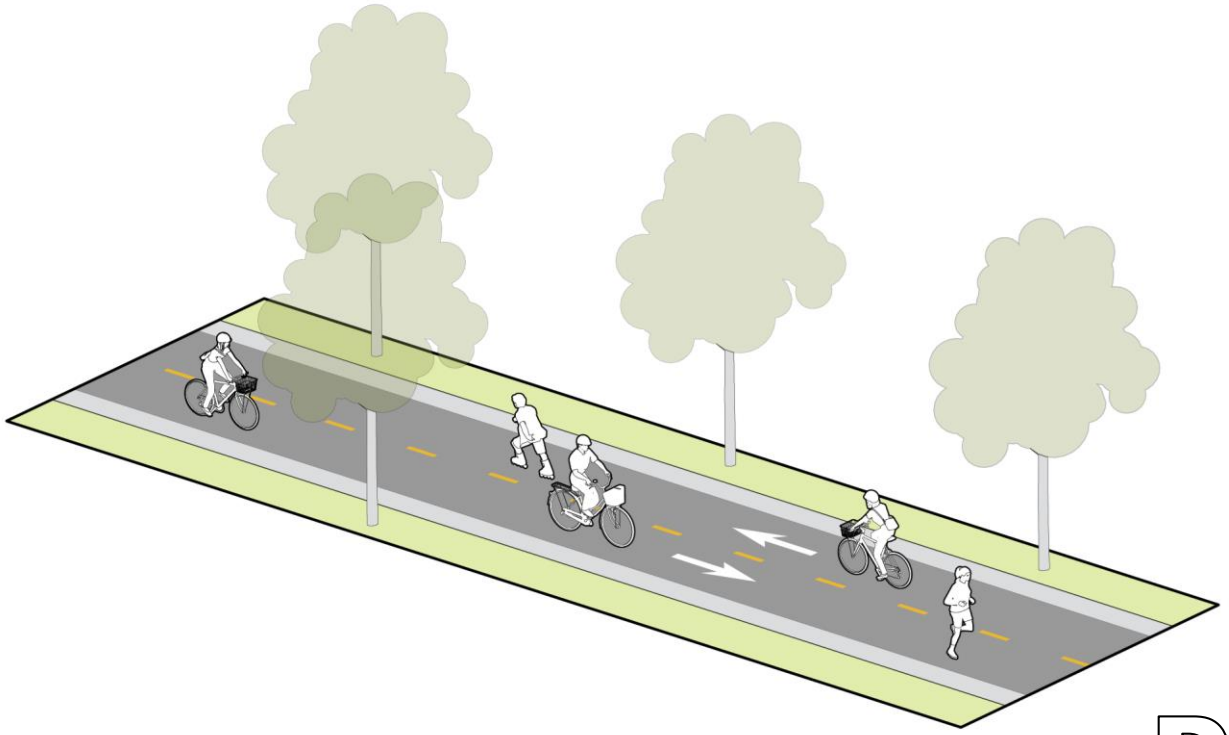
- Mixed Use Street
- Neighborhood Street
- Industrial Street
- Mixed Use Avenue
- Avenue
- Thoroughfare
- Boulevard



Greenway

A U R C I

No anticipated cost impacts



DRAFT

Description	Transportation Function	Relevant Place Types
Although not actually a type of street, shared use paths in independent alignments are important parts of the multimodal network.	Emphasizes nonmotorized travel; Pedestrian and bicycle only	All

Mixed Use Street

A U R C I

No anticipated cost impacts

Description	Transportation Function	Place Types
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

Potential Variant of "Mixed Use Street"

Shared Street

A U R C I

No anticipated cost impacts

Description	Transportation Function	Relevant Place Types
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

