Transit and Land Use Design

Goals
- Rethink land use/travel patterns to facilitate non-automotive travel
- Create human scale neighborhood
- Reduce dominance of automobile
- Enhance movement by pedestrians, bicycles and access to transit
- Facilitate internal circulation
- Create a particular architectural style ??

New Directions for Land Use and Site Design
- Fundamentally we need to consider pedestrians, bicycles and transit in the land use process
- Provide and preserve choices for the future
- Need to ask how will people walk or bicycle safely before land use decisions are made
- Adopt a vision, positive approach, how to make it work, rather than reasons why it won't
- Increase awareness of the market and design to serve new land use and travel markets

Approaches
- Many terms and approaches:
  - New Urbanism,
  - Traditional Neighborhood development
  - Neo-Traditional Design,
  - Transit Sensitive Design,
  - Transit Oriented Development,
  - Walkable Design
  - Pedestrian Pocket,
  - Cluster Design
  - Conservation Subdivision
- Many principles and techniques can also be applied to conventional subdivisions
Traditional Neighborhood Development

- Origins in Planning Architecture Community
- Design for a phased implementation of transit corridors.
- Node based design
- Attempt to recreate traditional neighborhood design as it was done prior to mid-1950's
- Grid street pattern, alleys, no cul-de-sacs
- Multiple entry and exit points into neighborhoods
- Local commercial land use mixed with residential land uses
- Public amenities
- Often have a distinctive architectural style with specific required details
- May not have any transit, may not necessarily be “transit friendly”

Transit Based Design

- Origins in Transit Community
- Corridor based design
- Land use is arranged to facilitate success of transit services.
- Predesignate future transit routes
- Transit corridor zoning overlay district
- Separate transit and auto oriented land uses
- Use mixed land uses
- Control of through auto traffic
- Provide a quality access system to transit by walking or bicycles
Figure 1: Node vs corridor based design
Walkable Design

- Origins in Planning Architecture community – “Pedestrian Pods”
- Node oriented design
- Places where people can walk safely
- Places with amenities and activities to walk to
- Pathways along all roads and in other areas to provide short connections
- May not have any transit or be “transit friendly”
- A component of TND or transit friendly design

Transit and Conventional Subdivision/Neighborhoods

- Use Good Traffic Management
- Avoid driveways on main roads
- Provide Proper sight distance
- Provide Good connectivity to adjacent parcels
- Use Access management

- Avoid cul de sacs
  - Extra public cost
  - Extra travel
  - Concentrates traffic on arterials
  - Poor connectivity for pedestrians and bicycles

- Provide pedestrian and bicycle facilities
  - Shortcut connections
  - Paths parallel to main roads

- Use Appropriate Geometry
  - Speed = f(width)
  - Be willing to accept narrow streets
Transit Sensitive Land Use Design Guidelines

Background

Series of Federal Transit Administration projects
- Market Based Transit Facility Design
- The New Suburb
- Guidelines for Transit Sensitive Land Use Design
- Measurement of Transit Benefits

