TND Design Rating Standards

Version 2.2

> "Theories are to be distrusted and continually tested against whether or not they lead to generally desired outcomes."
>
> -John Ray (paraphrasing Edmund Burke)

A simple, sensible neighborhood evaluation system can be useful in several ways. It can recognize the accomplishments of talented designers, planners and real estate developers. It can be a teaching tool, illustrating the ways neighborhood developments can be improved. And it's a way to communicate good urban design principles, by supplementing guidebooks, case studies and checklists, and providing a more objective definition of new urbanism.

There are numerous evaluation systems in use or under development. Even so, there's a need for a simple system that non-experts, with no specialized tools, can use with commonly available information. Invariably, a simplified system will miss things that some people consider critical. The advantage is greater participation and awareness of the quality of the built environment.

The opening quote represents a double-edged sword. Urban design principles are based on the hypothesis that certain physical patterns support high-quality urban environments. That hypothesis should be tested, and a rating system can help to do so. At the same time, every rating system is based on abstractions and generalizations. Rating systems should be held accountable by asking: are they truly identifying the urban design forms and patterns that contribute to beneficial outcomes?

About the ratings: The first five standards are more objective in nature, with mathematical methods determining scores, while the last four standards involve more subjective methods. A goal of this rating system, however, is to increase the level of objectivity at every reasonable opportunity. All ratings are on a scale of 1 to 5 stars. In general, 5 stars is equivalent to a well-designed, early twentieth-century, urban neighborhood in the United States.

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Ratings Key

Five Stars: Excellent
Four Stars: Good
Three Stars: Acceptable
Two Stars: Fair
One Star: Poor

Alternative Ratings Key

Five Stars: Laudable
Four Stars: Respectable
Three Stars: Acceptable
Two Stars: Regrettable
One Star: Deplorable

–Laurence Aurbach, September 2005

Prerequisites

Inclusiveness

Gated developments should not be considered TNDs and are automatically disqualified from consideration. Developments in which all housing is unavailable to the full public, such as entirely age- or organization-restricted developments, are also disqualified.

Size

• Neighborhood scale development

A minimum of 15 acres (6 hectares) is required for a development to be evaluated by the full standards in this guidebook.

• Block scale development

Developments that are smaller than 15 acres but larger than 2 blocks and 40 dwellings can be evaluated with the following standards: Streetscape, location, proximity and architectural aesthetics. The connectivity, external connectivity and civic space standards may or may not apply. Uses must contain a mix of housing and other uses, but the full mixed-use standard may not apply. Housing should add to the housing choice available in the larger (up to 200 acre/81 hectare) neighborhood, but the full housing choice standard may not apply.

• Lot scale development

Developments that are smaller than 2 blocks and 40 dwellings can affect neighborhood character, but in most cases will not affect neighborhood structure. Developments at this scale can be evaluated with the following standards: Streetscape (frontages only), location, proximity and architectural aesthetics. Other standards may or may not apply.

The author gratefully thanks the people who have reviewed sections of this guidebook and generously contributed suggestions for improvement.

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Time

Planners, designers and historians can be deeply involved with analyzing initial, pre-construction site plans. However, people are generally concerned with what has already been built, because that is what is more obviously affecting their quality of life. Neighborhood ratings are like restaurant ratings: Everyone knows a restaurant rating from five years ago isn't worth much. What happens when the chef leaves, when the ownership changes, when a new menu is adopted? A neighborhood in its beginning years changes nearly as often, and frequent updates to its rating are appropriate. Therefore, start off by rating the initial site plan, and then make updates whenever sufficient change has occurred to warrant an update. Ratings are based on a snapshot in time, and there are definite pitfalls in thinking of them as final, enduring pronouncements.

The need for frequent updates is another reason that the ratings process should be as simple, quick and low-cost as possible.

What is a TND?

The acronym TND stands for Traditional Neighborhood Development, a comprehensive planning system that includes a variety of housing types and land uses in a defined area. The variety of uses permits educational facilities, civic buildings and commercial establishments to be located within walking distance of private homes. A TND is served by a network of paths, streets and lanes suitable for pedestrians as well as vehicles. This provides residents the option of walking, biking or driving to places within their neighborhood. Present and future modes of transit are also considered during the planning stages.

Public and private spaces have equal importance, creating a balanced community that serves a wide range of home and business owners. The inclusion of civic buildings and civic space – in the form of plazas, greens, parks and squares – enhances community identity and value.

Housing Choice

Definition

Housing diversity refers to a variety of housing that serves different market segments or socio-economic categories. This standard measures the probability that any two dwellings will be different in type and/or size.[1]

An **accessory unit** is a suite that functions as an independent dwelling and is in a secondary building sharing a lot with the primary building. A **multifamily dwelling** is in a building that accommodates multiple dwellings above and beside each other, sharing common entrances.

Method

Count the number of dwellings in each category:

	Less than 1,200 sq ft	1,200 to 2,600 sq ft	More than 2,600 sq ft
Detached residential			
Duplex or townhouse			
Multifamily dwelling in building with no elevator			
Multifamily dwelling in building with elevator			
Live/work			
Accessory Unit			
Subtotal (add up each column)			
Total (add up subtotals)			

If the square footage of housing is not available, it may be possible to estimate the size of dwellings using the following rules of thumb:

- Less than 1,200 sq ft = suitable for 1–2 inhabitants
- 1,200–2,600 sq ft = suitable for 3–5 inhabitants
- More than 2,600 sq ft = suitable for 6+ inhabitants

Apply the Simpson Diversity Index to the totals.

The final result represents the probability that two dwellings randomly selected will be in different categories. The formula is:

$$1 - \Sigma (n/N)^2$$

- n = the total number of dwellings in a particular category
- N = the total number of dwellings in all categories

See the case study on the next page.

Scoring

Five stars: 0.7 to 1
Four stars: 0.5 to 0.7
Three stars: 0.3 to 0.5
Two stars: 0.1 to 0.3
One star: 0 to 0.1

If two categories together account for more than 85% of dwellings, the maximum allowable score is three stars, "acceptable."

Discussion

A diverse range of housing can allow members of an extended family to live in the same neighborhood. It can provide housing for those who work in the neighborhood, in fields like teaching, emergency response, and services. When neighborhoods serve a variety of ages and incomes, they are not dominated by a single cohort that ages in place, and therefore they are more resistant to cycles of abandonment and decline. Diverse housing has demonstrated success breaking up unhealthy concentrations of poverty.[2]

The main reason for housing diversity is to serve a variety of incomes and family types in one neighborhood. An additional, perhaps minor reason, is an aesthetic preference for a variety of housing types in place of housing monocultures.

There are three factors that will maximize the variety of incomes and family types: price, size and type. Price is left out of this rating system: Price data is difficult to obtain, is always changing due to market conditions, and affordability is to a large degree dependent on government policy.

Housing Choice

That leaves size and type, the two axes of the classification grid on the previous page. Building size is straightforward and related to household size.

The type classifications are the minimum number that still group significant sociological function. For example, consider two detached residential types: a sideyard house and a courtyard house. Do a sideyard house and a courtyard house of equal square footage serve significantly different socio-economic markets? If not, then it is valid to group together those types.

Accessory units are treated as a separate category. That is done primarily for urban design reasons, rather than sociological reasons. That is, the impact of accessory units on the function and aesthetics of a neighborhood's urbanism is strong. But from a sociological viewpoint, the residents of accessory dwellings will be similar to the residents of nearby apartment/condos (assuming they exist).

Apartment units that are contained within single family houses are classified in the apartment/condo category. The existence of such units is one of the justifications for the elevator/no elevator distinction.

