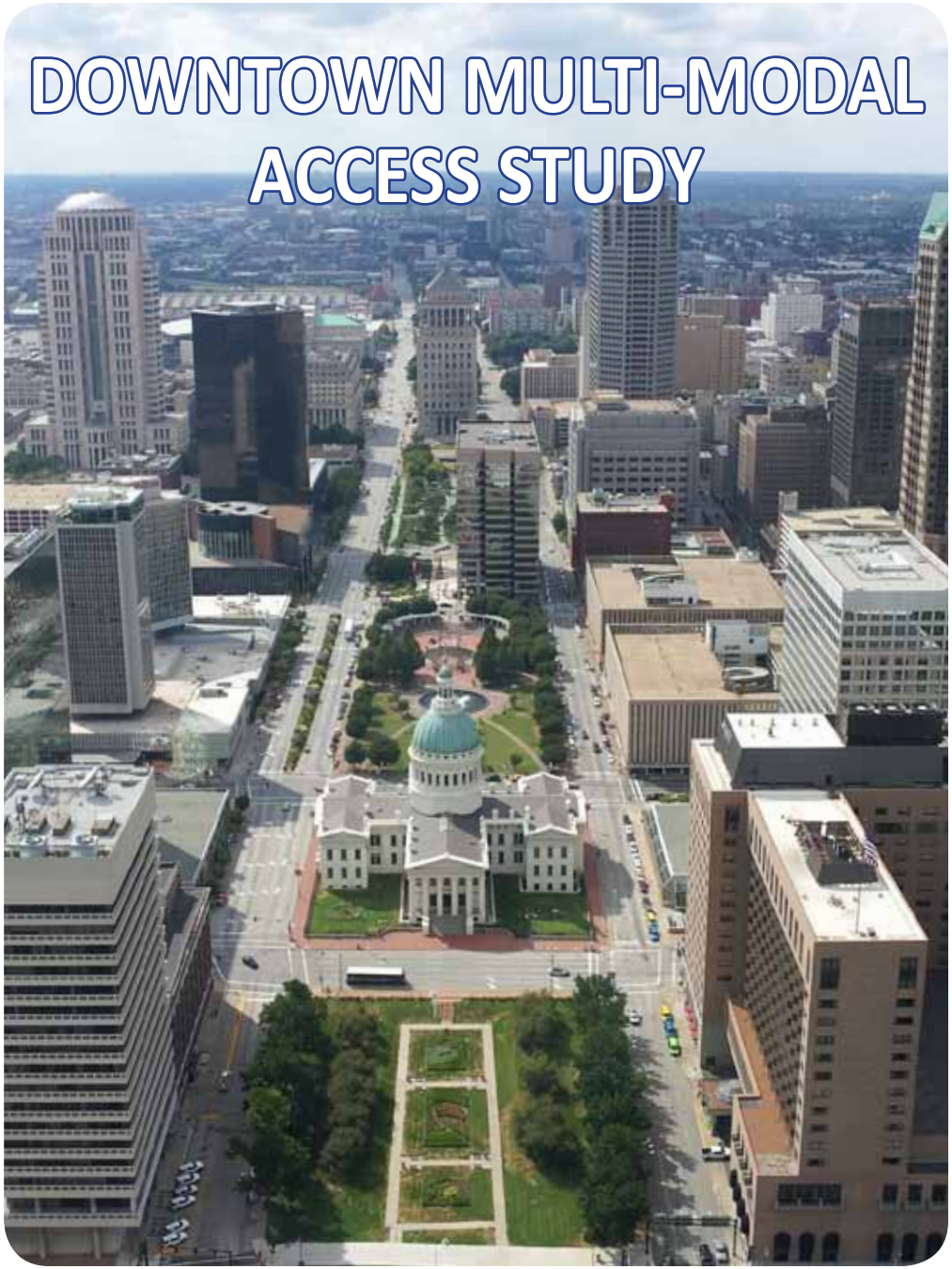
DOWNTOWN MULTI-MODAL ACCESS STUDY



Prepared for: City of St. Louis, St. Louis Development Corporation, and Partnership for Downtown St. Louis


DOWNTOWN
BICYCLE
STATION

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WASHINGTON AVE
10TH ST

SECTION 1

Project Overview

PROJECT OVERVIEW

The 2020 Downtown Next public engagement process produced a community vision for Downtown St. Louis: a vibrant, regional hub offering an authentic Downtown experience for residents, employees and visitors. In order to help achieve that vision, a study was solicited to identify needs and opportunities for improving access and connectivity for all modes of travel serving Downtown.

The Downtown Multi-Modal Access Study sought to build upon work that had already been completed as well as on-going efforts that promote sustainable planning principles while addressing three themes of the Downtown Next process:

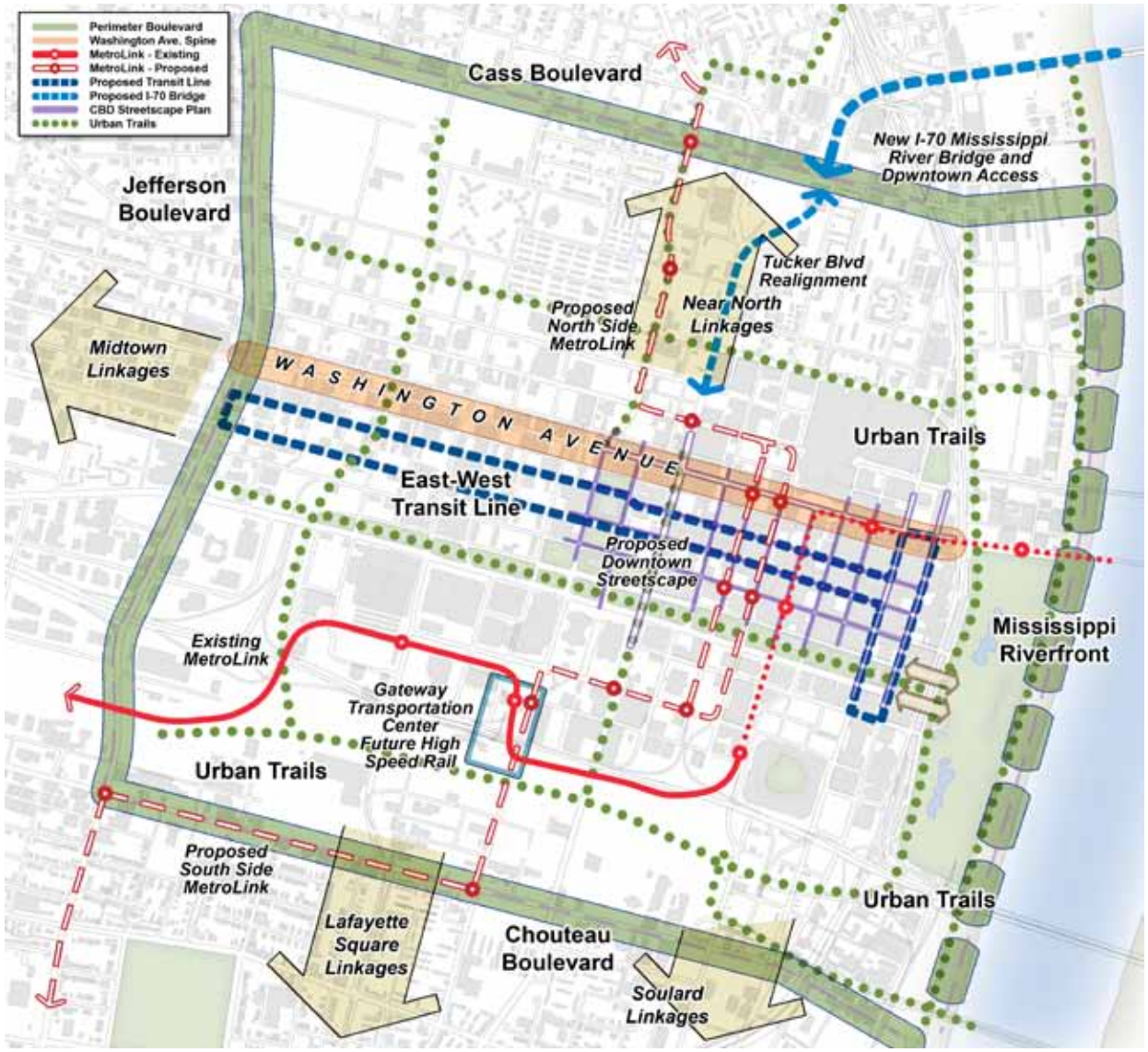
- Creating an Inviting Environment
- Making Downtown Accessible and Easy to Get Around
- Emphasizing Downtown's Unique Character

The study addresses all modes of transportation and emphasizes strategies to encourage walkability, bicycling and transit usage while considering a larger context of ensuring streetscapes are positioned to support mixed-use retail and serve the needs of those who live, work and play in the Downtown area. It also attempts to mirror Downtown's "multi-modal potential", as reflected by Downtown Next's "2020 Vision for Downtown St. Louis" (see **Exhibit 1**).

This project was funded, in part, by the Sustainable Communities Regional Planning Grant, which is aimed at building the capacity of local and regional actors to implement sustainable practices by sharing knowledge, best practices and resources, and connecting local and regional planning efforts. As such, the goal of this study was to position Downtown so that it may incorporate and reflect sustainable principles related to transportation, including ways to implement the City of St. Louis' Complete Streets ordinance and Sustainability Plan.

The work that provided the basis of this publication was supported by funding under an award with the U.S. Department of Housing and Urban Development through the East-West Gateway Council of Governments. The substance and findings of this work are dedicated to the public. The author and publisher are solely responsible for the accuracy of the statements and interpretations contained in this publication. Such interpretations do not necessarily reflect the views of the Government or East-West Gateway.

Exhibit 1: Downtown Next Multi-Modal Potential



(Source: Downtown Next Vision 2020 Plan)

The primary objectives of the study are to:

1. Consider strategies for programmatically enhancing the sustainability of the transportation system in the Downtown area.
2. Develop a range of transportation improvements that could be implemented.
3. Create a plan to increase connectivity into and throughout Downtown by encouraging efficient traffic flow that prioritizes pedestrians, bicycles, and transit (bus, Bus Rapid Transit (BRT), streetcar, light rail) with a focus on the Arch grounds, North Riverfront and New Mississippi River Bridge.
4. By-products of this process, which reflects input from stakeholders, include a Downtown Connectivity Plan with short and long-term prioritization of proposed projects and an emphasis on Riverfront Connectivity.
5. Finally, the study will identify potential projects for which to submit a Surface Transportation Program (STP) Application.

Guiding Principles:

The plan's development was formed by the guiding principles of the Downtown Next 2020 Plan. Related goals, objectives and strategies from that plan are summarized in **Table 1**. These principles promoted several distinct themes pertaining to Downtown's transportation systems:

- Simplify transportation.
- Make the existing system more efficient.
- Diversify transportation options.
- Change the way we view streets.

"In order to increase its energy, Downtown must remain a walkable, accessible destination that is easy to navigate once you arrive. Downtown should take advantage of the potential synergies of adjacent neighborhoods by reaching out and connecting to its neighbors."
source: ***Downtown Next 2020 Plan***

Table 1: Related Goals, Objectives and Strategies from Downtown Next

GOAL: A WELCOMING DOWNTOWN	
Objective: Active, Walkable Corridors	
Strategy: Implement the Streetscape plan.	○ Include key corridors in the City's annual applications for federal funds for the Streetscape plan ○ Codify the updated Streetscape Plan
Strategy: Target key entryways and connector streets as priorities for initial improvements.	○ Make connector/entryway streets (e.g., 8th,Tucker, Clark, Olive, Broadway) funding priorities ○ Encourage building owners to start an adopt-a-block beautification program
Objective: Welcoming Entryways into Downtown	
Strategy: Target Downtown approaches for investment.	○ Encourage redevelopment of blighted areas along select entryways/connectors ○ Bolster the City's street maintenance program ○ Organize plantings in common areas near interstate entrance and exit ramps ○ Improve Downtown MetroLink stations (appearance and signage)
Objective: Clear Wayfinding	
Strategy: Implement the CVC wayfinding program at the vehicular and pedestrian levels.	○ Install vehicular signs and pedestrian kiosks in strategic locations
Strategy: Explore multi-media wayfinding kiosks.	○ Pursue public/private partnerships to fund installation
GOAL: A DOWNTOWN WHERE YOU WANT TO STAY ALL DAY	
Objective: An Active Riverfront	
Strategy: Advance North Riverfront development.	○ Build upon Trailnet's Trailhead park ○ Leverage Lumiere's proposed Phase II to provide Riverfront public entertainment space
Strategy: Eliminate visual barriers.	○ Remove sky bridges that block key views ○ Ensure adequate lighting throughout the central business district
GOAL: AN ACCESSIBLE DOWNTOWN	
Objective: A Robust Transit System	
Strategy: Secure a reliable funding source for Metro.	○ Leverage County's success to solicit increased federal and state funding support ○ Promote system expansion throughout the region that connects Downtown
Objective: Viable alternatives to the automobile	
Strategy: Encourage the completion of GRG's Bike Master Plan.	○ Ensure a strong emphasis on Downtown access
Strategy: Support High Speed Rail between St. Louis, Chicago and Kansas City.	○ Support future state and federal funding to improve train reliability and technology
Strategy: Enhance taxi service.	○ Evaluate and identify areas of opportunity to make taxis a viable means of travel
GOAL: A DOWNTOWN THAT IS EASY TO GET AROUND	
Objective: Navigable by All Transportation Modes	
Strategy: Provide more bike amenities, such as bike lanes and bike racks.	○ Incorporate bike considerations into other capital improvement projects
Strategy: Improve the walking experience.	○ Conduct a walk audit and eliminate obstacles as resources become available ○ Review streets for strategic closures that could prompt more pedestrian activity ○ Continue to explore converting select one-way streets to two-way
Strategy: Develop and promote a Downtown circulator.	○ Work with Metro and/or partners to create a viable special service
Strategy: Consider all modes when making infrastructure upgrades.	○ Pursue "Complete Streets" and "Complete Bridges" where possible
Strategy: Implement a Parking Management Plan.	○ Create a parking advisory entity to implement a comprehensive approach
GOAL: CONNECTING DOWNTOWN NEIGHBORHOODS	
Objective: Links to Nearby Neighborhoods	
Strategy: Enhance pedestrian/bike connections to adjacent neighborhoods.	○ Incorporate trail connections into development plans ○ Extend Streetscape Plan on key corridors leading into Downtown ○ Build a strong transit connection between Downtown and Midtown

(Source Downtown Next Vision 2020 Plan)

The City of St. Louis' Sustainability Plan also provided guidance to the principles that were applied in this study:

- Diversify transportation & encourage alternative modes.
- Ensure residents have access to transit.
- Foster transit-oriented development.
- Promote cycling & encourage bike lanes.
- Update street design standards & provide complete streets.
- Implement road diets & avoid inducing traffic.
- Remove or modify infrastructure to improve access to the riverfront.
- Incorporate green infrastructure practices.

It should be acknowledged that some multi-modal accommodations can involve the de-prioritization of vehicular traffic, which can then result in additional traffic congestion or delay. In order to achieve the goals set forth for this multi-modal access plan, these trade-offs must be recognized and accepted by the governing agencies and the Stakeholders.

STUDY AREA

The study area encompasses all of Downtown and is bounded by the Mississippi River to the east, Chouteau Avenue to the south, Jefferson Avenue to the west, and Cass Avenue to the north, as shown in **Exhibit 2**. This area is relatively expansive and contains a diverse mixture of conditions and transportation systems.

In order to help bring greater focus to the study, primary emphasis was placed on the area between I-64 and Cole Street, with considerations for the connections to the surrounding neighborhoods and major gateways. Downtown's major entryways were previously defined by the Downtown Next 2020 Plan, as shown in **Exhibit 3**, and additional connections to the adjacent neighborhoods were also considered in this evaluation.

The resulting Downtown Connectivity Plan is intended to reflect measures for improving pedestrian, bike, transit, and vehicular movement into and connectivity throughout this area. A **Special Focus Area** was defined to provide added emphasis on transportation connections between the core of the CBD and the Riverfront (Arch grounds, Laclede's Landing, Lumiere Place, Mississippi River). This special focus area is bounded by the Mississippi River to the east, the Arch grounds to the south, Broadway to the west and Carr Street to the north.

A corresponding assessment of Connectivity to the North Riverfront reflects short-term and long-term recommendations for providing sustainable and enhanced connections within this area while giving consideration to the plans being developed for CityArchRiver 2015. Plans for improving accessibility for all modes also consider the existing barriers to connectivity, in particular the elevated sections of I-70 from north of Pine St. to O'Fallon St.

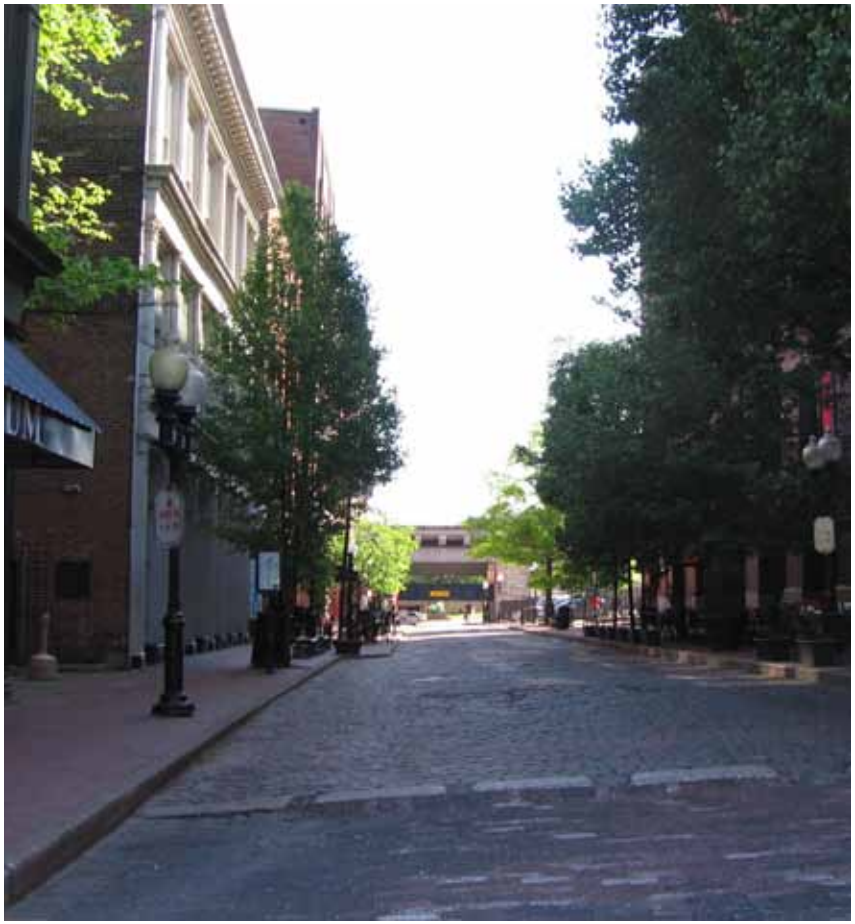
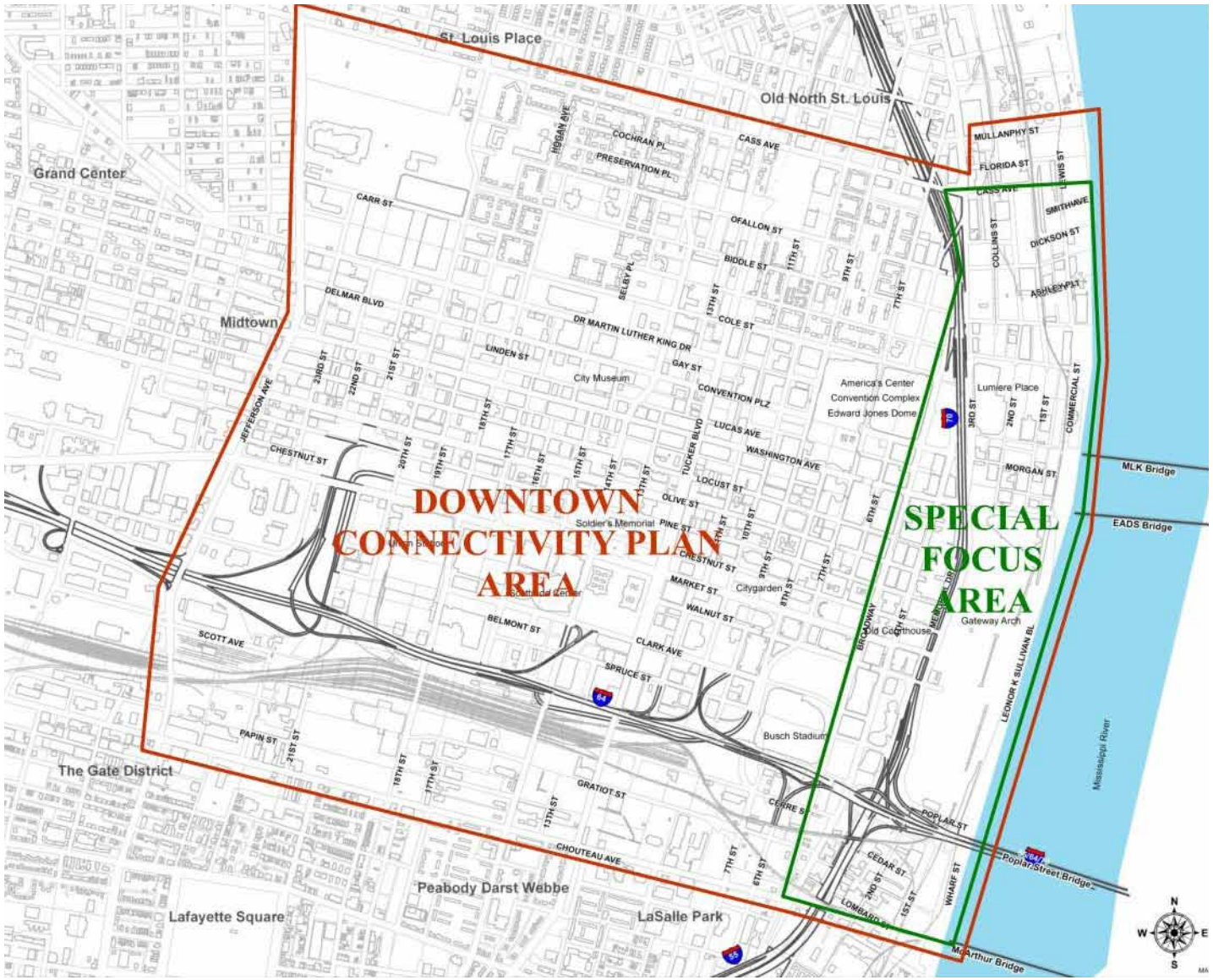
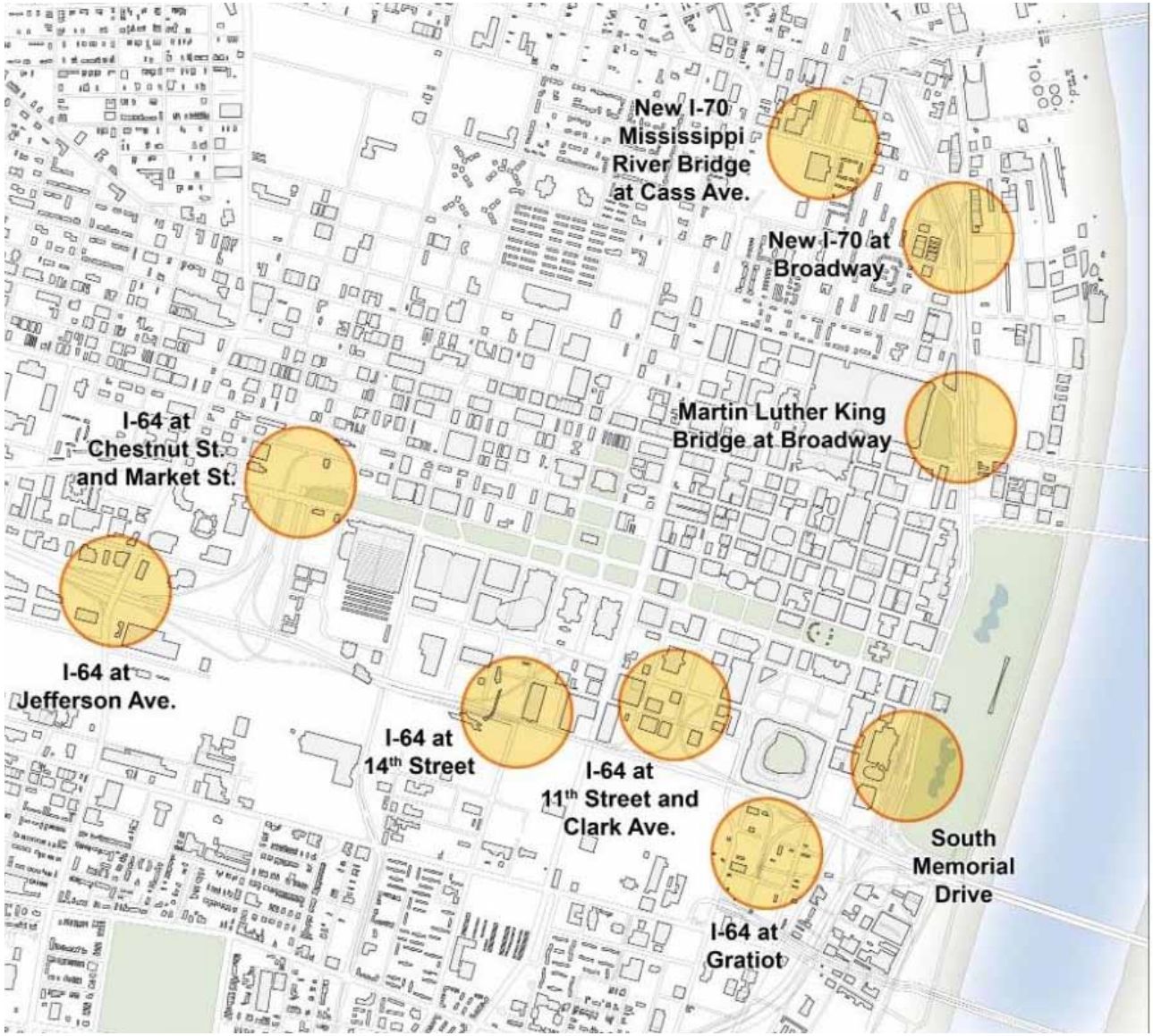


