

TRANSIT ORIENTED DEVELOPMENT REPORT



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1. TOD RESEARCH

The Transit Oriented Development Report is a comprehensive review of transit oriented development (TOD) projects, literature, and guidelines in order to build a knowledge base in the subject and set preliminary recommendations for the Dallas-Fort Worth metropolitan area. The goal of this report is to produce a resource for North Texas stakeholders in both public and private sectors by studying planning, design, and implementation activities of selected TOD projects in local, regional, national, and international scale.

The broader aim of this research is to enhance the resource base on TOD, learning from its relatively short history in practice, in view of developing a region-specific set of recommendations for future developments. To do so, the focus of this report is on gaps between the conceptualization of the TOD as a tool of place-making and the ways it has been translated into actual built environment in different urban settings.

This report highlights the lessons learned from the review of 21 case studies of TODs nationwide and selected TOD sites in Dallas-Fort Worth (DFW) region and other Texas metropolitan areas. The focus of the case studies was to understand the development process including various planning, design, and development stages involved in creating TODs, draw lessons, and identify specific examples from small, medium, and large cities. The population classifications that define the different city sizes are as follows: small cities - less than 50,000; medium cities - 50,000 to 250,000; and large cities - more than 250,000.

The findings of these case studies were further analyzed and synthesized in conjunction with TOD planning and design documents that were prepared for other North American cities (such as Phoenix, Austin, and Denver) as well as the documents of progressive cities in the DFW region in order to give a set of preliminary recommendations for the cities and counties that will plan for transit oriented developments and districts in North Texas.

Data was compiled from a comprehensive collection of TOD projects applied to date from various locations throughout North America, and a broad set of existing literatures (such as guidelines, reports, planning documents, and policies). This report should be utilized as a document of initial data and processes and the first set of inferences drawn out of case studies for recommendations for each of the TOD typologies for different city sizes that will be explained in detail in the following sections of this report.

2. TOD PROJECT OBJECTIVE

Ranked as the fourth largest Metropolitan Statistical Area (MSA) by population in the US, the DFW metropolitan area houses approximately 61 cities and 12 counties an area of 9,284 square miles of land (US Census, 2009, Texas Market Report, 2010). The 16-county North Central Texas Council of Governments (NCTCOG) region currently houses 6,729,800 people (NCTCOG, 2009). NCTCOG in its *Mobility 2030-2009 Amendment*, states "...approximately 500 miles of rail is identified. Of that, 83 miles are existing service, 128 miles are programmed projects and projects currently under development, an additional 38 miles consist of projects identified in transit authority planning studies, and the remaining 251 miles are projects utilizing funding identified through the Rail North Texas efforts" (Mobility 2030-2009 Amendment, 2009, p. 216).

Under the regional framework of NCTCOG for rail based passenger transportation the Transit Oriented Development Report is intended to create a shared understanding for cities and counties of what TOD and transit oriented districts (TODt) are, and what are the regulatory, planning, and design implementation processes they go through, in addition to identifying the key elements and features that would be

critical for further development and future success. Thus the objective of this particular report is to develop a resource that assists cities in developing transit oriented *developments* and transit oriented *districts* in Dallas-Fort Worth Metropolitan Area. The Transit Oriented Development Report can be used by planning agencies, cities, counties, and transit agencies, as well as public and private entities:

- Review examples of in-depth studies of various types of transit oriented developments and districts in various sizes across North America in order to better inform new TOD planning and implementation processes in North Texas.
- Compare and contrast some of the common features of TOD examples across small, medium, and large cities in order to identify effective policies and strategies to facilitate transit oriented development implementation tools suitable to their particular city.
- Inform and educate other stakeholders concerning the regulatory, planning, design, and implementation stages of the transit oriented developments and districts, and their possible implications.
- Access a set of regional principles and recommendations, to set short-term and long-term vision for any given city.
- Ensure close coordination and shared vision among various cities, counties and transit agencies as they undertake planning and implementation activities related to transit oriented development and districts.

3. COMPONENTS OF THE TOD REPORT

TODs are seen as desirable choices for developing metropolitan areas to accommodate the concerns surrounding population growth such as the availability of infrastructure. Transit oriented developments and districts are typically characterized by higher development density and variety of mix of land-uses, TOD offers planning agencies, cities, and counties opportunities for sustainable development options to counteract some of the negative effects of urban sprawl, declining urban cores, and congestion sparked by rising populations. This particular report will primarily concentrate on:

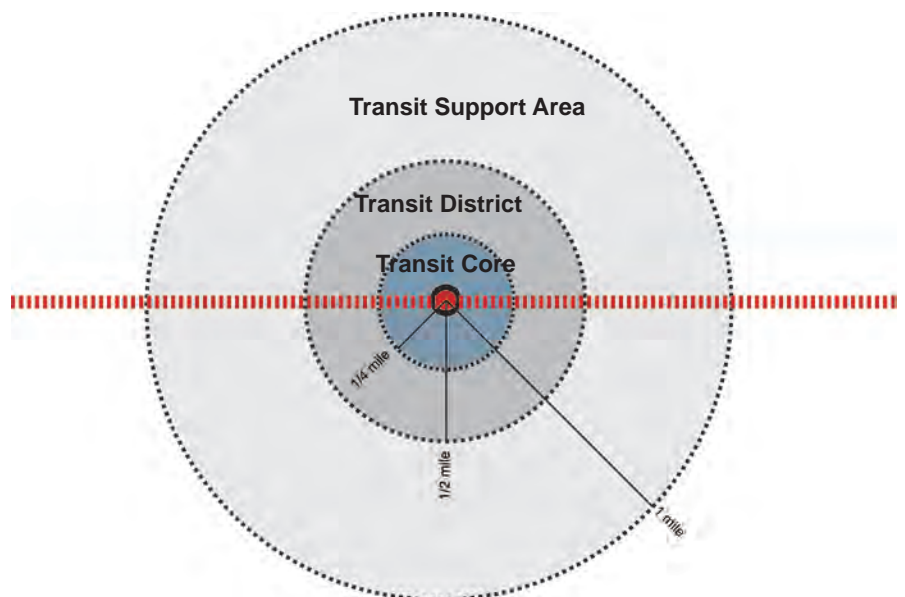


Figure 0.1: Transit area zones map (Inspired by City of Florida, 2009)

Key Definitions and Concepts of Transit Oriented Development and Districts:

TOD in this report is defined as a high density development within walking distance of a transit station that contains a diverse mix of uses such as housing, employment, shops, restaurants and entertainment and is used to describe individual new development projects. Typically developments within ½ mile from the station are considered transit oriented (See also Lefaver,1997). Whereas “Transit Oriented District” is defined as high density developments that contain a diverse mix of uses such as housing, employment, shops, restaurants and entertainment in an area typically defined as the whole area within ½ mile of a transit station. These districts aspire to encourage strong sense of place, diverse set of travel mode choices (such walking, biking, and public transportation) and function more like a coherent district than a single project. The transit oriented district is typically guided by a strategic transit district or station area plan. For example, transit oriented development can occur in any part of the transit core or transit oriented district or the boundaries of the TOD can overlap between the transit district and the transit support area (See Figure 0.1). Figure 0.1 illustrates the geographical context of these defined terms in relation to the transit station.

Transit Oriented Development Typology: TOD Typology refers to the range of TOD types and places and shows the relationships among residential density, regional connectivity and transit frequency. Its terminology contains measures reflecting a TOD’s importance and function in local and regional contexts. TOD typology is an applied methodology to help understand the types and places studied in this report. Typology used in this research for the DFW metropolitan area is adopted from the typology developed by the Center for Transit Oriented Development (See Table 0.1 TOD Typologies).

Case Studies of Transit Oriented Developments (TOD) and Districts (TODt):

This report focuses on 21 selected case studies of TODs (among 41 cases studies initially reviewed) in DFW, Texas (examples Austin, San Antonio, and Houston) and

Table 0.1: TOD typologies for metropolitan regions (Dittmar et. al. 2004)

TOD Type	Land Use Mix	Typical Housing Density	Regional Connectivity	Transit Frequencies
Urban Downtown	Office Center, Urban Entertainment, Multifamily Housing, Retail	> 60 units per acre	High Hub of Radial System	< 10 Minutes
Urban Neighborhood	Residential, Retail, Class B Commercial	> 20 units per acre	Medium Access to Downtown, Subregional Circulation	10 Minutes Peak 20 Minutes Off-peak
Suburban Center	Primary Office Center, Urban Entertainment, Multifamily Housing, Retail	> 50 units per acre	High Access to Downtown, Subregional Hub	10 Minutes Peak 10-15 Minutes Off-peak
Suburban Neighborhood	Residential Neighborhood, Retail, Local Office	> 12 units per acre	Medium Access to Suburban Centers	20 Minutes Peak 30 Minutes Off-peak
Neighborhood Transit Zone	Residential Neighborhood, Retail	> 7 units per acre	Low Access to a Center	25-30 Minutes Demand Responsive
Commuter Town Center	Retail Center, Residential	>12 units per acre	Low Access to Downtown	Peak Service Demand Responsive

selected sites nationwide. The focus of the case studies was to understand the development process including various planning, design, and implementation stages involved in creating TODs and identifying specific examples from small, medium, and large cities in Texas. City size, TOD typology diversity, location diversity, project significance, data and project completion were among the considerations for the selection of the case studies for this particular review. The population classifications that define the different city sizes are as follows: small cities less than 50,000; medium cities of 50,000 to 250,000; and large cities with more than 250,000. Although the overall study has reviewed over 41 TOD examples, 21 of those sites (9 large city, 6 medium, and 6 small city) have the most comprehensive set of information included in this particular research as case studies.

Large City Case Studies (Population over 250,000)

- Collingwood Village, Canada, TOD
- Houston Pavillions, Texas, TOD
- Lindbergh City Center, Georgia, TODt
- Mockingbird Station, Texas, TOD
- Port Credit Village, Canada, TOD
- Saltillo Loft, Texas, TOD
- Sheridan Station Area Plan, Colorado, TODt
- Uptown District, California, TOD
- Verano at City South, Texas, TODt

Medium City Case Studies (Population 50,000 to 250, 000)

- Court House, Virginia, TODT
- Del Mar Transit Village, California, TOD
- Downtown Plano, Texas, TODt
- Orenco Station, Oregon, TOD
- Galatyn Park, Texas, TOD
- 5th Street Crossing, Texas, TOD

Small City Case Studies (Population under 50,000)

- Daybreak, Utah, TOD
- The Village at Leander Station, Texas, TOD
- Rahway Town Center, New Jersey, TODt
- West Hyattsville, Maryland, TODt
- Wesmont Station, New Jersey, TOD
- Metrowest, Virginia, TOD

Existing TOD Literature, and Current Policies and Programs from North Texas:

An inventory of existing literature from other cities and metropolitan areas from other states as well as documents, policies and activities within the city and counties of the DFW metropolitan area that currently focus on TOD were reviewed for this particular research. References to these documents can be found throughout the report.

Summary Findings for Small, Medium, and Large City Case Studies: Based on the review of literature and case studies the task was to summarize and synthesize the lessons learned in the development of TODs. The analysis of this stage included determining contextual frameworks, TOD typologies, planning and design elements and the processes used to develop the TODs.

Recommendations for the Region: Based on the analysis of the case studies, review of the literature and the findings in chapters 1 to 4, the research team outlined several general steps for the development of TODs and TODts in small, medium, and large cities. Recommendations in this report are set up to read as primarily part of chapter 5 and they are to include but not be limited to the following broad categories of issues:

- Clear and Strong Vision
- Contexts: Social, Economic and Environmental Factors
- TOD Typology
- Market
- Connectivity and Transportation
- Zoning
- Land-Use
- Intensity, density, and diversity
- Stakeholders and Ownership
- TOD Development Process
- Partnerships and Financing
- Urban Design

Urban designs are typically regulated by the strategic TOD plan, zoning and land use controls, or guided by TOD, Form Based, or Smart Growth principles by the developer. Urban design elements typical of the case studies are:

- Architecture,
- Landscape and Open Space,
- Streets and Walkability,
- Sense of Place,
- Parking

These categories of issues, along with the smart features checklist items explained below, are further explained in the methodology portion of the introduction chapter.

Smart Features for Transit Oriented Developments and Districts:

A Smart Feature checklist was created as a result of lessons learned from the case studies as well as from the findings of the other relevant literature. This 20 item list aids in our synthesis of TODs that vary in scale, community type, land use mix, density, etc. This list is considered as a set of important features for every transit oriented development and district to have in the region. Our Smart Features for transit oriented development and districts are:

- Strong vision
- Response to regional context
- Strategic transit oriented development or district plan
- Alternative zoning mechanisms (Form Based Codes, Smart Growth, etc.)
- Diverse mix of land uses (Office, Residential, Retail, and Civic)
- Essential uses and services (Child care facility, School, Grocery, etc.)
- Range of housing choices
- Community and public participation
- Joint development programs (Public Private Partnerships, etc.)
- Non-traditional financing mechanisms (TIF, CIP, BID, PID, etc.)
- Compact built environment
- Sustainable architecture
- Context sensitive design
- Multi-modal transportation options
- Pedestrian emphasis
- Station integration
- Attention to place making
- Environmental sensitivity
- Development in existing communities

1. INTRODUCTION



1.1 PREVIEW

The Dallas Fort Worth Metropolitan Area is steadily growing by population and land coverage. The North Texas region, defined by the North Central Texas Council of Governments, houses 6,729,800 million people in its 16 counties, and is expected to double its population within the next 30 years (NCTCOG, 2010; VNT, 2010). Ranked as the fourth largest Metropolitan Statistical Areas (MSA) by population in the US, the Dallas-Fort Worth (DFW) MSA houses approximately 61 cities (with over 10,000 population) and 12 counties, covering an area of 9,284 square miles of land (US Census, 2009, Texas Market Report, 2010). The population growth taking place in the region comes with its recognizable impact to transportation networks, infrastructure, and built environment.

North Central Texas Council of Governments (NCTCOG), in its Mobility 2030, 2009 Amendment (2009), identifies approximately 500 miles of rail within the region. Of that, 83 miles are existing service, 128 miles are programmed projects and projects currently under development, an additional 38 miles consist of projects identified in transit authority planning studies, and the remaining 251 miles are projects utilizing funding identified through the Rail North Texas efforts (Mobility 2030 2009 Amendment, 2009, p. 216). The DFW metropolitan area currently houses 35 commuter and light rail stations, operated by Dallas Area Rapid Transit (DART), throughout the region and the number of stations are projected to grow to nearly 196 stations with determined vision, planning, and implementation strategies by the year 2030 in order to serve the greater DFW region (DART, 2010; NCTCOG, 2009).

Transit oriented developments (TOD) are seen as desirable choices in growing metropolitan areas to accommodate various needs of urbanizing population with higher development densities, a diverse mix of land-uses, and opportunities they present with multi-modal transportation connections to serve their immediate locale. TODs are also seen as critical components of cities in creating centers, nodes, or hubs of activity with the sense of place they create with their built environment. When TODs are planned and designed with greater understanding of their context, they offer planning agencies, cities, and counties opportunities for sustainable development options to counteract some of the negative effects of growth, urban sprawl, declining urban cores, and congestion sparked by rising populations.

Although DFW has pioneered Texas with one of its earliest and most recognized transit oriented developments (Mockingbird TOD, completed in 2001), the region only seems to be utilizing these type of developments around half of its operational stations in varying capacity by the end of 2010 (Ozdil et. al., 2009). Considering the regional growth and projected number of rail miles to be added to the light rail and commuter rail in the region, and the number of stations that would likely to be operational within the next 20 years, there is a stronger urgency to understand and guide the concept of transit oriented development and transit oriented districts in the North Texas region and create a shared vision.

1.2 TRANSIT ORIENTED DEVELOPMENT RESEARCH SCOPE

The transit oriented development report is a comprehensive review of TOD projects, literature, and guidelines in order to build a knowledge base in the topic and set preliminary recommendations for the DFW region. The goal of this report is to produce a resource for North Texas stakeholders in both public and private sectors by studying planning, design, and implementation activities of selected TOD projects in local, regional, national, and international scale.

The report also aims to illustrate the stages between the conceptualization of the TOD as a tool of place-making and the ways it has been translated into actual built environment in different urban settings. This report highlights the lessons learned from the review of 21 case studies of TODs in North America and selected TOD sites

in the DFW region and other Texas metropolitan areas. The overall focus of the case studies was to understand the development process including various planning, design, and development stages involved in creating TODs, draw lessons, and identify specific examples from small, medium, and large cities. The population classifications that define the different city sizes are as follows: small cities less than 50,000; medium cities of 50,000 to 250,000; and large cities with more than 250,000. The findings of these case studies were further analyzed and synthesized in conjunction with other TOD planning and design literature (i.e. guidelines, reports, planning documents, and policies) that were prepared for other North American cities (i.e. Phoenix, Denver, Austin) as well as the documents of the progressive cities in the DFW region.

The knowledge generated here both relies on data collected from TOD projects in North America and engages a broad set of existing literature. This report is primarily a compendium of resources for TODs specifically developed for this region. Therefore, the report outlined here primarily reveals the findings of preparatory data and knowledge-building processes and the first set of inferences drawn out of case study analysis for recommendations for different TOD typologies for different city sizes that will be explained in detail in the following sections of this report.

Under the regional framework of NCTCOG for sustainable development and rail based passenger transportation, the Transit Oriented Development Report is intended to provide cities and counties information on transit oriented developments and districts and the associated regulatory, planning, design, and implementation processes. Thus the objective of this particular report is to develop a resource that assists cities in developing transit oriented developments and districts in the DFW region. The Transit Oriented Development Report can be used by planning agencies, cities, counties, transit agencies as well as public and private entities to:

- Review examples of in depth studies of various types of transit oriented developments and districts in various sizes across North America in order to better inform new TOD planning and implementation processes in North Texas;
- Compare and contrast some of the common features of TOD examples across small, medium, and large cities in order to identify effective policies and strategies to facilitate transit oriented development implementation tools suitable to their particular city;
- Inform and educate other stakeholders concerning the regulatory, planning, design, and implementation stages of the transit oriented developments and districts, and their possible implications;
- Utilize regional principles and recommendations to set short term and long term vision for any given city; and
- Ensure close coordination and shared vision among various cities, counties, and transit agencies as they undertake planning and implementation activities related to transit oriented developments and districts.

1.3 WHAT IS TOD?

1.3.1 BACKGROUND

The concept of developing land in relation to transit goes back to late 19th and early 20th centuries in the US. The earlier examples of such steam-powered commuter rails and streetcar served developments were seen mainly in the East coast in places such as the Hudson River Railroad, Harlem River Valley Railroad, and Long Island Sound Railroad and helped channel population growth from the five boroughs to outlying suburban townships places (Bernick et. al. 1997). Similar developments

were also seen on the West coast where the San Francisco-San Jose railway began service along the Peninsula in 1864, and led to the development of commuter suburbs such as Burlingame, Redwood City, and San Mateo (Mineta Transportation Institute, 2010). Belzer et. al. suggest the phrase “development-oriented transit” rather than “transit-oriented development,” as a more accurate phrase to describe the streetcar suburbs prevalent at the beginning of the last century. A single owner typically built the streetcar lines to add value to his residential development by providing a link between jobs in the city and housing in the suburbs. The streetcars developed small retail clusters to serve commuters and locals, becoming in a sense the forerunner to the modern idea of TOD, and represent a good balance between place and node (Belzer et. al., 2002).

The opportunities to link transit and development seem to be less utilized with the advent of the automobile after the Great Depression. Vehicles and bus systems with enhanced road infrastructure started replacing rail based transit which also seemed to impact the involvement of developers building transportation systems to service their residential developments in that period. According to Belzer while some suburbs in older cities such as New York, Boston, and Chicago, still functioned as transit-based communities, in most places, transit was less of an option to tie to the residential development to the city in this era (Belzer et. al., 2002).

Exponential increases in vehicular transportation options and vehicular network and the suburb boom, especially after the second World War, brought greater concerns about traffic congestion in urbanized areas. The transit systems in this period were exclusively funded by the public sector and that primarily worked with the automobile which began to be built after 1950s. The transit systems served a greater urban region, stations were considered as nodes and relatively limited development emphasis was paid to them. The San Francisco Bay Area Rapid Transit (BART) system, MARTA in Atlanta, and Metro in the Washington, D.C. area were opened in the 1970s. According to Belzer et. al., the transit stations in this period were characterized by expanses of parking, which created barriers rather than as compared to their earlier counterparts intimate connection with the surrounding community (Belzer et. al., 2002).

The pressures of growth and population, and a new urban living trend, especially in the southern and sunbelt cities in the past couple of decades, has promoted the development of new passenger transit rail lines in such places as Dallas, Denver, Phoenix, St. Louis, San Diego, Sacramento, and Los Angeles. Encouraging momentum in urban living trends coupled with the wider acceptance and recognition of New Urbanism (See CNU 2010), Smart Growth principles and tools started to be developed in the early 1990s, further increased the necessity of greater understanding of the concept of TODs as people places. Few other cities added to this list such as Austin, Fort Worth, Houston, Salt Lake City, San Antonio and etc. since the mid 90s while others searched for significant expansion in their systems.

The last decade saw developing trends among TODs, some of which Belzer et. al. (2002) points out as “increased transit ridership, increasing investment in transit, rising frustration with congestion ... a greater recognition of the benefits of TOD,” along with greater collaboration among private and public entities and an increase in the number of projects. However, TODs are still not studied to their full capacity. It is critical to understand the concepts of TODs and develop regional goals and principles in the subject to ensure shared vision among various cities, counties and transit agencies.

1.3.2 WHAT IS TRANSIT ORIENTED DEVELOPMENT (TOD)?

Transit Oriented Development (TOD) in this report is defined as a high density development within walking distance of a transit station with a mix of land uses such as housing, employment, shops, restaurants and entertainment and is used to describe individual new development projects (See also Lefaver,1997). For the purposes of this research developments within ½ mile from (Porter, 1997) the station is con-

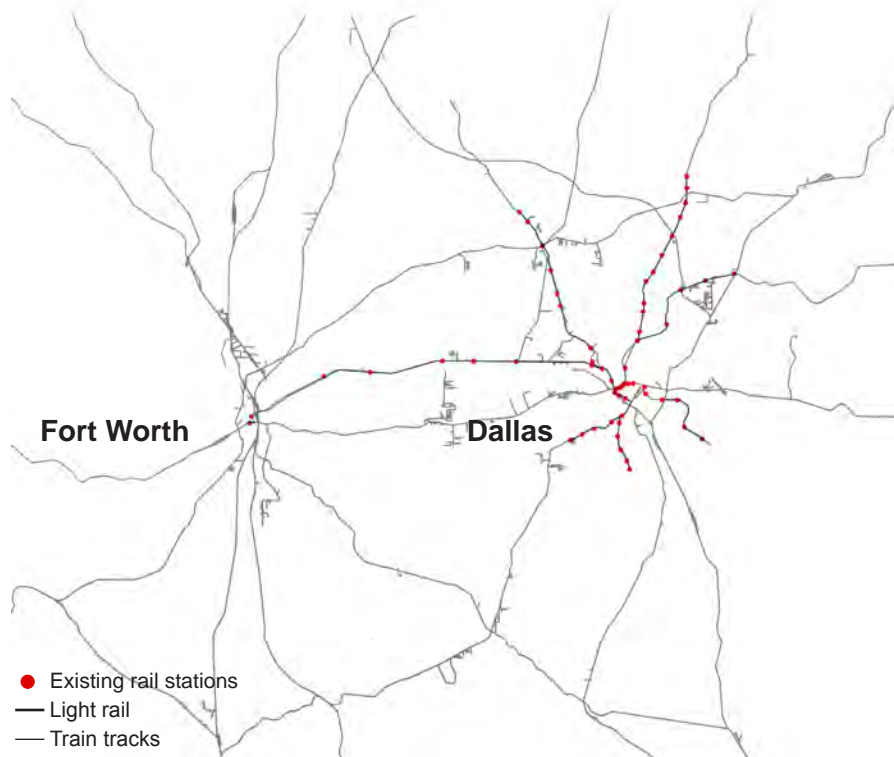


Figure 1.1: Existing rail lines and stations 2008 (Data source: NCTCOG, 2010)

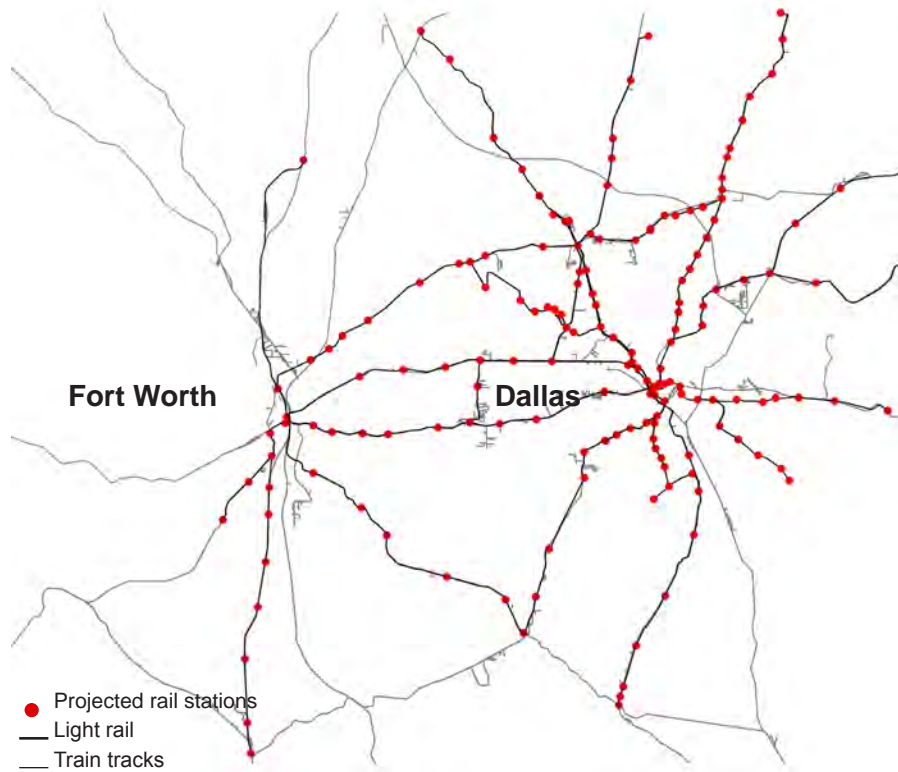


Figure 1.2: Illustrative projected passenger rail lines and stations 2030 (Data source: NCTCOG, 2010)

sidered transit oriented. Typically TODs encourage stronger reciprocal relationships among land-uses, development, and a variety of transportation choices such as walking, biking, public transportations options, and vehicles in the order of importance mentioned here (See Figure 1.3). The Center for Transit-Oriented Development also suggests to use a performance-based definition, and believe that projects should also:

- Increase “location efficiency” so people can walk and bike and take transit
- Boost transit ridership and minimize traffic
- Provide a rich mix of housing, shopping and transportation choices
- Generate revenue for the public and private sectors and provide value for both new and existing residents
- Create a sense of place (Center for Transit-Oriented Development, 2010).

1.3.3 WHAT IS TRANSIT ORIENTED DISTRICT (TODt)?

Transit Oriented District (TODt) in this study is defined as areas that are within walking distance of high density developments that contain a diverse mix of uses such as housing, employment, shops, restaurants and entertainment typically defined as the whole area within ½ mile of a transit station. These districts aspire to have strong sense of place, diverse set of travel mode choices (such walking, biking, and public transportation) and function more like a coherent district than a single project. TODts are suggested to be typically in conformance with a coherent district plan and/or zoning overlay that frequently stipulates the type and scale of uses, permitted densities, and related regulatory and recommended items. In new developing areas these districts are usually expected to be organized around the station with coherent streets, parks, plazas, and/or squares and function more like urban district than a single project. Whereas, if the district is located in an existing urbanized area the current regulations and/or future overlays are expected to encourage enhancements of streets, parks, plazas, and/or squares in order to encourage strong public spaces and connectivity within and from the district. The following location based definitions for TODts are developed for the North Texas region:

- **Transit Station:** It is light rail or the commuter rail station that serves the TOD and TODts.
- **Transit Core:** It typically refers to the area immediately surrounding the transit station, area typically defined as ¼ mile from a transit station. In most cases building facing the station area, or the area within 1/8 mile radius from the station may require additional set of provisions in this zone.
- **Transit Oriented District/Neighborhood:** Area typically defined as ½ mile from a transit station providing high density mixed-use development. Transit oriented development (TOD) can be anywhere in the transit oriented district (TODt).
- **Transit Support Area:** Area typically defined as being ½ mile to 1 mile from the transit stations. This area is typically less dense and diverse in its mix of uses and is typically comprised of single and multi-family residential neighborhoods with some neighborhood and community services. This is the area where transit adjacent development might occur (See Figure 1.7).

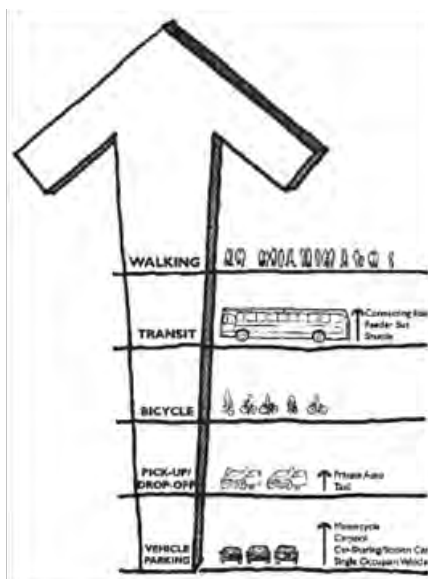


Figure 1.3 Various transportation choices and their importance to TODs (Source; BART, 2003)

1.3.4 TRANSIT ORIENTED DEVELOPMENT TYPOLOGIES

Typology refers to the range of TOD types and places around commuter and light rail stations that show a relationship among residential density, regional connectivity, and transit frequency. Its terminology contains measures reflecting a TOD’s compatibility, importance, and function in local and regional contexts. TOD typology is an applied methodology to help understand the types and places studied in this report. A variety of typologies are available in TOD literature and planning documents for ‘quality’ and ‘place’ base categorization options for TODs (See such as Austin Guide-

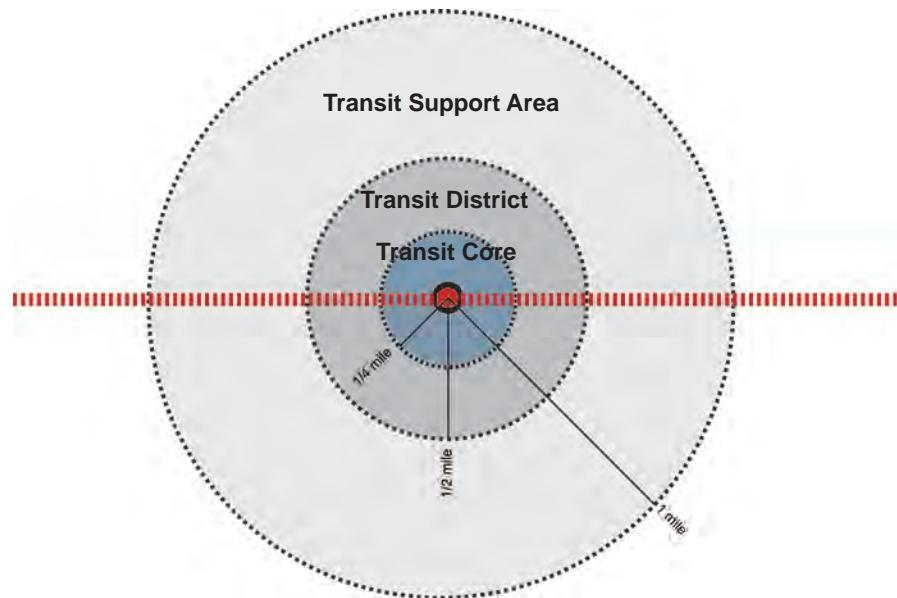


Figure 1.4 Transit area zones diagram

line, 2006). This report benefits from two categorization techniques in order to better serve the needs of the region. The report primarily utilizes small, medium, and large cities to categorize case studies and to report on preliminary findings. The population classifications that define the different city sizes are as follows: small cities less than 50,000; medium cities of 50,000 to 250,000; and large cities with more than 250,000. The TOD report also adopts Dittmar et. al.'s transit typology (2004) as it is described in *The New Transit Town: Best Practices in Transit-Oriented Development* due to its relative applicability to large metropolitan regions such as DFW (Dittmar et. al., 2004). Dittmar et. al. defines six place based TOD types (See also Table.1.1 TOD Typologies for Metropolitan Regions);

- **Urban Downtown:** (Re) emerging civic and cultural centers, employment hubs, regional transit hubs that offer the most modal options, generally the highest densities of land uses, and highest frequencies of transit service. This type of TOD location corresponds to core cities in DFW region.
- **Urban Neighborhood:** This typology concentrates in inner tier locations, often historic, neighborhoods that surround the downtown. Often these neighborhoods were built on an extension of the downtown street grid(s). Urban neighborhoods offer moderate to high density housing, shopping, and services for employees and their families.
- **Suburban Town Center:** This typology includes growing suburbs and emerging suburban town centers (such as Addison) where there is a demand for connections to other suburbs and centers and a diverse mix of uses for working, shopping, and living within close proximity.
- **Suburban Neighborhood:** Suburban community located on a light rail or rapid bus line, with access to either a sub regional center or urban downtown. This neighborhood offers the opportunity for some densification around the station, with multi-family near the station and single family housing further away.
- **Neighborhood Transition Zone:** Typically, this is a transit stop (light rail, street car, or bus) with limited neighborhood retail or office space in a largely residential area.
- **Commuter Town Center:** It is a freestanding town (separate community) outside

the suburbs. Station area can be developed as town center and may include neighborhood retail, office, and multifamily within the core area. It is transit served by commuter rail or bus service and this type of community.

Table 1.1: TOD typologies for metropolitan regions (Dittmar et. al. 2004)

TOD Type	Land Use Mix	Typical Housing Density	Regional Connectivity	Transit Frequencies
Urban Downtown	Office Center, Urban Entertainment, Multifamily Housing, Retail	> 60 units per acre	High Hub of Radial System	< 10 minutes
Urban Neighborhood	Residential, Retail, Class B Commercial	> 20 units per acre	Medium Access to downtown, subregional circulation	10 minutes peak 20 minutes off-peak
Suburban Center	Primary Office Center, Urban Entertainment, Multifamily, Housing, Retail	> 50 units per acre	High Access to downtown Subregional hub	10 minutes peak 10-15 minutes off-peak
Suburban Neighborhood	Residential, Neighborhood Retail, Local Office	> 12 units per acre	Medium Access to suburban centers	20 minutes peak 30 minutes off-peak
Neighborhood-Transit Zone	Residential, Neighborhood Retail	> 7 units per acre	Low Access to a Center	25-30 minutes Demand responsive
Commuter Town Center	Retail center Residential	>12 units per acre	Low access to downtown	Peak service Demand responsive

1.3.5 WHAT ARE THE BENEFITS OF TOD?

Arrington and Parker (2001) in Factors for Success in California’s Transit-Oriented Development, commissioned by the California Department of Transportation, identify the following potential benefits of TODs. According to the results of this study,

<p>TOD can:</p> <ol style="list-style-type: none"> 1. Provide mobility choices. By creating “activity nodes” linked by transit, TOD provides important mobility options, very much needed in congested metropolitan areas. This also allows young people, the elderly, people who prefer not to drive, and those who don’t own cars the ability to get around. 2. Increase public safety. By creating active places that are busy through the day and evening and providing “eyes on the street,” TOD helps increase safety for pedestrians, transit-users, and many others. 3. Increase transit ridership. TOD improves the efficiency and effectiveness of transit service investments by increasing the use of transit near stations by 20 to 40 percent, and up to five percent overall at the regional level. 4. Reduce rates of vehicle miles traveled (VMT). Vehicle travel in California has increased faster than the state’s population for years. TOD can lower annual household rates of driving 20–40 percent for those living, working, and/or shopping within transit station areas. 5. Increase households’ disposable income. Housing and transportation are the
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first and second largest household expenses, respectively. TOD can free-up

disposable income by reducing the need for more than one car and reducing driving costs, saving \$3000-\$4000 per year.

6. Reduce air pollution and energy consumption rates. By providing safe and easy pedestrian access to transit, TOD allows households to lower rates of air pollution and energy consumption. Also, TODs can help households reduce rates of greenhouse gas emissions by 2.5 to 3.7 tons per year.
7. Conserve resource lands and open space. Because TOD consumes less land than low-density, auto-oriented growth, it reduces the need to convert farmland and open spaces to development.
8. Play a role in economic development. TOD is increasingly used as a tool to revitalize aging downtowns and declining urban neighborhoods, and to enhance tax revenues for local jurisdictions.
9. Contribute to more affordable housing. It was recently estimated that housing costs for land and structures can be significantly reduced through more compact growth patterns.
10. Decrease local infrastructure costs. TOD can reduce costs for water, sewage, and roads to local governments and property owners by up to 25 percent.

Source: Arrington and Parker (2001)

1.4 TERMS AND DEFINITIONS

Throughout the TOD literature review we came across various terms and definitions as they pertain importance to the topics reviewed on this report. Although the terms seems to be very similar, if not the same, their definitions are slightly different from one document to the next. The following terms and definitions are developed or adopted for the purpose of this document and to ensure shared understanding for the region.

Affordable Housing: According to Texas Department of Housing and Community Affairs, “Housing where the occupant is paying no more than 30 percent (of gross income for gross housing costs, including utility costs. Housing that is for purchase (with or without rehabilitation) qualifies as affordable housing if (1) it is purchased by a low-income, first-time home buyer who will make the housing his or her principal residence; and (2) has a sale price that does not exceed the mortgages limit for type of single family housing for the area under HUD’s single family insuring authority under the National Housing Act” (TDHCA, 2010). See also affordable workforce housing.

Affordable Workforce Housing: Although the term varies city by city, it typically refers to affordable for sale or rental units geared towards the workforce (such as teachers, nurses, firefighters, and etc.). For example for the City of Dallas affordable workforce housing refers to the housing costs, including either rent or PITI (Principal, interest, taxes and insurance), that are less than 30 percent of a family’s gross income for those making less than 80 percent Area Mean Family Income (AMFI). City of Dallas Mayor’s Task Force adopted the 50 to 80 percent AMFI definition for affordable workforce housing, which translates into monthly housing costs ranging from \$750 to \$1,200 (City of Dallas, 2002, p. 66).

Alternative Zoning Mechanisms: Zoning and development regulations that are in contrast to conventional Euclidean zoning methods used in modern planning. Examples include Form Based Codes, Transect Planning, Smart Growth Principles, etc.

Brownfield Redevelopment: The development of contaminated, abandoned, or underutilized sites available for redevelopment.

Business Improvement District (BID): A Business Improvement District (BID) is

a professionally-managed organization whose purpose is to improve a locale using funds from mandatory special taxes or fees paid by property and/or business owners in a designated area. Typically, authorized by state legislation, a local government is normally responsible for establishing a district, collecting the assessments, and then transferring the funds over to the BID to use as it sees fit. The managing agent for a BID is usually a nonprofit organization, although in some cities public agencies and public-private partnerships may be responsible for a BID's operation (Mitchell, 2008).

Capital Improvement Program (CIP): A Capital Improvement Program (CIP) is a major public infrastructure and planning tool for municipalities. The CIP is a statement of the City's policies and financial abilities to manage the physical development of the community. Periodically prepared CIP allows a systematic plan for providing infrastructure improvements within a prioritized framework (City of Tukwila, 2010).

City Population: The latest US Census or Census Estimate is used for city population. The date of the census or estimate is in parenthesis.

Community Type: Five primary community form types are classified based on factors that describe the cities roles in the region and in the region's historic development pattern. The primary community form types are Core Areas, Inner Tier Communities, Outer Tier Communities, Separate Communities, and Rural/Unincorporated Areas. For a more detailed description please see the Regional Choices for North Texas report published by Vision North Texas (2009).

Commuter Rail (Transit): Urban passenger train service for short-distance travel between a central city and adjacent suburb. Does not include rapid rail transit or light rail service (National Transportation Statistics, 2010).

Connectivity: Connectivity refers to the degree that transportation networks - streets, railways, walking, cycling routes, bus services and related infrastructure interconnect.

Conventional Zoning: Single-use zoning, also known as Euclidean zoning, where land uses of the same type are grouped together and different uses are separated from each other, and where the dominant mode of access to different land use areas is the automobile.

Dallas Area Rapid Transit (DART): Created on August 13, 1983, DART is the primary transit agency for the Dallas region. DART currently operates DART Rail, a portion of the Trinity Railway Express (TRE), bus services and a system of high occupancy vehicle (HOV) in 13 cities in North Texas. The network of DART Rail, TRE and bus services currently moves more than 220,000 passengers per day across our 700-square-mile service area (DART, 2010).

Developer: Single or multiple: The name of the developer is listed when known. In the case of multiple developers the primary or master developer is listed.

Development Site: Refers to the status of the land prior to development or the type of redevelopment that is to take place on the proposed site: greenfield development, grey/brownfield redevelopment, urban or suburban infill, adaptive re-use of a building, or district revitalization.

Form-Based Codes: An alternative to conventional zoning where the built environment is developed using physical form (rather than separation of uses) as the organizing principal of development regulation. Form-based codes foster expected built results and a high-quality public realm by using physical form as the organizing principle for the code.

Greenfield Development: Greenfield development is an individual development or the creation of planned communities on previously undeveloped land. This land may be rural, agricultural or unused areas on the outskirts of urban areas.

Greyfield Redevelopment: Refers to the redevelopment of sites such as derelict

shopping centers or malls often characterized by the vast empty asphalt or concrete parking lots that surround them (Florida Planning Toolbox, 2010).

Heavy Rail (Transit): An electric railway with the capacity to transport a heavy volume of passenger traffic and characterized by exclusive rights-of-way, multi-car trains, high speed, rapid acceleration, sophisticated signaling, and high platform loading. Also known as “subway,” “elevated (railway),” or “metropolitan railway (metro)” (National Transportation Statistics, 2010).

Joint Development Programs: Joint development programs are development and management programs designed to secure the most appropriate private and/or public sector development.

Land Assembly (LA): Acquiring strategic parcels, assembling land that could be sold at a reduced price or held until market demand is stronger, or both in where there is weak market support for TOD, tools like re-zoning and area specific design guidelines will probably be insufficient to catalyze new development. This land could be used to leverage higher density projects and encourage a greater mix of uses (EPA Smart Growth, 2010).

Light Rail: A streetcar-type vehicle operated on city streets, semi-exclusive rights-of-way, or exclusive rights-of-way. Service may be provided by step-entry vehicles or by level boarding (National Transportation Statistics, 2010).

Master Planned Community: A planned community or planned city that is typically large in scale, sometimes covering thousands of acres, and is carefully planned from inception to completion status and is typically constructed in a previously undeveloped area.

Mixed-Income Transit-Oriented Development (MITOD): MITOD is an Action Guide and a tool for local jurisdictions working to foster mixed-income transit oriented development around planned transit stations. The term “mixed-income TOD” (MITOD) is shorthand to describe a set of goals that includes the provision of a mix of housing choices, affordable to a range of incomes, for people at different stages of life within a specific transit station area. The goal of MITOD guide is to help practitioners identify the most appropriate and effective planning tools for achieving MITOD in their transit station area, and ultimately to facilitate the development of mixed-income communities across the U.S. (MITOD, 2010).

Mixed-Use Development: Development that has three or more significant revenue generating uses that have significant functional and physical integration of project components; a relatively close-knit and intensive use of land; uninterrupted pedestrian connections; and development in conformance with a coherent plan that frequently stipulates the type and scale of uses, permitted densities, and related items (see Schwanke, 2003; Witherspoon and Abbett, 1976; Ozdil et. al., 2009)

NIMBYism: NIMBY is an acronym for the phrase Not In My Back Yard. The term is used to describe the opposition by residents to a development proposal.

Non-Conventional Parking Strategies: Non-conventional Parking Strategies refer to strategic parking standards coordinated for the development of a TOD. Examples include reduced parking ratios, non-profit and for-profit parking entities, shared parking, car free development, structured parking, courtyard parking, on-street parking that counts toward parking requirements, etc.

Non-Traditional Financing Mechanisms: Financing mechanisms that are in contrast to conventional financing mechanisms of a project. Examples include Tax Increment Financing (TIF), Community Investment Financing, Self taxing mechanisms such as Public Investment Districts (PID) and Business Improvement Districts (BID) and Public Private Partnerships or Joint Venture Programs.

Ownership: Single or multiple: The name of the owner is listed when known.

Passenger-Mile: 1) Auto: One passenger traveling 1 mile; e.g., one car transporting

two passengers 4 miles results in eight passenger-miles. 2) Transit: The total number of miles traveled by transit passengers; e.g., one bus transporting five passengers 3 miles results in 15 passenger-miles (National Transportation Statistics, 2010).

Permanence of Architecture: Permanence of Architecture refers to the materials of construction, and their respective life expectancy, and the flexibility of buildings to change uses over time. Typical factors regarding flexibility are floor to ceiling heights and the size of the floor plates.

Person-Miles (American Travel Survey): An estimate of the aggregate distances traveled by all persons on a given trip based on the estimated transportation-network-miles traveled on that trip (National Transportation Statistics, 2010).

Person Trip (American Travel Survey): A trip taken by an individual. For example, if three persons from the same household travel together, the trip is counted as one household trip and three person trips (National Transportation Statistics, 2010).

Primary Transit: The primary mode of transit offered at the respective TOD. Secondary and tertiary modes are listed after the primary mode.

Public Improvement District (PID): See Business Improvement District (BID).

Rapid Rail Transit: Transit service using rail cars driven by electricity usually drawn from a third rail, configured for passenger traffic, and usually operated on exclusive rights-of-way. It generally uses longer trains and has longer station spacing than light rail (National Transportation Statistics, 2010).

Set Piece Development: An individual development relatively small in scale, ranging from a single building to a multi-block development, that is wholly conceived and built in single or multiple phases.

Shared Parking: May also referred to as **Flexible Parking**. Shared Parking refers to parking strategies that are utilized by more than one user, which allows parking facilities to be used more efficiently. It is a type of parking management. Shared Parking takes advantage of the fact that most parking spaces are only used part time by a particular motorist or group, and many parking facilities have a significant portion of unused spaces, with utilization patterns that follow predictable daily, weekly and annual cycles. (Victoria Transport Policy Institute, 2010).

SmartCode: The SmartCode is a type of form-based code that offers an alternative to conventional zoning regulations. According to its lead author, Andrés Duany, the SmartCode is based on the traditional neighborhood model as it varies along the urban-to-rural Transect. In keeping with the new urbanist principle that the neighborhood is the basic unit of urban form, the SmartCode provides design criteria for streets, blocks, open spaces and buildings based on their geographic location from rural preserve to urban core. Municipalities can now adopt the SmartCode as a replacement for the aging zoning ordinances that perpetuate sprawl.

Smart Features: The Smart Feature checklist is a hybrid checklist combining features from typical definitions of TOD principles, Smart Growth principles, Traditional Neighborhood Development, and tenets of sustainability. The checklist is graded on whether the particular element was a highlighted feature, a feature that was present but not necessarily highlighted or whether the feature was not present or unknown if present.

Smart Growth: Refers to urban planning and transportation methodologies that concentrate growth in developed areas to avoid urban sprawl and its negative consequences.

Stakeholders: The term stakeholder is used here to describe anyone with an interest in the TOD. Interests range from the vested interests of owners, developers, and regulators to a relatively more passive interests of the general and specific public.

Station Area Plan: A development/regulatory plan used to guide the type, intensity

and density of development in a transit oriented district or station area (DART, 2008, see also See Appendix I DART Policy, and DART TOD guideline, 2008).

Strategic Transit Oriented District Plan: Also refer to as **Transit-Oriented District Strategic Plan** or **Strategic TOD Plan**. A guide for prioritizing the planning and implementation activities of cities, transit authorities, counties, etc., related to transit planning and transit-oriented development stations and the areas around them. These plans may be small area plans specific to a particular area or may be general guidelines for all areas adjacent to transit stations in an entire transit system. These planning efforts typically involve public participation and significant amounts of input from other public departments, such as transportation or economic development departments of city, county, or even state departments. The goal here is to develop physical guidelines pursuant to TOD principles and goals for the station area. These plans may or may not have regulatory authority and are typically used to guide development of an area with multiple ownerships where a master plan by a single owner/developer is not viable. In this research this term typically refers to 1/2 a mile radius area surrounding the station (City of Denver, 2006, August).

Streetcars: Relatively lightweight passenger rail cars operating singly or in short trains, or fixed rails in right-of-way that are not always separated from other traffic for much of the way. Streetcars do not necessarily have the right-of-way at grade crossings with other traffic (National Transportation Statistics, 2010).

Suburban Infill: Refers to the development of land in existing suburban areas that was left undeveloped during the development of a suburb.

Tax Increment Financing (TIF): Tax increment financing is a method and a tool that allows municipalities to promote economic development by earmarking property tax revenue from increases in assessed values within a designated TIF district or neighborhood. Underlying assumption is to invest the funds gained back to the district (Dye et. al., 2010).

Transit Adjacent Development: Development that is in close proximity to transit, but with a design that has not been significantly influenced by it. This is in contrast to TOD, where transit is a central design feature.

Transit Core: Area defined as ¼ mile from a transit station.

Transit District/Neighborhood: Area typically defined as ½ mile from a transit station providing high density mixed-use development.

Traditional Neighborhood Development (TND): Refers to the development of a complete neighborhood or town using traditional town planning principles typically characterized by all-new construction on previously undeveloped land, a range of housing types, a network of well connected streets and blocks, public spaces and amenities such as stores, schools and civic/public places within walking distances of residential units. This development type typically requires a combination of commercial centers, single and multi family neighborhoods, and park space (San Antonio, 2010).

Transit Oriented Design: Transit Oriented Design is defined as a relatively higher density development within walking distance of a transit station that contains a diverse mix of uses such as housing, employment, shops, restaurants and entertainment. The term is typically used to describe individual new development projects but can also refer to a mix of uses in a transit station area typically defined as the area within ½ mile of a transit station. (Center for TOD, 2010). Although this definition emphasizes design, it is used synonymously with Transit Oriented Development.

Transit Oriented Development (TOD): Defined as a high density development within walking distance of a transit station that contains a diverse mix of uses such as housing, employment, shops, restaurants and entertainment and is used to describe individual new development projects (See Section 1.3.2 for comprehensive definition).

Transit Oriented District (TODt): Defined as high density developments that contain a diverse mix of uses such as housing, employment, shops, restaurants and entertainment in an area typically defined as the area within ½ mile of a transit station. The Transit Oriented District is typically guided by a strategic Transit District or Station Area Plan (See Section 1.3.3 for comprehensive definition).

Third Places: Defined as places of refuge other than the home or workplace where people can regularly interact with other people.

Transect Planning: An urban planning model, a system of planning classification, created by New Urbanist Andres Duany. Transect planning defines a series of zones that transition between the rural landscape to the dense urban core in order to categorize typical elements of urbanism (CNU, 2010). The zones defined in Transect are (See Figure 1.5):

- **T1 Natural Zone/ Rural Preserve:** Consists of Wilderness or open space unsuitable for settlement legally protected from development in perpetuity.
- **T2 Rural Reserve:** Consists of lands in open or cultivated state or sparsely settled. Open space not yet protected from development.
- **T3 Suburban:** Consists of low density suburban residential areas with typically single family detached housing, deep setbacks, and large blocks.
- **T4 General Urban:** Consist of variety of land uses but primarily residential urban fabric. It has wide range of building types that are maximum of three stories. Streets typically define medium size blocks.
- **T5 Urban Center:** Consists of higher density (typically five stories) mixed-use building that accommodate row houses, apartments, retail, offices with. It has a tight street network with wider sidewalks.
- **T6 Urban Core:** The densest residential, business, cultural, and entertainment concentration of the region with the greatest variety of uses. Buildings are disposed on a wide range of lot sizes and set close to the frontages.
- **D District:** Consist of special districts that has unique characteristics (See Duany et. al., 2002, and Bohl et. al., 2008 for more details).

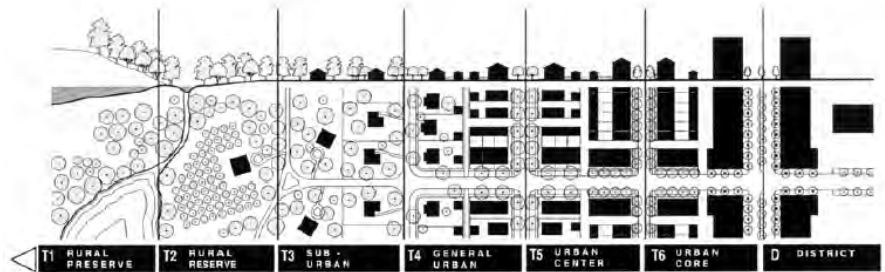


Figure 1.5 Transect map (Source: Duany Plater-Zyberk & Co. CNU, 2010)

Transit Support Area: Area defined as being ½ mile to 1 mile from the transit stations. This area is typically less dense and diverse in its mix of uses and is typically comprised of single and multi-family residential neighborhoods with some neighborhood and community services.

The Trinity Railway Express (TRE): The Trinity Railway Express is a cooperative service provided by the Fort Worth Transportation Authority (The T) and Dallas Area Rapid Transit (DART). The TRE currently provides commuter rail service between Fort Worth and Dallas and has approximately 20 miles of line and 10 stations. It is the first commuter rail line in the southwestern United States operating since 1996 (TRE, 2010).

TOD Typology: TOD Typology refers to the range of TOD types and places and shows the relationship between residential density, regional connectivity and transit frequency. Its terminology contains measures reflecting a TOD’s importance and

function in local and regional contexts. TOD typology is an applied methodology to help understand the types and places studied in this report (See Section 1.3.3 for comprehensive definition for the region).

Urban Infill: Refers to the use of land within the built-up area of an urban environment for new construction or the reuse and repositioning of obsolete or underutilized buildings and sites.

Walkability: Walkability is a measure of how conducive and friendly an area is to walking.

Workforce Housing: Referred synonymously with affordable housing.

Please see DART Glossary, 2010 at <http://www.dart.org/transiteducation/glossary.asp> for additional terms and definitions for North Texas region.

1.5 OVERVIEW OF THE RESEARCH

As it is stated in the earlier segments, the Transit Oriented Development Report is a comprehensive review of transit oriented development projects, literature, and guidelines in order to build a knowledge base in the subject and set preliminary recommendations for the Dallas-Fort Worth Metropolitan Region. The goal of this report is to produce a resource for North Texas stakeholders in both public and private sectors by studying planning, design, and implementation activities of selected TOD projects and districts in local, regional, national, and international scale.

This portion of the report will specifically focus on the methodological underpinnings of the research for literature review, data collection, analysis, and findings as well as the significance and limitations of the research in order to give the reader an objective view of the content of this report.

1.5.1 METHODS: DATA COLLECTION, ANALYSIS, AND SYNTHESIS

Transit oriented development research drives its methodological underpinnings primarily from qualitative data available through secondary sources (See Lincoln and Guba 1985 for broader definitions of qualitative methods). Although there exist references to empirical knowledge generated from quantitative sources throughout the document, the broader inferences made in this document are products of this qualitative review due to the primary scope of the research. Methodology established here first sets the framework for the research with literature review, then systematically reviews a series of TODs and TODts from North America by using case study format, analyzes our findings, summarizes the lessons learned from these layers of information, and finally gives a set of principles and recommendations that is deeply rooted in a generated knowledge base. The following highlights each of these stages and their significance and limitations.

Methodology on the Review of TOD Related Documents Literature:

There has been a wealth of information that was available to the TOD research which broadened the content and substantiated the intellectual merits of the TOD report. The literature review on this research was conducted in three steps. First, general literature on transit oriented developments and districts, such as books, journals articles, other metropolitan areas' published reports, guidelines, documents, and policies are collected and reviewed in order to establish the definitions and the framework for this particular research. Then, the investigation concentrated on the project resource review of TODs and TODts in order to conduct the case studies. Finally, the documents, policies and activities within the cities and counties of DFW Metropolitan Area that currently focus on TOD were collected and reviewed for this particular research in order to give additional regional resources to the cities, counties and transit agencies. Citation of these resources can be found throughout the report. A summary list of references are provided at the end of each case study, in addition to the comprehensive bibliography on TODs created at the end of this report.

Case Studies of Transit Oriented Developments and Districts:

Planning and design fields heavily rely on the knowledge developed through individual case studies being cumulatively converted into prescriptive theories and paradigms (Lang, 2005). This report conducted rigorous research on 21 selected case studies of TODs (among 41 cases studies initially reviewed) in DFW, Texas (Examples Austin, San Antonio, and Houston), and selected sites from North America. The focus of the case studies was to understand the development process including various planning, design, and implementation stages involved in creating TODs and TODts and identifying specific examples from small, medium, and large cities in Texas.

The cases presented in the following chapters were primarily chosen to represent a diverse set of city-sizes, TOD typologies, location, and project significance. Data and project completion were also considerations for the selection of the case studies for this particular review. For example, geography based diversity was attempted by choosing examples from different cities and states, different TOD typologies (such as suburb vs. downtown), and by assuring the varying distances to major metropolitan areas. The case studies highlighted projects of significance for the concept of TODs and TODts for their respective cities and regions. Attempt was also made to mostly exemplify recently built projects along with the classics (such as Mockingbird TOD, or Plano TODt) and some with visionary planning (such as Verano TOD in San Antonio) in order to give a better set of information to the reader.

Each case study is composed of six major parts; TOD or TODts’ Profile, Project Context, Planning and Design, Process, Conclusion (including smart features), and References. The TOD or TODt’s profile page includes a one-page summary visual that provides information concerning the attributes and the location of the case study under review (see Table 1.2 Case Study TOD Profile Page Key). The Project Brief section in each case study explains the background of the project and attempts to highlight contextual issues, while the Planning and Design section concentrates on decisions and outcomes that pertain to the importance of implementation of the TODs or TODts. The Process section particularly focuses on the explanation of key timeline and steps taken from visioning to the implementation of the project. The Conclusion portion of the case studies highlights brief summaries of lessons learned from the project review. A Reference section is included at the end of each case study in order to give the reader an easy access to additional information.

The overall study has reviewed 21 TODs or TODts (9 large city, 6 medium, and 6 small city case studies) which had the most comprehensive set of information out of 41 examples initially reviewed for this research. One of the major drawbacks of the case studies is that although attempts were made to collect information from peer-reviewed sources, some of the information collected in these cases came from web based documents, private and public websites, and other secondary sources. Although this is natural in such qualitative approaches and the revision process was rigorous to assure data reliability and accuracy, the reader must be well aware of these methodological limitations and cautioned to pull direct specific inferences from the presented material.

Table 1.2: Case study profile table key

Case Study Name and Type	Name and type of the transit station at the center of the case study.
Transit Station	Name of the transit station at the center of the case study.
Transit Agency	Name of the transit agency operating the transit station.
Primary Transit	Primary transit type, followed by secondary and tertiary transit options if applicable.

Station Status	The operational status of the transit station: planned, under construction, or built. Date of status is indicated in parentheses.
TOD Typology	See TOD Typology definition in section 1.3.4
TOD Name	The name of an individual development or the name of the transit district.
Station Address	The street address of the Transit Station.
TOD Size	The size of the development or district in acres.
TOD Status	The completion level of the development or district: planned, built, on-going or complete. The date of the status is in parentheses.
City Population	The latest US Census or Census Estimate used for city population. The date of the census or estimate is in parentheses.
Developer	Single or multiple: The name of the developer is listed when known. In the case of multiple developers the primary or master developer is listed.
Ownership	Single or multiple: The name of the owner is listed when known.
Zoning	Alternative zoning mechanisms used to regulate the development of the TOD.
Investment/Cost	The amount of known money invested in the individual development or within the transit district. It is likely that documentation of this attribute is incomplete.
Stakeholders:	Anyone with an interest in the TOD. Interests range from land owners, developers, and regulators to the relatively more passive interests of the general and specific public. If a public private partnership was identified it will be indicated here.
Development Site	Status of the land prior to development or the type of redevelopment that is to take place on the proposed site: greenfield development, grey/brownfield redevelopment, urban or suburban infill, adaptive re-use of a building, or district revitalization.
Residential	Number of known dwelling units for the case study.
Retail	Known retail space in square feet for the case study.
Office	Known office space in square feet for the case study.
Public/Civic	Public and or civic uses such as parks, schools, libraries, police stations, etc.
Parking	Parking storage methods are listed in order of primary use (structured, on-street, surface, shared).
Other	Listing of essential uses that are key to the development of the TOD.

Analysis and Synthesis Procedures for Small, Medium, and Large City Case Studies:

Based on the review of the case studies, scholarly literature, and other planning documents and guidelines, preliminary findings of the research was systematically analyzed, synthesized and summarized for a given city size category at the end of its respective chapter. Analysis methods at this stage were inclusive of systematic review of common occurrence patterns of TOD profile items, projects, contextual elements, planning and design elements, and the processes and timelines used to develop the TODs. Simple compilation of data in summary tables and graphic format allowed definitions of patterns for each of the three city sizes. Rather than comparing and contrasting case studies, the research focuses more on the commonalities and differences recorded about case studies in the summary tables. Further review of the case studies and literature illustrated emergence of patterns in sub-categories of themes which seem to be common elements in TODs and TODts. The themes below describe the categories of issues that make up the outline of our summary findings.

- **Contexts:** This category concentrates on social, environmental and economic issues surrounding the TODs, including their role and function within regional and local contexts.
- **TOD Typology:** Adopted from Dittmar et. al., 2004 for metropolitan region (see details in Section 1.3.4).
- **Market:** This section discusses the findings regarding market analysis for the development of TODs within a particular city size.
- **Connectivity:** Refers to the degree that transportation networks - streets, rail-ways, walking, cycling routes, bus services and related infrastructure interconnect.
- **Zoning:** Typical zoning mechanisms employed for the development of the TODs within a particular city size: conventional, Euclidean zoning or alternative zoning methods, e.g. Form-Based Codes, Smart Growth principles, transect planning, etc.
- **Land-Use:** This section discusses the typical development sites chosen for the development of TODs and the typical land-use mixes found in TODs of a particular city size. Development sites are urban infill, suburban infill, green field development, grey/brownfield redevelopment etc. Additionally, our use of the TOD Typology (Center for TOD) allows us to positively categorize the TODs according to their emphasis, role and function within regional and local contexts.
- **Intensity, Density, and Diversity:** Intensity refers to the emphasis of a particular land use that gives the project an identity regarding its land use mix. For example, office centers, urban entertainment centers, residential or retail centers, etc. Densities of different land-uses are summarized and compared locally and regionally for the TOD when known. Diversity refers to general diversity of uses, activities, services, and choices available provided by the new development or added to the existing station area. See the Other category in the Profile Table.
- **Stakeholders and Ownership:** The term stakeholder here is used to describe anyone with an interest in the TOD. Interests range from the vested interests of land owners, developers, and regulators to a relatively more passive interests of the general and specific public.
- **TOD Development Process:** Typical processes employed for the approval or completion of a project, respective of the city size. A timeline of the processes were used to help in our understanding of the developmental processes.
- **Partnerships and Financing:** This section discusses the partnerships and financing mechanisms employed to develop the projects, respective of the city size. This provides more detail about the specific partnerships between high level interest stakeholders such as cities and developers. Examples of alternative financing mechanisms include, but are not limited to Tax Increment Financing (TIF), Community Improvement Programs (CIP), Business Improvement Districts (BID), etc.
- **Urban Design:** The key urban design features that were typical to the TODs of a particular city size. Categories emphasized here are: architecture, open space/landscape, parking, streets, walkability and sense of place.

Smart Features:

In addition to the categories of broader issues highlighted above, which are common to most TODs and TODts, a list of more specific issues was generated to capture the essential ingredients of TODs and TODts highlighted in the projects and the literature. A list of items named Smart Features was created from the lessons learned from the case studies as well as from the findings of the other relevant literature. This 20 item list was used to assess the presence of these qualities in the case studies.

A simple three point Likert scale key was created to give a snapshot of the presence

of the desired TOD qualities in the case studies reviewed in this research. “oo - *Features highlighted by case study*” indicated strong presence of the features where as “o - *Other features illustrated*” imply the presence of the feature with less emphasis. “- *Unknown or not illustrated*” score was given to features which seemed not to be utilized in the case study or the features reviewed were simply not encountered in the case study through secondary sources.

It is essential to indicate here that this basic review technique was primarily reliant on the researchers’ judgement and it was qualitative in nature, and did not intent to rank the case studies. It was, rather, utilized to give the reader a quick snapshot of the case study and it’s substance. Comparison tables generated from this list was also used as an aid to synthesis the qualities found in the case studies that vary in community type and TOD typology (See Table 1.3 for the key and definitions for Smart Features list). The summary of the smart features along with other critical themes for TODs were collectively assessed in the summary findings section for small, medium, and large city case studies.

Table 1.3: Smart features key

Strong vision	Was there a strong vision for the project? The availability of supporting documents that indicate a strong vision.
Response to regional context	Economic, social, and environmental context within the TODs immediate environment or in the city.
Strategic transit oriented development or district plan	Is there a strategic TOD plan? The availability of supporting documents that indicate a strategic TOD plan.
Alternative zoning mechanisms (form-based codes, smart growth, etc.)	Does the project utilize alternative zoning mechanism to create the TOD?
Diverse mix of land uses (office, residential, retail, and civic)	Is there a mix of major land uses? At least 2 of the 3 major uses (office, retail, residential) were present.
Essential uses and services (child care facility, school, grocery, etc.)	Did the project emphasize essential uses and services above and beyond the big three (office, retail, residential)?
Range of housing choices	Did the project utilize a range of housing choices: mixed-income or mixed-life stage?
Community and public participation	From the available literature, was community and public participation emphasized?
Joint development programs (public private partnerships, etc.)	Were joint development programs or partnerships employed for the development of the project?
Non-traditional financing mechanisms (TIF, CIP, BID, PID, and etc.)	Were non-traditional financing mechanisms used to finance components of the project?
Compact built environment	Does the project encourage compact building distribution to create pedestrian environment and increase density?
Sustainable architecture	Does the project emphasize the use of sustainable features in its architecture such as LEED? Is the project an adaptive re-use of a building(s)?
Context sensitive design	Is the project contextually sensitive to its immediate surrounding?

Multi-modal transportation options	Are there multiple transit options available to the TOD?
Pedestrian emphasis	From the available literature, are there elements of the design that lead us to believe that the pedestrian is emphasized?
Station integration	Is the station well integrated (central component to the design) into the development or district?
Attention to place making	From the available literature, was there an emphasis on place making?
Environmental sensitivity	Was the project responsive to environmental concerns such as allocation and consumption of natural resources as well as repurposing existing infrastructure via infill and redevelopment?
Development in existing communities	Was the project a development or redevelopment project within the continuous urban fabric? (As opposed to a green field development).

Findings and Recommendations for the Region:

Final findings and recommendations primarily concentrated on the adoption of categories of themes and patterns, and the highlights of Smart Features. This chapter also explored additional resources such as guidelines for other cities, planning and policy documents for TODs in North Texas (which are listed in the recommendation chapter as a resource), passive observations conducted in the regional examples, and various TOD design exercises and discussions undertaken in classroom settings. The knowledge accumulated as a result of these data collection, analysis, and synthesis techniques were utilized to set common TOD principles and goals for the region.

This knowledge base was utilized to capture the methodological framework for the recommendations for both TODs and TODs for the DFW region. This report gives recommendations on a district scale rather (all areas within ½ from the station) than development scale (which may occur any were within the given district). Therefore development stages and recommendations for DFW primarily focused on regional contexts, TOD typology, market and development constraints, connectivity, zoning, land-use, development density, and diversity, stakeholders and ownership, TOD development process, partnerships and financing, and urban design for developing within ½ mile from the transit stations. Specific emphasis was given to issues surrounding the creation of physical environment under the framework of urban design such as architecture, open space/landscape, parking, streets, walkability and sense of place in order to create people places in transit oriented districts. One comprehensive set of recommendations was given as a result of this report. Where it is needed variations on these recommendations was highlighted for individual development, city size, or TOD typology at the end of each segment.

1.5.2 SIGNIFICANCE AND LIMITATIONS

Data gathered for this report utilized various methods for literature review and analysis in order to provide a comprehensive document for private and public sectors and transit agencies. Data was compiled from a comprehensive collection of TOD projects applied to date from various locations throughout North America and a broad set of existing literatures (such as guidelines, reports, planning documents, and policies). The research makes certain assumptions, significance, and limitations. Items listed below highlight the broader issues concerning the body of the research reported here.

Assumptions

- The researchers are impartial and unbiased in collecting and analyzing data.
- The instruments used in this study are able to capture the qualities of TODs, and TODts in North America.
- Qualitative research is a desirable method for revealing intricate dynamics of such multifaceted, and comprehensive sets of issues and projects.
- Governmental and State agencies' data and information are accurate and complete.

