



Designing Streets for Everyone: Developing Effective Multimodal Corridors

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Completion Requirements



Attend entire session



Active participation



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Introduction



Jordan Everhart, AICP, PMP

Central Texas Transportation Planning Lead
HDR, Inc.



Learning Objectives

- Identify Complete Streets key features and benefits
- Identify Complete Streets challenges
- Learn public engagement tactics to develop good building blocks for corridor solutions
- Discover and implement potential Complete Streets solutions (toolbox) into future projects
- Identify additional insight into potential project funding mechanisms and strategies
- Example project application

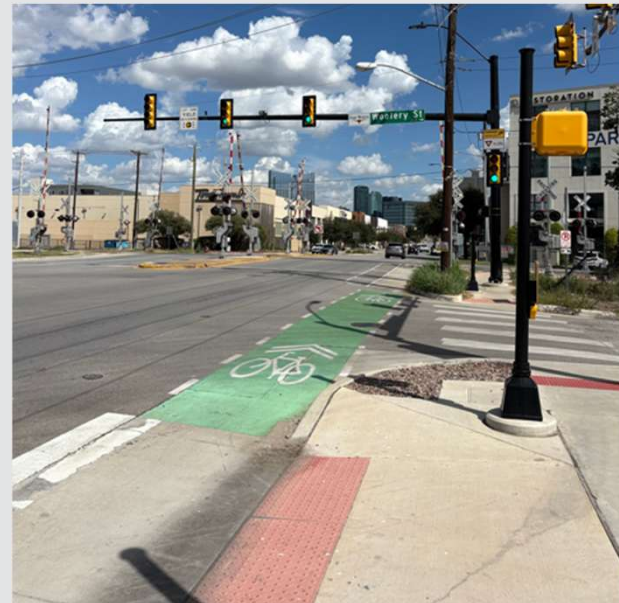


Complete Streets

Complete Streets

Definition

- Roadways designed to be safe and accessible for all users, including pedestrians, cyclists, motorists, and transit riders
- Have features like bike lanes, sidewalks, safe crosswalks, and public transit access
- Aim to reduce injuries, improve accessibility, enhance community livability, and support healthier lifestyles



SAFE



COMFORTABLE



CONVENIENT

Complete Streets are NOT...

- A requirement to add a **bike lane**
- One **special street project**
- A design **prescription**
- **A mandate** for immediate retrofits or increased costs
- **A requirement to optimize** travel on all roads for **every mode**



What are Complete Streets?

Safe



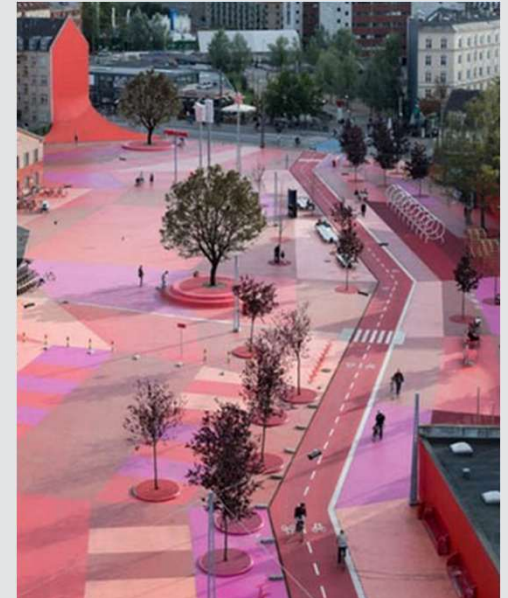
Comfortable



Convenient



Sense of Place



Complete Streets

Key Features and Benefits

- Inclusive Design
- Improved Safety
- Enhanced Transportation Options
- Increased Connectivity
- Environmental Benefits
- Health



Our Challenges



Complete Streets

Challenges

- Community Opposition
- Costs
- Space Allocation
- Right-of-Way
- Funding
- Trade-Offs
- Consensus on Street Identity (e.g. “through street” or “to street”).



Complete Streets

Design Using Data

- Baseline Information
- Existing Conditions
- Understand Land Use Context
- Local Plans and Policies
- Learning from Others
- **Community Engagement !!!!**

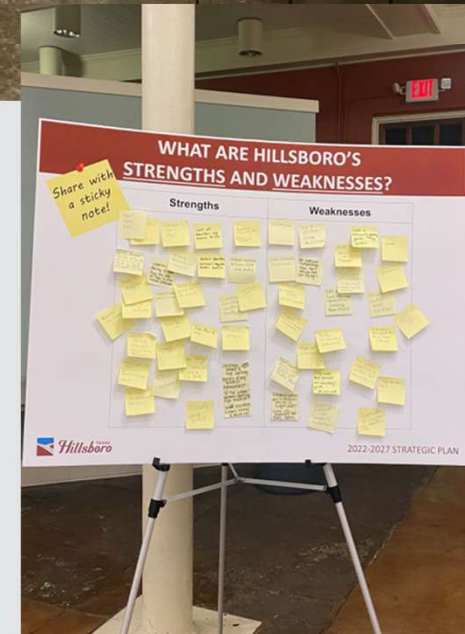
Traffic volume (vehicular)	Traffic speed	Land use density	Transit frequency
Driveway density	Truck volumes	Permitted/ planned development	Drainage/ stormwater
Utilities	Land use/ zoning	Crashes	Existing roadway dimensions

Complete Streets

Community Engagement

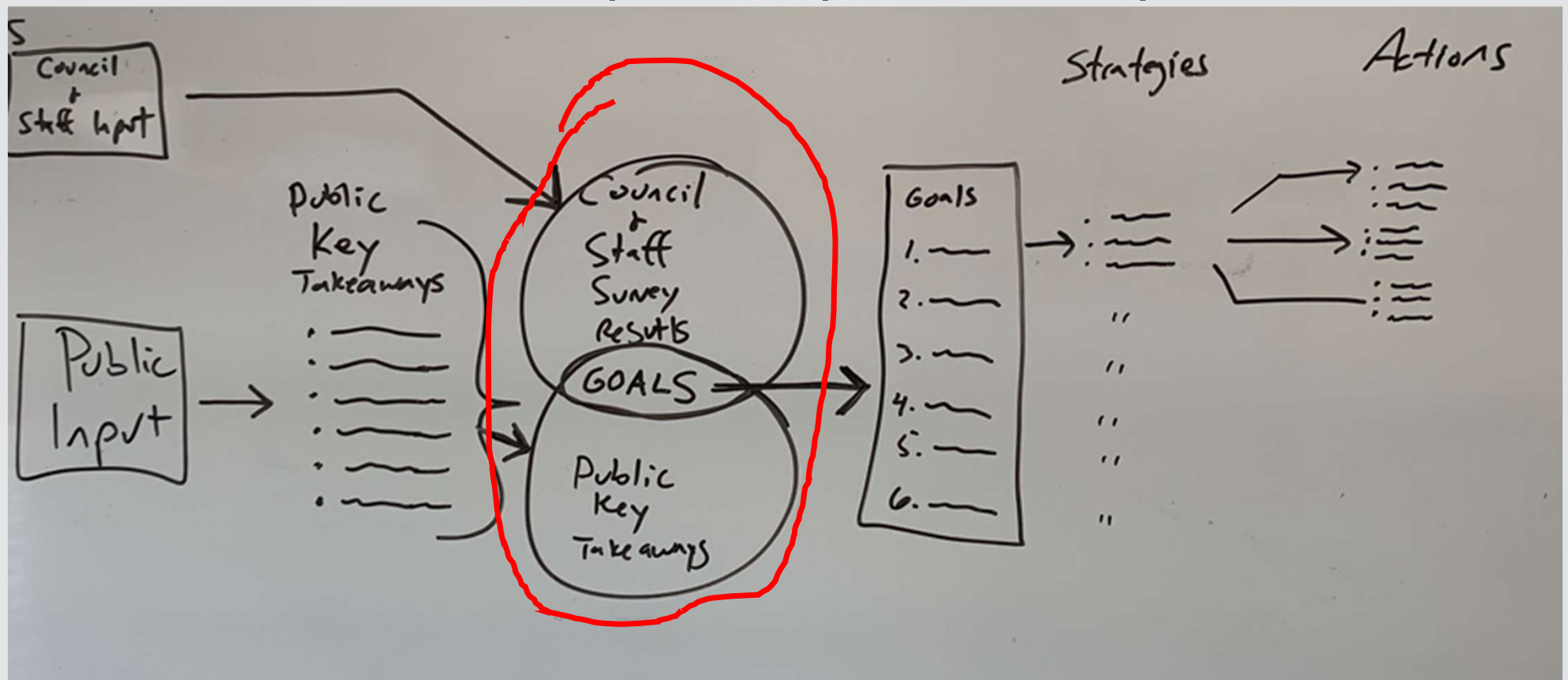
- Corridor Goals and Objectives
- Corridor Vision (Cover Page Exercise)
- SWOT Analysis
- Surveys
- Community Meetings
- Design Charettes
- Workshops
- Walk Audits