Exhibit 2: Study Area Map



(Source: Partnership for Downtown St. Louis)

Exhibit 3: Downtown Next's Major Entryways



(Source: Downtown Next Vision 2020 Plan)

SECTION 2

Review of Other Projects

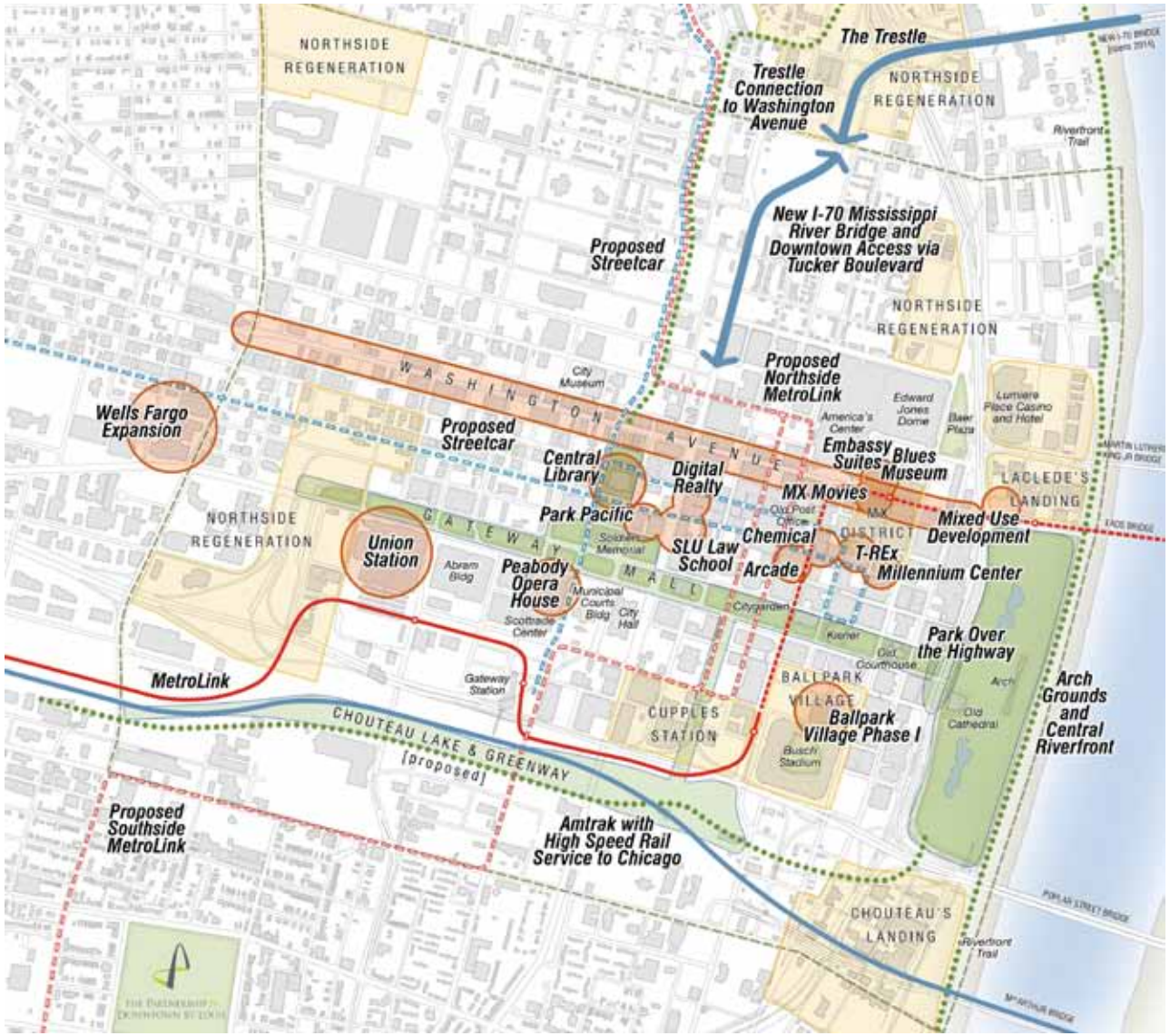
REVIEW OF OTHER PROJECTS

A high-level review of over 30 different plans and projects, including previous and on-going efforts, was conducted to assess their potential implications on the Downtown transportation system and to avoid conflict or duplication with this plan. In particular, several noteworthy projects are expected to significantly impact the way people access or travel within Downtown, as reflected by the 2010 Downtown Proposals from the 2020 Vision Plan and as summarized in **Table 2.**

Table 2: Major Downtown Project Summary

Project	Enhancement	Impact
CityArchRiver 2015	Park over I-44 (I-70 freeway re-designated)	Enhances pedestrian connection between Arch and Downtown
	Interrupt Memorial Drive	Adds vehicular emphasis on 4th and Broadway
	Ramps between I-44 and Washington Ave.	Adds vehicular emphasis on Washington Avenue
	Remove Washington Ave. east of Memorial Drive	Simplifies intersection; Improves pedestrian connectivity; Laclede's Landing access shifts north
New Mississippi River Bridge	New bridge span; Removes I-70 from Poplar Street Bridge	Tucker Boulevard to the north becomes major gateway to/from Illinois and I-70
Poplar Street Bridge Ramp Modifications	Eliminate ramp from Memorial Drive to Poplar Street Bridge	Adds vehicular emphasis to 6th Street ramp to east-bound I-64 and 9th Street ramp from westbound I-64
Metro Civic Center Station Expansion	Enlarged bus transfer center	More convenient and safer bus transfers; concentrated bus activity

Exhibit 4: Downtown Proposals - 2010



(Source: Downtown Next Vision 2020 Plan)

As noted, these major projects will have a profound impact on travel patterns, mode choices, traffic conditions and system connectivity. This study did not attempt to quantify these impacts; rather, it acknowledged their potential influence on current conditions and other recommended enhancements.

Other plans and projects were also reviewed and cataloged, as summarized in Appendix A. This Information of Record included a review of applicable policies, including the City's Sustainability Plan and Complete Streets Ordinance.


Information
Edward Jones
Dome

SECTION 3

Stakeholder Guidance

STAKEHOLDER GUIDANCE

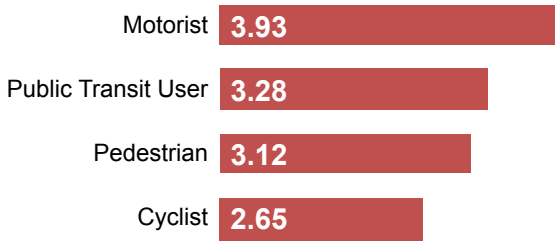
A key element of this study was a Stakeholder outreach and engagement process that identified community concerns and priorities. The study team and the City collaborated to develop a list of stakeholders with vested interests in access, connectivity and infrastructure in the Study Area. Stakeholders included advocates for specific modes of transportation and representatives from various sectors of the community (government, business, tourism/ entertainment or the residential community).

The Stakeholders included a group of policy makers and agency representatives that acted as a Stakeholder Advisory Committee, as listed in **Appendix C**. These representatives were asked to identify existing connectivity deficiencies and priorities and share perspectives on the synergy and conflicts between various planning efforts.

Stakeholders included a larger group of community representatives that were identified for polling purposes, as listed in **Appendix D**. The study team developed an online survey to gauge stakeholder's perspectives regarding the barriers and contributors to multi-modal connectivity in Downtown St. Louis. A copy of the survey is provided in **Appendix B**.

The survey results were used to help identify Preliminary Connectivity Alternatives and Priorities. These results were presented to the members of the Advisory Committee during two separate meetings (October 18, 2012 and November 15, 2012), during which several concepts and priorities were debated. The results are summarized in **Figures 1-6** and are discussed in greater detail in the following sections.

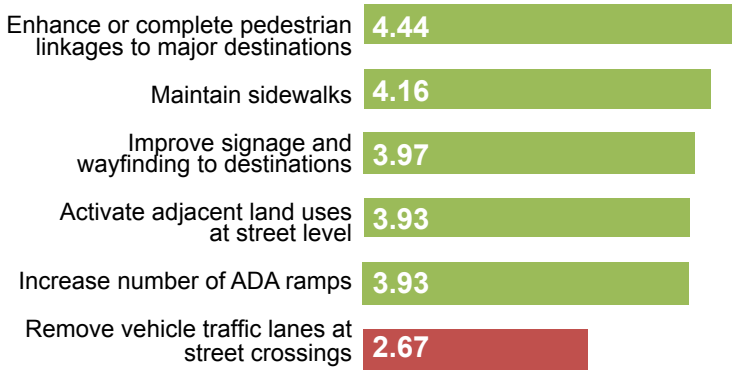
Figure 1: Relative Level of Connectivity by Mode



Scaled 1-5, one is "not connected at all"

Conclusion: while motorists are most connected, bicycle connections are lacking

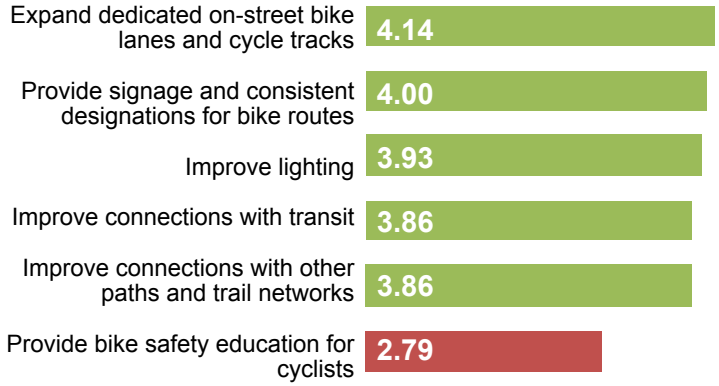
Figure 2: Pedestrian Connectivity Priorities



Scaled 1-5, one is "not a priority"

Conclusion: most prominent priorities are to enhance and maintain the pedestrian environment

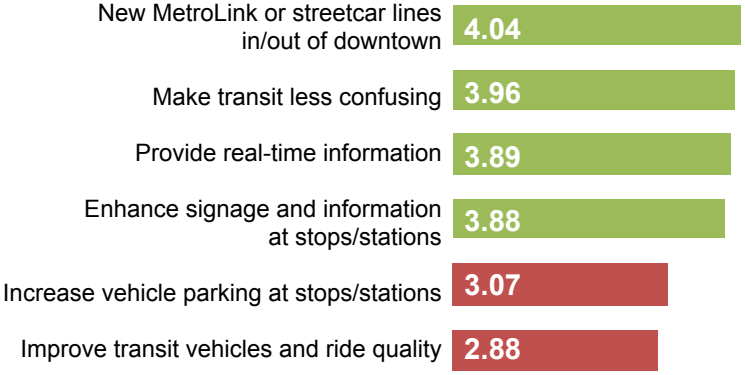
Figure 3: Bicycling Connectivity Priorities



Scaled 1-5, one is "not a priority"

Conclusion: expand bicycling facilities and accommodations

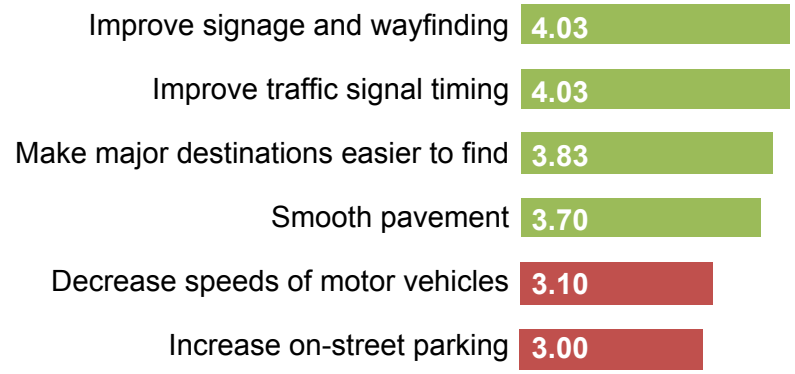
Figure 4: Transit Connectivity Priorities



Scaled 1-5, one is "not a priority"

Conclusion: Increase transit service and information

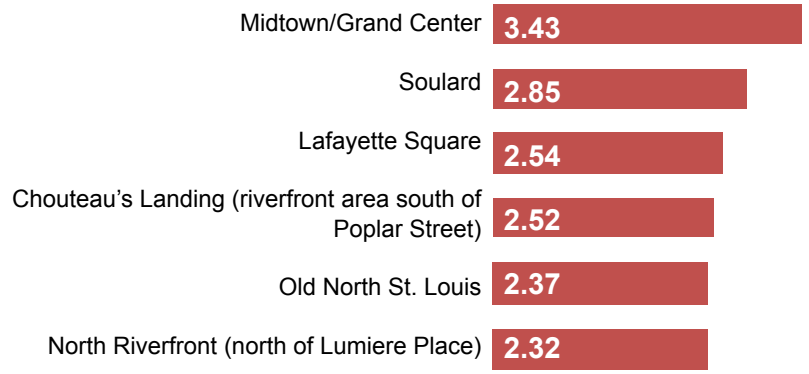
Figure 5: Vehicular Connectivity Priorities



Scaled 1-5, one is "not a priority"

Conclusion: improve clarity of vehicular operations and control

Figure 6: Existing Neighborhood Connectivity



Scaled 1-5, one is "not at all connected"

Conclusion: improve connections are needed to Old North St. Louis and North Riverport

Identification of Study Priorities

The Stakeholders identified some of the key issues that they perceived as contributing to connectivity, access or modality deficiencies within Downtown. Some of the global issues that were identified include the following:

- Inadequate connectivity to adjacent areas (particularly the North Riverfront) and insufficient connections to regional trails.
- No defined multi-modal street hierarchy that defines streets in terms of their purpose, function or design features.
- Excessively wide streets are not well-utilized and streets are not “right-sized” for all modes of transportation or adjacent land uses. Some streets are under-utilized while others create barriers.
- Street closures erode the cohesion of the grid and “superblocks” interrupt connectivity. Portions of the street grid are disrupted by inconsistent directional patterns and/or freeway corridors, and one-way streets hinder circulation and wayfinding.
- No uniform strategy for on-street parking/loading, which can impact vehicle operations, transit and biking patterns.
- Incomplete wayfinding and directional signage for ALL modes of travel. In particular, pedestrian guidance needs to be reinforced between major landmarks.
- Traffic signal timings are not effective for all modes of travel.

Tucker at Washington Avenue - excessively wide street

The results of the stakeholder surveys were combined with field observations and inventories as well as qualitative evaluations to identify modal-specific deficiencies, which are discussed in the next section.

These processes were also used to identify priority locations, or those that were considered “the most deficient” with respect to connectivity and multi-modal access. The most prominent study locations are summarized in **Table 3**.

This listing of prominent deficiencies was supplemented with additional feedback from the stakeholders, as shown by **Figures 7 and 8**. As can be seen, there is a heavy emphasis on the area between the Edward Jones Dome and the Riverfront – including the I-70 corridor and adjacent intersections – which represents the core of the Special Focus Area. In general, many of these existing intersections are considered confusing, inefficient, and unfriendly to pedestrians or bicyclists.

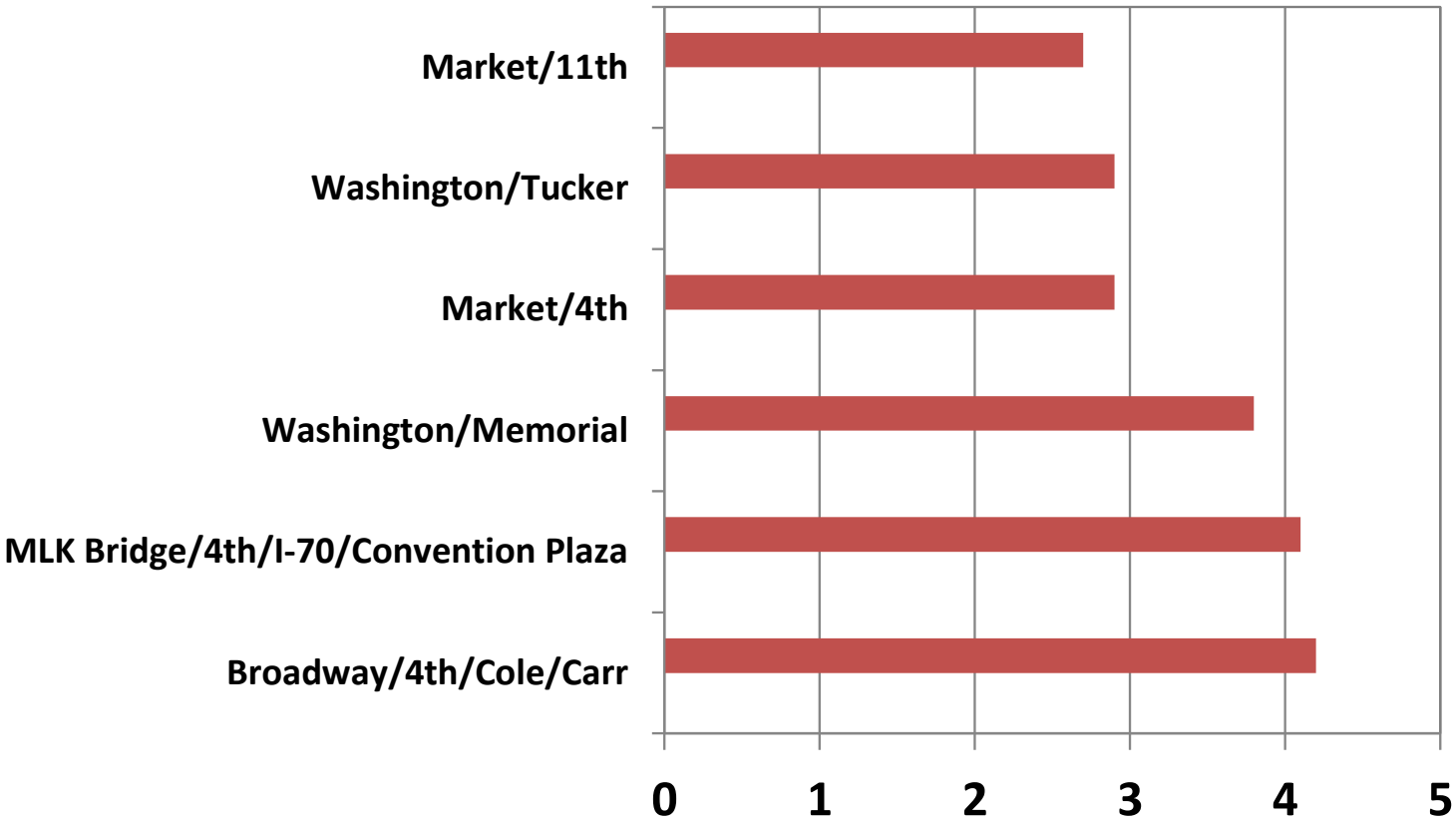
It should be acknowledged that a number of these existing deficiencies will be addressed and/or corrected by improvements associated with the CityArchRiver 2015 project, including modifications to the intersections of 4th Street and 3rd with Convention Plaza and the MLK Bridge, respectively. Those enhancements will provide improved pedestrian connections along the south side of Convention Plaza between the CBD and Laclede’s Landing. They will also improve pedestrian egress from Laclede’s Landing and ingress to Lumiere Place.

Nevertheless, the need for better multi-modal accommodations and treatments in the Special Focus Area, including reinforced north-south connections to the north of Convention Plaza as well as east-west connections at Cole/Carr or Biddle will persist.

Table 3: Location Deficiencies

Location	Deficiencies
Laclede's Landing	▪ Inadequate vehicular and pedestrian connectivity to/from CBD ▪ Inadequate vehicular internal circulation and connectivity to major gateways
Lumiere Place	▪ Pedestrian connectivity from CBD via tunnel not promoted ▪ No direct connectivity to/from Memorial Dr
Gateway Station/Civic Center Transfer Station	▪ Surrounding surface lots and depressed MetroLink corridor hinder connectivity ▪ No unique character identifiers – difficult to get to ▪ Bus Transfer Center currently over-capacity
Civic Center District	▪ Large blocks & fenced areas inhibit connectivity ▪ Inactive facades at street level ▪ Abundance of off-street surface parking ▪ Inconsistent policies for on-street parking
Chouteau's Landing	▪ Poorly connected to Downtown due to interstate barriers ▪ Lombard St and Gratiot St do not extend beyond 4th/Broadway
Tucker Blvd Corridor	▪ Barrier to pedestrian and bicycle connectivity ▪ Too many vehicular lanes ▪ Traffic signal timings not conducive to pedestrians ▪ Encourages fast vehicle speeds
Market Street Corridor	▪ Excessively wide ▪ Designed as an arterial but doesn't carry enough traffic ▪ Barrier to pedestrian and bicycle connectivity
4th Street and Broadway Corridors	▪ Inconsistent lane definitions and alignments ▪ Encourage fast vehicle speeds ▪ Unprotected hotel drop-off/pick-up areas ▪ Excessive number of curb cuts
I-70	▪ Barrier to connectivity ▪ CityArchRiver 2015 emphasizes pedestrian linkages at select locations only
Washington Avenue east of 10th Street	▪ Inadequate transit transfer accommodations at 6th Street ▪ Competing demands for limited street width (on-street parking, vehicular, transit)
Olive St Corridor west of Tucker Blvd	▪ Excessively wide and underutilized
Cole St Corridor	▪ Excessively wide and underutilized
Rail yard viaducts south of Downtown	▪ Absence of bicycle accommodations
Eads Bridge/Washington Ave/Memorial Dr	▪ Inefficient for motorists ▪ Hazardous for pedestrians and cyclists ▪ Confusing – impediment to wayfinding
MLK Bridge Touchdown	▪ Inhospitable to pedestrians and cyclists ▪ Interrupts connectivity between Edward Jones Dome and Laclede's Landing
Broadway/Carr St/Cole St/4th St/3rd St	▪ Inefficient for vehicles ▪ Confusing and dangerous ▪ Inhospitable to pedestrians and cyclists ▪ Not conducive to Bottle District development
Spruce/Clark Ave at I-64 Ramps	▪ Ramps intrude into otherwise developable city blocks ▪ Ramp orientations create awkward intersections ▪ Ramps preclude 2-way traffic on 9th and 10th St ▪ Ramps hinder pedestrian connectivity
11th St at Market St	▪ Offset intersection confusing and awkward
Washington Ave at Tucker Blvd	▪ Long east-west pedestrian crossings ▪ Vehicular congestion
Market at 4th and Market at Broadway	▪ Needlessly large intersections with dual turn lanes ▪ Inhospitable to pedestrians and cyclists
Tucker at Spruce	▪ Awkward vehicular lane shifts ▪ Heavy bus usage associated with Civic Center Transfer Station to the west
Broadway at I-64/Poplar	▪ Encourages fast vehicular speeds ▪ Hazardous for pedestrians
Chouteau Ave/Broadway/4th St	▪ Excessively large and complex gateway intersection
Union Station superblock	▪ Disrupts east-west connectivity to redevelopment opportunities on MoDOT ROW
"Mansion House"	• Superblock disrupts east-west connectivity between Memorial Drive and Fourth Street
"Millenium Hotel"	• Superblock disrupts east-west connectivity between Memorial Drive and Fourth Street
"Hilton at the Ballpark"	• Superblock disrupts north-south connectivity between Walnut Street and Market Street
"MAC"	• Superblock disrupts east-west connectivity between Fourth Street and Broadway
Busch Stadium	▪ East-west connectivity disrupted between Gratiot St and Clark Ave

Figure 7: Prioritization of Connectivity Deficiencies by Location



Scaled 1-5, Five representing extreme deficiencies

Intersections between the Edward Jones Dome and the elevated section of I-70 were deemed to be most deficient.

Figure 8: Ranking of Deficiencies by Connectivity Issue

	Connectivity Barrier	Traffic Congestion	Confusing for Non-Motorized Users	Excessively Sized	Disconnected to Transit	Inhospitable to Cyclists	Inhospitable to Pedestrians
Broadway/4th/Cole/Carr	6	**7**	1	3	5	4	2
MLK Bridge/4th/I-70/Convention Plaza	4	**7**	3	6	5	2	1
Washington/Memorial	4	**7**	3	6	5	1	2
Market/4th	5	**7**	6	4	2	1	3
Washington/Tucker	5	**7**	6	1	4	3	2
Market/11th	6	**7**	5	1	2	3	4

Scaled 1-7,with one being "most deficient"

Traffic congestion was not a major concern at any of the priority locations. Instead, the lack of ped-bike connectivity and the confusing, oversized configuration of the intersections were of greater concern.

