



APPENDIX D: INFILL DESIGN GUIDELINES

CITY OF GREENVILLE
CITY-WIDE HOUSING STRATEGY
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1.0 INFILL DESIGN GUIDELINES

1.1 Overview

The primary purpose of the information in this Appendix is to provide design guidance for developers, builders, architects and planners who intend to build and work in Greenville. The City of Greenville is committed to new development that is both contextual and appropriate to the City’s urban character and form, while also providing new techniques, typologies and methods for developing a range of infill type sites. The infill design guidelines discussed in this report are intended to help guide how new development is situated on lots/parcel sites; the desired form of streets and public realm; and how transitions of uses, heights, and forms can achieve a contextual development that is economically sustainable, promotes positive housing and infill options, and is supported by neighborhood residents where infill development is proposed.

These guidelines graphically illustrate various types of redevelopment sites found in Greenville neighborhoods and how an appropriate contextual redevelopment might take shape. Various housing types (typologies) are presented with their corresponding characteristics; then visualization studies show graphically how these might be utilized in a variety of Greenville neighborhood conditions and corridor type mixed-use opportunities. Lastly, some strategies for Transit Oriented Development (TOD) are presented as it relates to Greenville’s potential Bus Rapid Transit (BRT).

1.2 Introduction to Housing Typology

A vibrant and active neighborhood is one that provides a variety of housing types (size, type and economic levels) that are attractive, safe, and offer the range of size, function, and features to meet the diverse needs of a wide-range of residents. Truly vital neighborhoods need access to shopping, daily services, recreation and other amenities along with public services and facilities.

A diverse variety of housing types have grown in popularity, or have been revived from historic building patterns. This report illustrates how these can be woven into the pattern and context of Greenville’s vibrant neighborhoods.



Small scale multi-family units like 8 and 16 plex buildings (top), townhomes (2nd from top), and stacked flats (bottom) can be integrated successfully into single family neighborhoods, but can be difficult to finance due to a lack of scale.

I.3 Visualization of Housing Density

Through illustrations of neighborhood conditions found in many of Greenville’s distinct neighborhoods - the housing types/typologies presented below are “inserted” into various scenarios. These exhibits portray how effective and contextual redevelopment could take place - key characteristics of these neighborhoods are identified and presented.

VISUALIZATION OF HOUSING TYPOLOGIES WITH VARIOUS DENSITY

SINGLE-FAMILY DETACHED, LARGE LOTS
main house with granny flat/garage apartment

SINGLE-FAMILY DETACHED, MEDIUM LOTS
traditional/cottages and bungalows



SINGLE-FAMILY DETACHED, LARGE LOTS	
NET DENSITY	4-8 du/acre (6 du/acre)
CHARACTERISTICS	1-2.5 stories large lot detached house with possible accessory unit (granny flats) in the back of lot or over garages, house address street with stoop or porch entry
CONSTRUCTION TYPE	Wood Construction (max 3 stories/35 feet)
PARKING CONFIGURATION	2-3 car garage, separate from the main house, preferably adjacent to an alley

SINGLE-FAMILY DETACHED, MEDIUM LOTS	
NET DENSITY	6-12 du/acre (9 du/acre)
CHARACTERISTICS	1-2 stories medium-sized lot detached house, addresses street with stoop or porch entry
CONSTRUCTION TYPE	Wood Construction (max 3 stories/35 feet)
PARKING CONFIGURATION	1-2 car garage attached to house or separate/ preferably adjacent to an alley

SINGLE-FAMILY DETACHED, SMALL LOTS
zero-setback/charleston courtyard-type homes



SINGLE-FAMILY ATTACHED
townhouses/rowhouses



SINGLE-FAMILY DETACHED, SMALL LOTS	
NET DENSITY	8-16 du/acre (12 du/acre)
CHARACTERISTICS	2-3 stories small or zero-setback lots detached house, which address the street with stoop or porch entry
CONSTRUCTION TYPE	Wood Construction (max 3 stories/35 feet)
PARKING CONFIGURATION	Ideally alley parked with individual garages/driveways and using on-street parking to augment

SINGLE-FAMILY ATTACHED	
NET DENSITY	12-24 du/acre (18 du/acre)
CHARACTERISTICS	2-3 stories attached houses, with direct entry from street; housing units can be paired with flats for increased density, brownstone or row-house look
CONSTRUCTION TYPE	Wood or load-bearing masonry (max 3 stories/35 feet)
PARKING CONFIGURATION	Parking provided via alleys or private drives, with garages integrated into townhome footprint

