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**Report #4 in the Series:**
**Moving Communities Forward**


# Moving Design: Spaces of Transportation

THE AMERICAN INSTITUTE OF ARCHITECTS

CENTER FOR TRANSPORTATION STUDIES
UNIVERSITY OF MINNESOTA

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16. Abstract (Limit: 200 words)

Focusing on the design issues involved in two key types of transportation environments—context sensitive solutions and transit-oriented development—the report investigates design benefits measured in aesthetic and humanistic terms. These include issues of community identity, appearance, scenic quality, and cultural value. These characteristics are difficult to measure, more difficult to quantify, and even more difficult to cast in terms of monetary costs and benefits. Despite the difficulty of measuring it, design is an important element for the success of transportation projects and should not be overlooked. It is critical that we be able to measure the qualities of design so we can discuss it in a systematic and reliable way.

In order to capture important details and reflect a range of potential definitions of good design, this report examined case studies in three regions—in Northern Virginia, the Saint Louis Metropolitan area and Missouri, and Northern California. In each it tested six approaches to measuring design quality: using a short score sheet rating tool and a longer inventory, eliciting the opinions of design experts and some of the users and creators of the spaces, using standardized drawing and mapping techniques to compare designs, and by assessing photographs.

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# Moving Design:
# Spaces of Transportation

Report #4 in the Series:
Moving Communities Forward

## Final Report

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# Preface

Well-designed transportation projects demonstrate the potential to shape a community in ways that go far beyond the project's original purposes. Anecdotal evidence and advocacy exist on behalf of the benefits of well-designed transportation projects on communities, yet there is little organized quantifiable or qualitative data, nor is there a comprehensive guide for communities to maximize or integrate the diverse benefits that well-designed transportation projects can bring.

Recognizing this lack of data about the role of design in transportation, Congress authorized a study in Section 1925 of the 2005 Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) to achieve two goals: (1) begin to measure how well-designed transportation projects can bring multiple enhancements to communities in terms of economic development, health and the environment, visual identity and design, public participation, and public safety; and (2) provide communities, designers, transportation officials, and policymakers a set of principles and practices to adapt to their unique situations and needs.

The *Moving Communities Forward* research team employed a case study-based approach, analyzing nearly 30 transportation projects that represent a broad spectrum of regions, demographics, and project types. The research team identified key principles and practices that designers and others can use—in the context of their unique situation and environment—to realize multiple enhancements to their communities.

Funding for the study was derived from a grant to the American Institute of Architects (AIA) from the Federal Highway Administration (FHWA), authorized by Congress in SAFETEA-LU. In 2006, the AIA selected the Center for Transportation Studies (CTS) at the University of Minnesota to conduct the pioneering research study.

To address the interdisciplinary issues raised by the study, CTS assembled a research team drawn from multiple fields. Research was allocated to five research projects; a sixth project synthesized the study's key findings into a single document highlighting major themes and recommendations:

1. Promoting Economic Development
2. Improving Health and the Environment
3. Designing Great Places
4. Fostering Civic Participation
5. Making Communities Safer
6. Study Synthesis

Results of this research are available in a series of reports on the *Moving Communities Forward* Web site: www.movingcommunitiesforward.org. The site also includes a summary report submitted by the FHWA to Congress in September 2007. The Web site is part of a coordinated outreach effort designed to share the research findings and recommended practices with transportation and design professionals, policymakers, and the public.

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## ABOUT THE AMERICAN INSTITUTE OF ARCHITECTS

The American Institute of Architects (www.aia.org) is the voice of the architectural profession and the resource for its members in service to society. As AIA members, more than 80,000 licensed architects in over 300 state and local chapters express their commitment to excellence in design and livability in our nation's buildings and communities. Members adhere to a code of ethics and professional conduct that assures the client, the public, and colleagues of an AIA-member architect's dedication to the highest standards in professional practice.