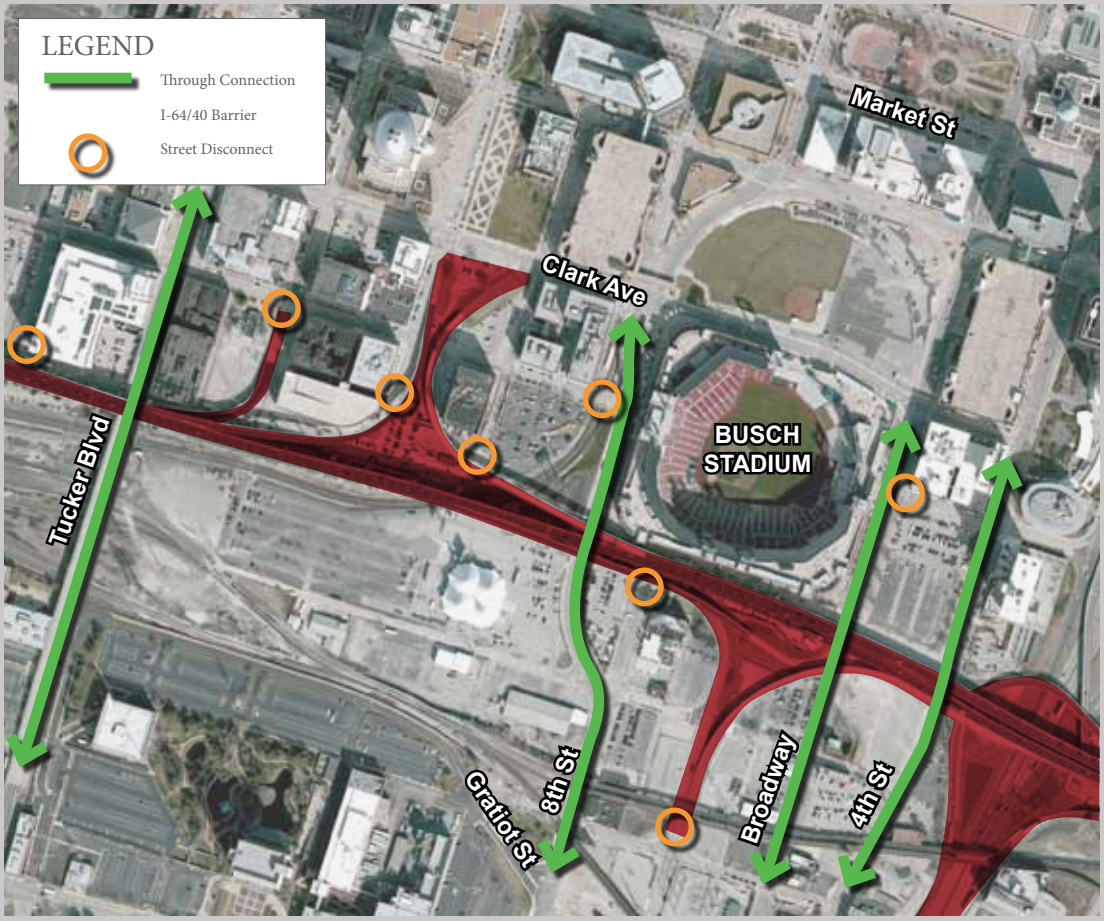
SECTION 4

Review of Modal-Specific Connectivity Deficiencies

REVIEW OF MODAL-SPECIFIC CONNECTIVITY DEFICIENCIES

The preceding section reflected comments from the stakeholders that were combined with assessments of the study area to identify existing transportation deficiencies of a global nature. It was noted that Downtown lacks a multi-modal street hierarchy; many streets are not appropriately sized to accommodate all modes of travel or to complement the urban context of the adjacent land uses. Some streets are underutilized and/or excessively-sized, while others create perceptional barriers that disrupt neighborhoods and discourage travel for all modes.

As a subsequent step in this process, an effort was made to further define conditions for each mode of travel, as discussed herein.



"Busch Stadium and the I-64 ramps…disrupt east-west connectivity for all modes between Clark Avenue and Gratiot Street – a distance of more than ¼-mile."
– Bicycle Federation Listserve

Pedestrian

The following conditions were identified as the most significant impediments or deficiencies to pedestrian activity in Downtown:

- Pedestrian infrastructure is inadequate in many locations – examples include missing curb ramps, fractured sidewalks, no pedestrian signal indications, and faded pavement markings. More pedestrian-scaled streetscaping is also needed in many locations, including lighting, wayfinding and street furniture.

It should be acknowledged that efforts are underway to correct some of these deficiencies. For example, the City's 4th & Broadway Overlay and Pedestrian Improvement Project will provide new Americans with Disability Act (ADA) wheelchair ramps at each of the intersections along those two corridors. However, there will still be a need for an aggressive sidewalk maintenance program throughout the remainder of the CBD.

Crosswalk on Market Street between Broadway and 7th

Pedestrian in scooter on southbound 14th Street

Washington Avenue at 3rd Street looking west

Traffic signal timings do not prioritize pedestrians and frequently provide the shortest crossing interval possible. Some corridors are programmed for heavier traffic flows than they currently carry, resulting in unnecessary delays for other modes of travel.

As a result, there is a need to revisit the prioritization of signal corridors that was originally established with the Downtown Streetscape Plan and the Downtown Traffic, Access and Circulation Study conducted in 2005.

It must be acknowledged that significant changes in traffic patterns will occur between now and 2015 due to the completion of the Mississippi River Bridge and the closure of Memorial Drive (for the CityArchRiver 2015 project). Therefore, it may be prudent to forestall signal timing efforts in the CBD until after travel patterns have normalized. At that time, consideration should be given to the use of shorter cycles along corridors like Washington Avenue or Market Street.

Existing east-west connections to the Riverfront and Laclede's Landing are unfriendly to both pedestrians and bicyclists. The intersections of Washington Avenue with Memorial Drive and the Ead's Bridge are confusing, high in conflicts, and intimidating because of the elevated I-70 structure. Likewise, there are poorly defined connections at Convention Plaza/MLK Bridge/Laclede's Landing and at Cole/Carr/Lumiere Place. These large, complex intersections offer multiple conflict points and insufficient pedestrian pathways. Wayfinding through these complexes is not intuitive.

Despite the meaningful improvements being made by these pending projects, they will only enhance pedestrian connections to the south side of Convention Plaza. Pedestrians will be deterred from the north side of the Convention Plaza to avoid conflicts with traffic accessing the MLK Bridge, 4th Street and the I-70 exit ramp, which disengages Baer Plaza. Connections further to the north - including east-west connections in the vicinity of Cole/Carr/ Lumiere Place and Biddle Avenue - will remain deficient since they are beyond the limits of the CityArchRiver 2015 Project.

Acknowledgement:

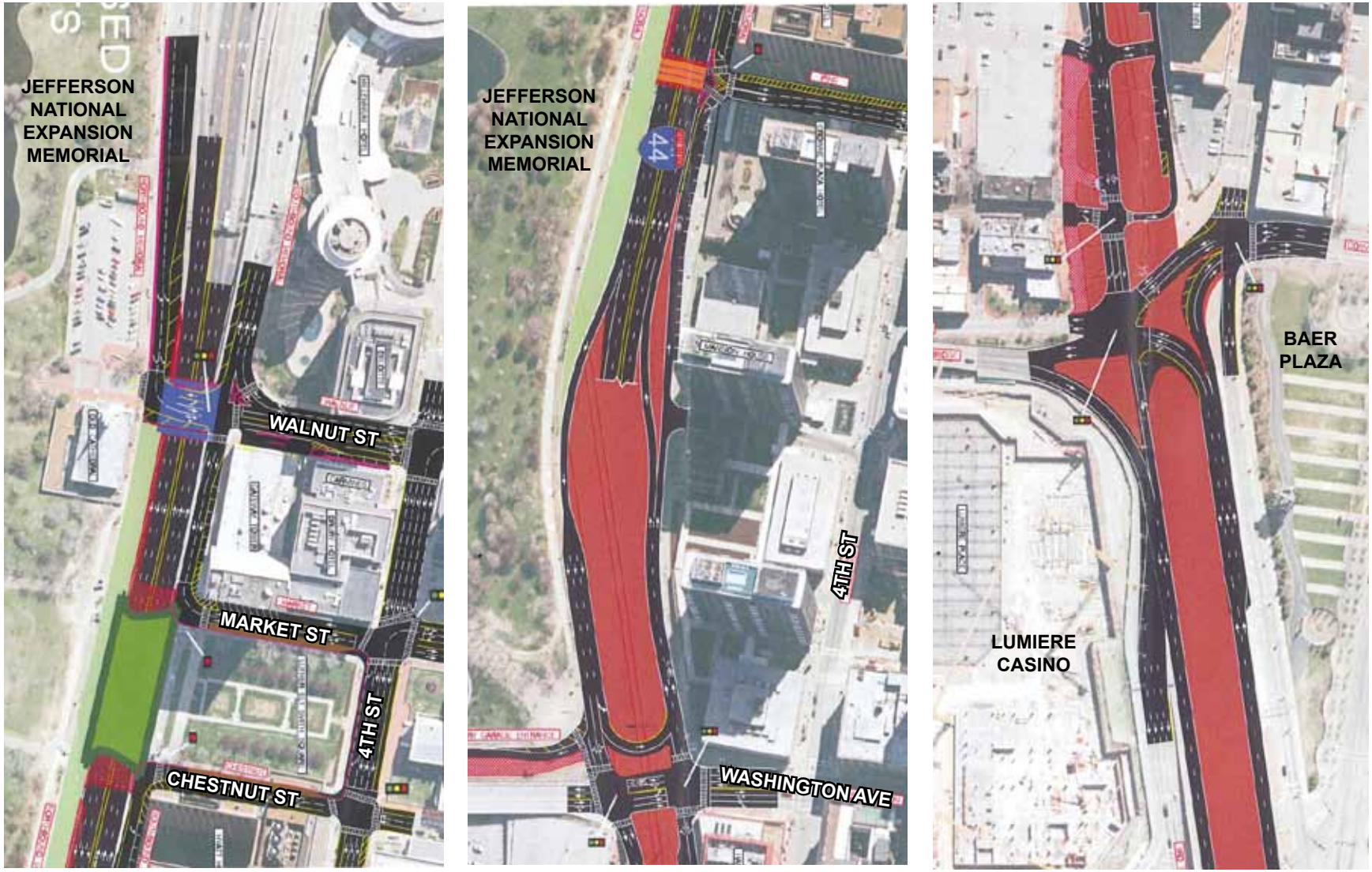
A number of these intersections will be improved by the CityArchRiver 2015 project and Laclede's Landing's 3rd Street Streetscape Project. In particular, the Washington Avenue/Memorial Drive intersection will be simplified, more intuitive pathways will be created and pedestrian accommodations will be greatly enhanced.

These conditions will be augmented by a streetscape plan being developed for Washington Avenue in association with the MX District (similar enhancements are also being considered for 7th and 8th Streets). Improvements may include relocation of traffic signal cabinets and pull boxes in order to create wider pedestrian corridors.

Additional enhancements are also being made between 4th Street and Laclede's Landing to provide an improved pedestrian connection from Convention Plaza. This will include widening of the sidewalk on the south side of Laclede's Landing Boulevard.

The collective enhancements from the CityArchRiver 2015 and Laclede's Landing projects are reflected by preliminary concept drawings provided by the Missouri Department of Transportation (individual elements are subject to change pending completion of the design process), as reflected by the three panels in **Exhibit 5.**

Exhibit 5: Proposed Roadway Modifications Associated with CityArchRiver 2015 and Laclede's Landing Streetscape Projects



Source: MODOT, Preliminary Concept Drawings

Intersections of freeway ramps with the Downtown grid system (including many of the major gateways for vehicular traffic) are typically inhospitable to pedestrians. In some cases, no pedestrian facilities are provided, travel paths are not intuitive, and the potential for pedestrian-vehicle conflicts is high.

- Similar conditions exist on many of the arterial gateways or connections to the surrounding neighborhoods. The viaducts on Tucker and 14th Street are particularly inhospitable to pedestrians, offering long, exposed connections with relatively narrow sidewalks.

- Several streets are unnecessarily wide, forming barriers to pedestrian activity. The most glaring example is Tucker Boulevard, which requires excessively long crossings for pedestrians and long wait times.

- Other, more generic observations include the following:
  - Relatively narrow sidewalks along some streets, where demands for limited space can occasionally result in congestion or conflicts between pedestrians and sidewalk diners.
  - Overhead skywalks can detract from sidewalk usage and street-level activity.
  - Some green spaces are not designed for pedestrian connectivity, so they can form barriers rather than attractions.
  - Surface parking lots can neutralize sidewalk activity.

Gateways

The Downtown Next Vision 2020 plan identified a number of prominent gateways or entryways that play key roles in establishing visitors' perceptions: making Downtown more of an enticing destination; creating an arrival experience that helps delineate the district boundaries; and providing a more welcoming connection for all modes of travel to the surrounding neighborhoods. In fact, the Vision 2020 plan proposed a strategy to prioritize Downtown's key entryways and connector streets (e.g., 8th, Tucker, Clark, Olive, Broadway) for improvements.

A more extensive listing of entryways into Downtown is provided in **Table 4**, along with noteworthy deficiencies at several locations. As shown, exits from the Interstate system represent some of the more prominent gateways, which are often the first exposure visitors and commuters have to Downtown. The Downtown Next Plan advocated beautifying these portals in order to create a more welcoming environment.

"Washington Avenue shouldn't be the only street with an enhanced streetscape design."
– Vision 2020 Participant

Several current projects should offer good opportunities to address a number of these locations. In particular, the CityArchRiver 2015 project will facilitate enhancements to Memorial Drive at Walnut Street and Washington Avenue at 3rd Street. Likewise, the MRB and Tucker Boulevard projects should address Tucker at Cass, which will be a primary portal from I-70.

However, several other gateways are either congested during peak periods and/or are lacking aesthetic treatments that convey any sense or arrival or guidance into Downtown. Arguably, high-priority locations would include several entryways in the Special Focus Area that require treatment - either through streetscaping or perhaps through the redevelopment of adjacent properties - to enhance connectivity:

- I-70 at Broadway (includes Broadway at Cole).
- MLK Bridge at 3rd Street (includes 3rd Street at Carr and Broadway at Cole).
- Chouteau at 7th Street, Tucker Boulevard, 14th Street and 18th Street / Truman Parkway. Chouteau is a common denominator as an entryway to Downtown for several local roadways as well as motorists exiting from I-44/I-55.

Table 4: Downtown Gateway Deficiencies and Treatments

Entry Route	Primary Gateway	Secondary Gateway	Noteworthy Deficiencies	Potential Treatments
EB I-64	Jefferson			
	Chestnut at 20th		Awkward intersection with confusing control; high potential for pedestrian conflicts	Proposed interchange modifications associated with Northside redevelopment
	14th Street		Structurally constrained; conflicts with activity at Civic Center multi-modal station	Add structural streetscape and wayfinding elements (e.g., overhead signage and lighting)
	11th Street at Spruce	11th at Clark	Poor aesthetics; high potential for pedestrian conflcits; awkward intersection configuration and control at Spruce	Reconfigure ramp to span Spruce Street
	Gratiot at 6th Street	Gratiot at 4th Street	Poor visibility and aesthetics; additional capacity needed; pedestrian conflicts	Supplement signage, wayfinding and streetscaping along Gratiot
WB I-64	Market		Structurally isolated	Establish landmark / gateway treatments at east end of bridge
	9th at Clark		Awkward intersection; high potential for pedestrian conflicts	Reinforce pedestrian accommodations along south side of Clark Street; add signage for ramp traffic
	Memorial at Walnut (proposed)	(also serves EB I-44/NB I-55)		Will be addressed by City+Arch+River project
EB I-44/NB I-55	Truman Parkway at Lafayette	Also see Gravois / Tucker		
	Park Avenue at 7th	Park Avenue at Broadway	Confusing series of intersections; insufficient storage; poor aesthetics	Direct Downtown traffic to Broadway instead of 7th
	Washington Avenue at 3rd Street (proposed)	(also serves Eads Bridge)		Will be addressed by City+Arch+River project
EB I-70	Tucker Avenue at Cass (via MRB exit)			Willl be addressed in conjunction with MRB and Tucker Blvd projects
	Broadway		Poor aesthetics; confusing intersection; incompatible for peds/bikes; intersection with Cole is congested	Recommended realignment of 4th Street and Cole at Broadway; route peds/bikes across I-70 corridor at Cole/Carr and Biddle
MLK Bridge	3rd Street at Carr	Broadway at Cole	Downstream intersections are over-sized, confusing & awkward; unfriendly to peds/bikes	Proposed realignment of 4th Street and Cole at Broadway with pedestrian enhancements
Broadway	Chouteau	4th at I-64 (Poplar)	Poor aesthetics; large intersection is unfriendly to peds/bikes	Streetscape improvements and/or landmark / gateway treatments; reinforce ped/bike accommodations
7th Street	Chouteau	7th at I-64 (Cerre)		
Gravois /Tucker	Chouteau	Tucker at I-64 (Spruce)	Large intersection and Tucker viaduct are unfriendly to peds/bikes;	Consider road diet on Tucker viaduct in order to enhance ped/bike accommodations; streetscape improvements and/or landmark / gateway treatments
14th Street	Chouteau		14th Street viaduct is unfriendly to peds/bikes	Consider road diet on 14th viaduct in order to enhance ped/bike accommodations
Truman Parkway	Chouteau	18th at I-64 (Spruce)		
Market Street	Jefferson			
Olive Street	Jefferson		Lacks character based on adjacent land uses and lack of streetscaping	Promote redevelopment and prioritize streetscape improvements
Jefferson Street	Cass			
N. Florissant	14th	13th at Tucker		Potential for N. Florissant to align with 14th Street corridor as part of Northside redevelopment

Bicycle

The following conditions were identified as the most significant impediments or deficiencies to bicycle activity in Downtown:

- Bicycle routes are not consistently or adequately signed or prioritized, and they also fail to provide guidance to several major destinations.
- Viaducts such as those on 14th and Tucker crossing Mill Creek Valley south of Downtown do not provide accommodations for cyclists.
- Some cyclists feel that 'Share the Road' operations provide insufficient safety clearances between bicycles and moving vehicles. There is a preference for separate bike lanes in select locations.
- There are very few on-street bicycle treatments, and they tend to be applied in relative isolation in lieu of continuous connections. Continuous signage to reinforce provisions is also needed.

"Bike lanes on Jefferson Avenue are not organized enough and drivers are too aggressive to offer the protection many cyclists need." - Bicycle Federation Listserve

- Off-street bicycle facilities are limited and disconnected from much of Downtown.
- Locations where freeway ramps connect to the street system (i.e., vehicular gateways) are typically inhospitable to cyclists.
- Select intersection configurations, such as dual turn lanes, are perceived as being hazardous to cyclists.
- Poor pavement conditions discourage cycling.
- More bike racks and/or bike parking facilities are needed throughout Downtown.

Many of these conditions are redundant with pedestrian-related deficiencies. Accordingly, the major assets and deficiencies in the combined pedestrian-bicycle system are summarized in **Appendix F**.

Transit

The following conditions were identified as the most significant impediments or deficiencies to transit usage in Downtown:

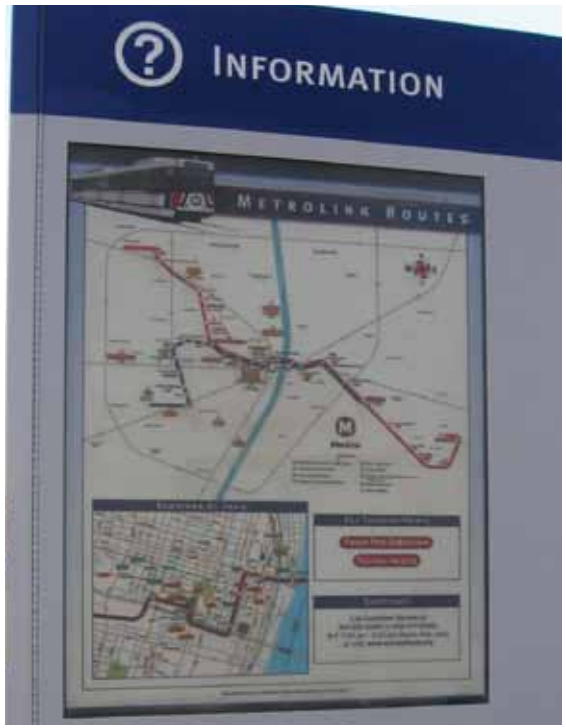
- There is a perceived lack of awareness of transit services and customer information regarding how and where to access transit.

- Most bus stops provide only basic amenities and lack seating, shelter, prominent signage, and essential customer information, such as route diagrams and schedules. There's an increasing desire to have real-time arrival information, and upgraded facilities (as well as increased connectivity) could increase the number of "choice riders".

Metro – operator of most transit services in the study area – intends to introduce several new amenities for transit customers in the near future, including real-time transit arrival information on several routes and a smart card fare system.

- One-seat bus service between Downtown and adjacent areas is limited, as most services require transferring to the Downtown Trolley at the Civic Center Station.

- Within the heart of Downtown, several express buses utilize diagonal routing patterns, which are not conducive to attracting casual riders.



- A comprehensive plan for the future of transit in Downtown is lacking – on-going initiatives are focused on specific services (i.e., bus rapid transit and St. Louis Streetcar).

  In particular, services along the proposed Northside-Southside corridors need to be addressed. Currently, high-speed transit service in the form of light rail radiates east-west from Downtown and connects to other bus routes, but the same quality of service is not offered for north-south routes through the core of Downtown.

  Likewise, a comprehensive plan for Downtown is needed to consider possible features like bus lanes or shared guideways on some critical routes (14th Street, for example) or to accommodate the extension of Bus Rapid Transit (BRT) further into the core. Reinforcing BRT linkages between the interstates and the main downtown loop (14th, Market, 4th/Broadway, Washington) could encourage more transit usage.

- The Civic Center bus transfer center is currently overcapacity during peak periods. However, this condition will be improved by Metro's planned expansion of the station. When complete, this will better complement Metro's existing hub 'n spoke network.

- Bus service is not currently provided east of 4th Street, so there is no direct connection to the Arch grounds or Riverfront.

- Currently, there is too much conflict between transit vehicles and vehicular traffic, or delays caused by congestion, resulting in slower-than-desired service speeds for transit.

Vehicular

The following conditions were identified as the most significant impediments or deficiencies to efficient vehicular traffic movement in Downtown:

- One-way streets can hinder traffic circulation and create wayfinding difficulties for unfamiliar motorists. While this study did NOT focus on the deliberation of one-way vs. two-way street orientations, the implications of both configurations should be noted:
  - One-way streets are more efficient and higher capacity, but they negatively affect retail, create adverse travel and contribute to confusion.
  - Two-way streets can improve mobility and retail visibility, reduce confusion and calm traffic, but they adversely affect signal operations and capacity, and result in increased conflicts with parking or loading maneuvers.
- Street closures erode the cohesion of the street grid system, create adverse travel and disrupt wayfinding. They also deactivate vehicle travel upstream and downstream of the closure, thereby hindering businesses that may rely upon pass-by traffic.
- Several major gateways into and out of the Downtown are congested during peak periods and special events. In addition, many of the gateways offer little sense of arrival or guidance into the CBD.
- Lane assignments and markings are not well-defined at several intersections or along selected streets.

- Several major intersections are highly complex and confusing to navigate, mainly due to travel paths that are disorienting to drivers.
- Turn on red regulations are not well understood, and thus a wide range of turning behaviors are exhibited in the downtown on a regular basis.
- Despite significant improvements made to downtown traffic signal operations in 2005, coordination along several corridors has been disrupted by construction activities, power supply irregularities and changing conditions.
    - Long cycle lengths used on the “primary” routes frequently result in queues during peak traffic periods that spill back between intersections (particularly along Washington Avenue).
    - Separate left-turn phases at many intersections are under-utilized, resulting in unnecessary delays for motorists as well as pedestrians and bicyclists.

Urban Design, Land Use & Wayfinding

While most of this dialogue focuses on deficiencies of the existing transportation system, the adjacent land uses and wayfinding systems also play a significant role in enhancing multi-modal access and connectivity. These elements can substantially influence the perception of whether sufficient connections exist and how "friendly" a given corridor is to pedestrians, bicyclists and transit users.

The following deficiencies in urban design, land use, and wayfinding were identified as having the most significant impacts on the existing transportation system:

Urban Design

There are varying levels of urban design throughout Downtown St. Louis. Critical corridors such as Washington Avenue, Broadway, 4th Street, and 8th Street all exhibit elements of urban design components within the public realm, including streetscape enhancements, street trees, lighting, street furniture, and public art, which have added to the placemaking experience.

More prominent examples are evident within the public spaces of CityGarden and Old Post Office Plaza along with the renovations to the historic streetscapes of Laclede's Landing and Washington Avenue. These treatments have enhanced the urban design and destination experience, while also providing identity to the various districts of Downtown. There continue to be numerous challenges to Downtown's experience, with the most notable examples listed below:

- Elevated I-70 Viaduct: As previously noted, the massive structure of columns, girders and decking over the streets and sidewalks of Memorial Drive, 3rd Street, Washington Avenue, Convention Plaza/MLK Bridge and Cole/Carr Streets present a very intimidating and negative experience for travelers. The physical space underneath the viaduct is empty, inactive and often unsightly with debris, dust and grime. Lighting underneath the structure is insufficient, resulting in a perception that the area is unsafe for pedestrians and bicyclists.

  The CityArchRiver 2015 project will combine with other new investments in Laclede's Landing, the Mercantile Exchange District, and potential improvements to the Edward Jones Dome to provide improvements to some of these areas and also to attract more pedestrians to the adjacent streets. Expansions and/or augmentations of those improvements are needed to help extend the pedestrian realm beyond the limits of those projects.