- Placemapping
- “What's important to you”
- “BIG Idea”
- Boards, Comment Cards, Sticky Notes, Dot Voting, Maps



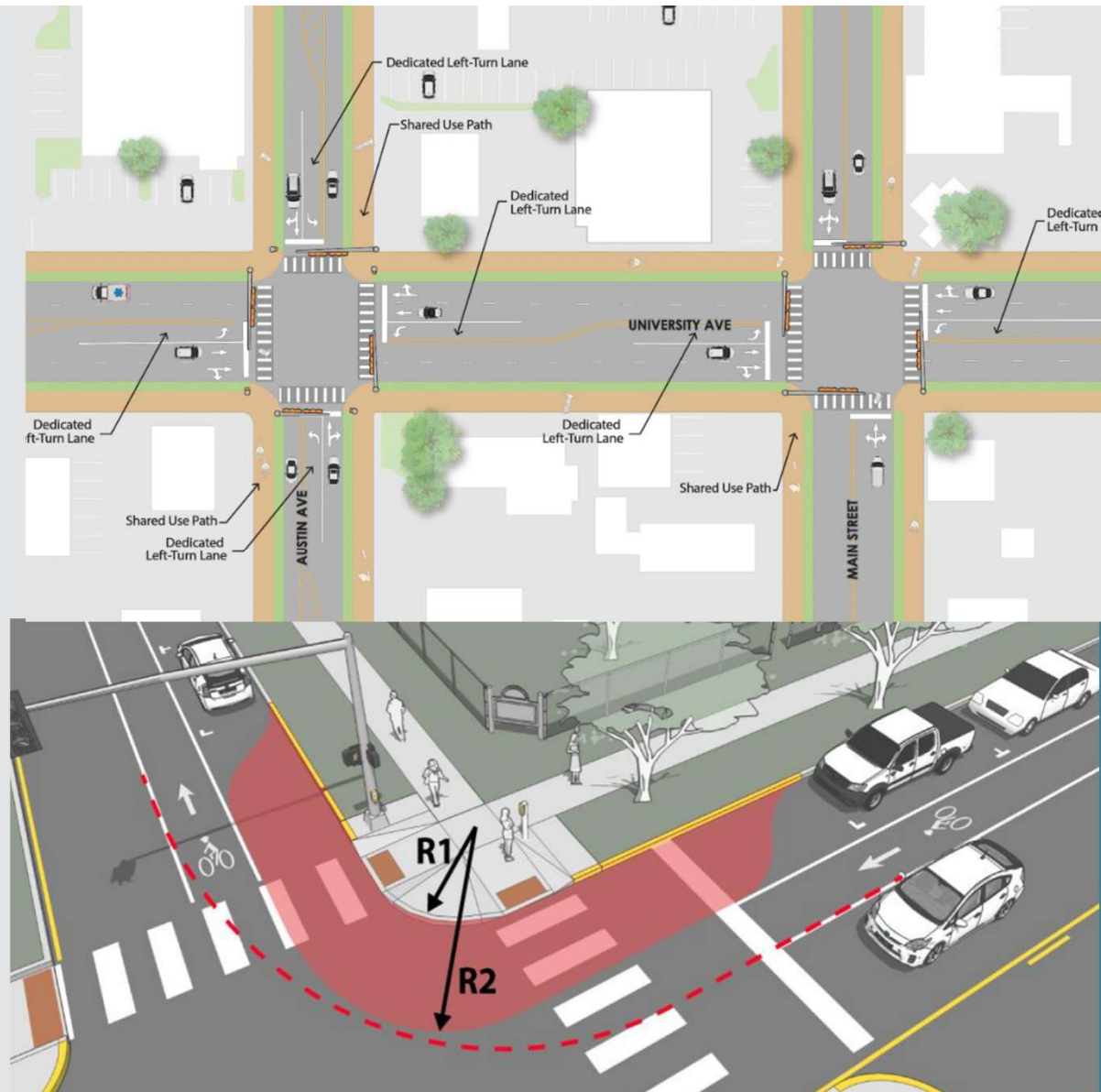
Complete Streets

COMMUNITY INPUT | GOALS | SRATEGIES | ACTIONS



Complete Streets Evaluation

- Multimodal Level of Service (MMLOS)
- Level of Traffic Stress (LTS) for Bike/Ped
- Traffic Operations
- Turning Movements
- Vehicle Types



Complete Streets - Best Practices

Shared Streets



Source: HDR San Antonio Hemisfair Park Streets

- Retractable bollards
- Textured or pervious pavements that are flush with the curb
- Meet ADA requirements including slopes, curb ramps, detectable edges
- Provide shade and lighting for safer and more comfortable travel

Protected Intersections

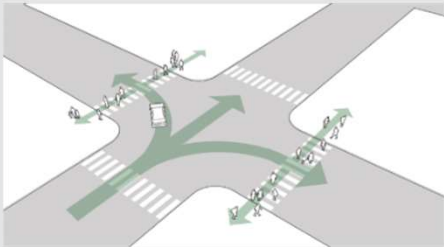


Source: NACTO Urban Bikeway Design Guide

- Physically separates bikes and cars until the intersection
- Increases visibility
- Slow vehicle turning movements
- Decrease pedestrian crossing distance

Innovative Traffic Signals

Leading Pedestrian Interval (LPI) or Protected Signal Phases



Source: NACTO Urban Street Design Guide

- Pedestrians are given a 3-7 second head start to enter the intersection
- Enhances visibility of pedestrians and reinforces right-of-way
- Or, pedestrians and/or bicyclists have a dedicated signal phase