Significance

- The project of this scale and scope in TODs is first of its kind for the DFW region.
- The TOD Report has the potential to promote a collective and shared vision among cities, counties, private parties, transit agencies, and other stakeholders for developing TODs and TODts in North Texas.
- Unlike other reports and guidelines on the topic the TOD research attempts to systematically create a knowledge base prior to developing a set of goals, principles, and recommendations for TODs and TODts.
- The body of the research also tries to set common set of definitions and typologies for the 12 county region, and attempts to clarify the difference between transit oriented developments (TOD) and transit oriented districts (TODt).

Limitations

- Although the data and the information for the TOD research was collected from a diverse set of geographies, it is not a random sample and the recommendations presented here make only qualitative inferences from them with a regional focus.
- The number of case studies reviewed in this research was limited. Therefore, the inferences drawn here are mostly qualitative and have no statistical power.
- Unlike the major part of the research, some case study literature comes from sources other than peer-reviewed literature such as from project, developer, city, or organizational websites or documents and news. Although this is natural in such qualitative approach and revision process in this material was rigorous to assure data reliability and accuracy, this is a methodological limitation for this type of research.
- On a similar note most of these sources were reluctant to cite original resources. Although attempts were made to find the original sources for images, documents, and facts, and cite them directly, this was found to be a cumbersome process due to resource and time limitations of the project. Therefore, from time to time references to these non-conventional sources were made to capture the information needed for the TOD report.
- Although the researchers were impartial during the data collection and the review process for the case studies was meticulous, this particular research relied on the input of multiple researchers which opens discussions for reliability and human error.

1.6 REPORT OUTLINE

This report is composed of five chapters to delineate the scope of the TODt research. First chapter started with the review of the preset goals and the scope of the project, reviewed the history and the background on the topic of transit oriented development and elaborated on key definitions to set shared regional vision on the subject matter. The chapter continued with explanation of methods for data collection, analysis, and presenting findings, and finally highlighted the significance and limitations of the approach that is undertaken. The overall focus of this chapter was two-fold both to introduce the reader to the definitions and concepts under investigation and to set the framework to explain the underpinnings of the research in order to layout the methodology which informs the formation of the TOD recommendations for North Texas.

Chapter II of the research focuses on the review of nine large city TOD case stud-

ies. As it is explained in the methodology section, although the length and content of these studies varied based on the availability of the data and the information, all case studies were reviewed with the same systematic outline to create a consistent base to outline the findings for the group of case studies under investigation. Chapter III follows the same procedures for six medium size city TOD case studies and Chapter IV follows the same procedure for six small size city TOD case studies. Summary analyses and findings for each group of TOD case studies (large city, medium city, small city) are given at the end of their respective chapters.

The final chapter of this research focuses on the summary conclusions and the recommendations of this report. Chapter V starts with the brief summary of the research project, explains the knowledge base generated by the nationwide case study reviews and their syntheses as well as by the comprehensive literature review on the subject matter from other resources. The chapter then concentrates on the regional knowledge generated on TODs by highlighting resources such as plans, policies, and projects by various cities and jurisdictions in North Texas. Based on the knowledge generated in national, state, and local scale the chapter continues with setting transit oriented development and district goals. The chapter concludes with the research team's comprehensive list of recommendations for transit oriented developments and districts for the DFW Metropolitan Area.

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2. LARGE CITY TOD CASE STUDIES



COLLINGWOOD VILLAGE, CANADA
HOUSTON PAVILIONS, TX
LINDBERGH CITY CENTER, GA
MOCKINGBIRD STATION, TX
PORT CREDIT VILLAGE, CANADA
SALTILLO LOFTS, TX
SHERIDAN STATION AREA PLAN, CO
UPTOWN DISTRICT, CA
VERANO AT CITY SOUTH, TX



Source: Collingwood Village, 2008

COLLINGWOOD VILLAGE TOD		
Development Profile	Transit Station	Joyce-Collingwood SkyTrain Station
	Transit Agency	TransLink
	Primary Transit	Rail, bus
	Station Status	Built (1985), elevated
	TOD Typology	Urban Neighborhood
	TOD Name	Collingwood Village
	Station Address	5050 Joyce St., Vancouver, BC, Canada
	TOD Size	27 acres
	TOD Status	Completed (2006)
	City Population	578,041 (City Census 2006)
	Developer	Single, Concert Properties
	Ownership	Single, Concert Properties
	Zoning	City Plan (adopted 1995)
	Cost	Total development cost \$402 million, City contributed \$5 million for community amenities
Stakeholder	Concert Properties, Ltd., City of Vancouver, TransLink, The City solicited community input	
Land-use	Development Site	Redevelopment of industrial site, urban infill
	Residential	2800 units
	Retail	+/- 45,000 sq. ft.
	Office	Unknown
	Public/Civic	7 acres of parks, elementary school, community policing office, community center
	Parking	Structured parking
	Other	Childcare facility, non-market housing, for-sale housing, bicycle facilities, grocery store, drug store

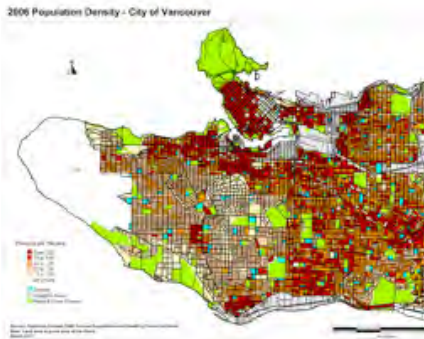


Figure 2.1 : Immigration influences to the City (Source: Canada Census 2006)



Figure 2.2 : Completed Collingwood village (Source: Collingwood, 2006)

2.1 THE COLLINGWOOD VILLAGE, BC

2.1.1 PROJECT BRIEF

Collingwood Village is located at the Eastern edge of the Renfrew-Collingwood Neighborhood in Vancouver. The City of Vancouver is the anchor to a Metropolitan Area recognized by the Canadian government that is part of the province of British Columbia in Canada.

The Renfrew-Collingwood area was one of the first inhabited in modern Vancouver. Throughout the twentieth century it developed into a largely lower-income, blue collar area, with 48% below the city's average household income. The land used to develop Collingwood Village was once an industrial park (City of Vancouver 2006).

From 1970-2000 there was no addition to the greater Vancouver area's highway miles aside from six lanes in the form of Fraser bridge. To this day, it has no urban freeway through the town, making it one of the largest cities in North America without such a thoroughfare. Additionally, "Population and employment in Vancouver has grown steadily over the last ten years, resulting in a 23% increase in trips to Vancouver" (City of Vancouver 2006).

The Vancouver light rail system has over 30 miles of track, making it the longest automated light rail system in the world, and moves approximately 200,000 passengers a day. As of 2009, the SkyTrain is looking forward to adding 48 new cars and making hundreds of millions of dollars in construction investment in the new Evergreen Line, which will be its third line in operation (TransLink 2009).

2.1.2 PLANNING + DESIGN

In the early 1990's, the area that would be one of the most dense urban environments outside of downtown Vancouver was nothing more than a run-down inner ring industrial site. Many such existed in Vancouver; in fact, when British Columbia Transit was first building SkyTrain to prepare for the World Expo in 1986, they made an effort to position the stations in these under-utilized areas for the sake of development potential (City of South San Francisco 2007).

A local developer, Concert Properties, expressed interest in adding to the existing residential Neighborhood. The company was willing to accommodate the City in areas related to open space and public facilities, and began to assist City staff in the

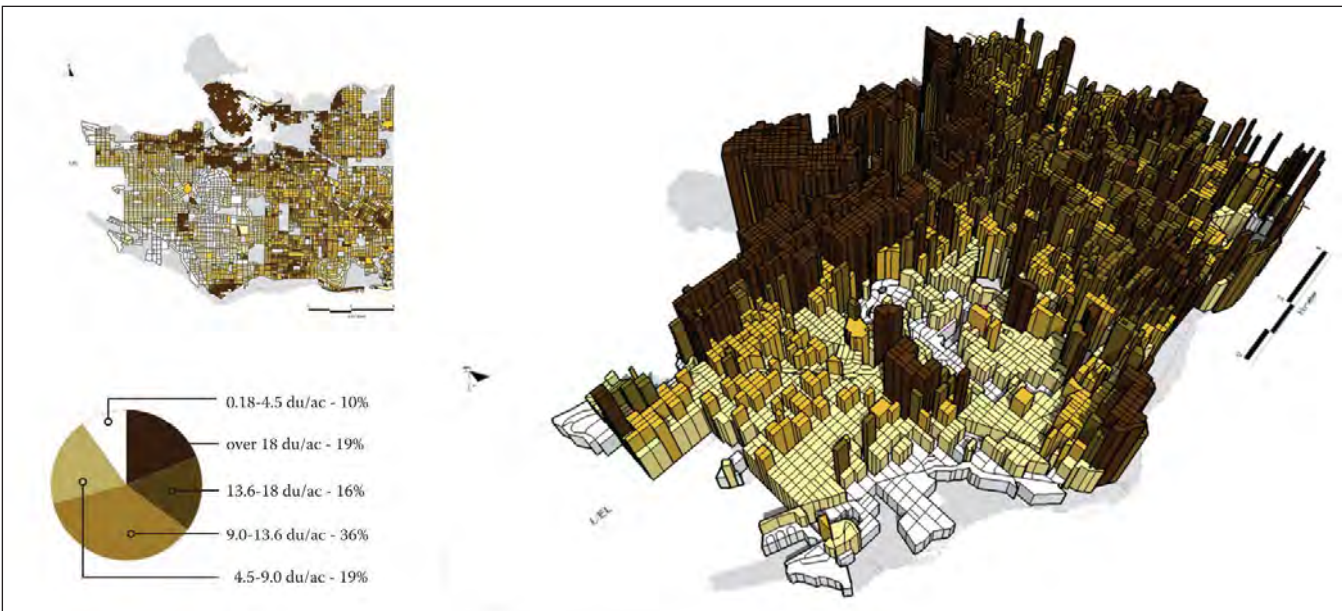


Figure 2.3: Density map of Vancouver (Source: Skyscraperpage, 2008)

process of rezoning and working out the details. Eventually, Concert Properties committed to providing 15-20% of the total residences at non-market (subsidized) rates, buildings for a Neighborhood gathering place, gymnasium, resident policing center, and more than two acres of public parks (City of Vancouver 2006).

The City of Vancouver focused on under-utilized, older industrial areas for transit oriented developments. This suggestion originated locally with the “Liveable Region Plan” in the 1970’s, and British Columbia (BC) Transit, the predecessor to TransLink, made an effort to construct their stations in these areas. By consistently doing this, TransLink has avoided widespread NIMBYism from the general public. Typically, industrial sites are buffered from the surrounding residential dwellings, so there were already obstructions to any mixed-use development that residents may have disagreed with. Also, the transit authority wisely put itself in a situation to coordinate with the Greater Vancouver Regional District’s (GVRD) popular Regional Centre densification initiatives. This presented options related to public financing and regional support otherwise unavailable (City of South San Francisco 1997).

TransLink presented itself as a community leader in densified living by investing in its own projects, whether directly or indirectly. Most of the land that the train tracks covered was not owned by TransLink, rather the company owned easements on the land. The critical land around the train station, however, was publicly owned, given that so much planning had gone into the idea of TOD’s throughout the years (Kenworthy and Newman, 1999). TransLink also relocated its offices to sites near light rail stations, as if to express their commitment to the idea of dense, public transit-anchored development.

Land use planning was exercised on the part of the City in promptly rezoning the 27-acre plot of land to Comprehensive Development District (CD-1) to manage the land-use diversity and density. The City rezoned the entire area in 1993, mainly as regulation code Comprehensive Development District “CD-1” (See City of Vancouver Zoning and Development By-law CD-1(314), City of Vancouver 2008). It is tailored-made to the intended form of development, which included the following highlights in the realm of TOD-planning:

The by-laws call for compliance with the existing structured physical form of Collingwood. It required accommodation of the surrounding citizenry in addition to the developer’s clientele. It also required 20% of total housing to be built for families, as well as 20% of the total stock to be dedicated to rental tenants only, thus preserving the diverse economic status of the neighborhood. Also, the City required that 15% of the total units available be offered at non-market prices (Davison, 2008). By-laws also regulated the parking by measuring out one space for each 215 feet of residential space, and .75 spaces for each residential unit. Architectural design criteria included but not limited to overall up-zoning, pedestrian pathways, utilities, infrastructure, and land for parks was required by the city of the developer, most of it in step with the incremental nature of the project. Certain details were left up to the discretion of the City Director of Planning such as the detailed zoning for certain sub-areas within the development and density transfers to encourage maximum density.

As a result of these changes and regulations, land speculations diminished as to how much one could profit from this area, and advanced the cause of urban densification. On the other side, the city limited competing developments by zoning restrictions on similarly-located areas it owned. This shelved investigative maneuvers by potentially distracting developers, which may have drawn Collingwood Village the way of another failed TOD project in the City (City of South San Francisco 1997).



Figure 2.4 : Transit car interior (Source: Skyscraperpage, 2003)



Figure 2.5: Street view (Source: flickr, 2009)

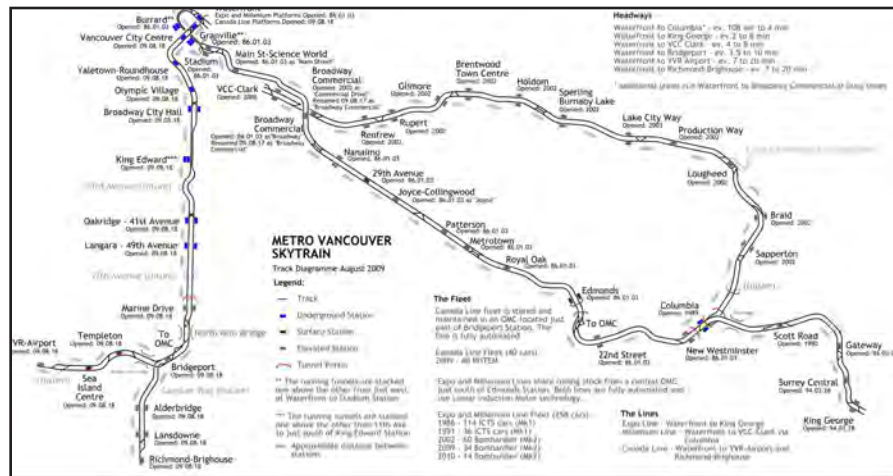


Figure 2.6: Metro Vancouver skytrain (Source: Vancouver, 2009)

2.1.3 PROCESS

The process behind the Collingwood Village at Joyce-Collingwood station reaches back administratively to the 1970’s. The Vancouver region has a rich history of regional cooperation in planning for future urbanization and to combat geographic restraints (Kenworthy and Newman, 1999; City of South San Francisco, 2007).

In the 1970’s the Greater Vancouver Regional District, a collection of Vancouver and nineteen suburbs, drew up a landmark plan for accommodating densification and eliminating deleterious traffic conditions in the Vancouver metro area. This became known as the “Liveable Region Plan” and still serves as a milestone in the area’s urban planning culture. The plan’s main contribution to urban patterns today is the creation of six regional centres that served to contain urban growth and provide for its future as much as possible (Newman, 2000). The twenty participating cities responded in kind during the 1980’s and adopted ordinances aimed at implementing these goals. This included up-zoning the regional centres to attract development and induce density, parking restrictions, right-of-way easements, and overlay districts where needed to diversify the commercial base and uphold design standards (City of South San Francisco 2007). These actions bear fruit to this day, with Collingwood Village being particularly noted for its high standard of design and integration into the existing urban landscape (Davison, 2008).

The City oversaw the development work and adhered closely to recently-published densification suggestions. Also, this presented a unique opportunity for the municipality to appear willing to work with the private industry. The City of Vancouver is one of the largest employers in the region (Statistics Canada 2006), and had been unsuccessful in some of its widely-publicized goals related to modern urban restruc-

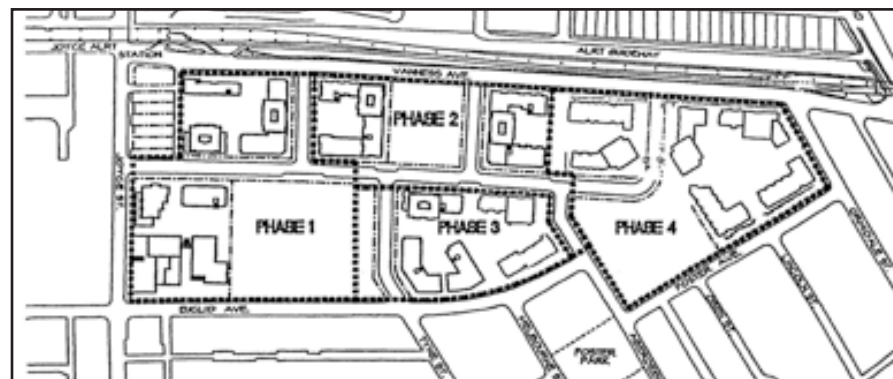


Figure 2.7: Phases (Source: Collingwood, 2009)



Figure 2.8: Collingwood Village (Source: Sharpdiamond, 2009)



Figure 2.9: Joyce Collingwood streetscape (Source: Flickr, 2009)

turing. The City acted quickly, rezoning the 27 acres comprehensively the same year Concert Properties applied (City of Vancouver 2007). It also assisted the private developer in the funding construction of the Collingwood Neighborhood House, and left the construction schedule open-ended to relieve the pressure on the developer’s side associated with completing all four phases consecutively (Attili and Sandercock, 2000; City of Vancouver, 2008). The Residents of Collingwood, a tight-knit, historically diverse community, were actually lobbying for more densification. They saw people as a welcome replacement for the old industrial area, and suggested setting the building heights for the new structures at a higher level than the developer and the City (Davison, 2008). Some of the important steps taken for the development of Collingwood Village include:

- 1970’s The “Liveable Region Plan” is adopted by the Greater Vancouver Regional District (GVRD). It suggests six regional centres to induce densification and control rising traffic congestion in British Columbia (Kenworthy and Newman, 1999).
- The Joyce Station is constructed for the upcoming World’s Fair. The City of Vancouver soon began drafting plans to redevelop the whole Neighborhood of Renfrew-Collingwood based on the station (City of Vancouver, 2006; Carmichael, 2005).
- 1990 “The Urban Containment Policy” was adopted by the GVRD, including many tools and incentives to direct development away from highways and toward transit stops (Newman, 2007; City of South San Francisco 2007)
- 1993 Collingwood Village Development initiated by Concert Properties; 27 acres purchased for \$65 million; zoning by-laws adopted for the village, organizing construction into four phases and effectively ending land speculation (Carmichael, 2005)
- 1994 Renfrew-Collingwood crime prevention center opened, mostly volunteers. At this point Renfrew-Collingwood had Vancouver’s highest crime rate, and was bordering on blight (Carmichael, 2005); Phase One construction of Collingwood Village begins.
- 1995 The Melbourne is completed; Earle’s Court is also completed; The Macgregor is completed; Wessex Gate is completed; Phase Two construction begins.
- 1998 Emerald Park Place is completed; The Centro is completed.
- 1999 The Remington is completed; Phase Three construction begins.
- 2002 The Millenio is completed.
- 2003 The Nexus is completed; Phase Four construction begins.
- 2005 The Latitude is completed.
- 2006 The Urba is completed; The Circa is completed; The Bradford is completed; May—the Joyce station is renamed the “Joyce-Collingwood” station, highlighting the effect the transformation has had on the community as a whole (Emporis Company, 2008; TransLink, 2006).
- 2007 The completed development wins numerous Canadian Institute of Plan-



Figure 2.10: Joyce Collingwood (Source: Flickr, 2009)



Figure 2.11: Housing at Collingwood Village (Source: Collingwood Village, 2009)

ners awards; a story is run in the Vancouver Sun newspaper celebrating the efforts of the Collingwood Neighborhood House (CNH); a movie documentary is released on the CNH, entitled “Where Strangers Become Neighbors” by Leonie Sandercock and Giovanni Attili.

2.1.4 CONCLUSION

The Collingwood Village development is considered a success by the City of Vancouver; it implemented similar strategies in an area called False Creek a few years later (City of Vancouver, 2006). But what exactly did the City of Vancouver do to aid the developers at Collingwood Village, and how effective was the City in all of its efforts? Certainly Collingwood Village has achieved success at some levels. Its population is built-out, with competition for space in the area driving real estate prices higher every year since completion, according to local real estate agents Warren Bros. Realty, Ltd. Additionally, the community maintains a strong volunteer ethic, as well as an award-winning Neighborhood House that serves as a standard for the industry.

The Collingwood Neighborhood House is an extension of a non-profit organization whose mission is to provide volunteer-driven, community based activities committed to enhancing neighborhoods (ANHBC, 2011). It provides services through social, educational, cultural, and recreational programs and improve the quality of life for everyone in the neighborhood. The House has expanded three times since its construction, as well as doubled its main volunteer base (Carmichael, 2005). According to the local newspaper, the Vancouver Sun, the House is the “heart of that community,” and serves as a rallying point for the many cultures represented, fulfilling 164,000 single uses from 2005-2006 alone (Vancouver Sun, 2007; Davison, 2008).

The review of the case study illustrates that Collingwood Village helped achieve a higher level of density for the Renfrew-Collingwood Neighborhood, and thus the City of Vancouver, through its provision of around 2,800 new residential units. In 1991, the approximate density of Renfrew-Collingwood was 13,000 persons per square mile. In 2006, that density had risen to 15,420 persons per square mile. Such an increase would not have been possible without an additional 5,000 people on 27 acres on the east side of the Neighborhood. In addition to density, traffic volume has been significantly reduced throughout greater Vancouver thanks to TOD’s like Collingwood Village. The City records that, for the Renfrew-Collingwood Neighborhood, both passenger and public transit commuting rates rose from 1991 to 2006, strengthened by a correlating drop in rates of people driving themselves to work.



Figure 2.12: Renderings of Gateway business park by the skytrain station (Source: Mcmparchitects, 2009)



Figure 2.13: Collingwood Village walkways (Source: Sharpdiamond, 2009)



Figure 2.14: Collingwood Village street views (Source: Sharpdiamond, 2009)

The Collingwood development project has been met with positive reactions from scholars and residents in regard to its design and form (Sandercock, 2000; Davison, 2008). From an academic point of view, care has been taken in the direction of uniformity and vision, both in the direction of higher density for the neighborhood, reveal quality planning and leave a pleasant impression to the eye (Newman, 2000).

The main contribution that the City of Vancouver made to the change of density brought by the 27-acre development area was not money, but zoning changes and regulations (Babalik, 2000). Additionally, the City concentrated efforts on certain types of sites, made direct investment itself as an example, exercised proactive land use control, and offered developers important opportunities to be involved in future station-area construction (Crampton, 2003).

Given the TOD's general rate of return on its original objectives, as briefly mentioned, the case for overall success is strong. Those points did not include the fact that in its first 5 years Collingwood Village produced around \$145 million in revenue for all levels of government (Carmichael, 2005). The urban rail transport in Vancouver, of which the Collingwood Village is a prime example, has empirically achieved a densification of the city's central district, the redevelopment of under-utilized areas, and changed the pattern of urban growth from what it had been (Babalik, 2000). Peter Newman and Jeffrey Kenworthy offer some of the following reasons why the experiment in urban density worked in their 1999 book "Sustainability and Cities".

The history of regional cooperation in planning dense town centers included: public ownership of critical development land near SkyTrain stations, timely inclusion of private partners, early consideration given to public opinion, and overall lack of highway mileage to compete with. The scarcity of land in and around Vancouver induced the city and its residents to actively desire density as a reaction to high land prices. That being said, two issues remain unresolved due to a lack of research into the subject: parking and non-market housing. The parking has been a matter of concern in past case studies done on the development (Davison, 2008, Bunt, et. al., 1997).

Also, this case study's research did not find any resources regarding the non-market housing supply versus local demand. As it stands, at least 30% of Collingwood-Renfrew's families live at or below the poverty line, producing a demand that would not be appear to be met by 194 non-market units. Research needs to be continued in the area in an attempt to provide non-market housing for the needy population (RCLP, 2008). From a design point of view, the Collingwood Village is a tight network of paths, landmarks, and nodes of open space drawing pedestrian traffic from the Joyce-Collingwood Station and directing them through the development to the west, toward the Burnaby City limit line. The main thoroughfare is Crowley Ave., preserved from the planning stages as a central artery and community focus. There are sharp edges at all sides of this development, and not only for the fact that its density is far greater than that of its surroundings. The style of architecture, would be considered an updated Art-Deco/Miami condominium style, stands out against the backdrop of mid-century single-family homes. However, the real success in this development is not the design, or even the construction, but rather the planning and implementation. From the beginning, City planners, Concert Properties, and the residents seemed to worked together, and cohesively and practically reach agreements based on costs, desired density, and even where the Neighbourhood House should be located. Review of the literature illustrates that these efforts paid off immensely and Collingwood Neighborhood House website yields various evidence to support of that claim. The secondary data also illustrates that residents are active, involved, and proud of what draws them together: their own particularities. Should such a project be attempted in the US, one ponders which point the plan would struggle the most, but with the American national tendency toward independence and privatism, it seems such an exercise may not likely to last through to fruition.

Smart Features of Collingwood Village Transit Oriented Development:

- oo Strong Vision
- oo Response to Regional Contexts
- oo Strategic Transit Oriented District Plan
 - Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- o Mix of Major Land Uses (Office, Residential, Retail, Civic)
- oo Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
- oo Range of Housing Choices
- oo Community and Public Participation
- oo Joint Development Programs (Public Private Partnerships, etc.)
 - Non-traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- oo Compact Built Environment
- oo Sustainable Architecture
 - o Context Sensitive Design
- oo Multi-modal Transportation Options
 - o Pedestrian Emphasis
- oo Station Integration
 - o Attention to Place Making
 - o Environmental Sensitivity
- oo Development in Existing Communities
 - o Non-conventional Parking Strategies

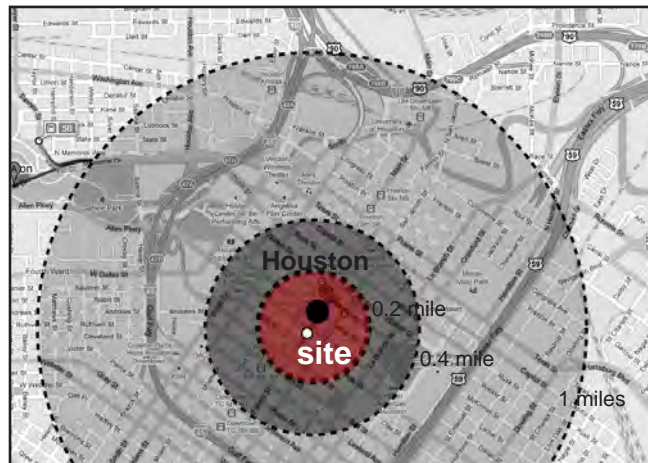
Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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Source: Houston, 2009

HOUSTON PAVILIONS TOD		
Development Profile	Transit Station	Downtown Transit Center
	Transit Agency	Metropolitan Transit Authority of Harris County
	Primary Transit	Light Rail
	Station Status	Built (2004)
	TOD Typology	Urban Downtown
	TOD Name	Houston Pavilions
	Station Address	1900 Main Street, Houston, TX 77002
	TOD Size	6 acres
	TOD Status	Completed (2008)
	City Population	2,300,000 (2009 U.S. Census Estimate)
	Developer	Multiple
	Ownership	Single, Houston Pavilions, LP
	Zoning	Follows the major development codes and ordinances of Downtown Houston.
	Cost	Total development cost \$170 million, tax increment reinvestment zone, development grants from city of Houston and Harris County
Stakeholder	Texas Real Estate Trust, Inc. and Entertainment Development Group, Houston Pavilions, LP City of Houston, Harris County, Buchanan Street Partners, North Houston Bank	
Land-use	Development Site	Urban infill and redevelopment
	Residential	None
	Retail	360,000 sq. ft.
	Office	200,000 sq. ft.
	Public/Civic	None
	Parking	Structured parking
	Other	Entertainment venues



2.2 HOUSTON PAVILIONS DOWNTOWN, TX

2.2.1 PROJECT BRIEF

The City of Houston is the fourth largest city in the US and does not have a zoning ordinance. The steady growth in the absence of a zoning regulation, has been a matter of concern for both the decision makers, as well as the citizens (Ozdil and Ozdil, 2008). Recent rise in the growth rate of population and demands for new housing invoked, once again, the concerns about the built environment, leading the City to take measures against further sprawl and congestion in the inner-city and along the lines of main arteries connecting the downtown with the suburbs. A transit oriented development approach was considered to be one of the critical means to overcome both environmental and planning problems that, to a large extent, stemmed from this unique history.



With 23% of the city's entire enclosed office spaces, Downtown Houston has the greatest concentration of high rise office buildings and of employment (over 150,000). A research conducted by Central Houston (2009) reveals that about 52% of people working in downtown use alternate forms of transport like bus, carpool, light rail or walking besides their own private vehicle. Metro Rail is operated by the Metropolitan Transit Authority of Harris County, Texas. METRORail is the second light rail service in Texas after the Dallas Area Rapid Transit (DART) system. It began operating about 60 years after a previous streetcar system was closed down. It runs through Downtown, midtown, the Museum District, the Texas Medical Center, Reliant Park and the South Fannin Park and Ride lot.



Against the backdrop of 1800's-era architecture along with many newly constructed office towers, Houston Pavilions, a three block urban mixed-use entertainment, retail, office complex, was developed in downtown Houston in 2004, extending from Main Street to Caroline between Dallas and Polk. Houston Pavilions was anticipated "to be a descent of Jane Jacobs's ethos", designed to undo the damage of mid-century modernist planning theory (Page, 2009, p.12). Dwelling on the favorable circumstance of increased public accessibility with the light rail, the goal was set to reinstate the human activity back on the streets of downtown with the project. The proximity to the main street characterized by sidewalk cafes, pubs and nighttime hotspots, and to the Main Street Square built around two light rail stations along the street would reinforce this goal. For this, the developers put together three empty blocks directly adjacent to the core of downtown. The development has three buildings connected with each other via a sky bridge. It also has a central court which serves as an open space and a transition area for the visitors. The pavilions opens into the plaza facing the light rail tracks. The office district surrounds the Pavilions on two sides.

2.2.2 PLANNING + DESIGN

Hardly any evidence exists suggesting that the planning and design of the site was put in action as part of a wider plan for downtown, other than the stated vision reflected in The Wall Street article by Herrick (2006, January 25) of reinvigoration of the downtown attracting retail. This may have to do with the specific circumstances surrounding the planning practice in the city. Since the TOD lies within the downtown, it follows the major development codes and ordinances of Downtown Houston. It comprises of 360,000 sq. ft. of retail space, 200,000 sq. ft. of office space, and a 480,000 sq. ft., 1,675 space parking garage (Kaplan, 2009, July 18). Houston Pavilions is within 5 to 10 minutes walk from the downtown Metro transit station. The Pavilions borders three of Downtown's pieces: the (small) retail district at Main Street Square, the "T" shaped high-rise district, and the sports/convention area around Discovery Green. The retail space is located on the first two levels of the development and the entertainment venues are on the third floor. It also has a central courtyard and pedestrian-friendly streetscape. The second and third floors of the development are connected by sky-bridges on the second level.



Figure 2.15: Views of Houston Pavilions
(Source: Houston Pavilions, 2009)



Figure 2.16: Rendering of Houston Pavilions (Source: Walterpmoore, 2009)

Table 2.1: Land Use mix of Houston Pavilions

LAND USE PLAN		
Use	Square Feet	Types
Retail	360,000	Book store, Clothing store
Office	200,000	Bank and Law firms
Parking	480,000 sq. ft.	1,675 space parking garage
Total	700,000 sq. ft.	



Figure 2.17: Night rendering of the Houston Pavilions (Source: Canalpluspr, 2009)



Figure 2.18: Rendering of Houston Pavilions (Source: Houston Pavilions, 2009)

2.2.3 PROCESS

Houston Pavilions is financed through a public-private funding mechanism Landmark Awards (April 2009). The development site has been annexed into the Main Street/Market Square Tax Increment Reinvestment Zone. Buchanan Street Partners of Newport Beach, CA provided \$47 million and is the principal financial partner of Houston Pavilions. The project received a \$8.8 million development grant from the City of Houston and \$5.5 million from Harris County as additional funding. The project also secured \$120 million in construction financing from North Houston Bank. The client, Entertainment Development Group, Inc., needed to obtain \$2 million in equity financing for a high profile, mixed-use urban development project, as well as, general guidance regarding joint venture structure and negotiations (Sarnoff et. al. Kaplan, 2008, October 11). The project:

- Created a detailed investment package and targeted smaller entrepreneurial investment groups in multiple states to create a competitive environment to seek and negotiate an equity joint venture.
- Utilized the investment package to communicate “the project story” effectively to several different audiences of investors and lenders.
- Orchestrated detailed investment equity package discussions with potential institutional capital partners.
- Structured a joint venture between Latitude Investments of San Francisco and the Client.
- Advised Latitude on further restructuring when Buchanan Street Partners and North Houston Bank agreed to provide the balance of the project funding (\$150 million).

The project conceptualization started in 2004, it broke ground in 2007 and was opened in October 2008.

- 1988 Voters approve plan to construct twenty miles of light rail.
- 1992 New Mayor Bob Lanier kills light rail plan and proceeds to spend \$500 million set aside for light rail on the Metro police force and fixing potholes.
- 2000 House Appropriations Committee Chair Tom Delay and Rep. John Culberson are successful in denying federal funds to help pay for METRORail.
- 2001 Despite the rejection by the FTA and State of Texas, the City of Houston moves forward on its own, breaking ground for METRORail.
- 2003 Secretly financially backed by Tom Delay, Texans for True Mobility sue and force a vote to stop METRORail construction.

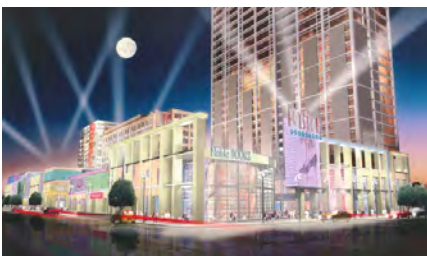


Figure 2.19: Renderings of Houston Pavilions block (Source: Houston Pavilions, 2009)



Figure 2.20: Birdseye rendering of Houston Pavilions at night (Source: Houston Pavilions, 2009)

- 2003 Opposition tactics backfire and voters opt for more rail, approving a \$640 million dollar bond to add 72 miles of rail.
- 2004 METRORail opens, 10 months ahead of schedule with 12 minute headways.
- 2004 64,005 passengers ride METRORail, during Super Bowl XXXVIII.
- 2007 Houston Pavilions, METRORail's largest TOD to date, breaks ground.
- 2008 Houston Pavilion opens.

2.2.4 CONCLUSION

Sharing the scope with TOD approach, Houston Pavilion differs from other cases in terms of land-uses it incorporated in the development project. With the project, a form of mixed-use was developed at the core of the downtown leaving the residential component outside. For Page (2009), the lacking residential use at the development is a significant drawback taking into consideration the aspirations of the stakeholders (both the city and the developer) to re-vitalize the downtown with human activity. The development did incite some level of activity pulling-in retail and entertainment functions, however, missing emphasis on the connectivity of the site with major, potentially pedestrian, destinations (such as, main street plaza, main street and the stations) is the major obstacle for the site to reach its full potential. The very same factor could be the reason which would possibly threaten the economic sustainability of the complex.

Smart Features of Houston Pavilions Transit Oriented Development:

- o Strong Vision
- o Response to Regional Contexts
 - Strategic Transit Oriented District Plan
 - Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- o Mix of Major Land Uses (Office, Residential, Retail, Civic)
 - Essential Uses and Services (child care facility, school, grocery, etc.)
 - Range of Housing Choices
 - Community and Public Participation
 - Joint Development Programs (Public Private Partnerships, etc.)

- Non-traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- oo Compact Built Environment
- oo Sustainable Architecture
 - o Context Sensitive Design
 - o Multi-modal Transportation Options
 - o Pedestrian Emphasis
- Station Integration
- oo Attention to Place Making
 - o Environmental Sensitivity
- oo Development in Existing Communities
- oo Non-conventional Parking Strategies

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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Source: Lindbergh City, 2009

LINDBERGH CITY CENTER TODt		
District Profile	Transit Station	Lindbergh Station
	Transit Agency	Metropolitan Atlanta Rapid Transit Authority (MARTA)
	Primary Transit	Light Rail, Bus
	Station Status	Built (1984), rebuilt 2002
	TOD Typology	Suburban Center
	TOD Name	Lindbergh City Center
	Station Address	2424 Piedmont Road, Atlanta, GA 30324
	TOD Size	47 Acres
	TOD Status	Phase I completed in 2008, on-going
	City Population	540,900 (2009 U.S. Census Estimate)
	Developer	Multiple
	Ownership	Multiple
	Zoning	Special public interest zone created for Lindbergh Transit District
Cost	\$500 million from private sector, MARTA \$100 million for station and station improvements	
Stakeholder	Carter & Associates, MARTA, Cooper Carry, Dawson Company, Bell South, Joint Development Program between MARTA and BellSouth, tax abatement for BellSouth	
Land-use	Development Site	Suburban infill
	Residential	2500 units (buildout)
	Retail	380,000 sq. ft. (buildout)
	Office	2.4 million sq. ft. (buildout)
	Public/Civic	Main Street
	Parking	Structured parking
Other	Hotel, affordable housing, free parking for retail and daily commuters, bicycle facilities, showers	

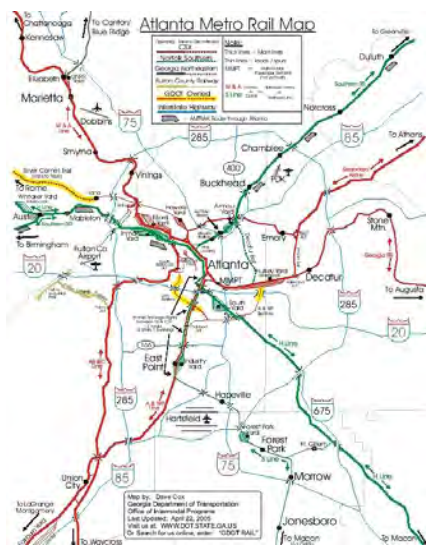


Figure 2.21: Metro Atlanta rail map (Source: Dave Cox, 2009)

2.3 LINDBERGH CITY CENTER, ATLANTA, GA

2.3.1 PROJECT BRIEF

Facing threats of air quality and traffic congestion, aggravated by increasing rate of growth throughout 1980's and 1990's forced Atlanta to join other metropolitan cities by the end of 1990's, to reconsider the urban trajectory that has been marked by automobile-dependent movement pattern. A series of transportation and land-use projects and strategies were prepared by local actors and authorities to set a new vision for the city. In accordance with the newly set vision, in 1997, Metropolitan Atlanta Rapid Transit Authority (MARTA) announced one of the city's largest redevelopment plans in the city's history (Feigon et al., 2004). A large-scale (47-acre site) mixed-use project, called Lindbergh City Center, was initiated at a site near Lindbergh Station at the central city that has high accessibility to the region's downtown. Prior to the development, the site consisted of low-density strip development and land held by MARTA around the station was serving primarily as a park-and-ride lot for local commuters.

2.3.2 PLANNING + DESIGN

The project was designed to be a significant center of economic and cultural activity with regional scale accessibility, and should be considered as a significant step in bringing the strategy of poly-centric city into actuality. With a moderate to high-density mix of residential, commercial, and office uses, the Lindbergh City Center project gave rise to a "mini-city". The development included more than 2 million square feet of office space, in addition to 800 units of housing.

- Size of the development in parts: Phase I - 2.3 million sq. ft., by end of Phase II- 4.5 million sq. ft.
- Ample retail parking available in existing decks at Lindbergh City Center
- All retail parking at lower and most convenient levels in decks
- Some nested parking is available
- Additional on-street parking available throughout the development
- Twin 14-story office towers owned and occupied by AT&T
- The High-Tech Institute, a post-secondary education provider, will occupy 45,000 sq. ft.
- A future 225,000 sq. ft. office tower is planned atop Parking Deck Two
- Uptown Square, an apartment development by Harold A. Dawson Company and The Lane Company, opened in 2006 with 363 units.
- Eon at Lindbergh, also from Harold A. Dawson Company and The Lane Company, is a 352-unit condominium development opened in Summer 2008.
- In addition to the residential development within Lindbergh City Center, more than 2,000 condominium and apartment units are currently under construction within a half-mile radius, and another 2,000 announced.

Table 2.2: Transit options

Is there a Bicycle Plan?	Yes
Is there a Pedestrian Plan?	Yes
Dominant Street Pattern in Area:	Modified Grid
Type of Street Station is located on:	Arterial

2.3.3 PROCESS

The reason that makes Lindbergh development a critical case is that following the shift to FTA's joint development policy (in 1997) MARTA took the initiative, for the first time, to develop the area surrounding the transit station. The introduced joint development policy was not only making it possible for MARTA to take a proactive role in the place-making process, it also opened up the channels to use public land under



Figure 2.22: The construction of Lindbergh city center (Source: Lindbergh City, 2009)

MARTA's holding for urban development (Dumbaugh, 2004). As the undertaker and the primary financier of the project, MARTA prepared a TOD plan through a competitive-bid process, and selected a master developer for the implementation of the plan (TCRP Report 102, 2004). In this joint venture, the agency contributed the land for the development, while the developer carried out the project through development and construction to acquire a 99-year ground lease on the property developed.

- 1985 Lindbergh Station is opened.
- 1997 Lindbergh TOD project was announced. It is initially planned for 47 acres.
- 1999 Additional 1.5 acres acquired for the project.
- 1999 Construction of the Phase-I began.
- 2001 \$81 million worth bonds issued for the construction.
- 2005 Piedmont, new urbanist development, breaks ground.
- 2006 Uptown Square apartment development opens.
- 2008 Phase I complete of the project is completed.

Implementation of the project has taken longer time than it was projected, since the process was disrupted by strong community protests when the local government declared a large corporate as a tenant (local telecommunication company BellSouth) for the project. Phase I was completed in 2008. BellSouth consolidated its offices and some 13,000 employees from multiple suburban locations and moved into two of the office towers in the area. The project has already had a trickle-down effect attracting further retail and office uses in the area outside the borders of the project. Even as Phase I of this TOD was going on, a new complex called the Lindbergh Plaza started being built adjacent to the site.

2.3.4 CONCLUSION

Lindbergh City Center has received wide recognition in TOD literature (Dittmar et.al., 2004; Dumbaugh, 2004; Feigon et.al., 2004) with financial and organizational model adopted which, eventually, lead to a partnership between public and private. It is suggested that the resources listed at the end of this case study should be reviewed in detail for a more concentrated look specifically at the financial concerns surrounding TODs.



Figure 2.23: View of Lindbergh City Center (Source: Lindbergh City, 2009)



Figure 2.24: View of Lindbergh city center
(Source: Carterusa, 2009)

Lindbergh TOD master plan initiated a strong change incorporating high-density with mixed-use at a formerly low density development surrounded by major arteries and freeways. The first phase of the development resulted in an “office park” with abundant office space and parking structures leaving, to a large extent, the housing component out. When considering the design approach adopted, pedestrian circulation within the site seems to have received some attention. Nevertheless, the project has yet to overcome the common connectivity problem associated with TOD practices; that is, to integrate the site with the surrounding neighborhoods.

Smart Features of Lindbergh City Center Transit Oriented District:

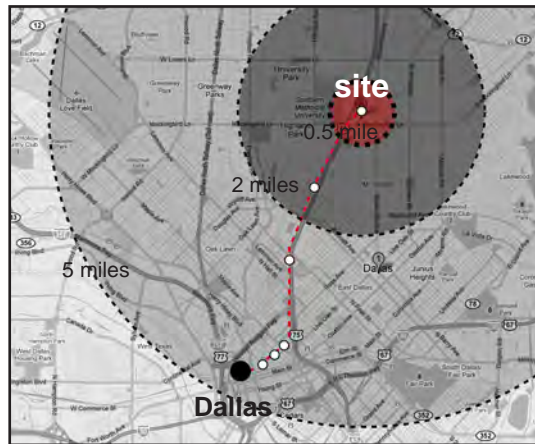
- o Strong Vision
- o Response to Regional Contexts
- o Strategic Transit Oriented District Plan
- o Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- o Mix of Major Land Uses (Office, Residential, Retail, Civic)
 - Essential Uses and Services (child care facility, school, grocery, etc.)
- o Range of Housing choices
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 - Non-traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- o Compact Built Environment
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- o Context Sensitive Design
- o Multi-modal Transportation Options
- o Pedestrian Emphasis
- o Station Integration
 - Attention to Place Making
- o Environmental Sensitivity
- o Development in Existing Communities
- o Non-conventional Parking Strategies

KEY

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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Source: DART, 2009

MOCKINGBIRD STATION TOD		
Development Profile	Transit Station	Mockingbird Station
	Transit Agency	DART (Dallas Area Rapid Transit)
	Primary Transit	Light Rail, Bus
	Station Status	Built, 1997
	TOD Typology	Urban Neighborhood
	TOD Name	Mockingbird Station
	Station Address	5465 East Mockingbird Lane, Dallas, Texas 75206
	TOD Size	10 acres
	TOD Status	Phase -1 complete (2001)
	City Population	1,300,000 (2009 U.S. Census Estimate)
	Developer	Single, UC Urban (now Hughes Development, LP)
	Ownership	Single, UC Urban (now Hughes Development, LP)
	Zoning	Conventional zoning
	Cost	Development costs \$145 Million
Stakeholder	UC Urban (now Hughes Development, LP), The City of Dallas, DART	
Land-use	Development Site	Adaptive reuse, urban infill
	Residential	211 units
	Retail	178,000 sq. ft.
	Office	150,000 sq. ft.
	Public/Civic	None
	Parking	Structured parking, on-street
	Other	Cinema

2.4 MOCKINGBIRD STATION, DALLAS, TX

2.4.1 PROJECT BRIEF

The City of Dallas provides a good example of how market factors and private initiative, rather than public policy, generate development in relation to transit. As the first mixed-use project designed around a multi-modal, rail-based transit station in Dallas, Mockingbird Station has had to face formidable challenges from the deeply rooted automobile-friendly institutional culture. The project was started at the initiative of the private sector as an infill development, including the rehabilitation of the old Western Electric building and a warehouse, in 1997, and was completed in 2001 with limited involvement by the public sector. Located four miles north of downtown Dallas, the ten-acre project made use of existing high density zoning and developed approximately 500,000 square feet of rentable building area and 520,000 square feet of parking at a location outside of Dallas's central business district near one of the busiest stations of Dallas Area Rapid Transit (DART) rail line (ULI, 2008). The project has set the path for future TOD applications in the Dallas region (TCRP Report 102, 2004).

2.4.2 PLANNING + DESIGN

Driven solely by market dynamics, the target group for potential residents were the affluent customers who were living in the surrounding neighborhoods. The original design of the project focused on the mixed-use and not so much on the "transit" aspect of the development. The plan was prepared to include a mixed use development that would concentrate on office, residential, retail, and entertainment, and realized 178,000 square feet of retail, restaurant, and cinema space; 137,000 square feet of office space; 211 loft apartments; and parking for 1,580 cars (Coleman, 2006).

The station area offers connections to bus, taxi, and shuttle service. Located four miles north of downtown Dallas, the ten-acre project makes use of very dense zoning; its approximately 500,000 square feet of rentable building area and 520,000 square feet of parking are unprecedented in density outside of Dallas's central business district.

The design attempt with the development was to find a middle-way solution between pedestrian and automobile circulation without compromising the set goal of creating a walkable community. And it resulted in inserting the pedestrian use within an automobile-friendly built environment primarily within the boundaries of the site. This point is also reflected in the amount of the space allocated for parking. While the City



Figure 2.25: Plan view of Mockingbird station (Source: City of Dallas, 2009)



Figure 2.26: Views of Mockingbird station (Source: City of Dallas, 2009)



Figure 2.27: View of Mockingbird station core (Source: UT Dallas, 2006)

gave the project a mixed-use parking reduction, it chose not to reduce it to the levels suggested for transit related development.

2.4.3 PROCESS

Prior to this development, the City had hardly any experience in transit related development and had made no attempts to promote TOD. With the exception of federal contributions toward public infrastructure - federal funding for off-site pedestrian access improvements to the area 0- all the costs, including some infrastructure costs, (such as road improvements) and also the cost of connection to the LRT station was covered by the developer. Mockingbird Station is unique for this very reason. It was not promoted by the city of Dallas and did not require incentives much like the Plano Transit Village. Zoning changes were not used by the city to encourage development of a TOD around this new light rail station at Mockingbird. The development in Dallas is ‘development by right,’ (Ohland, 2004, p.159) meaning that if a project meets code it can be built.

- 1997 DART opened the Mockingbird station.
- 1997 The developer Hughes bought a 7-acre property on Mockingbird Lane.
- 1997 Plans were prepared for the development.
- 2001 Mockingbird Station development was completed.
- 2007 Mockingbird Station announced the ground breaking of the third phase of its mixed-use development, adding an additional 23,000 square feet of retail and restaurant.
- 2008 23,000 square feet of new retail and entertainment building is completed.

2.4.4 CONCLUSION

Complete since July 2001, the first phase of Mockingbird development seems to have achieved the goal of responding to the light rail station, particularly since transit related development was an untried concept in North Texas. More importantly, the development has been a test case in the region for whether or not the residents of the sprawl friendly, low density region would take to urban living in a denser, more compact form of development. Although retail space occupancies fluctuated with the recent economic trends, residential occupancies have consistently outpaced the market, with above-average rents for the area. The retail and office space are, respectively, approximately 88 and 92 percent occupied. Future phases are expected to include a hotel and additional retail or residential uses.

Mockingbird Station has proved that a properly conceived mixed-use TOD can succeed and flourish while acting as a catalyst to increase transit use. The Mockingbird Station TOD is widely reviewed in the planning and design literature as one of the earliest examples of TOD in sunbelt cities and received recognition as one of the best examples of land use in regards to transit related development nationwide (See such as Coleman, 2006 and Ohland, 2004). It is strongly suggested that other resources



Figure 2.28: View of Mockingbird station retail (Source: Developeronline, 2008)



Figure 2.29: View of Mockingbird station (Source: Dallasdailyphoto, 2007)



Figure 2.30: Art work in Mockingbird station (Source: Wikipedia, 2007)



Figure 2.31: Connection to Mockingbird TOD (Source: Dallasdailyphoto, 2007)

indicated in this research should be reviewed in detail for more comprehensive look.

A couple of shortcomings, on the other hand, that must also be mentioned here are both the limited housing choices and the weak pedestrian connections of the development. Although Mockingbird seems to be intact and functioning within its own boundaries and successful at integrating vehicular access for the larger neighborhood, the project shows limitations connecting pedestrians to its immediate surroundings with its interrupted and narrow sidewalks. Considering the growth expected in the region, it is quite likely that some of these concerns must be challenged rigorously in the future by examining the land available around the existing developments and/or adopting new strategies for the new developments and districts in North Texas.

Smart Features of Mockingbird Station Transit Oriented Development:

- oo Strong Vision
- o Response to Regional Contexts
 - Strategic Transit Oriented District Plan
 - Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- o Mix of Major Land Uses (Office, Residential, Retail, Civic)
 - Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
 - Range of Housing Choices
 - Community and Public Participation
 - Joint Development Programs (Public Private Partnerships, etc.)
 - Non-traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- oo Compact Built Environment
- oo Sustainable Architecture
 - Context Sensitive Design
- o Multi-modal Transportation Options
- o Pedestrian Emphasis
- oo Station Integration
 - o Attention to Place Making
 - o Environmental Sensitivity
- oo Development in Existing Communities
- oo Non-conventional Parking Strategies

Key:

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2.4.5 REFERENCES

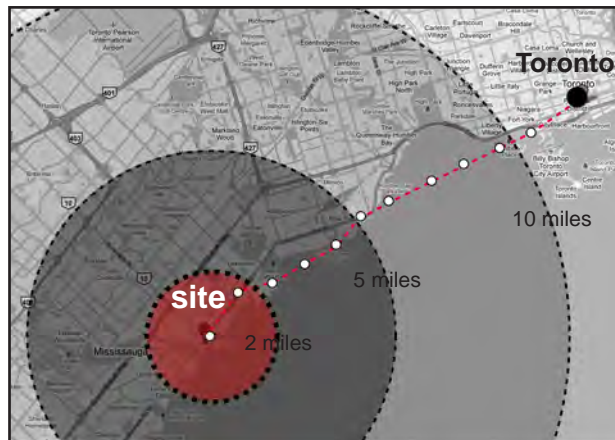
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Source: Toronto, 2009

PORT CREDIT VILLAGE TOD		
Development Profile	Transit Station	Port Credit GO Transit Station
	Transit Agency	Greater Toronto Transportation Authority (GO Transit), Mississauga Transit (Local Authority)
	Primary Transit	Commuter Rail, Express Bus
	Station Status	Built
	TOD Typology	Suburban Center
	TOD Name	Port Credit Village
	Station Address	30 Queen St. E., Mississauga, ON
	TOD Size	26 acres
	TOD Status	Phase I completed (2005)
	City Population	729,000 (2010)
	Developer	Single, FRAM/Slokker
	Ownership	Single, FRAM/Slokker
	Zoning	Smart Growth Initiative
	Cost	Development costs \$170.6 million
Stakeholder	FRAM/Slokker, City of Mississauga, GO Transit, Mississauga Transit, FRAM/Slokker and City of Mississauga solicited community input	
Land-use	Development Site	Brownfield Redevelopment
	Residential	410 (phase 1)
	Retail	40,000 sq. ft.
	Office	15,000 sq. ft.
	Public/Civic	Parks, public squares
	Parking	Structured parking, on-street, surface
	Other	Live-work housing

2.5 PORT CREDIT VILLAGE, CA

2.5.1 PROJECT BRIEF

Port Credit Village is a 27.2-acre planned community built on the site which was previously occupied by St. Lawrence Starch Company factory for more than 100 years. The existing rail corridor, patterns of settlement and the availability of the land near the rail corridor makes the location of the Port Village as the most suitable for transit oriented development (Transit Oriented Development Case Studies, 2007). Port Credit Village is within a 5 to 10 minute walk from the transit station, which is the most important consideration for the site selection of this particular TOD. The project lies within Port Credit which is a village with a history of nearly 170 years. It connects the two formerly separated sides of Port Credit by a restored waterfront. The project was completed in 2005 and has three condominium buildings, commercial buildings and townhouses containing 410 residential units, retail and office space, and 1,300 parking spaces. Phase II of the development, which is the North Shore Luxury Condominiums, was under construction during the research. Port Credit Village achieved the recognition for the planning, urban design and project implementation from the Urban Land Institute. The buildings and the site have also received various awards from Mississauga Urban Design Awards.

Port Credit Village lies on the southern side of the Mississauga, Ontario. It is located at the mouth of the Credit River on the north shore of Lake Ontario, 20 minutes west of downtown Toronto. Port Credit Village is 385 meters at its closest and 850 meters at its furthest point from the Port Credit GO station. It is bounded by Lakeshore Road East on the north, Lake Ontario on the south, Helene Street South on the west and Elmwood Street on the east. The streets surrounding the site are occupied by commercial and residential uses, banks, gas stations and several high-rise apartment buildings. Buses and streetcar are other alternatives to reaching the downtown.

The site previously functioned as a heavy industrial site for the manufacture of starch and glucose products. This brownfield site was contaminated with industrial waste that had to be remediated before development could take place. It also contained the foundations of the old factory buildings, which had to be demolished. In 1998, the FRAM Building Group and Slokker Canada saw that the site has potential for a mixed-use project. The project is envisioned not only as a typical mixed-use but also as a place for new experiences for the residents of Port Credit and a variety of public spaces that promote activities ranging from quiet strolls to large festive gatherings (Stern, 2006). Most of the artifacts from the St. Lawrence Starch Company factory, as well as the original administration building, have been preserved as reminders of



Figure 2.32: Port Credit Village waterfront (Source: Mississaugaforsale, 2009)

the site's industrial heritage. The reconstructed and redesigned shoreline and the new shoals constructed in the bay reduce the wave-up rush and also creates habitat for different types of native aquatic species (Stern, 2006).

Port Credit Village Mississauga is one of Canada's largest municipalities with a population of 668,549 (City of Mississauga 2007). Port Credit's projected growth population for 2011 is expected to be 12,100 from 12,300 in 2006 (City of Mississauga 2007). Most of people who live in Port Credit Village are affluent, with a higher income level than the rest of the neighborhood. The developers in the beginning had targeted this higher income group for the development. The residents living in the Port Credit Village are older and have higher household incomes than the Toronto CMA average. Household income for Port Credit Village is 6% under \$50,000, 3% for income between \$50,000 to \$100,000 and 44% over \$100,000 (Canada Mortgage and Housing Corporation, 2007). The people per household in Port Credit were 1.6, 31% were under the age of 35, 62% were between the age of 35 to 65, and 31% over 65.

2.5.2 PLANNING + DESIGN

The planning process to redevelop the property began after the St. Lawrence Starch Company demolished its factory buildings in 1992. A consulting team from Vancouver was hired to do the evaluation of the site and to submit an initial proposal. The firm suggested a development of more than 2,500 units of high-rise housing. The municipal planners wanted a dense development on the site but the politicians, local residents and local taxpayer associations strongly opposed the idea (Stern, 2006). Most of the residents wanted a single family housing or a park but this was not possible as the city was not willing to pay market value for the property.

In the beginning, the redevelopment project was rejected and was later taken to the Ontario Municipal Board (OMB). It was again opposed by the city council and ratepayers association, but in 1997 an unusual interim decision was made that encouraged the company, ratepayers and the municipality to work together to make a decision (Stern, 2006). The final decision was the flexible framework of density bonuses and also the approval to build 510 residential units on the site. It also suggested that the waterfront be reserved for public uses. Due to the bitter negotiation process as well as having no development experience, the St. Lawrence Starch Company decided to sell the land, which was bought in 1998 by FRAM (Stern, 2006).

As FRAM was preparing for the development and necessary approvals, it did a survey by sending out questionnaires to prospective buyers and local residents. After analyzing the survey results, seven focus groups were formed. The result of both the questionnaire and the focus groups gave FRAM ideas about prospective buyers and what they wanted. The potential buyers wanted larger-than-average townhouse and condominium units that offered two master bedrooms/bathrooms, plenty of parking, lake views, and urban amenities (Stern, 2006).

FRAM and Slokker's goal at Port Credit Village was to create a community where people lived, worked, and relaxed within walking distance of popular services. They wanted to connect the two sides of Port Village. As recommended by OMB, they kept the waterfront portion open to the public so as to create value for everyone.

Working with FRAM and Slokker, architects Giannone Associates came up with a master plan for the project that included live/work units, a mixed-use area that contains most of the project's retail and office space, two public squares (one large and the other a smaller, more intimate space), three mid-rise condominium buildings, and 167 townhouses. "The architects' goal was to take a gradual approach to the site, grounded in a consistent vision that created the right aesthetic for the market" (Stern, 2006).

The main planning objectives of the developers and the architects were (Canada Mortgage and Housing Corporation, 2007):



Figure 2.33: Townhouses
(Source: City of Toronto, 2010)



Figure 2.34: Regatta condominiums
(Source: City of Toronto, 2010)



Figure 2.35: Port street condominiums
(Source: City of Toronto, 2010)



Figure 2.36: Port street condominiums
(Source: City of Toronto, 2010)

- Reclaim the water edges and provide continuous public access along Mississauga's waterfront.
- Link the east village with the west village of Port Credit.
- Emphasize the architectural and urban design elements in the historic Port Credit area.
- Ensure that all components of the master plan were addressed and effectively implemented.

Port Credit Village lies on Mississauga which is the only city in the GTA serviced by seven major highways (City of Mississauga, 2009). The streets surrounding the sites are occupied by commercial and residential uses, banks, gas stations and several high-rise apartment buildings. In Port Credit, 53% of riders arrive by car, 23% walk, 12% use local transit, 11% carpool or get dropped off and 1% bike (Canada Mortgage and Housing Corporation, 2007). The number of riders who walk to the Port Credit Station is one of the highest for all the GO stations. Port Credit Village has access to the GO's Lakeshore trains that run daily between Burlington and Oshawa and extend to Hamilton at rush hour. It provides all-day train service to Port Credit.

Four sections of townhomes and one condominium building were built at the beginning of the project. The Regatta condominium building was designed and developed as a luxury condominium mid-rise which has an elegant architectural design. It has great clean lines and bold style with sweeping terraces and landscape grounds. It is at the water's edge, and adjacent to the open-air plaza and lakefront promenade (Stern, 2006). The architect has used large patios on the ground floor units so as to make it as attractive as the upper floors for the buyers. The construction for two other condominiums began after the completion of the Regatta. 80 Port Street Condominiums are located across the street from Regatta at the crossing of Port Street and Hurontario. These condominiums have a façade of brick, tactile stone and panoramic blue windows (FRAM, 2009). It also has a rooftop terrace to provide a stress free environment. It is designed to give a look of a converted loft building. 70 Port Street has a more contemporary look with clean lines and sophisticated materials. The elevation of these condominiums has modern glass spanning from floor to elevation and dark brick which gives warmth to the building (FRAM, 2009).

Three or more parking spaces were provided for each townhouse and 1.5 to 1.7 spaces per condominium apartment in the low- and mid-rise buildings. Seventy at-grade parking spaces are provided for commercial facilities. Indoor bicycle spaces are provided in all apartment buildings and townhouses. Although FRAM and Slokker did not want to include any surface parking in the commercial part of Port Credit Village, the market forces required them to provide 57 spaces in a small, landscaped surface lot behind Port Street Market and between two condominium buildings. Tall planters were added to break up the impact of the asphalt in this lot. All residential parking for Port Credit's three condominium buildings is located below grade, with direct elevator access to their buildings. Twenty public parking spaces are provided below the mixed-use block. This has been done so as to not provide on street parking along the waterfront road next to the residential townhouse development. The 18 live/work units are the only townhouses with surface parking (in short driveways) and ground-floor garages. Parking for the other townhouses is located in below-grade facilities or carport like structures sunken below outdoor decks (Stern, 2006).

The pedestrian connectivity and the pedestrian environment are very good within the Village. Due to the waterfront and green spaces, people have ample amount of space to walk and relax within the site. The connection to the stations are along the main arterial, Hurontario Street. Phase II of the construction, which is ongoing, will greatly improve pedestrian environment. The waterfront area was also improved to have a pedestrian trail and a park.

The square has a sculpted lawn area and a series of grassy waves. The waves were designed in such a way to pay homage to the lakefront location. This is a perfect place for kids to play while the parents relax as well as a place to host outdoor events

in the evenings.

The habitat of native aquatic species has been taken into account due to the re-designing and reconstruction of shoreline. Preservation of the industrial artifacts from the factory, as well as the company’s old administration building, has been done so as to preserve site’s industrial heritage.

As mentioned before, most of the parking in Port Credit is off-street. The off-street parking has been provided in almost all the units and the loading number is 1,316. A two-level underground garage below the Port Street Market commercial structures contains 516 spaces, 200 of which are public, designated for users of the project’s commercial space.

Marketing the project’s initial residences appeared to be an uphill battle due to high prices of the units which was higher than the most expensive existing condominium building in Mississauga (Stern, 2006). FRAM and Slokker did little advertising; instead they focused on supporting different festivals and events to attract people to Port Credit. The retailers of Port Credit also worked together to run marketing campaigns for the retail and restaurants. Many weekend concerts are still being held on the Port Credit Village Square and St. Lawrence Civic Square.

Leasing out the retail space was much more difficult than other activities as none of the high-end food markets wanted to locate there. Since they did not find any tenants for the large food market, they leased out the ground floor to a coffee shop and offices on the top. The situation has now changed and many large grocery stores want to locate there but the opportunity no longer exists. Retail lease rates today are double than what they were when the first retail market study was done in 2000. As of November 2008, Port Credit Village’s residences are almost completely sold out and the commercial space is 100 percent leased. Retail lease rates in the immediate area have risen as well. The project has revitalized the village, not only by building and increasing density, but also by making the community more pedestrian-friendly (Stern, 2006). It is serving as a catalyst for further development in the area.

Port Credit Village was developed through a 50/50 partnership of FRAM Building



Figure 2.37: Live/ work units (Source: City of Toronto, 2010)



Figure 2.38: Port street market (Source: City of Toronto, 2010)



Figure 2.39: Autumn in Port Credit (Source: Trekearth, 2008)



Figure 2.40: Port Credit, Mississauga
(Source: Snapshot-travel-blog, 2008)

Group and Slokker Canada Corporation. FRAM's offices are located at Port Credit Village in the former St. Lawrence Starch Company administration building. Slokker Canada is a subsidiary of the Slokker Group, a 70-year old Dutch real estate development and construction company.

2.5.3 PROCESS

The St. Lawrence Starch Company, who was the earlier owner of the site, decided to sell the land due to the difficulties they were facing about the development on the site. The site was bought in 1998 by FRAM. The developers did surveys by sending out questionnaires to prospective buyers and citizens and held focus groups to get ideas about the prospective buyers and what they wanted. Actual work at the site began after the demolition of the old factory. The developer faced the huge task of removing the tremendous amount of foundations and the industrial wastes from the site. The developer also had to raise the entire site by three feet on average and install a seawall due to its location on the flood plain.

The entire project was done in phases. Architect Giannone Associates came up with the master plan for the project which included live/work units, office and retail units, three mid-rise condominiums buildings and 167 townhouses. Four sections of townhouses and one condominium building was built at the beginning of the construction. The construction for other two condominiums began after the completion of the Regatta. Eighty condominiums are located across the street from Regatta at the crossing of Port Street and Hurontario and 70 condominiums are located across the street from Regatta. A strip of live/work units are located along the Lake Shore drive to provide retail amenities. These have two full fronts with the north side designed to look like the renovated factory buildings and the south side to look residential. The final development phase consisted of the commercial space known as Port Street



Figure 2.41: Port Credit, Mississauga (Source: Portcreditcondos, 2010)

Market along Lakeshore Drive. The Port Street Market area contains three two-story commercial buildings with ground-floor retail uses and second-floor offices.

Much remediation work was involved on the site as it was located in a flood zone and was also a brownfield site. Before the development could begin on the site, FRAM and Slokker faced the mammoth task of removing the foundations of the old factory and cleaning up the hazardous materials. The contaminated landfill and hazardous materials were disposed off site. The entire site was raised by 3 feet on average and a seawall was installed due to its location on the flood zone (Stern, 2006).

The St. Lawrence Starch Company's administration building was preserved because of its historical significance in the village (Stern, 2006). Four sections of townhomes and one condominium building were built at the beginning of the construction. The townhomes are handsome in design and have lush landscapes. The townhome sizes range from 1,400 sq. feet to 3,800 sq. feet. The largest and the costliest townhomes are located closest to the lake and thus have the best views. Like all the other buildings, the townhomes use solid heritage brick on its façade. The meandering streets, wide boulevards and lakeside park make it attractive for many.

The developers of Port Village wanted a retail space to connect the east and west side of the Village but did not want a strip retail center. They also did not want to own or manage the retail space. Their solution was to provide a strip of live/work units. This would provide retail amenities as well as act as a transition between the commercial and residential spaces. The two live/work components have full fronts with the north side designed to look like the renovated factory buildings and the south side to look residential (FRAM, 2009). The north side is colorful and decorative. Each live/work unit contains 500 square feet of retail space and an average of 2,000 square feet of residential space. The entrances to the retail space and residences are separate. A view corridor between the buildings allows for views of the lake from Lakeshore Road East (GPA, 2009).

The final development phase consisted of the commercial space known as Port Street Market along Lakeshore Drive. The Port Street Market area contains three two-story commercial buildings with ground-floor retail uses and second-floor offices. The piazza at the street market gives people a great place to meet and also experience open air events. A freestanding restaurant was also erected at the corner of Lakeshore Road and St. Lawrence Drive.

Timeline for municipal and construction process:

- 1993 Applications for amendments to the official plan and zoning bylaw filed with the city by the owner St. Lawrence Starch Company.
- 1993 Mississauga Council also initiates a district plan review covering the site.
- 1997 The OMB establishes ground rules for negotiating a new master plan instead of choosing between the owner's and the City's plan.
- 1998 The site is bought by FRAM/Slokker from St. Lawrence Starch Company.
- 1998 The developers begin preparing conceptual drawings for submission and review.
- 2000 Ontario Municipal Board approves the master plan.
- 2001 Construction starts.
- 2002 Phase I is completed.
- 2005 Completion and occupancy of the TOD.

