

MULTIMODAL SYSTEM

Design Guidelines



VIRGINIA DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION

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Virginia Department of Rail and Public Transportation

WHY THESE GUIDELINES?

- Provide a resource to improve planning & coordination:
 - Regional Scale
 - Community Scale
 - Street Scale
- Enhance economic value/competitiveness of places
- Promote Safety
- Offer more travel choices
- Resource for locals to implement plan recommendations



LINKAGE TO STATE PLANS/POLICIES



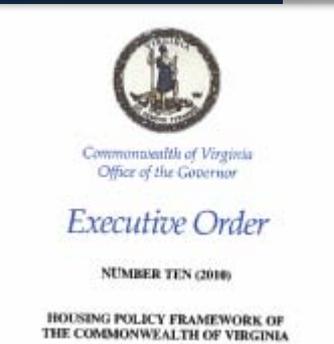
“Improve accessibility to modes and activity centers”

Governor's Strategic Multimodal Plan



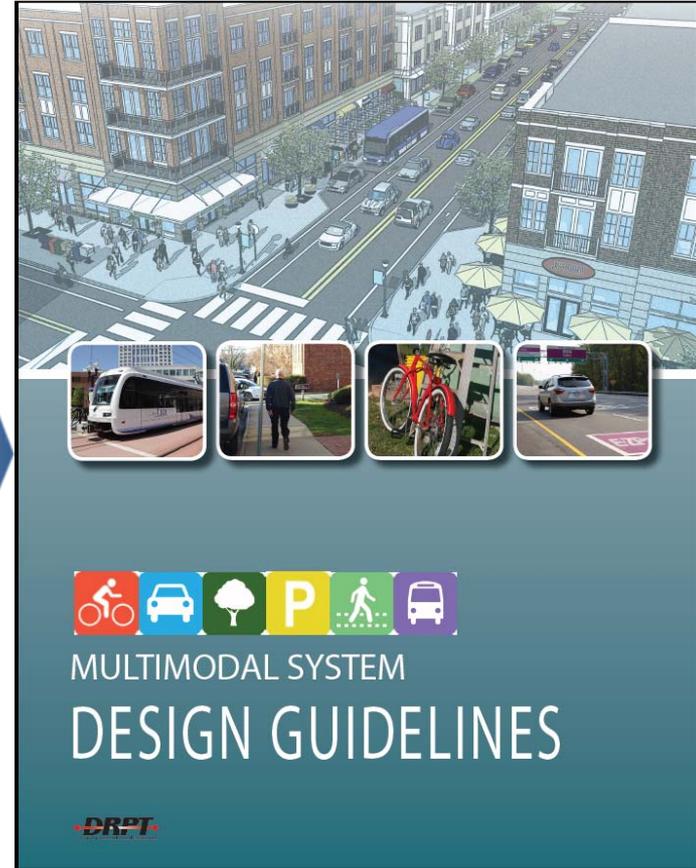
“Increase travel choices to improve quality of life for Virginians”

Vtrans 2035 Update



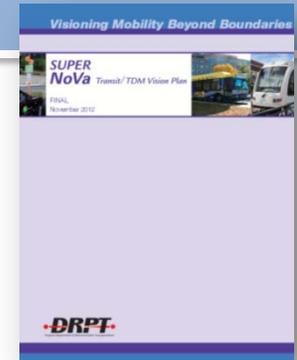
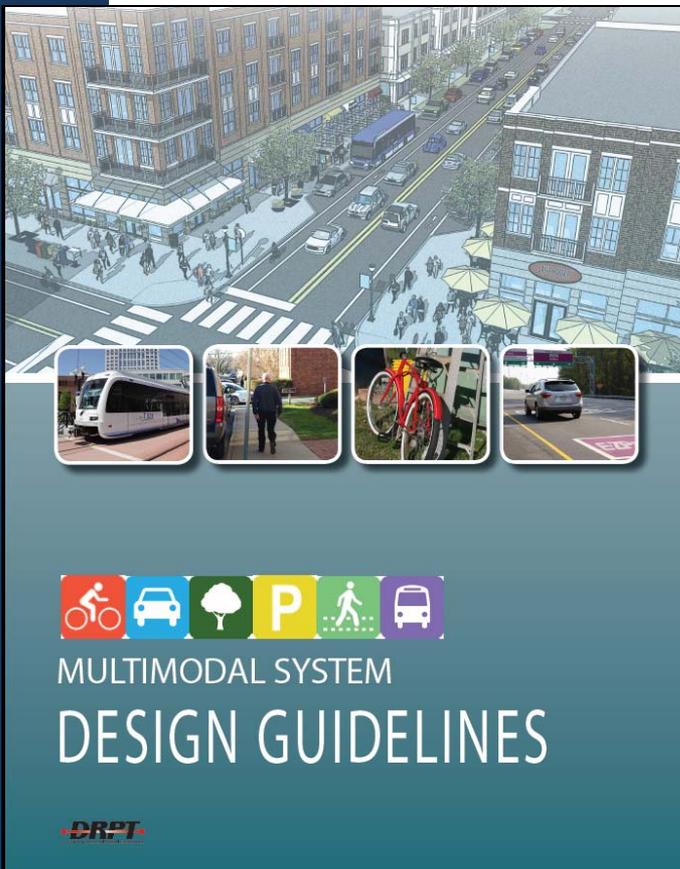
“Address the integral linkage of housing, employment and transportation”

Governor's Housing Policy Initiative



LINKAGE TO PROJECTS

Example of “common language” – all plans can use standard place type definitions



Super NoVA Plan

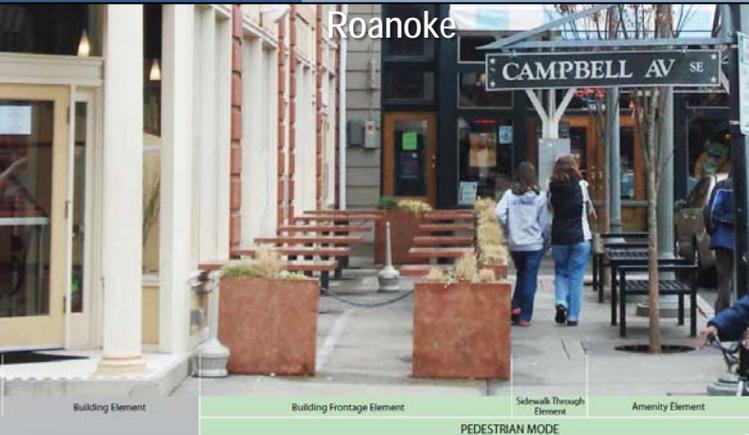


Statewide Transit/TDM Plan

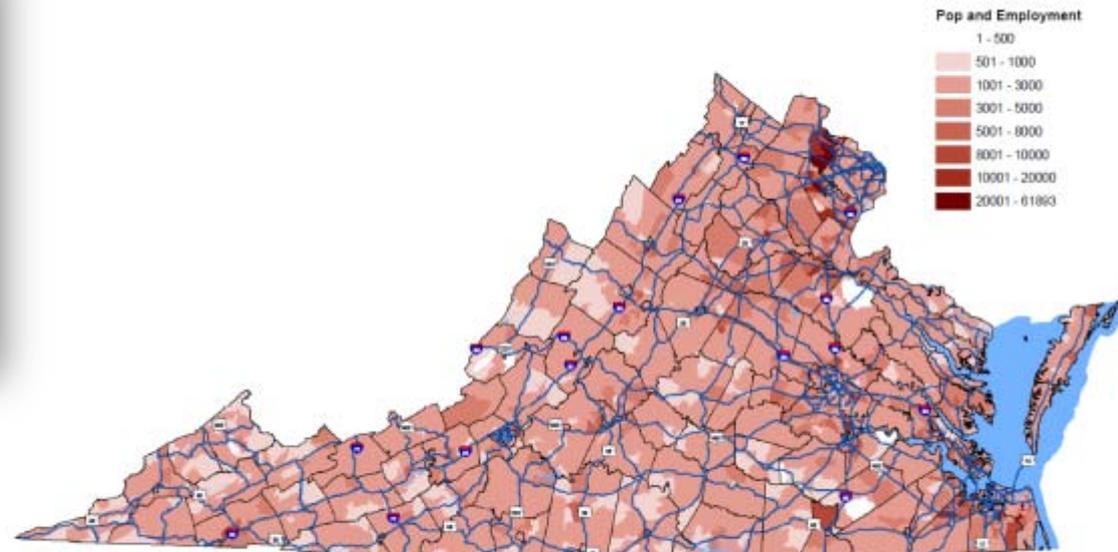
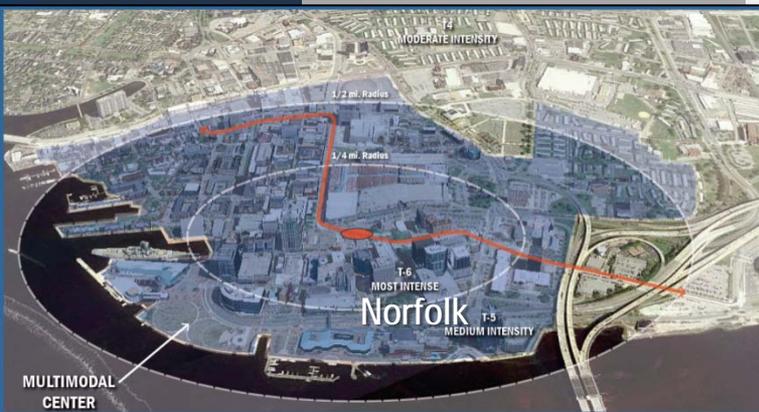


