The Potential of Form-Based Codes to Create Walkable Urban Streets

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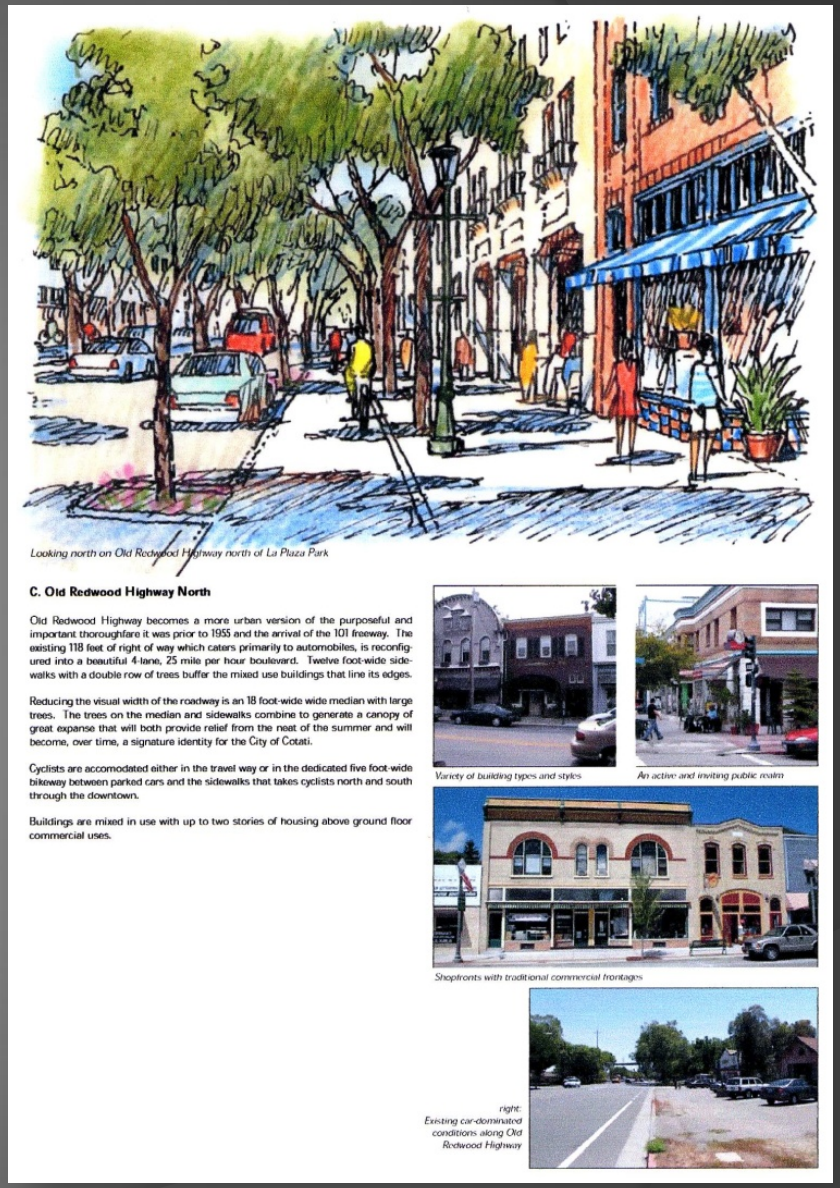
Form-based design codes are a new planning tool for communities to create livable, pedestrian-oriented urban environments. They are a land development regulation that fosters predictable results and a high-quality public realm by using physical form (rather than separation of uses) as its organising principle. A form-based code offers a powerful alternative to conventional zoning regulation.

FBCI- Form-Based Codes Institute
formbasedcodes.org
Library of codes
On-line courses



Looking north on Old Redwood Highway north of La Plaza Park

C. Old Redwood Highway North

Old Redwood Highway becomes a more urban version of the purposeful and important thoroughfare it was prior to 1955 and the arrival of the 101 freeway. The existing 118 feet of right of way which caters primarily to automobiles, is reconfigured into a beautiful 4-lane, 25 mile per hour boulevard. Twelve foot-wide sidewalks with a double row of trees buffer the mixed use buildings that line its edges.