## ABOUT THE CENTER FOR TRANSPORTATION STUDIES

The Center for Transportation Studies' (www.cts.umn.edu) mission is to serve as a catalyst for transportation innovation through research, education, and outreach. CTS works with University of Minnesota faculty in over 25 disciplines to advance knowledge in a variety of transportation-related research areas. In 1997, CTS first became involved with transportation and urban design issues in its leadership of a major interdisciplinary effort, the Transportation and Regional Growth Study, which produced new understandings of the relationship between transportation and growth in the Twin Cities area. CTS has also worked closely with the Minnesota Department of Transportation and local governments in advancing Context Sensitive Design/Solutions practices through the development of training courses and web resources, which have helped Minnesota to be recognized by FHWA and AASHTO as a leading state in applying Context Sensitive Design/Solutions.

## Credits

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## Contents

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At the University of Minnesota, Ann Forsyth was the project director and principal investigator for this report, took many of the photographs, visited most sites at least twice, and drafted several sections of the report. Justin Jacobson, was the main research staff person taking a lead on selecting cases and drafting that section of the report, as well as contributing in other important ways to the research and writing. Katie Thering coordinated graphics and design, doing much of the initial layout. Ann, Justin, and Katie, with assistance from Laura Baum for visual assessment, did the fieldwork. Lukas Van Sistine worked diligently to create the maps. Laura Baum was an extremely able research assistant and drafted some sections of the report, including the visual assessment approach. Wendy Sarkissian, an award-winning expert in participatory processes, was responsible for drafting the appendix on participation, assisted by Rebecca Bateman and Jeff Deby. Kristen Day, an expert in visual assessment reviewed the report as did Amanda Johnson from the Metropolitan Design Center. Bonnie Hayskar was the copy editor. Additional assistance came from Amanda Johnson, Nishi Mishra, Whitney Parks, and Joanne Richardson.

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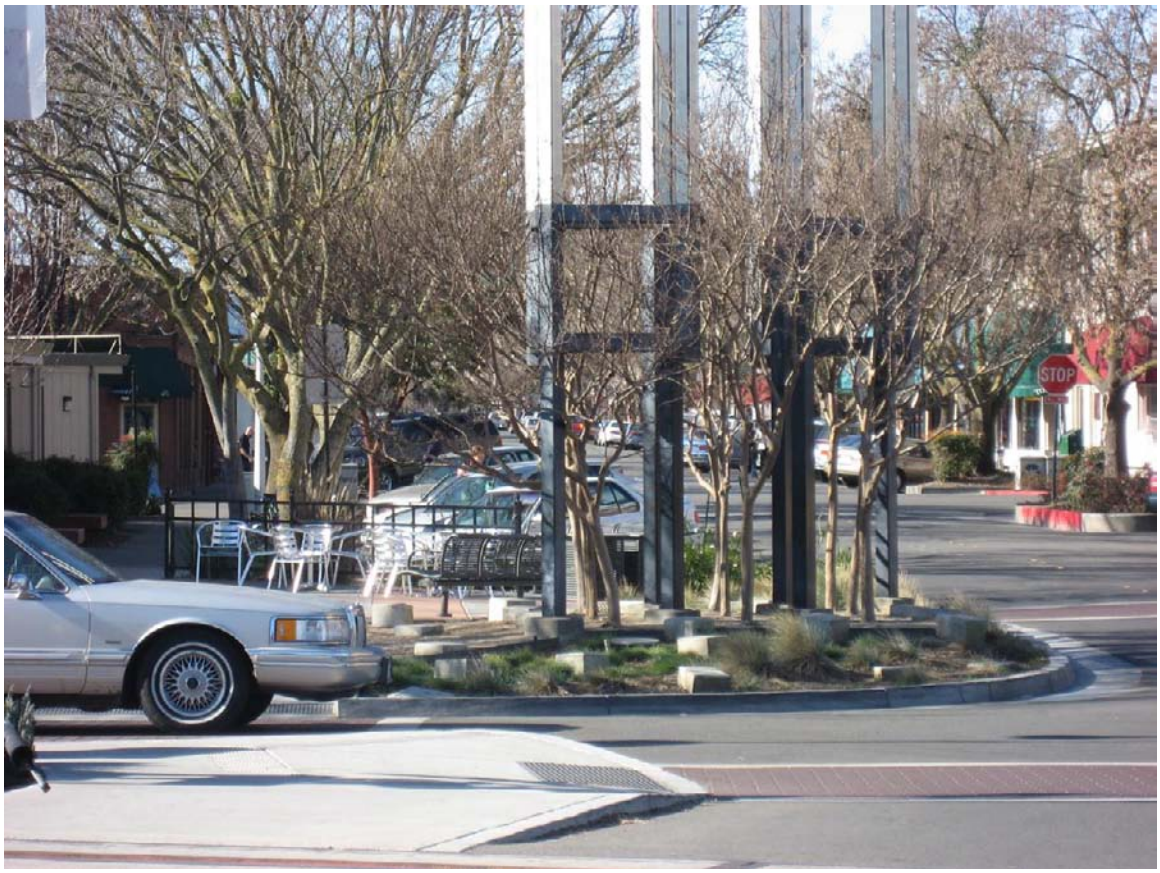



