The Nature of Context-Sensitive Solutions, Stakeholder Involvement and Critical Issues in the Urban Context

MTI Report 11-03

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REPORT 11-03

THE NATURE OF CONTEXT SENSITIVE SOLUTIONS, STAKEHOLDER INVOLVEMENT AND CRITICAL ISSUES IN THE URBAN CONTEXT

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16. Abstract

Over the last several decades many transportation and planning agencies have experienced conflicting demands emerging from the need to develop projects in an expeditious manner while at the same time involving stakeholders in the decision-making process, which sometimes is perceived as slowing project delivery and/or increasing costs. Given this tension between apparently conflicting demands, it is important to understand how the stakeholder involvement is being carried out and what best practices may be recommended. This study examines the issue in the context of a relatively new policy framework – Context Sensitive Solutions (CSS) – which supports the early integration of stakeholders into the planning process. The report pays particular attention to stakeholders' involvement in projects within urban centers, where there is likely to be more complexity, both in terms of the number of stakeholders and end users affected.

CSS is a relatively new process and not consistently interpreted or applied across states and/or agencies. The literature suggests that an underlying assumption when applying CSS principles to community involvement processes is that stakeholders are empowered through clear policies and procedures directed towards their participation. In our research, we found that the extent to which public agencies apply the CSS framework and involve and respond to stakeholders depends on each agency's interest to engage the public in the deliberation process to find the best-fit project for a community.

It is likely that the increased integration of stakeholders into the planning and project development process will not become a state of practice until the benefits flowing from community involvement are clearly understood by the agency staff. The CSS literature describes many benefits associated with comprehensive stakeholder engagement, including gaining constituents' buy-in and support for project financing. A movement toward standardizing CSS policies and directives across the country will facilitate a public discussion about the benefits of engaging communities into the project design phase and away from solely expert-based designs. In addition, there are a number of stakeholder involvement practices that, if adopted, could expedite the integration of communities' views and values in the decision-making process, while at the same time minimizing the chances of protracted consultation processes, time delays and additional costs.

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EXECUTIVE SUMMARY

Over the last several decades many transportation and planning agencies have experienced conflicting demands emerging from the need to develop projects in an expeditious manner. At the same time affected communities have to be involved in the decision-making process as required by the National Environmental Policy Act (NEPA). Moreover, stakeholder engagement is sometimes perceived by senior and middle management staff at transportation agencies as slowing project delivery or adding to overall costs.[1] Given this tension between apparently conflicting demands, it is important to understand how transportation agencies' public outreach processes are being carried out and what best practices may be recommended.

A relatively new policy framework known as Context Sensitive Solutions (CSS) has emerged in the United States to support the increased and early integration of stakeholders in the planning process. Consistent with the NEPA process, CSS involves taking the surrounding environment and its physical and historical characteristics into account during project development while integrating the views of stakeholders affected by the project. CSS has been defined as "an interdisciplinary approach that seeks effective, multimodal transportation solutions by working with stakeholders to develop, build and maintain cost-effective transportation facilities which fit into and reflect the project's surroundings – its context" (IDOT 2004). The Context Sensitive Solutions Clearinghouse[2] discusses a set of four core CSS principles that apply to decision making and outcomes for transportation and infrastructure projects. They are summarized as:

- Strive toward a shared stakeholder vision to provide the basis for decisions.

- Demonstrate a comprehensive understanding of contexts.

- Foster continuing communication and collaboration to achieve consensus.

- Exercise flexibility and creativity to shape effective transportation solutions, while preserving and enhancing community values and natural environments. (CSS website)

Many reports (NCHRP 2008, ICF International 2009) have discussed the benefits of CSS, including those that ensue from involving the affected communities in the decision-making process. The early interaction and agreement with stakeholders is seen to provide several benefits, including preventing legal challenges (thus avoiding project delays and related additional costs) (RTD 2009), gaining public support to help secure project funding (NCHRP 2008, ICF International 2009), increasing the public trust in agency responsiveness, and enhancing overall customer satisfaction (ICF International 2009, pp. 14-18, 32, 65-70), among others.[3]

Our research examined how the CSS framework is being applied to projects in urban districts, where there is likely to be more complexity in terms of the number of stakeholders and end users affected. Transportation projects in densely urbanized areas often face different challenges than highway or rail projects located in rural or suburban areas. This

research has sought to provide an assessment of how CSS is used in practice in urban centers, with a focus on CSS best practices regarding stakeholder involvement.

Several states around the country have instituted CSS principles but the interpretation and application of CSS varies across the nation. We found that states have had varying levels of success in applying the CSS process and/or incorporating its philosophy into the way they do business, in particular with respect to stakeholder involvement. Our recommendations for how CSS practices may be standardized across regions are based on information obtained from the available literature and several case studies. In addition, we have performed detailed analyses, including interviews with transportation agencies' staff members who had been engaged in the implementation of the following four projects:

- The Edgewater Drive project, in Orlando, FL,

- Route 9A, in New York City, NY,

- The US 131 S-Curve Replacement Project, in Grand Rapids, MI, and

- The *TRansportation EXpansion* (T-REX) project in Denver, CO.

It has been difficult to develop conclusive remarks when only four case studies could be considered on a comparative basis,[4] and when the state of the practice in certain categories varies so widely by region, scale of the project, and/or the particular agencies involved. This is particularly true with respect to the early integration of stakeholders into the planning process. Another challenge is that there are no clear metrics to guide practitioners on which public outreach tools work best.

Nevertheless, based on the limited cases reviewed, it appears that some practices have worked better than others and resulted in more effective and/or expeditious community involvement processes. Early engagement of the community is likely to produce satisfied "customers." This is especially true when it's executed during the first stages of project development in particular, during the "problem-definition" and "goal-setting" phases. While not always possible, involving the community to develop a comprehensive vision for the area or community where a potential project may be located generally returns good results, especially when followed by consultation about specific projects. Recommendations for the involvement of stakeholders in project development are summarized as follows:

1. **Adopt CSS policies and procedures.** Some states have adopted legislation to promote context sensitive design and/or solutions during project development and implementation. Other states should consider adopting comprehensive legislation to promote context sensitive design and/or solutions during project development and implementation. As a first step, state DOTs could institute organization-wide CSS policies (e.g., guidance and/or procedures and performance measures) and avoid implementing the CSS framework on a project- by-project basis. This will result in consistent procedural treatment throughout each state and all projects, thus helping to increase or repair public trust in the agencies' decision-making process. Attention

to the challenges faced by urban settings would provide much-needed guidance to transportation and planning agencies operating in densely populated centers.

2. **Coordinate across agencies.** Engaging other agencies is not only the recommended course of action to ensure collaboration and buy-in from all entities involved, it also brings additional resources when building multi-disciplinary teams. Due to the complexity of coordinating the efforts of multiple agencies, the lead agencies should properly allocate resources to this task. This should include accurate documentation of the interagency involvement process. Furthermore, agency staff should receive formal training on how to implement CSS policies and how to coordinate with other agencies and entities.

3. **Build multidisciplinary teams.** It is important to have a well-qualified team, particularly during the project definition stage. This will ensure that the solutions they propose will address potential problems across the entire life cycle of the project, encompassing not just planning, design, and construction, but also maintenance and operations. Structuring the teams to include a wide variety of perspectives produces more opportunities for optimizing the CSS implementation process. For example, engineers may be available to discuss which engineering standards are flexible and which are not. Maintenance and operations teams may be able to provide insights to ensure the efficient upkeep and operation of the facility.

4. **Integrate stakeholders into the planning process early and continuously.** An efficient and effective community involvement process would include stakeholders in the earliest stages, so that the project reflects the views and values of the community. This also helps to prevent legal challenges and delays in the later stages, when they're more costly. An optimal stakeholder engagement process generally involves the following steps:

   a. *Identify all relevant stakeholders.* The lead agency is advised to start the stakeholder engagement early on, in order to gather information from the community and identify all those who may be affected by a project. A detailed "mapping" of relevant stakeholders can help to achieve balanced representation. This mapping could identify key representative organizations and neighborhood coalitions that can be engaged to help in the outreach campaign, thus streamlining the process.[5] In identifying stakeholders, agencies should also consider the "broader context" including areas that are not within the project location but may be indirectly affected by it.

   b. *Build consensus.* To ensure a meaningful community involvement, it is important to set a clear collaborative structure to integrate stakeholders into the planning process, and to empower stakeholders by, for example, giving them a voice and vote in agency-led working groups, at Metropolitan Planning Organizations (MPOs) and other decision-making bodies. Clear rules of engagement about how to incorporate the various views and perspectives advanced by different constituencies should be in place and should be broadly shared and discussed with all the stakeholders. Having clear rules of engagement is particularly impor-

tant in urban centers, which are more likely to concentrate a variety of interests. Furthermore, policies and procedures for stakeholder involvement should be documented for both the lead agency and for other participating agencies.

c. *Engage the community to define the problem to be addressed.* Good practice would dictate that agencies should engage the communities at the very beginning of the planning process in order to better define the problem to be addressed. This may be achieved through visioning exercises in which the needs and values of the community are voiced.[6] For large cities, it is recommended that in addition to general visioning plans, agencies should also develop local-level plans, to ensure that particular communities and contextual elements of a site are integrated into the project design.

d. *Integrate contextual elements.* Careful consideration of contextual characteristics increases the likelihood that the vision for the project will be better aligned with regional plans, both in transportation and other policy arenas, while addressing the needs and values of the community where the project is located. It also increases the likelihood that multimodal options will be considered.

e. *Analyze alternatives for best project selection.* Developing the alternatives analysis requires stakeholder input into defining the problem, which includes the project's purpose, as well as the contextual elements. The lead agency should aid in defining trade-offs, benefits and costs among competing alternatives. To address concerns about budget creep, agencies may consider integrating stakeholders into discussions on budget constraints, as part of their consultation process. When stakeholders and community representatives are involved throughout the planning process, including financial and budgetary discussions, they are better equipped to consider potential trade-offs, safety standards and design constraints when selecting the final project.

5. **Document costs and benefits.** It is important for agencies to document the costs and benefits of the stakeholder outreach process. While more difficult to document, the cost benefits of avoiding project delays and legal challenges should be estimated. Such estimates will continue to be based on anecdotal information until better documentation is compiled or a national database of these costs is developed.

6. **Identify flexible and inflexible design standards; establish an exception process for flexible standards.** The flexibility of design standards should be made clear at the onset of a project to ensure that the stakeholders' vision can be achieved within safety and engineering standards. The process of making exceptions to these types of standards must also be clarified. This requires that the engineering design staff be part of the team responsible for conducting the initial visioning exercises with the communities.