Neighborhood Street

A U R C I

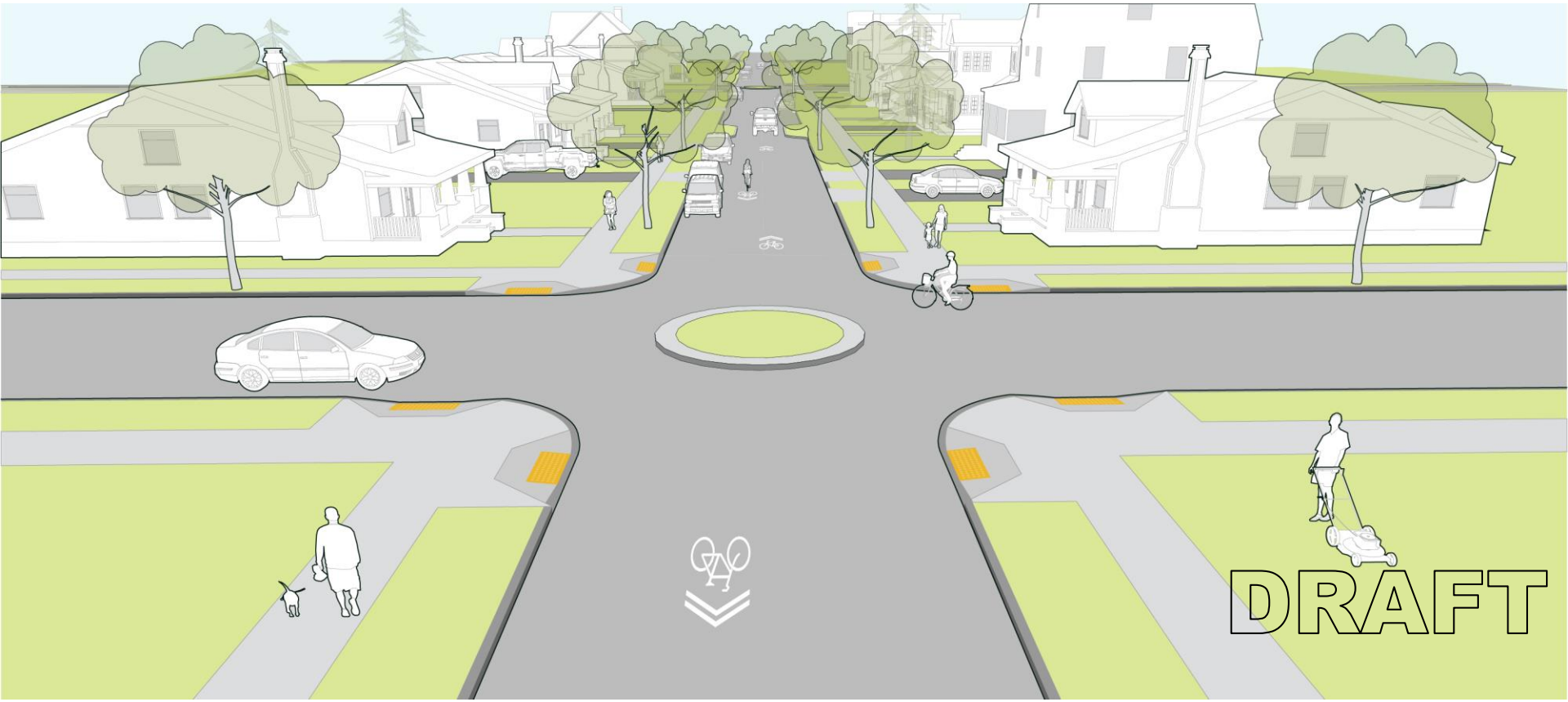
No anticipated cost impacts

Description	Transportation Function	Place Types
A low traffic street with housing and separated walkways, sometimes with on-street parking.	Emphasizes access	Urban Mix, Residential

Neighborhood Street (Bicycle Boulevard Variant)

A U R C I

Anticipated cost impacts ~1-2% increase (for curb/median and paint)

