Concurrent Sessions (3:30 - 5:00 pm)

Sustainability

Context Sensitive Solutions

Andrew Howard

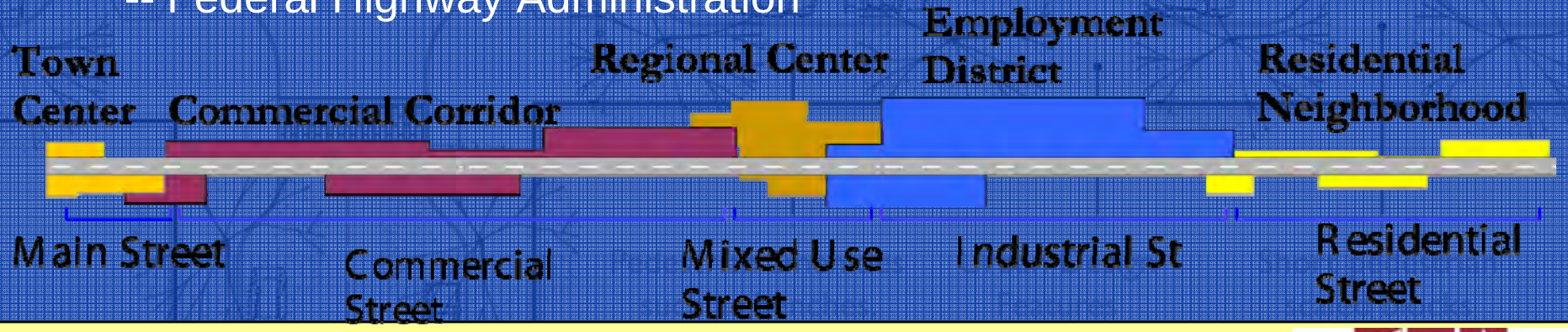
Kimley-Horn and Associates, Inc.

Kimley-Horn and Associates, Inc.

Context sensitive solutions (CSS) is a **collaborative**, **interdisciplinary** approach that involves all **stakeholders** to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that **considers the total context** within which a transportation improvement project will exist."

-- Federal Highway Administration

"One Size Doesn't Fit All"



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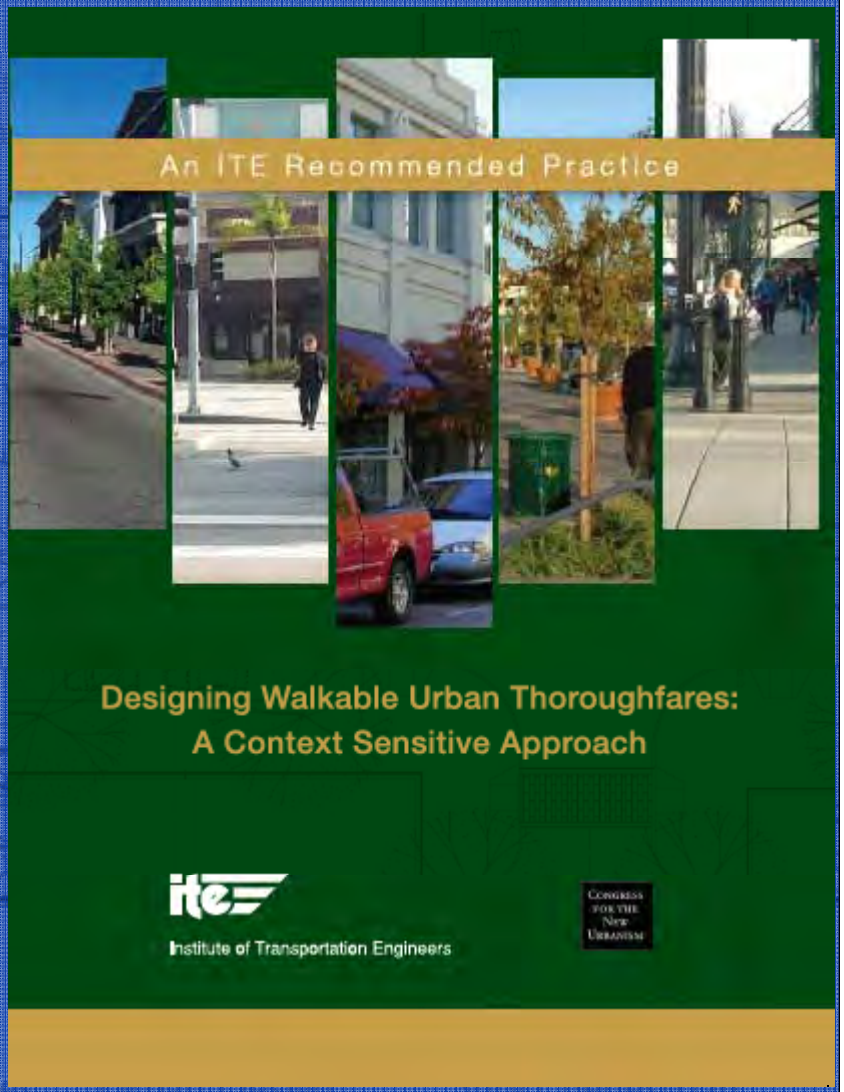
Foundation for CSS

- National recommended practice that sets the standard.
- New TxDOT project development process that enables.
- Local policy in Houston and other cities implements.

ITE
Recommended Practice

Designing Walkable Urban Thoroughfares: A Context Sensitive Approach

James M. Daisa, P.E.
Kimley-Horn and Associates, Inc.



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Placemaking

- Community-based approach to the development and revitalization of cities and neighborhoods
- Placemaking:
  - Unique places with lasting value
  - Compact, mixed-use
  - Pedestrian and transit oriented
  - Strong civic character
  - Contributes to economic development

CSS vs. Conventional Thoroughfare Design Approach

Conventional	CSS Approach
Context: Urban Rural	Context: Suburban General urban Urban center Urban core
Design criteria primarily based on: Functional class Design speed Forecast travel demand Level of service	Design criteria primarily based on: Community objectives Functional class Thoroughfare type Adjacent land use

CSS Design Framework

- Context zones:
  - Natural - Downtowns

The Concept of Context Zones

Source: Duany Plater-Zyberk and Company

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Context Zone Descriptions

Context Zone	Distinguishing Characteristics	General Character	Building Placement	Frontage Types	Typical Building Height	Average Target Residential Density	Type of Public Open Space	Examples of Commercial Corridors
C-4 General Urban	Mix of housing types including attached units, with a range of commercial and civic activity at the neighborhood and community scale	Predominantly detached buildings, balance between landscape and buildings, presence of pedestrians	Shallow to medium front and side yard setbacks	Porches, fences	2-3 story with some variation and few taller workplace buildings	8-12 units/acre (single-family) 16-32 units/acre (multi-family)	Parks, greenbelts	- ArkansasAve. - Interstate 20 - Green Oaks - Collins St. - S.H. 303 - Park Row Rd.