Reducing the visual width of the roadway is an 18 foot-wide wide median with large trees. The trees on the median and sidewalks combine to generate a canopy of great expanse that will both provide relief from the neat of the summer and will become, over time, a signature identity for the City of Cotati.

Cyclists are accomodated either in the travel way or in the dedicated five foot-wide bikeway between parked cars and the sidewalks that takes cyclists north and south through the downtown.

Buildings are mixed in use with up to two stories of housing above ground floor commercial uses.

Variety of building types and styles

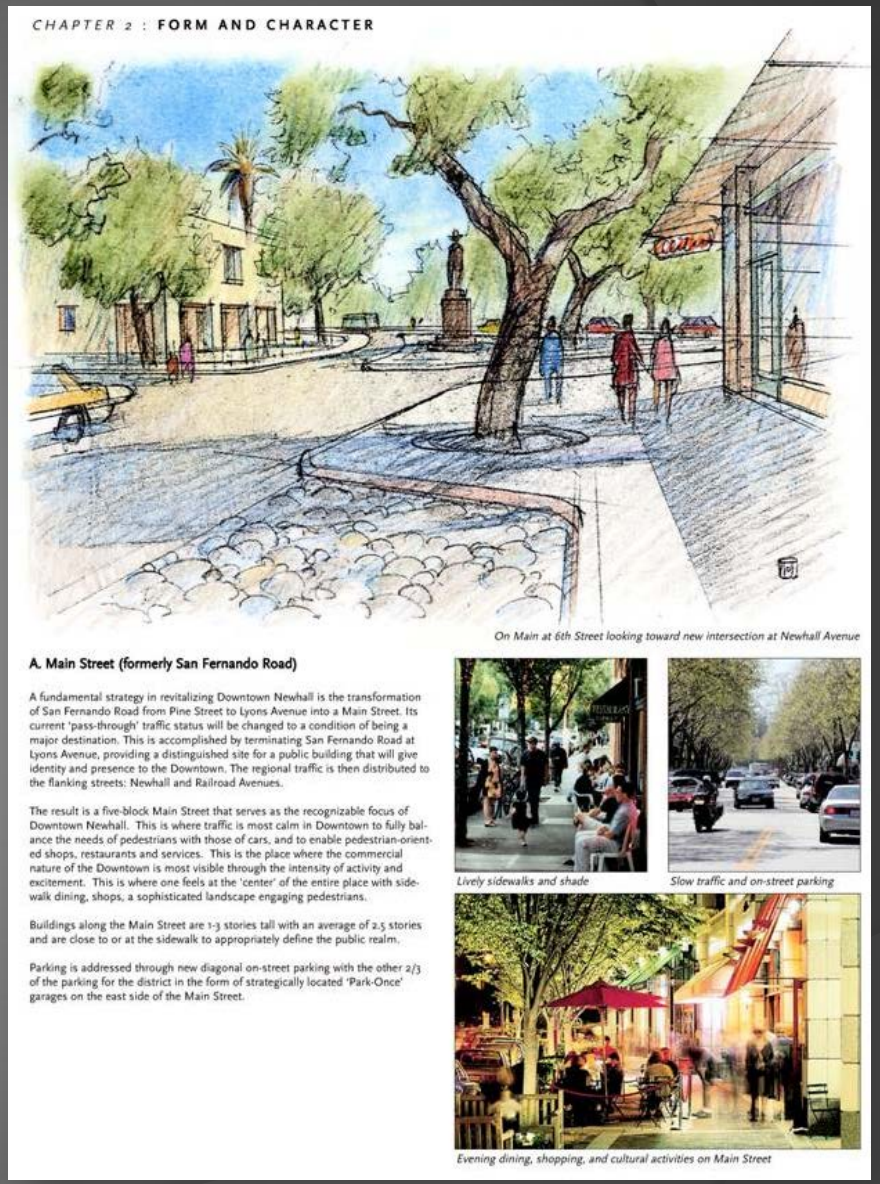
An active and inviting public realm

Shopfronts with traditional commercial frontages

right:
Existing car-dominated conditions along Old Redwood Highway

City of Cotati FBC

- FBC's promoted as a means to create walkable urban streets
- Regulate visual qualities and spatial dimensions of the street corridor



