



Transit-Oriented Development Compendium

Business, Transportation & Housing Agency

California Department of Transportation

June 2005



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Introduction

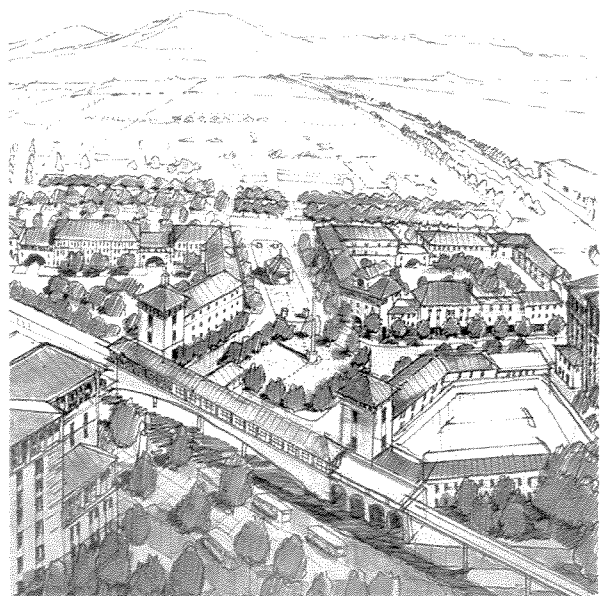
Consistent with Governor Schwarzenegger's policy to maximize infrastructure investments in California, and his administration's commitment toward advocating "smart-growth" measures, the California Department of Transportation supports Transit-Oriented Development (TOD) that links transportation with jobs and housing. This Compendium is an overview and synthesis of notable past work on TOD "best practices" within California and throughout the United States.¹ It is an information resource for policymakers, transit/community planners, and developers in facilitating the broader implementation of TODs. Used as a reference tool, this document supports the administration's directive to link transit to the five E's – education, energy, economy, equity and environment.²

Nationally, there are nearly 100 different TOD guidebooks. This compendium is based on a comprehensive review of approximately 20 of them. Decisions about what information to include were based on numerous telephone interviews with guidebook authors and transit agency staff.

Because of the diversity of places in California, this compendium provides general suggestions that can be used at the discretion of decision-makers and developers; more specific information is available in the various references that are cited throughout, including the study "Statewide Transit-Oriented Development: Factors for Success in California".

The compendium is organized into eight chapters, listed below. Each chapter describes relevant issues, the state of the practice for TOD, and includes information from guidebooks and interviews. The Appendix includes a checklist that can be used for evaluating TOD projects.

1. **General Principles of TOD:** This chapter discusses the character and potential of TOD for communities and neighborhoods; why TOD is important; the benefits of TOD; and the major barriers of implementing TOD.



Pleasant Hill TOD

2. **Creating a Framework for TOD:** Establishing TOD in the community is more complex than incorporating good urban design and designing transit facilities. It requires communication, cooperation, and teamwork between the public and private sector.
3. **Key TOD Considerations:** Zoning, Density, Mixed-Usage, Buildings and Architecture: The design of TOD synchronizes transit planning with compact mixed uses, higher densities, pedestrian-scale amenities and architecture, strong connections to the surrounding community, carefully designed streets, and relevant park and open spaces. This chapter is divided into six sections: Pedestrian-Friendly Areas, Transit-Friendly Zoning, Density, Mixed Uses, Aesthetics, and Provide Usable Public Open Space.

Introduction

4. **Providing Access to Transit:** Designing transit with development in mind is key to TOD success. The planning and design of transit facilities and how transit fits into the community are discussed.
5. **Streets and Parking:** Designing a multi-modal circulation system and providing for parking can be the most challenging aspect of TOD. This chapter focuses on integrating walking, bicycling, transit and automotive routes and managing parking.
6. **Pedestrian and Bicycle Facilities:** This chapter discusses how pedestrians and bicyclists interact with the urban environment. The comfort level they feel is largely due to how well the pedestrian and bicycling environment is designed.



San Francisco Embarcadero light-rail station

7. **TOD Examples in California:** This chapter contains a brief description of four very different examples of TOD in California.
8. **Ten Lessons Learned:** This chapter summarizes important 'lessons' for planners, public agencies, and private developers interested in successfully implementing TOD.

Appendix: The Appendix contains a checklist that can be used for evaluating TOD projects in local communities, as well as the References.

References

- 1 This Compendium evolved from the *Transit-Oriented Development Guidebook, Review Draft*, completed in June 2002, produced by Parsons Brinckerhoff in Phase 1 of the 2002 Statewide TOD Study.
- 2 The terms *education* and *energy* are from Governor Schwarzenegger's policy and the terms *equity*, *economy* and *environment* are from AB 857 (2002), Section 65041.1.

Chapter 1. General Principles of TOD

What is TOD?

“Transit-Oriented Development (TOD) is moderate to higher-density development, located within an easy walk of a major transit stop, generally with a mix of residential, employment and shopping opportunities designed for pedestrians without excluding the auto. TOD can be new construction or redevelopment of one or more buildings whose design and orientation facilitate transit use.”

Terry Parker and GB Arrington, “Statewide Transit-Oriented Development Study: Factors for Success in California”; for the California Department of Transportation; Final Report, September 2002

In applying TOD principles, some definitions are helpful:

{¹ **“Transit-Oriented** really means Pedestrian-Oriented (albeit centered around a transit station). Designing a station area for people rather than vehicles will ultimately support healthy transit ridership.

Moderate to High Density can vary with each community.

Development includes not only buildings but also the sidewalks, streets, bus zones and parks in the station area.”¹}

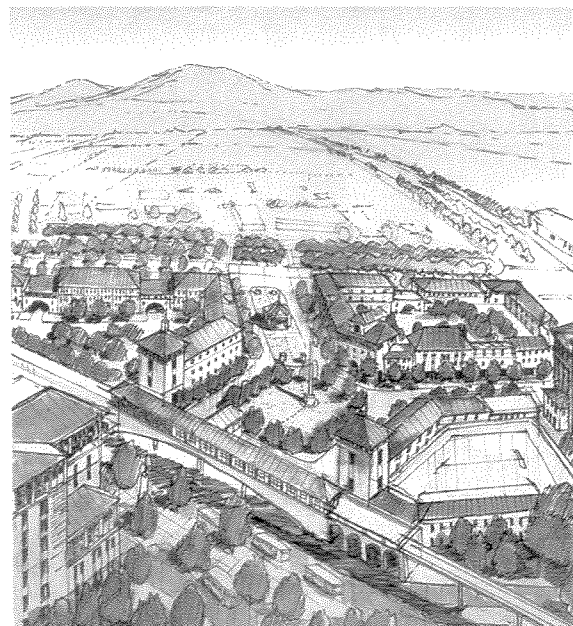
An **Easy Walk** is about one-quarter to one-half mile. {² “In safe and pleasant surroundings, people may consider a longer walk to be ‘easy.’

New Development or Reconstruction can include the preservation and enhancement of existing natural and manmade elements that give each community its unique sense of place.

TOD can refer to One or More Buildings, but usually describes the entire neighborhood surrounding a station.”²}

Site the Station to Maximize Development Opportunities

For successful TOD implementation the transit facility should be located and designed in a manner that welcomes and facilitates development. The Federal Transit Administration (FTA) provides support of TOD development indirectly by funding eligible “New Start” rail projects using funding criteria favorable for TOD development.



Lemnitz Coyle and Associates, Seth Harry

Pleasant Hill TOD, Phase II

Note: Because of the volume and length of many of the quotations in this document, a bracket symbol with corresponding footnote reference number is placed at the beginning and ending of each quotation.

Chapter 1. General Principles of TOD

As noted in the Statewide Transit-Oriented Development Study Final Report, higher funding priority is assigned to projects that 1) contain sprawl on a regional scale, 2) focus on development along transit corridors, and 3) incorporate transit-friendly zoning with a mix of uses, pedestrian scale, increased density, and parking limits in station areas. Specific funding criteria can be found at www.fta.dot.gov/25_ENG_html.htm.

{³ “Transit facilities should be planned, sited, and designed to be a major focus of the station area. To maximize pedestrian access, stations should be sited in areas that have or are planned to accommodate a high density of mixed land uses, including major employment locations, significant cultural or educational facilities, and other regional destinations. While park-and-ride lots are extremely important components to building the ridership of the overall transit system, they typically detract from the uses, densities and activities that create a pedestrian-oriented station community.

Stations that will have a significant amount of parking (200 or more surface parking spaces) should be sited in locations where major development is not planned for the immediate future.”^{3}}

Make the Station a Part of the Community

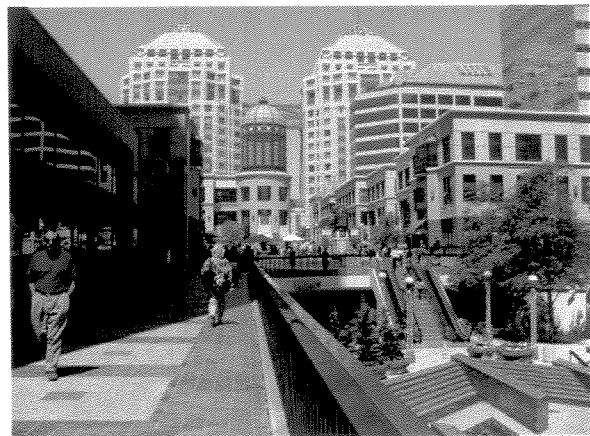
{⁴ “At its core, a transit station community is a compact, mixed-use activity area centered around a transit station that by design encourages residents, workers, and shoppers to drive their cars less and ride mass transit more. The centerpiece of the transit community is the transit station, connecting the residents and workers to the rest of the region, and the civic and public spaces that surround it. The design, configuration, mix of buildings and activities emphasize pedestrian-oriented environments and encourage use of public transportation. The land uses within a transit station community are linked with convenient pedestrian walkways, and parking is managed to discourage dependence on the automobile.”^{4}}

TOD is a strategy that has broad potential in cities, suburban areas, and small communities us-

ing bus and/or rail transit systems. TOD focuses compact growth around transit stops, thereby capitalizing on transit investments by bringing potential riders closer to transit facilities and increasing ridership. TOD can also produce a variety of other local and regional benefits by encouraging walkable compact and infill development.

TOD draws on many of the same planning and development principles embraced by New Urbanism, Place Making, Smart Growth, and the Livable Communities movements:

- Moderate to higher density development in relation to the existing pattern of development;
- Horizontally and/or vertically mixed land uses;
- Compact pedestrian-oriented design and streetscapes;
- Building design and orientation to the street to allow easy pedestrian and transit access;
- A fine-grained connected street pattern; and
- Parks and open spaces.



Oakland City Center is built around a BART station.

In addition to these principles, for development to be transit-oriented, it generally needs to provide access to transit in terms of parking, density, and/or building orientation in comparison to conventional development. (It is not enough that it is just adjacent to transit.)

Chapter 1. General Principles of TOD

Local governments can play a significant role in facilitating TOD through plans, policies, zoning provisions, and incentives for supportive densities, designs, and mix of land uses. A successful TOD will reinforce both the community and the transit system. A checklist is provided in the Appendix that can guide communities in reviewing proposed projects and assessing the transit-friendliness of current land use codes and ordinances.

Successful TOD implementation typically involves a number of elements such as: optimal transit system design; community partnerships; local real estate markets; TOD planning; coordination among local, regional, and state organizations; and providing the right mix of planning and financial incentives and resources.



Uptown District in San Diego

Why TOD?

{³ “Over the next 20 years California is expected to add 11-16 million new residents and over four million new households. This unprecedented growth is more than the state experienced during the 1950s, 1960s, and 1970s combined.”³ } California’s success at managing this growth will determine its future prosperity, the quality of its environment, and the overall quality of life for its residents.

TOD is a strategy that can help manage this growth and improve California’s quality of life. TOD provides communities with an alternative to the consequences of low-density suburban sprawl and automobile-dependent land use patterns. In addition, TOD can help answer California’s dramatic need for more affordable housing.

TOD seeks to align transit investments with a community’s vision for how it wants to grow; creating “livable” mixed use, denser, walkable “transit villages”. By implementing TOD, California can make progress towards improving its quality of life and better coordinate investments in transportation and land use projects.

Benefits from TOD

{⁶ “TOD Can Provide Mobility Choices

By creating ‘activity nodes’ linked by transit, TOD provides important mobility options, which are needed in the state’s most 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.

TOD Can 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 others.

TOD Can Increase Transit Ridership

TOD improves the efficiency and effectiveness of transit service investments by increasing the use of transit in the area surrounding major transit stations by 20 to 40 percent.

TOD Can Reduce Rates of Vehicle Miles Traveled (VMT)

Vehicle travel in California increases faster than the state’s population. TOD can lower annual household rates of driving by 20 to 40 percent for

Chapter 1. General Principles of TOD

those living, working, and/or shopping near transit stations.

TOD Can Increase Disposable Household Income

Housing and transportation are typically the first and second largest household expenses, respectively. TOD can free-up disposable income by reducing driving costs, saving \$3-4,000 per year for each household.

TOD Can Reduce Air Pollution and Energy Consumption Rates

By providing safe and easy pedestrian access to transit, TOD can lower rates of air pollution and energy consumption. Also, TODs can reduce rates of greenhouse gas emissions by 2.5 to 3.7 tons per year for each household.”^{6}}

{⁷ “TOD Can Help 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.

TOD Can Play a Role in Economic Development

TOD is increasingly used as a tool to revive aging downtowns, revitalize declining urban neighborhoods, and enhance tax revenues for local jurisdictions.

TOD Can Contribute to More Affordable Housing

TOD can add to the supply of affordable housing by providing lower-cost housing and by reducing household transportation expenditures. Housing costs for land and structures can be significantly reduced through more compact growth patterns.