Statistics about the type and size of housing stock may prove to be difficult to obtain, particularly in older neighborhoods. Of all the standards in this rating system, housing diversity will likely be the most difficult to research.

Case Study

Kentlands in Gaithersburg, Md., was designed in 1988 and is now almost completely built out. In addition, a department store was recently demolished and redeveloped as a condominium complex, leading to significant increases in population.

Information in this case was conveniently provided by the town architect and by online sales websites.[1]

Kentlands housing types -- rough estimates:

1. Detached residential (2,600+ sq ft) 238
2. Detached residential (1,200–2,600 sq ft) 239
3. Townhouses 378
4. Apartments/condominiums w/ elevator 513
5. Apartments/condominiums w/o elevator 909
6. Live-works 45
7. Accessory units 36

Total 2,373

We have broken down the detached housing category by size. We could go further and break down the other categories by size; however, in this case doing so will not increase the number of stars awarded. That is because many categories are well-represented. The housing choice in Kentlands will get the maximum rating without any further breakdown.

Type and square footage figures can be difficult to obtain and rough estimates may be the best that are possible in many cases.

Calculation

The total number of dwellings is 2,373. The formula is: (number in category ÷ total number of dwellings)^2, repeat and add for each category, then subtract the final sum from 1.

1. $(238 \div 2{,}373)^2 = .01$
2. Add to $(239 \div 2{,}373)^2 = 0.02$
3. Add to $(378 \div 2{,}373)^2 = 0.046$
4. Add to $(513 \div 2{,}373)^2 = 0.092$
5. Add to $(909 \div 2{,}373)^2 = 0.239$
6. Add to $(45 \div 2{,}373)^2 = 0.2394$
7. Add to $(36 \div 2{,}373)^2 = 0.2396$

Final calculation: 1 - 0.2396 = 0.76 = five stars. If two dwellings are selected at random, there is a 76% chance or better they will be in different categories.

Notes

1. Other sources may include the developer, the property owner/manager, local building permit, planning and tax assessor's offices, homeowner's association, LEXIS/NEXIS, project profiles made by the APA, ULI, CNU, New Urban News, Town Paper Publications, New Urban Living, and other media.

2. While the Simpson Diversity Index is most commonly used by ecologists to measure species diversity, it is occasionally used by city planners to evaluate housing diversity. Richard Milk, senior planner for the City of San Antonio, personal email communication, Jan. 29, 2004.

3. Bothwell, Stephanie E., Raymond Gindroz and Robert E. Lang, "Restoring Community through Traditional Neighborhood Design: A Case Study of Diggs Town Public Housing," *Housing Policy Debate*, Volume 9, Issue 1, 1998. Zielenbach, Sean, "Assessing Economic Change in HOPE VI Neighborhoods," *Housing Policy Debate*,Volume 14 Issue 4, 2003.

Mixed Use (Non-residential)

Definition

Mixed use means that a variety of commercial, civic, institutional, and personal activities take place within close proximity. Uses may be mixed horizontally, which means they sit side by side, or they may be mixed vertically, which means they occupy different floors of the same building. A mix of land uses is a key aspect of a walkable community, for if people are going to walk there must be destinations to walk to. A fine-grained mix of uses – where no single use monopolizes a large area – "provides the greatest accessibility of daily activities to the greatest number of people."[1]

Method

Count how many nonresidential categories are on the property (out of the 13 listed).

Categories that are off the property are included also, provided

a) they are within 1/2 mile of the majority of residential lots, and

b) they are accessible by pedestrian oriented routes, without having to battle highway-size streets and freeway-speed traffic.

- Everyday retail (Store types: convenience, general, grocery, pharmacy, hardware; gas and laundry)
- Discretionary retail (restaurants, department stores, specialty shops)
- Entertainment (movies, theaters, concert halls, music and performance venues)
- Educational facilities (schools, college, university)
- Private clubs (not open to the public) and their associated recreational facilities
- Religious, including cemeteries
- Government services (city hall, court, jail, police station, fire station, post office, motor vehicle administration)
- Other civic buildings (library, museum, community center, transportation stations/terminals)
- Offices (not counting home-based, small, personal offices)
- Lodging
- Medical (hospital, clinic, private offices)
- Public recreational facilities: playing courts, sports fields, extensive trail networks (multi-mile/multi-kilometer), public gardens
- Light industrial (including auto repair), warehouses, nurseries

Scoring (number of categories present)

Five stars: 7 or more
Four stars: 5-6
Three stars: 4
Two stars: 3
One star: 2 or less

Discussion

The categorization of uses is oriented to the experience of the residents and customers rather than developers and financiers. For instance, a large medical clinic and a small hospital are similar in terms of services provided and effect on neighborhood character (with the possible exception of ambulances).

Also, the list of uses is limited in order to maintain the simplicity of this rating system. The U.S. Census lists hundreds of developed land uses, but that is not workable for a rating system that maximizes ease of use. The goal is to sort the uses into the smallest number of categories that will still retain meaningful distinctions.

Notes

1. Moule, Elizabeth, "Principle Sixteen," *Charter of the New Urbanism*, 2000, p. 105

Connectivity

Definition

Connectivity refers to the efficiency of travel. The connectivity standard aims to determine how direct are the travel routes within a development, and how many options there are for traveling between any two points.

The "thoroughfare network" includes all routes that are designed to accommodate a mix of travel modes, including motor vehicles, bicycles and pedestrians. The facilities may include boulevards and avenues, streets, alleys and lanes.

Method[1]

Connectivity is represented by the density of intersections per unit of area.

1. Obtain a copy of the site plan with a bar scale. (A bar scale is a line that is labeled to represent a stated distance.) On a piece of tracing paper, outline the property boundary or study area boundary.

2. Determine the undeveloped area as follows. Outline the large water bodies. Outline the large land areas designated for permanent preservation in a natural state. "Large" is defined as not less than five acres (2 ha.) and not less than 200 feet (61 m) wide.

3. Use the bar scale to create a grid of scaled acres on the tracing paper: 209' x 209' squares (or a grid of scaled hectares: 100 meter x 100 meter squares). Count the number of grid squares that cover the property **minus the undeveloped area**. Include fractions of grid squares.

4. Divide the number of acres by 640 to convert the area to square miles. If you are using hectares, divide the number of hectares by 1,000 to convert the area to square kilometers.

5. Count the number of intersections and cul-de-sacs in the motor vehicle thoroughfare network. Intersections and dead ends that are outside the property boundaries (or study area boundaries) are not counted. Intersections that are on the property boundary are counted only if they connect to someplace inside the property.

Each traffic circle, roundabout, square, plaza, etc., is counted as one intersection unless it is more than one acre (0.4 hectare) in size.

Some parking lots are configured as blocks, with code-compliant thoroughfares that connect to the surrounding street network. In those cases, count all the intersections in the parking lot.

Parking areas that surround apartment complexes, office complexes, etc., are considered to be driveways. They should not be counted unless they are part of the public access thoroughfare network and connect to multiple lots.

6. Calculate the intersection density as follows:

$$\frac{\text{(Intersections - Dead ends)}}{\text{Developed area}}$$

Handling stub-ends: In some cases, the designer or developer will provide stub-end streets that are dead ends, but have the potential to connect to streets on adjoining parcels. The connections may be made when political conditions improve, or when adjoining parcels are developed. In these cases, a stub-end should not be counted as a dead end, and should not be subtracted from number of intersections.