Other studies (eg Hampton Roads Regional Transit Vision)

STATEWIDE CONTEXT



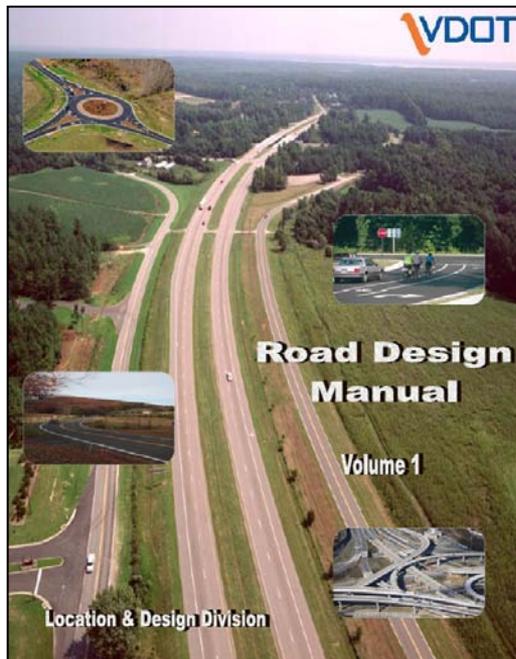
- These Guidelines were developed using real places from a Virginia Context



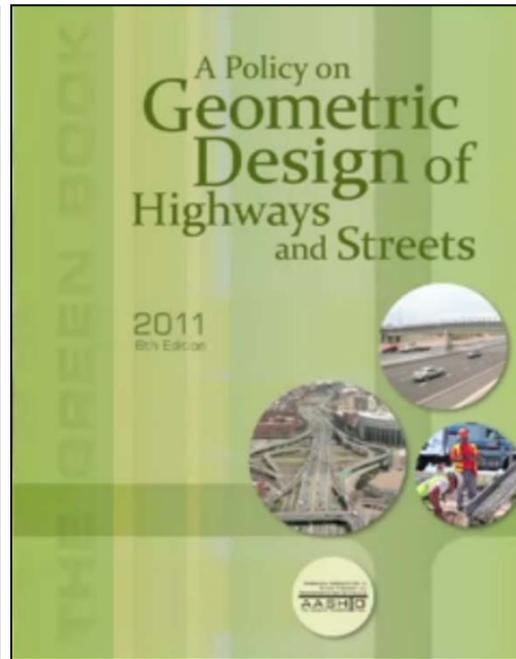
0 20 40 Miles

INDUSTRY STANDARDS

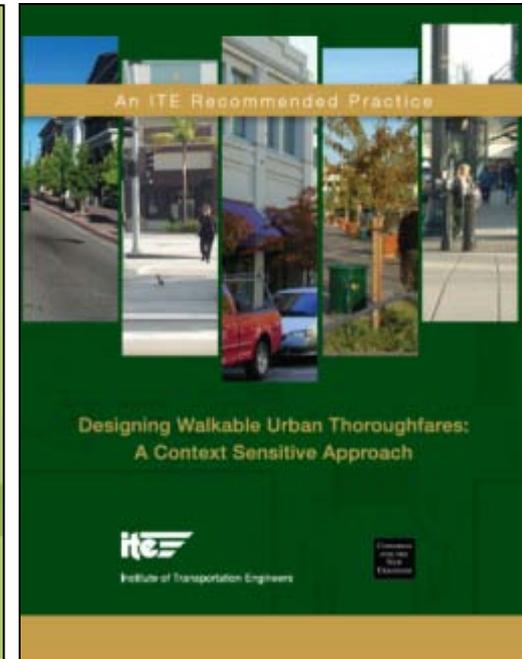
- Extensive research and use of (Virginia and National) industry standards



VDOT



AASHTO



ITE & CNU

GUIDELINES CONTENTS

- Introduction / Benefits of Multimodal Planning
- The Multimodal System Plan
- Centers
- Centers & TOD
- Corridors
- Intersections
- Developing Over Time
- TDM
- Implementation/Funding

REGION

COMMUNITY

CORRIDOR

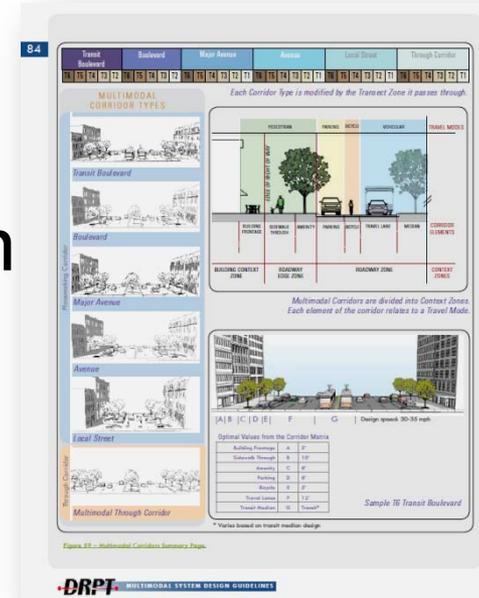


Figure 57 - Multimodal Corridor Summary Page.

The Corridor Prototype Cross-Sections

The set of example cross-sections illustrated in Figures 60 through 65 reflect the "prototype" condition for each of the Placemaking and Multimodal Through Corridor types. Note that not all T.Zones are applicable to each Multimodal Corridor type. The cross-sections below assume that the right-of-way is



Figure 57 - Pedestrian Corridor Elements Illustrated on a Street in Berkeley.



Figure 58 - Multimodal Corridor Elements Illustrated on a Street in Portland.