MULTI-FAMILY, MANOR HOUSE
multiple residences in mansion style



MULTI-FAMILY, NEIGHBORHOOD MIXED-USE
housing above retail/office space



MULTI-FAMILY, MANOR HOUSE	
NET DENSITY	15-30 du/acre (23 du/acre)
CHARACTERISTICS	2-3 stories with multiple attached units in a larger house or mansion format, high quality material with multiple grouped entries/stoops, easily fits into neighborhood density context
CONSTRUCTION TYPE	Wood construction (max 3 stories/40 feet)
PARKING CONFIGURATION	Parking provided either in the interior of the block surface or within rear tuck-under garages or rear separate garages

MULTI-FAMILY, NEIGHBORHOOD MIXED-USE	
NET DENSITY	20-50 du/acre (35 du/acre)
CHARACTERISTICS	3-5 stories with multi-family apartments, single- or double-loaded corridors with lobby entrance, off-street parking in structure or parking via rear/surface lots. Ground floor uses such as community retail, restaurants or small scale service offices
CONSTRUCTION TYPE	Wood construction with possible elevated concrete deck (max 5 stories/70 feet)
PARKING CONFIGURATION	Rear surface parked and/or podium parking, on-street parking for mixed-use needs

MULTI-FAMILY, VILLAGE CLUSTERS
 small housing groups with surface parking acting as infill



MID-RISE/HIGH DENSITY HOUSING
 housing above podium parking or with structured garage allowing higher density



MULTI-FAMILY, VILLAGE CLUSTERS(SURFACE PARKING)	
NET DENSITY	24-36 du/acre (30 du/acre)
CHARACTERISTICS	3-4 stories housing in an urban village configuration (street edge/wall created through building articulation/interest through balconies/terraces/patios/stoops, high quality materials with carriageway entries)
CONSTRUCTION TYPE	Wood construction (typical) with possible masonry veneer (max 4 stories/60 feet)
PARKING CONFIGURATION	Rear tuck-under garages or surface parking court, possibly free standing private garages, on-street parking necessary to meet parking ratios

MID-RISE/HIGH DENSITY HOUSING	
NET DENSITY	50-80 du/acre (65 du/acre)
CHARACTERISTICS	4-5 stories housing (apartments/condos) in an urban edge/street configuration. Street edge/wall created with the building (either lining garage or podium parking) articulated created via balconies, terraces carriageways, or stoops
CONSTRUCTION TYPE	Wood construction or concrete podium or wrapping concrete parking garage (max 5 stories/70 feet)
PARKING CONFIGURATION	Above and/or below grade podium parking or free standing concrete garage (pre-cast or cast-in-place) ratios and provide visitor needs

SINGLE FAMILY, POCKET NEIGHBORHOOD
 housing around common space creating small scale community

MULTI-FAMILY, STACK FLATS
 different ownership units stacked in a housing structure



SINGLE FAMILY, POCKET NEIGHBORHOOD	
NET DENSITY	12-18 du/acre (15 du/acre)
CHARACTERISTICS	4-10 smaller houses/bungalows arranged around a common green open space creating a closer sense of community in a compact denser approach.
CONSTRUCTION TYPE	Typical wood or masonry residential construction(max 2 1/2 stories/30 feet)
CONFIGURATION	Parking is screened from the street and "tucked -away" around the site although always close adjacent to the homes it serves

MULTI-FAMILY, STACK FLATS	
NET DENSITY	15-20 du/acre (18 du/acre)
CHARACTERISTICS	2-3 story residential building (resembling large houses) which are comprised of single level (flats) multi-family units "stacked" vertically. These neighborhood scaled buildings fit into a typical single-family neighborhood
CONSTRUCTION TYPE	Typical wood or masonry residential construction (max 2 1/2 stories/30 feet)
CONFIGURATION	Parking is located at rear of the building and accessed by shared drive

I.4 Infill Guidelines to Form Cohesive Neighborhoods

Architecture and Urban Design Infill Principles

The goal of these guidelines are to illustrate the urban patterns and architectural vocabularies present in many of Greenville's neighborhoods and how the character, imagery and neighborhood pattern are reinforced and stitched together with new redevelopment. Ultimately creating an even more vibrant and active community presenting a greater variety of housing and mixed-use potential.