7. **Select and train staff appropriately.** Personnel conducting outreach campaigns should have the appropriate expertise and be properly trained. Agencies electing to

employ in-house personnel to conduct the stakeholder consultation are advised to allocate sufficient resources to ensure proper training.

8. **Evaluate success of the process and outcome.** Metrics and procedures should be in place from the beginning of the outreach process to evaluate not just how many people participate at meetings, but also the degree to which the community and professional staff were satisfied with the community engagement process and the final output.

I. INTRODUCTION

BACKGROUND

Over the last few decades there has been a gradual movement towards integrating the public in decision-making processes in transportation and other policy arenas. This transition may be seen as the result of public calls to move away from just "expert-based designs" toward an integrated approach that includes the community in the planning process (Myerson 1999). The shift may also be driven by legal challenges that have emerged when proposed projects conflict with a community's values. Particular attention has been given to the impact of proposed projects on end users, the broader community, and the environment, as well as other contextual elements.
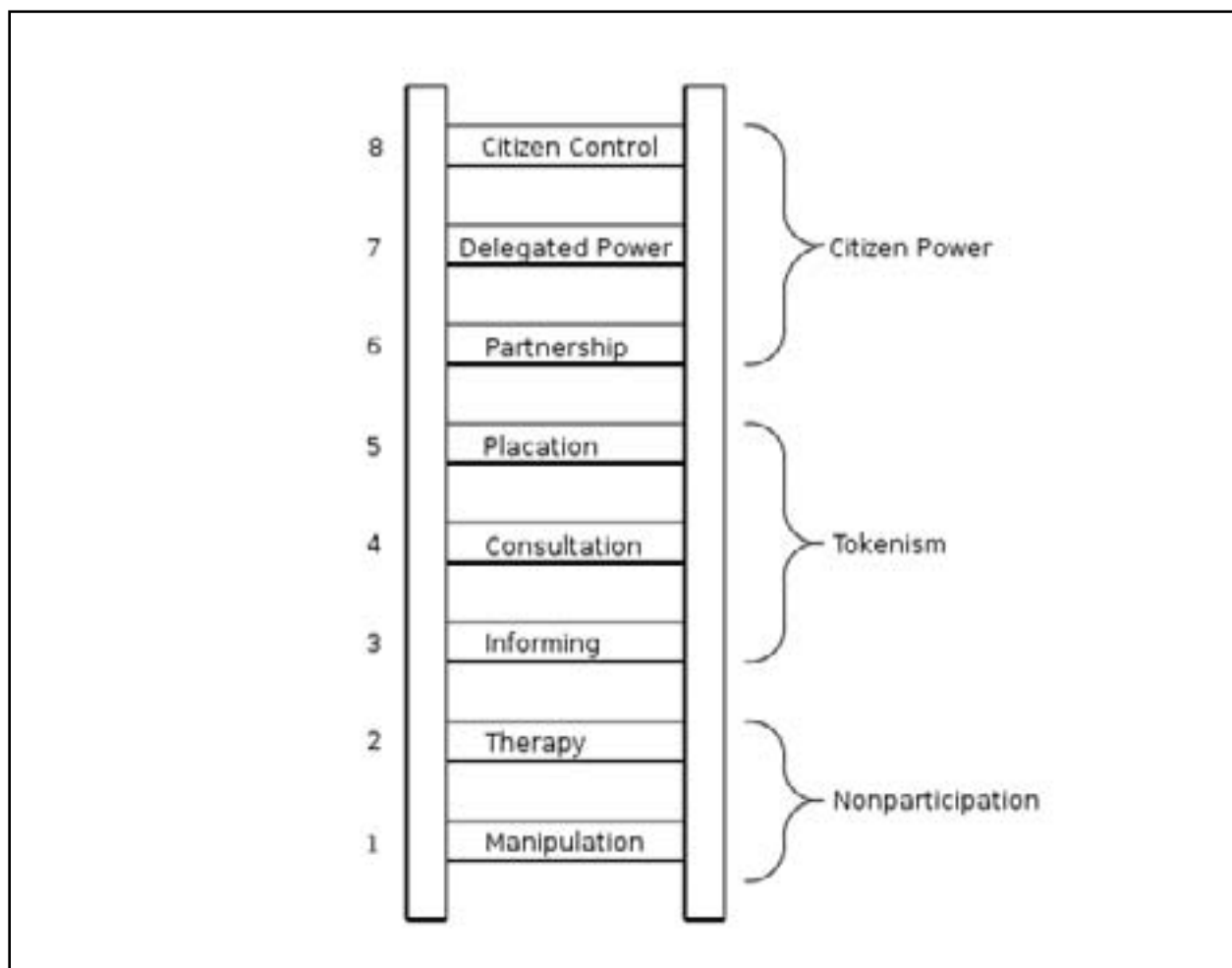

Figure 1. The Arnstein Ladder of Participation

Source: S. Arnstein, 1969

During this evolution, many agencies have experienced seemingly conflicting demands, such as the need to expedite projects while simultaneously including stakeholders in the decision-making process, which can be perceived as increasing project completion times

and/or costs (ICF International 2009, 17). Agencies have struggled to meet both of these demands, and public input has been integrated in a variety of ways, from providing opportunities for deliberation and collaborative problem-solving from the outset to delaying community involvement until a late stage. Between these two extremes, there is a spectrum of possibilities vis-à-vis how stakeholders are included in the planning process, as originally noted in 1969 by Sherry Arnstein's seminal paper. She argued that citizen participation frequently serves as a "token" for real influence. It's benefits are experienced by participants as one-sided, lacking a real redistribution of power, and they're left feeling frustrated. To make her point, Arnstein distinguished eight degrees of effectiveness in engaging stakeholders (see figure 1). An important consideration in the "Arnstein ladder of stakeholder involvement" is whether stakeholders have the power to shape investment decisions affecting their own communities, with increasing degrees of influence ranging from *de facto* non-participation to over-tokenism to actual citizen power.

Textbox 1.
The National Environmental Policy Act (NEPA) of 1970 and Public Participation

NEPA established national environmental policy, goals, protections and maintain measures when undertaking federal action potentially affecting the environment, e.g. when building airports, buildings, military complexes and highways, developing parklands, and other federal activities. NEPA also established the Council of Environmental Quality (CEQ) in the Executive Office of the President. Within the NEPA process, public input is one of the five required elements of consideration, along with social impact, transportation needs, and environmental and economic impacts. NEPA legislation specifically established that "EPA shall make diligent efforts to involve the public in the environmental review process…" (40 CFR 6.400(a))

The following public participation activities are recommended: To budget and plan for participation efforts, to make information available to the public, to evaluate how (depending on the issue) the public would like to participate, then to define the affected and interested groups, especially low income groups. Further, it is recommended to establish working relationships with key audiences and governments, activist organizations and civic groups. Agencies should reach out for interactions with the public, and invite specific comments rather than asking for simple satisfaction/non-satisfaction responses. All alternatives should be presented fairly. In the end, feedback should also be gathered on how successful the feedback process was judged to be.

Source: U.S. Environmental Protection Agency, 2011

The roots of CSS may be found in the National Environmental Policy Act (NEPA) of 1969, which required agencies utilizing federal funds to undergo an analysis of a project's impact on natural and human resources. NEPA language has aimed at protecting historic, scenic, and cultural resources (textbox 1 provides a brief overview of NEPA). In later years, additional federal legislation in the transportation arena strengthened this commitment to the natural environment. The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 provided funding for such efforts through the Transportation Enhancements Program.[7] Congress passed the National Highway System Designation Act in 1995, which supports applications for design standard modifications to preserve historic and scenic resources.

Consistent with the above legislative directive, in 1997, the Federal Highway Administration issued "Flexibility in Highway Design" (FHWA 1997), a report encouraging highway designers to "expand their consideration in applying the Green Book criteria." In May 1998,

Maryland DOT's State Highway Administration conference, "Thinking Beyond the Pavement: National Workshop on Integrating Highway Development with Communities and the Environment while Maintaining Safety and Performance," established the foundation for much of the current thinking on Context Sensitive Design/Solutions (CSD/CSS), (Maryland DOT 1999).

Since 1969, a number of studies have focused on the interface between planning processes and engagement of the public and communities affected by a project. Recent research findings indicate that: "stakeholders' engagement tends to revolve around punctuated events at particular stages of the project life cycle, i.e., planning, design, programming, construction, operations and maintenance" (Legacy 2010). Such research indicates that for the lead agencies to retain their legitimacy the decision-making process must incorporate deliberation and consensus building among the stakeholders, including transportation professionals, other affected governmental agencies, civic organizations, developers, politicians and the public at key stages. Several states in the United States have adopted formal policies to this effect.

One of the focal points of the CSS policy framework is the transition toward further integration of stakeholders in the planning process. It involves consideration of the surrounding environment and its physical and historical characteristics during project development while integrating the views and values of the stakeholders affected by the project. This framework aims to support better decisions, and ultimately projects that are legitimate representations of the values and needs of various communities (CMAP 2008).

CSS and the closely related CSD are defined in a number of ways around the country. The Maryland Department of Transportation states that CSD is "a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility" (Maryland DOT 1998). The FHWA employs a similar definition: "CSS is an approach that considers the total context within which a transportation improvement project will exist" (FHWA 2007). This approach seeks to optimize the project development process in order to promote outcomes that are in sync with community needs and values while ensuring that transportation goals are met. A recent definition states that "CSS aims to address the question 'How do people in this community want to live' before investigating mobility and access solutions" (Stamatiadis et al. 2009).

Whereas some practitioners utilize CSD and CSS interchangeably, the general trend has been to move toward the use of the phrase "Context Sensitive Solutions" to emphasize the *process* involved in finding transportation solutions rather than focusing solely on the design elements. New York State emphasizes the stakeholder element, defining CSS as a "philosophy wherein safe transportation solutions are designed in harmony with the community" (NYSDOT, n.d.). The California Department of Transportation (Caltrans) incorporates parts of both of the above definitions in its policies and statements related to CSS, while at the same time emphasizing that: "context sensitive solutions are reached through a collaborative interdisciplinary approach involving all stakeholders" (ITE 2006).

The CSS process may be understood as a tool assisting in the planning, design and implementation of a project with the aim of considering not only environmental concerns, but also other contextual elements and community values (C. de Cerreño & Pierson 2004). All CSS concepts incorporate public involvement as part of an inclusive and comprehensive planning process. The strong emphasis on taking the context of the project into account as well as an emphasis on public or stakeholder participation are the key features that most strongly differentiate CSS initiatives from projects that do not adhere to such principles.