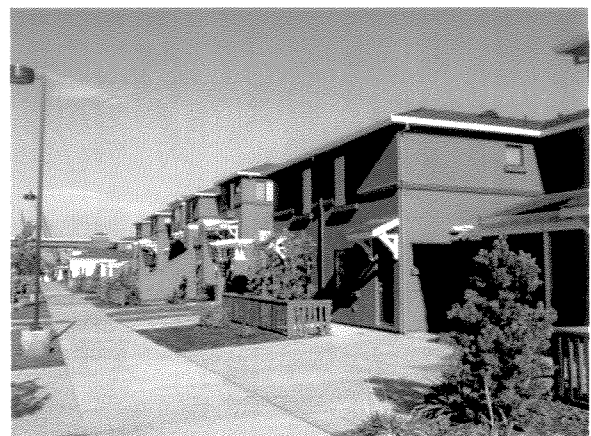
Hollywood-Highland is an entertainment destination in Los Angeles that maximizes the use of the adjacent Red Line station.

TOD Can Decrease Local Infrastructure Costs

Depending on local circumstances, TOD can help reduce infrastructure costs (such as for water, sewage and roads) to local governments and property owners by up to 25% through more compact and infill development.”^{7}}

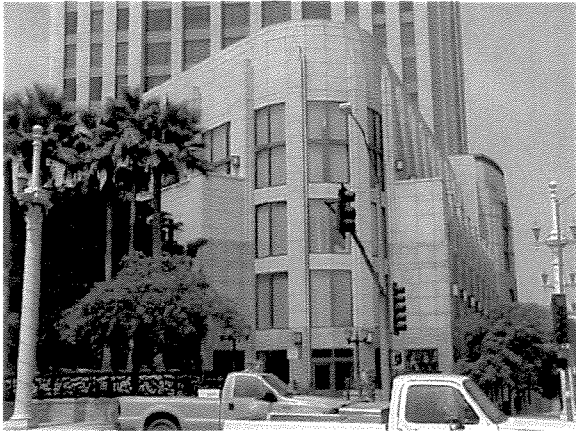


American Plaza in San Diego



Ohlone-Chynoweth has 194 affordable housing units.

Chapter 1. General Principles of TOD



Gateway Plaza in Los Angeles is the result of city efforts to spur economic growth near transit corridors.

Barriers to Implementing TOD

{⁸ “The community and transportation benefits of TOD can be significant, but there are still many major barriers that limit the broader implementation of TOD in California, including:

Transit System Design

The design of transit systems can be a major barrier to successful TOD. Stations often have poor pedestrian access and ignore the surrounding local community. Broad expanses of surface-level commuter parking often separate the stations from the surrounding community, and stations and transit corridors are often located in areas with challenging development conditions, reducing transit’s ability to link activity centers.

Local Community Concerns

To local neighborhoods, proposals for TOD projects often are associated with concerns about changing the character of a community. Even with quality design and appropriate density, and despite local government support for a TOD, community concerns about density and traffic are often huge hurdles to implementation.

Local Zoning Not Transit-Friendly

In most major transit station areas in the state, local zoning has not been changed to reflect the presence of transit. Local development codes around stations often tend to favor low density, auto-oriented uses. Creating and implementing transit-friendly zoning becomes an additional challenge.

Higher Developer Risk and Cost

Mixed-use, higher density projects with reduced amounts of parking (such as in TOD) can significantly increase risks for developers and financiers. TOD can be more costly, and can be subject to more regulations and more complex local approval processes, as compared to conventional ‘auto-oriented’ development.

Financing Difficult to Obtain

Obtaining private financing for TODs is often also a barrier. Lenders typically have concerns about financing mixed-use projects or those with lower parking ratios (which are typical in TOD). Public financing available for implementing TOD is very limited and often difficult to obtain in California.”^{8}}

Chapter 1. General Principles of TOD

References

- 1 San Francisco Bay Area Rapid Transit District, *BART Transit-Oriented Development Guidelines*, June 2003.
- 2 Ibid.
- 3 Puget Sound Regional Council, *Creating Transit Station Communities in the Central Puget Sound Region – A Transit-Oriented Development Workbook*, June 1999.
- 4 Ibid.
- 5 Elizabeth Deakin, et.al. *Twelve Trends for Consideration in California's Transportation Plan*, Overview, University of California Transportation Center, May 2001.
- 6 Terry Parker and GB Arrington, *Statewide Transit-Oriented Development Study: Factors for Success in California*; for the California Department of Transportation; Final Report, September 2002.
- 7 Elizabeth Deakin, et.al.
- 8 Terry Parker and GB Arrington.

Chapter 2. Creating a Framework for TOD

“Transit-oriented communities are characterized by design and development patterns that are conducive to the use of transit.”

Federal Transit Administration, “Building Livable Communities with Transit”, Office of Planning, September 1999

Livable Communities

Developers have long known how to successfully implement and profit from building conventional residential, commercial, urban, suburban, industrial, and office development projects. TOD incorporates, modifies, and integrates these conventional development products to create walkable communities that are less dependent on the automobile.

{¹ “Communities throughout the United States are pursuing patterns of development that make walking and transit use more convenient. Major land use incentives – which seek to make possible effective alternatives to auto-dependent lifestyles – are underway in metropolitan regions as diverse as those in Salt Lake City, San Diego, Minneapolis/St. Paul, Orlando, Washington, D.C., and Portland...

These efforts respond to the myriad of problems attributable to the boundless mobility of the car. This mobility makes dispersed destinations increasingly reachable, but at a cost. Faced with mounting congestion and longer commutes, interest in smarter forms of growth has mushroomed. The primary building block of these smart growth efforts is transit-oriented development. ”¹}



Whisman Station in Mountain View

The TOD Strategy

{² “The [TOD strategy] seeks to address the most pressing problems: urban sprawl, escalating traffic congestion, non-attainment of regional air quality standards, and growing demand for housing opportunities which meet the needs of an increasingly diverse population. These growth strategies [TOD] also recognize that reliance upon typical patterns of low density urban development will not address these problems, and new forms of urban development are needed.... Consistent with these concerns [are] the following guiding principles:

“Communities have always developed along transportation routes, and savvy real estate developers have always been there to lead or participate in their growth.”

Jim Miara, “On Route”, Urban Land Institute, May 2001

Note: Because of the volume and length of many of the quotations in this document, a bracket symbol with corresponding footnote reference number is placed at the beginning and ending of each quotation.

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“Strategic Improvement Plan for the City of Auburn, Washington

The City of Auburn undertook an ambitious Main Street Improvement Project to prepare the downtown for ultimate transit station development and to encourage private investment. Based on a strategic downtown improvement plan, the City initiated a series of street and pedestrian improvements that, along with a reduced interest loan program, led to significant private storefront and parking improvements. With a much more attractive setting, the City is poised to take advantage of the potential station area development opportunities.”

Puget Sound Regional Council, “Creating Transit Station Communities in the Central Puget Sound Region – A Transit-Oriented Development Workbook”, June 1999 (<http://www.psrc.org/projects/tod/index.htm>)

- Maximize the use of existing urbanized areas.
- Reduce [fuel] consumption [in] non-urban areas.
- Link land use with transit.
- Reduce the number of auto trips and regional Vehicle Miles Traveled (VMT).
- Reduce air pollutant emissions.
- Provide a diversity of housing types.
- Design the urban area efficiently.

TOD’s mixed-use clustering of land uses within a pedestrian-friendly area connected to transit provides for growth with minimum environmental and social costs.”^{2}}



Passengers boarding a Sacramento Regional Transit light-rail car.



Treat Towers near Pleasant Hill BART station in Walnut Creek.

In the TOD strategy, new moderate and high density housing, as well as new public uses and a majority of neighborhood serving retail and commercial uses, will be concentrated in mixed-use developments located at strategic points along the regional transit system. The linkage between land use and transit is designed to result in an efficient pattern of development that supports a regional transit system and makes significant progress in reducing traffic congestion and air pollutants. The

Demonstrate Public Commitment to Private Investment

{³ “Private investment follows public commitment’ is the advice given by public and agency officials who have worked with the development community to move TOD plans from the shelf to the ground.

Knowledgeable private investors and developers are often reluctant to ‘pioneer’ non-traditional developments. This is especially true in locations that are economically distressed, have little in the way

Chapter 2. Creating a Framework for TOD

“To be effective, transit agency representatives must be involved early, while the site plan – and the developer’s budget – are still relatively flexible.”

Snohomish County Transportation Authority, “Participating in Community Planning: Ideas for Public Transit Agencies”, October 1993

of recent investment by others, or have a reputation for crime or other social problems. A station area plan should outline the public investments necessary to spur private development. The most significant barriers to investment must be removed or neutralized by public commitment in the form of personnel and capital. This sends a clear signal that the public sector is prepared to pave the way and make it safe for private capital to follow.”^{3}}

Market Potential Development Opportunities

{⁴ “The marketing strategy should be used as a vehicle to ‘sell’ transit-oriented development opportunities at the station area to the variety of players that make up the development community – developers, property owners, bankers and others.”^{4}}

Establish Development Incentives

{⁵ “Often developers will need an incentive of some sort if they are going to commit to the generally more risky practice of transit-oriented development. A wide variety of incentives are available to local jurisdictions to foster private development interest. Incentives can be in the form of:

- Density bonuses for providing certain amenities,
- Favorable permit review procedures for certain development, or
- Direct cash outlays for public improvements that support a development.”^{5}}

{⁶ “Incentives that have been tried with success include covering the cost of a market analysis for a site or preparing a prototypical pro-forma

to demonstrate the feasibility of various types of development to potential financiers. One of the strongest incentives that have been used is a tax incentive. Both Minneapolis/St. Paul and Portland, Oregon provide developers the potential for reductions in their property taxes if certain conditions are met.”^{6}}



Union Station in Los Angeles is next to a TOD.

Provide Public Facilities and Infrastructure

{⁷ “Before private capital will come to a station area, some infrastructure improvements are often needed to improve the safety, appearance, or function of a location. Infrastructure investments also demonstrate a public commitment to an area and can signal increased investments over time – always a good sign to the development community. BART, in California, and other systems have used this strategy with considerable success. Some of the public improvements at station areas could include a police substation, a pedestrian plaza, a bus turnaround facility, new drainage and water systems, and placing certain utilities underground.”^{7}}

Chapter 2. Creating a Framework for TOD

{⁸ “Public facilities, such as libraries, performing arts centers, recreation centers, parks, and city halls can be a powerful magnet. In developing a capital improvement program, each location should

develop a strategic plan for investments in public facilities and infrastructure that support transit-oriented locations near the station facility.”⁸ }

Removing Barriers to TOD Implementation

Minimize the Financial Risk

- Make it easier to obtain financing
- Conduct financing workshops and tours with lenders
- Show successful floor-area-ratio and reduced parking examples
- Show examples of diversified products and faster market absorption

Provide Options for Financing*

- Seek Federal Funds
- Use Housing and Community Development Funds
- Establish a Main Street Program
- Apply for Historic Preservation Tax Credits
- Establish a Redevelopment Area
- Set up Public-Private Partnerships
- Build on Public and Tax-Delinquent Land
- Establish Special Assessment Districts
- Use the General Fund
- Subsidize the Retail Component
- Pursue Grants and/or Local Donations

Establish Cost-Saving Measures into the TOD Project Sites*

- Zone Appropriate Properties “By-Right”
- Streamline the Permit Process for Desired Projects
- Reduce or Delay Development Fees
- Adjust Level of Service Requirements
- Reduce Parking Requirements
- Establish Enterprise Zones in Older Activity Centers
- Educate Banks and Provide Loan Guarantees
- Conduct Market Studies and Marketing
- Seek Free/Low-Cost Technical or Material Assistance

*Peninsula Corridor Joint Powers Board, “Transit-Oriented Development Guidelines – Building a Gateway to Community with Strategies for Infill, Redevelopment and New Growth Along the Caltrain Corridor”, October 1997

Chapter 2. Creating a Framework for TOD

Participate in the Private Development Process

{⁹ “Package and assemble land for development – Public action in helping to package, secure and assemble land for transit-oriented development purposes can be one of the more powerful tools for creating transit station communities. Assembly of land can be an effective way to achieve development that is of sufficient size to be economically viable and spur a change in station area land use patterns.”⁹}

{¹⁰ “Participate in or help in securing public financing – In some cases, aggressive financial participation and risk sharing can help to stimulate transit-oriented development. One means of risk sharing is the underwriting of land costs in return for project participation. As an example, an agency might accept below market rents on land leased to a developer in return for a percentage of the project revenues over a specified period. Transit agencies throughout the country have used this technique with success including BART in San Francisco, Metro in Washington DC, and in San Diego.”¹⁰}

{¹¹ “Participate in Joint Development – ‘Joint development’ involves public and private sector cooperation in planning, design and construction of residential, commercial, or mixed-use projects near transit in a manner that maximizes the skills and contributions of each sector. Joint development is based on the concept that transit investment and commercial development can be integrated to create value, both financially and in terms of public benefit.”¹¹}



Public Participation Workshop

Development Opportunities at Different Station Locations

Regional Urban Center

A regional urban center is an area of high density and intensity of uses that supports the primary transit connections in the region.

Types of Development Opportunities:

- Mixes of high density and high intensity uses which include mid-rise and high-rise offices, retail and specialty shopping, support services, high and medium density residential, and cultural and public facilities, and
- Opportunities for redevelopment and infill development.

Go Out “Into the Field”

“Take a walk around the community. Visit transit and transportation facilities and observe what kind of activities occur there. Talk to people and ask them what works and what doesn’t work about the place. Listen to their suggestions. Through this process, you will develop a better understanding of how a place operates and how it can be improved.”

Project for Public Places, Inc., “How Transportation and Community Partnerships are Shaping America, Part I: Transit Stops and Stations”, 1999

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Community or Town Center

A community or town center is a focal point for a smaller community or a major grouping of neighborhoods.

Types of Development Opportunities:

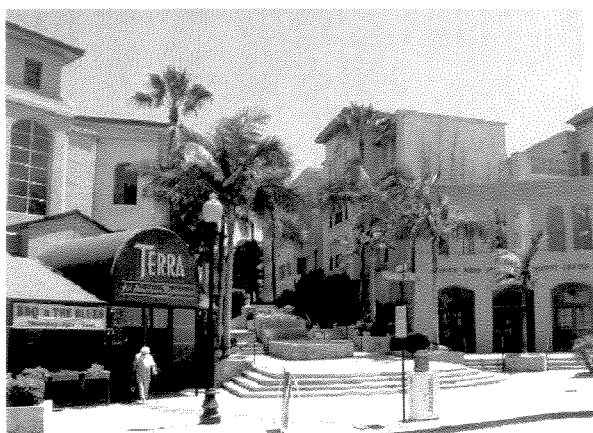
- Medium to high-density housing, commercial uses and office uses,
- Redevelopment and infill opportunities,
- Scale of development is lower in neighborhoods, and
- Small-scale mixed uses along main streets connecting to transit facility.