It is important that the unique characteristics of Greenville's neighborhoods be presented and understood; so that the community and neighborhood patterns can be understood with sensitive and appropriate new infill redevelopment.

1 HISTORY AND CHARACTER

- *The history and key characteristics of the style are expressed in essential architectural elements found in Greenville's neighborhoods that should be respected in new development.*
- *Predominate in Greenville are simple bungalows and turn-of-the century craftsmen style homes.*



2 MASSING AND COMPOSITION

- *The massing of a house includes a main body in which the front door is located, and, in many instances, side wings. New buildings should respect the forms in the existing neighborhood such as: the roof pitch, structure height, and overall form of the buildings.*
- *Simple roof forms and shapes have a strong presence in Greenville's neighborhoods.*
- *Greenville's neighborhoods typically are one and two story homes - although the hilly topography means basements and split level homes are common.*



3 HISTORY OF MATERIALS AND COLORS

- *New buildings should utilize materials and colors that are complimentary, not necessarily homogeneous, to existing buildings.*
- *Greenville's housing typically has siding with a range of colors; some brick construction is also found. Commercial and neighborhood corridors historically were predominately brick construction.*



4 TRANSITION OF SCALE

- *Encourage similar architectural features to be incorporated into higher density developments when located adjacent to properties with lower density single-family use to enhance the compatibility between properties.*
- *One and two story homes are typically found in Greenville's neighborhoods. Two and three story townhouses alongside lower scaled small housing developments can provide a buffer to existing houses.*



5 RELATIONSHIP TO STREET

- *Support and encourage pedestrian comfort, convenience and activity by creating a sense of enclosure within the street corridor.*
- *Create a logical transition from the public realm of the street and sidewalk to the private realm of residential properties.*



6 NEIGHBORHOOD NODES/CORNERS

- Enhance pedestrian experience by creating visual gateways and gathering spaces.
- Key intersections should be marked with setbacks that allow for public spaces. Rather than meeting the corner, new buildings should incorporate forecourts, plazas, or gardens that welcome the public and offer a dramatic statement at the corner.
- Some neighborhood corners/nodes may warrant corner stores and/or neighborhood scaled retail/shopfronts - this will further activate these neighborhoods while providing much needed community services and retail.



7 COMMUNITY AND REGIONAL PATTERNS

- Neighborhood nodes should relate to other neighborhood nodes creating a network within the community as a whole. Communities should in turn relate to other communities. These relationships make a city cohesive despite varied building types, densities, and architectural styles.

Greenville's neighborhoods are fundamentally a grid street pattern intertwined with the rolling topography of Greenville's many hills - with blocks being rectangular/long. Much of the street patterns found in these neighborhoods follow the contours/slopes with limited cross-streets.



I.5 Infill Scenarios Within Neighborhood Context

Typical Greenville Neighborhood Pattern

A typical Greenville block pattern found in many targeted neighborhoods is a rectangular (2:1 ratio of length to width) block comprised of one and two story simple homes set back from the street with typically front driveways (versus alleys and rear parking). What is commonly found will be various “scattered” lots/sites either at corners, mid-block, or occasionally in combinations or multiple lots together. The redevelopment goal is to increase the diversity and type of housing available while also increasing the total density (number of housing units). This provides an approach that creates housing affordability by offering a range of housing sizes/rents.