Scoring

Intersections per square mile (or intersections per square kilometer)

Five stars: More than 330 (more than 127)
Four stars: 290 – 330 (112 – 127)
Three stars: 250 – 290 (97 – 112)
Two stars: 80 – 250 (31 – 97)
One star: Less than 80 (less than 31)

Discussion

The density of intersections measure is primarily used by planning and transportation researchers analyzing the connectivity of street networks.[2] To date, it has not been used by local jurisdictions.[3]

Connectivity for motor vehicles is important because without it, vehicles are funneled onto collector roads and arterials. These usually become high-speed automobile facilities that are dangerous and unpleasant for pedestrians. They also separate neighborhoods into isolated pods and decrease the number of

route choices for drivers, thus creating more traffic bottlenecks and congestion.[4]

Dead-ends tend to be more difficult to serve with services needing continuous through routes, such as school bus, transit, delivery truck, postal, utility service routes and policing rounds. They can make navigation more difficult for emergency, fire, and ambulance services, as well as visitors. Well-connected thoroughfares allow faster, more efficient emergency vehicle response.[5]

The benefits of connectivity have been recognized by numerous planners, commentators, and officials. Jane Jabobs wrote that connected street networks benefit neighborhood commerce, sociability, safety, and aesthetic variety.[6] Research suggests that spaces with a combination of highly-visible frontages and through traffic on well-connected networks have fewer crimes than comparable cul-de-sac neighborhoods.[7] The Institute of Transportation Engineers guidelines state that connectivity supports public health, safety and welfare by ensuring that streets function in an interdependent manner, provide adequate access for emergency and service vehicles, enhance non-vehicular travel such as pedestrians and bicycles, and provide continuous and comprehensible traffic routes.[8]

The special treatment for stub-ends with future connection potential is made in order to avoid penalizing those desirable features.

Blocks

The density of intersections is also related to the size of blocks. When blocks are smaller, the route to any given destination can be more direct and destinations are therefore more accessible.

Smaller blocks also provide a greater choice of routes to destinations, increasing the variety of pedestrian experiences and the available range of spontaneous social contacts. The increased variety can in turn increase subjective psychological interest and pleasure in travel, and decrease the boredom and disinterest that results from repetition. Larger blocks reduce the number of alternate routes in an area and create disincentives to pedestrian activity.

The opposite extreme of very small blocks limits the possibilities for alleys and lanes, off-street parking, rear yard space and rear yard accessory units. In general, block sizes within a certain range are most desirable. In car-free or car-restricted areas, the smallest block sizes are more viable.

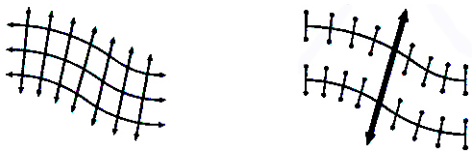
When appropriately sized, small blocks allow more flexibility as a neighborhood matures through its natural stages of growth.[9] The small-block pattern allows neighborhood land uses to more readily adapt to changing economic conditions, thereby retaining economic viability instead of declining into obsolescence.

The standard for parking lots configured as blocks is intended to encourage patterns that allow incremental development to occur with maximum efficiency.

Flaws

The "density of intersections" measure is useful, but investigators should be aware that it is a crude proxy with pronounced flaws. One flaw is that it does not relate well to an intuitive understanding of street networks.[10]

A more severe disadvantage is that it fails to account for pods and bottlenecks in the street network. As a general guideline, the desirable thoroughfare pattern resembles a web (Figure 1a) while less desirable patterns are hierarchical (resembling a plant with a stem and smaller branches), forcing most



a) Web pattern b) Stem pattern

Figure 1: Connected web pattern versus heirarchical stem pattern. Source: Lexicon of the New Urbanism, Duany Plater-Zyberk & Co.

trips to travel on a major thoroughfare (Figure 1b). A pattern with pods and bottlenecks superficially resembles a) but functions like b) (Figure 2). If the thoroughfare network under investigation has a high density of intersections set in a pattern of pods and bottlenecks, the investigator may reduce the score in proportion to the lack of overall connectivity.

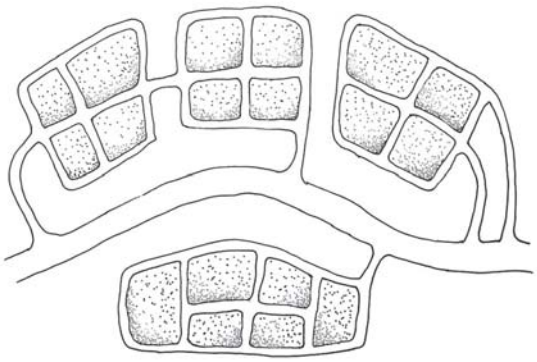


Figure 2: Pods and bottlenecks. The network has a high density of intersections but low overall connectivity. Diagram: Laurence Aurbach

To rely on the density-of-intersections measure exclusively is to risk unintended consequences. Computerized analysis can provide more accurate and objective measures of connectivity.[11]

Notes

1. If you are familiar with GIS, you may import or digitize the street network into a line layer (theme or coverage) and the neighborhood boundary as a polygon layer. Intersect the two, and use the software's database to calculate the number of network intersections per unit of area.

2. Jacobs, Allan B., *Great Streets*, 1993. Cervero, Robert and K. Kockelman, "Travel Demand and the 3Ds: Density, Diversity, and Design," T*ransportation Research D*, 2, 1997, pp. 199-219. Dill, Jennifer, "Measuring Network Connectivity for Bicycling and Walking," *TRB 2004 Annual Meeting CD-ROM*, 2004. Schlossberg, Marc, et. al., "Using Spatial Indicators for Pre- and Post-Development Analysis of TOD Areas: A Case Study of Portland and the Silicon Valley," Mineta Transportation Institute, Report No. MTI 03-03, 2004.

3. Handy, Susan, Robert G. Paterson and Kent Butler, *Planning for Street Connectivity: Getting from Here to There.* APA Planning Advisory Service Report No. 515, 2003, p. 23, 68.

4. Ibid, pp. 14-16.

5. Ibid, pp. 17, 56-58; West, Jim and Allen Lowe, "Integration of Transportation and Land Use Planning through Residential Street Design," *ITE Journal 67*, 1997, p. 50.

6. Jacobs, Jane, *The Death and Life of Great American Cities,* 1961.

7. See Hillier, Bill, "Do Burglars Understand Defensible Space? New evidence on the relation between crime and space" <http://tinyurl.com/4svrb>. The original research on which that essay is based is Shu, Simon C.F., and Jason N.H. Huang, "Spatial configuration and vulnerability of residential burglary: A case study of a city in Taiwan" in P*roceedings, 4th International Space Syntax Symposium*, London 2003. Accessed from <http://www.spacesyntax.net/symposia/SSS4/fullpapers/46Shu-Huangpaper.pdf>

Space Syntax has posted a summary of its housing layout/crime research (accessed from <http://tinyurl.com/69xca>). This includes Shu and Hillier, "Crime and Urban Layout: the need for evidence" published in *Secure foundations: Key issues in crime prevention, crime reduction and community safety* by V. MacLaren, S. Ballintyne and K. Pease, eds., 2000, London, IPPR, pp. 224-248.

8. Institute for Transportation Engineers, ITE Transportation Planning Council Committee 5P-8, *Traditional Neighborhood Development Street Design Guidelines*, June 1997.

9. For example, the stages of a residential neighborhood lifecycle, as identified by Larry Bourne, are suburbanization, in-filling, downgrading, thinning out, and renewal. Larry S. Bourne, *The Geography of Housing*, London: Winston., 1981, p. 24.