Transit Operations

Transit Operational Assessments



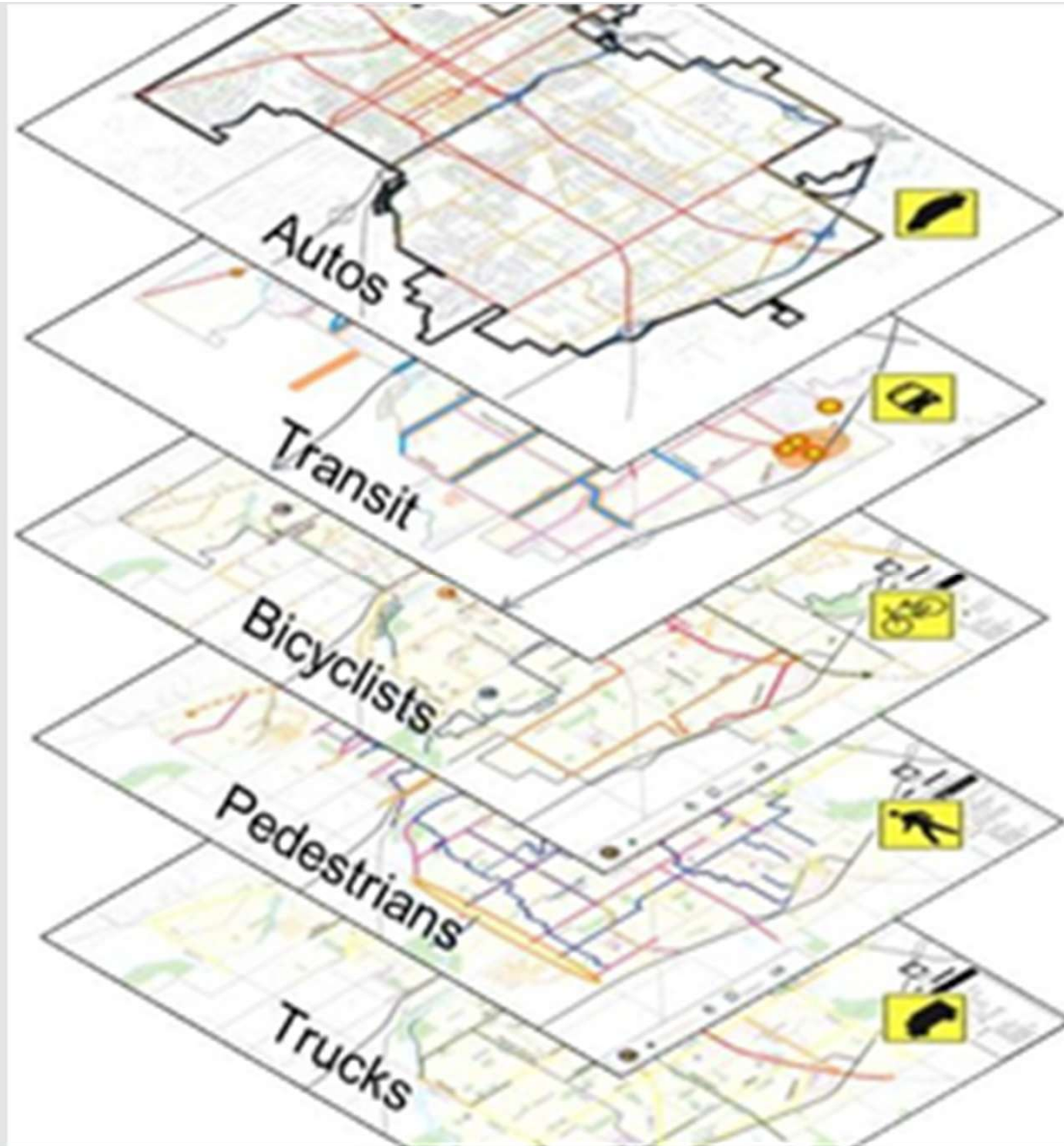
Source: WAX Architectural Visualizations / Austin Transit Partnership

- Evaluates bus frequency/blockage time, delay and LOS
- Improves environmental benefits
- Improves travel time reliability for multimodal travel

Complete Streets

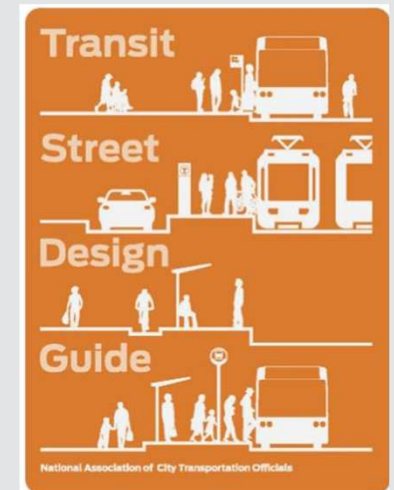
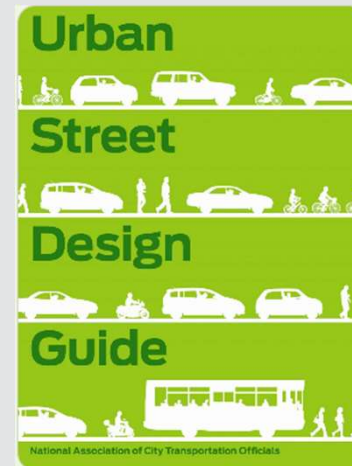
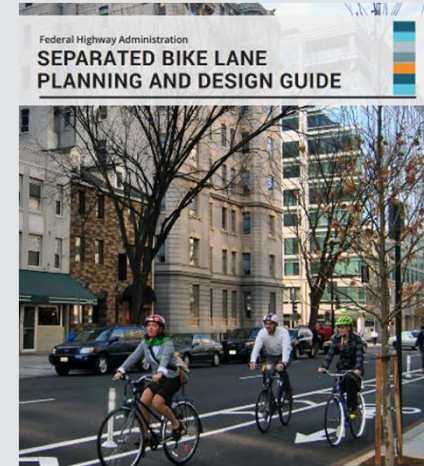
Network Connections

- Layered roadway concept is an extension of the complete streets approach.
- All travel modes need to be accommodated within the overall network, but individual roadways should focus on one or two modes rather than accommodating every mode on every street.



Complete Streets Implementation

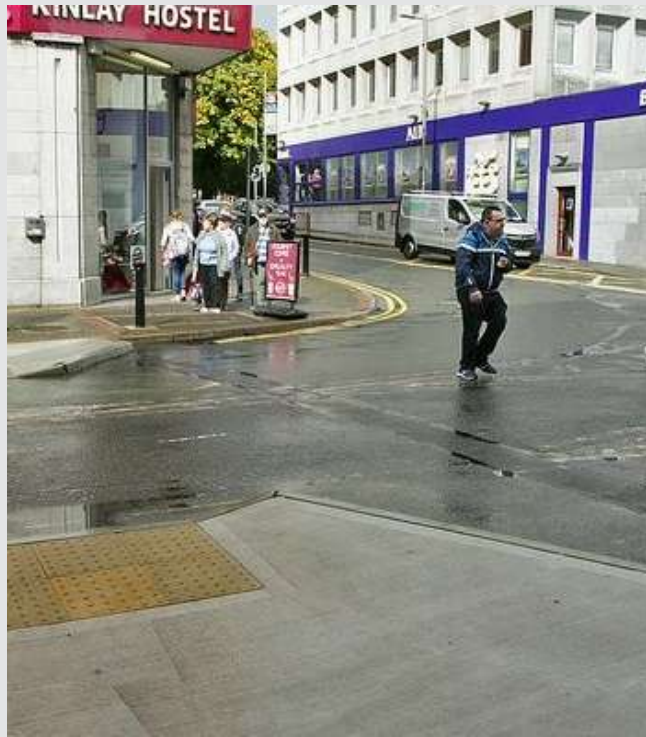
- Complete Streets Policy Development
- Design Standards
- Context-Specific Solutions
- State and Regional Plans and Policies
- Be “Shovel-Ready”
- Continual Community Input
- Grants
- Build Your Case!