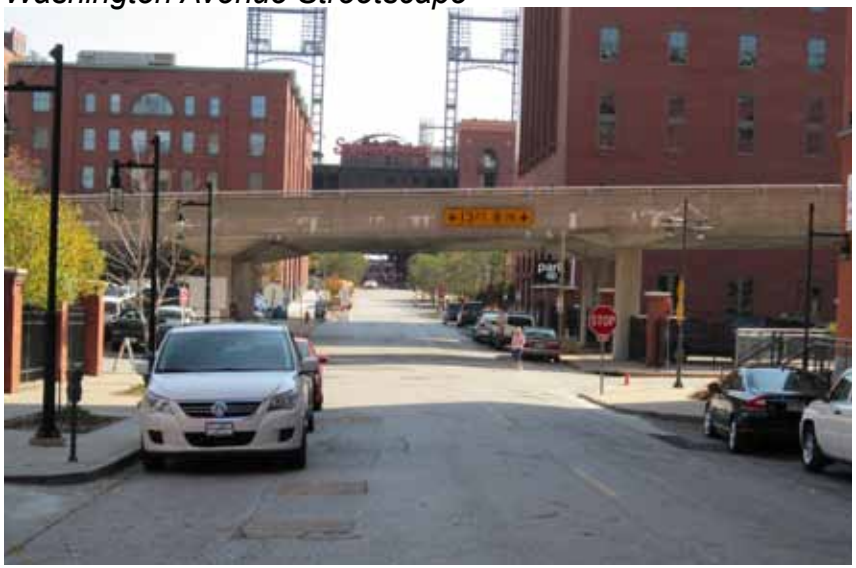
  In particular, the treatments of the three-dimensional space (including vertical elements) under the elevated freeway between the Ead's Bridge and the MLK Bridge are being contemplated. Ideally, these spaces could be activated with kinetic, electronic or aesthetic treatments in order to enhance the pedestrian-bicycle and motorist experience in these corridors.

- Clark Avenue and Spruce Street: Clark Street serves as an important east-west corridor for pedestrians, transit riders and visitors in Downtown. The street is anchored by Busch Stadium on the east and the Scottrade Center and Union Station on the west. There are three MetroLink stations located along the corridor that help serve multiple destinations, including the Westin Hotel, Cupples Station, the Federal Courthouse, City Hall, and Ballpark Village that can and will attract high volumes of pedestrian traffic.

  Despite its prominence, the continuity of this corridor is also disrupted by other features, including intersections with the ramps to and from I-64; multiple driveways and/or garage access; and extremely wide intersections with Tucker Boulevard. Collectively, these conditions favor vehicular traffic at the expense of other modes, detract from the corridor's functionality, and also deter multi-modal usage. Pedestrian connectivity along the south side of Clark Street is particularly impeded.

  Similar conditions also exist along Spruce Street, though it is more lightly traveled. This street could be a natural candidate as a landmark corridor, particularly given the historical character created by Cupples Station, but its streetscape is sullied by elevated ramp structures.

Washington Avenue Streetscape



Spruce Street

Land Use

The transportation network can impact land uses throughout Downtown by creating barriers to some types of activity. I-70's division of Downtown from the Mississippi River and the Arch grounds provides the most telling example, though the CityArchRiver 2015 project seeks to mitigate that condition. However, the elevated section to the north of Convention Plaza will continue to affect connectivity and the viability of adjacent development.

Arguably, the lack of connectivity across Memorial Drive/3rd Street may hinder the sustained vibrancy of Laclede's Landing. This condition could be exacerbated by the removal of the east leg of Washington Avenue, though CityArchRiver 2015 is attempting to mitigate that impact by enhancing connections along 3rd Street at Lucas Avenue, Morgan Avenue and Laclede's Landing Boulevard and also extending 3rd Street through the MLK Bridge Terminus.

Similar enhancements should be pursued at Cole/Carr and Biddle to help foster redevelopment efforts around Lumiere Place and the North Riverfront. Those areas to the north of Carr Avenue could potentially have improved visibility with the completion of the Mississippi River Bridge, though improved access must still be provided. In particular, better east-west transects along Cole Avenue and Cass Avenue will be critical. Such connections would improve access and circulation and could potentially help promote redevelopment of the Bottle District and Columbus Square Neighborhood.

Existing land use can also have a pronounced impact on the utilization of a corridor and its perception as being "friendly" to alternative modes of travel. Throughout Downtown, many blocks have inactive façades or other inhospitable conditions that deter pedestrian or bicycle activity and may also effect transit utilization if stops are perceived to be in unfriendly or unsafe locations. Examples include those roadways paralleling or crossing the elevated sections of I-70 or abutting the "superblocks" (i.e., southbound Memorial along the back of Mansion House or the Hampton Inn, or 9th Street and Cole Street along the back of the Convention Center).

In addition, there are many locations in the core where historic buildings are awaiting renovation. Inactive building facades require street-level treatments, perhaps including building access on all facing streets, streetscaping, lighting and the addition of activated spaces.

I-70 Viaduct Pedestrian Conditions

Wayfinding

The wayfinding system for Downtown has many positive components; however, many issues need to be addressed to provide a comprehensive system for downtown. The new wayfinding system provided by the Convention and Visitors Commission (CVC) is a very good initiative for wayfinding in Downtown, although the new signs are mainly oriented in scale and message towards motorists and vehicular traffic. As more of the pedestrian level signs are implemented, the CVC wayfinding system will be more complete.

Currently, there is a lack of pedestrian level wayfinding signs to direct pedestrians to destinations such as CityGarden or Union Station. These same signs are also needed to direct pedestrians, especially out of town visitors, to retail streets such as Olive Street, entertainment streets such as Washington Avenue, or festival areas such as Old Post Office Plaza or Laclede's Landing. Such signage would identify and direct pedestrians to restaurants, bars, cafes, and retail shops in addition to larger destinations such as Busch Stadium, the Convention Center and the Edward Jones Dome.

Location of wayfinding signs and way markers is critically important to wayfinding systems. The wayfinding signs, directories and way markers should be where pedestrians are clustered. Such locations would be numerous hotels, parking garages (especially public parking garages), larger public parking lots, Metrolink stations, Metro Bus Transfer Center, and public spaces such as Kiener Plaza, CityGarden, Old Post Office Plaza, Baer Plaza, etc. The waymarkers of pavement icons, street lights/banners, public art and signs should define routes from starting points (MetroLink Stations, Lumiere Casino tunnel portal, parking garages, etc.) to destinations (Convention Center, Ballpark Village, Laclede's Landing, etc.).


ST. LOUIS
to Grand
Busch Sta
Gateway
THE BEST
OF
DOWNTOWN
ST. LOUIS


Convention Center
PLAY

SECTION 5

Multi-Modal Plan

MULTI-MODAL PLAN

In developing a Multi-Modal Transportation Plan for Downtown, the emphasis extended beyond just addressing the existing deficiencies to consider a new way of thinking about the streets within the study area. Traditional tenets reflected a view of City streets as conveyors of vehicular traffic, and their performance was measured accordingly. In retrospect, the streets in the CBD are an essential element of the public realm that influence the adjacent land uses (and vice versa). Accordingly, these corridors (the public right-of-way, if not the pavement) must serve all modes of travel in the Downtown environment.

This plan refocuses the use of the existing street grid to better accommodate multi-modal transportation while accounting for the context of the surrounding uses and their public function. Elements of the Multi-Modal Plan are first presented as area-wide or systemic guidelines, with references to "best practices"; followed by corridor-level typologies that suggest typical cross-sections or appropriate configurations and accommodations; and then as individual modality treatments in the form of recommendations for site-specific improvements.

AREA- WIDE AND SYSTEMIC TREATMENTS

A list of global or systemic recommendations for improving multi-modal access and connectivity was generated for application throughout the study area. These recommendations reflect current industry guidelines and best practices.

One principle resource cited herein is the Institute of Transportation Engineer's Recommended Practice for Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (2010). These recommendations also reflect the principles of the City's Complete Streets Ordinance and, in some cases, Great Streets tenets.

In essence, these measures are intended to accommodate and/or prioritize alternative modes of travel, including pedestrians, bicycles and transit.

Whenever possible, these accommodations should be incorporated into any new development or redevelopment plans as well as any public improvement projects.

- Apply the multi-modal street hierarchy developed as part of this plan to guide the functional priority and character of streets, including guidance for the number of vehicle lanes and accommodations for on-street parking, transit, bicycle and pedestrian facilities.

- Leverage excess street widths to provide multi-modal on-street treatments (bike lanes, cycle tracks, dedicated transit lanes, etc.). Streets should be "right-sized" for all modes of travel and for the adjacent land uses by eliminating or re-allocating excess pavement, where feasible. This may include curb bulb-outs or widened sidewalks, bike lanes or cycle tracks, the addition of landscaping (either on the curb or in a median), or reconfiguration of on-street parking.

- Convert one-way streets to two-way where feasible and where the resulting accessibility and wayfinding enhancements could stimulate commercial activity at the street-level. It should be reiterated that this study did NOT attempt to address which streets can and should be converted.

- Develop traffic signal timings based on multi-modal service standards that more effectively balance the needs of all modes. This may include the re-timing of selected corridors where traffic volumes are lower than historical averages, thereby allowing for the potential use of shorter cycle lengths that would be more conducive to pedestrians and bicyclists. For example:

    - Washington Avenue carries relatively moderate volumes between Broadway and Tucker (except during Convention Center events). The existing signal timings were established for arterial flow, which impedes pedestrians and bicyclists, and the long cycle lengths contribute to spill-backs between intersections.

    - Market Street is also moderately heavily traveled between Broadway & Tucker, so its timing patterns act as an impediment to pedestrians and bicyclists while also increasing delays for north-south traffic traveling to/from I-64. It must be acknowledged that it would be prudent to postpone any evaluations of traffic operations until after 2015 when major changes in travel patterns will occur as a result of several major projects (MRB and CityArchRiver 2015).

    - Reinforce street grid cohesion and discourage unwarranted street closures and “superblocks” to preserve multi-modal connectivity. Preserving the street grid is critical to connectivity.

    - Enhance wayfinding information and directional signage, including encouraging unique visual elements and landmarks to define key destinations.

    - Remove unwarranted traffic signals that hinder circulation and access, create confusion, and discourage compliance with traffic control devices (i.e., Cole at 6th Street or Convention Plaza at 10th and/or 11th Street). All-way or side-street stop control may provide a more efficient means of traffic control at selected locations where traffic volumes have decreased significantly. In addition, some signals in the CBD (like those at Locust and 6th or 7th) could be allowed to go to FLASH operation during off-peak periods to reduce delays for all modes.

    - Expand on-street parking and enforcement in areas where additional parking could contribute to street-level activity by catalyzing commercial businesses or creating pedestrians.

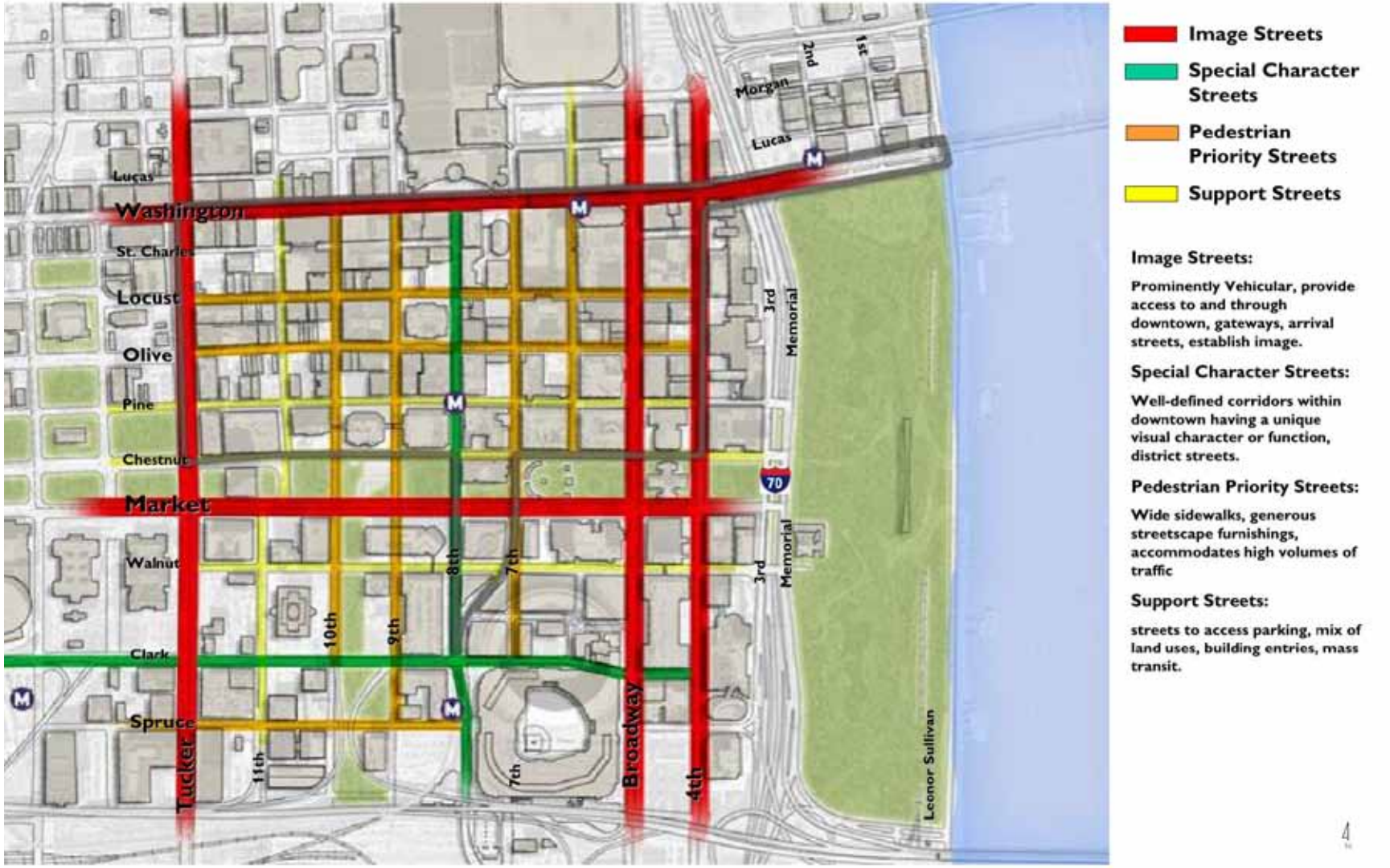
It is recognized that exceptions to these guidelines may apply in select applications. They are not intended to be absolute but rather should serve as general principles to guide the future of transportation in the study area.

Corridor-Level Typologies

Typology classifications were created to establish functional priorities for streets and to offer guidance regarding design elements, typical sections, and modality treatments. These typologies represent an extension of the classifications that were developed as part of the 2004 Downtown Streetscape Plan, as shown in **Exhibit 6.**

These typologies were created with the acknowledging that not all streets, nor all groups of streets, are created equally. They have different functional and contextual emphases, which could change over time. Accordingly, their configuration or character could change based on their primary modal emphasis or utilization of the corridor.

Exhibit 6: 2004 Street Classifications



Source: Downtown Streetscape Plan (2004)

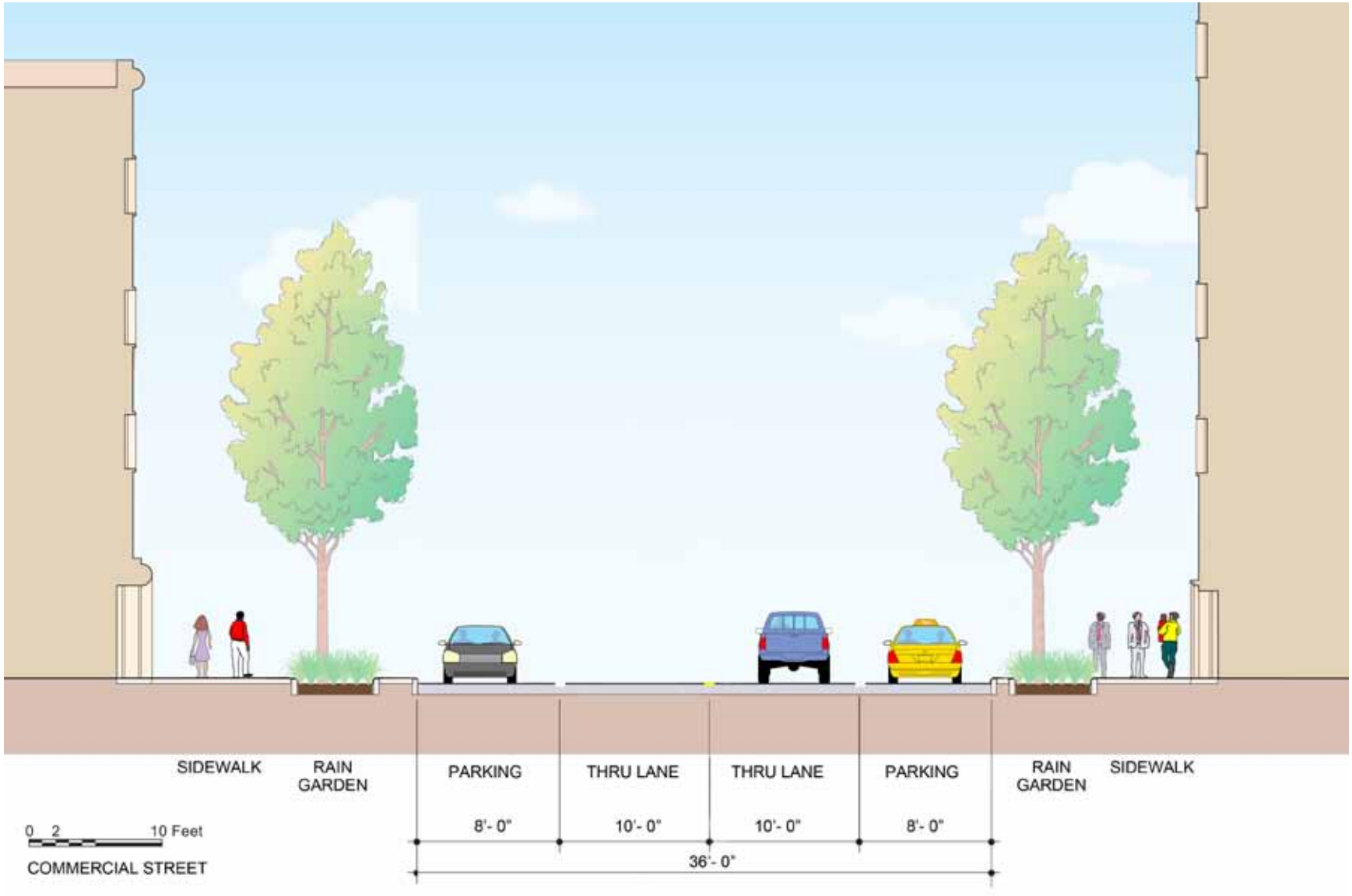
A. Commercial Streets – Prioritize pedestrians and on-street parking in order to catalyze street-level commercial activity. Low traffic speeds are emphasized to promote pedestrian safety. Pedestrian amenities such as wide sidewalks, attractive streetscapes, high-visibility crosswalks (stamped or colored concrete, zebra markings, etc.), and curb bulb-outs are encouraged. Traffic signalization prioritizes pedestrians and employs extended crossing times and leading pedestrian intervals to reduce friction from moving vehicles. Corner turning radii are limited to reduce vehicle turning speeds.

Potential Secondary Priority – Transit and Bicycle

Design Parameter	**Guideline**
Target Speed	25 mph
Traffic Signalization Priority	Pedestrians
Traffic Restrictions	Turns on Red Prohibited
Desired Street Orientation	Two-Way Traffic
Maximum Lanes	2
Infrastructure Emphasis	Pedestrian
Example Corridor	Washington Avenue

In pedestrian-vehicle collisions, the speed of the vehicle is a primary factor in the severity of the injury incurred by the pedestrian. For vehicle traveling at 30 mph, the pedestrian has an 80% chance of surviving. If the vehicle is traveling at 40 mph, there's a 70% chance the pedestrian will be killed.
Source: ITE

Exhibit 7: Typical Section for Commercial Streets

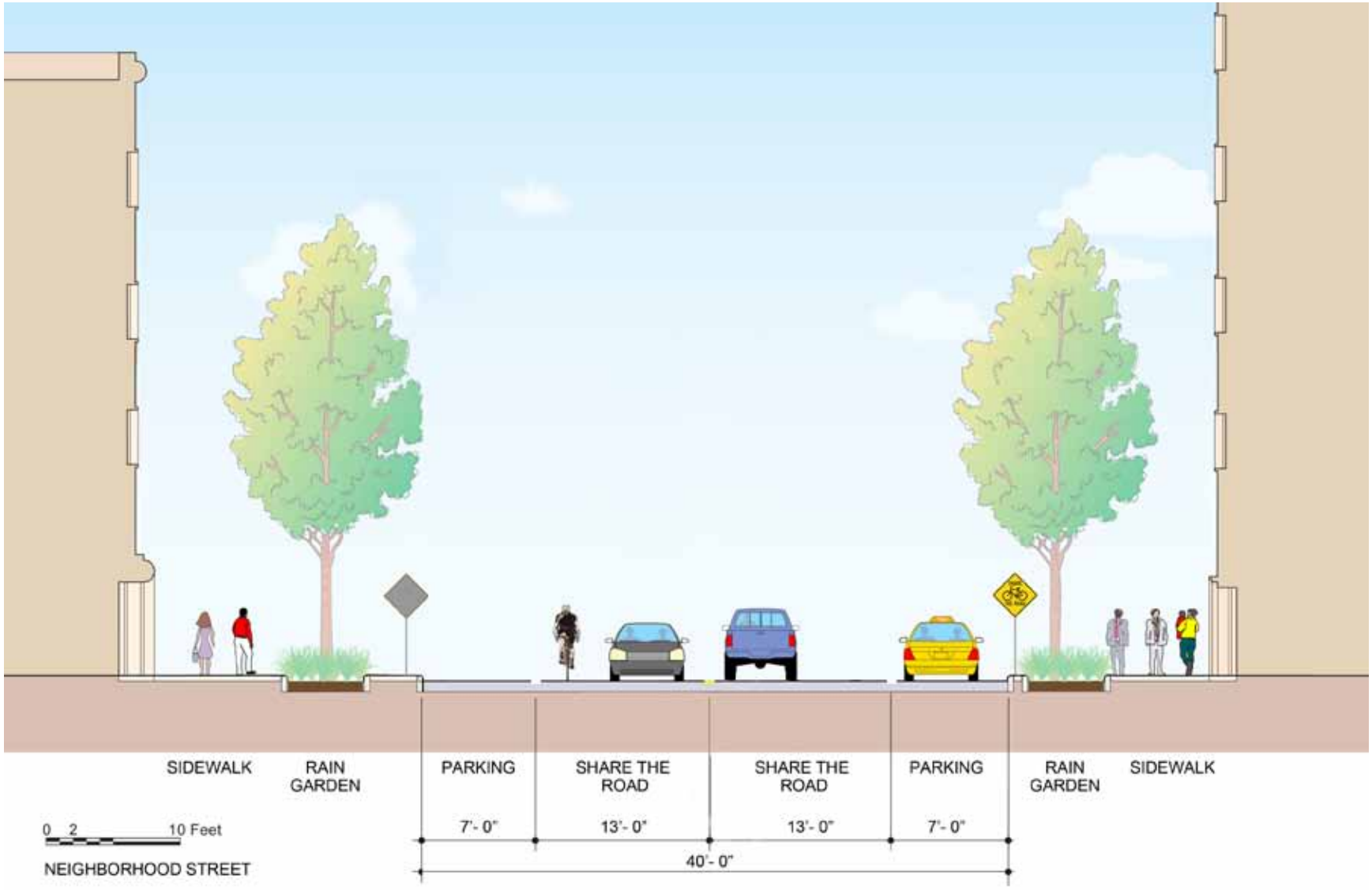


B. Neighborhood Connector Street – Multi-modal street that provides access into neighborhoods for all users emphasizing balanced modal priorities. Traffic volumes are generally low, so lanes for moving traffic should be limited to no more than 2. Low traffic speeds are emphasized to promote pedestrian safety. Dedicated turn lanes and protected turn signal phases should be avoided to prevent wide pavement sections that encourage higher speeds and discourage pedestrians. "Share-the-road" signage and "sharrow" pavement markings should be employed to foster an awareness of cyclists. Pedestrian amenities such as curb bump outs, street trees, pedestrian-scale lighting, and crosswalk treatments are encouraged.

