



# FORM-BASED CODE - TECHNIQUES FOR ENCODING URBAN ENVIRONMENTS

# MISSION?

Cities have to move to a new system. They should look at the streets they like and the public spaces they like and then write the rules to get more of what they like and less of what they don't. Conventional zoning doesn't do that. It just gives a use and a density and then you hope for the best.

- Peter Katz -

# FORM-BASED CODES

Hierarchy in Urban Planning and Urban Design

Development Strategies

Masterplan

Design Briefs

Development Framework

Regulating Plan

What is a Form-Based Code?

Principles of FBCs

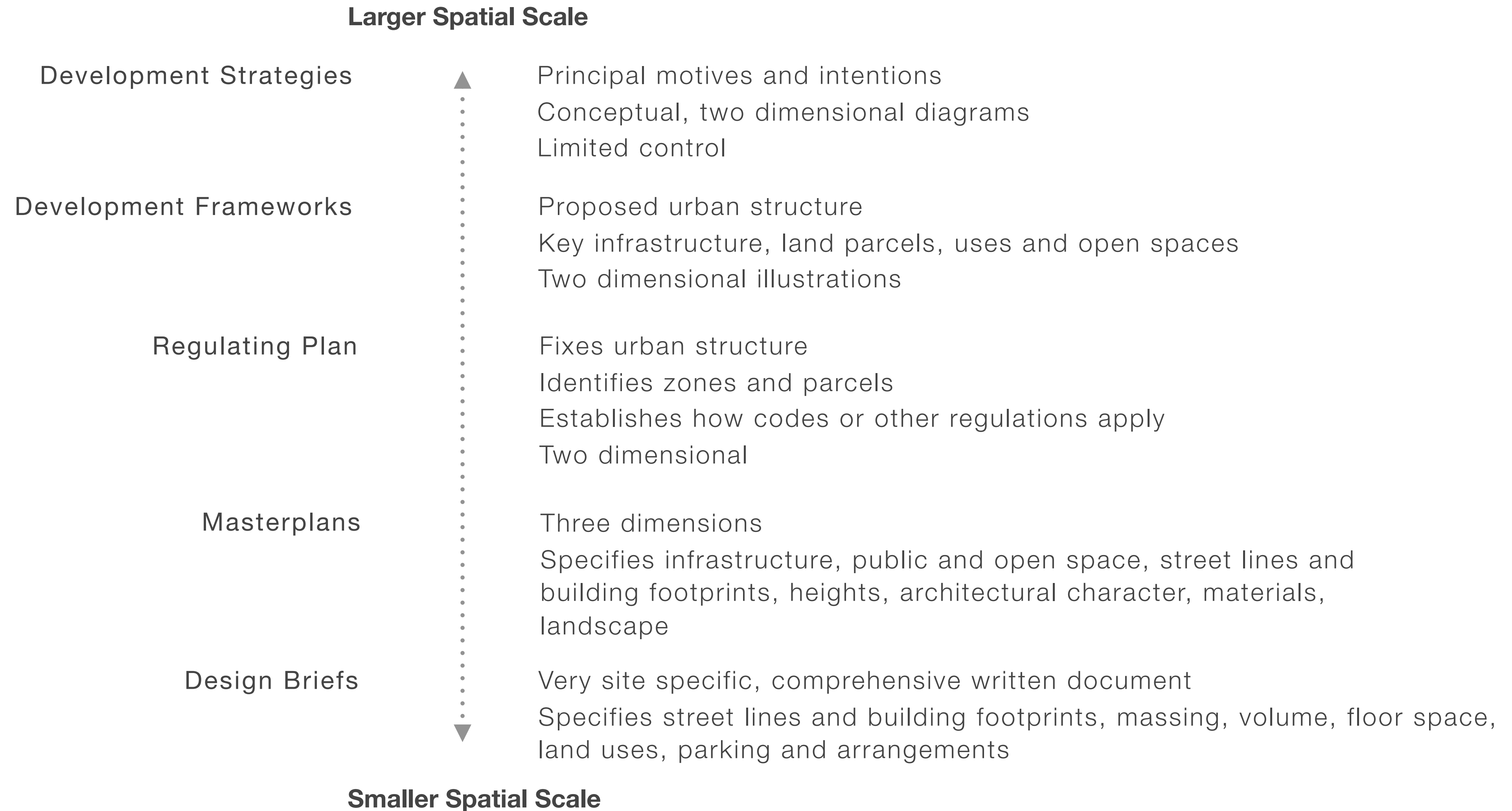
Components

Example Codes

Benefits and Drawbacks

Relevance of FBCs for Urban Modeling

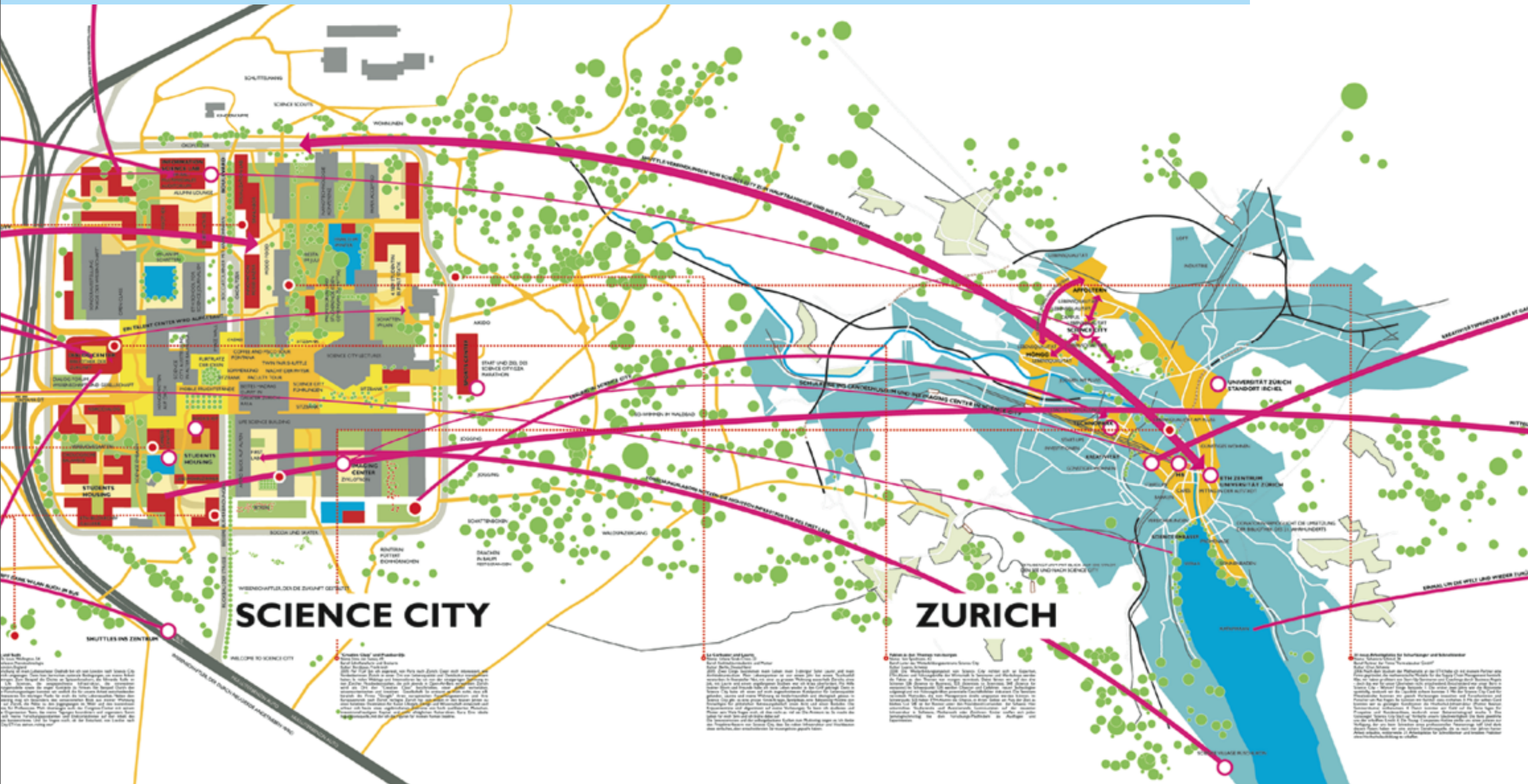
# HIERARCHY IN URBAN PLANNING AND URBAN DESIGN



Adapted from: Public Places - Urban Spaces, Carmona et. al , Elsevier Ltd., 2010



# DEVELOPMENT STRATEGIES

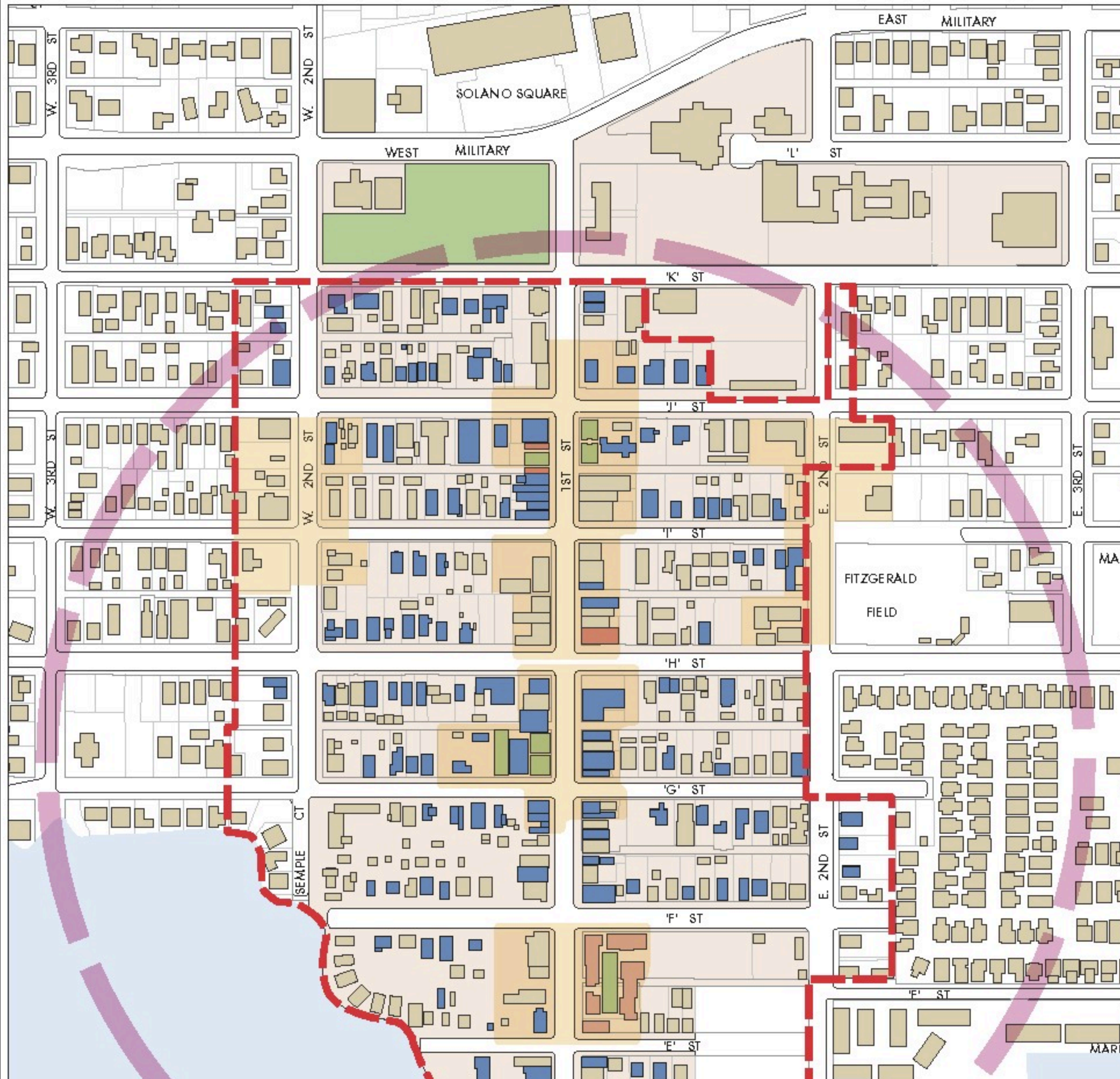


Static strategy maps help to create a mutual understanding between stakeholders by creating a “big picture” visually capturing the relationships between them.

