



# TRANSIT ORIENTED DEVELOPMENT

## DESIGN GUIDELINES

### Florida Department of Transportation

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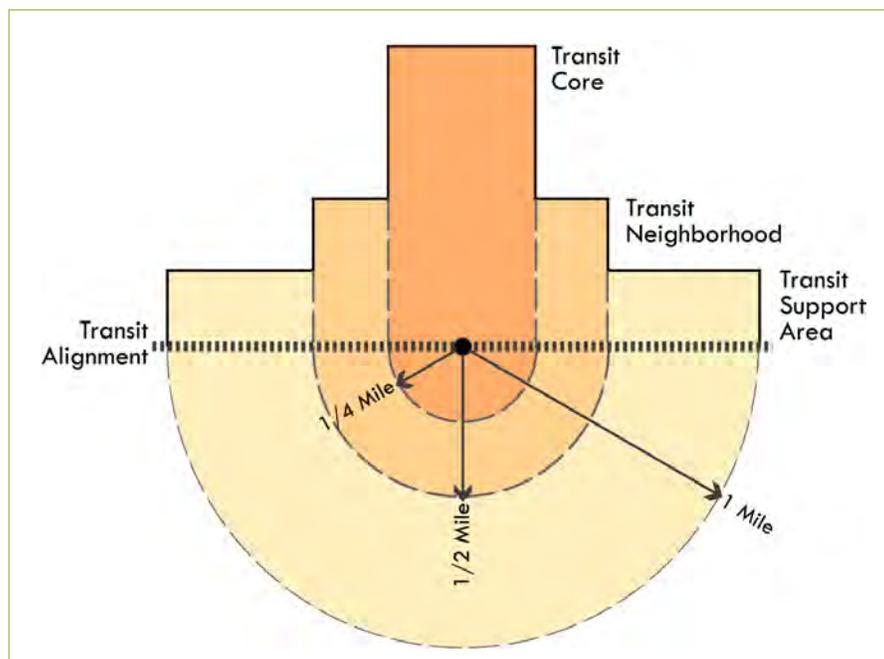
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# Introduction

The Florida Department of Transportation (FDOT), in partnership with the Florida Department of Community Affairs (DCA), is developing Transit Oriented Development (TOD) Design Guidelines to provide general parameters and strategies to local governments and agencies to promote and implement 'transit ready' development patterns. Focusing land use and urban design policies towards transit will help to optimize future transit investments and potential transit ridership.

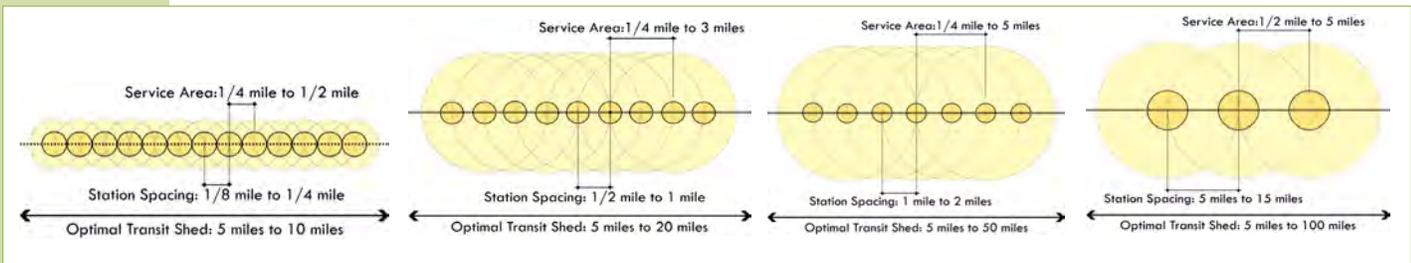
FDOT is holding a series of workshops throughout the state to vet the TOD Design Guidelines with local governments, agencies, and the public. Based on this outreach process, the resulting guidelines are intended to provide guidance to local governments in refining their Comprehensive Plans and Land Development Codes to support various transit technologies and TOD.



TODs are moderate to high density, mixed-use, and walkable developments designed to facilitate transit and accommodate multiple modes of transportation. For the purposes of these guidelines, TODs are defined generally as the area encompassing a radius of one-fourth to one-half miles around a transit station, a distance most pedestrians are willing to walk. It incorporates features such as interconnected street networks, bicycle and pedestrian facilities, and street-oriented site design, to encourage transit ridership. This form of development optimizes use of the transit network and maximizes pedestrian accessibility. Successful TOD provides a mix of land uses and densities that create a convenient, interesting and vibrant community.

