



Context Sensitive Solutions and Design

What is CSS/D?

The use of Content Sensitive Solutions (CSS) to achieve Context Sensitive Design (CSD) outcomes is referred to as Context Sensitive Solutions and Design (CSS/D). The information below provides additional details and the timeline shown on the right sidebar highlights some recent CSS/D milestones and resources.

CSD is a design process that considers the physical setting and design criteria of a transportation facility, as well as the economic, social, and environmental resources in the community being served by that facility. A CSD approach helps to ensure projects:

1. Are safe for all users
2. Use a shared stakeholder vision as a basis for decisions and for solving problems that may arise.
3. Meet or exceed expectations of both designers and stakeholders, thereby adding lasting value to the community, the environment, and the transportation system.
4. Demonstrate effective and efficient use of resources

The CSS process is a collaborative, interdisciplinary, and holistic approach to the development of transportation projects. The CSS process involves all stakeholders, including community members, elected officials, interest groups, and affected local, State, and Federal agencies. The CSS process values equally the needs of agency and community, considering all trade-offs in decision-making.

The CSS process is guided by four core principles:

1. A shared stakeholder vision to provide a basis for decisions.
2. A comprehensive understanding of contexts
3. Continuing communication and collaboration to achieve consensus.
4. Flexibility and creativity to shape effective transportation solutions, while preserving and enhancing community and natural environments.

The CSS process considers a range of goals that extend beyond the transportation problem. Such goals often include quality of life, sustainability, active transportation, economic development and community revitalization. The CSS process allows for the identification and evaluation of diverse objectives early, thus allowing greater participation by affected stakeholders. A CSS process can help facilitate greater consensus resulting in streamlined project development and delivery. The CSS process is most effective when employed throughout the project lifecycle, beginning with problem definition, continuing through design and construction, and concluding with addressing questions about maintenance and operation. The CSS process can be applied at any scale from small projects, to corridor strategies, and long-range transportation plans. For more about applying the CSS approach in transportation decision making, refer to FHWA's [CSS/D website](#).

Recent Milestones	
2015	
FHWA introduces Performance-Based Practical Design to complement CSS/D	
2017	
ITE publishes Implementing Context Sensitive Design for Multimodal Thoroughfares: An ITE Informational Report	
2018	
FHWA introduces Economic Development and Highway Right-Sizing	
FHWA offers resources on Using Context Sensitive Solutions to Achieve Context Sensitive Design, State of the Practice Assessment	
FHWA publishes Summary Report – Using Context Sensitive Solutions to Achieve Context Sensitive Design, Technical Assistance and Peer Exchanges	
TRB publishes An Expanded Functional Classification System for Highways and Streets (NCHRP Report 855)	
AASHTO releases 7 th edition of “A Policy on Geometric Design of Highways and Streets (The Green Book)”	
2019	
AASHTO’s Center for Environmental Excellence publishes summary report from Design Flexibility and Context Sensitive Solutions Workshop	
2020	
TRB published a Practitioners Guide on Context-Sensitive Design Options for Workhorse Bridges in Rural Historic Districts, NCHRP Document 278 (Web-only).	

Creating more livable communities through transportation choices



Benefits of CSS/D

For Transportation Agencies	For All Stakeholders
<ul style="list-style-type: none">• Solves transportation problems effectively and efficiently• Measures performance using a data driven approach• Accelerates project delivery• Increases stakeholder participation and satisfaction• Manages risks and liability through an assessment of tradeoffs• Shares responsibility for solutions and funding• Addresses full transportation life cycle	<ul style="list-style-type: none">• Improves safety and mobility for all users• Expands multimodal options (including micromobility)• Tailors transportation solutions for the appropriate context• Maximizes value and return on investment• Demonstrates due diligence, transparency, and accountability• Promotes stewardship and improves environmental outcomes• Strengthens partnerships and stakeholder engagement• Facilitates project development that is sustainable and improves community quality of life

CSS/D Today

CSS emerged in the 1990s as an approach to getting transportation projects built in a responsive, timely, cost-effective, contextually-based, and environmentally sound manner. Today, we note the CSS decision-making process and the context sensitive design outcomes as CSS/D. This approach continues to serve as an effective tool as agencies work to plan, build, and retrofit transportation projects. CSS/D can be integrated within all phases of multimodal project development and delivery, including planning, environmental review, design, right of way, construction, maintenance, and operations.

