

B. ABOUT THIS GUIDE – THE MULTI-DISCIPLINARY APPROACH TO CSD/CSS

The key strength of the CSD/CSS concept and methodology is its applicability to all of the agency participants in the transportation development process. Because of this flexibility, CSD/CSS can be applied from numerous perspectives and, in doing so, bridge differing points of view to successfully implement projects. For example:

- **Project managers** must balance a wide range of budget and resource prioritization issues and determine how to efficiently deliver the right resources at the right times during the project.

CONTEXT SENSITIVE DESIGN/SOLUTIONS								
A	B	C	D	E	F	G	H	
Introduction to CSD	About this Guide	Effective Decision Making	Reflecting Community Values	Achieving Environmental Sensitivity	Ensuring Safe and Feasible Solutions	Organizational Needs	Case Studies	Appendices
Management Structure								
Problem Definition								
Project Development and Evaluation Framework								
Alternatives Development								
Alternatives Screening Evaluation and Selection								
Implementation								

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- The **highway engineer’s** perspective focuses on the development and application of critical design criteria, and on providing the intended performance, including safety and operational efficiency. In the CSD/CSS environment, highway and traffic engineers are concerned with how to develop creative, affordable design solutions that are consistent with good engineering practice and principles.
- **Environmental managers**, whose staffs are responsible for assessing the impacts of project alternatives, providing documentation, and proposing mitigation, will be concerned with interacting effectively with highway engineers, resource agency representatives, and the public as part of the project team.
- **Public involvement specialists** are concerned with identifying who should be involved in the project, how best to seek their input, and how to integrate that input so that it provides meaningful information to project technical staff.
- **Senior managers** and transportation **agency administrators** are ultimately responsible for meeting the needs of their customers and seeing that the project is delivered on time and within budget.

All of these roles are critical to the success of transportation improvements – and CSD/CSS is an approach that enables disciplines to effectively accommodate what otherwise might be competing interests. The interaction among these professional disciplines is complex. The management and integration of staff resources represents perhaps the greatest challenge in effective project development for an agency, because project success will be achieved not by individual “pockets” of professionals working independently, but by forming teams and integrating activities.

The sections in this document are designed to reflect these different perspectives, as described below.

CSD/CSS FOR PROJECT MANAGERS

Every decision maker is confronted with balancing numerous options, stakeholders, and professional disciplines while delivering transportation projects. Often, this balance is achieved through the day-to-day management of resources and staff; in the end, effective projects are designed and built. As programs become more complex and stakeholders more interested in influencing how projects impact their communities, delivering successful projects becomes much more complex. Additional requirements come from the environmental process and the formal public input process required by NEPA.

Singly, each of the disciplines and stakeholders that must be included in the development of a project is manageable. As input from multiple sources is required, the risk of miscommunication, of improper analysis or technical omission, or of alienating a key constituent grows dramatically. A worst case scenario: a needed project is derailed because a critical point of view was left unconsidered; a significant environmental impact was not recognized; or constituency rallies a community against the project.

CSD/CSS is a formalized process for significantly reducing the risk that a project gets derailed. The worst case scenarios listed above are generally avoidable – had there been the one public meeting to capture a previously unknown stakeholder’s point of view or better communication among designers and environmental experts, the project may have been completed without a problem.

Using CSD/CSS processes effectively takes some effort and resources, but these are generally well worth the benefits gained from ensuring that all disciplines are working together; that they have a process for identifying and resolving differences; and that decisions are documented and defensible.

Although project managers will generally not be expert in all technical disciplines, they should have an appreciation of the duties and challenges of each discipline and the ways each discipline can contribute to the project. For that reason, project managers will likely be interested in all content in this guide. Specifically, project managers may want to focus on the portions of each chapter related to management structure and specifically to Section C, Effective Decision Making. CSD/CSS is all about completing projects, which can be seen as completing a series of processes, tasks, and work efforts, each of which involves one or more key decisions.