Public art and outdoor dining are integrated with traffic calming in Davis, California.



Transportation environments can provide space for social interaction, as is demonstrated with children taking a ferry in Stockholm and cyclists waiting for the rain to stop in the Netherlands.

# Executive Summary

## Overview: The Benefits of Good Design in Transportation Environments: Assessing and Enhancing Design

The big question behind this project is how good design can benefit transportation environments. Focusing on the design issues involved in two key types of transportation environments—context sensitive solutions (CSS) and transit-oriented development (TOD)—it investigates design benefits measured in aesthetic and humanistic terms. These include issues of community identity, appearance, scenic quality, and cultural value. These characteristics are difficult to measure, more difficult to quantify, and even more difficult to cast in terms of monetary costs and benefits. Despite the difficulty of measuring it, design is an important element for the success of transportation projects and should not be overlooked. It is critical that we be able to measure the qualities of design so we can discuss it in a systematic and reliable way.

In order to capture important details and reflect a range of potential definitions of good design, this report examined case studies in three regions—in Northern Virginia, the Saint Louis Metropolitan area and Missouri, and Northern California. In each it tested six approaches to measuring design quality: using a short score sheet rating tool and a longer inventory, eliciting the opinions of design experts and some of the users and creators of the spaces, using standardized drawing and mapping techniques to compare designs, and by assessing photographs.

The six approaches to measuring design converged on a similar overall picture of each of the case-study areas. At a more specific and detailed level the different assessment techniques each provided a slightly different lens with which to view these pictures. Some provided inventories of what was in each place—densities of businesses or urban-design features. Others gave a sense of the history and use of the areas. Together they provided a more rounded and multi-faceted view of the design qualities of each place.

This summary provides an overview of key findings, methods, and cases, and concludes with a design toolkit for creating better transportation environments.


Transit-oriented development in Chiba, Japan demonstrates high densities and facilities for biking and walking as well as cars.

## Key Findings

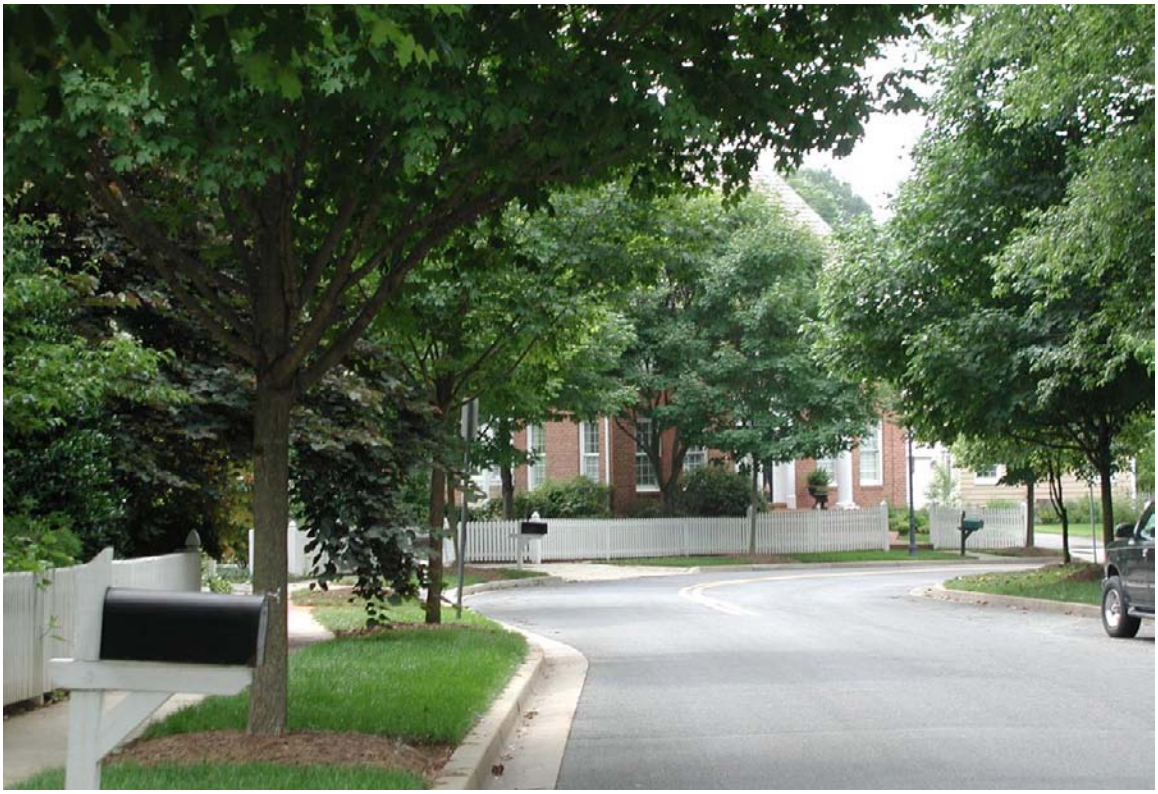
Study findings on the benefits of good design in a wide range of transportation environments revolve around four key topics. The findings are dealt with in more detail in section D below. Topics include:

*Methods:* Different places have different strengths. Using multiple design assessment methods—from audits to mapping—is essential in identifying, assessing, and honoring this diversity of design qualities.

*Processes and time:* Great places develop over decades with the participation of many people, but their uses vary from day to day. This issue of time is key. While good environments are built well to start with, they are made better with redevelopment and good maintenance as well as active use over time.

*Places:* Design at a human scale is the first principle outlined in the American Institute of Architects (AIA) 2005 report Livability 101 and a key feature of the well-designed places in this study. Also important were well connected areas that accommodated many uses, offered variety and choices, and that felt safe.

*Facilities:* Facilities for pedestrians, cyclists, transit users, and motorists can be designed in ways that protect the most vulnerable users and provide options for all.



Kentlands, Marlyand, is a new urbanist development featuring a number of elements associated with context sensitive solutions including landscaping, sidewalks, and narrow streets.

## Research Approach and Measures

*Toward a Multi-Method Approach*

This is not the first study to look at visual issues related to transportation. The fields of environment and behavior, environmental psychology, and urban design have created a number of urban design assessments to measure qualities of place (Nasar 1998). Such assessments have most recently received a surge of new funding and interest from those concerned with measuring environments for walking and cycling (Moudon and Lee 2003).

These measures of visual issues related to transportation vary along a number of dimensions. The choice of methods involves tradeoffs tied to different goals and priorities.

They vary in level of detail and complexity:

- Checklists measure the presence or absence of different elements.
- Rating scales quantify design characteristics.
- Holistic assessments of complete environments are more qualitative but potentially more comprehensive (e.g. tours, videos, workshops).

While simple, quantitative approaches may be easy to administer they may miss some of the more complex qualities of design captured by holistic assessments.

They also vary in terms of who does the rating:

- Participatory/educational approaches have users and other lay people do the rating and assessment.
- Designer-oriented approaches have design experts as raters and evaluators.
- Field-based checklists/surveys may be used by a variety of people including users, design experts, and trained raters.
- GIS-based and automated measures and simulations typically require a high level of expertise and are conducted by trained raters or experts. Some simulations are, however, used as the basis of participatory approaches.

Assessments administered by lay people can be conducted by community volunteers and can encourage community involvement and tap into local knowledge. GIS and other expert measures can provide more detailed information about design and planning.

There are several levels of assessment or evaluation:

- Identifying features—identifying and articulating visual or place character.
- Measuring features—quantifying or counting features of the place in some way.
- Evaluating features—adding an evaluative component either in comparison to other scenes and places or creating some kind of scoring system.

Each level provides a different amount and type of information.