The Federal Highway Administration (FHWA) continues to leverage successful programs and projects to demonstrate how States and local agencies are incorporating CSS/D as a core program delivery tool. This includes consideration of design context relating to the deployment of mobility innovations such as shared use systems, new active transportation devices, including micromobility, automated and connected vehicles, and curb space allocation for small parcel goods movement, Mobility as a Service (MaaS) kiosks, charging stations, and other supplemental uses needed for new and emerging technology.

CSS/D helps agencies meet today's transportation challenges through integrating a host of Federal, State and local programs and initiatives that further CSS/D state of practice and help buildout connected multimodal networks that are context sensitive and improve quality of life.

CSS/D in Practice

RURAL

The North Dakota Department of Transportation (DOT) successfully leveraged CSS/D principles to quickly plan and build the Highway 85 bypass around Watford City to accommodate a significant increase in traffic in the area following the oil boom in the late 2000s. The bypass proved to be an effective solution that not only resulted in substantial traffic safety improvements, but also facilitated improved quality of life for Watford City residents.

URBAN

Loop Expressway into a redesigned context sensitive urban arterial corridor. The project filled in over a half a mile of the below-grade highway to grade-level, making six acres of both city- and State-owned land available for development. Concurrently, the city of Rochester made improvements to the adjacent Union Street, including street parking, sidewalks, greenspace, and bicycle accommodations. The completed project connected neighborhoods and leveraged public-private partnerships to redevelop the land made available by removing the highway.

Federal Highway Administration: www.fhwa.dot.gov/livability



The Indianapolis Cultural Trail is an 8-mile urban bicycle and pedestrian path in downtown Indianapolis, Indiana that exemplifies the positive effects of context sensitive design can have on communities. The trail uses excess right-of-way from wide city streets to connect the city's seven cultural districts to each other and to improve pedestrian and bicyclist access throughout the city. It has led to extensive real estate development in areas along the trail, improved safety, and has transformed the way residents and visitors experience the downtown area.



Pedestrian travel separated from bicycle travel on segments of the Indianapolis Cultural trail. (Rundell Ernstberger Associates, LLC)

SUBURBAN

Near Seattle, WA, the Washington State DOT used a context sensitive design approach as part of the SR 520 Bridge Replacement project to implement improvements to the **Montlake Boulevard Interchange**. The project resulted in a landscaped cap the over SR 520 with a bicycle/pedestrian “land bridge” east of the cap, and a three-lane West Approach Bridge South, over Union Bay, for eastbound traffic. The project development process included extensive stakeholder involvement facilitated through the Seattle Community Design Process.

The Virginia DOT, with support from FHWA, developed a corridor plan for context sensitive traffic calming along Route 50 in Loudoun and Fauquier Counties. The **Route 50 Corridor** is 24-mile rural highway located 45 minutes northwest of Washington, D.C., that serves as a through route and main street for several small towns.



The corridor plan supports multiple uses and users of the roadway in the communities along the corridor. (FHWA)

ORGANIZATIONAL

In 2016, the Pennsylvania Department of Transportation (Penn DOT) adopted a context sensitive design approach for its program development and project delivery process called **PennDOT Connects**. *PennDOT Connects* helps ensure a shared stakeholder vision during the decision-making process by facilitating meetings with MPOs, RTPOs, local governments, and other community stakeholders to discuss priorities during project planning, prior to developing project scopes and cost estimates. The purpose of the program is to improve the transportation system for all Pennsylvania communities through collaborative planning and collectively reaching context sensitive solutions that sustain and expand mobility throughout the State.

Understanding CSS and Design Flexibility

A key pillar of CSS/D is **flexibility in design**. Flexible design can meet local and community needs, improve accommodations for all transportation facility users, and provide a practical way to help state DOTs meet the challenges of constrained budgets and environmental or built conditions. When the flexibility inherent in design policies is not recognized or not used, it can lead to one-size-fits-all solutions and turn into conflicts, project delays, and overly complex projects. Through efforts including CSS/D and performance-based practical design, FHWA is helping design professionals better understand how to use flexible design and multidisciplinary approaches to delivering projects.

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