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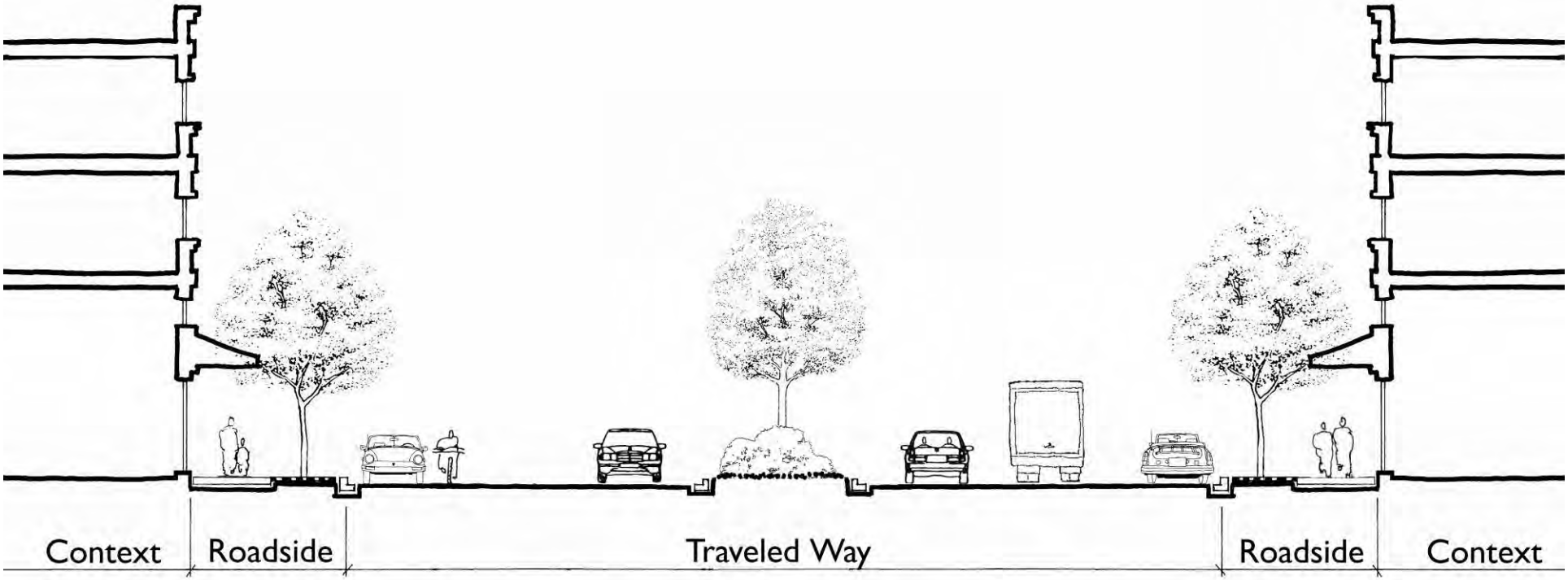
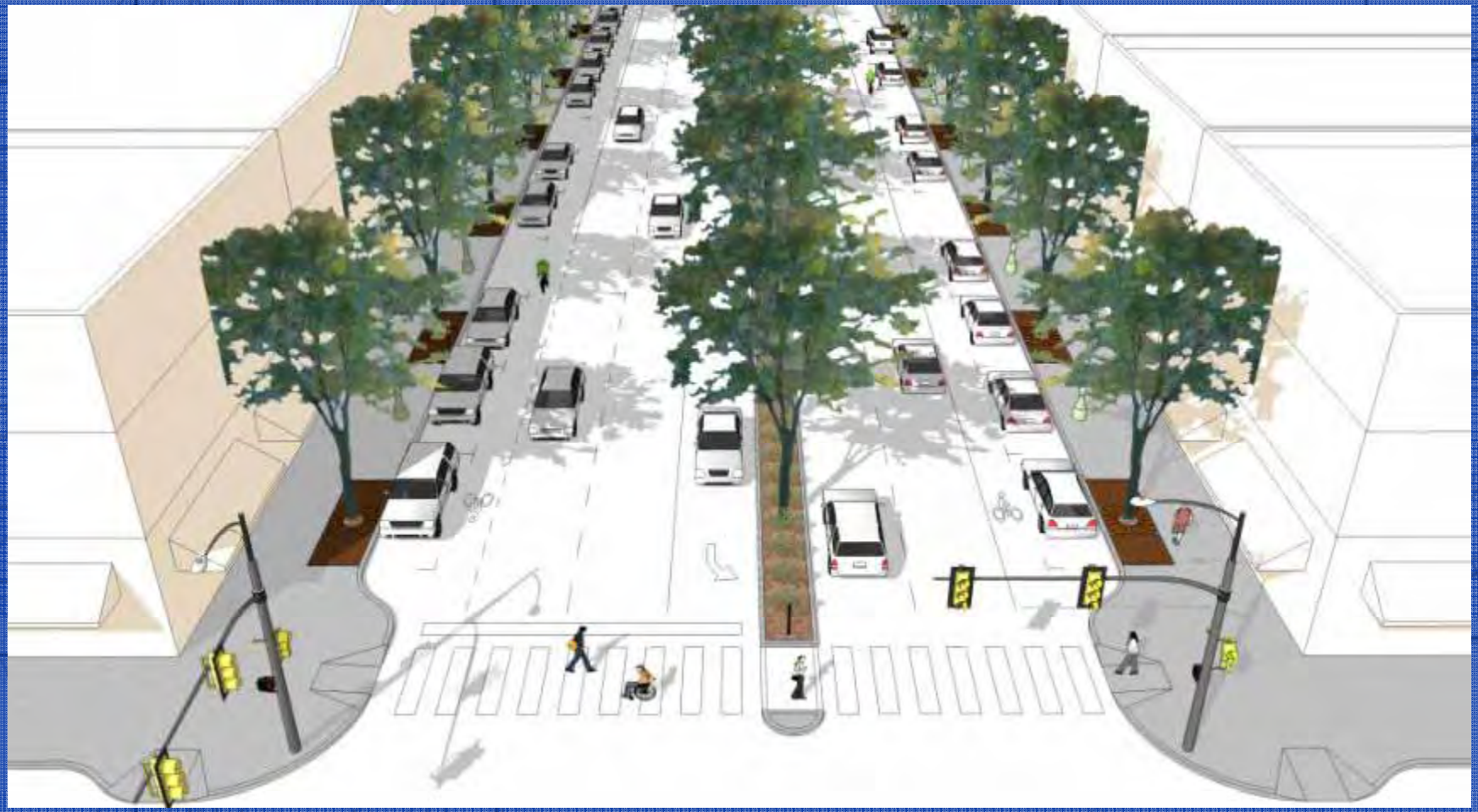
CSS Design Framework

- Street classification:
  - Functional class
    - Arterial
    - Collector

Thoroughfare type
Boulevard
Avenue
Street



Boulevard



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Boulevard

- Divided arterial (4+ lanes)
- Target speed (35 mph or less)
- Through and local traffic
- Serve longer trips
- Access management
- Major transit corridor
- Primary freight route
- Emergency response route
- May or may not have curb parking


JADE

Multi-way Boulevard

Walkable high capacity street

- Central roadway for through traffic
- Parallel access lanes
- Access lanes for parking, and pedestrian and bicycle facilities
- Require significant right-of-way
- Special treatment of intersections

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NEED TRANSIT INFO?
CALL
511
CHANNING
Way


THE ARTS & COMMERCE DISTRICT

Avenue

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Avenue

- Arterial or collector (4 lanes max)
- Target speed (30 to 35 mph)
- Land access
- Primary ped and bike route
- Local transit route
- Freight - local deliveries
- Optional raised landscaped median
- Curb parking

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AILABLE


BIKE LANE

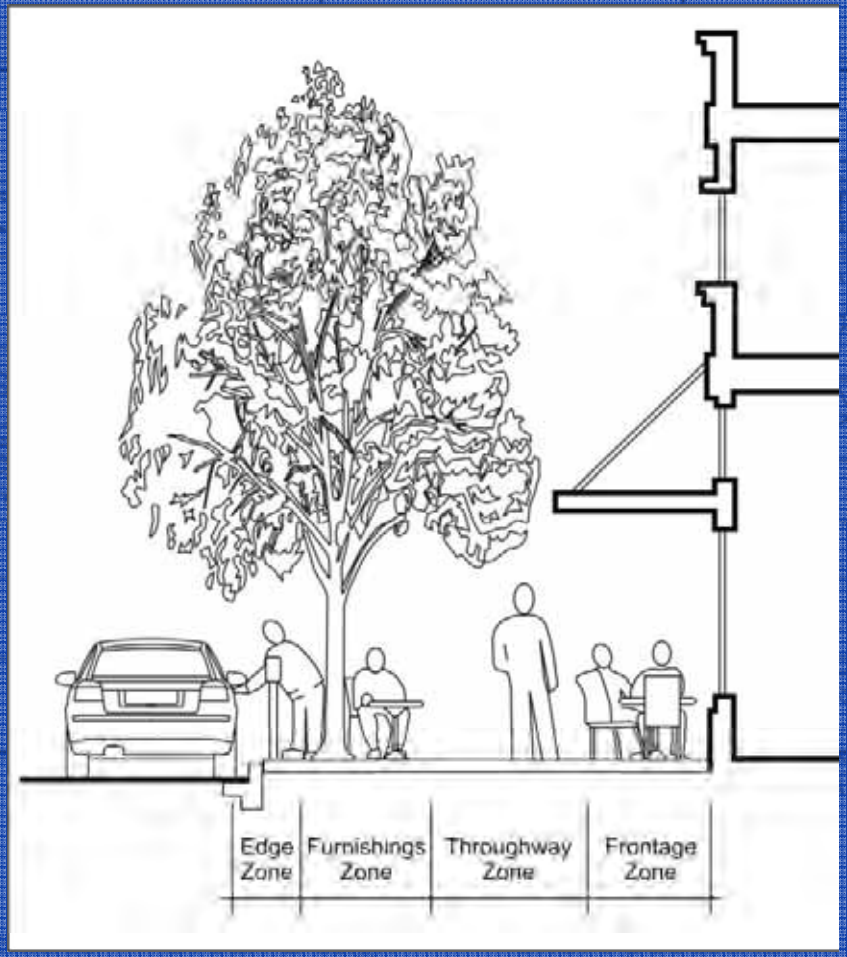
Street

Street

- Collector or local
- 2 lanes maximum
- Target speed (25mph)
- Land access
- Designed to connect
- May be commercial main street
- Emphasizes curb parking
- Freight restricted to local deliveries