CHAPTER 2 : FORM AND CHARACTER

On Main at 6th Street looking toward new intersection at Newhall Avenue

A. Main Street (formerly San Fernando Road)

A fundamental strategy in revitalizing Downtown Newhall is the transformation of San Fernando Road from Pine Street to Lyons Avenue into a Main Street. Its current 'pass-through' traffic status will be changed to a condition of being a major destination. This is accomplished by terminating San Fernando Road at Lyons Avenue, providing a distinguished site for a public building that will give identity and presence to the Downtown. The regional traffic is then distributed to the flanking streets: Newhall and Railroad Avenues.

The result is a five-block Main Street that serves as the recognizable focus of Downtown Newhall. This is where traffic is most calm in Downtown to fully balance the needs of pedestrians with those of cars, and to enable pedestrian-oriented shops, restaurants and services. This is the place where the commercial nature of the Downtown is most visible through the intensity of activity and excitement. This is where one feels at the 'center' of the entire place with sidewalk dining, shops, a sophisticated landscape engaging pedestrians.

Buildings along the Main Street are 1-3 stories tall with an average of 2.5 stories and are close to or at the sidewalk to appropriately define the public realm.

Parking is addressed through new diagonal on-street parking with the other 2/3 of the parking for the district in the form of strategically located 'Park-Once' garages on the east side of the Main Street.