Pedestrian Safety Toolbox



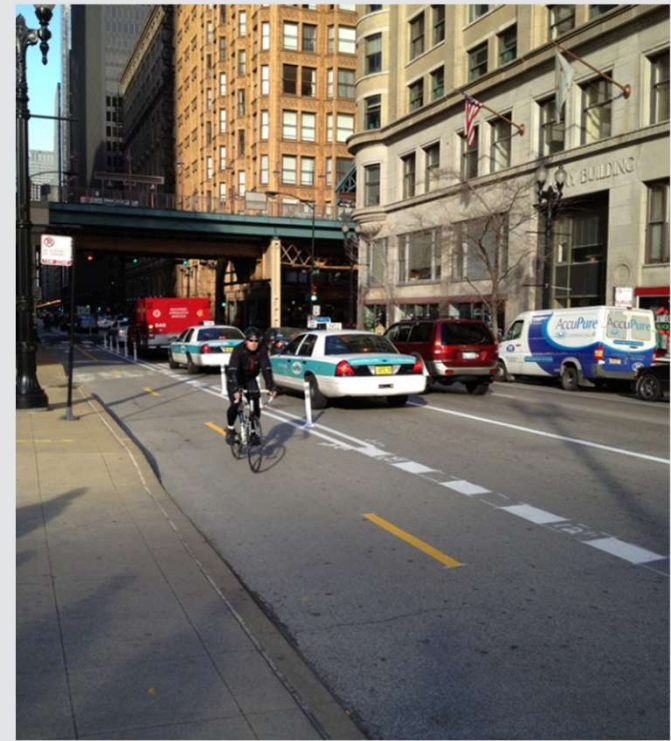
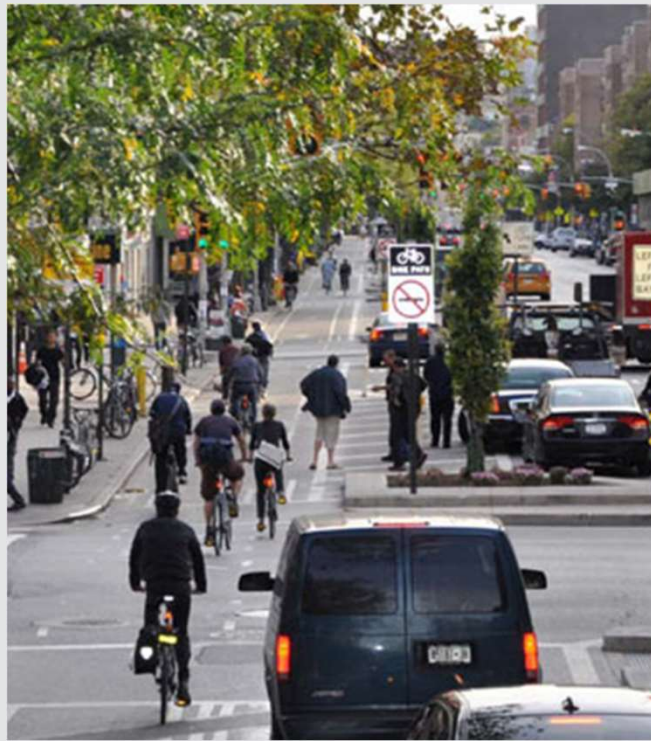
Pedestrian Safety Toolbox



Bicycle Corridor Toolbox



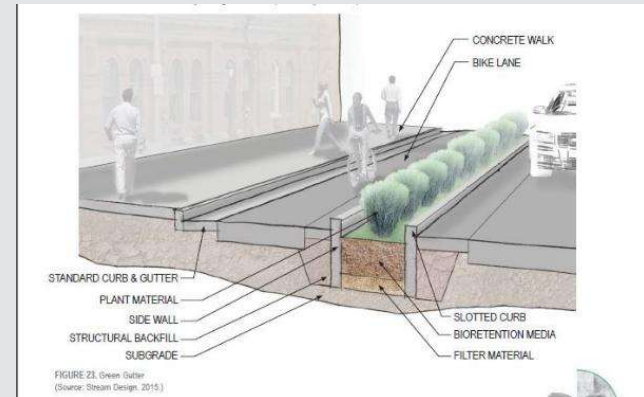
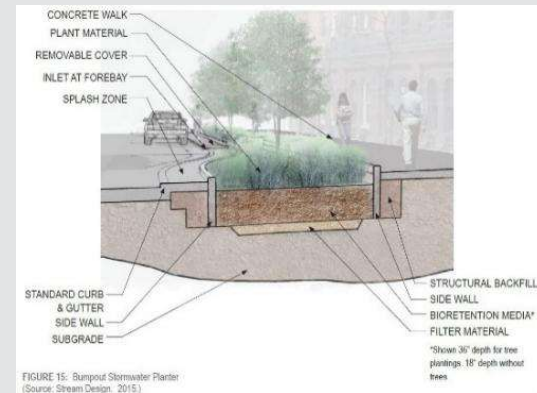
Bicycle Corridor Toolbox



Transit Facility Toolbox



Green Infrastructure Toolbox



Pedestrian Realm Toolbox



Pedestrian Realm Toolbox



Typical Contextual Street Design



Downtown Street

- Low speeds (20-30mph)
 - Narrow lanes (10-11')
- Short block lengths (200-600')
 - On-street parking
- Wide pedestrian walkways
 - On-street bike lanes
 - Street cafes
 - Transit only lane



Suburban Street

- Higher speeds (30-40 mph)
 - Wider lanes (11-12')
- Longer block lengths (600-1,000')
 - No on-street parking
 - Shared use paths (10')
- Sidewalks + protected bike lanes
 - Medians
 - In-lane transit stop

Example Project

West 7th Street

City of Fort Worth, TX



City of Fort Worth, West 7th Street Complete Street Planning and Design

Project Management

- Multidisciplinary team of planners, engineers, and architects
- PS&E production and construction services

Community Involvement

- Residents and business owners
- Stakeholder workshops
- Collaborative design sessions

Planning & Alternatives

- Integrated mobility options
- Developed alternatives supporting Complete Streets

Street Design

- Supported Complete Streets goals
- Integrated urban design elements



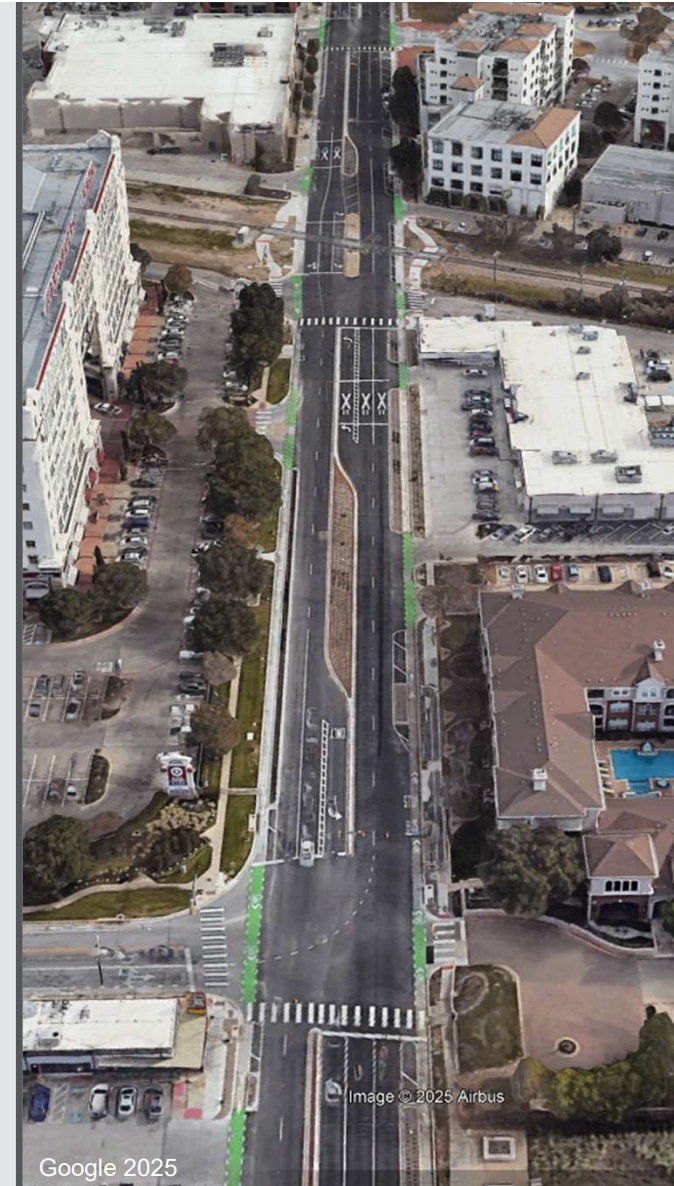
West 7th Street

Project Description:

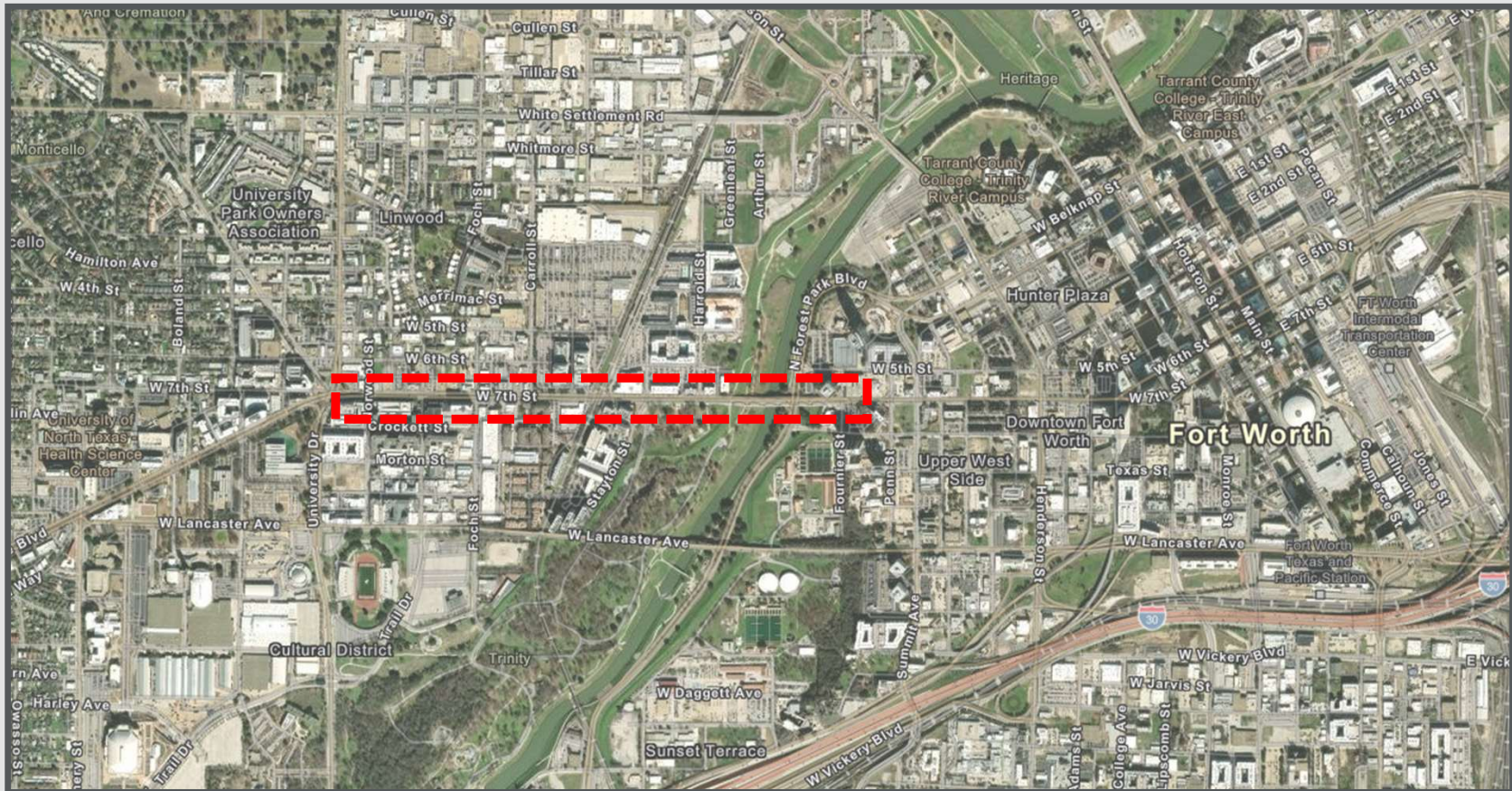
- A “To” from a “Through” Street
- University Dr. to Summit Ave.
- 2018 Bond Funded
- Cost ~\$8.5M
- Approx. 1 Mile Long
- 76 ft Curb to Curb
- Planning, Design, and Construction

Unique Scope Items:

- On-Street Parking
- Montgomery Plaza
- Bus Operations
- Stayton St. Realignment



West 7th Street



West 7th Street

Community Engagement

- 3-Day Design Charrette
- Vacant Office Space
- Walk Audit
- Place Mapping
- Visual Preference Surveys
- Interviews
- Surveys
- Public Meetings



West 7th Street

Alternatives Development

- Over 25 Alternatives Developed
- Plaza-Style Medians
- Queue Jumping
- Cycle Tracks
- Lane Reductions
- Landscaped Medians
- One-Way Street
- Bike/Bus Lane
- Wide Sidewalks
- On-Street Parking
- Transit Stops



West 7th Street

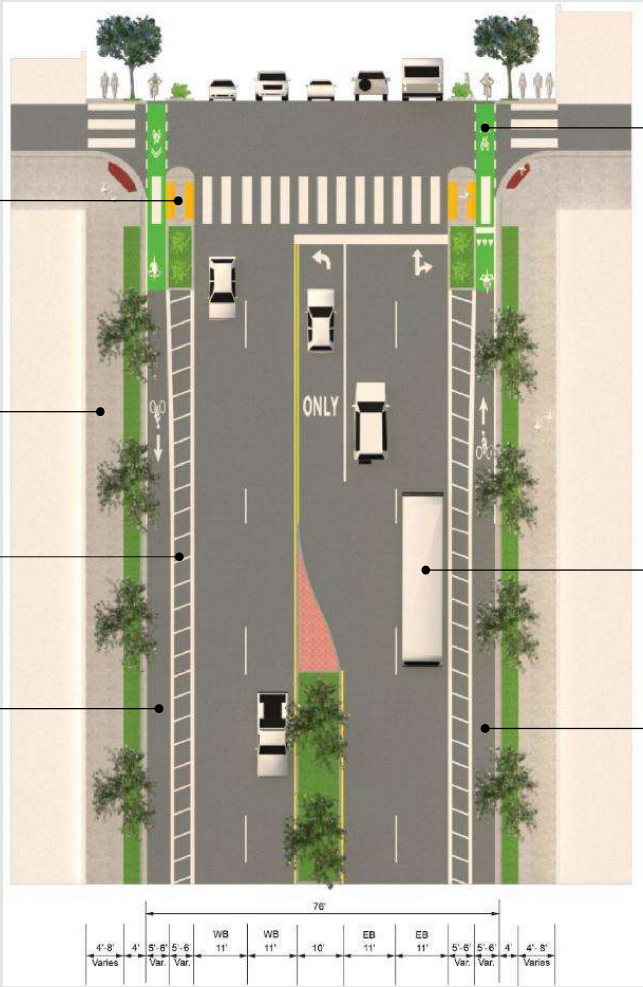
Alternatives

Pedestrian refuges at intersections and mid-block crossings limits the exposure of pedestrians to the travel lanes.