Roadside Zones

- Zones:
  - Edge
  - Furnishings
  - Throughway (ADA)
  - Frontage
- Function and dimensions vary by context zone and adjacent land use




STA TRAVEL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PYT
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OP

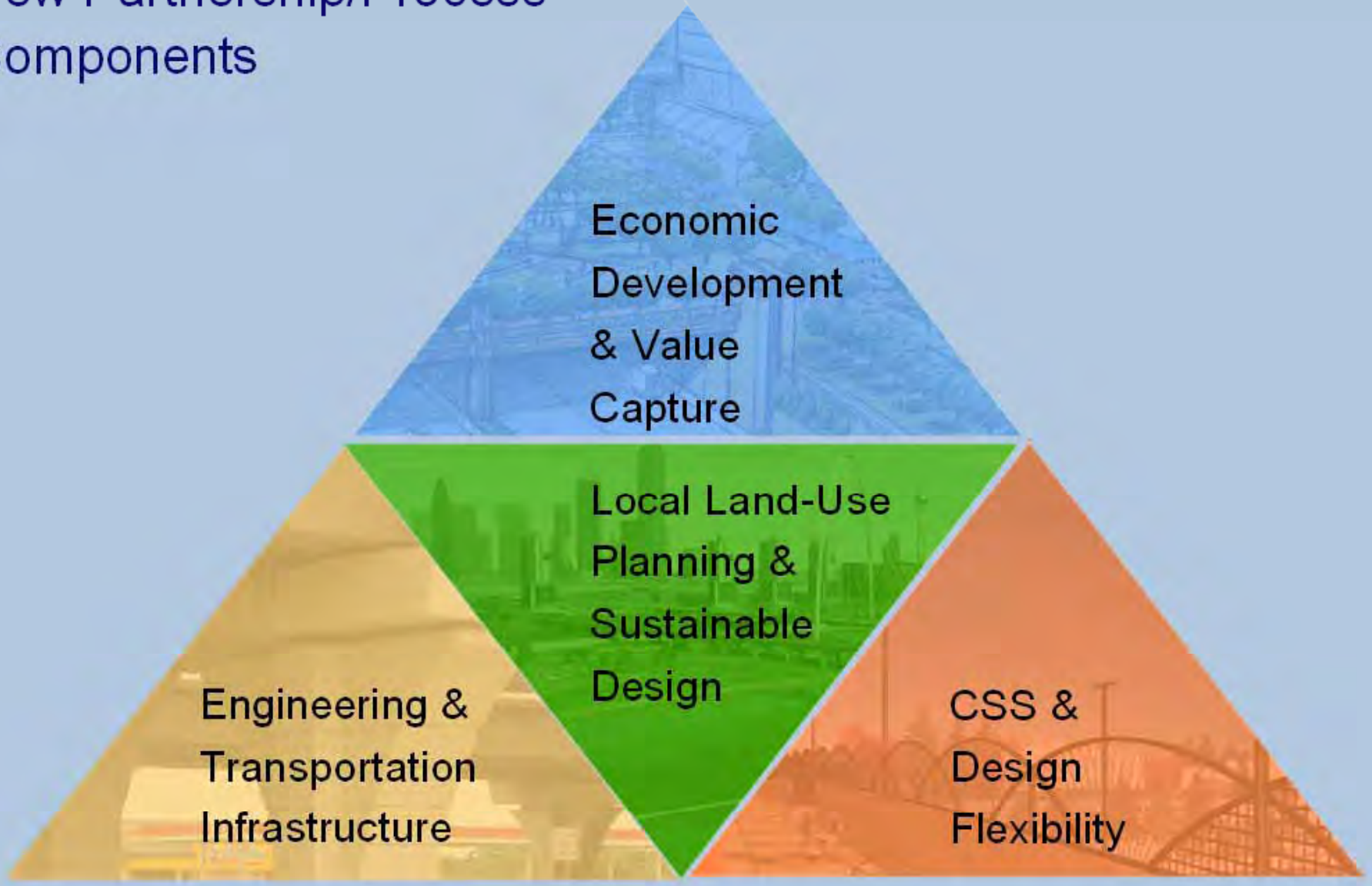
Table 6.2 General Parameters for Arterial Thoroughfares

	Suburban (C-3)				General Urban (C-4)				Urban Center/Core (C-5/6)			
	Residential		Commercial		Residential		Commercial		Residential		Commercial	
Context	Boulevard	Avenue	Boulevard	Avenue	Boulevard	Avenue	Boulevard	Avenue	Boulevard	Avenue	Boulevard	Avenue
Building Orientation (entrance orientation)	front, side	front, side	front, side	front, side	front	front	front	front	front	front	front	front
Maximum Setback [1]	20 ft.	20 ft.	5 ft.	5 ft.	15 ft.	15 ft.	0 ft.	0 ft.	10 ft.	10 ft.	0 ft.	0 ft.
Off-Street Parking Access/Location	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear	rear	rear	rear
Roadside												
Recommended Roadside Width [2]	14.5 ft.	12.5 ft.	16 ft.	15 ft.	16.5 ft.	12.5 ft.	19 ft.	16 ft.	21.5 ft.	19.5 ft.	21.5 ft.	19.5 ft.
Pedestrian Buffers (planting strip exclusive of travel way width) [2]	8 ft. planting strip	6-8 ft. planting strip	7 ft. tree well	6 ft. tree well	8 ft. planting strip	6-8 ft. planting strip	7 ft. tree well	6 ft. tree well	7 ft. tree well	6 ft. tree well	7 ft. tree well	6 ft. tree well
Street Lighting	For all arterial thoroughfares in all context zones, intersection safety lighting, basic street lighting and pedestrian-scaled lighting is recommended. See Chapter 8 (Roadside Design Guidelines) and Chapter 10 (Intersection Design Guidelines).											
Traveled Way												
Target Speed (mph)	35	25-30	35	35	35	25-30	35	25-30 [3]	35	25-30	30	25-30 [3]
Design Speed	Design speed should be a maximum of 5 mph over the operating speed. Design speed is used as a control for certain geometric design elements including sight distance and horizontal and vertical curvature.											
Number of Through Lanes [4]	4-6	2-4	4-6	2-4	4-6	2-4	4-6	2-4	4-6	2-4	4-6	2-4
Lane Width [5]	10-11 ft.	10-11 ft.	10-12 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-12 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.	10-11 ft.
Parallel On-Street Parking Width [6]	7 ft.	7 ft.	8 ft.	8 ft.	7 ft.	7 ft.	8 ft.	8 ft.	7 ft.	7 ft.	8 ft.	8 ft.
Min. Combined Parking/Bike Lane Width	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.
Horizontal Radius (per AASHTO) [7]	762 ft.	510 ft.	762 ft.	762 ft.	762 ft.	510 ft.	762 ft.	510 ft.	762 ft.	510 ft.	510 ft.	510 ft.
Vertical Alignment	Use AASHTO minimums as a target, but consider combinations of horizontal and vertical per AASHTO Green Book.											
Medians (which will accommodate single left-turn lanes at intersections) [8]	14-16 ft.	Optional 14 ft.	14-16 ft.	Optional 14 ft.	14-16 ft.	Optional 14 ft.	14-16 ft.	Optional 14 ft.	14-16 ft.	Optional 14 ft.	14-16 ft.	Optional 14 ft.
Bike Lanes (min./preferred width)	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.
Access Management [9]	Moderate	Low	High	Moderate	Moderate	Low	High	Low	Moderate	Low	High	Low
Typical Traffic Volume Range (vpd)	20,000-35,000	15,000-25,000	20,000-50,000	10,000-35,000	10,000-30,000	10,000-20,000	15,000-40,000	5,000-30,000	15,000-30,000	10,000-20,000	15,000-40,000	5,000-30,000
Intersections												
Roundabout	Consider urban single-lane roundabouts at intersections on arterial avenues with less than 20,000 entering vehicles per day, and urban double-lane roundabouts at intersections on Boulevards and Avenues with less than 40,000 entering vehicles per day.											
Curb Return Radii	Refer to Chapter 10 (Intersection Design Guidelines) for details											