The time at which the assessment is done also varies:

- Prospective evaluations evaluate interventions before they occur and if evaluation is involved involve simulations or models of the future. This might involve drawing or computer modeling for visual assessment.
- Retrospective evaluations are conducted on a completed project.

The use of these techniques depends on the goals of the specific assessment.

Different approaches have different strengths. For example, an inventory that checks for the presence or absence of a feature like a street tree is likely to be easy to replicate but does not say much about how a space is used. A technique that has people evaluate whole scenes may be able to distinguish between places that are more or less liked, but it may be difficult to tell why; is it the vegetation or the street lamps or a personal characteristic of the rater? In undertaking an assessment of the visual environment for transportation projects, it is crucial to consider the specific goals of the project and its evaluation.

## The Methods in this Study

This report acknowledges the different strengths of various methods, and seeks to integrate them. In this study, we rely on six, in particular: two kinds of checklists—an score sheet and an inventory; two participatory assessments; and two primarily graphical techniques. In evaluating the visual environment of the case-study projects the report demonstrates different ways that design can be measured and how such information can be used to enhance transportation projects.

*A. Score Sheet*

The urban design score sheet was developed to assess commercial and main street type environments like those found in many transit-oriented development areas and context sensitive solution projects (Ewing et al. 2005a, 2005b, 2006). The tool creates scores for the urban design qualities of imageability or how memorable a space is; enclosure or how much a street feels like an outdoor room; human scale; transparency or the visibility of activities beyond the street edge, such as through windows; and complexity or visual variety. Its strength is in creating scores for these design dimensions, allowing comparison across different places or different areas within the same place.

*B. Inventory*

The Irvine Minnesota Inventory is an urban design inventory (Day et al. 2006; Boarnet et al. 2006). While the inventory is very long, it is quick and easy to fill out and is thus highly reliable. It was developed for measuring urban design elements related to walking but is also the most comprehensive of published instruments on features of streets. It has strengths and weaknesses compared with the urban design score sheet described above. Unlike the score sheet it does not have a built-in evaluation component. Rather, individual researchers decide how they will make composite scores out of all the information they collect. This allows flexibility but adds additional work. This tool may be best for those who seek reliable ways to measure specific features of the visual environment such as landscaping or land uses.

*C. Design Workshop*

The design workshop is a participatory evaluation technique. Design experts, led by a researcher or workshop leader, participate in a workshop to evaluate the visual environment of one or more places. The workshop takes a few hours. Depending on the number and complexity of sites dealt with, this technique requires one to two weeks of additional work prior to the workshop to prepare background maps, graphics, and briefing materials for the experts. It provides a holistic or comprehensive assessment of the places—what is good about them and what can be improved. It relies on people who are already very familiar with the places in question and can delve deeply into complicated issues such as community character. This technique is well suited to identifying aspects of the places which should be preserved or improved. It is less well suited as a technique for systematic research.

*D. Participation/Community Representatives*

There are many different participatory techniques to elicit opinions about visual issues. For this report we used a similar process to the design workshop. Instead of involving design experts, however, we worked with representatives of cities, community groups, transit users, police, transportation workers, and other professional groups. This allowed us to elicit opinions without needing to identify and engage members of the general public. However, if working on an actual project it would be important to seek input from a variety of audiences to gain input, opinions, and build expertise of users of environments. The background report outlines a wide range of such tools for varied groups of the public, from children to adults. Such methods are effective for assessing the design perceptions and preferences of those who actually use and manage transportation environments.

Ballston station is an example of mixed use transit-oriented development.

*E. Mapping*

For projects that seek to compare environments, it is useful to compare their physical scale and

pattern. We used variations on figure ground mapping, including measures of street patterns and intersections, to create maps of each of the case-study environments. With the advent of online mapping, and particularly of Google Earth, it is now relatively inexpensive to prepare maps to scale. In addition, we developed some analysis from geographic information systems (GIS) mapping. These included measures of mixed use.

*F. Visual Assessment/Photography*

Assessing visual impacts has a long history. The Moving Design project modified a method produced for the Bureau of Land Management in the 1970s (Shepphard and Newman, 1979). This method focuses on six issues: color contrast, form contrast, line contrast, texture contrast, scale contrast, scale dominance, and spatial dominance. The original method focused on the potential impacts of proposed projects, however, the method used for this project assesses the overall contrast of an existing scene. Visual assessment techniques are well suited both for research projects and for projects that seek to make recommendations about specific designs.

