Infill Design Strategies
Portland’s Experience

Bill Cunningham • Portland Bureau of Planning & Sustainability

Makeover Montgomery  2011
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Portland’s Experience

• Medium-density residential infill development in established neighborhoods

• Portland’s infill design approaches and tools:

  1. Existing neighborhood patterns as a guide

  2. Development standards targeted to **positive outcomes** (not just regulating to prevent “bad things”)

  3. Role of non-regulatory strategies
     - Infill Design Toolkit and Housing Prototypes
     - Design competitions & promotion
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Background

Portland: center of a region of 2 million people
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Background

Growth - Intended to be concentrated around transit-oriented centers and corridors
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Background

Portland – Well known for high-density development in Downtown’s Pearl and South Waterfront districts

11,000 new downtown residential units built since 1997
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Background

Majority (74%) of new residential development has been built in neighborhoods outside Downtown

31,000 new residential units built in neighborhoods outside Downtown since 1997
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42,000 new units built 1997-2007

36% built in mixed-use centers & corridors

64% built in residential neighborhood areas

New Units Built
- Apartments/Condos
  - Up to 20 units
  - 21 to 40 units
  - 41 or More units
- Rowhouses/Duplexes
  - All Units

2040 Mixed Use Areas
- Central City, Regional & Town Centers, Station Community Areas, Main Streets.

City of Portland | Bureau of Planning | GIS/May 2008
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Three distinct neighborhood geographies: Inner, Eastern and Western
Inner neighborhood residential streets
Characterized by street-oriented buildings and a green edge of landscaping
Issue:
How to accommodate infill in ways that respect cherished neighborhood characteristics?
Lessons from housing mix in Streetcar-Era neighborhoods
Existing Neighborhood Patterns:

Can be continued with medium density infill development (up to about 40 units/acre)
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Existing Patterns as Guide

Green street frontages
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Existing Patterns as Guide

Green street frontages

Continuity

Discontinuity
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Existing Patterns as Guide

Green street frontages
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Existing Patterns as Guide

Front setback patterns
Infill Design Project

Contextual Approaches

Rhythm of development along the street
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Existing Patterns as Guide

Rhythm of development along the street

Continuity
Discontinuity
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Existing Patterns as Guide

Rhythm of development along the street

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Existing Patterns as Guide

Rhythm of development along the street

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Existing Patterns as Guide

Street orientation
Landscaping and trees
Landscaping and trees
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Existing Patterns as Guide

Landscaping and trees
Housing diversity:
Development standards crafted to allow additional housing types

Rowhouses – Portland’s primary medium-density ownership housing type

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Facilitative Regulations

House-plex
Cottage clusters
Courtyard townhouses
Shared court housing
Rowhouses – Provide medium-density ownership housing

- Builders like “fee-simple” lots for each unit
- Negative impacts on street frontage caused by garages
- Community interest in alternative infill housing types
Community interest in courtyard housing
- Historic Portland precedents
Common Green Provisions

- Allow lots to front onto a pedestrian “street” (as narrow as 15’)
- Facilitate ownership housing on separate lots
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Facilitative Regulations

Common Green Examples
New “shared court” provisions: housing oriented to a narrow street designed to accommodate pedestrians and cars within the same space.
Shared Court Street Type - Objectives

Make efficient use of limited site area
- Increase amount of space that is oriented to pedestrians
- Make space more multifunctional

Vehicle areas often occupy large portions of higher-density infill sites
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Facilitative Regulations

Shared Court Street Type - Objectives

Make efficient use of limited site area
- Increase amount of space that is oriented to pedestrians
- Make space more multifunctional

Precedents: British “home zone”
Dutch *woonerf*
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Shared Court Street Type - Objectives

Additional sustainable development opportunities
- Stormwater planters integrated into street design
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House-like plexes
A practical solution for small sites
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A practical solution for small sites

... until driveway and setback requirements are figured in
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Facilitative Regulations

House-like plexes
A practical solution for small sites

... regulations changed to make what is possible, approvable
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Facilitative Regulations