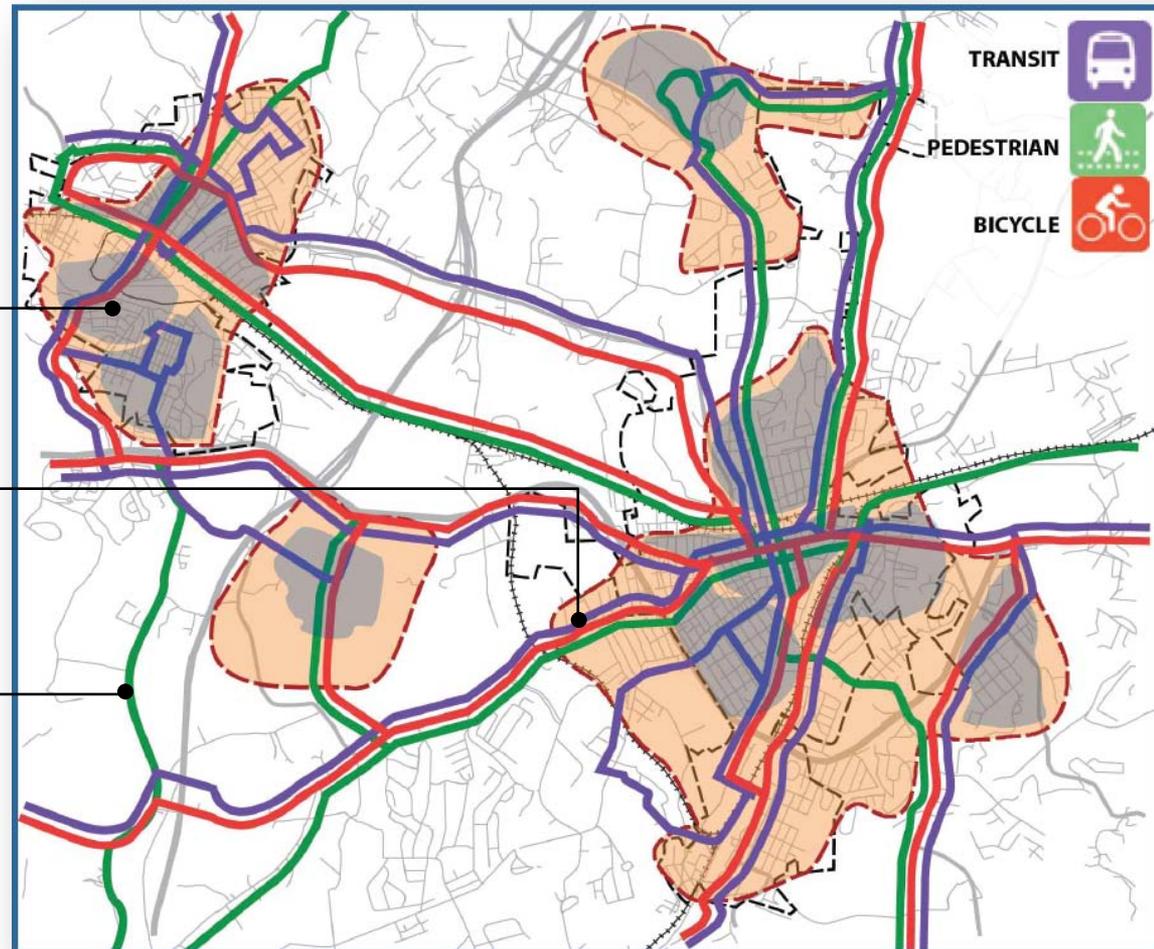
CHAPTER 2: MULTIMODAL SYSTEM PLANS



Example of a Multimodal System Plan

Multimodal Centers

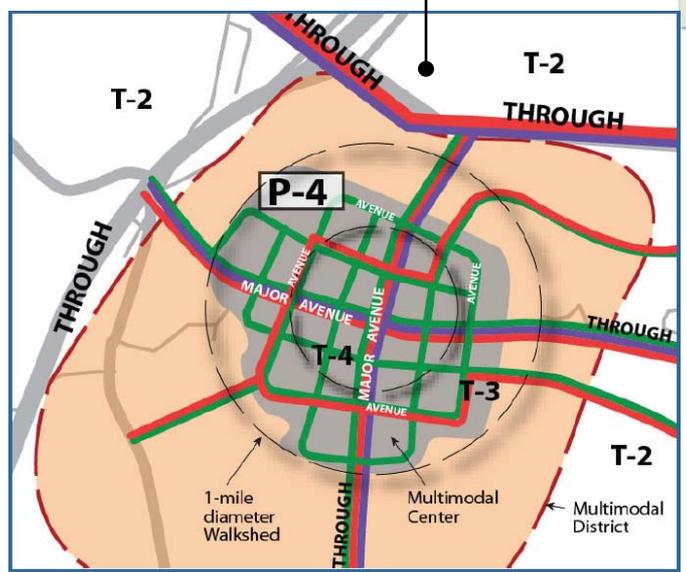
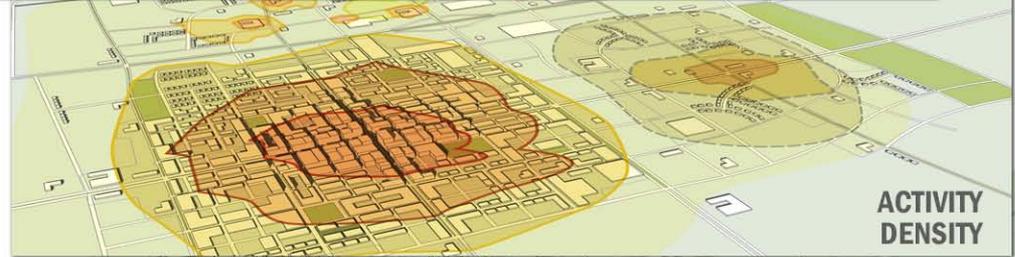
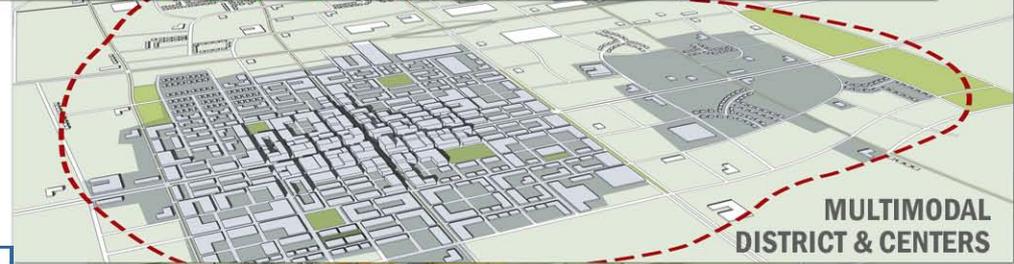
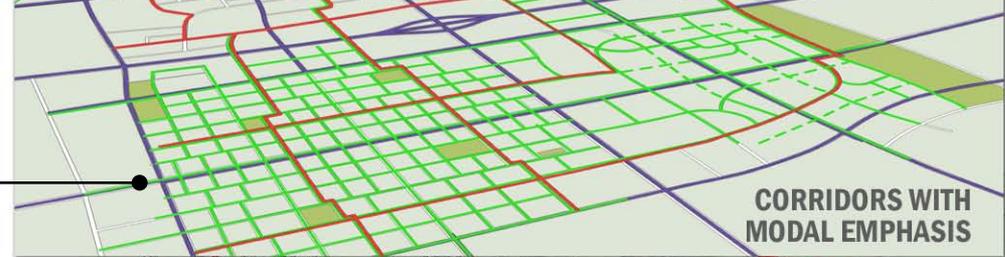
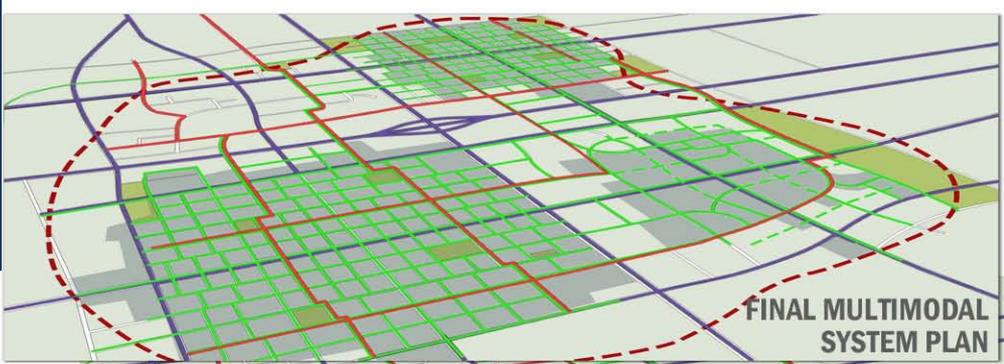
Multimodal Corridors



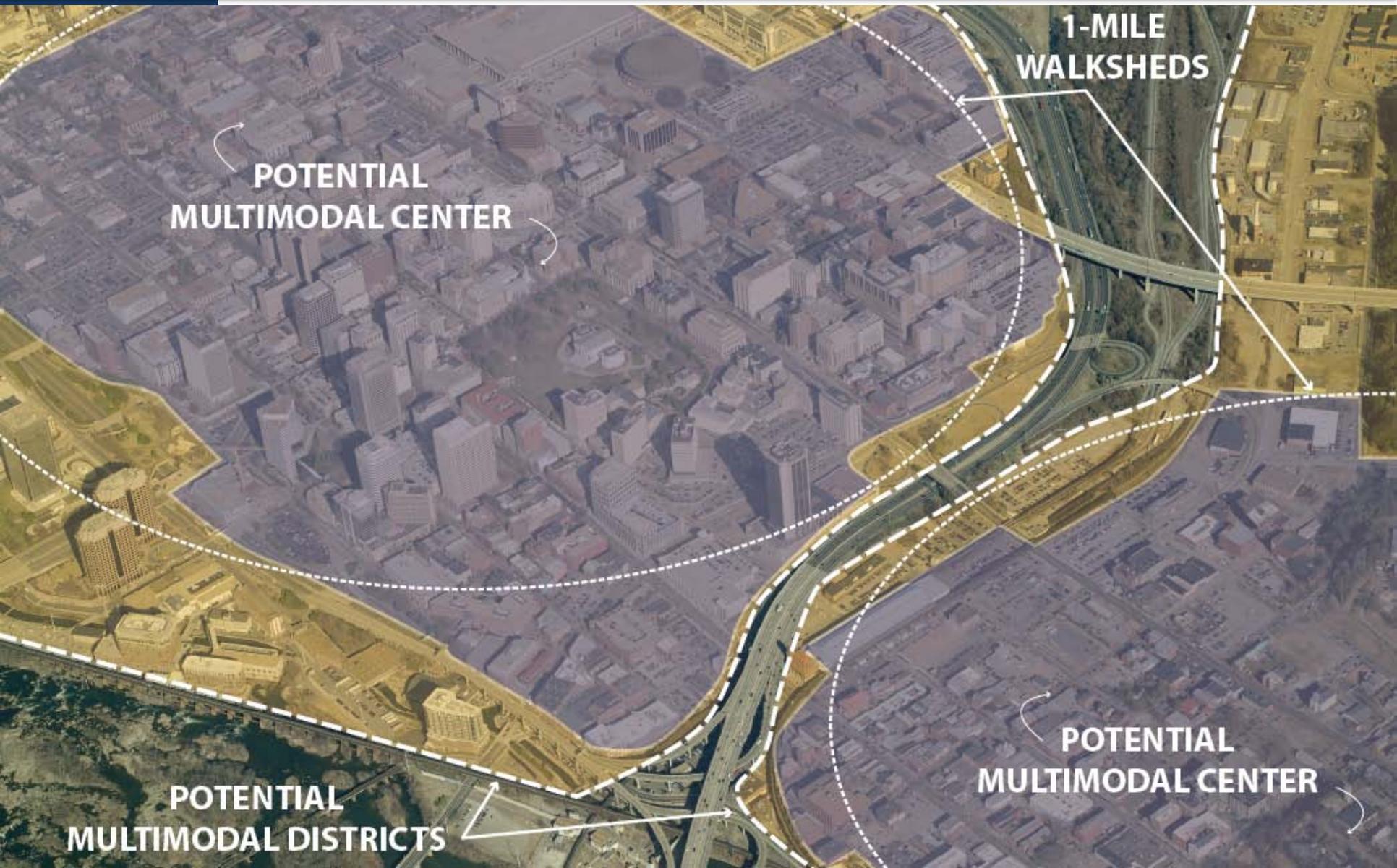
COMPONENTS OF A MULTIMODAL SYSTEM PLAN

Assembling the Activities and Networks in a Region

Detail of a MM System Plan showing Corridor Types and Center Type



CHAPTER 3: MULTIMODAL DISTRICTS & CENTERS



RANGE OF MULTIMODodal CENTERS

DENSITY OF MIXED USE

High

Moderate/High

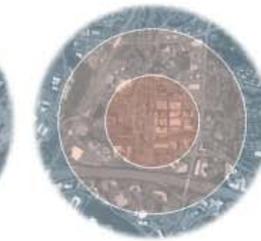
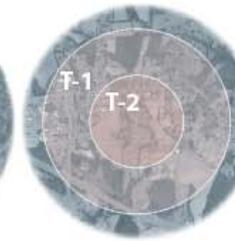
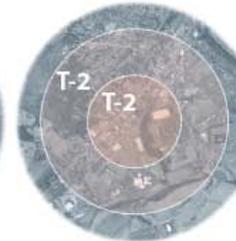
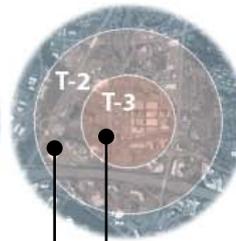
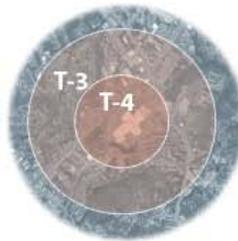
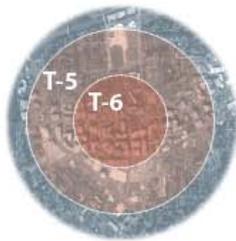
Moderate