TODs are often planned as single station areas or development sites. However in creating effective TOD policies and guidelines, it is important to plan for TOD within the context of the existing or future transit system as a whole. Depending upon the transit technology anticipated (e.g. fixed route bus, bus rapid transit, light rail, or commuter rail), the density and mixture of uses may vary from station area to station area. The development patterns may also vary in response to transit station area spacing. For example, if a high frequency light rail system is being planned with multiple stops located every one mile along a single corridor, the mixture of uses and development intensity may

vary from station to station along that corridor. This type of system would lend itself to planning for transit corridors or transit districts. Whereas if a TOD is being planned along a commuter rail line with stations located five to ten miles apart, the development patterns within the one-half mile radius of each station area are likely to be the focus. Regardless of the transit system planned, these guidelines are intended to establish some baseline metrics for creating and evaluating TODs, but also should be used within the context of planning for a larger transit system.



### Benefits of Transit Oriented Development

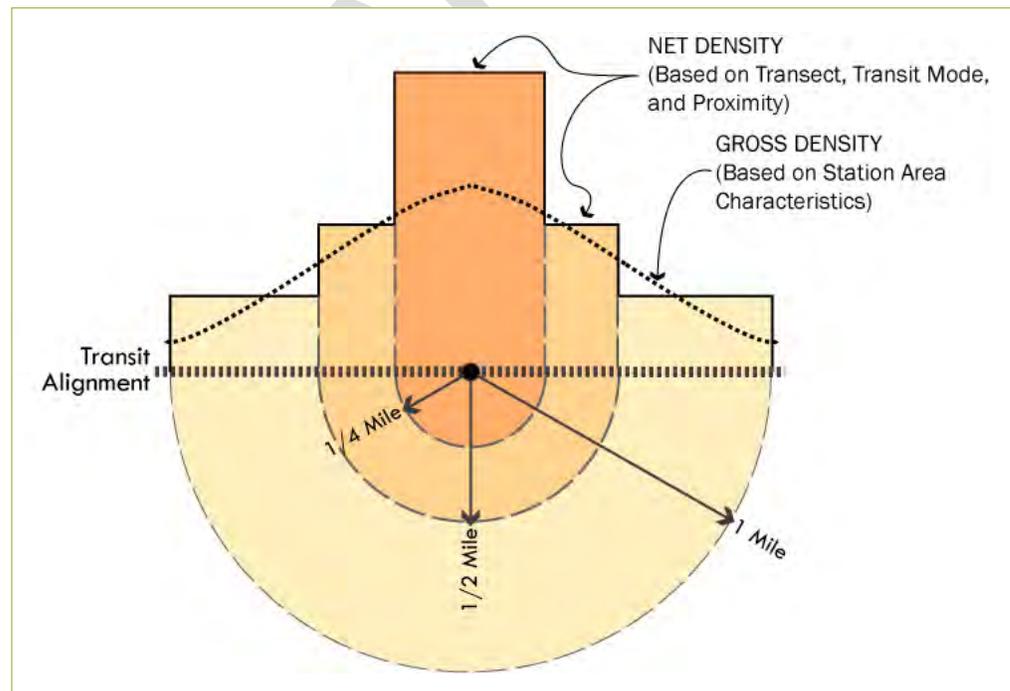
Benefits of TOD go beyond maximizing transit ridership potential. TODs by design are pedestrian friendly, less land consumptive and increase accessibility through proximity. Multiple destinations are often located within close proximity to one another, thereby adding convenience, time and cost savings. Higher density/intensity developments also provide wider housing choices and often support housing affordability. Businesses located in TODs can optimize the use of land and building space while at the same time increase accessibility to their clients and workforce, thereby resulting in more efficient operating costs.

Mixed use, compact developments create opportunities to live, work and shop in close proximity and ultimately promote greater transportation choices. Creating strong TOD patterns can jointly benefit both the transportation disadvantaged populations through increasing accessibility and the general population through reduced household costs for auto ownership and operation. TOD's create strong jobs to housing balances, decrease dependence on single occupant auto trips and reduce parking requirements, all resulting in reductions to area-wide vehicle miles traveled (VMT) which supports energy conservation. Public transit combined with reduced private automobile usage reduces the consumption of fossil fuels and potential emission of greenhouse gases, balanced distribution of jobs and housing. The added convenience, accessibility, and amenity resulting from close proximity to a diversity of uses results in travel cost and time savings for residents and employees. Access to transit and other modes of transportation results in increased mobility, especially for the transportation disadvantaged population, and reduced household costs for auto ownership and operation. Transit provides access to a larger employment pool resulting in higher productivity for businesses. Decreased dependence on private automobiles reduces parking requirements and enhances development opportunities.