2.5.4 CONCLUSION

The Port Credit Village is a successful waterfront development project in terms of integrating diverse uses and activities in a coherent manner. The pedestrian and bike trail and amenities on the waterfront give people an opportunity to enjoy nature and provides connection to the broader water trail system of Lake Ontario. It also has varied levels of viewing along the water's edge to give different experiences for viewers. The natural habitat is protected by the improved shoreline.

The strength of the planning in Port Credit is that it was able to create a mixed-use project with complete urban experience, despite all the constraints in the site. It is one of the best examples of a brownfield redevelopment project. Port Credit Village seems to provide the best of both worlds the charm of a close knit village community along with the convenience of big city amenities. The developers and the architects have coordinated well to provide a compact mixed-use development with all the amenities in close vicinity. Port Credit has gained a lot of popularity among the people there, which has helped the developers extend and build the second phase of the development.

One of weakness of the project is the affordability. The units within Port Credit are for high income families. The price of the condominiums is higher than most of the condominiums in Mississauga. Due to the popularity of its units, the management has raised prices of the new condominiums to be built on the site. The live/work units are also being sold at much higher than market prices. Even though the density, form and mix of uses in Port Credit is transit supportive, the development has attracted the demographic which is above the average income and age that are willing to use public transportation to get to work. One of the surveys done by the Canada Mortgage and Housing Corporation showed that 69% used automobiles to get to work, whereas only 15% used the public transit (Canada Mortgage and Housing Corporation, 2007). A main goal of the project was to encourage people to use public transportation but Port Credit seems more of a redevelopment project than a TOD project.

Smart Features of Port Credit Village Transit Oriented Development:

- oo Strong Vision
- oo Response to Regional Contexts
 - o Strategic Transit Oriented District Plan
 - Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
 - o Mix of Major Land Uses (Office, Residential, Retail, Civic)
 - Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
 - Range of housing choices
- oo Community and Public Participation
 - Joint Development Programs (Public Private Partnerships, etc.)
 - Non-traditional financing mechanisms (TIF, CIP, BID , PID, etc.)
- o Compact Built Environment
 - Sustainable Architecture
- oo Context Sensitive Design
 - o Multi-modal transportation options
 - o Pedestrian emphasis
 - Station Integration
 - o Attention to Place Making
 - o Environmental Sensitivity
 - o Development in Existing Communities
 - o Non-conventional Parking Strategies

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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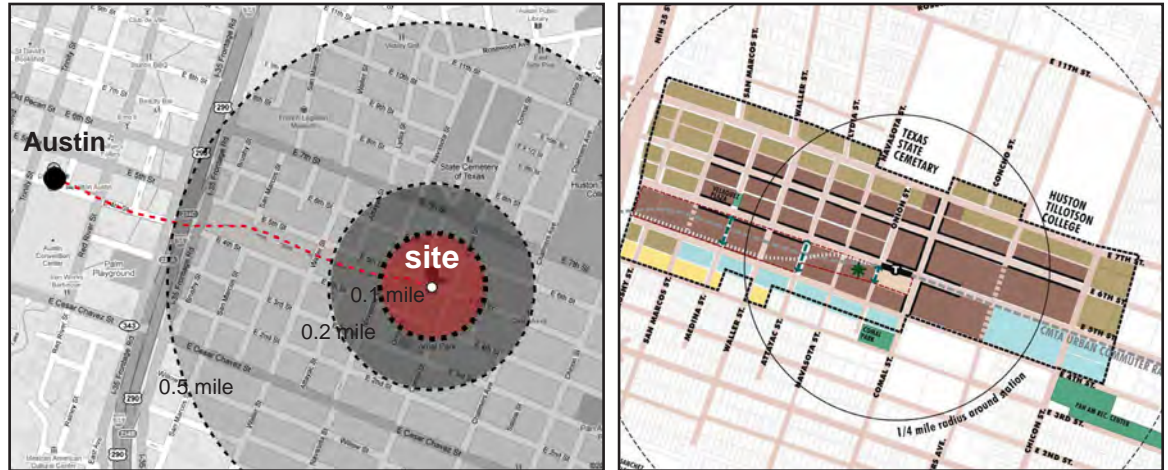
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Source: Plaza Saltillo station area plan, 2008

SALTILLO LOFTS TOD		
Development Profile	Transit Station	Plaza Saltillo-Comal Station
	Transit Agency	Capital Metro
	Primary Transit	Commuter Rail
	Station Status	Built (1998)
	TOD Typology	Urban Neighborhood
	TOD Name	Saltillo Lofts
	Station Address	412 Comal Street, Austin, TX 78702
	TOD Size	1.1 Acres
	TOD Status	Completed (2006)
	City Population	786,382 (2009 U.S. Census estimate)
	Developer	Single, Saltillo Development, LTD
	Ownership	Single, Saltillo Development, LTD
	Zoning	TOD Ordinance
	Cost	Development cost: \$5,251,271
Stakeholder	Saltillo Development, LTD, City of Austin	
Land-use	Development Site	Brownfield Redevelopment, urban infill
	Residential	29 units
	Retail	6,758 sq. ft.
	Office	NA
	Public/Civic	NA
	Parking	Surface, interior parking courts
	Other	For-sale housing



Figure 2.42: View of Saltillo Lofts (Source: Saltillo District Masterplan Market Overview, 2003)

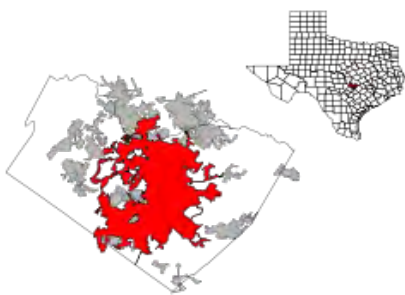


Figure 2.43: Location of Austin (Source: City of Austin, 2009)

2.6 SALTILLO LOFTS, AUSTIN, TX

2.6.1 PROJECT BRIEF

The City of Austin and the greater Austin Metropolitan Statistical Area (MSA) experienced rapid job growth, which in turn fueled dramatic increases in demand for housing between 1990 and 2000. The city added over 190,000 people to its city limits over the ten-year period and was home to a total of 657,000 people in 2000 (EPS, 2003). Many of the new residential communities and preferences for urban amenities have started to attract people, especially young professionals, to the Downtown area over the last several years.

Currently, Austin, along with the entire country, is facing an economic downturn following a decade of unprecedented growth. In particular, Austin’s high technology sector has slowed, and associated jobs have been lost. Recent local real estate market performance reflects impacts of these trends. In more of the region’s geographic areas vacancy rates in most types of development have increased, and growth in rents have slowed or reversed. The commercial real estate sector seem to see the hardest hit, with six million square feet of space directly available in Austin, representing a 19 percent vacancy rate. The for-sale housing market has been the only submarket relatively unaffected by the economic slowdown in Austin (EPS, 2003). Austin remains, however, a desirable long-term location for business and employment and population growth is projected to continue over the upcoming decade.

Mainly due to the regional and nationwide trends, the City of Austin initiated planning and implementation of 32 miles Capital Metro commuter rail line. The Saltillo station and the Saltillo Development District Area are planned as one of 9 new stations located along the MetroRail Commuter line proposed between Downtown Austin and the City of Leander (City of Austin, 2006).

The Saltillo Development District Area is strategically situated adjacent to Austin’s Downtown, separated by I-35, and is currently home to 3,920 residents. The Saltillo District Area is bound by the I-35 frontage road to the west, 6th Street to the north, Chicon Street to the east, and the Colorado River to the south. The Saltillo District Area is a predominately Hispanic neighborhood with higher than average unemployment rates than the city and lower incomes as well. In 2000, The Saltillo District community faced an 11.8 percent unemployment rate compared to a 4.4 percent for the city, and the median household income for the neighborhood was \$19,000 below that of the city (EPS, 2003). Despite the economic disparity between the Saltillo District Area and the city, the Saltillo District community has benefited from the regions recent prosperity.

As part of the city-sponsored neighborhood planning process, major corridors including the Saltillo District site were zoned mixed-use. The neighborhood consists of primarily older, single family detached homes, a mix of local-serving restaurants, and auto-oriented commercial uses concentrated along the 6th Street and East Cesar Chavez Street corridors. 6th Street and East Cesar Chavez Street are the primary east-west corridors that transect the area and provide principal auto and transit access into the area (EPS, 2003).

The primary community shopping district for the area, however, lies immediately outside the Saltillo District Area boundaries to the north. The shopping center at the corner of 7th street and Pleasant Valley Road, anchored by a full service H.E.B. grocery and pharmacy, provides the majority of the local-serving services and retail amenities to the community. Many of the local restaurants and specialty retail stores in the neighborhood reflect the strong Hispanic heritage shared by many of the residents in the area (EPS, 2003).

Industrial and artisan-related uses are interspersed throughout the neighborhood, but are predominate in the area surrounding the site along 5th and 4th street, including recycling centers, scrap yards, and stone carving and ceramic studios. Office/



Figure 2.44: Location map of Saltillo Lofts (Source: Saltillo District, 2006)

production studio spaces for small-scale multi-media companies and other “creative professionals,” such as photographers and architects, are located directly adjacent to the site along 5th street between the I-35 frontage road and Medina Street.

2.6.2 PLANNING + DESIGN

The official development entity for Saltillo Lofts is Saltillo Development, Ltd., a Texas limited partnership. However, while construction on Saltillo Lofts was underway in 2006, partners Perry Lorenz and Larry Warshaw started a new development firm. (Newberg, 2007).

Lorenz purchased the then-vacant Saltillo site from Union Pacific in 2003. Although the site was presumed to be contaminated, the development team believed it presented a good opportunity for the development of multifamily for-sale housing at a moderate price point. Because of its location on Austin’s east side, Saltillo Lofts faced very little competition in the for-sale market at the time. The developer’s first project in the area, the Pedernales Lofts, a similar development with ground-floor commercial space, was completed in 2004. The developers felt that younger buyers would be attracted to the value of the area, as prices were well below those found in downtown Austin, which is just one mile to the west (Newberg, 2007).

Saltillo Lofts is located in the East Cesar Chavez neighborhood at the southeast corner of East Fifth and Comal streets. A set of railroad tracks lies between the site and Fifth Street. The existing railroad is infrequently used, although commuter rail is planned for the right-of-way. In the past, the railroad adjacent to the project led to the development of industrial uses along its right-of-way. However, few industrial uses remain today. In fact, several former industrial properties in the area are being redeveloped, along with other projects that are underway or proposed on infill sites along commercial streets (Newberg, 2007).

A major redevelopment is being planned along the rail corridor across Comal Street and to the west of the site. Straddling the tracks, the Saltillo Development District consists of 11 acres (4.5 hectares) and will contain 675 housing units. Immediately

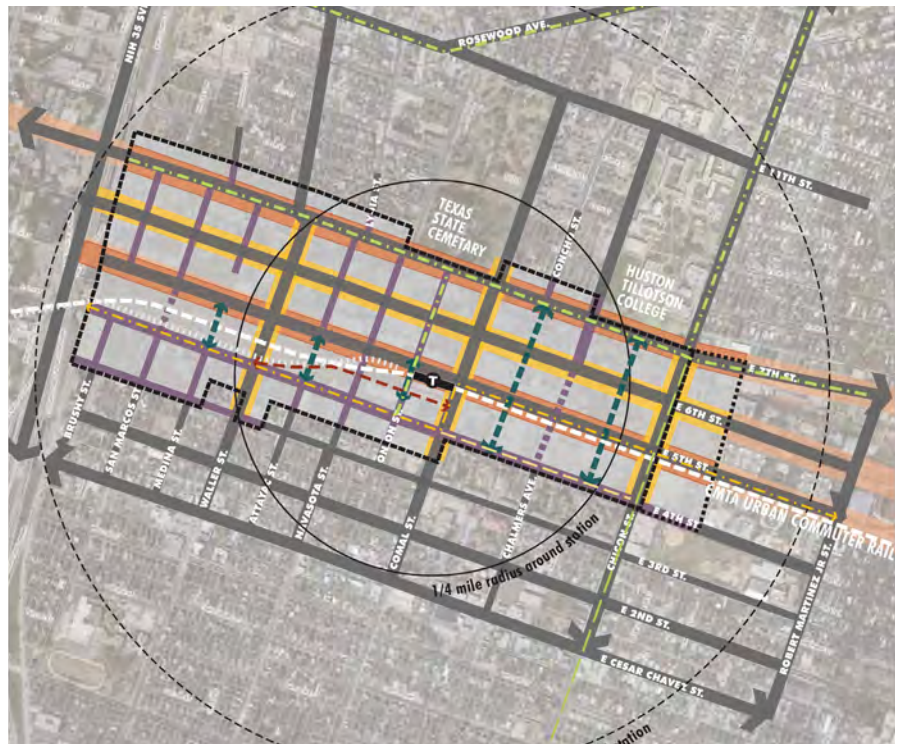


Figure 2.45: Circulation concept (Source: Plaza Saltillo station area plan, 2008)



Figure 2.46: Building in Salttilo Lofts
(Source: Architecture365, 2009)

across the street to the west of the site is Plaza Saltillo, a public park that was completed in 1998. The most eastern parcel in the Saltillo Development District, the Plaza contains stalls for a farmers market and is also adjacent to the planned commuter rail station. Capital MetroRail began service in March 2010, with the Red Line scheduled to run on 32 miles (51 kilometers) of existing freight tracks between Leander, Texas, and downtown Austin, with a stop at Plaza Saltillo. According to the developer, land prices average \$120 per square foot (\$1,292 per square meter) in downtown Austin (Newberg, 2007). Thus, the value proposition for multifamily development in the immediate neighborhood was a major incentive to develop. Because the site is zoned for high-density residential and/or commercial development, no variances of any kind were needed for the project to be built.

The market study suggested to developers that the housing market could absorb reasonably priced units at sizes ranging from 750 to 900 square feet at this part of town and the developers used that basic size range for nearly half of the residential units at Salttilo Lofts. Project Architects' main design goals for the Lofts was that it have an urban-chic aesthetic while keeping construction costs as low as possible. The firm used basic materials such as asphalt shingles and Hardi-Board, but employed color and design flourishes to make the project appear "edgy." The project consists of three buildings: an L-shaped three-story structure at the corner of Comal and Fifth Streets, another three-story building that sits next to it and faces Fifth Street, and a third building—which is two stories tall—that is located on the other side of a courtyard from the first two structures. Commercial units occupy the ground floor of the two street-facing buildings while the two-story structure contains only residential units. With the intention of giving the project a "brownstone feel," all units have individual entrances, rather than a common secured entrance, which would have been more apartment like in both appearance and function. The architect calls the overall design "modern brownstone" or "modern walkup." Design details include a slightly pitched roof on portions of the building facing Comal Street, exterior wall articulation, and a variety of exterior colors (Newberg, 2007).

As of June 2007, Comal is the busier of the two streets (this may change, however, once train service starts) because it serves as a feeder road that moves traffic north to Seventh Street and south to Cesar Chavez Street East (also known as East First Street). Running parallel to the railroad tracks, Fifth Street is a little-used road and therefore has much less traffic. The future intent, through development in the Saltillo District to the west and the commuter rail service, is for an improved streetscape along Fifth Street and greater utilization. The developers had this in mind with streetscape improvements along Fifth Street as part of the development of Salttilo Lofts (Newberg, 2007). The commercial space at Salttilo Lofts consists of either offices or "destination retail" uses and the commercial spaces are not reliant on high traffic counts and good visibility to draw customers.

Streetscape improvements include grade-separated stoops and planter boxes for units facing Comal Street, and planters, trees, and benches for the Fifth Street side of the building. The courtyard is a small space with planters and greenery, and an additional exterior common area for residents is located at the southeast corner of the site, between the courtyard units and the east parking lot.

The site contains 55 parking stalls, equivalent to one space per bedroom throughout the project. Each commercial unit gets one stall. Parking is provided in three locations on site, and all spaces are accessible from the alley that borders the south side of the site and all access is security gated. One lot, containing 18 stalls covered by a metal canopy, is situated between the structure facing the courtyard building. Another, with nine spaces, is located along the west side of the courtyard building and covered by the second story of that structure. The third is a 28-stall lot on the east end of the site. Three of these spaces are under the second-floor residential unit facing the courtyard, and the remaining stalls are open air (Newberg, 2007).

2.6.3 PROCESS

One of the first new projects to be developed in recent years in the East Cesar Chavez neighborhood of Austin, Saltillo Lofts is a three-building mixed-use project consisting of 29 for-sale loft- and flat-style condos and nine commercial spaces. This infill project sits on land that was once owned by a railroad company and used for industrial purposes. The site now features a pedestrian-friendly design, affordable for-sale residential units, and commercial incubator space. (Newberg, 2007).

It was the developer's intention to build reasonably priced residential units and provide business incubator space for entrepreneurs seeking office or retail space. Ranging in size from 710 to 1,235 square feet, residential for-sale units are located on the second and third floors of the structures facing adjacent streets, and on the first and second floors of buildings facing an interior courtyard. Units accessible to people with disabilities are located on the ground floor and can be entered through the interior courtyard. Housing a mix of both professional service providers and retailers, the commercial units range in size from 586 to 930 square feet (54 to 86 square meters). These relatively small spaces are intended to serve as locations for startup businesses and entrepreneurs (Newberg, 2007).

Saltillo Lofts was originally part of the city of Austin's S.M.A.R.T. Housing (Safe, Mixed Income, Accessible, Reasonably Priced, and Transit Oriented) program. Under this program, at least 10 percent of units must be affordable to households earning 80 percent or less of the area median income (\$45,500 for a family of two as of March 2006). A total of 12 of the 38 units offered at Saltillo Lofts were considered affordable. Prior to the completion of the project, the developer dropped out of the program, but kept the 12 residential units and two commercial units priced affordable, at \$120,000 to \$125,000 (Newberg, 2007).

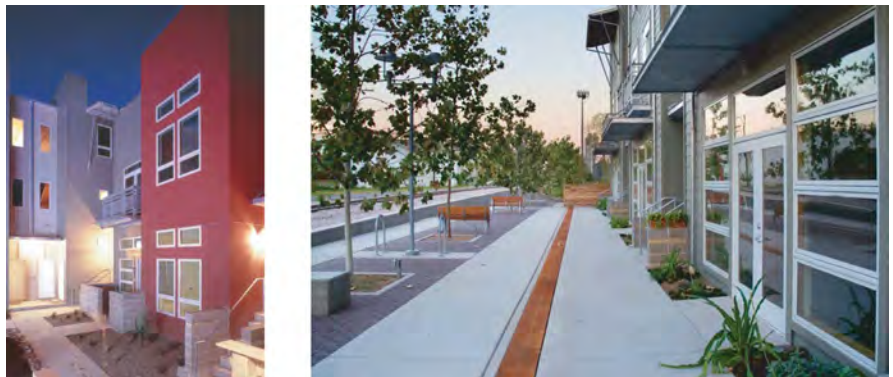


Figure 2.47: Environment of Saltillo Lofts (Source: Architecture365, 2009)

The affordable units are generally smaller and face the courtyard, whereas units facing Comal are larger and go for higher prices due to their views of downtown to the west. Though small, homes facing the courtyard have 11-foot ceilings and clerestory windows that are intended to give the units an open feel. Second-story courtyard units have a bedroom raised 2.5 feet off the main level to provide an increased sense of separation between rooms. Units facing Comal and Fifth streets stand two stories high, with the main living level on the second floor and bedrooms on the third. All other units occupy one story (Newberg, 2007).

Several environmentally friendly measures were used at Saltillo Lofts as part of the city of Austin's Green Building Program. Credits were received for features such as solar screens, window glazing to reduce heat gain, low-VOC paint, Energy Star appliances, and a location in a walkable, mixed-use community with a transit connection within a ten-minute walk. In all, the project received 92 of a possible 180-plus points as part of the system, giving it a three-star rating (Newberg, 2007).

First State Bank of Temple, Texas, provided the financing for Saltillo Lofts. The bank required 20 percent equity and allowed the developer to put up the land, which was already owned and valued at \$500,000, as a portion of the equity. The remaining equity came from pre-development costs provided by the developer and a deferred developer fee. Also, half of the units had to be sold before the bank would provide the loan and construction could begin (Newberg, 2007).

Constructive Ventures anticipated a 30 to 35 percent return on its investment. During the design phase, construction costs increased around 10 percent—a typical increase for the Austin area and a common problem for developers nationwide in recent years. The final return on investment was \$1 million on a \$5.2 million project, or just under 20 percent. The city of Austin provided \$212,000 toward streetscape improvements at Saltillo Lofts. The developer signed a community facilities contract with the municipality, wherein the developer was reimbursed by the city for the design and construction costs of streetscape improvements built in the public right-of-way. This was an added incentive for the developer to create an attractive streetscape for the project along Fifth and Comal streets (Newberg, 2007).

2.6.4 CONCLUSION

The Saltillo District is envisioned as a mixed-use transit village, with a significant component of housing and a wide range of neighborhood-serving uses that will serve as a new “heart” for the neighborhood. Saltillo Lofts represents the first transit-oriented development, not only in Austin but also in Central Texas, serving as a catalyst for the revitalization of the brownfield site at the east side of the city. The design of this mixed-use infill development, received recognition as a model for sustainable, affordable and desirable multifamily urban housing.

A major challenge for this particular development was that it was not only one of the earliest examples of TOD in the region but also one of the earlier revitalization projects on the East of IH-35 which essentially started the gentrification in the neighborhood. The project had to mediate a balance between value and quality while it was responding to transit station and the Saltillo Development District Area plans. The development team sought to build apartment-style units and keep prices down while adhering buyers' demands for upgraded features to create an “edginess” with the design without spending too much on materials. The development team seemed to acknowledge that, although sales started out briskly, project sellout took longer than anticipated. But in the end, Saltillo Lofts' price points, along with its design and lack of significant competition, led to its overall success (Newberg, 2007).

Saltillo Loft TOD case study has various lessons to be drawn from, as highlighted in the previous sections, because it challenges transit oriented development concept in a smaller scale urban lot with various local and on site constraints. The project not only tries to respond to affordable housing needs, but also attempts to integrate sustainability factors first and foremost by adopting a brownfield site, and integrat-

ing energy saving measures such as adopting environmentally friendly construction materials and appliances. One minor drawback is that the building presence as an adjacent lot to the tracks and the station seems to be rather limited. If the regulations permit, such core locations in TOD developments can engage iconic or taller buildings that have street presence and permanence as a landmark for the station and the neighborhood. This would not only allow integration of higher density to the transit core area but also add to the identity of the place.

Smart Features of Saltillo Lofts Transit Oriented Development:

- o Strong Vision
- o Response to Regional Contexts
- o Strategic Transit Oriented District Plan
- o Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
 - Mix of Major Land Uses (Office, Residential, Retail, Civic)
 - Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
- o Range of Housing Choices
- o Community and Public Participation
 - Joint Development Programs (Public Private Partnerships, etc.)
 - Non-traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- o Compact Built Environment
- o Sustainable Architecture
- oo Context Sensitive Design
- o Multi-modal Transportation Options
- o Pedestrian Emphasis
- o Station Integration
- oo Attention to Place Making
- o Environmental Sensitivity
- oo Development in Existing Communities
- o Non-conventional Parking Strategies

Key:

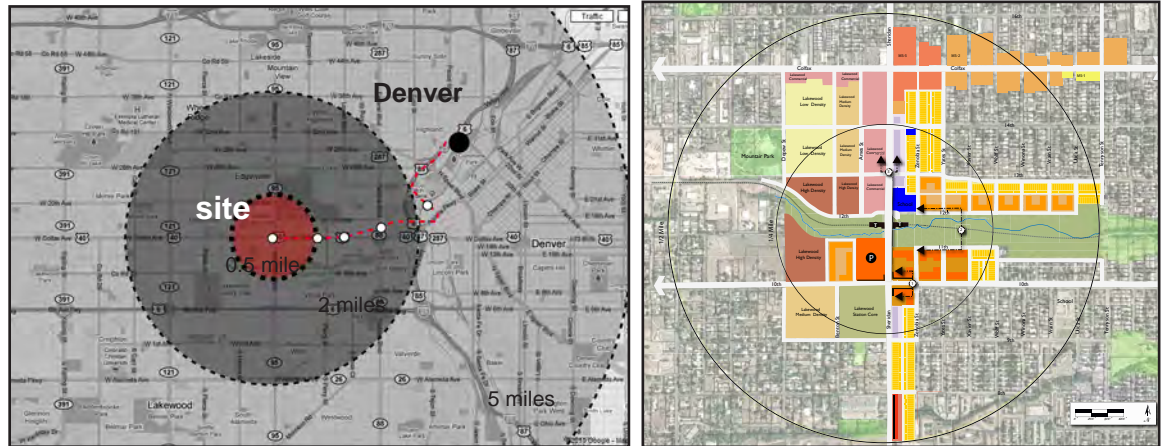
- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated



Figure 2.48: Saltillo Lofts (Source: Architecture365, 2009)

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Source: Sheridan Station Plan, 2009

SHERIDAN STATION AREA PLAN TODT		
District Profile	Transit Station	Sheridan Station
	Transit Agency	Regional Transportation District (RTD)
	Primary Transit	Light Rail
	Station Status	Planned
	TOD Typology	Urban Neighborhood
	TOD Name	Sheridan Station Area Plan adopted 2009
	Station Address	TBD
	TOD Size	247.5 Acres
	TOD Status	Station Area Plan adopted
	City Population	610,345 (2009 U.S. Census Estimate)
	Developer	TBD
	Ownership	Multiple
	Zoning	Sheridan Station Area Plan (adopted 2009)
	Cost	TBD
Stakeholder	Denver City Council, Denver Planning Board, Denver Community Planning and Development, Denver Public Works, Denver Parks and Recreation, Office of Economic Development, Denver Urban Renewal Authority, Regional Transportation District, City of Lakewood, City of Denver solicited community input	
Land-use	Development Site	Suburban/urban infill, redevelopment, new construction
	Residential	2,550 (planned)
	Retail	206,000 sq. ft (planned)
	Office	215,000 sq. ft. (planned)
	Public/Civic	Parks, plazas, green corridor (planned)
	Parking	Structured parking, on-street, surface (planned)
	Other	TBD

2.7 SHERIDAN STATION, DENVER, CO

2.7.1 PROJECT BRIEF

Sheridan Station is a proposed light rail station as one of the 57 new transit stations to be added as part of the FasTrack program in the Denver metropolitan area. The station is proposed as one of 11 new stations located along the Regional Transportation District's (RTD) proposed West Corridor Light Rail line between City of Lakewood and Downtown Denver. In order to establish common vision the City and the community prepared a plan primarily focusing on the 1/2 mile radius area around the station. The Sheridan Station Area Plan was adopted by the city in 2009.

The Sheridan Station Area Plan is an important district level case study to learn from because it exemplifies unique understanding and integration of a greenbelt to the transit station area that is in the border of two jurisdictions Denver and Lakewood.

The Lakewood Gulch is a greenbelt that includes Rude Park, Sanchez Park and Lakewood Gulch Park, and is an important recreational amenity for the surrounding neighborhoods. Lakewood Gulch drains a section of west Denver, Colorado and



Figure 2.49: Location map (Source: City of Denver, 2009)

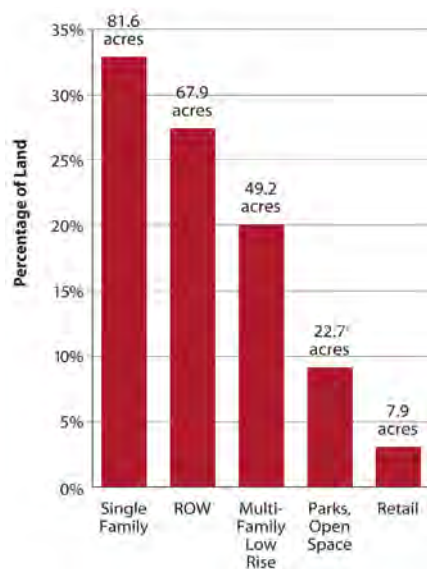
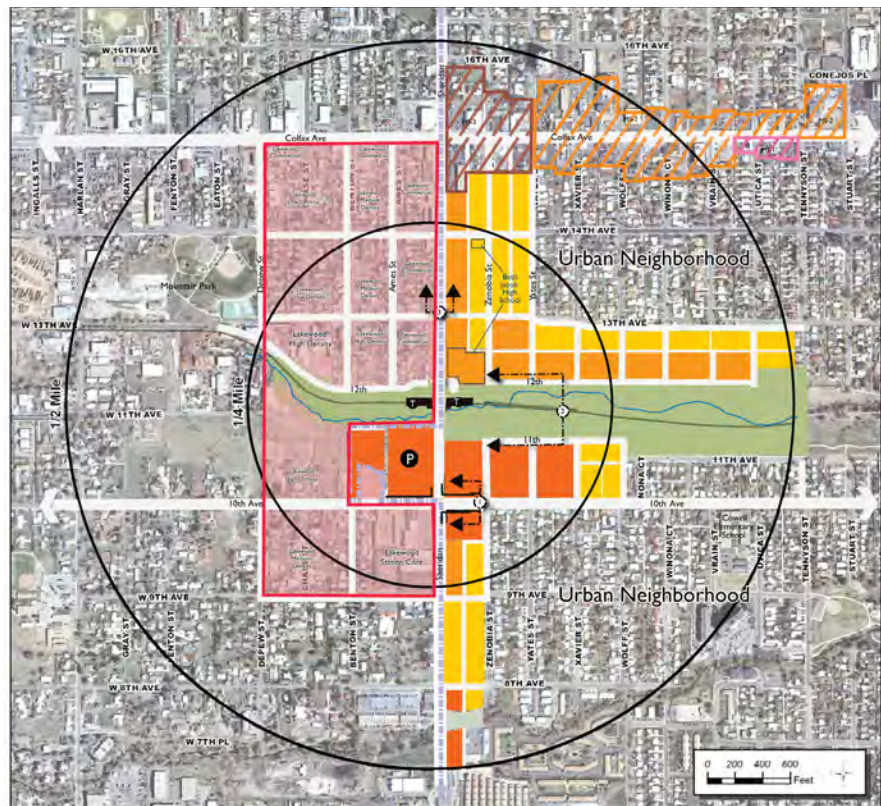


Figure 2.50: Top five land uses in Sheridan Station Area (Source: City of Denver, 2009)



Sheridan Land Use and Urban Design Concept



Figure 2.51: Land use and urban design concept (Source: City of Denver, 2009)

Lakewood into the South Platte River. Lakewood Gulch is the historic location of the old Interurban Shortline Railway. The gulch passes through the Denver neighborhoods of Sun Valley and Villa Park before exiting the city into Lakewood.

The area surrounding Lakewood Gulch has been identified as an urban neighborhood with residential and local-serving retail uses. Thus, the goals of the plan are to create strong pedestrian connections throughout the neighborhood and protect the existing residential area with the addition of suggested land uses to improve the density in the district. The station platform is planned to be located under a newly constructed bridge adjacent to an 800 space park-n-ride structure, to create a safe and convenient pedestrian environment in the station and develop a station identity that reflects the best aspects of Lakewood Gulch.

2.7.2 PLANNING + DESIGN

The Sheridan Station Area has a unique position at the border of two jurisdictions-Denver and Lakewood. The area features residential neighborhood and the Lakewood Gulch open space, part of a future regional trail and park system. Development efforts will require the involvement of many agencies within the City and County of Denver as well as coordination and cooperation with developers, land owners and businesses. Several strategies are complementary to specific projects already planned or proposed for implementation by the city's Public Works Department. As the city moves forward with implementation of station area plans, an inter-departmental TOD team approach will continue to be used (City of Denver, 2008).

The Sheridan station district plans seems to make a significant effort to:

- Preserve current housing affordability in the area.
- Provide for residential needs of people who live on either side of light rail line.
- Promote the area for better community amenities, safety, and future economic growth and stability.
- Provide strategic and catalytic projects.
- Take advantage of the corners of sites to redevelop to retails and commercial use.
- Encourage desired land uses and buildings through regulation, and through public-private partnerships.
- Coordinate economic development activities with Lakewood.
- Coordinate with the Department of Public Works to use future public infrastructure investment to leverage private sector investment.

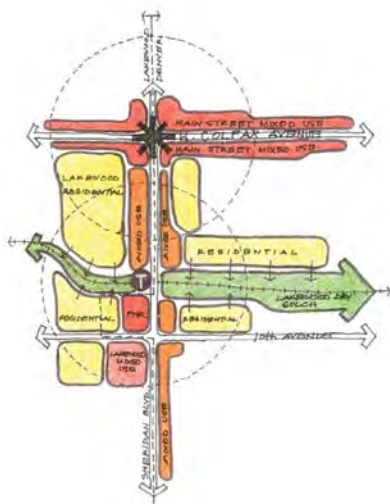


Figure 2.52: Conceptual program plan (Source: City of Denver, 2009)

Section #1 - 10th Avenue Mixed Use Cross Section



Cross sections are shown to reflect existing lane-width standards of the Denver Fire Department and Public Works. These standards may change prior to implementation as a result of future discussions concerning multi-modal design goals identified in Blueprint Denver and the Strategic Transportation Plan.

Figure 2.53: Mixed-use street section (Source: City of Denver 2009)

Mixed Use Scale Urban Design



- 80' Right of Way
- 8' Tree Lawn
- Corner Building Architectural Elements
- Transparent Surfaces at Street Level
- Parking Facilities at Rear of Structures
- 5' Detached Walks
- On Street Parking
- Unit Access on Street
- Stepped Back Upper Floors
- Active Ground Floor Uses
- Pedestrian Amenities
- Pedestrian Scale Light Fixtures

Sheridan Boulevard Urban Design



- 110' Right of Way
- 12' Tree Lawn
- Transparent Surfaces at Street Level
- Parking Facilities at Rear of Structures
- 8' Detached Walks
- 10' Amenity Zone
- Unit Access on Street
- Varied Cornice Heights
- Active Ground Floor Use
- Pedestrian Amenities
- Pedestrian Scale Light Fixtures

Figure 2.57: Urban design components (Source: City of Denver, 2009)

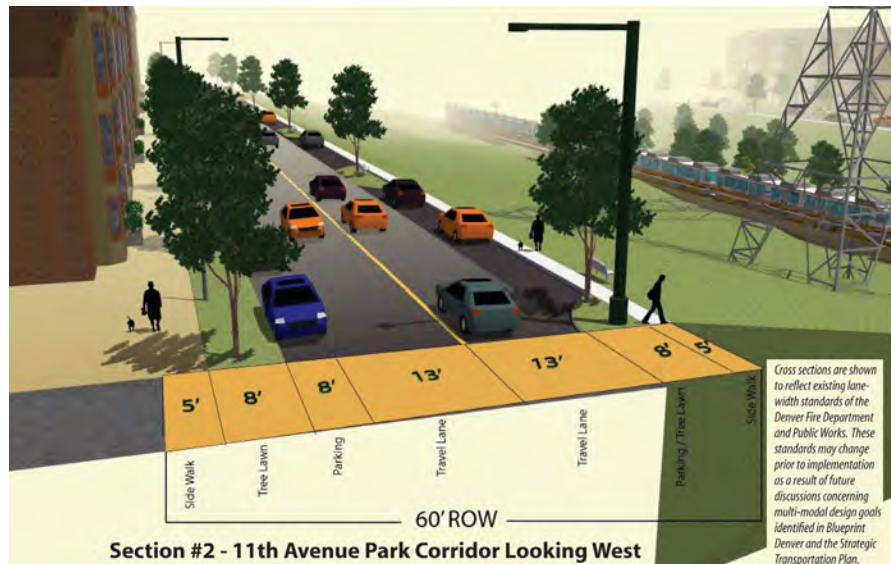


Figure 2.54: Future plans for Lakewood dry gulch corridor (Source: City of Denver, 2009)

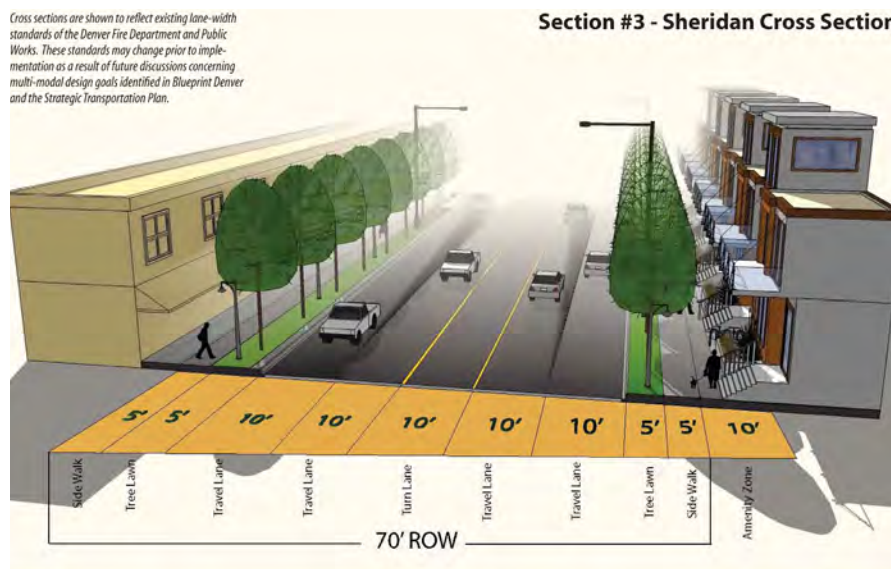


Figure 2.55: Urban residential cross section (Source: City of Denver, 2009)

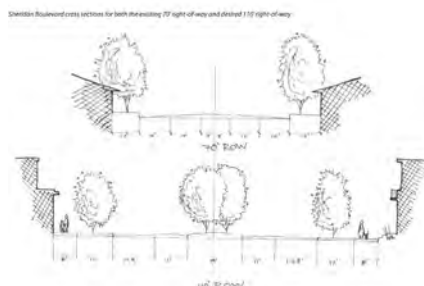


Figure 2.58: Proposed cross section for west colfax avenue from the west colfax plan (Source: City of Denver, 2009)

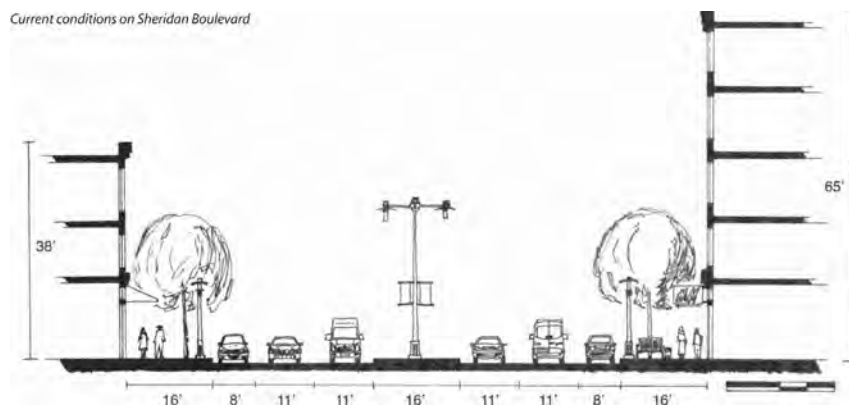


Figure 2.56: Sheridan Boulevard cross sections (Source: City of Denver, 2009)



Figure 2.59: Images of Sheridan station area (Source: City of Denver, 2009)

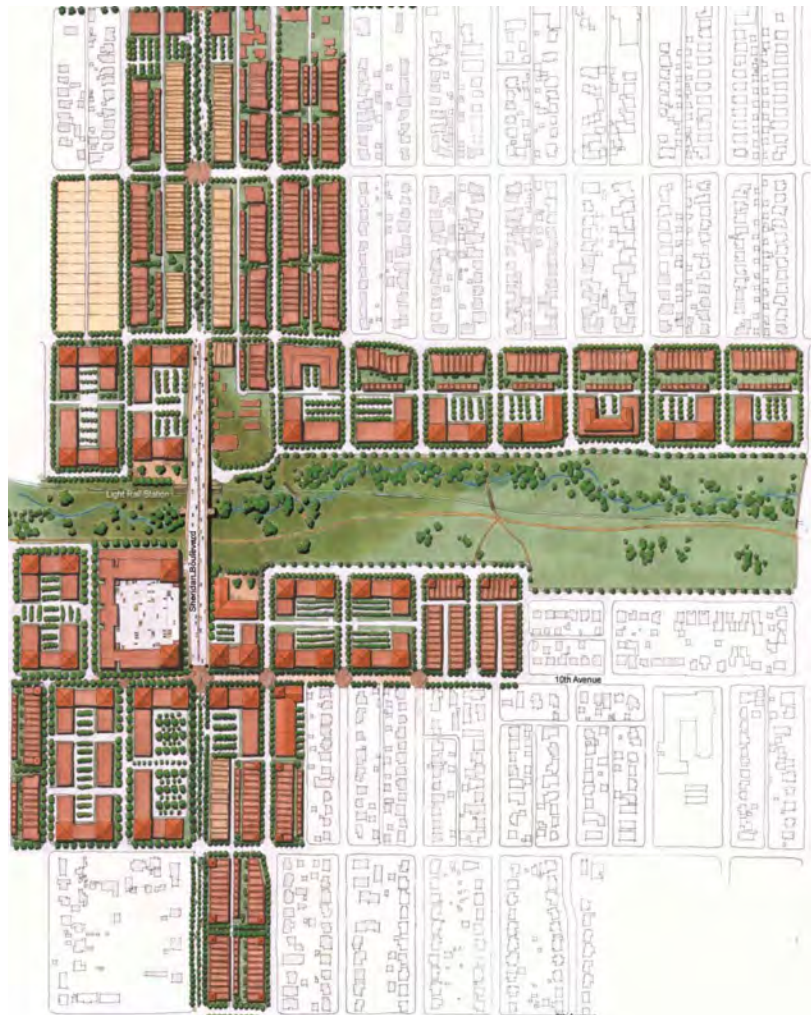


Figure 2.60: Illustrative plan (Source: City of Denver, 2009)

- Provide employment and commercial development (City of Denver, 2009).
- Promote more opportunities around Sheridan station area.
- Make alternatives to more expensive office markets available closer to downtown.
- Ensure commercial uses at or around the station area are neighborhood-oriented and complementary.

There are currently 11 zoned districts in the Sheridan Station Area. Only about 12% of the ½ mile station area is zoned for commercial or Main Street commercial. Mixed-use development is planned to be concentrated along Colfax Avenue and the intersection of 10th Avenue and Sheridan (City of Denver, 2008, p. 58).

The Current residential land use in the Sheridan Station Area is a mixture of single-family and low-use multi-family residential with some higher-density apartment buildings. Approximately 38 percent of the land area is public or quasi-public comprising such uses as street right-of-way and publicly owned park or open space. Only 4 percent of the land is vacant or counts surface parking as an independent use.

The station area was planned to support commercial development along Colfax Avenue which is an important axis on the north. While Colfax Avenue will be the focus,

the highest densities near the station are planned around the intersection of 10th Avenue and Sheridan Boulevard. The separation of commercial uses on Colfax Avenue from the station and the impact of Lakewood Dry Gulch on neighborhood connectivity both increase the importance of rebuilding Sheridan Boulevard as a more walkable and pedestrian friendly street (Sirois, 2005; City of Denver, 2009).

The plan includes the following priorities:

- Colfax Avenue: the Sheridan Station Area should support the Colfax Avenue redevelopment.
- Lakewood Gulch is the main amenity of the area. New uses should front onto the gulch
- Sheridan Boulevard from 6th Avenue to 17th Avenue: Sheridan Boulevard should be the main north/south connector for both pedestrians and vehicles and should support new residential and mixed-use development.
- 10th Avenue and Sheridan park-n-ride facility: the new park-n-ride facility provides a great opportunity to “jump start” development in the area.
- Mixed income and market rate housing: the new housing that is provided in the station area needs to include a mix of housing types and incomes.
- Close coordination with the City of Lakewood in the development around the station and for Sheridan Boulevard improvements.

2.7.3 PROCESS

Sheridan Station TODt is currently in the planning stages. At the time of the preparation of this review the project seems to be going through a series of preparatory steps to set the vision and plan. The following planning steps are some of the key points of the process followed in this particular case study.

- Existing conditions analysis
- Draft vision and key objectives
- Identify opportunities and constraints
- Public visioning workshop
- Develop and analyze plan alternatives
- Technical review of plan concepts
- Alternative concepts public workshop
- Develop preferred plan alternative with the public input
- Draft station area concept plan
- Public open house to present draft station area plan
- Plan refinements
- Planning Board review and approval
- Plan adoption by City Council (City of Denver, 2009).

2.7.4 CONCLUSION

Although this particular case study was in the planning stages while this report was being prepared, the plans and documentation present ideas for the cities that are considering district level integration of transit. Sheridan Area Station Plan is unique due to its effort to plan and implement comprehensive project that combines development, design and environmental sensitivity. The district crosses Lakewood Gulch green belt and could provide lessons on how to integrate a high quality outdoor environment for residents. Although the district is in its infancy it illustrates a variety of design details, including land-use concepts, a hierarchy of streets, connectivity consideration within and beyond the district. Since the visioning and planning stages of this district is well documented and available through secondary sources, it would be an important case study to understand the project time line in relation to planning processes and implementation phases under the current national economic and demographic trends.

Smart Features of Sheridan Station Area Plan Transit Oriented District:

- o Strong Vision
- o Response to Regional Contexts
- oo Strategic Transit Oriented District Plan
 - o Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
 - oo Mix of Major Land Uses (Office, Residential, Retail, Civic)
 - oo Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
 - oo Range of housing choices
 - oo Community and Public Participation
 - Joint Development Programs (Public Private Partnerships, etc.
 - Non-traditional financing mechanisms (TIF, CIP, BID , PID, etc.)
 - o Compact Built Environment
 - Sustainable Architecture
 - oo Context Sensitive Design
 - o Multi-modal transportation options
 - o Pedestrian emphasis
 - o Station Integration
 - o Attention to Place Making
 - o Environmental Sensitivity
 - oo Development in Existing Communities
 - Non-conventional Parking Strategies

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

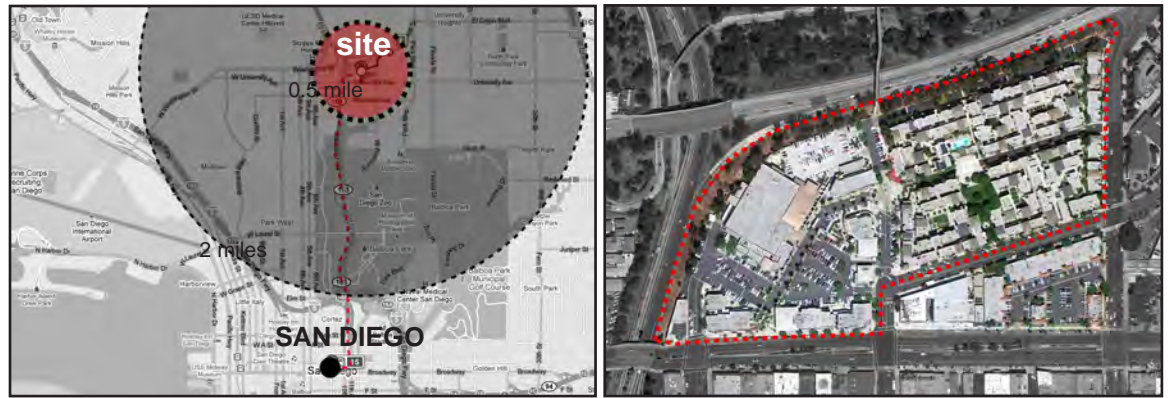
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Sirois, B. (2005) Transit-Oriented Development Status Report. The RTD Board of Directors; Denver, CO



Source: Google Map, 2010

UPTOWN DISTRICT TOD		
Development Profile	Transit Station	Uptown District
	Transit Agency	Metropolitan Transportation Development Board (MTDB)
	Primary Transit	Bus (5 bus routes)
	Station Status	Built
	TOD Type	Urban Neighborhood TOD
	TOD Name	Uptown District
	Station Address	1092 University Avenue San Diego, California 92103
	TOD Size	14 acres
	TOD Status	Complete (1989)
	City Population	1,359,132 (2009 U.S. Census Estimate)
	Developer	Single, Oliver McMillan/Odmark and Thelan
	Ownership	Single, Oliver McMillan/Odmark and Thelan
	Zoning	Conventional Zoning, Uptown Community Plan adopted after construction
Cost	Project cost \$70 million	
Stakeholder	Oliver McMillan Inc., Ted Odmark, SPGA Architecture and Planning Group. City of San Diego, Citizens Advisory Committee, Uptown Community Planners, the Hillcrest Business Association	
Land-use	Development Site	Greyfield redevelopment
	Residential	320 units
	Retail	145,000 sq. ft.
	Office	None
	Public/Civic	3,000 sq. ft community center, public courtyards
	Parking	Structured parking, on-street, surface
Other	Grocery store	



Figure 2.61: Location of Uptown District
(Source: California TOD Database, 2009)

2.8 UPTOWN DISTRICT, SAN DIEGO, CA

2.8.1 PROJECT BRIEF

The present Uptown District was originally occupied by a Sears store and sea of parking lots. In September 1986, the City of San Diego purchased the 14-acre abandoned Sears store and surrounding parking lot for \$9 million. Though the site was originally intended to house the City's new central library, the City Council—with input from citizens groups such as Uptown Community Planners and the Hillcrest Business Association—decided instead to issue a request for proposals for the acquisition and development of the site. Stringent land use and design criteria were written into the RFP, including ground floor neighborhood-oriented retail uses and limited upper level commercial uses, as well as a 3,000 square foot community center (Caltrans, 2002).

A development team, Oliver McMillan/Odmark and Thelan, assembled design themes based on photos from the surrounding neighborhoods of Hillcrest, Mission Hills, University Heights, and North Park and utilized a community-participation process called "Project Head Start" that involved local residents in the planning even before the proposal was drafted. The team's proposal won, and in 1988 the property was purchased for \$10.5 million.

2.8.2 PLANNING + DESIGN

The urban design concept for "Uptown District" emphasized transforming the site into a pedestrian environment closely linked to the adjacent blocks of the Hillcrest business district and residential neighborhood. University Avenue, a major thoroughfare lined by neighborhood shops and services, was damaged by the older Sears shopping center on the site. Typical of commercial centers of the period, the Sears center was isolated from the adjacent neighborhood by a sea of parked cars, robbing University Avenue of its pedestrian activity.

The project comprises a neighborhood retail center with a major supermarket and small shops, a public community center for the Hillcrest neighborhood, a section of live-work lofts and 313 dwelling units, many located above retail shops (SGPA, 2008). The project forms a strong edge on University Avenue, a major transit street, by placing new retail buildings at the sidewalk to provide active street frontages. Parking is located below the market, and in a "parking court" behind the street-fronting buildings. Along University Avenue, courtyard openings allow views into the heart of the shopping district, visually linking it to the activity of the thoroughfare.

A series of enclosed public courtyards and gardens provide a strong internal focus for the residential portion of the site. An existing adjacent street, Vermont Street, was extended into the site to provide a link with the existing city grid. The residential units are a mix of townhouses and apartments in two to four story buildings with balconies, gardens and access to outdoor courtyards. The residential density is approximately 55 dwellings per acre (313 units, 7 acres) (SGPA, 2008).

Residential parking is located under the dwellings, taking advantage of a grade change on the site. The zoning for the land use mentions this area as commercial. Vermont Street runs through the site and acts as an integration corridor between the commercial and mixed-use residential and retail areas. However, the Uptown District currently has 56% residential and 31% commercial land use. The Uptown Community lies just north of the Centre City area. It is bounded on the north by the steep hillsides of Mission Valley. A density of 55 households per residential acre are seen in the Uptown District. An artfully decorated pedestrian bridge was built between the project and the adjacent neighborhood, University Heights, spanning a busy multi-lane street (Washington Street) many feet below. Now, residents of that historic neighborhood have access to the grocery store, boutique retail shops, and the community center, while residents of Uptown District have access to other neighborhood parks and facilities (Caltran, 2002).



Figure 2.62: The Sears store and parking lot (Source: Sandiegohistory, 2009)

Parking is limited, further enhancing pedestrian access. Ratios are 2.0 spaces per townhouse, 1.7 per apartment, and 1 space for every 270 square feet of commercial floor area. The vicinity average is 2.25 spaces per residential unit and 1 space for every 250 square feet of commercial floor area. Higher density in Uptown District equates to more efficient land use. There are nearly 23,000 people per square mile at the project (about 500 live there), while the average in the City of San Diego is only 3,200. Uptown District boasts a Ralphs Supermarket (45,000 square feet), and the project also included a 3000 square feet community center (Caltran, 2002b).

SGPA Architecture and Planning began the planning process by roaming about the streets of Hillcrest and taking hundreds of photographs. The firm then produced montages in search of a suitable architectural approach, and it soon concluded that the worst possible solution would be to wrap the entire development in a single style. For one thing, no one style predominated in Hillcrest; for another, that approach would have increased the development's apparent scale and clearly brand it as an interloper.

The architects consequently took the opposite tack, attempting to make Uptown's 48 buildings look as if they had been done by many hands over a period of time. It helped that there were different architects for the commercial and residential sectors; yet even within each sector, buildings vary widely in form and color. Flat-roofed rows that look like something out of an old California mining town contrast with other buildings bearing hipped roofs, vaults, and towers. Uptown may be a low-rise community, but it has a lively skyline.

SGPA's plan emphasizes linkages to the existing neighborhood. The original Sears site stopped just short of University Avenue, Hillcrest's main retail corridor, so the developers bought the strip of land in between to bring Uptown's total acreage to fourteen. Because University was one of the streets that had fallen prey to strip development, Uptown's architects brought their buildings along the avenue right up to the sidewalk line, reinforcing the street edge. The architects then extended San Diego's street grid into the project, widening Vermont Street to create a grand boulevard where the commercial and residential sectors meet. Mixed-use buildings along Vermont have ground-floor shops, with offices or residential lofts above, while a landscaped courtyard in the center of the development rises in a series of terraced steps that can serve as an amphitheater for community events.

An east-west spine extends from the courtyard to Uptown's largest single building, a Ralph's Supermarket. The architects softened the store's visual impact by designing the 42,500 square foot structure as a farmers' market topped by an arching bow-truss metal roof. They also reduced surface parking by placing the market atop a 115 car garage, which features a specially designed escalator that carries both shopping carts and shoppers down to their cars. The grocery store has only a minimal sign on the arterial road and is not adjacent to a large parking lot (most parking is underground, thanks to the cart-moving escalator system), and is "designed to be inconspicuous," according to the City of San Diego Planning Department. Where there is surface parking, it is modest and heavily planted with flowering jacarandas. Landscaping and street furnishings throughout contribute an "urban village" feeling, in the architects' words.



Figure 2.63: Image of Uptown District (Source: City of San Diego, 2009)

Table 2.3: Transit options and street characteristics (Caltran, 2002b).

Is there a Bicycle Plan?:	Yes
Is there a Pedestrian Plan?:	Yes
Average Block Length:	400 feet
Dominant Street Pattern in Area:	Modified Grid
Type of Street Station is located on:	Arterial

Uptown's 320 residential units are also set over garages and are arranged in a pedestrian version of the city grid. Buildings surround a large central park and smaller



Figure 2.64: Richmond street townhomes (Source: City-data, 2009)

landscaped courts, each with a distinct design. Lorimer-Case took advantage of San Diego’s benign weather by turning what normally would be interior corridors in the apartment buildings to outdoor passageways. Two-story townhomes lining perimeter streets help bring Uptown into scale with Hillcrest’s existing buildings. Restoring old streets that had been removed to create the original store’s parking lot encourages a pedestrian-friendly atmosphere. Smaller blocks, along with pedestrian pathways, create a safer and easier walking experience. Underground parking for both the grocery store and the homes helps reduce the presence of automobiles in the project.

In addition to the urban orientation and architecture, Uptown District is unique for many reasons. The project places all residential parking underground, using a network of pedestrian-only streets around a central park. Because home ownership was a goal of involved community groups, residents who rented during the first two phases were additionally given right of first refusal when the units came up for sale.

Uptown was built quickly and has succeeded quickly. Within the first three months, all of the first-phase residential and 70 percent of the commercial space was leased or committed.

Among the many awards it has received, the Uptown District was named the Project of the Year by the National Association of Home Builders in 1991 and was awarded the Urban Design Award by the California Council of the American Institute of Architects in 1991.

Table 2.4: Parking and Zoning (Caltrans, 2002c).

Primary Zoning of Project:	Commercial
Residential Parking Standard:	2.25 spaces per dwelling unit
Retail Parking Standard:	2.0 spaces per 1000 square feet
Office Parking Standard:	2.25 spaces per 1000 square feet

The Uptown District is not oriented around a single transit stop, but is instead a walkable district served by several bus lines. The major design issue solved by the development is how to maintain walkability while providing adequate parking to support anchor tenants. Parking is accommodated in a landscaped lot at the center of the development, away from street frontages, and in an underground parking garage (Caltrans, 2002c).

Because the project was in an existing community adjacent to one of the city’s busiest bus corridors, the developers could reduce parking below the requirements for conventional developments in the city. While the Hillcrest neighborhood averages 2.25 parking spaces per residential unit and one parking space per 250 square feet of commercial space, the uptown district offers 2 parking spaces per town house, 1.7 parking spaces per apartment, and one parking space per 270 square feet of commercial space.

The Uptown District project was initiated in 1986 and was concluded in 1990. It was a redevelopment process with the City of San Diego being the responsible agency.

Parking and Transit Related Information (Caltrans, 2002a):

- Type of Parking and Transit Structure: At Grade
- Peak-Hour Headways (time between cars): 15
- Average Daily Weekday Boardings: 123
- Average Daily Weekday Alightings (Deboardings): 133
- Duration of Service: 20.0 hours/day
- Capacity of Transit Vehicle (sitting and standing): 37 persons
- Is there a Passenger Drop off Area? : No
- Is there Dedicated Station Parking? No
- Number of Parking Lots in Station Area: 8
- Number of Parking Structures in Station Area: 5



Figure 2.65 Bicycle parking in Uptown District (Source: California TOD Database, 2009)

- Number of Parking Spaces in Structures in Station Area: 1546
- Is there a Freeway within 1/2 mile of Station Area? Yes
- Is there a Parking District around Transit Station? Yes
- Is there a Residential Permit Parking Program around Transit Station? Yes

2.8.3 PROCESS

In 1986, the City of San Diego purchased the 14-acre site for \$9 million. The City subsequently issued a request for proposals (RFP), including specific land use and design specifications. A proposal by the development team of Oliver McMillin Company and Oldmark and Thelan was selected as the winning concept. In 1988, the City sold the land to these developers for \$10.5 million subject to the requirements laid out in the RFP (Caltrans, 2002d). The project was completed in 1989.

2.8.4 CONCLUSION

Today the Uptown District in the Hillcrest area of San Diego, California, is a vibrant, pedestrian-friendly community, which achieves the objectives of the City and community for a mixed-use development that includes neighborhood-oriented retail uses and a small community center. Uptown District has greatly spurred development and redevelopment in the surrounding Hillcrest neighborhood, especially adjacent to the site along University Avenue, the main arterial road, according to the San Diego Daily Transcript.



Figure 2.66: Community center at Uptown District (Source: Gast-hillmer, 2009)

The Uptown District in the Hillcrest area of San Diego, California, demonstrates how redeveloping abandoned retail centers, or “greyfields,” can help revive and reconnect communities (Canty, 1990). The project, a successful 14-acre mixed-use, high-density development in the city’s Hillcrest neighborhood, was built on the site of an abandoned department store and its surrounding parking lot.

The abandoned Sears Outlet with its parking lot was bought by the City of San Diego with the intention of building a city library. With input from citizens groups such as Uptown Community Planners and the Hillcrest Business Association, the City Council decided instead to issue a request for proposals for the acquisition and development of the site. Stringent land use and design criteria were written into the RFP, including ground floor neighborhood-oriented retail uses and limited upper level commercial uses, as well as a 3,000 square foot community center.

The project started in 1986 and was completed in 1989. Uptown District is located in the Hillcrest area of San Diego on University and 163 Freeway. Uptown District is bounded by Cleveland, Washington, Richmond and Tenth Avenues. The zoning for the land use mentions this area as commercial. Vermont Street runs through the site and acts as an integration between the commercial and mixed use residential/retail areas. However, the Uptown District currently has 56% residential and 31% commercial land use.



Figure 2.67: Vertical mixed use with ground floor retail and apartments above (Source: California TOD Database, 2009)

The Uptown District was developed as a transit oriented development due to the easy access to bus stops on University Avenue. The MDTB has two bus stops on University Avenue from where people can use public transit. Also, the district was developed as a compact, pedestrian friendly development. Parking spaces are limited and people are thus encouraged to walk. Mixed-use spaces, with retail and dining on the first level and apartments and condominiums on the upper levels, are available on the east side of Vermont Street. The west side is comprised of the commercial area with retail giants like Ralph Supermarket. The 3,000 square feet community center adds to the diverse land uses. A density of 55 households per residential acre is seen in the Uptown District.

Uptown’s 320 residential units are also set over garages and are arranged in a pedestrian version of the city grid. Buildings surround a large central park and smaller landscaped courts, each with a distinct design. The Ralph Supermarket occupies 45,000 square feet of space. A connecting pedestrian bridge to the nearby University



Figure 2.68: Tree lined streets of Uptown District (Source: California TOD Database, 2009)



Figure 2.69: Uptown District (Source: MTDB Database, 2009)



Figure 2.70: MTDB bus serving Uptown District (Source: MTDB Database, 2009)



Figure 2.71: The diverse architecture of Uptown District (Source: Gast-hillmer, 2009)

Village links the two communities and allows the sharing of resources.

The 14 acre site has thus emerged as a vibrant pedestrian oriented neighborhood.

- Uptown’s 320 residential units are also set over garages and are arranged in a pedestrian version of the San Diego city grid.
- Buildings surround a large central park and smaller landscaped courts, each with a distinct design.
- For those visiting on foot, the Uptown District provides welcoming and active street frontages, including landscaped plazas and sidewalk cafes.
- The development is linked to neighborhoods to the north via a pedestrian bridge that spans a highway.
- To the east, the development blends into the fabric of walkable neighborhoods organized along a street grid.
- A density of 55 households per acre is achieved.
- Restaurants and retail are provided on the first level with apartments on the upper levels thus creating vertical, mixed land uses in the heart of San Diego.
- Easy access to the bus stops.
- Basic necessities within a walking distance with a grocery store in the community.
- Most of the parking for the residential area is provided below ground.
- Few dedicated bike facilities exist in the vicinity of the Uptown District. There are a handful of bike parking spaces tucked in the back of the development near the entry to a grocery store. Although the area lacks dedicated bike lanes, cyclists use the pedestrian bridge which connects Uptown to neighborhoods to the north.
- Eco-friendly design principles are not used here.

Smart Features of Uptown District Transit Oriented Development:

- o Strong Vision
- o Response to Regional Contexts
 - Strategic Transit Oriented District Plan
 - Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- o Mix of Major Land Uses (Office, Residential, Retail, Civic)
- oo Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
 - Range of housing choices
 - Community and Public Participation
 - Joint Development Programs (Public Private Partnerships, etc.)
 - Non-traditional financing mechanisms (TIF, CIP, BID , PID, etc.)
- oo Compact Built Environment
 - Sustainable Architecture
- oo Context Sensitive Design
 - o Multi-modal transportation options
 - oo Pedestrian emphasis
 - o Station Integration
 - oo Attention to Place Making
 - o Environmental Sensitivity
 - oo Development in Existing Communities
 - oo Non-conventional Parking Strategies

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated



Figure 2.72: Pedestrian only residential level with lush parks (Source: Photo by S. Buntin, 2009)



Figure 2.73: Mediterranean architecture of Uptown District (Source: S. Buntin, 2009)



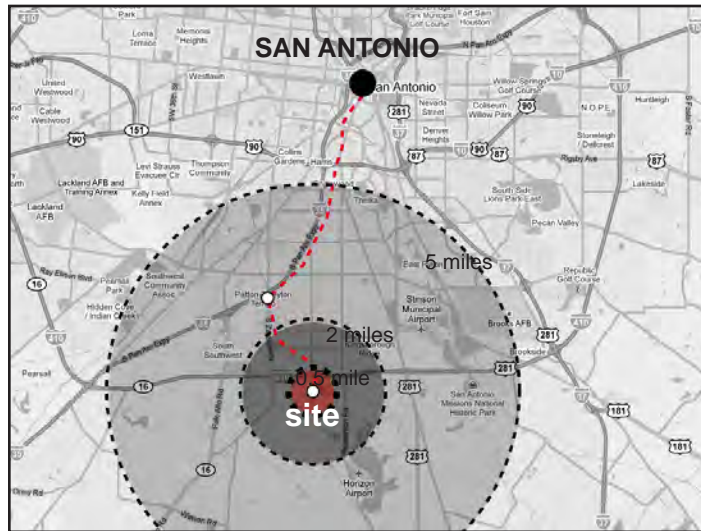
Figure 2.74: Corner cafes (Source: California TOD Database, 2009)



Figure 2.75: Birds eye view of the Uptown District with Balboa Park in background (Source: California TOD Database, 2009)

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Source: Verano, 2009

VERANO AT CITY SOUTH TOD		
District Profile	Transit Station	Verano (planned)
	Transit Agency	Austin-San Antonio Intermunicipal Commuter Rail District
	Primary Transit	Commuter Rail (planned)
	Station Status	Planned
	TOD Typology	Suburban Center, master planned community
	TOD Name	Verano at City South
	Station Address	TBD
	TOD Size	2,700 acres
	TOD Status	TX A&M broke ground on 1st campus building 2009
	City Population	1,400,000 (2009 U.S. Census estimate)
	Developer	Multiple
	Ownership	Single, Verano Land Group
	Zoning	SmartCode (Form Based Code)
Cost	TBD, Tax Increment Reinvestment Zone	
Stakeholder	City of San Antonio; TIRZ, Verano Land Group, Triple L Management, LLC	
Land-Use	Development Site	Greenfield
	Residential Units	6,938 units
	Retail	1,245,439 sq. ft.
	Office	1,395,440 sq. ft.
	Public/Civic	600 acre college campus, dedicated open space, hike/bike trails
	Parking	TBD
Other	TBD, 3 mil. sq. ft. of light industrial	

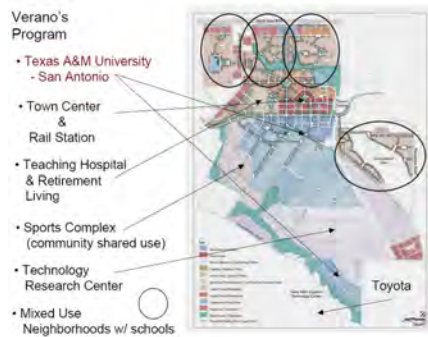


Figure 2.76: Verano's development design
(Source: Gateway Planning Group, 2008)

2.9 VERANO CITY SOUTH TOD/TND SAN ANTONIO, TX

2.9.1 PROJECT BRIEF

The Verano plan is designed to create a pedestrian-friendly, maintainable mixed-use human community built around the concept of the urban village. The core of the project will be a Town Center, which will be located directly across from the entrance to the Texas A&M San Antonio Campus. This primary node will house a transit center that will be the hub for a proposed commuter rail station and busing to and from San Antonio's downtown area. The Town Center, as the densest area within the community, will also be the central area for commercial, retail and compact habitation.

In addition to the Town Center, each village will have a small node from which to do local, pedestrian-oriented business. These mixed-use areas will provide for local needs. As well, sports activities will culminate in the area in front of the proposed Sports Complex that will be located to the west of the Texas A&M University San Antonio campus.

Verano-Texas A&M San Antonio is a proposed TOD/TND located in the City South portion of San Antonio. The site totals 2,700 acres and lies along South Loop 410, west of Pleasanton Road and east of South Zarzamora Street. A Toyota Plant lies along the southern boundary. The compact nature of this mixed-use development is designed to discourage urban sprawl by utilizing the SmartCode form-based development criteria.

The Austin-San Antonio Rail District has acknowledged the proposed Verano Town Center as the most southern stop for the Austin-San Antonio Commuter Rail System. The Verano at City South site meets qualifications and has been approved as a Tax Increment Re-Investment Zone (TIRZ) (City of San Antonio, 2008).

A proposed expansion and re-location of the current Texas A&M University San Antonio campus has been approved and will be surrounded by a mixed-use community (Evans and Halbert, 2007; Ludwig, 2007). The new Texas A&M campus will serve as the anchor for the development. The Texas A&M University San Antonio site is composed of 694 acres that have been donated by the developer, The Verano Land Group, LP which is managed by the investment group Triple L Management (Steuville, 2009; San Antonio Business Journal, 2008). These two main private funding entities are based in Las Vegas, Nevada. The Verano Land Group has also pledged \$1 million for construction and assistance in raising additional moneys for student assistance in the form of scholarships.

2.9.2 PLANNING + DESIGN

The proposed Verano development lies to the south of both the Balcones Escarpment and the Edward's Aquifer. TIRZ development requires the utilization of land that is not within the Edward's Aquifer or its associated recharge zone. The Verano site lies within the Lower Leon Creek and the Elm Creek Watersheds. The site lies within close proximity to Mitchell Lake Audubon Sanctuary.

