UNDERSTANDING NEW URBANISM & SMARTCODE
Learning Objectives

- To understand the concept of new urbanism, SmartCode and their key elements, with a focus on transportation design
Acknowledgement & Reference

- Mr. Matthew McEllroy
  Director, City of El Paso City Development Department

- Congress of New Urbanism (CNU)
  www.cnu.org/networks
Outline

- The problem of urban sprawl
- Structure of a traditional neighborhood
- Street network
  - Include design for transit, walkability
- Parking
- UTEP campus master plan
Urban Sprawl

- **Traditional neighborhoods vs. sprawl**
  - Traditional: Mixed use, pedestrian friendly, varied population, dominant development style for centuries
  - Sprawl: “Sweeping aside the old,” low density, disinvestment in city core
Vehicle Miles Traveled (VMT) per Household

- Data Not Available
- Less than 12,000 Annual Miles
- 12,000 to 14,000 Annual Miles
- 14,000 to 16,000 Annual Miles
- 16,000 to 18,000 Annual Miles
- 18,000 Annual Miles and Greater

Vehicle Miles Traveled (VMT) per Household models the average annual auto travel by households in a Block Group. This includes commute travel, but also all other daily auto trips made by all members of the household.

Annual VMT Cost ($)

- Data Not Available
- Less than 1,000 $
- 1,000 to 1,500 $
- 1,500 to 2,000 $
- 2,000 to 2,500 $
- 2,500 $ and Greater

Annual VMT Costs (Auto Use Costs) are calculated using modeled VMT, per mile cost figures obtained from the American Automobile Association and regional gas prices from the Energy Information Administration. This component of total Transportation Costs factors only the variable costs associated with the amount a vehicle is driven, not the fixed cost of auto ownership.
Rules for a Traditional Neighborhood

- The center
- Five minute walk
- Street network
- Narrow, versatile streets
- Mixed use
- Special sites for special buildings

What should this be?
Best Practices Guide

- Defined neighborhoods within pedestrian sheds (1/4 mile or 400 m radius)
- Rural to urban transect zones
- Small blocks
- Streets for all modes of transit
- Appropriate building frontages
- Sense of enclosure
1/4 Mile (400 m) Radius
Regional Structure

- Concentrate compatible residential and work populations within clusters of walkable neighborhoods to form towns
- Neighborhood edges should weave together
- Incompatible uses should be outside of clusters
The Neighborhood

- Compact in order to not waste land and typically no larger than ½ mile across
- Walkable due to pedestrian-friendly streets and five minute walk from the center to edge
- Diverse with a full range of housing, shopping, and employment opportunities
- Connected to transit, roadways, and bicycle networks
Rural to Urban Transect Zones

T1 NATURAL ZONE
T2 RURAL ZONE
T3 SUB-URBAN ZONE
T4 GENERAL URBAN ZONE
T5 URBAN CENTER ZONE
T6 URBAN CORE ZONE
SD SPECIAL DISTRICT
Small Blocks

Remcon Circle, El Paso

Johnson Square Area
Savannah, GA
Streets for All Modes of Transport
El Paso, TX
Mesa Street
El Paso, TX
Mesa Street
El Paso, TX
Mesa Street
El Paso, TX
Mesa Street
Appropriate Building Frontages
Sense of Enclosure
proportion of building height to public space
proportion of building height to public space
Neighborhood Center & Civic Space

- Fine grained interconnected network of streets
- Public gathering places
- Mix of uses, not just second places
- Examples: Reston, Redmond Town Center, Riverside in Atlanta, Eighth and Pearl in Boulder
Neighborhood Center & Civic Space
Area in open development preferably 160 acres. In any case, it should house enough people to require one elementary school. Exact shape not essential, but best when all sides are fairly equidistant from center.

Shopping districts in periphery at traffic junctions and preferably bunched in form.

Ten percent of area to recreation and park space.

Interior streets not wider than required for specific use and giving easy access to shops and community center.
School

- Schools should be integrated into the fabric of residential and commercial developments

- Basic ideas
  - All schools within ½ mile (800 m) of homes (no bussing)
  - Small sites – 10 to 12 acres
  - No more than 500 students
  - Share sites with parks, co-locate fields
  - Schools can also function as community centers
Other Civic Space

- Provide places for play: all homes should be a two minute walk from a playground or small park
- Try mid block public spaces
- Dog parks count, too
Street Network

- **Connected street network**
  - Grid system or highly irregular
  - Provides direct routes between where people live and regular destinations
  - Intersections increase left-turn options and reduce congestion

- **Results**
  - Reduce local traffic problems
  - Conserve energy
  - Improve air quality
  - Encourage residents to walk, bike, or utilize transit
7 Principles of Sustainable Streets

1. Create a street network that supports communities and places.

2. Create a street network that attracts and sustains economic activity.

3. Maximize transportation choice.

4. Integrate the street network with natural systems at all scales.

5. Respect the existing natural and built environment.

6. Emphasize walking as the fundamental unit of the street network.

7. Create harmony with other transportation networks.
Key Characteristics

1. A web of streets and travel modes that maximize connectivity
2. Desirable places where multiple networks overlap
3. Inherently complex
4. Major streets designed and spaced properly
5. All streets safe and walkable
6. Wide variety of street types, each with a role in the network
Why Traffic is Congested?