Burkhard, R.A.: Visualize Desires, not Cities. In: Thierstein, A., Förster, A. (eds.)  
The image and the region, Lars Müller Publishers, Baden, pp. 169--180 (2008)



# DEVELOPMENT FRAMEWORK



- Buildings of Historical Significance
- Plan Initiative Areas
- Proposed Buildings
- Public Open Spaces
- Proposed Improvement Areas
- Existing Building Fabric
- Five Minute walking radius
- Plan Area

Benicia , CA Downtown Mixed Use Master Plan, [http://www.formbasedcodes.org/files/BeniciaCA\\_DMU\\_FBC\(2\).pdf](http://www.formbasedcodes.org/files/BeniciaCA_DMU_FBC(2).pdf)



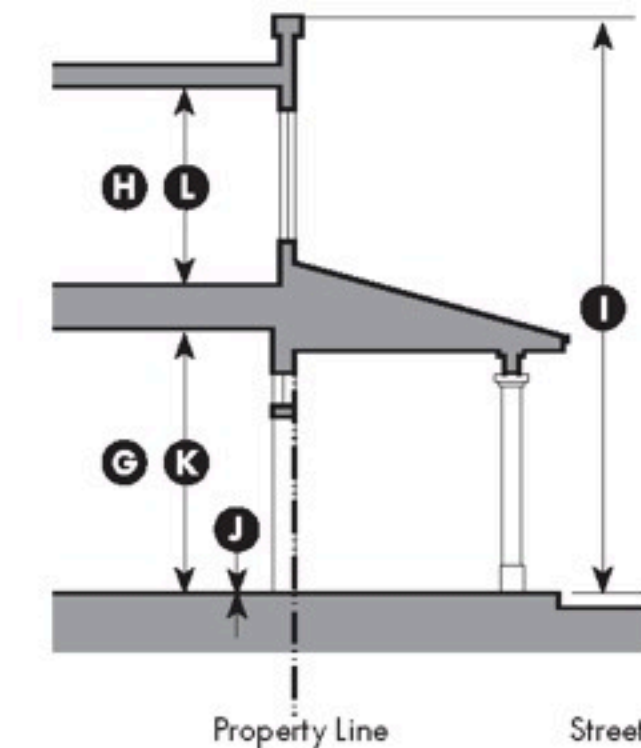
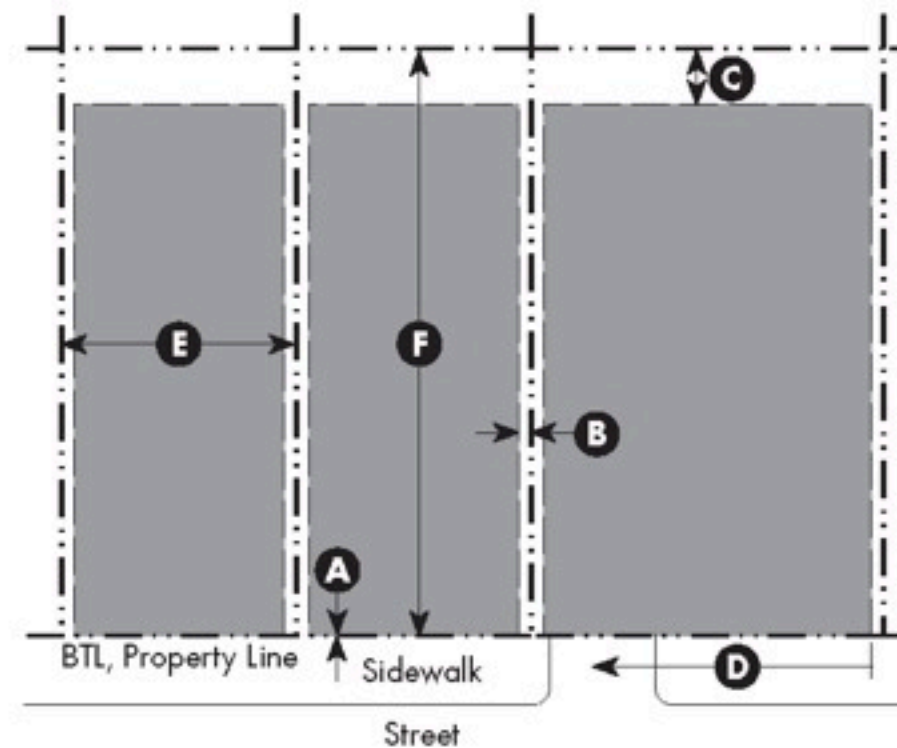
# REGULATING PLAN



## Zoning Districts

- Town Core
- Town Core-Open
- Neighborhood General
- Neighborhood General - Open
- Public & Semi-Public

## Town Core-Open (TC-O) Standards



## Key

- Property Line
- Setback Line
- Build-to Line (BTL)
- Building Area

Benicia , CA Downtown Mixed Use Master Plan, [http://www.formbasedcodes.org/files/BeniciaCA\\_DMU\\_FBC\(2\).pdf](http://www.formbasedcodes.org/files/BeniciaCA_DMU_FBC(2).pdf)



# MASTERPLAN

## ETH Science City Masterplan



<http://archiv.ethlife.ethz.ch/articles/campuslife/scmasterpraes.html>, model of Prof. Kees Christiaanse



# DESIGN BRIEFS

## CITY OF BENICIA Downtown Mixed Use Master Plan September 2007



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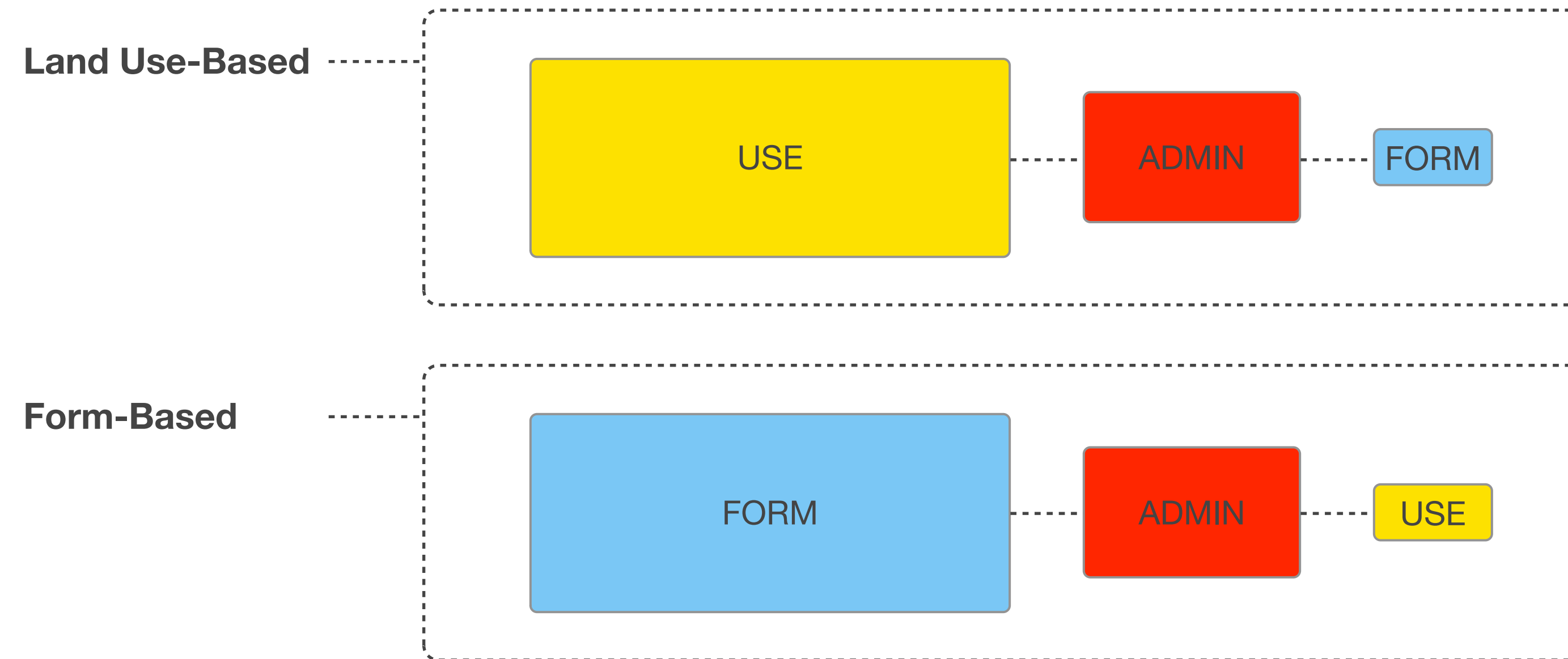
Benicia , CA Downtown Mixed Use Master Plan, [http://www.formbasedcodes.org/files/BeniciaCA\\_DMU\\_FBC\(2\).pdf](http://www.formbasedcodes.org/files/BeniciaCA_DMU_FBC(2).pdf)



# FORM-BASED CODES

A method of regulating urban development to achieve a specific form.

- Form Based Code Institute -



After: Chris Brewster, Dan Jarrell, Scott Allen (MARC Roundable, March 5, 2009)

# KEY DIFFERENCES

## Traditional Zoning

Emphasis on use

## Form-based Codes

Emphasis on community / neighborhood / social life in quarter

Maps are of zone districts

Maps are of neighborhoods / streets / blocks

Emphasis on individual uses of property, rigid use of lot size, and building placement

Emphasis on building relationships and on fitting building to its surroundings

Segregation of land uses

Mixed uses

Uniformity in neighborhoods

Diversity in neighborhoods

Limited ability to effect change

Ability to transform or preserve

Design standards are add-ons

Design standards are fundamental

Setbacks

Build-to lines

Often hard to understand, legal texts

Simple diagrams explaining parametrics

Adapted from: Form Based Codes, a Practical Guide, LSL Planning, Inc.