10. Goodchild MF "GIS And Transportation: Status And Challenges" Keynote address, International Workshop on GIS-T and ITS, Chinese University of Hong Kong, 1999. Accessed from <http://www.ncgia.ucsb.edu/vital/research/pubs/9904hkg1.pdf >

11. The best measure may be Pedestrian Route Directness (PRD). PRD is the ratio of linear (crow flies) distance to network (actual travel) distance. Most researchers calculate PRD from each parcel (lot) to a central point in the neighborhood (see Randall, Todd A. and Brian W. Baetz, "Evaluating Pedestrian Connectivity for Suburban Sustainability," *Journal of Urban Planning and Development*, March 2001). However, a more comprehensive and objective analysis will measure PRD from each parcel to all other parcels. I theorize that the general formula is:

$$\frac{\sum_{p}\left[\frac{\sum_{q}\left[\frac{D_{npq}}{D_{lpq}}\right]}{p-1}\right]}{p}$$

p = all parcels
q = all parcels except parcel p
D_{npq} = Network distance from parcel p to parcel q
D_{lpq} = Linear distance from parcel p to parcel q

External Connections

Definition

This standard measures how well a neighborhood is connected to its surroundings.

External connectivity is the distribution and frequency of vehicular entrance/exit points on the perimeter of a neighborhood. Entrance/exit points are points on the neighborhood perimeter where the thoroughfare network of a neighborhood connects with the thoroughfare networks of the surrounding neighborhoods or districts. In practical terms, this will be any spot where a thoroughfare crosses the development's property line (or the study area's boundary line).

Method

On the site map, count the number of vehicular entrance/exit points. To this number, add the number of stub-ends that have future potential to become entrance/exit points.

Where a thoroughfare runs along the property line, count the intersections on that thoroughfare that connect to areas outside the property.

Measure the length of the neighborhood perimeter. Subtract all portions of the perimeter that are directly adjacent to major water bodies such as oceans, lakes and rivers.

Also subtract all portions of the perimeter that are directly adjacent to major tracts of undevelopable land such as wetlands, cliffs and protected wilderness. However, do **not** subtract perimeter portions adjacent to developable yet preserved land, provided it can be traversed in an environmentally responsible manner.

Divide the length of the perimeter by the number of entrance/exit points.

Scoring

Average distance between entrance/exit points in feet:

Five stars: 350 – 550
Four stars: 550 – 750
Three stars: 250 – 350
Two stars: 750 – 1500
One star: Less than 250 or greater than 1500

Average distance between entrance/exit points in meters:

Five stars: 110 – 170
Four stars: 170 – 230
Three stars: 75 – 170
Two stars: 230 – 460
One star: Less than 75 or greater than 460

Discussion

The external connectivity standard is based on two lines of thought.

First, it is beneficial for a neighborhood to be accessible to its surroundings. Neighborhoods with poor accessibility will overload local arterials because of the deficit of thru routes.[1] When a small number of ingress/egress intersections are available, these may become choke points in peak hour traffic. Poor accessibility isolates pedestrians and cyclists from surrounding areas, increasing neighborhood isolation and car dependency.

Second, there is an optimal level of external connectivity. Above this optimal level, the number of intersections becomes excessive and traffic functionality suffers.[2]

Notes

1. James M. Daisa, Tom Kloster and Richard Ledbetter, "Does Increased Street Connectivity Improve the Operation of Regional Streets?" in *Case Studies from the Portland Metro Regional Street Design Study*. Presented at ASCE Transportation, Land Use and Air Quality: Making the Connection Conference 1997, 1998. Accessed from <http://www.fehrandpeers.com/publications/papers/street_connectivity.pdf>, Dec. 7, 2002.

2. Ibid.

Proximity

Definition

Proximity is the percentage of land that is within walking distance of a specific place -- in this case, a town center. A town center is composed, at minimum, of the following elements:

1) A discernible center such as civic space (plaza, square or green), or a boulevard/avenue-type commercial corridor,
2) At least one shop or market that is open to the general public and selling daily sundries,
3a) One or more businesses in addition to #2, **OR**
3b) One or more community facilities serving all members of the community, such as meeting halls, town halls, religious buildings open to the public, community centers, schools, or post offices.[1]

Commercial activities, community facilities, and institutions are part of the town center if they are in close proximity to it, i.e., on the same block or on adjacent blocks.

Walking distance for town centers is defined as 0.25 mile (1,320 feet, or 400 meters). This is the actual distance walked, not the linear (crow flies) distance. It is roughly equal to a 5-minute walk. The area encompassed by this distance, as measured from a central point or area, is a **walkable catchment** (syn: pedestrian shed).

Method [2]

1. On a scaled map draw a boundary line around all of the town center properties. Color this area.

The town center should be configured in a pattern of small blocks and walkable thoroughfares. If it is not (a large, enclosed mall surrounded by parking lots, for example), do not draw a boundary. Instead, treat the town center as a single point, and measure the walkable catchment from that point.

2. Measure from the town center boundary line in an outward direction to a distance of 0.25 miles (1320 feet or 400 meters). Measure this distance along the centerlines of the streets. Measure all available routes through all available intersections within the 0.25 mile distance.

3. Estimate the boundary of the lots reached by the measurements in step #3. Color this area.

This represents the area from which a pedestrian is able to access a town center in a five-minute walk along the available thoroughfares.

Do not include large water bodies and large land areas designated for permanent preservation in a natural state. "Large" is defined as more than five acres (2 ha.) and more than 200 feet (61 m) wide.

4. Using a grid of scaled acres, 209' x 209' squares at the appropriate scale (or a grid of scaled hectares, 100 m x 100 m squares at the appropriate scale), calculate the total area of the colored areas.

5. If there is more than one town center, repeat steps 1 through 4 for each town center. Off-site town centers should be considered also, but color *only the on-site land* that is within their walkable catchments.

6. Calculate the total developed area: Subtract from the total area the large water bodies and large land areas designated for permanent preservation in a natural state. "Large" is defined as more than five acres (2 ha.) and more than 200 feet (61 m) wide.

7. Calculate the percentage of land within walking distance of the town center like so: (colored area) ÷ (total developed area). Multiply by 100 to convert to percentage.

Scoring

Five stars: 84 – 100
Four stars: 67 – 83
Three stars: 51 – 66
Two stars: 33 – 50
One star: Less than 33

Fine tuning the calculation:

"There are practical influences on walkable catchments such as short cuts through parks or along pedestrian paths. These should only be included where there is a high degree of surveillance, during evenings and at weekends, from adjoining development that fronts the parks and where there is good lighting. Sim-

ilarly, the walkable catchment may need to be reduced where there is poor surveillance and routes are perceived to be unsafe."[3]

Discussion

The compact, walkable neighborhood is an ideal of neotraditional planning that fosters numerous synergistic effects. In neighborhoods where activity centers are accessible by foot, residents walk more and put fewer miles on their cars.[4] The walkable neighborhood thus performs well in terms of energy efficiency and pollution resulting from car use.

The walkable community increases independent mobility for those who are unable to drive or own cars. The number of cars that each household must own to maintain a regular standard of living is thus reduced. Higher levels of pedestrian activity support a greater sense of community through casual and repeated social contact, as well as greater safety through the increased presence of citizen observers on foot. Finally, by encouraging the exercise of frequent walking, pedestrian-oriented neighborhoods may support a healthier lifestyle.[5]

The 0.25 mile distance used to define a walkable catchment is a common standard used by transportation and urban planners. It is derived from various surveys of travel behavior. Travel surveys show that the decision to walk depends to a large extent on trip distance; the shorter the trip, the more people choose the walking mode. The U.S. National Personal Transportation Study found that 40% of respondents were willing to walk 0.2 miles (1,000 feet, or 305 meters) for normal daily trips.[6]

Walking behavior depends on a number of factors in addition to distance. Topography, weather and accessibility (ease of travel) are important. Urban design elements such as sidewalks, tree canopies, and building frontages have a major effect on trip quality. Socioeconomic factors are significant, as is the desirability of the destination. The 0.25 mile standard therefore represents a generalized rule of thumb that may be incorrect for specific places or situations.