Emerging Suburban Center

A typical suburban center is a gathering place, such as a shopping center or office park.

{¹² “Types of Development Opportunities:

- Primarily commercial and office-related uses, with some opportunities for medium density multi-family development, and
- Opportunities for future development of parking lots and redevelopment of obsolete buildings.”^{12}}



A café, a community center and apartment houses in San Diego's Uptown District.



Drugstore across from Downtown Berkeley BART station

Retail Opportunities Adjacent to Transit Facilities

{¹³ “Retail developments can serve transit riders going to and from bus stops and rail stations while at the same time capturing the neighborhood walk-in market. The design of these developments can emphasize the pedestrian environment, without sacrificing convenient auto access to do so. In addition, transit riders don't need parking, minimizing land cost in urban areas.”^{13}}

Retail Opportunities in the Station Areas

{¹⁴ “Small retail stores and services on a traditional commercial street can capture much of the transit riding market by ensuring that the mix of businesses serves riders needs, acknowledges their time constraints, and provides an attractive environment for patrons who might drop in to or from work. Merchant associations and chambers of commerce can be effective partners in addressing these issues.”^{14}}

Maintain Station Areas with Community Involvement

{¹⁵ “Block clubs, community groups, and business associations can help strengthen these markets by participating in cooperative efforts to improve connections to transit. Volunteer neighborhood clean-up efforts, adopt-a-station programs, and landscape maintenance can contribute greatly and set the tone for cooperation.”^{15}}

Chapter 2. Creating a Framework for TOD



St. Rose of Lima Park station is the most heavily used light-rail station in Sacramento; it is adjacent to Downtown Plaza and K Street Mall.

{¹⁷ “If you are a transportation agency, reach out to community organizations, businesses, and local officials to elicit their ideas and opinions – and support. If you are a community organization, get in touch with the staff of your transportation or transit agency. Invite them for a tour or site visit of an existing or proposed project. Discuss ways of working together to plan, design, and implement a project.”¹⁷}

Provide Long-Term Value

Profiting with TOD may not happen overnight – the bottom line of the TOD strategy requires a long-term commitment to growing smart and creating neighborhoods with long-term value.

{¹⁶ “The new real estate developer needs to become an expert in community building and to adjust their business expectations to a longer term view. New Urbanist developers are building much more into their communities (street trees, parks, and other amenities); thus, it takes longer to harvest the full value of their investment. A New Urbanist developer needs to look to a time horizon of 20 to 30 years, not just the first 5 years when most lots and new homes have sold.”¹⁶}



Hollywood Highland

Chapter 2. Creating a Framework for TOD

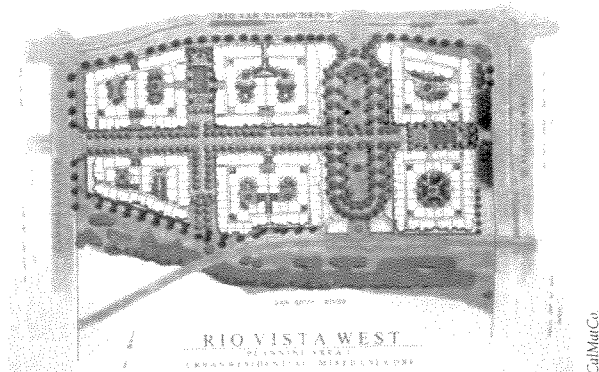
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Chapter 3. Key TOD Considerations: Zoning, Density, Mixed-Usage, Buildings and Architecture

Pedestrian-Friendly Areas

{¹ “In pedestrian-friendly areas, land use activities are designed and arranged in a way that emphasizes travel on foot rather than driving by car. Creating an environment at pedestrian scale requires careful consideration of the dimensions of the human body and the proportions of the spaces that people use. The factors that encourage people to walk are often subtle, but they most regularly focus upon the creation of pleasant environments for the pedestrian.



Plan for Rio Vista West TOD, San Diego

Most people do not feel comfortable walking in a wide-open area with busy traffic passing closely by. Pedestrians are drawn to streets and paths with a feeling of intimacy and enclosure. This feeling can be created by locating buildings close to the sidewalk, by lining the street with trees, and by buffering the sidewalk with planting strips or parked cars. People on foot enjoy small details, such as displays in shop windows, street level lighting and signs, and public art and displays.”¹ }

{² “Increasing the likelihood that people will walk to and within a station area significantly increases the probability that they will use public transit and

improves the viability of the entire station community. A walkable environment is key to a successful TOD community. Just locating a mix of high-density development does not guarantee a good walking environment. Success in attracting people to walk rather than drive depends on the quality of the walkways, type of destinations, perceptions of safety, and number of obstacles or conflicts encountered along the way. If projects are to be more transit-oriented, they must be sensitive to the differing requirements of pedestrians, bicyclists and transit customers.”² }

Develop a Shared Vision for the Project

“Address the future needs of the community and the transportation agency; and specify short- and longer-term goals, immediate action steps, and additional partners. Seek ways to solve problems, overcome obstacles, and innovate and identify a range of funding sources that may be available to the community or to the transportation agency.”

Project for Public Places, Inc., “How Transportation and Community Partnerships are Shaping America, Part I: Transit Stops and Stations”, 1999

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Chapter 3. Key TOD Considerations: Zoning, Density, Mixed-Usage, Buildings and Architecture

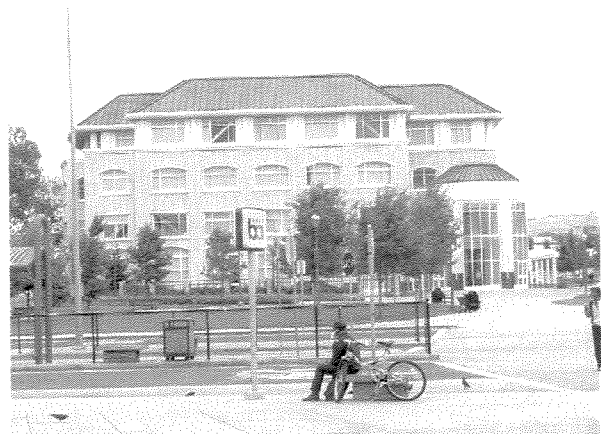
Transit-Friendly Zoning

TOD is part of a land use and transportation strategy that works best when enabled through clear and predictable development entitlements, transit-friendly zoning, and design standards. Legally defensible TOD zoning codes and design standards give planning departments a framework to shape development with building guidelines.

{³ “Although transit-oriented development has been hailed for a number of years as an excellent alternative to conventional low-density development, it has still not been institutionalized within the permit and regulatory environment of most jurisdictions of the nation and region. According to a report published in the *New Urban News*, for every dollar invested in transit-supportive land use developments, over \$1,400 is still invested in conventional suburban development. For this to change, local communities will have to take a hard look at how their zoning and development codes either frustrate or accommodate station area development activities.

Described below are three ways of creating a more effective regulatory and permit review environment for transit-oriented development:

- Modify zoning and development regulations to encourage, rather than discourage, transit-oriented development.
- Develop appropriate mechanisms to ensure that regulations are tailored to individual station areas.
- Simplify and streamline the permit review process.”³}



Hayward Civic Center Place is the result of transit-friendly policies in the San Francisco Bay Area.

Chapter 3. Key TOD Considerations: Zoning, Density, Mixed-Usage, Buildings and Architecture

Prohibited Uses

To help assure the return on the public's investment in major transit facilities, some communities have prohibited low intensity automobile-oriented uses in the areas near transit stations. For example, in Seattle:

“The following uses are prohibited within an underlying commercial zone as both principle and accessory uses, except as otherwise noted:

- A. Drive-in businesses;**
- B. Dry storage of boats;**
- C. General manufacturing;**
- D. Heavy commercial services, except laundry facilities existing as of April 1, 2001;**
- E. Sales and rental of large boats;**
- F. Vessel repair (major or minor);**
- G. Mini-warehouse;**
- H. Principle use, nonresidential long-term parking;**
- I. Outdoor storage;**
- J. Sale of heating fuel;**
- K. Sales, services and rental of commercial equipment and construction materials;**
- L. Salvage and recycling;**
- M. Towing services;**
- N. Vehicle repair (major or minor);**
- O. Wholesale showroom; and**
- P. Warehouse.”**

Seattle Municipal Code, “Seattle Area Station Overlay District”, Ordinance 120452, July 30, 2001

Modify Zoning and Development Regulations

{⁴ “Many local zoning codes unwittingly discourage transit-oriented development through regulations designed to promote automobile-oriented, single-purpose, suburban-scale development. Identifying and eliminating these regulatory barriers is a necessary first step for creating successful transit station communities. This process is sometimes described as a regulatory audit.”⁴}

New Zone Classifications

{⁵ “The most common and basic way to implement new land use objectives is to create new zone classifications that can be used within a defined station area. This approach is useful if the land use objectives in other parts of the jurisdiction are much different, and minor modifications to existing classifications will not work. Emerging urban areas may need to use new classifications if they are to achieve some of the more dramatic changes needed at their station areas.”⁵}

Chapter 3. Key TOD Considerations: Zoning, Density, Mixed-Usage, Buildings and Architecture

“Transit agencies must get the word out to local planning departments and developers that they have an interest in site design and can offer valuable suggestions.”

Snohomish County Transportation Authority, “Participating in Community Planning: Ideas for Public Transit Agencies”, October 1993

Transit Overlay Zone

{⁶ “If the current zoning only needs minor modifications, an ‘overlay zone’ might be appropriate. An overlay zone retains the existing zoning, but adds some supplemental provisions that apply only to the station area. In some cases an overlay zone is more restrictive, such as prohibiting auto-oriented uses, while in other cases it may be more flexible, such as allowing existing parking spaces as part of the new development requirement. The advantage of an overlay zone is that you can tailor regulations for a specific area without having to add an entirely new district to your zoning code.”⁶}

New Zoning Districts

{⁷ “Another approach is to create an entirely new zoning district with its own land uses and development standards. An advantage to an entirely new zoning district is that regulations can be specifically tailored to objectives and can be made clear and simple.”⁷}

Minimum Density

{⁸ “One zoning technique for achieving higher densities is to require minimum densities, but this approach can be tricky. If minimum densities are set too high, development is discouraged and locates elsewhere, often in areas poorly served by transit. If no minimum density standards are set, development occurs in areas at densities too low to support good transit service. To achieve workable minimum density standards, the following strategy is recommended: find the maximum density that the market can support and make that the minimum density.”⁸}

Design Guidelines

{⁹ “Another way to ensure that land use regulations are tailored to a community is to develop and use transit-oriented development design guidelines.”⁹}

Design review can be an important regulatory tool for developing transit-oriented communities. Generally, design guidelines are used in conjunction with zoning requirements in directing new development to achieve public objectives. Whereas zoning codes can regulate quantifiable and easily determined characteristics such as use, height, bulk and setbacks, design guidelines are more successful in addressing other objectives such as building design, pedestrian orientation, building scale with respect to its surroundings and special site design issues. While zoning provisions usually rely on specific formulas or criteria, design guidelines can be much more flexible.”⁹}



Parsaus Brantnerhoff

Uptown Mixed Use

Chapter 3. Key TOD Considerations: Zoning, Density, Mixed-Usage, Buildings and Architecture

“There is no magic number for an appropriate density target for all transit station communities.”

Puget Sound Regional Council, “Creating Transit Station Communities in the Central Puget Sound Region – A Transit-Oriented Development Workbook”, June 1999

Density

Establishing Density Targets

{¹⁰ “Although density is only one variable influencing transit use, numerous studies have found that transit ridership increases significantly with increased land use density. There is no magic number for an appropriate density target for all transit station communities. Many different variables should influence any density targets that are established. For example, household densities can be lower if employment and commercial densities are high, and vice versa. Transit stations without associated parking would require higher densities than those with parking available; and rail stations with 5-10 minute headways would obviously support higher densities than those with 30 minute headways.”¹⁰}

{¹¹ “Residential development near stations provides a ready market for transit trips. A variety of housing types, costs and ownership will establish diversity in a community and will lead to more transit trips throughout the day. More people will be around the [transit facility], supporting local commercial establishments. Research indicates that 15 housing units per gross acre will support a high

level of bus service to a station area. High-density single family, townhouses, and apartments should be combined to achieve an adequate housing density. To maintain a good balance of activity, the number of jobs in the station area should not exceed the number of households by more than 3 to 1.”¹¹}

A Checklist for Planning a Mix of Land Uses:

- **“Are land uses complementary?”**
- **Are uses linked by sidewalks or paths?**
- **Do uses create all day activity?**
- **Are uses within walking distance?**
- **Do buildings fit with each other?”**

Puget Sound Regional Council, “Creating Transit Station Communities in the Central Puget Sound Region – A Transit-Oriented Development Workbook”, June 1999

Chapter 3. Key TOD Considerations: Zoning, Density, Mixed-Usage, Buildings and Architecture

Mixed-Uses

Establish a Compact Mix of Land Uses within a Defined Station Area

{¹² “A station area should generally include parcels within one-quarter mile to one-half mile walking distance of the transit facility. However, barriers such as busy streets or steep slopes can reduce this distance, while pleasant walking routes, such as an unrestricted pedestrian path, can increase the size of the pedestrian area. Each station area should be specifically defined based on local conditions, including the level of transit service provided, the likely purposes of the trips to be taken, and the pedestrian qualities in the immediate vicinity of the facility. Within a defined station area, the mix and density of land uses should be planned based on the location and access to the station. The highest density developments should, ideally, be located closest to the transit facility.”¹²}



American Plaza is a 34-story building consisting of office space, a specialty retail galleria, a food court, and the San Diego Museum of Contemporary Art.

“To ensure that a mix of different land use activities is created within a station area, jurisdictions in other regions have established targets for mixed-use development. Below are some examples. Actual development may need to be monitored and zoning adjusted if targets are not met. Local targets should be based on specific station area land use goals.