The process commonly starts with a collaborative definition of the project need and/or problem to be addressed, as well as identification of related opportunities. In essence, the CSS approach integrates varied perspectives and alternatives, seeking to build consensus on a "shared vision" or a definition of goals consistent with existing local plans. This approach considers a variety of project impacts as perceived by the stakeholders.

STUDY GOALS

While CSS is a broad approach, this paper's primary focus is to identify CSS best practices with regard to stakeholder involvement. In particular, the study seeks to assess the state of practice of CSS during the transportation-planning process, with a focus on projects within urban centers where there is likely to be more complexity in terms of the number of stakeholders and end users affected.

Findings from previous research showed that there are unique challenges and "something fundamentally different about large central cities that renders illustrations from less urbanized areas insufficient" (C. de Cerreño & Pierson 2004). Several distinguishing features of large cities were cited, which required additional analysis of how CSS was being applied in urban centers. The distinguishing features include large populations, higher governmental complexities, multimodal and complex transportation systems, intricate or antiquated street grids and designs, and the need for improved security measures (C. de Cerreño & Pierson 2004, 2). In addition, the report argued that the prevailing transportation culture with its focus on motor vehicles as the primary mode of transportation and less emphasis on flexible integration of other transportation modes, worked against the application and experience of CSD/S in urban centers.

While the Rudin Center's 2004 study identified key issues and provided some initial examples, it became clear that more work remained to be done to assess how CSS is used in practice in urban areas. The early work had engaged various agencies on the identification of needs, challenges and opportunities encountered when attempting to implement CSS. The ensuing recommendations reflected the agencies' perspectives regarding process improvements and the need to build professional and organizational capacity, as well as identifying research and innovation requirements. Most of the recommendations focused on specific challenges, such as the need to streamline the lengthy permitting process (e.g., through delegated authority and self-certification or by instituting time limits on exceptions and/or comment periods), how to deal with tort liability and settlements, training engineers in CSD/S principles, and suggestions for urban design standards.

The present study has a narrower focus. It aims to identify best practices on a specific but significant aspect of the implementation of CSS: the stakeholder involvement process during planning for projects in urban areas. While many studies have focused on the physical outcomes (e.g., design, safety and/or aesthetically pleasing project characteristics), fewer research initiatives have attempted to assess how public participation within the CSS framework is being incorporated during project development in large cities around the country. The emphasis of this study is placed on how various stakeholders are engaged in the decision-making process, and the degree to which their diverse views are brought together during the planning, design and implementation of urban projects.

There are various reasons why this may be important. In several instances projects have been delayed because of protracted legal battles initiated by stakeholders who felt disengaged from the decision-making process or felt their views and/or needs were not being represented. Communities and advocacy groups have often been frustrated by their inability to influence public investment decisions. Reactions have gone beyond NIMBY (Not In My Backyard) to BANANA (Build Absolutely Nothing Anywhere Near Anyone), regardless of the benefits to local communities (Rue 2000). Such uncertain environments are not conducive to the effective planning and implementation of public projects. A recent report (ICF International 2009) suggests that senior and middle management personnel at some state DOTs frequently raise concerns about the CSS approach requirements for community engagement (due to potentially increased project delivery times or costs).

RESEARCH APPROACH

To accomplish the study objectives, our team employed a two-tiered approach. First, we reviewed the literature and then conducted a number of case studies, incorporating answers to a questionnaire and follow-up interviews with the project managers at lead agencies. The literature review included the identification of potential candidate cases for study. Five cases were selected. While background information and the questionnaires were completed for five projects, the team was unable to locate representatives to follow up on details about the stakeholder engagement process for one case (Mandela Park, CA), therefore, only four project case studies were completed on a comparative basis. In addition, the team drew from previous case studies completed by the Rudin Center in 2004 (C. de Cerreño & Pierson 2004) and this provided a larger analytical base when formulating recommendations about CSS best practices in urban settings. A questionnaire was developed to guide interviews with those involved in the selected projects. The literature review also included an evaluation of various studies of CSS and an identification of key features of CSS in urban centers. In addition, the literature was reviewed to shed light on the current state of CSS practice in urban/metropolitan areas, in particular with respect to the stakeholder engagement and community consultation processes. The results of the literature review and the findings of the case studies were evaluated to arrive at suggestions for best practice regarding stakeholder participation. Finally, a summary of best practices related to key features of CSS in urban areas was compiled, followed by some closing comments.

II. KEY FEATURES OF CSS IN URBAN CENTERS AND CONTEXTUAL FACTORS

Many CSD/S research studies and activities have focused on highway design and construction of projects outside city centers. In contrast, this study focuses on large urban centers with considerably larger populations and densities than other areas of the country. The team also took into consideration projects intersecting smaller cities' urban cores or business districts, where population densities increase during the business hours. As discussed previously, urban projects present different challenges (e.g., pedestrian interface, coordinating with other transportation modes) than those implementing CDS/S for highways in rural and/or suburban areas. For the present research, the following key characteristics of urban centers were found to be important:[8]

1. **Stakeholder complexity.** Urban areas concentrate a multiplicity of interests from a number of different actors, including the business community, environmental advocates, and the general public, among others. At times, these interests conflict, and therein lies the challenge of building consensus in urban core areas, in particular when projects affect many and/or distinct stakeholders.

2. **Multiple agencies involved in urban projects.** Bureaucracies in large cities tend to be larger,[9] with agencies having jurisdiction over different zones or with diverse areas of expertise. This adds to the difficulty of coordinating all organizational players, in particular as the scope of a project increases requiring consultation with representatives from different disciplines.

3. **Intricacy of the built environment and intermodal infrastructure.**[10] Projects within urban centers interface with multimodal transportation networks (e.g., subway, rail systems, and bike lanes) as well as with other infrastructure systems (e.g., utilities such as sewer, gas, electricity and telecommunications), which adds to the complexity of the process, in addition to increasing the number of agencies and stakeholders requiring consultation. In addition to coordinating with other agencies, the lead agency must coordinate with multiple utilities that may have their own priorities in terms of schedules and resource use.

4. **Urban design elements.** Designing projects in urban centers places additional demands on the project coordinators to accommodate the many functions and users of public spaces, which serve as multimodal mobility corridors (for public transport, vehicles, cyclists and pedestrians) providing access to jobs and opportunities and support for social and economic functions and cultural and recreational activities.[11] As a result, additional resources are likely needed during planning, design and implementation to ensure the seamless integration of the project with stakeholders representing various interests in a functionally complex and densely built urban environment.

III. IDENTIFYING CANDIDATE CASE STUDIES

We identified 20 potential cases and developed criteria and guidelines to select the projects to be studied in further detail. In order to ensure balanced representation, the criteria set included:

Location

- E.g., East Coast, South, Midwest, Southwest, West Coast.

- **Diversity of the cities represented.** Attention was given to city characteristics such as population size, population density and the age of the infrastructure.

- **Variety of project scale and contextual character.**

- **Modal diversity.** We strove to include case studies involving alternative modes of transportation (e.g., transit, bike lanes).

- **Construction status.** In order to gather information from the entire process we agreed that all projects studied would be already completed or near completion. This requirement precluded newer, ongoing, projects from consideration.

- **Availability of key contacts.** We required access to contacts (e.g., agency staff) who were informed about the stakeholder involvement process and willing to participate in the interviews.

To aid the selection process, a "selection matrix" was developed, compiling preliminary information that aided the identification of the final five cases meriting further analysis. The matrix included the following projects (organized by geographical distribution):

Northeast:

1. Anacostia Waterfront Initiative, Washington, D.C.

2. Asylum Avenue, West Hartford, CT

3. Barracks Row, Washington, D.C.

4. Montgomery County, MD

5. Route 179 – Avon-by-the-Sea, NJ

6. Route 9A Redevelopment Project – New York City, NY

Midwest:

7. Excelsior Boulevard, St. Louis Park, MN

8. Ohio Eastern Corridor (Eastern Cincinnati), OH

9. US 131 "S-Curve" Extension in Downtown Grand Rapids, MI

South:

10. Edgewater Drive, Orlando, FL

11. Martin Luther King Boulevard, Savannah, GA

12. Washington Avenue, Miami, FL

Southwest:

13. Addison Circle, Addison, TX

14. Isleta Boulevard/El Camino Real, Route 66, Albuquerque Metro Area, NM

15. Route 179, Sedona, AZ

16. *TRansportation EXpansion* (T-REX), Denver, CO

West Coast:

17. "A" Avenue, Lake Oswego, OR

18. Carson Street Reconstruction, City of Torrance, CA

19. Culver Boulevard, Culver City, CA

20. Mandela Park, Oakland, CA

The team also obtained information about additional CSS case studies from several reports, including the Rudin Center's previous analysis, such as by C. de Cerreño and Pierson (2004), ITE (2006), as well as TRB reports, the Transportation Research Circular Number E-C067 (2004) and the recently published NCHRP 642 report (2009) (see bibliography for detailed references).

Five cases (one from each region) were selected from the above list, and four were fully completed as required by this study's scope of work. The work included interviews with agency personnel who either played a leadership role or had significantly participated in one of the selected projects. As previously discussed, the team also developed a questionnaire that could be used to guide our interviews. The questionnaire was provided to the interviewees before cases were discussed with them. Some replied with written answers, which facilitated the interviews greatly. The questionnaire is presented in Appendix A.

Projects were chosen as meriting further study according to selection criteria developed for this study. As discussed earlier, the major factors considered were geographical distribution, project size, and transportation modes. The cases initially selected were:

1. The Edgewater Drive project, in Orlando, FL,

2. Route 9A, in New York City, NY,

3. The US 131 "S-Curve" Replacement Project, in Grand Rapids, MI

4. The T-REX project in Denver, CO.

5. Mandela Park, Oakland, CA

For the Mandela Park project in Oakland, CA, our team conducted the interview with a Caltrans representative. However, most of the stakeholder involvement had been carried out by a consultant who was no longer available to be interviewed; therefore, this case study was not completed. Yet, the information on the California project was used whenever relevant to our analysis.[12]

A brief synopsis of each of the first four projects studied is provided in the following section, including a summary of the following:

1. City characteristics relevant for transportation systems

2. Project history

3. Agencies involved

4. Purpose and need/problem addressed by the project

5. Context-sensitive elements

6. Stakeholder participation

IV. CONTEXTUAL CHARACTERISTICS
OF SELECTED CASES

EDGEWATER DRIVE, CITY OF ORLANDO, FLORIDA

City characteristics

Orlando is Florida's fifth largest city, population-wise, with more than two million residents living in the Greater Orlando metropolitan area. (City of Orlando 2011) In addition, Orlando receives millions of visitors per year who travel to nearby parks, including Disney World and Sea World.

