



New Designs for New Times

Transportation • Issue Brief

Background

Designers constantly strive to make things better – more functional, efficient, attractive, convenient, and cost-effective, among other aims. As their imaginations become reality, our everyday lives evolve, including how we move about. In recent decades, transportation design innovations have resulted in new systems for collecting tolls, timing traffic lights, and improving automotive fuel efficiency. Yet road design has been remarkably consistent over the past 50 years.

This Issue Brief highlights how to improve transportation design.

Historically, engineering considerations such as increasing the flow of cars have dictated the design of our transportation systems. While a focus on standardization and safety has had

benefits, the accompanying rigid design standards for roads and top-down decision making processes have tied the hands of transportation agencies in addressing other considerations — whether it is safety of pedestrians, the impact on the natural environment, or consistency with the design of the local community.

The results are plain to see. Arterial streets have become dividing lines in communities. With public trans-

portation inaccessible in many areas, residents — especially young and elderly — are unable to travel safely anywhere without a car. Aesthetic and scenic concerns are sacrificed for car-centric design, and common streetscapes have no relation to the surrounding community. Residents fight necessary transportation improvements because their concerns about the local environment and development patterns are not being addressed. Design standards, pursued in the name of public safety, are jeopardizing the public by creating un-walkable and transit-deficient communities. In addition, the lack of connections at the neighborhood level pool traffic onto arterials, leading to greater traffic congestion, pollution, and frustration by drivers.

What are Context Sensitive Solutions?... Page 2

CSS in Illinois... Page 4

Three Steps for Successful CSS Implementation... Page 5

Contact information.....

Peter Skosey

VP of External Relations

312.863.6004

312.922.5619 (fax)

pskosey@metroplanning.org

www.metroplanning.org



A major arterial for Chicago-area drivers, Lake Shore Drive (facing north) provides access to the lake, museums, and Chicago neighborhoods but does not meet typical design standards.

CONTEXT SENSITIVE DESIGN

Context sensitive design asks questions first about the need and purpose of the transportation project, and then equally addresses safety, mobility, and the preservation of scenic, aesthetic, historic, environmental, and other community values.¹

Transportation projects around the nation, as well as in the Chicago region, have increasingly become the focal points of organized community action. This is something that reflects not only a growing local-level dissatisfaction with the standard tenets of transportation design — wider, faster, and straighter — but also an increased regional interest in the relationship between transportation decisions and urban or suburban development patterns.

Due in part to this dissatisfaction, those responsible for creating and maintaining transportation infrastructure are embracing a new project philosophy to ensure that transportation projects are “context sensitive.” This movement recognizes that the value of a transit line or road goes beyond the individual driver. Rather, transportation facilities have significant economic, environmental, and community impacts that deserve consideration early on in the decision-making process.

In Illinois, the passage in 2004 of Public Act 093-0545 requires the Ill. Dept. of Transportation (IDOT) to include broader considerations in its project decision-making. IDOT has developed a set of policies for how “context sensitive solutions” can be achieved through a fresh approach

that connects transportation project planning to land use goals in Illinois. It promises change that will serve citizens and local communities far better through flexibility and improved design.

What are Context Sensitive Solutions?

The Federal Highway Administration (FHWA) defines context sensitive solutions as a “collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits the physical setting; preserves scenic, aesthetic, historic and environmental resources; and maintains safety and mobility.”²

Achieving context sensitivity in transportation projects is not a new idea, and has been promoted by the federal government for many years. Many trace the roots of context-sensitivity back to the National Environmental Protection Act (NEPA) of 1969, legislation that continues to have a significant impact on how transportation projects interact with their surrounding environments.³

Beginning with the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991, and continuing in subsequent transportation legislation, context sensitive design has been more directly

addressed at the federal level. These bills relaxed broad engineering and design rules for federally funded projects, and allowed states to create their own rules for transportation design both on and off of the national highway system.