2 units on 2,500 SF site
7 units on 4,000 SF site

No parking required within 500’ of frequent-service transit
- Facilitates small-site development
Accessory Dwelling Units

- Allowed in all residential zones
- Up to 800 SF in size
- No system development charges

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Facilitative Regulations
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Portland Infill Design Toolkit

Housing Prototypes

Design Strategies & Techniques

Case Studies
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Portland Infill Design Toolkit

Housing Prototypes

Design Strategies & Techniques

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Non-Regulatory Strategies

Alternative to these:

Housing Prototypes
Contextual rowhouses
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Non-Regulatory Strategies

Facilitates these:

Housing Prototypes
Contextual rowhouses
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Facilitates these:

Housing Prototypes
Pocket courtyard

Non-Regulatory Strategies
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Non-Regulatory Strategies

Facilitates these:

Housing Prototypes
Shared court rowhouses
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Facilitates these:
Housing Prototypes
Cottage cluster

Non-Regulatory Strategies
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Non-Regulatory Strategies

Facilitates these:

Housing Prototypes
Courtyard flats
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Portland Infill Design Toolkit

Housing Prototypes

Design Strategies & Techniques

Case Studies
Structured Parking

Structured or podium parking has typically been used on large-scale urban mixed-use and residential developments. However, mid-scale medium density infill developments are increasingly utilizing podiums as a viable alternative to individual garage parking or surface lots, and as a way of providing on-site parking for residents while providing more usable open space. This section provides detailed examples of structured parking strategies, discusses the considerations, and outlines key residential projects.

Cost Efficient Strategies for Structured Parking:

- The separation required by the building code between parking structures and residences has been reduced to 1 hour fire barrier allowing for conventional

Locate and design

Locate and design

Locate and design

Non-Regulatory Strategies

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Portland Infill Design Toolkit

Housing Prototypes

Design Strategies & Techniques

Case Studies
Portland Infill Design Toolkit

Housing Prototypes

Design Strategies & Techniques

Case Studies
Purpose:

- Foster innovation
- Promote new housing types
- Test regulations
Community concerns about “skinny” houses

(Detached houses on 25’-wide lots)
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Detached houses on 25’-wide lots

Received 426 entries from 22 countries
Two winners became “permit ready” house plans – available at no charge
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Design Competitions

Two winners became “permit ready” house plans – available at no charge
Portland Courtyard Housing Design Competition (2007)

Over 250 submittals from 15 countries

Addressed the challenge of designing medium-density housing attractive to families with children

Resulted in new models for family housing that integrates into the urban fabric of Portland neighborhoods

Creating spaces for families, community and sustainability in the city
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Winning Designs: Inner Site
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Winning Designs: Eastern Site

Design Competitions
Courtyard designs show that:
Density does not have to mean the loss of opportunities for play space.
Courtyard designs show that:
Density does not have to mean the loss of opportunities for play space
… or for gardens
Minimize the amount of site area designed solely for cars
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Overall lessons:

• Provide some car-free courtyard space.
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Overall lessons:

- Front living space onto courtyards
- Create transitions between private and public areas
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Overall lessons:

- Provide a strong orientation to the public street
- Respond to neighborhood patterns
• Shared court details are critical if such spaces are to serve as pedestrian-friendly places
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Overall lessons:

- Integrate sustainability, stormwater management into design
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Design Competitions

Implementation

- Code changes to facilitate approval of courtyard designs
- New street standards for shared courts
- Developer interest and built projects
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Design Competitions

Built courtyard projects
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Future Direction

The Portland Plan: Update to Comprehensive Plan
- Move away from “one-size-fits-all” approach
- Revise zoning code to better respond to community characteristics
Green Streets / Shared Streets

- Explore possibilities for incorporating “shared street” concepts into public street design
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Role of open space in block structure
- Importance of mid-block open space
- Consideration of perimeter block arrangements

Future Direction
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www.portlandonline.com/bps/infilldesign
www.courtyardhousing.org