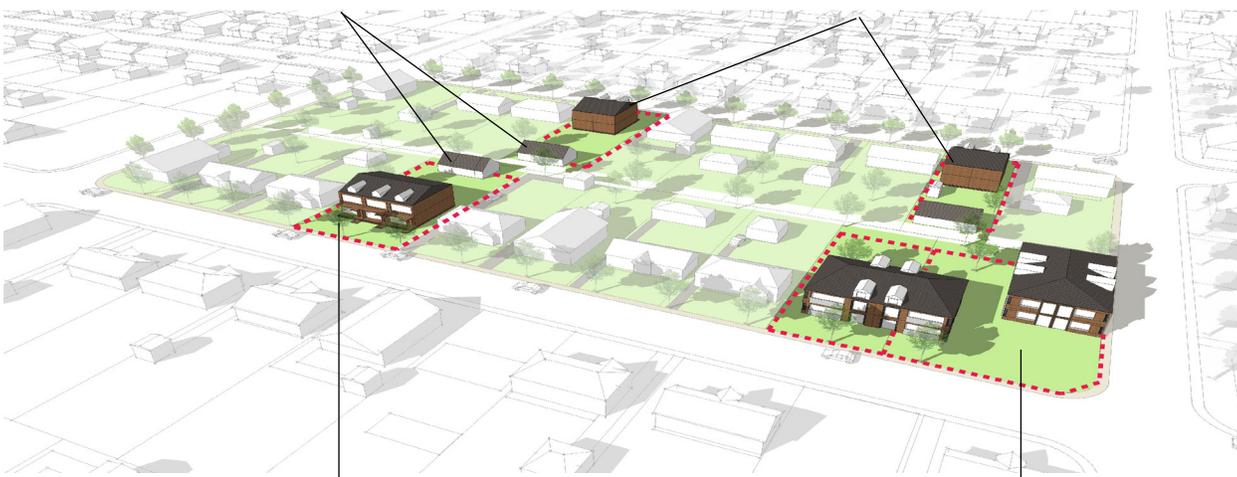
INFILL WITHIN A NEIGHBORHOOD CONTEXT



Various sizes of vacant or underutilized lots are commonly available within neighborhood blocks.

Granny flats/accessory units in the back of lots or above garages could be introduced as a simple method to add housing diversity and density.

Townhomes /duplexes could be introduced to vacant lots respecting the existing setback and housing character while increasing housing diversity and density.



Small “blocks” of townhomes/rowhouses (3-4 dwelling units) could be incorporated on larger lots or multiple lots while also respecting neighborhood character and scale.

Multi-family “mansion style” buildings could be introduced to corner lots or larger vacant parcels where available. Lot consolidation would increase housing diversity, density, property values and flexibility with parking. “Mansion” style buildings appear from the street as larger homes while accommodating 4-8 MF dwelling units.

NEIGHBORHOOD ADJACENCY

Of crucial importance is the sensitive siting of compatible housing types adjacent to one another providing gradual transitions of scale, massing, and densities without drastic different heights or increases in densities or scale. Understanding the “palette” of housing types, corresponding which types best fits in each unique situation, and the scale of a type’s use are important factors to be considered when positioning infill redevelopment - for example large multifamily developments do not relate well adjacent to single family homes (factors of scale, size, and housing type come into play).

APPROPRIATE ADJACENCY OF HOUSING TYPOLOGY



1 SF (LARGE LOT) - TOWNHOMES



A single family home on a large lot with a granny flat in the back of the site adjacent to 3-story townhomes. An access road in between the adjacent sites allows access to parking and maintains a consistent streetscape.

3 MANOR HOUSE - MULTI-FAMILY



A manor house adjacent to a 3-story multi-family apartment building separated by a neighborhood street. Parking is accessible by access roads located behind each building, while maintaining the streetscape.

2 SF (MEDIUM LOT) - MANOR HOUSE



Single family home on a medium sized lot adjacent to a manor house. An access road in between the adjacent sites allows access to parking and maintains a consistent streetscape.

4 TOWNHOMES - MULTI-FAMILY



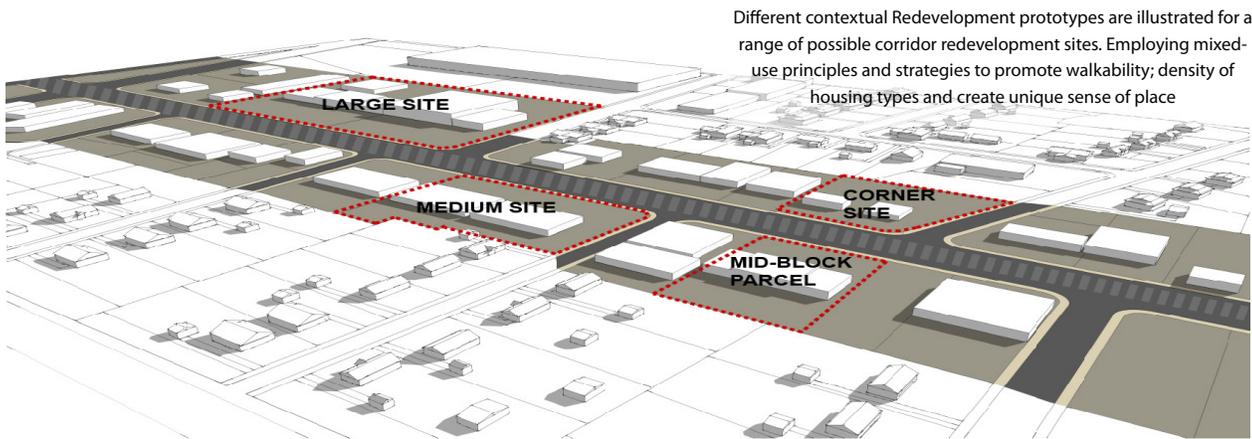
These 2-story townhomes are adjacent to a multi-family 3-story apartment building and are separated by a neighborhood street.