The Verano site has two minor waterways, one on the northern side of the site and one running along the western edge. The floodplain area has been determined and is proposed to remain undeveloped and a part of the parks and open space for the site. These areas, along with many pocket parks will serve as natural areas for the inhabitants of the neighborhood. As well, Canvas Back Lake is located on the south-eastern portion of the site.

Traditional land use codes are currently utilized throughout most of the city of San Antonio. The Form-Based Zoning District (FBZD) has been approved for projects in City South. The FBZD was adopted for Verano in December, 2007 (Gateway Planning Group, 2009a). It will be implemented throughout the mixed-use areas that lie outside the Texas A&M University site. This code promotes a transect-style of

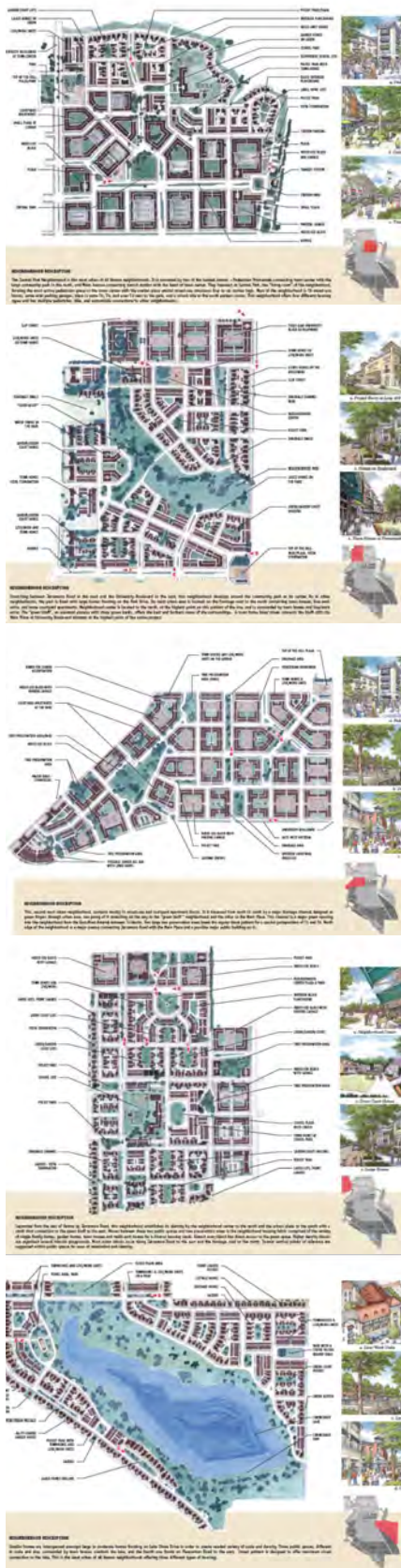


Figure 2.77: Master plans (Gateway Planning Group, 2008)

planning which results in development that varies in density, the most compact area being the proposed Town Center (T6), which is located in the closest proximity to the proposed rail station (See Transect definition in Chp.1).

In October of 2008, the City of San Antonio Planning Commission approved a Master Development Pattern Plan designed specifically for the Verano at City South Community. The approval of this plan is designed to streamline the platting and site plan process so that submissions may receive administrative approval by the Director of Planning and Development Services without the need for further Planning Commission or City Council approvals. Conformance with the FBZD, the Verano Zoning Ordinance and the Master Development Pattern Plan is required for the securing of administrative approval.

The Verano team worked for six months with city staff to calibrate a Form-Based Development Code Module (SmartCode) for application in City South (City of San Antonio, 2007). The SmartCode template calls for local calibration before it can be utilized.

The City of San Antonio has adopted Tax Increment Financing (TIF) “as governed by the TIF Act found in Chapter 311 of the Texas Tax Code” in order to provide incentive for development in economically challenged areas of the city. These target areas have been delineated throughout the city and are called Tax Increment Reinvestment Zones (TIRZ). All zones are required to demonstrate a need for the development through the approval of extensive market feasibility studies. TIRZ funds are created by a percentage of property value tax set aside over a period of time.

In the case of the Verano TIRZ, a percentage of property taxes collected against the property and its associated development are set aside by different entities over a period of years (until 2037). These funds (up to \$265 million) will be used to reimburse the developer for the cost specific public improvements within the TIRZ. Such areas of reimbursement costs include streets and drainage, lighting and signage, parks, plazas and green spaces, fees associated with processing and impact, and reconstruction/improvements within other areas delineated by the TIRZ.

Table 2.5: Participation (Source: City of San Antonio, 2007)

The TIRZ Tax Entity	Participation Rate	Length of Participation
City of San Antonio	75%	September 30, 2007-September 30, 2037
Bexar County	70%	September 30, 2007-September 30, 2037
Alamo Community College District	50%	September 30, 2018-September 30, 2037
San Antonio River Authority	60%	September 30, 2007-September 30, 2037

A set of development guidelines has been created for these areas so that they retain vitality over a length of time. All public infrastructure must meet the requirements for construction in accordance with guidelines that prioritize the comfort and the safety of the user. Housing construction requirements include such measures as ensuring adaptability for the disabled. This type of environment ensures that a person may live within the community throughout the duration of his/her life.

The San Antonio City Council has entered into a Memorandum of Understanding that requires accurate quarterly reports that include all documents, invoices and monitoring of alterations so that project status may be monitored for compliance with the guidelines associated with the TIRZ agreement.

The Missouri-Pacific rail system borders the Verano at City South site on the east side. This line is along the Austin-San Antonio rail corridor. The Austin-San Antonio

Inter Municipal Commuter Rail District ("Rail District") was created in 2002, and received legislative authorization in 1997 (ASA, 2009). This board has been working on the feasibility and viability of a commuter rail system that links the two cities, as well as providing for those smaller communities that exist along this north/south corridor.

A transit station is proposed to be located along the rail line and within the Verano Town Center. This rail transit service will be initiated upon the successful relocation of the main-line freight service of Union-Pacific from the I-35 corridor to the east (ASA, 2009a).

Currently, the locally-preferred-alternative (LPA) for the rail service stops seven miles north of Verano at the Port of San Antonio (formerly Kelly Air Force Base). The San Antonio-Bexar Metropolitan Planning Organization (MPO) and the Rail District are considering and are likely to amend the LPA to extend it to Verano. The Rail District will commence preliminary engineering and the federal environmental clearance process during the summer of 2009, for service from Georgetown, Texas to Verano-Texas A&M San Antonio.

The San Antonio VIA Metropolitan Transit bus line is planned to provide rapid transit to and from the downtown area of San Antonio.

As well as a proposed rail system, it has been determined that a smaller commuter system, probably in the form of bus or trolley, be utilized to move people from the outer fringes of the Villages to the University Campus and to the City Center where the rail station is to be located (San Antonio/Bexar County Transportation Task Force, 2009). The area is designed to be pedestrian and bicycle friendly, and neighborhood centers are designed to be located at the center of each village providing convenient accessibility for accommodation of smaller shopping needs.

Over 500 acres of the Verano site will be utilized for housing. This City South area will include the division of land into three villages and two Hamlets. Each of these villages will utilize the transect plan of the SmartCode to provide variation in density. Housing will be in conformance with both a "form-based" design approach adopted for the area as well the TIRZ. Student residences will be interspersed throughout the villages. Dwellings are planned for a variety of income levels. The lack of segregation within the neighborhoods allows for multiple housing types so that families do not have leave the neighborhood to purchase a different scale home. The Verano communities are projected to house up to 30,000 people at total build out in the year 2022.

Residential units are proposed to follow the following breakdown: 750 acres of the Verano project will be set aside for commercial and industrial development. The Verano Research and Technology Center will include exploration in the fields of green technology as well as alternative energy production. The institutional support structures plan for the inclusion of day care and assisted living facilities. Over 150 acres of the Verano Development are set aside for sports and hospital facilities. A sports and entertainment complex has been designed to meet the needs of the community and the university. As well, areas designated for playing fields will provide for group recreational activities. A regional hospital, complete with teaching facilities and clinics is proposed. This health care facility will be designed to fulfill the medical needs of the City South area as well as the educational requisites of Texas A&M San Antonio.

451 acres have been identified for open space and other amenities such as plazas, greens and playgrounds. These areas are proposed to be maintained by home owner's/property owners' associations. Other areas designated by the city will be maintained by using public funds. Those areas that meet requirements will be reimbursed to the developer utilizing TIF funding. ROW landscape enhancements are planned to be funded by the developer and maintained by the city upon dedication.

Transect Development Proposal: The distribution of the different Transect Zones

(T1 – T6) for each of the Verano Community Types also seem to be utilized for the greater organization of the development. Each Community Type is planned to contain a varied distribution of transect zones, from T6 corresponding to high density town center to T1 low density and open space, providing for a diverse pedestrian-friendly, mixed-use environment throughout Verano (See definitions in Chapter.1 for Transect Zones definitions).

The proposal for an expansion of the existing Texas A&M University San Antonio has been in the works for quite some time. In 2003, the Texas Legislature authorized the creation of a stand-alone campus.

In 2007, the developer successfully petitioned the Texas A&M system to locate the new San Antonio campus within the Verano development by donating 694 acres.

In order to receive the initial \$40 million in funding from the Texas Legislature, Texas A&M University San Antonio has to have an enrollment of 1,500 full time students by the year 2010. Much effort has gone into the recruiting of students in an attempt to meet this threshold for the release of funds. Unfortunately, enrollment has not yet reached this minimum. Because the campus plans are already underway, it has been decided that the legislature re-visit this situation and provide amendment, reducing the enrollment requirement to 1,000 students. At this point, the revenue bonds can be released and campus construction can commence.

Table 2.6: Proposed land donation (Source: Verano: TAMUS Board of Regents Presentation, 2008)

Texas A&M University San Antonio	Acreage
Entrance to Site/Campus	10 acres
Main Campus	580 acres
Irrigation Technology Center	104 acres
Total	694 acres

2.9.3 PROCESS

The Texas Rail Relocation Improvement Fund was approved by constitutional amendment in 2005. This fund is proposed to be used in the relocation of freight lines away from areas of mass population within the Austin-San Antonio Rail Corridor, thereby freeing up the area for a commuter rail scenario. It is proposed that funding be allocated during the 2009 Texas Legislative Session. (This funding would enable use of the rail line running on the east side of Verano for commuter purpose.)

In July, 2008, a 12-member task force was appointed for an in-depth review of the transportation challenges and opportunities within Bexar county and the San Antonio metro area. This task force created recommendations that were proposed to the Mayor and County Judge in January of 2009. Investigative findings pledge to use infrastructure investments in accordance with the 2009 recovery package and 2010-2015 transportation bill to take advantage of funding and to implement a strategy that provides for more efficient public transit and improvement of air quality. The task force has proposed more aggressive action in an attempt to integrate transportation and land use in an area that historically has been almost solely car dependent.

The San Antonio Architectural group Marmon Mok and Associates and a planning firm with expertise in campuses of higher education, Sasaki Associates, have been hired to design the layout and the buildings for Texas A&M University San Antonio.

At build-out enrollment, Texas A&M University San Antonio will provide higher education facilities for 25,000 students. It is estimated that the university will provide 5,000 – 10,000 jobs and directly contribute \$329.1 million to the economy.

The Texas A&M University San Antonio site also proposes to create an irrigation research center on a large portion of dedicated land to the south of the campus.

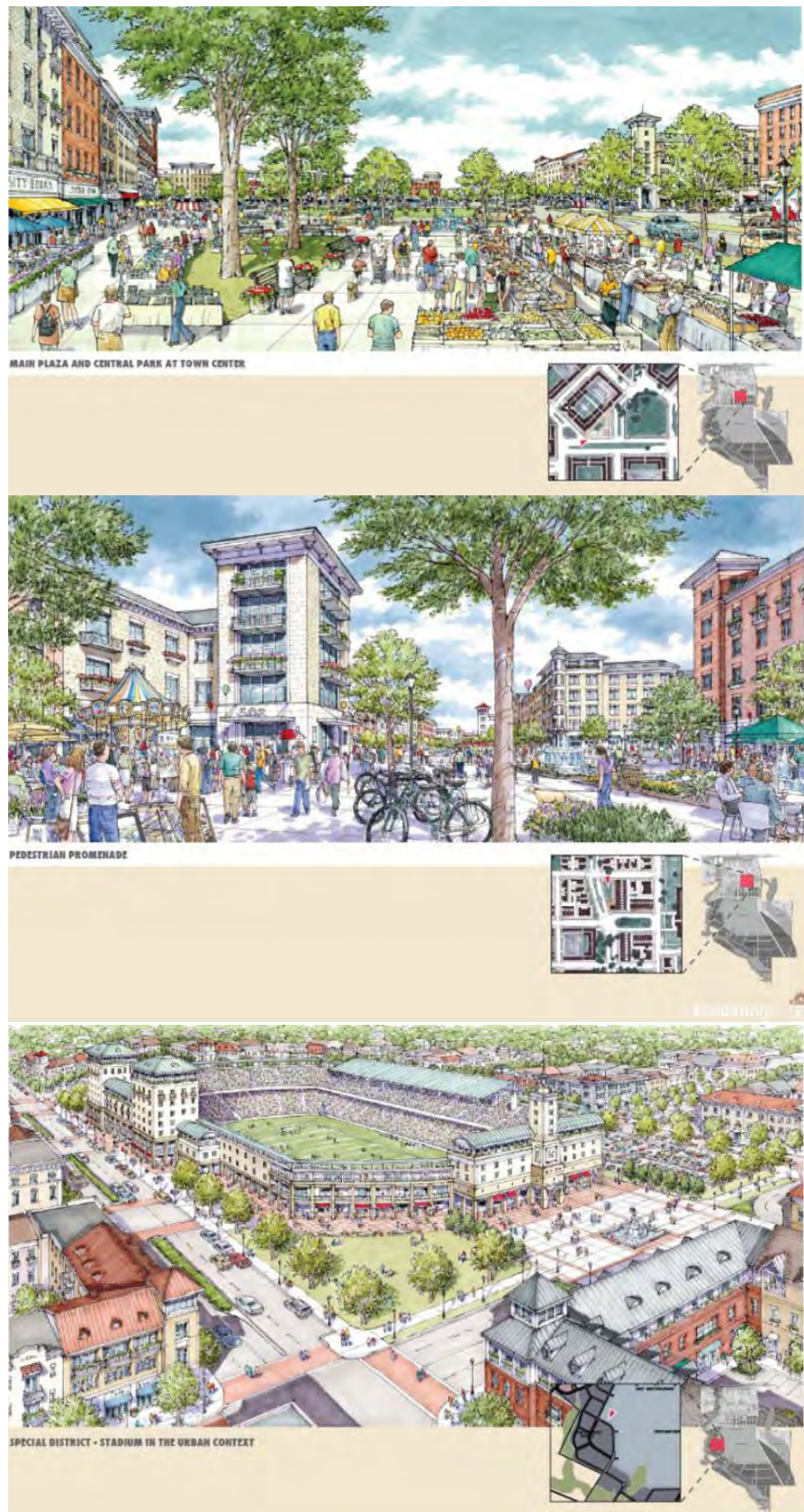


Figure 2.78: Illustrative perspectives of Verano (Source: Gateway Planning Group, 2009)

The City of San Antonio will provide \$15 million for infrastructure, and City Public Service (CPS) Energy proposes to provide funds as well as electric and gas infrastructure for the Texas A&M University San Antonio Campus.

- 1997: The Austin-San Antonio InterMunicipal Commuter Rail District received legislative authorization.
- 2002: The Austin-San Antonio InterMunicipal Commuter Rail District was created.
- 2003: The Texas Legislature authorized the creation of a stand-alone campus for Texas A&M University San Antonio.
- 2005: The Texas Rail Relocation Improvement Fund was approved by constitutional amendment. This fund is proposed to be used in the relocation of freight lines away from areas of mass population within the Austin-San Antonio Rail Corridor, thereby freeing up the area for a commuter rail scenario.
- Spring, 2006: Verano Land Company, LP begins making land purchases for the Verano at City South properties and retains Pate Engineering and Gateway Planning Group to begin a feasibility study and initial design work.
- September 19, 2006: First internal concept of the Verano at City South land use layout proposed to the client by Gateway Planning Group
- February 2, 2007: Texas A&M University System chooses Verano at City South site for new Texas A&M University San Antonio Campus
- July, 13, 2007: Donation Agreement signed by Texas A&M San Antonio and Verano Land Group, LP
- September 30, 2007: Tax increment Reinvestment Zone (TIRZ) fund initiated
- November 20, 2007: FBZD (form-based zoning code) for City South and zoning there under for Verano recommended by the Zoning Commission
- December 6, 2007: FBZD approved by City Council; Ordinance entitling Verano under FBDZ and designating TIRZ No. 28
- July, 2008: a 12-member task force was appointed for an in-depth review of the transportation challenges and opportunities within Bexar County and the San Antonio metro area
- October 28, 2008: Verano Master Development Pattern Plan Approved by Planning Commission; Enables administrative approval by staff for all future plats and site plans in conformance with the FBZD, the Verano Zoning Ordinance and the Master Development Pattern Plan
- January, 2009: Task force makes transportation review presentation to the Mayor and County Judge, highlighting opportunities for integration of transportation and land use and citing such projects as the Verano at City South Community.
- February, 2009: Begin Construction of North-South Boulevard (University Way) connecting Loop 410 to the proposed Town Center and main entrance to Texas A&M University San Antonio Campus (Phase I)
- 2009 Texas Legislative Session: proposal that funding be allocated for Austin-San Antonio Rail District freight line relocation.
- 2022: projected year of build out of Verano at City South
- September 30, 2037: TIRZ funding ends

2.9.4 CONCLUSION

The Verano development is a unique in that it is a green field development that departs from the boutique construction idea that seemingly has been the focus thus far in Texas regarding TOD development. The implementation of the TIRZ format of development departs from the stereotypical view that has come into play with regard to the socioeconomic status required for a prosperous, money-making construction initiative. In these types of projects it is revealed that profitable development need not be “high end” (TXP, Inc., 2008). Instead, it can be practical and usable for the average, middle class individual and family.

San Antonio is a city rich in culture and diversity. It has historically lagged in education and in mass transit initiatives. The Verano project appears to assist this area

in filling both of these voids. Affordable housing within close proximity to a higher education facility may provide the incentive that people need so that they believe that they may be included in the American dream. San Antonio is currently making vast effort to dispel illiteracy and to create a community of higher educational esteem.

Verano at City South project falls in line with the ideas for green development. It is a forward-thinking development and although it is considered to be an experiment of large proportion, it seems that it is being done with a great amount of support from the public as well as the private sector.

Although a greenfield development, the Verano project hardly adheres to the classic definition of sprawl. The developers, planners and coordinators of this project have put their expertise on the table to create a very practical use for a large piece of land in an area of the city that is in desperate need of an economic “leg up”. The TIRZ monitoring by the City of San Antonio requires a standard of quality that is seldom utilized in affordable living growth. This monitoring holds the local government accountable in that they must play a large and active role throughout the entire process. As well, the TIRZ initiative puts the same active attention on the builders, designers and developers so that a long-lasting, sustainable community is created instead of a future slum area.

The use of SmartCode adopted for this area is an opportunity for the community of San Antonio to experiment with a new initiative in land-use. This project is the catalyst for a community that has somewhat lagged behind in progressive growth initiative. It is hoped that the SmartCode ideas be implemented in more developments throughout this eight county metro area.

Although Verano is in its early development stages and has recently broken ground with Phase One, it appears to be a unique case study exemplifying some of the contemporary strategies that are critical for such comprehensive district level efforts.

Smart Features of Verano at City South Transit Oriented District:

- oo Strong Vision
- oo Response to Regional Contexts
- oo Strategic Transit Oriented District Plan
 - o Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
 - o Mix of Major Land Uses (Office, Residential, Retail, Civic)
 - o Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
 - o Range of housing choices
 - Community and Public Participation
 - o Joint Development Programs (Public Private Partnerships, etc.)
 - Non-traditional financing mechanisms (TIF, CIP, BID , PID, etc.)
 - o Compact Built Environment
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LARGE CITY CASE STUDIES

This section, focuses on the cross analysis of transit related development (whether in the form of transit oriented development or transit oriented district) in nine large cities in North America, and outlines the inferences drawn out of rigorous consideration of the intricate features of this particular development type. The following section is a summary of the key themes and features identified in the large city TOD case studies from the following case studies and the literature review:

- Collingwood Village, Canada
- Houston Pavilions, TX
- Lindbergh City Center, GA
- Mockingbird Station, TX
- Port Credit Village, Canada
- Saltillo Lofts, TX
- Sheridan Station Plan, CO
- Uptown District, CA
- Verano at City South, TX

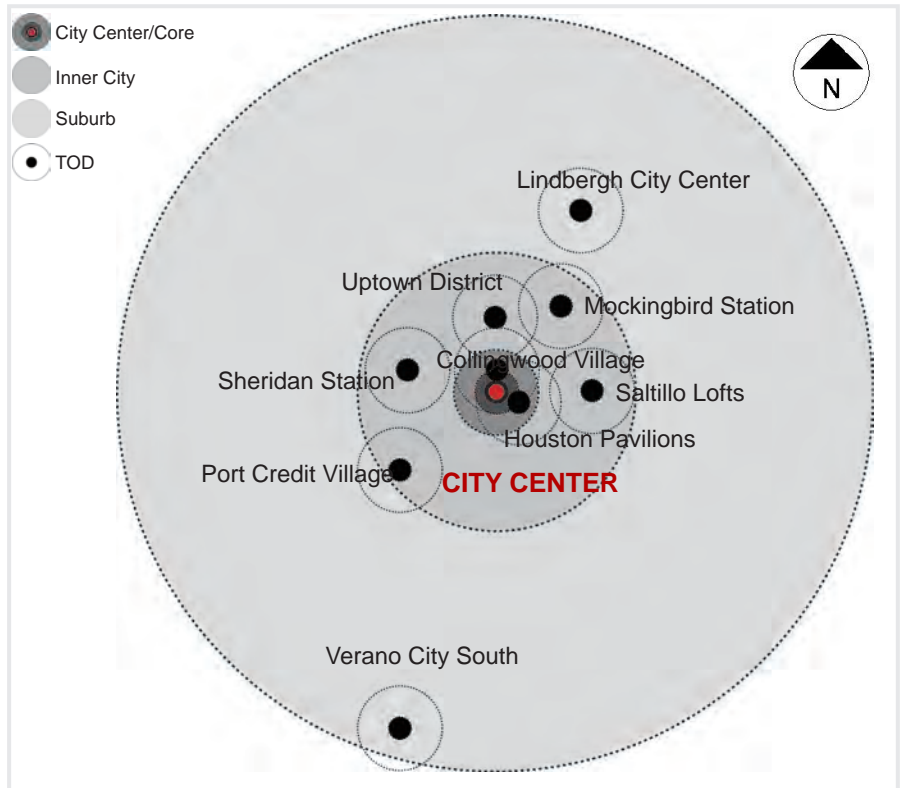
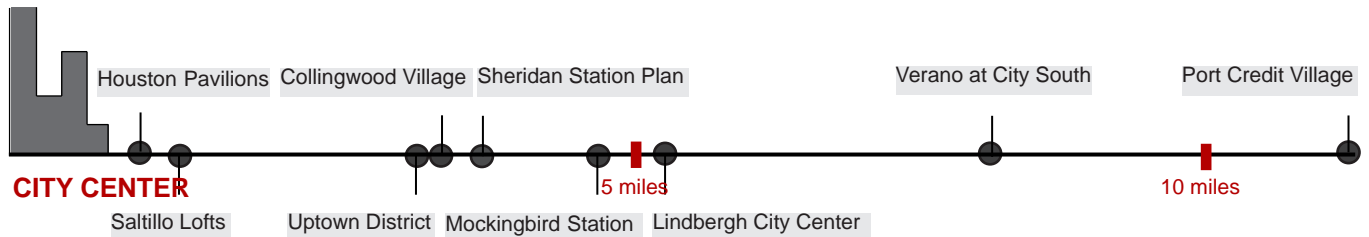


Figure 2.79: Compared location diagram



SUMMARY FINDINGS FOR LARGE CITY TODS AND TODTS

CONTEXTS AND TOD TYPOLOGY

SOCIAL, ECONOMIC AND ENVIRONMENTAL CONTEXTS

Despite the variance in scale and the declared scope among transit related development projects, there appears some discernible commonalities and shared underlying dynamics which lead to their materialization. Large city TODs are urban and typically core to inner tier communities. Development in existing communities reduces demand for land at or beyond the urban fringe. These projects are a densification of urban areas. They typically exist in the transect zones General Urban, Urban Centers, and Urban Cores (T4-T6) of the Smart Code (See chapter 1 for definitions, CNU, 2010). The developments tend to accommodate intense office/employment, along with cultural, residential, civic and/or retail centers. They target primarily middle to upper income “empty-nesters” as residents who work at the offices in the inner city. Densities for the urban downtown developments rises above 50 dwelling units per acre on average. The general urban transit related developments, on the other hand, function as urban neighborhood centers. Urban neighborhood TOD’s, however, tend to allocate higher share for residential, retail centers or class B commercial buildings (renovated buildings in good locations) in the land-use. Densities are typically greater than 20 dwelling units per acre. Regional connectivity is less significant a factor, as these TOD’s are part of the subregional circulation and typically have direct access to downtown and suburban centers.

Due, in part, to the scarce vacant land in the inner-city, Urban TOD projects often take the form of redevelopment projects; rehabilitation, district-scale revitalization, grey/brownfield redevelopment, adaptive reuse, and urban infill on land under public as well as private ownership. District level revitalization plans are often used in urban TODs. However, some projects utilize other planning methods, in the absence of a strategic TOD plan, to achieve a successful TOD. The scale of large city TODs are relatively small ranging from single building projects to multiple block projects. Existing freight rail and former street car right of ways (ROW) are used for the new rail ROW's. The rail lines were once used for freight or streetcar are rebuilt most often with electric light rail.

MARKET

Transit oriented developments at this city scale are typically associated with high-density mixed-use development therefore they require greater understanding of the current and future markets in central city. Area market analyses performed by cities, counties and transit authorities are used to study, strategize, plan and market the areas around transit stations. Private market analyses are used by the private sector to deduce investment opportunities. Although demographic and market trends point towards an increase in the demand of TODs in large cities in the recent years, it is a common checklist item for large city TODs to go through a rigorous market analysis prior to development stages in order to measure demand.

CONNECTIVITY AND TRANSPORTATION

Regional and local connectivity in large city TODs are typically higher than their counterparts in medium and small. TODs developed in large cities are typically a transportation hub (often multi-modal) or part of the subregional circulation. There is a high degree of connection to the existing street network and most transit stations are multi-modal stations that offer bus connections and bike facilities. The existing street network is typically composed of small, compact, blocks of a regular grid system.

ZONING

Large city TODs are more often developed with new, amended, or alternative regulation code as opposed to being a master planned community. The new regulations are typically a strategic station area plan employing form based codes, station area zoning districts, district overlays, transect based codes, incentive zoning or amended conventional zoning. These urban development entitlements allow for, among others, more density, reduced parking, and a greater mix of uses than the original zoning did for the site.

LAND-USE

The mix of land-uses (residential, office, cultural and commercial) differ between urban downtown and urban neighborhood. The urban downtown TODs are most often urban infill, brown/grey field redevelopment or area redevelopment. The scale ranges from the single building to multiple block redevelopment. Urban downtown TODs tend to be regional office, entertainment, residential, retail or civic in emphasis. Open space tends to be smaller in size, such as urban parks, pocket parks and public plazas. Urban downtown TODs emphasize the street as the major public realm. Uses tend to be vertically mixed.

The urban neighborhood TODs are also most often urban infill, brown/grey field redevelopment or area redevelopment and shares of both rise in favour of residential and commercial uses, and open space. Open spaces tend to be urban parks, pocket parks and public plazas. Uses tend to be vertically mixed although there are examples of horizontal solutions to mixed-use.

INTENSITY, DENSITY, AND DIVERSITY

Large city TODs are smaller in scale, on average, than small and medium city TODs but are typically denser. The density and intensity of urban downtown and urban neighborhood TODs are typically equal or larger than that of its immediate context. However, the contrast between the TOD and its surrounding context is greater in urban neighborhood TODs. Since TODs in large cities are typically infill or redevelopment sites they typically add to the already intense, dense, and diverse urban areas. Urban downtown TODs tend to be intense employment, entertainment, retail or residential centers with residential densities typically above 50 dwelling units per acre. Urban neighborhood TODs tend to emphasize a residential intensity with neighborhood retail services and class B commercial spaces. The heights, bulk, and massing of TODs tend to be greatest in large cities with the highest values being in the urban downtown areas. Large city TODs tend to offer more diversity and choices than the smaller city TODs. They tend to offer a greater range of housing choices including below market housing.

STAKEHOLDERS + OWNERSHIP

The term stakeholder here defines anyone with an interest in the TOD. In practice, interests range from the vested interests of owners, developers, and regulators to a relatively more passive interests of the general and specific public who, directly or indirectly, are affected by the changes proposed with the projects. The latter gets involved in the process through civic organizations, or as individuals, depending on the significance attributed to participatory planning and design. Public authorities' interests lie, primarily, in the aspect of reducing the potential demand for land at or beyond the urban fringes; that is, to curb further sprawl.

District level plans for the large city TODs typically have a large amount of input from the government in terms of development ideas. Set-piece transit developments typically have less public involvement unless it is an urban neighborhood transit development regulated by the public sector. In the absence of a strategic TOD plan there is less governmental input in terms of development ideas. Major concerns for the general public include density, congestion, and safety. NIMBYism is likely.

Ownership of the large city TODs can be single public ownership, single private ownership, or multiple ownership. District planned TODs tend to have multiple ownership while set-piece developments tend to have single private or public ownership. Land assembly can be an obstacle with single ownership set piece developments.

PROCESS

The different levels of public stakeholder interest leads to varied processes for the realization of a TOD project. District level TOD tends to have a high degree of public stakeholder interest in crafting the strategic TOD plan. The forthcoming projects are then regulated by the strategic plan with little to no additional public stakeholder involvement. In the absence of a strategic TOD plan the process tends to be one of regulatory input according to the zoning mechanisms and entitlements in place. Especially in large city TODs, land acquisition and zoning changes seem to be concerns impacting the timeline of the planning and design processes.

PARTNERSHIPS + FINANCING

Urban downtown and neighborhood TODs of large cities tend to have a high level of partnerships and non-conventional financing mechanisms. Public/Private partnerships, joint development programs, and community development corporations are often developed to ensure the success of the project. Non-conventional financing mechanisms such as Tax Increment Financing and community investment financing are used to develop infrastructure and community amenities. Tax abatements and self taxing jurisdictions are financial contributions to the investment of a project.

URBAN DESIGN

The urban design in large city TODs is typically regulated by the design codes and guidelines developed either by design charrettes, by public and private parties, or by the developer, often as part of a strategic TOD plan. In many cases, the City is the advocate encouraging the adoption of form-based codes in line with the principles of Smart Growth. Due to the limited amount of vacant, undeveloped land available in large cities these TODs tend to be urban infill, district revitalization/redevelopment, grey/brownfield redevelopments which require greater attention to contextual issues for connectivity and urban form. These TODs are often designed from the bottom up and typically have to deal with many contextual restraints. Urban design elements typical of the large city case studies are:

Architecture:

- Permanence of Architecture: Steel and concrete are typical so to achieve heights necessary in urban core areas
- Urban neighborhoods often have heights five stories or less. These are often of the less permanent stick frame construction
- Urban core areas tend to have larger floor plates and typically more flexible with regards to use
- Urban neighborhoods tend to have less flexible, less permanent, architecture
- Buildings are typically as tall as the market and regulation allows
- Buildings nearly always front onto streets
- Compact design/buildings/blocks
- Architecture is often of a signature design although some are contextually based, pattern based, or historically based
- Facade regulations control transparency, signage, material, etc.

Landscape and Open Space:

- Urban plazas, pocket parks, small neighborhood parks, play courts over play fields
- Well established connections to larger open spaces through on-street and trail connections
- Streets and sidewalks are most used as public spaces

Parking:

- On-street parking is often entitled by right and metered
- Parking structures, above ground and subterranean, are the dominant storage method
- Reduced parking ratios typically exist already in high urban areas
- Shared parking in large single owned parking structures or surface lots

Streets + Walkability:

- Emphasis on pedestrian and multi-modal transportation choices
- Streetscape is emphasized: furniture, shade, material and other amenities
- The existing street grid is either utilized or extended
- Compact regular grid network of existing streets
- There are well established connections connecting the development to existing adjacent neighborhoods

Sense of Place:

- Public realm and publicness
- Third places: a place of refuge other than the home or workplace where people can regularly interact with other people
- High degree of diversity of uses and services create a sense of downtown or urban center
- Variety of buildings and spaces
- Places to walk to
- Enclosure
- Landmarks

SMART FEATURES SUMMARY FOR LARGE CITIES:

The smart feature checklist is a hybrid list of attributes generated from the project and literature review of TOD resources. The checklist is graded on whether the particular element was a highlighted feature, a feature that was present but not necessarily highlighted or whether the feature was not present or unknown in a given case study. As the emerging themes can be viewed in the summary Table 2.17 the large city TODs studied in this research were mostly responsive to creating a vision for the development and receptive to local and regional contextual issues. Most of these projects also attempted to relate city density and form by capitalizing on compact built environment, multi-modal connection opportunities and suggesting pedestrian emphasis. Although it may be just a limitation of the data, there seemed to be less mention or absence of the use of non-traditional financing mechanisms, partnerships, and joint development programs which are known to be essential ingredients of TOD planning and implementation. Emphasis on connections to transit support area or transit district, which are critical component of TODs, were also limited. See Tables 2.17 to draw additional inferences concerning large cities.

TOD PROFILE SUMMARIES FOR LARGE CITIES:

The TOD profile table included with each case study is a one page summary of key attributes for each TOD case study in this report. Table 2.18, TOD Profile summary table for large city case studies, provided at the end of this chapter is a quick reference to illustrate some of the commonalities and differences among case studies under review. The table is particularly beneficial for making quick inferences such as the idea that large city TODs seem to be smaller in site but more diverse in their major land uses or that large city TODs also seem to utilize structural parking more than their counterparts in small and medium cities (See Table 2.18).

Table 2.7: Smart Features comparison table for large city case studies

	COLLING- WOOD VILLAGE	HOUSTON PAVILIONS	LINDBERGH CITY CENTER	MOCKINGBIRD STATION	PORT CREDIT VILLAGE	SALTILLO LOFTS	SHERIDAN STATION AREA PLAN	UPTOWN DISTRICT	VERANO AT CITY SOUTH
Strong vision	●	○	○	●	●	○	○	○	●
Response to regional context	●	○	○	○	●	○	○	○	●
Strategic Transit Oriented District plan	●		○		○	○	●		●
Alternative zoning mechanisms			○			○	○		○
Mix of major land uses	○	○	○	○	○		●	○	○
Essential uses and services	●					○	●	●	○
Range of housing choices	●		○			○	●		○
Community and Public participation	●		○		●	○	●	○	
Joint development programs	●		●						○
Non-traditional financing mechanisms									
Compact built environment	●	●	○	●	○	○	○	●	○
Sustainable architecture	●	●	○	●		○			
Context sensitive design	○	○	○		●	●	●	●	●
Multi-modal transportation options	●	○	○	○	○	○	○	○	
Pedestrian emphasis	○	○	○	○	○	○	○	●	○
Station integration	●	○	○	●		○	○	○	○
Attention to place making	○	●		○	○	●	○	●	●
Environmental sensitivity	○	○	○	○	○	○	○	○	○
Development in existing communities	●	●	○	●	○	●	●	●	
Non-conventional parking strategies	○	●	○	●	○	○		●	

Key: ● Features highlighted by case study ○ Other principles illustrated □ Unknown or not illustrated

Table 2.8: TOD profile summary table for large city case studies

	COLLINGWOOD VILLAGE	HOUSTON PAVILIONS	LINDBERGH CITY CENTER	MOCKINGBIRD STATION
CASE STUDY TYPE	Development	Development	District	Development
TRANSIT STATION	Joyce-Collingwood SkyTrain Station	Downtown Transit Center	Lindbergh Station	Mockingbird Station
TRANSIT AGENCY	TransLink	Metropolitan Transit Authority of Harris County	Metropolitan Atlanta Rapid Transit Authority (MARTA)	Dallas Area Rapid Transit - (DART)
PRIMARY TRANSIT	Rail, Bus	Light Rail	Light Rail, Bus	Light Rail, Bus
STATION STATUS	Built (1985)	Built (2004)	Built (1984), Rebuilt (2002)	Built (1997)
TOD TYPE	Urban Neighborhood	Urban Downtown	Suburban Center	Urban Neighborhood
TOD SIZE	27 acres	6 acres	47 Acres	10 acres
TOD STATUS	Complete (2006)	Completed (2008)	Phase I completed in 2008, On-going	Phase 1 Complete (2001)
ZONING	CityPlan (adopted 1995)	Follows the major development codes and ordinances of Downtown Houston.	Special Public Interest zone (SPI) created for Lindbergh Transit District	Conventional zoning
COST(\$)	\$402 Million (private)	\$170 million (private)	\$500 Million (private)	\$145 Million (private)
PUBLIC PRIVATE PARTNERSHIPS	Unknown	Yes	Yes	None
DEVELOPMENT SITE	Redevelopment of industrial site, urban infill	Urban infill and redevelopment	Suburban infill	Adaptive reuse, urban infill
RESIDENTIAL	2800 units	N/A	2500 units (buildout)	211 units
RETAIL	+/- 45,000 sq. ft.	360,000 sq. ft.	380,000 sq. ft. (buildout)	178,000 sq. ft.
OFFICE	unknown	200,000 sq. ft.	2.4 million sq. ft. (buildout)	150,000 sq. ft.
PUBLIC/CIVIC	7 acres of parks, elementary school, Community Policing Office, Community Center	None	Main Street	None
PARKING	Structured parking	Structured parking	Structured parking	Structured parking, on-street
OTHER	Childcare facility, non-market housing, for-sale housing	N/A	Hotel, affordable housing, free parking for retail and daily commuters, bicycle facilities, showers	Cinema

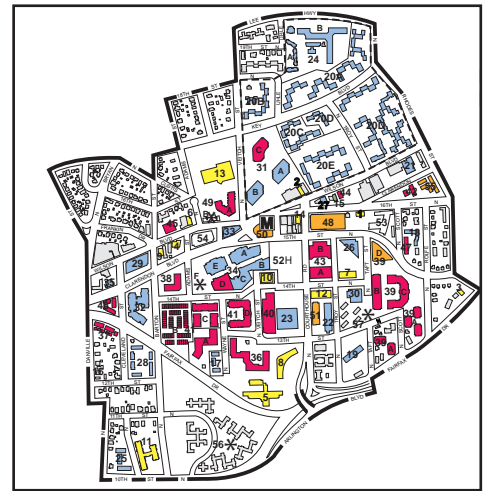
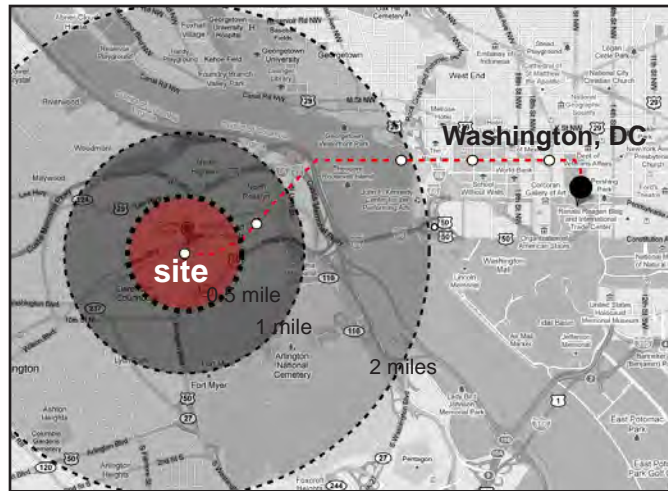
Table 2.8: Continued

PORT CREDIT VILLAGE	SALTILLO LOFTS	SHERIDAN STATION AREA PLAN	UPTOWN DISTRICT	VERANO AT CITY SOUTH
Development	Development	District	Development	District
Port Credit GO Transit Station	Plaza Saltillo-Comal Station	Sheridan Station	Uptown District	Verano (Planned)
Greater Toronto Transportation Authority (GO Transit)	Capital Metro	Regional Transportation District (RTD)	Metropolitan Transportation Development Board (MTDB)	Austin-San Antonio Intermunicipal Commuter Rail District
Commuter Rail, Express Bus	Commuter Rail	Light Rail	Bus	Commuter Rail
Built	Built (1998)	Planned	Built	Planned
Suburban Center	Urban Neighborhood	Urban Neighborhood	Urban Neighborhood	Suburban center, master planned community
26 acres	1.1 acres	247.5 Acres	14 acres	2,700 acres
Phase I completed (2005)	Completed (2006)	Station Area Plan adopted 2009	Complete (1989)	TX A&M broke ground on 1st campus building 2009
Smart Growth Initiative	TOD Ordinance	Sheridan Station Area Plan (adopted 2009)	Conventional zoning, Uptown Community Plan adopted after completion	SmartCode + Form Based Code
\$170.6 Million (private)	\$5,251,271 (private)	TBD	\$70 Million (private)	TBD, Tax Increment Reinvestment Zone
Unknown	Unknown	TBD	Unknown	TBD
Brownfield Redevelopment	Urban infill, brownfield redevelopment	Suburban/urban infill, redevelopment, new construction	Greyfield redevelopment	Greenfield
410 units (phase 1)	29 units	2,550 units (planned)	320 units	6,938 units (planned)
40,000 sq. ft.	6,758 sq. ft.	206,000 sq. ft. (planned)	145,000 sq. ft.	1,245,439 sq. ft. (planned)
15,000 sq. ft.	NA	215,000 sq. ft. (planned)	none	1,395,440 sq. ft. (planned)
Parks, public squares	NA	Parks, plazas, green corridors (planned)	3,000 sq. ft community center, public courtyards	600 acre college campus, dedicated open space, hike/bike trails
Structured parking, on-street, surface	Surface (interior parking courts)	Structured parking, on-street, surface parking, shared parking (planned)	Structured parking, on-street, surface, Parking court	TBD
Live-work housing	For-sale housing	TBD	Grocery store	TBD, 3 mil sq. ft. of light industrial, 600 acre college campus

3. MEDIUM CITY TOD CASE STUDIES



COURTHOUSE, VA
DEL MAR TRANSIT VILLAGE, CA
DOWNTOWN PLANO, TX
ORENCO STATION, OR
GALATYN PARK, TX
5TH STREET CROSSING, TX



Source: Court House Development Project, 2005

COURT HOUSE TODt		
District Profile	Transit Station	Court House Metro Station
	Transit Agency	Washington Metropolitan Area Transit Authority
	Primary Transit Type	Light Rail, Bus
	Station Status	Built (1979)
	TOD Typology	Urban Downtown
	TOD Name	Court House
	Station Address	2100 Wilson Boulevard, Arlington, VA 22201
	TOD Size	240 Acres
	TOD Status	On-going
	County Population	210,000 (U.S. Census Estimate)
	Developer	Multiple
	Ownership	Multiple
	Zoning	Incentive zoning is used to attract private sector transit-oriented development, General Land Use Plan
Cost	Unknown	
Stakeholder	Arlington County Board, Ballston Partnership, Clarendon Alliance, Rosslyn Renaissance, 40+ County Commissions, 60+ Civic Neighborhood Associations	
Land-use	Development Site	Urban infill, greyfield redevelopment
	Residential	9,700 units (within 1/2 mile of station)
	Retail	204,000 sq. ft.
	Office	3,800,000 sq. ft. (within 1/2 mile of station)
	Public/Civic	Plaza/pedestrian mall, Numerous government buildings
	Parking	Structured, on-street, surface
Other	Hotel rooms 465	



Figure 3.1 : Rail transit route map
(Source: Court House, 2009)

COURT HOUSE, ARLINGTON, VA

3.1.1 PROJECT BRIEF

Arlington County is widely acknowledged with its early recognition of integration of mass transportation with place making which lead to some four decades of experience in TOD application. Court House Metro Station, a development of approximately 240 acres, is among five major TOD projects anchored to stations along the Metrorail corridor. As with many neighborhoods in central Arlington, the exact boundaries of the Court House neighborhood are unclear. Arlington County's Court House Sector Plan includes the area bounded by Wilson Boulevard, Cleveland Street, Fairfax Drive, Arlington Boulevard and Court House Road. The Clarendon-Court House Civic Association has similar boundaries. However, an argument can be made to extend the Court House neighborhood to lie between the midpoint of the locations of the Court House and Clarendon Metro stations and the midpoint of the Court House and Rosslyn Stations -- which would be Danville and Rhodes Streets, respectively.

The corridor was one of the early access routes to Washington that started to deteriorate by 1970s with automobile dealers and services along the boulevard. The area was transformed from an automobile oriented close-in suburb into a textbook case of TOD. The population of the Court House Metro Station area was about 5000 in 1980 and it approached ten thousand in 2000 (County of Arlington-VA, 1993). Currently, the Court House station area is the Arlington County government core. Developed in increments, the neighborhood turned into a complex of high-rise residential and office buildings including the high tech offices of washingtonpost.com, Verizon, and a movie theater. It is currently home to the County's courts, administrative offices and police department, as well as a farmer's market, cinemas, and Courthouse Plaza, a pedestrian mall with shops and restaurants.

3.1.2 PLANNING + DESIGN

A key tool that rendered the TOD concept at the corridor was a general land use plan prepared by the City. The land-use plan was instrumental in setting the policy framework that would orchestrate TOD projects, i.e. along major growth axes, one of which was Rosslyn-Ballston Metro Corridor where Court House Station resided. A site specific sector plan, including distinct policies on land-use, transportation, urban design and open spaces, were prepared for area within ¼ mile radius from the Court House Station in 1981. The sector plan was not a regulatory plan, rather, it was a policy document that envisioned and guided future development. Both the general land use plan and the sector plan were revised to respond to the changing market trends. The sector plan addendum approved by County Board in 1993 for the Court House Station area reinforced an early vision of a model urban government center, defining further the Concept Plan and elements of urban design for the County's new government center with underground parking, civic plaza and a performing arts center (County of Arlington-VA, 1993).

The general land use plan set a vision of intense urban redevelopment in much of the central corridor and preservation of lower density residential areas. To do so, the strategy was to concentrate high density mixed-use development around metro stations along the corridor that would eventually lift the pressure out of the surrounding well established neighborhoods. Mid-course review of development at the corridor brought about the analysis of the design issues. Major recommendations were the creation of a Court House Square with landscape promenades leading to surrounding structures and open space and an inclusion of a cultural facility. The addendum in 1993 further elaborated the early ideas and set the goal to create a government center surrounded by a balanced mixed of plazas and high density residential and office uses. The second sector plan provided detailed design guidelines under four categories: circulation system, public utilities and facilities, urban plazas and open spaces and structural elements which include guidelines, landscape and streetscape.



Figure 3.2: Image of Arlington, VA (Source: County of Arlington-VA, 1993a)

3.1.3 PROCESS

The first step was the planning for a regional transit system. This entailed embarking upon an ambitious community wide planning effort. From this effort emerged development concepts such as closely spaced stations, high and mid-density redevelopment around stations, mix of uses with a strong residential emphasis, preserve and reinvest in established residential neighborhoods (Brosnan, 2010). Next came the adoption of a corridor-wide general land use plan (GLUP) based on development goals that were agreed upon. Following the adoption of the GLUP, the focus was placed on developing sector plans to create distinctive Urban Villages with an overall vision for each station area, desired public improvements, location for retail and urban design standards.

Arlington used a comprehensive site plan review process including public meetings with staff, citizens, County Commissioners, and developers (EPA, 2002). Since the 1970's the City of Arlington has worked proactively to follow Smart Growth principles. By designating the Court House Station as an "urban village" along the Rosslyn – Ballston Metro Corridor, the city has guided growth rather than allow it to occur haphazardly. A comprehensive vision that embraced "economic and political commitment to transportation oriented developments" early in the game was essential for the entire corridor's success including the Court House Station (EPA, 2002).

The Court House Station area has witnessed phenomenal growth as part of the wider Metrorail Corridor, as stated by Cervero (2004), more than any transit corridor in the country. Later addition of high density residential - including affordable housing - and retail to the existing commercial and office development diversified further the mix of uses in the area. Development in and around the city of Arlington's Court House includes fifty-seven projects constructed between 1960 and 2005 (see table 3.1). Projects included government and community offices; residential and hotel units; retail; a public school; fast food outlets; and service commercial. Distinguishing characteristics include high density, safe, pedestrian-friendly sidewalks, public places, retail, and the civic nature and buildings of the immediate site.

Table 3.1 Development Summary for the Court House Metro Station Area (1960-2005) Source: County of Arlington-VA. (2009).

Decade	Office Gross Floor Area (GFA) in Square Feet	Retail Gross Floor Area (GFA) in Square Feet	Other* Gross Floor Area (GFA) in Square Feet	Residential Units	Hotel Rooms	Parking Spaces
Net Density Completed by Decade						
1960-1969	235,977	18,120	97,152	221	361	1,440
1970-1979	0	3,750	0	0	0	16
1980-1989	1,094,774	114,968	0	1918	0	6,623
1990-1999	906,646	7,290	231,356	2919	0	5,097
2000-2005	286,093	39,374	0	499	199	1,187
Total 1960 - date	3,413,790	180,500	328,507	5,357	560	14,343
Under Construction	197,881	23,566	0	306	0	705
Approved, but Not Yet Under Construction	365,828	28,906	3,700	534	276	1,919

Development Activity As of March 31, 2005.
*Other includes universities and college, libraries, community centers, etc.



Figure 3.3: Station area at Court House station (Source: city of Arlington)

- 1972 Arlington County introduces a corridor-wide comprehensive general land use plan.
- 1979 Metro Orange Line and The Court House Metro Station are opened.
- 1981 County Board approves the Court House Sector Plan.
- 1983 High-tech company Verizon I starts the construction of office building.
- 1986 The Court House Plaza site plan is approved for a private development on County-owned property.
- 1989 The Court House Plaza is opened offering high density residential, office, retail uses.
- 1989 The Court House zoning is changed to give permit for the construction and operation of a jail.
- 1991 Construction and operation of new courts and police facilities are ap-



Figure 3.4: Image of inside Court House Metro Station (Source: My life as a contact sheet, 2006)

proved in the Court House area.

- 1990 “Special Affordable Housing District” is created to retain affordable housing within the Metrorail corridors.
- 1992 County adopts a new open space policy and prepares an Open Space Master Plan as part of a Comprehensive Plan.
- 1992 Construction of Verizon II office building is started.
- 1993 County Board approved the Court House Sector Plan Addendum.
- 1994 A two-building complex justice center is completed.
- 2005 The Palatine, Woodbury Park North, The Odyssey, and The Navy League opened.
- 2009 Residence Inn is opened in Arlington Court House plaza.

3.1.4 CONCLUSION

The Court House Station area is an important district scale effort from which to draw lessons, since it exemplifies one of the matured TODs in an urban setting. The most obvious advantage of the development to achieve the set goals for the area was certainly the multi-modal connection and proximity to the Nation’s Capital. However, it was not just the location of the site but a combination of diverse factors that led to this favorable outcome. From the perspective of planning, a comprehensive approach that gathered each of the TOD nodes under a corridor plan helped to synchronize the development along the boulevard. Continued amendments of the general plan and sector plans lead the local authority to capture and act upon the changing market dynamics. Finally, the encouragement of citizens to participate in planning and design process at the early stages has eliminated possible risk of interruption of the development process.

Follow-up studies proved “above-average” use of the Metrorail with a steady rise in the ridership rates (26% between the years 1990 to 2002) and reduced vehicle travel along the corridor (TCRP, 2007). The walk mode share of access to the station



Figure 3.5: Image of Court House Metro Station (Source: Wikipedia, 2010)

was 67% in 2002. The evaluation illustrates the effect of density on the volume of ridership. The research also shows that the density was increased without incurring set-backs on the automobile traffic. Between 1996 and 2006 automobile traffic on Wilson Boulevard dropped by 16% (TCRP, 2007).

Court House Station Development received particular attention in TOD literature and recognition by planning and design authorities. The American Planning Association designated the Clarendon-Wilson Corridor, between Court House and Clarendon stations, one of the ten Great Streets in the United States in 2008. Unique integration to the existing urban fabric, high levels of Metrorail ridership, less reliance on automobiles, mixed-use development, increased density, and reduced carbon footprint were some of the reasons the corridor deserved recognition. Both boulevards have been designed as “complete” streets, accommodating both cyclists in bike lanes and increasing numbers of pedestrians in widened sidewalks.

Smart Features of Court House Metro Station Transit Oriented District:

- o Strong Vision
- oo Response to Regional Contexts
- oo Strategic Transit Oriented District Plan
 - Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- oo Mix of Major Land Uses (Office, Residential, Retail, Civic)
- oo Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
- oo Range of Housing Choices
- o Community and Public Participation
 - Joint Development Programs (Public/Private Partnerships, etc.)
 - Non-Traditional Financing Mechanisms (TIF, CIP, BID, PID, etc.)
- oo Compact Built Environment
 - o Sustainable Architecture
 - o Context Sensitive Design
- oo Multi-Modal Transportation Options
 - o Pedestrian Emphasis
 - o Station Integration
 - Attention to Place Making
 - o Environmental Sensitivity
- oo Development in Existing Communities
 - o Non-Conventional Parking Strategies

KEY

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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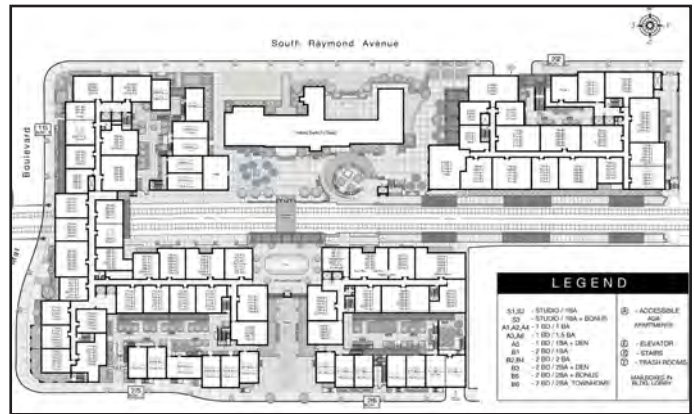
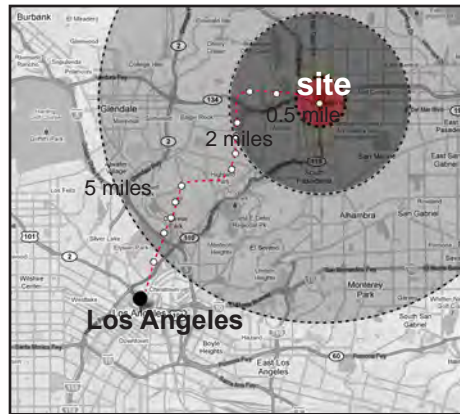
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Source: Archstone Del Mar Station, 2010

DEL MAR TRANSIT VILLAGE TOD		
Development Profile	Transit Station	Del Mar Station
	Transit Agency	Pasadena (ARTS) Area Rapid Transit System
	Primary Transit Type	Light Rail, Bus
	Station Status	Built (2003)
	TOD Typology	Urban Neighborhood
	TOD Name	Del Mar Transit Village
	Station Address	230 S Raymond Avenue, Pasadena, CA 91105
	TOD Size	3.4 acres
	TOD Status	Complete (2006)
	City Population	143,667 (2009 U.S. Census Estimate)
	Developer	Multiple
	Ownership	Single, Archstone Smith
	Zoning	Unknown
	Cost	Project cost: \$77 Million
Stakeholder	City of Los Angeles, Gold Line Construction Authority, LA Metro Daniel Urban Partners of Los Angeles, Rosenfeld, Archstone - Smith	
Land-use	Development Site	Urban infill/Redevelopment
	Residential	347 units
	Retail	20,000 sq. ft.
	Office	200,000 sq. ft.
	Public/Civic	Civic plaza
	Parking	Structured parking, shared parking
	Other	Adjacent to Olmstedian Park, 1/2 mile from historic downtown, park and ride facility, bike facilities, affordable/subsidized housing, live-work housing, day care facility

3.2 DEL MAR TRANSIT VILLAGE, PASEDENA, CA

3.2.1 PROJECT BRIEF



Figure 3.6: Rail map of Los Angeles (Source: Metro, 2009)

The Del Mar Station Transit Village provides a complex civic plaza for those who live and work in this area of Pasadena. It also encourages visitors from the entire region to board the local light-rail and visit the historic downtown. A bridge over the rail right-of-way forms a physical gateway to those arriving by train. The tower at one corner of the project greets those arriving by automobile. The transit village celebrates the region’s historic railroad past, incarnated in the restored station.

This project occupies one of the most significant areas within the city: across the street from an Olmstead designed park, one-quarter mile from the city’s historic downtown, immediately adjacent to a new light-rail line, and at the terminus of one of the region’s high traffic freeways. The 3.4 acre site is flanked by three streets including the main vehicular entry into the city. An adjacent street to downtown is smaller, well-traveled, and pedestrian-oriented. To the north is a large parcel of land slated for extensive mixed-use development. The site is bisected by the north-south light-rail line.

Immediately west of the rail line is a Spanish Revival-style train depot that is being restored and converted for retail use. The design protects the small building by limiting the adjacent massing to two stories. Housing and retail skirt three sides of the plaza, the station completing the fourth side. The rail right-of-way is designed as a street with public sidewalks, plantings, lighting, and buildings.



Figure 3.7: Hand drawing of Del Mar transit village (Source: Moule and Polyzoides, 2006)

The Del Mar Station is located on the Metro Gold Line, a sophisticated light rail system that covers a 13.7 mile stretch, making 13 stops between the eastern edge of Pasadena to downtown Los Angeles. The area that is now the transit station was once an area of mostly auto related uses including industrial and commercial services. What was once a fragmented area is now a major hub of action for the district and is revitalizing the adjoining neighborhoods, and sustaining the four new buildings at the transit area. The new buildings contain 347 rental units, 20,000 square feet of rental space, and a subterranean parking facility with a total capacity of 1200 cars, with 600 of those being allotted to the transit system. (James Hardie, 2008) It was determined that a project density of 100 units per acre was desired in the Del Mar Station. In order to keep from overwhelming the district with this high level of density a seven story tower was used to accommodate the numbers desired (Zirkle, 2006, December 5).

3.2.2 PLANNING + DESIGN

The developers took advantage of the revitalization of this once highly industrial and commercial area. Using the character of older buildings the designers created a modern urban character that sustains itself with high density living (100 units per acre) and 20,000 square feet of retail (Zirkle, 2006, December 5). The Del Mar Station, once an old depot, was an optimum way to create an urban pedestrian friendly district.

The development team addressed the fact that the site is located among smaller pedestrian friendly streets while also in the vicinity of a large freeway. The designers worked with these opportunities to maximize the pedestrian aspects of the district. The developers and designers addressed the automobile and congestion issues by developing two subterranean parking lots with mid-block entrances to avoid congestion at the intersections.

3.2.3 PROCESS

The project was co-developed by public agencies and private entities. Transit authorities developed rail line (Pasadena ARTS, 2008). The property that the Del Mar Station sits on was recently owned by the city of Pasadena. The property was developed by the Urban Partners of Los Angeles and a conglomerate of public and private



Figure 3.8: Hand drawing of Del Mar transit village (Source: Moule and Polyzoides, 2006)



Figure 3.9: Del Mar transit village images (Source: Left Image, Moule and Polyzoides, 2006; Right Image, Karp, 2008, June 17)

entities. The entities included the City of Los Angeles, the Gold Line Construction Authority, and the LA Metro. The development cost was \$77 million dollars. After completion, the Del Mar Station was sold to Archstone – Smith, a real estate investment company, for \$134 million (James Hardie 2008). The joint effort between public and private entities consisted of the city and transit authorities developing the rail system, and the private developers being responsible for the on-site transit parking (Zirkle, 2006, December 5).

The Del Mar Station was assembled by a re-development agency that had the ability to gain the property and invest in the necessary infrastructure. Significant portions of the site were publicly owned, making revitalization efforts easier, and allowed long-term leasing options rather than purchasing options.

- City of Pasadena holds land where the current Del Mar Station exists.



Figure 3.10: Image of Del Mar transit village (Source: Pasadena ARTS, 2008)

- Decides to develop land to take advantage of Metro Gold line (light rail).
- Joint effort between city, transit authorities, and private developers.
- Public entities handle transit; private handles parking accommodations.
- 2002 Implementation process started with ground breaking,
- 2004 Project is completed.
- Developed project sold to real estate investment company to manage property.

3.2.4 CONCLUSION

Del Mar's design strives to complement and connect with the surrounding dense residential neighborhoods. Streetscape improvements on surrounding streets will encourage residents of these neighborhoods to walk to the station. Careful coordination with the local bus agencies has ensured that local bus lines stop at the park across the street from the site. A bicycle storage room has been designated specifically for the public's use.

The Del Mar Station Transit Village provides a complex civic plaza for those who live and work in this area of Pasadena. It also encourages visitors from the entire region to board the local light-rail and visit the historic downtown.

Smart Features of Del Mar Transit Village Transit Oriented Development:

- oo Strong Vision
- oo Response to Regional Contexts
 - Strategic Transit Oriented District Plan
 - Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- o Mix of Major Land Uses (Office, Residential, Retail, Civic)
- o Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
- o Range of Housing Choices
- o Community and Public Participation
 - Joint Development Programs (Public/Private Partnerships, etc.)
 - Non-Traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- oo Compact Built Environment
 - o Sustainable Architecture
- oo Context Sensitive Design
 - o Multi-Modal Transportation Options
 - o Pedestrian Emphasis
- oo Station Integration
- oo Attention to Place Making
 - o Environmental Sensitivity
- oo Development in Existing Communities
 - o Non-Conventional Parking Strategies

KEY

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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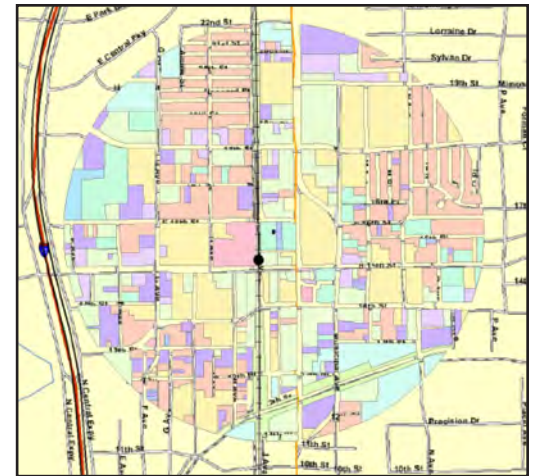
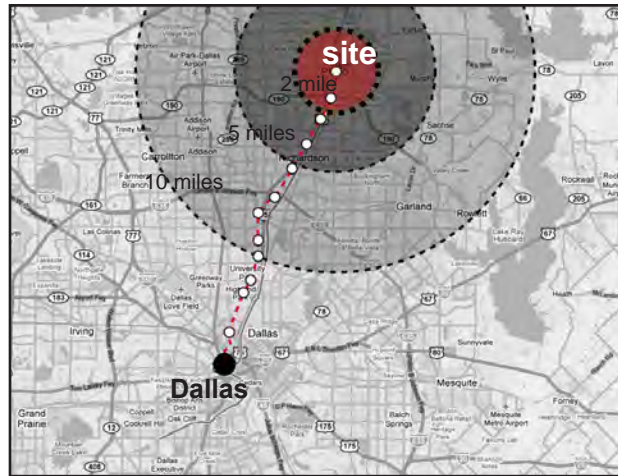
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Source: NCTCOG, 2010

DOWNTOWN PLANO TODt		
District Profile	Transit Station	Downtown Plano
	Transit Agency	DART- (Dallas Area Rapid Transit)
	Primary Transit Type	Light Rail, Bus
	Station Status	Built (2002)
	TOD Typology	Suburban Center
	TOD Name	Downtown Plano
	Station Address	1001 E. 16th St., Plano, 75074
	TOD Size	Approximately 500 acres (1/2 mile radius)
	TOD Status	On-going
	City Population	273,611 (2009 U.S. Census Estimate)
	Developer	Multiple
	Ownership	Multiple
	Zoning	Transit Village Plan (1998), Downtown Development Plan (1991)
Cost	\$50 Million+ investment from private sector	
Stakeholder	City of Plano, DART, City of Plano solicited community input, Eastside Tax Increment Financing District (TIF)	
Land-use	Development Site	Suburban infill, redevelopment
	Residential	750 units (within 1/4 mile of station)
	Retail	+/- 100,000 sq. ft. (estimated)
	Office	+/- 40,000 sq. ft.
	Public/Civic	Community park, renovated Main Street
	Parking	Structured parking, on-street parking
	Other	Existing municipal center, theatre, live-work housing



Figure 3.11: Downtown Plano rail crossing
(Source: T. R. Ozdil, 2009)

3.3 DOWNTOWN PLANO, PLANO, TX

3.3.1 PROJECT BRIEF

Downtown Plano was the historic commercial center of the city when it was a small farming community of 3,000 people. The exponential growth that was seen in the greater Dallas Fort Worth metropolitan area along with the improvements made on I-75 corridor within the past two decades eroded the function and the vitality of historic downtown. By the mid 1990s, Downtown Plano had a number of antique and knick-knack shops, but had ceased to support other types of retail. The area suffered from absentee landlords, physical decline, and marginal businesses on the fringes of Main Street. Around the same time DART finalized the light rail station location for Downtown Plano, the city adopted its Transit Village Plan (City of Plano, 1999b).

Downtown Plano district level transit integration efforts, is one of the classic successful local examples of the adoption and implementation of transit to a historic town center in North Texas region. The downtown has been transformed into a vital, active urban village through a strategy combining transit related development activities, public/private partnerships, and community support and participation.

3.3.2 PLANNING + DESIGN

The comprehensive planning and design of Downtown Plano with light rail in mind started as early as DART initiation of the first light rail transit line in 1993 in North Texas. Although the city worked with the idea of having light rail through the historic core in the mid 90's the transit inspired development model for the downtown district with compact urban fabric, mixed-uses strategies and pedestrian emphasis became more evident with the adoption of Transit Village Plan in the later years. The plan sets forth several goals for the revitalization of the area through the addition of:

- 1,000 new housing units within 1/4 mile of the rail platform
- 50,000 sq. ft. of new commercial space
- 3,000 new housing units within 1/2 mile of the rail platform
- Reinforce downtown as an arts district
- Restore historic structures
- Provide incentives for reinvestment (City of Plano, 1999b).

To date, 750 apartments, townhouses and condominiums have been built/approved within the 1/4 mile radius. These projects have been public/private partnerships, with the city using a variety of incentives and funding sources to support the developments, including, land swaps, round leases, selling property at cost, infrastructure allowances, fee waivers etc. (City of Plano, 2010).

The city spent bond funds and tax increment financing funds to rebuild streets and utilities, take electrical utility lines underground, install historic street lighting and street trees, and refurbish and expand Haggard Park. On the west side of the park, TIF funds have been used to partner with the school district to renovate the 1938 WPA (Works Progress Administration) school gymnasium into a 326 seat performing arts theater, and to convert the original 1924 high school into additional performance and office space.

The city has also changed its zoning for the downtown area to require buildings to be brought to the street, installation of wider sidewalks and street trees. The density for urban apartments was increased from 40 units per acre to 100 units per acre, a change actually supported by homeowners, merchants and property owners. Parking requirements were reduced for new construction and on-street parking was emphasized.

Code changes and the establishment of a TIF district were two notable methods used by Plano to attract a transit-oriented development. Code changes were essential in order to make the vision of a higher density, walkable downtown a reality. This

was done through changing zoning regulations to allow for a higher Floor to Area Ratio (FAR) and changing the codes to allow for wider sidewalk requirements. The establishment of the Tax Increment Financing District also made funds available in order to improve existing streets to attract development. These methods used by the city were essential to the success of the development and were the essential components that allowed for the success of Plano Transit Village.

3.3.3 PROCESS

Downtown deterioration led city and neighborhood leaders to begin an effort in the early 1990's to revitalize and bring energy back to Downtown Plano. The Downtown Plano Historical Society began this effort by increasing awareness of the problems which were facing Downtown Plano. The Historical Society reached out to downtown business owners and residents of Downtown Plano to form a coalition of individuals who had interests in the future of the downtown. The fact that the individuals involved in wanting to revitalize downtown Plano had a vested interest and connection to this area helped create a strong grassroots campaign to change the downward trend and return vitality and energy back to the downtown that they had known from years past. The energy created by these property and business owners became a strong effort which involved civic leaders, local representatives, and others to create a task force in order to address some of the problems and issues that the downtown community faced (City of Plano, 1999a). The recommendations by those involved with the Downtown Plano Historical Society were taken into consideration and an official blueprint plan was developed by the Planning department for the City of Plano which set guidelines for the future of Downtown Plano.