# EUCLIDEAN ZONING

## **Problems with Euclidean Zoning**

Traditional zoning are describing primarily minimum requirements, which may limit creativity and adaptability...

**Primary regulates use**

**Not user friendly/complex**

**Not flexible**

**Leads to mediocrity & conformity**

**Minimum requirements instead of desire**

**Isolates different uses**



# AWARENESS I

## The New Urbanism Debate

FCBs and Smart Code are specifically applied for New Urbanism (NU) projects.

NU is credited to have developed frameworks against urban sprawl.

However NU concepts highly focus on traditionalists' architectural or urban development schemes.

In Switzerland and Germany NU is being criticized for being backward oriented.

Further NU sees the cottage village as nucleus for urban (re-)development.



Photograph: Matthew Trump, Prospect New Town, new urbanist development in Longmont, Colorado.

# PRINCIPLES OF FBBCS

1. Vision-Centered
2. Priority-Driven
3. Place-Based
4. Regionally Diverse
5. Consequential
6. Precise
7. Integrated
8. Predictable
9. Comprehensible
10. Adjustable

Adapted from: Form-Based Codes, Parolek et al, 2008

# COMPONENTS OF FBC

The Regulating Plan

Public Space Standards

Building Form Standards

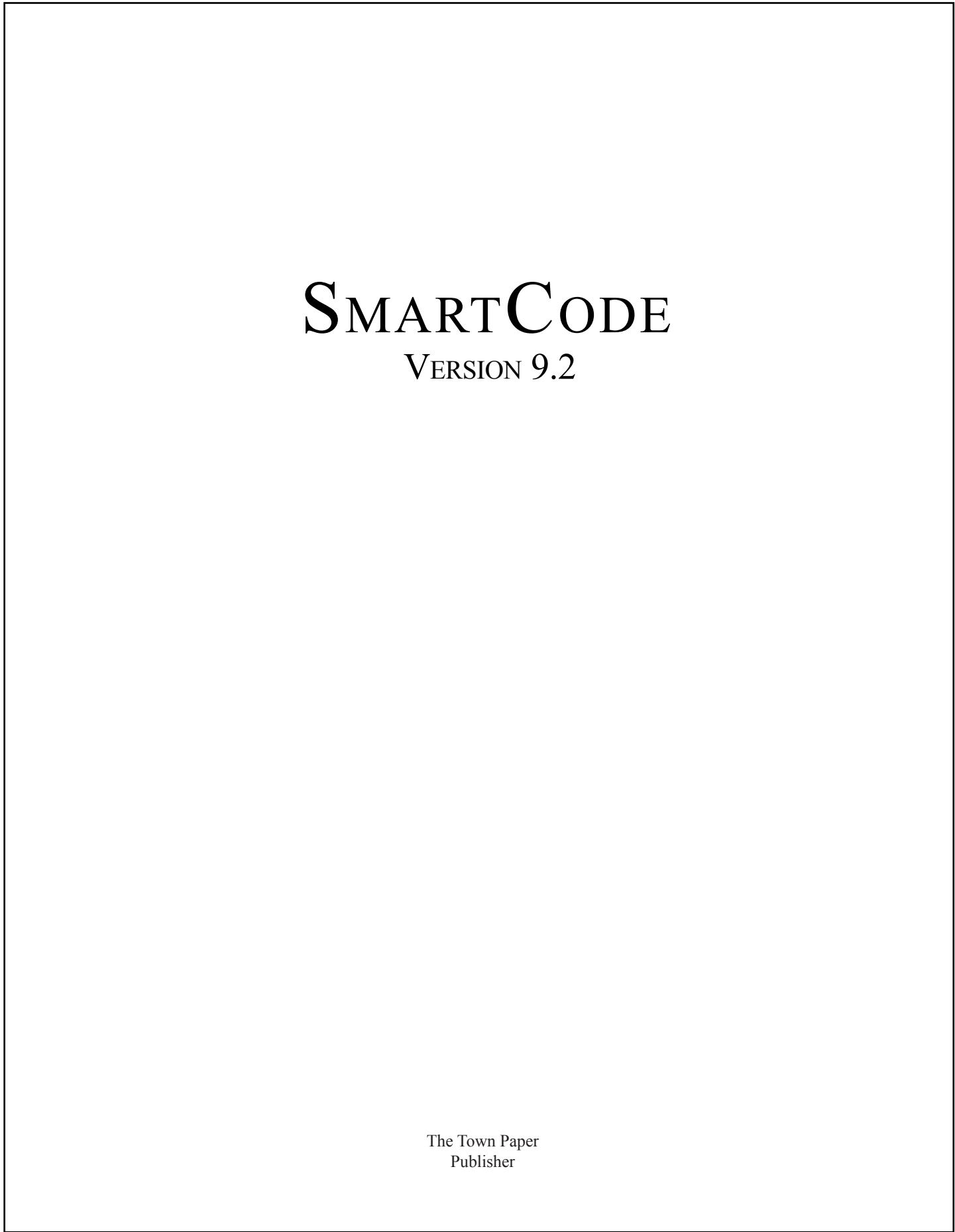
Frontage Type Standards

Block Standards

Building Type Standards

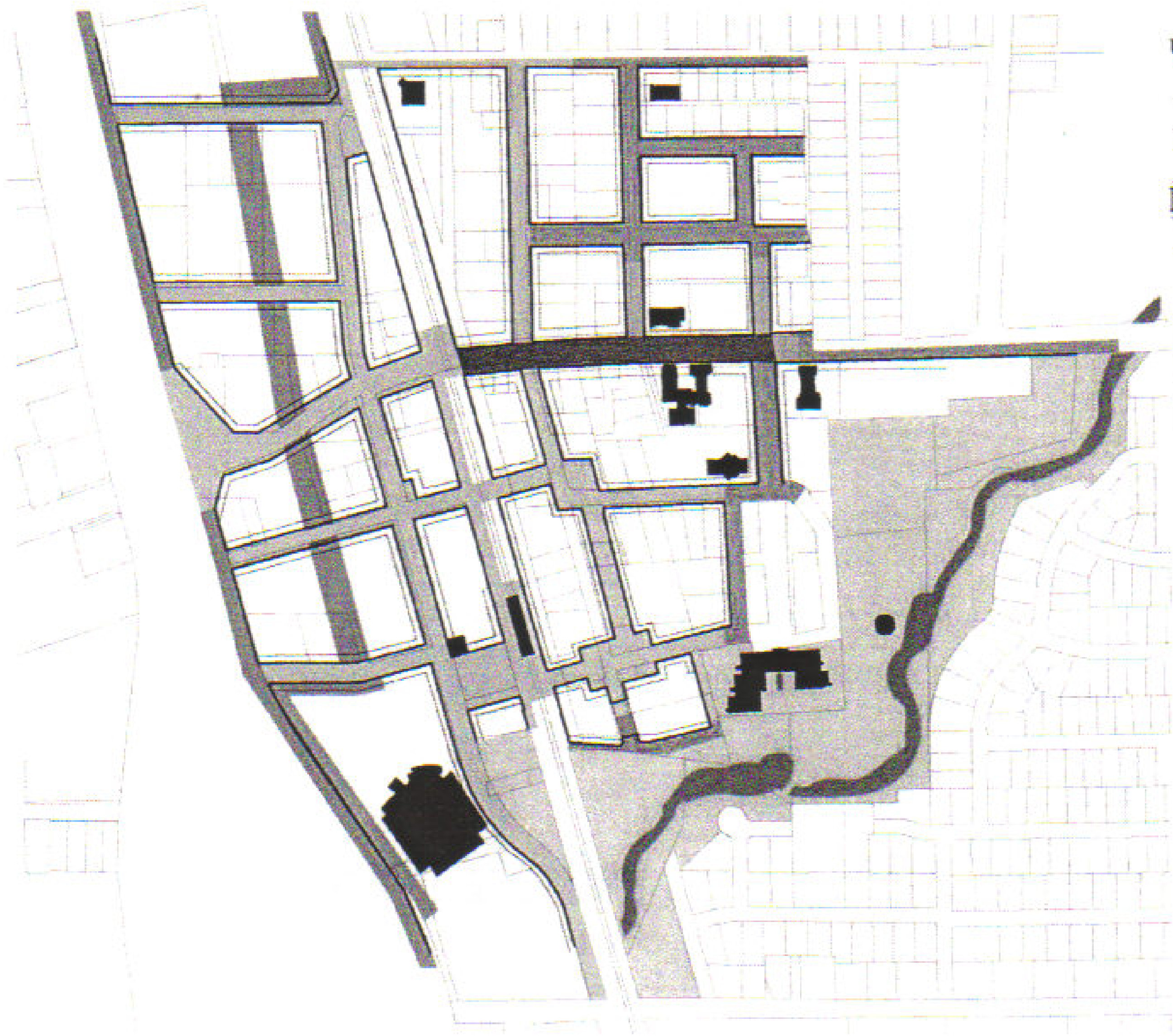
Architectural Standards

# FBC EXAMPLE: SMART CODE FRAMEWORK

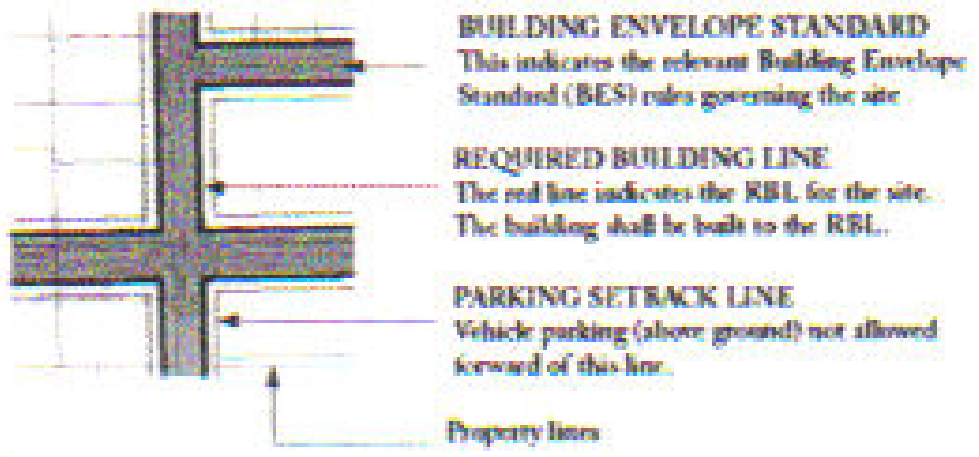




# STREET-BASED

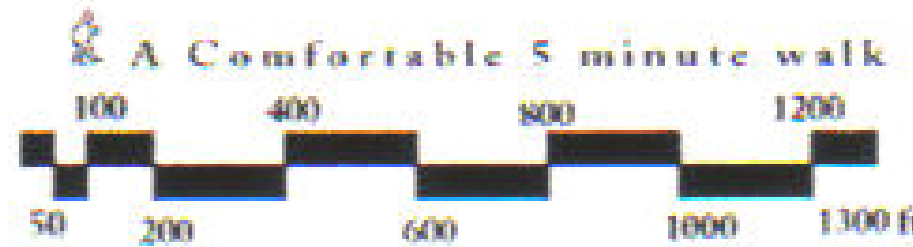


## Understanding the Regulating Plan

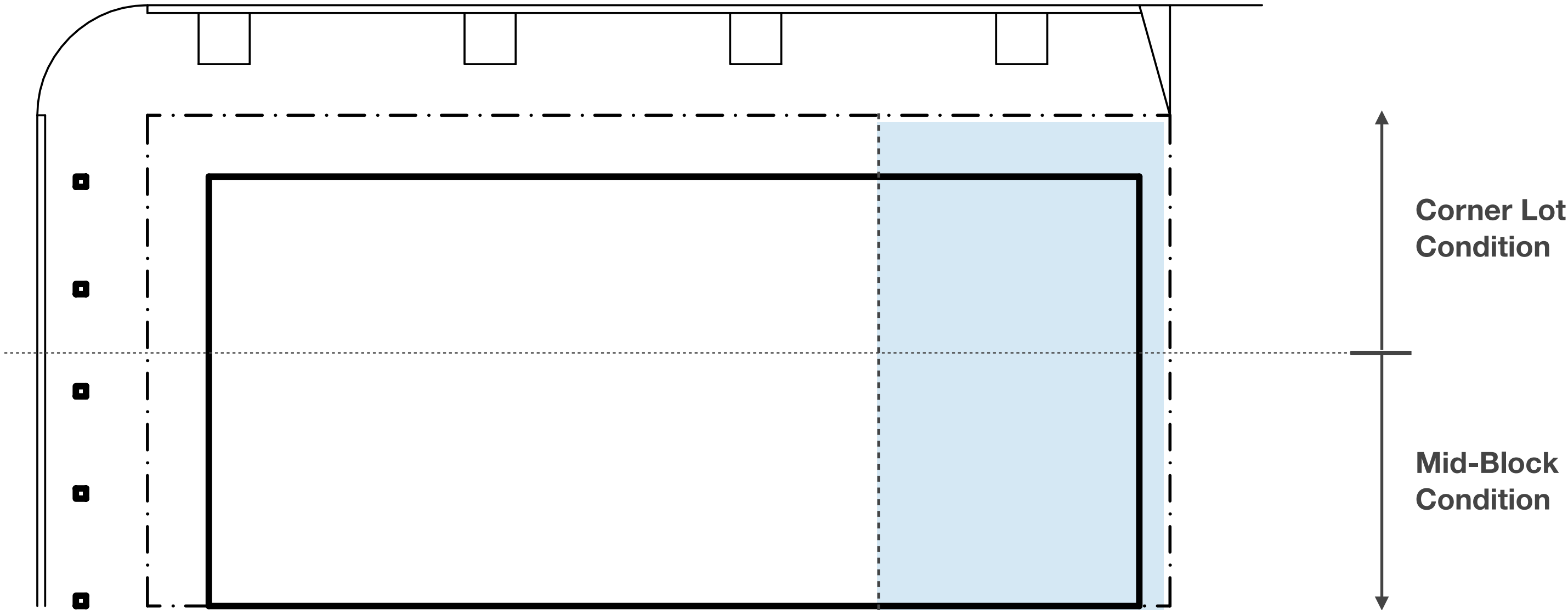
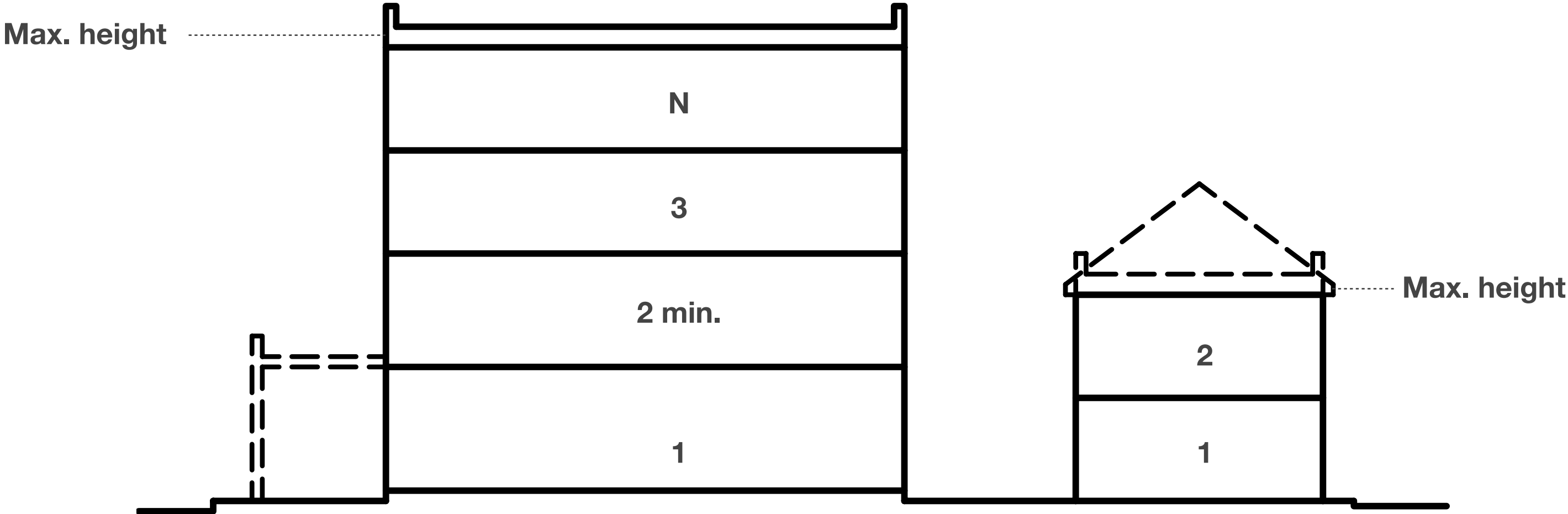


- Shopfront Colonnade Frontage
- General Frontage
- 1-35 Special Frontage
- Local Frontage
- Proscenium Easement
- Civic Buildings & Monuments