- **Public uses, including park space and civic uses: 5 to 16% of total land use area**
- **Commercial retail space: 10 to 50% of total land use area**
- **Residential development: 20 to 80% of total land area**
- **Employment: 20 to 60% of total land area.”**

Puget Sound Regional Council, “Creating Transit Station Communities in the Central Puget Sound Region - A Transit-Oriented Development Workbook”, June 1999

Chapter 3. Key TOD Considerations: Zoning, Density, Mixed-Usage, Buildings and Architecture

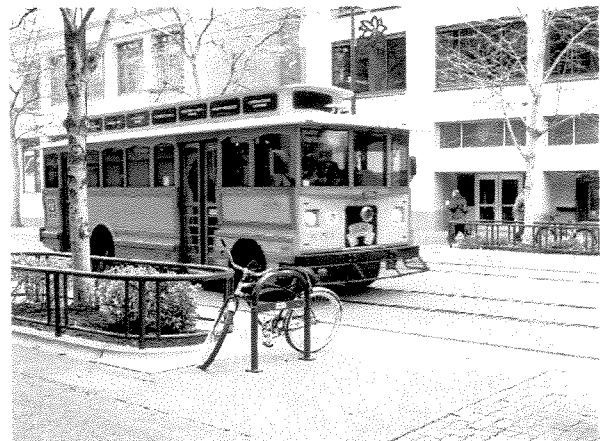
Building Height/Street Width

“Harmonious proportion has, at least since 1784, been a major objective of regulations of building height along Paris streets. The two (street width) to three (height to the cornice line) proportion of streets had existed traditionally and was then formalized.”

Allan B Jacobs, “Great Streets”, Massachusetts Institute of Technology, Boston, MA, 1999



A drugstore below offices across from the Oakland City Center Bart Station.



K Street Mall in Sacramento vertically mixes retail, office and residential uses.

Encourage Mixed-Uses within Buildings and on Adjacent Sites

{¹³ “Mixed-use can occur when more than one land use is within a single building or when different uses are located in separate buildings close to each other. The important component is that good walking access must exist between the different land uses. Mixed-use within buildings (known as ‘vertical mixed-use’) is an excellent way to increase building density while integrating mutually supportive land uses. Residential above commercial will create all day activity and a functional place for pedestrians while increasing transit ridership. The same can be achieved with mixed-use in separate buildings (known as “horizontal mixed-use”) if they are in close proximity and have adequate pedestrian connections.”^{13}}

{¹⁴ “A certain minimum proportion of uses are required to stimulate pedestrian activity and to provide economic incentives for developing mixed-use patterns. The proportion of uses is based on site area and does not preclude additional, different uses on upper floors. A minimum amount of retail, housing and public uses are required in all TODs. The different mix of uses for neighborhood TODs and urban TODs is intended to reflect the variations in intensity and type of development desired at these sites.”^{14}}

Chapter 3. Key TOD Considerations: Zoning, Density, Mixed-Usage, Buildings and Architecture

Buildings and Architecture

Urban Vitality

{¹⁵ “Locating shops along the roadway attracts people to the area and helps create a dynamic, exciting environment in which pedestrians feel comfortable. Store windows add interest to the street and draw pedestrians along. Retail destinations close to the bus or trolley stop are an added incentive to use transit. Storeowners near active transit stops also benefit from sales to the casual, walk-in buyer.”¹⁵}



Sacramento Convention Center

Varied Architectural Design and Detail

{¹⁶ “Varied details on the exterior of buildings and in the public spaces adds interest for pedestrians, patrons and residents. These details assist in defining a TOD and establishing a separate identity from other parts of a community. The exterior treatments also help in relating the building(s) to the sidewalk and other public areas.”¹⁶}

{¹⁷ “A number of communities have developed provisions to reduce the effect of lengthy, unvaried, featureless facades or other structures lining the pedestrian route. A number of approaches can improve building interest, such as requiring street level display windows and other features of inter-

est rather than blank walls along sidewalks and emphasizing building modulation (varying the set-back of different sections of the building facade) to add variety.”¹⁷}

Commercial Buildings

{¹⁸ “The configuration of shops in a core area must seek a balance between pedestrian and auto comfort, visibility, and accessibility. While anchor stores may orient to the arterial and parking lots, smaller shops must orient to pedestrian “main” streets and plazas.



Villages of La Mesa Apartments in La Mesa

Primary ground floor commercial building entrances must orient to plazas, parks, or pedestrian oriented streets, not to interior blocks or parking lots. Secondary entries from the interior of a block will be allowed. Anchor retail buildings may have their entries from off-street parking lots; however, on-street entries are strongly encouraged.

Entries into small shops and offices should orient directly onto a pedestrian-oriented street. Buildings with multiple retail tenants should have numerous entries to the street; small single entry malls will be discouraged. Off-street parking should also be located at the rear of buildings with paths or sidewalks leading to the street and entry.”¹⁸}

Chapter 3. Key TOD Considerations: Zoning, Density, Mixed-Usage, Buildings and Architecture

Residential Buildings

{ 19 “As with commercial uses, residential entries should face the street to encourage public activity in the public realm and to welcome visitors from the on-street guest parking.

In all cases, primary ground floor residential building entrances must orient to streets, not to interior blocks or parking lots. Secondary and upper floor entries from the interior of a block will be allowed.

In residential areas, the front door and guest entry must orient to the street. Private back-door entries can provide access from alleys, garages, and parking lots. Ancillary units and upper floor units in multi-family or apartment complexes may be accessed by rear entries.” 19 }



Plaza in Oakland City Center

Provide Usable Public Open Space

Integrated Parks and Open Spaces

{ 20 “As density increases in centers and corridors, the need for usable public open space will also increase. Open space should be thoughtfully planned to avoid creating wasteful landscaped areas with little more than visual appeal. Instead, open space should be planned and designed for use by people, especially children and the elderly.” 20 }



Plaza in Hollywood-Highland

Chapter 3. Key TOD Considerations: Zoning, Density, Mixed-Usage, Buildings and Architecture**References**

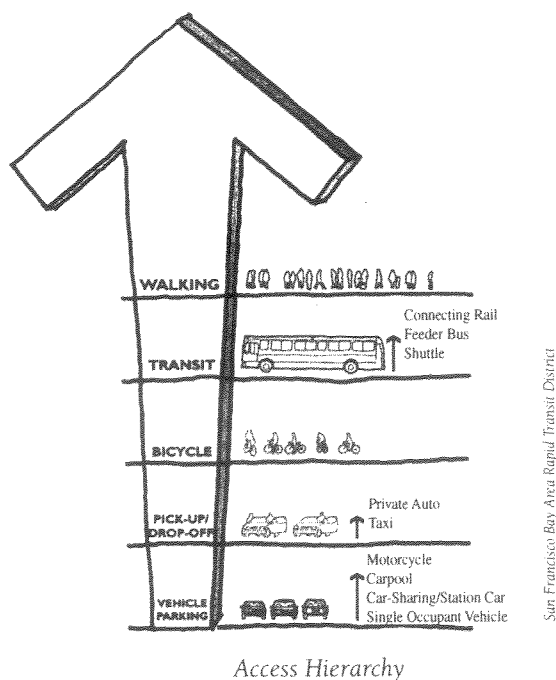
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- 2 Ibid.
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- 9 Puget Sound Regional Council.
- 10 Ibid.
- 11 Ibid.
- 12 Ibid.
- 13 Ibid.
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- 15 Corbett, Judy and Zycofsky, Paul, *Building Livable Communities: A Policy-Maker's Guide to Transit-Oriented Development*, The Center for Livable Communities, Sacramento, CA, August 1996.
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- 20 Tri-County Metropolitan Transportation District of Oregon.

Chapter 4. Providing Access to Transit

Access to Rail Transit Stations

Rail transit includes light rail, heavy rail, commute, and intercity rail services. { “People who catch rail transit are walking, bicycling, driving, and transferring to and from buses. Traffic moves more slowly and parking is a valued commodity. In fact, if the streets and sidewalks are not bustling, then the station area is probably not as vibrant as it could be. Access to the rail transit station should be an extension of the local and regional circulation network that serves the surrounding neighborhood.

According to the figure below, the ... priority of modes of access to rail transit stations ...[is]:



1. Pedestrian
2. Transit and Shuttles
3. Bicycles
4. Carpool, Cabs and Drop-offs
5. Single-Occupant Automobiles” } }

Note: Because of the volume and length of many of the quotations in this document, a bracket symbol with corresponding footnote reference number is placed at the beginning and ending of each quotation.

Pedestrian Access to Rail Transit Stations

All people who pass through a rail transit station’s faregates are pedestrians, no matter how they got to the station area. Whether on foot or in wheelchairs, pedestrians trying to reach a rail transit station will always seek the shortest route, even when buildings and parking areas block the way to the station, when the roads are wide, and when crosswalks are few and far between. Trampled landscaping, chronic jaywalking and regular circumvention of no-crossing zones and keep-out fences may suggest that the site planning in the station area did not fully consider pedestrians.

Many of these problems can be avoided by giving pedestrians top priority in the rail station area. This means making the area feel safer, more convenient and more human-scaled. Sidewalks and crosswalks that take people where they want to go not only improve pedestrian safety and satisfaction, they reduce long-term maintenance costs. In fact, the ‘cow paths’ that pedestrians blaze through the station area are good indicators of where they want to go, and are possibly worth formalizing in station area development.

The closer streets get to a rail station area, the more complex and multi-modal they become. Cars, shuttles, bikes and buses share the street with pedestrians, and traffic slows. Certain levels of congestion near the station must be ...[expected] and tolerated. The street design near the station should prepare drivers for unexpected, immediate stops. The street and lane width and curb radius [not just speed limit signs] should dictate the travel speeds...

Chapter 4. Providing Access to Transit

{² “Guideline: Sidewalks connecting rail station faregates to key intersections and destinations in the station area should be as short, direct and visually unobstructed as possible.

Guideline: Sidewalks linking rail station faregates to the surrounding community should be wide and smooth enough for wheelchairs and strollers, and lined with trees, lights and wayfinding signs to improve orientation and safety.

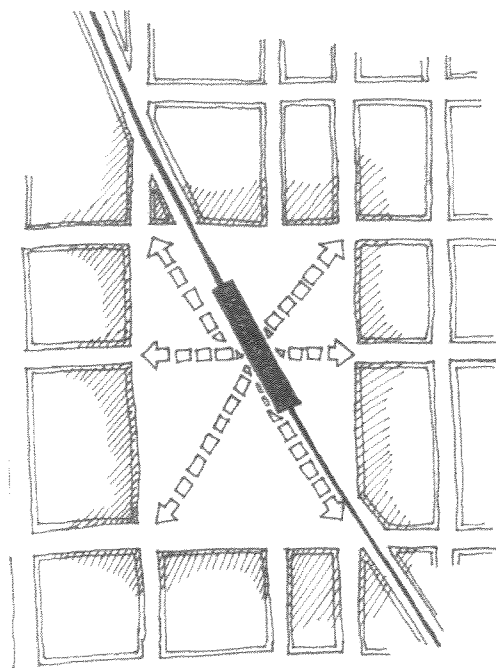
Guideline: The size and layout of blocks near rail stations should anticipate the need for direct pedestrian paths.

Guideline: The main sidewalks and crosswalks in the area should not be disrupted by wide turning radii, driveways, garage entrances, and dedicated turning lanes that require pedestrian refuge islands.

Guideline: Street width in the immediate station area should not be wider than needed to accommodate ‘design’ travel speeds and emergency vehicle egress, and if applicable, any bike and/or parking lanes.”²}

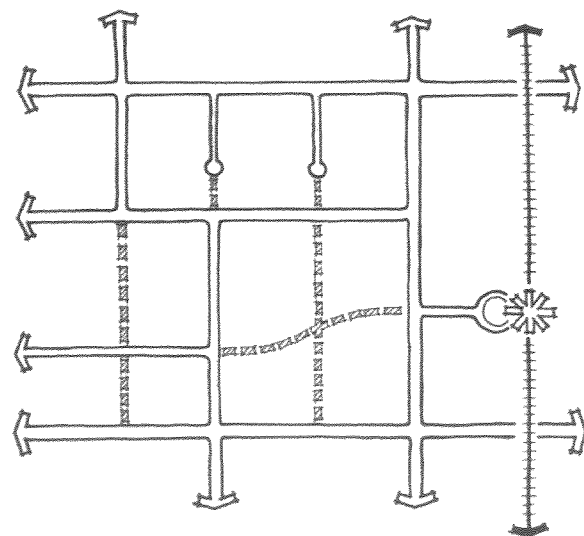
Transit Access to Rail Transit Stations

Rail transit stations are linked to buses, light rail, commuter rail, ferries, cable cars, shuttles and other means of transit. These connections are essential for healthy, growing rail transit ridership. As multi-modal hubs, rail transit stations are also important transfer points between these other transit systems and should accommodate them. Transit-oriented development (TOD) residents and workers may depend on these vital transit services to go places that rail transit does not reach.



Pedestrian Pathways

San Francisco Bay Area Rapid Transit District



Cul-de-sac

San Francisco Bay Area Rapid Transit District

However, bus lanes and loading zones can cause conflicts with other functions in the station area. Land devoted exclusively to bus loading can feel “dead” outside the rush hour. In a TOD, where land is especially valuable and pedestrian activity most intense, the amount of land and street space dedicated to buses should be used as efficiently as possible.

Chapter 4. Providing Access to Transit

“Guideline: Transit boarding zones should have, lighting, seating, service information (schedules, maps and monitors), and offer shelter from the elements to promote comfort, security and reliable connections.

Guideline: The link between rail transit and connecting transit should be direct, short and uninterrupted by other types of vehicular traffic.

Guideline: Bus, shuttle and light rail waiting and loading areas should be concentrated to facilitate transit-to-transit connections and to avoid wasting land and creating expansive ‘dead’ zones.



Bus arriving at a BART station

Bicycle Access to Rail Transit Stations

Bicycles provide access to the station from greater distances than walking, but with fewer impacts than vehicular traffic and parking. However, the mix of vehicular and pedestrian traffic converging at rail transit stations may discourage bike riders. Even though the station itself may provide ample bike accommodations, the streets and paths that lead there should still provide bicyclists with a safe and comfortable approach to the station.