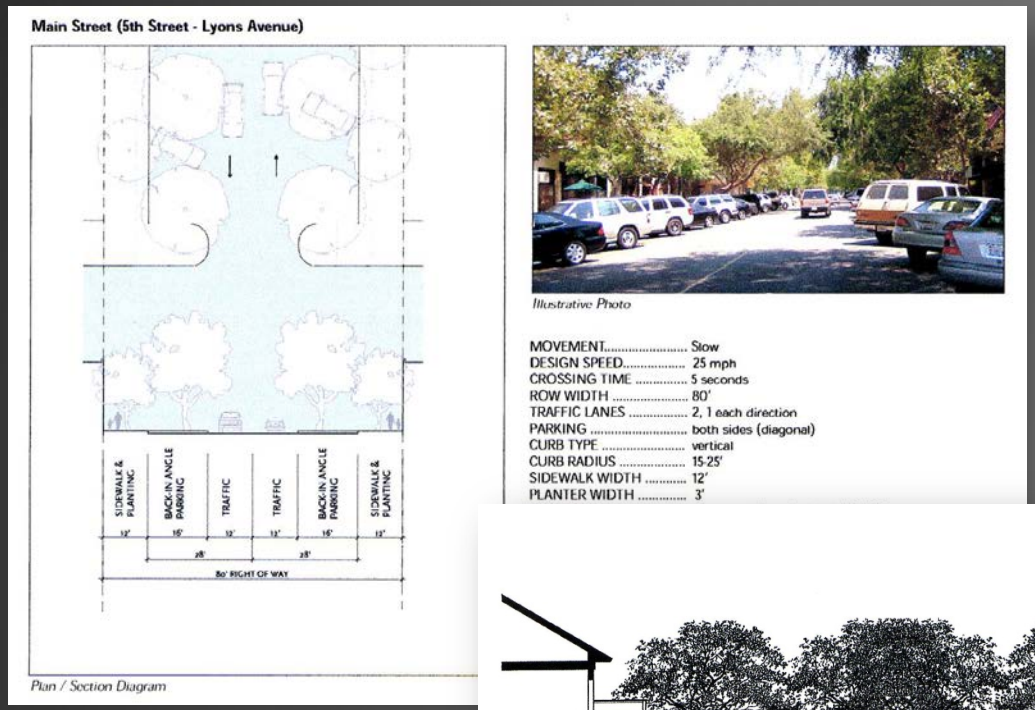
Lively sidewalks and shade

Slow traffic and on-street parking

Evening dining, shopping, and cultural activities on Main Street

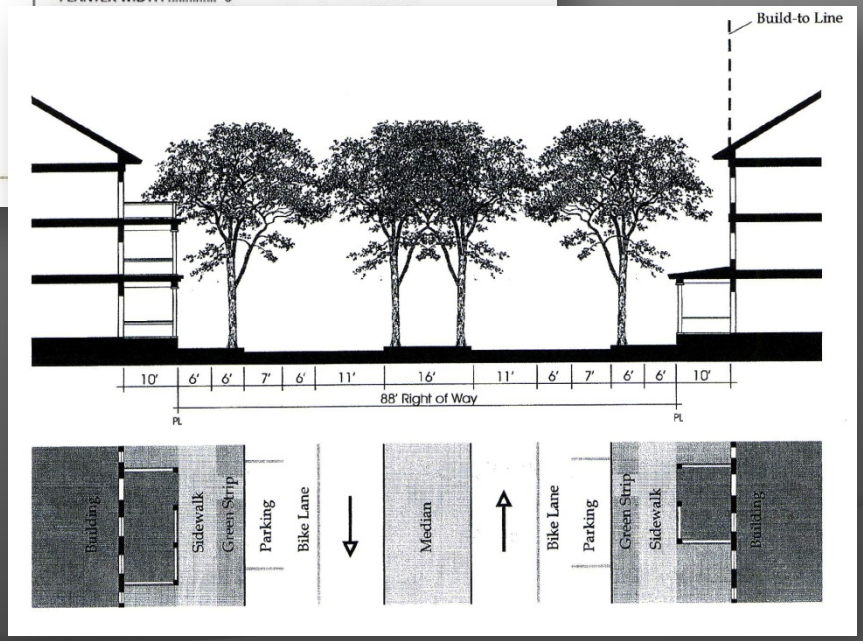
Moule & Polyzoides, FBC 201 July 2006

Public Space Standards

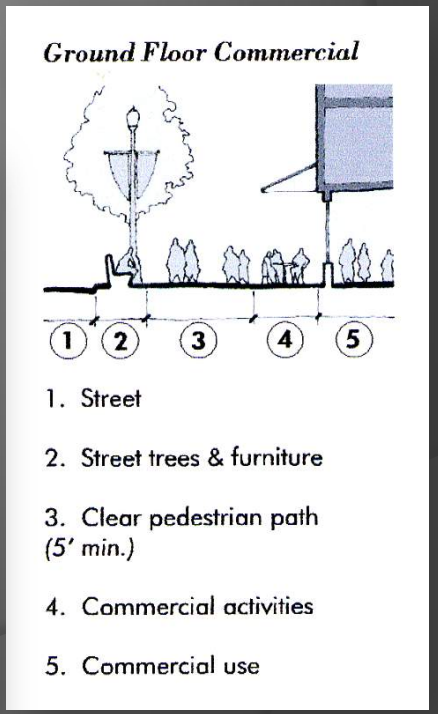


City of Santa Clara, CA FBC

Specifications for elements within the public realm (sidewalks, travel lanes, street trees, street furniture)