Figure 2.   Edgewater Drive, Before and After Restriping.

Photo credit: City of Orlando 2002.

Edgewater Drive (Figure 2) is a main thoroughfare of the downtown College Park neighborhood of the City of Orlando. The area has been classified as zone 5 to 4 (i.e., from "urban center" to "general urban context zone").[13]

The roadway serves as College Park's Main Street while accommodating some through traffic. Average daily traffic on this north-south artery in the early 2000s was about 20,000 vehicles. (City of Orlando 2002) The study area of interest is the portion of Edgewater Drive between Park and Lakeview streets.

Project description

The Edgewater Drive improvement project was implemented in 2001 and 2002 as part of College Park's "Neighborhood Horizon" plan. The main feature of this project is the reconfiguration of Edgewater Drive from four lanes to three in order to "provide sufficient room for wider sidewalks, bicycle lanes, and the streetscape's multiple uses. The project was

seen as helping to reinvent the community into a pedestrian-friendly commercial district" (City of Orlando 2002).

Agencies involved

The City of Orlando (Transportation Planning Bureau) was the lead agency. It assumed jurisdiction for this project from the Florida Department of Transportation (FDOT).

Purpose and need/problem addressed by the project

Edgewater Drive needed repaving. At the same time, during a preliminary consultation, the agency learned that the community wanted to revitalize the area and to create a lively commercial district with cafés and shops that would favor pedestrian traffic. Through a "visioning" exercise, the community developed a plan to improve the commercial district along Edgewater Drive.

Context-sensitive elements

The community-developed visioning plan called for creating a small village within the larger city, by eliminating one of four vehicle lanes along Edgewater Drive and improving the streetscape. To attain this goal, a number of improvements along the drive were needed, such as crosswalks with pavers at various points of crossing, new traffic lights, safer parking, bicycle lanes and pedestrian-friendly (wider) sidewalks. Trees were added to create an urban canopy and utilities were moved underground.

Stakeholder involvement

While this was initially conceptualized as a re-paving project, the City of Orlando (CoO) engaged stakeholders from various neighborhoods (including College Park) through visioning exercises to discuss their views about how to define the problem to be addressed. The CoO led the way to develop master plans that reflected the values and needs of each community. Following approval by the City Council, these master plans served as the foundation of the infrastructure projects developed later. The consultation process continued throughout the planning, design and implementation of particular projects, including the reconstruction of Edgewater Drive.

ROUTE 9A, NEW YORK CITY, NY

City characteristics

With over 8 million residents and a population density of almost 27,500 per square mile within a relatively condensed urban area (less than 470 sq m) (NYCGO), the City of New York ranks as the most populous city in the country. On weekdays even more people flow into the city core, commuting from a large metropolitan area of more than 19 million residents. In addition, the number of tourists has been rising, with domestic and international visitors in 2008 reaching 47 million (NYCGO). These characteristics make NYC a unique place to execute transportation and infrastructure projects.

Project description

This reconstruction project spans a 5.7-mile section of Route 9A (also known as the West-side Highway), which extends along the Hudson River waterfront between Battery Place and 59th Street. The multimodal project includes a street-level six- to eight-lane north-south boulevard and a continuous bikeway and walkway, and it accommodates cars, trucks, buses, bicycles, pedestrians, and various recreational users. Average daily two-way traffic volumes range from 69,000 to 81,000 motor vehicles, demonstrating the importance of Route 9A to this metropolitan region (Eastern Roads, n.d.).

Figure 3.   New York Route 9A
Source: NYSDOT

The project area is classified as a principal urban arterial road, or C-6 – "Urban Core Zone" – which is characterized by the Institute of Transportation Engineers as a "highest-intensity area in sub-region or region, with high-density residential and workplace uses, entertainment, civic and cultural uses," as well as buildings in close proximity to the road, which provide "a sense of enclosure and continuous street wall landscaping within the public right of way, highest pedestrian and transit activity" (ITE 2006).

The project described above is different from the proposed "Westway" – an unsuccessful plan to build an underground interstate-quality highway on the West side of Manhattan, south of 59th Street. That plan met with community opposition, was challenged in court and was eventually dismissed. The public was subsequently engaged in the development of a new master plan that would reflect the values of the communities affected. The result was an at-street-level boulevard that accommodates multiple users of the streetscape. "Joe DiMaggio Boulevard" (Figure 4) opened in 2001, and the section adjacent to the World Trade Center was damaged on September 11, 2001 (SMTC 2011). Reconstruction of this section began in 2002.

Agencies Involved

This project illustrates the complexity of the bureaucracy working in infrastructure investments in large urban centers, such as New York City, where the lead agency must coordinate with multiple agencies and authorities. While the New York State Department of Transportation (NYSDOT), has led the effort, a staggering number of federal, state and city agencies and authorities have also been involved, including:

- Federal: Federal Highway Administration (FHWA); Federal Emergency Management Administration (FEMA); Federal Transit Administration (FTA); Advisory Council on Historic Preservation (ACHP); U.S. Environmental Protection Agency (EPA), and U.S. Department of Housing and Urban Development (HUD).

- New York State: New York State Department of Environmental Conservation (NYSDEC); New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP); New York State Department of State; Empire State Development Corporation; Lower Manhattan Development Corporation (LMDC); Metropolitan Transportation Authority (MTA) including MTA New York City Transit (NYCT) and MTA Bridges & Tunnels; Hudson River Park Trust (HRPT); and the Battery Park City Authority (BPCA).

- Bi-State (NY & NJ): Port Authority of New York and New Jersey (PANY&NJ).

- New York City: New York City Department of City Planning (NYCDCP); New York City Department of Design and Construction (NYCDDC); New York City Department of Transportation (NYCDOT); New York City Economic Development Corporation (NYEDC); New York City Police Department (NYPD); New York City Department of Environmental Protection (NYCDEP); New York City Department of Parks and Recreation (NYCDPR); New York City Landmarks Preservation Commission (NYCLPC); New York City Arts Commission (NYCAC), and the New York City Fire Department (FDNY).

Purpose and need/problem addressed by the project

The limited-access Miller Highway in New York City was the first elevated highway built in the United States. Running north-south from 72nd to Chambers streets, it was constructed between 1927 and 1931 (SMTC 2011). In the mid-1940s the through-traffic roadway was extended to the Battery Tunnel. Service roads and local streets served the Port of New York on the Hudson River waterfront. However, as early as 1957 there was evidence that the highway was inadequate to accommodate trucks and was in need of repair. A comprehensive reconstruction plan was recommended in 1965 but the port was being relocated and the shipping industry declined through the 1960s, which may explain why the roadway was allowed to deteriorate. After the port was relocated away from the West Side of Manhattan and the shipping industry declined in the 1960s, the elevated roadway deteriorated and in 1972 a portion of it collapsed after a truck hit some supporting pylons. The elevated West Side Highway structure south of 59th street was then removed in the 1980s and a

surface roadway was repaved to serve as an interim artery while a permanent replacement was planned.

With the closure and demolition of the elevated West Side Highway, the New York City DOT estimates that as many as 10,000 vehicles per day were diverted to Manhattan's other north-south routes, further taxing the capacity of these already congested roadways. The main goal of the Route 9A reconstruction project has been to address the problems associated with the continued use of the interim roadway and to accommodate some of the traffic diverted to other streets in the area when the elevated roadway closed.

Figure 4.   Joe DiMaggio Boulevard

Photo credit: Charles Spiegel

Context-sensitive elements

The community had wanted to replace the dilapidated West Side highway with a six-lane boulevard that would provide easy access to the waterfront and public spaces. The project design reflected these values, including an urban boulevard, with tree-lined buffers and landscaped medians and replicas of early twentieth-century streetlights—several at-grade crossings—and a number of pedestrian bridges to facilitate access to the Hudson's riverfront area. In addition, new bike lanes and walkways, parks and recreational areas have been built along the reconstructed Route 9A, extending from 59th street to the Battery Park area in the south of Manhattan (Nehuleni 1999).

Stakeholder involvement

The reconstruction of Route 9A involved three planning and design phases with different stakeholder involvement practices at each. During an early planning phase, which started in the 1970s, various community members felt that they had not been properly consulted on the Westway plan, and contested it in court. After the Westway plan was defeated, stakeholders were involved through several consultation meetings and their values and needs were reflected in the design of an urban boulevard. Construction started in 1996 and was nearing completion when the World Trade Center buildings were destroyed in September 2001. As a result, a section of Route 9A was heavily damaged. The reconstruction of this boulevard segment was one of the issues considered in a reconstruction plan for Lower Manhattan, which has been developed through early community involvement and visioning exercises.

T-REX, DENVER, COLORADO

City characteristics

The population growth rate of Denver's metropolitan region has consistently outpaced the national rate every decade since the 1930s. The region grew steadily in the past 10 years, averaging 1.9 percent population growth each year from 1999 to 2009. The current population exceeds 2.8 million people, and by 2030, it is anticipated to increase to almost 3.8 million (MetroDenver, n.d.). The T-REX project, which includes the "Southeast Corridor" in the Denver Metro area, connects the bustling downtown Denver Central Business District and the Southeast business district. These two major employment centers concentrate more than 180,000 people on a daily basis, plus approximately 30,000 additional workers employed along this corridor, which is expected to continue to grow over the next 20 years (RTD, 2007).

Figure 5.   The T-REX Rail Line, Parallel to the Highway

Project description

The *TRansportation EXpansion* Project (T-REX) represents the largest multimodal transportation project to date in the history of Colorado. (RTD 2007) It passes through the City of Denver and includes improvements to the I-25 highway, the main north-south interstate traversing the State of Colorado. This urban project added highway capacity in the corridor connecting two business centers (Downtown Denver and Denver Tech), expanding from three lanes to four and from two lanes to three in a five-mile stretch, with space for shoulders and medians. This Southeast corridor multimodal project also added a new 17.9-mile double-tracked light rail transit (LRT) service that now runs adjacent to much of the improved highways. Along with highway and light-rail additions, T-REX also reconstructed and widened numerous bridges, added and improved shoulders, and improved ramps and acceleration/deceleration lanes. Thirteen new LRT stations have been built along the new rail line and 6,000 new Park-n-Ride spaces added. The stations have transit-oriented development (TOD) potential (RTD, 2007).