Strengths and Weaknesses of the Methods at a Glance

Each of the methods used to assess these environments has different strengths and limitations.

- The urban design score sheet develops scores for key urban design concepts of relevance to commercial streets, which is useful for comparing places in terms of these concepts.
- The inventory provides great detail on the character of places and can be used in a wide variety of environments.
- The design workshop provides a focused but comprehensive view of design quality.
- Various participatory techniques both elicit information and build capacity among members of the public to debate issues of design.
- Mapping provides an understanding for the basic structure of streets and blocks and can be expanded to examine other topics such as destinations.
- The visual contrast worksheet allows a quick assessment of photographs focused on visual variety.

## Cases

The design principles and issues outlined in earlier sections are common to projects in a wide variety of situations. The project examined cases in three regions: in Washington, DC, and Northern Virginia; in the St. Louis area of Missouri and Illinois as well as Boonville in central Missouri; and in Northern California in Oakland and Davis. The goal of these case studies was to explore in more detail the uses of these methods for measuring the built environment.

Case studies were selected to demonstrate good design in a range of locations and situations.

- Several of the cases include affordable housing development near station areas, most notably Fruitvale, California and Emerson Park, Illinois.
- Others involve revitalized shopping streets often reached from a train station—for example at Clarendon in Virginia, Barracks Row in the District of Columbia, Delmar Loop in St. Louis, and International Boulevard near Fruitvale in California.
- Some have major office development, including Rosslyn and Ballston in Virginia and the 12th Street area in Oakland.
- A number of projects preserve historic landscapes and buildings, including Virginia Route 50 and a park in Booneville, Missouri.
- Many have mixed use areas.

**The eleven case-study sites listed below are outlined in more detail in part three of this report.**

| Major Cases | State | Type | Major Retail | Affordable Housing | Historic Preservation | Mixed Use |
|---|---|---|---|---|---|---|
| 12th Street/Oakland City Center | CA | TOD | x | | x | x |
| Ballston | VA | TOD | x | | | x |
| Barracks Row | DC | CSS | | | x | x |
| Boonville | MO | CSS | | | x | |
| Clarendon | VA | TOD | x | | | x |
| Davis | CA | CSS | | | | x |
| Delmar Loop | MO | TOD | x | | x | x |
| Emerson Park | IL | TOD | | x | | |
| Fruitvale | CA | TOD | x | x | | x |
| Rosslyn | VA | TOD | x | | | x |
| Route 50 | VA | CSS | | | x | x |

All cases demonstrate the capacity of well-designed transportation infrastructure to enhance a sense of place in terms of community identity, scenic quality, and cultural value.

In addition to these cases, the background report draws on research and observation by the study team and others across the globe. Illustrations come not only from North America but from Europe, Japan, and Australasia. While the United States has many examples of well-designed environments around transportation facilities, international comparisons are also valuable for demonstrating a wider range of possible design contexts and solutions.

## Design Toolkit

One-size-fits-all solutions to design problems certainly do not fit all, as the tastes and needs of varied users are rarely the same, and are sometimes even in direct conflict. Instead, it is perhaps better to think of a good design toolkit – or a set of good, not necessarily "best" practices, each with particular effects in particular situations. Selecting from different parts of the toolkit, people responsible for the design of places can mix and match solutions to problems. Good design, then, is not as much a product but a process of assessing, selecting, and implementing of a wide number of individual design interventions.

As was explained earlier, the toolkit of design and measurement practices has four main parts: methods, processes and time, places, and facilities. Within each of these parts principles for good design are identified. These principles are drawn from the results of this study of visual issues as well as from a number of exemplary reports on urban design aspects of transportation. These design principles are summarized below.

*Ballston:*

The Ballston station area includes significant office and retail areas as well as a wide variety of housing options. It is notable for the diverse mix of uses in this area.

*Barracks Row:*

8th Street Barracks Row is one of Washington D.C.'s oldest commercial neighborhoods. The area was a winner of the Great American Main Street Award in 2005.