For local governments, TODs can serve as a funding mechanism for transit/transportation plans and multi-modal transportation improvements by leveraging public-private partnerships. By optimizing transit ridership through appropriate land use strategies, TODs facilitate the implementation of transit, especially rail transit. TOD reduces the incentive for sprawling development patterns resulting in less land consumption and preservation of natural resources. Public transit combined with reduced private automobile usage reduces the consumption of fossil fuels and emission of greenhouse gases.

### Design Guidelines Framework

The TOD Design Guidelines framework identifies physical attributes, functional characteristics and design character within the one-half and one-fourth mile radius of transit stations. Station areas are associated with specific place types based on context zone (location on an urban-rural continuum). For the purposes of this draft framework, the metrics described for each zone address the minimum intensities, densities and mixture of uses most desirable within each station area. While net densities are used to describe building development intensity relative to the site area, gross densities are calculated based on the total station area including roads, open space, and other non-buildable land. These densities and intensities represent the targets within the one-fourth mile radius, however it is to be expected that the densities are likely to be highest immediately adjacent to the station.



The framework describes development standards in station areas are described for a range of variables broadly classified into the following categories:

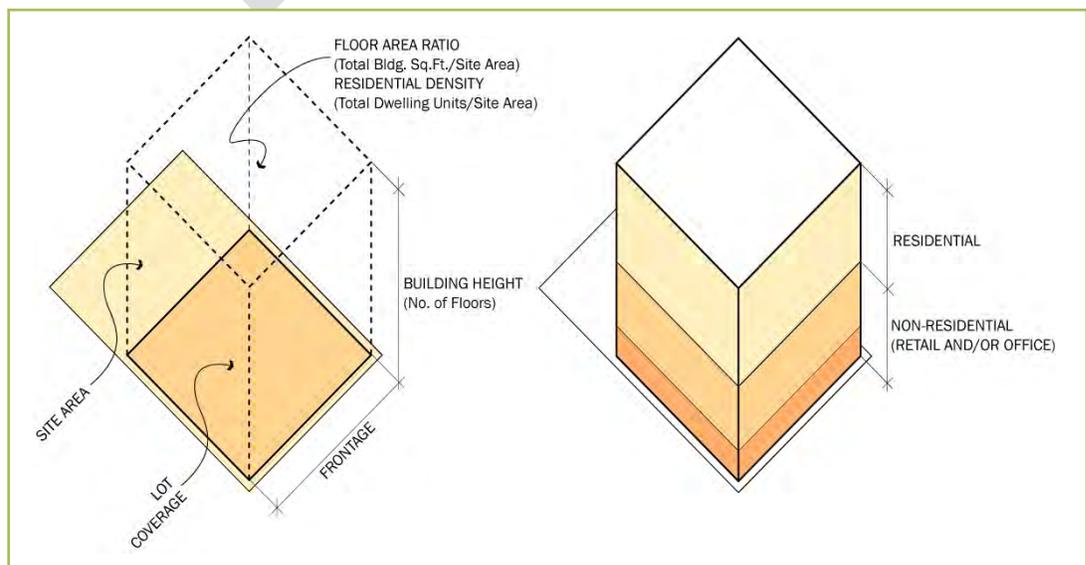
- **Intensity/Density of Use** – floor area ratio, residential density, building height, lot coverage, street frontage
- **Parking** – residential parking, office/retail parking, surface parking, shared parking, park and ride facilities
- **Mixed Use and Diversity** – hours of significant activity, jobs/housing ratio, residential/non-residential mix of uses
- **Street Network** – grid density, block size

Development and potential ridership in station areas is measured using the following gross density indicators:

- Residential Density – households or dwelling units per acre
- Population Density – persons per acre (based on 2.49 persons per household or dwelling unit)
- Employment Density – jobs per acre (based on FAR and mix of uses)

Station Area development standards and all assumptions applied to the standards are tabulated in the Design Guidelines Matrix.