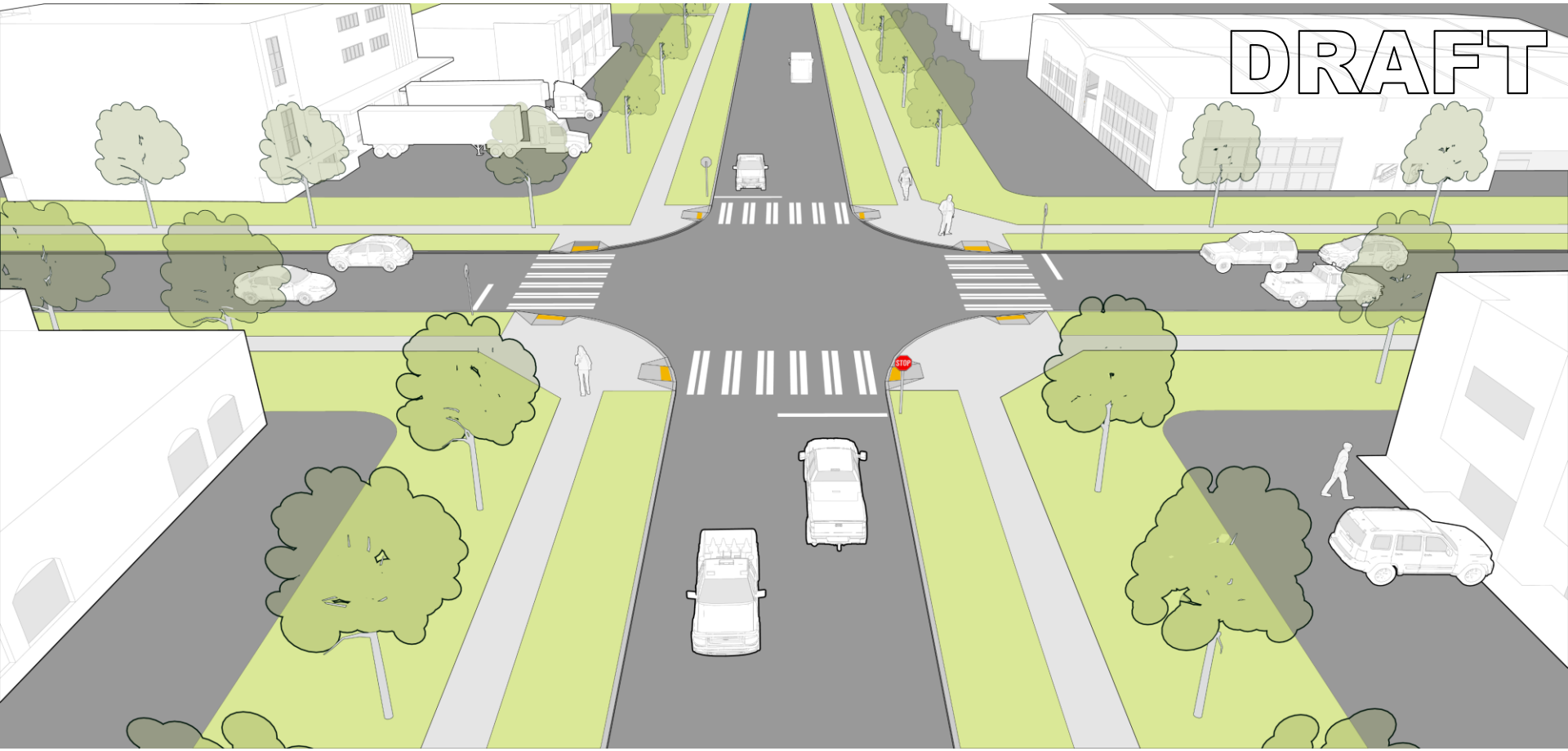


Description	Transportation Function	Place Types
A variation of Neighborhood Street that optimizes the street for bicycle traffic through traffic calming and diversion; also includes pedestrian enhancements	Emphasizes access and nonmotorized throughput	Urban Mix, Residential