The Historical Society noted that there were two major attributes that downtown Plano possessed that could be used for its advantage in trying to revitalize downtown. Since Plano was a city built around the turn of the 19th century, it had a historic grid of streets accompanied by a traditional American "Main Street" sited along 7th Street. Many smaller cities in America had begun using their historical downtown as a catalyst for development. Plano realized this historical downtown could also be used in the same manner and that its traditional grid could be advantageous. The second major attribute that could be used to spur development was the existing rail through downtown. As was discussed earlier, during the same time that planning for downtown revitalization was taking place, DART was establishing itself as a force in the Dallas area. Its strong impact on the Downtown Dallas area led to the overwhelming passage of new bonds in order to speed construction of light rail to the northern suburbs. Plans showed that eventually a station would be built in Downtown Plano and members of the task force saw this as an incredible opportunity that the City of Plano and downtown interests should capitalize on. They realized that light rail would be a major force in the Dallas area and that this future rail station could be utilized to bring residents from all over the metroplex into downtown Plano. They also believed that this station would be used by commuters who would park near the station and ride the train to Downtown Dallas. They believed that they could focus on creating new residential units near the station in order to attract such commuters who could abandon driving to the station every day in favor of just living by the station instead. Bringing residents into downtown would create life and would create a demand for restaurants and retail beyond the typical 8-5 business hours. They believed this would be the beginning of bringing life back to the streets of downtown.

In addition to the private interests of the Historical Society and business owners who advocated for revitalization of downtown for personal reasons, another major force contributing to the desire to revitalize downtown and build around this potential future transit station came from city officials for fiscal reasons. As suburbs grow, their tax base is funded in large part by the increased tax value and by exactions that are placed upon developers of new land to also build roads, provide lighting, and pay for utilities and pipeline construction. The cities experiencing rapid growth during these time periods also experience rapid growth of their treasuries. However, as cities mature and age, they are now responsible for infrastructure repair, and for cities that



Figure 3.12: Image of Downtown Plano Streetscape (Source: T.R. Ozdil, 2009)

were built during a specific period of time, such as Plano which was built between 1960-2000, this decay and repair may be widespread and expensive. Suburban cities, therefore, are often looking for ways to diversify their tax base. Suburbs “need to diversify land uses in order to build more solid revenue bases; they need to create urban centers and address the problem of traffic congestion along overtaxed suburban arterials” (Dittmar and Ohland, 2004 p. 2). This, combined with the other previously mentioned ambitions of downtown leaders, let them to adopt transit oriented development in downtown Plano.

The City of Plano established several programs in order to attract new development and re-development to Downtown Plano. Historic Downtown Plano Association along with city leaders, realized that the city was going to have to ambitiously attract development. This was not a situation where a developer had expressed interest in creating a project and then the city had to analyze the impacts of such a project. Rather, this was a situation where an old section of the city was going to have to convince developers that Downtown Plano would be a place to develop. This meant changing regulations and building codes to fit the vision of a denser downtown but also creating programs that would take the financial burden off of developers in order to attract them. The introduced regulatory incentives included strategies such as reducing the share of parking required from new buildings, increasing the density (up to 4 stories in height) and allowing full coverage of the lots for construction. Additionally, building stoops, awnings, balconies, and signs were permitted to extend into the street right-of-way and, outside dining was permitted under a license agreement with the restaurant where sidewalks were sufficiently wide.

The city realized that certain zoning or regulations must be changed in order to accommodate higher density development (City of Plano, 1999). This meant creating a minimum Floor to Area Ratio of 1.0. To many, this is not traditional zoning for Transit Oriented Development. However, considering the suburban nature of Plano, this was indeed a substantial increase in residential zoning density. This allowed developers to build a residential structure which took up 100 percent of the land purchased up to 4 stories high.

Decreasing parking regulations was another regulatory incentive and this change was important for two specific reasons. First, it allowed developers to concentrate more of their purchased land on residential units thus increasing their profit. Traditionally, suburban cities required a setback on development and required a specific amount of parking spaces depending on intensity. This often led to wasted land that had to be used for parking when a developer could have used that land for development, decreasing their profit. By reducing this requirement, city officials hoped that developers would be able to increase their profit by focusing on the construction of more units instead of parking. This would make the downtown area more attractive for developers. Secondly, reducing parking requirements seemed to focus on the idea that transit would eventually be a focus of the area and therefore decreased parking would hopefully encourage transit use. The original plans created in the 1990's did not focus on the creation of a TOD, but they hoped to utilize the transit stop as an additional means of accessibility. After seeing the success of the DART system, leaders advocated that the high ridership rates could be critically advantageous to downtown and therefore they should focus development around the transit station, basically advocating for the creation of a TOD. They believed that many people would still come to downtown by means of the automobile, but as transit ridership increased in the future, more and more people would be willing to use DART to come downtown. Reducing parking requirements by developers would coincide with this goal.

The City of Plano also took advantage of a development type often referred as “Texas Doughnut” which is essentially described as a group of buildings surrounding (typically multi-family residential with first floor commercial) a structural parking. Although this type seem to provide typical parking ratios with a pedestrian friendly urban streetscape it is found to be promoting vehicular traffic in TOD areas.



Figure 3.13: Downtown Plano sidewalks (Source: T. R. Ozdil, 2009)



Figure 3.14: Image of new multifamily residential in Downtown Plano (Source: T. R. Ozdil, 2009)



Figure 3.15: Downtown Plano Station (Source: NCTCOG, 2009)



Figure 3.16: Downtown Plano Station (Source: DART, 2009)

Other incentives created by the city were the 380 Incentives which “gave municipalities the authority to make grants and loans of funds or services to further economic development” (City of Plano, 1999b). This type of incentive was described by the same source as “the most common form of incentive used in economic development projects” (City of Plano, 1999b). This again gave the city the ability to give grants, waive development fees, and work with developers to create loans that allowed both parties to negotiate satisfactory terms that would achieve the goals of the city yet made the loan terms affordable for developers. Further, the City of Plano in 1999, along with the Plano Independent School District, Collin County, and Collin County Community College, established a Tax Increment Finance District (TIF) in downtown Plano and along the new DART rail line in an effort to encourage development near transit stations. This TIF district allowed the city to invest 1.4 million dollars in street improvements and streetscape improvements in order to begin facilitating new growth. Any money invested in this area would be recovered by the city as new development increased the tax base in the future. Also in 1999, the downtown task force implemented the Neighborhood Empowerment Zone which said that “cities may waive development fees within an empowerment zone to stimulate economic development, including the production and rehabilitation of affordable housing” (City of Plano, 1999b). This Empowerment Zone basically waived fees which were normally imposed upon new development allowing for new construction and rehabilitation of existing buildings. In traditional development, exactions and other fees are placed upon developers for the impact that their development would have on the surrounding area or upon the city’s utilities and infrastructure. Many of these fees are waived by the city to again make development less expensive on the developer. The hope is that the increase in taxable value by the projects will sufficiently supply funds to the city to cover the costs that are normally imposed upon the developer.

One final incentive was the Historical Preservation Tax Abatement which allowed the city to reduce or exempt properties from taxes based upon their historical significance. People could purchase such properties, renovate them according to strict historical guidelines, and then have their property taxes waived due to their preservation of a historical building. This was a huge incentive to many people who have the capital to improve historical houses and then never have to pay property taxes



on that property, as long as it continues to meet the historical guidelines. This was advocated for by the Downtown Plano Historical Association in order to preserve the historical feel of downtown Plano amid new residential construction and plans for a denser downtown.

These policies led to the construction of the first development downtown, East Side Village, which was completed in 2001, a full year before the arrival of DART rail to downtown Plano. East Side Village is a mixed residential project which contains ground level retail, a hidden parking garage, and lofts above retail. This project contains a large number of individuals who use the close proximity of the station for their daily commutes to other parts of the Metroplex. In addition to East Side Village, a performing arts center was built, a large public park next to the rail station was built, and West Side Village was also nearing completion. These projects have increased the residential population of downtown and have created life on the streets well into the evening hours. Historic 7th Street is once again filled with boutiques, restaurants, businesses, and even a few pubs, returning 7th Street back to the life it once knew before the rapid growth of Plano which left downtown in the dust. As of 2005, over 140 million dollars in new development had been completed in downtown Plano and more development is in the works including a large sports facility and another large residential project named 7th Place which is modeled after East Side Village and West Side Village (City of Plano, 1999b). The city is presently working with Southern Land Development Company on a new development to be located at 15th Street and the DART light rail line, The project plans include 230 apartments and 15,000 sq. ft. of retail/live-work space; construction is planned to begin in 2011.

- 1990 The Downtown Plano Historical Society began efforts to revitalize Downtown area.
- 1999 An official blueprint plan was developed by the planning department for the City of Plano.
- 1999 The City of Plano established a Tax Increment Finance District (TIF) in Downtown Plano.
- 1999 The downtown task force implemented the Neighborhood Empowerment Zone.
- 2001 The construction of the first East Side Village was completed.
- 2002 DART's Plano Station was opened.
- 2005 Downtown Plano project completed.

3.3.4 CONCLUSION

The regulatory actions, code changes, incentives, and tax exemptions created by the city were instrumental in making this area attractive to developers. Those involved in revitalization realized that business would not just come without any sort of enticement. In such projects, the city could impose extensive development requirements, fees, exactions, and other such things due to the high demand for land and the extensive development in those areas. Downtown Plano was different. There was no major demand on land for development and there was no competition to build. Therefore, they were going to have to remove all such fees, exactions, and in fact give incentives to bring that development in and make development financially feasible for a developer. This even meant giving the developer of East Side Village some land which was owned by the city at no cost. They hoped that the loss of revenue in the beginning would eventually lead to an overall increase in revenue as the new subsidized development would eventually create an increase to the tax base.

As a result of the various steps taken by the city in response to transit the new apartments and residents have spurred revitalization of the downtown. Several new restaurants have opened and attract large crowds. Property owners have renovated and enlarged the original buildings, and the tenant mix has diversified. The area has yet to attract national credit retail tenants but their absence reinforces the distinctiveness of the downtown as a unique urban village. The retail space in the new devel-

opments have struggled. There has been a surprising demand for live/work space from businesses that do not need visibility or a large lease space such as lawyers, accountants, salons, and craftsman.

Downtown Plano is an important case study to draw lessons from in the adoption, planning, and implementation of transit to a historic town center in North Texas region, because it exemplifies some of the issues that have to be overcome in order to make the project work. Following are four cautionary points identified by the City of Plano for the success of such developments defines the heart of these issues:

- It takes time. The original plan for Plano's urban village was adopted 12 years ago.
- It takes money. Plano has been fortunate to have CIP and TIF funds to support infrastructure and other projects.
- It needs complete community support. The city took P&Z commissioners, Council members, merchants and homeowners on tours of mixed-use developments in the area to help educate them and gain their support.
- It requires innovation and a less regulatory attitude among city staff. The staff has to shift to being facilitators of development rather than regulators (City of Plano, 1999a).

Smart Features of Downtown Plano Transit Oriented District:

- oo Strong Vision
- oo Response to Regional Contexts
- oo Strategic Transit Oriented District Plan
 - Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- oo Mix of Major Land Uses (Office, Residential, Retail, Civic)
- oo Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
 - o Range of Housing Choices
 - o Community and Public Participation
- oo Joint Development Programs (Public/Private Partnerships, etc.)
- oo Non-Traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- oo Compact Built Environment
 - Sustainable Architecture
- oo Context Sensitive Design
- oo Multi-Modal Transportation Options
- oo Pedestrian Emphasis
 - o Station Integration
- oo Attention to Place Making
 - o Environmental Sensitivity
- oo Development in Existing Communities
 - o Non-Conventional Parking Strategies

KEY

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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Source: Orenco Station, 2009

ORENCO STATION TOD		
Development Profile	Transit Station	Orenco Station
	Transit Agency	Tri-County Metropolitan Transportation District of Oregon (TRI-MET)
	Primary Transit Type	Light Rail
	Station Status	Built (1998)
	TOD Typology	Suburban Neighborhood (Master Planned Community)
	TOD Name	Orenco Station
	TOD Location	NE Orenco Station Parkway and Campus Court Hillsboro, OR 97124
	TOD Size	209 acres
	TOD Status	On-going
	City Population	90,000 (2009 U.S. Census Estimate)
	Developer	Multiple
	Ownership	Multiple
	Zoning	A new zoning ordinance was written for the site.
	Cost	Unknown
Stakeholder	Developers: PacTrust, LP; Costa Pacific Homes Design: Alpha Engineering; Fletcher Farr Ayotte Architects; Iverson Associates; Walker Macy Landscape Architects Public sector: Tri-Met (public transit authority); Metro (regional government); Planning Department, City of Hillsboro Other: Project for Public Spaces	
Land-use	Development Site	Suburban infill
	Residential	1800 units
	Retail	25,000 sq. ft.
	Office	Quantity unknown
	Public/Civic	Park, public square
	Parking	On-street parking, surface parking
	Other	24 live-work town homes, Town Center



Figure 3.17: Orenco Station
(Source: Andrew Hall, 2006)

3.4 ORENCO STATION, PORTLAND, OR

3.4.1 PROJECT BRIEF

Even though Oregon is well known for its growth management policies, Portland has not remained unaffected by the scale of its growth and the drawbacks of early solutions to it. Oregon was among the first to capture the need to act upon the impending investment in a light rail network to re-connect the sprawling suburbs with the inner city, and deliberate transit-oriented development around stations. With little precedent for either higher-density or mixed-use development in the area, Oregon Station, a 190-acre master planned community, including housing product-lines, a neighborhood retail district, and an attractive promenade that links residents to the rail stop, was built in a western suburb of Hillsboro in 1997. The site received international acclaim for the strength of community and quality design (Girling and Kennett, 2005). As an early product of transit related development, Orenco Station set an exemplar for later TOD applications nationwide.

3.4.2 PLANNING + DESIGN

Being one of the earliest products of TOD, the planning and the design solution for the Orenco Station, also known as “Silicon Forest”, was considered an “experiment” in types of New Urbanism (Hock, 2000; Benfield, 2001). “The ability to walk to a quart of milk” is how Rudy Kadlub of Costa Pacific Homes summarized the philosophy behind Orenco Station development (Cuorno, 2000). Drawing explicitly on early twentieth century residential archetype, the plan is organized around the station on the south side of an arterial road and along the main street of the town center. It has been developed with a variety of loft apartments, townhouses and live/work units. Land uses adjacent to the town center are predominantly low density, single detached housing and 209 acres of high tech industry at the periphery. A gridded network of narrow local streets forms a walkable pattern of residential blocks (see table 3.2 and 3.3 components of the development and the associated costs with the improvements).

Table 3.2: Size of the development in parts (Source: Fader, 1999)

Use	Acres	Percent of site
Residential	30.25	49.4
Recreation/amenities	1.05	1.7
Roads/parking	20.1	32.8
Open space	7.8	12.7
Mixed uses	2	3.3
Total	61.2	100



Figure 3.18: Orenco Station area sidewalks
(Source: Andrew Hall, 2006)



Figure 3.19: Brownstones in Orenco Station
(Source: Hillsboro, 2006)

3.4.3 PROCESS

The site originally was zoned for industrial use and later for subdivision housing. Development of the present community followed the site’s designation as a “town center” in the Portland Metro Area 2040 Plan. Generally the process for Orenco Station is as follows:

- 1990 West side Light-rail line was approved.
- 1994 Planning Started
- 1997 Construction Orenco development started
- 1997 Sales Started
- 1998 First Closing

The planning portion of the Orenco Station process included:

- A market survey was conducted of employees in the surrounding high-tech facilities to establish their design and housing preferences and to define

affordability issues. There were two years of discussions.

- Negotiations with city, state and transit officials.
- Development of a zoning ordinance customized for Orenco Station, which was dubbed a “station community residential village,” or SCR.V.
- The new zoning established design guidelines to allow for, and ensure, a heterogeneous, urban mix of housing types and land uses not typically found in the suburbs.

Table 3.3: Costs (Source: Fader, 1999)

Cost	Total	Cost/ Dwelling Unit	Cost/ Residential sq. ft.
Site acquisition	\$5,400,000	\$12,100	\$8.52
Site improvement	12,000,000	26,900	18.92
Construction	45,800,000	102,700	72.73
Soft costs	13,100,000	29,400	20.66
Total	\$76,300,000	\$171,100	\$120.33

3.4.4 CONCLUSION

Since the development has reached some maturity, its performance as a town center was brought under analytical scrutiny examining the links between physical environment with social cohesion and human activity. (Boarnet et.al., 2008; Popodnik, 2002; Weigand, 2008). The evidence collected from the site, as an example of a new approach to built-environment, reinforces the view that the design has had significant, and in this particular case positive, implications on the development of “community” and human activity at the local scale.

From the perspective of planning, Orenco Station reveals that higher densities and mixed housing types can succeed in suburban environments. Success comes, in large measure, from the attention paid to the public spaces, which off-sets any disadvantage in creating smaller private spaces. The project’s community and pedestrian orientation has been cited in post-purchase focus groups as primary



Figure 3.20: Merchant of Venice Cafe, Orenco Station (Source: Hochstein, 2005a)

reasons for purchasing a home at Orenco Station. Accessory units have been a success. Use of the space has varied; some owners have used it for office space or guest quarters, and others have rented it as small apartments. The availability of accessory units has added to the market appeal of the project.

Smart Features of Orenco Station Transit Oriented Development:

- oo Strong Vision
- o Response to Regional Contexts
- oo Strategic Transit Oriented District Plan
- oo Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- o Mix of Major Land Uses (Office, Residential, Retail, Civic)
- o Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
- o Range of Housing Choices
 - Community and Public Participation
 - Joint Development Programs (Public/Private Partnerships, etc.)
 - Non-Traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- o Compact Built Environment
 - Sustainable Architecture
- oo Context Sensitive Design
 - o Multi-Modal Transportation Options
 - o Pedestrian Emphasis
 - o Station Integration
 - o Attention to Place Making
 - o Environmental Sensitivity
 - o Development in Existing Communities
 - o Non-Conventional Parking Strategies

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

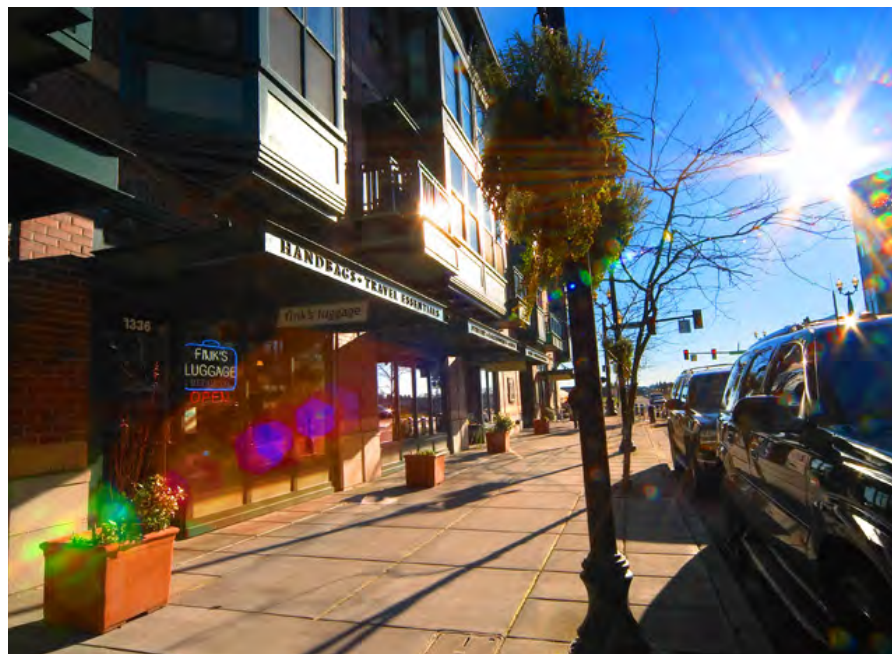
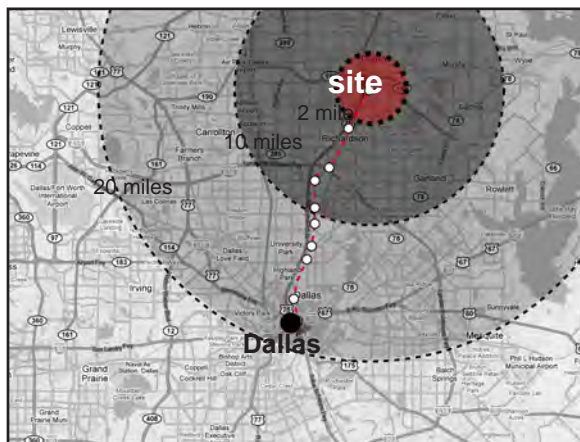


Figure 3.21 : Orenco Station area streetscape (Source: (Hochstein, 2005))

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Source: City of Richardson, 2009

Galatyn Park TOD		
Development Profile	Transit Station	Galatyn Park Station
	Transit Agency	DART (Dallas Area Rapid Transit)
	Primary Transit Type	Light Rail
	Station Status	Built (2002)
	TOD Typology	Suburban Center
	TOD Name	Galatyn Park Urban Center
	Station Address	2500 North Central Expressway Richardson, Texas 75082
	TOD Size	500 acres
	TOD Status	On-going
	City Population	101,400 (2007 U.S. Census Estimate)
	Developer	Multiple
	Ownership	Multiple
	Zoning	Amended Conventional Zoning
	Cost	Unknown
Stakeholder	Hunt Petroleum, Legacy Partners, BlackRock Realty, City of Richardson, DART	
Land-use	Development Site	Suburban/urban infill
	Residential	282 units
	Retail	6000 sq. ft.
	Office	1,800,000 sq. ft.
	Public/Civic	2 acre public plaza, 8 acres of open space, trails
	Parking	Structured parking, surface parking, shared parking
	Other	Hotel, performance arts and corporate presentation center



Figure 3.22: Satellite view of site location, Richardson (Source: Google Maps, 2009)



Figure 3.23: Galatyn Park Urban Center (Source: City of Richardson, 2009a)



Figure 3.24: Richardson land use (Source: City of Richardson, 2007)

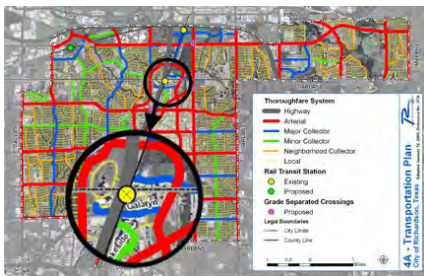


Figure 3.25: Richardson thoroughfare system (Source: City of Richardson, 2009)

3.5 GALATYN PARK URBAN CENTER, RICHARDSON, TX

3.5.1 PROJECT BRIEF

Galatyn Park is Richardson's first TOD and is a result of a public/private partnership among the City of Richardson, Galatyn Park Corporation, and private developers. It is served by DART's Red Line light rail service and is home to the Galatyn Park station (DART, 2009). The Galatyn Park combines a unique mix of uses with gathering places and open spaces to create an iconic destination. Public/private cooperation has been a hallmark of the development throughout the project's history. The master plan has evolved over time, but the vision for a cohesive district with a mix of private development and civic spaces has been consistent (City of Richardson, 2009a).

In the 1980's, Richardson was a bedroom community that saw significant growth. It became known for its "Telecom Corridor" because of companies like Nortel, Alcatel, Erickson and others that built significant corporate facilities. The recession and the dot-com and telecom busts of 2001 created significant job loss but recently there have been numerous positive developments like Countrywide Financial's relocation, Texas Instrument's new 1.1 million square foot semiconductor fabrication plant and the Fossil Company's corporate headquarters relocation across IH-75 to the West. Home to the Telecom Corridor area, Richardson is known around the world as the high-tech center of North Texas and the Dallas-Fort Worth Metroplex. The 11-mile Telecom Corridor area averages 50 technology companies per square mile, making it one of the densest high-tech areas in the United States. Richardson is currently a major employment center drawing thousands of workers, both tech and non-tech, to its more than 5,700 businesses, including multi-national employers such as Nortel, Samsung, Cisco Systems, Hewlett-Packard, MCI and Fujitsu. The world-class University of Texas at Dallas, with more than 14,000 students, also calls Richardson home and attracts many of the brightest scholars from the area's award-winning public school systems. Located just 15 miles north of Downtown Dallas, Richardson offers easy access to major freeways and a public transit system (with direct access to DFW International Airport by 2006). Richardson also boasts some of the finest Class A office and industrial buildings, and build-to-suit corporate campus acreage (Legacy Partners, 2009). These development trends surrounding the City seem to initiate the early focus to Galatyn Station and the Master Planned TOD development surrounding it.

3.5.2 PLANNING + DESIGN

Galatyn Park Urban Center is developed initially in eight phases and planned to house various public and private uses that essentially create a center for the station area and the City of Richardson (see figure 3.23). Although 800,000-plus square feet of corporate campus seem to be the driving force for this particular set piece development, the master plan incorporates various design strategies and uses worth addressing here.

The Galatyn Park station features a technology theme, with large columns symbolizing twin satellite dishes and a circuit board fence design (City of Richardson, 2009). DART provides connection from the Red Line rail service to the Palisades Office Park E-Shuttle.

The Charles W. Eisemann Center for Performing Arts and Corporate Presentations, a City of Richardson facility, is located in Galatyn Park. The center's is created "to provide quality, competitively priced facilities; professional staffing and services; enhanced technology; and programming excellence that will enrich our community; foster the growth and development of our performing arts and corporate groups; and create for our patrons an environment of cultural diversity, educational enrichment, and fulfilling experiences benefiting all who live and work within our region" (Eisemann Center, 2009). Since opening in 2002, it has been recognized by clients, patrons and the media as one of the leading performing arts facilities serving the Dallas/Fort Worth area. Critical acclaim has been awarded not only for events that

have taken place at the Eisemann Center, but for the facility and its architectural design (Eisemann Center, 2009). The Renaissance Hotel and Convention Center are also located in Galatyn Park.

Mixed-use multifamily component of the Galatyn Park, The Venue, was one of the later additions to this master planned development. The Venue is a transit oriented luxury apartment community featuring a unique musical/theatrical design theme located in Galatyn Park Urban Center. Responding to the growth and the multifamily housing needs in the station areas as well as in the City of Richardson the Venue consists of 282 luxury apartment homes and approximately 6,000 square feet of retail (see Legacy Partners, 2009 for detailed market analysis conducted for this development). The residential units are divided into two areas, each surrounding a courtyard, and separated by a parking structure in the middle often referred as a “Texas Doughnut”. The retail component is located at ground level on the north side of the development. The retail component faces the Eisemann Center to the north and the Renaissance Hotel to the northwest. The current retail space was not fully occupied during the site visit. There is a full-service restaurant and a small fruit beverage and snack shop. There appears to be space for one or two establishments depending on their square footage needs. The structure is a 4-story wood frame building with a 4 level structured parking garage. The 4.38 acre site is located on the NW corner of Galatyn Parkway and Performance Drive in Richardson, Texas in an area referred to the “Telecom Corridor”. The site is within a 1/4 mile of a DART (Dallas Area Rapid Transit) light rail station, and is across the street from the Bank of America complex.



Figure 3.26: Site plan of the Galatyn Park Urban Center (Source: City of Richardson, 2009)



Figure 3.27: City of Richardson trail-way master plan (Source: City of Richardson, 2007a)

The Venue at Galatyn Park also includes on-site parking in a structured parking facility. Galatyn Park also contains structured parking for The Renaissance Hotel and Eisemann Center, as well as structured parking for the corporate campus located east of the study site. Galatyn Park does not have parking associated with DART’s Galatyn Park Station for commuter park/ride use.

The City of Richardson has invested more than \$5,000,000 in improvements to the streets and the public plaza bordering the site including an elaborate “dancing” fountain, shown in Figure 3.28 (Legacy Partners, 2009).

Galatyn Park master plan also integrates and trail and open space system. The Galatyn Woodland Preserve and Nature Trails provides a pedestrian connection between the DART light rail station, corporate campuses, hotels, residential and the Spring Creek Nature Area to the north. The preserve includes a wetlands mitigation area, multi-use trail, picnic areas, animal sculpture playground, and boardwalk (City of Richardson, 2009a). The Galatyn Woodland Preserve occupies 8 acres and includes typical park features, such as three horseshoe pits, a playground containing concrete woodland animal play sculptures, picnic facilities and a .56 mile hike and bike trail, but also incorporates a boardwalk for bird-watching and observing wildlife, wetland ponds and remnants of a tall grass prairie savannah (City of Richardson, 2007; Richardson Convention and Visitor Bureau, 2009). In the spring, Poppies, Indian Paintbrush and other wildflowers grow along the shady trail that meanders through the preserve, where mature oak, elm and ash trees help block out the sounds of traffic. The park’s hike-and-bike trail connects to the DART light-rail system and the Spring Creek Nature Area that are part of the city’s 22 mile trail system (Richardson Convention and Visitor Bureau, 2009).

Galatyn Park Urban Center hosts Wildflower!, an annual art and music festival each year in May which is produced by the City of Richardson. The festival began in 1993 as a small community event and subsequently grew each year. Attendance in 2008 was estimated at more than 70,000. The festival moved to Galatyn Park Urban Center in 2003 (WildFlower!, 2009).

Galatyn Park TOD component highlights:

The Eisemann Center

- Performing arts and corporate presentation facility
 - Flexible, three-venue facility
 - 1,550 seat performance hall
 - 350 seat theater
 - 3,150 square foot multi-use facility
- Advanced presentation technology
- Capital enhancement gift from Richardson resident Charles W. Eisemann
- Land donation from Galatyn Park Corporation; main venue named Margaret and Al Hill Performance Hall
- Donation of light sculpture by local resident

The Renaissance Hotel and Convention Center

- Full service Renaissance Hotel by Marriott International, owned and operated by John Q. Hammons Hotels
- 12 stories; 336 rooms, including 42 suites
- 30,000 square feet of meeting space, including 12,000 square foot ballroom
- 750-space City-built/financed parking garage (380 parking spaces for hotel, 370 spaces for conference center)
- Conference center financed by City; 20-year city ownership, with debt service paid annually by hotel and ownership transfer at payout

Public Plaza

- Two-acre public plaza
- Land donation from Galatyn Park Corporation
- Site of annual Wildflower Festival, attracting over 70,000 people



Figure 3.28: Galatyn plaza fountain (Source: Wet Design, 2001)

- Element of live/work/play environment
- Texas Instruments Foundation Community Fountain designed by WET Design as plaza focal point
- Design links adjacent development with DART station and nature trail system

The Venue

- 4.3-acre mixed-use development by Legacy Partners
- 282-units; four stories
- 6,000 square feet of ground-floor retail, restaurant
- 4-level parking garage

Corporate Campus

- 800,000 square feet of office space, three parking garages
 - Countrywide Financial/Bank of America
 - CreditSolutions
 - Nortel Networks
 - Public parking partnership to accommodate evening/weekend activities at Eisemann Center
- Campus design coordinated with Urban Center plan for aligned view and design axis
- Trees relocated to area parks before start of construction

Blue Cross and Blue Shield of Texas

- 1 million square foot headquarters for Blue Cross and Blue Shield on 34 acres
- Initial employment of 2,700, with ability to increase to 5,000
- 15-story building, 7-story building, parking garage; land for expansion
- Start of construction Fall 2007; occupancy early 2010

Woodland Preserve and Nature Trails

- Eight acres donated by Galatyn Park Corporation
- Wetlands mitigation area for urban center
- Multi-use trail, picnic areas, animal sculpture playground, boardwalk for bird-watching, wetland ponds, horseshoe pits
- Trail connects corporate campuses, DART Station, and hotels to the Spring Creek Nature Area to the north
- Property value used as in-kind match for State grant



Figure 3.29: Elevation renderings of The Venue (Source: City of Richardson, 2009)



Figure 3.30: Aerial view of the Venue (Source: City of Richardson, 2009)



Figure 3.31 : Photographs of the Venue
(Source: W. A. Miller, 2009)

Future Development

- Eight-acre vacant parcel for employment/mixed-use development
- Galatyn Park Interchange
- Ingress and egress from US-75 to Galatyn Park
- \$11 million project combining DART/CMAQ/City funding and TxDOT administration
- Extension of Galatyn Parkway to properties west of US 75 under design

3.4.3 PROCESS

The design concept for Galatyn Park was announced in March, 1997. The following year, in April 1998, a hotel development partner was named. The City of Richardson passed Ordinance NO. 3367-A in March, 1999 which amended the city's Comprehensive Zoning Ordinance to allow a transit-oriented residential development on a 4.38 acre study site. The previous zoning for the site was C-M Commercial District Zoning with special conditions. The ordinance only applied to this tract and specified building height of 40-150', a minimum of 35 units per acre, parking structures, and the specific exterior materials to be used (City of Richardson, 2009). The city recognized that residential is a key element of a mixed use community and essential to the creation of a 24/7 environment and in December, 2000, the transit oriented residential zoning was applied to a total of 12.44 acres of undeveloped land in Galatyn Park (City of Richardson, 2009a).

The ceremonial ground breaking for Galatyn Park took place in April 1999. DART began construction on the NC4 rail line to service the area in June 1999. Construction of The Renaissance Hotel began in November, 1999. The hotel opened in May, 2001 followed by the opening of Galatyn Park Plaza that same fall. DART opened Galatyn Park Station and began service to the area in June, 2002. In September, 2002, the City of Richardson completed the construction of Eisemann Center and unveiled the facility to the community. The land sale and construction for The Venue was announced by Legacy Partners and Galatyn Park Corporation in December, 2006. The Venue opened in May, 2008.

- 1997 Galatyn Park was announced in March.
- 1998 Hotel development partner was named.
- 1999 The City of Richardson passed an ordinance to amend the City's comprehensive zoning ordinance to allow a transit-oriented residential development.
- 1999 Ceremonial ground breaking took place in April.
- 2001 Hotel at Galatyn opened for business.
- 2002 Galatyn Park Station opened for DART service.
- 2002 Eisemann Center construction is completed.
- 2006 Land sale was announced for a residential component at Galatyn.
- 2007 One million square foot headquarters for Blue Cross and Blue Shield on 34 acres started of construction Fall 2007.
- 2008 The Venue opened in May, 2008.

3.5.4 CONCLUSION

Overall the center seemed lifeless during visits by the researcher: once on a Saturday afternoon and once on a Friday around lunchtime. There was very little pedestrian traffic between the different areas of the site. No one was walking between the hotel and the restaurant, between the corporate campus and the restaurant, or between the Eisemann Center and the hotel or restaurant. The light pedestrian traffic that was observed was between the Galatyn Park Station and the corporate campus area. The researcher perceived that the center would not qualify as an active 24/7 site.

The ordinance to allow a residential transit-oriented development was passed



Figure 3.32 : Galatyn Park Plaza
(Source: W. A. Miller, 2009)

approximately 7 years before construction actually began on The Venue. Between passage of the ordinance and the start of construction on The Venue, the Renaissance Hotel and the Eisemann Center were announced, built and opened. The Venue is the first and only residential component introduced into the center. The different land uses in the center, while in close proximity to each other, are still somewhat isolated from each other and each occupies their own space on the site. This also seems to contribute to the lifelessness of the center.

There are approximately 8 acres, adjacent and west of The Venue, that are also zoned for residential transit oriented development. This vacant tract of land, adjacent to The Venue, Galatyn Park Plaza, and the Galatyn Park Station, if developed, would create a much more enclosed space and enhance the center visually.

The lack of park and ride options for the DART station also contributes to the lifelessness of the center. If parking were available for commuters there might be more pedestrian traffic in the center. The increased traffic would create more opportunities for successful commercial activities and enhance the energy level of the center as a whole. The construction of the entire center appears to be excellent and has required significant investment. The city has invested substantially in infrastructure, the public plaza and the Eisemann Center.

Smart Features of Galatyn Park Transit Oriented District:

- o Strong Vision
- o Response to Regional Contexts
 - Strategic Transit Oriented District Plan
 - Alternative Zoning Mechanism (form based codes, smart growth, etc.)
- o Mix of Major Land Uses (Office, Residential, Retail, Civic)
 - Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
 - Range of Housing Choices
 - Community and Public Participation
- o Joint Development Programs (Public/Private Partnerships, etc.)
- o Non-Traditional Financing Mechanisms (TIF, CIP, BID, PID, etc.)
- o Compact Built Environment
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 - Multi-Modal Transportation Options
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- o Attention to Place Making
- o Environmental Sensitivity
- oo Development in Existing Communities
- o Non-Conventional Parking Strategies

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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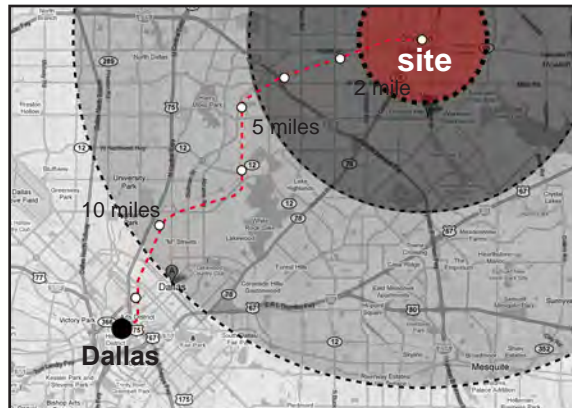
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Source: High Street Residential, 2009

5 TH STREET CROSSING TOD		
Development Profile	Transit Station	Downtown Garland Station
	Transit Agency	DART (Dallas Area Rapid Transit)
	Primary Transit Type	Light Rail, Bus
	Station Status	Built (2002)
	TOD Typology	Suburban Center
	TOD Name	5th Street Crossing
	Station Address	430 West Walnut Street, Garland, Texas 75040
	TOD Size	3.4 Acres
	TOD Status	Complete (2009)
	City Population	222,013 (2010 Census)
	Developer	Single, Trammell Crow
	Ownership	Single, Trammell Crow
	Zoning	City of Garland Downtown Redevelopment Plan
	Cost	Project cost \$ 22 million
Stakeholder	City of Garland, Trammell Crow's High Street Residential, Downtown and Forest/Jupiter TIF District	
Land-use	Development Type	Urban infill, historic downtown redevelopment
	Residential	189 units
	Retail	13,500 sq. ft.
	Office	5700 sq. ft.
	Public/Civic	--
	Parking	Structured parking, on-street, shared parking (City is paying for the construction of the parking garage)



Figure 3.33: Image of downtown Garland (Source D.S. Cooper, 2009)



Figure 3.34: Aerial of 5th Street Crossing (Source: City of Garland, 2009)



Figure 3.35: Site construction (Source: City of Garland, 2009)



Figure 3.36: Rendering of 5th Street Crossing (Source Lincoln Property Company, 2010)

3.6 5TH STREET CROSSING DOWNTOWN GARLAND

3.6.1 PROJECT BRIEF

5th Street Crossing is an urban mixed-use, transit-oriented development developed by Trammell Crow's High Street Residential. The construction of 5th Street Crossing began in the spring of 2008 and was completed mid-2009. It consists of 189 residential units and 11,400 square feet of ground floor flex space, on 3.4 acres within a block of the Downtown Garland Rail Station, Granville Arts Center, City Hall, the new Richland College campus, and the historic Downtown Square. The project includes a 440-stall shared use parking garage that will serve the residents of 5th Street Crossing, city employees, and the general public. 5th Street Crossing is the first catalyst project toward implementation of Garland's Downtown Redevelopment Strategy. It is also a key component of Garland's vision for the downtown's future as a vibrant, mixed-use, and pedestrian-oriented district. The much anticipated project is the impetus for a downtown revitalization where people can live, work, shop, dine, and participate in other entertainment during traditional work and non-work hours.

The TOD is located near Downtown Garland, which is the historic core of the community and contains historic structures, many of which were built between 1900 and 1935. The development pattern and urban "habitat" is typical of a historic community, with short blocks and street-fronting buildings. Cultural resources include the Richland College, Granville Center for Performing Arts, and the Nicholson Memorial Library. One block to the south of the TOD is the historic Downtown Square, which serves as the retail core of the downtown area. Many of the buildings on the square date back to the late 1800's and early 1900's. In the center of the square is the plaza, which has functioned as a public gathering place since the 1800's. Its current configuration was constructed in the 1970's.

Garland is located 15 miles northeast of Downtown Dallas and is bordered by Interstate 30 and Interstate 635. The Forest/Jupiter Station and the Downtown Garland Station have served the city since 2001. The population within five miles of downtown Garland is notably diverse, with a smaller percentage of white residents and a higher percentage of "other" and Hispanic origin residents relative to the Dallas Metroplex. The change in racial composition in the Downtown Garland market area is driven primarily by the growth in persons of Hispanic origin. Hispanics are projected to comprise 58.1% of the area within one mile of downtown (up from 46% in 2003) and 37.5% of the area with five miles (up from 29% in 2003) by 2008 (Downtown Redevelopment Implementation Plan, pg. 15).

3.6.2 PLANNING + DESIGN

The 5th Street Crossing development consists of 189 one and two bedroom apartments units and 11,400 square feet of flex space. Flex space is available for retail, personal service, restaurants, or office uses and will be located on the first floor of the two three-story mixed-use buildings. A variety of other public and private uses can be found in the immediate area, including retail and service uses, government offices, cultural arts venues, and other commercial uses. The city paid for the construction of the parking garage and, in exchange, the first floor garage will serve all users, including retail patrons and employees, adjacent office employees, and the general public. The remaining four floors are specifically reserved for the residents and their guests. Seventy-Six on-street angled parking spaces were also provided.

Garland's TOD is integrated into the fabric of downtown and serves as a unifying element for the various nearby activities. The 5th Street Crossing physically and functionally connects several activity centers including the Richland College campus, an affiliate of the Dallas County Community College District, which is located to the north across Walnut Street. This campus focuses on workforce training and continuing education. The Downtown Garland Station, Granville Arts Center, and City Hall are all located to the east across Fifth Street; the historic Downtown Square



Figure 3.37: Downtown square (Source: D.S. Cooper, 2009)



Figure 3.38: Downtown Garland station (Source: D.S. Cooper, 2009)



Figure 3.39: DART station plan (Source: DART, 2009)



Figure 3.40: 5th Street Crossing at DART station (Source: Brown, 2010)

is adjacent to the south; and the Nicholson Memorial Library adjacent to the west. The downtown core is comprised of a sunken plaza with a water feature, canvassed by trees and elevated planting beds, tree-lined streets and storefronts, theater, performing arts center, and government offices.

Prior to construction of 5th Street Crossing, roadway improvements were made to Walnut Street, Sixth Street and Fifth Street. The city received funding through the NCTCOG's Sustainable Development program to assist with these improvements. Sixth Street, which forms the western boundary of the project and currently terminates at the railroad tracks, is being extended north across the tracks to the new Richland College campus at Glenbrook Drive and Walnut Street. This will provide a direct link between the community college campus, 5th Street Crossing, and the historic Downtown Square. In addition to the roadway improvements, streetscape improvements were installed to create a more pedestrian-oriented environment. The Austin Street cartway (access road to public road from private easement) was reduced to approximately 24 feet, two-lane road to accommodate angled and parallel parking between the buildings and to improve pedestrian access. The Fifth Street cartway was also reduced from a four-lane to a three-lane road with two lanes heading south and one lane heading north. There were no major development constraints during the process other than demolishing the existing County building, the City's parking lot and telecommunications tower, and preparing the site for redevelopment.

The 5th Street Crossing is an example of innovative site usage and architectural design for a residential development in Garland. Similarly, it provides an example of a mixed-use development that accommodates a true connection to public transit and the nearby services. The success of the project is attributed to the considerate design and higher density that contributes to a mix of land uses around the Downtown Garland Station. The streetscape and building design support a pedestrian-oriented



Figure 3.41: Aerial perspective of 5th Street Crossing (Source: ReconnectingAmerica, 2009)



Figure 3.42: Parking garage (Source: D.S. Cooper, 2009)



Figure 3.43: Photo of 5th Street Crossing (Source: D.S. Cooper)



Figure 3.44: Downtown rail station (Source: 5th Street Crossing, 2008)



Figure 3.45: Night image of 5th Street Crossing (Source: Brown, 2010)

development. The combination of design elements, including minimal road widths, maximum sidewalk widths, landscaped spaces, on-street parking, and boulevard tree planting represent a substantial departure from typical suburban development. The benefits of narrowing the adjacent streets include reducing traffic speeds, efficient use of urban land, less costly to construct and maintain, less impervious surface results in less stormwater runoff, and they accommodate convenient pedestrian and bicycle circulation. Minimizing the street dimensions creates an urban environment that is more human in scale while providing adequate access for municipal and emergency vehicles. Maximizing the widths of the sidewalks creates a convenient and comfortable pedestrian trip, reinforces the use of the transit system, and reduces the number of auto oriented trips. Street trees offer shade for the comfort of the pedestrian creating a viable walking environment in the Texas climate. A combination of on-street parking and street trees serve as buffer between automobile traffic and the sidewalk, which helps civilize the streets and increases pedestrian activity. The pedestrian system along 5th Street provides a clear and direct pedestrian access to the Downtown Square and DART station. By combining work/non-work related trips with a transit station provides patrons the opportunity to combine trips, reinforcing the convenience of transit usage. One element of the pedestrian system that is an example of non-design is the street and railroad crossings to the transit stop. The pedestrian crossings are not clearly marked and neglect to provide a fast and safe access route. Accessibility is the key to capturing maximum ridership and the Downtown Garland Station is located within a five-minute walk from the center of the TOD. The transit station also provides pedestrian shelters and convenient passenger loading and unloading areas that are also accessible by people with disabilities. The shelters were designed with the passenger's safety and comfort in mind while creating visual interest the architectural design.

The Downtown Garland Station serves 5th Street Crossing and Downtown Garland, and is the eastern terminus of the DART Blue Line. Components of the station include a park-and-ride, bus terminal and parking for bus and light rail patrons. The bus and rail service connect downtown Garland to the rest of the city and surrounding cities. There is no trolley service nor designated bike lanes, although there are bike racks available at various downtown locations. The site accommodates pedestrian activity by enhancing the visual appearance of the streetscape through landscaping, paving, and adequate sidewalk accommodations. A DART bus transfer center is located adjacent to the light rail station and serves cross-town, suburb-to-suburb and downtown via traditional and express bus routes. Passenger boardings at Downtown Garland Station have trended upward between October 2003 and August 2004, ranking in the top third for total boardings and accounting for between 3% and 3.5% of total DART ridership (Downtown Redevelopment Implementation Plan, p. 48).

The city has bond funding to redesign and rebuild the plaza to make it a more functional public space better integrated with the historic character of Downtown Garland and the redevelopment of adjacent blocks.

3.6.3 PROCESS

The Downtown Garland Station opened in November 2002 and was the impetus for initiating this project. The City hired Wallace Roberts and Todd in 1998 to prepare a Station Area Development Plan for both the Downtown and Forest/Jupiter Stations. That document, completed in 1999, set forth the vision for a Downtown TOD. In June 2005 the city hired RTKL Associates to prepare an updated strategy for downtown redevelopment and as a result created the Downtown Redevelopment Implementation Plan in June 2005. This study also included a market analysis prepared by Economic Research Associates (ERA). The plan's recommendations for strengthening the core included:

- Renovating the historic Downtown Square to strengthen its identity as the focal point of downtown
- Strengthen the identity of the historic buildings



Figure 3.46: Granville Arts Center
(Source: D.S. Cooper, 2009)

- Create a unique, active urban streetscape
- Renovate and reposition municipal buildings to create a stronger and more active street presence
- Create a mixed-use cultural arts district
- Add new residential “infill” development
- Establish pocket parks and landscape features to provide amenities and interim destinations throughout downtown.

The Plan also recommended establishing various activity nodes that can physically connect the downtown core to the surrounding community. Such linkages would take the form of a commercial district focused around the Main Street corridor, and strengthening the Fifth Street link from the downtown DART Station to the core combining improved streetscape, infill development and unique graphic elements to create an active and vital corridor (Downtown Revitalization, 2009). The economic development department of DART worked closely with the City well before the Downtown Garland Station was constructed. They were involved in the various studies and meetings over the past several years to refine the vision for a TOD that culminated in the 5th Street Crossing project.



Figure 3.47: Nicholson Memorial Library
(Source: D.S. Cooper, 2009)

The land was previously owned by the City of Garland and Dallas County. The city's portion of the land was a parking lot used by the Garland Police Department and also contained the police department's telecommunications tower. Demolition of the telecommunications tower began on February 18, 2008 and the new tower was relocated to south Garland to enhance police and fire communications. The city constructed a new police department at an off-site location, creating more available land for redevelopment. The Dallas County sub-courthouse occupied the county-owned land. Demolition of the sub-courthouse began on January 9, 2008 and was complete a few days later. The City entered into a land exchange agreement with the county that included this parcel, as well as a county-owned parcel on Walnut Street. The county facilities were consolidated and relocated to a city-owned property at Main Street and Garland Road, again making more land available for redevelopment.



Figure 3.48: Courtyard seating (Source: Brown, 2010)

The recommendations contained in this document became the basis for the City's decision to send out Request for Proposals (RFP's) to partner with the City for a mixed-use development at this location. At this point in the development process, it is difficult to estimate the number of jobs the transit-oriented development would create; however, the number of jobs would be limited to employment generated by the 11,400 square feet of flex space, as well as jobs related to management and maintenance of the apartment development. The City is also anticipating the opening of new local businesses in the nearby downtown area due to the population increase in the area and centralized activity.



Figure 3.49: 5th Street Market
(Source: Brown, 2010)

In March 2006, the City of Garland sent out an RFP to enter into an agreement to develop a mixed-use, transit-oriented development on the land assembled by the City. After deliberations between the city staff and city officials, Trammell Crow was selected to partner with the City. Negotiations with Trammell Crow resulted in the proposed 5th Street Crossing project and the development agreements were finalized. The planning and design for this project was required to follow the Garland's established development process guidelines. In 2008, there were a total of three public hearings held during the approval process for the proposed TOD, two hearings associated with the zoning change, one before Planning and Zoning Commission and one before City Council, and one hearing associated with the plat.

In addition to the public hearings, there were other City Council presentations and meetings held throughout the process of developing the agreements and project scope. There were no design charrettes specific to the 5th Street Crossing project, however, there were town hall meetings held related to the Downtown Redevelopment Implementation Plan, which became the basis for initiating the 5th Street Crossing project. The zoning of the property was changed from a Planned Development for



Figure 3.51 : Leasing office and entry to garage (Source: Brown, 2010)



Figure 3.52 : Flex retail and live/work (Source: Brown, 2010)



Figure 3.53 : Flex retail at 5th Street Crossing (Source: Brown, 2010)

commercial uses to a Planned Development for mixed-use residential and non-residential uses. The property is platted as the 5th Street Crossing Addition and contains two lots totaling 3.4 acres. Once the zoning and platting issues were resolved, the various consultants submitted the site plan and all public improvements to the city for review. These plans include such documents as the proposed site design, final plat, building elevations, landscape plan, tree survey and mitigation plans, dimension control plan, grading plan, paving and drainage plan, water and sewer utility plan, and Storm Water Management Site Plan (SWMSP). After city staffers approved these plans, the consultants applied for the building permits and the demolition of the existing buildings began.

5th Street Crossing was developed through a public-private partnership between Trammell Crow's High Street Residential and the City of Garland. Other participants key to the viability of this project includes DART, Dallas County Community College District, and Dallas County. In addition, the City received a Sustainable Development Grant from the North Central Texas Council of Governments (NCTCOG) to assist with infrastructure improvements critical to the success of this project. Other stakeholders involved with 5th Street Crossing are JHP Architects, Half Engineering, RTKL, Lincoln Property Management, and USAA.

3.6.4 CONCLUSION

A mixed-use project is appropriate for this site given its adjacency to the downtown core, key cultural locations and the DART station. In summary, the development is an infill and redevelopment project that improves the streetscape and pedestrian experience, provides for a sense of place, and provides continuity between the DART station and the central part of the downtown core. The City of Garland considers the engagement of all stakeholders in the planning, design and development of the project as the key factors in the success of the project. There was a shared commitment to creating a special place and the city anticipates the project will deliver just that. Through careful planning and thoughtful design, the City of Garland, along with the other stakeholders, developed a TOD designed to increase the number of downtown residents and potential DART riders. In addition, a complementary mix of uses, activities, and services are located in close proximity to 5th Street Crossing allowing residents to commute to work, run errands, socialize and meet basic needs without always needing a car. Opportunities abound for participation in subsequent phases of the Downtown Redevelopment Implementation Plan, including reconstruction of the Downtown Plaza and redevelopment of adjacent blocks. The City of Garland has expressed an eagerness to explore partnership opportunities that could lead to additional catalyst projects that will assist in the realization of the vision set forth for Downtown redevelopment.



Figure 3.50 : Rendering of the 5th Street Crossing (Source: DART, 2009)



Figure 3.54: Rendering of 5th Street Crossing (Source: Mondo Tiki Man , 2010)

Smart Features of 5th Street Crossing Transit Oriented Development:

- o Strong Vision
- oo Response to Regional Contexts
- o Strategic Transit Oriented District Plan
- o Alternative Zoning Mechanism (form based codes, smart growth, etc.)
- o Mix of Major Land Uses (office, residential, retail, civic)
- o Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
- Range of Housing Choices
- Community and Public Participation
- o Joint Development Programs (Public/Private Partnerships, etc.)
- o Non-Traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- o Compact Built Environment
- Sustainable Architecture
- oo Context Sensitive Design
- o Multi-Modal Transportation Options
- oo Pedestrian Emphasis
- o Station Integration
- o Attention to Place Making
- o Environmental Sensitivity
- oo Development in Existing Communities
- o Non-Conventional Parking Strategies

KEY

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

3.6.5 REFERENCES

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MEDIUM CITY CASE STUDIES

Medium cities are classified as cities with a population range of 50,000 to 250,000. This section focuses on the cross analysis of transit-related development (whether in the form of transit oriented development or transit oriented district) in 6 medium cities in North America, and outlines the inferences drawn out of rigorous consideration of the intricate features of this particular development type. The following section is a summary of the key themes and features identified in the medium city TOD case studies from the following case studies and the literature review:

- Court House Metro Station, VA
- Del Mar Transit Village, CA
- Downtown Plano, TX
- Orenco Station, OR
- Galatyn Park, TX
- 5th Street Crossing, TX

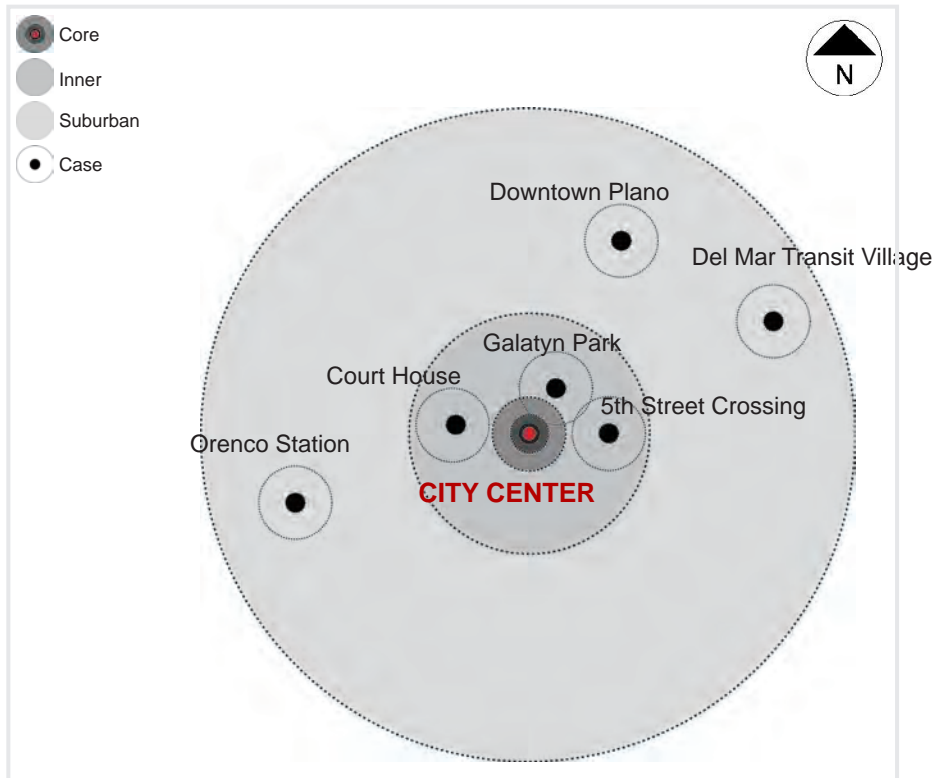
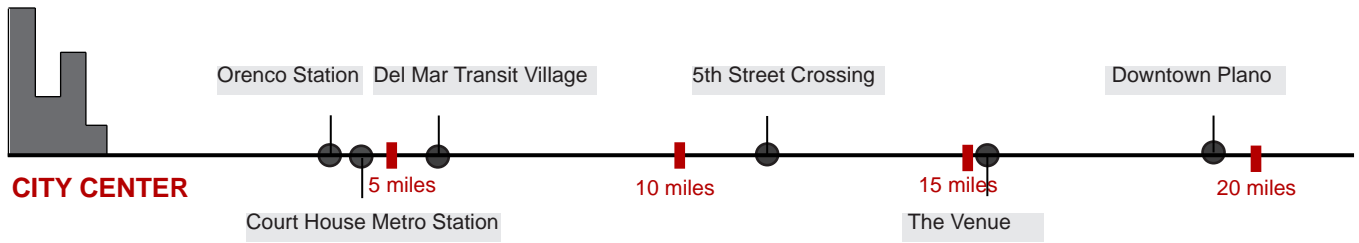


Figure 3.55: Location comparisons diagrams, relative to Medium city center



SUMMARY FINDINGS FOR MEDIUM CITY TODS AND TODtS

CONTEXTS AND TYPOLOGY

SOCIAL, ECONOMIC AND ENVIRONMENTAL CONTEXTS

The medium city TODs in this chapter tend to exist within contexts ranging from suburban to general urban areas that typically correspond to general urban transect of T4 to suburban transect of T3, according to transect planning (CNU, 2010). The medium cities are typically inner tier to outer tier communities. They are typically projects in existing communities or old town centers surrounding a major city. Transit oriented development projects in existing communities and old town centers are likely to reutilize existing infrastructure and potentially reduce demand for land at or beyond the urban fringe. These projects typically evolve as a densification of urban and suburban areas in the greater metropolitan areas.

TOD in medium cities surrounding metropolitan areas tend to function as suburban centers or suburban neighborhoods. Suburban centers function as primary office centers, entertainment centers, residential centers and retail centers. Densities for the suburban center TODs typically are greater than 50 dwelling units per acre. Regional connectivity is high as these TODs are subregional hubs providing access to urban core areas and other suburban centers and often have several transit options including rail, bus, bike and an emphasis on walking.

Suburban neighborhood TODs function as residential densification projects providing neighborhood retail and local office services. Residential densities are typically greater than 12 dwelling units per acre. Regional connectivity in such locations may provide connections to other modes of transportations and direct access to suburban centers.

The general urban TOD's typically function as urban neighborhood centers. Urban neighborhood TOD's often seem to function as centers and have a high concentration of residential, retail centers or office buildings. Densities are typically greater than 20 dwelling units per acre. Regional connectivity is rated as medium as these TOD's are part of the subregional circulation and typically have direct access to downtown and suburban centers.

Review of the case studies illustrated that medium city TOD projects are typically urban/suburban infill, grey/brownfield redevelopment, and district level revitalization projects. Strategic area plans and district level revitalization plans are often used in medium city TOD's to revitalize an historic CBD (See such as Plano, TX, case studies). However, some projects utilize other regulation methods, in the absence of a strategic TOD plan, to achieve a successful TOD (See Court House, VA). The foot-print of medium city TOD's in metropolitan areas seems to be relatively larger than large city TODs, ranging from single building projects to multiple block projects to district revitalization projects.

Existing freight rail and former street car right of ways (ROW) are used for the new rail ROWs. The rail lines once used for freight or streetcar are rebuilt most often with electric light rail.

MARKET

Although the vertical scale is relatively modest in comparison to large city TODs, the medium size cities are also typically associated with high-density mixed-use developments. Understanding of regional market dynamics for medium city TODs is an essential step for medium cities in large metropolitan areas. Market analysis usually initiated by private or public entities based on the concentration of the project (whether it is individual development or district level effort). Market demand studies performed by cities, counties and transit authorities are used to study, strategize, plan and market the areas around transit stations. Private market analysis are used by the private sector to deduce investment opportunities. Demographic and market trends point towards an increase in the demand of TODs.

CONNECTIVITY AND TRANSPORTATION

Regional and local connectivity for medium city TODs is essential for medium city. TODs developed in medium cities are typically a suburban hub or part of the subregional circulation with direct access to the urban core and other suburban centers. The existing street network ranges from a regular compact urban street network to a more suburban street network characterized by arterial and collector streets with relative larger block sizes. Connectivity to adjacent urban fabric is somewhat well established. Most transit stations are multi-modal stations that offer bus connections and bike facilities.

ZONING

Medium city TODs are more often developed with new, amended, or alternative regulation code as opposed to being a master planned community. The new regulations are typically a strategic TOD station area plan employing form based codes, district overlays, transect based codes, incentive zoning or amended conventional zoning. The zoning typically has intensity and density tools/entitlements that allow for, among others, more density, reduced parking, and a greater mix of uses than the original zoning did for the site.

LAND-USE

The medium city TODs are most often urban/suburban infill, brown/grey field redevelopment or district area redevelopment. The scale of the medium city TODs range from the single building to multiple block redevelopments.

Suburban center TODs tend to be primary office centers, entertainment centers, residential, and/or retail centers. Open space tends to be smaller spaces such as urban parks, pocket parks and public plazas. Suburban center TODs emphasize the street and vary between horizontal and vertical mixed-use.

The suburban neighborhood TODs are residential, neighborhood retail and local office suburban infill, brown/grey field redevelopment. Open spaces include tend to be community parks, urban parks and public plazas.

INTENSITY, DENSITY, AND DIVERSITY

Medium city TODs are typically larger in scale, on average, than large city TODs but are typically less dense in population, jobs, and built space. The density and intensity of suburban center and suburban neighborhood TODs are typically larger than those of its immediate context.

The contrast between the TOD and its surrounding context is quite noticeable in medium cities. TODs in medium cities are typically suburban infill or redevelopment sites that typically add intensity, density, and diversity to suburban areas. Suburban center TODs tend to be primary office, entertainment, residential, and/or retail centers with residential densities typically above 50 dwelling units per acre. Suburban neighborhood TODs tend to emphasize a residential intensity with neighborhood retail services and local office services. The heights, bulk, and massing of medium city TODs tend to be the highest in the city. Medium city TODs tend to offer more diversity and choices than the rest of the city. They tend to offer a greater range of housing choices including below market housing.

STAKEHOLDERS + OWNERSHIP

The term stakeholder is used here to describe anyone with an interest in the TOD. Interests range from the vested interests of owners, developers, and regulators to the relatively more passive interests of the general and specific public. The level of interest and involvement in medium city TODs seems to be high in most case studies reviewed in this research. Transit districts with strategic TOD area plans, typically involve medium cities soliciting community input for the development of the transit area plan. District level plans for the medium city TODs typically have a large amount of input from the government in terms of development ideas. In the absence of a strategic TOD plan there is less governmental input in terms of development ideas. Similar to other city sizes, major concerns raised by the general public include density, congestion, and safety. NIMBYism can be a likely attitude among the general public unless the process is engaging and benefits of the development are demonstrated clearly.

Ownership of the medium city TODs seemed to be single public ownership, single private ownership, or multiple ownership based on the case studies reviewed in this research. District planned TODs tend to be multiple ownership while set piece developments tend to be single private or public ownership. Land assembly seemed to be a common obstacle with single ownership set piece developments.

PROCESS

The review of the case studies illustrated that different levels of public stakeholder interest and involvement leads to varied processes and timelines for the realization of TOD projects in medium size cities. District level TOD tends to have a high degree of public stakeholder interest and involvement in the crafting of the strategic TOD plan therefore tend to require time. Once the planning and regulatory steps are completed, development process and timeline seem to be market driven with little to no additional public stakeholder development. In the absence of a strategic TOD plan the process tends to be one of regulatory input according to the zoning mechanisms and entitlements in place.

PARTNERSHIPS + FINANCING

Suburban center and suburban neighborhood TODs of medium cities tend to utilize partnerships and non-conventional financing mechanisms in order to create TODs. Public/Private partnerships, joint development programs, and community development corporations, in most cases, seem to be developed to ensure the initiation and the success of the project. Non-conventional financing mechanisms such as Tax Increment Financing and community investment financing are also used to develop infrastructure and community amenities. Tax abatements and self taxing jurisdictions are financial contributions to the investment of a project.

URBAN DESIGN

The findings of review of the medium city TOD case studies illustrate that these developments are typically regulated by a strategic TOD plan, zoning and land use controls, or guided by TOD, form based codes, or smart growth principles by the public or private parties involved in the development process. Therefore there is a balance of interest and concern from various parties about the urban form and the built environment.

Medium city TODs tend to be suburban infill, district revitalization/redevelopment (often revitalization of historic CBD), or grey/brownfield redevelopment such as redevelopment of malls or industrial sites. TOD project design in medium cities seem to be part of collaborative effort in the city centers, and set piece master planned developments in the periphery. These TODs are often designed from the bottom up and typically have to deal with some contextual restraints. Urban design elements typical of the medium city case studies are:

Architecture:

- Buildings are taller and have more massing and bulk than surrounding context but are shorter and smaller in scale compared to typical large city TODs
- Buildings nearly always front onto streets
- Architecture is contextually based, pattern based, or historically based
- Façade regulations control transparency, signage, material, etc.
- Diverse elevations
- Architectural permanence and flexibility is questionable

Landscape and Open Space:

- Small neighborhood parks, urban plazas, play courts over play fields
- Community gardens

Parking:

- On-street parking is nearly always entitled by right
- Surface parking is still prevalent but parking structures emerge as co-dominant storage method
- Reduced Parking Ratios for housing and commercial services
- Shared parking in large single owned parking structures
- Park and ride facilities for the transit stations begin to diminish here

Streets + Walkability:

- These TODs tend to be multi-modal with regards to transportation. They typically include 4 major transportation options: rail, bus, bike and walking
- Streets are often narrower than conventional development
- Streetscape is emphasized: furniture, shade, material and other amenities
- Smaller block sizes are often created from super blocks; otherwise the existing street grid is either utilized or extended
- Walkability within the development and connections to existing adjacent neighborhoods is emphasized

Sense of Place:

- Third places: a place of refuge other than the home or workplace where people can regularly interact with other people
- Cluster of uses that encourage interaction among people
- Variety of buildings and spaces
- Places to walk to
- Enclosure
- Landmarks

SMART FEATURES SUMMARY FOR MEDIUM CITIES:

The smart feature checklist is a hybrid list of attributes generated from the project and literature review of various TOD resources. Table 3.4 highlights some key commonalities and differences for six medium city TODs studied in this research. With some variations in level of concentration medium city case studies seem to highlight a majority of the items listed in the smart features list. The medium city TODs studied here seem to concentrate on existing communities and be sensitive to contextual elements of the build environment surrounding the stations. These cases also seem to be receptive to local and regional contextual issues.

Different than small and large city case studies, there seem to be more cases in the medium city size category that concentrate on joint development programs and non-traditional financing mechanisms. Yet there seem to be less adoption of alternative zoning mechanisms such as form based code among the case studies highlighted here. See Tables 3.4 to draw additional inferences concerning large cities.

TOD PROFILE SUMMARIES FOR MEDIUM CITIES:

TOD profile table included with each case study is a one page summary of key attributes for any TOD project in this report. Table 3.5, TOD Profile summary table for medium city case studies, provided at the end of this chapter is a quick reference to merged data which illustrate some of the commonalities and differences of case studies reviewed (See Table 3.5).