Schools, Parks and Transit

The walkable catchment for certain land uses should be calculated in addition to the walkable catchment for town centers described on the previous page. "Schools" are preschool, elementary and secondary schools. "Parks" include greens, playgrounds, tot lots, etc., that are open to the public. "Transit" includes bus and rail stops and transit stations.

Scoring

Use the same method and scoring as the Town Center standard, with these changes:

1. Do not draw boundaries around school, park and transit properties. Instead, treat them as single points.
2. Substitute the catchment distances listed below.

Walkable Catchment (Schools)

Use 1 mile (1600 meters) as the walkable catchment distance for schools.

Walkable Catchment (Parks)

Use 0.125 mile (200 meters) as the walkable catchment distance for parks.

Walkable Catchment (Transit)

Use 0.25 mile (400 meters) as the walkable catchment distance for local bus stops. Use 0.5 mile (800 meters) as the walkable catchment distance for rail transit stops.

Notes

1. Definition of town center is adapted, modified and formalized from the discussion of neighborhood types in Duany Plater-Zyberk & Co., *Lexicon of New Urbanism Version 3.2*, 2002. Even if all elements of a neighborhood center are not present, it is still quite useful to calculate compactness relative to any commercial uses. If this is the case, reduce the weighting of this standard in the final tally (in the worksheet).

2. Calculation procedure adapted from Western Australian Planning Commission, *Liveable Neighbourhoods, Edition 2*, June, 2000. This is one suggested procedure; however, any procedure that yields the same results is acceptable. This type of calculation lends itself to analysis by GIS. Once the town center boundary,

open space area, travel network and residential lots have been digitized, a network analysis can be performed to obtain the 0.25 mile network. Next, the intersection of travel network and residential lots can be selected either by hand or by calculation. Open space can be subtracted from all coverages, and the final ratio may then be calculated.

3. Ibid

4. Handy, Susan L. and Kelly J. Clifton, "Local Shopping as a Strategy for Reducing Automobile Travel," *Transportatio*n, Vol. 28, No. 4, pp. 317-346. 2001.

Handy, Susan L., "Urban form and pedestrian choices: Study of Austin neighborhoods." *Transportation Research Record*, 1552, 135-144. 1996.

Krizek, Kevin, "Residential Relocation and Changes in Urban Travel: Does Neighborhood-Scale Urban Form Matter?" *Journal of the American Planning Associatio*n, Spring (2003), Vol. 69, No. 3.

Rajamani, et al., "Assessing the impact of urban form measures in non-work trip mode choice after controlling for demographic and level-of-service effects," Transportation Research Board 2003 Annual Meeting CD-ROM.

5. Howard Frumkin, Lawrence Frank and Richard Jackson, *Urban Sprawl and Public Health: Designing, Planning and Building for Healthy Communities,* 2004; Sturm, R., and D. A. Cohen, "Suburban Sprawl and Physical and Mental Health." *Public Health*, Vol. 118, No. 7, 2004.

6. David Unterman, "Accommodating the Pedestrian: Adapting Towns and Neighborhoods for Walking and Bicycling", in *Personal Travel in the US, Vol. II, A Report of the Findings from 1983-1984 NPTS,* Source Control Programs, U.S. DOT, 1990.

References:

Childs, Mark, *Parking Spaces* (1999), on the factors that affect the size of walkable catchments.

Gehl, Jan and L. Gemzøe, *Public Spaces and Public Life* (1996), on the impact of weather on pedestrian activity

Location

Definition

The location of a TND refers to its placement relative to the regional or metropolitan context. Location is the factor most often associated with measures of urban sprawl, and is the factor that many environmentalists identify as the number one priority for responsible growth.

A **greenfield** is a site in undeveloped, natural condition or one that is in agricultural use. **Infill** development is seamlessly developed within an existing urban fabric, balancing, completing and/or repairing the surrounding sectors. A **brownfield** site is one that has been used industrially, subsequently vacated, and is available for re-urbanization. While the requisite infrastructure is in place, the soil is often contaminated and subject to expensive cleanup requirements. A **greyfield** is an area previously used primarily as a parking lot. Shopping centers and shopping malls are typical greyfield sites.[1]

Method

A good street map is helpful, one that shows the TND and its surroundings to a radius of 5 miles (8 kilometers). Aerial photographs are available online and may be helpful in determining previous uses of the site. Topographic maps are available online and can help identify steep slopes, wetlands, government lands, and natural features. Map sources are listed in the "Frequently Asked Questions" section.

The local planning authority or agricultural extension office may have maps showing soil types unsuitable for building, floodplains, buffer zones, and other lands that should not be developed, and information about sewer and water service districts. Local transit agencies will have transit route maps.

Look for nearby cities, neighborhoods and developed areas; major thoroughfares and transit facilities; parks, nature preserves, wilderness areas; streams, rivers and lakes. Distance to local schools, commercial and employment centers, and recreational facilities may give some indication of the daily travel patterns of the TND's residents (although this is not explicitly incorporated into the rating).

Scoring

5 stars: Brownfield and greyfield redevelopment, infill on previously developed land. Development that primarily uses existing thoroughfares, sewer and water services, schools, transit facilities and other infrastructure.

4 stars: Greenfield infill within existing urban/suburban development.[2] Greenfield within designated growth areas, with planned water and community sewer service, within 1/4-mile of transit or major transportation corridors. [Sites within designated growth sectors having a planned system of well-connected cities, towns and villages, each with an identifiable center and edge.]

3 stars: Greenfield within 1 mile of major transportation corridors and within planned water and community sewer service areas. [Within 2 miles of a transit station, accessible by routes that are safe and convenient for low-speed vehicles.]

2 stars: Greenfield not served by major transportation corridors. Areas outside designated growth sectors.

1 star: Development in sensitive and critical lands. Floodplains, unstable slopes and soils, wetlands, wildlife corridors and nature habitats. [Legacy farmlands and woodlands.]

Notes

1. Definitions from *Lexicon of the New Urbanism Version 3.2*, Duany Plater-Zyberk and Company, 2002, p. B 4.1

2. Not all infill is desirable or responsible. Access to nature and recreation needs to be maintained, and some sites are inappropriate for development. At the same time, it should be recognized that some of the greatest urban spaces are built on sites that today are considered inappropriate for development; those opportunities should not be forgone.

Urban/suburban development has a minimum density of 2 dwellings / acre (5 dwellings /hectare) net, that is, not counting thoroughfares, preserved land and recreational land. Public or community water and sewer service must also be available. *Smart Growth: Designating Priority Funding Areas*, Md. Office of Planning, 1997.

Streetscapes

Definition

In traditional neighborhoods, thoroughfares and their associated spaces are multipurpose. They serve a variety of travel modes, unify and organize adjacent buildings, and provide zones of public congregation and commerce. Therefore, there will always be some overlap between the streetscape and civic space categories.

The three formally defined elements of streetscapes are: the private frontage, the public frontage, and the vehicular way. The **private frontage** is the privately-owned layer between building facade and the lot line. The **public frontage** is the publicly-owned layer between the lot line and the edge of the vehicular lanes. The **vehicular lanes** are in the space from curb to curb (or from pavement edge to pavement edge, if there are no curbs), including travel and parking lanes.[1]

In some situations, such as historic streets with no setbacks or sidewalks, or lanes and alleys, these three elements are not differentiated.