Farmers Branch Station Area  
Regulating Plan B



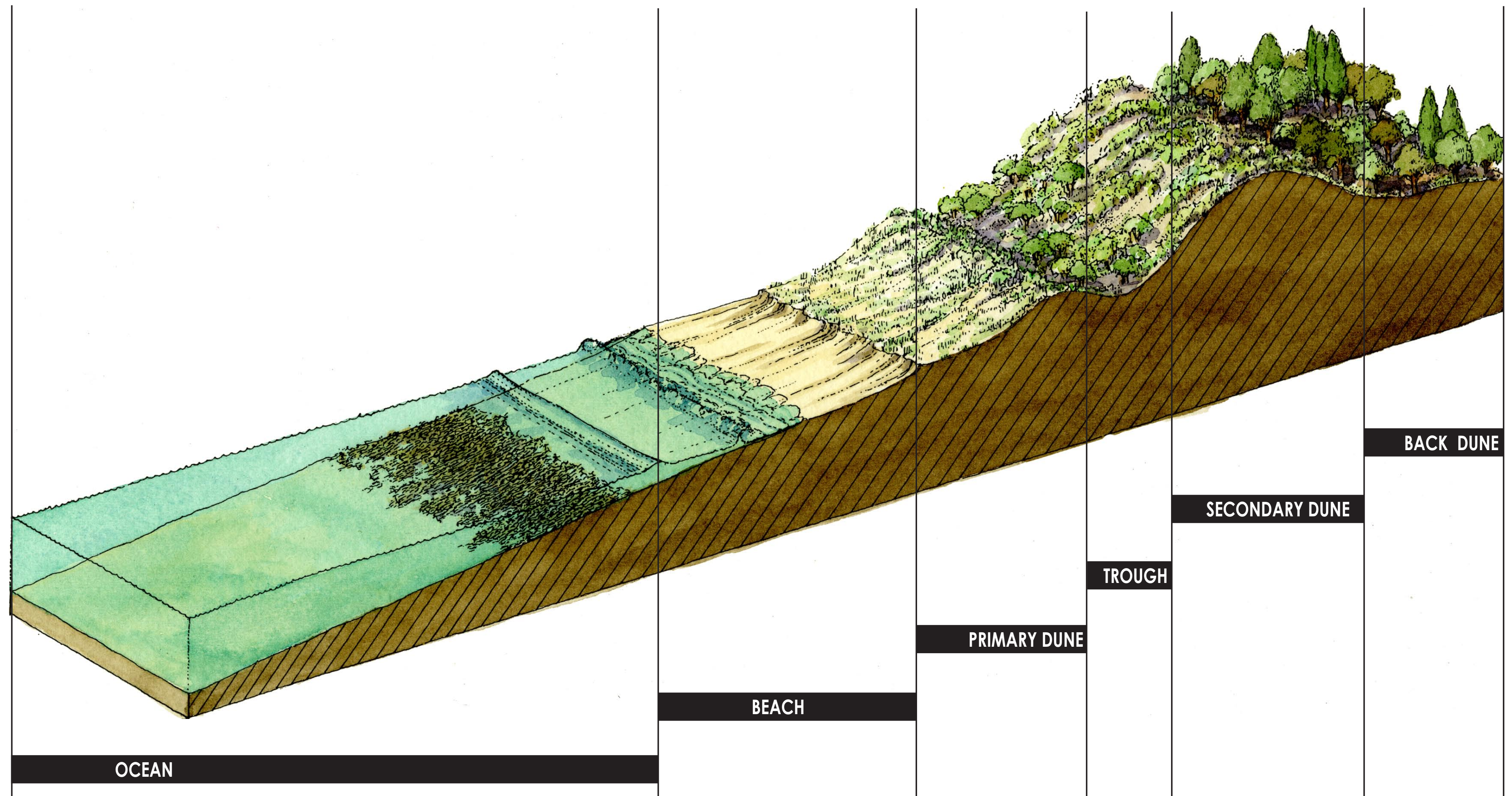
# BUILDING TYPE-BASED



Source: SmartCode Handbook v. 9.2



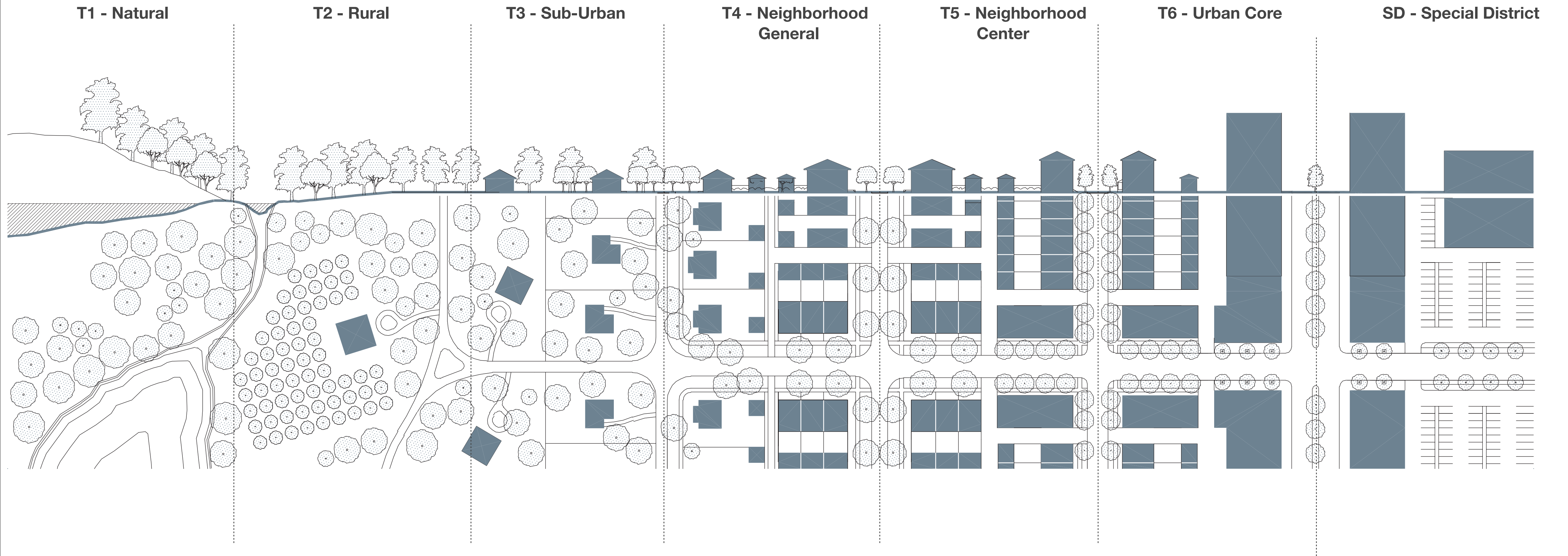
# TRANSECT-BASED



Source: SmartCode Handbook v. 9.2