TXDOT APPROVED
Context Sensitive Solutions
in Designing Major Urban Thoroughfares
for Walkable Communities
ite
Institute of Transportation Engineers

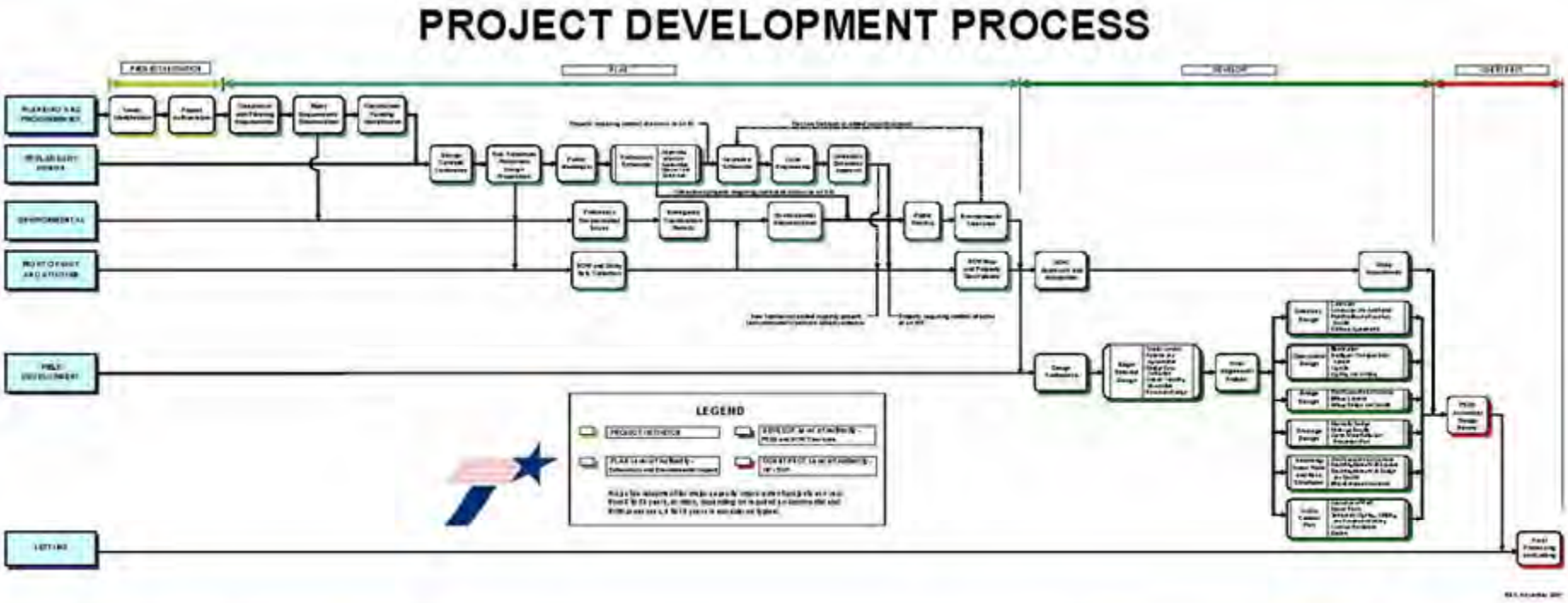
Urban Thoroughfares Committee

New Partnership/Process Components



Courtesy of HNTB Gateway

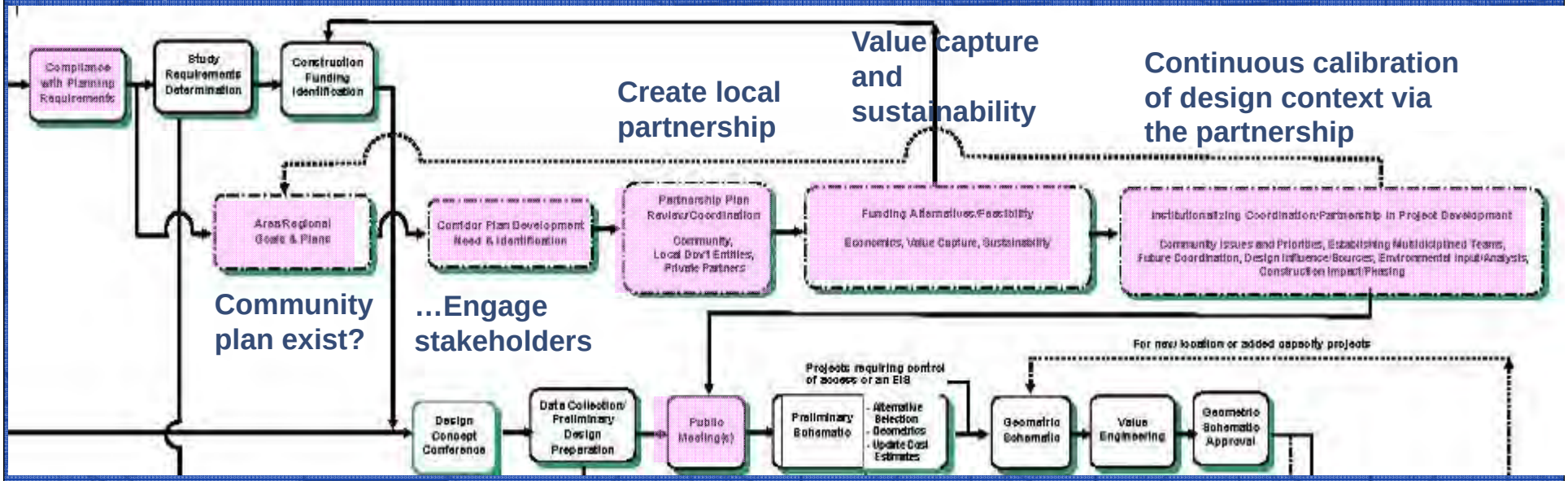
Project Development Process



Texas Department of Transportation

The Committee's Proposed Revised Process

"Compliance with planning" requirement



Value capture and sustainability

Create local partnership

Continuous calibration of design context via the partnership

Community plan exist?

…Engage stakeholders

A meaningful formal public-meeting process and consequent design in the community context