Method

No formal scoring system has yet been devised. In general, the evaluation method involves first classifying the study area into Transect zones (Figure 1), and then determining if various urban design elements are consonant with SmartCode (Figure 2) and other context-directed standards.[2] Transect zones are based on intensity of urban character. Objective measures for identifying Transect zones have been suggested, such as density of streets, intersections, and population.[3] Those measures can serve as rough-estimate starting points that can be refined through direct observation.

Elements to check when evaluating streetscapes:

- Street geometry: Lane width and street width (curb face to curb face) are appropriate to Transect/Context zones.[4]
- Public frontage: Frontage width, curb radii, curb detailing, and sidewalk width are appropriate to Transect/Context zones. Sidewalks are continuous in all public frontages in urban areas.[5]
- Street planters (tree boxes) in public frontage: Planter type and width are appropriate to Transect/Context zones. Selection of tree and other landscaping species, and their arrangement, are appropriate to Transect/Context zones.[6]
- Continuity of built-out frontages is appropriate to Transect/Context zones. Proportion of height to width creates urbanistic enclosure, with width being measured from facade to facade. Minimum of 1:5 for public squares; 1:3 recommended. Minimum of 1:3 for avenues and boulevards. Minimum of 1:2 for streets.[7]
- Visibility of garages: For a streetscape of front-entry

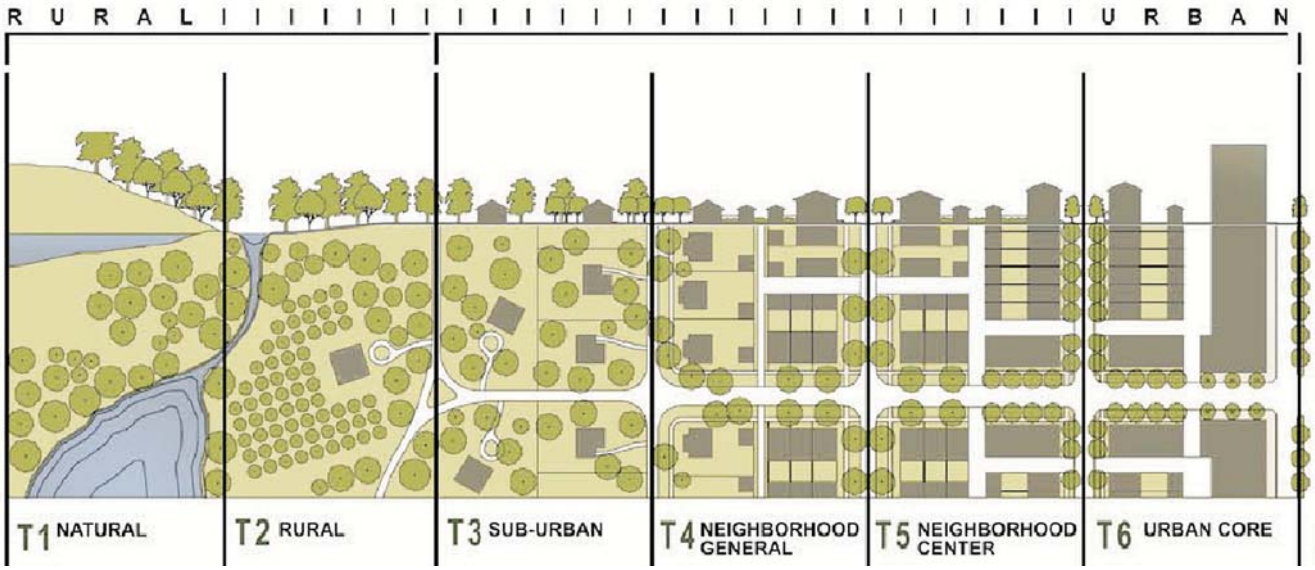


Figure 1: A transect of traditional neighborhood patterns, visualized as a spectrum ranging from most rural to most urban. Image: Duany Plater-Zyberk and Company, SmartCode Version 6.5.

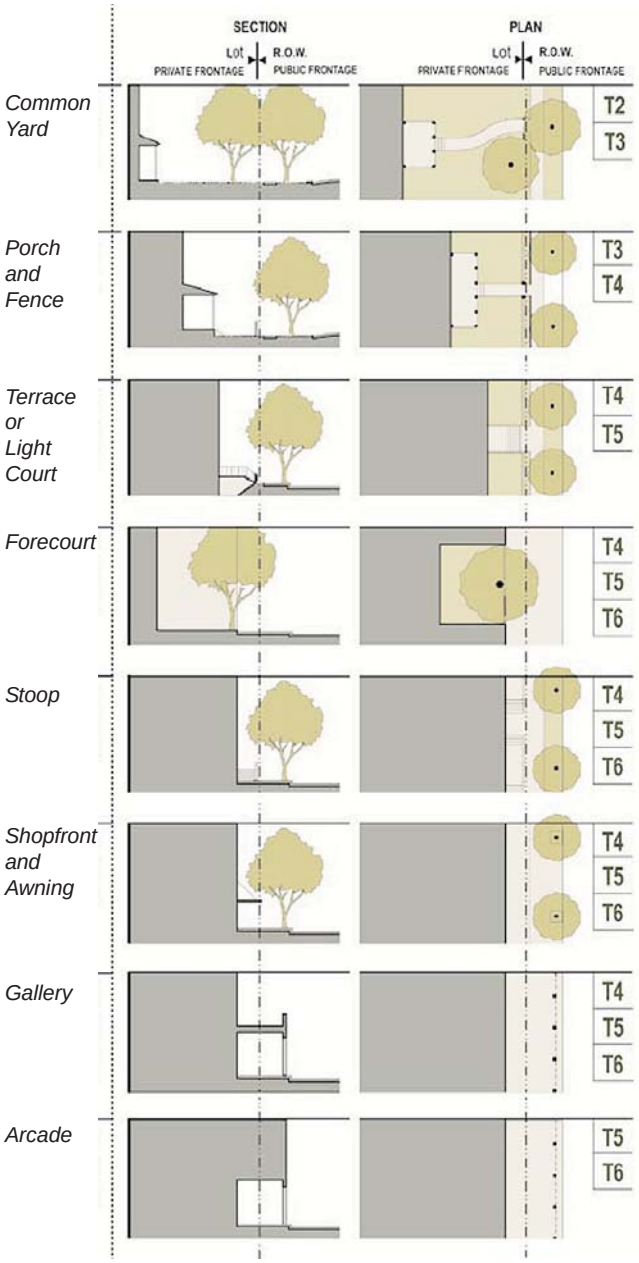


Figure 2: Selected traditional frontage types and their compatibility with various Transect zones. Image: Duany Plater-Zyberk and Company, SmartCode Version 6.5.

garages, use a "garage visibility from the opposite side of the street" standard: In general, not more than one garage door at a time should be visible as one walks along the sidewalk on the opposite side of the street.[8]

• Harmony of architectural ensembles composing the vertical dimension of the streetscapes. Excellent architecture does not necessarily result in excellent streetscapes. What looks good in a single building may look mechanical and repetitive when duplicated along an entire block face. Conversely, a lack of harmony may result in a cacophony of styles and a discordant block face. The balance of foreground and background buildings (syn: figure and fabric) must be considered in relation to the overall harmony of the streetscape.