The station area development standards are also summarized and illustrated based on context zones as ranges. The variables contained within these guidelines are consistent with the Federal Transit Administration's standards for assessing land uses that are supportive of major transit capital investment. Proposed transit projects that exhibit land use characteristics within the ranges described within these guidelines would receive favorable consideration for the overall land use rating.



The TOD principles are to be used as a guide to aid local governments and public agencies in planning for and implementing transit. These guidelines are intended to be used in partnership with the FDOT to assist in promoting multimodal system planning and managing congestion on state roadways, especially on the Strategic Intermodal System (SIS). Implementation of the principles contained within these guidelines can assist local governments to comply with Florida's Growth Management Act of 2005 requiring the mitigation of impacts to the SIS.

This document provides the initial framework necessary to facilitate discussion at workshops geared towards refining TOD guidelines for ultimate use by local governments and other public agencies. Based on the input gained at these work sessions, the draft TOD framework will be refined, and the context, purpose and use of the guidelines will be defined within a guidance document for distribution and use by local governments and agencies. This final work product is intended to address the following:

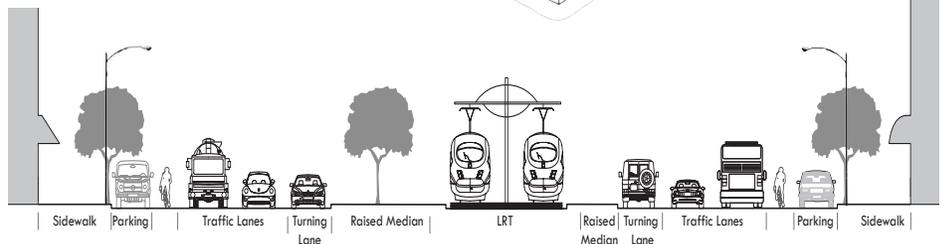
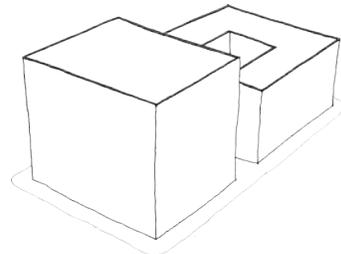
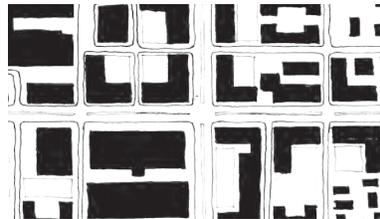
- More detailed breakdown of development characteristics at the one-fourth and one-half mile scales specific to differing transit technologies and existing community types including considerations of mixture of uses, parking, stormwater retention and open space requirements
- Corridor-wide and district wide targets for jobs/housing balances, ridership potential and station spacing based on varying transit technologies
- Implementation discussion addressing use of the guidelines for local governments, transit system planners, site reviewers and other potential user groups.

# T5/T6

	T6/T5
<b>Gross Density Indicators</b>	
Residential Density - Dwelling Units per Acre	> 35 Dwelling Units/Acre
Population Density - Persons per Acre	> 85 Persons/Acre
Employment Density - Employees per Acre	> 500 Jobs/Acre
<b>Intensity/Density of Use</b>	
Minimum Floor Area Ratio (FAR)	> 10.0
Minimum Net Residential Density	> 55 Dwelling Units/Acre
Minimum Building Height	12 or more Stories
Minimum Lot Coverage	80%
Minimum Street Frontage	100% primary, 80% secondary
<b>Parking</b>	
Maximum Residential Parking (Spaces per Unit)	1 space/unit
Maximum Office/Retail Parking (Spaces per 1,000 square feet)	1 spaces/1,000 sq.ft.
Maximum Surface Parking (% of Total Spaces)	10%
Shared vs. Single-Use Parking Facility	Shared
Park & Ride and other considerations	No
<b>Mixed Use &amp; Diversity</b>	
Minimum Hours of 'Significant' Activity	18 Hours
Average Jobs/Housing Ratio	10 Jobs : 1 Dwelling Unit
Mix of Uses (% Residential, % Non-Residential)	20% Residential and 80% Non-Residential
<b>Street Network</b>	
Grid Density (Polygons per Square Mile.) - Bicycle, Pedestrian and Street Network	Min. 150
Average Block Size (in Feet)	200' x 400'