I.6 Infill Scenarios Within A Corridor Context

Neighborhood Corridor Streets

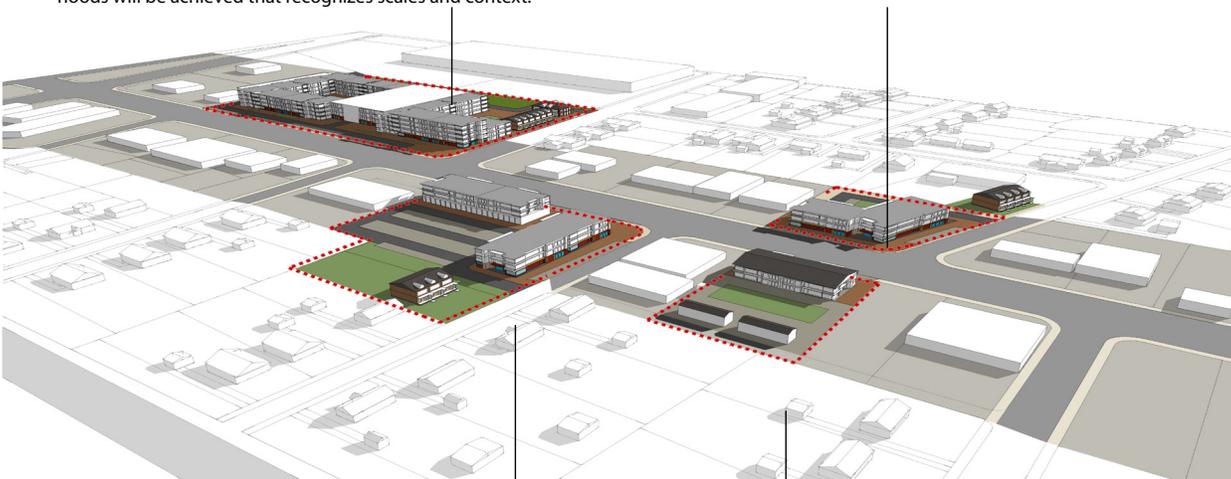
Existing neighborhood and city corridors offer targeted redevelopment opportunities which can not only provide a diversity of housing types and scales, but create a walkable mixed-use identity and sense of place to the various neighborhoods they serve. The key redevelopment strategies are based on the size and type of development site: from large assemblies better suited to large scaled mixed-use developments; to midblock (medium-size tracts) suited to “hybrid” or limited scale mixed-use; to key corner locations where neighborhood services and storefronts with limited mixed-use can serve as community catalysts for neighborhood transformations.

INFILL WITHIN A CORRIDOR CONTEXT



Medium to high density mixed-use development with garages could be introduced to very large land assemblies along major corridors. Retail/ Commercial/Restaurants on the ground floor will create a walkable mixed use environment. Through lower density of housing such as “mansion” style MF or Townhomes, a transition and buffer to neighborhoods will be achieved that recognizes scales and context.

Smaller scale neighborhood mixed-use with surface parking and tuck-under parking in the rear could be introduced onto corner sites. Smaller neighborhood service/retail would occur at the ground/street level. Angled or parallel on-street parking along major streets would provide retail parking needs and serve as a “traffic calming” measure.