Table 3.4: Smart Features comparison table for medium city case studies


	COURT HOUSE	DEL MAR TRANSIT VILLAGE	DOWNTOWN PLANO	ORENCO STATION	GALATYN PARK	5TH STREET CROSSING
Strong vision	○	●	●	●	○	○
Response to regional context	●	●	●	○	○	●
Strategic Transit Oriented District plan	●		●	●		○
Alternative zoning mechanisms				●		○
Mix of major land uses	●	○	●	○	○	○
Essential uses and services	●	○	●	○		○
Range of housing choices	●	○	○	○		
Community and Public participation	○	○	○			
Joint development programs			●		○	○
Non-traditional financing mechanisms			●		○	○
Compact built environment	●	●	●	○	○	○
Sustainable architecture	○	○			○	
Context sensitive design	○	●	●	●	○	●
Multi-modal transportation options	●	○	●	○		○
Pedestrian emphasis	○	○	●	○	○	●
Station integration	○	●	○	○	○	○
Attention to place making		●	●	○	○	○
Environmental sensitivity	○	○	○	○	○	○
Development in existing communities	●	●	●	○	●	●
Non-conventional parking strategies	○	○	○	○	○	○

Key: ● Features highlighted by case study ○ Other principles illustrated □ Unknown or not illustrated

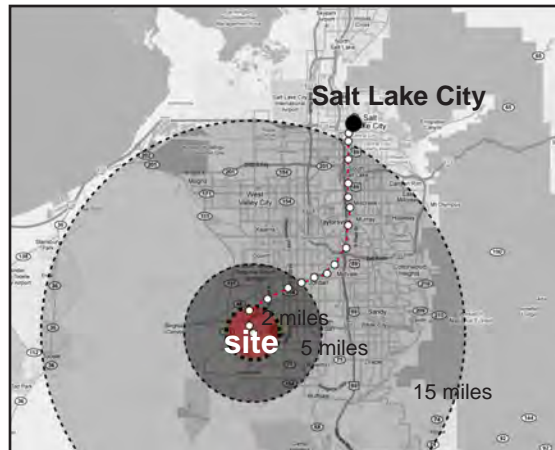
Table 3.5: TOD profile summary table for medium city case studies

	COURT HOUSE	DEL MAR TRANSIT VILLAGE	DOWNTOWN PLANO	ORENCO STATION	GALATYN PARK	5TH STREET CROSSING
CASE STUDY TYPE	District	Development	District	Development	District	Development
TRANSIT STATION	Court House Metro Station	Del Mar Station	Downtown Plano	Orenco Station	Galatyn Park Station	Downtown Garland Station
TRANSIT AGENCY	Washington Metropolitan Area Transit Authority	Pasadena Area Rapid Transit System	DART- (Dallas Area Rapid Transit)	TRI-MET Tri-County Metropolitan Transportation District of Oregon	DART- (Dallas Area Rapid Transit)	DART- (Dallas Area Rapid Transit)
PRIMARY TRANSIT	Light Rail, Bus	Light Rail, Bus	Light Rail, Bus	Light Rail	Light Rail	Light Rail, Bus
STATION STATUS	Built (1979)	Built (2003)	Built (2002)	Built (1998)	Built (2002)	Built (2002)
PROJECT TYPE	Urban Downtown	Urban Neighborhood	Suburban Center	Suburban Neighborhood, master planned community	Suburban Center	Suburban Center
TOD SIZE	240 acres	3.4 acres	1/2 mile radius, approx. 500 acres	209 acres	500 acres	3.4 acres
TOD STATUS	On-going	Complete (2006)	On-going	On-going	On-going	Complete (2009)
ZONING	Incentive zoning is used to attract private sector transit-oriented development	Unknown	Transit Village Plan (1998) Downtown Development Guide (1991)	A new zoning ordinance was written for the site.	Amended conventional zoning	Downtown Redevelopment Plan
INVESTMENT	Unknown	\$77 Million	\$50 Million+	Unknown	Unknown	\$22 million
PUBLIC PRIVATE PARTNERSHIPS	Unknown	Unknown	Yes	Unknown	Unknown	Yes
DEVELOPMENT SITE	Urban infill, greyfield redevelopment	Urban infill/ Redevelopment	Suburban infill, redevelopment	Suburban Infill	Suburban/urban Infill	Urban Infill, Historic Downtown Redevelopment
RESIDENTIAL	9,700 units	347 units	750 units	1,800 units	282 units	189 units
RETAIL	204,000 sq. ft.	20,000 sq. ft.	+/- 100,000 sq. ft.	25,000 sq. ft.	6,000 sq. ft.	13,500 sq. ft.
OFFICE	3,800,000 sq. ft.	200,000 sq. ft.	+/- 40,000 sq. ft.	Quantity unknown	1,800,000 sq. ft.	5,700 sq. ft.
PUBLIC/CIVIC	Plaza/pedestrian mall, Numerous government buildings	Civic plaza	Community park, renovated Main Street	Park, public square	2 acre public plaza, 8 acres of open space, trails	--
PARKING	Structured, on-street, surface	Structured, shared parking	Structured, on-street	On-street, surface	Structured, surface, shared parking	Structured, on-street, shared parking
OTHER	Hotel rooms 465	Park and ride facility, affordable housing, live-work housing, day-care	Existing municipal center, theatre, live-work housing	24 live-work town homes, Town Center	Performance arts and corporate presentation center, Hotel	--

4. SMALL CITY TOD CASE STUDIES

A photograph of a modern brick townhome development. The buildings are multi-story with large windows and balconies. A 'WRONG WAY' sign is visible on the street. There are parked cars and trees in the background. The image is overlaid with a semi-transparent teal bar at the top and bottom.

DAYBREAK, UT
THE VILLAGE AT LEANDER STATION, TX
RAHWAY TOWN CENTER, NJ
WEST HYATTSVILLE, MD
WESTMONT STATION, NJ
METROWEST, VA



Source: Calthorpe Associates, 2010

DAYBREAK STATION TOD		
Development Profile	Transit Station	2 Daybreak Stations (North and South)
	Transit Agency	Utah Transit Authority TRAX (Transit Express)
	Primary Transit Type	Light Rail, Express Bus
	Station Status	SoDa Row Village Center opened, 2008 Under construction (expected completion 2012)
	TOD Typology	Suburban Center (master planned community)
	TOD Name	Daybreak-SoDa Row Village Center
	Station Address	114th South and Bangerter High South Jordan, UT 84095
	TOD Size	45 acre TOD (4200 acre master planned community)
	TOD Status	Under Construction (completion 2012)
	City Population	51,131 (2008 U.S. Census Estimate)
	Developer	Multiple, master developer: Kennecott Land
	Ownership	Single, Kennecott Land
	Zoning	Community Design Guidelines
	Cost	Unknown
Stakeholder	Kennecott Land, Utah Transit Authority TRAX, City of South Jordan,	
Land-use	Development Site	Greenfield and Brownfield
	Residential	+/- 350 units
	Retail	+/- 70,000 sq. ft.
	Office	+/- 255,000 sq. ft.
	Public/Civic	Unknown
	Parking	On-street, surface
	Other	Fitness center, Live-work housing

4.1 DAYBREAK STATION, SOUTH JORDAN, UT

4.1.1 PROJECT BRIEF

Kennecott Land is composed of 93,000 acres and is a subsidiary of Kennecott Utah Copper, a mining company. During the early 1900s, Kennecott purchased large tracts of land for potential mining or to be used as a buffer between the mine and the growing community in the Salt Lake Valley. The land was never mined, yet bordering mining activities affected some parcels, leading to a period of remediation, restoration, and reclamation in the 1990s. Part of this land, which is integrally linked to the Salt Lake City region with freeway access and multiple transit options, is now being used for Utah's largest mix use Smart Growth community planned to be developed as a network of villages. Originally, the development was projected to be completed in 70 years, but that has later been revised to a 20 year build-out period.

Daybreak project anticipates developing a master planned community on 4,200 acres of land, providing a variety of housing options, public transit, offices, public amenities, green space and recreation opportunities, as well as natural resource conservation. This environmentally sensitive walkable network of villages designed around a transit hub is intended to reduce regional commute demands providing, the nearly equal balance of jobs to homes. The Utah Transit Authority has proposed two rail stations, to be completed in 2012, at Daybreak, on the Mid-Jordan Trax line linking the Daybreak development to the greater Salt Lake City metro area (Kennecott Land, 2007). Transit-oriented town center, known as SoDa Row, is built upon a 45 acre land is among the villages of the first phase of this large scale project. Although many of the proposed villages of this expansive development will be in distance from the stations, SoDa Row, is planned to be directly connected to the two stations as well as to the employment centers for the larger Daybreak master planned community.

4.1.2 PLANNING + DESIGN

Prior to planning and design, a long process of research was undertaken and examples from the United States were used as case studies to incorporate sustainability principles into the proposed Daybreak development. These principles included measures on the operation of developer during the construction process, but more to the point, they underwrite the urban design principles at SoDa Row, as in wider development. Key features of Daybreaks sustainable approach include land reclamation and soil remediation before the development, and adoption of energy and water conservation measures in the built-up environment (Kennecott Land, 2007). These measures included;

- The application of Energy Star Rating system in the construction of houses and public facilities: enhanced sealing package, high-performance insulation, sealed/insulated ductwork, high-efficiency furnaces, programmable thermostats and compact fluorescent light bulbs,
- Provision of sustainable landscapes including native/naturalized plantings, wildlife habitat and movement corridors and shade trees to reduce heat island effect, and
- The adoption of a water-management system: Kennecott has committed to catching 100% of the rainwater that falls on the site.

As in each village of the Daybreak, Soda Row was designed to be oriented towards the transit hubs and to be built to meet LEED® principles. Comprising 120 acres, the village center is anchored by big box commercial chains around the stations. The district offers approximately 1,200,000 square feet of retail space (Kennecott Land, 2008a). The SoDa Row Village Center with mixed use retail, employment and apartments is constructed between the proposed light rail stations. The prepared community design guideline for Daybreak establishes recommendations for multiple "place types" throughout the community, which will create a mixed-use walkable community with a full-range of services and public amenities. The place types include

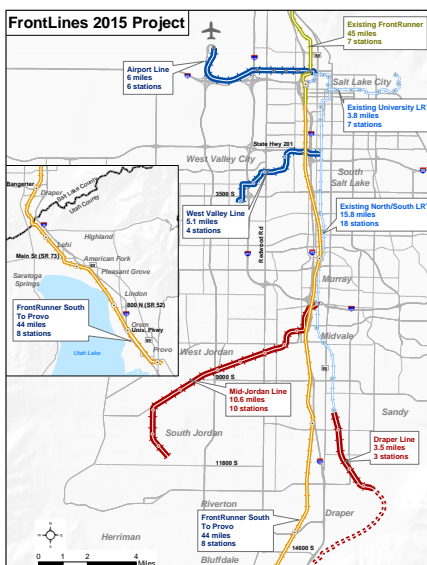


Figure 4.1 : FrontLines 2015 project
(Source: Utah Transit Authority, 2008)

various scales of civic, commercial, residential, and recreational uses. The guideline addresses connectivity, hierarchy mixed-use and diversity as important design features to be emphasized at Daybreak. The interconnected street grid network disperses traffic and eases walking. A hierarchy of narrow streets, boulevards and alleys is identifiable in line with the guideline. The largest streets have large trees and smaller trees are provided on the less traveled streets for people to orient themselves.

Parks and open spaces is an integral part of the plan. There is a network of trails leading from the Town Center to villages outside the Town Center area. The Oquirrh mountain range is located four miles from Daybreak. There is a hike and bike trail linking the two. The open space focal point is Oquirrh Lake located in the center of the community and fed by trails that circle the lake providing a network of pathways. The 67 acre Oquirrh Lake, with 1200 acres of open spaces and parks, is used for leisurely activities like walking, jogging, bicycling, canoeing and other water activities. The lake is also an instrumental part of the community's water-wise landscape program, which was honored with a Governor's Award for Quality Growth by Envision Utah in 2002 (Kennecott Land, 2006). The lake stores some of the water used to irrigate Daybreak's parks and open spaces. The bottom is lined with a tough, impermeable material that prevents water loss. The community also includes numerous pocket parks, open spaces, and playgrounds. The green townhouses, built to National Green Building Standards (NAHBGreen, 2010) near the north shore of Oquirrh Lake, demonstrate an "eyes on the street" design that provides an element of safety as well as reinforcing the site's character as a neighborhood.

A mix of village types and uses within the villages are employed at Daybreak. SoDa Row is the original retail core where residents will meet to eat, shop and mingle with the neighbors. Unlike many similar town centers in other New Urban influenced commercial areas, the designers of Daybreak's SoDa Row seem to have resisted creating a contrived Main Street model. By utilizing a unique and contemporary architectural solution (yet clearly based on the urban form of historic main streets) Daybreak's first village center, SoDa has a distinct character and sense of place.

4.1.3 PROCESS

During the period of remediation and restoration in the 1990's, Kennecott Copper hired national planning experts to evaluate the potential use of the reclaimed land in



Figure 4.2: Aerial rendering of DayBreak (Source: Calthorpe Associates, 2010)



Figure 4.3: Daybreak homes (Source: Design Workshop, 2009)



Figure 4.4: Village at DayBreak Street view rendering (Source: Calthorpe Associates, 2010)

the area of South Jordan. In 1999, a team of experts began a detailed evaluation of the potential for land development on Kennecott Utah Copper's entire West Bench land holding. Calthorpe Associates produced a general plan for the property. Kennecott Utah Copper began working with the city of South Jordan to enact zoning that would allow the large-scale mixed-use development on 4,126 acres. In 2001, Kennecott Land Company was established to focus exclusively on this development. The plan would provide for nearly 14,000 residential units as well as significant commercial entitlements, and more than 1,200 acres of parks and open space for the community to enjoy, making this the largest master-planned development in the history of Utah (Calthorpe Associate, 2010).

Transportation was of prime importance during the planning of this project. Kennecott's contribution to initiate the study of the rail line resulted in the proposal of the Mid Jordan line to the already existing Utah Transit Express. Utah Transportation Authority (UTA), the Federal Transit Administration, the Wasatch Front Regional Council, Kennecott Land Company, and the cities of Murray, Midvale, West Jordan and South Jordan became active partners developing the Mid-Jordan Light Rail Transit (LRT) Project. UTA officially broke ground and began initial construction activities on the Mid-Jordan line in May 2008. The 10.6-mile line, that is projected to be completed in 2012, will run down the existing Bingham Branch Industrial Spur Railroad corridor (Utah Transit Authority, 2008). The goal with the new line was to accommodate growth on the West Bench without lifting the pressure away from the Valley traffic. That was also the reason to promote a variety of transportation alternatives—from walking and biking trails to bus and light rail. They have planned for a main transit corridor to run through the heart of the West Bench, connecting all communities and employment centers. Kennecott contributed \$400,000 to kick start an environmental study of extending a light rail line from Downtown Salt Lake city to Daybreak. The plan is for a 20 mile string of densely packed walkable communities framing along the rural west side of Salt Lake County.

- 1999 Kennecott Utah Copper begins working with the City of South Jordan to enact zoning that would allow a large-scale mixed-use development on 4,126 acres.
- Kennecott contributes 400,000 to kick start an environmental study to extend LRT to Daybreak.
- Calthorpe Associates produces a general plan for the property.
- 2001 Kennecott Development Company is established by Rio Tinto to focus exclusively on this development.
- 2002 The company name is changed to Kennecott Land.
- 2007 The Eastlake Village and The Founders Village opens.
- 2005 Soil remediation for development started.
- 2006 The cleaning-up of the land from heavy metals ended.
- 2008 The SoDa Row Village Center opens.



Figure 4.5: Illustrative perspective of retail area of SoDa Row (Source: DayBreak Utah, 2009)

- 2008 The Utah Transit Authority begins construction of the Mid-Jordan TRAX light rail line from the existing Fashion Place TRAX station to Kennecott Land's Daybreak development in South Jordan
- 2009 The North Shore Village opens.
- 2009 The Garden Park opens.
- 2012 Expected completion of Construction of Mid-Jordan TRAX LRT.

4.1.4 CONCLUSION

Utah, Daybreak development is one of the largest examples of TOD planned to be developed on greenfield. Despite being developed outside the limits of the built-up area, it differs from typical suburban development. In effect, it is an ambitious plan of developing a whole city, relatively small in size, in accordance with principles of sustainability and TOD. The settlement pattern was designed as residential villages in and around employment cores (office, retail and public) cores those of which were fed by two transit stations. Most of the villages comprise only residences and dedicated open space. Modeled on the Andres Duany's iconic Seaside in Florida, one significant drawback of the development is its disregard of a diverse demographic based on income level and housing alternatives for those with lower income levels to live and work in the immediate community.

Smart Features of Daybreak Transit Oriented Development:

- oo Strong Vision
 - o Response to Regional Contexts
 - Strategic Transit Oriented District Plan
- oo Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
 - o Mix of Major Land Uses (Office, Residential, Retail, Civic)
 - o Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
 - o Range of Housing Choices
 - Community and Public Participation
 - o Joint Development Programs (Public Private Partnerships, etc.)
 - Non-traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- oo Compact Built Environment
- oo Sustainable Architecture
 - o Context Sensitive Design
 - o Multi-modal Transportation Options
 - o Pedestrian Emphasis
 - o Station Integration
 - o Attention to Place Making
 - o Environmental Sensitivity
 - Development in Existing Communities
 - Non-conventional Parking Strategies

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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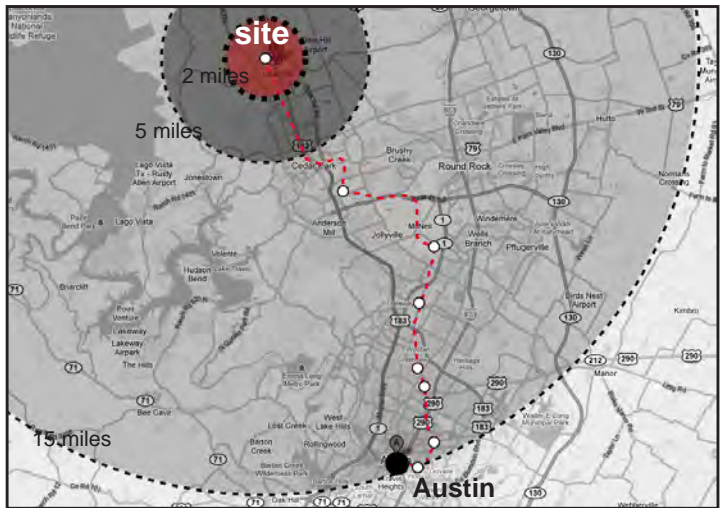
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Source: Gateway Planning Group, 2005

THE VILLAGE AT LEANDER STATION TOD		
Development Profile	Transit Station	Leander Station
	Transit Agency	Capital Metro
	Primary Transit Type	Commuter Rail, Express Bus
	Station Status	Built (2010)
	TOD Typology	Suburban Center (master planned community)
	TOD Name	The Village at Leander Station
	Station Address	800 N. US 183, Leander, TX 78641
	TOD Size	67 acre TOD core -- (2300 acre master planned community)
	TOD Status	Planned, on-going
	City Population	24,500 (2009 U.S. Census Estimate)
	Developer	Single, Hughes Capital Management, Inc
	Ownership	Multiple
	Zoning	Leander Smart Growth Plan with approved TOD plan in concert with Transect Zoning and Planned Unit Development (PUD) Overlay
	Cost	Over \$50 million in private investment
Stakeholder	Hughes Capital Management Inc., City of Leander, Capital Metro Rail, Leander Transit Interests, LLC	
Land-use	Development Site	Greenfield, redevelopment of historic downtown
	Residential	Unknown
	Retail	1 to 1.5 million sq. ft.
	Office	500,000 to 1 million sq. ft.
	Public/Civic	Elementary school and recreational trails
	Parking	On-street, surface
	Other	Entertainment, grocery store, park and ride facility

4.2 LEANDER - AUSTIN, TX

4.2.1 PROJECT BRIEF

In 2005 the city of Leander adopted a 2,300-acre community plan to encourage Leander to become a more dense, walkable and pedestrian-oriented community. The project vision was influenced primarily by several New Urbanism and transit-oriented development precedents in the DC area, and Andres Duany's SmartCode workshop in San Diego (City of Leander, 2004).

The first development at Village at Leander Station is planned to be a 67-acre transit-oriented development adjacent to the transit station and part of the envisioned commercial and cultural core to the larger 2,300-acre planned community for Leander. This TOD is proposed to be within a 5 minute walk from the station, and planned to be a high density mixed-use development.

In 2007 the MetroExpress Bus Park & Ride facility opened with 600 surface parking spaces. In late 2010 the MetroRail commuter line opened and linked Leander Station to Downtown Austin. Leander became the northern terminus of the first Austin metro area commuter rail line, the RedLine. The RedLine is a 32-mile starter line that provides service to commuters during peak morning and afternoon hours. MetroRail operates on existing freight tracks and has nine stations from Leander to Downtown Austin. The new station also retained the express bus service.

4.2.2 PLANNING + DESIGN

Capital Metro, the City of Leander, and Leander Transit Interests, LLC, have been developing plans for a 67-acre site adjacent to the transit station, designed by nationally recognized firm Torti-Gallas Partners, as the town center for the larger 2,300 acre planning area (Leander, 2004). The city adopted the Leander Smart Code to guide specific development characteristics within the planning area, as well as the larger development area. Together the Leander Smart Code and physical master plan are the basis for planned approvals for future uses, creating a new, urban, high-density, mixed-use, walkable, pedestrian-friendly town core. This SmartCode is based on the principles required to build traditional neighborhoods, using the rural to urban 'transect' as a descriptive and measurement tool.

Gateway Planning Group performed a market analysis and introduced the planning process, recognizing the target groups "empty nesters" and "young professionals" with their preferences for the physical environment of the Leander TOD such as smaller dwelling sizes. Development strategies suggested the SmartCode template, which is calibrated later into an Urban Design Code. (Gateway Planning Group and Placemakers L.L.C., 2005).

The development team, with the support of community input, envisioned sustaining and enhancing a small town character and feel for the TOD. Some areas of The Village at Leander Station have been underway in advance of completed design documents for the development of site-specific infrastructure. The Park and Ride facility has been retained, although the surface parking lot is planned to be replaced with structured parking.

Efforts have been focused to plan and provide for pedestrian and bicycle trails along the rail corridor connecting Austin to Leander with multi-modal transportation options via the rail corridor. Capital Metro committed over \$7.2 million of its transit sales tax to trails development (Capital Metro, 2007). Planning and construction of a network of pedestrian and bicycle trails along the corridor between Leander and Austin was done prior to any construction of the TOD.

4.2.3 PROCESS

In the fall of 2003, Leander city officials, Capital Metro officials and other Central Texas leaders travelled to the Washington, DC metro area to evaluate exemplary



Figure 4.6: Rendering of residential redevelopment of the old town (Source: Gateway Planning Group. 2005)



Figure 4.7: Rendering of Promenade at Leander Transit Village (Source: Gateway Planning Group. 2005)

New Urbanist and transit-oriented developments in the area. A few months later Leander Councilman David Siebold attended Duany’s SmartCode workshop in San Diego. These preliminary evaluations convinced the stakeholders that with a new urbanist/transit-oriented development strategy, coupled with the 2004 voter approval for the MetroRail Redline, Leander could harness the expected population growth in an attractive way while preserving the small town character of Leander (Leander, 2004).

Soon thereafter the City of Leander sought feedback from landowners in the planning area for their interest in developing their land with a new urban approach. City staff began to explore opportunities for public private partnerships to finance the necessary infrastructure and public spaces needed for the development of the urban village concept. The leadership of Leander and Capital Metro called for the new growth to be “based on mixed-use neighborhoods that are walkable and sustainable - the kind of neighborhoods where the young, the professional and the retired alike, can live a fulfilling lifestyle” (City of Leander 2004). The consultant team and city staff recognized Leander as an opportunity to develop a high-density, mixed-use, walkable, sustainable site that would otherwise be destined for classic sprawl.

The landowners and public stakeholders of Leander agreed to support the creation of a vision for the 2,300 acre planning area, as well as the tools necessary to realize that vision. This partnership directly involved the community in the decision-making for place character and community image.

The consultant team and city officials held an initial plan development meeting/charrette to identify what areas would be impacted by the proposed transportation improvements, other areas that should be considered in the development proposal, and a preliminary effort at a regulating code based on Duany’s trademarked SmartCode.

The consultant team and city staff again consulted the major landowners to present their planning process and objectives, and to determine the landowner’s interests in participating in a detailed planning effort. Positive reactions from the landowners led



Figure 4.8: Rendering of mixed-use development at Leander Transit Village (Source: Gateway Planning Group. 2005)

the consultant team and city staff to follow up with the major landowners individually to ascertain their individual needs and concerns. The certainty of form and character of development adjacent to their properties, as well as the flexibility of the proposed code was received positively by the landowners, and the consensus was to proceed with the creation of a detailed planning and code effort (City of Leander 2004).

The consultant team and city staff also used market studies and a fiscal impact analysis to compare their new urban strategy versus a traditional development build out. These early steps also identified likely partnerships in financing the infrastructure as well as legislation action that would be needed to pursue and ensure the vision developed earlier (Gateway Planning Group and Placemakers L.L.C., 2005).

The consultant team and the City of Leander, as part of The Leander TOD Unified Development Code (UDC) Initiative, developed a detailed physical master plan and regulating code for the entire 2,300-acre planning area. Duany's SmartCode (form based code) would be used as a template, regionally adapted, in developing the UDC. The UDC would serve as the regulating plan for the neo-traditional master plan. In 2005, Leander replaced its existing zoning and subdivision ordinances within the 2,300 acre planning area with the Leander SmartCode.

The station originally opened in 2007 as a 600-parking space (surface) Park & Ride Express bus service facility and will continue bus service with the opening of rail. This Park and Ride facility serves as a port for up to seven rapid bus terminals. The Leander rail transit station opened late 2010 linking Leander to Downtown Austin and the station has continued express bus service. Vaught suggested that once the roads are finished (estimated mid-2010) Leander's TOD will have a "landing strip for development." (Vaught, 2009).

Brief timeline of the Leander TOD as follows:

- 2003 City and Capital Metro officials visit DC to study precedents.
- 2004 Leander TOD Unified Development Code Initiative Phase 1 report
- 2005 Leander Smart Code is adopted replacing existing development. ordinances.
- 2007 H-E-B Plus! 280,000 sq. ft. of business space, including 150,000 sq. ft of grocery, opened.
- 2007 Capital Metro Leander Park & Ride, opened.
- 2007 Subdivision Ordinance was adopted by the mayor of the City of Leander, John D. Cowman.
- 2008 The Village of Messina. 317 acres where US 183 joins 183-A Toll. Mixed-use development including 45 acres of commercial growth and 750 residential lots. Model homes open.
- 2008 Leander Transit Village. 160 acres around the Capital Metro Park & Ride. Mixed-use development including commercial and residential growth within walking distance of station. First phase opens.
- High Point Business Park. 141 acres, a portion in the edge of the TOD, west of US 183. Possible home for Capital Metro's rail cars, showroom space and flex buildings.
- 2009 The first concept plan for new development in the TOD was approved by the Leander Planning & Zoning Commission.
- 2010 Toll road finished 2010.
- 2010 Commuter rail Opens.

4.2.4 CONCLUSION

Leander is currently a small city but lies in a projected growth corridor in the Austin metro area. City officials and transportation authorities identified the current infrastructure as inadequate for the projected development boom. As an alternative to traditional suburban development, that characterizes the recent growth of the Austin metro area, city officials, Capital Metro, and other interested parties propose an alternative solution based on high-density, mixed-use, pedestrian friendliness,

and transit options linking Leander to Austin. Public participation and public/private partnerships were instrumental in putting together a vision and a regulatory device to ensure the vision. Although not completed, The Village at Leander Station could prove to be a seminal example of how to harness the growth corridor coming out of the CBD in an environmentally, economically and equitable manner.

Leander is a critical TOD case study from which some additional lessons can be drawn because it attempts to harness growth in a greenfield, 32 miles from the nearest source of density, with smart growth policies and new urbanist principles, which are relatively new concepts for the state of Texas. Although Leander does not necessarily meet two of the idealized TOD characteristics: 1) to infill, redevelop and adapt/reuse in built-up areas; and 2) efficient management and expansion of infrastructure (Porter, 2002), it attempts to respond to growth with new urbanist strategies that would concentrate the densities in a more centralized location and encourage multi-modal connections in its transit district.

Smart Features of Leander Station Transit Oriented Development:

- o Strong Vision
- o Response to Regional Contexts
- oo Strategic Transit Oriented District Plan
- oo Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- o Mix of Major Land Uses (Office, Residential, Retail, Civic)
- o Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
- o Range of Housing Choices
 - Community and Public Participation
- o Joint Development Programs (Public Private Partnerships, etc.)
 - Non-traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- o Compact Built Environment
 - Sustainable Architecture
- o Context Sensitive Design
- o Multi-modal Transportation Options
- o Pedestrian Emphasis
 - Station Integration
- o Attention to Place Making
- o Environmental Sensitivity
 - Development in Existing Communities
 - Non-conventional Parking Strategies

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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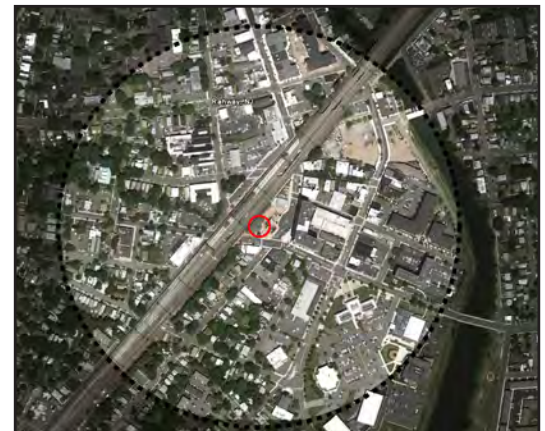
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Source: Google Map, 2010a

RAHWAY TOWN CENTER TODt		
District Profile	Transit Station	Rahway Station
	Transit Agency	New Jersey Transit
	Primary Transit Type	Commuter Rail, Bus
	Station Status	Built (1999) renovated (2006)
	TOD Type	Urban Neighborhood
	TOD Name	Rahway Town Center
	TOD Location	Milton Avenue between Irving and Broad Streets, Union County, 07065
	TOD Size	+/- 500 acres (1/2 mile radius from Transit Station)
	TOD Status	On-going
	City Population	28,189 (207 U.S. Census Estimate)
	Developer	Multiple
	Ownership	Multiple
	Zoning	County TOD planning regulations
	Cost(\$)	\$13 Million – Rahway Station \$1.5 Million – Plaza \$105 Million privately invested within ½ mile radius of Station (1999-2003)
Stakeholder	NJDOT, New Jersey Transit, NJ Commerce & Economic Growth Commission, NJ Department of Community Affairs, Rahway Redevelopment Agency, Diversified Communities, LLC (redeveloper), Private Public Partnerships: DeBartolo Development, NJ Redevelopment Authority, NJ Department of Environmental Protection Payment in Lieu of Taxes (PILOT) agreement between Landmark and Rahway which allows for a 20 percent abatement for five years.	
Land-use	Development Site	Infill, greyfield redevelopment, brownfield redevelopment
	Residential	1800 units
	Retail	150,000 sq. ft.
	Office	3,741,322 sq. ft.
	Public/Civic	Civic Plaza, outdoor theatre, police station
	Parking	Structured parking, on-street, surface
	Other	Hotel 102 rooms, for-sale housing, affordable housing



Figure 4.9: Image of the station area
(Source: NJ Rahway, 2009)

4.3 RAHWAY TOWN CENTER, RAHWAY, NJ

4.3.1 PROJECT BRIEF

The city of Rahway is located within New York city-region along NJ Transit's North-east Corridor, connecting New Jersey to New York City. The commuter station of Rahway is 15 miles from Manhattan and 35 minutes train ride from New York's Penn station. The catalyst for this particular district, and perhaps for the city to break away from its long standing stagnant past, was the decision to adopt smart growth principles, and the inclusion the City of Rahway to the Transit Village program (Transit Friendly Development, 2008, December; New Jersey DOT, 2010). It was enacted by the State of New Jersey to encourage economic development, urban revitalization and private-sector investment with mixed-use around passenger rail stations. Although the passenger line was operational for many years, it was after a series of public investments including the rebuilding of the station in 1999, completion of the public plaza next to the station, and the renovation of the arts center, the city became the focus of new development (New Jersey DOT, 2008). The plaza, built in 2001, besides serving as a gathering place at the entrance to the station, started to serve as the city's center—becoming a weekly farmers' market, as well as fairs and musical events. (New Jersey DOT, 2008). Along with the civic plaza, the City introduced façade and streetscape improvements and additional traffic-calming measures that prioritized pedestrian movement in the area around the station. According to ridership figures declared by New Jersey TOD (2008), more than 3,200 passengers on average board the trains at the station each weekday.

4.3.2 PLANNING + DESIGN

New Jersey Transit, created in 1979 to act as a regional governing body for the delivery of transit service throughout the state, began working with community governments that approached the transit provider with questions on how to link land use and public transportation. In collaboration with municipalities, the agency introduced Transit Village Initiative to encourage growth and development around existing public transportation. Rahway began pursuing its TOD plans in the late 1990s and has transformed the area around the station with new land-uses that include mixed-use and higher density structures such as a hotel and high-rise housing. Other inward investments followed and what began as a station renovation project, and a relatively small investment in infrastructure by the City of Rahway, eventually turned into some 1,800 mixed income housing units built within walking distance of the train depot.

Both the initiation of the Transit Village Program of New Jersey, and later the Smart Growth Program, have triggered a new set of development around the station. One of earliest projects was the Silicon Group's Carriage City Plaza situated at the east of the station plaza that combined retail, housing and a hotel. Since its start in 2005, the 16-story, 385,000-square foot tower makes good use of its site and the opportunities afforded by intensive mixed-use development. The Indigo Hotel is a 102-room hotel that is part of the Indigo boutique hotel chain. The hotel was the first of the brand to open in New Jersey. The hotel is marketed to business travelers as well as families, and focuses upon what might be called a "hip urban" customer base.

The location of this facility is a selling point—easy access to Manhattan, Newark International Airport and the Jersey Shore. (New Jersey DOT, 2008). The building's first and second floors house 21,000 square feet of retail space, a third of which is



Figure 4.10: Image of river walk at Rahway (Source: Transit Friendly Development, 2006, June)

reserved for an upscale restaurant. The remainder of the building is devoted to 209 condominiums—88 one-bedroom units and 121 two-bedroom units ranging in size from 800 to 1,200 square feet, as well as 13 penthouses (Transit Friendly Development, 2008, December).

A more recent development was the Park Square project by Landmark Properties that accommodates rental apartments in a pair of four-storey buildings. This mixed-use residential and retail project is in the city's newly formed arts district, midway between the station and the recently renovated Union County Performing Arts Center. A unique feature to the project's design is the introduction of a new street through the center of the site which enables each of the project's units to have street frontage (Transit Friendly Development, 2008, December). The design of this new internal street comprises a landscaped roundabout that helps to ease the traffic flow within the site.

4.3.3 PROCESS

In 1999, A Smart Growth Planning Grant program was established, appropriating \$3 million per year in state funds for several years for grants to counties and municipalities to assist local efforts to incorporate State Plan and "smart growth" principles in local planning and development regulation (New Jersey DOT, 2008). In 1999, the Transit Village Initiative was begun, (spearheaded by then-Governor, Christine Todd-Whitman) and in 2002, Rahway was designated as a Transit Village.

City officials played an active role in encouraging TOD by pursuing public-private partnerships through utilizing infrastructure investment and direct subsidies. City leaders often waived upfront costs or short-term expenses owed by developers, in return for payments and/or profit share over an extended time frame. In other instances, the City helped developers by assembling parcels needed to bring about a desired development. Both approaches allowed for the developers to get over the potential setbacks in application. This, in turn, triggered a spillover effect that encouraged the revitalization of downtown Rahway and redevelopment of neighboring properties.

- 1835 Penn Central Railroad is established in Rahway.
- 1974 Penn Central passenger station is constructed.
- 1990 James J. Kennedy is elected as city mayor.
- 1990 Mayor Kennedy creates the Rahway Center Partnership to revitalize the city's central business district.
- 1999 A Smart Growth Planning Grant program is established.
- 1999 Transit Village Initiative is initiated begins (Spearheaded by then-Governor, Christine Todd-Whitman)
- 1999 Rahway Station is renovated.
- 2001 Station plaza is built.
- 2002 Rahway designated as a Transit Village meant it would qualify for State and Federal funding meant to revitalize city centers.

4.3.4 CONCLUSION

New Jersey is considered a leader in smart-growth strategies, which include a state-wide land-use planning and an aggressive preservation of agricultural lands. These policies are, in-part, credited with having driven up real estate prices in the inner city and forced developers to focus on denser infill projects. Strong public-sector advocates, proactively seeking to strengthen inner-cities to limit sprawl, seemed to be the agents of transit development and change in Rahway. Establishing programs like Smart Growth Planning Grant program seem to provide the necessary funding by appropriating \$3 million per year in state funds for several years for grants to counties and municipalities to assist local efforts to incorporate State Plan and "smart growth" principles in local planning and development regulation. (New Jersey DOT, 2010a).



Figure 4.11: Rendering of town center
(Source: TimHass Architects. 2008)



Figure 4.12: Rendering of town center
(Source: TimHass Architects. 2008)

This particular case illustrates that political leadership is one of essential ingredients of a successful city center redevelopment. Unlike many North Texas cities, Rahway, New Jersey, has no mayoral term limits. No term limits for New Jersey mayors have also contributed to Rahway's success as there have been no abrupt changes in direction or policy. Mayor Kennedy has been the mayor of Rahway for eighteen years. Practically, this has meant that he has been able to implement his vision and maintain policy direction for his hometown over a sustained period of time.

Additionally, strong interventions by the state of New Jersey to limit sprawl and the destruction of agricultural lands, in addition to a commitment to conservation, have contributed to vitalizing the city center. As the Transit Cooperative Research Program sponsored by the Federal Transportation Administration points out, "In New Jersey, smart-growth policies, like transit village initiatives and farmland protection, have been driven by economic development concerns every bit as much as conservation considerations. An affordable-housing crisis and continually worsening traffic snarls, officials fear, will prompt businesses to leave the state and choke off economic investment" (Cervero, 2004).

One other feature of Rahway that deserves attention is the approach developed for parking around TOD station. While the requirement was kept as low as 1.1 parking space per housing unit from the developer, Rahway Parking Authority sold and transferred its development rights for a particular parcel of land and then utilize the funds received to build structured parking facilities that would serve for out-site commuters.

Smart Features of Rahway Town Center Transit Oriented District:

- o Strong Vision
- o Response to Regional Contexts
 - Strategic Transit Oriented District Plan
- oo Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- oo Mix of Major Land Uses (Office, Residential, Retail, Civic)
- oo Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
- oo Range of Housing Choices
 - Community and Public Participation
- o Joint Development Programs (Public Private Partnerships, etc.)
- o Non-traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- o Compact Built Environment
- o Sustainable Architecture
- o Context Sensitive Design
- o Multi-modal Transportation Options
- o Pedestrian Emphasis



Figure 4.13: Image of Rahway (New Jersey DOT, 2008)

- o Station Integration
- o Attention to Place Making
- o Environmental Sensitivity
- oo Development in Existing Communities
- o Non-conventional Parking Strategies

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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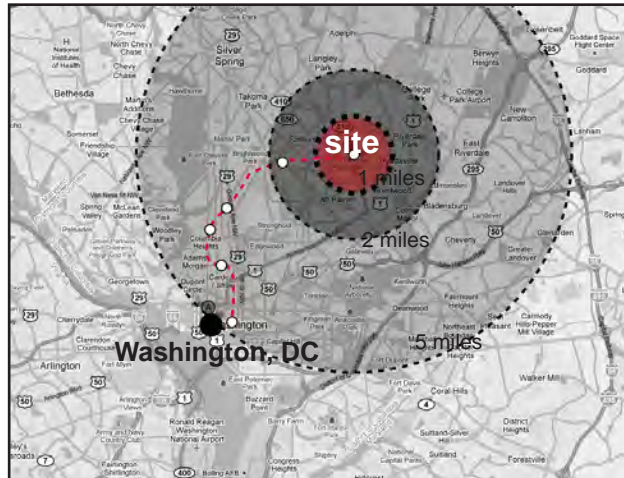
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Source: Ehrenkrantz Eckstut & Kuhn Architects, 2010

WEST HYATTSVILLE COMMONS TOD		
District Profile	Transit Station	West Hyattsville Metro Station
	Transit Agency	Washington Metropolitan Area Transit Authority (WMATA)
	Primary Transit Type	Light Rail, Bus
	Station Status	Built (1993)
	TOD Typology	Suburban Center (master planned community)
	TOD Name	West Hyattsville Transit District
	Station Address	2700 Hamilton St. Hyattsville, Prince George's County, 20782
	TOD Size	+/- 203 acres 44.5 acres (Commons Development)
	TOD Status	Planned
	City Population	15,604 (2009 U.S. Census Estimate)
	Developer	Multiple
	Ownership	Multiple
	Zoning	County development regulations emphasize TOD
	Cost	Station and parking garage \$16 million, Flood Plain Mitigation \$5-7 Million, Promenade \$2 Million Community Center \$2-5 Million
Stakeholders	Centex Homes and Gunston Hall Realty, the City of Hyattsville solicited community input. Private Public Partnership: Washington Metropolitan Area Transit Authority (WMATA) and Centex Homes and Gunston Hall Realty	
Land-use	Development Site	Suburban infill
	Residential	3600 units
	Retail	60,000-85,000 sq. ft.
	Office	1,000,000 sq. ft.
	Public/Civic	Public Square, new lake with water front access/amenities, Hike/Bike trails, public park, recreation fields
	Parking	Structured parking, on-street, surface, parking management strategy
	Other	Bicycle facilities, park and ride facility



Figure 4.14: Aerial of West Hyattsville, Maryland (Source: City of Hyattsville, 2008)



Figure 4.15: Master plan of West Hyattsville (Source: City of Hyattsville, 2008)



Figure 4.16: Image of Hyattsville Maryland (Source: City of Hyattsville, 2008)

4.4 WEST HYATTSVILLE TRANSIT DISTRICT, HYATTSVILLE, MD

4.4.1 PROJECT BRIEF

The West Hyattsville Transit District is located in Prince George’s County, Maryland, encompasses approximately 203 acres of underutilized and undeveloped land, and includes the West Hyattsville Metro Station (elevated platform). The transit district is guided by the West Hyattsville District Development Plan (TDDP) and its accompanying overlays. The plan promotes the TDDP as “an unprecedented opportunity to attract new jobs and residents on underutilized land around an existing Metrorail Green Line station” (West Hyattsville, 2006).

West Hyattsville Metro station is one of four stations on the Metro green line that serve northern Prince George’s County and is located just minutes north of the District of Columbia. The Metro Green Line does not connect directly to DC but connects to the Red Line, at the Fort Totten Metro Station.

The station was built in 1993, but the area around the station has remained underutilized even though existing county and city land use policies support the development of TOD. The West Hyattsville TOD Strategy Report acknowledges this issue: “because it is located within the Capital Beltway, but is outside downtown DC, West Hyattsville has suffered from ‘developer aversion’. It is a situation faced by other Metrorail stations in first tier suburban locations around the Metropolitan region, some of which have similarly lagged in their attempts to realize any appreciable level of desirable, quality development” (Maryland DOT, 2003).

Despite existing policies that promote TOD, development currently within the West Hyattsville Transit District is the kind of development one would expect from single-use Euclidean zoning. There a number of aging, small-scale, automobile-oriented commercial developments, and a few concentrations of multi-family housing that, while within walking distance of the West Hyattsville transit station, are not necessarily transit-oriented.

While no new major development has occurred in the area since the opening of the station, market interest in the site has been growing. The market for Prince George’s



Figure 4.17: Building elevations at West Hyattsville (Source: City of Hyattsville, 2008)

County's undeveloped Metrorail station joint development sites has heated up since 2000 as similar sites in other local jurisdictions have been built out. This change in the market has resulted in serious developer interest in the West Hyattsville Metro area (West Hyattsville, 2006).

The 2006 approved West Hyattsville TDDP contains "a comprehensive development vision, development review process requirements, and form-based development standards and guidelines" (West Hyattsville, 2006). The TDDP controls the development of all land within the Transit Overlay Zone (TDOZ).

In 2008 the conceptual site plan for the West Hyattsville Commons was approved by the Prince George County Planning Board. The 44.5 acre plan, including 27.5 acres of WMATA owned property, is a transit-oriented, mixed-use development that aims to develop 60,000 to 85,000 square feet of retail, about 200,000 square feet of office space, a 15,000 square-foot community center and up to 1,400 residential units (Prabhu, 2008). The proposal is the result of joint development program of Centex Homes, Gunston Hall Realty and Metro.

4.4.2 PLANNING + DESIGN

Prior to 2003 the State of Maryland retained Parsons Brinckerhoff (PB) to analyze the TOD potential for the area surrounding West Hyattsville Metrorail station. The planning effort produced a development strategy and build out scenario "for a transit village with 3,600 to 3,700 residential units, 1 million square feet of commercial space, and an extensive system of parks and open spaces" (PBDF, 2011).

The result of the Parsons Brinckerhoff planning effort resulted in the approval of the amended West Hyattsville TDOZ and TDDP. The West Hyattsville TDDP presents moderate-to-higher density development that is compatible to its context. The land use pattern is designed to be transit supportive; the mix of land uses and a modified-grid pattern of streets form the framework for the village.

Four key elements of West Hyattsville TOD strategy support the transit-oriented development at West Hyattsville: Neighborhoods, Environment, Transportation, Low Impact Development (LID) (West Hyattsville, 2006).

The TDDP features a compact, mixed-use, pedestrian friendly environment; a restored, continuous, comprehensive, hydrologically and ecologically performing park system along both sides of the two creeks that traverse the site; a Main Street intended to be the cultural and commercial core of the 3 planned, residential neighborhoods, and a Metrorail transit station as part of one of the sites dominant "village greens".

Taken together, the TDOZ and TDDP aim to encourage transit-oriented development that "increases the use of public transit, maximizes return on investment in transit facilities and services, encourages appropriate development near transit stations with coordinated urban design elements, and increases local tax revenues" (City of Hyattsville). The stated purpose of the West Hyattsville TDDP is "to provide a clear and predictable path for transit-oriented development within the West Hyattsville Transit District Overlay Zone" (West Hyattsville, 2006).

The plan for the West Hyattsville TOD incorporates qualities of a traditional village neighborhood and includes a robust mix of uses (including civic amenities), home choices, commercial retail services and employment opportunities. It is planned to be walkable and human scaled, and a safe and pleasurable place to visit, live and play (Maryland DOT, 2003)

The first significant development proposal for the West Hyattsville Transit District is West Hyattsville Commons. The 44-acre development site has a mix of ownership (with the WMATA owning 27.5 acres) and is a joint development program of Centex Homes and Gunston Hall Realty. The plans for West Hyattsville Commons aims to develop 60,000 to 85,000 square feet of retail, about 200,000 square feet of office

space, a 15,000 square-foot community center and up to 1,400 residential units (Prabhu, 2008).

4.4.3 PROCESS

The history from the decision to build the West Hyattsville Metro station to the proposed development of the West Hyattsville Commons is a rather long one. In 1984 the District Council of Prince George County created the Transit District Overlay Zone (TDOZ) “in order to address the problems of sprawl, traffic congestion, depletion of environmental resources, and the growing demand for housing opportunities” (West Hyattsville 2006).

The TDOZ and TDDP were applied to the West Hyattsville station in 1992, prior to the completion of the station in 1993, “with the provision that the plan be revisited in 6 years if implementation of the plan were not occurring” (West Hyattsville 2006). However, no new major development had occurred in the transit district since the West Hyattsville Metro station had opened. In 1998, with the original plan set to expire, the plan was revisited, revised, and reenacted to ensure that future development was true to the goals of the original TDDP.

Since 2000, several similar transit station areas in other local jurisdictions have been built out. Their success “has resulted in serious developer interest in the West Hyattsville Metro area” (West Hyattsville, 2006). The result of this increased interest was to revise the TDDP and TDOZ again in 2006 to better facilitate transit-oriented development in the West Hyattsville Transit District.

The process, culminating in the 2006 approval of the amended Transit District Development Plan, began with the State of Maryland retaining Parsons Brinckerhoff (PB) to analyze the transit-oriented development potential of the transit district. The planning effort was initiated by the state as part of its efforts to promote the implementation of smart growth and transit-oriented development projects at Metrorail stations in Prince George’s County (PBDF, 2011).

The PB-led evaluation involved site, market and financial analyses, as well as extensive public sector stakeholder involvement, including design charettes, and a forum to solicit input from developers. By their own admissions, PB “conducted extensive community and stakeholder outreach to evaluate the character of the community, establish planning goals for the area, develop potential alternatives, communicate analysis, gather feedback, and respond to input received” (PBDF, 2011).

According to the approved West Hyattsville Transit District Development Plan, “From its inception, stakeholder involvement has been critical to the planning effort



Figure 4.18: Rendering of streetscape at West Hyattsville, Maryland (Source: City of Hyattsville, 2008)

and has played a significant role in directing the formation of the process and the creation of the project. Numerous meetings and two design charrettes were held with representatives of WMATA, the Prince George's County Planning Department, the City of Hyattsville, MDOT and the Maryland Office of Smart Growth to ensure that the strategy honors local values and reflects the regional context. The station-area planning framework currently in place, and developed through a public process, provided the context for this study" (West Hyattsville, 2006).

This effort led to the formation, and selection, of a preferred site strategy and specific recommended implementation actions. The effort delivered a master plan detailed with principles, features, and benefits of transit-oriented development to the West Hyattsville Transit District as well as potential TOD sites across the county. PB provided project facilitation, including public design charrette workshops in developing (PBDF, 2011):

- An illustrative master plan
- A circulation framework
- An open space, parks and civic plan
- A neighborhood plan
- A parking plan and strategy
- An implementation strategy

The PB team also explored possibilities of how the State of Maryland's own TOD policies could assist the WMATA and Prince George's County in attracting private market interest and investment to the West Hyattsville Transit District as well as other underutilized locations within the county.

The PB planning study for the West Hyattsville Transit District delivered a development strategy with approximately 3,700 residential units, 1 million square feet of commercial space, and an extensive system of parks, open, and civic spaces (PBDF, 2011).

In 2008 the conceptual site plan for the West Hyattsville Commons was approved by the Prince George County Planning Board.

A general time line for the planning process is as follows:

- 1992 The TDOZ and TDDP were first applied to West Hyattsville station area
- 1993 West Hyattsville Metrorail station opens.
- 1998 The TDOZ and TDDP are revised and reenacted.
- 2003 West Hyattsville TOD Strategy is published.
- 2005 Metro, Centex Real Estate Corporation and Gunston Hall Realty, Inc. signed a Purchase and Sale Agreement.
- 2006 The TDOZ and TDDP are revised and reenacted.
- 2007 Prince George's County Council remanded plans for West Hyattsville Commons Planning Commission.
- 2008 The Conceptual Site Plan for West Hyattsville Commons was approved by the Prince George's County Planning Board.

4.4.4 CONCLUSION

The PB planning effort received the American Association of State Highway and Transportation Officials (AASHTO) National Best Project of the Year Award for excellence in smart growth and sustainable transportation. The study is considered a model for achieving sustainable urban regeneration through sensitive integration of environmental, transportation and socioeconomic considerations (PBDF, 2011).

Smart Features of West Hyattsville Commons Transit Oriented Development:

- oo Strong Vision
- oo Response to Regional Contexts
 - o Strategic Transit Oriented District Plan
 - o Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
 - o Mix of Major Land Uses (Office, Residential, Retail, Civic)
 - o Essential uses and services (child care facility, school, grocery, etc.)
 - o Range of Housing Choices
 - o Community and Public Participation
 - o Joint Development Programs (Public Private Partnerships, etc.)
 - Non-traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- o Compact Built Environment
 - Sustainable Architecture
- o Context Sensitive Design
- o Multi-modal Transportation Options
- o Pedestrian Emphasis
- o Station Integration
- o Attention to Place Making
- o Environmental Sensitivity
- o Development in Existing Communities
- o Non-conventional Parking Strategies

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

4.4.5 REFERENCES

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Source: DPZ, 2006

WESMONT STATION TOD		
Development Profile	Transit Station	Wesmont Station
	Transit Agency	New Jersey Transit
	Primary Transit Type	Commuter rail, bus
	Station Status	Built (1969) Rebuilt 2011
	TOD Typology	Suburban neighborhood (master planned community)
	TOD Name	Wesmont Station
	Station Address	1 Passaic Street Woodridge NJ, 07075
	TOD Size	150 acres
	TOD Status	Under construction
	City Population	7,462 (2009 U.S. Census Estimate)
	Developer	Multiple, master redeveloper: Somerset Development
	Ownership	Single: Somerset Development
	Zoning	Form based codes
Cost	Proposed project cost \$500 million	
Stakeholder	Wood-Ridge Development LLC, Somerset Development, Duany, Plater-Zyberk & Company (DPZ), Edward & Kelcey Engineers Inc, NJ TRANSIT, public participation	
Land-use	Development Site	Brownfield redevelopment, suburban infill
	Residential	788 units
	Retail	25,000 sq. ft
	Office	130,000 sq. ft.
	Public/Civic	8 Acres of recreation space
	Parking	Structured parking, on-street, shared parking
	Other	Public events plaza, middle school, affordable housing, live-work housing, community center, athletic fields, walking and bike paths



Figure 4.19: Schematic master plan for Wesmont TOD (Source: DPZ, 2006)

4.5 WESMONT STATION, WOODRIDGE, NJ

4.5.1 PROJECT BRIEF

Eleven miles from mid-town Manhattan and just three stops from Penn Station, Wesmont Station is a 152 acre TOD that was developed on a former Curtis-Wright airplane factory site in Woodridge. This largely abandoned site was the last remaining land at the county for redevelopment. Sized at nearly a third of its borough, the target with the project was to develop a new neighborhood anchored to the station for approximately 2,500 new residents, public amenities and a mixed-use town center. A wide variety of residential units, including detached single-family residences, townhomes, live-work units, condominiums and rental apartments featuring a variety of elevations was believed to attract primarily the types of households that would capitalize on the area's proximity to Manhattan. The rail-based housing was complemented by a town center with village retail and restaurants, an events plaza and a recreation complex. The new community train station that would be accessible to all borough residents was designed to be the centerpiece of the development. Increased connectivity with nearby neighborhoods through walking paths, bikeways and green space would help to meld the new community within the existing town fabric (DPZ, 2006).

4.5.2 PLANNING + DESIGN

As stated by the designers, the plan was inspired by some of the most acknowledged towns of the region, including Ridgewood and Radburn in New Jersey and Forest Hills in New York. The idea was to bring together the design features of traditional, neo-classical neighborhood and new urbanism in order to produce a sense of community by allowing civic and commercial uses to co-exist with the residential units. Wesmont Station was chosen to participate in the LEED for Neighborhood Development Pilot Program that reinforced the site's environmental quality.

Walkability, pedestrian health and quality of life are considered to be the central design criteria of Wesmont Station development. Every housing unit is placed to be within walking distance of the station and the facing plaza. Greenways have been developed to promote pedestrian travel from place to place and roadways have been designed to inhibit vehicular speed. Streetscape elements, such as pedestrian bridges, light fixtures, planters, benches, bike racks and extra-wide sidewalks were used to emphasize the site's anticipated identity as a pedestrian oriented community. The homes are situated to ensure security and sense of community at the same time. Wesmont Station preserves large areas of open space, walkable parks and over four miles of running and biking paths for the community, while using architecture and other site/design elements to create the atmosphere of a small town. Parking lots for commuters were kept to be less than two acres in size (New Jersey Future, 2006).

The development, which started in 2001, includes 737 residential units, 130,000 square feet of retail, a wide variety of housing, a public square, community center, a new middle school, walking and biking paths, and office and retail facilities all within a five-minute walk of a new planned train station that will connect with the Bergen Line commuter rail to Manhattan. The project is being built where there are already-existing water and sewer lines, several public schools, numerous bus routes, and Route 17. The housing at Westmont Station consists of 217 single-family homes, 135 rental apartments, 131 condos, 77 condo apartment units for people age 55 and older, 166 town houses, and 11 live-work spaces for artists and small entrepreneurs (DPZ, 2006).

4.5.3 PROCESS

The force behind Wood-Ridge Development LLC is Somerset Development of Lakewood, NJ, the firm named master redeveloper for the property by the Borough of Wood-Ridge in 2002. Working with the Mayor and Council of the Borough of Wood-Ridge and its local stakeholders, Somerset Development and renowned town plan-



Figure 4.20: Rendering of residential units at Wesmont Station (Source: DPZ, 2006)

ners Duany, Plater-Zyberk & Company have integrated participatory planning and design, also involving the local residents in the design process through design workshop sessions. This led to the creation of specific guidelines about the design of signs, the mass of buildings, the look of exterior light fixtures, roof pitches, windows and doors, siding materials and colors, porches, decks, and ornamental trim (New Jersey Future, 2006).

The construction was started later than the planned date, to remediate the contaminated land for redevelopment. The Brownfields Redevelopment Interagency Team (BRIT) has facilitated access to the wide array of incentives for clearance and the process was undertaken under the supervision of the NJ Department of Environment Protection.

Somerset Development, along with Avalon Bay and Centex Homes, has started the site improvements for Phase 1 of the project. Avalon Bay is responsible for the first four multi-use buildings that will feature a mix of 406 luxury and affordable rental apartments over first floor retail space housed in distinct buildings. Of the 406 apartments, 61 are designated as affordable. Centex Homes, on the other hand, established a sales center and constructed townhouses and single-family homes at its site (Transit-Friendly Development, 2008, December), which is adjacent to Avalon Bay pedestrian infrastructure, connecting all of these living spaces to the station and the adjacent public plaza, as part of the first phase of development. Project brief timeline:

- 2001 Brownfield clean up process is started for the site preparation.
- 2002 Somerset Development of Lakewood, NJ, named master redeveloper for the property by the Borough of Wood-Ridge.
- 2006 Somerset Development had picked up site plan approval.
- 2007 Wesmont Station was chosen to participate in the LEED for Neighborhood Development Pilot Program.
- 2007 Additional areas of contamination are found after much of the clean up effort completed.
- 2008 September Local officials of Bergen County grant first-phase approvals
- 2008 Project initiated.
- 2009 Construction of Station began.
- 2009 Construction of TOD begins Phase 1: 27 single-family homes, 36 townhomes, and 11 live/work townhouses, 400 apartments in four buildings
- 2010 Phase one is completed.
- 2011 Expected Station completion.



Figure 4.21: Rendering of Westmont Station residential units (Source: DPZ, 2006)



Figure 4.22: Partial master plan of Westmont Station (Source: DPZ, 2006)

4.5.4 CONCLUSION

Westmont Station TOD is a suburban infill development located at formerly an abandoned industrial site. It was considered to have a considerable potential for regeneration, given its proximity to mid-town Manhattan. It was anticipated to build a complete neighborhood for about 2500 population including mix of office, retail and housing uses, with the station at its core. Incorporating smart growth and new urbanist principles, the emphasis in the approach to design was strictly kept at walkability. Hence, pedestrian was prioritized over private car movement, as well as mass over private transportation within the area. It was this aspect especially which brought Westmont Station recognition as a model for transit oriented development. This case study, requires particular attention to the intricate solutions developed for pedestrian behavior, as well as the design tools to translate environmental consciousness into built environment.

Smart Features of Westmont Station Transit Oriented Development:

- o Strong Vision
- o Response to Regional Contexts
 - Strategic Transit Oriented District Plan
- o Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- o Mix of Major Land Uses (Office, Residential, Retail, Civic)
- oo Essential uses and services (child care facility, school, grocery, etc.)
- oo Range of housing choices
- o Community and Public Participation
- o Joint Development Programs (Public Private Partnerships, etc.)
 - Non-traditional financing mechanisms (TIF, CIP, BID , PID, etc.)
- o Compact Built Environment
- oo Sustainable Architecture
- oo Context Sensitive Design
- o Multi-modal transportation options
- o Pedestrian emphasis
- o Station Integration
- o Attention to Place Making
- oo Environmental Sensitivity
- oo Development in Existing Communities
- o Non-conventional Parking Strategies



Figure 4.23: Streetscape rendering of Westmont Station (Source: DPZ, 2006)

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

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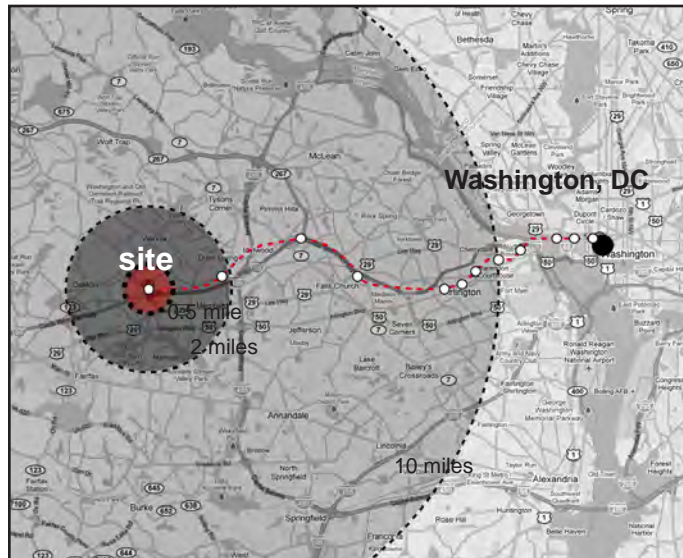
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Source: Cooltown studios April 20, 2009

METROWEST TOD		
Development Profile	Transit Station	Vienna-Fairfax-GMU
	Transit Agency	Washington Metro
	Primary Transit	Light Rail, Bus
	Station Status	Built (1986)
	TOD Typology	Suburban Neighborhood (master planned community)
	TOD Name	MetroWest
	Station Address	2900 Nutley Street, Fairfax, VA 22031
	TOD Size	55 Acres
	TOD Status	Planned
	City Population	24,665 (2009 U.S. Census Estimate)
	Developer	Single, Pulte Homes
	Ownership	Single, Pulte Homes
	Zoning	County Policy Plan for development adjacent to Transit Stations
Cost	Unknown	
Stakeholder	<p>Developers Pulte Homes Corporation and Clark Realty, Washington Metro, City of Fairfax Dewberry & Davis LLC, VIKa Inc.</p> <p>Public neighborhood associations, a citizens' working group, the Fairfax County Department of Planning and Zoning, the Washington Metropolitan Area Transit Authority and the Virginia Department of Transportation.</p> <p>Design: The Lessard Arch. Group, Inc., EDAW Inc., and RTKL Associates, Inc.</p>	
Land-use	Development Site	Suburban infill
	Residential	2,248 units
	Retail	100,000 sq. ft.
	Office	300,000 sq. ft.
	Public/Civic	25,000 sq. ft. Community Center
	Parking	Structured parking, on-street, surface
Other	Transportation Demand Management Plan, day care facility	

4.6 METROWEST, FAIRFAX, VA

4.6.1 PROJECT BRIEF

MetroWest is an infill TOD development, replacing a former low-density residential area, within walking distance from Vienna Metro Station, in Fairfax Virginia. In compliance with the Policy Plan of Fairfax County, MetroWest proposed a dense, mixed-use, transit-oriented development next to one of its Metro station. The project was designed to incorporate mixed-residential with mixed-use including a variety of office, retail, civic and governmental uses at a 55 acres site adjacent to the Station. Enhanced pedestrian-friendly interface with the Station, a town center plaza combining retail and public outdoor activity space, pedestrian connections to and through East Blake Lane Park and existing nearby neighborhoods, as well as provide a new public recreation/community center (MetroWest, 2008).

4.6.2 PLANNING + DESIGN

A significant feature of this particular case is that the planning and design process was carried out in collaboration between public and private organizations. The plan was produced with active participation of neighborhood associations, a citizens' work group, the Fairfax County Department of Planning and Zoning, the Washington Metropolitan Area Transit Authority and the Virginia Department of Transportation.

TOD approach was chosen to redevelop the site in compliance with the Smart Growth Principles of the Metropolitan Washington Council of Governments and Policy Plan of Fairfax County. The development of the project, next to an existing Metrorail Station, has meant the removal of 65 single-family detached residences to create a mixed-use, transit-oriented, development of nearly 2,300 residential units, 190,000 sq ft of retail space, and 300,000 sq ft of office space (see Figure 4.25 through 4.32 for the plan distribution of uses and densities). The project aimed not only to redevelop the urban land but also convey improvements in the existing transportation infrastructure, including pedestrian amenities that enhance circulation in the station area (Dunham-Johns and Williamson, 2009). Eventually, the team came up with a plan to improve pedestrian connections to the Metro Station and the project from communities west of the park. To develop programmatic details and specifications for the implementation at MetroWest, design recommendations were organized around the following aspects of TOD:

- Site & physical amenities/ improvements
- Products, programs and services, including branding and targeted marketing
- Program strategies
- Program management
- Parking management
- Implementation and funding
- Monitoring and evaluation



Figure 4.24: View of Vienna Metro Station (Source: Clark Realty Capital, 2008)

While getting prepared for the implementation, to remove concerns about the possible outcomes of the planned high density development, the team resorted to multiple methods to better understand current travel patterns and traveler attitudes in reference with the Vienna Station Area: It passed through an intensive research process of analysis to project the development's potential impact on the existing transportation network. The surveys conducted were;

- Resident & Employer Survey: Survey of residents and employees in the study area to assess their attitudes and preferences about travel choices with the goal of understanding more about current travel behavior
- Traffic Counts: Counting vehicles entering/exiting existing subdivisions, and observing vehicles' occupancy during the peak periods, and comparison of traffic counts to Fairfax County trip generation forecasts.
- Census Analysis: Utilized 2000 Census and Journey-to-Work data, along with a 2005 demographic assessment to understand demographic and household information and commute patterns for the transit station and surrounding areas (STI, 2008).



Figure 4.25: Mid-highrise multi-family residential



Figure 4.26: Lowrise multi-family residential



Figure 4.27: Age restricted/elderly housing



Figure 4.28: Two over two multi-family residential



Figure 4.29: Public/community facility



Figure 4.30: Office building (Source: MetroWest, 2004)



Figure 4.31: Retail locations



Figure 4.32: Townhouse units



Figure 4.33: Renderings of Vienna Metro Station (Source: Fairfaxcounty-Real Estate)

Based on the findings of the surveys, the team produced a Transportation Demand Management Plan (STI, 2008) to reduce congestion in the development's immediate vicinity. In addition to the management plan, Pulte released a list of proffers as agreed to with Fairfax County. Among these were commitments to maximum density, construction schedule, and amenities/buildings accessible to all (MetroWest, 2008). The Smart Growth Alliance, in fact, has recognized the Metro West design as contributing land use, transportation and environmental advantages to Fairfax County and the Washington region.

4.6.3 PROCESS

Initially, the project spurred some significant local opposition and opposition from a member of congress member (Cool Town Studios 2006) on grounds of the possible implications of high density development on its environment. In a low-density neighborhood that was generally suburban in character, neighbors feared increased development would put further pressure on the traffic in the area. The planners, on the other hand, argued that dense development clustered near transit stations and diverse land uses generates less traffic congestion on a per unit basis than low density development, and is the only way to reduce or manage congestion on a regional basis (Clark Reality Capital, 2008).

The primary proposal was approved by the Fairfax County Board of Supervisors on March 27, 2006, to incorporate all of the former Fairlee residential subdivision, as well as some adjacent parcels. Fairlee has been razed and at the time the project was approved, construction was expected to begin in 2007, with the first residential units available for occupancy in 2008 (Fairfax 2008). However, development was postponed due to a housing market correction that has influenced Fairfax County as well as most densely populated areas in the United States, but finally began in November 2008. In June 2009, Pulte requested a modification to the plan to swap out approximately 700,000 square feet of planned residential space for use as office instead; that modification was reviewed and later approved.

- 2001 Assembly of properties begins for redevelopment south of the Vienna-Fairfax-GMU Metro Station.
- 2003 Fairfax County Planning Commission staff recommends Comprehensive Plan amendments to provide an opportunity for mixed-use "transit-oriented" development at Fairlee-Metro West.
- 2003 Smart Growth Alliance recognizes Metro West redevelopment plans as contributing land use, transportation and environmental advantages to Fairfax County and the Washington region.
- 2003 Fairlee Workgroup is formed by then-Providence District Supervisor Gerry Connolly to consider issues surrounding redevelopment of Fairlee-Metro West.
- 2004 Fairfax County Board of Supervisors adopts The Environmental Agenda, which supports mixed-use development near transit stops, integrating pedestrian-oriented neighborhood commerce into new communities and providing pedestrian amenities.
- 2004 Fairfax County Board of Supervisors unanimously approves comprehensive plan amendment for transit-oriented, mixed-use development at the Vienna-Fairfax-GMU Metro Station.
- 2005 Final report conducted to the City.

4.6.4 CONCLUSION

MetroWest is an infill TOD project, with which designers attempted to overcome some of the problems associated with inner-city redevelopment. The two points that deserve highlighting in that respect are the attention placed on the connectivity issues with the urban fabric, and scrupulous analysis concerning the impact of the high density redevelopment on the existing transportation infrastructure and network. The analysis of the case suggests that emphasis on both was an outcome of the participatory planning and design approach that was adopted in this project.