Administration and Policy Guidelines

- Modify state and local policies to include transit as an element of land development.
- Zoning should encourage transit-sensitive land use design through the designation of Transit Corridor Districts (TCDs).
- Provide for transit-sensitive review of site plans and development proposals.
- Provide transit checklist for potential developers.
- Parking requirements in TCDs should reflect availability of transit services.
- Establish a Transportation Management Association to oversee transportation services and land use development along the transit corridor.
- Provide a mechanism for transfer of development rights (TDRs) for the land surrounding the TCDs.
<table>
<thead>
<tr>
<th>Question</th>
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<tbody>
<tr>
<td>• Are transit stops located within one-quarter mile (one-half mile in low density developments) or less of all buildings within the development?</td>
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<tr>
<td>• Have bus turnouts, berths, turnarounds and/or park-n-ride facilities been incorporated into appropriate roadway or development designs?</td>
</tr>
<tr>
<td>• Do pedestrian walkways provide a direct path from building entrances to transit stops?</td>
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<tr>
<td>• Are pedestrian walkways and bicycle routes located along the development’s perimeter streets? Do they lead directly to building entrances?</td>
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<tr>
<td>• Are walkways, curbs, bus stops, building entrances, parking areas and transit facilities designed for the mobility limited?</td>
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<tr>
<td>• Do office and industrial developments over 25,000 square feet have lobbies designed with passenger waiting areas?</td>
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<tr>
<td>• Are retail, office and industrial buildings located within 150 feet from transit service?</td>
</tr>
<tr>
<td>• Is adequate lighting provided at bus stops, passenger waiting areas and along pedestrian walkways?</td>
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<tr>
<td>• Are 5% of the parking spaces near the primary building entrance from the parking lot designed for vanpool/carpool vehicles?</td>
</tr>
<tr>
<td>• Do parking spaces for the mobility limited conform in dimension and number to the Illinois Accessibility Code?</td>
</tr>
<tr>
<td>• Are parking spaces for the mobility limited located adjacent to the primary building entrance from the parking lot?</td>
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Systems Level Actions -- Land Use

- Create transit corridor zoning overlay districts -- areas that will have future transit service
- Separate transit oriented and auto oriented land uses. Land uses which are conducive to transit; compact residential, schools, health care, office buildings, should be located along transit corridors
- Predesignate a future system of transit corridors; areas that have higher densities, mixed use development, and are served by transit with quality pedestrian and bicycle facilities with control of through automobile movement
- Establish transit service zones along existing arterials.
- Explore public/private opportunities for transit stop joint development.
- Provide adequate population size and density to support transit use.
- Provide for mixed use development to facilitate shorter trips and use of non-vehicle travel

System Level Actions -- Transit

- Relate services design to market conditions
- Provide for passenger safety and security
- Provide high quality transit service.
- Use Transit vehicles that are quiet and have low air pollution levels.
- Create a consistent Transit Identity: Signage, etc. and compatibility of stops.
- Avoid need for shuttle services
- Design for a phased implementation of transit corridors.
- Provide for Technological and infrastructure flexibility.
- Provide for high level geometric design of transit corridors.
- Provide regular maintenance at transit stops.
Transit Oriented Land Uses

The following land use categories were judged to have high transit compatibility (ratings of 4 or 5) and should be located in areas to be served by transit.

- Commercial airport
- Park and ride station
- General heavy industry
- Apartments
- Residential condominiums
- High density residential
- Retirement community
- Hotel – non-CBD
- Stadium
- Elementary school
- High school
- Junior/community college
- University
- Hospital
- General office building
- Office park
- Shopping center

The following had low compatibility (a rating of 1) and it is unlikely that large numbers of people would use transit to get to these places on a regular basis. It is possible that if these places had a high employment, that there could be travel to the site for employees. These land uses can generally be separated from public transit services.

- Water port
- General aviation airport
- Truck terminal
- Mini-warehousing
- Utilities
- Recreational homes
- Resort hotel
- Marina
- Golf course
- Day care center
- Nursing home
- State motor vehicle department
- Building materials and lumber
- Hardware/paint store
- Nursery/garden center
- Quality restaurant
- New car sales
- Service station
- Car wash
- Highway oasis
- Truck stop
- Furniture store
- Drive-in bank
- Drive-in savings and loan
Source: Snohomish County “Guide . . .,” p. 8-7 from Portland “Public streets for Public Use.”
System Level Actions -- Pedestrian/Bicycle

- Develop standards for pathways to be included with arterial, and collector highway projects, parallel but separate from roadway
- Institute a plat review that includes consideration of pathway connections, safety of pedestrian and bicycle movement
- Control of through automobile traffic.
  - Use transit corridors for primary pedestrian, bicycle and transit movement.