Guideline: Local and regional bike networks should be connected with rail transit stations, marked with signage, and free of any barriers such as curbs and fences.

Guideline: Bicycle parking at rail transit stations should be sheltered, well-lit, secure and highly visible.

Taxi, Pick Up and Drop-Off Zones

Persons getting picked up and dropped off at rail transit stations by taxis or other drivers invariably seek to get as close to the station as possible. Providing space for this activity can be a challenge.

“Good public transportation is as important to the quality of a community as good roads. Well-designed transit routes and accessible stops are essential to a usable system. Bus stops should be located at intervals that are convenient for passengers. The stops should be designed to provide safe and convenient access and should be comfortable places for people to wait. Adequate bus stop signing, lighting, a bus shelter with seating, trash receptacles, and bicycle parking are also desirable features. Bus stops should be highly visible locations where pedestrians can reach them easily by means of accessible travel routes. Therefore, a complete sidewalk system is essential to support a public transportation system.”

Federal Highway Administration, “Pedestrian Facilities Users Guide: Providing Safety and Mobility”, March 2002

Chapter 4. Providing Access to Transit

This is where pedestrian, bus and automobile circulation is most intense and station area land the most valuable. Still, taxi and drop-off access to rail transit accommodates large volumes of customers more efficiently than drive-and-park access, and cab access is especially important for visitors unfamiliar with other modes.

Guideline: Taxi and pick-up/drop off areas should be signed, well-lit, close to and visible from the station entrance.”^{3}}

Development-Oriented Bus Facility Design

Site Relationship to Transit Stop

{⁴ “The transit stop should be centrally located within the TOD.”^{4}}

Bus Stop Spacing

{⁵ “Bus travel time and schedule reliability are important factors in attracting transit ridership. Too many stops slow bus operations and fail to provide sufficient distance between stops for safe stopping. Too few stops increase walking distances and decrease coverage. Striking a balance between convenient access and safe, timely operation increases bus competitiveness with cars.”^{5}}

Bus Stop Placement

{⁶ “Tri-Met uses the following guidelines as an initial tool for evaluating bus stop placement:

- Avoid unnecessary changes in bus stop locations,
- Identify closest bus stops,
- Ensure compatibility with adjacent properties,
- Allow adequate sight distance,
- Ensure pedestrian linkages and street crossings,
- Provide for adequate bus maneuvering,
- Evaluate travel time delays, and
- Evaluate signalization impacts.”^{6}}



Chicago Transit Authority

Bus landing

Lane Widths

“Provide a curbside lane width of 12 feet (exclusive of a bike lane) for normal bus operation on a mixed-traffic roadway. Provide curbside lane width of 14 feet along roadway segments where operating speeds and bus frequency are higher or where on-street parking is available adjacent to the travel lane.”

Tri-County Metropolitan Transportation District, “Planning and Design for Transit Handbook”, January 1996

Chapter 4. Providing Access to Transit

Bus Zones

{⁷ “Bus zones are designated no-parking areas on streets with curbside parking. They allow the bus to pull out of the travel lane and up to the curb to stop, boarding and de-boarding all passengers in a way that is safe and not disruptive to other traffic.”⁷}

Transit Stop Facilities

{⁸ “At a minimum, TOD transit stops shall provide shelter for pedestrians, convenient passenger loading zones, and secure bike storage.”⁸}

{⁹ “Reasonable levels of weather protection, physical accessibility, and clearly understood transit information are important elements in promoting public use of the transit system.”⁹}

Curb Extensions

{¹⁰ “Curb extensions enhance the pedestrian environment by reducing street crossing distances and calming vehicular traffic...they also allow more on-street parking than bus zones do, and they also provide additional space for pedestrian and bus passenger amenities (e.g., shelter or bench, bicycle rack, trash receptacle).

Curb extensions usually are considered appropriate along streets with lower traffic speeds and/or reduced traffic congestion where it is acceptable to stop buses in the travel lanes. Collector streets in neighborhoods and the designated pedestrian districts are also good candidates for such treatment.”¹⁰}

Bus Shelters

{¹¹ “Tri-Met encourages private developers and other agencies to include passenger shelters as part of new developments when warranted. The most important criteria are as follows:

- Number of passengers boarding per day,
- Type of population served,
- Preparation required, and
- Availability of nearby shelter.”¹¹}



Parsons Brinckerhoff

Bus shelter

Bus Benches

{¹² “Providing bus benches without shelters is appropriate at some bus stops. Criteria for placing benches without shelters include the following:

- Locations where the regular number of riders does not warrant a shelter.
- Locations with adjacent site features (retaining walls, stairs, low fences) that attract riders onto adjacent property.
- High-use areas due to high levels of pedestrian movement over a small area.
- High ridership locations that have weather protections, but no seating.
- Transfer locations with buses on long headways.
- Locations used by elderly and disabled persons.”¹²}

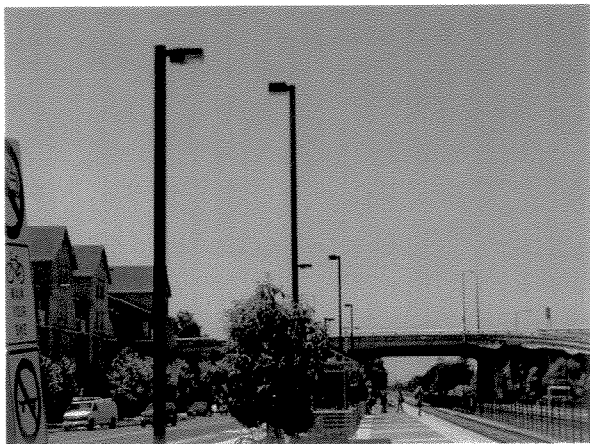


Curb extension

Chapter 4. Providing Access to Transit

Lighting

{¹³ “Site lighting is often determined by economies of scale and the particular configuration of a site. For functional reasons, lighting standards are located along the perimeter of the property and at interior locations within larger parking areas. Throughout the Portland region, jurisdictions have recognized the need to incorporate shorter ornamental lighting standards and brighter lighting levels in areas targeted for pedestrian activity. These standards provide the opportunity to focus brighter lighting levels in pedestrian areas, allowing lower levels elsewhere, and add to the legibility of the pedestrian network.



Street lights at San Antonio station in Mountain View

- To distinguish the pedestrian network, provide ornamental lighting no greater than 12 feet in height.
- To ensure pedestrian safety, provide .75 to 1.5 foot-candles of illumination along pedestrian routes and at bus stops.
- Place light posts in buffers between pedestrian pathway and driveways or roadways.”^{13}}

Bus Landing Areas

{¹⁴ “At a minimum, the Americans with Disabilities Act (ADA) requires that all new and relocated stops have a landing area that meets the following requirements:



Bus landing area near Downtown Plaza in Sacramento

- Provide a 5-foot-wide by 8-foot-wide unobstructed paved landing area for bus lift operation.
- Ensure that the cross-slope of the landing pad does not exceed 2 percent.
- In curbed areas, construct the landing pad of concrete at least 4" in depth. In uncurbed shoulder areas, an asphalt landing pad is acceptable.
- For most buses, locate landing pads one foot from bus stop sign location. For buses with rear door lifts, locate the landing 23.5 feet from the bus stop sign.”^{14}}

Bus Stop Delineation

“Proper delineation of a bus stop will discourage general traffic from using the stop area and will direct bus operators where to stop. Delineation might include:

- * Signing and striping the stop as a bus zone,**
- * Identifying the stop through curb markings, and**
- * Additional signage provided by the local jurisdiction.”**

Tri-County Metropolitan Transportation District, “Planning and Design for Transit Handbook”, January 1996

Roadway Pavement

{¹⁵ “When fully loaded, a standard bus has a rear axle weight of 25,000 pounds (dual tires). With repeated use, substandard roadways will deteriorate.”¹⁵}

- {¹⁶ “On typical roadways with fewer than 25 buses per day, design roadways with typical asphalt pavement sections.
- On roadways carrying 25 or more buses per day, incorporate concrete roadways to avoid the deterioration that typically occurs with asphalt, particularly in bus stopping and turning areas or areas with special soil conditions.
- At bus stops accommodating very high bus volumes, provide a reinforced concrete pad.”¹⁶}



Parsons Brinckerhoff

Reinforced bus roadway

Corner Radii

{¹⁷ “Design curb radii to accommodate bus movements where appropriate. Curb radii may vary from 15 to 50 feet depending on site constraints and desirable operations. Where larger radii are developed, allow longer walk time at signalized intersections to accommodate increased pedestrian crossing distances.”¹⁷}

Obstructions/Clearances

{¹⁸ “Generally, buses travel in the curbside traffic lane and make frequent stops to pick up and drop off passengers. Physical obstructions, such as utility poles and signs, must be set back far enough from the curb to allow space for bus ‘tilt’ from crowned roadway sections.”¹⁸}

Driveways

{¹⁹ “Provide adequate distance between bus stops and driveways to prevent buses from blocking driveway traffic or sight lines. In constrained situations, buses may block driveways if other access is provided to the property and sight distances are maintained.”¹⁹}

Chapter 4. Providing Access to Transit

Catch Basins

{²⁰ “Bus stops should not be located where a bus wheel will stop on a catch basin or storm drain because that could cause the bus to lurch or change direction. Repeated loading on a catch basin will cause excessive settlement of the basin’s structure and could cause difficulty with deployment of a wheelchair lift. Avoid placing catch basins within bus stop zones.” ²⁰}



Bus sign at K Street Mall in Sacramento

Bus Stop Signs

{²¹ “Signs are placed to notify passengers where a bus will stop, to provide a reference for bus operators and passengers, and to publicize the system. In placing a bus stop sign, concerns for passenger and public safety, convenience, and bus stop visibility must be addressed.” ²¹}

Street Grade

{²² “Evaluate cross-slopes in lanes with bus circulation to avoid roller coaster effects and allow adequate bus lift deployment.” ²²}

References

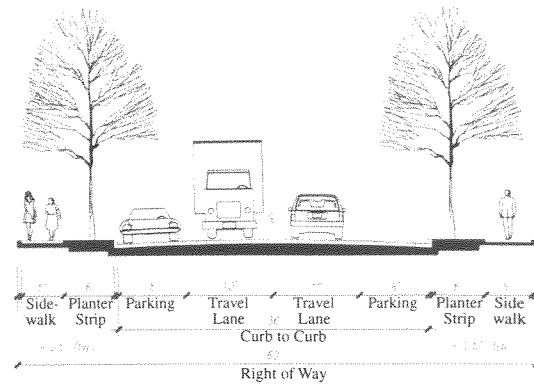
- 1 *BART Transit-Oriented Development Guidelines*, San Francisco Bay Area Rapid Transit District, June 2003. “BART station” has been changed to “rail transit station” for this Compendium.
- 2 Ibid.
- 3 Ibid.
- 4 Calthorpe Associates in association with Mintier Associates, *Transit Oriented Development Design Guidelines for Sacramento County*, September 1990.
- 5 Tri-County Metropolitan Transportation District of Oregon, *Planning and Design for Transit Handbook*, January 1996.
- 6 Ibid.
- 7 Ibid.
- 8 Calthorpe Associates in association with Mintier Associates.
- 9 Tri-County Metropolitan Transportation District of Oregon.
- 10 Calthorpe Associates in association with Mintier Associates.
- 11 Tri-County Metropolitan Transportation District.
- 12 Ibid.
- 13 Ibid.
- 14 Ibid.
- 15 Ibid.
- 16 Ibid.
- 17 Ibid.
- 18 Ibid.
- 19 Ibid.
- 20 Ibid.
- 21 Ibid.
- 22 Ibid.

Chapter 5. Streets and Parking

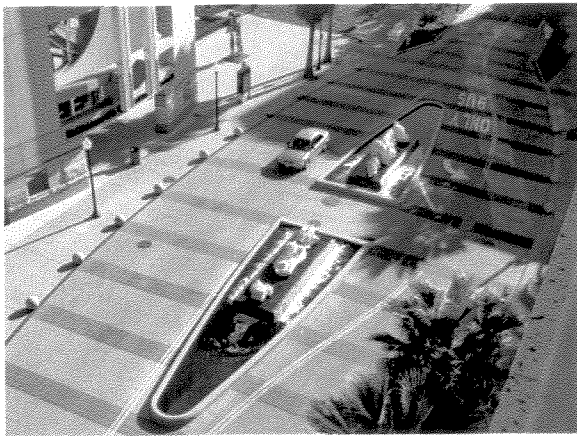
Connectivity

{¹ “To achieve pedestrian-friendly design, the circulation network must serve as the framework for placing and orienting buildings. Streets should be designed for all travel modes, not just cars.”¹}

Clear formalized, narrow and interconnected streets and small blocks make destinations visible and easier to access. They also provide the shortest and most direct route for pedestrians and bicyclists.”¹}



TOD Standard Residential

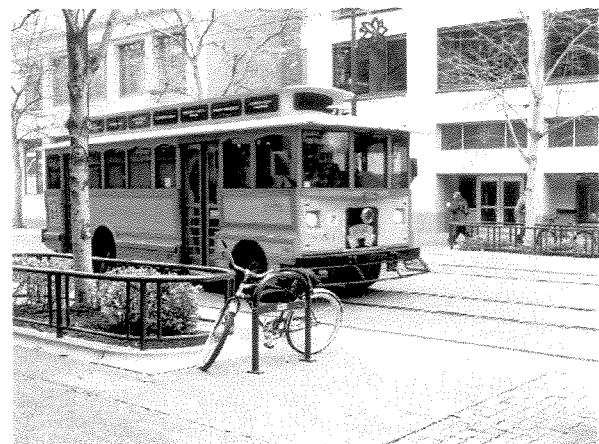


13th Street between Esquire Square and the Sacramento Convention Center

Narrow Streets and Pedestrian Activity

{³ “The design of the street right-of-way is very important in ...[improving] the walking environment. Narrow streets help to slow traffic, reduce crossing distances, and provide space for landscaping, bike access, and on-street parking. Wider sidewalks, limited curb-cuts, street trees, awnings, and arcades can help to create a more active pedestrian environment. Public works standards should be reviewed and revised if necessary to ensure that new street design projects are sensitive to pedestrian needs.”³}

{² “An interconnected street system is essential to making a station area function as a pedestrian-oriented activity center. A major function of the street system is to facilitate pedestrian circulation within the district and to link adjacent neighborhoods. The street system should provide direct connections to transit facilities, commercial uses, parks and other destinations in the station area.”²}



Trolleybus on K Street in downtown Sacramento

Note: Because of the volume and length of many of the quotations in this document, a bracket symbol with corresponding footnote reference number is placed at the beginning and ending of each quotation.