Source: *Visualizing Density*. Julie Campoli, Alex S. MacLean

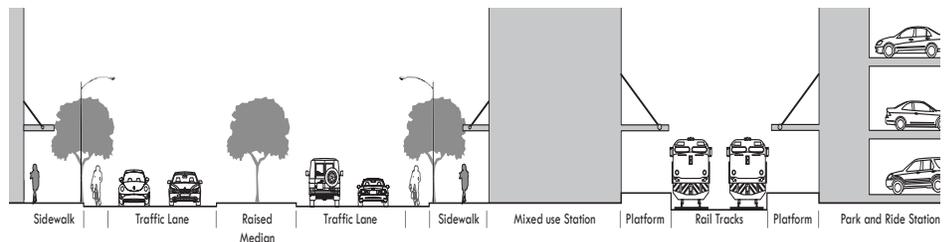
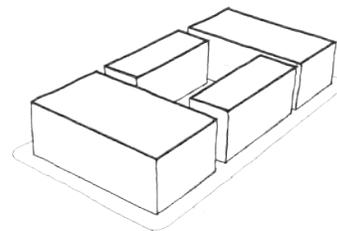
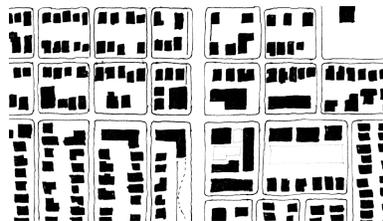


# T4

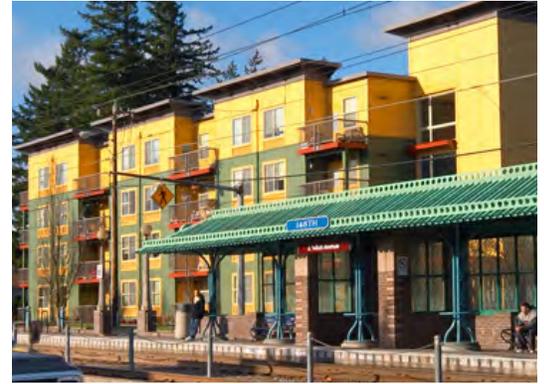
	T4
<b>Gross Density Indicators</b>	
Residential Density - Dwelling Units per Acre	15 to 35 Dwelling Units/Acre
Population Density - Persons per Acre	45 to 85 Persons/Acre
Employment Density - Employees per Acre	75 to 150 Jobs/Acre
<b>Intensity/Density of Use</b>	
Minimum Floor Area Ratio (FAR)	3.0 - 4.0
Minimum Net Residential Density	45 to 60 Dwelling Units/Acre
Minimum Building Height	4 or more Stories
Minimum Lot Coverage	70%
Minimum Street Frontage	70%
<b>Parking</b>	
Maximum Residential Parking (Spaces per Unit)	1.5 Spaces/Unit
Maximum Office/Retail Parking (Spaces per 1,000 square feet)	2 spaces/1,000 sq.ft.
Maximum Surface Parking (% of Total Spaces)	15%
Shared vs. Single-Use Parking Facility	Shared
Park & Ride and other considerations	No
<b>Mixed Use &amp; Diversity</b>	
Minimum Hours of 'Significant' Activity	16 Hours
Average Jobs/Housing Ratio	5 Jobs : 1 Dwelling Unit
Mix of Uses (% Residential, % Non-Residential)	50% Residential and 50% Non-Residential
<b>Street Network</b>	
Grid Density (Polygons per Square Mile.) - Bicycle, Pedestrian and Street Network	Min. 75
Average Block Size (in Feet)	200' x 600'



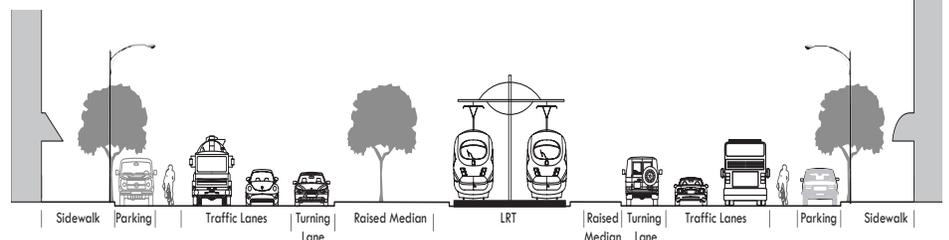
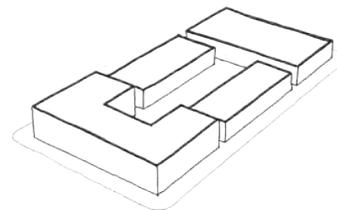
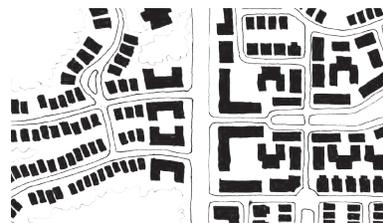
Source: *Visualizing Density*. Julie Campoli, Alex S. MacLean