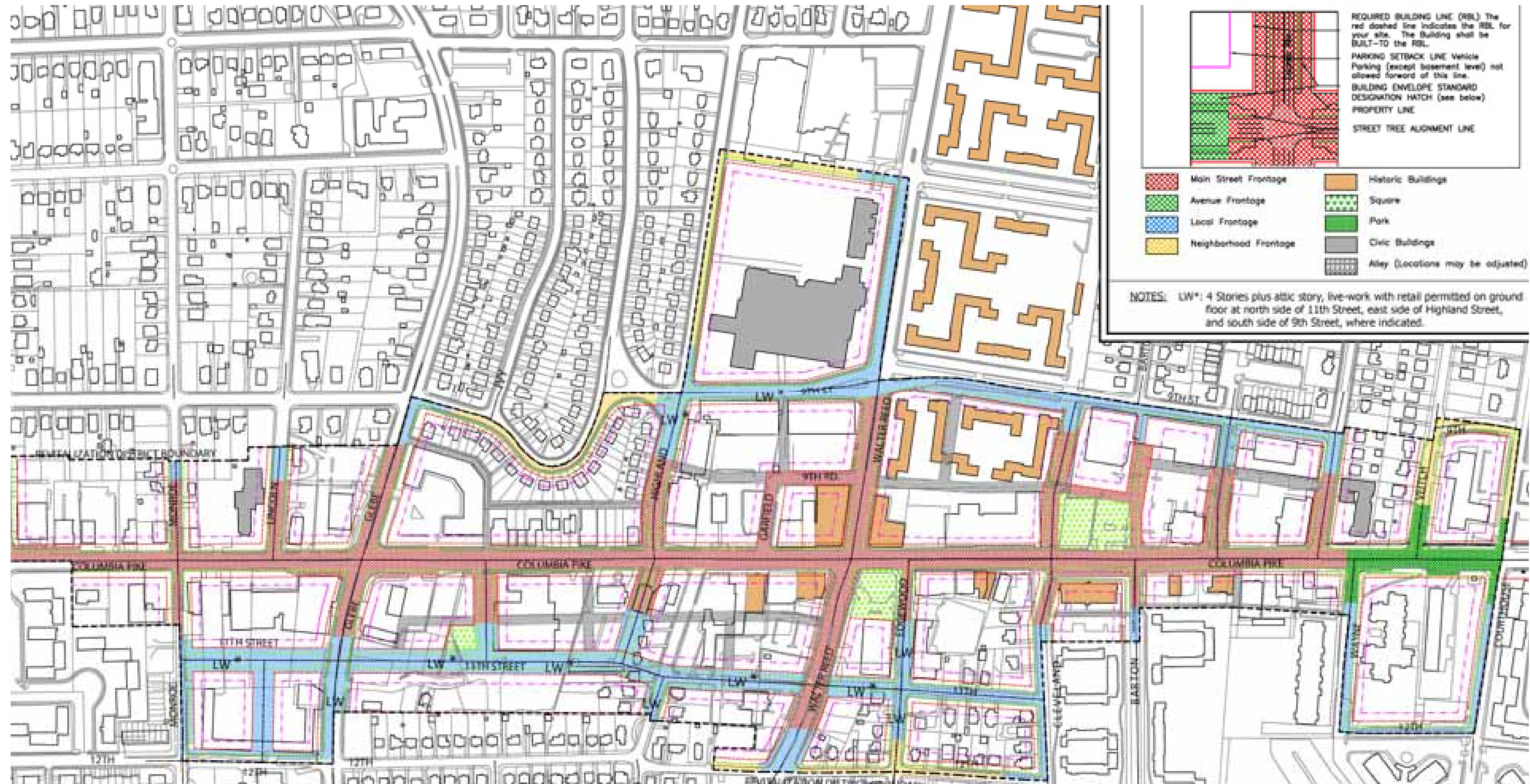
# TRANSECT-BASED



Source: SmartCode Handbook v. 9.2

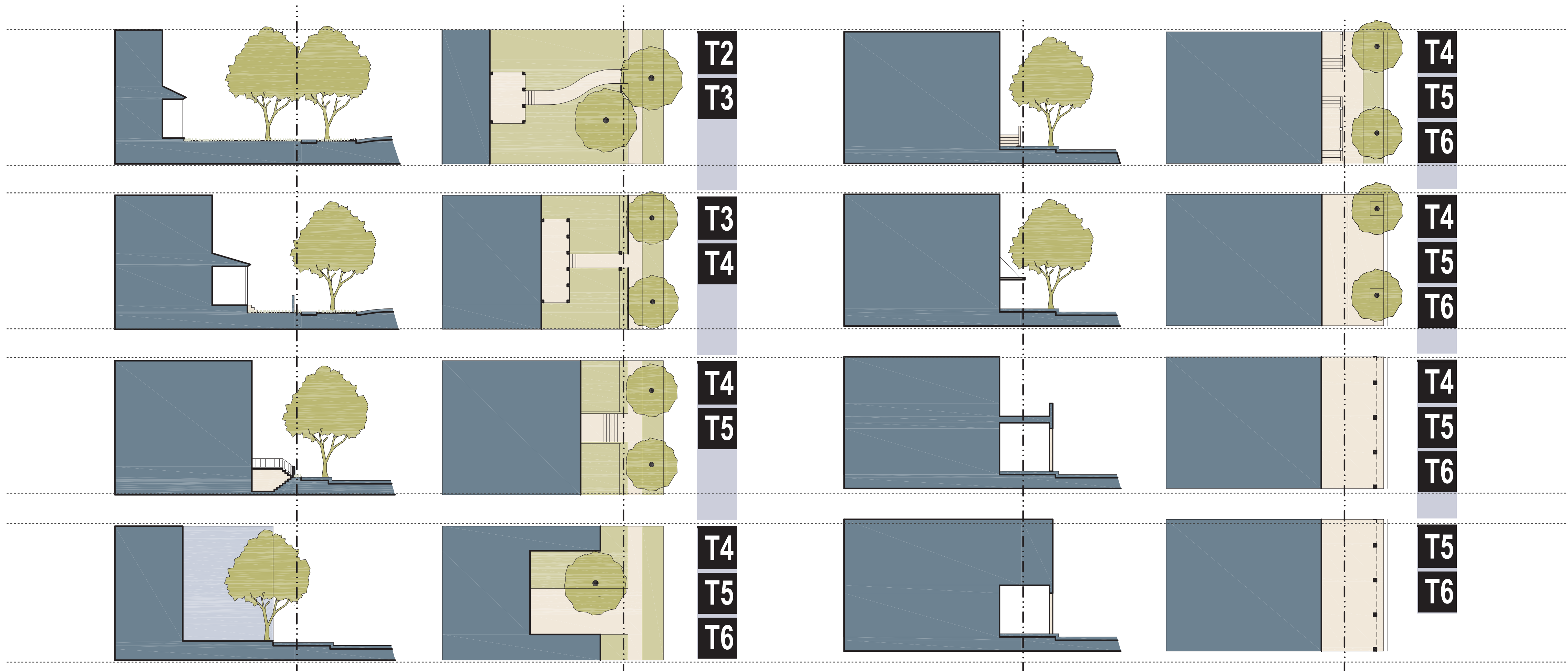


# FRONTAGE-BASED



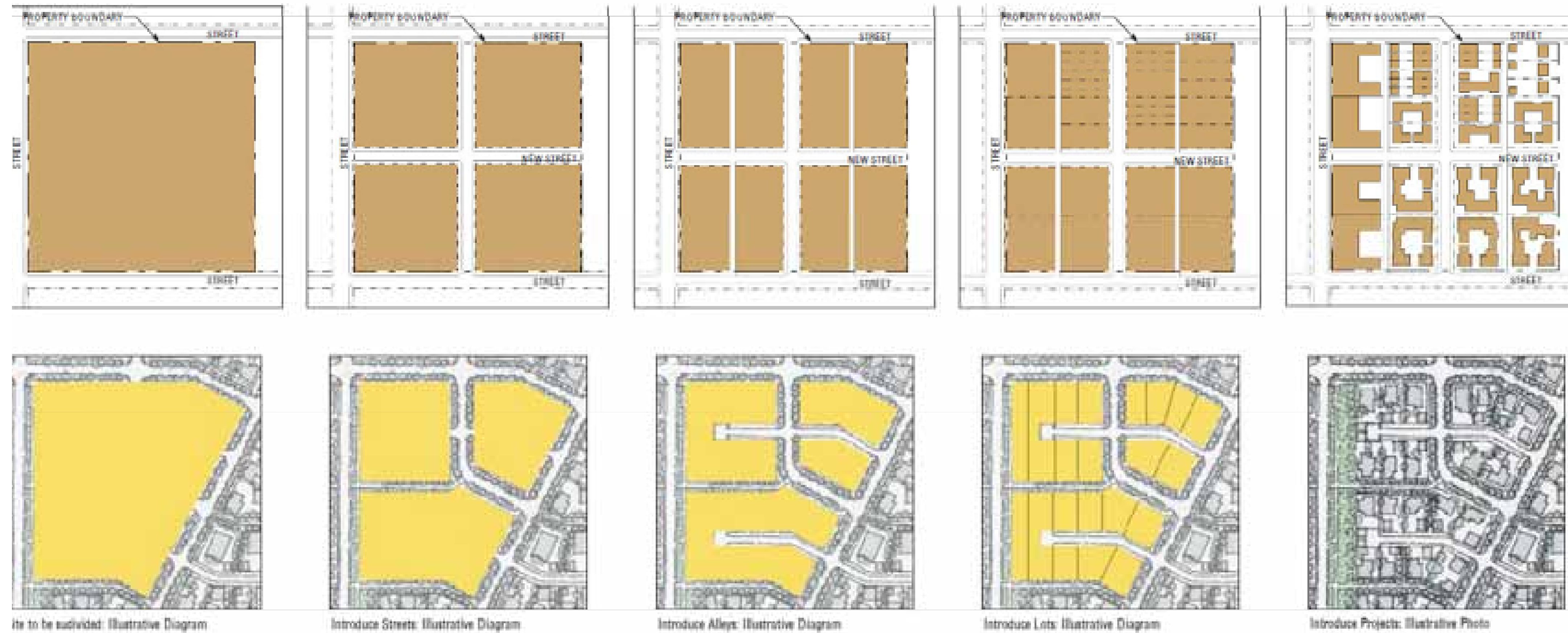
Source: Columbia Pike Code, Arlington County, VA