City of Pasadena, CA FBC



City of Hercules CA FBC

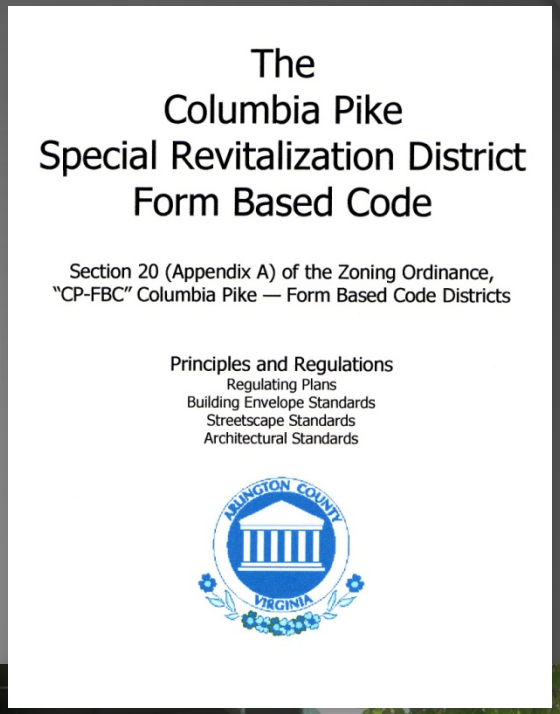
Urban Streets

- Design qualities important to walkability can be defined, measured and quantified
- FBC's regulate measurable and quantifiable features that can be illustrated

Moule & Polyzoides, FBC 201, July 2006

Investigation

- Survey of streets built using FBC's and survey of historic walkable streets
- Interviewed users of FBC streets and historic streets
- Reviewed content of 30 FBC's – recorded regulated features


The
Columbia Pike
Special Revitalization District
Form Based Code

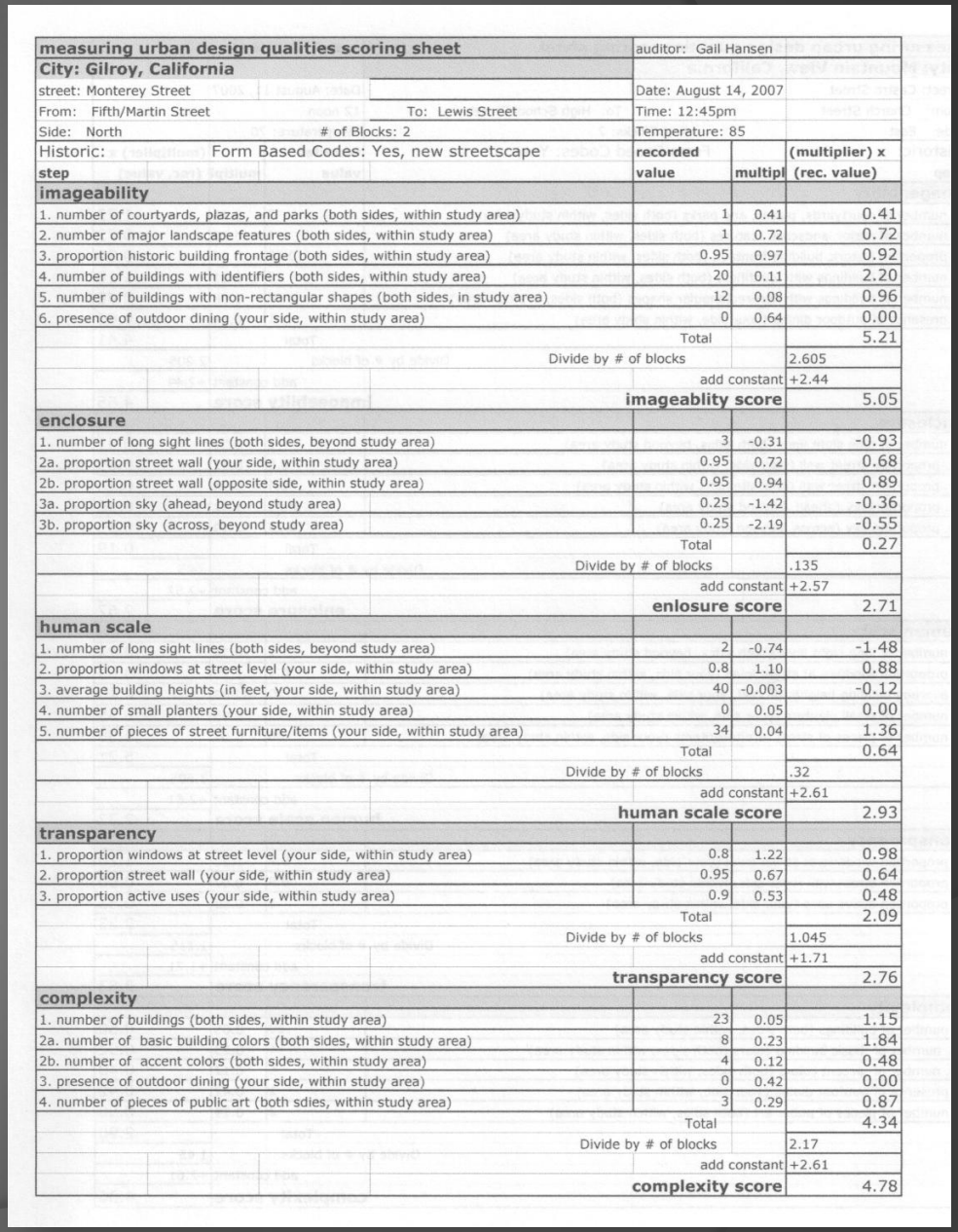
Section 20 (Appendix A) of the Zoning Ordinance,
"CP-FBC" Columbia Pike — Form Based Code Districts