	T3
<b>Gross Density Indicators</b>	
Residential Density - Dwelling Units per Acre	5 to 30 Dwelling Units/Acre
Population Density - Persons per Acre	15 to 80 Persons/Acre
Employment Density - Employees per Acre	5 to 40 Jobs/Acre
<b>Intensity/Density of Use</b>	
Minimum Floor Area Ratio (FAR)	2.0 - 3.0
Minimum Net Residential Density	35 to 60 Dwelling Units/Acre
Minimum Building Height	3 or more Stories
Minimum Lot Coverage	80%
Minimum Street Frontage	80%
<b>Parking</b>	
Maximum Residential Parking (Spaces per Unit)	2 Spaces/Unit
Maximum Office/Retail Parking (Spaces per 1,000 square feet)	3 spaces/1,000 sq.ft.
Maximum Surface Parking (% of Total Spaces)	20%
Shared vs. Single-Use Parking Facility	Shared
Park & Ride and other considerations	Yes
<b>Mixed Use &amp; Diversity</b>	
Minimum Hours of 'Significant' Activity	14 Hours
Average Jobs/Housing Ratio	1 Jobs : 1 Dwelling Unit
Mix of Uses (% Residential, % Non-Residential)	70% Residential and 30% Non-Residential
<b>Street Network</b>	
Grid Density (Polygons per Square Mile.) - Bicycle, Pedestrian and Street Network	Min. 50
Average Block Size (in Feet)	200' x 800'



Source: *Visualizing Density*. Julie Campoli, Alex S. MacLean

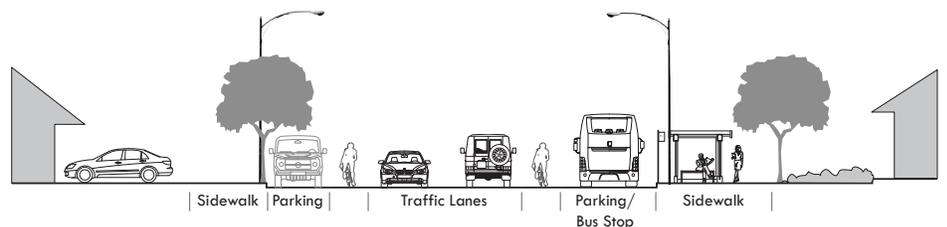
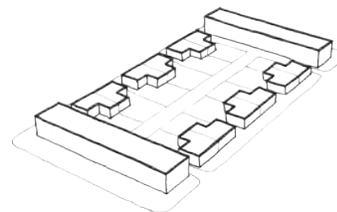


# T2

	T2
<b>Gross Density Indicators</b>	
Residential Density - Dwelling Units per Acre	5 to 10 Dwelling Units/Acre
Population Density - Persons per Acre	10 to 25 Persons/Acre
Employment Density - Employees per Acre	2 to 5 Jobs/Acre
<b>Intensity/Density of Use</b>	
Minimum Floor Area Ratio (FAR)	.5 - 1.0
Minimum Net Residential Density	10 to 20 Dwelling Units/Acre
Minimum Building Height	1 or more Stories
Minimum Lot Coverage	50%
Minimum Street Frontage	70%
<b>Parking</b>	
Maximum Residential Parking (Spaces per Unit)	2 Spaces/Unit
Maximum Office/Retail Parking (Spaces per 1,000 square feet)	4 spaces/1,000 sq.ft.
Maximum Surface Parking (% of Total Spaces)	40%
Shared vs. Single-Use Parking Facility	N/A
Park & Ride and other considerations	Yes
<b>Mixed Use &amp; Diversity</b>	
Minimum Hours of 'Significant' Activity	N/A
Average Jobs/Housing Ratio	1 Job : 2 Dwelling Units
Mix of Uses (% Residential, % Non-Residential)	90% Residential & 10% Non-Residential
<b>Street Network</b>	
Grid Density (Polygons per Square Mile.) - Bicycle, Pedestrian and Street Network	N/A
Average Block Size (in Feet)	N/A