Additionally, in the late 1990s, FHWA began to advocate that greater weight be given to natural, environmental, pedestrian, and scenic considerations throughout the project development process.⁴ Professional organizations such as the American Association of State and Highway Transportation Officials (AASHTO) began creating standards for accommodating bicycle and pedestrian traffic. Meanwhile, the federal Transportation Enhancements program set aside money for projects that addressed bicycle, pedestrian, scenic, or historical preservation concerns.⁵

As the federal government began allowing flexibility within design standards and helping provide the technical and financial resources for more context sensitive design, many state DOTs have instituted more flexible design standards. They have placed a priority on how a truly “context sensitive” design must be the result of a process where the needs of



During the recent Lake Shore Drive reconstruction, IDOT upgraded bridges and underpasses that provide access to the lakefront and parks, making the design more people-friendly.

the surrounding community are consulted early on. The term “context sensitive solutions” (CSS) was coined with the recognition that an inclusive process, which satisfies local communities, is as much part of the goal as the final design.⁶

This entails a shift in approach: from the myopic “curb-to-curb” consideration of a project, to an “outside-in” approach, where the context is considered from the beginning and drives the resulting design.

Context sensitivity brings together many perspec-

tives. For some, CSS is a method that accommodates multiple modes of travel (motorists, cyclists, pedestrians, transit vehicles). For others, CSS is about addressing how transportation corridors shape land use patterns. For yet others, CSS is a public involvement strategy that moves beyond public relations and finds meaningful ways for citizens to give input on all phases of a transportation project.

A successful CSS process should consider all of these factors and more, making sure to balance them with the safety, mobility, and accessibility needs that transportation projects traditionally serve. This entails a shift in approach: from the myopic “curb-to-curb” consideration of a project, to an “outside-in” approach,

where the context is considered from the beginning and drives the resulting design.

State DOT initiatives

The relaxation of federal rules regarding the national highway system opened up new flexibility for states in their design guidelines, and prodded them to consider a balanced set of environmental, community, and transportation needs. Starting in the mid-1990s, a number of states have taken the lead in developing CSS policies.

- **Connecticut:** The Connecticut Dept. of Transportation has promoted context sensitive design through statewide awareness training, training courses for its managers, and development of an ongoing training course for engineers through collaboration with the University of Connecticut's Engineering Department.
- **Minnesota:** CSS became part of the state's ongoing effort to involve the public in every stage of transportation decision-making.⁷
- **New York State:** The DOT matched context-sensitivity with their statewide Environmental Initiative, to make the environmental review process more effective, and provide environmen-

Benefits of Context Sensitive Solutions

Projects respect their place.

Understanding the context of a project early on can reap many benefits, including: protecting environmental assets, enhancing the attractiveness of a community, and building community support.

CSS is cost-efficient. A true CSS process encourages appropriate expenditures of resources at appropriate times and offers the most cost-effective approach because it addresses the problems before they become costly mistakes. This avoids the “rework” cycle evident in so many large transportation projects, when projects need to be redesigned because they did not fit well the first time.

CSS is more people friendly. It is responsive to the neighborhood need rather than imposing top-down rules.

CSS creates partnerships between the community and design experts. CSS sets the stage for positive interaction between the community and IDOT (or transportation providers), making sure that the technical design components address the public's needs and forming partnerships that facilitate implementation.

CSS has lasting results. Adding CSS to the design process will result in more pleasing, publicly supported transportation project and design excellence. Incorporating its tenets through construction and maintenance ensures continuing public approval.

tal enhancements such as streetscaping, plantings, and bikeways as part of transportation projects.

- **Maryland:** The Maryland Dept. of Transportation State Highway Administration has developed a “Thinking Beyond the Pavement” strategic plan to guide implementation, conducted charrettes to identify project development process strengths,

designed a project evaluation instrument, and established teams to review and implement project improvement strategies.

- **Washington:** The DOT is focusing its commitment to context sensitivity around a community partnership initiative called “Vibrant Communities.”⁸

During the 1990s, the FHWA and AASHTO began working with selected state DOTs on a pilot project to create flexible design criteria that integrate safety, environmental, scenic, historic, community, and preservation concerns. In Maryland, Connecticut, Kentucky, Minnesota, Utah, and a growing number of other states, agencies have come to recognize that respecting context sensitivity is a key part of fulfilling their missions.

Although some state and federal transportation agencies have led the way in developing CSS policy, the practice of being “context sensitive” routinely happens at the local level. The potential for CSS is especially important for county or municipal governments, who have the ability to directly coordinate their transportation investments with other land use and planning initiatives.

A recently published review of best practices⁹ from these early adopters shows there have been shared experiences across states. One key lesson is that CSS cannot work as a project add-on — it must be an integral part of the agency’s project-delivery process.