# FRONTAGE TYPE



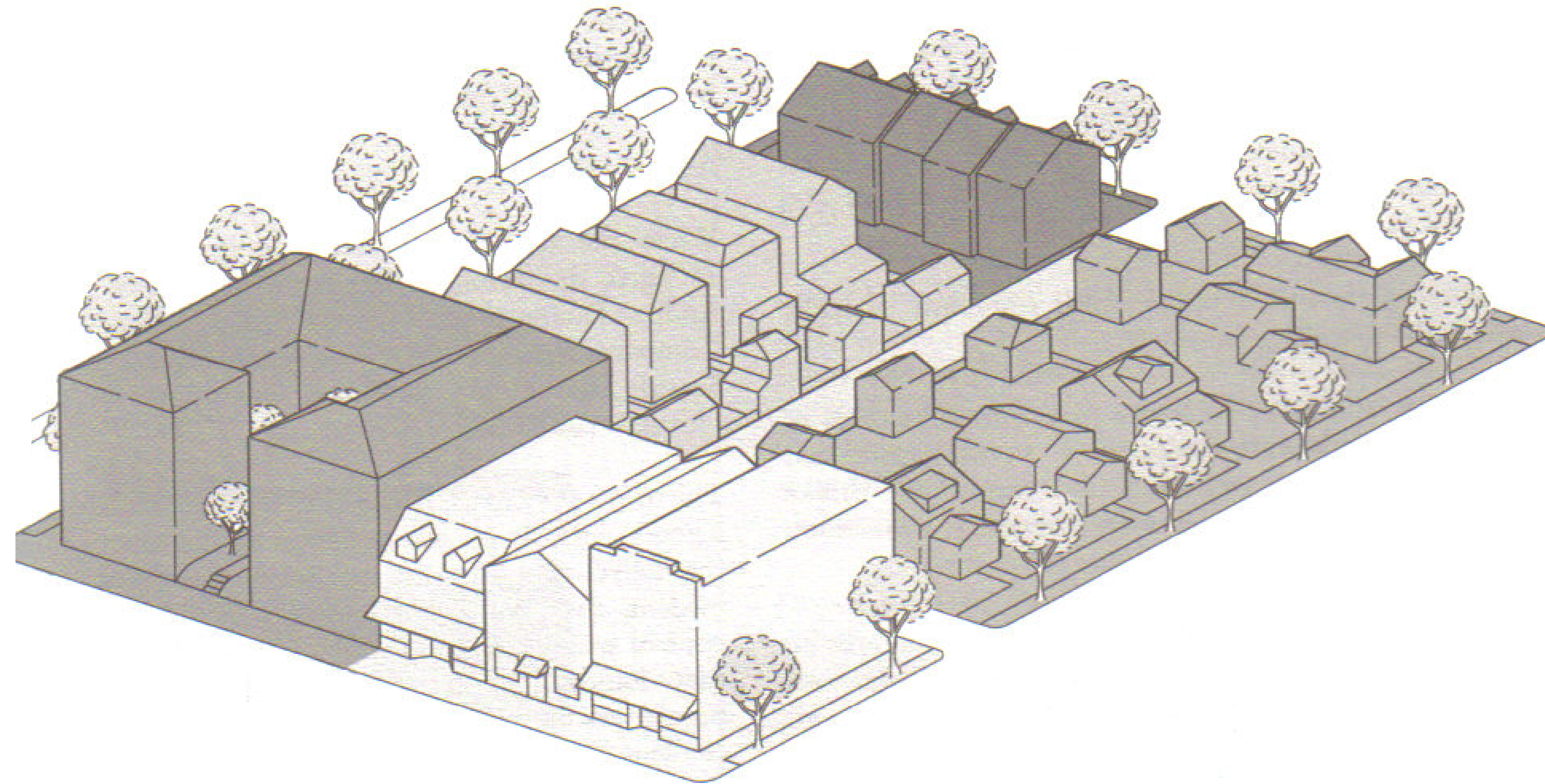
Source: SmartCode Handbook v. 9.2

# BLOCK



Uptown Whittier, CA

# BLOCK STANDARDS



Source: A Guidebook to New Urbanism in Florida, 2005



# PUBLIC SPACES



## Plaza, Squares, Courts and Parks

### Plaza

Plaza is a public space that is open to all and is used for a variety of activities. It is a place where people can gather, relax, and enjoy the outdoors. Plazas are often found in the heart of a city and are surrounded by buildings and trees. They are a vital part of the urban fabric and provide a sense of community and place.

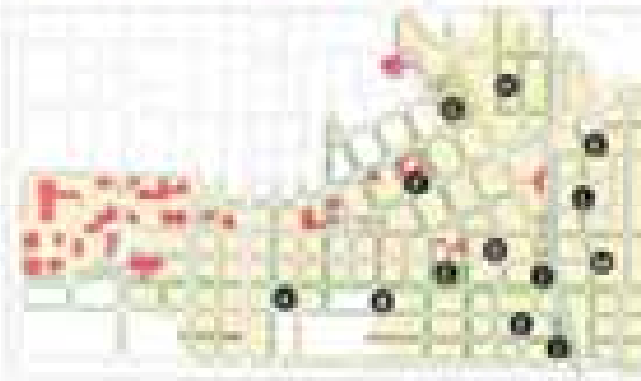


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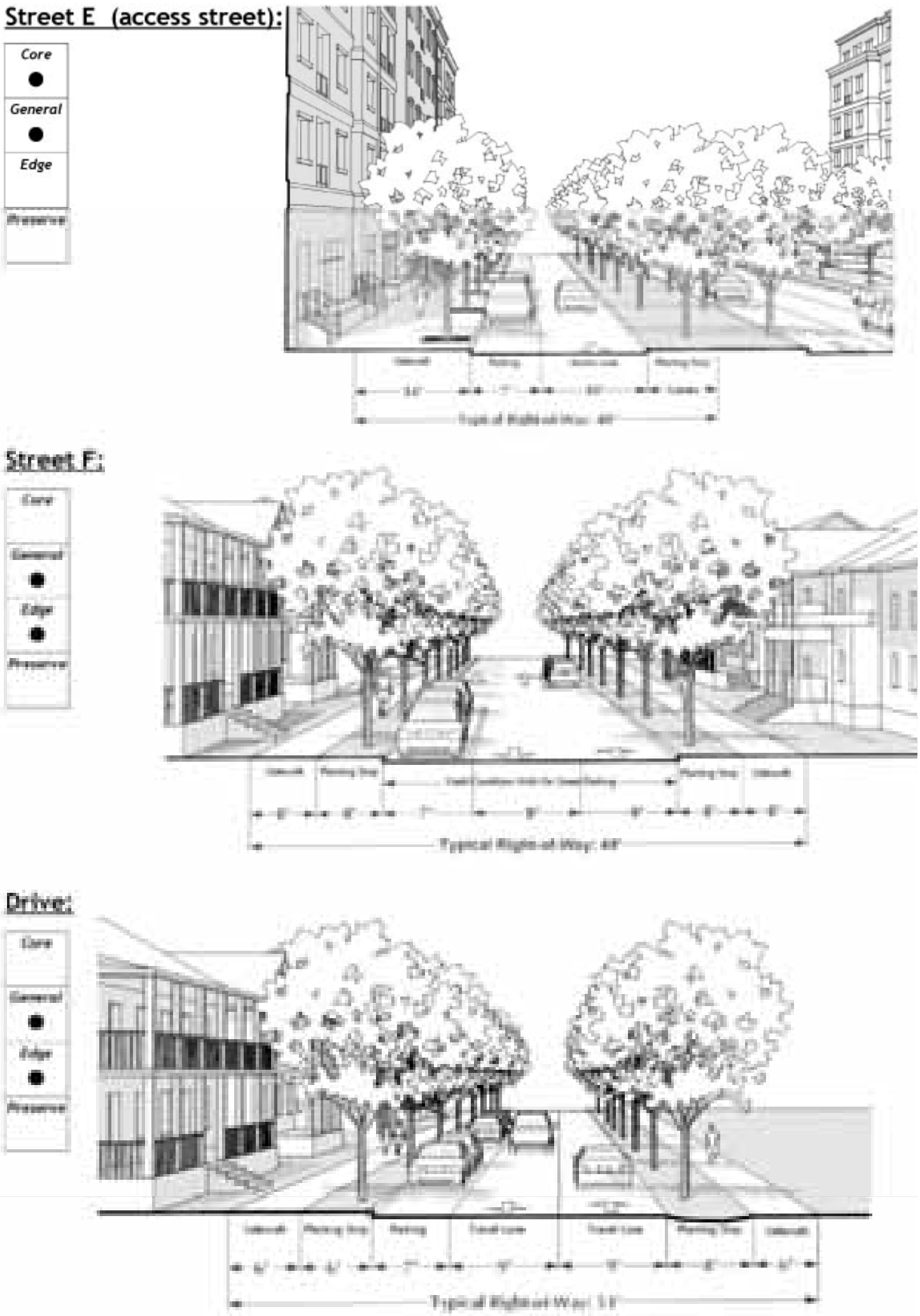
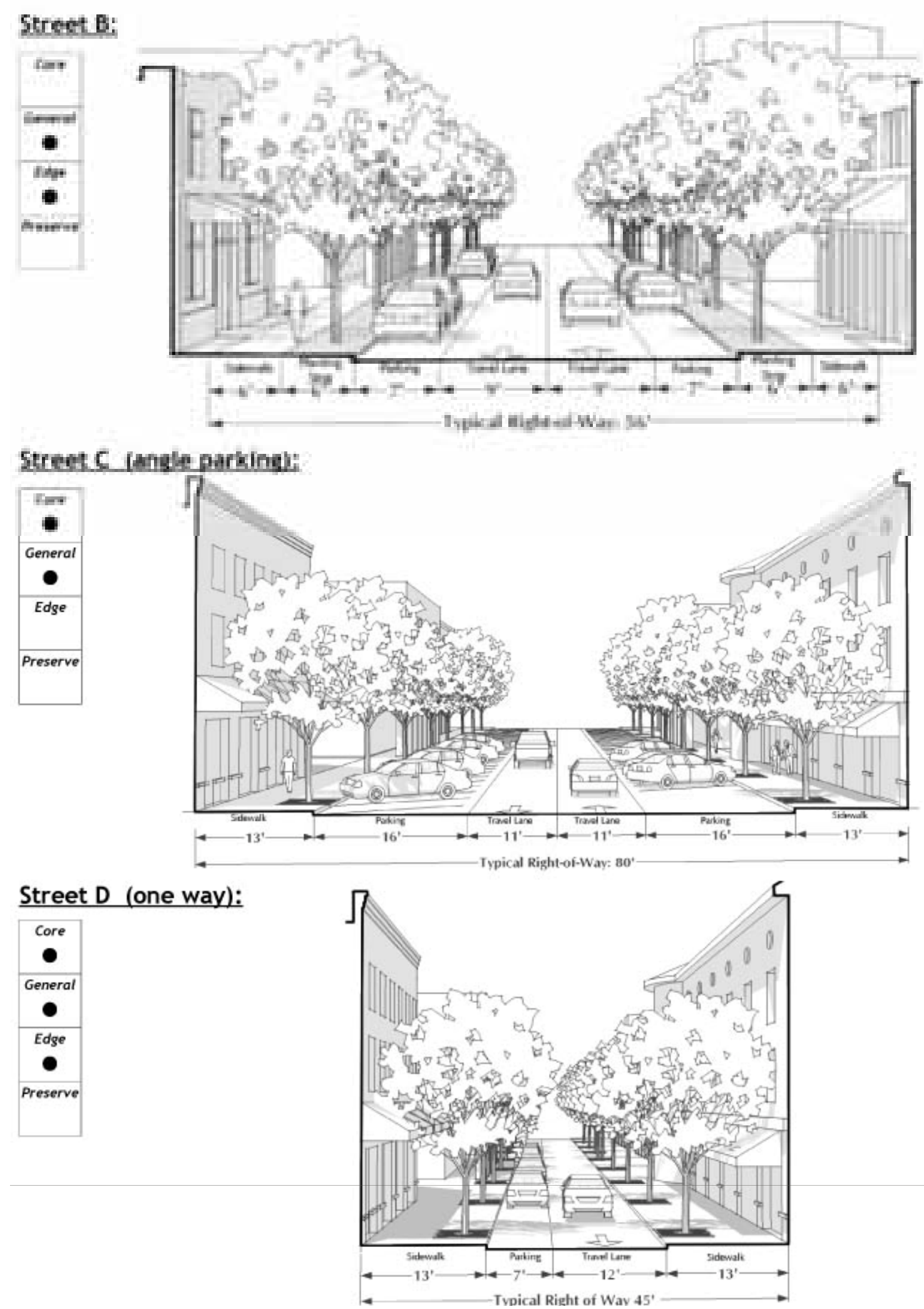