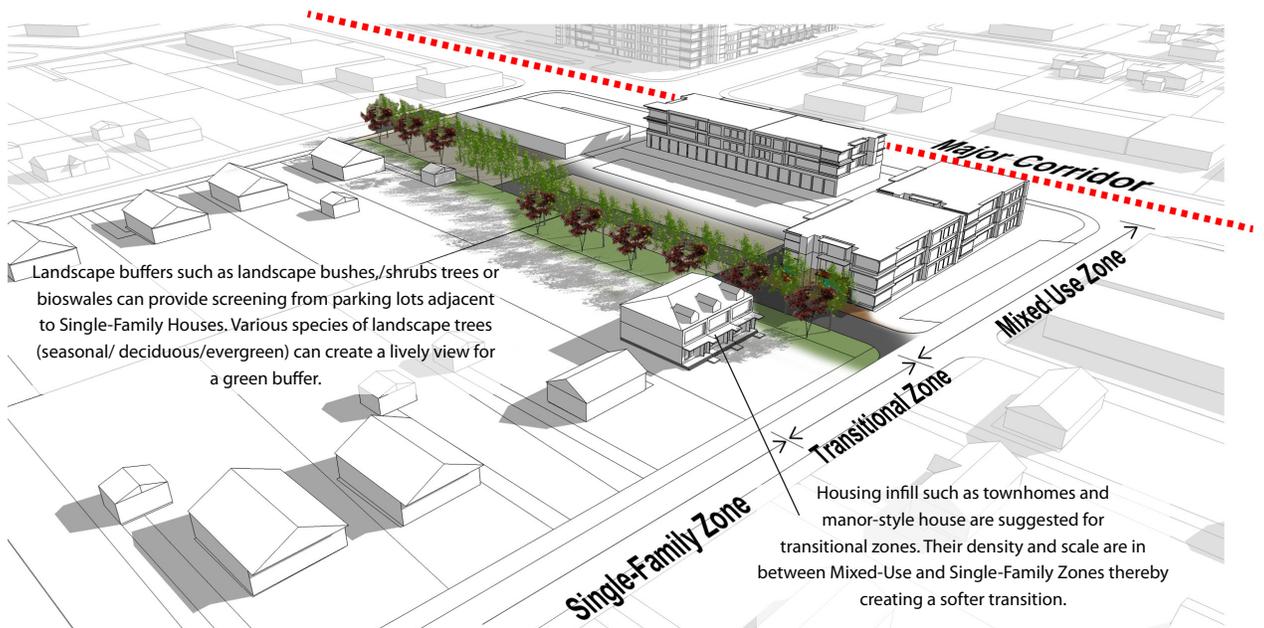


Smaller “infill” mixed-use/MF could be utilized with “in-between” sites to respect to the scale and setbacks of neighboring buildings. Granny flats/accessory units in the back of lots or above garages could be introduced as a method to add housing diversity and density.

BUFFER ZONES

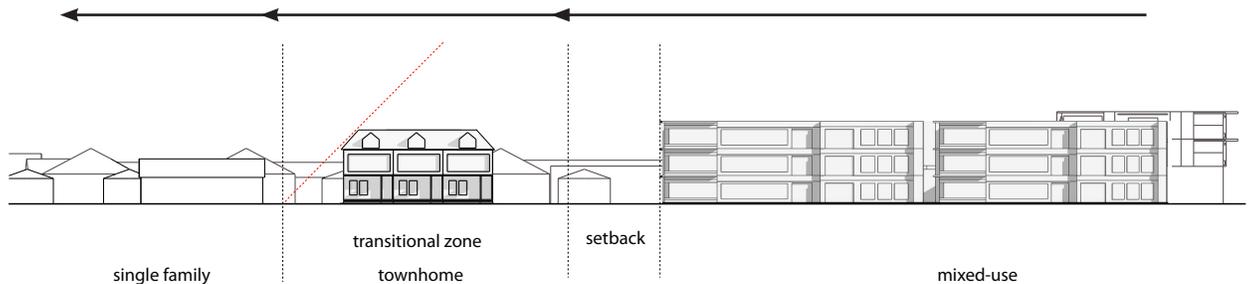
A crucial aspect of infill corridor redevelopment is how the higher intensity of mixed-use is buffered or transitions to the surrounding neighborhoods - primarily comprised of small homes/residences). Establishing a “transition zone” is critical to providing an effective buffer by using transitional housing types such as townhomes and manor-style homes. These should provide a realistic and effective “stepping-down” of height, scale, and density between the single-family and mixed-use. Additionally, buffer elements (walls or screens) combined with landscaping (trees and/or shrubs) are an effective method of augmenting and/or complementing the transition strategy.