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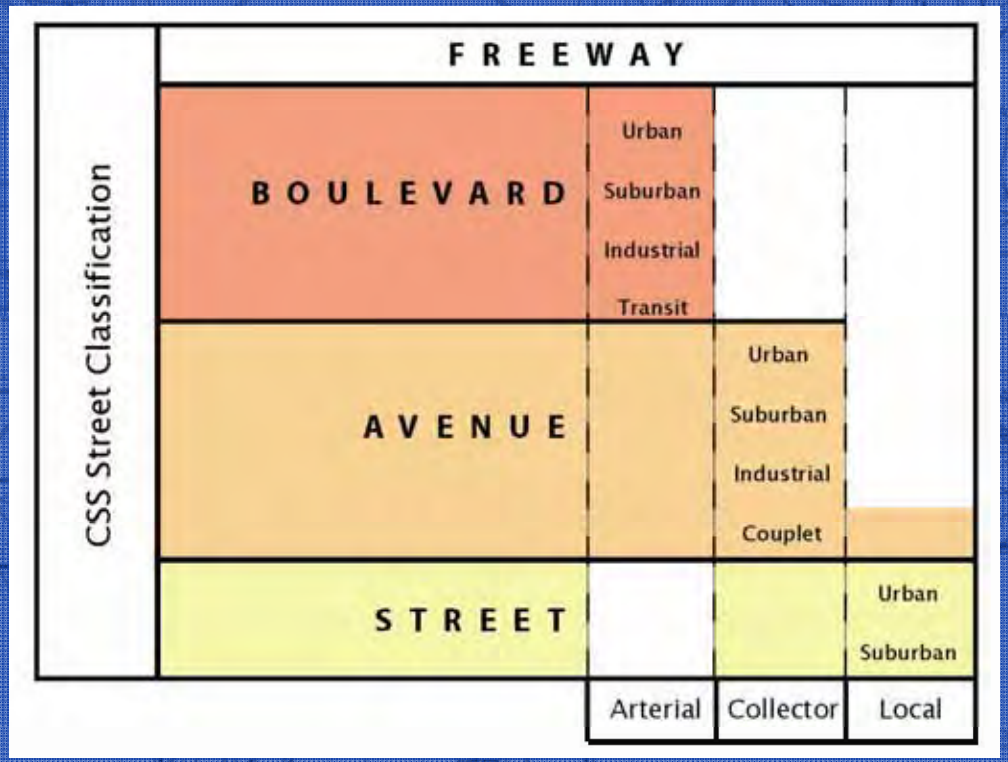
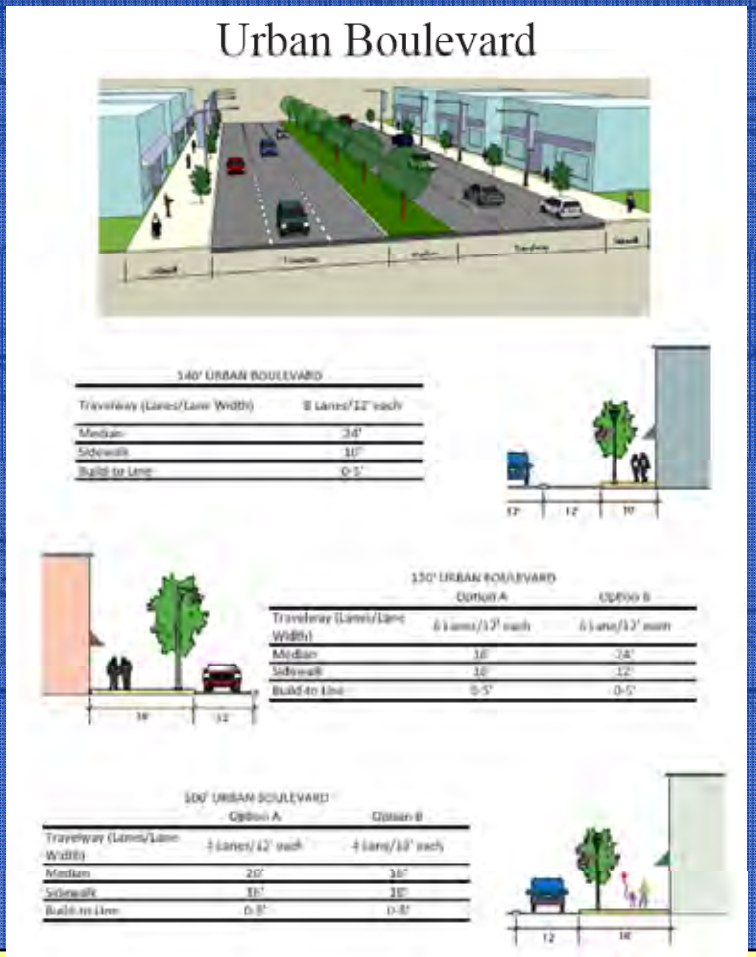
TxDOT Pilot CSS Projects

- SH 26 Colleyville
- SP 100 South Padre Island
- 30-80-20 Terrell
- SH 6 Houston

Houston Example





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Houston Example

Toolbox	MODELING: Increased access to transit facilities	MODELING: Improve connectivity of the system	MODELING: Maximize cost efficiency	MODELING: Minimize travel times	MODELING: Reduce increase in congestion	MODELING: Neighborhood traffic	MODELING: Air quality conformity	PLANNING: Increased access to pedestrian facilities	PLANNING: Increased access to bicycle facilities	PLANNING: Accommodate the movement of freight	PLANNING: Minimizing conflict points	PLANNING: Provide a safe and secure environment for pedestrian and bicycle safety	PLANNING: Improve corridor aesthetics	PLANNING: Expand pedestrian Amenities
Technical Modeling Tools														
Roadway Widening				✓	✓									
New Roadways		✓		✓	✓									
Network Spacing	✓	✓	✓	✓	✓	✓		✓						
Grade separations				✓	✓					✓	✓			
Commuter Rail	✓			✓	✓		✓							
Light Rail	✓			✓	✓		✓							
Bus Rapid Transit	✓			✓	✓		✓							
Signature Bus	✓				✓		✓							
Local, Special Bus	✓						✓							
Park and Ride	✓		✓	✓	✓		✓							
HOV/Managed Lanes	✓		✓	✓	✓		✓							
Street Diet													✓	
Raised Medians			✓	✓	✓						✓		✓	
Intersection Design/Improvement			✓	✓	✓		✓				✓			
Planning Tools														
Sidewalks	✓	✓						✓	✓			✓	✓	✓
Mid-block Crossings								✓					✓	✓
Crosswalks	✓							✓				✓	✓	✓
Bike Building									✓			✓	✓	✓
Paved Shoulder		✓					✓		✓			✓	✓	
Bike Lane	✓	✓					✓		✓			✓	✓	
Multi-use Path	✓						✓		✓			✓	✓	✓
Bike Racks									✓			✓	✓	✓
Cross Access		✓	✓	✓	✓		✓				✓		✓	
Bulb-outs								✓				✓	✓	✓
Acceleration/Deceleration Lanes			✓	✓	✓						✓			
Pedestrian Islands								✓				✓	✓	✓
Lanscaping													✓	✓
Curb Ramps	✓							✓				✓		✓
Pedestrian Bridge	✓							✓	✓			✓		✓
Vanpool	✓		✓	✓	✓		✓							
Para Transit	✓													
On street Parking														
Traffic Calming Devices			✓		✓	✓					✓	✓		
Driveway Consolidation			✓	✓	✓						✓		✓	
Technical Operations Tools														
Transit signal priority			✓	✓	✓									
Advanced Parking Signs			✓	✓	✓		✓							
Emergency vehicle prevention				✓										
Advanced signal systems			✓	✓	✓		✓			✓				
Variable speed limts			✓	✓			✓							
Dynamic message signs			✓	✓	✓		✓			✓				
Speed enforcement			✓	✓			✓							
Evacuation and re-entry management			✓											
Signal Timing			✓	✓	✓		✓			✓	✓			
Pedestrian Phase	✓							✓	✓			✓		✓

URBAN AVENUE DESIGNATION

	PEDESTRIAN REALM		TRAVELWAY REALM				
Minimum R.O.W. (feet)	**Sidewalk (feet)**	**Tree Well or Swale (feet)**	**On-Street Parking (feet)**	**Bike Lane (feet)**	**Median Width (feet)**	**Lane Widths (feet)**	**ADT (vpd)**
80	20 x 2 = 40	TW	8 x 2 = 16	N/A	N/A	2 x 12 = 24	1,500-15,000
	10 x 2 = 20	TW	18 x 2 = 36 *	N/A	N/A		
	15 x 2 = 30	TW	8 x 2 = 16	5 x 2 = 10	N/A		
	10 x 2 = 20	TW	18 x 2 = 36 *	N/A	N/A		
	22 x 2 = 44	TW	N/A	6 x 2 = 12	N/A		
	21 x 2 = 42	TW	N/A	N/A	N/A	2 x12 + 1 x14 (CLTL*)* = 38	5,000-20,000
	13 x 2 = 26	TW	8 x 2 = 16	N/A	N/A		
	8 x 2 = 16	TW	8 x 2 = 16	5 x 2 = 10	N/A		
	15 x 2 = 30	TW	N/A	6 x 2 = 12	N/A		
	16 x 2 = 32	TW	N/A	N/A	N/A	4 x 12 = 48	10,000-30,000
	8 x 2 = 16	TW	8 x 2 = 16	N/A	N/A		
	10 x 2 = 20	TW	N/A	6 x 2 = 12	N/A		
100	13 x 2 = 26	TW	8 x 2 = 16	5 x 2 = 10	N/A	4 x 12 = 48	10,000-30,000
	20 x 2 = 40	TW	N/A	6 x 2 = 12	N/A	4 x 12 = 48	

* Angle Parking

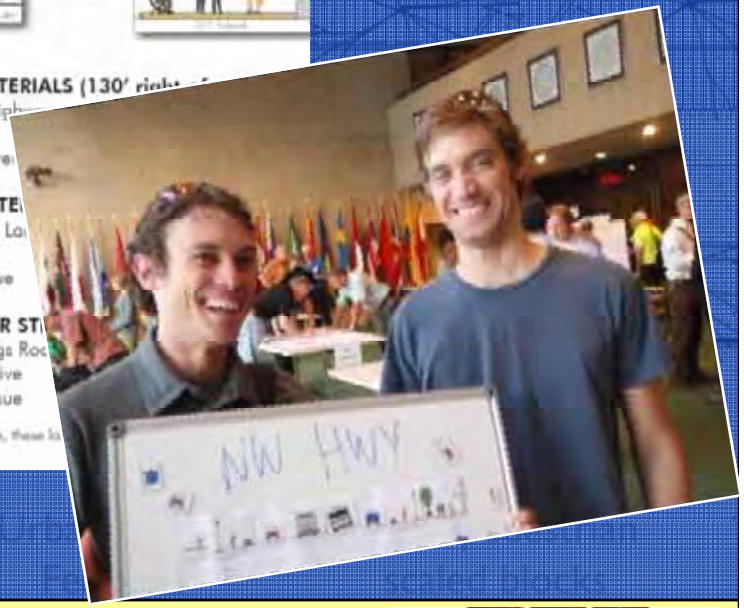
Public Outreach Tools

MAJOR ARTERIALS (130' right-
Northwest High
Harry Hines
Industrial/River

MINOR ARTE
Mockingbird La
Royal Lane
Illinois Avenue

COLLECTOR ST
Cedar Springs Roa
University Drive
Gaston Avenue

* For this exercise, these lo
traffic volume



Light Rail

Commuter Rail

Streetcar

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On every street? And NOW?