Secondary Priority – None (modal priority is balanced)

Design Parameter	**Guideline**
Target Speed	25 mph
Traffic Signalization Priority	Balanced
Traffic Restrictions	Dedicated Turn Lanes & Signal Phases Discouraged
Desired Street Orientation	Two-Way Traffic
Maximum Lanes	2
Infrastructure Emphasis	Pedestrian
Example Corridor	15th, 16th, 17th Streets

Exhibit 8: Typical Section for Neighborhood Street

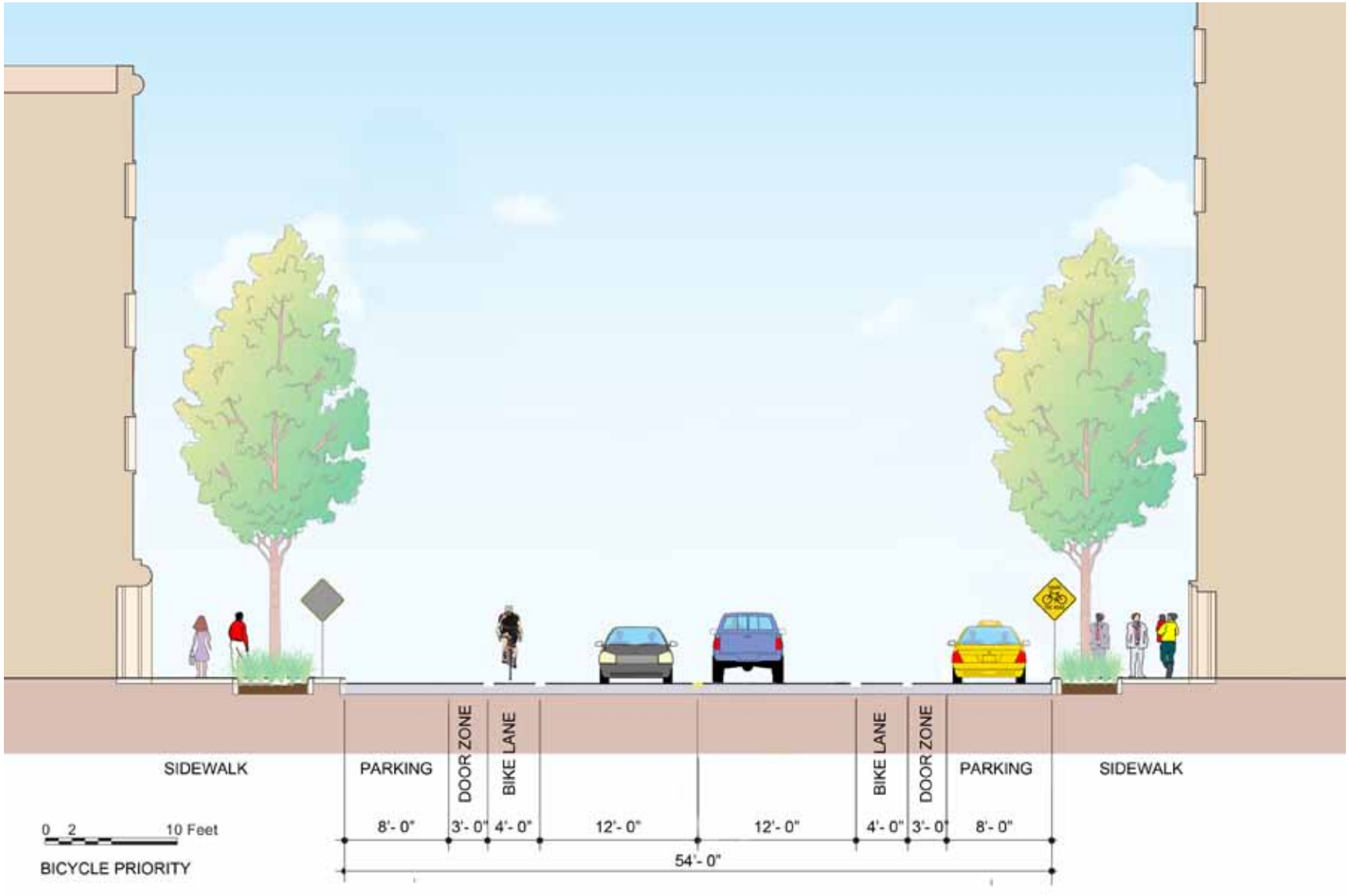


C. **Bicycle Priority Street –** Prioritizes cycling and incorporates supportive infrastructure, policies, and regulations. Dedicated on-street bicycle treatments, such as bicycle lanes, cycle tracks, and “bike boxes”, should be implemented as needed. Bicycle signage and markings should be provided to clearly and consistently delineate the bike route. Smooth pavement and regular maintenance should be prioritized to prevent pavement deterioration from impacting cyclists. Conflicts with moving traffic and on-street parking should be minimized by maintaining sufficient separation (i.e., “door zone”). Low traffic speeds are emphasized to promote bicycle safety.

Potential Secondary Priority – Pedestrians

Design Parameter	**Guideline**
Target Speed	25 mph
Traffic Signalization Priority	Cyclists
Traffic Restrictions	None
Desired Street Orientation	Two-Way Traffic
Maximum Lanes	2
Infrastructure Emphasis	Bicycle
Example Corridor	Locust Street, west of 14th

Exhibit 9: Typical Section for Bike-Priority Street

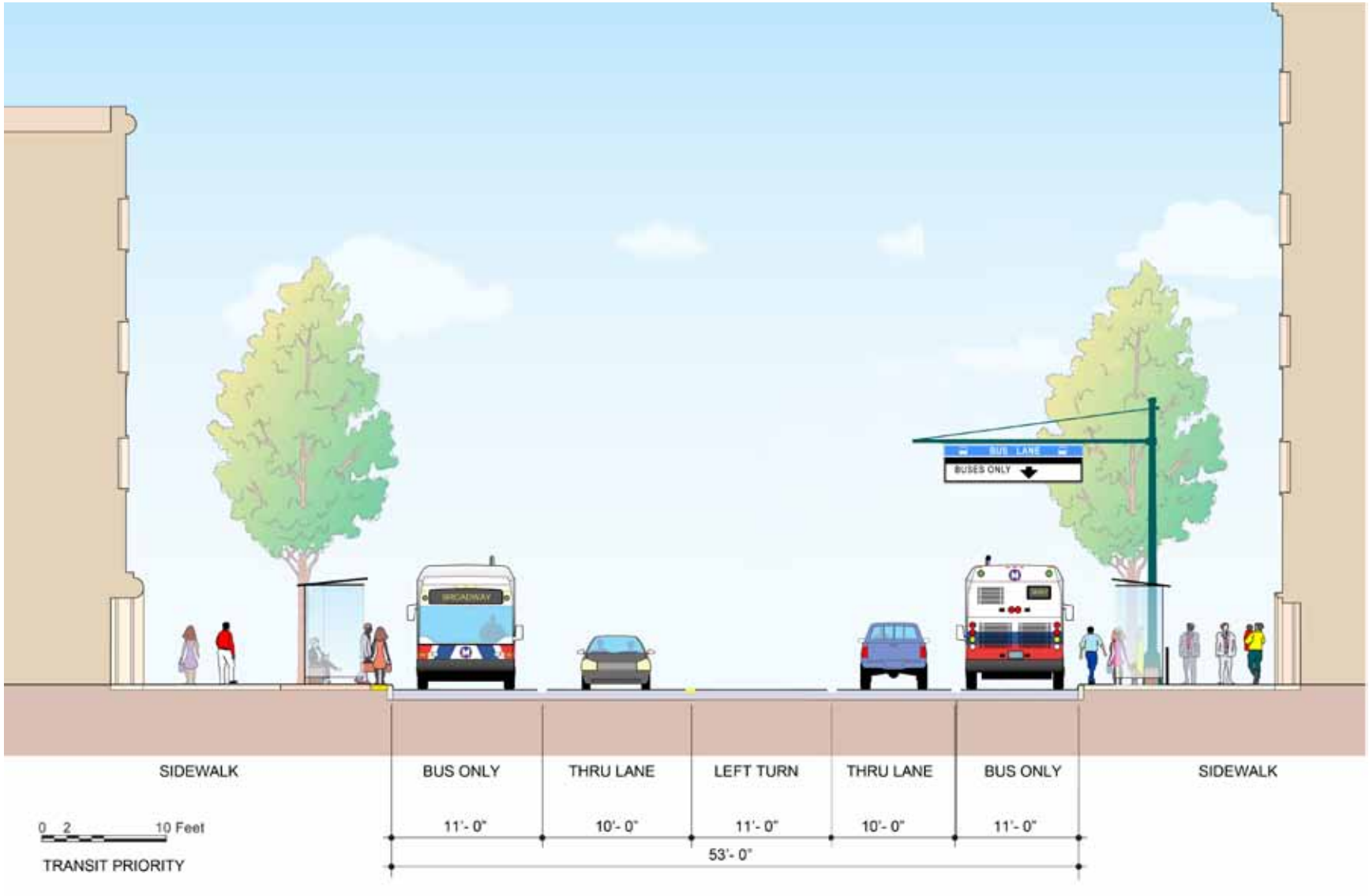


D. **Transit Priority Street –** Prioritizes transit service and incorporates transit-supportive infrastructure (such as bus-only lanes, transit signal priority), policies and regulations. Dedicated on-street transit lanes or transit vehicles operating in mixed lanes with regular traffic are permissible. Prominent stations with amenities such as seating, shelter, and real-time arrival information are encouraged to attract riders and promote the system. Traffic speeds should be established to complement transit services in the corridor. Multiple lanes in each direction are typically necessary to enable traffic to pass transit vehicles. Traffic and parking conflicts with transit should be mitigated to the extent possible. Potential strategies include prohibiting right-turns, allowing right-turns with protected signal arrows only, removing on-street parking and providing "jump" lanes to allow transit vehicles to proceed ahead of traffic queues at signalized intersections.

Secondary Priority – Pedestrians

Design Parameter	**Guideline**
Target Speed	Complements Transit
Traffic Signalization Priority	Transit
Desired Lanes	2 per Direction
Infrastructure Emphasis	Transit
Example Corridor	14th Street

Exhibit 10: Typical Section for Transit Priority Street

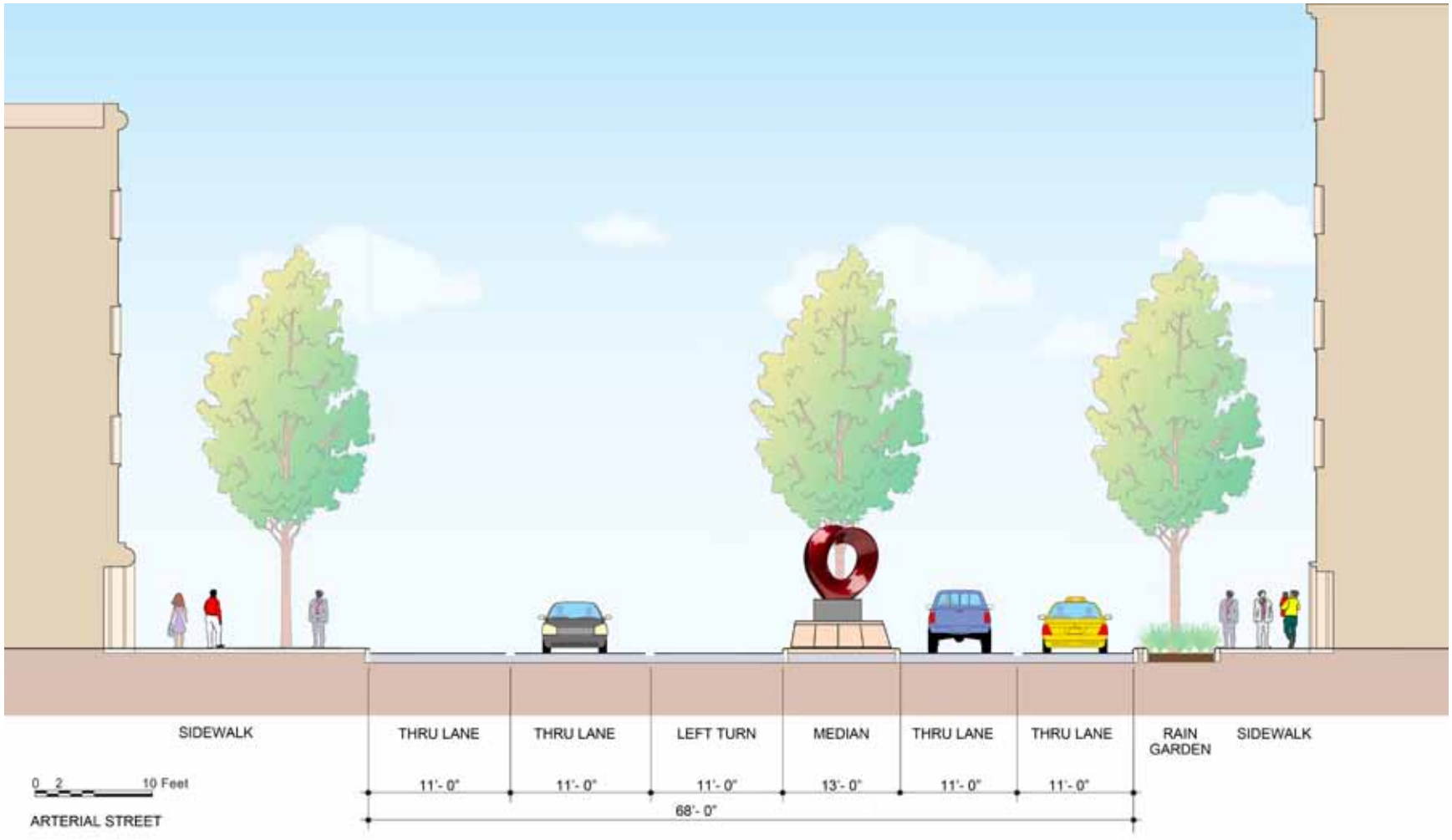


E. Arterial Street – Prioritizes vehicular traffic and mobility to move people to and from parking areas, drop-off/pick-up zones, and major gateways for access into and out of the Downtown. These streets tend to have a diminished land use context, and adjoining buildings may be turned away from arterial corridors. High-visibility crosswalk treatments are encouraged to promote awareness of pedestrians where applicable. Multiple traffic lanes are typically provided in each direction. Dedicated turn lanes and protected turn arrows at signalized intersections should be employed where needed to facilitate traffic flow. Similarly, mid-block conflicts such as driveway curb cuts, mid-block crosswalks, and on-street loading and unloading should be discouraged. On-street parking may also need to be minimized to reduce impacts to traffic.

Potential Secondary Priority – Transit

Design Parameter	**Guideline**
Target Speed	30 mph - 35 mph
Traffic Signalization Priority	Vehicle
Traffic Restrictions	Mid-Block Conflicts
Desired Street Orientation	Two-Way Traffic
Example Corridor	Walnut Street

Exhibit 11: Typical Section for Arterial Street



F. Promenade Street – Place-making streets that prioritize pedestrians, cyclists, or people gathering. These streets may have wide sidewalks and pedestrian amenities such as crosswalk treatments, curb bulb-outs, street trees, and pedestrian-scale lighting. They may also permit shared space between pedestrians and vehicles, in which case there may not be an interface between the sidewalk and street itself. On-street parking and loading or unloading is prohibited. Vehicular traffic speeds are minimized to discourage through traffic. Cycle tracks or adjacent multi-use paths are encouraged.

Potential Secondary Priority – None

Design Parameter	**Guideline**
Target Speed	20 mph
Traffic Signalization Priority	Pedestrian
Traffic Restrictions	On-Street Parking and Loading/Unloading
Desired Street Orientation	Two-Way Traffic
Infrastructure Emphasis	Pedestrian
Example Corridor	L.K. Sullivan Blvd.

G. Character–Based Overlay Typologies – Apply to uniquely-defined streets that are punctuated by special functions, scenic vistas, historical contexts, civic images, etc. For these streets, physical attributes and special characters may supersede functional priority and require an overlay typology to modify guidance regarding design elements, typical sections, and modality treatments. Example character overlay typologies include:

Image Streets: Prominent gateways and arrival streets that establish an image for Downtown. Special streetscape treatments such as landscaped medians and distinctive lighting may be employed. There may be added pedestrian emphasis addressed by wide sidewalks and textured or colored crosswalks. These streets tend to be busy thoroughfares, although their characters attract transit and pedestrian activity.

Ceremonial/Festival Streets: Serve a prominent role for special events and parades, which may dictate wider sections, overhead infrastructure restrictions, or other treatments that may be inconsistent with the street's functional priority.

Scenic Streets: Have scenic vistas or prominent wayfinding landmarks where visualization of these elements from the traffic lanes and/or the sidewalk is important. As such, obstructions are minimized, which may require on-street parking or loading/unloading restrictions, less obtrusive street trees, etc.

Historic Streets: Configurations may be dictated by historic features and/or adjacent land uses. Atypical configurations, narrow widths, historic pavements (i.e., cobblestones) are permitted even though these attributes may be inconsistent with the street's functional priority.

Typology Assignment

The preceding typologies were assigned to the individual streets within the study area in accordance with both their existing and future functions and their character, as determined by the information-of-record review. Applying the typologies to the street network is intended to offer guidance for future street enhancements, requirements of new development, and maintenance and systems management decisions. The resulting Multi-Modal Plan is reflected by **Exhibit 12**, and detailed assignments are listed in **Table 5.**

Exhibit 12: Downtown Street Typologies

Table 5: Typology Assignment by Corridor

East-West Streets						
Corridor	**Typology**	**Functional Priorities**	**Ultimate Direction**	**Modifying Character**	**Secondary Priorities**	**Notes**
Mullanphy St.	Neighborhood Connector	Multi-Modal				
Florida Ave.	Neighborhood Connector	Multi-Modal				
Cass Ave.	Arterial	Vehicles	Two-Way		Cycling	Gateway Bike Plan – Shared Lanes
O'Fallon St.	Neighborhood Connector	Multi-Modal				
Biddle St.	Bicycle Priority	Cyclists			Cycling	
Carr St. (West of I-70)	Neighborhood Connector	Multi-Modal			Transit	MetroBus 41
Cole/Carr St. (East of I-70)	Arterial	Vehicles				
Martin Luther King Dr.	Arterial	Vehicles	Two-Way			
Morgan St.	Commercial	Pedestrians	Westbound	Historic		
Delmar Blvd.	Bicycle-Priority	Cyclists	Two-Way			
Convention Plaza Dr.	Arterial	Vehicles	Two-Way			
Lucas Ave. (West of 4th)	Service Alley	Loading	Varies			
Lucas Ave. (East of 3rd)	Commercial	Pedestrians	Eastbound	Historic		
Washington Ave.	Commercial	Pedestrians	Two-Way	Image	Transit/ Cycling	Downtown Trolley / MetroBus 97 and Bike St. Louis – Shared Lanes
St. Charles St.	Service Alley	Loading	Varies			
Locust St. (West of Tucker)	Bicycle-Priority	Cyclists	Varies		Pedestrians	Two-way West of 14th/ Westbound east of 14th
Locust St. (East of Tucker)	Transit-Priority	Transit	Westbound		Pedestrians / Cycling	Streetcar - dictates preserving one-way traffic
Olive St. (West of Tucker)	Transit-Priority	Transit	Two-Way			Bike St. Louis – On-street Lanes precluded by streetcar
Olive St. (East of Tucker)	Transit-Priority	Transit	Eastbound		Pedestrians	MetroBus 10 & Streetcar – dictates preserving one-way traffic
Pine St. (West of Tucker)	Neighborhood Connector	Multi-Modal	Two-Way	Ceremonial		Two-way once I-64/22nd Street Interchange Reconfigured
Pine St. (East of Tucker)	Arterial	Vehicles	Westbound			
Chestnut St. (West of 15th)	Neighborhood Connector	Multi-Modal	Two-Way			Two-way once I-64/22nd St. Interchange Reconfigured
Chestnut St. (15th-Tucker)	Promenade	Pedestrians		Ceremonial		Closed to vehicle traffic per Gateway Mall Master Plan
Chestnut St. (East of Tucker)	Commercial	Pedestrians	Two-Way			Bike St. Louis – Shared Lane
Market St.	Transit-Priority	Transit	Two-Way	Image/ Ceremonial	Multi-Modal	Downtown Trolley/ Express Buses and Gateway Bike Plan/ Gateway Mall Master Plan – Cycle Track
Walnut St.	Arterial	Vehicles	Two-Way			
Clark Ave.	Neighborhood Connector	Multi-Modal	Two-Way		Cycling	Bike St. Louis – Shared Lane
Spruce St.	Neighborhood Connector	Multi-Modal	Two-Way			
Poplar St.	Neighborhood Connector	Multi-Modal	Two-Way			
Cerre St.	Neighborhood Connector	Multi-Modal	Two-Way			
Gratiot St.	Arterial	Vehicles	Two-Way			6th St. Ramps to I-64
Lombard St.	Neighborhood Connector	Multi-Modal	Two-Way			
Papin St.	Neighborhood Connector	Multi-Modal	Two-Way			
Chouteau Ave.	Arterial	Vehicles	Two-Way		Transit	Various MetroBus & Express Routes and Bike St. Louis/Gateway Mall Master Plan – Cycle Track

North-South Streets						
Corridor	**Typology**	**Functional Priorities**	**Desired Circulation**	**Modifying Character**	**Secondary Priorities**	**Notes**
Jefferson Ave.	Arterial	Vehicles	Two-Way		Transit	MetroBus 11 & 4
23rd St.	Neighborhood Connector	Multi-Modal	Two-Way			
22nd St.	Neighborhood Connector	Multi-Modal	Two-Way			
21st St.	Neighborhood Connector	Multi-Modal	Two-Way			
20th St.	Bicycle-Priority	Cyclists	Two-Way			Bike St. Louis – Shared Lane
19th St.	Neighborhood Connector	Multi-Modal	Two-Way			
18th St.	Arterial	Vehicles	Two-Way		Transit	MetroBus 4, 41 & 97 and Bike St. Louis – Share the Road
17th St.	Neighborhood Connector	Multi-Modal	Two-Way			
16th St.	Neighborhood Connector	Multi-Modal	Two-Way			
15th St.	Neighborhood Connector	Multi-Modal	Two-Way			
14th St.	Transit-Priority	Transit	Two-Way		Pedestrians	Numerous MetroBus Routes and Bike St. Louis / Gateway Bike Plan – Shared Lane
13th St.	Bicycle-Priority	Cyclists	Two-Way	Ceremonial	Pedestrians	Shared-use path south of Market through City Hall property to Civic Center Station
Tucker Blvd.	Arterial	Vehicles	Two-Way	Image		
11th St. (North of Delmar)	Neighborhood Connector	Multi-Modal	Two-Way			
11th St. (South of Delmar)	Commercial	Pedestrians	Two-Way			Two-way once I-64 Ramp and Intersection w/ Market Reconfigured
10th St. (North of Delmar)	Neighborhood Connector	Multi-Modal	Two-Way		Transit	MetroBus 32
10th St. (South of Delmar)	Commercial	Pedestrians	Two-Way			Two-way once I-64 Ramp Reconfigured
9th St. (North of Delmar)	Neighborhood Connector	Multi-Modal	Two-Way			
9th St. (South of Delmar)	Commercial	Pedestrians	Two-Way			Two-way once I-64 Ramp Reconfigured
8th St. (North of Cole)	Neighborhood Connector	Multi-Modal	Two-Way			
8th St. (South of Washington)	Commercial	Pedestrians	Two-Way	Scenic	Cycling	Bike St. Louis – Shared Lane
7th St. (North of Convention)	Neighborhood Connector	Multi-Modal	Two-Way			
7th St. (South of Convention)	Commercial	Pedestrians	Southbound		Transit	Reverse 7th/8th – Possible streetcar route
6th St (North of Cole)	Neighborhood Connector	Multi-Modal	Two-Way			
6th St. (South of Convention)	Commercial	Pedestrians	Northbound		Transit	Reverse 7th/8th – Possible streetcar route
Broadway	Arterial	Vehicles	Southbound	Image	Transit	MetroBus 40 & Trolley and Bike St. Louis – Shared Lane
4th St.	Arterial	Vehicles	Northbound	Image	Transit	MetroBus 40, Trolley & Bike St. Louis – Shared Lane
3rd St.	Arterial	Vehicles	Northbound			
2nd St.	Commercial	Pedestrians	Southbound	Historic		
1st St.	Commercial	Pedestrians	Northbound	Historic		
Lenore K. Sullivan Blvd.	Promenade	Pedestrians	Two-Way	Scenic	Cycling	Adjacent shared-use path and Bike St. Louis – Shared Lane

Modality Plans

In addition to the systemic or corridor-specific recommendations reflected by the Multi-Modal Plan, more detailed recommendations were generated for improving connectivity and multi-modal transportation for each specific mode. These measures build on the global recommendations and include selected project-level enhancements.

Pedestrian Plan

- Make major vehicular gateways more pedestrian-friendly by calming vehicular traffic speeds, optimizing traffic signals to more effectively serve all modes, and creating intuitive pathways for pedestrians.
- Modernize pedestrian infrastructure at intersections by providing ADA compliance, installing curb ramps that are perpendicular to the street and crossing, replacing signal indicators with pedestrian countdown timers, and introducing leading pedestrian intervals along commercial streets.
- Design green spaces for pedestrians by providing connections between major origins and destinations served by traveling within the space.
- Focus streetscapes on pedestrians by augmenting aesthetics with pedestrian amenities such as shade trees and seating.
- Enhance connections to regional trails, such as the North Riverfront Trail, through signage and wayfinding.
- Develop a policy for allocating sidewalk area between pedestrians and diners.

The following project-level improvements are recommended for consideration to improve pedestrian connectivity:

1. Pursue converting the 13th Street corridor into a major north-south multi-use path forming a pedestrian/bicycle spine in Downtown.

2. Consider a road diet for Tucker Boulevard between Washington and Spruce and for Cole Street between Tucker and Broadway to reduce pedestrian crossing widths. It must be acknowledged that this measure may require further study.

3. Reconfigure the intersection of Broadway and 4th Street with Cole and Carr Streets to establish clear, intuitive pedestrian paths to the North Riverfront. These modifications may include realignment of 4th Street (merging it with 3rd Street), downsizing of the Broadway intersection, and/or realignment of Cole to reduce the intersection skew. All of these improvements should include enhancements to the abutting pedestrian paths.