Source: *Visualizing Density*. Julie Campoli, Alex S. MacLean



# Transit Oriented Place Types



Transects	T6, T5	T4	T3	T2
<b>Transit Modes</b>				
<b>Special</b> Automated Fixed Guideway Water-Bourne Ferry Streetcar/Trolley	○	○		
<b>Light Rail Transit</b>	●	●	○	
<b>Bus Rapid Transit</b>	●	●	○	
<b>Heavy Rail Transit</b> High Speed Rail Commuter Rail	●	●	○	
<b>Local Bus</b> Fixed Route Bus Demand Response Bus/Shuttle	●	●	●	○
<b>Express Bus</b> Express Route Bus	●	●	●	●

## Legend

○ Feasible under certain conditions

● Feasible

Design Guidelines Matrix Column No.

1 thru 9



# Design Guidelines Matrix

	1	2	3	4	5	6	7	8	9	Remarks
	T6/T5	T6/T5	T4	T4	T3	T3	T3	T3	T2/T1	
	Commuter Rail/LRT/BRT	Local Bus Hub	Commuter Rail/LRT/BRT	Local Bus Hub	LRT/BRT	Commuter Rail	Local Bus Hub	Express Bus	Express Bus	See Note B
<b>Gross Density</b>										
Residential Density - Dwelling Units per Acre	> 35 Dwelling Units/Acre	15 to 20 Dwelling Units/Acre	25 to 35 Dwelling Units/Acre	15 to 25 Dwelling Units/Acre	20 to 25 Dwelling Units/Acre	20 to 30 Dwelling Units/Acre	10 to 20 Dwelling Units/Acre	5 to 10 Dwelling Units/Acre	5 to 10 Dwelling Units/Acre	See Notes A, C, F
Population Density - Persons per Acre	> 85 Persons/Acre	40 to 50 Persons/Acre	65 to 85 Persons/Acre	45 to 65 Persons/Acre	45 to 70 Persons/Acre	50 to 80 Persons/Acre	25 to 50 Persons/Acre	15 to 30 Persons/Acre	10 to 25 Persons/Acre	See Notes A, C, F
Employment Density - Employees per Acre	> 500 Jobs/Acre	150 to 200 Jobs/Acre	100 to 150 Jobs/Acre	75 to 100 Jobs/Acre	30 to 40 Jobs/Acre	20 to 30 Jobs/Acre	10 to 25 Jobs/Acre	2 to 5 Jobs/Acre	2 to 5 Jobs/Acre	See Notes A, C, F
<b>Intensity/Density of Use</b>										
Minimum Floor Area Ratio (FAR)	> 10.0	3.0 - 4.0	3.0 - 4.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	1.0 - 2.0	.5 - 1.0	.5 - 1.0	See Notes A, C
Minimum Residential Density (Net)	> 55 Dwelling Units/Acre	25 to 35 Dwelling Units/Acre	45 to 60 Dwelling Units/Acre	30 to 45 Dwelling Units/Acre	35 to 50 Dwelling Units/Acre	40 to 60 Dwelling Units/Acre	20 to 40 Dwelling Units/Acre	10 to 25 Dwelling Units/Acre	10 to 20 Dwelling Units/Acre	See Note E, F
Minimum Building Height	12 or more Stories	4 or more Stories	4 or more Stories	3 or more Stories	3 or more Stories	3 or more Stories	2 or more Stories	2 or more Stories	1 or more Stories	
Minimum Lot Coverage	80%	70%	70%	70%	80%	70%	70%	70%	50%	
Minimum Street Frontage	100% primary, 80% secondary	80%	70%	70%	80%	70%	70%	70%	70%	See Notes C, E
<b>Parking</b>										
Maximum Residential Parking - Spaces per Unit	1 space/unit	1.5 Spaces/Unit	1.5 Spaces/Unit	1.5 Spaces/Unit	2 Spaces/Unit	2 Spaces/Unit	2 Spaces/Unit	2 Spaces/Unit	2 Spaces/Unit	
Maximum Office/Retail Parking - Spaces per 1,000 square feet	1 spaces/1,000 sq.ft.	2 spaces/1,000 sq.ft.	2 spaces/1,000 sq.ft.	2 spaces/1,000 sq.ft.	3 spaces/1,000 sq.ft.	3 spaces/1,000 sq.ft.	3 spaces/1,000 sq.ft.	3 spaces/1,000 sq.ft.	4 spaces/1,000 sq.ft.	
Maximum Surface Parking - % of Total Spaces	10%	15%	15%	15%	20%	25%	30%	30%	40%	
Shared vs. Single-Use Parking Facility	Shared	Shared	Shared	Shared	Shared	Shared	Shared	Shared	N/A	
Park & Ride and other considerations	No	No	No	No	Yes	Yes	Yes	Yes	Yes	
<b>Mixed Use &amp; Diversity</b>										
Minimum Hours of 'Significant' Activity	18 Hours	16 Hours	16 Hours	14 Hours	14 Hours	14 Hours	12 Hours	N/A	N/A	
Average Jobs/Housing Ratio	15 Jobs : 1 Dwelling Unit	10 Jobs : 1 Dwelling Unit	5 Jobs : 1 Dwelling Unit	4 Jobs : 1 Dwelling Unit	1.5 Jobs : 1 Dwelling Unit	1 Jobs : 1 Dwelling Unit	1 Jobs : 1 Dwelling Unit	1 Job : 2 Dwelling Units	1 Job : 2 Dwelling Units	
Mix of Uses - % Residential (Res) and % Non-Residential (Non-Res)	20% Res and 80% Non-Res	30% Res and 70% Non-Res	50% Res and 50% Non-Res	50% Res and 50% Non-Res	70% Res and 30% Non-Res	80% Res and 20% Non-Res	80% Res and 20% Non-Res	90% Res and 10% Non-Res	90% Res and 10% Non-Res	See Notes C, D
<b>Street Network</b>										
Grid Density - Polygons per Square Mile for Bike, Ped and Street	Min. 150	Min. 150	Min. 75	Min. 75	Min. 50	Min. 50	Min. 50	Min. 50	N/A	
Average Block Size (in Feet)	200' x 400'	200' x 400'	200' x 600'	200' x 600'	200' x 800'	200' x 800'	200' x 800'	200' x 800'	N/A	