Chapter 5. Streets and Parking

Block Length

“In areas where large blocks exist, new internal streets should be built to provide pedestrian-friendly connections to work places. Development sites, including parking lots, should be subdivided into blocks by local streets with sidewalks. Block perimeters should average 1200 feet with a range of 800 feet minimum to 1600 feet maximum.”

Puget Sound Regional Council, “Creating Transit Station Communities in the Central Puget Sound Region”, June 1999

Multi-Modal Street Design

{+ “To assure regional mobility in the future, an extensive network of multimodal streets will be needed. Multimodal streets balance the needs of pedestrians, bicycles, cars, trucks and transit vehicles in a way appropriate to the particular function and location of a road or street. Some roads may give ...[higher] priority to cars and trucks; others may give ...[priority] to transit vehicles and pedestrians. Some of the benefits of multimodal street design are:

- Preserves mobility by encouraging transportation facilities and development patterns that make walking, bicycling, and using competitive choices compared with driving;
- Encourages more efficient movement of people on roadways, rather than the addition of more vehicles; and
- Increases the capacity of the existing street system.” +}



Circulation Pattern

“In areas where walking is to be encouraged, streets lined with garages are undesirable. Alleys provide an opportunity to put the garage to the rear allowing the more ‘social’ aspects of the home to the front of the street. Streets lined with porches, entries, and living spaces are safer because of this natural surveillance. Alleys in commercial areas place service vehicle access and parking away from the street and sidewalks, affording a more interesting and comfortable streetscape.”

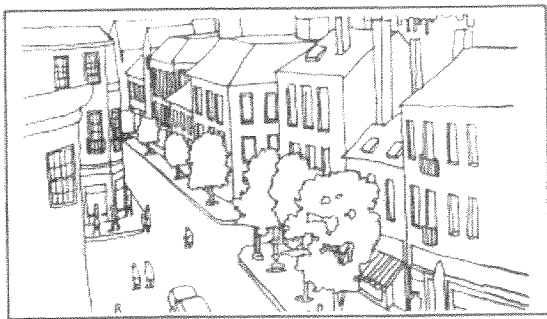
Calthorpe Associates, “Transit-Oriented Development Guidelines for Sacramento County Planning and Community Development Department”, September 1990

Chapter 5. Streets and Parking

Street Patterns

{³ “The street pattern should be memorable, avoid winding, dead end roads, dead end streets, and cul-de-sacs. With an interconnected street system, any single street will not be overburdened by excessive traffic, thus reducing the need for cul-de-sacs. A street pattern which is circuitous and complex will discourage pedestrians; a street system with landmarks and a simple form will be memorable and familiar.

Clear, formalized and inter-connected street systems make destinations visible, provide the shortest and most direct path to destinations, and result in security through community, rather than by isolation.”^{5}}



Snohomish County Transit

Street Vitality

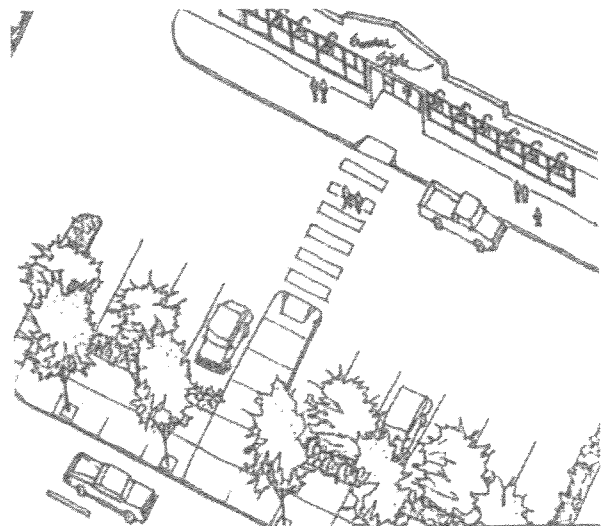
{⁶ “As Jane Jacobs has written, ‘Streets and their sidewalks, the main public places of a city, are its most vital organs’. Neighborhood streets are an important element of the design of livable residential communities. They perform many diverse functions, serving as:

- Public space defining collective values and civic sensibility,
- Spaces for social interaction,
- A framework that gives structures an address, access, and identity,
- Public infrastructure for the through movement of traffic and vehicular access to private dwellings,
- Places for storage of vehicles,

- Places for cycling,
- Walking environments and play spaces,
- Locations for underground services including sewer, water, gas, electricity, cable television, and telephone and
- Places for the storage of snow.”^{6}}

Carefully Designed Intersections

{⁷ “Intersections should be designed to facilitate both pedestrian and vehicular movement by slowing traffic and reducing pedestrian crossing distances. Minimizing curb radii at intersections reduces pedestrian crossing distances, as well as the speed of cars. Unless absolutely necessary for safety, right and left turn lanes at intersections should be avoided.”^{7}}



Mid-block crossing

Pugget Sound Regional Council

Traffic Calming

{⁸ “Slowing auto traffic in the TOD is desired to create a safer, more comfortable pedestrian environment. Minimum street dimensions are intended to make streets more intimate in scale while providing for municipal service vehicle access and maintaining auto safety. Smaller street sections will reduce street crossing dimensions and result in cost savings which can, in turn be allocated for pedestrian amenities.”^{8}}

Chapter 5. Streets and Parking



Trees near Hollywood and Highland in Los Angeles

Trees

{⁹ “Trees are an important element in the creation of liveable communities. Trees add color and contrast to the street. They moderate the micro-climate of the street, filter pollution, and can act as a separator between uses.

Street trees and other landscaping provide a pleasing contrast and softening of the urban environment. They enliven streetscapes by blending natural features with built features. Street trees, when planted between sidewalks and streets, buffer pedestrians from vehicles.”⁹}



Trees outside Berkeley BART station

{¹⁰ “Many consider the right-of-way the most appropriate location for trees since this gives the municipality clear control over their care, protection, and, when necessary, replacement. Some park departments suggest that trees be given the status of a utility and that a location within a right-of-way be reserved for it. Formal and organized tree planting programs on private lots are, however, an alternative to locating trees within the right-of-way. When the latter approach is utilized, selected tree species are typically planted in set locations by the developer or house builder. The advantage of this approach is that trees can often be located farther from the underground and surface elements of the right-of-way and thus are likely to be undisturbed. The disadvantage is that the care and maintenance of trees are not guaranteed since they become a homeowner rather than a municipal responsibility.”¹⁰}



Streetlamps in Oakland

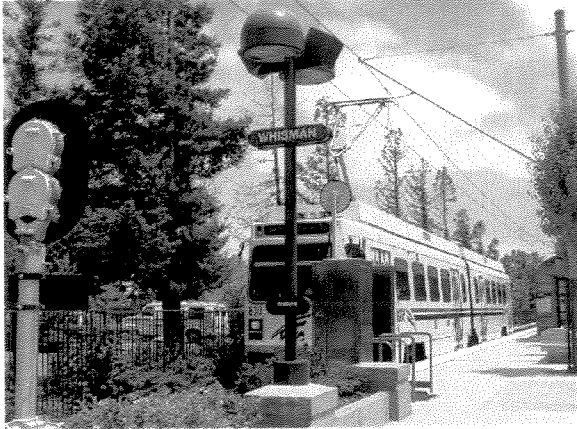
Lighting

{¹¹ “Lights should be installed to achieve appropriate and acceptable light levels to ensure safety and to deter criminal activity. On narrower roads the lights can be located on one side of the street only. On wider roads, lights are typically required on both sides. Lighting levels, pole heights, and fixture designs should be at a scale that is compatible with the street or lane design.”¹¹}

Chapter 5. Streets and Parking

“In the contemporary metropolis, development must adequately accommodate automobiles. It should do so in ways that respect the pedestrian and the form of public space .”

Congress for the New Urbanism, “Charter of the New Urbanism”, McGraw-Hill, New York 2000



Lighting at Whisman Station in Mountain View



Street near Union Station in Los Angeles

Automobiles within the TOD

Automobile Access

{¹² “Transit station communities should be developed recognizing that many trips even within the station area will still be made using cars. To that end, the street system within the station area is very important and needs to be designed to accommodate the conflicting demands of auto and pedestrian travel. The traditional grid pattern with interconnected streets and small blocks provides the greatest level of accessibility within station areas and to the rest of the community. A grid (or other dense network of interconnected streets) has the shortest trip lengths, greatest choice of routes, and is easiest to expand. In contrast, typical suburban street systems create large blocks with wide arterial spacing and few local street connections. These areas often lack direct routes between station areas and adjacent neighborhoods. Research has demonstrated that grid network designs can result in more direct routing of vehicles than suburban street networks. Comparisons of activity areas with similar land uses have shown that vehicle miles traveled can be reduced by between

10 to 40 percent where streets are interconnected along a system of small blocks.”^{12}}

Parking Design

Parking Management

{¹³ “Managing the growth of surface parking represents a major challenge to TOD. Typical suburban development projects devote 50 to 75% of their sites to surface parking. The result is land use densities that are too low to serve frequent and fast regional transit service. A more limited parking supply encourages residents, employees, and shoppers to use transit.

Surface lots separate buildings from public streets, making it difficult for pedestrians to walk between buildings and to transit facilities. Parking management provides alternative strategies to traditional surface parking and can result in more compact developments. If properly designed and located, auto parking can be provided to meet demand and not negatively impact the pedestrian environment.”^{13}}

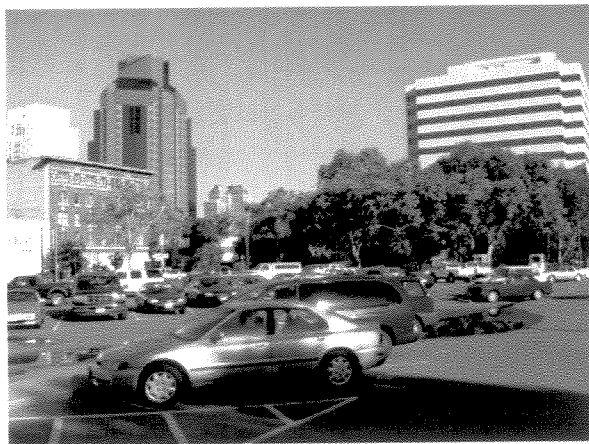
Chapter 5. Streets and Parking

Parking Reduction for TOD

TOD offers significant opportunities to reduce the number of parking spaces below conventional parking requirements typical for retail, office and residential land uses. TOD provides these opportunities by increasing transit accessibility and combining a mixture of land uses. The design and location of TODs can enable a reduction in the number of parking spaces needed.

Research indicates TOD offers the potential to reduce parking per household on the order of approximately 20%, as compared to non transit-oriented land uses. A wide range of parking reductions has also been found for commercial parking in TODs. However, to date there are no clear conclusions regarding how much parking may reasonably be reduced for any particular TOD. Therefore, parking need calculations must be made on a site-by-site basis.

Terry Parker and GB Arrington, "Statewide Transit-Oriented Development Study: Factors for Success in California", for the California Department of Transportation, Final Report, April 2002



Surface parking next to Downtown Plaza in Sacramento

Control the Total Supply of Parking

{¹⁴ "Too much parking in a station area discourages TOD by discouraging pedestrians, since parking lots are an unpleasant pedestrian environment and make distances between uses inconveniently great. Large parking lots also thwart TOD by consuming land that might otherwise be developed with uses that could attract new transit riders. Finally, abundant, free parking makes driving too convenient, which is a disincentive for people to use transit. Controlling the parking supply is an excellent way to shift people to other modes of travel including transit."¹⁴}

Reduce the Impact of Parking

{¹⁵ "The single most effective way of reducing the impact of large areas devoted to parking is to build parking structures. Property values, proximity to riders, and existing development character all play a role in the viability of structured park-and-ride facilities. When planning park-and-ride facilities, create an environment that encourages walking."¹⁵}



Retail establishments on the ground floor of a parking structure in Sacramento

Chapter 5. Streets and Parking

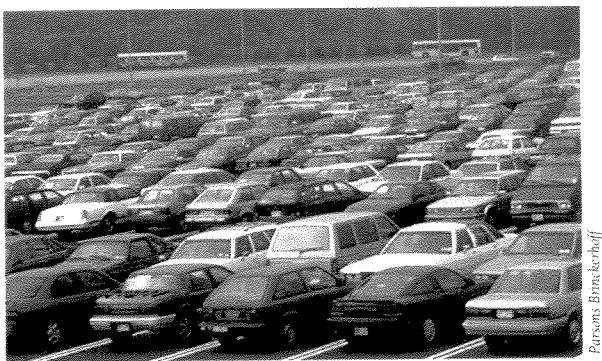
Encourage Ground Floor Development in Parking Structures

{16 “Design parking lots and structures so they do not dominate the frontage of pedestrian-oriented streets or establish impediments to pedestrian routes. Retail or other land uses should be located on the ground floor and incorporated into the building’s design. Portions of parking structures that do not have first level retail uses should be designed to have an appearance that blends with neighboring structures.” 16}

Surface Parking

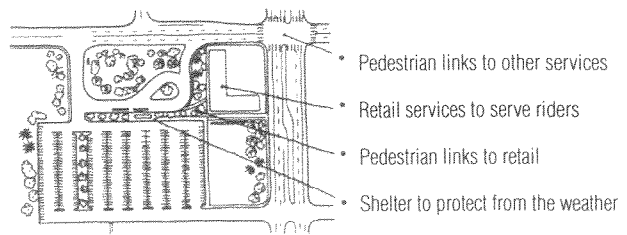
{17 “Streetside parking is critical to keeping the focus of a community on the street, rather than on the interior of lots. Parallel parking helps to create street activity, as well as provide functional spaces. It supports orienting building entries to the street by providing convenient access for guests and patrons.