4. Institute countermeasures throughout the core of the CBD to mitigate pedestrian-vehicle conflicts, as summarized in **Table 6.**

Table 6: Pedestrian-Vehicle Conflict Countermeasures

"TURNING TRAFFIC YIELD TO PEDESTRIANS" Signs
In-street pedestrian crossing signs (flexible signs placed in the median or centerline that remind drivers to stop or yield to pedestrians)
Pedestrian zone signs (indicate distance pedestrians might be expected)
"NO TURN ON RED" (NTOR) signs
Portable radar speed trailers
High visibility crosswalk treatment
Advance stop lines
"LOOK" pavement stencils
Pedestrian countdown signals
Call buttons that confirm the press (buttons that give feedback to the pedestrian by lighting up or making a noise when activated)
Automated pedestrian detection (detects presence of pedestrian and does not require pedestrian to push a button to activate it)
Activated flashing beacons (flashing lights near a crosswalk that come on to alert drivers when activated by a pedestrian)
Rectangular rapid flashing beacon
Leading pedestrian interval (gives pedestrians a head start before cars get the green light)
Prohibition of permissive left turns
Median refuge island
Danish offset (with high visibility crosswalk, advance yield markings and "YIELD HERE TO PEDESTRIANS" signs)
Dynamic lighting (crosswalk lighting that only comes on at night when activated by a pedestrian)

Source: ITE Journal

Bicycle Plan

- Create a network of consistent and adequately signed bicycle routes and bicycle priority streets.
- Expand usage of on-street bicycle provisions such as bike lanes, “bike boxes”, and share-the-road treatments The resulting recommendations for bike treatments on the Downtown streets are shown on **Exhibit 13**.
- Prioritize preservation and maintenance on bicycle priority routes to address pavement deterioration and/or faded markings that tend to be deterrents to cycling.
- Limit the application of dual-turn lanes for vehicles and provide on-street intersection bicycle treatments to guide cyclists and mitigate vehicle-bicycle conflicts.
- Promote the Downtown Bike Station while also expanding bicycle parking options elsewhere, particularly in parking garages strategically located throughout the study area.
- Expand bicycle-friendly ordinances, such as the bike parking ordinance, to continue to drive policies to support of bicycle transportation.
- Make major vehicular gateways more bicycle-friendly by calming vehicular traffic speeds, optimizing traffic signals to more effectively serve all modes, and creating intuitive pathways for cyclists.
- Provide desired vehicle-bicycle clearances where possible under Share The Road operations by accommodating “door zone” lateral separation from on-street parking.
- Expand the network of off-street bicycle facilities by reutilizing abandoned rights-of-way and establishing connections to existing trails outside of the study area.

The following project-level improvements are recommended for consideration to improve bicycle connectivity:

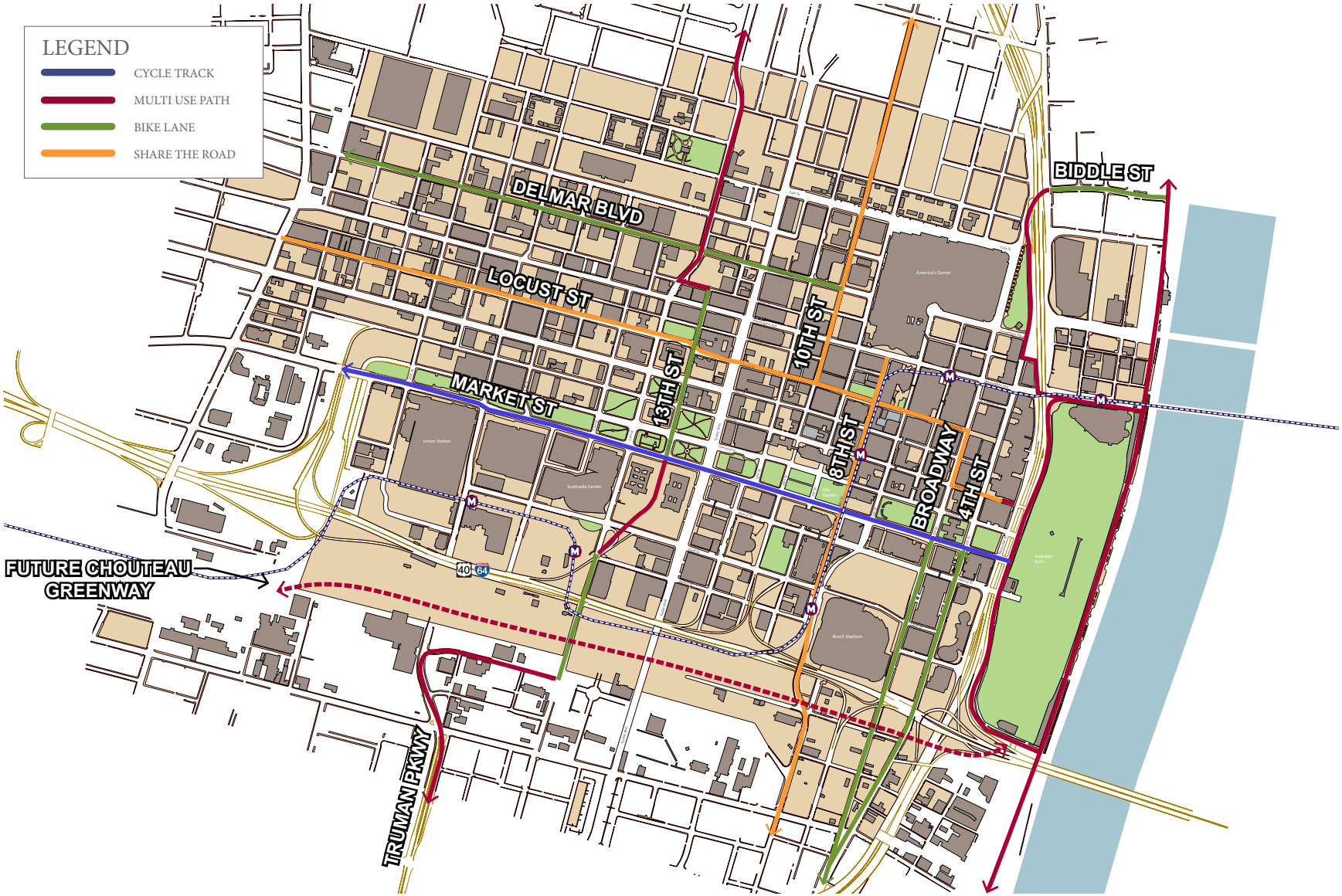
1. Create a cycle track along the north side of Market Street as initially identified in the Gateway Mall Master Plan.

2. Establish Locust Street (west of Tucker) as a bicycle-priority street to connect Downtown with neighborhoods to the west.

3. Provide on-street bike lanes on 4th Street and Broadway south of Walnut Street to connect with existing on-street facilities in the Soulard neighborhood.

4. Pursue converting the 13th Street corridor into a major north-south pedestrian and bicycle spine through Downtown.

Exhibit 13: Recommended Downtown Bicycle Plan



Transit Plan

- Promote existing transit services through expanded wayfinding, branding, signage, awareness, and information.

- Reconnect Downtown and adjacent areas by reducing the required transfer at the Civic Center station with more one-seat rides on local buses.

- Enhance bus stops on principle routes with more customer amenities such as improved signage, bus shelters, seating, and customer information.

- Improve pedestrian connectivity around all transit stops, especially MetroLink stations such as the Civic Center Station, which lacks connectivity into the heart of Downtown due to the City Hall “superblock.”

- Foster collaborative planning for all future transit projects affecting the study area, including bus rapid transit, Northside-Southside MetroLink, and St. Louis Streetcar.

- Develop logical and intuitive transit routes Downtown to promote ease of use and to concentrate service on priority corridors where the service can be emphasized and combined to reduce headways and maximize service connections.

The following project-level improvements are recommended to improve transit connectivity:

1. Create a north-south transit priority spine along 14th Street by converting the curb lane to a bus-only lane, implementing transit signal priority, and enhancing stops. It is understood that other changes to the 14th Street corridor are currently being considered or programmed, including Great River Greenway’s establishment of a separate multi-use path, but the cross-section and laneage of 14th Street should still be able to accommodate bus prioritization lanes.

2. Create an east-west transit priority spine along Market Street. Unlike 14th Street, the curb lane on Market would not necessarily be dedicated to transit vehicles since it may carry higher traffic volumes, and it’s anticipated that there will be a desire to maintain on-street parking and also accommodate a cycle track.

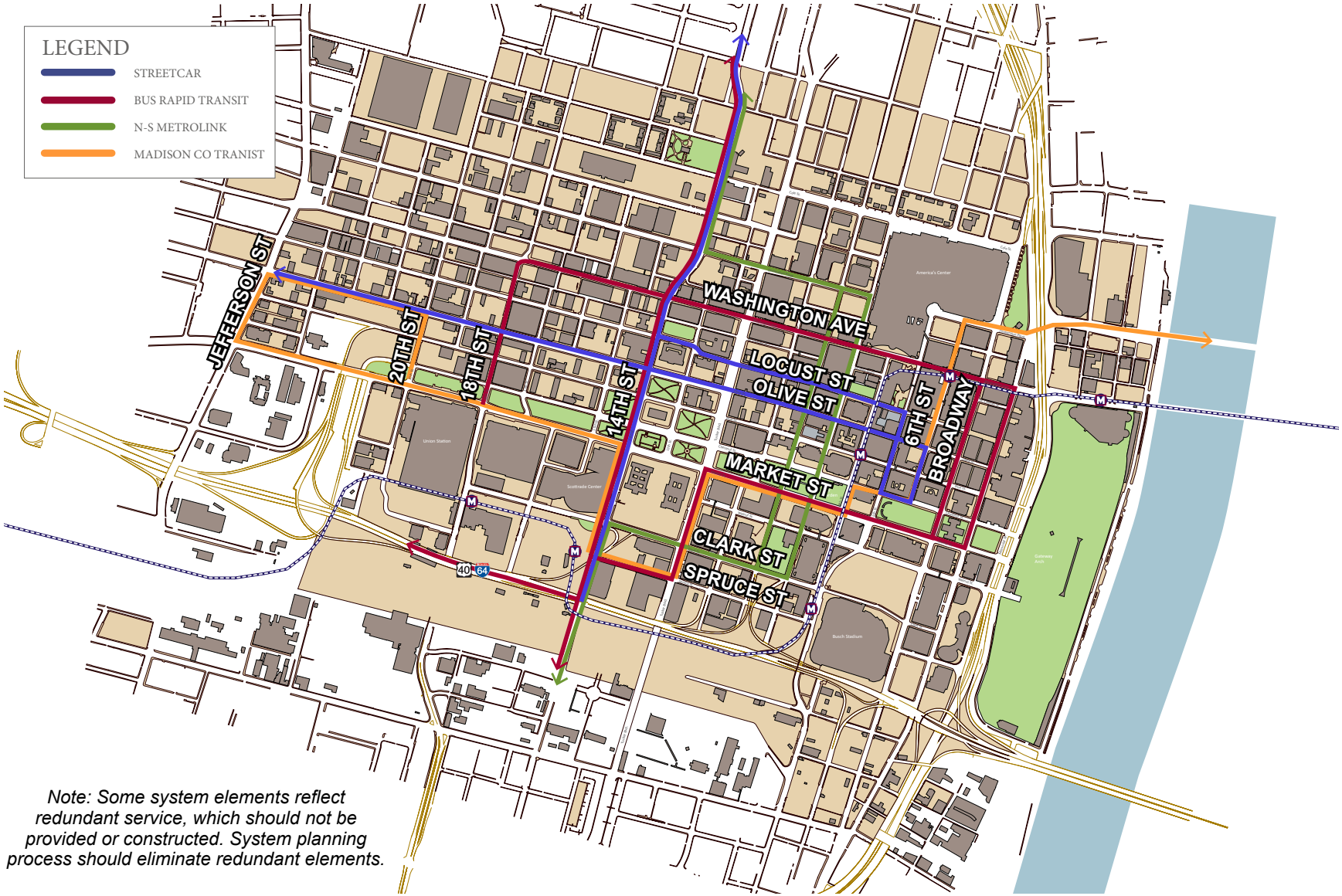
   It should be acknowledged that prioritization of Market Street, as well as the establishment of 14th Street as a transit corridor, must take into consideration Metro’s plans for the Northside-Southside Metrolink and the proposal for the St. Louis Streetcar. The St. Louis Streetcar is designed to link Downtown with Midtown/ Grand Center and also to Old North St. Louis, whereas the MetroLink plan would connect to neighborhoods immediately north and south of Downtown.

While the two conceptual projects may serve different areas and objectives, there may also be some overlap. Therefore, elements of either or both plans could complement or replace components of the recommended priority routes for 14th Street and Market Street (it is presumed that redundant elements would not be implemented). Both projects would promote multi-modal connectivity, which is consistent with the guiding principles of this study.

3. Ultimately, the preceding enhancements could also help facilitate the incorporation of the planned Bus Rapid Transit network into Downtown by connecting the radial freeway system routes to local roadways. The 14th Street priority corridor could connect BRT service on I-70 West with the Civic Center Station. Similarly, BRT service on I-44/I-55 South could utilize 14th Street (via Truman Parkway and Chouteau) to enter/exit Downtown through the Civic Center Station.

   Connecting the Civic Center Station would facilitate transfers, after which all BRT routes could then continue east along Market Street (a transit priority corridor) to penetrate the heart of the CBD. Prioritization of these corridors could help optimize service times for transit vehicles. Since these BRT routes would overlap within Downtown, headways could remain short, and it may be possible for the BRT routes to extend beyond Market Street to mimic (or replace) the semicircular route of the #99 Downtown Trolley by turning north on 4th Street and then west on Washington Avenue to the City Museum, and potentially south to Union Station. This route effectively serves most downtown hotels and attractions as well as many of the major employment centers. This would facilitate intuitive usage by commuters and visitors (tourists): boarding any bus in the clockwise direction would go to the Civic Center Station and in the counterclockwise direction would go to the City Museum. The resulting transit plan for Downtown is illustrated in **Exhibit 14.**

Exhibit 14: Recommended Downtown Transit Plan



Note: Some system elements reflect redundant service, which should not be provided or constructed. System planning process should eliminate redundant elements.

Vehicular Plan

- Standardize turn on red restrictions by enforcing the existing left-turn-on-red prohibition and by managing right-turn-on-reds based on corridor typologies.

- Simplify lane markings and assignments by reducing usage of shared-lane configurations and dedicated turn lanes and emphasizing left-turns from the left lane and right-turns from the right lane and through traffic from all lanes.

- Simplify intersections and make them more intuitive by reducing the size of large intersections and more clearly defining turning paths.

- Enforce on-street parking and loading/unloading restrictions, and quickly remove vehicles parked in traffic lanes, obstructing hydrants, or impeding sight distance at intersections.

- Discourage one-way street exemptions for private access to alleviate confusion and potential safety issues associated with motorists traveling the wrong way.

- Maximize on-street parking as a means of encouraging street-level commercial activity and increasing pedestrians in Downtown.

- Enforce the speed limit on major thoroughfares, and optimize traffic signals to meter traffic speeds in accordance with the target speed.

The following project-level improvements are recommended to improve vehicular connectivity:

- Improve the intersection of Broadway/Cole Street/Carr Street/4th Street to reduce its size, reduce confusion, improve operational efficiency, and accommodate other modes (this recommendation is discussed in greater detail in the following section of the report).

- Realign 4th Street to intersect 3rd Street at the MLK Bridge, and vacate existing 4th Street north of Convention Plaza. This modification, which would reinforce the grid and create a more intuitive travel route, is discussed in greater detail in the following section of the report.

- Pending the normalization of traffic patterns in 2015 (following the completion of the MRB and CityArchRiver 2015 improvements), reassess signal operations in the Downtown core. This should include a reevaluation of Washington Avenue and Market Street (for the potential use of shorter cycles) and evaluation of left-turn phases at multiple intersections throughout the CBD.

- Also pending the normalization of traffic patterns, reassess the feasibility of converting selected streets from one-way flow to two-way flow. Candidate corridors would include 8th, 9th, 10th, and 11th Streets as well as segments of Chestnut Street, Walnut Street, and Pine Street (west of Tucker), pending the mitigation

of identified conflicts. Implementation of circulatory changes would also be contingent on the following conditions:

- Resolution of conflicts with loading and deliveries, valet operations and other street blockages, including increased regulation and enforcement.
- Regulation of on-street parking and deliveries.
- Funding of corresponding traffic signal modifications and curbline modifications.
- Partial implementation of street segments to verify project costs and viability.

Treatment of the I-70 Barrier

It is widely agreed that I-70 (both the elevated sections and the depressed section) forms a barrier between the Downtown core and the riverfront (including the Arch grounds, Laclede's Landing, Lumiere Place, and the North Riverfront), impeding access for all modes of travel. The CityArchRiver 2015 Plan will substantially address the existing deficiencies within the depressed section, but interest in developing measures for improving connectivity and access through the elevated sections would remain.

Treatments could potentially involve changes in the horizontal infrastructure; vertical (3-dimensional) enhancements of the areas beneath the elevated lanes; and/or the eventual removal of the elevated freeway.

Elevated lanes of I-70 at Washington Avenue

Elevated lanes of I-70 at the MLK Bridge

Acknowledgement of the Proposed CityArchRiver 2015 (CAR) Enhancements

It should be acknowledged that the improvements being planned by CAR will provide significant (and immediate) benefits to connectivity across the I-70 corridor, particularly within the depressed section. Principle enhancements include the following:

- Park Over the Highway – The "land bridge" that will greatly enhance the pedestrian connections between Downtown and the Arch along the Market Street and Chestnut corridors.

- Pine Street Pedestrian Bridge – Converting the existing overpass to pedestrian-only usage will maintain and enhance pedestrian and bicycle connectivity to the Arch grounds.

- Washington Avenue / Ead's Bridge Intersection Modifications – Reconfiguration of this convoluted set of intersections will make this gateway to the Arch grounds and Laclede's Landing more pedestrian and bicycle friendly. Enhanced pedestrian zones will be created with improved sight lines and other enhancements as well as more intuitive wayfinding for all modes.

- 3rd Street / Morgan Avenue / Laclede's Landing Boulevard – These modifications (proposed in conjunction with Laclede's Landing's streetscape plans, as pictured on **Exhibit 15**) would create:

    - An enhanced pedestrian corridor that will channelize pedestrians along the south side of Convention Plaza, connecting to Morgan Avenue and Laclede's Landing Boulevard;

    - A new connection of 3rd Street across the MLK Bridge terminal that will improve egress from Laclede's Landing and ingress to Lumiere Place; and

    - A "bonus ramp" that will provide redundant access from I-70 to Broadway.

All of these improvements are consistent with the existing regional consensus to prioritize the connections to the Arch grounds and Laclede's Landing. These plans have been vetted and funded, and are also consistent with other efforts including improved streetscape along Washington Avenue and Kiener Plaza, and they have been developed with the cooperation of the adjacent business community, City of St. Louis, Great Rivers Greenway, CityArchRiver 2015 Foundation, Metro and the National Park Service.

Exhibit 15: Laclede's Landing Streetscape Plan (Proposed)

(source: Laclede's Landing/Memorial Drive streetscape plan, Planning Design Studio)

Potential Short-Term Measures for Enhancing Connectivity Beneath I-70

While acknowledging the benefits of the CAR and Laclede's Landing plans, there is still a desire to eventually accommodate additional modal connections and/or to extend these improvements further to the north, thereby improving access to the North Riverfront (this is particularly relevant to the bicycle community). In fact, it may be possible to expand upon the CAR plan by leveraging those efforts to facilitate additional improvements or simply enhancing the existing designs.

Several enhancements to the CAR/Laclede's Landing plans are proposed that would include the modification of access to/from the MLK bridge (subject to the approval of MoDOT and FHWA); the realignment of 4th Street to connect with 3rd Street; and the connection of Convention Plaza to Laclede's landing at Morgan. Likewise, similar treatments may be proposed at Cole & Carr.

With the acknowledgement that additional (more detailed) traffic analyses would be required and that an Access Justification Report would have to be approved by FHWA, the following components are recommended (as reflected in **Exhibit 16** on page 88):

- Realign 4th Street north of Convention Plaza to connect with 3rd Street under the elevated section of I-70 near the foot of the MLK Bridge. This would provide a direct connection from 4th Street to the existing ramp onto Westbound I-70, while also maintaining two lanes onto the MLK Bridge. It would establish a more "natural" connection between I-70 and the one-way couple formed by Broadway and 4th (and 3rd), enhancing access into and out of downtown. Moreover, better integration of the freeway with the downtown street grid would diminish the level with which it disrupts the urban fabric and it would reinforce connectivity for all modes.

- Realign the entrance to the MLK Bridge from 4th Street to provide greater separation from Morgan Street and Convention Plaza.

- Separate the MLK Bridge exit from the I-70 entrance ramp, thereby preserving that ramp for the use of motorists exiting from the CBD. It is acknowledged that motorists exiting the MLK Bridge that are destined for Westbound I-70 would have to travel through signalized intersections at Carr and Biddle, but that movement, which will be minimized by the New Mississippi River Bridge (MRB), would be comparable to the reverse movement: motorists traveling from Eastbound I-70 to the MLK currently travel through the signalized intersection with Convention Plaza.

- Provide a "Texas U-Turn" between northbound 3rd Street and southbound Broadway, thereby serving the heavy volume of traffic from the MLK Bridge that wants to enter Downtown. The u-turn would remove those motorists from the intersection with Cole/Carr, thereby improving operations and reducing conflicts. [This would be similar to the CAR plans for I-44 at Washington Avenue.]

- Connect Convention Plaza to Morgan at 3rd Street, thereby enhancing access for Laclede's Landing. This modification is consistent with the CAR plan except that it would reinforce intuitive connections for pedestrians, bicyclists and motorists (as opposed to just pedestrian traffic) by allowing them to simply follow a re-established grid. Moreover, when combined with the modification of the MLK Bridge entrance, it would accommodate pedestrian traffic on both sides of Convention Plaza (as opposed to forcing them to the south side), thereby helping to activate Baer Plaza.

- Remove existing 4th Street east of Baer Plaza. This would greatly improve conditions at Cole and Broadway by downsizing that intersection and making it less confusing. Moreover, 4th Street's existing right-of-way could be added to Baer Plaza or recaptured as a multi-use path connecting pedestrians and bicyclists from the CBD to Cole Street and Biddle Street, where they would have improved east-west connections to the North Riverfront.

- Improve (and widen) 3rd Street from Carr through Biddle in order to improve north-south connectivity, provide better egress from Laclede's Landing and Lumiere Place, and also to maximize access for Downtown motorists to the I-70 entrance-ramp north of Biddle. Reconfigured 3rd Street (northbound) would act as a natural complement to Broadway (southbound).

- Realign Cole Street (this would, presumably, be dependent upon the eventual development of the Bottle District site and would likely necessitate changes to the development plan) to better align with Carr Street. This would provide a more intuitive and less complicated connection from Cole Street to the North Riverfront. With the elimination of 4th Street, the adjacent intersections would be down-sized, and improved spacing (from 3rd Street) would be provided.

These proposed modifications are schematically illustrated in **Exhibit 16** on page 88. It should be emphasized that these concepts are intended to further enhance the CAR plan, not conflict with or disrupt it. The only aspect of the current CAR plan that would be negatively impacted by the proposed modifications would be the bonus ramp from eastbound I-70 onto Convention Plaza (it would be replaced with a slightly different alignment).

It must also be reiterated that these "supplemental" modifications would be subject to further vetting and design evaluation. Once approved, they could be implemented at a later date or incorporated into the current projects, though it is acknowledged that MoDOT's design process is nearly complete, and any changes would impact existing project schedules.

In total, the reconfigured intersections would be considerably more pedestrian-friendly and bicycle-friendly. Substantial pedestrian/bicycle enhancements could be provided on both sides of Cole and Carr, including widened pathways behind the bridge piers (much like what CAR is proposing at Washington and Morgan) that would help channelize pedestrians while also providing a more friendly and attractive environment.

These conditions could be further enhanced with the treatment of the three-dimensional spaces under the elevated sections of I-70. As previously noted in the Urban Design section, the installation of kinetic, electronic or aesthetic walls or other features has been discussed in an effort to activate these spaces. These installations could also help channelize pedestrians toward the main crossing points along the public streets.

Long-Term Steps Required to Comprehensively Address the I-70 Barrier

One vision for comprehensively addressing the barrier created by I-70 is to eventually eliminate the elevated sections of the freeway. The existing high-speed freeway would presumably be replaced by an at-grade boulevard, potentially leaving excess right-of-way for additional development opportunities and/or public spaces.

It should be acknowledged that there are substantial obstacles to the potential decertification of this interstate highway. A lengthy and exhaustive process, which would require a regional consensus on multiple levels, would have to address the following issues:

- The need for a regional solution for replacing the freeway's capacity. Such a solution would first have to be developed and vetted before the concept for decertification could advance.

- Performance of a comprehensive study (with a likely cost of more than $2M to $4M). As an initial step, the collective agencies or stakeholders would need to demonstrate a "want" and "need" for this change

from which they could garner regional support. This would include the allocation of sufficient funds to perform regional studies to evaluate the impacts and alternatives for the freeway. It is likely that these studies would include a tiered Environmental Impact Statement (EIS), regional traffic modeling, an Access Justification Report (AJR), and extensive public involvement in accordance with FHWA guidelines. Complete implementation of planned infrastructure improvements (new Mississippi River Bridge, Poplar Street Bridge ramp changes, and CityArchRiver 2015) would need to occur first so that the subsequent studies could reflect newly normalized traffic conditions.

- As an outcome of the study, alternative means of regional mobility (new arterial, new freeway, no-build alternatives) would need to be identified. This would lead to an eventual commitment for substantial upgrades to the regional network to accommodate the resulting traffic diversions. Regional projects would either divert north-south traffic away from Downtown, and/or they would enable other existing freeways or arterials throughout the St. Louis Metro to absorb increased traffic. Speculatively, the cost for decertifying I-70, demolishing the existing elevated structure, and improving other regional connections would be expected to exceed several-$100M.