## Assumptions and Notes:

A. The guidelines provides policy guidance (gross densities, development/design standards) for transit oriented development sites located within an approximately 1/2 mile radius around a transit station or 1/4 mile around a local bus hub . The target density and intensity of specific developments could vary based on the size and location of the developments within the station area. This variation in density/intensity as well as design standards for streets and other public spaces should be addressed through a station area plan/overlay.

B. The development potential around Commuter Rail, Light Rail and Bus Rapid Transit stations are similar since the station spacing and service levels are within a comparable range. Commuter Rail and Commuter Bus have distinctly different transit service characteristics and development impact in station areas. Local or Fixed Route Bus is assumed to be supportive of transit oriented development at a transfer station or local bus hub consisting of a minimum of 3 routes and 30 minute headways, i.e. level of service D per the Transit Capacity and Quality of Service Manual. In suburban areas, the development around Commuter Rail is assumed to be rich in residential uses.

C. Intensity (FAR), net residential density, mix of uses (% residential / % non-residential) and lot coverage are variables used to calculate the gross density indicators (residential, employment, and population). The gross density indicators are adjusted for land development capacity (vacant, redevelopment, and not available for development or redevelopment) and public infrastructure/open space requirements. Gross population density assumes 2.49 persons per dwelling based on Florida Census data.

D. The residential/non-residential mix is managed by transects to reflect preferences about living and working, but the general assumption is that residential uses are higher in suburban and rural areas compared to the urban core and urban general transects, which are more employment centric. The mix of uses could vary by approximately 15% based on the location of the development relative to the transit station and/or hub.

E. In the urban core and urban general transects, each dwelling unit is assumed to be 1,500 sq.ft. and each job is assigned 350 sq.ft. (average of retail and office employment). In suburban transects, each dwelling unit is assumed to be 1,800 sq.ft. and each job is assigned 500 sq.ft. (average of retail and office employment). In rural transects, each dwelling unit is assumed to be 2,000 sq.ft. and each job is assigned 500 sq.ft. (average of retail and office employment).

F. The variables listed under Intensity/Density of Use are minimum net development/design standards that project the anticipated development potential of a transit oriented development site based on it's context. The net development standards will require calibration to existing intensity/density, land availability (vacant or redevelopment), public infrastructure/open spaces, location within station areas, etc. The target gross density indicators guide the degree and direction of calibration.