*Boonville:*

The Cobblestone Street Interpretive Park opened in 2000 and demonstrates that modern transportation needs can be achieved without sacrificing local concerns for historic preservation and place promotion.

*Clarendon:*

The first plan to specifically deal with Clarendon was released in 1984 and articulated a vision for Clarendon as an "urban village," meaning greater development around the station while maintaining the strong sense of place.

*Davis:*

The City of Davis, California has a well-earned reputation as America's leader in supporting and encouraging bicycle transportation.

*Delmar Loop:*

The MetroLink in this area preserved and extended the existing commercial activity in the area from University City across the municipal border to the station in the City of St. Louis.

*Emerson Park:*

In Emerson Park, transit-oriented development was brought to the area through community activism and has been used to spark redevelopment in the economically troubled City of East St. Louis.


*Fruitvale:*

The proposal for a transit village at Fruitvale grew out of a Community Design Symposium between BART and Fruitvale community leaders in which both tried to work together to figure out a common solution to their respective problems.

*Oakland City Center/12th Street:*

Oakland's downtown has different parts with distinctive characters. This ongoing transformation demonstrates the challenges and benefits of implementing transit-oriented development in an already established area.


*Rosslyn:*

The Rosslyn station is the gateway to Arlington County on the Metro, and the eastern most station in the TOD corridor.

*Route 50:*

Set in a very scenic part of northern Virginia, just beyond the outer edges of the Washington DC metro area, Virginia Route 50 is a lovely tourist drive that demonstrates the many benefits of thoughtful design that takes citizen input into account.

Methods: Different places have different strengths as these images from the Great Smoky Mountains and Shibuya in Tokyo demonstrate—in this case the difference between a scenic road dominated by vegetation and a high-density active commercial area near a major train station. By using different assessment methods it is possible to capture some of this diversity.

## Methods

*1. Use multiple assessment tools to tap multiple concepts*

While converging on a generally similar picture of each of the case-study areas, the different assessment techniques each provide different information about the visual environment of the place. Some techniques identify elements within the place—such as street furnishings—and others assess design quality. There is no one best method for visual assessment. A best practice is to use multiple methods of assessment.

*2. Understand that different concepts are relevant to different places*

The various assessment tools measure a variety of urban design features from imageability, or how memorable a site is, to whether there is pedestrian lighting present. Of course, places differ and not all places stive for the same qualities. There are many definitions of good design. It is important to focus on understanding the particular character of a place in order to decide which concepts are relevant and which aspects of design should be measured.


Processes: Great places develop over time. These examples are from historic areas in the centers of Stockholm, Sweden, and Sendai, Japan.

## Processes and time

*3. Appreciate that planning and developing great places takes time*

Many of the best-loved places in the world are the product of decades, if not centuries, of development and redevelopment. This was equally true for the locations in this study. Designers and community representatives all remarked on the decades-long processes of redevelopment. It is virtually impossible to jump-start a development from nothing to a fully built, well-designed place in a few years. What sometimes looks like fast development is often misleading, as the development is merely the physical culmination of years of planning.

*4. Engage the public, as well as designers, as collaborators and work with activist energy*

Community members need to live with the results of development and redevelopment and can be allies or opponents. In long-term transportation projects with multiple buildings and projects, it is worth making local residents and business groups into partners. Their buy-in can be important when weathering inevitable setbacks. While community process can slow down design and implementation, it can also improve it by connecting design to community values and helping residents have a sense of ownership in creating and maintaining these places. It is also important that community members be provided with knowledge about design so that they can be informed partners in these discussions.

Places: Human scale and choices are features of well-designed commercial streets, as is demonstrated at Delmar Loop in Missouri.

*5. Program spaces for use*

A design is a physical space. Programming is about use. Successful places have appropriate activities occurring at different times of the day, week, and year. Of course not all places need to have constant activity, but appropriate programming can increase use, safety, and sense of place.

*6. Invest in maintaining spaces*

A number of studies have found that high levels of maintenance are appreciated by viewers and can make places more attractive. Too often paths, trails, and other pedestrian and biking facilities are installed without long-term maintenance plans. In addition, wear and tear increases as places become popular, adding to the maintenance burden.