Notes

1. Duany Plater Zyberk & Co., "Definitions of Terms," and Table 11, "Explanatory Diagrams," *SmartCode 6.5*, 2005.

2. Materials explaining the Transect and SmartCode are available from the Duany Plater-Zyberk and Company website at <http://www.dpz.com/transect.htm>. A summary of the SmartCode version 6.5 with excerpts and explanations is available from Town Paper Publications at <http://www.tndtownpaper.com/images/SmartCode6.5.pdf>.

3. Criterion Planners, "Applying a Transect to Local Geography: A Calibration & Delineation Method," Version 1.1, April 2005

4. Duany Plater Zyberk & Co., Tables 10A and 10B, "Vehicular Lanes," *SmartCode 6.5*, 2005. The CNU and the ITE are collaborating to produce a design manual, *Recommended Practice for Context Sensitive Design for Major Urban Thoroughfares*, with a draft expected in late 2005. This publication may supplement or supercede the SmartCode tables as a standard reference.

5. Duany Plater Zyberk & Co., Tables 8A and 8B, "Public Frontages," *SmartCode 6.5*, 2005.

6. Ibid.

7. Sources include: Bols, Charles *Esthetique des Villes*, 1893 (references Violette Le Duc). Duany Plater Zyberk & Co., *Lexicon of the New Urbanism Version 3.2.* Jacobs, Allan, *Great Streets.* Kostof, Spiro, *The City Assembled*, pp.138-140. Sitte, Camillo, *City Planning According to Aesthetic Principles* (referencing Maertens' 1892 folio). Stubben, Josef in a study of several European cities. Duany, Douglas, post to Pro-Urb listserv, "Re: building to street ratio," Dec. 11, 2004.

8. Mouzon, Stephen A., post to Pro-Urb Listserv, "Re: A Technical Question," Jan. 24, 2003.

Civic Space

Definition

Civic space includes publicly-accessible gathering areas such as plazas, squares, and greens. This standard also evaluates the overall aesthetic and functional qualities of the urban fabric.

- Plaza - A public space at the intersection of important streets set aside for civic purposes and commercial activities. A plaza is enclosed by frontages; its landscape consists of durable pavement for parking and trees requiring little maintenance.
- Square - A public space, seldom larger than a block, at the intersection of important streets. A square is enclosed by frontages; its streetscape consists of paved walks, lawns, trees and civic buildings. Requires substantial maintenance.
- Green - A medium sized public space available for unstructured recreation. A green is surrounded by building facades, its landscape consisting of grassy areas and trees. Requires limited maintenance.
- Tot lots, playgrounds, gardens, small sports fields and other small, publicly-accessible recreational and open spaces contained within urban blocks are evaluated under this standard.
- Urban fabric - The physical aspect of the human habitat, emphasizing building types, thoroughfares, frontages, streetscapes, civic spaces, and civic buildings.[1]

The boundary between the civic space and streetscape categories can be a fuzzy one.[2] Wide sidewalks along boulevards, avenues and streets may serve as linear civic space, complete with public art, fountains, and low walls, stairs and benches for seating.

Method

A formal rating method has not yet been developed. Elements to consider include:

- Ratio of enfronting building heights to civic space width: minimum of 1:6, with 1:3 to 1:2 recommended.
- Seating configurations that give opportunities for people watching, socializing, and viewing scenery. Movable seating can be particularly popular.
- Design to mitigate climatic extremes; protection from heaviest winds; filtering of glaring sunlight; ensuring adequate solar access.
- A thoroughfare or sidewalk should run along at least half of the perimeter of the civic space.[3]
- Overall aesthetics and arrangement of urban fabric. Harmony of street and block layout with topography and character of the land. Layered, deflected and terminated vistas,[4] views, and skyline. Wayfinding and legibility,[5] artistic quality of the urban design.[6]

Notes

1. Definitions adapted from Duany Plater Zyberk & Company, *Lexicon of the New Urbanism Version 3.2*, 2002. Note that large parks are also a type of civic space, but the landscape design of large parks is not addressed in this standard.

2. McNichol, Tom, "Roads Gone Wild," *Wired Magazine12.12*, December 2004.

3. Duany Plater-Zyberk and Company, "Article 3: New Community Plans," *SmartCode 6.5*, 2005.

4. Duany, Andrés, Michael Morrissey and Patrick Pinnell, "Urban Navigation," *New Urban News*, Vol. 7, No. 7, p. 15; Vol 7, No. 8, p. 18; Vol 8, No. 1, p. 13; Vol. 8, No. 2, p. 16.

5. Lynch, Kevin, *The Image of the City*, 1960.

6. Sitte, Camillo, *City Planning According to Artistic Principles*, 1889.

Other sources include:

Childs, Mark C., *Squares: A Public Places Design Guide for Urbanists*, 2004.

Marcus, Clare Cooper and Carolyn Francis (eds.) *People Places: Design Guidelines for Urban Open Space*, 2nd Edition, 1997.

Whyte, William H., *City: Rediscovering the Center*, 1988 and *The Social Life of Small Urban Spaces*, 1980.

Architectural Aesthetics

Definition

The judgment of architectural quality involves a number of assumptions. Some of these assumptions may seem obvious, but are in fact controversial, given the positions advanced by leading architectural publications, academics and avant-garde practitioners.

Beauty and ugliness exist, and it is more desirable to strive for beauty than ugliness. Beauty is based on more absolute qualities such as proportion, as well as more culturally-determined qualities such as symbolism. In general, beauty is better served by honoring cultural expectations, traditions and heritage, rather than subverting them. Beautiful buildings are closely related to the scale of the human body and the comfort of the human heart. They are legible, comprehensible, and intellectually accessible. They are based on intuitive understandings of space and gravity, and on the organized complexity found in all living things.

The aesthetic quality of buildings has a major impact on the character of the spaces with which they are associated. Therefore, there will always be some overlap between this category and the streetscapes and civic space categories.

Method

No objective system has yet been devised because the determination of architectural quality requires so much subjective and intuitive judgement. Elements to consider include:

- Architecture that grows from local geography, climate and topography[1]
- Contextual harmony with historical, vernacular design and building practices[2]
- Design that reinforces safe environments, but not at the expense of accessibility.[3] Presence and arrangement of doors and windows (permeability) versus blank walls
- Facades that, upon analysis, reveal "regulating lines" – invisible lines that relate the facade elements to each other and to the building itself. Rhythm and articulation of building elements, patterns of light and shade. Proportions, massing and scale of building elements and overall building proportions[4]
- Matching of iconography, ornamentation and symbolism to the building's use and purpose[5]
- Appearance and durability of materials

Scoring

5 stars - Whether the building is a "foreground" or "background" building, a high level of skill and experience is involved in making it noticeably attractive
4 stars - Competent, pleasant workmanship of design
3 stars - Acceptable, but may remain bothersome in some respects
2 stars - Dispiriting, banal or mostly incompetent
1 star - Actively threatening, remote, deranged or confusing

Notes

1. Congress for the New Urbanism, *Charter of the New Urbanism*, 2000, pp. 127-132 and pp. 155-159.

2. For guidelines on pre-1920s vernacular and traditional styles found primarily in the southern, eastern and midwestern United States, see Mouzon, Stephen A., *Traditional Construction Patterns*, New York: McGraw-Hill, 2004. For other styles and locations, or for more specific information about regional variations, custom-produced pattern books can provide useful guidelines.