Medium/Low

Low

Very Low

Variable



TYPE of CENTER

P-6
URBAN
CORE

P-5
URBAN
CENTER

P-4
LARGE TOWN or
SUBURBAN CENTER

P-3
MEDIUM TOWN or
SUBURBAN CENTER

P-2
SMALL TOWN or
SUBURBAN CENTER

P-1
RURAL or
VILLAGE CENTER

SP
SPECIAL
PURPOSE CENTER

Gross Activity Density (Jobs+People per acre)

70+

34-70

14-34

7-14

2-7

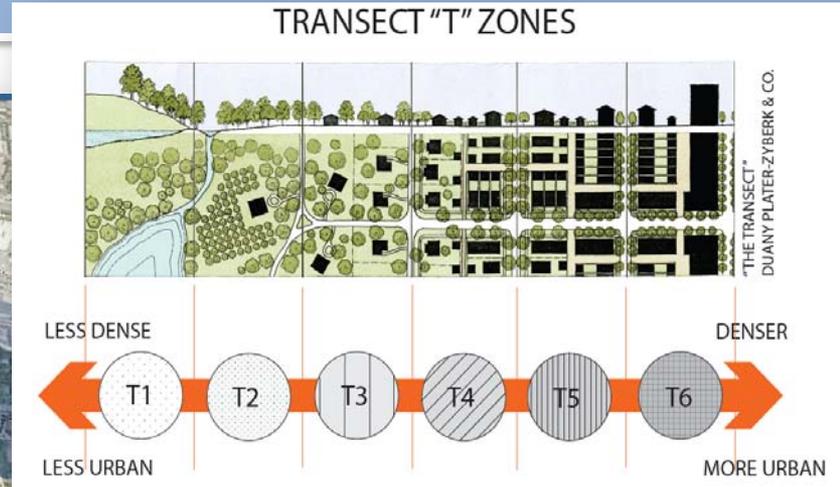
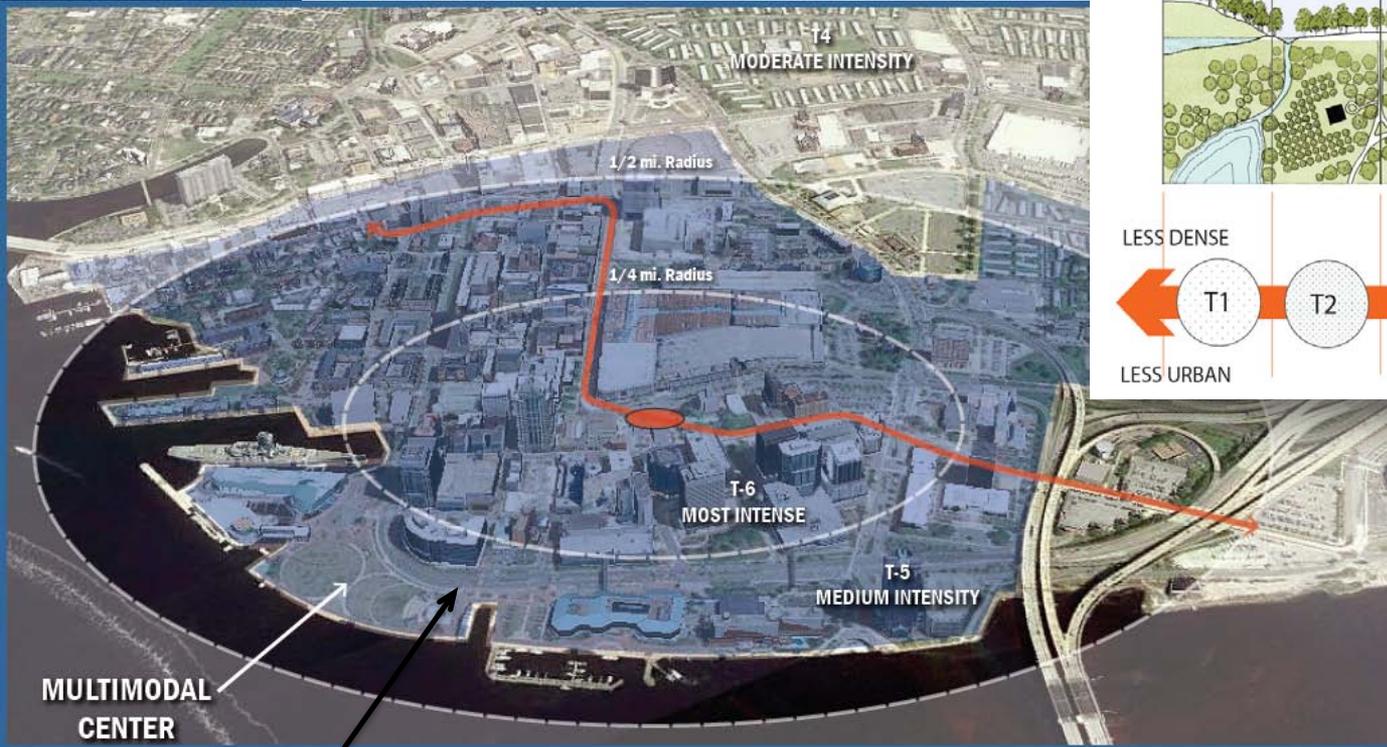
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Variable

There are 7 types of Multimodal Centers based on different intensities from rural to urban

Each Center Type has different densities in the core and edges, based on TRANSECT ZONES

MULTIMODAL CENTERS – DEVELOPMENT INTENSITY



The TRANSECT is a standard way of defining INTENSITY of places. There are 6 TRANSECT ZONES used in these guidelines to define the intensity of Multimodal Centers

The Travelsheds also define intensity of development from center to edge in each Multimodal Center

TRANSECT ZONE INTENSITY			
Transect Zone	Activity Density (Jobs + people/acre)	Gross Development FAR (residential + non-residential)	Net Development FAR (residential + non-residential)
T1	1 or less	0.01 or less	0.02 or less
T2	1 to 10	0.01 to 0.15	0.02 to 0.23
T3	10 to 25	0.15 to 0.37	0.23 to 0.57
T4	25 to 60	0.37 to 0.9	0.57 to 1.38
T5	60 to 100	0.9 to 1.49	1.38 to 2.3
T6	100 or more	1.49 or more	2.3 or more

TRANSECT DENSITY

T6



Ballston, VA



T5



Roanoke, VA



T4



Danville, VA



T3



Blacksburg, VA



T2



Stanardsville, VA



■ Detailed Descriptions of each Transect Zone

TRANSECT	T6
MIXED USE INTENSITY	High
ACTIVITY DENSITY (jobs + HH/ac)	100+/ac
AVG. BLDG. HEIGHT	8+ Stories
TYPICAL MAX BLDG. HEIGHT	20+ Stories
TYPICAL NET FAR	2.3+
TYPICAL NET RESIDENTIAL DENSITY	
SUPPORTED TRANSIT TECHNOLOGY	LRT/Rail

SUPPORTED TRANSIT TECHNOLOGY

	T5
	Moderate/High
(/ac)	60/ac-100/ac
	5-8 Stories
	12 Stories
	1.38 - 2.30
DENSITY	
SUPPORTED TRANSIT TECHNOLOGY	BRT/LRT

TECHNOLOGY

	T4
	Moderate
	25/ac-60/ac
	3-5 Stories
HEIGHT	8 Stories
	0.57-1.38
TYPICAL DENSITY	
	Express Bus

	T3
	Medium-Low
	10/ac-25/ac
	2-4 Stories
	5 Stories
	0.23-0.57
DENSITY	
	Fixed Route Bus

TECHNOLOGY

	T2
	Low
	1/ac-10/ac
	1-2 Stories
HEIGHT	3 Stories
	0.02-0.23
TYPICAL DENSITY	
	Demand Response