Principles and Regulations
Regulating Plans
Building Envelope Standards
Streetscape Standards
Architectural Standards

ARLINGTON COUNTY VIRGINIA

Phase I Street Survey

- Audit instrument- developed by Reid Ewing for RWJ Foundation http://www.activelivingresearch.org
- Record street features
  - Street furniture
  - Pedestrian lights
  - Windows at street level
  - Outdoor dining
  - Public art pieces



measuring urban design qualities scoring sheet		auditor: Gail Hansen	
City: Gilroy, California			
street: Monterey Street		Date: August 14, 2007	
From: Fifth/Martin Street	To: Lewis Street	Time: 12:45pm	
Side: North	# of Blocks: 2	Temperature: 85	
Historic:	Form Based Codes: Yes, new streetscape	recorded	(multiplier) x
step		value	multipl (rec. value)
imageability			
1. number of courtyards, plazas, and parks (both sides, within study area)		1	0.41 0.41
2. number of major landscape features (both sides, within study area)		1	0.72 0.72
3. proportion historic building frontage (both sides, within study area)		0.95	0.97 0.92
4. number of buildings with identifiers (both sides, within study area)		20	0.11 2.20
5. number of buildings with non-rectangular shapes (both sides, in study area)		12	0.08 0.96
6. presence of outdoor dining (your side, within study area)		0	0.64 0.00
		Total	5.21
		Divide by # of blocks	2.605
		add constant	+2.44
		imageablity score	5.05
enclosure			
1. number of long sight lines (both sides, beyond study area)		3	-0.31 -0.93
2a. proportion street wall (your side, within study area)		0.95	0.72 0.68
2b. proportion street wall (opposite side, within study area)		0.95	0.94 0.89
3a. proportion sky (ahead, beyond study area)		0.25	-1.42 -0.36
3b. proportion sky (across, beyond study area)		0.25	-2.19 -0.55
		Total	0.27
		Divide by # of blocks	.135
		add constant	+2.57
		enlosure score	2.71
human scale			
1. number of long sight lines (both sides, beyond study area)		2	-0.74 -1.48
2. proportion windows at street level (your side, within study area)		0.8	1.10 0.88
3. average building heights (in feet, your side, within study area)		40	-0.003 -0.12
4. number of small planters (your side, within study area)		0	0.05 0.00
5. number of pieces of street furniture/items (your side, within study area)		34	0.04 1.36
		Total	0.64
		Divide by # of blocks	.32
		add constant	+2.61
		human scale score	2.93
transparency			
1. proportion windows at street level (your side, within study area)		0.8	1.22 0.98
2. proportion street wall (your side, within study area)		0.95	0.67 0.64
3. proportion active uses (your side, within study area)		0.9	0.53 0.48
		Total	2.09
		Divide by # of blocks	1.045
		add constant	+1.71
		transparency score	2.76
complexity			
1. number of buildings (both sides, within study area)		23	0.05 1.15
2a. number of basic building colors (both sides, within study area)		8	0.23 1.84
2b. number of accent colors (both sides, within study area)		4	0.12 0.48
3. presence of outdoor dining (your side, within study area)		0	0.42 0.00
4. number of pieces of public art (both sdies, within study area)		3	0.29 0.87
		Total	4.34
		Divide by # of blocks	2.17
		add constant	+2.61
		complexity score	4.78