There are **three key aspects** that CSS should deliver:

1. Effective decision making and implementation;
2. Outcomes that reflect community values and are sensitive to environmental resources; and
3. Solutions that are safe and financially feasible.

CSS cannot work as a project add-on — it must be an integral part of the agency’s project-delivery process.

CSS in Illinois

Most of these concepts are not entirely new for IDOT, but the agency has not applied a consistent method for accomplishing context sensitivity in all of its projects. Without a real commitment to CSS, local opposition to new and expanded transportation

projects tends to surface early on. If CSS is to be successful throughout the state, IDOT’s priorities need to be aligned with a regional vision and long-range plan. During the early stage of planning, IDOT must balance local planning objectives with system-level needs.

Opposition can also arise to a particular project once initial designs have been revealed. This happens when the right stakeholders are not involved from the beginning of the planning and design process, when viable, community-inspired alternatives are not considered, and when local issues are not addressed. Sometimes — due to public and legal challenges — projects are delayed for years at a great cost or even abandoned without the existing transportation need ever being met.

New state CSS legislation requires IDOT to be more flexible in the design of projects and encourage community input in its transportation decision-making process. Once the state develops a CSS policy, implementation will be dependent upon strong commitment and leadership throughout state government, and most importantly, fundamental changes to the way IDOT has traditionally done roadway planning. It will

Founded in 1934, the Metropolitan Planning Council (MPC) is a nonprofit, nonpartisan group of business and civic leaders committed to serving the public interest through the promotion and implementation of sensible planning and development policies necessary for a world-class Chicago region.

MPC conducts policy analysis, outreach and advocacy in partnership with public officials and community leaders to improve equity of opportunity and quality of life throughout metropolitan Chicago.



The renovated intersection at Lake Shore Drive and 55th Street now features an underpass for pedestrian and cyclists to access the lakefront.

require a stronger emphasis on the stakeholder, project process, design flexibility, and institutional commitment.

Three Steps for Successful CSS Implementation

Step 1: Involve the community when project planning begins

It is critical to analyze the planning and design process. For CSS to work, the community's involvement in and knowledge of IDOT's project must begin early when needs are being defined, continue through the end of project construction, and include feedback on results. The process needs to be conducted in partnership with local officials and community leaders, and projects should be consistent with the goals identified through local planning efforts. The process also needs to be guided by multidisciplinary teams that can address the many aspects and impacts of a

transportation project, from engineering and landscape architecture, to public involvement, transit considerations, and environmental stewardship.

Proper community involvement and consideration of social, economic, and environmental impacts will help ensure that a transportation project is safer and more efficient for users, but also in harmony with the surroundings. In addition, effective public involvement fosters a sense of ownership from citizens. At the same time, it is important to remember that well-thought out community involvement processes will not necessarily please everyone. It is about moving beyond the top-down public relations efforts and implementing an effective, clear and open decision-making process that works through competing needs and arrives at a consensus solution.

Step 2: Encourage multi-modal, environmentally sensitive designs

The design guidelines at IDOT must encourage innovative solutions to transportation needs. This involves a less rigid adherence, when warranted, to some of the "age-old rules" of transportation design, which may not be appropriate in local situations, as well as recognition that major transportation projects offer opportunities for broader community improvement.

Roadway design guidelines, such as AASHTO's Green Book, offer a set of geometric ranges for projects, respecting the fact that different projects will have different priorities. Typically, transportation designers gravitate toward the higher, more conservative end of these ranges.

One example is the design speed of a road, or the speed at which a driver can safely travel. Using such aspects as a road's straightness and lane width, it is recommended practice to require minimum design speeds that are higher than the posted speed limit. These requirements dictate specific design elements regardless of context (e.g., a pedestrian-oriented main street). Because operating speeds will tend to conform to design speed, a high percentage of drivers

The public is demanding Context Sensitive Solutions

The CSS approach has gained popularity for a number of practical reasons.

Increasing public discontent.

Over the past few decades, public opposition to roadway construction projects has grown dramatically, leading to many projects being delayed or abandoned altogether. At the same time, citizens have demanded an increasing amount of government accountability.

Growing objection to the rigidity of design standards.

Interest groups and public officials have recognized that existing standards value engineering considerations over broader community goals, and make it difficult for states and localities to make even minor changes to their transportation facilities.

CSS support from FHWA. Support from the federal government for CSS includes publishing "best practice" guides, sponsoring training/conferences, and including context sensitivity and public participation in drafting federal transportation legislation.

Shift in transportation, public focus. As the focus of transportation systems — especially highways — has shifted away from creating new infrastructure to maintaining and upgrading the existing system, public attention has also shifted to how to enhance the existing system. Local projects are also often under more pressure today to incorporate pedestrian, bicycle, and mass transit synergy into the transportation landscape.

South Lake Shore Drive: Community input drives design changes

Considering community needs early on in transportation projects increases the probability that innovative design elements will add amenities for the local community. A great example of this is the recent Lake Shore Drive reconstruction work on Chicago’s South Side, a collaborative project of IDOT, the City of Chicago, and the Chicago Park District.

In 1965, IDOT planned what was for them a typical project: making the Drive wider, straighter, and faster

to accommodate increased demand. In the process, many of the natural features of the lakefront parks were sacrificed, and the residential communities’ access to the lake was severely limited. Public opposition was loud and forced the agency to scrap initial plans. The end result was a project that took much more time and created a persistent distrust of IDOT by the community.

In 2000, IDOT was again leading a major upgrade to this section of the state highway. But instead of

just focusing on increasing roadway capacity, the agency placed a preference on improving its operational efficiency. By partnering with community groups, IDOT was able to address lingering problems that residents had recognized for years: not enough pedestrian and bicycle access points to the lake, and poor integration of the road with its natural setting along the lakefront park system.

In addition to improving operational efficiency and public safety, IDOT

upgraded the bridges and underpasses that provide access to the lakefront and parks, and added more natural landscaping to let the highway “blend in” better with its surroundings. In the end, the project was a tremendous success — for the community, because its ideas were incorporated into the process, and for IDOT, because the public embraced the reconstruction as a physical enhancement to their community.



The Lake Shore Drive reconstruction work on Chicago’s South Side is a prime example of applying context sensitive design principles.

exceeding the speed limit would suggest a higher speed limit, which would suggest a higher future design speed, and so on.¹⁰ IDOT now has an opportunity to review its design guidelines in light of such conflicts, and determine when exceptions should be allowed. These guidelines may not be particularly inappropriate for roadways through residential neighborhoods, where students may be prevented from walking to school due to poorly designed paved roads.

IDOT must also find ways to encourage innovative design concepts that make projects more environmentally sensitive, address multi-modal concerns, and enhance the assets of a community. Many states

have programs that mandate or encourage natural landscaping and conservation in rural or scenic settings. There are design guides on bicycle and pedestrian access, as well as methods for traffic calming in Main Street and neighborhood settings. Such programs and guidelines can go a long way toward encouraging a fresh approach to design rules.

Step 3: Statewide implementation of policies that enforce CSS

While IDOT has taken the first steps toward developing a statewide CSS policy, including demonstrating this concept in various projects around the state, a long-term commitment to CSS will require a philosophical change in road-

Peck Road Corridor in Kane County: Considering an entire corridor’s transportation and land use

A prime example of innovative local transportation design has been achieved by Kane County’s work on the Peck Road corridor, a north-south rural road west of St. Charles, Geneva, and Batavia. By 1990, the pattern of growth approaching the Peck Road corridor, just over a mile to the west of Randall Road, seemed destined to turn it from a two-lane, rural road into another sprawling arterial. At the time, the county designated Peck Road as a highway, with the idea that it would become a main north-south route. The land directly east of the road, formerly agricultural, was mostly slated for development.

Scenic, environmental, and community considerations were recognized as impor-

tant. Rather than simply sending a road-widening project to engineers, the county hired a planning consultant to study the existing corridor. The result was a set of recommendations that emphasized preserving the rural and scenic nature of the areas west of Peck Road, which included existing open space, the Mill Creek watershed, and a number of historic farmsteads.

The study was well received by county and municipal officials, which shifted the focus to thinking about how the county could have a road that functioned better but still preserved some of the area’s rural and scenic attributes.

According to Phil Bus, Kane County development

director, the key was completing the plan — which suggested preserving open space, creating a dedicated bicycle path, and monitoring the ways that development interacted with the road — and then getting support from the adjacent municipalities. In particular, the City of Geneva embraced the plan, and made a decision to stop the growth of its city boundaries at Peck Road, leaving the areas to the west rural. Likewise, Kane County’s Comprehensive Land Use Strategy map shows Peck Road as a dividing line between the “urban areas” to the east and the “critical growth areas” to the west, with preserved open space tracts, especially along Mill Creek.

Another key recommendation was having houses that faced the road — with driveways — rather than the typical subdivision development that turns its back to the road. “Our purpose was to have a road that could carry more traffic,” he explained, “but with houses that front it rather than backyard stockade fences.”

These, and other recommendations, went against many of the “rules” of highway design, and faced resistance from some transportation professionals. Bus said that successfully accomplishing a different design along Peck Road — one that did not follow the traditional rules of expanding to meet demand — has changed the outlook of some of those engineers.

way design within all government agencies and at all levels within IDOT. This commitment must include internal policies that ensure context sensitivity is incorporated into all projects, and a set of performance measures — for staff as well as projects — to assess the ability of project managers to deliver design solutions that satisfy the needs of communities and to evaluate progress.

In following IDOT’s lead, regional, county, and local level transportation infra-

structure planning should also adhere to CSS policies. This signifies the importance of a truly connected transportation system and better coordinated transportation and land use plans.

The Illinois State Toll Highway Authority’s long-range plan, *Open Roads for a Faster Future* (2004), lists the establishment of corridor planning councils as one of its five major goals, citing the need to “strengthen the partnership between the Tollway



Scenic, environmental, and community considerations were recognized as important when planning consultants designed Peck Road in Kane County, with more intense development allowed to the east.

and communities it serves ... [and] improve mobility for communities served by the Tollway through a revamped interchange policy, intermodalism and context-sensitive improvements such as sound walls and bike paths.” The forthcoming extension of Interstate 355 is an opportunity to put CSS into practice by giving all involved parties an opportunity to be a part of the planning, design, and implementation of this project, as well as ensuring that it will meet the need of the community and fits within the context of its surroundings.

And, it is not just IDOT or the Toll Authority that can make a difference. Local planning for interconnected streets, mixed uses, community-wide pedestrian and bicycle plans, and transit-friendly develop-

ment are absolutely crucial in creating the context in which transportation projects are designed. Transportation design can become far more people friendly, just as so many other consumer products have improved their design.

Issue Brief written by Natasha Holmes, Senior Transportation Associate, and Jeromie Winsor, former MPC transportation research assistant.

Photos courtesy of Edwards and Kelcey and Kane County Division of Transportation

MPC is grateful to The Joyce Foundation whose funding made this work possible.

Thanks also to the John D. and Catherine T. MacArthur Foundation and the McCormick Tribune Foundation for their funding of MPC's Regional Action Agenda, of which this program is a component.

Endnotes

- 1 “Thinking Beyond the Pavement,” Maryland State Highway Administration Workshop, 1998,
- 2 National Context Sensitive Design Web site <http://www.fhwa.dot.gov/csd/index.htm>
- 3 “Flexible Design of New Jersey’s Main Streets,” Voorhees Transportation Policy Institute, http://policy.rutgers.edu/tpi/docs/flexdes_ch1.pdf.
- 4 “Flexibility in Highway Design,” FHWA, 1997, <http://www.fhwa.dot.gov/environment/flex/index.htm>
- 5 “Enhancing America’s Communities: A Guide to Transportation Enhancements,” National Transportation Enhancements Clearinghouse, 2002, <http://www.railtrails.org/whattwedo/information/TEGui-de2002.pdf>
- 6 “A Best Practices Guide to Achieving Context Sensitive Solutions,” NCHRP Report 480, 2002
- 7 “Hear Every Voice: A Guide to Public Involvement at Mn/DOT,” Mn/DOT, 1999 <http://www.fhwa.dot.gov/csd/minn.htm>
- 8 “Building Projects that Build Communities,” Washington State DOT, 2003, http://www.wsdot.wa.gov/biz/csd/BPBC_Final/
- 9 NCHRP Report 480, “A Guide to Best Practices for Achieving Context Sensitive Solutions,” 2002
- 10 “Flexible Design of New Jersey’s Main Streets,” Voorhees Transportation Policy Institute, 2002, http://policy.rutgers.edu/tpi/docs/flexdes_ch1.pdf.

METROPOLITAN PLANNING COUNCIL



NON-PROFIT ORGANIZATION
U.S. POSTAGE
PAID
CHICAGO, IL
PERMIT NO. 8307