Industrial Street

A U R C I

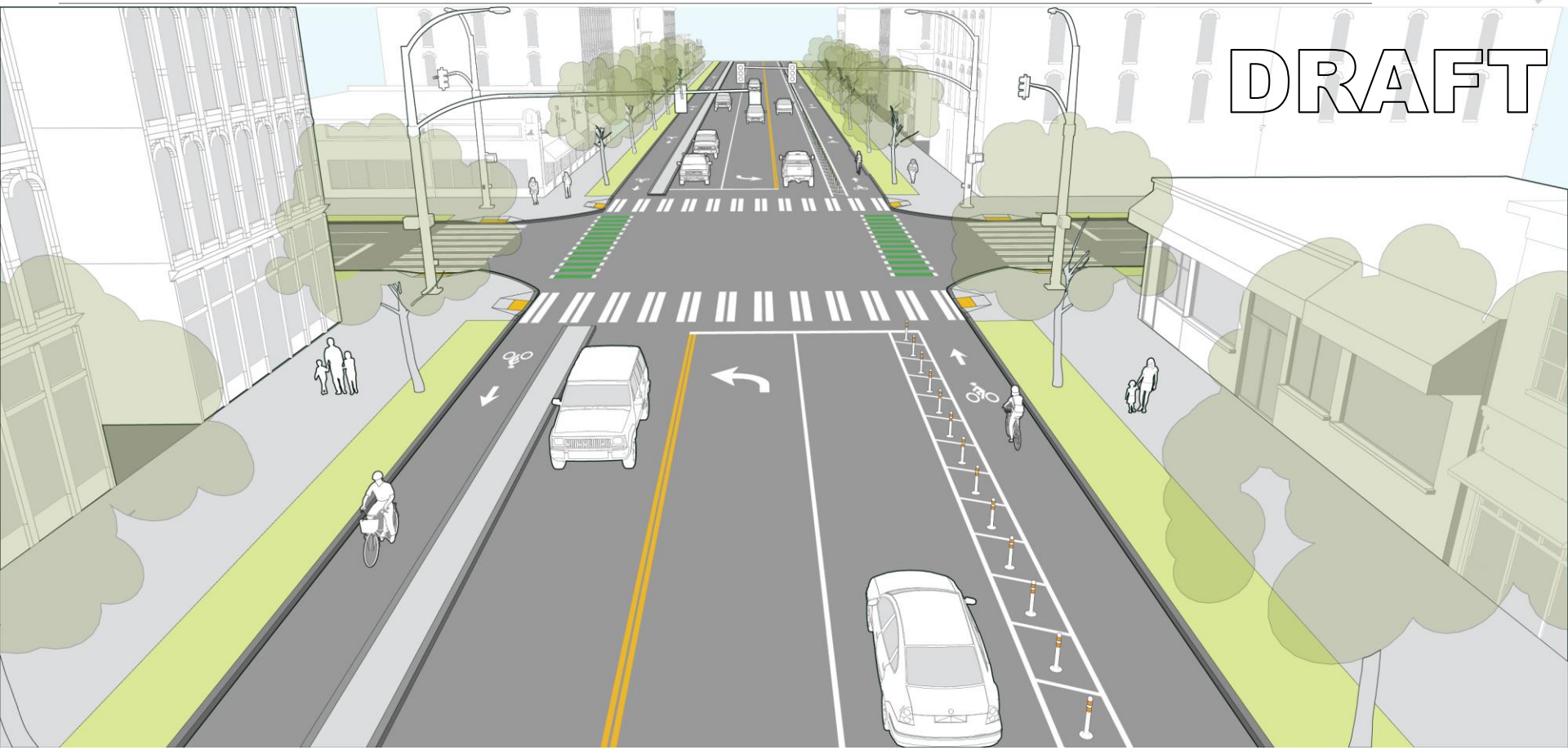
Anticipated cost impacts ~4% increase (for walks on both sides)



Description	Transportation Function	Place Types
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

Mixed Use Avenue

Anticipated cost impacts ~0-30% increase (depending on size and location of bike facility)