Agencies involved

The lead agency was the Colorado Department of Transportation working in close collaboration with the Regional Transportation District (RTD). This unique partnership has yielded a project that combines both highway and light rail elements to address overall passenger mobility.

Problem addressed by the project

The primary problem was described as "traffic congestion on the I-25 highway." Given the amount of traffic in a segment of this highway between major business districts, there was congestion in both directions every day, especially during the morning and evening peak hours. With anticipated development and businesses moving into the Denver metropolitan area, the state transportation agency determined that widening the highway was a promising solution to ease mobility from home to work and vice versa.

Context-sensitive elements

Several elements reflected a CSS approach toward upholding the values of the communities. These included:

1. A depressed profile for the light rail service at certain intersections, (Louisiana and Buchtel Boulevard), so as to minimize the impact on the streetscape.

2. Improvements to pedestrian, bike and park-and-ride facilities to encourage light rail ridership.

3. Narrowed highway shoulders next to various parks to prevent negative impacts on protected properties.

4. A program that gave residents the option of declining noise walls in favor of preserving scenic views. In addition, various neighborhoods could select the colors and characteristics of their noise walls.

Stakeholder involvement

The public involvement process on this project has been characterized as "pro-active and transparent throughout all phases of the project." The success of the project is attributed to "the partnership spirit and culture that was implemented during the Environmental Impact Statement (EIS), design and construction phases among all of the project team members" (Clark, 2006).

The project team organized two committees – one to deal with technical considerations and the other to address policy issues, with the latter securing funding for the light rail system (from the federal "New Starts" discretionary financial resource)[14] (Clark 2006). The latter included an outreach team that organized more than 200 meetings with community and business organizations, to review the Major Investment Study (MIS) and all docu-

ments necessary to comply with NEPA. A contractor hired to conduct a public information campaign worked in close collaboration with the CDOT and the RTD, keeping the public informed about progress and next steps during the construction phase.

US 131 "S-CURVE" REPLACEMENT, GRAND RAPIDS, MI

City characteristics

Grand Rapids is the second largest city in Michigan, following Detroit. While the population within the city limits is less than a quarter-million, the population of the surrounding Grand Rapids metropolitan area is three times that size (Grand Rapids 2011). US Route 131, which traverses the city in the north-south direction, is the most heavily traveled highway in the Grand Rapids area.

Project description

The s-curve segment of US 131 is located in the core downtown area of the city, south of the I-196 interchange in downtown Grand Rapids, MI. Reconstruction and reconfiguration of this 1.1-mile elevated freeway segment began in the late 1990s (AASHTO 2005; MDOT 2002).

Agencies involved

Several agencies were involved at some or all stages of the process. Leading the effort was the Michigan Department of Transportation, which worked in close collaboration with the Federal Highway Administration and the City of Grand Rapids, as well as the Michigan Department of Environmental Quality, the Michigan Department of Natural Resources, and the State Historic Preservation Office.

Purpose and need/problem addressed by the project

Built in the 1960s, the elevated freeway through the city's downtown included six bridges. By 1998, the structure carried an average of 100,000 vehicles daily (MDOT 2006; AAS-HTO 2006; and Michigan Association of Planning, n.d.). Urgent repairs were needed after it was discovered that gypsum deposits under the supporting columns were dissolving, causing the s-curve segment to settle (Michigan Association of Planning, n.d.).

Context-sensitive elements

With a new interest in neighborhood development, the scope of the s-curve replacement project expanded to include the improvement of motorized and nonmotorized travel modes, the addition of pedestrian facilities, and consideration for community aesthetics, history, and culture when selecting bridge design elements (AASHTO 2006; MDOT 2006).

Figure 6.   Grand Region, US 131 Grand Rapids S-Curve Replacement.
Source: MDOT.

Stakeholder involvement

MDOT engaged the public throughout this project, which won an AASHTO CSS Award (AASHTO 2006; MDOT 2006). The community was not initially in favor of this reconstruction project due to the potentially negative impacts perceived during rebuilding. However, given the urgency of the project, MDOT promptly engaged stakeholders in public meetings and used various innovative communication techniques in addition to hiring a public relations firm to help spread the word about the significance of the project and to help residents and businesses visualize the changes. MDOT conveyed these ideas via flyers/brochures, a newsletter, a dedicated web site, and a toll-free number (Michigan Association of Planning, n.d., MDOT 2006, AASHTO 2006) as well as PowerPoint presentations that included graphic features to help stakeholders visualize the new s-curve design. Through a public relations campaign (motto: "Road Closed, City Open"), MDOT provided information to businesses, residents and visitors throughout the construction process (Michigan Association of Planning, n.d.). This was an important public campaign to redirect traffic to alternative routes without discouraging visits downtown.

Consultations during the process involved city and local officials, neighborhood associations, economic development associations, state archaeologists, the Ottawa tribe, and other actors, such as the Grand Valley Metropolitan Council, Grand Valley State University, the Grand Rapids Chamber of Commerce and the Interurban Transit Partnership. Through the many meetings held, they participated in determining the extent of the project and the construction phasing options. However the extent of stakeholders' involvement was limited by the general time constraints due to the urgency of the need for roadway repairs.

V. SOME ASPECTS OF BEST PRACTICE IN URBAN AREAS

The objective of this section of the report is to discuss and summarize some aspects of best CSS practices associated with stakeholder involvement in urban areas. However, in our opinion, it is unclear what exactly is meant by "best practice." This issue will be addressed first.

THE MEANING OF CSS "BEST PRACTICE"

Since this project's main focus is on stakeholder involvement instead of all aspects of good CSS practice, the discussion of the meaning of good practice will of course be limited to the main theme of this paper. We did, however, feel that the meaning should be placed into the framework of overall assessment of good practice to provide some context to our discussion.

We found that a fair amount of the literature advocates for more stakeholder involvement, which, as stated previously, could be advantageous in reducing project delays and overall costs and securing funding, as well as increasing the chances of selecting an alternative solution consistent with the values of the stakeholders. However, involving stakeholders may result in some anticipated effects and thus should be carried out by trained personnel and/or public participation experts.

To frame this discussion, it may be useful to restate some of the definitions of CSD and CSS from the introduction of this report. The Maryland Department of Transportation states that CSD is "a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility" (Maryland DOT 1998). The Federal Highway Administration states: "CSS is an approach that considers the total context within which a transportation improvement project will exist" (FHWA 2007). This approach seeks to optimize the project development process in order to promote outcomes that are in sync with community needs and values while ensuring that transportation goals are met. A recent definition states: "CSS aims to address the question '[H]ow do people in this community want to live[?]' before investigating mobility and access solutions" (Stamatiadis et al., 2009).

Besides definitions, there is also anecdotal information pointing to potential conflicts that may affect how CSS principles may be implemented, in practical terms, with respect to stakeholder involvement. Obviously, properly addressing them would improve the community consultation practice. Some of these tensions are described below:

- Difficulties in achieving balanced representation, such as when certain stakeholders are hard to identify (e.g., if they are not formally organized), or when there is mistrust in the process due to a previous poor experience. Working with local citizen coalitions or organizations may be a solution as long as they are truly representative. Moreover, the identification of stakeholders should not be considered completed at the beginning of the project but instead continue throughout the decision-making

process as scenarios change and new policy alternatives are considered (Taschner and Fiedler, 2009).

- Problems in reaching consensus when a community is divided about the best alternative. For example, some stakeholders may want bicycle lanes while others oppose losing car lanes or parking spaces, and still others may want better transit alternatives (faster buses) instead of using the streetscape to accommodate single-passenger vehicles, be they automobiles or bicycles. If conflicting demands exist within the community, it is better to identify them early to allow more time to resolve conflicts and avoid having the project derailed later, after more resources have been invested.

- Mistrust about the process, such as situations in which there is lack of transparency or communities don't feel empowered. Engaging stakeholders early (e.g., visioning exercises to set goals and define the problem to be solved) and establishing clear rules of engagement can go a long way to build trust and legitimize the process.

- Tensions about how flexible agencies may be in interpreting the engineering and safety standards and/or in accommodating stakeholders' requests. While enjoying increased flexibility in project designs since the FHWA's publication of the "Flexibility in Highway Design" guidance in 1997, planning teams have also faced demands for design changes that engineers deem to compromise safety standards. Integrating engineers into the stakeholder outreach process will facilitate the discussion of which standards may be flexible and which are not.

Textbox 2.
NEPA Public Review Requirements

(1) According to the regulations of the Council of Environmental Quality "scoping" is required before the preparation of an environmental impact statement. Within the program, scoping is defined as an "early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action." (40 CFR 1501.7) Scoping specifically requires the dissemination of a notice of intent, to hold at least one public meeting, and to solicit and consider public comments.

(2) NEPA regulations require the public review of the draft environmental impact statements and assessments. This involves circulation of the documents, public notice of availability, solicitation of public comments, and holding at least one public hearing. The regulations specify how comments from all agencies, organizations and interested or affected persons should be solicited.

(3) Requirements regarding the final environmental impact statement: All responses must be addressed by EPA in the final environmental impact statement, which in turn should be made available to the public for comments.

 (4) Records of Decision and environmental impact statements with findings of no significant impact must be announced and made available for public review and comment, along with any mitigation action plan.

Source: U.S. Environmental Protection Agency 2011

In order to identify best practices that incorporate CSS principles as described above, various performance measures for both the process and the outcomes have been identified (see Olszak et al. 2007, for example). The 2002 NCHRP Report 480 offers guidance on best practices for achieving CSS, and the 2004 NCHRP 20-24(30) provides recommenda-

tions for evaluating agencies' performance in implementing CSS principles. This guide-book for state DOTs describes the following useful project evaluation criteria:

Process measures

- Use of multidisciplinary teams

- Public engagement

- Consensus on project problem statement, purpose and needs definitions

- Consensus on project vision or goals statements

- Alternative analysis

- Construction and maintenance

Outcome measures

- Achievement of project vision or goals

- Stakeholder satisfaction

- Quality assurance review

These include criteria that are outside the scope of this project. From our review of the literature, we found that certain key practices related to stakeholder participation were deemed to be consistent with CSS principles. These key practices may be summarized as follows:

- Fostering public/community engagement. Stakeholder participation is central to CSS and may start during the development of the project definition (or statement of purpose). Agencies develop plans for stakeholder involvement at the very beginning of the process to ensure the public's accessibility to the decision-making process and to provide ample opportunities for public participation. To ensure balanced representation, it is important that a variety of perspectives are represented and that the public is able to influence the project development process. Optimally, the community consultation plan makes provisions for documenting the decision-making process and establishing how conflicts will be resolved.