TECHNOLOGY

13

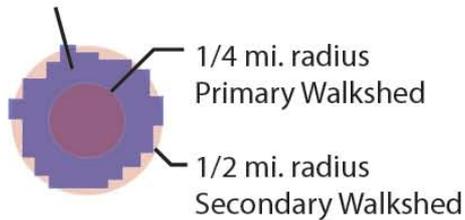
Response

	T1
MIXED USE INTENSITY	Very Low
ACTIVITY DENSITY (jobs + people/ac)	0-1/ac
BLDG. HEIGHT	1 Stories
TYPICAL MAX BLDG. HEIGHT	2 Stories
TYPICAL NET FAR	0-0.02
SUPPORTED TRANSIT TECHNOLOGY	Demand Response

CHAPTER 5: MULTIMODAL CORRIDORS

MULTIMODAL CENTERS & CORRIDORS

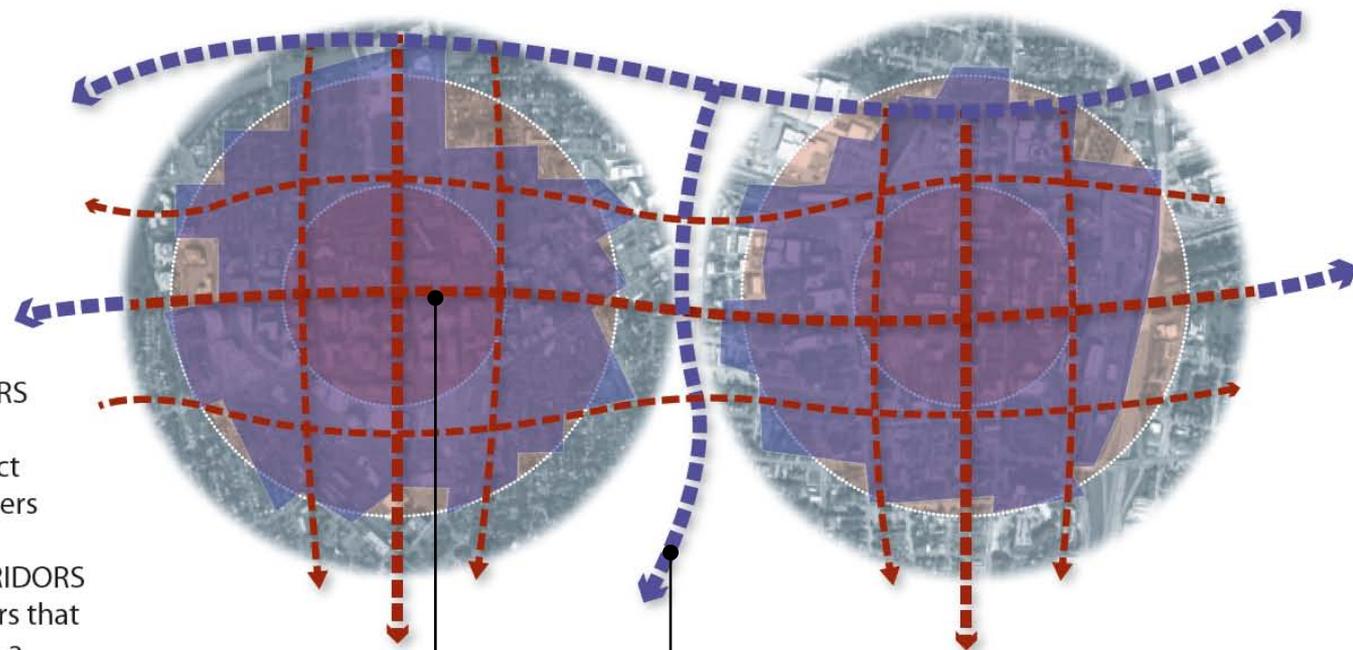
Multimodal Centers



Multimodal Corridors

MULTIMODAL THROUGH CORRIDORS
Moderate speed corridors that connect the Multimodal Centers

PLACEMAKING CORRIDORS
Lower speed corridors that connect areas within a Multimodal Center



Through Corridors connect Multimodal Centers
Placemaking Corridors connect areas within a Multimodal Center

MULTIMODAL THROUGH CORRIDORS & PLACEMAKING CORRIDORS



MULTIMODAL CORRIDOR TYPES

There are 6 basic Corridor Types:

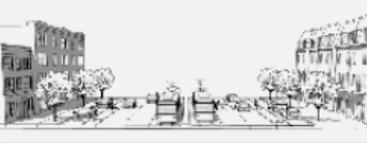
1. Transit Boulevard
2. Boulevard
3. Major Avenue
4. Avenue
5. Local Street
6. MM Through Corridor
7. Special Purpose

Each Corridor Type is modified by up to 6

Transit Boulevard	Boulevard	Major Avenue	Avenue	Local Street	Through Corridor
T6 T5 T4 T3 T2	T6 T5 T4 T3 T2	T6 T5 T4 T3 T2 T1			

MULTIMODAL CORRIDOR TYPES

Placemaking Corridor



Transit Boulevard



Boulevard



Major Avenue



Avenue



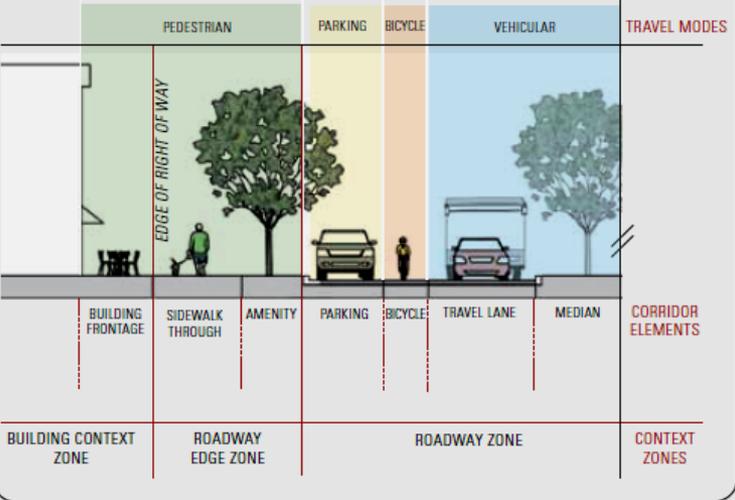
Local Street

Through Corridor



Multimodal Through Corridor

Each Corridor Type is modified by the Transect Zone it passes through.



Multimodal Corridors are divided into Context Zones. Each element of the corridor relates to a Travel Mode.



| A | B | C | D | E | F | G | Design speed: 30-35 mph

Optimal Values from the Corridor Matrix

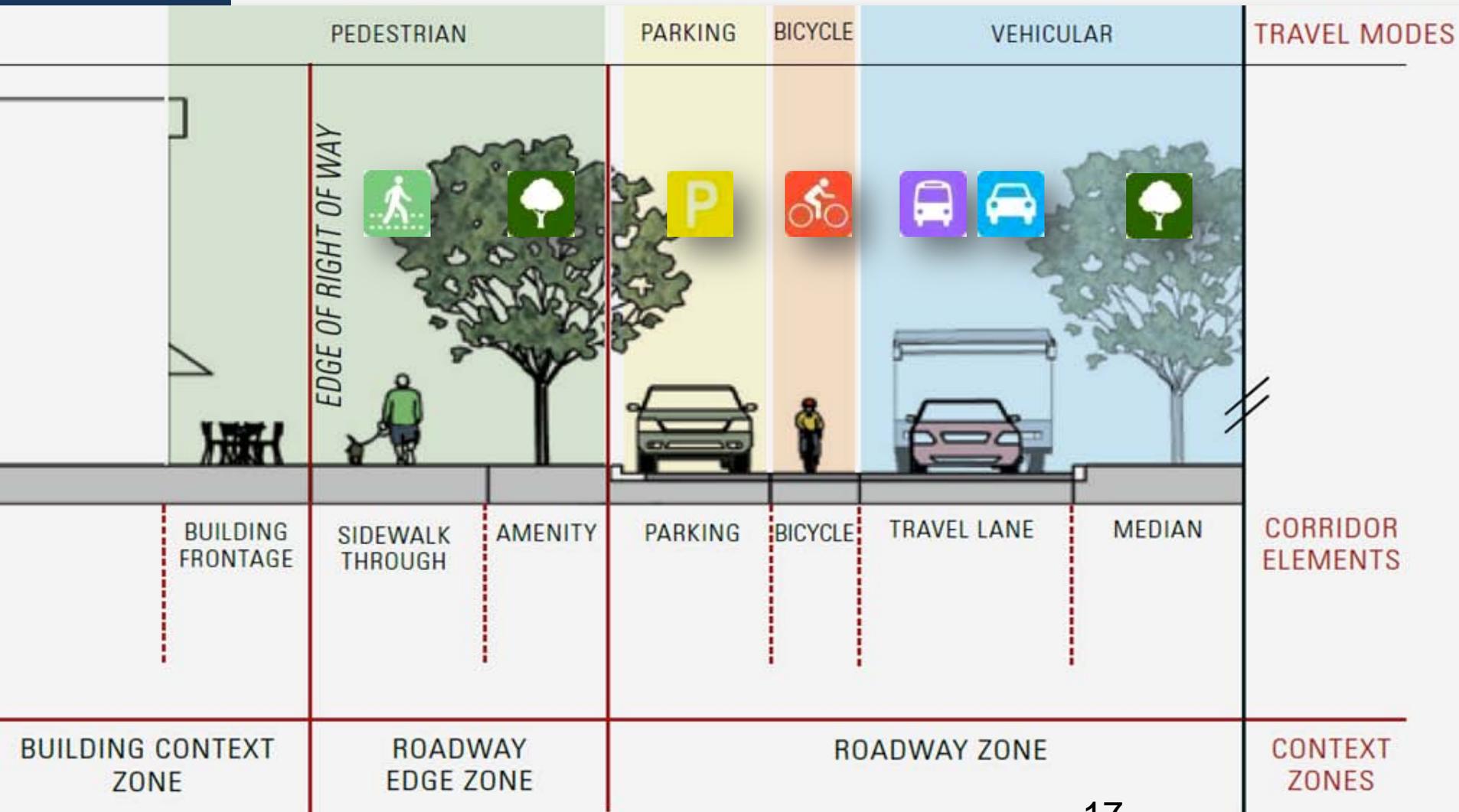
Building Frontage	A	5'
Sidewalk Through	B	10'
Amenity	C	8'
Parking	D	8'
Bicycle	E	5'
Travel Lanes	F	12'
Transit Median	G	Transit*