Copenhagen, Denmark, considered a model for pedestrian-friendly streets, realized its multi-modal vision over a 30-year period.

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Main Street Duncanville

Gateway Planning Group

Kimley-Horn and Associates, Inc.

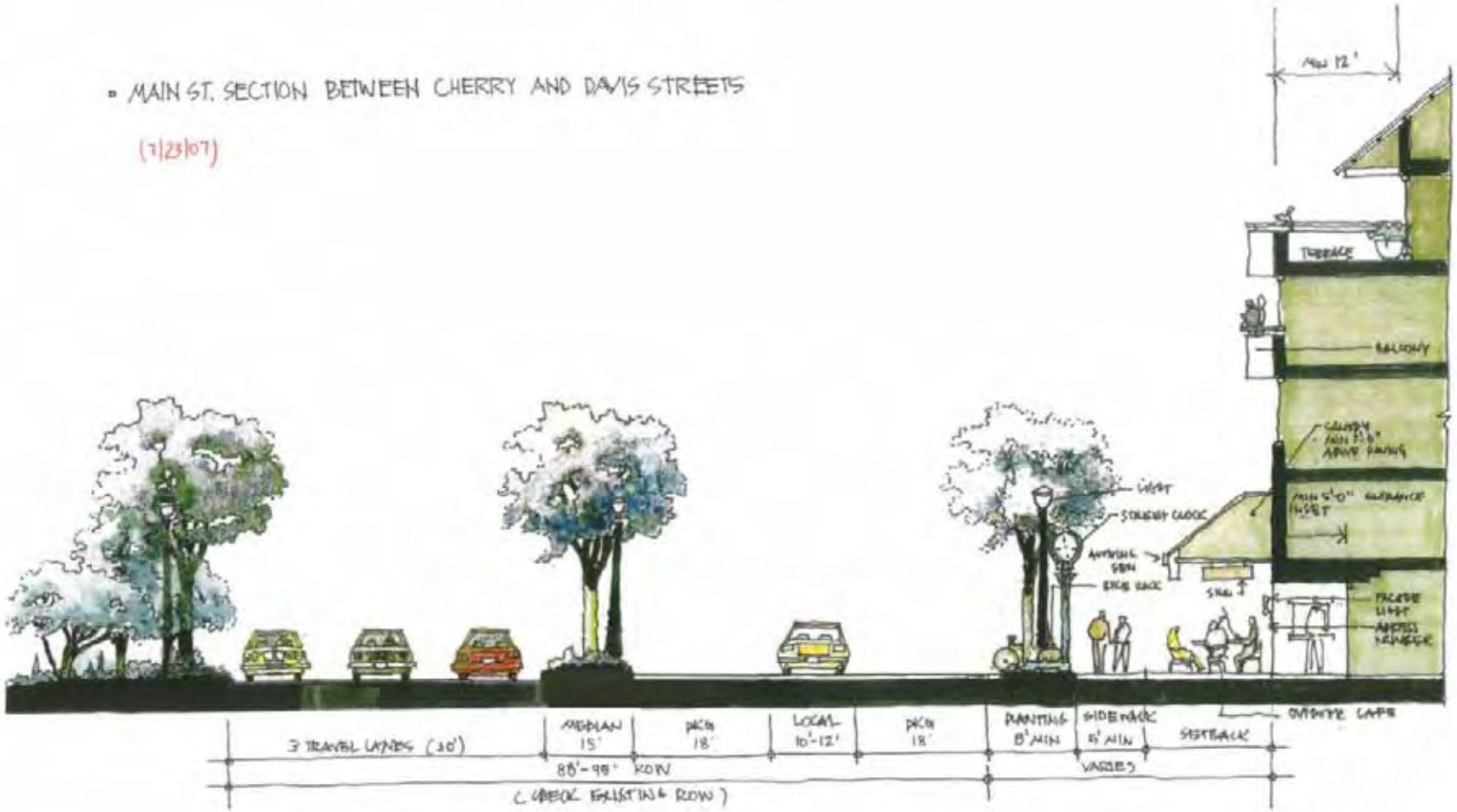
The Main Street Committee met numerous times, providing input… the consultant team also met with stakeholders at over a dozen local businesses.

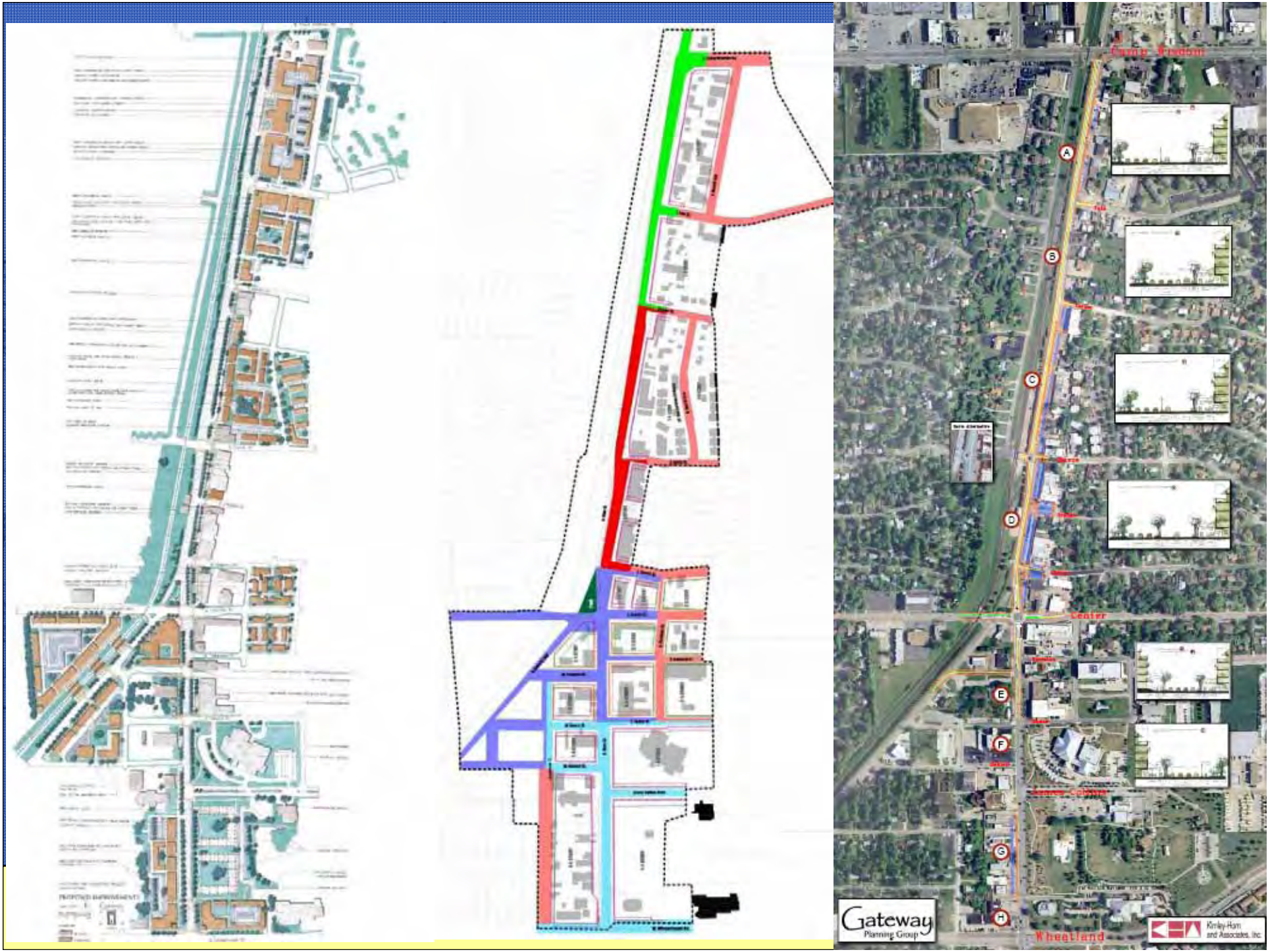
Gateway Planning Group

Kimley-Horn and Associates, Inc.