- Striving to build consensus. This significant element reflects agreement between the project team, various stakeholders and the public at various stages of the process.

- Problem definition. NCHRP Report 480 (NCHRP 2002) states that the starting point of any project applying the CSS framework is problem definition, which may be likened to the "Statement of Purpose" required under the NEPA process. At this stage, a very important requirement for a successful CSS project is to develop consensus

in defining the problem to be addressed and potential solutions for such problem. The definition of the context is part of this consensus-building process.

- Context definition. Effective projects take into consideration the public's priorities (values and needs) and the physical character of the area in which the project is being implemented, including environmental, historic and scenic characteristics; topographic and geometric conditions; safety, mobility and accessibility; and the various modes used, or potentially used, in such areas (Stamatiadis 2010).

- Project vision and goals statement. Once consensus has been reached in defining the problem and needs, stakeholders may be engaged to define the project goals. These must be consistent with existing local plans and supportive of community needs and values.

- Alternatives analysis and project selection. The project definition and vision or goals statement should be reflected in the range of alternatives considered. In evaluating various alternatives to select the project that best fits the context and community values, it is important to develop criteria by which to judge the projects. It is also important to consider safety issues, multimodal options, level of service, design and cost-effectiveness. Note that if the previous steps were narrowly defined they can limit the choice of alternatives available for consideration, hence, the significance of taking into account various perspectives from the beginning of the decision-making process.

- Evaluating stakeholder satisfaction. Given the significant role played by the public and various stakeholders, it is important to evaluate their satisfaction with the process and outcomes. Various instruments are available to assess their satisfaction (both during and at the end of the project development), including informal or formal questionnaires, surveys, interviews, focus groups, and other assessment tools.

Educating the public about costs and efficient use of resources. Efficiency and cost avoidance are integral to a project's success. Effective project management takes into account financial resources, along with staff experience, and staffing levels. An important step is development of a "resource identification" plan, which may be used to educate and/or involve the community in budgetary decisions and choices.

The elements of best practices that we found in the literature will be further discussed in subsequent sections.

SOME ASPECTS OF GOOD PRACTICE REGARDING STAKEHOLDER IN-VOLVEMENT

Evolution of CSS principles and policies

While the CSS concept and associated principles first emerged in 1998,[15] it may be argued that the CSS policy framework and procedures are closely linked to a policy framework that has been evolving for several decades, and is still evolving. A first step in this policy-

making evolution was the 1969 National Environmental Policy Act (NEPA) and subsequent regulations and guidelines in the 1970s and 1980s. NEPA established procedural policy and goals for the protection, maintenance and enhancement of the environment. This landmark regulation requires that agencies using federal funds must implement a process to consider the environmental consequences of any proposed action that has the potential to significantly affect the quality of the human environment, and to identify related mitigation measures and consult with, and incorporate comments from, other parties, including the public (U.S. Congress, 1969).

Since then, there have been calls for increased public participation during the NEPA process, including public engagement in the draft environmental impact statements (DEIS) and final environmental impact statement (EIS) (Nehuleni 1999). Several federal initiatives, including ISTEA (1991) (U.S. Congress 1991), TEA 21 (1998) (U.S. Congress 1998) and SAFETEA-LU (U.S. Congress, 2005) have been advanced over the last decades to promote the integration of stakeholders and environmental concerns into transportation planning and project development in all 50 states. These and other legislative efforts are consistent with CSS principles.

Textbox 3.
Benefits of Instituting CSS Legislation

CSS legislation helps foster more effective community engagement, which in turn builds trust in the agency and the entire process. Specifically, it:

1. Opens the door to increased discussion and training for agency staff;

2. Enhances procedural transparency and prevents the selective implementation of the CSS framework on a project- by-project basis;

3. Requires that the consultation starts early in the process, and

4. Directs agencies to properly plan and allocate resources for the public engagement process.

  The CSS framework has been proposed as a philosophy that can support the NEPA process and bring flexibility into transportation planning by promoting place-sensitive projects that reflect community values and needs, thereby achieving better project outcomes. However, there is a lack of clarity about the legal relationship between NEPA and the CSS framework.[16] This framework recommends that the community consultation process should start during the problem-definition phase, (and definitely prior to selecting a project alternative or developing a draft environmental impact statement). Still, agencies may choose to carry out the public engagement process to satisfy the legislative requirements in NEPA while not structuring the outreach to provide meaningful stakeholder participation. It is likely that without a clear understanding of the value of community engagement, the consultation process will be carried out solely to meet the minimum mandates, executed in an *ad hoc* manner (depending on the case), or start at a late stage (FHWA, 2007).

Several states have attempted to address this problem by institutionalizing CSS as the way of doing business. In California, Illinois and several other states, legislatures have been working to integrate CSS principles as part of all planning and project development processes. Indeed, state governments have been adopting legislation or policies requiring every transportation project in their jurisdiction to: a) fully involve all affected stakeholders;

and b) reflect the values of the community, with "sensitivity to the environment, to aesthetics and to the character of the place" (CMAP 2008). To date, approximately 44 states have some form of CSS policy or guideline in place. Only one state has passed statewide legislation (Illinois), and four have issued an executive order instituting CSS policies, while another seventeen have adopted CSS policies only at the DOT level (CSS website).

However, without a clear understanding of CSS benefits, it is likely that even in states where CSS policies have been adopted and/or legislation enacted, agencies will continue to involve stakeholders merely to meet the legal requirements. Therefore, for the CSS principles to become a state of practice across the country it is important that the related benefits and costs be clearly documented[17] and agency staff understand the value of early and continuous relationship with communities to address mobility needs. The movement to promote CSS as a mandate needs to be viewed as an opportunity to bring increased understanding of its benefits and to train practitioners in a new approach to co-planning and co-deciding with stakeholders, not just as a new legal burden. The benefits of having consistent procedural treatment throughout each state are many. They include: a) increased transparency about the decision-making process and resource allocation, b) increased public trust in the process, c) clarification of the challenges faced by different project types (e.g., according to location, scale/scope and/or mode), d) much-needed guidance to transportation and planning agencies on how to plan for community involvement (e.g., when operating in densely populated urban centers) or how best to document the process for both the lead agency and other participating agencies.

Findings from the case studies

In the cases studied, explanations for the need to engage stakeholders were many. They included the following:[18]

- Addressing the community needs and desires.

- Involving the community in goal setting to comprehensively define the problem to be addressed by the project (alternatively, the stakeholders were consulted on a project that had already been defined),

- Ensuring public support for projects.

- Obtaining feedback from the community about a specific project and its design.

- Soliciting input on how to design a project to best fit its context, including the aesthetics of a place, preservation of historical and/or environmental resources, and community values and needs.

- Identifying potential conflicts and/or opposition so as to address the problems early in the process and prevent legal challenges that could derail the project.

Only two states (Michigan and New York), out of the four cases studied have instituted CSS policies and/or procedures in recent years and those had not been in place when

these projects started. The state of Michigan enacted a CSS program through an executive directive, and the policy was officially adopted by the state's transportation commission in 2005 (CSS Michigan 2008). The state of New York has been working at integrating CSS principles into their day-to-day operations for at least a decade. In 1998, the New York State Department of Transportation (NYSDOT) adopted an environmental initiative to encourage designers to go "above and beyond federal and state mandated environmental mitigation requirements." In 1999, NYSDOT created CSS implementation teams to coordinate CSS implementation at the regional level. Then, in 2001, a CSS policy document titled "Engineering Instruction 01-020" was developed to revise NYSDOT's Project Development Manual and incorporate CSS principles and guidance throughout project development (CSS New York 2008).

The other two cases studied (Colorado and Florida) did not have explicit legal provisions requiring that CSS principles be incorporated in the way they do business. However, our interviews with the project teams for these two cases revealed that, in practical terms, they were employing CSS principles during project development. The City of Denver lacks a specific CSS policy, although the department circulated a memo in 2003 explaining the CSS approach and recommended actions, including training. In the city of Orlando, while there is no direct mandate regarding CSS, there are policies to require consideration and integration of bike lanes and sidewalks during the project development process. In addition, Orlando has other policies that influence project development, including the City's "Growth Management Plan" (GMP), which supports transit enhancements, and the "Future Land Use Support Density" document that includes a transportation concurrency exception for the project's area (Art, 2010). While the practitioners felt they applied procedures that were somewhat consistent with the CSS framework, arguably these are policies related to land use or multimodalism (e.g., "complete streets").[19] The CSS framework is more extensive in that it takes into account the social, environmental, historical and aesthetic context of a transportation facility (ITE 2011).

The overall analysis of the case studies led to the same impression gained from the literature review: Despite uneven laws, policies and procedures, CSS principles are implemented even when there is not a formal requirement for doing so. This suggests (as illustrated by the City of Orlando visioning exercises) that when agencies are convinced of the benefits of the CSS approach, they are inclined to apply it.

Suggestions for best practices

The state of Illinois has adopted comprehensive legislation to promote context-sensitive design and/or solutions during project development and implementation. Such legislation is clearly connected to the NEPA requirements. States that don't currently have CSS laws in place may consider adopting the model language from Section 304 of the National Highway System Act of 1995, plus additional language to make clear the legislative intent (Scenic America, n.d.). As a first step, state DOTs could institute organization-wide CSS policies (e.g., guidance and/or procedures and performance measures).

There are several benefits of adopting CSS legislation. It: 1) opens the door to increased discussion and training for agency staff; 2) enhances procedural transparency and pre-

vents the selective implementation of the CSS framework on a project-by-project basis; 3) requires that the consultation start early on, and 4) directs agencies to properly plan for and allocate resources for the public engagement process. All of these actions make for more effective community engagement and can go a long way to help build trust of the agency and the entire process. CSS policies could also bring attention to the challenges faced by projects in urban settings and provide much-needed guidance to transportation and planning agencies operating in densely populated centers.

CSS principles and related benefits and costs must be clearly documented in order to address the issue of why this approach is needed and why resources should be allocated to it. This is a prerequisite before the CSS framework can become a state of practice across the country.[20]

Interagency coordination and use of multidisciplinary teams

For projects located in urban settings, agencies at several different government levels may be involved (i.e., federal, state, metropolitan or regional, local and/or city), all with diverse mandates, areas of expertise and/or operational domains. Projects applying the CSS framework, which attempts to incorporate several contextual dimensions, often face a higher degree of managerial complexity, in part because of the need to engage certain agencies that are not usually involved in transportation projects. Given such conditions, the lack of coordination between agencies can significantly affect the project outcome.