TRANSITION OPTIONS FROM CORRIDOR TO NEIGHBORHOOD



1 RESIDENTIAL PROXIMITY SLOPE

decrease in scale creates a density buffer as well as residential proximity slope which limit heights of neighboring properties



2 LANDSCAPE BUFFER



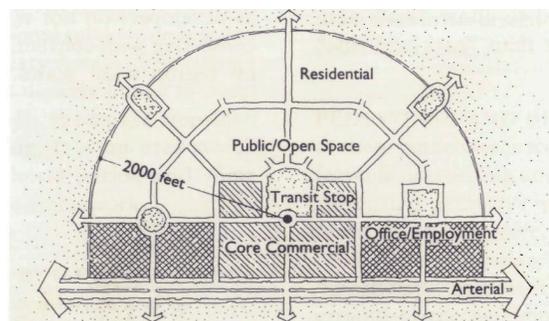
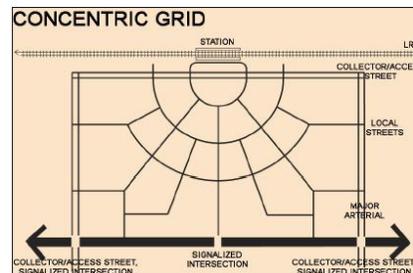
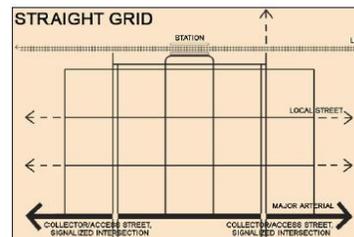
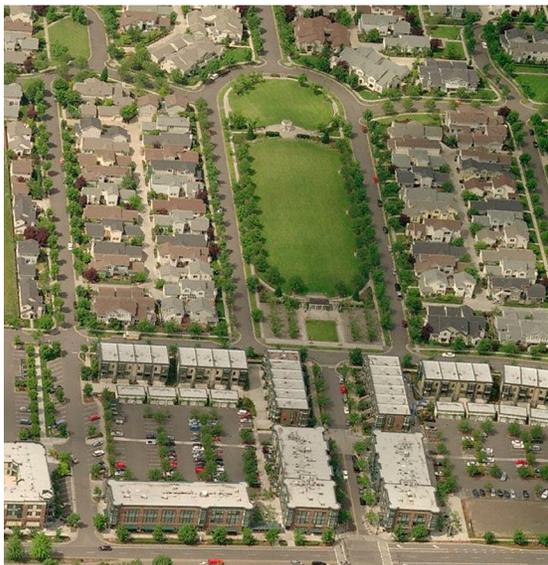
I.7 Transit Oriented Development (TOD) Guidelines

DESIGN PRINCIPLES FOR CREATING TOD DEVELOPMENT

Transit Oriented Development (TOD) is new redevelopment spurred and centered around transit stations or stops. The principles presented are meant to serve as reminders for the community, designers/planners, and developers who may not understand TOD development or have forgotten them. Replacing the automobile-oriented development patterns, these principles can serve as a checklist for the development of pedestrian-scale communities that not only promote transit but provide alternative housing options for residents with limited transit options. The principles also look to ensure that nearby development will generate a higher number of riders to support transit, and that transit will indeed enhance the community. If real estate development is to support transit, the single most important requirement is that it be near transit (situated as close as possible to the actual transit stops). The principles outlined here will help support transit and strengthen both future redevelopment projects and the surrounding community.

1 CONNECTIVITY

- Place commercial, residential, employment, open space, and civic uses within walking distance of transit stops.
- Locate the transit stop at the center of the neighborhood rather than on its periphery. The new station should connect an entire transit system to the surrounding community, and its location should reflect the centrality of its role.