Existing sidewalks would be reconstructed up to 8 feet where available.

Bike lanes are not physically separated from travel lanes.

Six-foot dedicated bike lanes are buffered from the outside travel lanes



Painted bike lanes at conflict points such as driveways and intersections increases the visibility of the bicyclist's travel path.

Buses cross the bike lane to pick up and drop off riders.

The combined bike lane and buffer widths (11 feet) provide buses space to pick up and drop off riders at the existing curb.

Potential concern from community and business owners by removing parking.

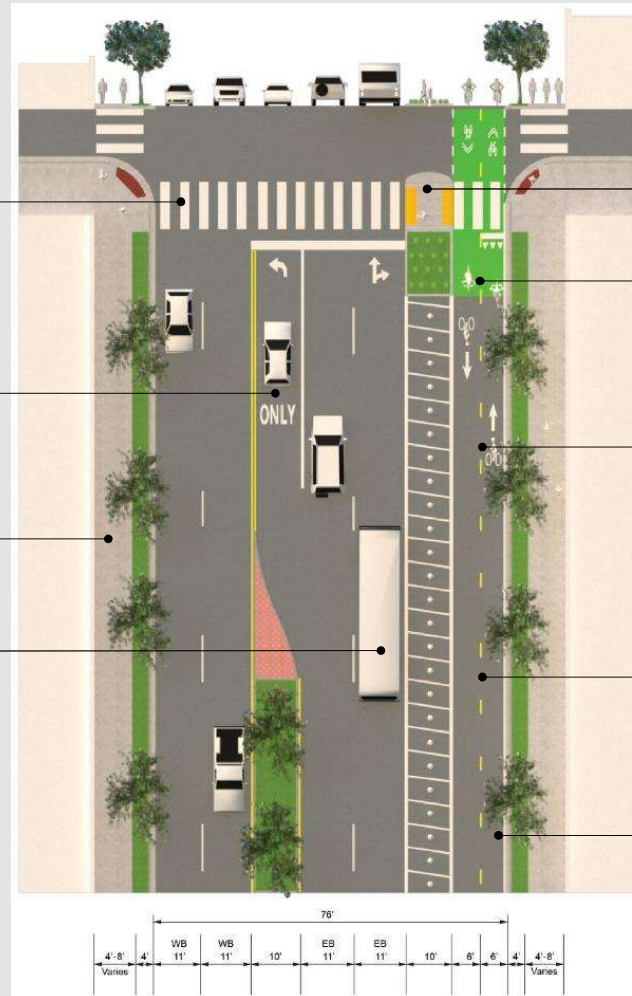
West 7th Street Alternatives

Existing pavement width does not allow pedestrian refuges at intersections and mid-block crossings to be constructed along the north side of the street.

Median and left-turn lane are off-set from the existing lane configuration.

Existing sidewalks would be reconstructed up to 8 feet where available.

Buses pick up and drop off riders in the outside travel lane. This may impact traffic flow.



Pedestrian refuges at intersections and mid-block crossings limits the exposure of pedestrians to the travel lanes.

Painted cycle track at conflict points such as driveways and intersections increases the visibility of the bicyclist's travel path.

Two-way cycle track is protected by bollards to provide safety and comfort for the bicyclist and pedestrian.

Reduce bicycle conflict points from 30 to 20 by placing the westbound bike lane on the south side. The north side has 20 driveways, and the south side has 10 driveways.

Potential concern from community and business owners by removing parking.

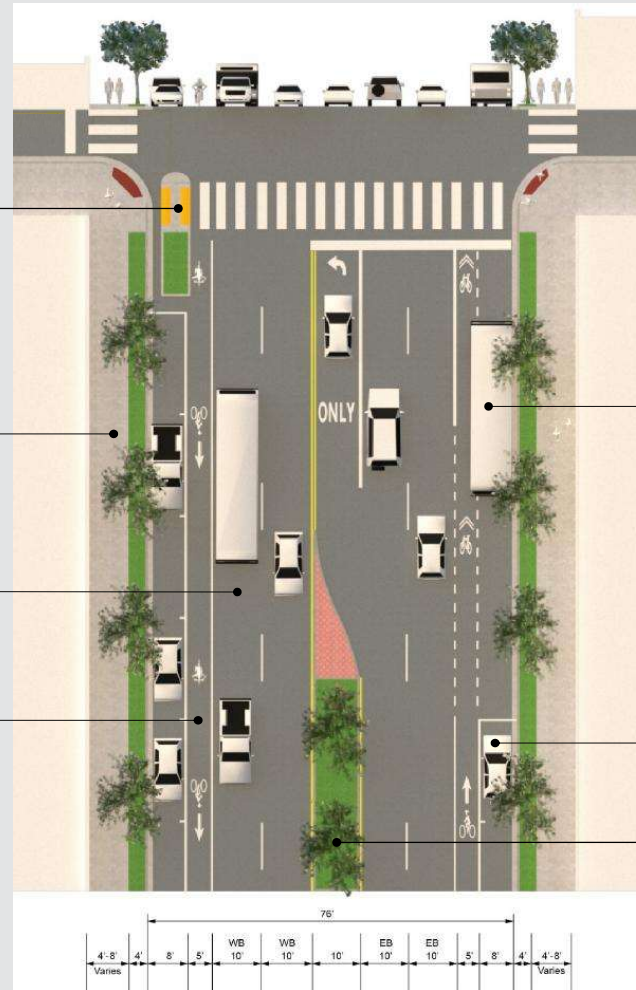
West 7th Street Alternatives

Pedestrian refuges at intersections and mid-block crossings limits the exposure of pedestrians to the travel lanes.

Existing sidewalks would be reconstructed up to 8 feet where available.

Maintains a 4-lane configuration

5-foot bike lanes are not physically separated from travel lanes.



Buses pick up and drop off riders at the curb in a shared space with bicycles vehicles turning right.

Buses would receive a green light ahead of the travel lanes allowing the bus to "Jump" ahead of traffic.

On-street parking is maintained.

Raised medians would restrict the access to properties that a full two-way left-turn lane would provide.