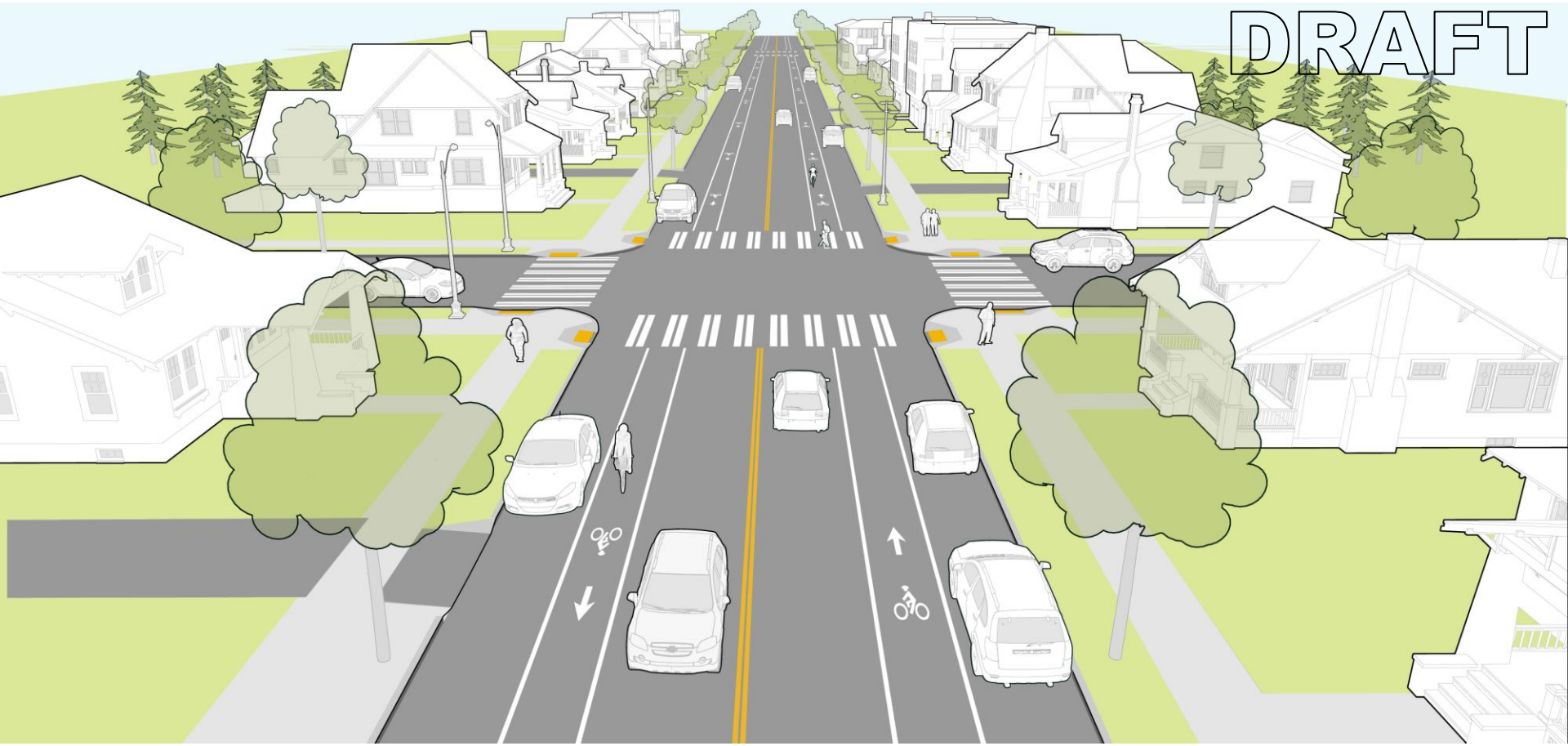


Description	Transportation Function	Place Types
A street with high amounts of a diverse mix of retail, housing, office and/or education, with people using several types of transportation to circulate, but with increased transit and motor vehicle demand	Balances access and throughput	Activity Center, Urban Mix