3. Congress for the New Urbanism, pp. 133-139. Techniques to reduce crime include natural surveillance, territorial identification, vandal/burglar-resistant design and materials, and semi-public congregation space. See Katyal, Neal Kumar, "Architecture as Crime Control," *Yale Law Journal*, Volume 111, 2002, pp. 11-99. Accessed from <http://papers.ssrn.com/abstract=290756>

4. Hale, Jonathan, *The Old Way of Seeing*, chapter 4. Langhein, Joachim, "Proportion and Traditional Architecture," *INTBAU Essays*, Vol. 1, No. 10, <http://www.intbau.org/essay10.htm> Langhein writes: "For beginners, it is not easy to understand that the proportion mesh does not define every architectural detail. Further, the system's character of all proportional relations may be more important than the exactness in all details."

5. Marcantonio, Dino, "Iconography and the Transect," PLANetizen Op-Ed, May 19, 2003, <http://www.planetizen.com/oped/item.php?id=92>

Frequently Asked Questions

Isn't this system incomplete? Aren't there many well designed places that do not have a good quality of life?

It's extremely important to recognize that good design does not automatically create good places. The scope of this rating system is purposefully limited to design for two reasons: 1) To provide a sharp focus that other rating systems do not, and 2) To keep the work of developing this system at a manageable level. A complete evaluation according to the Congress for the New Urbanism (CNU) charter would involve many additional standards. Certain examples are listed below. Some are design related, while others go beyond the design-only scope of this rating system.

Even considering its design-only focus, this rating system is without question incomplete, and should be continually refined, developed and tested.

- Affordability
- Codes, association documents and governance
- Social capital, cohesion and cultural identity
- Environmental performance
- Financial performance
- Balance of residential to nonresidential land uses
- Vertical mixing of uses
- Mix of building typologies
- Construction quality

There are situations where a specific greenfield development is as ecologically and socially responsible as a specific infill development – or even more so. A rating system should account for this.

Why is 5 stars equivalent to a "well-designed, early twentieth-century, urban neighborhood in the United States"? Don't many older neighborhoods have better design quality?

Of course, great towns and cities that have had centuries to mature set the gold standard for urban design. Most new construction, even the best of new urbanism, rates poorly by comparison. However, a rating system that only awards low scores isn't very useful. In order to maximize its usefulness, the top of the scale should be calibrated to a level that is achievable and acceptably good.

The mainstream of early 20th century urban design and planning attained a remarkably sophisticated level of quality. Practitioners had the benefit of historic models to draw upon, as well as new scientific advances in building, transportation and infrastructure standards. Also, early 20th century neighborhoods developed good techniques for handling mass automobile ownership. Those neighborhoods are the most recent, extensive examples of good urbanism familiar to most people or available to visit, particularly in the western United States.

What are some online sources of maps?

- Microsoft's TerraServer (http://terraserver.microsoft.com): Aerial photos, topo maps, distance bar scale, lat-long information, map projection information.
- USGS National Map (http://nationalmap.gov): Many forms of aerial imagery, landmark and boundary maps, distance measurement.
- Yahoo! Maps (http://maps.yahoo.com) and Mapquest (http://www.mapquest.com): Best-quality street maps with distance bar scale.
- Global Mapper (http://www.globalmapper.com or http://mcmcweb.er.usgs.gov/drc/dlgv32pro): Free software for viewing aerial photos and plan drawings. Distance and area measurement. Requires some knowledge of cartography.
- Google Earth (http://earth.google.com/): Free software for viewing aerial photos, street networks, landmarks and businesses. Distance measurement.
- Terraserver (http://www.terraserver.com): For-sale software for viewing aerial photos and topo maps. Distance and area measurement.

Who is supposed to use this system?

This system is relatively simple compared to more comprehensive rating systems, GIS-based systems and academic research. Even though it requires some degree of training and familiarity with concepts, it is intended for use by anyone with an interest in the quality of place, such as homeowners, urban planners, designers, developers and community activists. If a

standards-setting organization uses this system, it would be best to use approved evaluators with at least some minimum amount of training.

Is this system foolproof?

Any system of rules and standards is susceptible to those who would meet the letter of the law while circumventing its intention. Why do standards-setting bodies like LEED or the Underwriter's Laboratory enjoy a reputation for fairness, impartiality and reliability? It's because they use trained, experienced investigators who can best maintain the integrity of formal evaluations. At the same time, their standards are transparent and reasonably objective enough that anyone can have an idea how a product will fare in the ratings. It's better to put energy into administering a system properly than trying to make it absolutely bulletproof, which is probably impossible anyhow.

Should I evaluate the whole plan or just a portion of it?

In a number of cases, only a portion of the development can be considered a TND (that is, pedestrian oriented, diverse and within walking distance of mixed use). For instance, in some master-planned communities one may find a great deal of disconnected conventional suburban development, with a more traditionally-patterned town center in the center or on the edge. Alternately, there may be pods of TND: highly connected, walkable grids of residences that are isolated and stranded like small islands within a larger master planned community, lacking truly functional, convenient connections to their surroundings.

In a cases like these, the evaluator must decide whether to rate the entire master plan or just portions of it. Therefore, one must ask:

- Does all the property have the same ownership structure, owned by the same owner(s)?
- Is it all being developed by the same developer?
- Was it all planned by the same designer, at the same time, using a single overall vision?
- Is it all being developed under the same legal codes and regulations?
- Does the TND component fail to stand on its own as a neighborhood, lacking a significant population of residents?

If the answer to most of these questions is "yes," it makes more sense to evaluate the master plan as a whole.

Weighting: Aren't some standards more important than others?

The greatest obstacle to widespread use of neighborhood rating systems is that everyone has different priorities and ideas about what makes a neighborhood great. Even within the limited scope of this system – design – the differences are strongly held and seemingly unbridgeable.

A possible resolution is presented on the next page. The worksheet allows investigators to assign a weight to each standard. You can assign a higher weight to the standards you think are a priority. So for example, if you think sidewalks are the most important element of good neighborhood design, assign a high weight to the public frontage standard. If you think location is the most critical factor, assign the highest weight to that.

The author's suggested weights are:

- Eight points each for connectivity.
- Twopoints for each of the proximity standards (town center, schools, parks, transit).
- Four points for all other standards.

Once you have determined the number of stars and the weight for each standard, you can add up the score. The worksheet converts all scores to a 1-to-100 scale. Therefore, many investigators can use different weighting schemes, but all who use the worksheet will finish with overall neighborhood scores that are on the same 1-to-100 scale.

We recommend that you develop or adopt a weighting scheme that makes sense to you, and then use it consistently in all your neighborhood evaluations. Don't change your weighting scheme from evaluation to evaluation, because your results won't be comparable to each other. Inconsistent results are of little use to you and to others who may be interested in your evaluations.

Worksheet

STANDARD		A: NUMBER OF STARS	B: WEIGHT	C: WEIGHTED RATING (COLUMN A × COLUMN B)
Housing Choice (page 3) Probability any two dwellings are different in type or size				
Mixed Use (page 5) Number of categories counted				
Connectivity (page 6) Intersections per square mile (or square kilometer)				
External Connections (page 9) Number of entrance/exit points per foot (or meter) of perimeter length				
Proximity (page 10) Percent of land within walking distance of:	Town/Neighborhood center			
	Schools			
	Parks			
	Transit			
Location (page 13) Evaluation of project location in the regional context				
Streetscapes (page 14) Evaluation of overall quality:	Private frontages			
	Public frontages			
	Vehicular lanes			
Civic Space (page 16) Evaluation of overall quality of civic spaces				
Architectural Aesthetics (page 17) Evaluation of overall quality of architectural exteriors				

1. Add up column C		
2. Maximum possible score: Add up column B and multiply by *5*		
3. Project score as a percent of maximum possible: Divide line 1 by line 2 and multiply by 100		