- Same Total Lanes
- More Capacity
  - VMT
  - Turns
Accessibility from houses to shops?
Calthorpe and The Urban Network

Illustration 3: Transit Boulevard

Illustration 4: Town CenterCouplet
Transport boulevards are the heart of the network, spaced roughly every four miles.
- Lined with higher density development
- Split into two one way streets in the commercial center only, spaced a block apart

Streets scale down to connector streets spaced at 1/8 of a mile (200 m), more frequent than standard “collector”.
The Couplet in Practice
five points transfer center

Existing Conditions: Montana Ave
Sidewalks, street trees and bicycle lanes
Public reinvestment: mixed income public housing, government offices
Private reinvestment: storefronts with arcades or awnings for pedestrians
five points transfer center

Additional public investment: crossings and trees
complete streets
Top 10 Walkability Factors

10. Street Trees
9. Traffic Volumes
8. Sidewalks
7. Narrow Streets
6. Interconnected Streets
5. On Street Parking
4. Lower Traffic Speeds
3. Mixed Land Use
2. Buildings Fronting St.
1. Small Block Size
Example - ASARCO
Mass Transit

- **Transit-Oriented Development**
  - Increase densities surrounding transit stations
  - Locate offices, shops, and a community center adjacent to transit stations
  - Locate multi-family and rowhouses adjacent to transit stops to allow for higher densities than single-family residential
  - For commercial, require FAR of 0.35 – 0.50
  - For residential, require at least 18 homes per acre within ½ mile of a transit station and 12 units within ¼ mile
  - In suburban neighborhoods, 5 – 7 units per acre

- **Walking distances**
  - For a bus stop, many residents are willing to walk ¼ mile
  - For light rail or rapid transit, one third mile to ½ mile walk
Transit-Oriented Development

- Pulaski Station - West Garfield, IL
  - Loss of industrial development
  - 40% of land around the station was vacant
  - 118,000 people within ½ mile of the station

- Partnership between City, Transit Authority, and Community Activists for Community Green Line Initiative
  - Planning charrettes, ISTEA funds
  - New station built with a day care center and neighborhood center
  - Redevelopment area designated by the City within a ¼ mile of the station
  - Land swaps by the Transit Authority made land available retail services
Parking

- For each parking space required, the cost of a residential unit rises 15 – 30 percent while the number of units that can be built decreases by 15 – 25 percent.

- Commercial parking spaces each cost around $20,000 in land and construction.

- If more than three parking spaces are required per 1,000 sq ft, more parking area than building area may be built.

- Every parking space is a magnet for cars. Parking therefore increases congestion, which in turn raises road maintenance and construction costs.
Parking

- Single-family detached neighborhoods
  - The alley, or rear lane, is the key planning and design device for neighborhoods
  - Alleys typically reduce the amount of pavement required per block by replacing and consolidating paving dedicated to driveways
  - In suburban developments, imposing garages, driveways, and curb cuts detract from the appeal of the public realm
Parking

- Moderate density solutions
  - Townhome and apartment buildings can utilize alley-accessed garages or tuck-under arrangements
  - Parking lots should be separated from primary frontages by linear buildings
  - Any parking visible from the street frontage should be screened
Parking

- Center, core, and district
  - Parking requirements are typically tied to annual peak demands for commercial
  - For peak demand events, town centers can create shuttle programs, mass transit incentives, employee programs
  - Design challenges with parking garages
Parking
Alleys and Lanes

**SQUARE BLOCK**

The Square Block was an early model for planned settlements in America. It was sometimes associated with agricultural communities involving four large lots per block, each with a house at its center. When the growth of the community produced additional subdivision, the resulting lots became irregular in shape (Figure 1). While this may provide a useful variety, it is more often regarded as a nuisance by a building industry accustomed to standardized products.

A disadvantage is that discontinuous street lots prevent double-loaded alleys and rear access utilities. Despite these shortcomings, the square lot is useful as a specialized type. The forced variety of plotting assures a range of lot prices. When plotted only at a periphery with a corner open (Figures 2), it can accommodate the high parking requirements of civic buildings. The open corner may also be used as a common garden or playground, isolated from traffic.

**ELONGATED BLOCK**

The Elongated Block is an evolution of the square block which overcomes some of its drawbacks. The elongated block eliminates the uncontrolled variability of depth while maintaining the option of altering the lot width. Elongated blocks provide economic double-loaded alleys with short utility runs. The alley may be placed diagonally, varying the length of the lot (Figure 3). By adjusting the block length, it is possible to reduce cross-streets at the panel edges and to add them at the urban centers. This adjustment aids pedestrian permeability of the grid, and controls the ratio of street parking to the building capacity of the block.

The elongated block can be designed along its length.

**IRREGULAR BLOCK**

The Irregular Block is characterized by its unlimited variations. The original organic block was created by the subdivision of small, withdrawn between well-used paths. It was later rationalized by Eliot, Cullen, Hike, and Osborn to achieve a controllable picturesque effect and to organically negotiate sloping terrain. An important technique in the layout of irregular blocks is that the frontages of adjacent blocks need not be parallel (Figure 4). This irregular block, despite its variety, generates certain recurring conditions which must be resolved by sophisticated plotting. At shallow corners, it is desirable to have the facade follow the frontage smoothly. This is achieved by maintaining the side lot lines perpendicular to the frontage line (Figure 6). It is important that the near lot line be wide enough to permit vehicular access (Figure 6b). At sharp corners, it is desirable to have the area of an angle lot exceed the acute angle (Figure 6c). In the event of excessive block depth it is possible to access the interior of the block by means of a driveway (Figure 6d).
Section through proposed Hawthorne Street

Section through existing Hawthorne Street
UTEP Master Plan - Parking

Before

After