Urban Design Qualities

Identifying and Measuring Urban Design Qualities Related to Walkability, Final Report

Measuring Urban Design Qualities: An Illustrated Field Manual

UDQ Models- Enclosure, Human Scale, Transparency, Complexity, Imageability

Enclosure

Elements that visually define the street- outdoor room

- Sight lines
- Street walls
- Awnings, overheads
- Street trees
- Sidewalk and street width

Human Scale

Matching the proportions and size of humans

- Windows and façade details
- Building heights
- Street furniture
- Planters

Transparency

Ability to see beyond edge of street

- Windows and doors in street walls
- Activity inside buildings
- Mid-block passages

Complexity

Visual variety in the environment

- Number of distinct buildings
- Different building colors
- Variety of elements
- Public art

Imageability

Memorable theme

- Courtyards, plazas, parks
- Landscape, outdoor dining
- Historic building façade, non-rectangular shape

Street Audit- Results

- FBC streets had similar urban design qualities and features as the historic walkable streets

UDQ Model	Historic Streets	FBC Streets
Imageability	5.23	5.03
Complexity	4.37	4.50
Human Scale	4.26	4.13
Enclosure	3.05	2.89
Transparency	2.76	2.86

Interview and Code Review

UDQ Models Street Audit	UDQ Models Interview	Features	UDQ Models Codes	Features
Imageability	Imageability	73%	Transparency	72%
Complexity	Complexity	65%	Enclosure	66%
Human Scale	Human Scale	60%	Human Scale	43%
Enclosure	Transparency	57%	Complexity	38%
Transparency	Enclosure	47%	Imageability	38%

Code Review

- Was the presence of the features the result of the codes?

Building height
% windows in façade
Visible sets of doors
Street lights
Signage
Historic buildings
Street art
Outdoor dining
Awnings, overhangs
Sidewalk width
Street trees
Street furniture
Building materials

Conclusion

- FBC's have the potential to create walkable streets- if they regulate certain features

Codes should:

- Regulate a high total number of features
- Regulate frequency of the features in a set distance (one to three blocks)
- Regulate a high number of features linked to the UDQ models

Codes should:

- Regulate most features linked to imageability, complexity, and human scale
- Most prescriptive with building materials and colors, the façade, street furniture, and spatial dimensions of the street

Codes should:

- Narratives to describe desired experience of users
- Narratives to describe rationale for a coded feature

Thank You
Questions?

Design Codes for Healthy Communities: The Potential of Form-Based Codes to Create Walkable Urban Streets (Dissertation)

Hansen, G. 2014. Design for Healthy Communities: The Potential of Form-Based codes to Create Walkable Urban Streets. Journal of Urban Design. 19:2, 151-170
https//doi.org/10.1080/13574809.2013.8070466

Identifying and Measuring Urban Design Qualities Related to Walkability, Final Report 2006
Reid Ewing, Susan Handy, Ross Brownson, Otto Clemente, and Emily Winston
http://www.activelivingresearch.org/node/10636

Measuring Urban Design Qualities: An Illustrated Field Manual
Clemente, Ewing, Handy, Brownson, & Winston
http://www.activelivingresearch.org/node/10635

Walkable Communities, Inc.
http://walkable.org