There are various risks associated with public investment decisions made separately by individual agencies. An obvious case is that of missing opportunities to create synergies among agencies to develop solutions to common problems in a cost-effective manner. Indeed, interagency coordination may avoid the problems of piecemeal approaches to addressing transportation and environmental problems (Rue 2000).

When multiple agencies collaborate, it is also easier to form multidisciplinary teams and address the diverse requirements at densely populated urban centers where diverse stakeholders and intricate streetscape requirements can pose a challenge. To facilitate this collaboration, the lead team should strive to develop agreements early in the process about procedures and the collaborative structure. For example, a discussion of each agency's expertise could help in assigning roles for explaining different issues to the community and/or prevent conflicting statements during public engagement, a problem that can create confusion and mistrust.[21] Similarly, while operations and maintenance or certain safety issues are not necessarily considered during the planning stage, including agency personnel with expertise or experience in these areas early on can improve the outcome. Finally, it is essential that all departments and agencies, be engaged in the early stages to prevent significant changes later on. Nevertheless, coordinating among multiple agencies in large cities can be a challenging task, in particular because of the number of agencies and authorities as well as other parties operating in a single jurisdiction. It will also require technical and managerial skills that have hereto not been as essential.

Findings from the case studies

The most recent New York City experience with the Route 9A project illustrates the challenges of interfacing with multiple agencies. For this project, NYSDOT has worked in close collaboration with the Federal Highway Administration (FHWA) as well as 25 other federal, state, and local agencies and authorities throughout the EIS (see the case study description in Chapter 4 for a complete list). The lead agency tackled this challenging task by creating a multidisciplinary team that included technical and communications experts and was available to coordinate among the various entities. To make this possible, the lead agency allocated the appropriate resources..

Textbox 4.
The Evolution of MPOs

Suburbanization and the growing importance of metropolitan areas since the 1960s required decision-making processes related to transportation and infrastructure planning to go beyond single-state jurisdictions. In response, Congress enacted the Federal Highway Act of 1962, which, as a condition for federal assistance, required urban planning to be a "continuing, comprehensive and cooperative planning process," by both state and local governments in areas with more than 50,000 residents.

Since many urban areas lacked the capacity to implement the requirements of the Federal Highway Act, in 1965 the Bureau of Public Roads (now the Federal Highway Administration) specifically mandated the creation of metropolitan planning organizations (MPOs). The provisions of the Housing and Urban Development Act of the same year encouraged regional and metropolitan planning agencies to work with elected rather than appointed officials, and grants were made available to support this. The 1973 Highway Act further strengthened MPOs, or local and metropolitan planning as a response to growing opposition to city planning-as-usual. The Act reallocated some funding from the Highway Trust Fund to MPOs, thus providing them with somewhat more financial independence and political power.

The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) gave "unprecedented authority and flexibility to allocate funds for different surface transportation projects" to metropolitan decision makers. The Act also regulated and broadened the composition of MPO board members in larger urban centers, requiring them to include local government representatives, transportation agencies and state officials. Both subsequent transportation acts – the 1998 Transportation Efficiency Act for the 21st Century (TEA-21) and the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), further strengthened MPOs. TEA-21 expanded the range of criteria to be considered by metropolitan and statewide highway planning processes. The latter act required that local residents be involved in the transportation planning process. These acts also attempted to standardize their function across the nation by giving them uniform responsibilities. However, their direct powers still remain limited (Katz et al. 2005) and highly unequal among different states and agencies. For example, in California, the state DOT funnels 75% of transportation funds through regional MPOs, while other state DOTs retain most of the funds.

Source: Katz 2005; Sanchez 2005, AMPO, n.d.

The other projects studied have also faced similar challenges with coordination of multiple parties, albeit at a reduced scale. On the Edgewater Drive project, the City of Orlando's Transportation Planning Department and local municipalities embarked in an extensive stakeholder consultation, which included coordinating visioning exercises at various communities in order to develop master plans for each of several neighborhoods. This coordinated outreach effort helped the agency prepare to address the problems identified by the various communities.

During the US 131 S-Curve Replacement project, the Michigan Department of Transportation's (MDOT) interagency coordination was complicated by the urgency of the project. Given the tight schedule and the need to promptly begin work, MDOT promptly coordinated with the City of Grand Rapids. MDOT also coordinated work on two other fronts: the recovery of archeological artifacts and minimization of habitat impacts to several fish populations, including mitigation measures to ensure reproduction rates during their spawning season. MDOT worked with the Michigan State Historic Preservation Office on the first issue and with the Michigan Department of Environmental Quality as well as the Department of Natural Resources on the second.

Textbox 5.
Stakeholder Influence Through MPOs

The main body integrating the views of various stakeholders of a metropolitan region is the federally mandated MPO-board, usually consisting of elected representatives from member jurisdictions. However, neither a specific decision-making structure of the boards – such as representative voting – nor their representative composition are fully prescribed by the federal government. Hence, various MPOs are able to structure their boards differently. This favors certain stakeholders over others in transportation planning; thus, MPOs are sometimes criticized for not representing all metropolitan interests equally.

A 2006 study of 50 large MPOs by Thomas Sanchez analyzed the influence of racial and ethnic minorities and showed that the influence of local stakeholders is unequally distributed and varies according to the size and particular socioeconomic or political character of the region or constituency each board member represents, as well as by the various methods of election and the particular voting procedures on the board. Sanchez found that the composition of the MPO boards is biased towards rural and state-level highway constituencies and against certain urban minorities, raising awareness of the need for more careful design of the structures of stakeholder involvement. According to Sanchez (2006) this is important because MPO boards "wield powers to adopt and endorse regional transportation plans, approve budgets, approve agreements, adopt rules, and oversee operating procedures. The plans, budgets, contracts, and agreements approved by MPOs all directly affect the location and extent of transportation investment" (Sanchez 2006, 2).

Source: Katz, 2005, Sanchez 2006.

The T-REX project in Denver provides a good example of two agencies working closely together to develop an integrated intermodal project within an urban center. The regional transit agency (RTA) and the Colorado Department of Transportation (CDOT) agreed to share responsibility for this transportation project. Most significantly they worked together to create public support for the passage of the *FasTracks* ballot initiative in 2004, a program to develop light rail systems throughout the state.

Suggestions for best practices

Considering that interagency coordination takes place at different levels of expertise, the consultation with other agencies and external parties needs to be properly documented (e.g., meetings, site visits, major submissions and correspondence, permits, presentations, consultation, etc.) Therefore, it is important for lead agencies to properly allocate resources to this important task. Our research found that agencies often lack the resources to properly document interagency collaboration, especially during financial crises. Good practice would require lead agencies to properly allocate resources to this task. Furthermore, agency staff should receive formal training on how to implement CSS policies and

how to coordinate with other agencies and entities. In our opinion, it will be necessary to continue to study and document cost-effective practices to find those that meet the test for good CSS practice, as discussed earlier.

Identifying stakeholders

In the past, highway and transportation agencies across the country decided on investment priorities based on the need to provide a safe and efficient transportation system, without necessarily consulting with external stakeholders (TRB, 2004). Over the last several decades, communities have been playing an increased role in defining infrastructure and transportation priorities, and have become more cognizant of the environmental, historical, cultural and social values that they want to preserve within their communities. This trend has been supported by the devolution over the last decades of transportation planning and decision-making authority to Metropolitan Planning Organizations (MPOs) – local or regional transportation planning agencies.

Given the above, it is important to identify and involve all or most stakeholders potentially affected by a project and to ensure balanced representation. There are different methods and techniques (some of them described in IFC, 2007) to assist in this task, including:

- Identify all parties whose particular interests or conditions determine them as stakeholders by outlining the project's "sphere of influence."

- Ask an initial list of stakeholders (e.g., local community organizations and/or citizen coalitions) to help identify other parties potentially affected by the project.

- Develop "stakeholder maps" to ensure that all parties directly and indirectly affected by a project have been identified. Such maps can include a description of how each group may be affected and to what degree they may influence the process. Understanding various stakeholders' priorities can help develop strategies for public engagement.

Stakeholder participation can be more broadly thought of as the participation of various entities in addition to the authorities that have the responsibility for the implementation of projects. The stakeholders can be divided into a number of categories, including:

- Governmental/regulatory agencies (discussed in the next section).

- Municipal planning organizations (MPOs) or regional councils.

- Citizen coalitions or community boards and/or other parties representing community interests.

- Private interest groups, such as the chamber of commerce or advocacy groups (e.g., the Sierra Club), with an agenda that may transcend a specific project.

- Businesses and property developers.

• Members of the general public who are affected by the project.

When outlining a particular project's sphere of influence, agencies need to include not only the project's primary environment but also those that may be indirectly affected. For example, if a project plans to convert a corridor's existing lanes intended for motor vehicles to another use (e.g., parking, bicycle lanes), the loss of mobility may result in automobiles shifting from that particular corridor to residential streets, where residents may feel less safe and potentially challenge the project at a later stage. Thus, these residents must also be engaged as stakeholders early on.

Achieving balanced representation can be a very complicated task. This is true, in particular, when interested parties are not formally organized and, thus, do not initially respond but may present a legal challenge to the project at a later stage, which can result in delays to the project and a concomitant increase in costs. Examples abound, but in recent years there has been a reaction to the redesign of the streetscape according to "Complete Streets" principles. To illustrate, an article describing the benefits of "Road Diets" published on July 28, 2011, in the *San Jose Mercury News*, stated that "Today there is a new focus, one drawing howls of protests from some motorists but cheers of relief from pedestrians and bicyclists." Therefore, agencies should strive to identify all potential stakeholders, in part by always asking, "Who will be opposed to this project?" and by drawing "impact zones" or maps of interest groups.

Achieving balanced representation does not mean that all groups will be engaged with the same intensity throughout the process. To streamline the process, agencies need to be strategic and prioritize among different interest groups, emphasizing those that have a direct stake in the project. It is also important to define the best ways to engage different stakeholders, considering, for example, special requirements of the population involved (e.g., scheduling meetings during the evenings or weekends for working adults).

Findings from the case studies

The cases studied provide a range of experiences in identifying stakeholders and achieving balanced representation. On one side of this range is the early experience of the Route 9A project, which indicates that all stakeholders had not been properly identified and some important ones had been left out. In contrast, the City of Orlando visited several communities and engaged them in co-organizing the consultation process and identifying all relevant stakeholders.