Smart Features of MetroWest Transit Oriented Development:

- o Strong Vision
- o Response to Regional Contexts
 - Strategic Transit Oriented District Plan
 - Alternative Zoning Mechanism (Form Based Codes, Smart Growth, etc.)
- o Mix of Major Land Uses (Office, Residential, Retail, Civic)
- o Essential Uses and Services (Child Care Facility, School, Grocery, etc.)
- o Range of Housing Choices
- oo Community and Public Participation
 - o Joint Development Programs (Public Private Partnerships, etc.)
 - Non-traditional Financing Mechanisms (TIF, CIP, BID , PID, etc.)
- o Compact Built Environment
 - Sustainable Architecture
- o Context Sensitive Design
- o Multi-modal transportation options
- o Pedestrian emphasis
- o Station Integration
- o Attention to Place Making
- o Environmental Sensitivity
- o Development in Existing Communities
- o Non-conventional Parking Strategies

Key:

- oo Features highlighted by case study
- o Other features illustrated
- Unknown or not illustrated

4.6.5 REFERENCES

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SMALL CITY CASE STUDIES

Small cities are classified as cities with a population of less than 50,000 people. This section focuses on the cross analysis of transit related development (whether in the form of transit oriented development or transit oriented district) in six small cities, and outlines the inferences drawn out of rigorous consideration of the intricate features of this particular development type. The following section is a summary of the key themes and features identified in the small city TOD case studies:

- Daybreak, UT
- Village at Leander Station, TX
- Rahway Station, NJ
- West Hyattsville, MD
- Wesmont Station, NJ
- MetroWest, VA

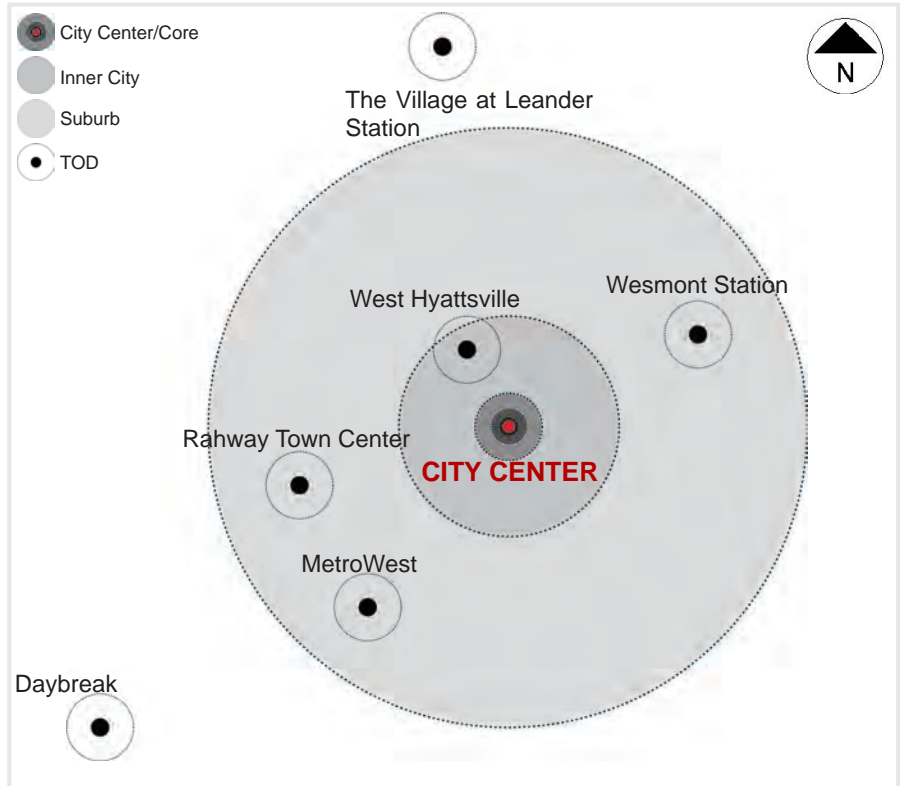
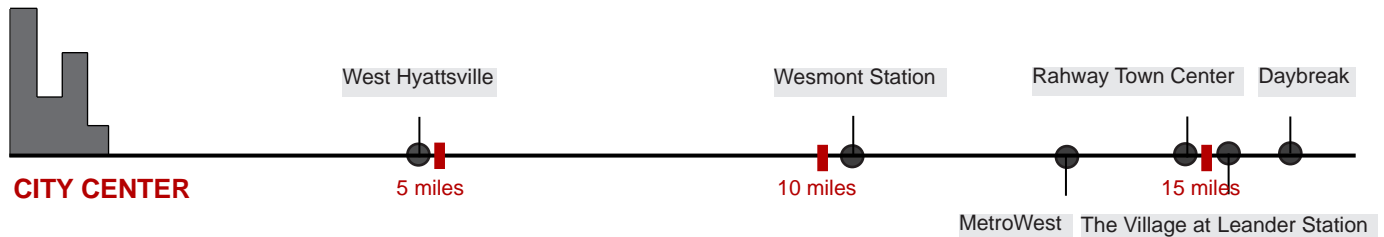


Figure 4.34: Location comparisons diagrams, relative to small city center



SUMMARY FINDINGS FOR SMALL CITY TODS AND TODtS

CONTEXTS AND TOD TYPOLOGY

SOCIAL, ECONOMIC AND ENVIRONMENTAL CONTEXTS

The small city TODs in this chapter commonly exist around the larger city in the transect zone T3: suburban context (CNU, 2010). Small cities are typically outer tier or separate communities. These types of projects utilized both existing communities and greenfields in order to respond to their growth needs. These projects typically are a densification of suburban areas and their immediate context is relatively limited especially in the greenfield developments.

Developments highlighted here are typically greenfield, suburban infill or downtown revitalization developments. Greenfield developments are typically large master planned communities. These developments typically develop a new Town Center. Suburban infill projects have nearly the same characteristics. The difference is one of size and scale due to amount of land available as infill. Revitalization developments are typically a revitalization of an historic CBD or other historic districts such as civic center. The small cities in this report tend to be ex-urban or suburban in nature and some located in the second tier suburban ring or outlying region of the urban area with which it resides. TODs within these small cities tend to be located along existing rail right-of-ways.

Small city TODs tend to function as commuter town centers, suburban centers, suburban neighborhoods or neighborhood transit zones. Suburban centers function as primary office centers, entertainment centers, residential centers and retail centers. Regional connectivity is high as these TODs are subregional hubs providing access to urban core areas and other suburban centers and often have several transit options including rail, bus, bike and an emphasis on walking.

Suburban neighborhood TODs function as residential densification projects providing neighborhood retail and local office services. Residential densities are typically greater than 12 dwelling units per acre. Regional connectivity is rated as medium with direct access to suburban centers. Neighborhood transit zones typically emphasize residential and neighborhood retail uses with residential densities greater than 7 dwelling units per acre. Regional connectivity is rated as low as these TODs are part of the subregional circulation and typically have direct access to suburban centers..

Small city TOD projects are typically suburban infill, district level revitalization projects, or master planned green field development. District level revitalization plans are often used in small city TODs to revitalize a historic CBD. However, some projects utilize other regulation methods, in the absence of a strategic TOD plan, to achieve a successful TOD. The size of small city TODs are relatively larger than large and medium city TODs.

MARKET

Although understanding the market may seem like a lesser amount of concern in the immediate context of small city TODs, regional understanding of market demand on large scale developments is especially critical in greenfield TODs. Area market analyses in such developments are primarily performed by private entities, transit authorities, cities, and counties to study, strategize, plan and market the areas around transit stations. Private market analyses are used by the private sector to deduce investment opportunities. On the contrary, more established commuter towns may require such tools to respond to their immediate concerns such as housing and/or retail demand in and around the transit station.

CONNECTIVITY AND TRANSPORTATION

Regional and local connectivity for small city TODs seems to be limited. TODs developed in small cities are typically a suburban part of the subregional circulation with direct access to suburban centers or other suburban neighborhood centers. Existing freight rail right-of-ways (ROW) are used for the new transit rail ROW and sometimes shares ROW with freight rail. The street network ranges from an existing regular compact urban street network to a suburban street network to an entirely new street network. New street networks tend to be small, compact regular grid networks, although connections to adjacent neighborhoods could be weak. Transit stations that are suburban infill offer a greater mix of transit options than do greenfield developments.

District revitalization in small cities typically have an existing urban street network (often small, compact, regular grid network of existing streets) from which to build. Greenfield sites have to create much of their own street network. By definition, greenfield sites are separated from adjacent communities therefore connectivity may have a low level of connectivity to existing, adjacent urban fabric. The automobile still dominates many of the small city TODs and often is the most practical mode of transportation for inter/intra-city transportation.

ZONING

The small city TODs studied here are most often greenfield sites, suburban infill or historic downtown redevelopment. The greenfield and suburban infill sites are typically master planned communities with their own planning regulations such as planned development district. The historic downtown redevelopment sites typically utilize an overlay or alternative planning code such as form based codes, smart growth principles or development codes based on the transect. Some write in new urban entitlements, based on conventional planning zoning, that allow for, among others, more density, reduced parking, and a greater mix of uses than did the original zoning for the historic downtown.

LAND-USE

The small city TODs are most often commuter towns, suburban infill projects, district area redevelopments, or greenfield developments. The scale of the small city TODs range from the single building to multiple block redevelopments in district area revitalization to master planned communities in suburban infill or greenfield developments.

Suburban center TODs tend to be primary office centers, entertainment centers, residential, and/or retail centers. Open space tends to be smaller spaces such as urban parks, pocket parks and public plazas. Suburban center TODs emphasize the street and vary between horizontal and vertical mixed-use.

The suburban neighborhood TODs reviewed in the case study generally seemed to be residential, neighborhood retail and local office suburban infill, brown/grey field redevelopments. Most cases seem to integrate open spaces infrastructure primarily composed of community parks, urban parks and public plazas. Land uses are typically horizontally mixed with an emphasis on residential, neighborhood retail, and local office. Civic buildings such as libraries and municipal buildings, and community/neighborhood are the most visible public realm in the small city TODs.

INTENSITY, DENSITY, AND DIVERSITY

Small city TODs are typically larger in scale, on average, than large and medium city TODs but are typically less dense. The density and intensity of suburban center neighborhood TODs are typically larger than that of its immediate context. The contrast between the TOD and its surrounding is noticeable in many of the instances studied here. Since TODs in small cities are typically suburban infill, district revitalization or greenfield development projects they typically add intensity, density, and diversity to suburban areas. Suburban center TODs tend to be primary office, entertainment, residential, and/or retail centers with residential densities typically above 50 dwelling units per acre. Suburban neighborhood TODs tend to emphasize a residential intensity with neighborhood retail services and local office services. The heights, bulk, and massing of small city TODs tend to be the highest in the city. Small city TODs tend to offer more diversity and choices than the rest of the city. They tend to offer a greater range of housing choices including below market housing. Greenfield small city TOD's are often part of a larger master plan community with the TOD developed as a new or revitalized Downtown or New Town Center.

STAKEHOLDERS + OWNERSHIP

The term stakeholder is used here to describe anyone with an interest in the TOD. Interests range from the vested interests of owners, developers, and regulators to a relatively more passive interests of the general and specific public. The level of interest in small city TODs are generally from a diverse set of stakeholders that are directly impacted by the development. Transit Districts with strategic TOD/area plans, typically involve small cities soliciting community input for the development of the transit area plan. District level plans for the small city TODs typically have a large amount of input from the government in terms of development ideas. Major concerns for the general public include density, congestion, and safety. NIMBYism is likely occurrence in prospective communities.

Ownership of the small city TODs tend to be single private ownership in the case of master planned suburban infill or greenfield developments and multiple ownership in the case of district revitalization projects. Land assembly in suburban infill or greenfield development is seen to be less of an obstacle in small city TODs.

PROCESS

Different levels of public stakeholder involvement in small city case studies seem to lead the processes and timelines at both planning and application phases of TODs. District level TOD and district revitalization projects in small cities tend to have a high degree of public stakeholder interest in crafting the strategic TOD plan. Succeeding projects are then regulated by the strategic plan with little to no additional public stakeholder involvement. Master planned suburban infill projects tend to have a high degree of public stakeholder input, while master planned greenfield developments tend to have very limited public stakeholder input. Extending the participatory process to include a diverse set of interest holders seems to lay the ground for a more robust development; planning of the participatory process appears to be particularly important to eliminate disruptions and delays in the project timeline.

PARTNERSHIPS + FINANCING

Suburban infill and district revitalization projects in small cities tend to have a medium level of partnerships and non-conventional financing mechanisms. Public/Private partnerships, joint development programs, and community development corporations are sometimes developed to ensure the success of the project. Non-conventional financing mechanisms such as TIF and community investment financing are used to develop infrastructure and community amenities. Tax abatements and self taxing jurisdictions are financial contributions to the investment of a project. Master planned greenfield TODs tend to have fewer partnerships and non-conventional financing mechanisms than all other prototypes. Public/private partnerships are sometimes used to build infrastructure and civic amenities in suburban infill and district revitalization projects.

URBAN DESIGN

Due to the larger amount of land available in outer and small cities the developer and designer seem to have more room to create a distinct and unified theme. These TODs are typically designed from the top down and typically stand out as a place compared to the surrounding existing development. Urban design considerations for such TODs primarily focus on the

relationship of the transit station to the transit core more than to the district. In various cases references seem to be made to green space structure, transect zones and planning, or smart growth principals in the creation of these developments in small cities. Although they exist to create well connected district by walking and biking, accommodating automobile is still a critical component of such built environment. Urban design elements typical of the small city case studies are:

Architecture:

- Buildings are taller than surrounding context but shorter compared to typical medium and large city TODs
- Theme architecture, e.g. historical or pattern based
- Facade regulations control transparency, signage, material, etc.
- Diverse building elevations
- Compact design/buildings/blocks

Landscape and Open Space:

- Parks, play fields, station plazas
- Hike/bike trails connected to green infrastructure and other neighborhood
- Community gardens

Parking:

- On-street parking entitled by right
- Surface parking is dominant storage method but is typically done with parking lots behind the buildings
- Reduced parking ratios for housing and commercial services
- Shared parking in large single-owned and managed developments
- Park and ride facilities for the transit stations

Streets and Walkability:

- Many times new street networks are built from the ground up
- Streets are often narrower than conventional development
- Streetscape is emphasized: furniture, shade, material and other amenities
- Smaller block sizes and compact development are typical for the TOD
- Walkability within the development is emphasized with different experiences, landmarks, physical connections
- Connections to adjacent neighborhoods are often emphasized

Sense of Place:

- Public realm and publicness
- Third places: a place of refuge other than the home or workplace where people can regularly interact with other people
- High degree of diversity of uses and services create a sense of Downtown or Urban Center
- Variety of buildings and spaces
- Places to walk to
- Enclosure
- Landmarks

SMART FEATURES SUMMARY FOR SMALL CITIES:

The smart feature checklist is a hybrid list of attributes generated from the project and literature review of various TOD resources. Table 4.1 highlights some key commonalities and differences for six small city TODs studied in this research. The small city TODs studied here seem to create vision for the development and were receptive to local and regional contextual issues. With some variations from their larger city TOD counter parts, small city TODs also provide essential uses and services, range of housing choices, and capitalized on joint development programs. The examples seem to be less illustrative of the strategic plan for the district and the use of non-traditional financing mechanisms, which are captured to be essential ingredients of TODs. See Tables 2.17 to draw additional inferences concerning large cities.

TOD PROFILE SUMMARIES FOR SMALL CITIES:

The profile table included with each case study is a one page summary of key attributes for any TOD project in this report. Table 4.1, TOD Profile summary table for small city case studies, provided at the end of this chapter is a quick reference to merged data which illustrate some of the commonalities and differences of case studies reviewed (See Table 2.18).

Table 4.1: Smart Features comparison table for small city case studies

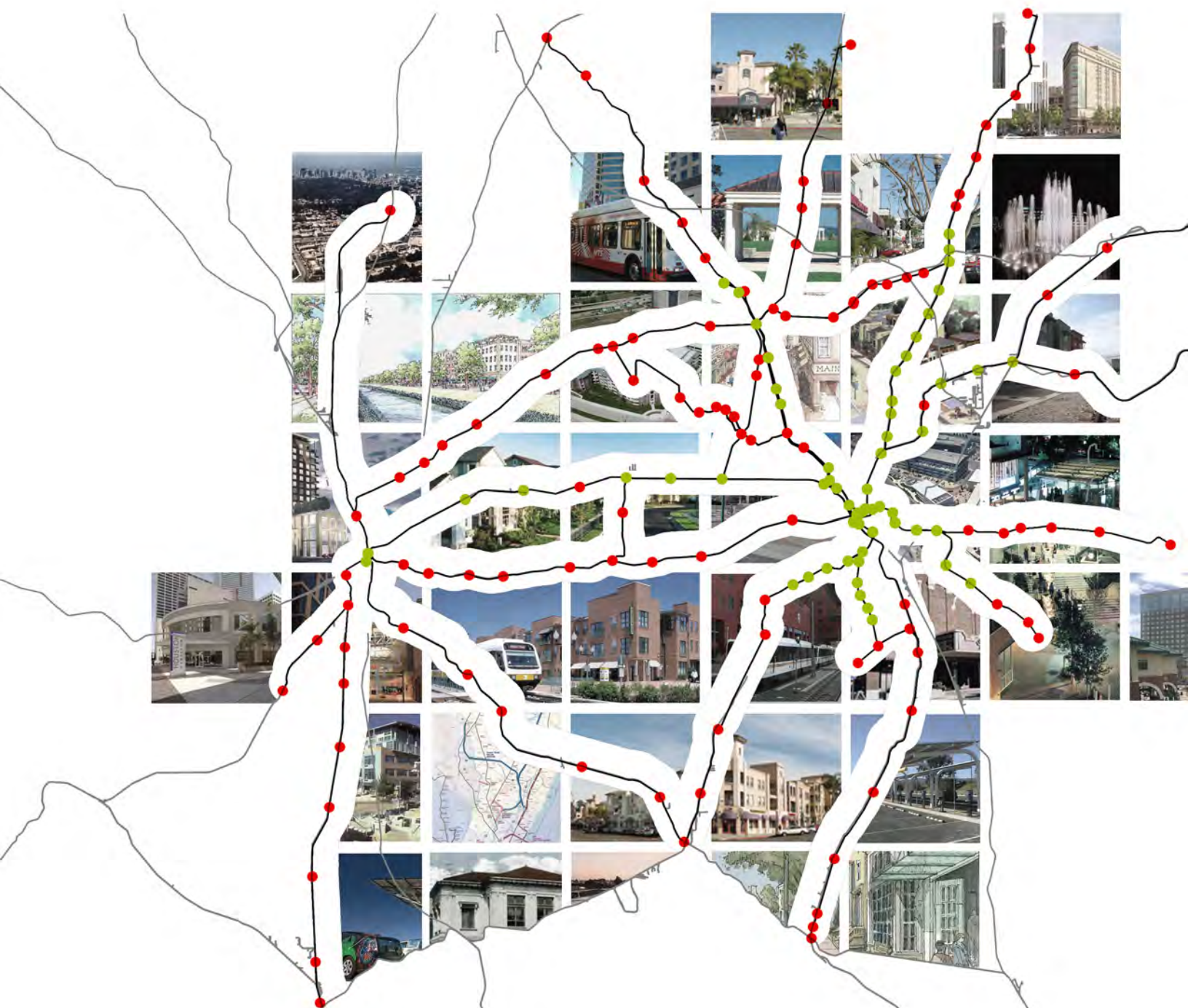
	DAYBREAK-SODA ROW	THE VILLAGE AT LEANDER STATION	RAHWAY TOWN CENTER	WEST HYATTSVILLE	WESMONT STATION	METROWEST
Strong vision	●	○	○	●	○	○
Response to regional context	○	○	○	●	○	○
Strategic Transit Oriented District Plan		●	○			
Alternative zoning mechanisms	●	●	●	○	○	
Mix of major land uses	○	○	●	○	○	○
Essential uses and services	○	○	●	○	●	○
Range of housing choices	○	○	●	○	●	○
Community and public participation				○	○	●
Joint development programs	○	○	○	○	○	○
Non-traditional financing mechanisms			○			
Compact built environment	○	○	○	○	○	○
Sustainable architecture	●		○		●	
Context sensitive design	○	○	○	○	●	○
Multi-modal transportation options	○	○	○	○	○	○
Pedestrian emphasis	○	○	○	○	○	○
Station integration	○		○	○	○	○
Attention to place making	○	○	○	○	○	○
Environmental sensitivity	○	○	○	○	●	○
Development in existing communities			●	○	●	○
Non-conventional parking strategies			○	○	○	○

Key: ● Features highlighted by case study ○ Other principles illustrated □ Unknown or not illustrated

Table 4.2: TOD profile summary table for small city case studies

	DAYBREAK	THE VILLAGE AT LEANDER STATION	RAHWAY TOWN CENTER	WEST HYATTSVILLE	WESMONT STATION	METROWEST
CASE STUDY TYPE	Development	Development	District	Development	Development	Development
TRANSIT STATION	Daybreak Stations (2)	Leander Station	Rahway Station	West Hyattsville Metro Station	Wesmont Station	Vienna-Fairfax-GMU
TRANSIT AGENCY	Utah Transit Authority TRAX	Capital MetroRail	Delaware River Port Authority & Port Authority Transit Corporation	Washington Metropolitan Area Transit Authority	New Jersey Transit	Washington Metro
PRIMARY TRANSIT	Light Rail, Bus	Commuter Rail, Bus	Commuter Rail, Bus	Light Rail, Bus	Commuter Rail, Bus	Light Rail, Bus
STATION STATUS	Under construction (2011)	Built (2010)	Built (1999) Renovated (2006)	Built (1993)	Built (1969)	Built (1986)
TOD TYPE	Suburban Center	Suburban Center	Urban Neighborhood	Suburban Center	Suburban Neighborhood	Suburban Neighborhood
TOD SIZE	45 acre	160 acre	+/-500 acres (1/2 mile radius)	+/- 203 acres	150 acres	55 acres
TOD STATUS	Under Construction	Planned	Ongoing	Planned	Under Construction	Planned
ZONING	Community Design Guidelines	Leander Smart Growth Plan, Transect Planning, Form based Codes	County TOD planning regulations	County development regulations emphasize TOD	Form Based Codes	County Policy Plan for development adjacent to Transit Stations
COST	Unknown	\$50+ Million-Private	\$105 Million-private \$15+ Million-Public	\$30 Million-Public Investment	\$500 Million - proposed	Unknown
PUBLIC PRIVATE PARTNERSHIPS	Yes	Yes	Yes	Yes	Yes	Yes
DEVELOPMENT SITE	Greenfield and brownfield	Greenfield, redevelopment of historic downtown	Infill, greyfield redevelopment, brownfield redevelopment	Suburban infill	Brownfield redevelopment, suburban infill	Suburban infill
RESIDENTIAL	+/- 350 units	Unknown	1800 units	3600 units	788 units	2,248 units
RETAIL	+/- 70,000 sq. ft.	1.5 million sq. ft	150,000 sq. ft.	85,000 sq. ft.	25,000 sq. ft	100,000 sq. ft.
OFFICE	255,000 sq. ft.	1 million sq. ft	3,741,322 sq. ft.	1,000,000 sq. ft	130,000 sq. ft	300,000 sq. ft.
PUBLIC/CIVIC	Unknown	Elementary school and recreational trails	Civic plaza, outdoor theatre, police station	Public square, new lake with water front access and amenities, Hike/bike trails, public park, recreation fields	Public events plaza, middle school, community center, athletic fields, walking and bike paths	25,000 sq. ft. Community Center
PARKING	On-street, surface	On-street, Surface	Structured, on-street, surface	Structured, on-street, surface, parking management strategy, shared parking	Structured, on-street, surface, shared parking	Structured, on-street, surface. Transportation demand Management (TDM)
OTHER	Fitness center, live-work housing	Entertainment, grocery store, park and ride facility	Hotel, for-sale housing, affordable housing	Bicycle facilities, park and ride facility	8 acres of recreation space, day care facility	TDM, daycare facility, fitness center

5. RECOMMENDATIONS



5.1 INTRODUCTION

5.1.1 BACKGROUND

The North Texas region, defined by the North Central Texas Council of Governments (NCTCOG), houses 6,729,800 million people in 16 counties, and is projected to nearly double its population within the next 40 years (VNT, 2010). The region is the fourth largest metropolitan area in the US, and is steadily growing in population and land coverage.

Demographic and market trends are producing changes in household numbers, types and sizes. The 2000 census identified six million households living near public transit in the US. This number is projected to reach nearly 16 million by 2030 in the US (Heffernan, 2006). The Center for Transit-Oriented Development, which projects the market for transit-oriented development, indicates an increase from 46,429 households in 2007 to 270,676 households in 2030 within ½ mile from transit stations in existing and planned transit systems for the Dallas region (Center for Transit-Oriented Development information, Appeared in VNT; 2010). The typical household size seems to be decreasing in most future projections for the metropolitan areas. The changes and shifts in demographic trends are not only in the projected households numbers and sizes but also in the composition of racial diversity, in the aging of the region's population, and in the number of employment opportunities in service economy projected to exist in future North Texas (See Table 5.1 for projected growth in the region). All of which are considered to be common ingredients for demand for public transportation and surrounding amenities and uses as they become available.

Table 5.1: Projected Regional Growth for 16-county North Texas Region NCTCOG projections based on 2000 US Census (Appeared in VNT, 2010)

Regional Growth (millions)	2000	2030	2050
Total Population	5.31	9.49	11.66
Total Households	1.94	3.48	4.38
Total Employment	3.22	5.58	7.17

As it is indicated in the earlier chapters, NCTCOG in its Mobility 2030-2009 Amendment identifies approximately 500 miles of rail within the region. Of that, 83 miles are existing passenger rail service, 128 miles are programmed projects and projects currently under development, an additional 38 miles consist of projects identified in transit authority planning studies, and the remaining 251 miles are projects utilizing funding identified through the Rail North Texas efforts (Mobility 2030 2009 Amendment, 2009, p. 216). As of October, 2010, the DFW metropolitan area housed 35 commuter and light rail stations, operated by Dallas Area Rapid Transit (DART), throughout the region, and the number of stations projected to grow to nearly 196 stations with determined vision, planning, and implementation strategies by the year 2030 in order to serve the greater DFW region (DART, 2010; NCTCOG, 2009).

TODs and TODt are important choices in growing metropolitan areas to accommodate various needs of urbanizing population with higher development densities, diverse mix of land-uses, and opportunities they present with multi-modal transportation connections to serve their immediate locale. Yet the regional understanding of transit oriented development and transit oriented districts are limited and requires common language and vision for the region.

In the final chapter the Transit Oriented Development Report makes a preliminary set of recommendations for the North Texas region based on the knowledge gained from the comprehensive review of TOD projects, literature, and guidelines. The goal

of the chapter is to produce a resource for North Texas stakeholders in both public and private sectors by studying planning, design, and implementation activities of selected TOD projects on local, regional, national, and international scales. The final chapter of this research focuses on the summary conclusions and the recommendations of this report.

5. 2 SYNOPSIS OF THE ANALYSIS AND FINDINGS

Analysis: This particular report's findings and recommendations are a result of comprehensive qualitative research, systematic evaluation, and documentation of its findings. Although some quantitative information was reported when it was attainable, the analysis in this report drew its knowledge base from the review of qualitative data and information available from secondary data sources. Due to the intended comprehensive and regional understanding of the transit oriented developments and districts, research attempted to review examples, documents, policies, plans, and guidelines from both Texas and North America rail-based transit systems. Findings and recommendations highlighted throughout the report and in the following section are primarily drawn from three sets of resources:

- First and foremost from an in-depth review of 21 case studies for three categories of cities (Small, Medium, and Large) selected from more than 41 case studies initially reviewed from North America (See the list below).
- Second, from the review of an extensive number of scholarly literature, and TOD documents, policies, plans, and guidelines from both Texas and North America (See Bibliography at the end of the document for the comprehensive list).
- And finally, from a series of site visits, observations, and documentation on all DART and TRE system lines, station areas, TODs and TODt, and additional TODs such as Saltillo Station area in Austin and Lindbergh Station area, in Atlanta.

Case Studies Reviewed:

Large City Case Studies (Population over 250,000)

- Collingwood Village, Canada, TOD
- Houston Pavilions, Texas, TOD
- Lindbergh City Center, Georgia, TODt
- Mockingbird Station, Texas, TOD
- Port Credit Village, Canada, TOD
- Saltillo Loft, Texas, TOD
- Sheridan Station Area Plan, Colorado, TODt
- Uptown District, California, TOD
- Verano at City South, Texas, TODt

Medium City Case Studies (Population 50,000 to 250,000)

- Court House, Virginia, TODt
- Del Mar Transit Village, California, TOD
- Downtown Plano, Texas, TODt
- Orenco Station, Oregon, TOD
- Galatyn Park, Texas, TOD
- 5th Street Crossing, TOD

Small City Case Studies (Population under 50,000)

- Daybreak, Utah, TOD
- The Village at Leander Station, Texas, TOD
- Rahway Town Center, New Jersey, TODt
- West Hyattsville Commons, Maryland, TODt
- Wesmont Station, New Jersey, TOD
- Metrowest, Virginia, TOD

Report Findings: Even though the body of the report is a manifestation of the overall analysis and findings detailed and more in-depth analysis and findings of this research primarily reported in three parts of the document:

- First, at the beginning of each case study as a “case study profile” table, and at the end of each case study under “conclusion” and a “smart features list” as researchers’ brief evaluation of the each case study reviewed in this report.
- Then, at the end of each chapter for small, medium, and large cities as “summary analysis and findings” by detailing findings under subcategories of major issues highlighted in the broader TOD and TODt literature.
- And, most importantly, in the following section as the recommendations for the region. The knowledge gained from this comprehensive effort both implicitly and explicitly informed the recommendations written in the following section by highlighting the same sub-categories of major issues listed in the chapter summaries.

Key Findings: It is instrumental to highlight the following key points which are found to be fundamental in informing the TOD and TODt building processes, from conceptualization to implementation, in many of the case studies and documents reviewed in this report. The research revealed that:

- Common sets of definitions, principles, and goals are used in almost all of the cases; and the guidelines reviewed set a shared vision for planning and development processes in transit oriented development and districts in large metropolitan regions.
- Although the city size is an important consideration, TODt typologies were defined based on community characteristics. Studying the city’s relationship to larger metropolitan centers seem to be the adopted practice in strategic planning of multiple transit oriented development areas in large metropolitan regions.
- City, corridor, or regional scale transit oriented development plans, with supplementary individual strategic transit area plans for multiple station areas, seem to be the preferred and effectively used large scale planning tools by regional governing agencies and municipalities, and seem to produce more stable and robust TODts for their communities in urbanized regions in the long run.
- Planning, designing, implementation, and monitoring of transit oriented districts (TODt) rather than singular developments (TODs) seem to produce better integrated projects for their immediate contexts. They seem to offer a diverse set of functions and uses, and add stability and longevity to the transit oriented districts in the long run.

Recommendations given in the following section are going to be guided by these over arching findings.

5.3 TOD DEFINITIONS AND TYPOLOGIES FOR NORTH TEXAS

This report adopts and recommends the use of following definitions for transit oriented developments (TOD), transit oriented districts (TODt), and transit typologies in order to set shared language and vision among all stakeholders in North Texas.

5.3.1 TRANSIT ORIENTED DEVELOPMENT (TOD)

TOD in this report for North Texas is defined as a high density development within walking distance of a transit station that suggests a mix of land uses such as housing, employment, shops, restaurants and entertainment, and is used to describe individual new development projects (See also Lefaver,1997). For the purposes of

this research, typically development within ½ mile from (Porter, 1997) the station is considered as transit oriented. TODs can encourage stronger reciprocal relationships between the land-uses offered with a given development and the variety of transportation choices such as walking, biking, public transportation options, and vehicles in the order of importance mentioned here. The types of uses in a TOD must be carefully matched with the function of the station and the needs and desires of those who live and work nearby.

5.3.2 TRANSIT ORIENTED DISTRICT (TODt)

TODt for North Texas is defined as areas that are within a walking distance of 1/2 mile of a transit station with high density developments that contain a diverse mix of uses such as housing, employment, shops, restaurants and entertainment. These districts aspire to have a strong sense of place, a diverse set of travel mode choices (such walking, biking, and public transportation) and function more like a coherent district than a single project. TODts are suggested to be typically in conformance with a coherent district plan and/or zoning overlay that frequently stipulates the type and scale of uses, permitted densities, and related regulatory and recommended items. In newly developing areas these districts are typically expected to be organized around the station with coherent streets, parks, plazas, and/or squares and function more like an urban district than a single project. Whereas, if the district is located in an existing urbanized area, the current regulations and/or future overlays are expected to encourage enhancements of streets, parks, plazas, and/or squares in order encourage strong public space and connectivity within and from the district. Following location based definitions for TODts are developed for North Texas region:

- Transit Station: light rail or the commuter station that serves TOD and TODts.
- Transit Core: refers to the area immediately surrounding the transit station, typically defined as ¼ mile from a transit station. In most cases buildings facing the station area, or the area within 1/8 mile radius from the station, may require additional set of provisions in this zone.
- Transit Oriented District/Neighborhood: area defined as ½ mile from a transit station providing high density mixed-use development. Transit oriented development (TOD) can be anywhere in the Transit Orient District (TODt).
- Transit Support Area: Area defined as being ½ mile to 1 mile from transit stations. This area is typically less dense and diverse in its mix of uses and is typically comprised of single and multi-family residential neighborhoods with some neighborhood and community services (See Figure 5.1).
- Transit Adjacent Development (TAD): A development type which is likely to occur in any of the zones indicated above but design is not significantly influenced by it.

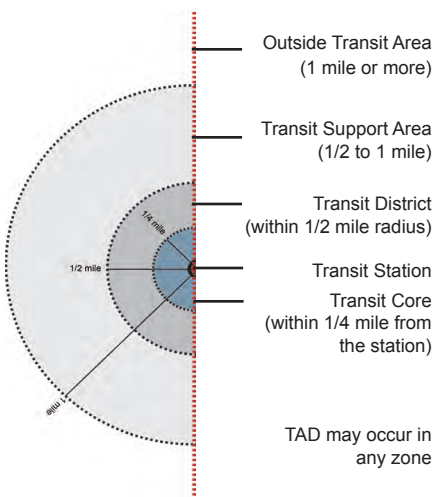


Figure 5.1: Transit area zones diagram

5.3.3 TOD TYPOLOGY FOR NORTH TEXAS

This report primarily utilized two categorization techniques for North Texas in order to better serve the needs of the region. The report primarily used small, medium, and large city population sizes to categorize case studies and to report on preliminary findings. The TOD report later adopts Dittmar et. al.'s transit typology (2004) as it is described in The New Transit Town: Best Practices in Transit-Oriented Development due to its relative applicability to large metropolitan regions (Dittmar et. al., 2004). Dittmar et. al. define six place based TOD types (See Table 5.2):

- **Urban Downtown:** (Re) emerging civic and cultural centers, employment hubs, regional transit hubs that offer the most modal options, generally the highest densities of land uses, and highest frequencies of transit service. This type of TOD's location corresponds to downtown or the historic core of most large cities

(such as downtown Dallas, Fort Worth, or Denton) in North Texas.

- **Urban Neighborhood:** This typology includes inner city locations in large cities, often historic, neighborhoods that surround the downtown (such as Deep Ellum or MLK stations in Dallas). Often these neighborhoods were built on an extension of the downtown street grid(s). Urban neighborhoods offer moderate to high density housing, shopping, entertainment, and services for employees and their families.
- **Suburban Town Center:** This typology includes growing suburbs and emerging suburban town centers (such as Downtown Plano and Galatyn Center) within metropolitan regions where there is a demand for connections to other suburbs and centers and a diverse mix of uses for working, shopping, and living within close proximity.
- **Suburban Neighborhood:** Suburban community located on a light rail or rapid bus line, with access to either a regional center or urban downtown. This typology offers the opportunity for some densification around the station (such as Farmersville Station, and Kiest Station in South Dallas), with multi-family nearest the station and single family housing further away.
- **Neighborhood Transition Zone:** Typically, this is a transit stop (light rail, street car, or bus) with limited neighborhood retail or office space in a largely residential area (such as West Irving Station, and 8th & Corinth Station area).
- **Commuter Town Center:** It is a freestanding town outside the suburbs. Station area can be developed as town center and may include retail, office, and multifamily within the core area of the community. These centers are served by commuter rail or bus service (see Dittmar et. al., 2004 for expanded definitions). Although this typology currently does not seem to exist in the region, with the projected expansion of commuter rail in North Texas communities classified as ‘Separate Community’ by NCTCOG, there will likely be candidates for this typology (see Appendix V for DART Rail System Plan map for 2010 as well as Transit

Table 5.2: TOD typologies for metropolitan regions (Dittmar et. al. 2004)

TOD Type	Land Use Mix	Typical Housing Density	Regional Connectivity	Transit Frequencies
Urban Downtown	Office Center, Urban Entertainment, Multifamily Housing, Retail	> 60 units per acre	High Hub of Radial System	< 10 minutes
Urban Neighborhood	Residential, Retail, Class B Commercial	> 20 units per acre	Medium Access to downtown, subregional circulation	10 minutes peak 20 minutes off-peak
Suburban Town Center	Primary Office Center, Urban Entertainment, Multifamily Housing, Retail	> 50 units per acre	High Access to downtown, Subregional hub	10 minutes peak 10-15 minutes off-peak
Suburban Neighborhood	Residential Neighborhood, Retail, Local Office	> 12 units per acre	Medium Access to suburban centers	20 minutes peak 30 minutes off-peak
Neighborhood Transit Zone	Residential Neighborhood, Retail	> 7 units per acre	Low Access to a Center	25-30 minutes Demand responsive
Commuter Town Center	Retail center, Residential	>12 units per acre	Low access to downtown	Peak service Demand responsive

System Plan map for 2030).

It is recommended that the region, city, and/or transit agencies adopt these TOD typologies to assist in the definition of the scale, function, and importance of TODs as well as providing the public a clearer understanding of what kind of development will be occurring at any particular station. The cautionary note here is that these categories should not be prescriptive which may imply one size fit all attitude. It sets rather the preliminary parameters which can guide a more comprehensive understanding of the issue at hand.

The following table illustrates the likely occurrences of these typologies in different sizes of cities (Table 5.3 TOD typologies by City Size). For example, 'Urban Downtown,' as it is defined in Dittmar et. al., 2004, is most likely to be the TOD type for the large city centers in the metropolitan region. Whereas in large cities with first ring suburbs, Suburban Town Center or Suburban Neighborhood typologies might be more appropriate. The recommendations in this chapter make inferences to these categories.

Table 5.3 TOD Typologies in relation to city size.

TOD Typologies	Small City (Under 50,000)	Medium City (50,000-250,000)	Large City (Above 250,000)
Urban Downtown		○	●
Urban Neighborhood		○	●
Suburban Town Center	○	●	○
Suburban Neighborhood	○	●	○
Neighborhood Transition Zone	○	○	○
Commuter Town Center	●	○	

Key: ● This TOD typology is **highly likely** to occur in this city size in the region.
 ○ This TOD typology is **likely** to occur in this city size in the region.

5.4 TRANSIT ORIENTED DISTRICT PRINCIPLES FOR NORTH TEXAS

The principles highlighted below serve as a guide to understanding the essential elements and characteristics of transit oriented districts. They will serve as the foundation for the station area planning in TOD districts. The principles were gleaned from knowledge gained through the smart features list primarily created from other guidelines (see such as for Austin, Denver, Phoenix Guidelines) and revised for the North Texas region. The principles are:

- Create strong and clear vision for the TODt and the TOD.
- Make a clear effort to respond to local and regional context (such as transportation and land-use framework).
- Create a strategic transit oriented district plan.
- Explore and incorporate alternative zoning mechanisms (Form Based Codes, Smart Growth, etc.) in order to provide better urban environment for people.
- Ensure an appropriate mix of major land-uses (office, residential, retail, civic) in every district.

- Incorporate other essential uses and services (child care facility, school, grocery, etc.) to enhance the community.
- Provide an appropriate mix of housing for diverse demographic and economic background (age, income level etc.).
- Encourage collaborative programs (public-private partnerships and joint development, etc.) in order to engage all parties in full capacity.
- Explore and incorporate non-traditional financing mechanisms (TIF, CIP, BID, PID, etc.) to ease the development process and make TODt economically viable.
- Create a compact built environment to encourage higher density and pedestrian scale urban form.
- Encourage clear adaptation of sustainable strategies in architectural design and construction in order to assure permanence, adoptability, and flexibility.
- Ensure design compatibility and connectivity throughout the TODt and surrounding area.
- Ensure accessibility and connectivity via various modes of transportation (walk, bike, bus, vehicular, etc.) throughout the district and the surrounding area.
- Accommodate accessibility for all pedestrians by making sidewalks, crosswalks, and sitting areas.
- Integrate the transit station to TODt fabric for day and night access and activity.
- Create civic spaces, parks, open spaces, and streetscapes for both organization and place making.
- Be responsive to environmental concerns such as allocation and consumptions of natural resources, as well as repurposing existing infrastructure.
- Ensure integration of existing city fabric and the community values to create or enhance TODt identity.
- Explore and incorporate non-conventional parking strategies (such as shared, flexible, and structural).

5.5 ADAPTATION OF TOD STRATEGIES IN NORTH TEXAS CITIES

Sunbelt cities' and metropolitan areas' experience with rail-based public transportation and TODs are relatively new in comparison to East and West Coast counterparts. As it is highlighted previously, some of the earlier examples of such developments go back as early as the late 19th century in the East coast and early 20th century in the West coast. Although DFW pioneers Texas with the inception of DART in the early 1980s (See Appendix I for DART's TOD policies), and one of its earliest and most recognized TODs (Mockingbird TOD), the region only seems to be utilizing these type of developments around half of its operational stations and in limited capacity by the end of 2010 (Ozdil et. al., 2009). At the same time, some of the groundwork for utilizing such development types and transit districts is under way by various progressive cities and municipalities across the region.

Starting from the late 1990s, the North Texas cities have initiated efforts to adopt a TOD approach in shaping the built environment with the renewed interest in the improvement of public transportation network, i.e. rail infrastructure, in the region. Table 5.4 puts together some of the regulatory steps taken in view of the transit related development by individual cities of the region within the past two decades.

The progress toward setting transit lines seems to have been made in incremental steps, mostly driven by the transit agencies' interest in capturing ridership and perhaps increasing the land values along the mass-transit corridors, and the individual cities' willingness to channel in federal financial resources to the built environment to increase quality of life.

Although not exclusively, most cities in the region to date have resorted to form-based code to draw the framework for their design approach. While some cities take steady steps towards assembling mediums to adopt the TOD design principles, most attempt to handle it with minor alterations in conventional planning and urban design measures. An interpretation of the form-based code sets the design framework.

The table (Table 5.4 TOD regulations adopted by DFW cities) briefly outlines policies, documents and plans adopted by various cities on their own initiative. It is a simple illustration of the TOD approach as it is practiced in the individual cities of the region. Along with enabling a review of common urban design concerns which stem from their local context, an overview of the experience with TOD practice sheds some light on the progress made to date with respect to conceptual goals set forth under the TOD approach. A quick assessment of this first wave of transit related development resources in the region reveals that;

- Set against the backdrop of prevalent automobile-driven place-making process, there has been some considerable progress towards designing pockets of areas that take into consideration the priorities of a mass transportation network.
- Despite giving rise to individual recognition stories at national scale (as in the cases of Plano and Mockingbird) in selected cases, lack of systematic leadership for individual cities results in a compromise in the place-making process in the absence of recognized design standards.
- The matrix is also an illustration of how the region may need a cohesive, and unified vision when it comes to rail-based transportation and the concept of TOD.

Table 5.4: TOD regulations adopted by DFW cities

North Texas Cities	Transit Supportive Zoning Regulations and Design Codes	Accessible Documentation
<p>Burleson</p>	<ul style="list-style-type: none"> Adopted "Transit Overlay District", 2007 	<p><i>Regulatory Documents</i></p> <ul style="list-style-type: none"> Overlay District Ordinance, 2007 Design Standards Manual, 2008 <p><i>Plans and Projects</i></p> <ul style="list-style-type: none"> Burleson TOD Comprehensive Plan Amendment Imagining Burleson 174 Corridor Plan Report SH Corridor Plan Draft
<p>Carrollton</p>	<ul style="list-style-type: none"> Adopted "Transit Center District Regulations" in 2005. Adopted "General Design Standards Ordinance" in 2007. 	<p><i>Regulatory Documents</i></p> <ul style="list-style-type: none"> Transit Center District Regulations, 2005 General Design Standards, 2007 Downtown Carrollton TOD, 2008 <p><i>Plans and Projects</i></p> <ul style="list-style-type: none"> TOD Market Analysis and Implementation Strategy TOD Transportation and Parking Study Downtown Transit Zoning Sub Districts Downtown and Trinity Mills TOD Districts Infrastructure Downtown Station Masterplan Downtown Rail Station Phase 2
<p>Dallas</p>	<ul style="list-style-type: none"> Utilized both Overlay District and Planned Development District to apply TOD Form-based mixed-use zoning code Forward Dallas! Policy Plan: Design Element 	<p><i>Regulatory Documents</i></p> <ul style="list-style-type: none"> Dallas Development Guide, 2006 ARTICLE XIII: Form Districts, 2008 <p><i>Plans and Projects</i></p> <ul style="list-style-type: none"> Forward Dallas! Comprehensive Plan Urban Design Element Forward Dallas! Implementation Plan Development Code Amendments UNT Dallas Area Plan UNT Dallas Implementation Plan
<p>Duncanville</p>	<ul style="list-style-type: none"> Adopted form-based code "Downtown Duncanville District" in 2008 	<p><i>Regulatory Documents</i></p> <ul style="list-style-type: none"> Downtown Duncanville District, 2008
<p>Farmers Branch</p>	<ul style="list-style-type: none"> Utilized Planned Development District Adopted Form-Based Code Station Area in 2005 	<p><i>Regulatory Documents</i></p> <ul style="list-style-type: none"> Form-Based Code Station Area, 2005 <p><i>Plans and Projects</i></p> <ul style="list-style-type: none"> Comprehensive Plan Station Area Conceptual Masterplan, 2002.
<p>Fort Worth</p>	<ul style="list-style-type: none"> Incorporated Planned Development (PD) zoning for mixed residential and nonresidential uses in or adjacent to employment areas in 1996. Adopted an ordinance establishing the Downtown Urban Design Guidelines as an overlay zoning district in 2001 (updated in 2009). Since then, two district-specific form-based code amendments have been adopted: the Trinity Uptown Development Standards and Guidelines (2007) and the Near Southside Development Standards and Guidelines. Initiated Urban Village Program in 2002 A TOD design charrette was conducted for the Summer Creek/Sycamore School Road station in July 2008 	<p><i>Regulatory Documents</i></p> <ul style="list-style-type: none"> Mixed Use Zoning Standards, 2006 Trinity Uptown Design Standards and Guidelines, 2007 Near Southside Development Standards and Guidelines, 2007 Downtown Urban Design Standards and Guidelines, 2009 <p><i>Plans and Projects</i></p> <ul style="list-style-type: none"> Comprehensive Plan: Chapter 14 Urban Design (Draft).pdf
<p>Frisco</p>	<ul style="list-style-type: none"> Utilized Planned Development District designation making amendments in Zoning Ordinance in 2003 Adopted Form-Based Code Manual for development in 2007. 	<p><i>Regulatory Documents</i></p> <ul style="list-style-type: none"> Form-Based Code Manual, 2007 <p><i>Plans and Projects</i></p> <ul style="list-style-type: none"> Comprehensive Plan

Table 5.4: TOD regulations adopted by DFW cities (continued)

North Texas Cities	Transit Supportive Zoning Regulations and Design Codes	Accessible Documentation
Garland	<ul style="list-style-type: none"> Utilized both Overlay District and Planned Development District to apply TOD SH 190, IH 30, and IH 635 Development Standards adopted in 2001. Downtown Development Standards adopted in 2005 	<i>Regulatory Documents</i> <ul style="list-style-type: none"> Comprehensive Zoning Ordinance, 2009 Downtown Development Standards, 2001 SH 190, IH 30, IH 635 Development Standards, 2005
Irving	<ul style="list-style-type: none"> * Zoning Ordinance is being updated in 2006 to include TOD TOD District Ordinance adopted to establish the design standards in 2006. 	<i>Regulatory Documents</i> <ul style="list-style-type: none"> TOD District Ordinance, 2006 <i>Plans and Projects</i> <ul style="list-style-type: none"> Irving's Transit Oriented Development Plan 2008 Comprehensive Plan Update (Final Draft) City of Irving Future TOD Developments
Keller	<ul style="list-style-type: none"> OTK Unified Development Code, Overlay District, 2008 	<i>Regulatory Documents</i> <ul style="list-style-type: none"> Old Town Keller Overlay District, 2008
Lancaster	<ul style="list-style-type: none"> Transit Ready Development District Adopted Medical District Design Standards in 2007 	<i>Regulatory Documents</i> <ul style="list-style-type: none"> Medical District Design Standards, 2007
McKinney	<ul style="list-style-type: none"> "The Town Center Study Phase 1 Report, 2008" serves as a policy guide regarding urban design treatments within Transit Village Module. Design Treatments: Transit Village Module "Urban Design Standards for the Regional Employment Center (REC)" Utilizes both Overlay District and Planned Development District 	<i>Regulatory Documents</i> <ul style="list-style-type: none"> Transit Oriented Development (TOD) Transit Village Module Design Treatments McKinney Town Center District Regulations Town Center Study Phase 1 Report, 2008
North Richland Hills	<ul style="list-style-type: none"> Adopted Transit Oriented Development Code in 2009 	<i>Regulatory Documents</i> <ul style="list-style-type: none"> Transit Oriented Development Code
Plano	<ul style="list-style-type: none"> Zoning Ordinance is being updated to include TOD* Adopted Transit Overlay District in 2003 	<i>Regulatory Documents</i> <i>Plans and Projects</i> <ul style="list-style-type: none"> Comprehensive Plan: Design Element
Richardson	<ul style="list-style-type: none"> Adopts both Overlay Zoning District and Planned Development Regulations and Design Guidelines Has a TOD master plan and vision Form-based approach instead of a use-based approach The city initiated works on TOD in the year 2000. Planned Development District Regulations 	<i>Regulatory Documents</i> <i>Plans and Projects</i> <ul style="list-style-type: none"> 2009 Comprehensive Plan Spring Valley and Main Street Station Plan, 2003 Arapaho Center Station Area Plan UTD North Campus TOD Phase 1 Project Report
Rowlett	<ul style="list-style-type: none"> TBD 	<i>Plans and Projects</i> <ul style="list-style-type: none"> Downtown (TOD) Projects Development plan Downtown Zoning
Town of Highland Park	<ul style="list-style-type: none"> Utilized Planned Development District 	<i>Regulatory Documents</i> <ul style="list-style-type: none"> Zoning Ordinance (w-new amendments)

Notes:

Overlay District: A mapped area where special regulations on development are applied. An overlay is typically superimposed over conventional zoning districts, but may also be used as stand-alone regulations to manage development in desired areas of the community.

Urban Villages: Urban Villages are small geographic areas (usually one square mile) zoned for dense, multiple-use development that is mass-transit and pedestrian friendly. "http://www.fortworthgov.org/planninganddevelopment/urbanvillages"

Form based zoning: Form-based zoning focuses regulations on building type and design, rather than on types of land uses. Conventional zoning regulations often separate land uses into distinct districts, which discourages multiple uses in a district.

Planned Development District: The Planned Development (PD) District is a district which accommodates coordinated development that provides a more flexible means than the zoning districts outlined in this ordinance.

5.6 REGIONAL MISSIONS AND GOALS

The transit oriented development and district goals in this report were primarily outlined to communicate a series of broader goals already set forth for the region by its institutional base, namely; the Center of Development Excellence principles and goals for future developments in North Texas by Sustainable Development Program of Transportation Department in NCTCOG; the transportation, quality of life, and financial goals emphasized in the 2030 Mobility Plan Amendment (NCTCOG, 2009b); and the vision set forth in the North Texas 2050 document by Vision North Texas (VNT, 2010). These goals for transit oriented developments and districts are further detailed by reviewing other documents and guidelines (such as, Reconnecting America & CTOD, 2010 *'TOD 101: Why Transit-Oriented Development and Why Now?'*, and City of Austin 2006 *'TOD Guidelines'*) in order to refine and illustrate the role of this particular development type in achieving the type of spatial growth anticipated for the region. The goals of transit oriented development and districts in North Texas are to:

- Provide balanced distribution of a diverse set of land uses, especially along the transit systems, to support growth and increase ridership across the region.
- Achieve a balanced, efficient, and dependable multi-modal transportation system that primarily supports walking, bicycling, and transit that reduces demand for single occupant vehicles.
- Foster self-sustaining mixed-use nodes for regional efficiency by creating live, work, shop, and play components.
- Enhance quality of life across the region by creating districts and neighborhoods with pedestrian-oriented features, streetscapes, and public spaces, that serve as centers of neighborhood and community activity.
- Increase and facilitate a range of housing opportunities and choices for residents of multiple age groups and economic levels.
- Foster redevelopment and infill of areas with existing infrastructure and promote the orderly and efficient provision of new infrastructure.
- Enrich community identity through use of compatible, quality architectural and landscape designs, and preserving community assets.
- Provide functional, adaptable, and sustainable building and site designs that use water, energy, and material resources effectively and efficiently.
- Activate and support healthier and active lifestyle by increasing walking and biking and community interaction opportunities.
- Advance economic development by creating additional tax base for the public sector, and cultivating entrepreneurship opportunities for the private sector.
- Avoid and mitigate the environmental impacts of vehicular traffic and sporadic lower density developments.

5.7 RECOMMENDATIONS FOR PLANNING, DESIGN AND DEVELOPMENT OF TOD'S IN NORTH TEXAS

This segment of the report outlines the key factors in the visioning, planning, and implementation of transit oriented developments and districts. The following recommendations primarily take their knowledge base from the findings of the case studies, smart features highlighted in the previous sections, and from the relevant literature reviewed throughout this research. The knowledge accumulated as a result of these data collection, analysis, and synthesis techniques is utilized to set cohesive, transit oriented district recommendations for the North Texas region.

The recommendations below make a clear effort to concentrate on district scale (all areas within ½ from the station) rather than development scale (which may occur anywhere within the given district) in order to assure district-level understanding. The development stages explained and recommendations highlighted in the following section focus on regional contexts, TOD typologies, market and development constraints, connectivity, zoning, land-use, development density, and diversity, stakeholders and ownership, TOD development process, partnerships and financing, and urban design for developing within ½ mile from the transit stations.

The findings of the case study analysis and literature review affirm that physical planning and design of TODs and TODs in most cases seem to be the core of the discussion to achieve an overall success for any given project. In most instances stakeholders seemed to be well aware that such developments require significant contextual understanding. Therefore, the recommendations concerning the creation of the physical environment was primarily focused on district level concerns and outlined under the framework of urban design by giving detailed suggestions on issues such as architecture, open space/landscape, parking, streets, walkability and sense of place in transit oriented districts. Although recommendations for this section is written in separate segments to highlight important points, this should not be taken that the issues highlighted in the design and planning of these districts are mutually exclusive.

Our systematic exploration and findings also reveal a greater emphasis on TOD typologies (See Dittmar et. al 2004 TOD typologies adopted earlier), even though examples and summary findings are provided by the city size in the previous chapters to give an easier access to the reader. Therefore the comprehensive set of recommendations below was given for all city sizes and typologies since this is one of the first attempts to such regional outlook. Where it is needed, variations on these recommendations were highlighted for individual developments, varying city sizes, and/or varying TOD typologies within the body of the each segment. It is recommended that future studies may explore more detailed look at these variations by taking the report as the first step to establish regional framework.

5.7.1 CLEAR AND STRONG VISION

The vision for development of transit oriented districts should be a regional vision for the entire transit system and more specific local visions for individual station areas. Strategic transit oriented district plans, station area plans, policy guidelines, and design guidelines are reliable methods for producing a strong, clear vision for the development of TODs within the region (See Appendix I DART Policy, and DART TOD guideline, 2008). As it can be seen in both Court House and Sheridan case studies, these planning tools are effectively used not only as guides for prioritizing the planning and implementation activities of cities and corridors, but also used as tools to build vision and public consensus for the TODt projects (See City of Denver Transit-Oriented Development Strategic Plan).

Regional governing agencies, transit agencies, branches of state and federal government and non-profit entities with regional emphasis and interests are capable of suggesting and developing a strong, cohesive, and clear vision for the development of TODs in the North Texas region. A list of these entities may include but is not limited to NCTCOG, DART, The T, VNT, and the collaborative or individual efforts of municipalities for the broader common good for North Texas (See Vision North Texas, 2010 to further explore the role of TODs in regional visioning).

A strong clear vision, especially one driven by regional governing agencies and developed with a strong community input, provides recognition, certainty, predictability, public and institutional education, and public buy-in for the development of transit oriented districts and developments. It is crucial that the public be engaged in this process regardless of the scope of the TOD, the size of the city or the type of the TOD

project. A visioning process with community input to develop station area plans and district plans can help set standards and expectations before projects are proposed. Although most of them are in the planning stages Sheridan, CO, and Verano, TX, case studies set concerted effort to publicly-driven visioning process in urban areas, whereas the case studies such as Leander, TX, and Daybreak, UT, illustrate mostly privately-driven, strong visioning processes in suburban conditions and smaller city sizes. These case studies in particular also show greater effort to engage community in the process at an earlier stage (See Appendix III for list of tools that can be used for setting the vision).

The preliminary steps taken in the visioning process with the community and the other stakeholders ensures a greater recognition and perhaps wider acceptance for the project during the planning phases rather than delay or community opposition during the implementation. The stakeholders involvement, especially communities involvement in the visioning process, help set the standards and expectations for infrastructure improvements, desired mix of uses, density and intensity, whether or not and what types of public/open spaces and other design considerations. The most effective plans or visions have a clear time frame and strategy for implementation. Districts should be well defined. Clearly illustrating the expectations for TOD development encourages stakeholder buy-in and assists the private sector by reducing risk and costs associated with uncertainty.

5.7.2 CONTEXTS: SOCIAL, ECONOMIC AND ENVIRONMENTAL FACTORS

Not all transit oriented districts or transit oriented developments will be similar in scale, function, or carry a similar significance for the larger urbanized region. It is critical that local and regional contexts be well understood and that the components of the TOD are appropriate for the local context and respond appropriately to the regional context. Although the impact of transit oriented districts and developments may be more absorbed in the larger city centers, these developments and districts typically grow to be important destinations as community and town centers for small and medium cities, and suburban areas in the growing metropolitan areas.

Transit oriented districts' strategic placement in the local and regional context, as well as strategic distribution of land-uses within a given TODt and a city is critical in shaping the larger development framework of the urbanized regions. Although the impacts of its conception may vary case by case due to varying planning, design, and implementation strategies, TODs and TODts not only intensify the city but also create economic, social and environmental impact for their immediate locals and their region.

For example, Clower et. al. predict a 50 percent increase in the announced, existing, and projected values of development projects located within 1/4 mile DART Rail stations since 2005 (Clower et. al., 2007, pii). By cautioning about confounding factors Clower et. al. also indicates that the total value of projects that can be attributed to the presence of a DART Rail station since 1999 is \$4.26 billion. Clower et. al. in the same paper also argues that the potential impacts, once all announced projects are completed, of state and local tax revenues associated with development near DART Rail stations will exceed \$127 million per year (Clower et. al., 2007, pii; Clower et. al., 2011). In most cases transit oriented developments also influence the socio-demographic structure of the neighborhoods, such as the gentrification impact of the Saltillo lofts, in east Austin inner city neighborhoods. Or have direct environmental impact to the its region, such as in the Sheridan area TODt example, due to the direct connections provided to the greenbelt system from the station and the district.

It must be realized that carefully planned mass transit system supported by strategically planned transit oriented districts in a regional scale is likely to contribute to

equitable distribution of resources and services throughout the urban regions (Soja, 2010). Furthermore, it will likely to provide greater accessibility, employment, education, and housing opportunities for all socio-demographic groups in the region.

Another environmental issue that must be noted here is that since most of the transit projects attempt to reutilize existing and abandoned rail lines in urbanized areas, they typically grow as infill projects. Over 50% of the reviewed case studies in this report are in one form or another, brownfield or greyfield remediation projects. Regaining these deprived sites, utilizing existing infrastructure and resources, and not necessarily going after another greenfield development has local and regional positive financial and environmental impact that is worth mentioning here (see such as Wesmont, Saltillo Lofts, Port Credit Village case studies concerning brownfield adaptation issues).

Given the potential economic, social, and environmental implications, both positive and negative, it is recommended that contextual exploration at the pre-development stages of TODs should be done in at least two stages. One is to explore and understand the past, present and the projected future regional dynamics and trends such as geospatial distribution and positioning of cities and municipalities within the larger region. The second stage is a strategic positioning of the district or the development within a given municipality in order to respond to social, economic, and environmental factors. For both scale and contextual exploration it is important to explore and respond to the factors such as regional economic dynamics, demographic changes and trends, employment numbers, housing choices, and community assets. to set the priorities for the planned development (see 'Evaluating the Impact of Transit-Oriented Development' by Clower et. al., 2011 for recent regional study results on the subject).

5.7.3 MARKET

Regional and national resources predict and project various important changes in the demography of the US that needs to be recognized in order understand the role of transit oriented districts in the foreseeable future. For example, nuclear family US households have been shrinking and now only comprise about 25 percent of households. More and more households are childless or headed by single parents. Single adults already comprise 41 percent of households. Demographic trends also illustrate that singles will soon be the majority, older Americans will outnumber younger Americans by 2050, and nearly half of the US population will be non-white by 2050. This older, non-family, non-white household demographic has historically used transit in higher numbers (Reconnecting America & CTOD, 2010). Similar changes and shifts in demographic trends has also been seen in not only in the projected households numbers and sizes but also in the composition of racial diversity, in the aging of the population, and in the number of employment opportunities in a service economy (VNT, 2010).

Demographic and economic trends, and life-style choices are significantly affecting where people, live, work and play. Urban housing is becoming more attractive to members of the aging Baby-Boomers, Echo Boomers, Gen X and Millennial generations. There seem to be a growing interest to return to the city for smaller homes, less maintenance, and more amenities. According to Reconnecting America & CTOD, 2010 many consumers want a "room with a view" within walking distance of employment housing, essential uses and services such as groceries and child care, and "third places" such as coffee houses, restaurants, fitness centers, dog parks, and culture centers. Lifestyle choices are changing, and convenience and affordability are paramount considerations. A market study conducted by the same center also illustrates "that by 2030 almost a quarter of all U.S. households looking to rent or to buy are likely to want higher-density housing near transit" and "to meet this demand we'd have to build 2,000 units of housing at every one of the 4,000 existing

and planned transit stations in the U.S.” It is also suggested in this study that most of the demand will be in the five metro regions with the biggest systems and investors seem to believe that investments in 24-hour cities outpaces investments in “9-to-5 cities” and in edge cities (Reconnecting America & CTOD, 2010).

Two particular cases, Saltillo Lofts, in urban context, and The Village at Leander station in suburban context illustrate a significant effort to understand both local and regional market dynamics in the pre-development stages. Although Leander is located 32 miles away from a larger city center and it is practically proposed in a green field, TOD visioning process is informed by wider market dynamics demographic trends, such as the ones highlighted in the above paragraph. Whereas Saltillo Lofts primarily takes its placement in the market by strategizing the dynamics shaping the immediate locale and the city.

While most developments are still occurring in the suburbs, there are reasons to believe that the balance is shifting from typical sprawl development, characterized by leapfrog scattered development of single, auto-dependant uses and strip centers, to reinvestment and redevelopment of urbanized areas, and that we will need to rethink our development models in urban and suburban centers to accommodate more growth (Reconnecting America & CTOD, 2010; VNT, 2010)

Although market analysis is a common practice for developers and the private sector, it is not a daily practice for communities, cities and municipalities. Due to the unique nature of the TODs it is recommended that the cities and municipalities should take proactive steps to systematically study local and regional demographic, economic, and life-style choices and trends primarily in their cities and their region. Market analysis performed in the pre-development stages can assist with determining the market potential for the transit oriented districts. Understanding travel choices and demands along with marketing studies can help leverage the potential economic and social impact of the transit oriented development for a community.

5.7.4 CONNECTIVITY AND TRANSPORTATION

Similar to the other contextual issues highlighted above, connectivity and transportation related concerns and recommendations for TODs and TODts are two-fold. One is the greater connectivity of the transit oriented districts and developments to its surrounding neighborhood, city, or the region, with well established multi-modal transportation network. The other is the connectivity and transportation options within a given transit district and its immediate surroundings.

Although in the regional scale transit lines and stations are typically collective visions and products of regional governing organizations, transit agencies, state and federal agencies for the greater good of the metropolitan region, proactive cities and municipalities must be part of this collective effort in the earlier stages of these plans in order to influence future decisions. In the pre-development stages of these systems it is recommended that communities have proactive roles to assess these location decisions in order to achieve greater connectivity with a multi-modal transportation network for the given city. As it can be exemplified in Figure 5.3, although Mockingbird Station has well integrated sidewalks within the development, greater connectivity is limited to the shopping areas South of Mockingbird Lane.

The review of the case studies and the relevant literature revealed two important city and region wide efforts which would be beneficial examples for the cities in the DFW region to evaluate. The Denver Transit-Oriented Development Strategic Plan (City of Denver, 2006, August) is a regional effort to create strategic corridor plan and station area plans for eight stations (See also Sheridan Station case study). The corridor plan is one of the oldest examples of such regional multi-municipality efforts, where there is a regional effort to plan, implement and manage transit corridors and development areas around the station while considering both multi-modal transportation



Figure 5.2: Easy vehicular access to shopping in TOD area, Mockingbird Station (Photo by T. R. Ozdil, 2010)



Figure 5.3: Mockingbird Station has well integrated sidewalks within the development. Yet, the greater connectivity is limited to the shopping area across the Mockingbird Lane (Photo by T. R. Ozdil, 2010)



Figure 5.4: Limited station integration to its surrounding neighborhood, Cityplace Station (Photo by T. R. Ozdil, 2010)



Figure 5.5: Desired qualities at station platform Baylor Station above', and Deep Ellum Station 'below' (Photo by T. R. Ozdil, 2010)

and connectivity issues in the heart of all transit oriented districts planned (County of Arlington-VA., 2010).

At the district level transit oriented districts that emphasize the pedestrian are well connected to the existing urban fabric, and have multi-modal transportation options, such as bus connections, street car connections, bicycle amenities; providing more opportunities and choices for the public. Well connected districts offer higher potential with regards to affordability with the largest savings coming from a reduction in the need for automobile ownership-related expenses. Based on the knowledge gained from the earlier findings it is recommended here that greater attention must be given to the connectivity of the station area to the rest of the district primarily for pedestrian connections. Limited station integration to its surrounding, as it can be exemplified in Cityplace station image in Figure 5.4, must be addressed through enhanced pedestrian amenities and streetscapes to make such areas desirable for multi-modal access. It is also suggested that multi-modal connectivity must be further explored between the transit district and the transit support area in order to create a more active district.

Well established pedestrian connectivity throughout the transit oriented district and the integration of multi-modal connections to the station area is a suggested approach for all developments regardless of city size. However, our findings also illustrate that smaller city TODs are more likely to integrate greater vehicular connection and park and ride facilities within the station area (or in the transit core) than larger cities. As the TODs start getting closer to larger metropolitan centers they seem to emphasize pedestrian connectivity and drop-off and pick up facilities for other transportation modes. It is important to explore this delicate balance between various transportation modes, and city size and TOD typology to achieve successful districts.

Another point that should be noted here is that when there are no underlying strategic station area plans to regulate and/or guide sidewalks, bicycle routes, bus stops, and pickup and drop-off points smaller TODs seemed to be primarily focused on site specific concerns neglecting the greater connectivity issues. As it can be highlighted with the examples like Mockingbird, Houston Pavilions, or Saltillo Lofts case studies although there are efforts in all of these cases to create pedestrian connections within the boundaries of the developments most of them seem to lack greater connectivity to the transit district and the transit support area. Therefore it is essential for cities to show district level efforts in the planning phases of the station areas in order to support and enhance the longevity of transit oriented developments in their communities.

5.7.5 ZONING

TODs and TODts are, in essence, compact development strategies that promote higher density urban living with the added benefit of access to a diverse set of uses within walking and biking distances or via public transportation. For TODs and TODts to truly function for their intended purposes they should respond to the pedestrian scale development where the distances are measured relative to walking, biking, and public transportation between live, work, and play, not to the vehicles. This essential principle requires sites, blocks, and buildings to offer mix of uses in close proximity which most traditional Sunbelt cities lack. The problems for metropolitan areas such as DFW is greater because it is primarily designed and planned by auto dominated principles therefore most land use codes encouraged separation of uses for several decades.