Project Level Actions – Land Use

- Provide mixed land use including housing, office, retail, light industrial and recreational uses.
- Provide variety within the district.
- Locate buildings near streets; maximize utilization of curb space to serve many users
- Land use density gradient. (Higher densities close to transit)
- Utilize appropriate land use adjacencies.
- Provide recreational opportunities and amenities.
- Accommodate multiple developers and development patterns.
- Use a parking density gradient.
- Develop a program to encourage shared parking facilities.
- Building location and design should be sensitive to transit-generated noise and views.

Project Level Actions – Transit

- Provide for better connections between adjacent development projects -- connect across "seams".
- Provide logical connections between buildings and pedestrians/bicycles/transit, minimize the distance between vehicle door and building door.

Project Level Actions – Pedestrian/Bicycle

- Create a pedestrian/bicycle friendly environment (safe, secure, storage, interesting, human scale)
- Provide pathway connections between subdivisions, at ends of cul de sacs, to improve connectivity -- shortcuts
- Narrow neighborhood streets
- Provide Pedestrian/bicycle pathway system.
- Provide for safe, convenient pedestrian circulation.
- Promote bicycle access through high quality pathways and secure storage systems.
### Pedestrian and Bike Transit Access Distance

<table>
<thead>
<tr>
<th></th>
<th>Average Trip Distance</th>
<th>Average Speed</th>
<th>Average Service Area</th>
</tr>
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<tbody>
<tr>
<td><strong>Walking</strong></td>
<td>.33 miles</td>
<td>2 mph</td>
<td>.34 sq. mi.</td>
</tr>
<tr>
<td><strong>Biking</strong></td>
<td>2 miles</td>
<td>8 mph</td>
<td>12.6 sq. mi.</td>
</tr>
<tr>
<td><strong>Biking vs. Walking</strong></td>
<td>6 times distance</td>
<td>4 times speed</td>
<td>37 times catchment area</td>
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</table>
Walk Buffers, Tallahassee, Florida

Air Buffers, Tallahassee, Florida
VARIATIONS ON CURRENT DESIGN PRACTICE TO PROMOTE DIRECT ACCESS TO TRANSIT

a) perceived direct  not perceived direct

b) direct  not direct

c) direct-direct

d) direct  not direct - walkway required

e) link required for sewer

walkway required to reach transit

direct pedestrian route

--- bus route

from Lavall Inc. for CMHC 1979

Source: British Columbia, "Guidelines ..." p. 28.
Figure: Paths facilitate pedestrian and bicycle movement through development to transit stops.
TRANSPORT SERVICEABLE DEVELOPMENT

EFFECT OF SITE LOCATION ON TRANSIT PERFORMANCE
from: Lavall Inc., for CMHC, 1979

Key: □ Mobility Limited □ Vanpool □ Visitor

References


“Smart Growth, Creating Communities for People” also available from Citizens for a Better Environment, (414) 271-7280.


Traditional Neighborhood Design Guidelines, Institute of Transportation Engineers, August, 1997

Useful Web pages:

http://www.uwm.edu/Dept/cuts/ University of Wisconsin Milwaukee, Center for Urban Transportation Studies

http://scitech.dot.gov/partech/sustran/sustran.html National Science Council Sustainable Communities Team

http://www.tlcnetwork.org/ Transportation for Livable Communities Network

http://www.cnu.org/ Congress for the new Urbanism

http://www.smartgrowth.org/ Smart Growth Network

http://www.sustainable.org/ Sustainable Communities Network

http://www.natlands.org/Planning/growgreen.html Pennsylvania Growing Greener Program

http://www.vtpi.org/ Victoria Transportation Policy Institute list of web sites

http://www.lcd.state.or.us/issues/tgmweb/index_f.htm Oregon Smart Growth Program
http://www.city.toronto.on.ca/mte/ Toronto, 'Moving the Economy' Sustainable Transport