Avenue

A U R C I

Anticipated cost impacts ~0-19% increase
(depending on size and location of bike facility)

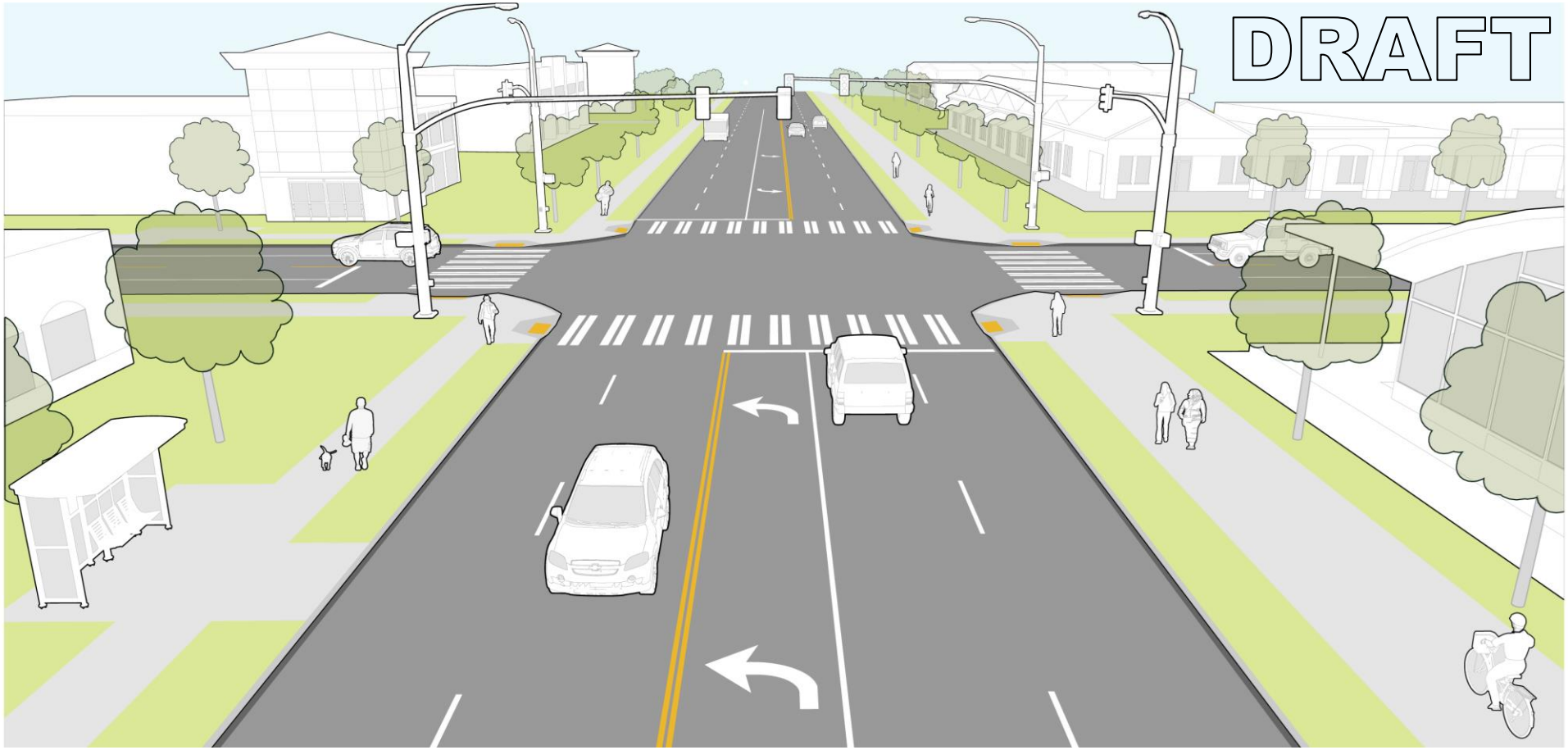


Description	Transportation Function	Place Types
A street with a moderate amount of traffic, wider than a neighborhood residential street. These may include on-street parking and bike lanes.	Balances access and throughput	Residential, Large Scale Commercial