CSD/CSS FOR THE TRANSPORTATION AND HIGHWAY DESIGN PROFESSIONALS

CSD/CSS presents significant challenges – and opportunities – for engineers and other design professionals responsible for implementing transportation projects. From this perspective, CSD/CSS focuses on identifying problems in functional or performance terms, and arriving at solutions that address them. In developing those solutions, the design process is presented as a series of choices, with the designer’s task being to make effective choices that balance the often competing interests of operational efficiency, cost, serving multiple users, and achieving environmental sensitivity.

Of course, designers will be concerned with how to effectively employ the proven design criteria and policies published by AASHTO and their respective agency, without increasing the risk to their agency. Section F, Ensuring Safe and Feasible Solutions, addresses these primary concerns. In particular, the Problem Definition and Alternatives Development sub-sections present non-traditional approaches that may be of special interest.

Many designers will also be concerned with how they can effectively present or communicate ideas to non-technical stakeholders, how they should interact with other fellow professionals such as environmental specialists, and how they can play an appropriate role in the overall decision process. CSD/CSS provides a methodology for designers to present the rationale for guidelines and criteria and a working environment to determine which guidelines might be adjusted while maintaining safety. While CSD/CSS may result in more effort than simply “going by the book,” it is unlikely that today’s community stakeholders will allow untenable projects to proceed. Since successful projects will require a level of compromise and trade-off, CSD/CSS is an excellent tool for providing structure to the process. In the end, key decisions will be documented, absolutely necessary design requirements will be met, and guidelines that can be adjusted for the betterment of other factors will be modified in a reasonable, defensible manner. Thus, individual areas of other chapters in the guide will be valuable and of interest to highway designers as well.

Finally, designers should be interested in how the concepts, research, and ideas are translated into real project solutions. Section H, Case Studies, provides a wide range of CSD/CSS creative design solutions and applications of the concepts to illustrate in real terms what CSD/CSS is all about.

CSD/CSS FOR THE ENVIRONMENTAL MANAGERS

Since the enactment of NEPA, recognizing the importance of natural and human environmental issues has become a key component of most infrastructure projects. Obtaining public input and understanding community needs is a key benefit of the environmental process that is now making its way into all aspects of project evaluation, development, and implementation. CSD/CSS is a key tool for extending the benefits of an inclusive project development approach and as such, should be most familiar to environmentally focused disciplines.

CSD/CDD offers additional opportunity beyond addressing environmental issues. It allows all points of view, including community concerns, questions about design standards, and project delivery and management issues, to be addressed in a structured, iterative process. This allows those responsible for the environmental process to gain an understanding of engineering issues that might affect a project's safety or constructibility. This process also provides a forum for resolving conflicts in the early phases of a project, as part of initial alternative development, thereby reducing the likelihood that they will become larger project risks or fatal flaws during the formal environmental review. Section E, Achieving Environmental Sensitivity, was prepared to provide an overview of CSD/CSS from the perspective of the environmental process. Of course, environmental planners should also be interested in issues addressed in other sections of the guide, including alternative development, screening, and decision making.

CSD/CSS FOR PUBLIC INVOLVEMENT SPECIALISTS

Public involvement has become a key recognized component of most successful transportation projects. Starting with the environmental process, stakeholder input is an essential part of an overall project development effort. Many transportation agencies gather and use community input very effectively throughout the lives of projects – and CSD/CSS recognizes and documents programs that have turned out to be most effective. CSD/CSS integrates the best aspects of a robust community involvement and public information program throughout the project development process and across all of its technical disciplines. In addition to public, jurisdiction, and resource agency stakeholders, highway designers, environmental professionals, and project managers within the sponsoring agency are viewed as necessary stakeholders. CSD/CSS builds on what has worked, and expands the concept to a new audience. Section D, Reflecting Community Values,

captures the body of knowledge and experience to date from agencies that have successfully incorporated public involvement into their transportation projects.

Public involvement specialists may wish to consider making this manual available to the public-at-large. Community stakeholders will benefit from an awareness that a process such as CSD/CSS exists and is available for their participation. For the involved stakeholder, an in-depth understanding of CSD/CSS will be of considerable benefit, especially when it comes to appreciating and understanding the roles and responsibilities of the various participants described here.