Parking lots should not dominate the frontage of pedestrian-oriented streets or interrupt pedestrian routes. Parking lots should be located behind buildings or in the interior of a block, whenever possible. In no case shall surface parking lots occupy more than 33 percent of the frontage of a pedestrian-oriented street.” 17}



Park & Ride Lot with Buses

- {18 “Where parking is or can be located at the side or rear of buildings, attractive, public pedestrian connections to the primary street should be created. Signs should be posted to direct drivers to parking entrances that may not be obvious.
- Encourage commercial district people and employees to use transit or limit employee parking to remote spaces, freeing the most desirable spaces for customers.
- Consolidate parking in public or private shared lots. Where shared parking is desirable, consideration should be given to time-share possibilities. Merchants are encouraged to share parking with other users that need parking primarily during hours when stores are closed, e.g., a movie theatre or church.” 18}



Park & Ride: Denver Regional Transit District

Park-and-Ride

{19 “Park-and-ride lots may be a desirable interim use of land along older commercial streets near outlying transit stations where newly concentrated commercial uses near the station lie between the transit rider and parking. Such lots may also provide shared parking opportunities for nearby residents that drive to other areas to work but could use the lot after hours.” 19}

Chapter 5. Streets and Parking

References

- 1 Puget Sound Regional Council, *Creating Transit Station Communities in the Central Puget Sound Region – A Transit-Oriented Development Workbook*, June 1999.
- 2 Ibid.
- 3 Ibid.
- 4 Tri-County Metropolitan Transportation District of Oregon, *Planning and Designing for Transit Handbook*, January 1996.
- 5 Calthorpe Associates in association with Mintier Associates, *Transit-Oriented Development Design Guidelines for Sacramento County*, September 1990.
- 6 Ministry of Housing and Ministry of Municipal Affairs, Ontario, Canada, *Making Choices – Alternative Development Standards Guideline*, August 1995.
- 7 Puget Sound Regional Council.
- 8 Calthorpe Associates in association with Mintier Associates.
- 9 Ministry of Housing and Ministry of Municipal Affairs, Ontario, Canada.
- 10 Municipal Research and Services Center of Washington for King County Department of Metropolitan Services and WSDOT Office of Urban Mobility, *Creating Transit Supportive Regulations: A Compendium of Codes, Standards and Guidelines*, August 1995.
- 11 Ministry of Housing and Ministry of Municipal Affairs, Ontario, Canada.
- 12 Puget Sound Regional Council.
- 13 Ibid.
- 14 Ibid.
- 15 Ibid.
- 16 Ibid.
- 17 Calthorpe Associates in association with Mintier Associates.
- 18 Chicago Transit Authority, *Guidelines for Transit-Supportive Development*, 1996.
- 19 Ibid.

Chapter 6. Pedestrian and Bicycle Facilities

Safe and convenient pedestrian and bicyclist access to transit is an essential component in the design of TODs.

Design Development for Pedestrians and Bicycles

Pedestrian Routes

{¹ “A continuous sidewalk system should be established within the station area. Pedestrian routes should be located along or visible from all streets and provide clear, comfortable, and direct access to the core commercial area and transit stop. When street connections are not feasible, short pedestrian paths should provide walking connections. Walkways between buildings are encouraged when blocks are large.”¹}

Weather Protection in Urban Areas

{² “Urban areas require weather protection for pedestrians. Weather protection needs to be a minimum of 6 feet wide and shall be integrated into the architectural character of the buildings.”²}



Bike racks in Wrigley Marketplace in Long Beach

Pedestrian Street Crossings

{³ “Pedestrians must be able to cross streets easily and safely at many different points within the station area if they are to do without their automobiles. Signalized, well-designed pedestrian crossings should be provided at all road intersections in the station area. ‘Bulbs’ and median strips should be used to shorten or break up crossing distances, and mid-block crossings should be established where intersections are far apart.”³}

Sidewalks

{⁴ “Comfortable sidewalks are key to reinforcing a pedestrian environment within a TOD. The comfort and convenience of the pedestrian trip will reinforce the efficiency of the transit system by creating destinations which are attainable without a car and origins which do not depend solely on park- and-ride mode transfers.”⁴}

- {⁵ “Connect the bus stop with adjacent pedestrian destinations, including building entrances, street crossings, other walkways, and with the nearest intersection.
- Minimize barriers (landscaping, berms, or fences) that impede pedestrian access or visibility.
- Provide buffers between pedestrians and moving traffic without obstructing transit boardings/deboardings.
- Vary sidewalk and buffer widths depending on traffic volumes and speeds and on pedestrian volumes (i.e., increase buffer widths as speeds increase; increase sidewalk widths to accommodate increased pedestrian volumes).”⁵}

Note: Because of the volume and length of many of the quotations in this document, a bracket symbol with corresponding footnote reference number is placed at the beginning and ending of each quotation.

Chapter 6. Pedestrian and Bicycle Facilities



Sidewalk approaching Berkeley BART

{⁶ “The preferred sidewalk width in a downtown is 12 feet, at least 6 feet of which must be clear of obstructions. This width allows pairs of pedestrians to walk side by side, or to pass each other comfortably. It generally provides enough width for window-shopping, some street furniture, and places for people to stop. More width is desirable to accommodate bus shelters, sidewalk cafés, and other outdoor retail.

Where it can be justified and all other measures have been examined (such as narrowing or eliminating medians, bike lanes, parking lanes or travel lanes), the sidewalk width can be reduced to as narrow as 8 feet. In general, however, the rule is: the wider the sidewalk, the more pleasant the pedestrian experience.”⁶}



Oakland Public Library

Pedestrian Amenities

{⁷ “Along with comfortable transit stops, it is important to provide other amenities that increase the comfort and safety of pedestrians. These amenities have many practical applications but they also play an important role in elevating the place of the pedestrian and transit user in the built environment.”⁷}

{⁸ “Clearly articulated pedestrian areas with smaller dimensioned surfaces and site elements improve pedestrian safety by distinguishing the pedestrian network from car, bike or transit circulation. The treatment of sidewalks, streets, and driveways is particularly important at points where they intersect.”⁸}



Bicycle path near Sylmar station in San Fernando

Bicycle Facilities

{⁹ “Biking can be a major alternative to the auto for local trips or trips to the transit stop. Separated or marked bike lanes on several primary routes to the core area will support this alternative. On smaller streets, bikes sharing the travel lane will help slow cars to speeds more appropriate for residential streets.”⁹}

{¹⁰ “Several types of design projects have the potential to complement and supplement bicycle transport and parking programs. Bicycle interest

Chapter 6. Pedestrian and Bicycle Facilities

groups suggest that the following improvements would increase the safety of riding bicycles and encourage their use:

- Bicycle-compatible roadways or bicycle lanes on station access roads,
- Bicycle paths through park-and-ride lots,
- Priority siting of parking equipment near the bus/train loading zone,
- Bicycle paths from neighboring communities that are shorter in length than roadways,
- Clearly visible signs using the bicycle symbol for bicycle routes, parking facilities, and bus stops serving bicyclists,
- Station design and siting accommodating to bicycles, e.g. curb cuts at parking locations, locating parking equipment so that the cyclists not be required to carry bicycles up or down stairs or through large crowds of travelers, and parking equipment in the clear view of the general public, or station attendants,
- Lighting, and
- Overhead protection from weather conditions at parking sites.”^{10}}

References

- 1 Puget Sound Regional Council, *Creating Transit Station Communities in the Central Puget Sound Region – A Transit-Oriented Development Workbook*, June 1999.
- 2 Snohomish County Tomorrow, *Transit-Oriented Development Guidelines*, July 1999.
- 3 Puget Sound Regional Council.
- 4 Calthorpe Associates in association with Mintier Associates, *Transit-Oriented Development Design Guidelines for Sacramento County*, September 1990.
- 5 Tri-County Metropolitan Transportation District of Oregon, *Planning and Designing for Transit Handbook*, January 1996.
- 6 Oregon Department of Transportation and Oregon Department of Land Conservation and Development, *Main Street... when a highway runs through it: A Handbook for Oregon Communities*, November 1999.
- 7 Corbett, Judy and Zykowsky, Paul, *Building Livable Communities: A Policy-Maker's Guide to Transit-Oriented Development*, The Center for Livable Communities, Sacramento, CA, August 1996.
- 8 Tri-County Metropolitan Transportation District of Oregon.
- 9 Calthorpe Associates in association with Mintier Associates.
- 10 Transit Cooperative Research Program, *Synthesis 4: Integration of Bicycles and Transit*, 1994.

Chapter 7. Examples of TOD in California

{ “TOD Examples in California

There are many transit-oriented development projects underway at various stages of implementation in California. The four examples selected for this guidebook represent different types of TODs in various parts of the state.” } The main project components and financing are presented as well as lessons learned.

Rio Vista West, San Diego

Location:
Suburban

Jurisdiction:
City of San Diego

Transit Agency:
Metropolitan Transit Development Board (MTDB)

Transit Service and Ridership:
Light Rail; 15-minute frequency;
451 daily ‘ons’ and ‘offs’ in 2000
565 daily ‘ons’ and ‘offs’ in 2003

Developers:
CalMat Co.(site planner); Greystone Development Company

Financing:
Financed privately and market driven

Terry Parker and GB Arrington, S"tatewide Transit-Oriented Development Study: Factors for Success in California", for the California Department of Transportation, Final Report, April 2002

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Chapter 7. Examples of TOD in California

Rio Vista West, San Diego

Overview

Rio Vista West, is a mixed-use transit village being built in phases on 95 acres near the Rio Vista light rail station. The City of San Diego’s 1985 Mission Valley Plan designated multiple urban nodes and envisioned higher-density for this area.

(<http://transitorienteddevelopment.dot.ca.gov/station/stateViewStationOverview.jsp?stationId=21>)

Rio Vista West’s first phase was a fairly standard shopping center. The first residential development in this area was located one-quarter mile from the station. These units are in three-story structures at blended densities of 33 units per acre, well above the typical densities found in the surrounding suburbs which average 4 to 5 units per acre.

The second residential phase of 240 condominium units broke ground in quick succession. Construction is now underway on the final residential portion immediately next to the station. The 970-unit project at a density of approximately 70 units per acre is estimated for completion in 2004. The residential units are over ground-floor retail stores.

The portion of the TOD near the light rail station includes 30,000 to 50,000 square feet of small office and neighborhood retail. There is minimal street parking near the office/retail uses because of the availability of transit, and much of the parking is underground.

TOD Policies and Programs

In 1990, the Metropolitan Transportation Development Board (MTDB) adopted a policy on land use coordination that calls for working closely with other

agencies on pedestrian and transit-oriented developments. The City of San Diego’s TOD design guidelines were adopted in 1992 and incorporated into official policies and regulations.

San Diego does not provide density bonuses for transit-supportive development, but does zone for higher densities around transit stations. The City zoning code allows mixed-uses in most commercial areas. San Diego encouraged the developer to follow [TOD design] guidelines, and received a design that met most of the objectives of the City. No subsidies were involved in this TOD; the project was privately financed and market driven.

Lessons Learned

Rio Vista is an important example of the challenges and opportunities with a phased TOD project. Some observers were skeptical about early development phases of the project because of their automobile orientation. However, the most recent phase – the higher-density residential portion – holds the promise of being one of the most transit-friendly suburban projects in California.

Major lessons from this project include:

- Providing a TOD-friendly master plan can facilitate quality development.
- Having a motivated developer who is committed to the project for the long term is important.
- [Being] ... persistent and pursuing quality TOD design [is important].

Fruitvale Transit Village, Oakland

Location:

Urban

Jurisdiction:

City of Oakland

Transit Agency:

Bay Area Rapid Transit District (BART)

Transit Service and Ridership:

BART station, 10-15 min. service

6,240 average weekday exits in 2003

Developer:

Fruitvale Development Corporation

Financing:

More than 20 mostly public sources of funds were combined such as:

- * FTA Livable Communities grant
- * Small grants for the upgrading of more than 100 commercial properties along the corridor

Terry Parker and GB Arrington, "Statewide Transit-Oriented Development Study: Factors for Success in California", for the California Department of Transportation, Final Report, April 2002

Fruitvale Transit Village, Oakland

Overview

The Fruitvale Transit Village involves the redevelopment of 5.3 acres of BART surface parking into housing and a community center. The Unity Council (formerly the Spanish Speaking Unity Council), created the Fruitvale Development Corporation (FDC) for the purpose of developing this mixed-use, public/private project.

The project was conceived as part of a neighborhood alternative to BART's construction of a parking structure at the station. BART relinquished its plan and agreed to work with the Unity Council to pursue a different type of development. The core of the transit village will cover five acres, including a 99-year ground lease of BART's property.

The plan for Fruitvale Transit Village includes: 337 units of housing; 25,000 sq. ft. of office space; 25,000 sq. ft. of retail/ commercial space; a library; and a 40,000 sq. ft. health clinic. The project is

Chapter 7. Examples of TOD in California

being completed in phases. In the initial phase (completed in 1998), sewer and water lines were installed, 67 units of affordable senior housing were built, and trees were planted. Groundbreaking for the second phase occurred early in 2002, for a new parking structure on a 300-space surface BART parking lot. These surface spaces will also be replaced by new parking at nearby locations, resulting in a net increase of 415 parking spaces.

Project Funding

The Fruitvale Transit Village received the Federal Transit Administration's first Livable Communities grant. The Fruitvale Development Corporation (FDC) also used small grants to fund a façade improvement and building renovation program involving more than 100 properties along the business corridor. (Before this program, vacancies had been as high as 40 percent in the area; now, they are less than 1 percent.)

Ultimately, more than 20 sources of funds have been combined to raise the total amount needed. Most of these are public funds, with an additional expected \$20 million in private investments. Each funding source has its own set of special requirements, some of which are conflicting. It took significant time and effort to negotiate a set of acceptable requirements for each element of the project and to make the various timelines mesh.