- The study would also have to address the re-use of the corridor, including the creation of a new boulevard and economic development opportunities. However, decertification and/or re-use of the rights-of-way (ROW) within the I-70 corridor could have extensive legal ramifications that are not yet known. For example, deed restrictions could impede usage, and compliance with the environmental documents for the Mississippi River Bridge and City Arch River projects (which were approved by federal agencies) would have to be addressed.

  The approved documentation for the MRB project also reflects a second phase of construction, which would provide for additional lanes on the bridge and ramps connecting with I-44 (formerly the depressed section of I-70) to and from the south. This phase of the project would directly conflict with the potential removal of the elevated lanes to the south of the MRB.

- Finally, funding and maintenance responsibilities for all existing and proposed components of the system would have to be identified.

SECTION 6

Connectivity Improvements & Opportunities

CONNECTIVITY IMPROVEMENTS & OPPORTUNITIES

Based on the recommendations provided in the preceding section, a number of concepts were developed for suggested projects that would improve multimodal access and connectivity in Downtown. Particular emphasis was placed on the Special Focus Area, as the intersections near the I-70 corridor were identified by stakeholders as having the highest priority for improving multimodal connectivity and access.

The projects are described below along with their intended purpose and primary modalities served. Relative order-of-magnitude costs were estimated for each project, though these costs are extremely crude and subject to change pending the refinement of the plans for each improvement. Potential partnering opportunities or funding sources are also suggested, though these too are subject to further discovery and refinement.

Finally, the relative prioritization of these projects was suggested based upon the likely feasibility of funding, design and implementation on a short-term (0-5 years), mid-term (6-15 years) or long-term basis. These priorities also reflected their general significance with respect to the goals of this study.

4th STREET & BROADWAY AT COLE / CARR STREETS

As previously acknowledged, several current projects – most notably CityArchRiver 2015 - will provide substantial connectivity improvements to a number of intersections: Market & Chestnut at Memorial Drive (Park Over the Highway); Pine Street at Memorial Drive (existing bridge to be converted for pedestrian usage); Washington Avenue at Memorial Drive (intersection consolidation and streetscape); and 3rd Street at Morgan / Laclede's Landing Boulevard (streetscape and extension of 3rd Street). However, there appear to be opportunities for further capitalizing on those enhancements by extending the modifications further to the north and improving access and connectivity through the North Riverfront area.

Realignment of 4th Street to the north of Convention Plaza would provide a more contiguous connection to 3rd Street under the elevated section of I-70. When combined with the widening of 3rd Street to the north of Carr (in order to maximize throughput to the I-70 entrance ramp), this would create a more intuitive and continuous northbound corridor that would complement the existing southbound corridor (Broadway), resulting in a "one-way couple" that would flank either side of I-70 and better integrate the Downtown street grid with the freeway, thereby reducing its relative level of disruption.

This reconfiguration would also dramatically simplify the intersections of Broadway and 3rd Street with Cole Street and Carr Street. Existing 4th Street would be removed north of Convention Plaza, effectively eliminating a redundant intersection and greatly reducing the size of the intersection at Cole. Moreover, the eventual development of the Bottle District could potentially facilitate the realignment of Cole Street opposite Carr Street to create a more conventional

intersection configuration that would provide a more direct east-west connection extending to the riverfront.

As a result, pedestrian and bicycle movements through each of these intersections – both east-west and north-south – would be more intuitive, friendlier and safer. Vehicular traffic movements would be simplified with fewer potential conflicts and less congestion; pedestrian crossings would be shortened with fewer conflicts and safer accommodations.

This concept could be further enhanced with an extension of Convention Plaza through 4th Street and connecting to Morgan Avenue, thereby providing increased connectivity to and from Laclede's Landing. This connection could be accomplished along with the extension of 3rd Street already proposed as part of the CityArchRiver 2015 improvements.

Collectively, these changes, which are illustrated by **Exhibit 16** on the following page, would help soften the adverse influence of the I-70 barrier. They could be further enhanced with "three-dimensional" treatments of the area under the elevated lanes of I-70. This could include the introduction of additional lighting, public art and kinetic walls, as described in the next item below.

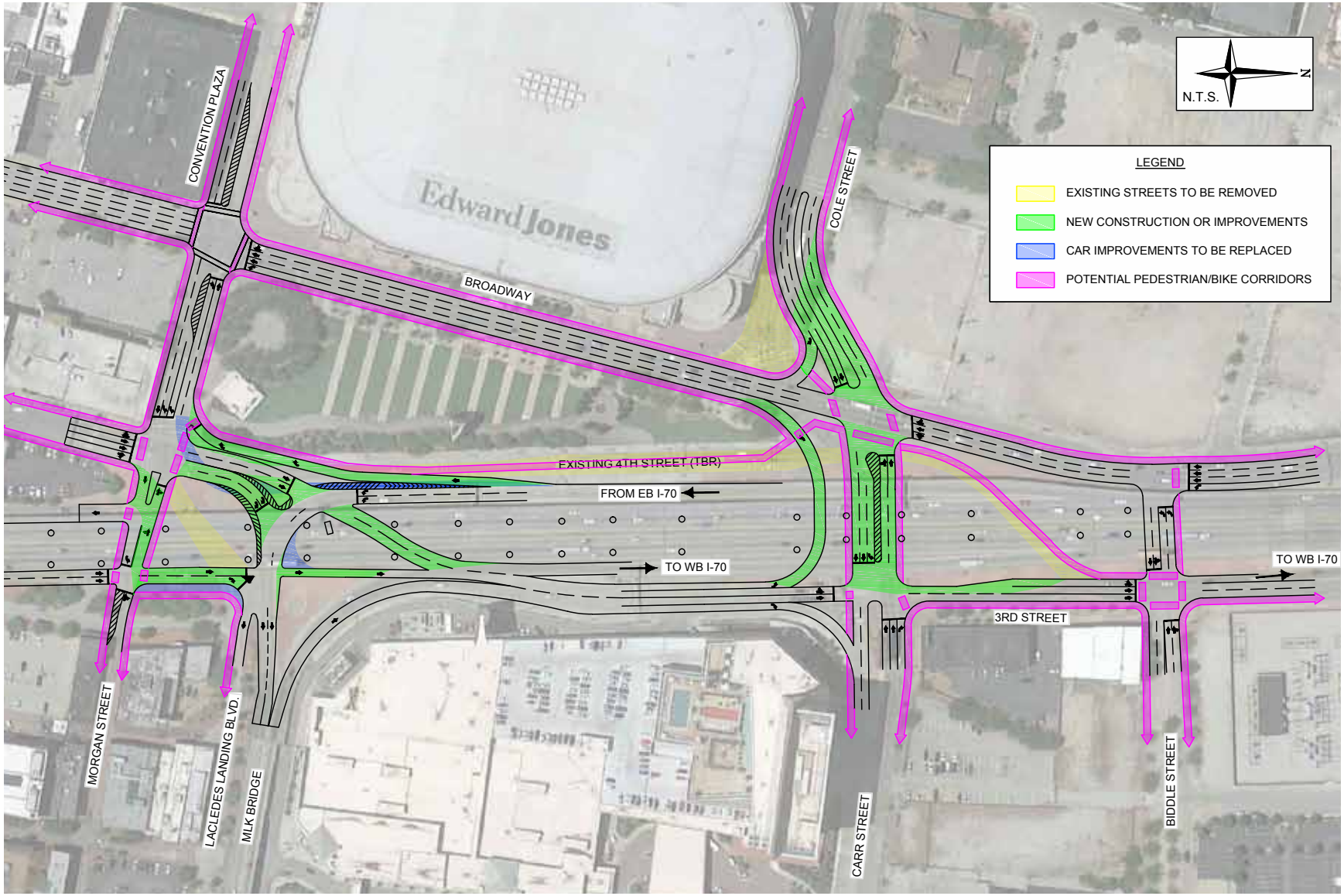
Purpose: Alleviate dangerous, confusing and routinely congested intersection configurations while providing more intuitive and direct connections for pedestrians and bicyclists with enhanced facilities.
Primary Modalities: Vehicular, Bicycle & Pedestrian

Relative Cost: Significant – estimated order of magnitude cost of approximately $2 - $4 Million based upon construction or modifications of four roadway segments or intersections, two traffic signal modifications or installations, and removal of existing pavement.

Potential Partnering Opportunities or Matching Funding Sources: Extension of existing Tiger Grant funds; CMAQ and/or STP grant candidate.

Prioritization: Short-Term

Exhibit 16: Proposed Enhancements to CAR/Laclede's Landing Plans



Enhance Area Under Elevated Lanes of I-70

The barrier effect created by the elevated section of I-70 that isolates the North Riverfront from Downtown could be softened by better activating the spaces under I-70 between Washington Avenue and Biddle. This space, much of which mirrors the inactive blocks along the back of the Hampton Inn, could be visually and dynamically activated through the addition of public art, interactive features, and digital displays that would reduce the freeways intimidating surroundings and may even attract increased pedestrian and bicycle activity.

These installations should be augmented with lighting and signage that would help channelize pedestrians along the major conveyances under the freeway (parallel to the through streets) and prevent their dispersal to areas where people are discouraged (e.g., near the freeway ramps or the MLK Bridge terminus where there are increased traffic conflicts). The design features would add dimension to the space and facilitate wayfinding through the establishment of prominent landmarks, and it would result in better defined and more attractive pedestrian pathways.

Purpose: Create activated spaces to attract and channelize pedestrians, reducing the intimidating environment currently found under the elevated lanes of I-70.

Primary Modalities: Pedestrian

Relative Cost: Unknown - dependent upon type and volume of installations.

Potential Partnering Opportunities or Matching Funding Sources: Potential addition to Lacledes Landing streetscape plan; augmentation to Tiger Grant plan; or Enhancement grant candidate.

Prioritization: Short-Term

Multi-Use Path Along I-70

A multi-use pedestrian and bicycle path would be provided along I-70 that would extend from the Arch grounds to Biddle Street. This facility would offer connections between the major destinations located within the Special Focus Area, including the Arch, Riverfront, Laclede's Landing, Lumiere Place, Edward Jones Dome, Baer Plaza, the Bottle District, and North Riverfront Trail.

Between Washington Avenue and Morgan Street, the design could be integrated into the planned Laclede's Landing streetscape along 3rd Street and under the elevated lanes of I-70. To the north of Morgan and Convention Plaza, the recommended realignment of 4th Street (connecting it to 3rd Street) would provide a separate corridor for a multi-use path that would extend along the east side of Baer Plaza and connecting to 3rd Street at Biddle (using the abandoned alignment of 4th Street). This facility would thereby facilitate improved connections to the North Riverfront Trail via Biddle.

The path would provide enlarged crosswalks across Convention Plaza/Morgan Street and 4th Street (on the east and north legs, respectively) as well as the east and north legs at Cole and Broadway, where it would offer a connection into the Bottle District.

Purpose: Establish a north-south pedestrian and bicycle linkage within the special focus area providing access to major destinations.

Primary Modalities: Pedestrian and Bicycle

Relative Cost: Modest – estimated order of magnitude cost of approximately $0.5 - $1 Million based upon construction of pathway and associated pedestrian/bicycle enhancements at intersections.

Potential Partnering Opportunities or Matching Funding Sources: Potential addition to Laclede's Landing streetscape plan; augmentation to Tiger Grant plan; Enhancement grant candidate; adoption by Great Rivers Greenway.

Prioritization: Short-Term

Central Multi-Use Corridor Phase 1

A multi-use path – a pedestrian and bicycle facility - is recommended to connect the Civic Center MetroLink Station with the core of Downtown. This path would cross the west leg of Clark Avenue and the north leg of 14th Street, incorporating the plaza adjacent to Scottrade Center. It would bisect City Hall's "superblock" along the former 13th Street alignment between City Hall and the Old Municipal Courts Building. It would require modifications to the existing parking lots: in essence, some parking would be sacrificed to accommodate a new promenade as shown in **Figure 9**.

The path would cross Market Street at the 13th Street corridor. It must be acknowledged that this concept would require signalization of the intersection of Market and 13th Street (this is already a prominent, mid-block pedestrian crossing). The resulting signal spacing would not be ideal, but it would be consistent with that existing between 14th and 18th. Accordingly, further analysis would be needed to optimize signal operations. Users could then utilize existing pathways within the mall to access the future Saint Louis University Law School, Soldier's Memorial (and its event space), and other nearby destinations.

Purpose: Provide a dedicated north-south pedestrian and bicycle facility through the heart of Downtown, and improve pedestrian and bicycle connectivity around the Civic Center Station and the I-64/14th Street gateway.

Primary Modalities: Pedestrian, Bicycle, and Transit

Relative Cost: Modest - estimated order of magnitude cost of approximately $0.5- $1 Million based upon relatively minor enhancements to existing shoulders, sidewalks and crosswalks.

Potential Partnering Opportunities or Matching Funding Sources: Enhancement grant candidate; adoption by Great Rivers Greenway as a potential connection of The Trestle to Chouteau Greenway.

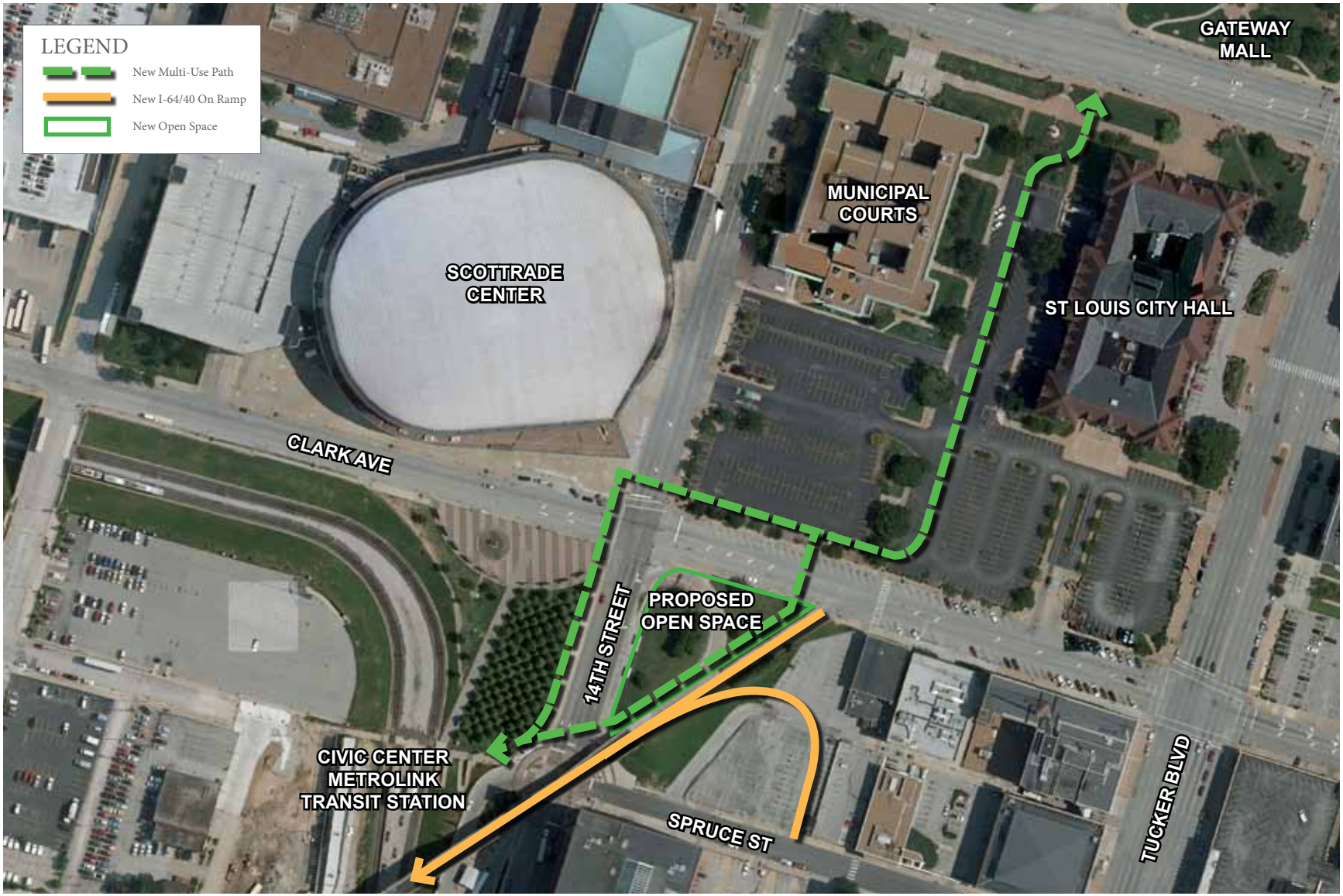
Prioritization: Short-Term

It should be noted that it would be desirable to also create an improved pedestrian and bicycle corridor along the south side of Clark Avenue, extending eastward from the Civic Center Station. However, the existing entrance ramp onto Westbound I-64 presents a significant conflict in this area. Ideally, this ramp could be reconfigured with a loop that would intersect Spruce Street several hundred feet to the east of 14th.

This reconfiguration would greatly reduce conflicts for all modes of travel at 14th and Clark and increase utilization of Spruce Street, where it could provide more direct access for Metro buses and Bus Rapid Transit leaving the Civic Center Station. It would also provide an opportunity for improved streetscape along Clark Avenue that would be conducive to the station.

However, reconstruction of the ramp would be costly and would require additional right-of-way. It may only be practical to consider at such time that the existing bridge is deemed deficient and in need of reconstruction. This would also likely shift its prioritization to Long-Term.

Figure 9: Central Multi-Use Path Connecting Civic Center Station to Gateway Mall



Central Multi-Use Corridor Phase 2

The second phase of the central multi-use path would extend northward along 13th Street from Market Street to Washington Avenue, thereby connecting pedestrians and cyclists north of the Gateway Mall and into the heart of the Washington Avenue Loft District. 13th Street could be closed within Gateway Mall (between Market and Olive) and narrowed between Olive and St. Charles to just serve local vehicular traffic (two lanes) along with a multi-use path on one side of the street.

This configuration could require the restriction or elimination of on-street parking along one or both sides of the street, subject to further design. It may also be desirable to signalize the intersection of Olive and 13th in order to provide safe crossings for pedestrians and bicyclists.

13th Street is already closed between St. Charles and Washington Avenue, so modifications to that segment would be minimal. However, enhanced pedestrian crossing measures, potentially including signals, raised crosswalks, curb bulb-outs and/or lighting may be necessary at the intersections with Pine and Washington Avenue to enable pedestrians and cyclists to safely cross those corridors.

Purpose: Provide a dedicated north-south pedestrian and bicycle facility through the heart of Downtown.

Primary Modalities: Pedestrian and Bicycle

Relative Cost: Moderate - estimated order of magnitude cost of approximately $0.5 to $1.0 Million based upon addition of curb bulb-outs, street closures, pedestrian-bicycle crossing enhancements and potential signalization.

Potential Partnering Opportunities or Matching Funding Sources: Enhancement grant candidate; adoption by Great Rivers Greenway as a potential connection of The Trestle to Chouteau Greenway.

Prioritization: Mid-Term

Central Multi-Use Corridor Phase 3

The 13th Street pedestrian and bicycle corridor would be extended north of Washington Avenue to connect with a trail already proposed by Great Rivers Greenway. That trail would, in turn, provide a connection to the Iron Horse Trestle and the North Riverfront Trail.

13th Street north of Washington Avenue narrows to just one lane of traffic (northbound). This segment, which extends only one block to Lucas Avenue, would accommodate shared usage by museum traffic and pedestrian-bicycle movements.

It would then jog one block westward along Lucas Avenue to 14th Street. From that intersection, the path would continue north parallel to 14th Street until connecting with Great Rivers Greenway's trail. This may require widening of the existing sidewalks, reconstruction of access ramps at each corner and, perhaps, acquisition of some right-of-way.

Purpose: Provide a dedicated north-south pedestrian and bicycle facility through the heart of Downtown and a pedestrian and bicycle connection to Great Rivers Greenway's Iron Horse Trestle.

Primary Modalities: Pedestrian and Bicycle

Relative Cost: Modest - estimated order of magnitude cost of approximately $250 to $500 Thousand based upon addition of pedestrian-bicycle enhancements, widening of sidewalks and potential trail. These costs do not include the acquisition of right-of-way, if required.

Potential Partnering Opportunities or Matching Funding Sources: Enhancement grant candidate; adoption by Great Rivers Greenway as a potential connection of The Trestle to Chouteau Greenway.

Prioritization: Mid-Term

14th Street Transit Priority Corridor

A transit priority corridor would be established along 14th Street to expedite transit services traveling north and south into and out of Downtown. This project could ultimately serve as a pilot for other potential transit priority corridors in the region. 14th Street was selected as the preferred candidate corridor primarily because it serves the most routes of any street in the Downtown, so it stands to yield the most benefits.

The prioritization includes dedicating lanes on 14th Street in both directions to transit vehicles. Once the reconstruction of Tucker Boulevard is completed, 14th Street is expected to have ample capacity to accommodate the lane conversion. This corridor and the transit connections could be further enhanced by the proposed realignment of N. Florissant Avenue to connect with 14th Street, rather than 13th and Tucker (proposed in conjunction with previous plans for the Northside redevelopment project).

In addition, traffic signalization along the corridor could be upgraded to include bus preemption using extended green signals and/or early return to green from competing movements. Bus stops would also be enhanced with more prominent signage and shelters and real-time arrival information. Plans for the St. Louis Streetcar currently utilize 14th Street as a north-south route and would need to be taken into consideration.

Purpose: Expedite the flow of transit vehicles into and out of Downtown and the Civic Center Station by maximizing bus speeds and minimizing stops.

Primary Modalities: Transit

Relative Capital Cost: Significant - estimated order of magnitude cost of approximately $2 to $4 Million based upon signage and pavement markings, enhanced bus stop facilities, signal preemption and modification of intersection with North Florissant.

Potential Partnering Opportunities or Matching Funding Sources: CMAQ grant candidate; partnering with Metro and/or Citizens for Modern Transit.

Prioritization: Short-Term

Update Traffic Signal Timings

Traffic signal timings throughout the Downtown should be optimized to more effectively balance the needs of all modes of traffic using multi-modal level of service standards. Timings should be developed following the completion of the CityArchRiver 2015 and the new Mississippi River Bridge projects in 2015 so that updated traffic patterns are reflected. Modifications may include reduced cycle lengths along Washington Avenue and Market Street to the east of Tucker Avenue as well as the elimination of unwarranted or under-utilized left-turn phases at selected locations throughout Downtown.

Purpose: Reduce delays for motorists and pedestrians crossing major collectors and expedite the flow of transit vehicles.

Primary Modalities: Vehicular and Pedestrian

Relative Capital Cost: Modest - estimated order of magnitude cost of approximately $250 to $500 Thousand based upon engineering evaluations and implementation.

Potential Partnering Opportunities or Matching Funding Sources: CMAQ grant candidate.

Prioritization: Short-Term

Cycle Track on Market Street

The concept of a cycle track along Market Street was identified in the Gateway Mall Master Plan. It is recommended that this feature be pursued in order to reinforce bicycle accommodations and provide connections to several major destinations, including the Gateway Mall, CityGarden and the Arch grounds. It would be constructed on the north side of Market Street adjacent to the Gateway Mall from 4th Street to 20th Street. It could be accommodated within the existing pavement, provided on-street parking is removed from the north side of the street.

Purpose: Improved bicycle connectivity.

Primary Modalities: Bicyclists

Relative Capital Cost: Moderate - estimated order of magnitude cost of approximately $0.5 to $1.0 Million based upon construction of a median, removal of parking meters (note: parking revenues are not reflected by estimated costs), pavement markings and signage.

Potential Partnering Opportunities or Matching Funding Sources: Enhancement grant candidate

Prioritization: Mid-Term

Tucker Boulevard Road Diet & Enhanced Streetscape

The Downtown Streetscape Plan previously recommended the installation of an expanded landscaped median along Tucker Boulevard in order to reduce the barrier effect created by its extremely wide existing cross-section. However, a median would still present challenges to pedestrians and bicyclists due to the long crossing distances, long delays and the potential need for two-stage crossings.

Rather than installing a median, an alternative streetscape could be pursued by implementing a "road diet" that would reduce the number of lanes on Tucker between Washington Avenue and Spruce Street. It must be acknowledged that this measure may require further study.

Pending the findings from that process, the existing 10-lane cross-section could potentially be narrowed by several lanes. In addition, curb bulb-outs could be provided in parking lanes to reduce crossing widths, thereby improving safety. The resulting configuration would encourage slower speeds, reduce confusion, and lessen the street's perception as a connectivity barrier. The streetscape should also be enhanced to reinforce Tucker as an image street, potentially including treatments such as the wrapping of building facades (particularly empty retail space or commercial buildings); additional planting along either side; and connections to the "festival space" around Soldier's Memorial.

Purpose: Improved pedestrian and bicycle connectivity.

Primary Modalities: Vehicular, Pedestrian and Bicyclist

Relative Capital Cost: Significant - estimated order of magnitude cost of approximately $2 to $3 Million based upon modification of curb line, removal of median, signal modifications.

Potential Partnering Opportunities or Matching Funding Sources: Enhancement grant candidate

Prioritization: Mid-Term

Cole Street Road Diet

Similar to Tucker Boulevard, Cole Street has a wider-than-necessary cross-section between Broadway and Tucker Boulevard. It may provide an opportunity for a road diet that would allow for narrowing of the pavement and/or the elimination of some travel lanes, thereby making it friendlier to pedestrians and bicyclists in the corridor without adversely affecting traffic operations.