Sample T6 Transit Boulevard

*Varies based on transit median design

UNDERSTANDING MODAL EMPHASIS

Each "mode" has a portion of the corridor cross section allocated to it:



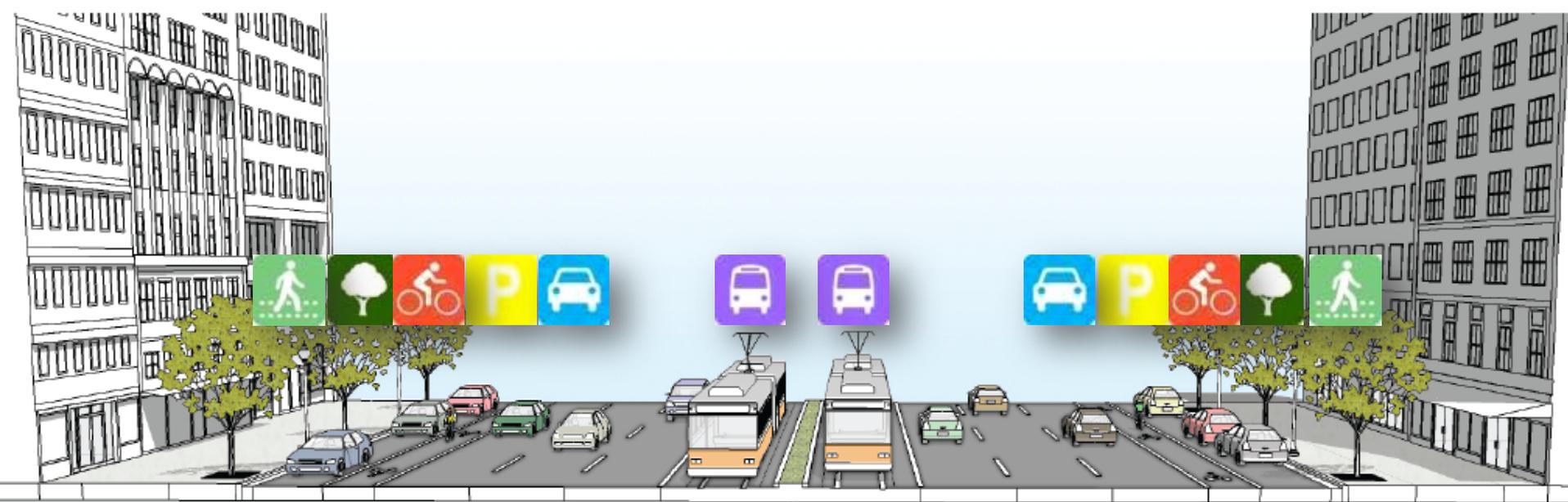
DESIGNING USING MODAL EMPHASIS

HOW CORRIDOR ELEMENTS ARE USED IN MODAL EMPHASIS

	MODAL EMPHASIS	PRIMARY ELEMENTS	SECONDARY ELEMENTS	CONTRIBUTING ELEMENTS	NON-CONTRIBUTING ELEMENTS
	Pedestrian	B-Sidewalk Through Element	A-Building Frontage Element C-Amenity Element	D- Parking Element Buidling Element	E-Bicycle Element F-Travel Lane Element G-MedianElement
	Bicycle	E-Bicycle Element	N/A	C-Amenity Element	A-Building Frontage Element B-Sidewalk Through Element D-Parking Element F-Travel Lane Element G-MedianElement
	Transit	F-Travel Lane Element	B-Sidewalk Through Element	A-Building Frontage Element C-Amenity Element E-Bicycle Element	D-Parking Element G-MedianElement
	Green	C-Amenity Element	G-Median Element	A-Building Frontage Element	B-Sidewalk Through Element D-Parking Element E-Bicycle Element F-Travel Lane Element
	Parking	D-Parking Element	N/A	E-Bicycle Element	A-Building Frontage Element B-Sidewalk Through Element C-Amenity Element F-Travel Lane Element E-MedianElement

PROTOTYPE CROSS SECTION

The "Prototype" corridor cross sections optimize the Elements for each mode



T-6 Transit Boulevard

The "Optimum" standard is used for each Corridor Element from the Corridor Matrix