CSD/CSS FOR SENIOR MANAGERS AND ADMINISTRATORS OF TRANSPORTATION AGENCIES

Senior managers of transportation agencies are concerned with the overall performance and effectiveness of their agency in meeting the needs of their customers. Completing projects that stakeholders support, that are on time and within budget, and that deliver value to customers are key objectives. Minimizing the potential for adverse outcomes from lawsuits is also a concern. While CSD/CSS offers significant opportunities to achieve these goals, its implementation may require management and cultural changes, or may call for investments in reorganization, retraining, and new skill development. Such implementation measures may present serious challenges to budget-strapped public transportation agencies.

Section G, Organizational Needs, addresses how some senior managers have transformed their agencies to be context sensitive in everything they do. Section G also addresses the benefits of organizational change. In addition, the management structure portions of all the guide chapters should be of interest to administrators and senior managers.

HOW TO USE THIS DOCUMENT

The CSD/CSS process is aimed at capturing all necessary interactions among the various professional activities. This is often a non-linear, iterative process, ideally communicated through Web technology that can present information in a non-linear, interactive format. For that reason, a key component of this report is the accompanying electronic version, the home page of which is shown in Exhibit B-1 (following page). This “e-deliverable” allows users to access each report element in whatever order he or she chooses. The e-deliverable also contains cross-reference

links throughout the document, including links to appendices, related sections, and all of the exhibits.

The material contained in this report is designed for numerous audiences, each with a different set of expectations and responsibilities for transportation project development. A reader may read the document cover to cover or, more likely, focus on those elements most useful for the challenge at hand. The printed version is designed to facilitate navigation as much as possible—the electronic version is ideal for a focused approach.

The Home Page represents the matrix shown at the beginning of each chapter in this document:

Exhibit B-1 E-Deliverable A Guide to Best Practices for Achieving Context Sensitive Solutions

The interactive version of this manual allows users to access material in a non-linear fashion. Readers may select sections in any order, select topics that appear in each section, or select any intersection of document sections and sub-topics. This e-deliverable contains all of the material contained in the printed report, as well as the associated appendices for each section.



- The **major topics** running across the top represent the major sections of the document, starting with Section C, Effective Decision Making, through Section G, Organizational Needs (and followed by Case Studies and Appendices). To read the document cover-to-cover in a linear fashion, each of these sections may be read in order. To read the major topics that are of priority to you, the title of each section may be selected for direct access.
- The **sub-topics** running down the left side of the matrix represent the sub-sections consistently addressed throughout the document. For most of the major sections noted above, these sub-sections are repeated and contain detail relevant to the specific section topic. For example, a discussion of Management Structure is contained in each section of this manual, each tailored for the section's specific issues and audience. To focus on each sub-topic, the sub-topic title may be selected to take the reader to its first occurrence. Subsequently, navigation is provided to the next occurrence of the same sub-topic through the rest of the document.
- Where the major sections and the sub-topic intersect, a **matrix** is created that illustrates the interrelationship between these key CSD/CSS concepts. In the electronic version, the reader may access these intersections of major topics and sub-topics directly, going immediately to the specific information of interest.

Other features of the electronic version of the manual include:

- **Exhibits.** All Exhibits contained in the published version or linked within the electronic document and are viewable (and printable) using the freely available Adobe Acrobat Reader.
- **Case Studies and Appendices.** Each case study is included along with accompanying exhibits.
- **Appendices.** To reduce the paper requirements in the presentation of this material, all appendices are included on the CD deliverable accompanying this guide. Materials are viewable and printable using Adobe Acrobat Reader.
- **Search Engine.** The electronic document is fully searchable, including all document text and text contained in Acrobat versions of the Exhibits and Appendices.
- **Cross-links.** Cross-references throughout the electronic document are linked, allowing the reader to jump quickly to topics of interest.
- **Bibliographic Links.** Citations to websites are linked and may be accessed directly from any computer with Internet access.
- **Added Material.** The electronic document contains simulation examples that cannot be shown in the hard copy.