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Source: Santa Ana Renaissance, CA

# STREET TYPES

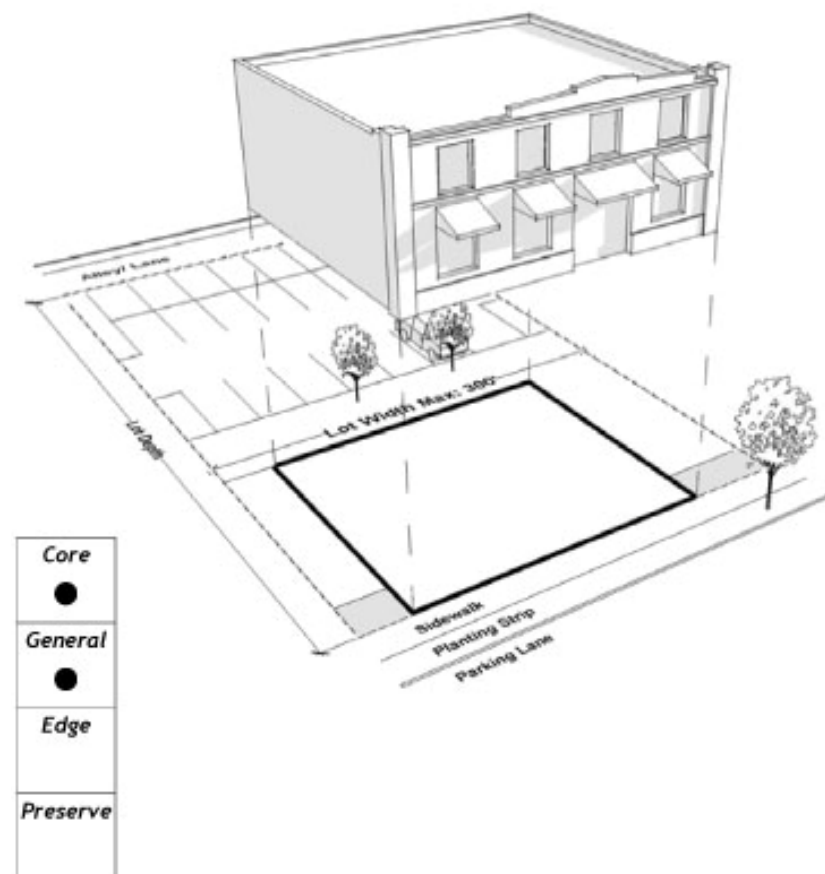


Source: Sarasota County FBC, FL, for Mixed-use Infill Development, by Kohl & Partners and Spikowski Planning Assoc.