2 PEDESTRIAN-FRIENDLY

- *Create pedestrian-friendly street networks that directly connect local destinations.*
- *Encourage pedestrian connections by creating compact blocks, pleasant walkways, and comfortable, well-marked, and continuous streetfront experiences. The appeal of a pedestrian environment strengthens the sense of place and supports retail spending. Look to create attractive landmarks and gateways to new transit neighborhood developments.*



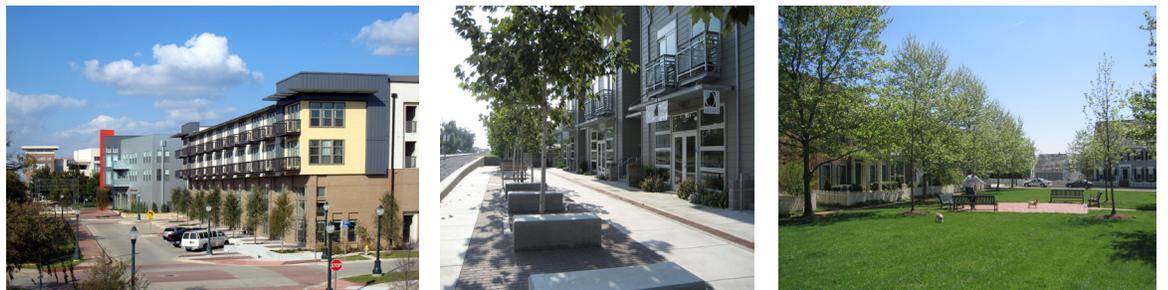
3 DIVERSITY

- *Provide a mix of housing types at varying densities and cost.*
- *Residential development around transit, especially in a mixed-use development, can be too successful, attracting wealthier households, resulting in higher real estate values and escalating rents. Preserving/expanding work-force housing is crucial, and is a special concern for development around transit because lower-income transit users often represent the core of the ridership. Local agencies should link transit and redevelopment funding with provisions for affordable housing so that transit and housing might reinforce each other.*



4 COMMUNITY

- *Orient buildings and neighborhood activity to public spaces/gathering areas (both formal and informal areas).*
- *Include engaging public spaces, street furniture, and public art. Public space is important in the creation of place; allowing for events such as concerts, markets, exhibits, and celebrations—events that bring people and vitality to a neighborhood and stimulate economic redevelopment.*



5 REDEVELOPMENT

- *Encourage infill and redevelopment along transit corridors within existing neighborhoods.*
- *The major public investment involved with transit can increase property values and create opportunities for neighborhood “building.” Because there is an enormous potential increase in real estate value, generation of jobs, and increasing tax revenues, the planning for redevelopment around transit needs to be coordinated with economic development. TOD projects with thoughtfully planned routes and station locations can set the stage for significant private development, however the careful coordination of transit and appropriate development is critical, so that each can optimally enhance the other.*
- *During a TOD project’s early development phase the opportunities for higher densities, and for mixing product types to market towards a broader range of incomes, should be encouraged and explored. Higher densities strengthen the demand for transit; therefore, new TOD projects offer excellent opportunities to think aggressively about increasing housing density.*



6 PARKING

- *Allow reductions in parking requirements and take advantage of shared parking. Where possible use parking-lot alternatives such as parking garages and on-street parking.*
- *Contrary to the common arrangement, where parking is located immediately adjacent to the station, broader community goals are better served when parking is located away from the transit platform. Land nearer to the station is the best land for development, so utilizing it for parking is a lost opportunity. Situate parking within a five to seven-minute walk from the station, this opens-up prime real estate for development.*
- *Sharing parking among patrons who use of it at different times of the day or week is an effective means of minimizing the total space and cost devoted to parking.*



TOD AROUND BUS RAPID TRANSIT STATIONS

The transit oriented development (TOD) of Bus Rapid transit (BRT) range in various density and uses, from Small-Lot Single Family to High-Rise Multifamily and from commercial to institutional. The important aspects of BRT development are:

- **Connect People and Places** - through access and better integration of land-use and transportation planning to reduce trip lengths and increase travel choices for Greenville's residents. Reducing transportation costs for residents will provide the mobility necessary to increase economic competitiveness for Greenville's citizens. Promoting clean mobility options will reduce criteria pollutants, greenhouse gas emissions, and dependence on foreign oil.
- **Create Community Value** - through Healthy Neighborhoods which will improve public health through traffic safety, reduced exposure to pollutants, and design for walking and biking.
- **Community Development** - through the design and construction of transportation facilities that not just allow but promote infill development, building community identity, and supporting social and economic diversity.
- **Context Sensitivity** - build upon the unique strengths of Greenville's communities through strategies that match local and regional context and support investment in existing communities. Plan and support transportation improvements that minimize material and resource use through conservation, re-use, re-cycling and re-purposing.