Thoroughfare

A U R C I

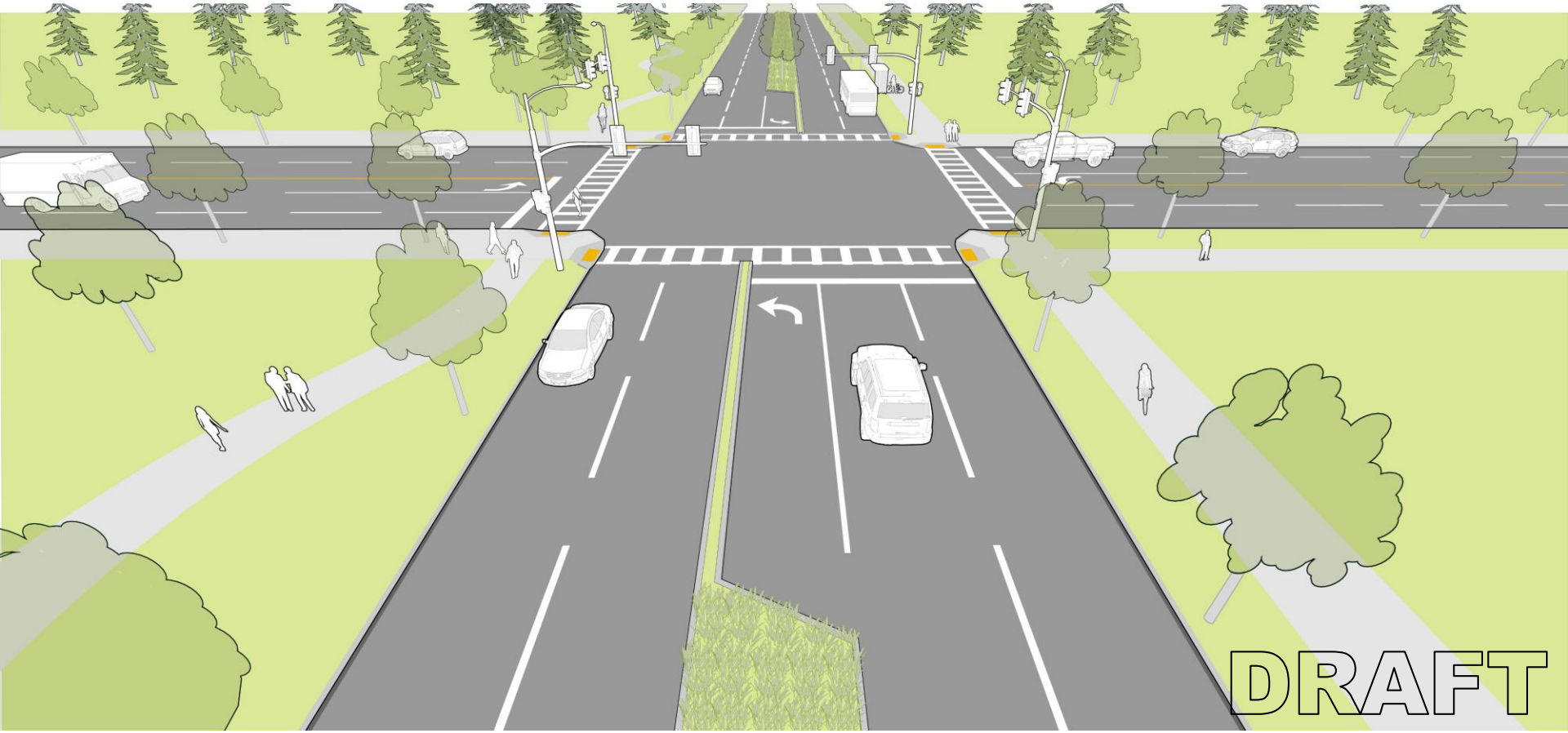
No anticipated cost impacts - Shared-Use path only when planned