## Places

*7. Design at a human scale*

Designing at a human scale is the foundation of creating a great place. This means design that contains elements of similar size to parts of the human body and design that is meant to be viewed by people at walking pace. Human scale is measured explicitly in the urban design score sheet, was referred to by workshop participants, and is a key component of the AIA 2005 livability principles. This does not preclude places with tall buildings and intensive development. Rather, it stresses that design of the areas that people inhabit—such as sidewalks, plazas, and transit stations—should be scaled to be usable and interesting to people moving at walking speed.

*8. Provide public spaces that accommodate a variety of uses and users*

Successful transportation environments attract people moving through them. Public spaces – places where people can stop, sit, and gather—are often ignored in transportation projects, where the emphasis is on moving people around. Good public spaces are ones where people like to stop and sit to read a newspaper, eat a lunch, or meet friends. They also provide places for people from different groups to either interact or stake out territory without overly bothering others.

*9. Use design and programming strategies to increase safety*

Personal safety is at the base of successful public spaces and is critically important for encouraging use in transportation environments. Programming and use of spaces is vitally important. Many of the case-study areas were well used and had successful formal and informal policing of spaces. Specific design strategies can improve safety and the perception of safety and thus make the spaces more likely to be used including lighting, delineating public and private space, ensuring visibility, and limiting the potential for entrapment.

*10. Allow for variety and complexity*

Transportation environments that have a high level of consistency, as well as those with much variety and complexity, can provide a positive sense of place. In the United States, however, regulation tends to make areas uniform and so particular attention is needed to promote visual variety and a diversity of uses. Strategies include allowing mixed-use strategies and providing flexible design guidelines.

*11. Create connections between spaces*

It is important to make great transportation environments but it is also important to connect them to the broader urban fabric. All the case-study areas had well-connected street patterns relevant to their locations. The transit-oriented development areas in particular had similar patterns of streets and relatively small blocks allowing multiple options for movement. Buildings, however, did not always connect well to the outdoors and sidewalks were not always continuous for pedestrians. Cyclists had even more challenges finding comfortable paths.

Facilities: Facilities for pedestrians, motorists, cyclists, and transit can all exhibit good design. This pedestrian bridge over a roadway at Millennium Park in Chicago reflects the avant garde architecture of the park.

## Facilities

*12. Design sidewalks and crosswalks, for appropriate pedestrian use*

Creating spaces that encourage walking depends partially on proper design of spaces reserved for pedestrians, and partially on places where pedestrians intersect with other users, especially motorists. From sidewalks to crosswalks, successful places have appropriate facilities.

*13. Create spaces for bicycles and bike parking*

Bicyclists are another type of transportation user whose presence and needs should be accounted for in the design process. Designing for bicyclists can be difficult, because in some ways their needs are similar to those of pedestrians, in other ways to drivers, but in still other ways, their needs are unique. Overall, bicycle infrastructure is part of a system that includes paths and parking.

*14. Integrate transit and transit facilities into the urban pattern*

The design of bus and rail facilities is complicated, as various needs and constraints must be properly balanced. A transit facility is a transition point between various modes, as people park cars and bikes and walk before heading on to mass transit. People also

Facilities: A street median at the planned community of Civano in Arizona uses local plants to reinforce a sense of place and to integrate the roadway with the overall design concept of this new neighborhood.

transfer between routes or types of transit. Modern transit facilities, especially in the case of transit-oriented development add shoppers, workers, and residents to this mix creating an even more diverse set of demands and expectations on transit facilities. These challenges also bring opportunities. Transit naturally brings people together, a key goal of urban designers seeking to promote vibrant street life. Transit can also serve as the impetus for economic or community development in a place, as investments in transit offer a chance to pursue other, complementary goals.

*15. Do not forget, but do not overemphasize, car movement and parking*

A number of design elements for streets can be used to create more walkable places, while simultaneously making the urban or suburban environment safe for drivers, as well. Many of these entail slowing down or restricting traffic to a more suitable level for the areas through which they pass. Reduced levels of service should be compensated for in other ways, however, such as by enhancing traffic capacity on parallel or nearby streets.

## Conclusion

Good design and planning—both process and product—involves using this toolkit in a way that is responsive to context and can be appreciated by different publics. Over time design can be a catalyst for other benefits.

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