Parking

Parking is a key element of this project. Without replacement parking for BART riders, it would be more difficult for BART to transfer its land for the

TOD. The FDC obtained \$7.6 million in grant funds for a new parking structure for this purpose. These funds will be credited toward the ground lease with BART.

The City of Oakland has created a special zoning district with reduced parking requirements for residential and commercial land uses in the Fruitvale TOD due to its design and proximity to transit. In this special zone, the residential parking requirement of one space for every two housing units is well below the minimum citywide requirement of one space for each unit. No parking is required for commercial uses.

Lessons Learned

The Fruitvale Transit Village demonstrates the power of a community to attract grant funds and develop solutions that meet its unique needs:

- The project is based on a community process.
- Implementation of the transit village has been hampered by the complexity of the project and the enormity of the vision. This has held back major progress on the project.
- The Unity Council risks becoming a 'victim of its own success' if improvements drive up property values and displace current residents. FDC's response has been to initiate a Homeownership Program that involves buying, rehabilitating and selling homes at affordable prices to help stabilize the community.

Chapter 7. Examples of TOD in California

Hollywood-Highland, Los Angeles

Location:

Urban

Jurisdiction:

City of Los Angeles

Transit Agency:

Los Angeles Metropolitan Transit Authority (MTA)

Transit Service and Ridership:

Metro Red Line subway station, 10-minute frequency
20,545 average weekday boardings and alightings in 2003

Developer:

TrizecHahn Centers

Financing:

Mostly private financing
City of Los Angeles: \$81 million bond for parking structure

Terry Parker and GB Arrington, "Statewide Transit-Oriented Development Study: Factors for Success in California", for the California Department of Transportation, Final Report, April 2002

Hollywood-Highland, Los Angeles

Overview

The Hollywood Highland TOD was constructed above the Metro Red Line subway at Hollywood Blvd. and Highland Ave. Construction of the subway station and the complex took place simultaneously. The station was completed and service began in June 2000. The TOD was completed in November 2001.

(<http://transitorienteddevelopment.dot.ca.gov/station/stateViewStationOverview.jsp?stationId=19>)

To implement this project, a 'request for proposal' for the project was issued jointly by the Community Redevelopment Agency (CRA) and the City of Los Angeles (LA) in coordination with the LA Metropolitan Transit Authority (MTA). The complex combines 1.3 million square feet of specialty retail, multiplex theaters, restaurants, a 640-room Renaissance Hotel, the restored Graumann's Chinese Theatre, a 3,000-space underground parking structure, plus the Kodak Theatre – the new permanent home for the Academy Awards.

Chapter 7. Examples of TOD in California

TrizecHahn holds a land lease for up to 99 years from MTA, and owns and operates the retail projects (a 55-year lease for the 1.35-acre property has already been agreed to for \$492,000 per year). The City of LA owns and operates the theater and parking structure, and the MTA owns and operates the station and the transit facilities.

This TOD is increasing the land use mix, density, and employment of the area. It is an important location and a major destination/attraction. Due to increasing ridership, the Red Line now has six-car trains at peak times.

Project Financing and Agency Participation

Simultaneously constructing the TOD and the Red Line station presented major coordination challenges. Apart from normal underwriting issues (e.g., lease up requirements), the developer felt that there were no significant problems arranging financing for the project.

The City of LA financed the parking garage and the theater through two separate bond offerings. An \$81 million bond for parking is to be repaid from parking fees, business license fees, the transient occupancy tax for the project, and \$20 million in developer equity.

The development results from the assembly of eight separately owned parcels, only one of which (50,000 square feet) was owned by MTA. The MTA

parcel is on a long-term lease for 60 years with four 10-year extensions.

Lessons Learned

The Hollywood/Highland TOD is a dramatic example of the need to start TOD planning early so the design of the transit facilities and other development fit together as well as possible. In this case, MTA started construction with a design that did not lend itself well to the addition of a large structure on the street level, even though it is located in a district where this is appropriate. The 'fast track design' caused subsequent construction problems.

This project heightened awareness of the need to have seasoned construction managers involved early in negotiations and schedule operation. Fortunately, a construction manager who had significant experience and credibility represented MTA. He was able to respond to demands to speed up station completion by establishing realistic schedules and, further, by identifying areas where the developer could facilitate the process.

MTA believes that they will benefit from the project, noting that most of the problems experienced are typical of large and complicated projects. Other station areas now in design are quite different from this one, as is appropriate since each one has to fit its surroundings.

Holly Street Village, Pasadena

Location:

Urban

Jurisdiction:

City of Pasadena

Transit Agency:

Los Angeles Metropolitan Transit Authority (MTA)

Transit Service and Ridership:

Light rail transit station, 12-minute frequency

4,560 average weekday boardings and alightings since Memorial Park station opening in July 2003

Developer:

Janss Corporation

Terry Parker and GB Arrington, "Statewide Transit-Oriented Development Study: Factors for Success in California", for the California Department of Transportation, Final Report, April 2002

Holly Street Village, Pasadena

Overview

Holly Street Village is a mixed-use development built in anticipation of the METRO Blue Line Memorial Park Light Rail Station, which opened in July 2003. The project includes 374 one and two bedroom apartments in 7 buildings as well as 200,000 square feet of parking, and 11,000 square feet of offices and retail on the ground floor. When completed, the light rail station will be located at ground level and go through the main building of the project.

(<http://transitorienteddevelopment.dot.ca.gov/station/stateViewStationOverview.jsp?stationId=11>)

The community is also the home of the former Hall of Justice Building, now converted into loft apartments. The Hall of Justice was built circa 1930 and once served as a courthouse, police station and jail. The project also has a pool, recreation area and public art. The project was winner of the Gold Nugget award for its architectural design and land use planning in 1994.

The Pasadena General Plan of the early 1990s focused on development around six new light rail stations. The city sought proposals for developments around these stations; Holly Street Village is the result of one of these. The area was a parking lot next to freight tracks and a few other buildings had to be demolished.

Chapter 7. Examples of TOD in California

Project Funding

Funding for Holly Street Village came from a variety of sources including bonds, grants, and Mello-Roos. The rehabilitated Hall of Justice, part of Holly Street Village, used tax credits for funding as well. This development took place before Joint Development with MTA.

References

- 1 The examples are taken from the study by Terry Parker and GB Arrington, Statewide Transit-Oriented Development Study: Factors for Success in California, for the California Department of Transportation, Final Report, April 2002; and the web-based TOD database; more detailed information is available at: <http://www.dot.ca.gov/hq/MassTrans/tod.htm>.

Chapter 8. Ten Lessons Learned

Reviewing TOD projects and the important lessons they teach:

“Since the late 1980s, TOD has evolved from a planning theory to implementation. There are now numerous ‘built’ TODs to study and learn from. Drawing on interviews with planners, developers, local officials and the TOD profiles completed in the ‘Statewide Transit-Oriented Development Study: Factors for Success in California’, it is possible to offer some key lessons that will be useful for practitioners.”

Terry Parker and GB Arrington, “Statewide Transit-Oriented Development Study: Factors for Success in California”, for the California Department of Transportation, Final Report, April 2002

Key Lessons

1. TOD can be a catalyst for achieving broader planning objectives:
 - {¹ “TOD is most likely to be successful when it is implemented as part of a community’s vision for future growth. As part of a larger vision, TOD can be used as a tool to achieve broader community goals for growing smart, while at the same time reinforcing the community’s investment in transit.”¹}
2. Community partnerships are essential:
 - {² “TOD requires coordination between local land use agencies and transit districts to plan and implement transit improvements and land use development. TOD is most successful when project leadership is shared with the community, local jurisdictions, developers, financial institutions, and transit agencies. Local governments can assume a primary role in promoting TOD by developing plans, policies, zoning provisions, and incentives for supportive densities, designs, and mix of land uses.”²}
3. Design for the pedestrian:
 - {³ “To function properly, the TOD site plan, transit facilities, and connections to the surrounding community need to be designed with the pedestrian in mind.
 - a. Easy access to the transit stop: Easy and convenient pedestrian access to the transit stop is of critical importance in any TOD design. Clearly defined, comfortable, highly visible, and safe walking and bicycle routes should lead to the transit stop with a minimum number of street and intersection crossings.
 - b. Walkable TOD site design: TODs should be designed so that the people living, working, or shopping in the neighborhood will find it convenient to walk or bike to neighborhood parks, shopping opportunities, and employment centers.
 - c. Connections to the community: New TOD projects should include multi-modal and contextual connectivity by having circulation patterns that capitalize on existing street, pedestrian, park, and open space networks. TODs work best when they are integrated into the surrounding community rather than standing apart from them.”³}

Note: Because of the volume and length of many of the quotations in this document, a bracket symbol with corresponding footnote reference number is placed at the beginning and ending of each quotation.

Chapter 8. Ten Lessons Learned

4. Start TOD work early:
 - {⁴ “Communities interested in promoting TOD need to consider TOD in the design and location of transit facilities. ...Often, transit systems are designed without considering TOD’s potential. Transit stops are located in areas with little or no development potential and transit facilities are dominated by commuter parking. With careful consideration, transit can be designed both to accommodate TOD and fulfill basic transit functions.”⁴}

5. Parking is one of the most important land uses in a TOD:
 - {⁵ “How to design parking lots and how much parking to provide are perhaps the most critical land use decisions that need to be made when planning for a compact, walkable TOD. The challenge is to provide for the automobile without being dominated by it. Parking needs to be analyzed at two levels: where it should be on the site and to what extent the number of parking spaces should be reduced.”⁵}

6. Plan for a mix of uses:
 - {⁶ “Promoting compact development and reducing automobile use can best be achieved through a mix of land uses. TODs can offer places to shop, work, live and recreate. Mixing uses in TODs offers additional opportunities to reduce parking requirements and increase transit use.”⁶}

7. TOD requires experienced leadership:
 - {⁷ “Successful TOD teams...include people with significant experience in real estate development and transit planning. Successful TOD implementation typically involves a number of elements, such as optimal transit system design; community partnerships; understanding local real estate markets; planning for TOD; coordination among local, regional, and state organizations; and providing the right mixes of planning and financial incentives.”⁷}

8. Density...matter[s] in TOD performance:
 - {⁸ “Increasing the density in areas around a transit station can lead to a corresponding increase in transit ridership. ...[Increasing density reduces the need for a car.] Transit use rates begin to increase at an average overall density of around six to seven households per residential acre, as vehicle trips decline. At around 50 households per acre, the number of trips taken daily by vehicles, transit, and walking become about the same. Increased densities have also been found to correspond with decreased levels of auto ownership.”⁸}

9. Most TOD occurs after new transit service is established:
 - {⁹ “Patience may be necessary when working with the development community. TODs are rarely built to coincide with the opening of new transit facilities. Instead, some developers and local planners tend to wait to see how new transit service is accepted by the community before investing in adjacent real estate. Once an initial track record of TOD is established, the pace of implementation tends to accelerate. Taking the long-term view and protecting the opportunity for TOD by not allowing non transit-supportive development to occur around transit facilities is critical. An effective strategy to overcome skepticism about the market for TOD is to require projects to be pedestrian-friendly. If the project works for pedestrians today, it will work for transit tomorrow.”⁹}

Chapter 8. Ten Lessons Learned

10. Demonstration projects can accelerate TOD implementation:

{¹⁰ “For many communities, a critical step to more widespread TOD implementation is the development of successful demonstration projects. Even though market forces and public policy have become increasingly ‘TOD-friendly’, concerted action is needed to spur the creation of new development models in some communities. TOD demonstration projects can provide real estate developers with the appraisal ‘comparables’, market performance information, and physical evidence they need to justify experimenting with new development models.” ¹⁰}

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- 1 Terry Parker and GB Arrington, *Statewide Transit-Oriented Development Study: Factors for Success in California*, for the California Department of Transportation, Final Report, April 2002.
- 2 Parsons Brinckerhoff, prepared by GB Arrington for this Compendium.
- 3 Ibid.
- 4 Ibid.
- 5 Ibid.
- 6 Ibid.
- 7 Ibid.
- 8 Ibid.
- 9 Ibid.
- 10 Ibid.

Appendix

TOD Evaluation Checklist

For development to be transit-oriented, it should be shaped by transit with respect to parking, density, and/or building orientation when compared to conventional development. It is not sufficient to merely locate conventional development adjacent to transit.

Local governments play a significant role in facilitating TOD through plans, policies, zoning provisions, and incentives for supportive densities, designs, and mix of land uses. A successful TOD will reinforce the community and the transit system.

The checklist on the following page can be used to guide communities as they review proposed projects and assess the transit-friendliness of current land use codes and ordinances.

Appendix

Within an easy walk of a major transit stop (e.g., 1/4 to 1/2 mile walk), consider the following:

Land Use

- Are key sites designated for “transit-friendly” land uses and densities (i.e., walkable, mixed-use, not dominated by activities associated with significant automobile use)?
- Are “transit-friendly” land uses permitted outright, not requiring special approval?
- Are higher densities allowed near transit?
- Are multiple compatible uses permitted within buildings near transit?
- Is the mix of uses generating pedestrian traffic concentrated within walking distance of transit?
- Are auto-oriented uses discouraged or prohibited near transit?

Site Design

- Are buildings and primary entrances sited to be easily accessible from the street?
- Do the designs of areas and buildings allow direct pedestrian movements between transit, mixed land uses, and surrounding areas?
- Does the site’s design allow for the intensification of densities over time?
 - Are the first floor uses “active” and pedestrian-oriented?
 - Are amenities provided to create an interesting and enjoyable pedestrian environment along and between buildings?
 - Are there sidewalks along the site frontage? Do they connect to sidewalks and streets on adjacent and nearby properties?
 - Are there trees sheltering streets and sidewalks? Is there pedestrian-scale lighting?

Street Patterns and Parking

- Are parking requirements reduced in close proximity to transit, compared to the norm?
 - Is structured parking encouraged rather than surface lots in higher density areas?
 - Is most of the parking located to the side or to the rear of the buildings?
 - Are street patterns based on a grid/interconnected system that simplifies access?
 - Are pedestrian routes buffered from fast-moving traffic and expanses of parking?
 - Are there convenient crosswalks to other uses on-and off-site?
 - Can residents and employees safely walk or bicycle to a store, post office, etc.?
- Does the site’s street pattern connect with streets in adjacent developments?

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