Given the growth and the foreseen limitations in natural resources to support activities, it must be realized that all cities must review our understanding of how they must function in the coming decades and adopt the type of strategies to a level that cities give choices to its habitants. Therefore, it is suggested that most cities must be proactive in reviewing their zoning requirements within the station area to ensure

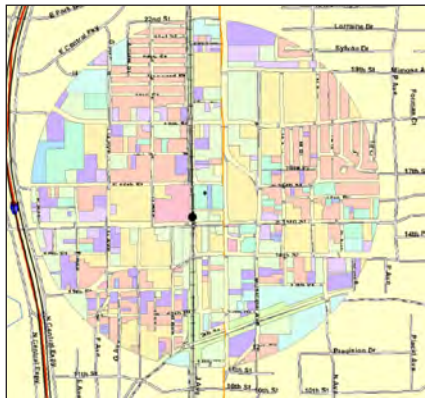


Figure 5.6: Downtown Plano, TX land use within 1/2 mile (Data Source: NCTCOG, 2010)

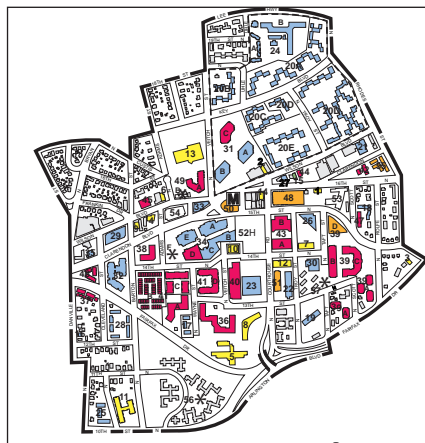


Figure 5.7: Court House, VA infill projects 1990-2005 (Source: Court House Development Project, 2005)

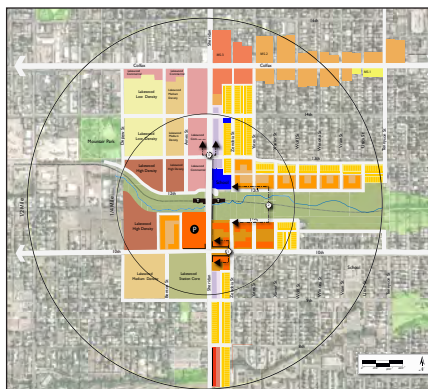


Figure 5.8: Sheridan Station Plan, Denver, (Source: Sheridan Station Plan, 2009)

that the zoning in place permits, encourages, and incentivizes appropriate transit oriented development. The review of the case studies illustrated that almost all the development projects or districts reviewed for this particular report, regardless of their city size, went through one form of zoning modification or another in order to accommodate this development type.

Mixed-use zoning and mixed-use districts are often overlaid upon conventional zoning grid through the creation of overlay districts or special zones. This is a makeshift strategy and often doesn't change the underlying requirements of auto-dependent planning (Reconnecting America, 2009). Often conventional zoning needs to be abandoned or modified in favor of alternative zoning methods such as form based codes to ensure that the transit district zoning supports development that follows the principles of TOD and the vision established for the transit station area. These alternative codes focus on the form of the built environment rather than use (See Appendix III for additional zoning definition and strategies). Re-zoning should also suggest an innovative attitude and less of a regulatory attitude where TOD is the desired development approach. In order to provide greater flexibility for innovative and unique district plans it is suggested that cities and municipalities should take a role of being facilitators for the development. It is important for cities to explore alternative approaches (such as form-based code, principals of new urbanism, and smart code) to guide such districts and developments.

5.7.6 LAND-USE

A well established relationship between the transit station and the surrounding land-uses are typically the key ingredient of successful transit oriented districts. Regardless of their city size, almost all case studies had a land-use plan with diverse number of land-use choices with well established pedestrian connections within their transit cores. The case studies also illustrated that many of these developments attempted to mix the uses at the finest grain possible based on the community's present and future needs.

Vertical mixed-use (having more than two uses in a given building) seems to be the preferred typology over horizontal mixed-use in large cities, urban centers, and suburban centers. It is also found that most of the TOD and TODt projects that grow as an infill project as a part of existing historic city fabric (such as Court House in Rahway, NJ and Plano, TX) seem to carry some of the essential components of the diversity and mix considered to be important for land-use related issues.

It is suggested that cities and municipalities have a strategic view and a plan for the desired land-uses in transit oriented districts. High quality transit oriented districts should provide a mix of major uses, jobs/housing balance, provide essential uses and services, diversity of uses, and a range of housing types including mixed income housing, and mixed life-stage housing. With the use of appropriate alternative zoning mechanisms such as form based codes, regulation of land use can become less prohibitive and more prescriptive and permissive.

In order to achieve the type of community and the pedestrian environment desired for the transit oriented districts, land-use mix in the station area and the transit core must be especially crafted. As it is highlighted in the Austin TOD guidebook, non-transit supportive uses such as automotive sales, services or car wash, large format food stores, warehouses, low intensity single-family housing or industrial or commercial uses should not be considered for the transit core area for any TOD types (City of Austin, 2006).

Although mixing of various land-uses is a desired quality for all transit oriented districts to accommodate live, work, and play within walking distance in a given district, the percent of uses allowed must be well crafted in accordance with the local demand. Adoptable and flexible building types must be encouraged in order to respond

to changing market demands over time.

One final point that must also be mentioned here is that the communities of different sizes should try not to replicate the TOD at the next stop in order to achieve a similar level of success. It is suggested that cities do their own due diligence to find a complementary mix of uses that is compatible, appropriate, and desired for their local context. Community involvement and participation processes with design shreds can be a very good tool to explore and envision various possibilities and set the desired goals for the type of uses that would be more relevant to the community in the transit oriented district.

5.7.7 INTENSITY, DENSITY, AND DIVERSITY

The review of the case studies and literature illustrated that sunbelt cities and metropolitan areas have different densities and intensities, as opposed to some other cities and case studies highlighted in North America. Particularly, North Texas cities are relatively young, and population and job densities (per/acre) are sporadic and relatively low due to their distribution to the greater metropolitan area. Less challenging natural boundaries in places like North Texas (as opposed to places like Portland, OR) and greater availability of affordable land in the periphery in this region contributes to growth which, in essence, requires a unique look at transit oriented district planning.

Transit oriented districts should be intense in function, dense in land-use and built form, and diverse in their uses, services, and attractions. Specific projects within a transit oriented district should provide a diversity of uses within the project itself or add to the diversity or intensity of uses within a district. Intensity regarding function can add identity to a transit district such as employment or residential centers of intensity. Diversity of housing is crucial to the success of a transit oriented district and district plans should emphasize mixed-income and mixed life-stage housing.

Although it is not a one size fit all formula, it is recommended that the desired intensity and density would be higher in the station area and in the transit core, and these densities can be tapered down as you go further away from the station to the district, and the support area (See Figure 5.3). These adjustments to build form should be considered of surrounding densities but respond to future demands, and the zoning should be easily adaptable to higher densities and intensities with the growth of the district or the city. Strategic distribution of density through the development and district would likely support compactness, efficiency, and greater pedestrian connectiv-

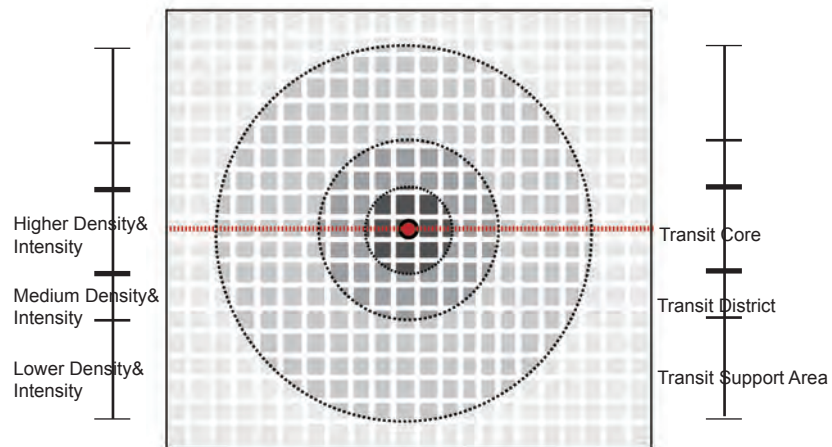


Figure 5.9: Density and intensity variations in TODs (Graphic is Inspired by DART, 2009)

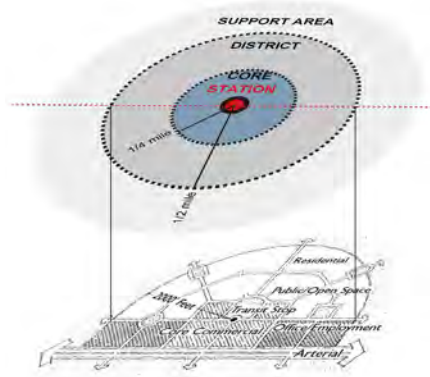


Figure 5.10: Transit oriented development diagram (graphics: T.R Ozdil and Y. Lin adaptation of Calthorpe, 1993).

ity to the station area (See Appendix IV Florida Department of Transportation, 2009 as examples of different density and intensity requirements by different types used for various TOD typology).

5.7.8 STAKEHOLDERS AND OWNERSHIP

As it is detailed in the TOD profile page at the beginning of each case study there are various actors representing both public and private interests in the visioning, planning, and implementation stages of transit oriented districts and developments. These actors include but not limited to transit agencies, local, state, and federal government agencies, developers, financial organizations, community members, and riders. These ranges of stakeholders engage in various levels of involvement from passive interest to vested interest concerned with the development of a transit oriented district throughout the planning and implementation process.

The cities and communities must recognize that the involvement capacity and interest of each actor will change overtime; however, the community at large is a consistent party who will see the impacts of such development. Therefore it is vital to involve the community as the primary stakeholder every step of the way in the development process. Community input in the visioning process helps to determine what public infrastructure is needed, the intensity, density, diversity, the desired mix of uses, whether there should be and what kind of public space, and other design considerations (Reconnecting America, 2009). Community input in the visioning process provides predictability and certainty for all stakeholders. Cities and municipalities are in good positions to facilitate the solicitation of community input.

In more established communities creating transit oriented district and developments requires the city to work with multiple landowners and developers. To set a greater vision for the transit oriented district it is important for cities to be actively involved with all the private parties, mediate potential points of conflicts, and support mechanisms that would ease the land assembly and implementation processes.

5.7.9 TOD DEVELOPMENT PROCESS

Developing TODs and TODts take time and there are many steps to the planning, development and implementation phases requiring involvement and input of many actors. As it is highlighted in the process section of the each case study every step of the TODs and TODts are influenced by a series of financial, regulatory, planning and adaptation decision making processes. For example, Port Credit Village TODs completion from its inception took approximately 12 years. Since 1981 the Court House station has been an evolving into a district. The third phase of the Mockingbird Station TOD was completed 11 years after the start of the project. The Court House case study can be considered a forty-year transit oriented development effort.

The first step is to create a strong public consensus in developing of a regional strategic transit oriented district plan or station area plan with the comprehensive understanding of regional and local context and market analysis. Although selection of station location requires inputs of many actors, typically station areas must be well placed, districts need to be rezoned, have land assembled, and partnerships and collaboration need to be forged.

It takes money, resources, and expertise. There are a variety of tools that are available to help ensure that the project is financially feasible and funded: community development corporations, public/private partnerships, joint development programs, municipal land assembly and land banking, housing trust funds, and shared parking strategies all bring the public and private sector assets together to get the project moving. Well established codes and guidelines for the districts in the earlier stages of the project are also helpful tools to assure consistency in applying the grand vision.

Planning Process and Timeline for TOD
Station Area Planning Beginning – Time frame (2-3) Months <ul style="list-style-type: none"> • Kick-off Meeting • Focus Group Meeting #1 – Define Key Objectives • Collect Background Information • Baseline Analysis • Map of Existing Conditions • Opportunities and Constraints • Public Workshop #1 – Review Findings/Finalize Objectives
Station Area Planning Design Phase – Time frame (3-4) months <ul style="list-style-type: none"> • Develop & Analyze Land Use/Circulation Alternatives • Parking/Traffic/Transport./Environ./Econ. Tech. Review • Focus Group Meeting #2 – Present Alternatives • Public Workshop #2 – Present Alternative Concepts • Refined Preferred Alternative
Station Area Planning Implementation Phase – Time frame (3-4) months <ul style="list-style-type: none"> • Draft Station Access & Design Standards • Draft Station Area Plan • Public Workshop #3 – Open House to Present Plan • Final Station Area Plan

Figure 5.11 : Planning process and timeline used for some City of Denver TODs (City of Denver, 2007, p. 19).

Due to the longevity of the execution of TOD projects there should be an implicit understanding among all stakeholders that adjustments to TOD plans must be an expected step in the development process. Adaptability and flexibility of earlier decisions to changing regional, local and market dynamics is a key ingredient of success for these complex projects. Plans and policies for transit oriented district framework must be well established so that changes can be absorbed in the intermediate stages of the projects. As the Westmont case study discussed, unexpected site conditions, such as brownfield remediation, can delay project for several years.

As mentioned in the previous sections, TOD needs complete community support throughout the development process. Community input is most efficiently applied in the visioning process. A visioning process with community input to develop station area plans can help set standards and expectations before projects are proposed. This smoothes the way for the approval of appropriate development. Certainty and predictability ensures that projects will be approved without delay or community opposition (see City of Denver TOD planning process and timeline).

5.7.10 PARTNERSHIPS AND FINANCING

Establishing partnerships and securing financing are two of the critical steps in the creation of transit oriented development. Local governments can be particularly effective in providing incentives for the kind of development they want by partnering with developers to mitigate risks associated with the development process: entitlement, construction, financing, and marketing.

The review of the TOD projects and literature illustrated that joint development programs and public-private partnerships are commonly used partnership mechanisms for TODs. In fact, over half of the case studies reviewed in the earlier chapters created unique partnerships among various stakeholders in order to achieve a common goal. These collaborations leverage the skills and assets of both the private and public sectors with the aim being to deliver a service or development for public benefit. It is also realized that public agencies and community based organizations such as Business Improvement Districts, Business District Associations, marketing



Figure 5.12: Preferred development proximity to station, Baylor Station (Photo by T. R. Ozdil, 2010)

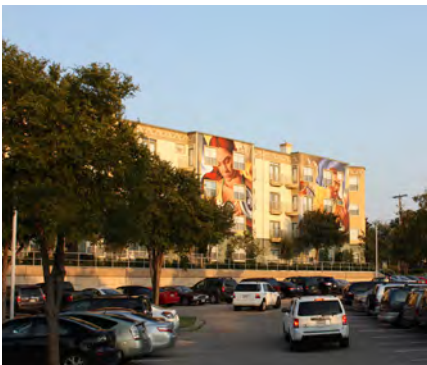


Figure 5.13: Development is disconnected with station area, Mockingbird Station (Photo by T. R. Ozdil, 2010)

and outreach programs, and Community Development Corporations can play a critical role in supporting TOD implementation through their programs and institutional relationships (EPA, 2010).

In order for any project to be built, including TOD, it must obtain financing. It is important that a number of financing sources are available for the development of TOD projects, and TOD developers have access to various lending institutions and local governmental funds. Although the trends are changing in a positive direction, many traditional financial institutions in North Texas are familiar with mainly building typologies that have single uses (i.e. financing for conventional subdivision developments with single uses where the financing process is well defined).

TOD projects are complex and have unique building typologies; therefore, it may be difficult to obtain funding from traditional mechanisms. It is important that incentives and financial tools are available such as tax increment financing, to reduced impact fees in station areas, and tax abatements that can be used to assist and encourage private-sector developers in TOD by investing public funds, and reducing or removing fees for development proposals. Tax increment financing can be used by cities to pay for infrastructure or other improvements to spur new development and reinvestment in areas that need revitalization (See Appendix III for additional financial instruments and partnership tools).

Where there is weak market support for TOD, public programs of assistance such as housing trusts, land assembly funds, and funds for buying available parcels in the open market can often be employed to leverage higher density, higher quality, mixed-use, mixed-income TOD projects. (See EPA, 2010; Myers, 2004; Parzen et. al. in Dittmar et. al. 2004, and Reconnecting America, 2009 for additional information for partnership and financing).

5.7.11 URBAN DESIGN

The practice of urban design is primarily concerned with the art of relating structures to one another and to their natural settings to create living conditions for people (Stein, 1955 appeared in Lang, 2005). It involves creation of a well crafted built environment as a product of this reciprocal relationship, where the outcome is beyond the scope of any single owner, site, project, or time. According to Lang in *Urban Design: A Typology of Procedures and Products* “However logical the land-use pattern prescribed by city planners, the beauty and utility of its buildings and the nature of the landscape, it is overall three-dimensional combination of forms and spaces as seen in time over time that gives a city its character” (Lang, 2005, p. XIX). Successful transit oriented developments and districts, whether newly built or in part requiring re-design of existing elements of a city, are products of the balance created between the urban form and the functional requirements of human needs.

As it is broadly covered throughout the planning and design portions of the case studies, there are number of issues that lend importance to design of the transit ori-



Figure 5.14: Cross-section of a typical transit oriented district (Y. Lin, and T. R. Ozdil).

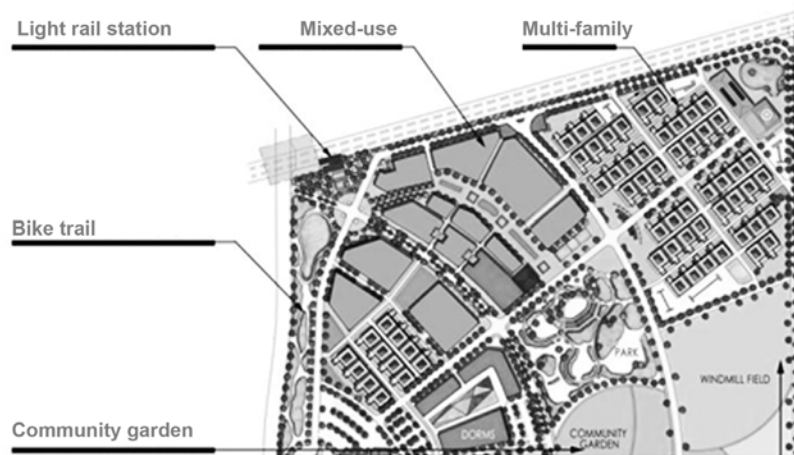


Figure 5.15: Conceptual TOD for Dallas Urban Solution Center of TAMUS (design and rendering by Crystal Cheng modified by Y. Lin)

ented developments and districts from an urban design point of view. Probably one of the most critical issues that must be realized and addressed by all actors collectively is that transit oriented development is a district level effort, meaning that singular development plans, strategies and efforts must respond to the community needs, identity, and collective vision. Therefore urban form and built environment, newly created or enhanced as a result of transit, should reflect the collective understanding of all stakeholders. This vision can be carried on and achieved by creating urban design plans, codes, and guidelines in the pre-development stages for the district.

It is suggested that series of urban design strategies should be developed and implemented for each zone (transit station, transit core, transit district, and transit support areas) of the TODs in order create a cohesive urban fabric. These efforts must also be carried out to the greater area with additional recommendation to enhance sidewalks, trails, and greenways in order to promote greater connectivity.

Since place-making and pedestrian emphasis are two of the most important goals of transit oriented districts, using public and open space hierarchy and public street network as an organizing mechanism for the district level planning can be considered good urban design practice to achieve such goals. In this framework it is recommended that the station areas are well integrated to the transit core through integrations of plazas, public spaces, and compact urban form (See Appendix II for DART's station area plans for DFW). Similar design languages can also be carried out with district art, signage, plant, and or material palette across the district and perhaps beyond.

Building heights, small block sizes (approx. 200'x 400", similar to Downtown Fort Worth block sizes), and zero lot line building frontages that respond to human scale, and building fenestrations and openings with well articulated sidewalks that accommodate pedestrian experience, flow, connectivity and accessibility can be contributing factors of urban form to place-making efforts in the transit oriented districts. Therefore they should be considered as determining factors for the design of the TODs (See Appendix IV TOD design guidelines 2009 by Florida Department of Transportation for the examples of block sizes and densities for different typologies of TODs).



Figure 5.16: Preferred frontages and uses at Baylor UMC Station (Photo by T. R. Ozdil, 2010)



Figure 5.17: TOD station and identity, Mockingbird Station (Photo by T. R. Ozdil, 2010)

Furthermore, other design elements and organizational tools such as strategic clustering of architectural elements, detailed alignment of view corridors, articulated placement of anchors, landmarks, sculptures and terminus points should be systematically utilized in order to create an urban form with identity. In urban design exploration the station area and the transit core must be given the upmost importance in the configuration of all other programmatic decisions for the district as the entry and exit point to the community.

It should also be realized that reducing set-backs on major arterials or number of lanes on street networks, and insertion of back alleys for service especially in the core areas of new developing districts may provide opportunities for greater area connectivity with bike trails, and other transit options. These interventions may also provide additional opportunities for on-street parking which might not be possible otherwise. These district level urban design strategies can further heighten the number of choices for people, enhance pedestrian presence and experience, and allow that transit core and district to connect to and serve the larger transit support area as a node.

As it is highlighted in the case studies (such as Daybreak, UT, Leander, TX, and Verano City South, TX) conventional zoning practices must be further enhanced with transect planning strategies and form based code in order to assure desired urban form and pedestrian experience in TODs. Decision makers should consider adopting these supporting strategies to reinforce the TODs' role as centers (node) for the community and the region.

As a result, the attention paid in the urban design scale would not only influence community identity by creating attractive and pedestrian friendly urban form, but also foster community interaction and enhance quality of life by creating compact and active spatial organization throughout the district. Although some key points for the design of transit oriented districts will be outlined separately in the following section with further focus on the key elements of urban design, it is recommended that cities and municipalities be proactive and create district level strategic plans, design codes and guidelines that would respond to the needs of development projects within their transit oriented districts.

ARCHITECTURE

Transit oriented districts and developments derive their primary identity from the facades and the spaces that are enclosed by the facades. More importantly buildings themselves create the very environment people live, work, shop, and entertain. Therefore transit oriented development architecture should be accommodating, interesting, and varied. The architecture should also be flexible so buildings can be employed for different uses over time (See cases such as Uptown District, CA and Court House, VA). As outlined through the previous case studies for varying city sizes, there is a range of issues related to the architecture that should be considered in the design of TODs and TODts.



Figure 5.18: Less desired retail frontage, Kiest Station (Photo by T. R. Ozdil, 2010)

Contextual integration is an important aspect of architecture therefore architectural materials and methods of the geographic area should be strongly considered in the design of TODts (see case studies such as Del Mar Transit Village, CA or East Side Village at Downtown Plano). This can be as simple as the use of readily available materials in the region, all the way to adoption of certain construction techniques and methodologies that contribute to the identity of a TODt. Integration can also focus on methods of sustainability as demonstrated by the history of successful architecture within the larger context.

All too often, the attempt to apply the architectural characteristics and styles of a larger region is reduced to stylistic and cliché representation. Successful transit oriented district architecture must not only address the pre-requisite pragmatic issues



Figure 5.19: Architectural identity around transit, Victory Station (Photo by T. R. Ozdil, 2010)

(such as providing required square foot of space for diverse set of residential, commercial, or office space for varying users), but must also communicate authenticity through design. Non-contextual materials and construction techniques are likely to disrupt the buildings' integration to the district and the community and thus likely to compromise the long-term viability of a TODt.

Regional practices are continually evolving, so too must a regional identity as demonstrated through the architecture. One of the challenges to this end facing TOD is the time frame and more universal oversight of the design and construction sequence. Therefore it is important that rules, regulations, and guidelines regarding the architecture do not have deterministic roles and can be modified over time to adapt to those changes.

Architectural singularity, especially in master planned or set piece developments, often produce overly stylized environments that are easily dismissed as imitation – or risk becoming dated uniformly. In both cases, no matter how pragmatic the architectural solution, the long-term viability can become compromised due to these stylistic limitations. It is also recommended that a wide range of materials suitable for the context be approved and that a range of parameters dealing with material types, and construction techniques be considered when assembling a transit oriented district architectural qualifications.

There is a growing awareness that cities and communities are in the middle of a transformative period for how they sustain value in the architecture that already surrounds us. Actors of built environment have begun a process of taking pre-existing buildings and finding methods by which the architecture can be altered to accom-



Figure 5.20: Architecture and identity around transit, Medical District/Parkland Station (Photo by T. R. Ozdil, 2010)

moderate a different program – possibly even a program that did not exist when the original building was built. However, given the prominence of this within the profession today, it is also conceivable that buildings can be designed with adaptive re-use in mind from the beginning. Meaning, transit oriented developments and districts can value a building design for not only its ability to meet the current programmatic needs, but also for its capacity to evolve and succeed in meeting future functional requirements not yet anticipated. While the capacity for a building to be used for a different function other than the one originally intended is not formulaic, there are some guiding principles that might provide the possibility for a more successful transfer.

- Increasing ceiling heights to 1.25 times the minimum requirement for the intended program.
- Clear organization and distribution of the environmental control systems.
- Open and optimized internal structural systems.
- Generous transparency given that the addition of opacity is easier to accommodate than the addition of transparency to an existing structure.
- Large vertical circulation cores with abundant capacity in the case of multi-story buildings.

While these are suggestions gleaned from current adaptive re-use strategies, it is possible that certain TOD programmatic requirements would be highly specific and thus make some of these ideas less applicable. However, buildings constructed with methods anticipating a 100-year lifespan should inherently be equipped with some capacity for adaptive re-use for transit oriented districts.

Buildings that rely entirely on simple shapes create a context that is often mundane and repressive where as the opposite expression of non-conforming shapes can seem to be a collection of follies or unrelated structures. In both instances the building shape and form fails to communicate intended public space or architectural building strategy. Although, the station area or the transit core may likely accommodate building form(s) with unique characteristics in an effort to give distinct identity to the district, buildings that are comprehensible, neither overly simplified nor artificially complex in shape and form, are likely to be the preferred choices for the larger TODt.

As it is also highlighted in the urban design section the architectural form plays a critical role in the articulation of public space. From street frontage, to formal and informal gathering spaces, all can be engaged and defined by the architectural form. In this regard the comprehension of the building form and shape in relationship to entrance, natural lighting, and landscaping can all be clear examples of ways of integrating a buildings shape into external systems to provide a cohesive and legible design for the district.



Figure 5.21: Mixed-use development in Downtown Plano (Photo by T. R. Ozdil, 2010)

Throughout the site visits for this research it is realized that buildings in Texas TODs often use construction techniques and materials that do not promise architectural presence, longevity, and permanence. Although, this temporal quality of the buildings is argued to be preferred choice by a few due to the buildings' relatively low construction costs to the stakeholders, and ease of replacement after its shelf life, these buildings are found to be limited in creating the desired presence, identity, and permanence expected from TODs long-term aspirations (such as Court House case study). Although, stylistic and mixed-use choices can be argued depending on one's perspective, local examples such as Mockingbird, Park Lane, and Victory TODs seem to make the desired attempt to address architectural permanence and longevity. It is important that some level of longevity and permanence is encouraged by communities especially for the station area and transit core in order to promote strong node for the community.

Due to permanence and longevity expected from most of the buildings in TODt it is critical that they are designed and built with sustainable principles by not only being



Figure 5.22: Enhanced access to transit station, MLK Jr. Station (Photo by T. R. Ozdil, 2010)



Figure 5.23: Open space around transit station, Baylor UMC Station (Photo by T. R. Ozdil, 2010)



Figure 5.24: Parking and pedestrian connections, Downtown Carrollton Station (Photo by T. R. Ozdil, 2010)

less dependent on external sources, but also performing intelligently by producing part of the energy and water to be consumed by utilizing technologies such as photovoltaic or wind power, or by reducing their environmental impacts by utilizing rooftop gardens, white roofs, or stormwater detention systems on site. These sustainability measures should go beyond mere gestures to comply with ratings and publicity requirements but they should be inherent to building practices throughout the TODs.

LANDSCAPE AND OPEN SPACE

Landscape and open space is often treated as the final touch up after the built environment takes its form and shape within the remaining site and portions of the development and the districts. In the case of transit oriented districts and developments this should be the last approach that must be taken by any city or municipality due to pedestrian oriented nature of these developments. If plazas, mini-parks, children play-grounds and neighborhood parks are strategically located throughout the district and transit support area, landscape and open space can be extremely influential in the spatial organization of the transit oriented district and perhaps the community at large. The thoughtful and balanced distribution of such spaces can encourage walking and biking, and create healthy and active living environment which are proven to be items that add to place-making, quality of life, and community building in TODs. Literature has also proven that the availability of such open and green space adds economic value to the surrounding uses.

Review of the case studies illustrated that master planned large scale TODs in smaller cities and greenfields, such as Daybreak and Leander, made concerted effort to provide hierarchy of open spaces and planned for recreational amenities and linkages throughout the transit oriented districts and the community beyond. Similar efforts were also seen in medium and large cities with a concerted effort to integrate existing green infrastructure and trails systems to the district. In urbanized areas the interest seem to be providing continuity and connectivity to existing natural and park systems, as it was highlighted in the Sheridan and Verano case studies. Although land values are some of the major concerns in the urbanized areas, to provide such amenities densified urbanized living conditions typically create the conditions and the needs for outdoor rooms. In order to make TODs attractive such qualities must be prioritized to the fullest extent.

Another functional attribute of such spaces is the environmental impact on the health of the city and its residents. The intricate role these spaces play in balancing storm water runoff, carbon sequestration, and off-setting the heat-island effect must not be undermined. It is recommended that the cities and the municipalities should take extra measures to assure strategic placement of appropriate amount of open spaces in order to reduce and mitigate such negative environmental effects. If these spaces can be designed with greater sensitivity and sophistication they can be programmed for not only their environmental benefits, but also their recreational amenities, which can be an attraction for urban dwellers.

Some of the recommended tools for transit oriented districts include, but are not limited to, low-impact development (LID) practices (See West Hyattsville case study), stormwater detention and retention requirements for developments, protection and use of riparian corridors and creeks as part of these systems (See Sheridan case study), daylighting streams and creeks, and incentivizing roof top gardens, biofilters, use of water efficient regional plant palate, and pervious surface requirements for large open spaces, plazas, and parking lots. Although it may require additional up-keep and maintenance, especially in urban areas, street trees should be utilized throughout the district for added benefits such as creating identity, punctuating circulation hierarchy and connectivity, and providing shade and relief for pedestrians in the hot Texas weather.

Obviously, not all TODs have similar landscape and open space requirements and

needs, nor will land be available to support or facilitate this type of use in every TOD location. Our case study findings illustrated that TODs in suburban areas and small cities are likely to have more community and neighborhood parks within the district areas than their counterparts in the large urban areas and cities. It is essential that town squares, plazas and mini parks be critical components of transit oriented districts and must be well integrated in the station areas and the transit core areas for all TOD types. It is also recommended that large community, neighborhood, and regional parks should be well linked to TODs but encouraged not to be placed within close proximity to the stations areas to support the broader goals of these developments. It is also suggested that cities and municipalities should especially be open to community input in setting the standards and expectations for landscape and open space.

STREETS AND WALKABILITY

Lively streets and walkability are key to the success of a transit oriented district, as it was highlighted in many of the case studies throughout this research (such as Westmont, Port Credit village, and Uptown district case studies). The review of case studies further revealed that cities which tend to adopt form based codes and other non-conventional zoning approaches, enhance pedestrian circulation and achieve more vibrant and human scaled neighborhoods and streetscapes. Form based code primarily focuses on architectural and urban form, regulating items such as building heights, setbacks, windows and doors, the street and sidewalks to create dynamic and vibrant streets. This approach should be reinforced, taking safety and connectivity measures into account, which has implications, not only on the walkability of the street network at local scale, but also on the public health in the regional scale.

Paramount to creating vibrant streets and walkability is the search for solutions advocating low vehicle density, by reducing set-backs on major arterials or number of lanes and speed limits on street networks, and insertion of back alleys for service especially in the core areas. For the new developments, on the other hand, similar solutions should also provide opportunities for greater area connectivity incorporating bike trails with transit choices.

As part of the larger connectivity considerations within the transit oriented district, as well as beyond the transit area, city and regional bike plans, such as the Veloweb plan in North Texas can be integrated to the connectivity considerations for the station areas and districts. As it can be exemplified in the Court House case, bike plans

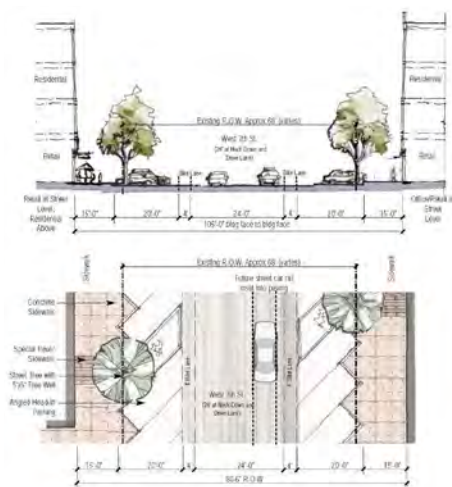


Figure 5.25: Street section: 2 traffic lanes, 2 bike lanes, angle parking (Source: JHP, 2009)

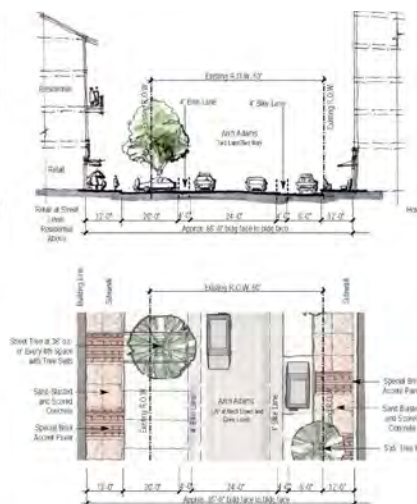


Figure 5.26: Street section: 2 lanes traffic, 2 bike lanes, head-in and parallel parking (Source: JHP, 2009)

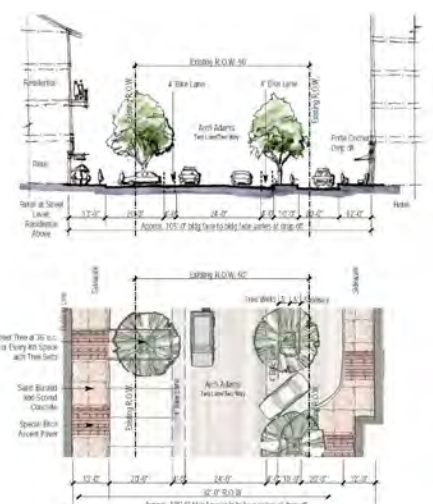


Figure 5.27: Street section: 2 traffic lanes, 2 bike lanes, head-in parking, slip drive (Source: JHP, 2009)

could be fully integrated in the strategic planning of regional TOD efforts to encourage multi-modal connection. Amenities such as bike racks, lockers and designated paths should also be encouraged for multi modal access to these areas. Additional information regarding bike can be found in NCTCOG’s Mobility 2035: The Metropolitan Transportation Plan – Bicycle and Pedestrian Chapter Update, Dallas Bike Plan, 2011.

It should also be noted, regardless of city size, that successful transit stations and districts generate both day and night time pedestrian activity. Therefore careful lighting strategies should be developed throughout the district, and proper amount of street furniture (such as seating, kiosks, trash bins, street lighting, and information booths) must be provided, especially in the transit core areas and major circulation routes.

Building to the street, minimizing the effect of parking – i.e. large surface parking lots, active building edges with transparency and activity and creating nodes to walk to (See Figure 5.17-19 for alternative street layout that promote variety of choices) are some of the design solutions to encourage and enhance the pedestrian experience in the built environment. Here, the Walkability Index measuring walkability of the area with reference to frequency of street intersections and the density of jobs in an area could be a means to assess the potential solutions of the design prior to implementation (Leslie, et. al., 2007). It must be realized that healthy street life can promote vitality in transit oriented districts.

PARKING

The balance between density and the subsequent need for parking structures can jeopardize a project, as can one-for-one replacement parking for the redevelopment of surface parking lots. Parking ratios/requirements for conventional zoning typically overestimate the parking needs of development near TODs and undermine opportunities for higher-value uses (Reconnecting America, 2009). Transit oriented districts are pedestrian environments; therefore, encouraging other means of transportation (such as walking, biking, and transit) and reducing parking requirements can, and should be an inherent quality to such developments to increase the feasibility of a TOD (See Table 5.5 to varying parking needs by various uses).

Table 5.5: Typical parking occupancy rates by uses (Source: Victoria Transport Policy Institute, 2010),

Uses	M-F 8am-5pm	M-F 6pm-12am	M-F 12am-6am	Sat. & Sun. 8am-5pm	Sat. & Sun. 6pm-12am	Sat. & Sun. 12am-6am
Residential	60%	100%	100%	80%	100%	100%
Office/ Warehouse/Industrial	100%	20%	5%	5%	5%	5%
Commercial	90%	80%	5%	100%	70%	5%
Hotel	70%	100%	100%	70%	100%	100%
Restaurant	70%	100%	10%	70%	100%	20%
Movie Theater	40%	80%	10%	80%	100%	10%
Entertainment	40%	100%	10%	80%	100%	50%
Conference/Convention	100%	100%	5%	100%	100%	5%
Institutional (non-church)	100%	20%	5%	10%	10%	5%
Institutional (church)	10%	5%	5%	100%	50%	5%

Notes: This table illustrates typical occupancy rates, it is not considering Transit. It defines the percent of the basic minimum needed during each time period for shared parking. (M-F = Monday to Friday),



Figure 5.28: Station area landmarks, Fair Park Station (Photo by T. R. Ozdil, 2010)

Parking should be conceived at the district level. On-street parking must be encouraged throughout the district not only to accommodate vehicles but also for quick and easy access for on-street retail and traffic calming purposes for the physical environment. Right-sizing the parking (reduced parking ratios) and parking strategies such as shared parking should be encouraged and guided by the codes and guidelines to provide much more efficient parking strategies while reducing the overall amount of space required for parking (See Appendix IV Florida Department of Transportation, 2009 TOD design guidelines for parking space requirements for various uses and densities, for different typologies of TODs).

Bulk surface parking, and park & ride facilities should be discouraged especially around the station areas in urban TODs. Passenger pick up and drop of points for other transit support systems and private vehicles should be enhanced especially in the large and medium city center and neighborhood TODs. If the need of such parking amenities is unavoidable they should be well distributed in the district and should not create conflict with the pedestrian connectivity and accessibility especially in the core area. Parking codes and regulations in TODs should also be flexible enough to accommodate future growth and density in the district. Growing TODs, such as Mockingbird Station, should be able to adapt its surface parking to more compact structural parking in order utilize the land for other crucial uses.

By means of good coordination between the public and the private stakeholders rent incentive programs can be explored for residents without automobiles, or savings to developers from reduced parking can be passed onto consumers in the form of more affordable housing. Less parking means that TODs are more compact, pedestrian friendly and sustainable.

SENSE OF PLACE

Although there are various components to transit oriented developments and districts it is essential for communities to create places and choices for people that are not identical to the district and the city at the next stop. It is vital for transit oriented developments and districts to find vehicles to create a sense of place, or preserve, adopt, or enhance the one that may be inherent to well established communities. Highlighting the unique qualities and identity of each community would likely promote community building and ensure long term success.

Sense of place can be achieved by establishing an identifiable neighborhood typically comprised of unique/interesting architecture, aesthetically pleasing public spaces and vistas, human scaled volumes, spaces and forms, and identifiable focal points and landmarks. Other key elements concerning the development of a sense of place include lively commercial centers, public stewardship, context sensitive design, and safe, attractive places.

As it can be seen in the case studies such as Rahway Station, NJ, or Court House, VA, sense of place can be enriched by preserving and adapting old buildings and landmarks primarily in the station area or enhanced by repeating and reusing the unique architectural materials, styles or characteristics as can be exemplified by case studies such as Del Mar Station, CA, or Plano, TX.

It must be realized that in such pedestrian oriented environments improvement and enhancements made in the public spaces will likely give the first impressions for the community. Therefore it is essential to pay closer attention to design of station, and transit core areas, and carry the language created with the form, texture, and material to other parts of the districts through intricate network of streetscapes and public spaces.



Figure 5.29: Sense of Place, Downtown Carrollton Station (Photo by T. R. Ozdil, 2010)



Figure 5.30: Sense of Place, Downtown Plano Station (Photo by T. R. Ozdil, 2010)

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APPENDIX I

DART'S Transit Oriented Development Policy

DATE ISSUED: October 24, 1989

Resolution No. 890135

Amended by Resolution: 080131

Policy No. IV.03 (Planning)

SECTION 1. PURPOSE

DART is the steward of a significant public investment which includes important real property assets. These real property assets can also be used to leverage the viability of the transit system and to add to its value to the community. Continuing expansion and maturation of the transit system along with federal, regional and local initiatives that direct and concentrate transit oriented development and urban infill around transit facilities enhance the value of these assets. DART seeks to work in close partnership with its member cities to identify and implement TOD opportunities. By promoting high quality Transit Oriented Development on and near DART owned properties, the transit system can attract riders and generate new opportunities to create revenue for DART, and environmentally sustainable livable communities that are focused on transit accessibility.

SECTION 2. DEFINITIONS

2.1 Transit Oriented Development (TOD) is characterized by the integration of transit facilities or elements, either bus or rail, throughout the development of intensive, high quality uses oriented towards DART facilities by others and/or development which is located adjacent to a transit facility. Transit Oriented Development shares a functional or financial relationship to the transit system.

2.2 Joint development is a subset of TOD and is development in which DART has a formalized relationship with a developer for land use, infrastructure improvements, and shared facilities.

SECTION 3. GOALS

DART recognizes that Transit Oriented Development can be a means to accomplish the following goals:

3.1 Increase transit ridership through the coordinated planning of land use and development of properties at and/or near DART stops, stations and transit centers.

3.2 Enhance the value of DART real property and other assets by designing transit facility access, and circulation to accommodate future TOD while maintaining accessibility and visibility to transit.

3.3 Encourage intensive, high quality development projects on and around DART station properties and along DART transit routes and corridors.

3.4 Enhance the quality of life at and around DART stations through the coordinated development of accessible pedestrian and non-motorized environments at transit stops and stations.

3.5 Use the appropriate method of disposing of DART real property for Transit Oriented Development projects to achieve specific development objectives and demonstrate a fiscal benefit to DART.

SECTION 4. TOD STRATEGIES

4.1 DART seeks to enhance the future value of planned DART facilities for TOD through one or more of the following:

- a. strategic acquisition of property to capture potential TOD opportunities;
- b. early design of transit facility elements such as, parking, circulation, and access;
- c. platform and infrastructure placement and orientation, in anticipation of reallocating surface parking spaces to incorporate eventual transit oriented uses. When feasible, these spaces should be integrated into TOD through the use of shared parking structures.

4.2 DART seeks to foster cooperative relationships with other governmental entities, local communities, and the private sector for the development of comprehensive development plans, station area plans, property acquisition and disposition, and development of financial strategies and tools such as assessment districts, tax increment finance districts, or improvement districts, any of which may be located on and off DART property.

4.3 DART seeks to encourage direct connections to transit stops and stations from surrounding development. Projects shall be consistent with City/Community TOD policies and plans.

4.4 DART seeks to cooperate with other governmental entities and communities in the DART service area early on in the development process to enhance multimodal access to and from DART stations.

4.5 To the extent allowed, DART seeks to use Transit Oriented Development revenues to support additional Transit Oriented Development projects, programs and infrastructure on DART property.

SECTION 5. APPROVAL OF DART PARTICIPATION IN TRANSIT ORIENTED DEVELOPMENT PROJECTS

DART will use the strategies set out in this section to accomplish its Transit Oriented Development goals when soliciting and evaluating specific Transit Oriented Development projects.

5.1 Developer and/or member city inquiries to discuss the following shall be directed to DART staff responsible for TOD:

- a. the feasibility or potential partnerships for development of TOD at specific DART stations;
- b. availability of DART property for TOD;
- c. or development of specific plans for future TOD projects

5.2 DART Staff will periodically brief the DART Board or the committee of the Board that has responsibility for TOD on potential development partnerships and interest in development of specific DART facilities.

5.3 Following review with the committee, DART staff will prepare a solicitation for TOD of DART property.

5.4 Solicitation of proposals for Transit Oriented Development on DART owned property shall be through an appropriate selection process that will result in a favorable outcome for the agency.

5.5 The Board shall consider the nature of the TOD and the recommendation of TOD staff and shall determine which of the two following solicitation methods is appropriate for use in the particular situation:

a. The Standard Developer Solicitation Method consists of a comprehensive pre-solicitation process that is used to gather and organize the necessary information to place DART in a position of strength to negotiate a Development Agreement. Following the presolicitation process, a Two-Step Request for Qualifications (RFQ) / Request for Proposals (RFP) approach shall be used as a tool to evaluate and rank potential development teams.

b. The Streamlined Developer Solicitation Method allows DART to expedite the process to identify a development team. After an accelerated presolicitation process, the RFQ and/or RFP approach shall be used as a tool to evaluate and rank potential development teams.

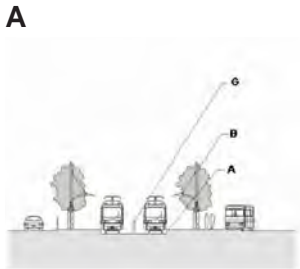
5.6 From time to time, development teams and/or landowners may approach DART with TOD opportunities. In these instances, the Board may authorize an alternate method in which DART staff will evaluate the opportunity. Such evaluation may include meeting with stakeholders and other interested parties, and performing financial and market analyses. Following presentation of the results of the evaluation, the Board may authorize negotiations with the potential private partner.

The TOD Policy was approved by the DART Board on August 26, 2008.

APPENDIX II

DART

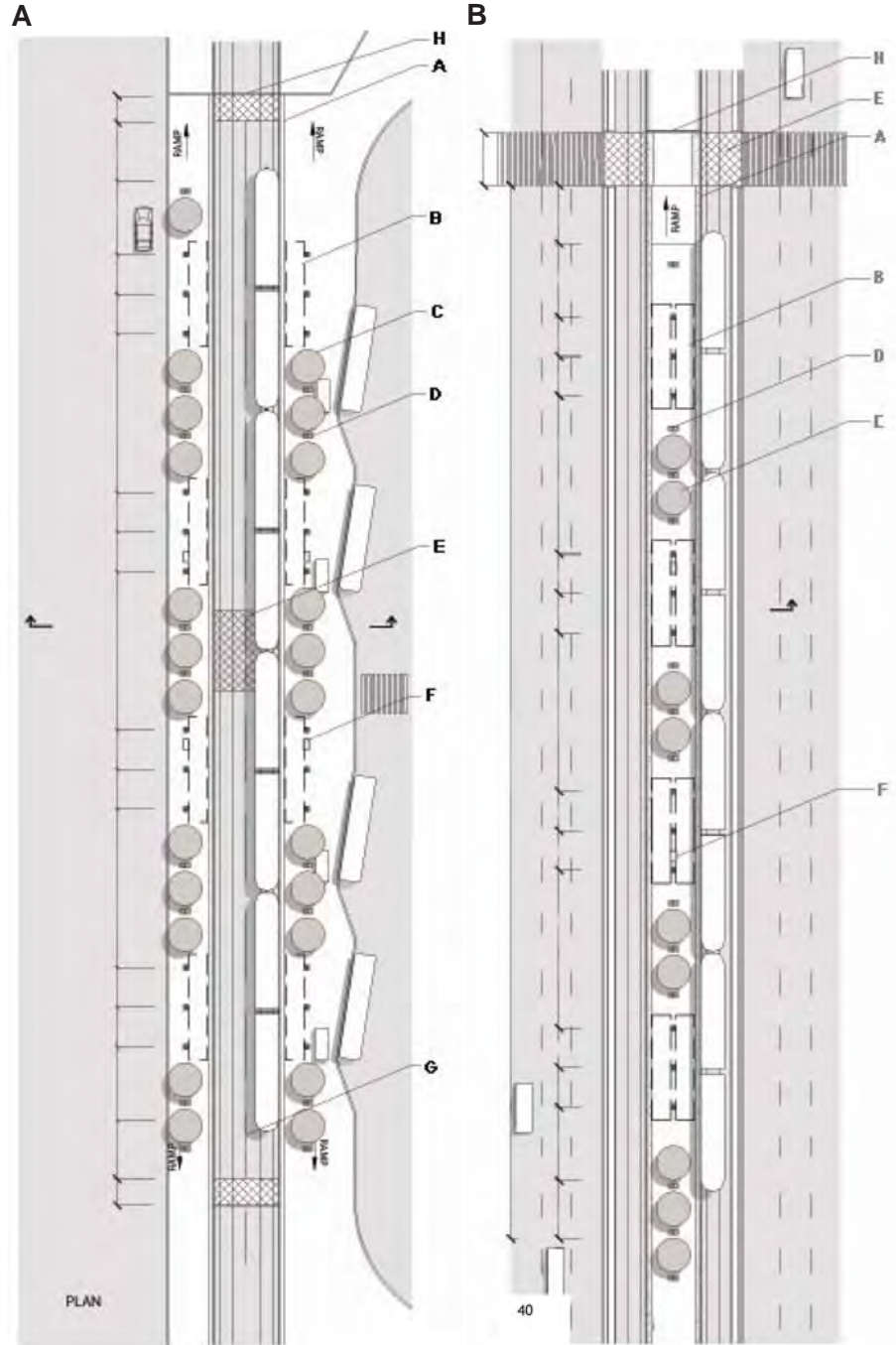
Transit-Oriented Development (TOD) Guidelines
 Promoting TOD Around DART Transit Facilities
 Dallas Area Rapid Transit
 Dallas, Texas
 August 2008



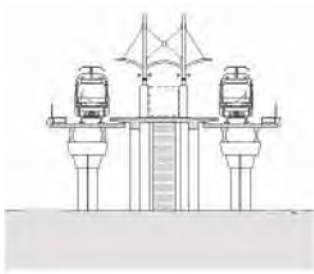
- A. Paving, Tactile Warning Strip
- B. Shelter, Single Gull Wing
- C. Trees
- D. Transit Lighting
- E. Pedestrian Track Crossing
- F. Ticket Vending/Validation
- G. Trackway Fence
- H. Guardrail



- A. Paving, Tactile Warning Strip
- B. Shelter Double Gull Wing
- C. Trees
- D. Transit Lighting
- E. Pedestrian Track Crossing
- F. Ticket Vending/Validation
- G. Planters
- H. Guardrail

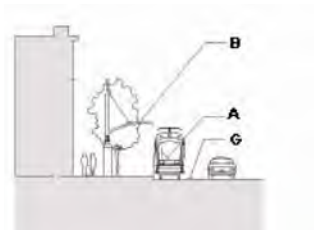


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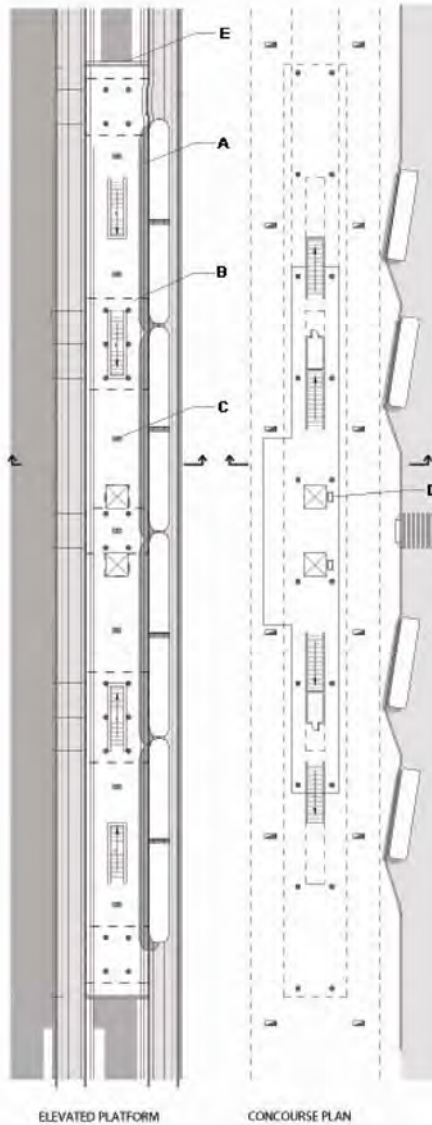
- A. Paving, Tactile Warning Strip
- B. Triple Gull-Wing Canopy
- C. Transit Lighting
- D. Ticket Vending/Validation
- E. Guardrail

D

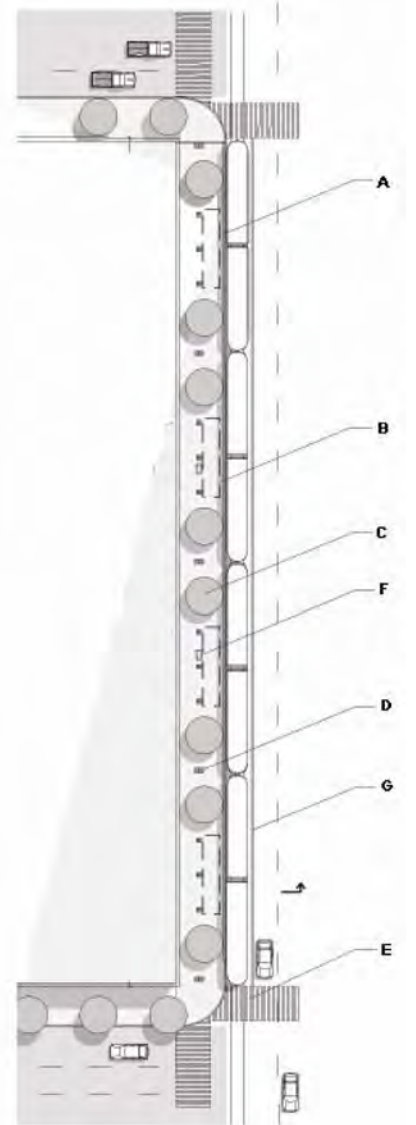


- A. Paving, Tactile Warning Strip
- B. Single Gull Wing Canopy Shelter
- C. Trees
- D. Transit Lighting
- E. Pedestrian Track Crossing
- F. Ticket Vending/Validation
- G. Traffic Divider

C



D



APPENDIX III

STRATEGIC TOOLS FOR TODs IN NORTH TEXAS

The review of TOD literature revealed that there is a readily available strategic set of tools on hand to achieve the mission and goals, and recommendations in this document. The following strategic tools for North Texas TODs were compiled from three sources: 1) Strategic Package of Tools: Transit Oriented Development in Metropolitan Phoenix, 2) Reconnecting America's Case Studies for Transit Oriented Development, and 3) NCTCOG's Center for Development Excellence Technical Tools (EPA Smart Growth, 2010, NCTCOG 2010, Reconnecting America, 2009). The tools were then compiled into functional categories using the Strategic Package of Tools: Transit Oriented Development in Metropolitan Phoenix as a model for grouping (See detailed definitions of some of the tools in Appendix III). These strategic tools for transit oriented development and districts include, but are not limited to:

Strategic Planning

- Regional TOD Strategic Plan
- Citywide TOD Strategic Plan
- Comprehensive Plans
- Small Area Plans

Local Visioning and Land Use Policy

- Prepare Station Area Plans and Market Studies
- Station Area Rezoning: Rezone Station Area, Use Restrictions, Overlay Zones
- Land Use Intensity Tools: Density Bonuses, FARs and Building Height Bonuses
- Land Use Standards Enhancement: Form Based Codes, Design Guidelines
- Parking Tools: Revised Parking Standards, Shared Parking, or Parking Districts

Development Assistance

- Fast Track Development Review
- Capital Funding for Infrastructure
- Tax Increment Financing
- Reduced Impact Fees in Station Areas
- Tax-Exempt Bonds
- Tax Abatement
- Public Private Partnerships

Place Making and Access

- Streetscape Standards
- Design Guidelines
- Pedestrian/Bike Improvements
- Façade and Site Frontage Improvement Program
- Historic Preservation
- Tree Preservation
- Landscape Requirements
- Natural Features Protection

Land Assembly

- Joint Development Program
- Land Acquisition Loan Funds
- Funds for Buying Available Parcels in the Open Market

Public Agencies and Community Based Organizations

- Business District Association or Business Improvement District
- Marketing Plan
- Livable Communities Program
- Community Development Corporation (CDC)

- Housing Trust Funds

The following tool descriptions are taken directly from the “Strategic Package of Tools: Transit oriented Development in Metropolitan Phoenix”. Please refer to EPA Smart Growth (2010). Strategic Package of Tools: Transit Oriented Development in Metropolitan Phoenix. Retrieved on September 2010. From; <http://www.epa.gov/smartgrowth/pdf/phoenix-sgia-package-tools.pdf>

DEFINITIONS

Regional TOD Strategic Plan

Regional TOD Strategic Plans give cities and regional agencies, including the transit operator and metropolitan planning organization or council of governments, an opportunity to consider all of the stations in the transit network and to evaluate what each will contribute in terms of ridership and the potential for future TOD. These plans should address: who lives or works in the station area and how population and/or employment has changed over time; current land use mix; future development opportunity; market strength; and potential for near-, mid-, or long-term development.

Citywide TOD Strategic Plan

The objective of a City-Wide TOD Strategic Plan is similar to that of the regional plan, but in this case a key activity is to bring together all of the city departments that would be involved in implementing future station area plans to be sure that they understand their role in facilitating TOD. In addition, the city can conduct more intensive screening and prioritization to filter which station areas will be targeted for early action and which are more appropriate for future investment.

Prepare Station Area Plans and Market Studies

Station Area plans establish an overall vision for the entire transit district, indicating the type of desired development, appropriate mix of land uses, and public amenities that will be provided by both the public sector and individual development projects. The station area planning needs to take into consideration the full function of the station and surrounding area as part of the regional transit network. The vision allows property owners and developers to understand what uses and building types may be allowable for their properties and provides certainty and predictability about what other kinds of development will occur in the area. Providing such certainty allows developers to build towards a collective vision instead of having each project be responsible for its own amenities. Conducting such a planning exercise in conjunction with real estate market analysis grounds the vision in reality and allows implementation to build off of existing or emerging market momentum.

Station Area Rezoning

Create new zoning in station areas that restricts some uses and allows new ones that prioritize activities that generate ridership. This may be done through creation of new zoning designations or application of existing zoning designations that meet the goals for TOD; using zoning overlays is another possible technique.

Zoning Restrictions

Designed to discourage uses or features that generate harmful impacts (e.g. noise or noxious odors) and/or uses that generate high levels of automobile or semi-truck traffic (e.g. big-box retail, gas stations, or industrial or warehouse uses) which would discourage walking and transit ridership and create hazards in the station area given the high levels of pedestrian activity that transit generates.

Overlay Zones

Create a separate set of requirements that amend existing zoning in specific areas. Some uses are restricted to prioritize activities that generate significant ridership, while others support ridership are encouraged. Overlay zoning can be applied to parcels in an area when the overlay is adopted, but in this case, the overlay could be defined as optional zoning. Property owners could elect to use the overlay when they seek to develop or revitalize their properties.

Density Bonuses

Density bonuses can promote mixed-use and compact development while creating the land use intensity that can efficiently support public services and transit usage. Density bonuses grant developers the opportunity to increase their number of units in a development beyond that which is typically allowed by zoning in exchange for providing a public amenity from which the community would benefit. Density bonuses are established to relieve developers of the cost burden of an inclusionary housing ordinance that mandates affordable units set-asides.

FARs and Building Height Bonuses

Increased floor area ratios (FARs) and building heights allow more activity to be provided on a given parcel, which is consistent with the goals of TOD. If the uses are marketable and the buildings and parking are affordable, increase in FAR and building heights will create more land and development value. Similar to residential density bonuses, commercial intensity bonuses are often linked to the provision of public amenities such as open space, access improvements, or community/cultural facilities.

Form Based Codes

A form based code is a method of regulating development to achieve a specific urban form. Form Based Codes create a predictable public realm by controlling physical form with a lesser focus on land use. Form Based Codes address the relationship between building facades and the public realm, the form and mass of the buildings in relation to one another, the location and design of parking, and other building form and site planning issues. They may also address the scale and types of streets and blocks. The regulations and standards in Form Based Codes, presented in both diagrams and words, are keyed to a regulating plan (i.e. a zoning map) that designates the appropriate form, character and scale of development, rather than only the type of land use.

Design Guidelines

Station area design guidelines can help ensure that new development or redevelopment of existing sites and buildings is pedestrian friendly, attractive, and connects the neighborhood to the transit station. TOD design guidelines often address the design of parking, pedestrian furniture, signage, ground level building façade design and materials, and respect for neighborhood spaces. TOD projects could also incorporate low-impact development techniques such as multi-level or covered parking structures with green roofs and other water harvesting and storm water management best practices. Similar to station area plans, design guidelines make the city's expectations for the quality of development clear to residents and others, as well as help assure developers that they are investing in an area that will have consistently high-quality development.

Revised Parking Standards

Parking standards could be revised to: 1) allow developers to provide fewer spaces for users in station areas; 2) create standards for shared parking among separate uses; 3) allow on-street parking to count toward required spaces; and 4) limit the total number of parking spaces required to increase the feasibility of mixed-income housing and mixed-use development by lowering project costs.

Shared Parking

The parking that is needed for a specific land use varies by time of day and day of week. Shared parking aims to reduce total parking spaces and the associated cost of redundant parking rather than reducing the amount of parking required for individual uses. This is done by providing parking that is accessible to a mix of uses and that satisfies the varying need of the different uses at different times. The maximum amount of parking provided is determined by the time of day and day of the week where the combined parking demand of all the uses is the highest.

Parking Districts

Parking could be provided in a shared parking lot or, preferably, a parking structure to provide all or part of the parking needed for the uses in a district. Businesses, and sometimes, residents in the district typically pay for at least a portion of the maintenance and operating costs of the parking and possibly for its construction.

Managers of the parking district calculate the appropriate distribution of shared parking for the existing conditions.

Fast Track Development Review

Creating a streamlined development Review and building permitting process, administered by city staff, for projects meeting specific criteria can reduce project financing costs for developers and make TOD more financially attractive.

Capital Funding for Infrastructure

There is no single source of funds designed to facilitate TOD at Station areas. The sources of capital funding are the same as those used for regular municipal infrastructure development. The funding challenge is to use these resources to maximize the potential development opportunities in a station area.

Tax Increment Financing

Tax Increment financing is commonly used by cities to pay for infrastructure or other improvements to spur new development and reinvestment in areas that need revitalization, but where market forces are weak. The amount of tax revenue flowing to all entities, including the city, school districts, and state, is fixed at a base year level. The increment—any actual tax revenues above the base year—is redirected to the TIF district.

Reduced Impact Fees in Station Areas

Waving or reducing such fees can be a significant incentive, particularly for projects that provide more affordable housing options. Fees are typically reduced or eliminated when an application is made illustrating the number of affordable units that will be built.

Streetscape and Pedestrian/Bicycle Improvements

The public realm of streets and other civic spaces in a station area are the glue that holds a TOD together and creates places where walking is comfortable and enjoyable. One method for encouraging private investment in a station area is to enhance the public investment in the transit system by making local streets. Enhancements could include aesthetic and transportation improvements to existing streets and the creation of new bicycle and pedestrian connections.

Façade and Site Frontage Improvement Program

Provide low-to-no interest loans or grants to revitalize existing building facades and lot frontage improvements to make streets in station area more appealing to pedestrians. A condition of the loan program could be acceptance and compliance with design standards and guidelines for the façade and frontage improvements.

Tax-Exempt Bonds

Tax-Exempt bonds are issued by a municipal, county, or state government whose interest payments are not subject to federal income tax. This tool is typically paired with Low Income Housing Tax Credits to build affordable housing units. Timeframes for affordability are established through state preferences.

Tax Abatement

Tax abatement for TOD has been established to support high-density housing and mixed-use developments affordable to a broad range of the public on vacant or under utilized sites.

Joint Development Program

Joint development programs formalize public and private sector cooperation in planning, design, and construction for a development project that will occur on transit agency, or city owned land, but will be developed by a private-sector partner. These projects could include sale of air rights above a transit facility, a long term lease, or a land sale. In some cases, the transit agency or city will receive full market value for the transaction, not in others, the transit agency or city may be required to write down the value of its interest to promote TOD.

Land Acquisition Funds

Cities assemble various loan funds around the country to assist developers in acquiring land for affordable housing (or TOD projects). These funds have not necessarily been targeted to TODs, but many non-profits are now considering focusing

more directly on TOD. These funds are generally for affordable housing projects only, and the loans have been relatively short term, allowing the developer to acquire land before lining up all its funding sources for a project. Once the permanent sources are secured, some of that money is used to pay back the land acquisition loans. Capitalization for these loan funds have come from a combination of sources, including foundations, banks, and various state and municipal and state sources. Although federal transportation dollars cannot be used for land acquisition, MPOs can work with the federal government to devise a suitable acquisition program.

Funds for Buying Available Parcels in the Open Market

Unlike Land Acquisition Funds, these funds can be used to assemble land and create catalytic TOD projects in locations where the market is not yet viable for higher density housing developments/projects. They can also be used to secure land that will be appropriate for TOD in the future, but where current market pressures are likely to result in near-term development that is not transit supportive.

Business District Association or Business Improvement District

Business community improvement districts are special purpose districts where property owners and/or business within a defined area cite to tax themselves and use the tax revenues, or assessments, to pay for local improvements and/or services. Some districts have the power to bond against their levy and can therefore fund capital improvements. Other districts are more oriented towards services such as street cleaning, public safety, marketing, and promotional events.

Marketing and Outreach Strategies

Many communities use a variety of techniques to market their TOD sites to potential developers, as well as educate elected officials and citizens about the benefits of TOD. These activities range from publicizing TOD sites through brochures and websites, to educational lectures, tours, and other events.

Livable Communities Programs

Regional planning agencies can use their portion of their discretionary transportation funds to support projects that would otherwise not be funded, but that demonstrate desirable public benefits typically related to transportation and land use, such as:

- Strengthening the link between transit planning and community/land use planning, including land use policies and urban design supporting the use of transit and providing physical assets that better meet community needs,
- Improve access to transit particularly for minority and low-income residents,
- Increase access to employment, educational facilities and other community destinations through community oriented, technologically innovative transit services and facilities,
- Leverage resources available through federal, state, local programs, private non-profit, and private for-profit assets.

Community Development Corporation

Community Development Corporations (CDC) are non-profit entities with the broad mission of community revitalization. These organizations typically have a geographic focus and undertake a range of activities to improve both physical and social conditions in the target area. CDCs have taken the lead in developing TOD projects in many cities around the country and have been successful largely because they have access to other funding sources than for-profit developers and can take on more challenging projects.

Housing Trust Funds

Housing trust funds are dedicated source of funding for affordable housing. These funds are typically established by a governmental agency, such as a state, county, or city, and have some permanent source of revenue. Revenues can come from some form of tax or from an impact or linkage fee. Contributions from foundations and other donors can also be used for housing trust funds. However, these funds are publicly administered and are not typically dependent on philanthropy for support.

APPENDIX IV

FLORIDA TRANSIT ORIENTED DEVELOPMENT DESIGN GUIDELINES

The content of the Design Guidelines Matrix below is copied from Florida Department of Transportation's Draft Transit Oriented Development Design Guidelines dated April 2009 with minor adjustments. It is provided here as additional information, not as a prescriptive guide for this region (Florida Department of Transportation, 2009, April, p.13).

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

Assumptions and Notes:

A. The guidelines provide 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 its 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.

Source: See Florida Department of Transportation (2009, April). Transit oriented development design guidelines, DRAFT. Retrieved from <http://www.floridatod.com/docs/Products/TODGuide041409.pdf> for the original.

APPENDIX V

DART RAIL SYSTEM MAP - 2010

DATE ISSUED: December, 2010

Source: DART (2011).

<http://www.dart.org/maps/pdfmaps/dartrailsystemmapdec2010.pdf>

DART Rail System Map



EFFECTIVE 12/06/10

Map Legend

- Red Line
- Blue Line
- Green Line
- Trinity Railway Express (TRE)
No Sunday service on TRE
- Orange Line
(Selected Weekday Trips Only)
- TRE Fare Zone Boundary
- Parking Available
- Connecting Service

Connecting Services in Fort Worth

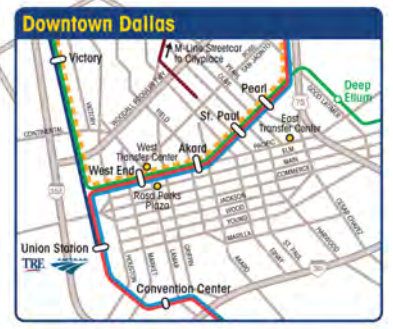
Use Fort Worth ITC Station to access:

- Local Bus Service
- Intercity Rail Service



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APPENDIX V

DART TRANSIT SYSTEM MAP - 2030

DATE ISSUED: October, 2006

Source: DART (2011).

<http://www.dart.org/images/newsroom/jpgs/DART2030Map26oct06.jpg>