Description	Transportation Function	Place Types
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

Anticipated cost impacts ~4% increase in Industrial Zones only (for walks on both sides): No cost impacts all other zones



Description	Transportation Function	Place Types
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

Draft Street Design Parameters & Priorities

April 11, 2018

Roadway Parameters

Typology	# 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]
		Min.	Bus Route Min.	Preferred	Max.					Preferred	Max.	
Shared Street	No centerline	20′ Total	N/A	20-40′ Total	N/A	Not compatible	N/A	None	10	0′	10′	<500
Mixed Use Street	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)	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	2	25′ Total	25′ Total	25′ Total	36′ Total	Optional	Shared roadway	None	25	20′	35′	<3,000
Mixed Use Avenue	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	2	10′ Lanes	11′ Outer Lanes	11′ Lanes	11′ Lanes	Optional	Bike lanes	Optional	25	10′	25′	1,000 to 15,000
Thoroughfare	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	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. 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.
- 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.
- These values represent typical applications. 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.

Pedestrian Zone Parameters

Typology	Frontage Zone[1] Door swings, awnings, café seating, retail signage and displays, building projections, planters, landscape areas		Pedestrian Zone[2] Clear space for pedestrian travel, should be clear of any and all fixed obstacles.		Greenscape / Furnishing Zone[3] Street lights, utility poles, street trees, landscaping, bike racks, parking meters, transit stops, street furniture, signage		Total Width[4] Excluding setback	
	Preferred	Minimum	Preferred	Minimum	Preferred	Minimum	Preferred	Minimum
Greenway	8′	3′	10-12′	8′	8′	3′	26-28′	14′
Shared Street	N/A	N/A	N/A	N/A	N/A	N/A	20-40′	20′
Mixed Use Street	4′	0′	10′	6′	8′	2′	22′	8′
Neighborhood Residential	2′	0′	5′	5′	4′	2′	11′	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′	6′	2′	14′	7′
Thoroughfare	2′	0′	6′	5′	6′	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 pedestrian 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 Pedestrian 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] Pedestrian Zone:

- In locations with severely constrained rights-of-way, it is possible to provide a narrower Pedestrian Zone. The Americans with Disabilities Act (ADA) minimum 4-foot wide Pedestrian 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 Pedestrian Zone is used, 5-foot wide passing zones are required every 200′. Driveways meet the criteria of ADA-compliant passing zones.
- Any pedestrian zone intended to also convey bicycle traffic (i.e. shared use path) should be a minimum of 10 feet wide. For short segments through constrained environments, 8-foot wide shared use paths are acceptable.

[3] Greenscape/Furnishing Zone:

- The minimum width necessary to support standard street tree installation is 6.5 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 Greenscape/Furnishing Zone should be prioritized over the width of the Frontage Zone.
- The preferred width of the Greenscape/Furnishing 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.

Explains how to use priority table

Typology	Pedestrian Realm & Crossings						Roadway				
	Frontage Zone	Pedestrian Zone	Greenscape / Furnishing Zone	Curb Extensions, Parklets, and other Buffers	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				Not Compatible	Not Compatible	Higher
Mixed Use Street	Higher	Higher	Higher	Higher		Higher		Higher		Not Compatible	Higher
Neighborhood Street		Higher	Medium	Higher				Medium		Not Compatible	Higher
Industrial Street		Higher	Medium	Medium	Medium	Medium	Higher		Medium		
Mixed Use Avenue	Higher	Higher	Medium	Higher	Medium	Higher		Medium	Higher	Medium	Medium
Avenue		Higher	Higher	Medium	Higher	Higher		Medium	Higher	Medium	Medium
Thoroughfare		Higher	Higher		Medium	Higher	Higher			Not Compatible	
Boulevard	Medium	Higher	Higher		Higher	Higher	Higher		Higher	Higher	

Higher Priority | Medium Priority | Lower Priority | Not Compatible