# BUILDING TYPES

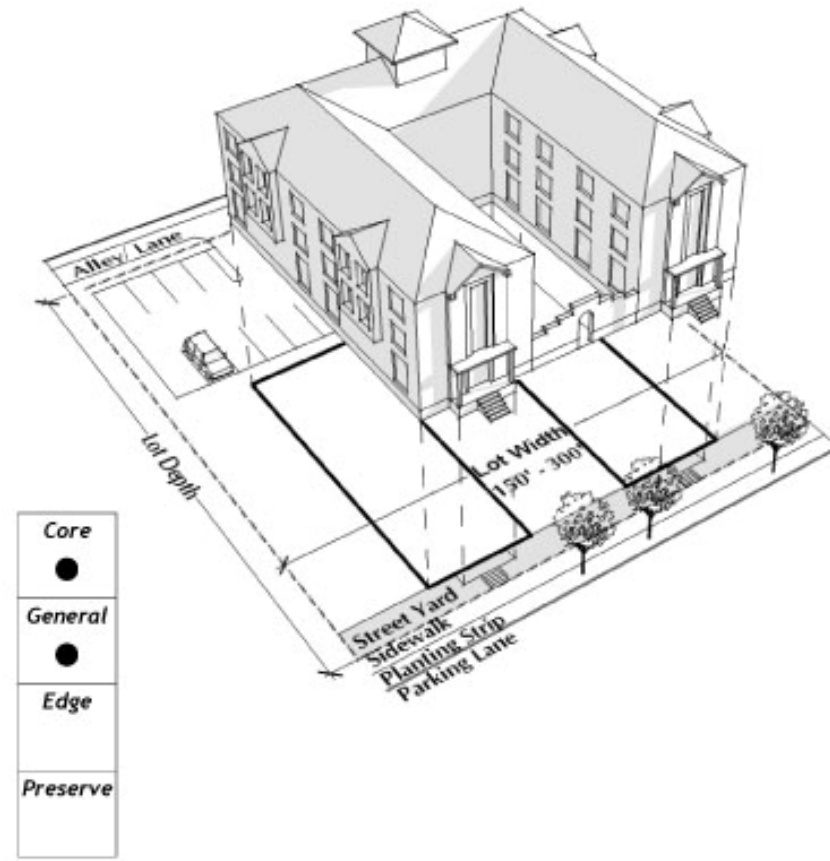
**Mixed-Use Building Lot (MU):**



**Character Examples:**



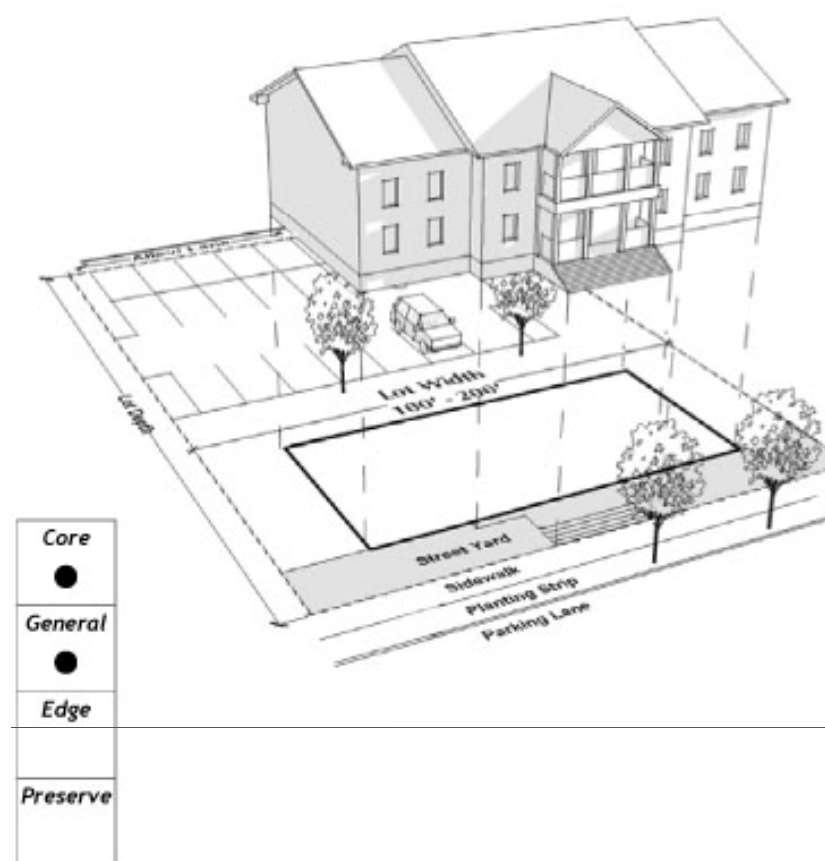
**Courtyard Building Lot (CO):**



**Character Examples:**



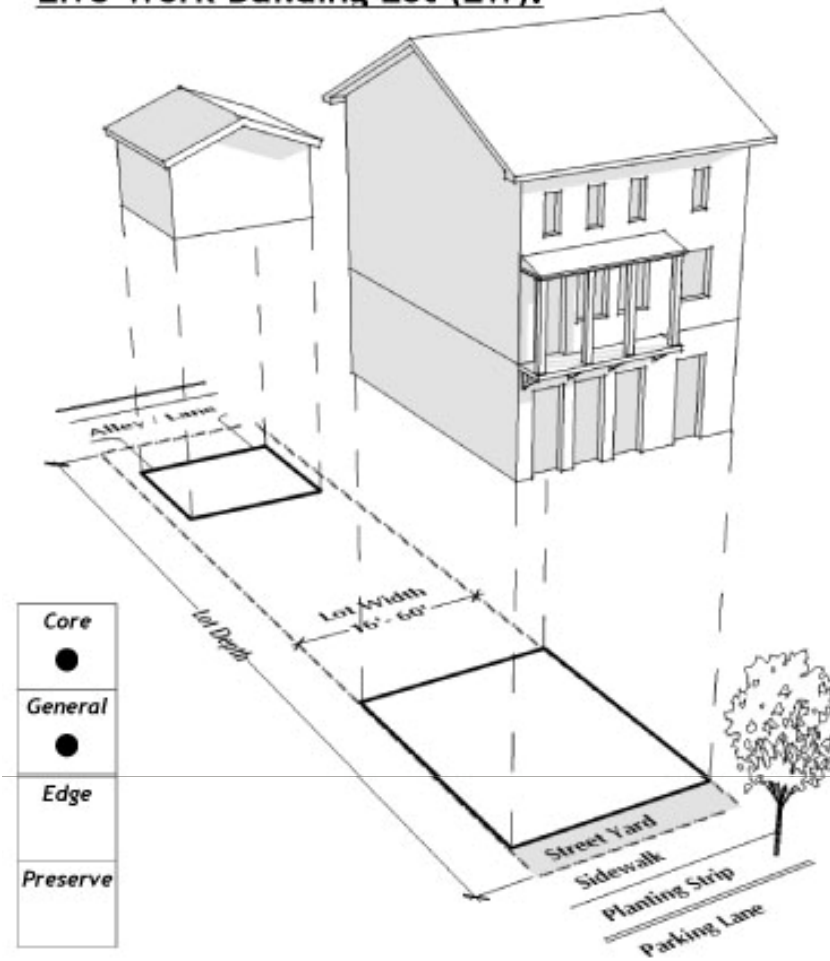
**Apartment Building Lot (AB):**



**Character Examples:**



**Live-Work Building Lot (LW):**



**Character Examples:**



Source: Sarasota County FBC, FL, for Mixed-use Infill Development, by Kohl & Partners and Spikowski Planning Assoc.



# DEVELOPMENT EXAMPLES USING FBC



Source: <http://www.formbasedcodes.org>



# DEVELOPMENT EXAMPLES



Source: <http://www.formbasedcodes.org>



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# POTENTIALS FOR FORM-BASED CODES

Urban Code Catalog

Diagnostics and goals

Community Education

Zoning Law Evaluation

Evaluation of Development Options

# POTENTIALS FOR FORM-BASED CODES

## Urban Code Catalog

Creation of a repository of all prominent urban forms in a structured manner.

Re-evaluation of zone definitions.

Evaluation of urban qualities (architectural and functional)

Input for parametric urban model

# POTENTIALS FOR FORM-BASED CODES

## Diagnostics and goals

Creation of a rule base and parametric typology patterns from the FBC repository.

Rule-based 3D city model for evaluation.

Evaluation of urban potentials for passive design.

Report on potentials for investment strategies.

Identifying architectural development goals to overcome shortcomings.

# POTENTIALS FOR FORM-BASED CODES

## Community Education

Visualization of abstract building and zoning laws.

Creation of a visual language for changes in building and zoning laws as well as empowering architectural qualities per definition.



# POTENTIALS FOR FORM-BASED CODES

## Zoning Law Evaluation

Creation of digital urban models.

Evaluation of sustainability criteria for urban growths.

# POTENTIALS FOR FORM-BASED CODES

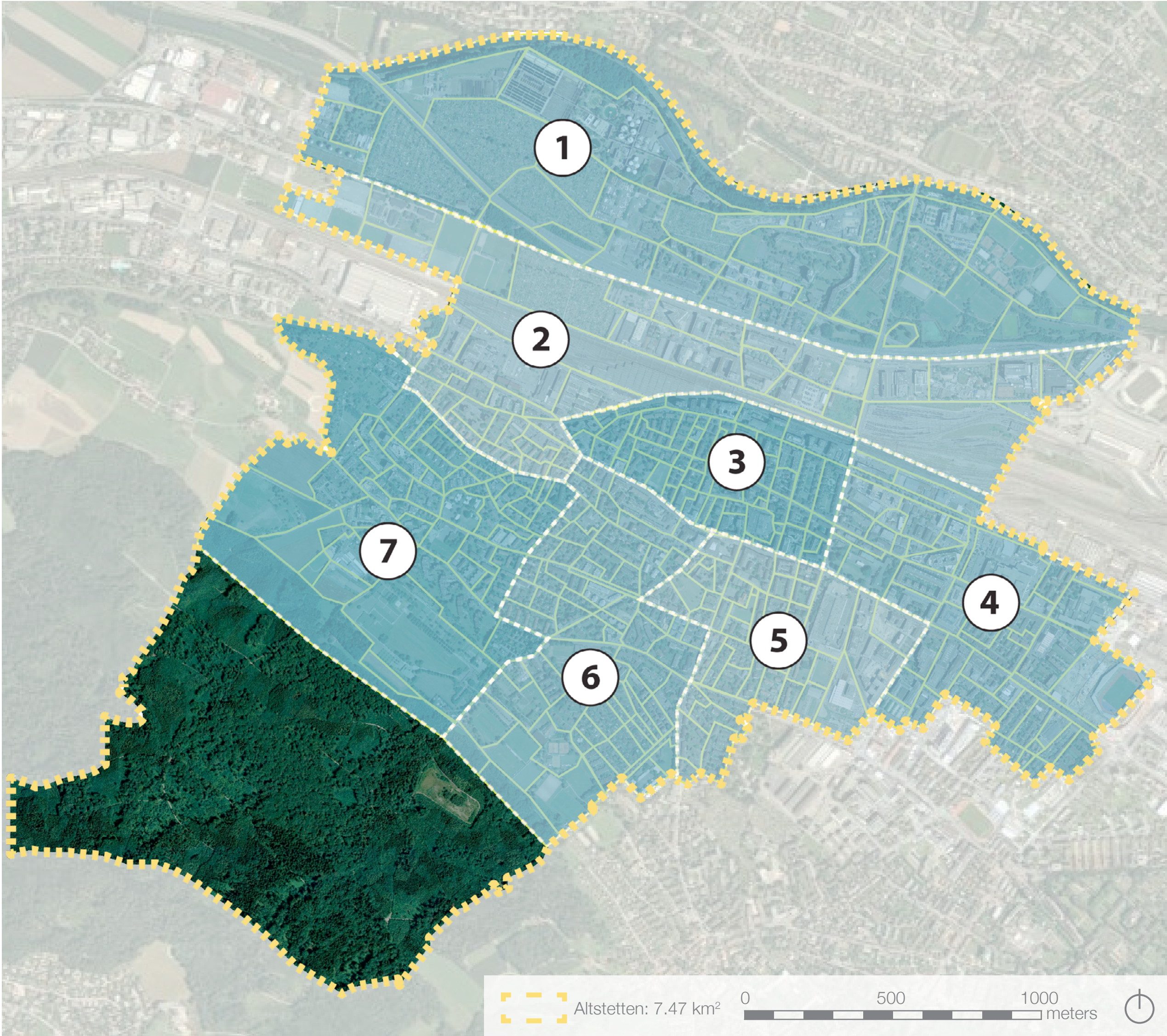
## Evaluation of Development Options

Design proposals and development proposals may be structured and may be better comparable.



# CASE STUDY AREA

## ZH ALTSTETTEN



area 1



area 2



area 3



area 4



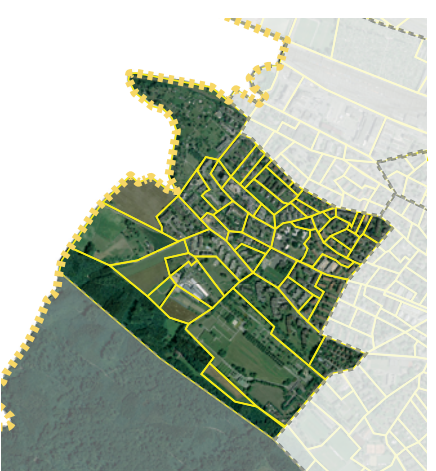
area 5



area 6



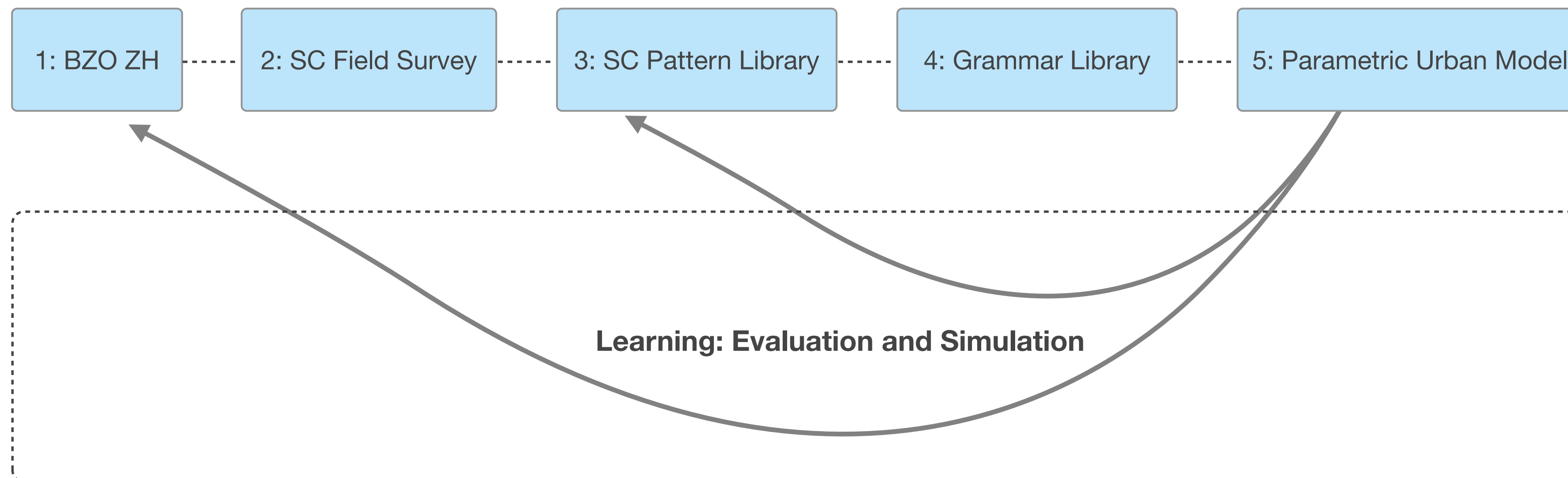
area 7





# SMART CODE TO 3D

Process for classification and  
3D modell derivation and regulation  
evaluation







THANK YOU!