West 7th Street

PLANT PALETTE 1



Drake Elm



Gulf Muhly



Mexican Feathergrass



Red Yucca



Autumn Sage

PLANT PALETTE 2



Drake Elm



Indian Hawthorn



Giant Liriope

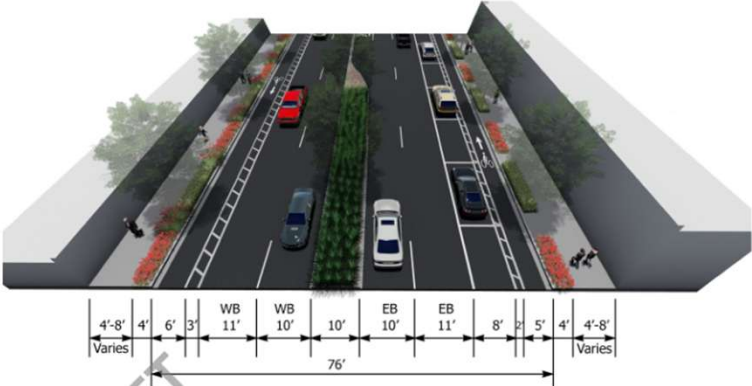


Red Yucca

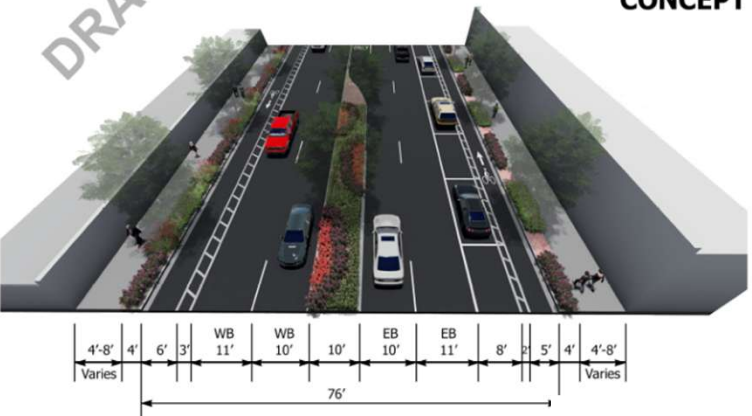


Autumn Sage

CONCEPT 1



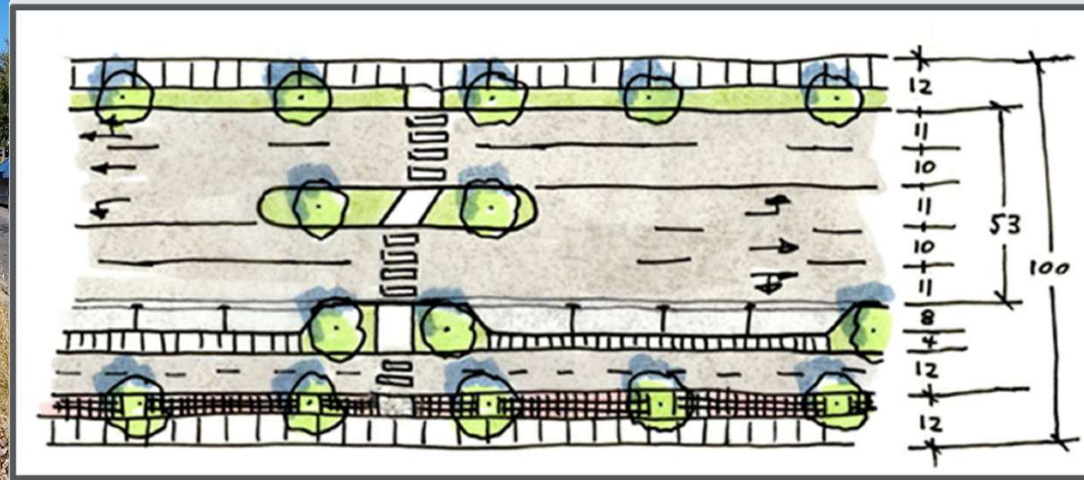
CONCEPT 2



West 7th Street

Design

- Railroad
- Concrete Buffered Bike Lane
- Stayton Realignment
- E-Bikes
- New Montgomery Plaza Signalization
- Signals
- Lighting
- Parking
- Landscaping



West 7th Street

Lessons Learned

- Understand how you want your street to function
- Educate the public on access management
- Acknowledge previous planning efforts
- Don't forget the intersections!
- Coordinate with other departments early and often

Before



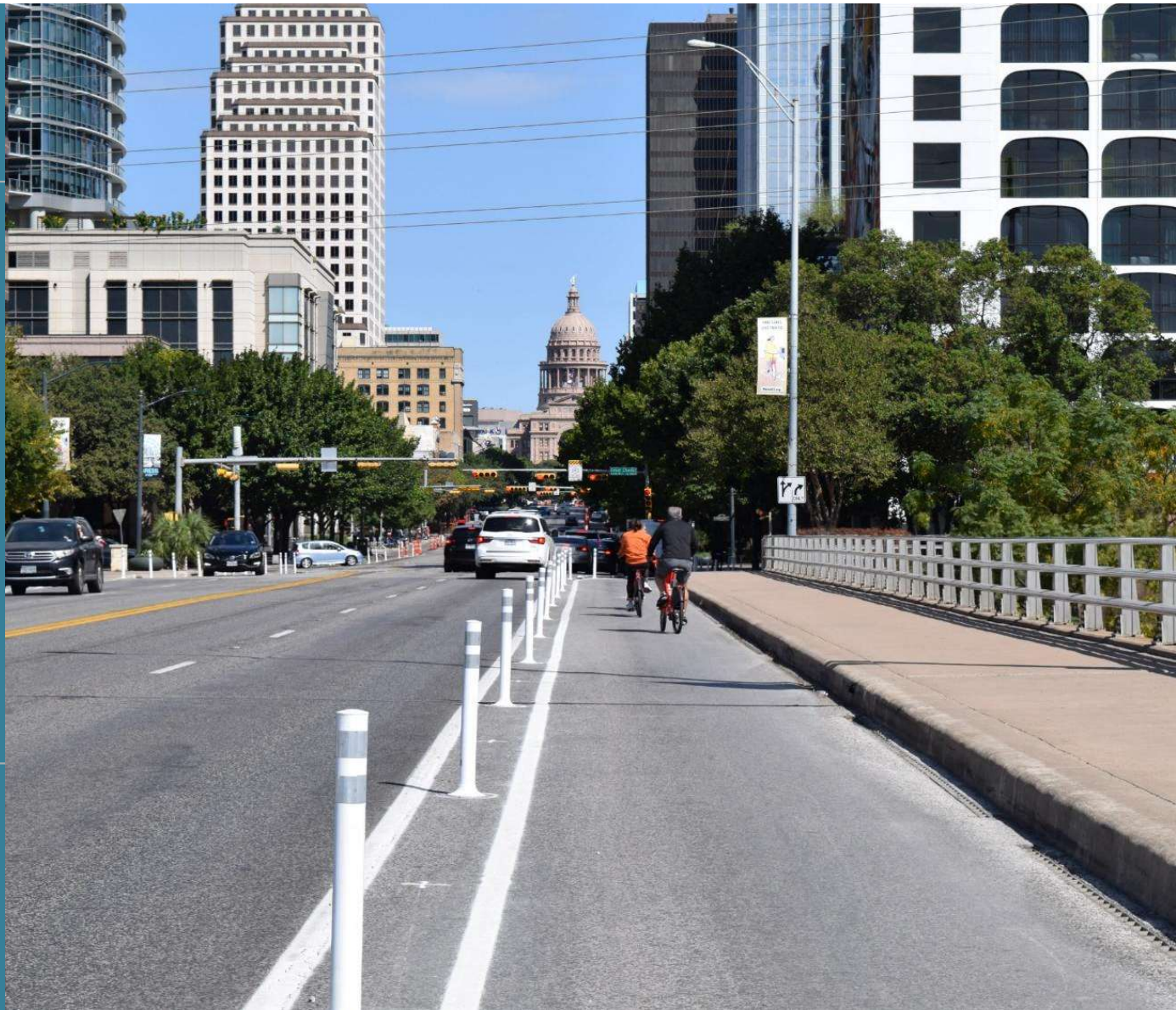
After





Congress Avenue Urban Design Initiative

City of Austin, TX



Congress Avenue

Project Description:

- Client – City of Austin
- Congress Avenue (11th St. to Riverside Dr.)
- 1.2 miles (13 signalized intersections)
- Multidisciplinary
- Schematic/30% Plans
- Programmatic cost estimate (~\$130M)

Unique Scope Items:

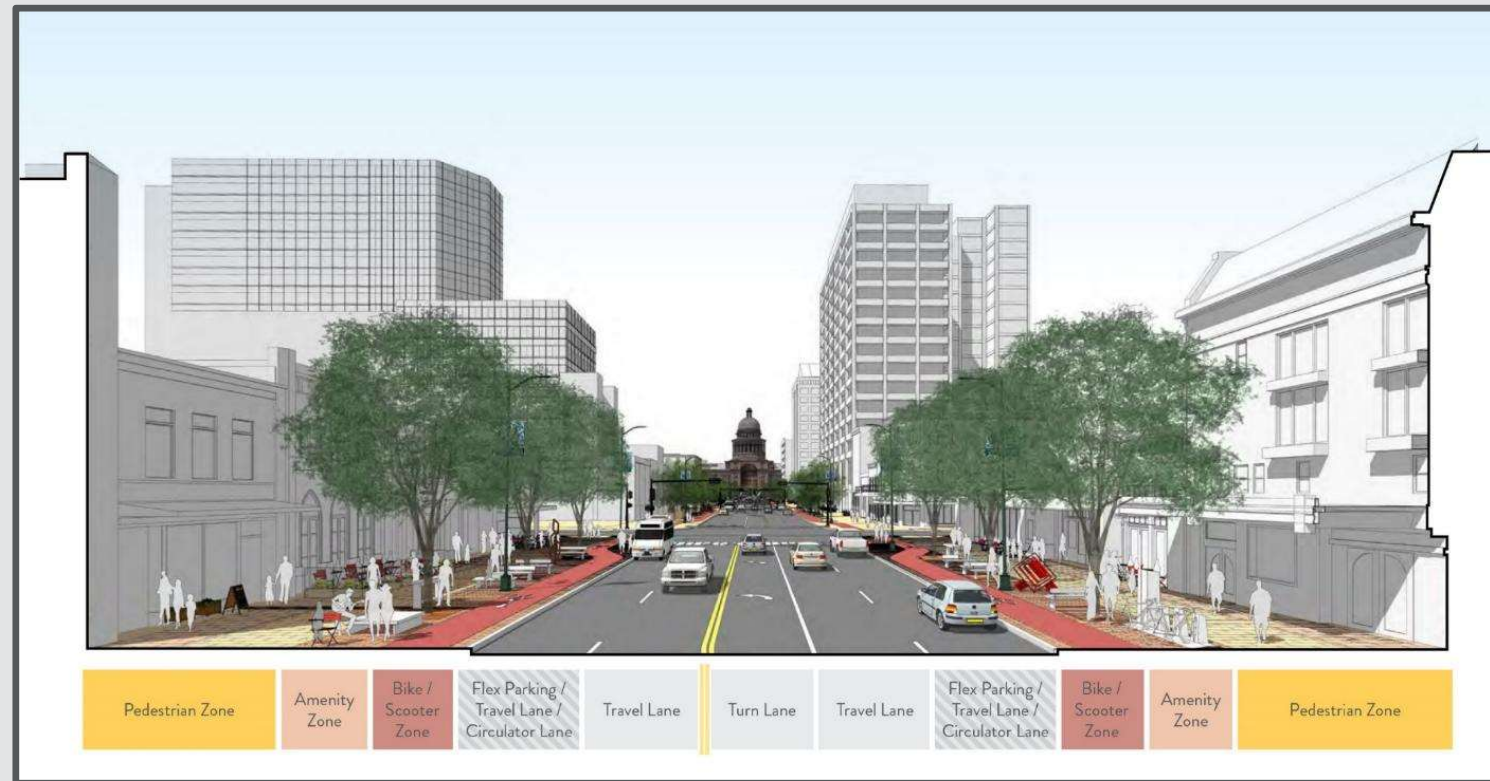
- Bridge (100+ years)
- Bats
- Envision (Sustainability/Resiliency)



Congress Avenue

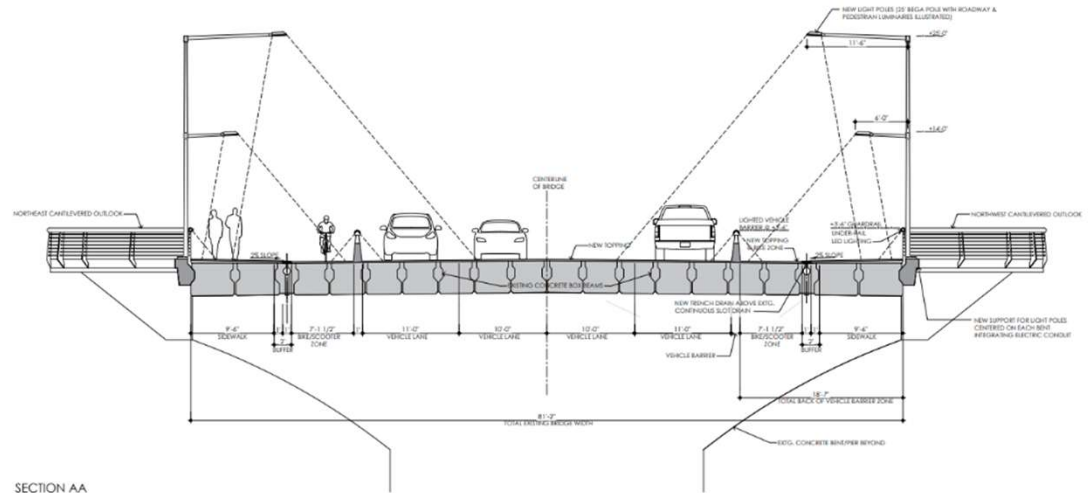
Challenges:

- Multiple City Stakeholders
- Business Owners
- Utilities
- Drainage
- Trees
- Permitting
- Budget

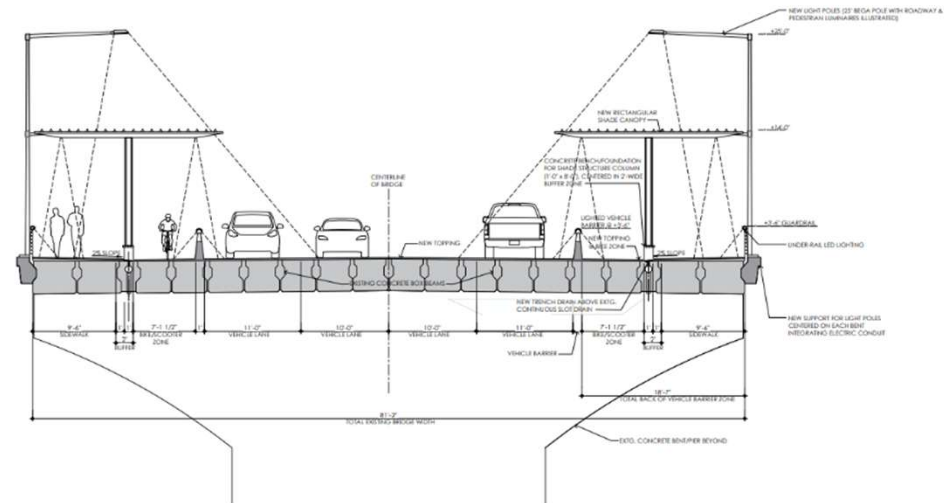




Congress Avenue Bridge Cross Section



SECTION AA



SECTION BB

Congress Avenue Bridge Rendering



Congress Avenue Urban Design Initiative
BRIDGE VIEW, LOOKING NORTH FROM NORTH EAST OUTLOOK: LIGHT POLES LOCATED AT NEW BLISTERS SUPPORTING 4 STEEL CANOPIES,
SHOWN WITH 4 CANTILEVERED OUTLOOKS

Congress Avenue Schematic