- MAIN ST. SECTION BETWEEN CHERRY AND DAVIS STREETS

(7|23|07)




Camp Freedom
A
B
C
D
Center
E
F
G
H
Wheatland
Gateway
Planning Group
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Roadway Capacity

	Predicted Level of Service			
	Existing	Santa Fe Through	Santa Fe Begins at Center	Santa Fe Curves into Main
Main/Center/Santa Fe	C	C	C	C
Davis/Main	A	A	A	A

Gateway Planning Group

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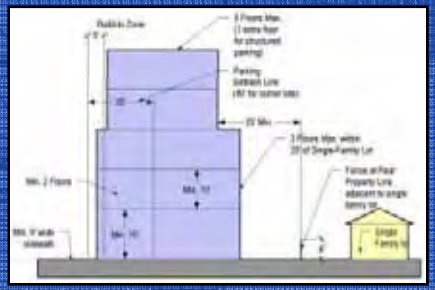
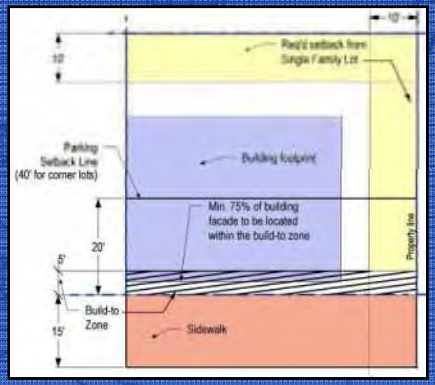
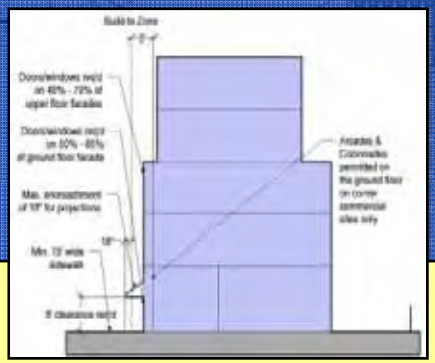
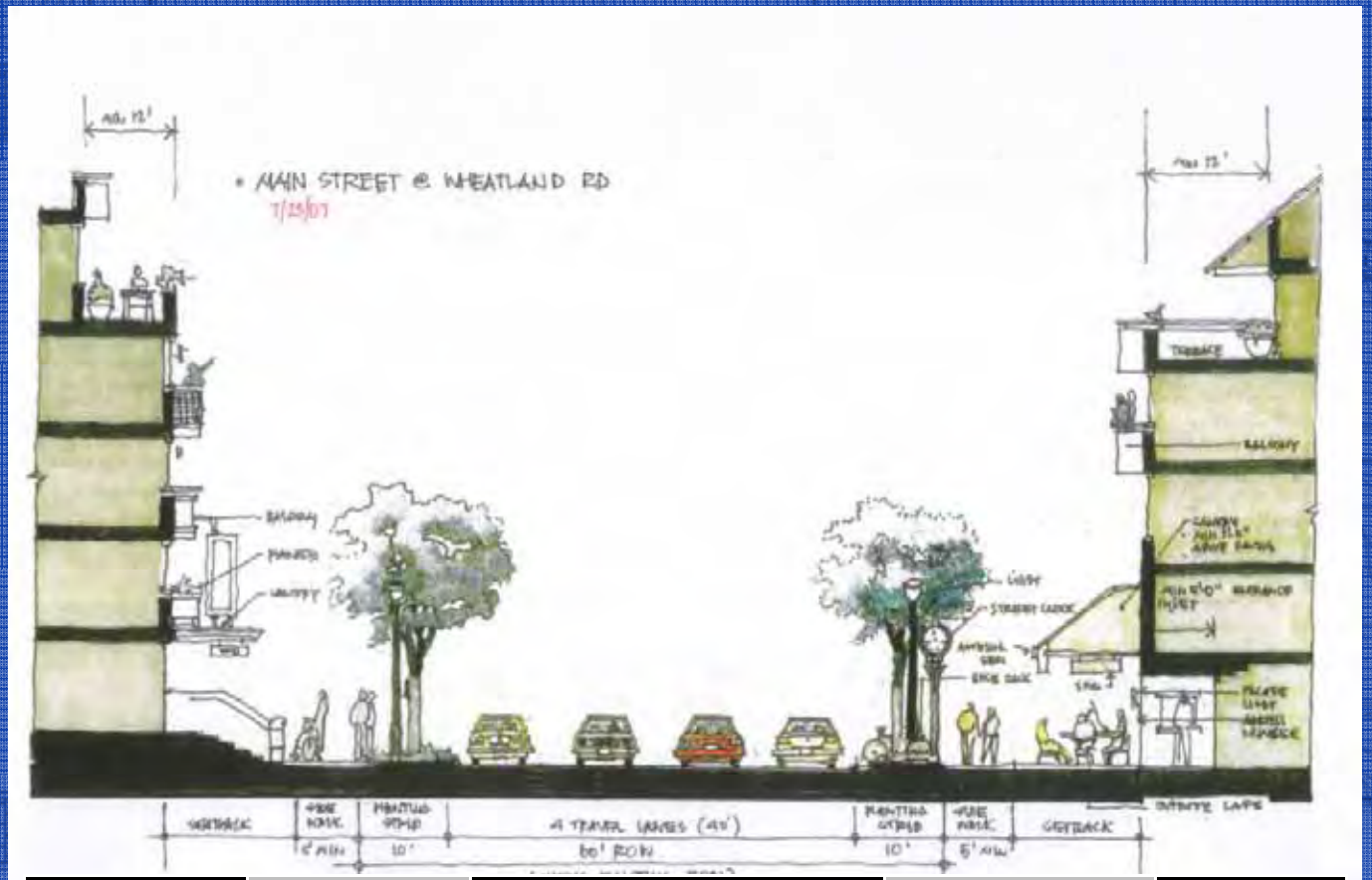
Land Development Code and CSS









Code	CSS	Roadway design	CSS	Code

Gateway Planning Group

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Fiscal Analysis

5-Year Phasing

	Phase 1	Phase 2	Phase 3	Phase 4
New retail in mixed use (sqf)	36,000	51,250	230,250	46,500
New retail in live/work (sqf)	23,400	14,400	0	0
Town homes (units)	109	0	0	0
Live/work (units)	39	20	0	0
Office (sqf)	28,625	25,625	111,875	15,125
New lofts (units)	115	96	132	65

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Fiscal Analysis

Fiscal Impact

Existing Value: $48,206,147	Property Value	Property Tax Revenue	Retail Sales	Sales Tax Revenue	Total Tax Revenue
Existing + Phase 1	$101,484,897	$370,820	$11,880,000	$237,600	$608,420
Existing + Phase 1-2	$132,156,147	$584,292	$25,010,000	$500,200	$1,084,492
Existing + Phase 1-3	$200,634,897	$1,060,904	$71,060,000	$1,421,200	$2,482,104
Existing + Phase 1-4	**$218,328,647**	$1,184,053	**$80,360,000**	$1,607,200	**$2,791,253**

- The initiative offers the potential of four times current property tax base, with total additional revenue impact approaching $3 million per year at buildout

Gateway Planning Group

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- For two days only, on April 10th and 11th, the 400 Block of North Tyler Street will change from a car-centric thoroughfare, to a people friendly environment, complete with temporary businesses like a cafe, flower market, and kid's art studio. We'll also bring out historic lighting, cafe seating, and more to create Dallas' first complete street.

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The Better Block Project

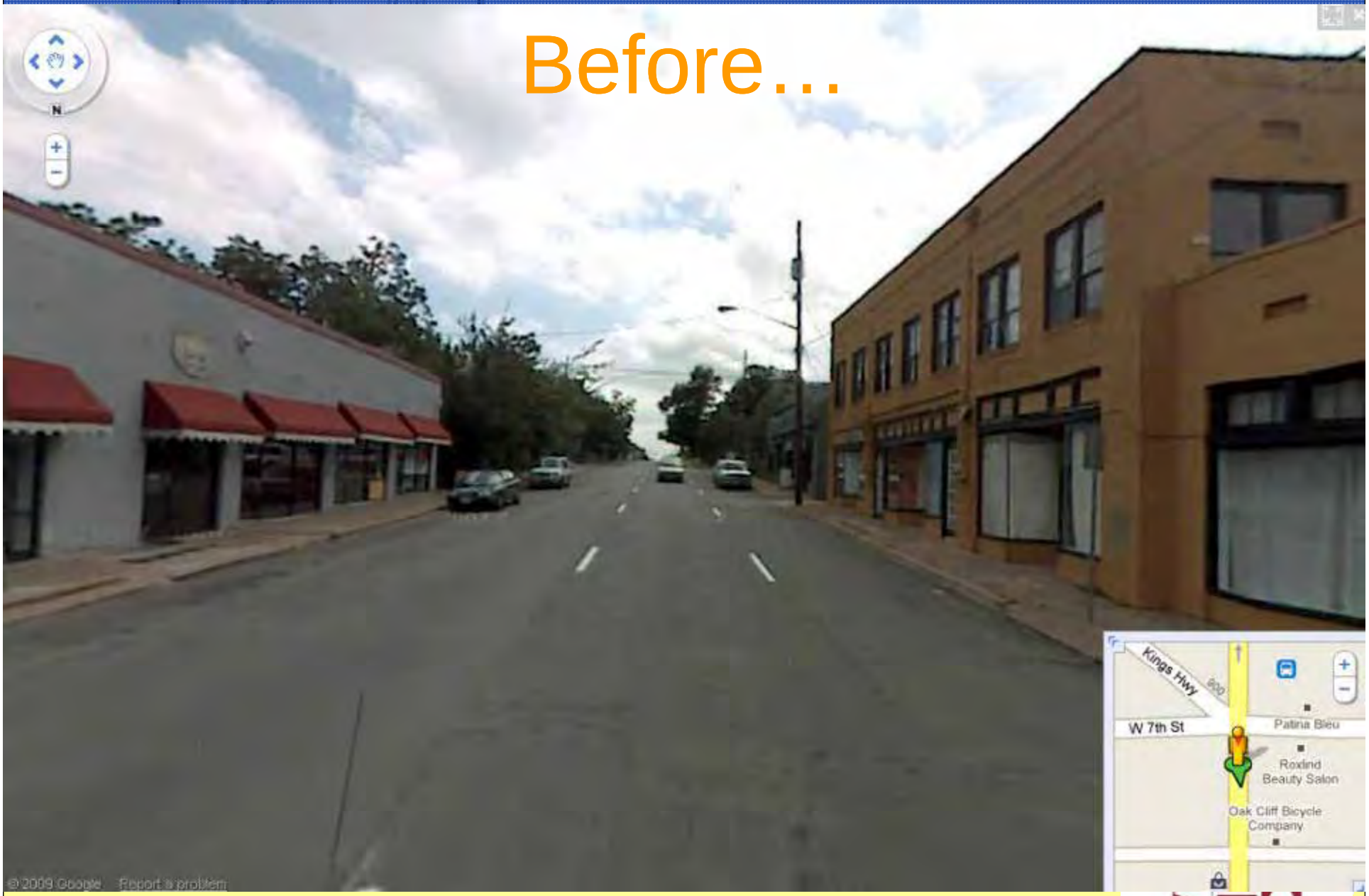
Existing Form

- Pre-War Building stock inside neighborhoods
- Former streetcar stop
- Lack of parking creates limited business potential
- Wide street heightens ped crossing risk
- Low perception of safety due to lack of viable use

"Better Block" Form

- Converted street to multi-modal use w/Bike lane, wide sidewalk, single car lane
- Increased business potential for area
- Heightened pedestrian safety by slower vehicle access
- Heightened perceived safety of area due to heavier neighborhood use

Before…



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After the transformation:


Tyler Street
becomes a Place

On every street? And NOW?

Copenhagen, Denmark, considered a model for pedestrian-friendly streets, realized its multi-modal vision over a 30-year period.

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Pilot Project Process

- Go to neighborhoods and business areas that request it.
- Community Design-Build
- Use retrofit public amenity providers like Fountain People and Street Print
- “Buy Board” contracting to reduce bidding procedures and improve project delivery

Pilot Project Criteria

- Use existing drainage and curb lines
- No utility movements
- Don’t trigger ADA improvements to historic infrastructure, but provide greater access
- Find improvements that can be quickly implemented using paint, bollards and signage.

Pilot Project Materials

Cost effective way to re-purpose streets – examples from the NEW Times Square and New York City Waterfalls

Pilot Project Identification

Begin with “pilot projects” to test how CSS and Complete Streets will work in Dallas.

Go to the parts of the community that are eager for change and will support you when hard decisions are to be made.

Update codes, ordinances and design standards to have a parallel emphasis on CSS/Complete streets with triggers that integrate land development (i.e. vertical mixed-use grants on-street parking a narrower lanes)

Consider providing a greater amount of information to bond committee to form strategic decisions about mobility investments (austin example).


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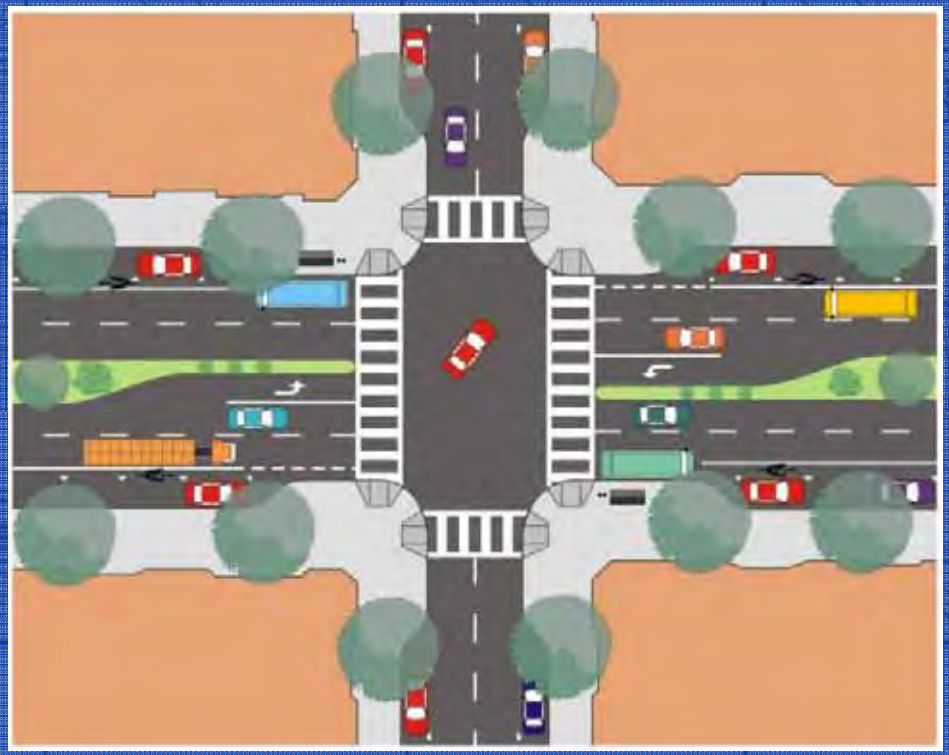
Lane Width

- Recommended practice
  - Range of lane widths: 10–11 ft. on arterials and collectors
  - 12 ft. under special circumstances
  - Based on:
    - Design speed
    - Design vehicle
    - Right-of-way
    - Width of adjacent parking and bicycle lanes

Intersection Design Considerations

- Sight distance
- Pedestrian crossing time
- Bicycle clearance intervals
- Operations
- Curb return radii
- Accessibility
- Channelized right turns
- Crosswalks
- Curb extensions
- Bicycle lane treatment
- Bus stops at intersections
- Queue jump lanes
- Modern roundabouts



4.2. Sidewalk Zones

Design Issue: Among their functions, sidewalks provide a linear through-circulation route for pedestrians; "spillout" space for people entering and exiting frontage buildings and parked cars, and; area for boulevard amenities such as street trees, transit shelters, lighting, benches, outdoor cafes, and vendors.

Recommendation: Sidewalks should be configured to reflect the three basic sidewalk functions note above. As depicted below, guideline recommendations include a 4-foot spillout zone adjacent to frontage buildings, a minimum 8-foot through walking zone, and a 6-foot amenity zone adjacent to the curb line for street trees, street lighting, and spillout area for curbside parking.

In Link areas with residential or office frontage land uses, the amenity zone could be used for a buffer landscape area. Variations in sidewalk paving patterns and/or materials should be considered to highlight the different sidewalk zones.

Caltrans Matrix Reference: Not applicable.