Ideally, this enhancement would accommodate the incorporation of bike lanes and other modifications that would promote slower speeds and lessen the street's perception as a barrier to connectivity. Pedestrian crossings would also be shortened through the installation of curb bulbs, thereby reducing crossing times and improving safety. It may also be feasible to eliminate the traffic signal at 6th Street (this signal is no longer warranted).

As with some of the other projects, no changes should be considered until after the completion of the CityArchRiver 2015 and new Mississippi River Bridge projects in 2015 so that changing traffic patterns will have sufficient opportunity to normalize, at which time a more detailed study will likely be required. Pending the findings from that process, the existing 7-lane cross-section (including parking) could potentially be narrowed by several lanes.

Purpose: Establish an east-west pedestrian and bicycle linkage within connections to the North Riverfront area (via Carr) and access to major destinations.

Primary Modalities: Pedestrians and Bicyclists

Relative Capital Cost: Modest - estimated order of magnitude cost of approximately $250 to $500 Thousand based upon pavement markings and signage, curb bulb-outs and streetscaping.

Potential Partnering Opportunities or Matching Funding Sources: Enhancement grant candidate

Prioritization: Mid-Term

Potential Long-Term Improvement Concepts

Enhance Railroad Viaducts over 4th, Broadway and 7th Streets

The railroad viaducts crossing over 4th Street, Broadway, and 7th Street in the vicinity of Gratiot Street create a perception of blight or industrialism that could discourage pedestrian or bicycle activity between Downtown and the adjacent neighborhoods. Making enhancements to these structures could soften their visual impact and reduce the level of segregation that is created. Improvements might include painting the steel structures, adding signage and/or lighting and providing supplemental wayfinding.

Tucker Avenue and 14th Street Viaduct Road Diets and/or Enhancements

The Tucker and 14th Street viaducts were noted as being particularly unfriendly to pedestrians and bicyclists, with long, exposed spans and relatively narrow sidewalks that are constrained by concrete barriers. As the bridges approach their service life, their cross-sections should be examined to determine if wide cross-sections need to be maintained or if some lanes could be eliminated in lieu of wider sidewalks and/or bike lanes. It should be noted that constraints exist immediately to the north and south of both structures, so additional vehicle capacity on the bridges may be under-utilized.

I-64/22nd Street Interchange Improvements

MoDOT has illustrative plans for the eventual reconstruction of the I-64 interchange at 22nd Street, at which time the connections into the Downtown area should be reevaluated. In particular, it may be feasible and desirable to replace the expansive right-of-way for a divided highway with an urban arterial that would intersect Market Street and others at-grade, thereby eliminating the need for a complex system of ramps that divide this section of Downtown. The new intersections could better accommodate other modes of travel and the surplus right-of-way could be made available for new economic development.

Reconfiguration of the I-64 Ramps at 9th, 10th, and 11th Streets

The elevated ramps connecting to/from I-64 disrupt the grid on the south side of the CBD and also create awkward intersections along Spruce or Clark Avenue with high potential for conflicts with pedestrians. Ideally, this access could be provided without extending into the CBD. Therefore, at such time that the existing structures warrant replacement, it would be prudent to consider ramp configurations that would parallel the interstate (provided the elevation differences could be addressed). This reduced footprint would reduce their impact on Cupples Station and other adjoining development opportunities. These changes would also help facilitate the conversion of 9th, 10th, and 11th Streets to two-way traffic and might even facilitate a

possible extension of those streets into the Chouteau's Pond redevelopment area.

Provision of Access from Tucker Boulevard to I-70 West

Enhancements to the New Mississippi River Bridge project included the provision for a ramp from Eastbound I-70 onto Tucker Avenue. This change will allow a significant amount of traffic to divert away from the Broadway and Memorial Drive exits, the latter of which will be eliminated, and will instead enter Downtown via the central corridor. However, there is no complementary ramp to serve outbound traffic.

Therefore, there will be heavy dependence on 4th Street and its connections to I-70 to serve Downtown's traffic demands. In turn, this will maintain high levels of conflict with other modes of travel trying to make connections to Laclede's Landing and/or the North Riverfront.

In order to minimize those conflicts, it would be desirable to provide access to I-70 West. The configuration of I-70's interchange with the MRB and Tucker Avenue may preclude a direct ramp connection, so alternative accommodations should be considered.

- One option may be to provide a ramp from the new Cass Avenue Bridge onto westbound I-70 by making use of the area previously occupied by the westbound entrance to the express lanes. However, this would necessitate a left-hand entrance, which is discouraged, and further investigation would be required to determine if it is constructible and sufficient.

- Another option would be to provide reinforced trail-blazing signage guiding motorists from Cass Avenue to North Broadway to Brooklyn Street, which turns into North 10th Street and ultimately leads to a slip ramp onto westbound I-70.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DOWNTOWN
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PARK

APPENDIX

Appendix A: Summation of Projects of Record

Project	Document	Description	Key Recommendations
CityArchRiver 2015	City Arch River Access Justification Report	Traffic modeling results for proposed City+Arch+River modifications	• Close Memorial Dr NB between Walnut St & Washington Ave and SB between Chestnut St & Market St • 'Flipping' the ramps on I-70 at Washington Ave; extend 3rd St north from Washington Ave to Carr Ave • Build ramp from EB I-70 to Cass Ave; convert Walnut St to two-way from Memorial Dr to 8th St • Narrow Poplar St adjacent to Arch grounds • Remove Washington Ave adjacent to Eads Bridge
	Notes on Access Justification Report		
	MVVA Arch EA Public Presentation		•Remove south lane on Chestnut St (-15') •Remove north lane and median on Market St (-18') •Add trail connection on Chouteau's Greenway
	Park Over Highway EA	Environmental documentation for I-70 land bridge	
	Arch Parking Alternatives Study	Assessment of existing parking conditions, parking alternatives analysis, and financial analysis within an area bounded by 10th St, Biddle St, and Park Ave	Emphasizes reserve capacity at Stadium East, Kiener East and Center East garages and a new facility at the MAC, Drury Lot, or lot next to MLK Br
7th & 8th Street Streetscape			
Downtown Streetcar Study	St. Louis Streetcar Feasibility Study	Determine the fesibility of modern streetcars linking Downtown, the near Northside, Midtown, and the Central West End	•Improve Downtown's accessibility •Create a catalyst for continued economic activity •Provide additional opportunities for alternative transportation •Support the region's and City's sustainable initiatives •Promote an environment that will attract and retain new jobs and residents to the City •Compliment MetroLink and MetroBuses
Downtown Next	Downtown Next Plan	Pertinent Objectives: •Create an inviting environment •Make Downtown accessible and easy to get around •Emphasize Downtown's unique character	Address entryways, focus on wayfinding, eliminate barriers, promote walkable corridors, create a robust transit system, and encourage alternatives to driving
Washington Ave. Streetscape East of 7th	Washington Streetscape TIP Application	Third phase of streetscape enhancements on Washington Avenue from 7th St to Memorial Dr	

Project	Document	Description	Key Recommendations
Poplar Street Ramps Reconstruction	PSB Conceptual Ramp Schematics		Recommends eliminating ramp from EB I-70 to PSB
	PSB MoDOT Presentation	Powerpoint presentation	
	HDR PSB Report	Proposes to eliminate ramp from EB I-70 to PBS replacing with a ramp from EB MLK Bridge to I-55/I-70 EB and SB Route 3	Recommends widening EB I-64 approaching the PSB, which may have implications for the Broadway on-ramp to WB I-64
	HDR PSB Presentation	Powerpoint presentation	
New MRB	MRB AJR	Access justification report	Does not include ramp from EB I-70 to Cass Ave
	MRB AJR Schematics	Lane diagrams and intersection levels of service	Recommended lane configuration of Cass Ave
	MRB MO Interchange Overview Map	Map showing various component projects and letting dates	
	MRB MO Interchange Plan Sheets	Detailed plan sheets showing Missouri project	Recommended lane configuration of Cass Ave
City North Tucker Reconstruction	N. Tucker Blvd Plan Sheet	Lane configuration of Tucker Blvd immediately north of Washington Ave	Illustrates narrowing of Tucker from the east curb line north of Washington Ave
	N. Tucker Blvd Streetscape Layout	Streetscape elements for Tucker Blvd immediately north of Washington Ave	
Downtown Traffic Access Circulation Study 2005	Downtown Traffic Access Circulation Study	Addressed CBD access, circulation, traffic operations, loading/unloading, pedestrian treatments, and on-street parking	Identifies signalization improvements, standardization of turns on red, lane reductions on Tucker Blvd, conversion of Walnut St, 8th St, 11th St from one-way to two-way
CBD Streetscape Design Manual	CBD Streetscape Design Manual 2004	Inventory of street classifications, lane widths, sidewalk widths, off-street parking, remerchandising plan; street typologies (image, special character, pedestrian, support); existing street surveys and dimensions; proposed streetscape treatments and design elements	Identifies Image Streets (Broadway, 4th, Tucker, Market, Washington); Special Character Streets (Clark, 8th); Pedestrian Priority Streets (Locust, Olive, Spruce, 10th, 9th, 7th, 6th); Support Streets (St. Charles, Pine, Walnut, 11th)

Project	Document	Description	Key Recommendations
Metro Downtown Transfer Center Feasibility Study	Downtown Transfer Center Feasibility Study	Analysis of 7 sites for a MetroBus tranfer center (existing civic center, America's Center garage, America's Center parking lot, MO Athletic Club garage, MO Athletic Club parking lot, US Bank parking garage, StL Centre East parking garage)	Recommends expansion of Civic Center MetroBus Facility; noted that future BRT routes may circulate through Downtown supplementing or replacing the #99 Downtown Trolley
Metro Moving Transit Forward Plan	Moving Transit Forward Executive Summary	Summary Overview of Metro's 30 Year Plan	
	Moving Transit Forward Long Range Transit Plan		Identifies 6 MetroLink lines (Daniel Boone, Northside, Southside, MetroNorth, MetroSouth, Madison County); 5 BRT corridors (I-44, I-55, I-64, I-70, Grand); 2 commuter rail lines (Alton, Pacific)
	Moving Transit Forward Plan Appendix	Data used to support development of the plan	
Metro Downtown MetroLink Station Area Plans	Downtown MetroLink Station Area Plans	Comprehensive MetroLink station-area profiles including demographics, employment, zoning regulations, permitted uses, required setbacks, vacant/developable parcel information, transit ridership, bus transfers, potential development opportunities, and neighborhood context	
Metro Bus Rapid Transit Study	Ongoing		
Metro Northside-Southside MetroLink Study	MetroLink Northside Final Report	Proposes new MetroLink line connecting Downtown with north and south St. Louis City	Street-running MetroLink proposed Downtown entering/exiting the area on 14th St, running east-west on Clark Ave and Convention Plaza, and lastly north-south via 9th St/10th St
	MetroLink Southside Final Report		
	Northside Southside Final Report Appendices	Public engagement and advisory group information and newsletters	
	Northside Southside Operations Report	Documentation of assumed headways, travel speeds, bus route modifications for alternatives	

Appendix B: Sample Stakeholder Survey Form

Downtown Multi-Modal Access Study
Stakeholder Perspectives

Survey Purpose: The City of St. Louis recognizes the need to enhance connectivity into and throughout downtown by prioritizing pedestrian, cyclist, and public transit user accessibility while encouraging sustainable and efficient vehicular flow. To ensure that the City considers all aspects of connectivity and mobility, it is surveying key stakeholders for their perspectives. Your responses will be considered and incorporated into the Downtown Multi-Modal Access Plan.

1. Which sector best describes your organization? Note: You may select up to two sectors.
    a. Business
    b. Community/Neighborhood
    c. Entertainment/Recreational
    d. Government

Pedestrians

2. On a scale of one to seven, with one being "not connected at all", rate the connectivity of downtown St. Louis for **pedestrians**. *(Note: scale will be shown on survey)*

3. To become one of the most connected cities for **pedestrians**, what would you improve or change in downtown St. Louis?

4. On a scale of one to five, with one being "not at all important" rate the importance of the following **pedestrian improvements** in downtown St. Louis:
    a. Widen and/or unclutter sidewalks
    b. Maintain sidewalks
    c. Implement high-visibility marked crosswalks
    d. Ensure that pedestrian countdown clocks are timed appropriately
    e. Decrease speeds of motor vehicles
    f. Improve lighting
    g. Remove vehicle traffic lanes at street crossings
    h. Improve signage and wayfinding to destinations
    i. Add more sidewalk amenities such as trees and benches
    j. Increase the number of ADA compliant ramps
    k. Activate adjacent land uses at the street level
    l. Eliminate elevated section of I-70
    m. Enhance or complete pedestrian linkages to major destinations
    n. Increase enforcement of traffic laws for all modes

Cyclists

5. On a scale of one to seven, with one being "not connected at all", rate the connectivity of downtown St. Louis for **cyclists**. *(Note: scale will be shown on survey)*

6. To become one of the most connected cities for **cyclists**, what would you improve or change in downtown St. Louis?

7. On a scale of one to five, with one being "not at all important" rate the importance of the following **bicycle improvements** in downtown St. Louis:

a. Add more bike racks and storage lockers
b. Implement a bike sharing program
c. Provide signage and consistent designations for bike routes
d. Expand the dedicated on-street bike lanes and cycle tracks
e. Expand off-street bike facilities such as paths and trails
f. Improve connections with transit
g. Improve connections with other paths and trail networks
h. Decrease speeds of motor vehicles
i. Improve lighting
j. Provide bike safety education for cyclists
k. Provide share-the-road education for motorists
l. Remove vehicle traffic lanes from streets
m. Increase enforcement of traffic laws for all modes

Motorists

8. On a scale of one to seven, with one being "not connected at all", rate the connectivity of downtown St. Louis for **motorists**. *(Note: scale will be shown on survey)*

9. To become one of the most connected cities for **motorists**, what would you improve or change in downtown St. Louis?

10. On a scale of one to five, with one being "not at all important" rate the importance of the following **vehicular improvements** in downtown St. Louis:

a. Improve traffic signal timing
b. Allow left-turns-on-red at one-way street intersections
c. Convert one-way streets to two-way
d. Prohibit closures of existing streets
e. Reduce blockages from deliveries and loading/unloading
f. Smooth pavement
g. Increase on-street parking
h. Improve signage and wayfinding
i. Alleviate congestion entering/exiting Downtown
j. Simplify intersection configurations

j. Simplify intersection configurations
k. Make major destinations easier to find
l. Make wide streets narrower
m. Decrease speeds of motor vehicles
n. Increase enforcement of traffic laws for all modes

Public Transit Users

11. On a scale of one to seven, with one being "not connected at all", rate the connectivity of downtown St. Louis for **public transit users**. *(Note: scale will be shown on survey)*

12. To become one of the most connected cities for **public transit users**, what would you improve or change in downtown St. Louis?

13. On a scale of one to five, with one being "not at all important" rate the importance of the following **public transit improvements** in downtown St. Louis:

a. Extend more bus routes into the Downtown core
b. More reliable and frequent service
c. Increase vehicle parking at stops/stations
d. Increase bike parking at stops/stations
e. Add more shelters and benches at stops/stations
f. Add New MetroLink or streetcar lines into and out of Downtown
g. Provide real-time arrival and departure information at stops/stations
h. Add dedicated bus lanes and prioritize traffic signals for buses
i. Make transit less confusing and easier to understand
j. Enhance signage and information provided at stops/stations
k. Provide bus service to Arch/Riverfront
l. Introduce free or reduced fare transit service Downtown
m. Improve transit vehicles and ride quality

Neighborhood Connectivity

14. On a scale of one to seven, with one being "not connected at all", please rate the connectivity of downtown St. Louis to the following adjacent neighborhoods.

a. Old North St. Louis
b. Soulard
c. Lafayette Square
d. Chouteau's Landing (riverfront area south of Poplar Street Bridge)
e. Midtown/Grand Center
f. North Riverfront (north of Lumiere Place)

15. What improvements are needed to connect adjacent neighborhoods to downtown St. Louis? (Note: Please include the name of the neighborhood in your response.)

Appendix C: Stakeholder Advisory Committee Members

Citiznes for Modern Transit	Kim Cella
City of St. Louis, Department of Streets	Todd Waelterman
City of St. Louis, Office on the Disabled	David Newburger
City of St. Louis, Planning and Urban Design	Don Roe
City of St. Louis, St. Louis Development Corporation	Amy Lampe
City of St. Louis, St. Louis Development Corporation	Otis Williams
City of St. Louis, Sustainability	Catherine Werner
City +Arch+ River 2015 Foundation	Maggie Hales
Convention and Visitors Commission	Brian Hall
Partnership for Downtown St. Louis	Matt Schindler
Downtown St. Louis Residents Association	Earline Bell
East West Gateway Council of Governments	Paul Hubbman
Great Rivers Greenway	Todd Antoine
Laclede's Landing Merchants Association	Emily Kochan
Laclede's Landing Redevelopment Corporation	John Clark
Locust Business District	Kathleen Kappel
Madison County Transit	Joe Domer
Metro	Jessica Mefford-Miller
MoDOT	Deanna Venker
National Park Service	Frank Mares
Old North St. Louis Restoration Group	Sean Thomas
Paraquad	Kirsten Dunham
Regional Commerce and Growth Association	Steve Johnson
Soulard Neighborhood Association	Nate Gullickson
Trailnet	Ann Mack

Appendix D: Stakeholder Survey Recipients

Bryan Cave	Jean Blair
City Museum	Richard Callow
City of St. Louis, BoA - Ward 5	Tammika Hubbard
City of St. Louis, BoA - Ward 6	Kacie Star-Triplett
City of St. Louis, BoA - Ward 7	Phyllis Young
City of St. Louis, BoA-Ward 9	Kenneth Ortmann
City of St. Louis, Board of Aldermen	Lewis Reed
City of St. Louis, Board of Public Service	Richard Bradley
City of St. Louis, Comptroller's Office	Darlene Green
City of St. Louis, Treasurer's Office	Larry Williams
Drury Inn(s)	Vince Miller
Embassy Suites/Laurel (Spinaker)	Wade Thompson
Grand Center	Vince Schoemel
Hyatt Hotel	Ashley Motchan
Jones Lang LaSalle	Terry Stieve
Lafayette Square Business Association	Lisa Young
Lafayette Square Neigborhood Assocation	Jennifer Weston
Lewis Rice Fingers	Julie LIlly
Lindenwood University - Downtown Campus	Katherine Leclere
Lumiere Casino	Jeff Babinski
Mercantile Exchange/Spinaker St. Louis	Amos Harris
Peabody Energy	Sarah Kramer
Soulard Restoration Group	Sean Cochran
St. Louis Cardinals	Ron Watermon
St. Louis Cardinals/Ballpark Village	Bill DeWitt,III

Appendix D: Stakeholder Survey Recipients

St. Louis Community College	Pat Matreci
St. Louis Fun Tours	Charlie Ragel
St. Louis Parking	Jack Pohrer
St. Louis Rams	Lisa Boaz
Union Station	Tony Stephens
US Bank	Zach Boyers
Webster University - Downtown Campus	Nicole Roach
Wells Fargo	Mary Atkin

Appendix E: Multi-Modal Level of Service Measures

Multi-Modal Level of Service Measures

A fundamental goal of context sensitive solutions (CSS) is to effectively serve all modes of travel. Although good network planning, access management and innovative street designs can provide significant vehicle capacity while accommodating bicycles and pedestrians, trade-offs has historically been hampered by the fact that performance measures were developed primarily to measure vehicle movement. However, the traditional Highway Capacity Manual level of service framework has been adapted to evaluate performance from a transit, pedestrian and bicycle perspective.

These multi-modal performance measures focus as much on the quality and convenience of facilities as they do on movement and flow. For example, the adequacy of pedestrian facilities is not determined by how crowded a sidewalk is but by the perception of comfort and safety. For transit services, frequency is an important attribute, but "on-time performance" and the pedestrian environment surrounding bus and rail stations are also critical aspects of the traveler experience. Below are examples of multi-modal performance measures.

Bicycle Level of Service Measures

- Effective width of the outside through lane
- Traffic volumes
- Traffic speeds
- Truck volumes

Pedestrian Level of Service Measures

- Existence of a sidewalk
- Lateral separation of pedestrians from motorized vehicles
- Motorized vehicle traffic volumes
- Motorized vehicle speeds

Source: ITE Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities

Appendix F: Major Assets and Deficiencies in the Bicycle-Pedestrian System

Assets	Deficiencies
A growing body of planning, policy and design documents related to the development of bicycle-pedestrian facilities	Downtown streets do not provide a complete and fully integrated system of options for the growing number of people who use bicycles as a primary means of movement.
The St. Louis Gateway Bicycle Plan and the "Bike St. Louis" program are important elements in the body of work. They lay a planning foundation for improved regional bicycle movement	There is some inconsistency between the two plans relating to bikeways. Some confusion may also result for map users because of the number of facility types.
A basic bikeway infrastructure has been developed and is increasingly being accepted by motorists who are beginning to recognize road-sharing as a standard expectation	Potential confusion from the use of several bicycle facility treatments without adequate education could result in vehicle conflicts and/or inhibit usage
Downtown Bikeways (from Gateway Bicycle Plan) East-West: Chouteau (Jefferson-Riverfront*); Clark (18th-14th); Market (20th-Memorial); Chestnut (20th-Memorial); Pine (20th-Tucker); Locust (Tucker-Broadway*); Washington (20th-Eads Br.); ML King (Broadway-MLK Bridge*) North-South: Leonore K. Sullivan (Chouteau-Riverfront Trl); 3rd St. (Chouteau-ML King); 4th St. (Chouteau-Biddle/Broadway); Broadway (Chouteau-Biddle/4th); 7th. St. (Clark to America's Ctr); 8th St. (Chouteau-Washington); Tucker (Chouteau-Cass*); 14th (Clark-Cass); 18th (Chouteau-Chestnut*); 20th (Market-Cass*); Jefferson (Chouteau to Cass).	Streets marked with an asterisk denote inconsistencies between the two plans.
Bikeways shown on "Bike St. Louis" map: East-West: Chouteau (Grattan-Riverfront*); Clark (18th-14th); Chestnut (20th-Memorial); Locust (Jefferson to 20th*); Washington (20th- Eads Br); ML King (Cole-20th*). North---South: Lenore K Sullivan (Chouteau-Riverfront Trl); Memorial Dr. (Memorial Connector-Washington); Tucker (Chestnut- Washington*); 15th (Clark- Olive*); 18th (MetroLink Station- Olive*); 20th (Olive- Cass*).	Streets marked with an asterisk denote inconsistencies between the two plans.
Both Metrobus and MCT buses are equipped with bicycle carriers	
The Complete Streets Ordinance (2010) provides a good framework to develop pedestrian- and bicycle-friendly conditions	Excessive curb heights in some locations that interfere with cyclists' abilities to utilize the full width of curb lanes
Bicycle Parking Ordinance (2012) defines bicycle parking space, rack, and site requirements	Lack of a bicycle-pedestrian management policy that provides improved monitoring, guidance and oversight
The Downtown Next Vision provides parameters for establishing a strong pedestrian and bicycling environment, developing a new focus on market rate housing and supportive amenities	Generally insufficient clearance between parked vehicles (opening door movements) and bicycles operating on Downtown streets.
The Big Shark Urban bike shop, locker and shower facility has made a strong investment in the emerging Downtown bicycle market, providing services that further encourage bicycle usage.	Pavement quality (holes, cracks and other irregularities) throughout the system pose stability/safety issues for bicyclists.

Assets	Deficiencies
The location of Trailnet headquarters in the Downtown district provides significant visibility to bicyclists and encouragement of non-motorized transportation	Motor vehicle driver and bicycle operator violations of the rules of the road, that affect safety and inhibit acceptance of road sharing
The City-Arch-River (CAR) project will result in major new opportunities for non-motorized movement along the eastern portion of the Gateway Mall corridor	Obstacles for bike-ped movement remain along the Gateway Mall, west of City Garden
The GRG Trestle project has created a signature bicycle-pedestrian facility that facilitates connectivity between the Riverfront Trail and the Downtown core.	
The 2005 CBB Study proposed signal enhancements and accommodations, traffic calming, and two-way flows at key Downtown locations (Locust, Broadway, Memorial Drive, Tucker, 8th) that promote reduced vehicle speeds and improve conditions for both pedestrians and bicyclists	Need for additional improvements at key Downtown employment generators and visitor destinations: Westin Hotel, Drury Plaza Hotel, Adam's Mark, Ballpark Village, Metropolitan Square, US Bank Plaza, Laclede Gas Building, Pavillion Hotel, Renaissance and Mayfair Hotels.

Appendix G: Street Network Planning Principles

Ten Street Network Planning Principles

Major Street networks should:

1. Connect and provide access to and between communities, centers of activity and neighborhoods of all types, as well as recreational and cultural facilities;
2. Form a grid-like pattern of continuous thoroughfares except as precluded by topographic barriers;
3. Conform with and follow natural topographic features and avoid adverse impacts to natural resource areas;
4. Meet spacing and connectivity criteria similar to those presented in this chapter;
5. Be designed to efficiently accommodate emergency vehicles, providing multiple routes to reach any block;
6. Have thoroughfares interconnected with specified distances between intersections to provide choices of routes to reduce travel distances; to promote use of transit, bicycles and walking; and to efficiently accommodate utility needs
7. Provide signalized crossings to encourage use of walking, bicycles and transit;
8. Be comprehensible to the average traveler;
9. Communicate the intended functions of individual thoroughfares through both design characteristics and appearance; and
10. Develop operating plans to serve all modes and all users, with uses varying on some thoroughfares according to context, needs, objectives and priorities while considering overall network needs

Source: ITE Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities