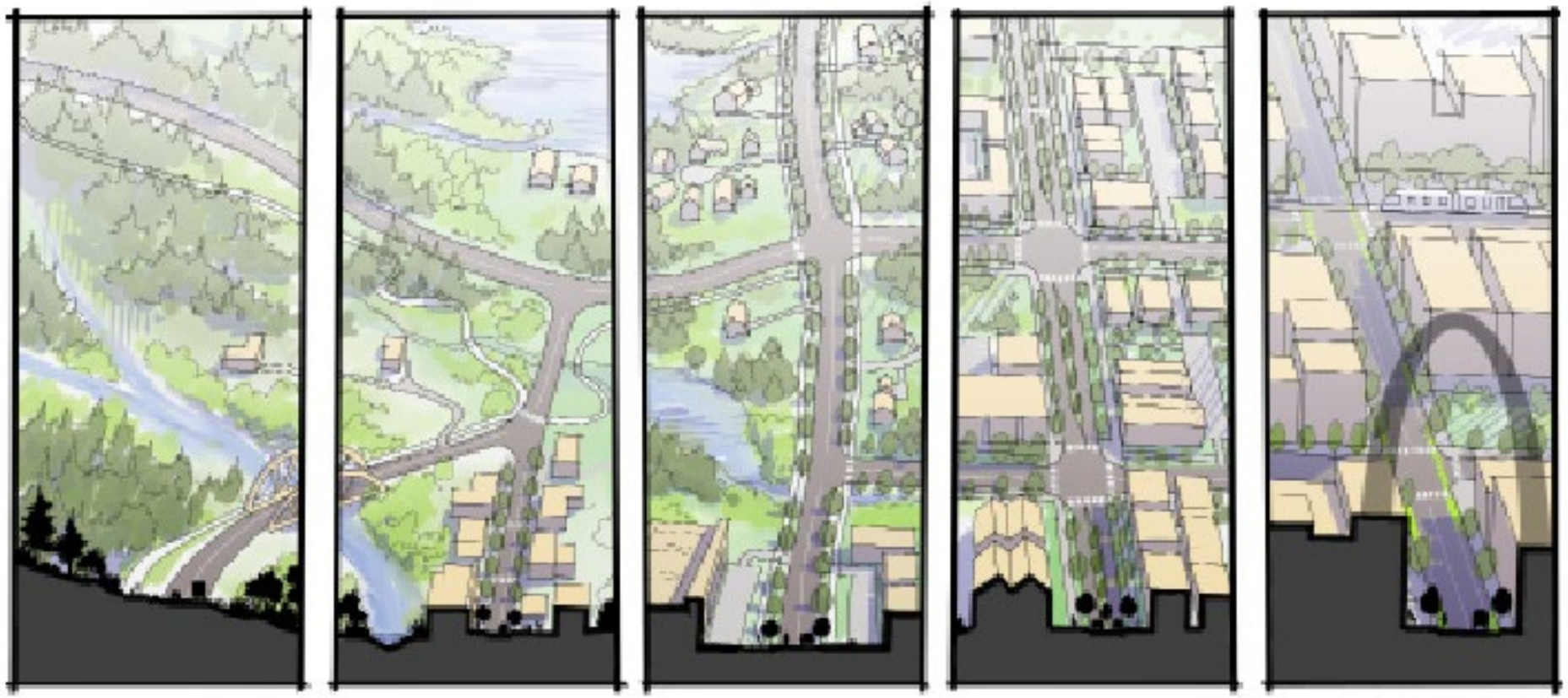


ARTERIAL DESIGN CONSIDERATIONS RESOURCE

# THE BLUEPRINT FOR ARTERIALS

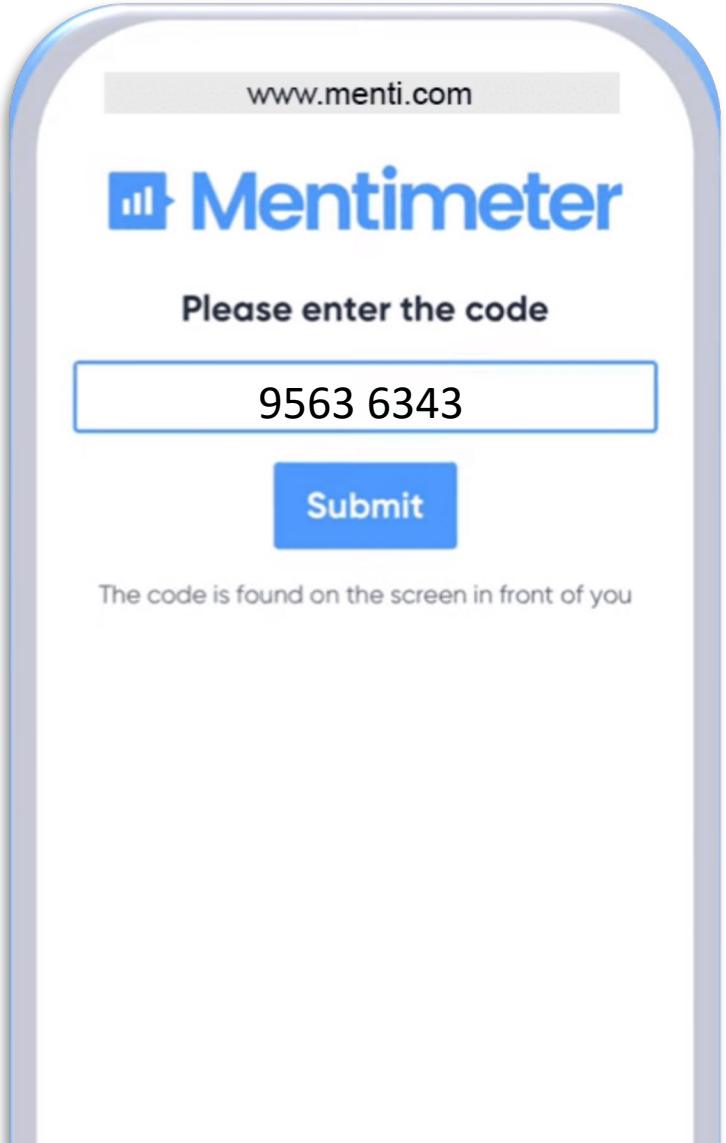
TEAM
March 2025

# AGENDA

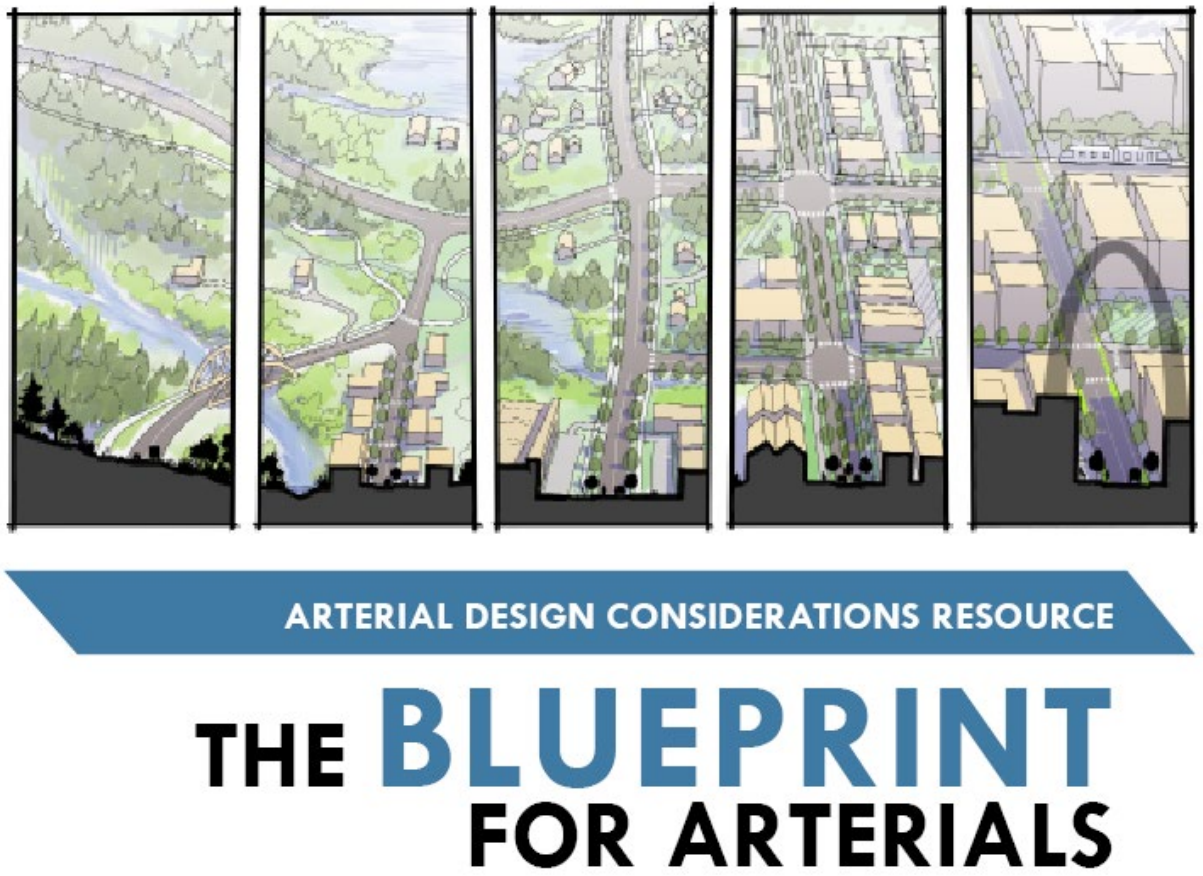
1. Survey the Audience
2. Review the Blueprint
3. Apply the Blueprint

# Survey the Audience

Join at menti.com | use code 9593 6343



# Review the Blueprint



# VISION & GOALS

**"Moving forward into the future, all arterials in the St. Louis Region should emphasize the safety of the most vulnerable users, advance a wide range of community contexts and goals, and provide for users of all modes. This can only be accomplished through a collaborative process that provides each community with flexible solutions to fit their unique needs."**

Vision Statement Key Words:

1. Safety
2. Vulnerable users
3. Community context
4. All users
5. Process
6. Fit (*adaptive*)

**GOALS**

1. **COLLABORATIVE**
   *+ INCLUSIVE*
2. **FLEXIBLE**
   *+ CONSISTENT*
3. **MULTIMODAL**
   *+ PLACE-BASED*
4. **SAFE**
   *+ CONTEXTUAL*

# INTENT OF THE BLUEPRINT

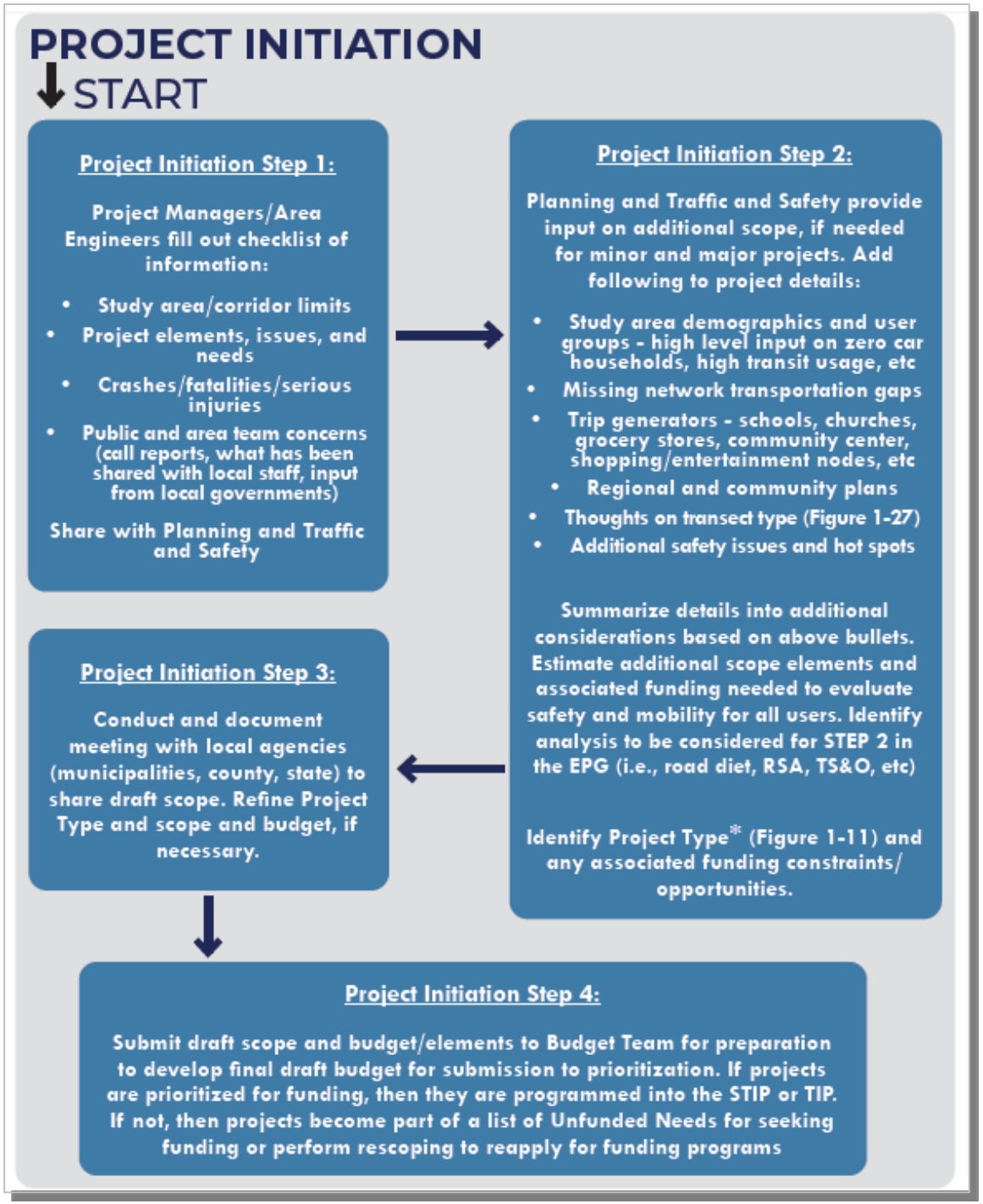
1. The Blueprint will:
   - Incorporate considerations for all modes and users on arterials
   - Develop contextual typologies and a toolkit of design elements for arterial design
   - Develop a process/tool to provide process consistency and design flexibility
   - Align land use and place with roadways and use
   - Identify data sources for evaluations
   - Identify who needs to be involved and when during the process
   - Better align community and stakeholder coordination
2. This Blueprint is not intended to:
   - Provide a descriptive solution for every arterial to look and be the same
   - Incorporate bike lanes into every road
   - Be used for every project on arterials
   - Create a new process that is time consuming

# SCOPING

p. 22-23

## Revised approach to scoping

- ✓ **Involve** Traffic/Safety and Planning staff in scoping and hiring
- ✓ **Involve** local agencies in scoping and validation
- ✓ Provides **opportunities for early consideration** of influential factors and participants
  - *Incorporate SAFER into scope*
  - Attracts funding for more than resurfacing
  - Develop plans for more than just asset management



# PROJECT TYPES

p. 24

## Revised approach to scoping

- ✓ Introduces three general project types:
  - Routine maintenance
  - Minor capital project
  - Major capital project
- ✓ **Identify** project type based on both current and potential funding
- ✓ **Identify** project type based both on scope elements and impacts

| Typical Scope Elements | Typical Impacts | Typical Project Name / Funding Stream |
|---|---|---|
| **Asset Management (Routine Maintenance, Operations, Bridges)** | | |
| -Emergency Resurfacing<br>-Traffic signal upgrade and/or retiming<br>-ADA ramp upgrades<br>-Bridge Repairs/structural work<br>-Bridge Inspection<br>-Bridge Deck Resurfacing<br>-Spot safety improvements<br>-Traffic Optimization | No/minor impacts to traffic capacity and parking<br>No/minor impacts to vehicular/pedestrian/cycling ways<br>No impacts to utilities or drainage<br>No changes to curb lines/drainage impacts<br>No impacts to other jurisdictions assets or roads<br>No ROW acquisition<br>No excavation below subbase<br>Rehabilitation work on or around an existing bridge<br>Maintaining existing safety features<br>Minimal coordination needed with other jurisdictions<br>No access management changes | -CMAQ signal optimization<br>-RSAs<br>-Safe Streets Implementation<br>-Safety Funding |
| **Minor Capital Projects** | | |
| -Overlay<br>-Lane reallocation<br>-Full resurfacing with impacts to intersections<br>-Restriping / Road diets<br>-Expansion of cycling network on-road<br>-First / Last mile projects to schools, transit, parks, trip generators<br>-Painting new midblock crossings<br>-Intersection improvements (turn lanes add/remove)<br>-Streetscape improvements<br>-Green Infrastructure | Minor parking impacts<br>Minor impacts to traffic signals<br>No ROW acquisition<br>Minor improvements of traffic calming and network tools<br>Changes to curb lines at intersections (mostly for traffic calming)<br>Minor to moderate impacts to traffic capacity and parking<br>Minor to moderate stormwater and drainage<br>Minor to moderate impacts to utilities with no/moderate utility coordination<br>Minimal to moderate coordination needed to other jurisdictions<br>Safety improvements to address crashes<br>No/minor access management changes<br>Minor to moderate changes at intersection<br>Minor to moderate below grade space (root zone) infrastructure needs | -STP<br>-Developer led<br>-Safe Streets Implementation<br>-Complete Streets<br>-Safety Funding |
| **Major Capital Projects** | | |
| -Corridor improvements<br>-Replacing bridges<br>-Roadway reconstruction<br>-Roundabouts<br>-Expansion of cycling network with protection or separated facilities<br>-Reclamation of roadway for other public uses<br>-Streetscape improvements<br>-Green Infrastructure | Moderate/major coordination need with other jurisdictions<br>Moderate/major stormwater and drainage<br>Moderate/major parking impacts and/or roadway capacity<br>Moderate/major impacts to utilities with possible extensive utility coordination<br>Changes to curb lines along corridor with drainage impacts<br>Major impacts to traffic signals that greatly impact traffic operations in addition to traffic capacity<br>Excavation below subbase<br>ROW acquisition<br>Moderate/major below grade space (root zone) infrastructure needs | -STP<br>-Corridor Studies<br>-PEL<br>-Bridge Replacement<br>-Federal Funding<br>-Major Development led<br>-Great Streets / Local Roadway Plan Implementation<br>-Complete Streets<br>-Other major federal funding |

# STEPS

p. 25

## Revised approach to conceptual study

- ✓ Restructures approach to conceptual study
  - Enhanced but *NOT LIMITED* to public involvement
  - Aligns and clarifies **EPG steps**
  - Iterates and clarifies **decision-making process** during conceptual phase
- ✓ Focused on how to a roadway adapts and fits with the community context

| EPG Project Development STEP | | Asset Management | Minor Capital Projects | Major Capital Projects |
|---|---|---|---|---|
| | Project Initiation | *Identified during this step* | | |
| Step 1: Inspire and Idea | Develop CEP | X | X | X |
| | Collaborate with communications | X | X | X |
| | Develop purpose and goals | | X | X |
| | Define high level issue | | X | X |
| | Public Touchpoint (and ENGAGEMENT MEMO) | | | X |
| | ARTERIAL CHECKLIST | X | X | X |
| Step 2: Planning Begins | Discover existing conditions | | X | X |
| | Identify typology and tools | | X | X |
| | Develop options/alternatives | | X | X |
| | Collaborate with Planning and Safety and Traffic | | X | X |
| | Collaborate with other Agency partners | | X | X |
| | Meet with Budget Team | | | X |
| | DRAFT PLANNING CHECKLIST | | X | X |
| Step 3: Public Consulted | Public Touchpoint (and ENGAGEMENT MEMO) | | X | X |
| Step 4: Impact Assessed | Collaborate with Safety and Traffic | | X | X |
| | Collaborate with Maintenance | | X | X |
| | Refine preferred concept | | X | X |
| Step 5: Public Involved Again Before Project Approval | Public Touchpoint (and ENGAGEMENT MEMO) | | X | X |
| | FINAL PLANNING CHECKLIST (15% concept) | | X | X |
| | Collaborate with other Agency partners | | X | X |
| | Public Touchpoint (INFORM) | X | | |

# ENGAGEMENT

p. 27-30, 37, & 41

## Revised approach to *public involvement*

- ✓ Restructures approach to public involvement
  - Happens **before design** (preliminary plans)
  - **Involve** communities early
  - The community *helps shape* the project
- ✓ Incorporates and clarifies roadway use by/for the local community.
- ✓ Guidance gives framework to assist project teams to build out public involvement



| STEP 5: ENGAGEMENT | Title of engagement: *'PROJECT NAME' DESIGN PHASE* |
|---|---|
| PURPOSE OF TOUCHPOINT | The aim is to communicate the input received so far, demonstrate how this input has influenced the proposed solutions, and present these solutions. Additionally, we should share the tools and solutions outlined within the budget, along with discussing any potential future opportunities that may not be encompassed in the current phase. |
| PUBLIC PARTICIPATION IMPACT | INFORM / CONSULT |
| ENGAGEMENT TYPE | open house, public survey, informative session |
| MATERIALS | presentation \| maps showing solutions and tools \| comment forms \| survey for final input |
| LOCATION | As close to or on arterial as possible. Look for location with a agency partner, community center, place that people in study area gather, or existing event to add on to. There could be a virtual option… |
| INPUT TO GATHER | The overarching goal of this step for minor and major capital projects is to share the input to date and how it has molded and developed the preferred option and solution presentated. This step allows for the public to give final input on the preferred solution for the arterial and future phases (if needed). |
| NOTES for this step | Preferred solutions and options should be considered draft until final input is gathered. It should be clear what is being designed with current project and where there is future opportunities. |

# DESIGN TOOLS

p. 52-82

**TYPE A**

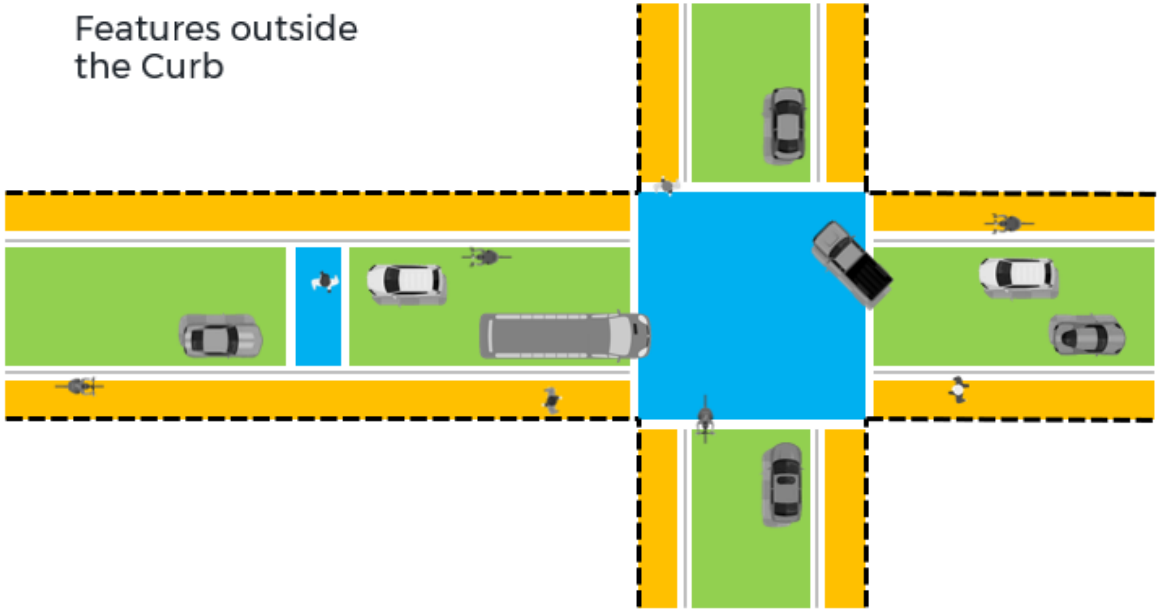
Features inside the Curb

**TYPE B**

Intersections and Crossings

**TYPE C**

Features outside the Curb

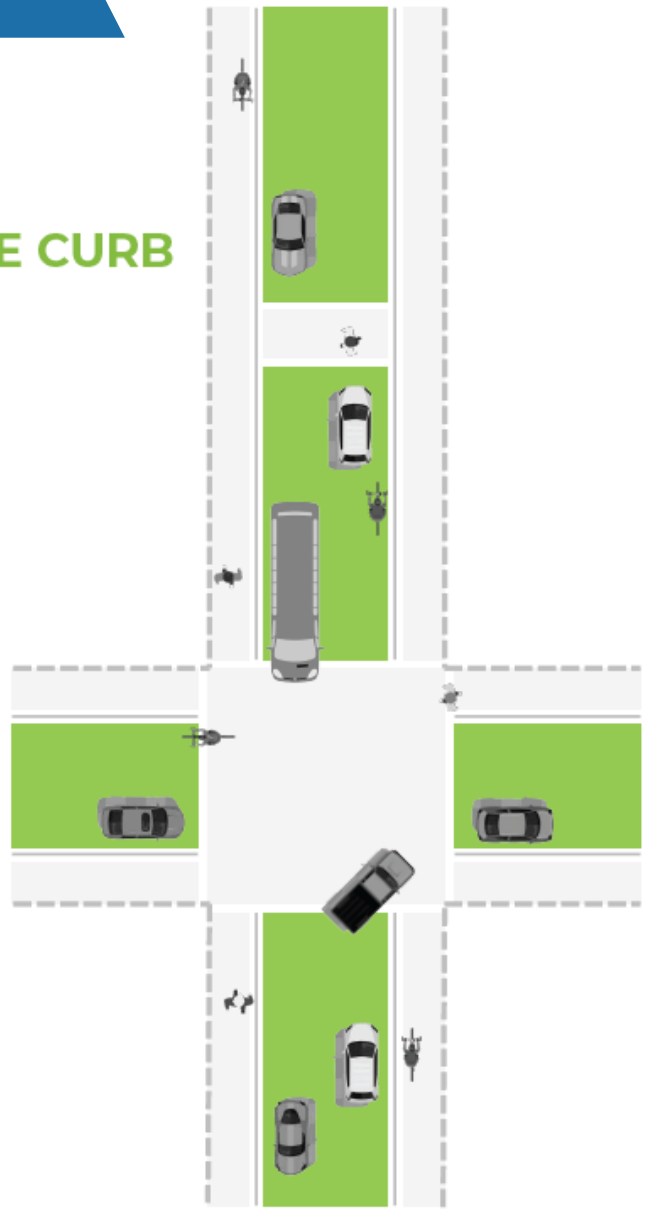


| Type A: Features Inside the Curb | |
|---|---|
| Lowering Design Speed (Restriping or Moving Curbs) | Road Diets |
| Access Management (Relocation or Consolidation of Driveways) | On-Street Parking |
| Narrowing Lanes | Transit Mobility Hubs / Protected |
| Segment Lane Reconfiguration / Curb Relocation | Traffic Calming / Movable Bollards |
| Traffic Diverters / Forced Turns | Green Infrastructure / Inside Curb |
| Transit Lanes / Pull-Outs | Enhanced Pavement Markings |
| Shared Traffic Bike Lanes | Rumble Strips |
| Dedicated / Protected Bike Lanes | Varying Curb Types |
| Center Medians | Bike Lane Vertical Separation |
| **Type B: Intersections and Crossings** | |
| Intersection Control Types | Pedestrian Refuge Islands |
| Intersection Lane Configuration / Curb Relocation | Traffic Diverters (for Side Streets) |
| Protected Bike Intersections | Raised Intersections / Crossings |
| Standard / Floating Island Curb Extensions | Midblock Crossings |
| Green Bike Crossings / Left Turn Boxes | Transit Signal Priority (TSP) |
| Median Noses | Intersection / Median Hardening |
| Pedestrian and Bike-Prioritized Signal Operations | High-Visibility Crosswalks / Crosswalk Visibility Enhancements |
| Intersection Turn Modifications (Radii/Channelized Right Removal) | Reconfiguring Channelized Right-Turn Lanes |
| Rectangular Rapid-Flashing Beacons (RRFB) | Floating Transit Islands / Bus Pads / Mobility Hubs |
| HAWK Pedestrian Signals / Hybrid Beacons | Roundabout Intersections |
| ADA Curb Ramps and Pedestrian Signals | Protected-Only Left Turns |
| **Type C: Features outside the Curb** | |
| Enhanced / Widened Sidewalks | Changing Site Distance Triangles |
| Shared Use Path / Elevated Bike Lanes | Relocation of Signals / Cabinets |
| Protected Bike Lanes (Cycle Tracks) | Continuous Sidewalks |
| Vulnerable Road User Barriers | Vertical Amenities |
| Posted Speed Limits / Lowering | Street Signage (MUTCD) |
| Pedestrian / Hybrid Sidewalk / Street Lighting | Right-of-Way Purchase |
| Green Infrastructure / Outside Curb | Street Trees / Landscaping |

# DESIGN TOOLS

## TYPE A:

## FEATURES INSIDE THE CURB



## LOWERING DESIGN SPEED

### WHAT IS IT?

The design speed is a selected speed utilized to determine a variety of geometric features on a roadway (such as curb radii, travel lane width, on-street parking restrictions, guardrails, and clear zones for example) which can affect the actual speeds. Lowering the design speed can also inform decisions during restriping or moving of curbs during redesign.

### WHEN TO USE?

Design speeds can be lowered network-wide or in sections. Lowering design speeds should be considered on high-crash corridors (typically identified in a high-injury network) and areas of higher-risk (typically identified in a high-risk network).

### GUIDANCE FOR USING

*NACTO's Safe Speed Study* identifies whether to lower speed considering operating speed, maximum safe speed, and the existing posted speed. However, lowering speeds does not always slow down drivers, as drivers will drive the speed limit that they feel comfortable to drive. Therefore, it is encouraged to pair lowered speeds with traffic calming and speed management countermeasures.

### BENEFITS:

- Lowering design speed can reduce intended speeds for cars
- Allows reduction in lane width and tighter turning radii
- Can allow shorter cycle lengths and pedestrian-priority for crossings
- Reduces injuries and fatalities for pedestrians and cyclist and overall crash severity

### TOOLS TO USE THIS WITH:

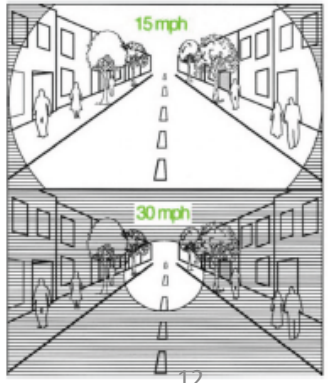
- Curb Extensions
- Islands / Medians
- Narrowing Lanes
- Raised Crosswalks
- Road Diets
- Roundabouts
- Street Trees / Landscaping


| SPEED (MPH) | STOPPING DISTANCE (FT)* | CRASH RISK (%)† | FATALITY RISK (%)† |
|---|---|---|---|
| 10–15 | 25 | 5 | 2 |
| 20–25 | 40 | 15 | 5 |
| 30–35 | 75 | 55 | 45 |
| 40+ | 110 | 90 | 85 |

* Stopping Distance includes perception, reaction, and braking times.

† Source: Traditional Neighborhood Development Street Design Guidelines (1999), ITE Transportation Planning Council Committee TP-8.

*Speeds Relation to Safety*
*FHWA Safe Speed / Risk Chart*




*Speed, Tunnel Vision, and Reaction Time Cone of Sight Distance from America Walks*

# PROCESS

p. 86-105

## Revised approach to *selection of project elements*

### Step #1 Define Context and Character for the Street Segment

- Urban Core
- Urban
- Suburban
- Rural Town
- Rural

### Step #2 Review any Applicable Plans or Projects or Major Overlays

- Comprehensive Plans
- Future Land Use Plans
- Area Plans
- Transportation Plans
- Corridor Designs
- Overlay Codes
- On-Going Projects
- Others

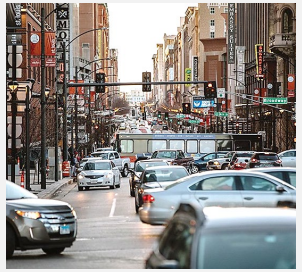
### Step #3 Identify Baseline User Needs and Priorities for the Street (Inside the curb, Outside the Curb, and at Intersections)

- Bicycles
- Pedestrians
- Vehicles
- Parking
- Transit
- Freight

### Step #4 Select Street Typology for Customization and Constraints Identification

- Downtown Street
- Transit Corridor
- Gateway Street
- Mixed-Use Street
- Main Street
- Commercial Corridor
- Residential Street
- Business Industrial Corridor
- Connector Corridor

# Identify context & character



**Urban Core**
Areas with highest density, mixed land uses within and among predominately high-rise structures, and small setbacks.

**Urban**
Areas with high density, mixed land uses and prominent destinations, potential for some on-street parking and sidewalks, and mixed setbacks.

**Suburban**
Areas with medium density, mixed land uses within and among structures (including mixed-use town centers, commercial corridors, and residential areas), and varied setbacks.

**Rural Town**
Areas with lowest density, few houses or structures (widely dispersed or no residential, commercial, and industrial uses), and usually large setbacks.

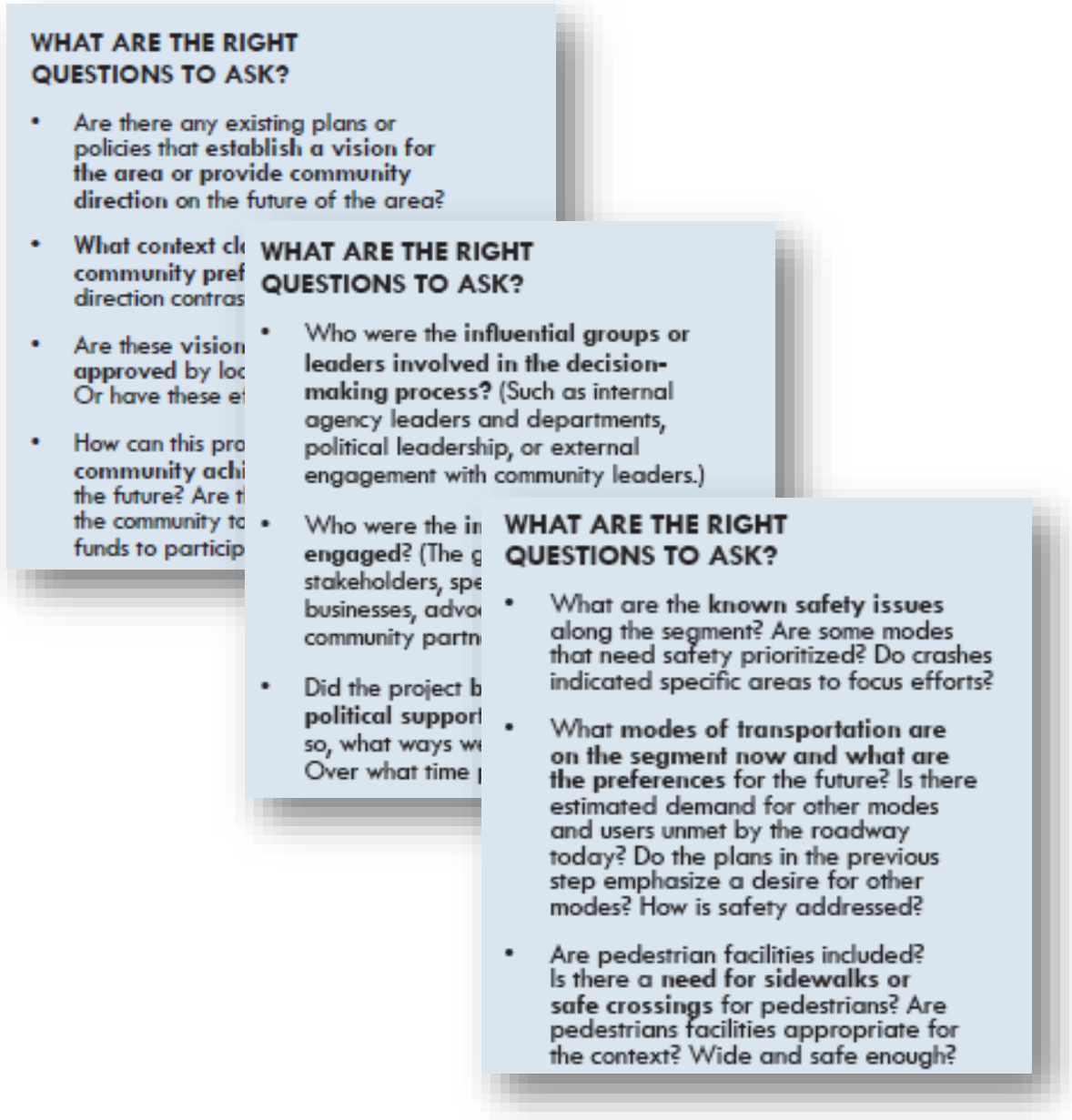
**Rural**
Areas with low density but diverse land uses with commercial main street character, potential for on-street parking and sidewalks, and small setbacks.

*(Credit: AASHTO Contextual Classification for Geometric Design and the NCHRP Research 855: An Expanded Functional Classification System for Highways and Street 2018)*

# Identify community details for adapting design

## Considers other community details and users:

- ✓ Identifies other plans and projects that could impact the roadway
- ✓ Expands understanding of who are the users and for whom are we designing.
  - Not just vehicle trips and trough-trips
  - Existing and future
- ✓ Shift from "*accommodating*" to *safe, comfortable, convenient, purposeful* "*inclusion*"



# TYPOLOGIES

p. 104-155

| CONTEXT AND DESIGN CONSIDERATIONS | Downtown Street (DTS) SEE PAGES 108-109 | Mixed-Use Street (MUS) SEE PAGES 110-115 | Transit Corridor (TRC) SEE PAGES 116-121 | Main Street (MNS) SEE PAGES 122-127 | Residential Street (RES) SEE PAGES 128-132 | Gateway Corridor (GWC) SEE PAGES 134-139 | Commercial Corridor (CMC) SEE PAGES 140-145 | Business Industrial Corridor (BIC) SEE PAGES 146-149 | Connector Corridor (CNC) SEE PAGES 150-155 |
|---|---|---|---|---|---|---|---|---|---|
| AASHTO Context Classification | UC | UC; U; S | UC; U; S | U; S; RT | U; S; RT | UC; U; S | U; S; RT | U; S | U; S; R |
| Right-of-Way (LF) | 60'-120' TYP | 80'-100' TYP | 100'-140' TYP | 60'-80' TYP | 50'-100' TYP | 80'-120' TYP | 80'-120' TYP | 60'-100' TYP | 50'-80' TYP |
| Vehicle Lanes (#, one way) | 0-3 TYP | 0-2 TYP | 2-4 TYP | 0-2 TYP | 1-4 TYP | 0-3 TYP | 2-4 TYP | 1-2 TYP | 2-3 TYP |
| Posted Speed (MPH) | 25 MPH MAX | 25-30 MPH MAX | 30 MPH MAX | 25-30 MPH MAX | 25-35 MPH MAX | 25 MPH MAX | 30-45 MPH MAX | 30-50 MPH MAX | 55 MAX |
| AADT (#) | 5,000-15,000 TYP | 10,000-20,000 TYP | 10,000-25,000 TYP | 5,000-10,000 TYP | 5,000-10,000 TYP | 5,000-15,000 TYP | > 15,000 TYP | > 5,000 TYP | > 15,000 TYP |
| Intersection / Crossing Density (#/LF) | < 300'-325' TYP | 250'-500' TYP | 300'-800' TYP | 250'-500' TYP | 300'-800' TYP | 250'-500' TYP | 300'-800' TYP | > 800' TYP | 800'-1,600 TYP |

**FIGURE 1-32:** *Table Cross-Referencing Street Typology with Context and Design Considerations*

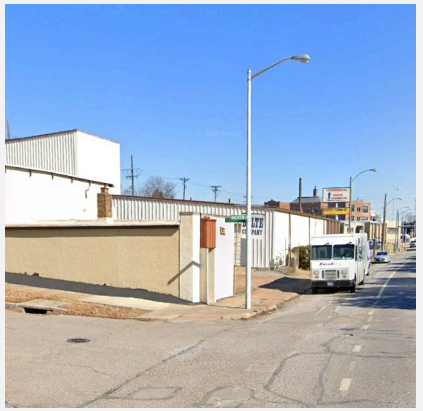
# Identify the typology by segment

## Rte. 100 / Manchester
## Big Bend to Vandeventer

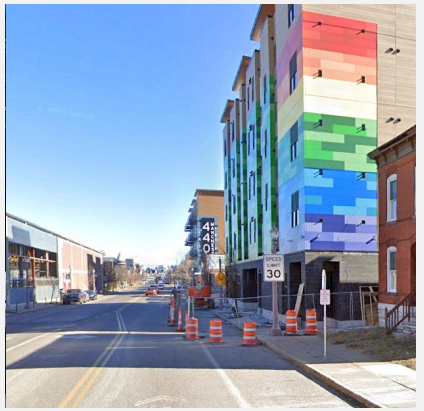
**Main Street**


**Commercial Corridor**


**Business Industrial Corridor**



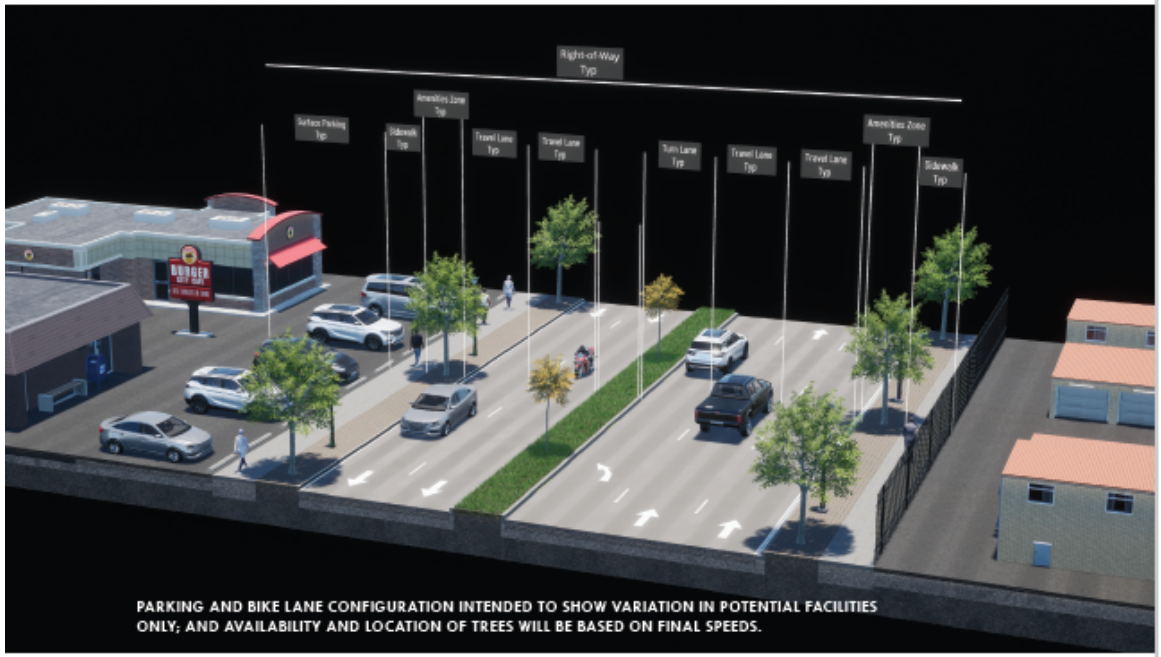
**Mixed-Use Street**




# COMMERCIAL CORRIDOR *RURAL TOWN* CMC-RT

## DESCRIPTION AND INTENTION:

A typology for the region's extensive network of radial and traversing commercial thoroughfares that link urban cores to population / employment centers through and between communities with a wide range of densities, heights and uses. A rural town Commercial Corridor is characterized by its provision of local land access and access management, and consideration for freight. Where possible and needed to support local businesses, they should include wide sidewalks and amenities, as well as on-street parking.




PARKING AND BIKE LANE CONFIGURATION INTENDED TO SHOW VARIATION IN POTENTIAL FACILITIES ONLY; AND AVAILABILITY AND LOCATION OF TREES WILL BE BASED ON FINAL SPEEDS.

## APPLICABLE CONTEXTS:

| AASHTO Context | Municipality |
|---|---|
| Rural Town (RT) | SCC; JEF; FRK |

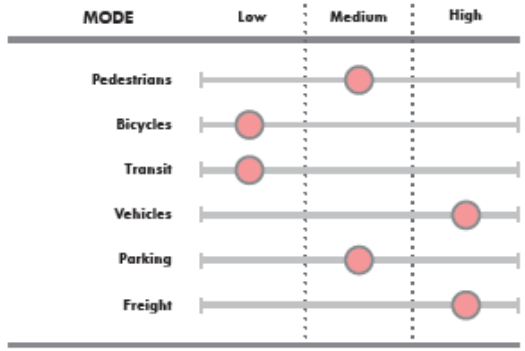
## CONTEXT CHARACTERISTICS:

| Factors | Quantitative Metric |
|---|---|
| Development Density | 1-3 Stories typical; heights may vary widely; and parcels are often built out. |
| Land Uses | Mostly vertical mixing of land uses within buildings with some areas of concentrated, single land use areas. |
| Building Setbacks | Ranging from 0' to 25' front setbacks, consistently and some consistent side setbacks relative to adjacent buildings. |
| Parking Location | > 60% On-street parking.<br>< 40% Off-street parking.<br>~ 0% in buildings / structures. |





## TYPICAL MODAL PRIORITY:




## OTHER MODAL CONSIDERATIONS:

| | |
|---|---|
| Pedestrians | Preferred: Wide sidewalks with amenities. |
| Bicycles | Optional: If included, protected or separate facilities preferred. |
| Transit | Optional: LRT, STC, BRT, or BUS facilities and amenities. |
| Vehicles | Recommended: Turn lanes or medians. |
| Parking | Preferred: On-street parking and curb space for loading and pickup. |
| Freight | Recommended: Provisions for larger design vehicles. |

## OTHER DESIGN CONSIDERATIONS:

| | |
|---|---|
| Right-of-Way (LF) | 80'-120' TYP |
| Vehicle Lanes (one way) | 2-4 TYP |
| Posted Speed (MPH) | 30-45 MAX |
| AADT (#) | > 15,000 TYP |
| Intersection / Crossing Density (#/LF) | 300'-800' TYP |

## APPLICABLE TOOLS:

### Type A: Features inside the Curb

- Y — Lowering Design Speed (Restriping or Moving Curbs)
- Y — Road Diets / Narrowing Lanes
- N — Dedicated Transit Lanes / Bus Pull-Outs
- M — Dedicated / Protected Bike Lanes
- Y — Traffic Calming Bollards

### Type B: Intersections and Crossings

- Y — Roundabout Intersections
- M — Protected Bike Intersections
- Y — Raised Intersections / Crossings
- M — Floating Transit Islands / Mobility Hubs
- N — Queue Jump Lanes / Transit Signal Priority (TSP)
- M — Green Bike Crossings / Left Turn Boxes
- M — Standard / Floating Island Curb Extensions
- Y — Midblock Crossings
- Y — Pedestrian Refuge Islands
- N — Intersection Turn Modifications
- M — Protected-Only Left Turns

### Type C: Features outside the Curb

- M — Shared-use Path / Elevated Bike Lane
- Y — Pedestrian / Hybrid Sidewalk Lighting
- Y — Street Trees / Landscaping
- Y — Vertical Amenities (A variety of items)

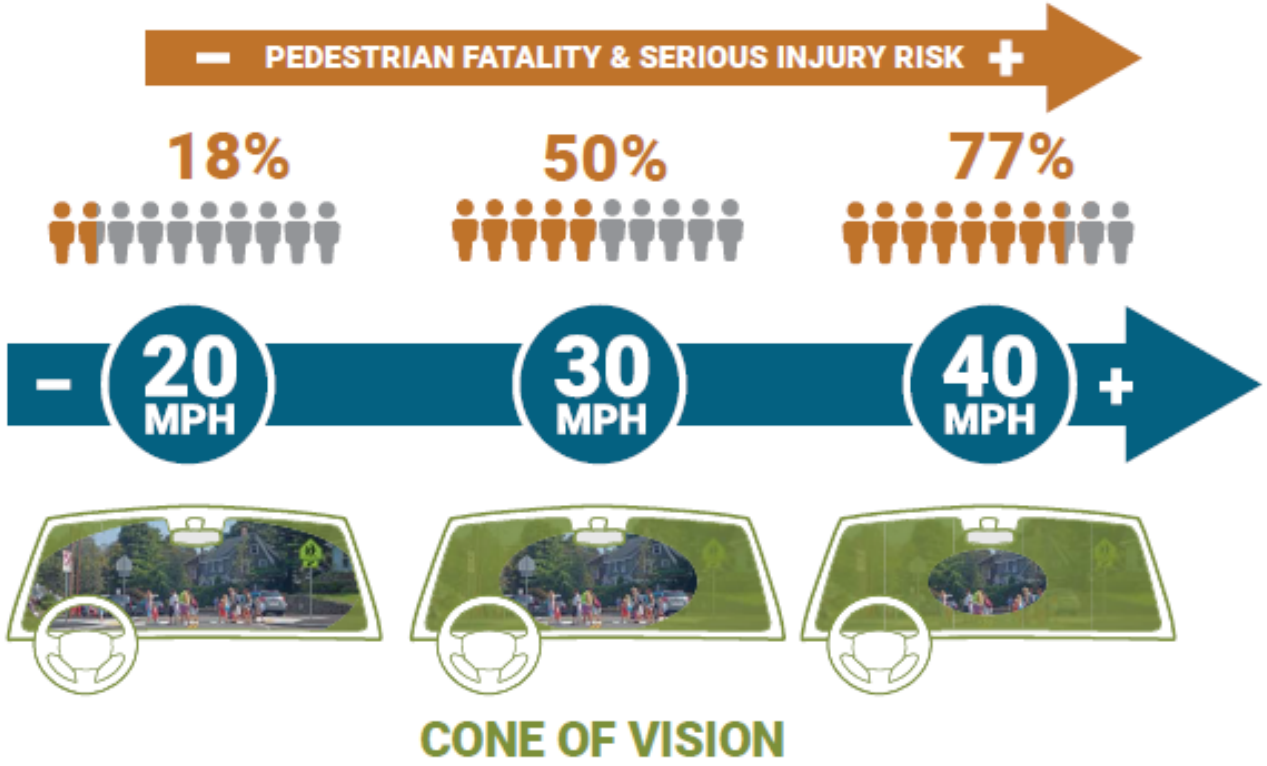
**LEGEND**

- Y — *Yes, the tool should be considered.*
- M — *Maybe, the tool could be utilized.*
- N — *No, the tool is not ideal.*

*SEE PAGE X FOR FULL TOOL DETAILS*

MoDOT | East-West Gateway Council of Governments | WSP

# Applying the Blueprint

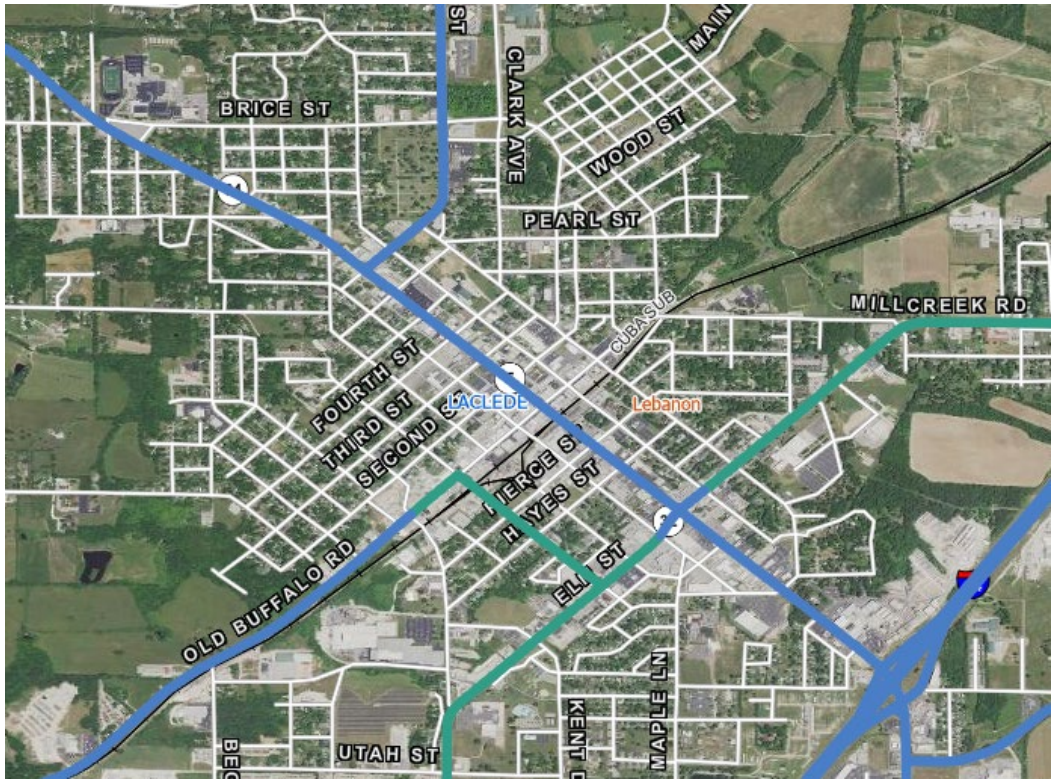


# Identifying Context – Rural Town

## Lebanon, MO

MO 5 (Jefferson Ave)

Pass alongside Main Street (Commercial Street)




## Camdenton, MO

US-54

Pass through Main Street

# Identifying Context – Rural Town

## Kennett, MO

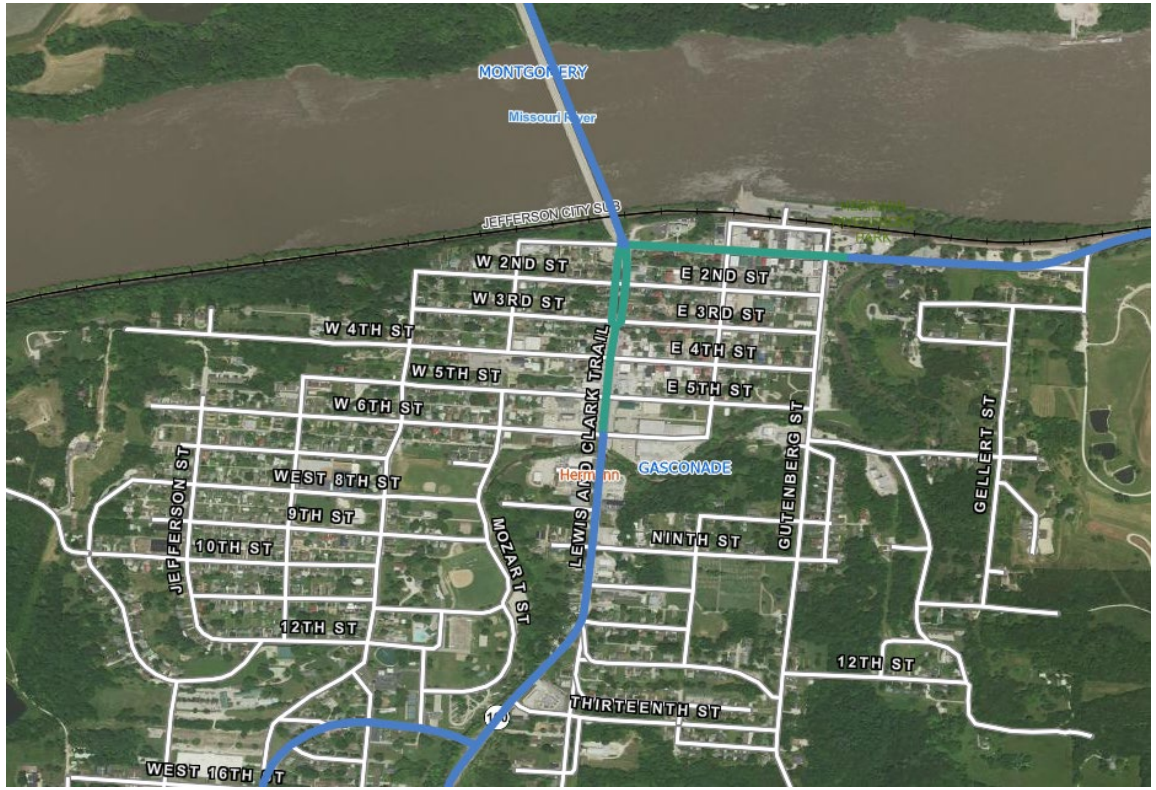
MO 84 (St. Francis St.)

Main Street


## Hermann, MO

MO 19 (Market St.)

Main Street – split ownership



# Community Details

## Business 63 in Kirksville, MO

- Typology: Residential Street – Rural Town (below)
- Era: Pre-WWII
- Comfortable for pedestrian



- Typology: Commercial corridor – Rural Town (above)
- Era: Post-WWII
- How comfortable for pedestrians crossing the street?

# Community Details

## US-65 in Chillicothe, MO

- Typology: Main Street – Rural Town (below)
- Era: Pre-WWII
- Pedestrian focused streetscape

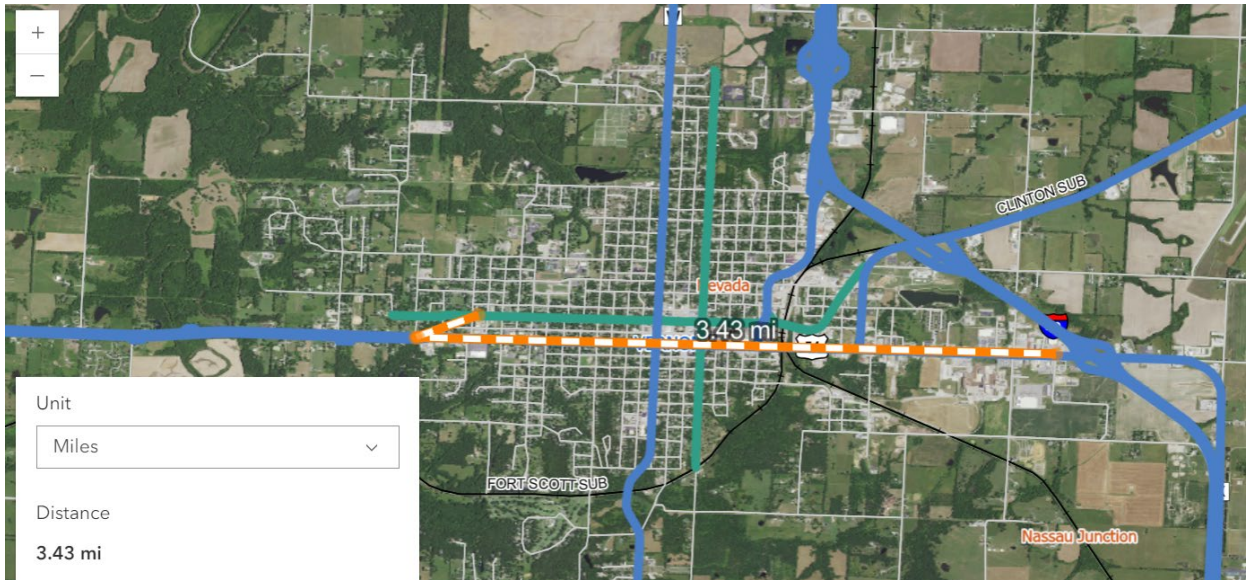


- Typology: Commercial Corridor – Rural Town (Above)
- Main Street: Post-WWII
- Regional level commercial
- Needs improvement for pedestrians

# Typologies & Design

## US-54 in Nevada, MO

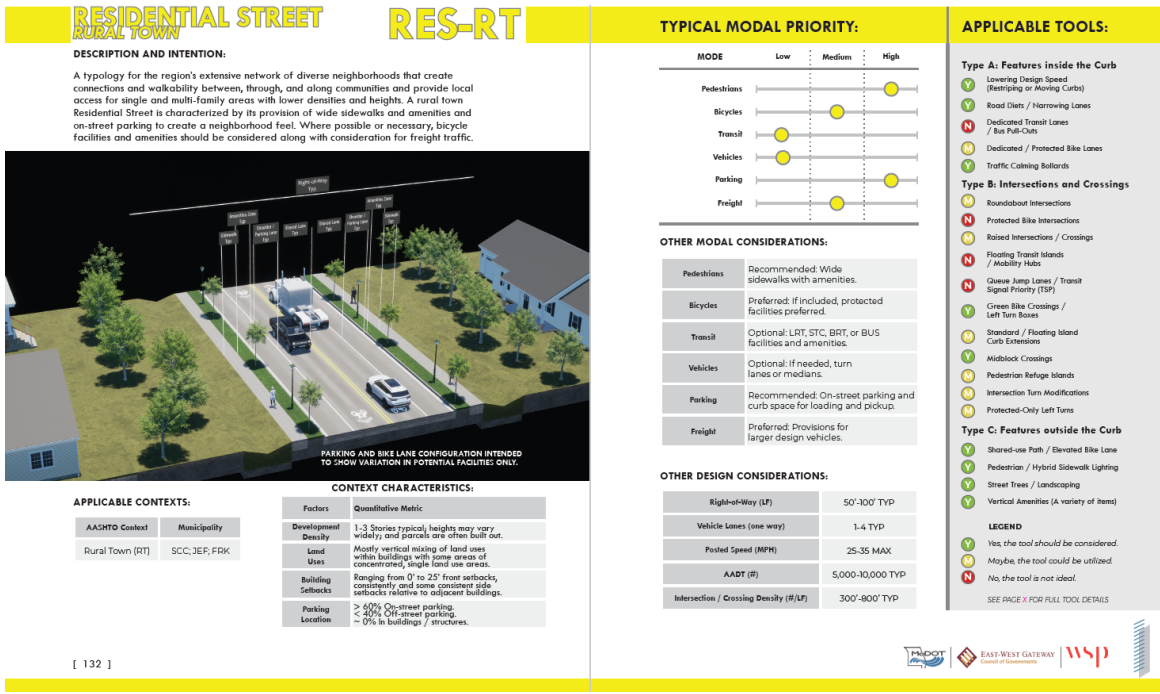
- 30 MPH zone
- 5-lane arterial
- Block lengths under 400 feet with sidewalks in pre-WWII area
- Pedestrian trip generators: Walmart, grocery, dollar store, dining, etc.
- 5 crosswalks for 3 miles
- Traffic volumes under 15k and most under 10k
- Rural town with pre-WWI layout




# Example: US-54 / Nevada, MO

## Potential design options

- ✓ Consolidate / remove driveways
- ✓ Add pedestrian crossings with lighting and refuge islands & enhance 5 existing crosswalks
- ✓ Re-allocate roadway space based on traffic and context:
  - ✓ Road diet 5-to-3 lane
  - ✓ Curb extensions or choker islands
  - ✓ Medians



RESIDENTIAL STREET RURAL TOWN RES-RT

DESCRIPTION AND INTENTION:

A typology for the region's extensive network of diverse neighborhoods that create connections and walkability between, through, and along communities and provide local access for single and multi-family areas with lower densities and heights. A rural town Residential Street is characterized by its provision of wide sidewalks and amenities and on-street parking to create a neighborhood feel. Where possible or necessary, bicycle facilities and amenities should be considered along with consideration for freight traffic.

PARKING AND BIKE LANE CONFIGURATION INTENDED TO SHOW VARIATION IN POTENTIAL FACILITIES ONLY.

APPLICABLE CONTEXTS:

| AASHTO Context | Municipality |
|---|---|
| Rural Town (RT) | SCC; JEF; FRK |

CONTEXT CHARACTERISTICS:

| Factors | Quantitative Metric |
|---|---|
| Development Density | 1-3 Stories typical; heights may vary widely; and parcels are often built out. |
| Land Uses | Mostly vertical mixing of land uses within buildings with some areas of concentrated, single land use areas. |
| Building Setbacks | Ranging from 0' to 25' front setbacks, consistently and some consistent side setbacks relative to adjacent buildings. |
| Parking Location | > 60% On-street parking.<br>< 40% Off-street parking.<br>~ 0% in buildings / structures. |

TYPICAL MODAL PRIORITY:

| MODE | Low | Medium | High |
|---|---|---|---|
| Pedestrians | | | ● |
| Bicycles | | ● | |
| Transit | ● | | |
| Vehicles | ● | | |
| Parking | | | ● |
| Freight | | ● | |

OTHER MODAL CONSIDERATIONS:

| | |
|---|---|
| Pedestrians | Recommended: Wide sidewalks with amenities. |
| Bicycles | Preferred: If included, protected facilities preferred. |
| Transit | Optional: LRT, STC, BRT, or BUS facilities and amenities. |
| Vehicles | Optional: If needed, turn lanes or medians. |
| Parking | Recommended: On-street parking and curb space for loading and pickup. |
| Freight | Preferred: Provisions for larger design vehicles. |

OTHER DESIGN CONSIDERATIONS:

| | |
|---|---|
| Right-of-Way (LF) | 50'-100' TYP |
| Vehicle Lanes (one way) | 1-4 TYP |
| Posted Speed (MPH) | 25-35 MAX |
| AADT (#) | 5,000-10,000 TYP |
| Intersection / Crossing Density (#/LF) | 300'-800' TYP |

APPLICABLE TOOLS:

Type A: Features inside the Curb
- Y Lowering Design Speed (Restriping or Moving Curbs)
- Y Road Diets / Narrowing Lanes
- N Dedicated Transit Lanes / Bus Pull-Outs
- M Dedicated / Protected Bike Lanes
- Y Traffic Calming Bollards

Type B: Intersections and Crossings
- M Roundabout Intersections
- N Protected Bike Intersections
- M Raised Intersections / Crossings
- N Floating Transit Islands / Mobility Hubs
- N Queue Jump Lanes / Transit Signal Priority (TSP)
- Y Green Bike Crossings / Left Turn Boxes
- M Standard / Floating Island Curb Extensions
- Y Midblock Crossings
- M Pedestrian Refuge Islands
- M Intersection Turn Modifications
- M Protected-Only Left Turns

Type C: Features outside the Curb
- Y Shared-use Path / Elevated Bike Lane
- Y Pedestrian / Hybrid Sidewalk Lighting
- Y Street Trees / Landscaping
- Y Vertical Amenities (A variety of items)

LEGEND
- Y Yes, the tool should be considered.
- M Maybe, the tool could be utilized.
- N No, the tool is not ideal.

SEE PAGE X FOR FULL TOOL DETAILS

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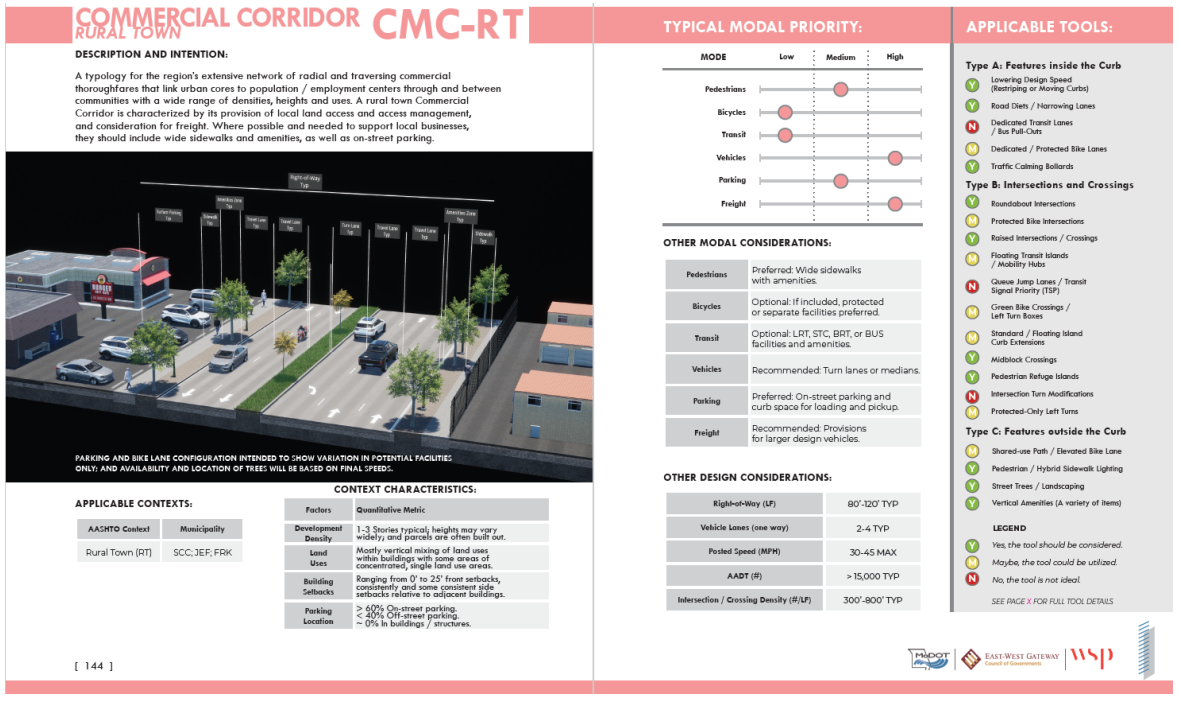

COMMERCIAL CORRIDOR RURAL TOWN CMC-RT

DESCRIPTION AND INTENTION:

A typology for the region's extensive network of radial and traversing commercial thoroughfares that link urban cores to population / employment centers through and between communities with a wide range of densities, heights and uses. A rural town Commercial Corridor is characterized by its provision of local land access and access management, and consideration for freight. Where possible and needed to support local businesses, they should include wide sidewalks and amenities, as well as on-street parking.

PARKING AND BIKE LANE CONFIGURATION INTENDED TO SHOW VARIATION IN POTENTIAL FACILITIES ONLY; AND AVAILABILITY AND LOCATION OF TREES WILL BE BASED ON FINAL SPEEDS.

APPLICABLE CONTEXTS:

| AASHTO Context | Municipality |
|---|---|
| Rural Town (RT) | SCC; JEF; FRK |

CONTEXT CHARACTERISTICS:

| Factors | Quantitative Metric |
|---|---|
| Development Density | 1-3 Stories typical; heights may vary widely; and parcels are often built out. |
| Land Uses | Mostly vertical mixing of land uses within buildings with some areas of concentrated, single land use areas. |
| Building Setbacks | Ranging from 0' to 25' front setbacks, consistently and some consistent side setbacks relative to adjacent buildings. |
| Parking Location | > 60% On-street parking.<br>< 40% Off-street parking.<br>~ 0% in buildings / structures. |

TYPICAL MODAL PRIORITY:

| MODE | Low | Medium | High |
|---|---|---|---|
| Pedestrians | | ● | |
| Bicycles | ● | | |
| Transit | ● | | |
| Vehicles | | | ● |
| Parking | | ● | |
| Freight | | | ● |

OTHER MODAL CONSIDERATIONS:

| | |
|---|---|
| Pedestrians | Preferred: Wide sidewalks with amenities. |
| Bicycles | Optional: If included, protected or separate facilities preferred. |
| Transit | Optional: LRT, STC, BRT, or BUS facilities and amenities. |
| Vehicles | Recommended: Turn lanes or medians. |
| Parking | Preferred: On-street parking and curb space for loading and pickup. |
| Freight | Recommended: Provisions for larger design vehicles. |

OTHER DESIGN CONSIDERATIONS:

| | |
|---|---|
| Right-of-Way (LF) | 80'-120' TYP |
| Vehicle Lanes (one way) | 2-4 TYP |
| Posted Speed (MPH) | 30-45 MAX |
| AADT (#) | > 15,000 TYP |
| Intersection / Crossing Density (#/LF) | 300'-800' TYP |

APPLICABLE TOOLS:

Type A: Features inside the Curb
- Y Lowering Design Speed (Restriping or Moving Curbs)
- Y Road Diets / Narrowing Lanes
- N Dedicated Transit Lanes / Bus Pull-Outs
- M Dedicated / Protected Bike Lanes
- Y Traffic Calming Bollards

Type B: Intersections and Crossings
- Y Roundabout Intersections
- M Protected Bike Intersections
- Y Raised Intersections / Crossings
- M Floating Transit Islands / Mobility Hubs
- N Queue Jump Lanes / Transit Signal Priority (TSP)
- M Green Bike Crossings / Left Turn Boxes
- M Standard / Floating Island Curb Extensions
- Y Midblock Crossings
- Y Pedestrian Refuge Islands
- N Intersection Turn Modifications
- M Protected-Only Left Turns

Type C: Features outside the Curb
- M Shared-use Path / Elevated Bike Lane
- Y Pedestrian / Hybrid Sidewalk Lighting
- Y Street Trees / Landscaping
- Y Vertical Amenities (A variety of items)

LEGEND
- Y Yes, the tool should be considered.
- M Maybe, the tool could be utilized.
- N No, the tool is not ideal.

SEE PAGE X FOR FULL TOOL DETAILS

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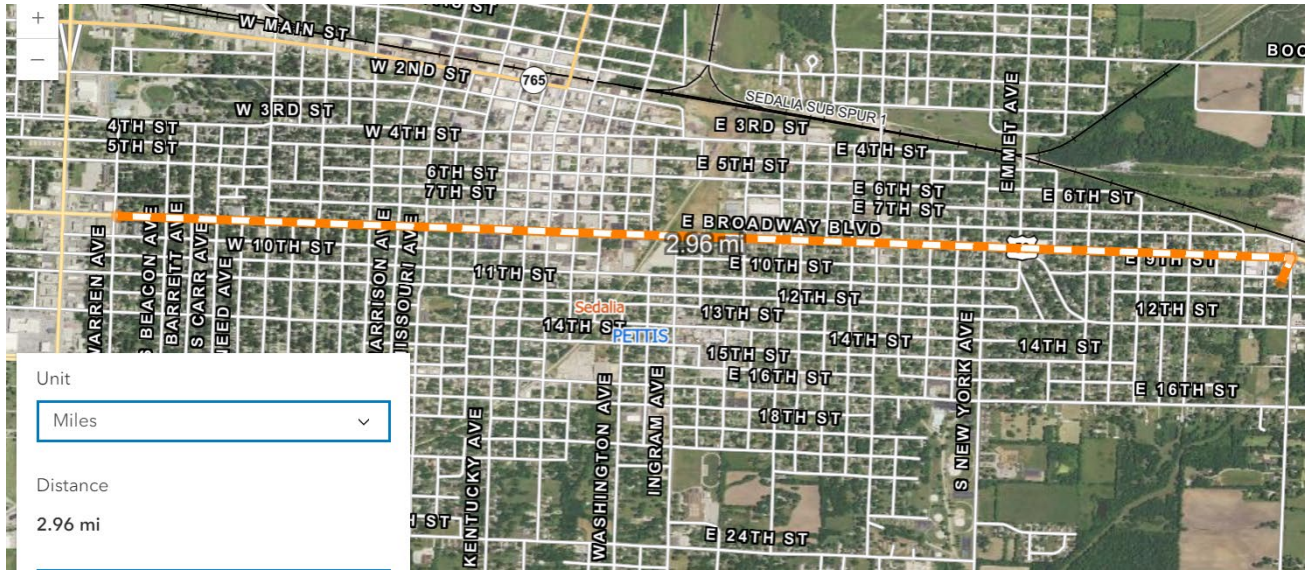
# Typologies & Design

## US-50 in Sedalia, MO

- 5-lane arterial, 35 mph
- Block lengths under 400 feet for 2.9 miles with sidewalks
- 6 crosswalks for 3 miles
- Traffic volumes over 20k
- Rural town with pre-WWI layout

- Potential design options:

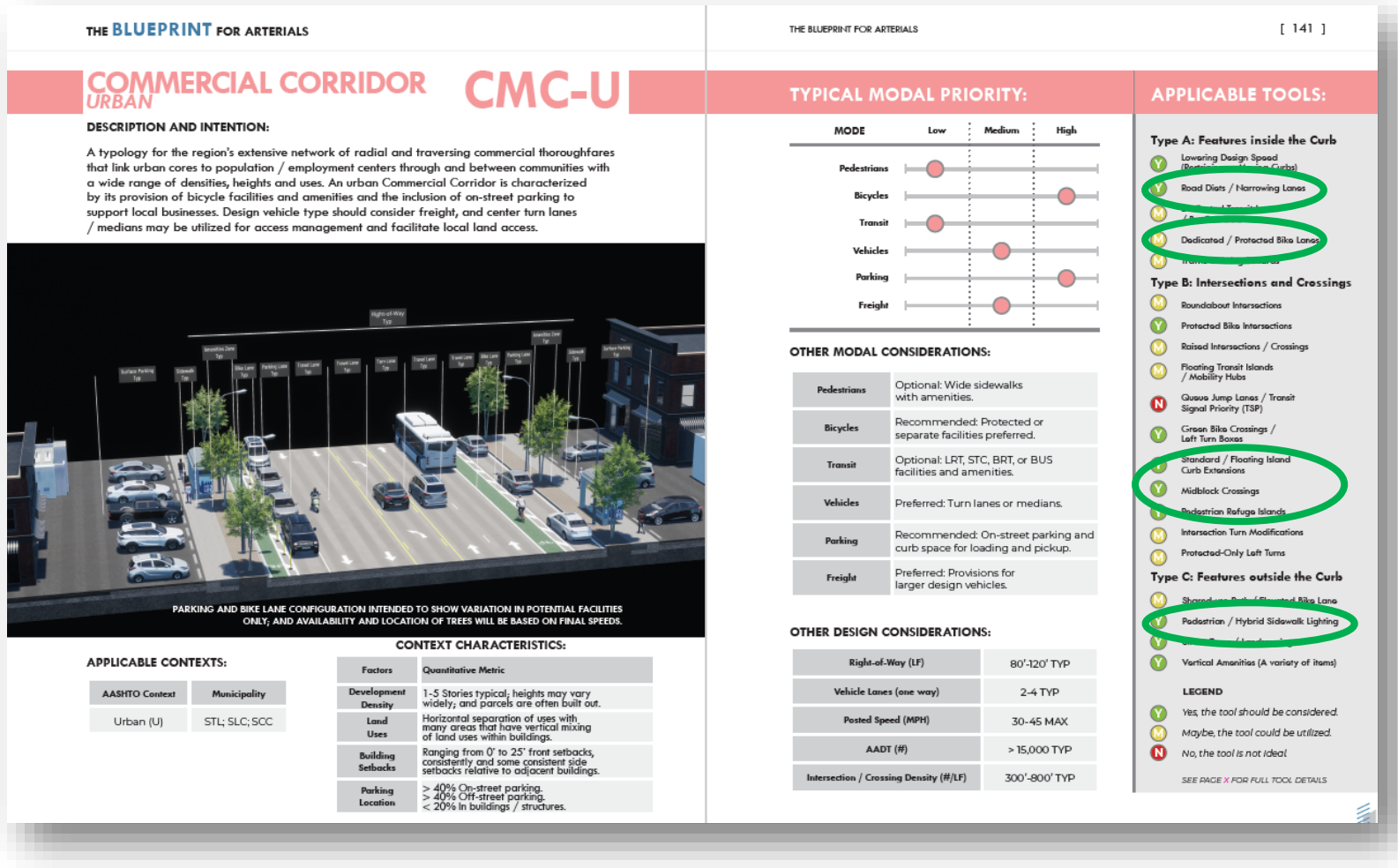
*medians, turn pockets, mid-block crossings, 10-feet wide lanes, lower speed to 30 mph, roundabouts*




# Example: Route 231 / South St. Louis County

## *Results of community input and technical analysis*

- ✓ Re-allocates roadway space based on traffic and context
  - ✓ Road diet 4-to-3 lane
  - ✓ Adds buffered bicycle lane
  - ✓ Designates on-street parking
  - ✓ Removes unwarranted turn lanes
- ✓ Adds 4 pedestrian mid-block crossings with lighting and refuge islands
- ✓ Enhances 4 existing crosswalk locations
- ✓ Begins to improve safety and movement for all users



THE BLUEPRINT FOR ARTERIALS

COMMERCIAL CORRIDOR URBAN CMC-U

DESCRIPTION AND INTENTION:

A typology for the region's extensive network of radial and traversing commercial thoroughfares that link urban cores to population / employment centers through and between communities with a wide range of densities, heights and uses. An urban Commercial Corridor is characterized by its provision of bicycle facilities and amenities and the inclusion of on-street parking to support local businesses. Design vehicle type should consider freight, and center turn lanes / medians may be utilized for access management and facilitate local land access.

PARKING AND BIKE LANE CONFIGURATION INTENDED TO SHOW VARIATION IN POTENTIAL FACILITIES ONLY; AND AVAILABILITY AND LOCATION OF TREES WILL BE BASED ON FINAL SPEEDS.

APPLICABLE CONTEXTS:

| AASHTO Context | Municipality |
|---|---|
| Urban (U) | STL; SLC; SCC |

CONTEXT CHARACTERISTICS:

| Factors | Quantitative Metric |
|---|---|
| Development Density | 1-5 Stories typical; heights may vary widely; and parcels are often built out. |
| Land Uses | Horizontal separation of uses with many areas that have vertical mixing of land uses within buildings. |
| Building Setbacks | Ranging from 0' to 25' front setbacks, consistently and some consistent side setbacks relative to adjacent buildings. |
| Parking Location | > 40% On-street parking.<br>> 40% Off-street parking.<br>< 20% In buildings / structures. |

THE BLUEPRINT FOR ARTERIALS [ 141 ]

TYPICAL MODAL PRIORITY:

| MODE | Low | Medium | High |
|---|---|---|---|
| Pedestrians | | | |
| Bicycles | | | |
| Transit | | | |
| Vehicles | | | |
| Parking | | | |
| Freight | | | |

OTHER MODAL CONSIDERATIONS:

| | |
|---|---|
| Pedestrians | Optional: Wide sidewalks with amenities. |
| Bicycles | Recommended: Protected or separate facilities preferred. |
| Transit | Optional: LRT, STC, BRT, or BUS facilities and amenities. |
| Vehicles | Preferred: Turn lanes or medians. |
| Parking | Recommended: On-street parking and curb space for loading and pickup. |
| Freight | Preferred: Provisions for larger design vehicles. |

OTHER DESIGN CONSIDERATIONS:

| | |
|---|---|
| Right-of-Way (LF) | 80'-120' TYP |
| Vehicle Lanes (one way) | 2-4 TYP |
| Posted Speed (MPH) | 30-45 MAX |
| AADT (#) | > 15,000 TYP |
| Intersection / Crossing Density (#/LF) | 300'-800' TYP |

APPLICABLE TOOLS:

Type A: Features inside the Curb
- Y Lowering Design Speed
- Y Road Diets / Narrowing Lanes
- M
- M Dedicated / Protected Bike Lanes
- M

Type B: Intersections and Crossings
- M Roundabout Intersections
- Y Protected Bike Intersections
- M Raised Intersections / Crossings
- M Floating Transit Islands / Mobility Hubs
- N Queue Jump Lanes / Transit Signal Priority (TSP)
- Y Green Bike Crossings / Left Turn Boxes
- Y Standard / Floating Island Curb Extensions
- Y Midblock Crossings
- Y Pedestrian Refuge Islands
- M Intersection Turn Modifications
- M Protected-Only Left Turns

Type C: Features outside the Curb
- M
- Y Pedestrian / Hybrid Sidewalk Lighting
- Y
- Y Vertical Amenities (A variety of items)

LEGEND
- Y Yes, the tool should be considered.
- M Maybe, the tool could be utilized.
- N No, the tool is not ideal

SEE PAGE X FOR FULL TOOL DETAILS

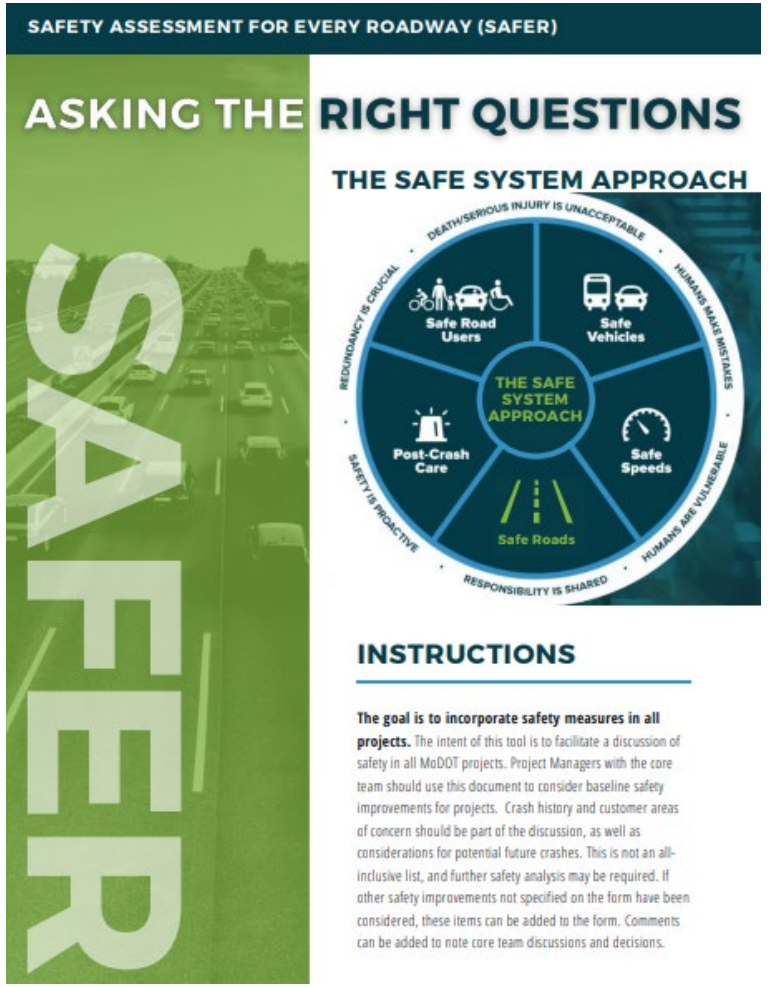
# Supportive Plans & Policies

## Federal

- National Roadway Safety Strategy (NRSS)
- Safe Systems Approach
- Complete Streets as default approach
  - Safety and mobility for all users

## State

- MoDOT EPG 907.10 - Complete Streets
- SAFER (prompts to ask)
- Vulnerable Road User Safety Assessment
- Strategic Highway Safety Plan

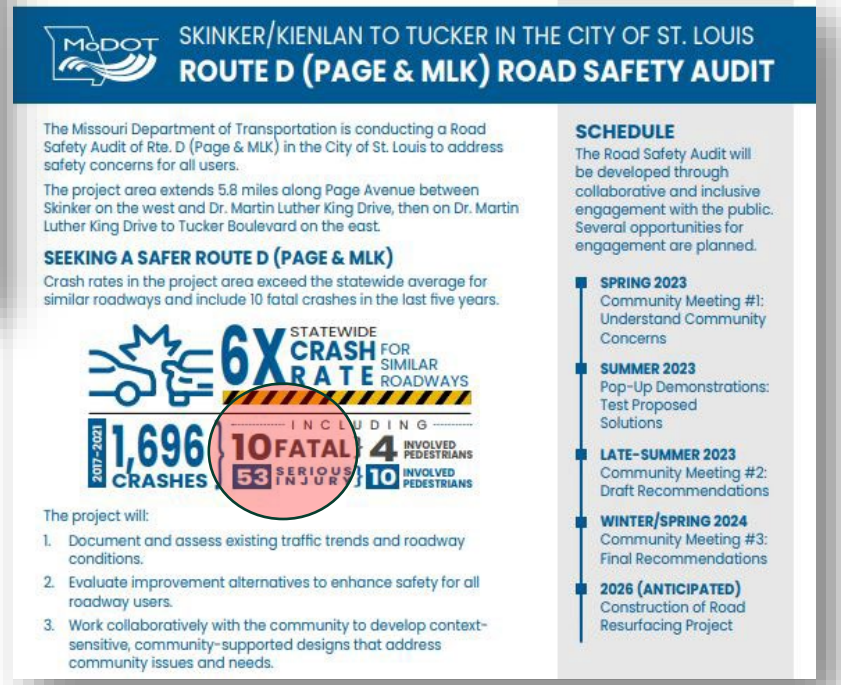


# Safety Projects


Route D
St. Louis County
3X statewide crash rate


Route 100
City of St. Louis
5X statewide crash rate

Route D
City of St. Louis
6X statewide crash rate

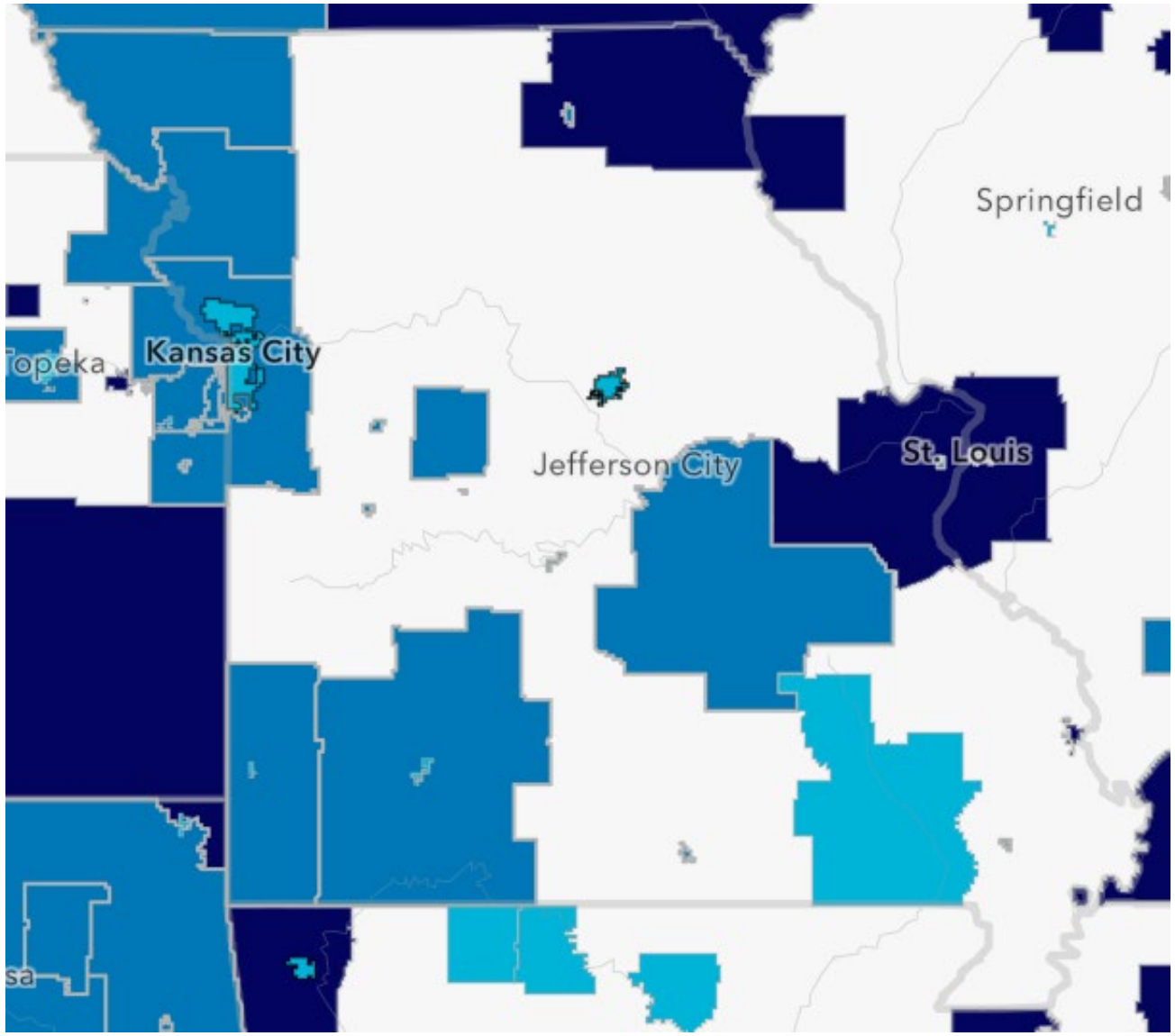


# Growing Relevance

## SS4A Grant Recipients

Expanded opportunities for safety projects:

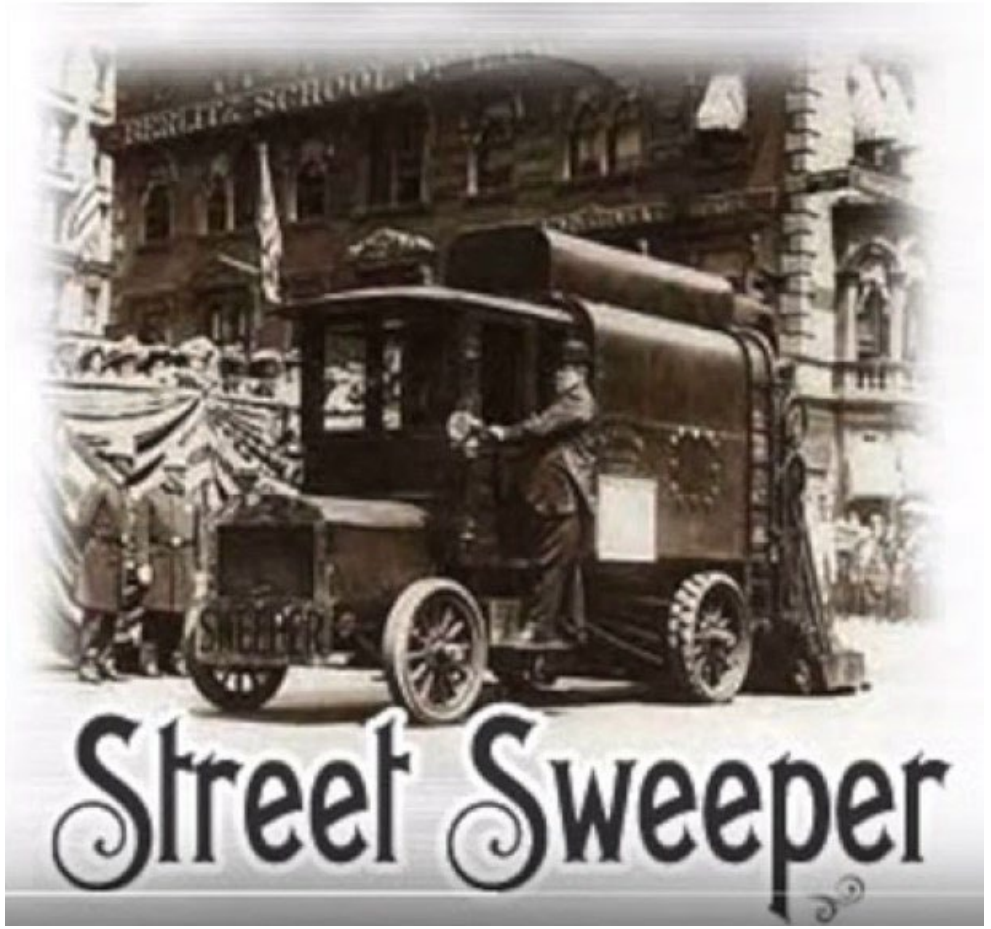
- 10 RPCs, 9 remain
- 6 MPOs, 3 remain
- 21 cities
- 1 county

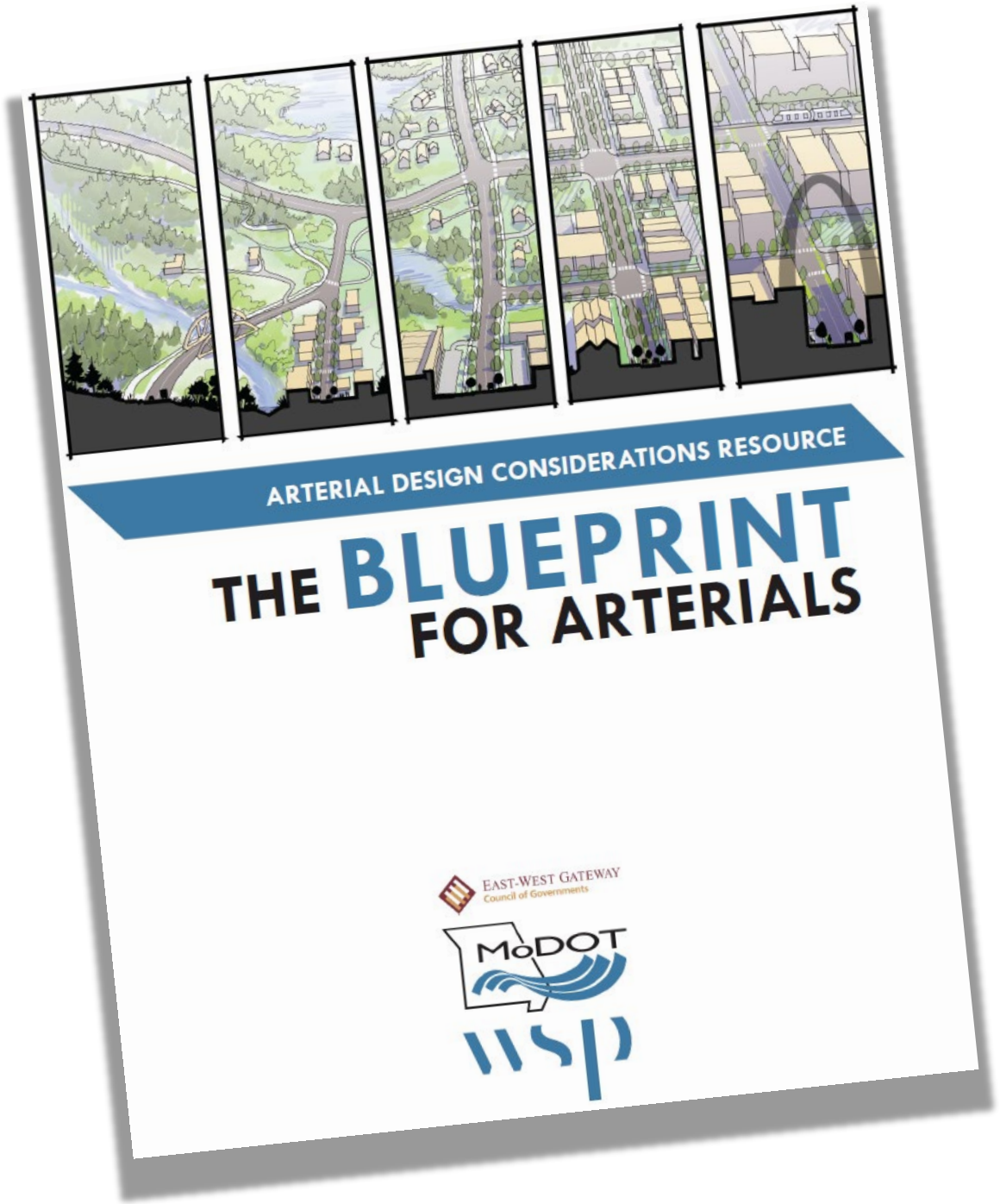


# What's Next?

- Blueprint for Arterials – Part 2: ***Maintenance & Costs***
- Performance-based ***prioritization***
- Minor capital projects
  - Rte. AC, U / North St. Louis County (now)
  - Rte. EE / North St. Louis County (next)
- Major capital projects
  - Rte. 30 / St. Louis City (next)
  - US-61/67 / Jefferson County (next)

Maintaining streets since 1896*!!!*




ARTERIAL DESIGN CONSIDERATIONS RESOURCE
THE BLUEPRINT FOR ARTERIALS
EAST-WEST GATEWAY
Council of Governments
MoDOT
wsp