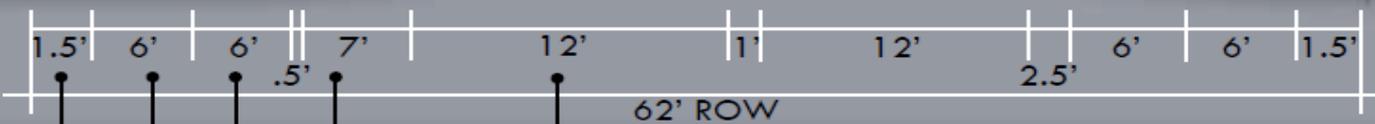
BUILDING THE PROPOSED CROSS SECTION

Modal Emphasis = Transit + Pedestrian



Avenue

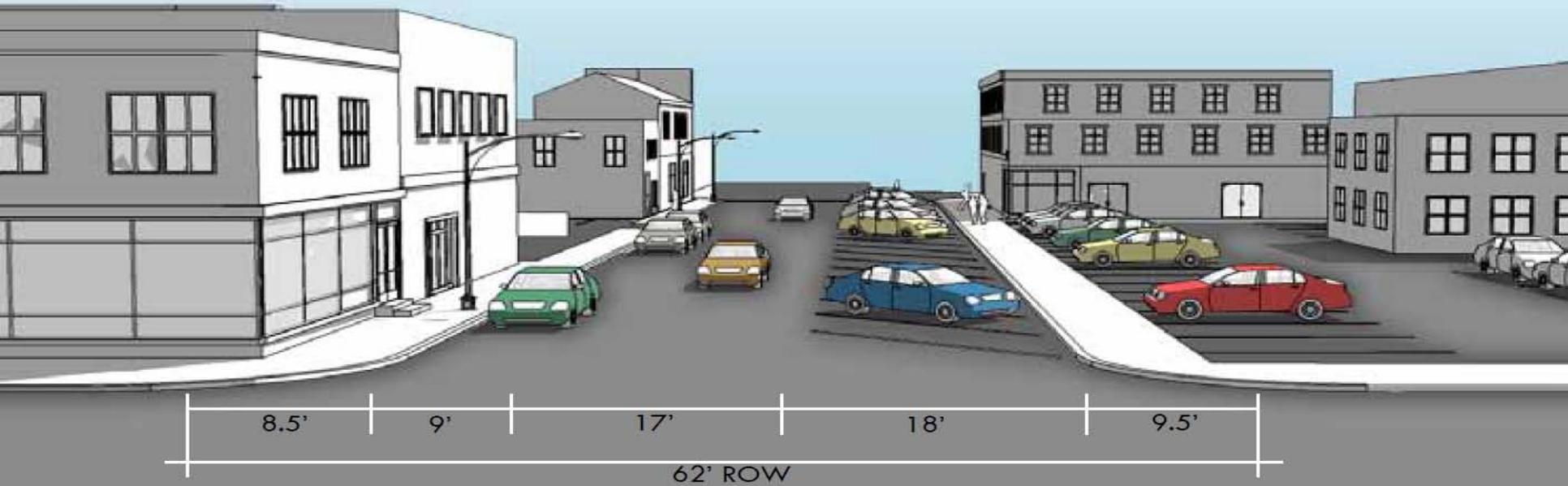
T3



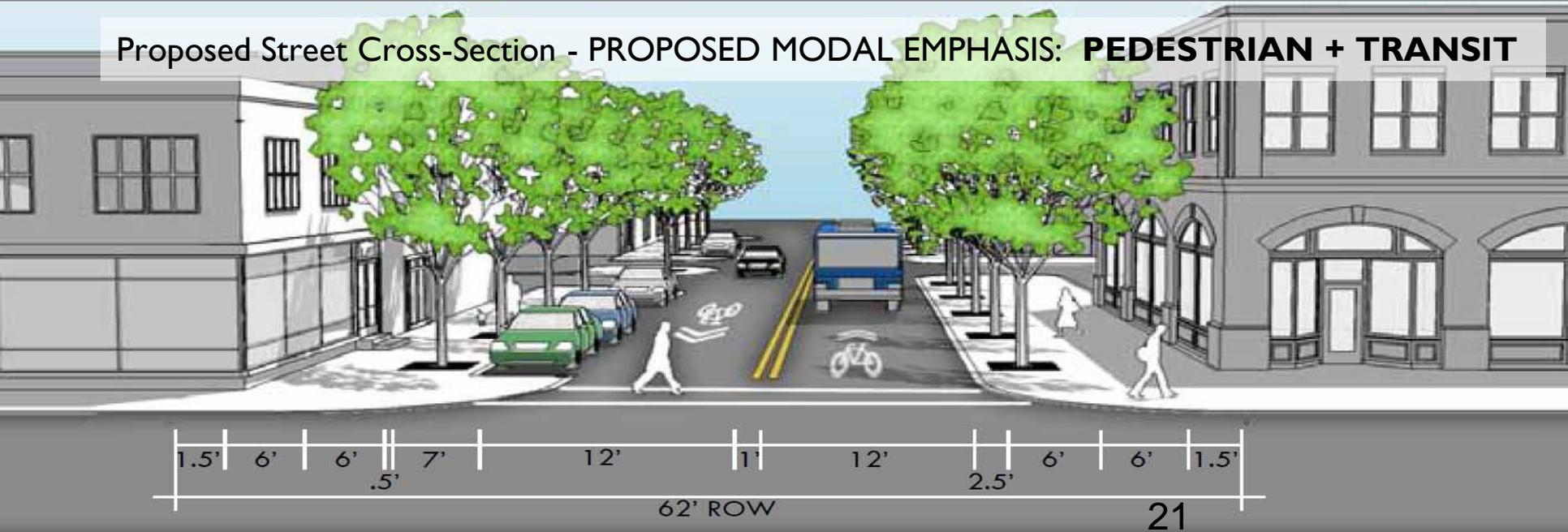
	BUILDING FRONTAGE ELEMENT	SIDEWALK THROUGH ELEMENT	AMENITY ELEMENT	PARKING ELEMENT	BICYCLE ELEMENT	TRAVEL LANE ELEMENT	MEDIAN ELEMENT
Optimal	10 ft	6 ft	7 ft	7 ft both sides	4 ft bike lane	12 ft	18 ft
Minimum	1.5 ft	5 ft	6 ft	None	Shared Lane (Sharrows)	11 ft	None
Standard Used	1.5 ft	6 ft	6 ft	7 ft one side	Shared Lane (Sharrows)	12 ft	None

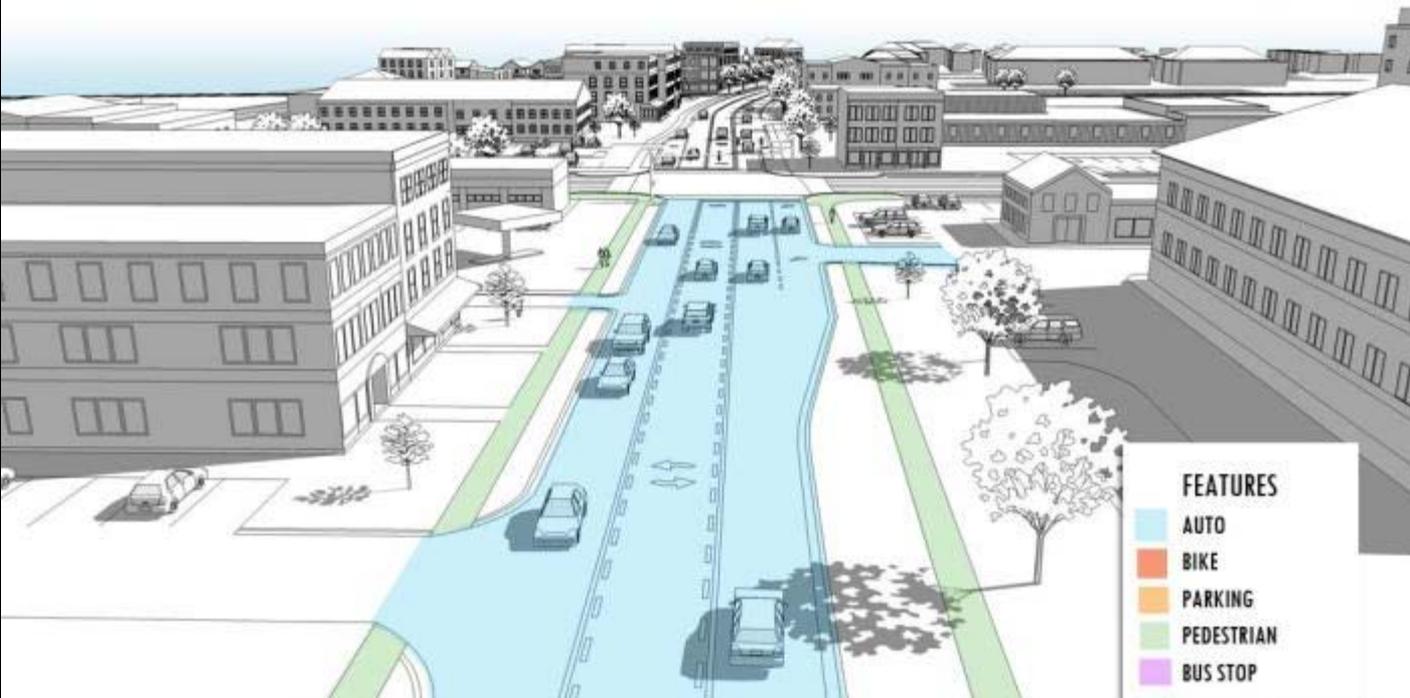
APPLYING MODAL EMPHASIS IN CONSTRAINED ROW SITUATIONS

Existing Street Cross-Section



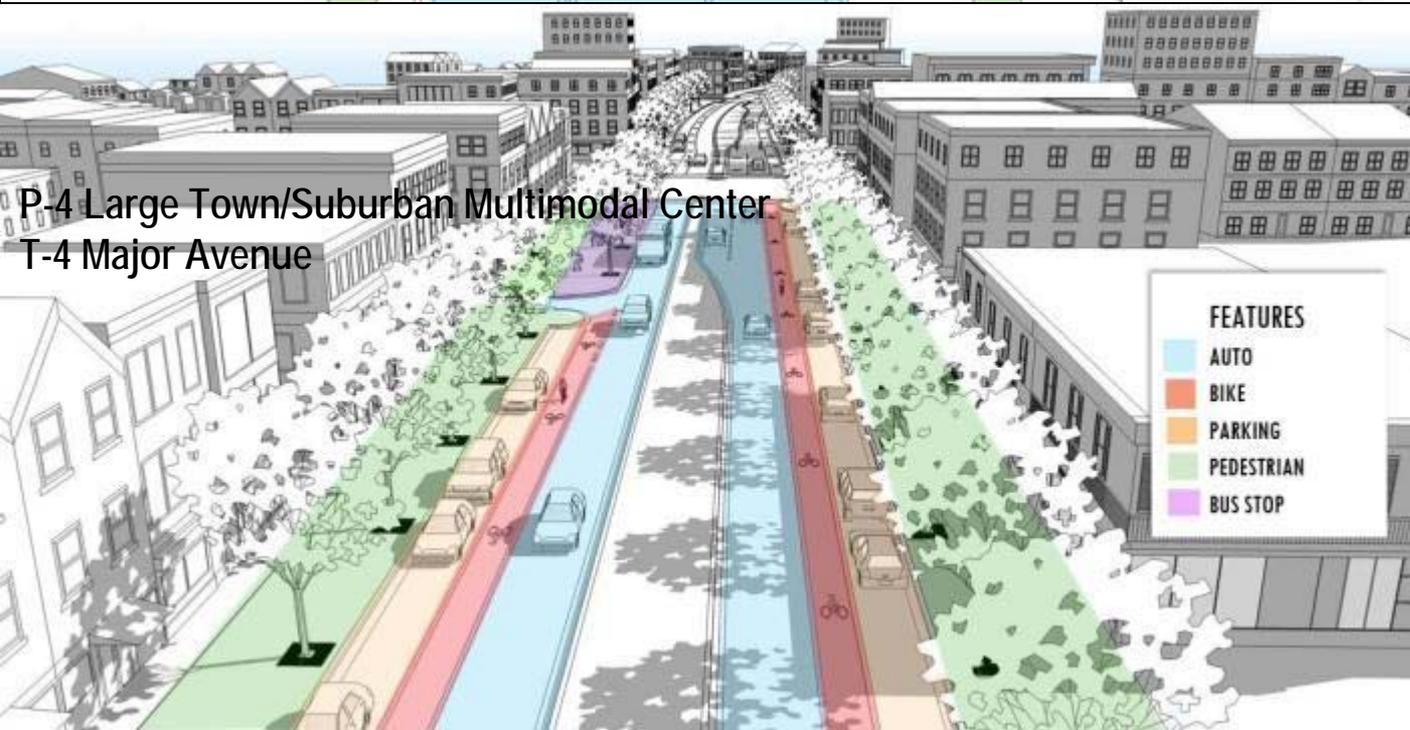
Proposed Street Cross-Section - PROPOSED MODAL EMPHASIS: **PEDESTRIAN + TRANSIT**





Evolving Places & Corridors:

- Existing corridor in an area planned to be a future Multimodal center



- Same corridor in future:

Accommodates more trips, modes & users

Enhances economic vitality & quality of life

CHAPTER 6: DEVELOPING OVER TIME



MULTIMODAL SYSTEM

Design Guidelines

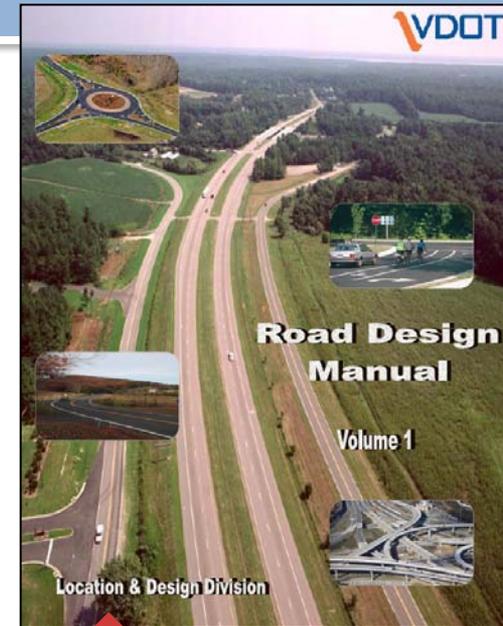


VIRGINIA DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION

IMPLEMENTATION

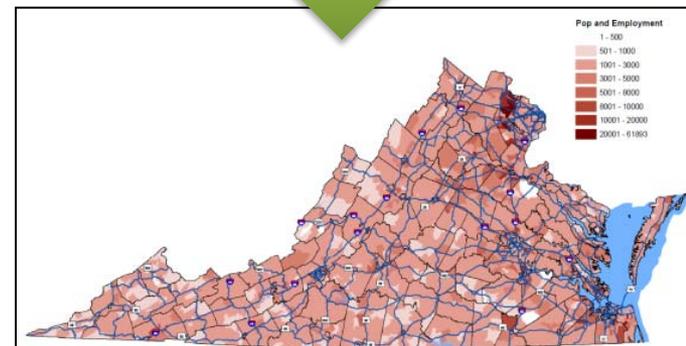
IMPLEMENTING THE GUIDELINES

- VDOT owns/maintains majority of roads in Virginia
- Recent legislation allowed localities to work w/VDOT to adopt new urban roadway standards
- 160 localities in Virginia – challenge if each locality develops its own urban standards!



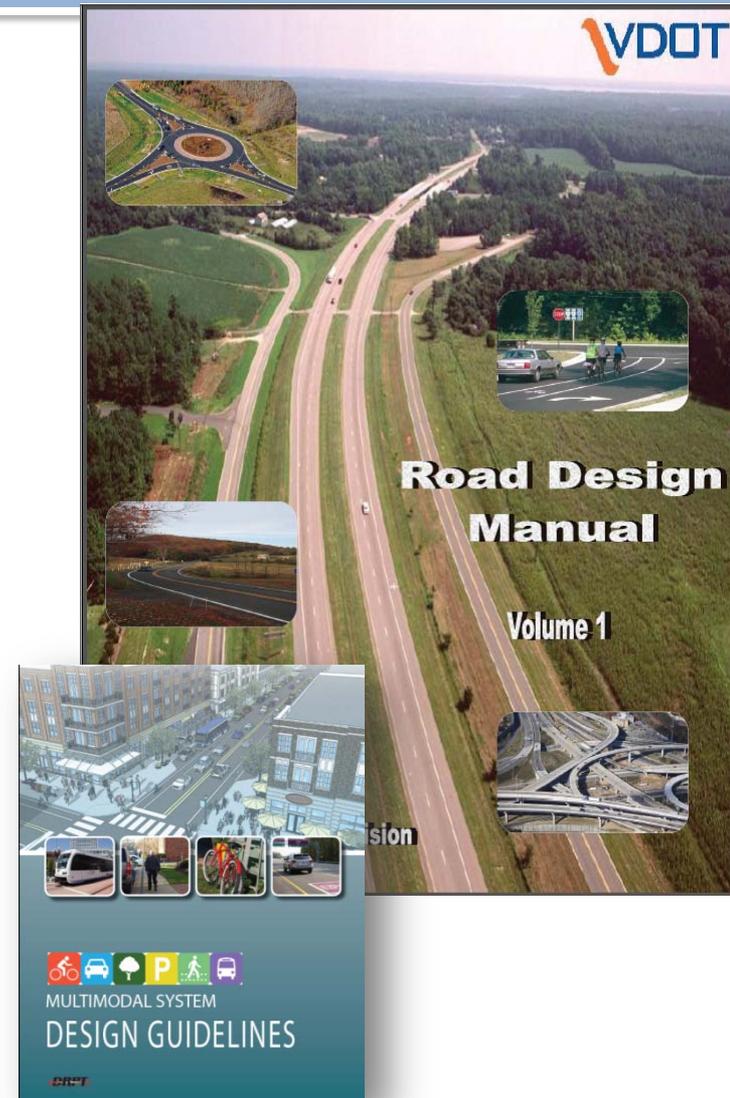
State

Localities



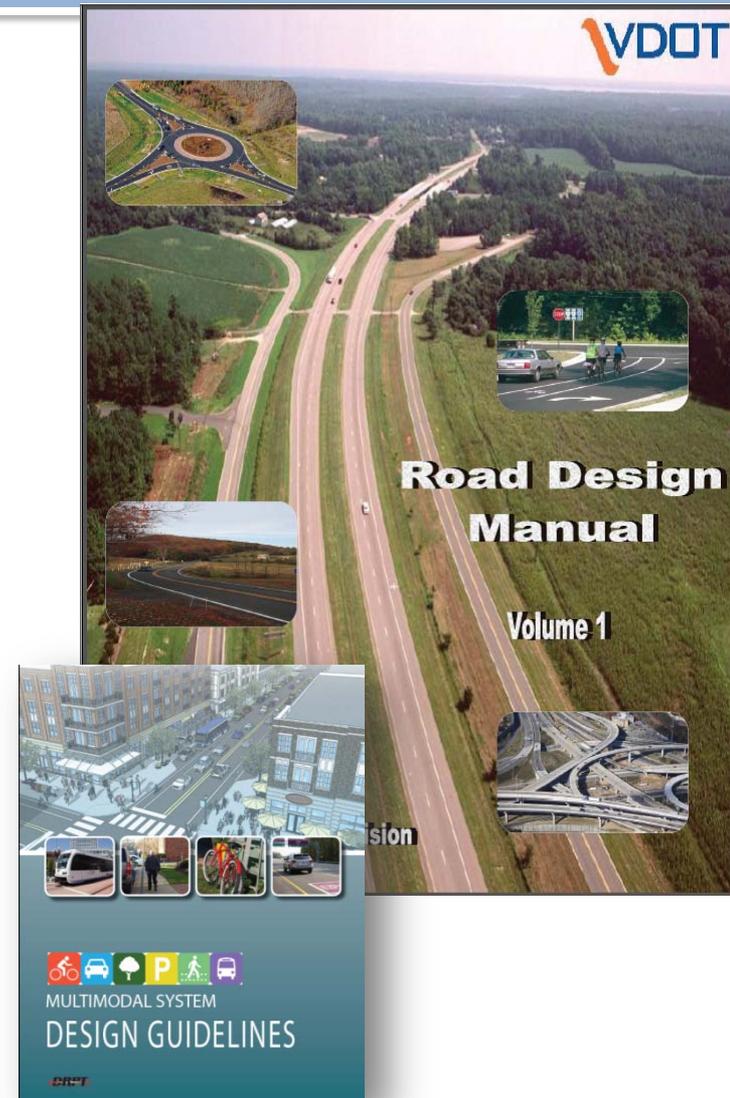
IMPLEMENTING THE GUIDELINES

- DRPT Guidelines allow a common language and set of best practices
- Guidelines allow VDOT and DRPT to have more unified approach to Multimodal Planning
- Adoption into Road Design Manual anticipated in Fall 2013.



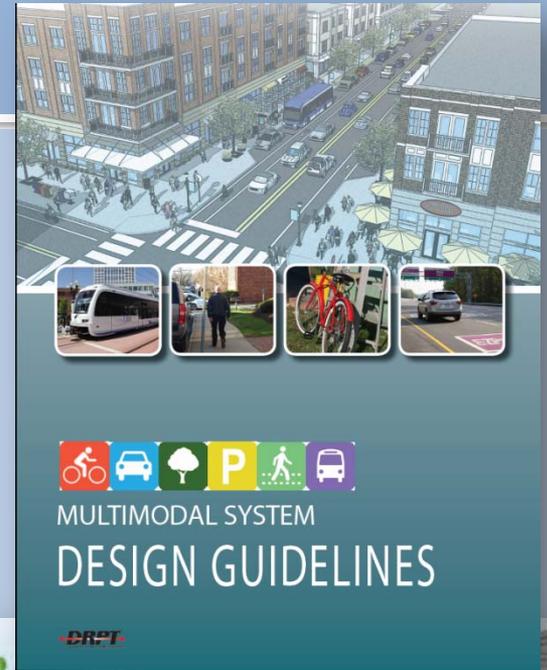
HOW WILL THIS WORK?

- The DRPT Multimodal System Design Guidelines have been incorporated into the VDOT Road Design Manual (RDM) as the *Statewide Urban and Mixed-Use Urban Center Standards* with a “link” to the DRPT website
- DRPT owns the Guidelines and will maintain them
- Locality responsible for implementation



<http://www.drpt.virginia.gov/activities/MultimodalSystemDesignGuidelines.aspx>

- Full Guidelines
- Executive Summary
- 3 short Web Movies
- Guide for Preparing a Multimodal System Plan



Thank You!
Questions?