Suggestions for best practices

Agencies that allocate sufficient resources to the identification and engagement of all relevant parties affected by a project are less likely to experience opposition, in particular when the project has been co-developed with the stakeholders. There are a number of tools that can help agencies streamline the consultation process, including developing "stakeholder maps" and/or "sphere of influence" outlines, These tools outlining various stakeholders' priorities and interests can help determine whether additional relevant stakeholders may exists, perhaps those opposing a specific agenda but not yet formally orga-

nized as a group. While helping agencies to achieve balanced representation, such tools can also assist in streamlining the consultation process by defining, for example, how best to engage each constituency.

Building consensus

Applying the CSS principles to project development and implementation requires building consensus among stakeholders around various issues. The FHWA suggests that the process be structured to ensure the "methodical integration of diverse values at each step of the process"(FHWA, 2009). While each transportation project is developed to address particular circumstances, all projects benefit from integrating the stakeholders, and they can be involved at various stages, to:

1. Collaboratively define the problem to be addressed, along with the project's purpose and needs.

2. Identify the contextual elements (including environmental, historical and scenic characteristics) as well as community values and needs.

3. Provide input to evaluate different options/solutions to the previously defined problem (during the alternative analyses process).

4. Select the final project design.

5. Determine roles for community involvement during project maintenance and operations phases.[22]

Building consensus is an important and often-neglected element of the community outreach process. It requires that those coordinating the consultation provide the appropriate structure and establish clear rules of engagement (e.g., how the deliberative process will be structured and how stakeholders' input will be integrated).

Two interrelated motivations drive agencies to work toward consensus building: First, they want to avoid legal challenges from stakeholders, especially parties with adequate resources or those who may feel disempowered. Second, they want to prevent discovering opposition to a project after resources have been invested in planning and design it.

Absent these two conditions, the question often becomes whether agencies are motivated to integrate stakeholders' views or to engage in behind-the-scenes political maneuvering. Without an empowerment structure, communities may not be able to influence the project development process. Therefore, it has been argued that the public engagement needs to move beyond just simple consultation meetings to offering discussion platforms where the public is able to influence and shape projects with the potential to affect their own communities. Most important, the "collaborative" decision-making structure needs to be clear so that participants understand the rules of engagement and roles played by all actors.

Findings from the case studies

The early (1970s-80s) Route 9A project in New York City illustrates that when stakeholders do not agree with an agency's plan or design, they may resort to the legal system. The project proponents learned of the opposition's strength too late. While it is preferable to involve communities during the early stages (e.g., problem definition), sometimes the problem to be addressed is already defined or considered urgent, as exemplified by the bridge replacement case of the US 131 S-Curve Replacement in Grand Rapids, MI. In any case, it was in the agency's best interest to build consensus to ensure expediency.

Suggestions for best practices

To support the public engagement process, the lead agencies may develop implementation plans that give structure to the decision-making process, along with procedures. Such plans inform stakeholders how their input will be integrated and how disputes are to be resolved. These action plans can also describe how customer satisfaction will be carried out and evaluated.

When conflicts arise between stakeholders it will be necessary to give stakeholders (especially the most vulnerable populations or those who are not members of a formal organization) the space to voice their opinions, and to address their questions, even when they may be critical of the agency's or majority's opinions.

Problem definition: determining purpose and needs

The CSS literature recommends starting the project development process by determining the problem to be addressed (see, for example, TRB 2002; FHWA, 2005; and ITE, 2006). This involves engaging various stakeholders (including users and those potentially affected) to produce a formal statement of the problem, opportunities, needs and values. The "Purpose and Needs" statement (which is required for all projects falling under NEPA), provides a good opportunity to engage stakeholders in developing comprehensive plans that go beyond consideration of transportation concerns to reflect several perspectives, contextual elements, and the views of all interested parties (TRB 2002, FHWA 2005, ITE 2006).

According to the FHWA (2005) defining the purpose and need should be the first step of the decision-making practice because it influences "the rest of the project development process, including the range of alternatives studies and, ultimately, the selected alternative." The Institute of Transportation Engineers (ITE) adds: "Understanding the purpose and need of the project includes developing an inclusive problem definition/statement that represents a common viewpoint of the problem among the stakeholders" (ITE 2006, 7; FHWA 2005; USDOT 2007). This is consistent with principles agreed upon during the "Thinking Beyond the Pavement" workshop held in Maryland in 1998, which found: "the project must satisfy the purpose and needs as agreed to by a full range of stakeholders. This agreement is forged in the earliest phase of the project and amended as warranted as the project develops" (USDOT 2007).
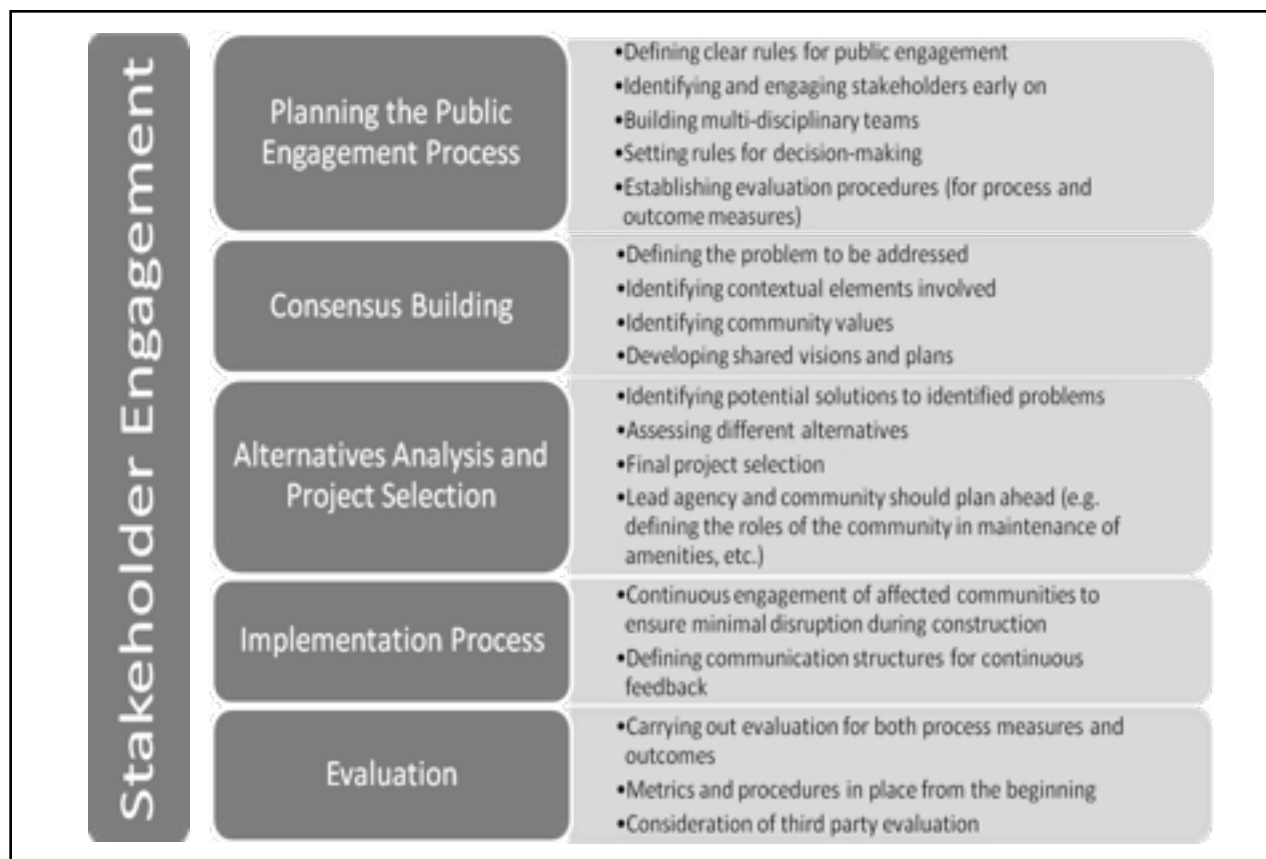
Figure 7.   Flowchart of the Stakeholder Involvement Process.

Early involvement of stakeholders is seen to be of critical importance because decisions made during the early stages of project development can constrain the range of potential alternatives to be considered as well as "limit the flexibility available in the later design stages" (Nehuleni 1999).

It may be argued that, to be useful, a problem definition statement must identify underlying causes and avoid describing only a "symptom" (e.g., traffic congestion). Instead, it should focus on the root problem (e.g., excessive travel demand, given the existing transportation networks)[23] (Peaks and Hayes 1999). Narrowly defining the problem as the need to solve "road congestion" instead of "improving public access to various mobility options" may preclude considering alternative or multimodal solutions to address the overall demand problem (CSS Problem Definition, CSS website, n.d.). However, problem definition is a difficult task and care should be taken to ensure that broader definitions not be taken out of context. For instance, defining the root problem as "excessive demand given existing transportation networks" may not be sufficient. If road space were to be allocated to just bicycles instead of public transportation, then an overall reduction of mobility may result.

Defining the problem to be solved and deciding how to solve it are two integral but different steps of the project development process. Confusing the two may lead to misunderstandings, in particular when a project is defined to solve a problem that contrasts with the community's idea of the underlying problem to be addressed. Some have argued that

involving the stakeholders after the problem has been defined may place the community in a "reactive" role and the planning agency in a "defensive" one.[24] In such cases, various stakeholders may contest the ensuing plans. Therefore, the lead agency is better positioned when it defines the problem *with* the community.

Findings from the case studies

During our interviews, the "problem to be solved" was defined in various terms. Safety and traffic concerns were cited by all cases as a reason for the transportation improvement. Two of the projects analyzed (Route 9A in New York City and Edgewater Drive in Orlando) actually decreased the number of road lanes to build multimodal corridors (adding bike lanes and pedestrian amenities), thus reflecting the values of the communities involved, while the two other cases (the T-REX project in Denver and the US 131 S-Curve Replacement in Grand Rapids)[25] added road lanes. However, in the Denver project, a transit option was also added as part of the plan to address increased mobility demand, consistent with the community values. Structural problems were also cited as a traffic-related problem, as illustrated by the New York City project where a highway section had fallen down, and the Grand Rapids project where the bridge supporting pilings were sinking.

In terms of building consensus to define the problem to be solved, out of the four cases studied, only the Edgewater project involved stakeholders during the goal-setting stage or in determining the extent of the problem to be addressed.[26] The other cases also involved the public relatively early but rather to define the *solution* or to gather information on the community values or contextual elements rather than to define the problem.

The importance of involving stakeholders in the defining the problem may be illustrated by the challenges faced by the three cases that "skipped" this significant step. In at least one of the cases studied (the 1970s Route 9A "Westway" proposal in NYC), having been excluded from the project definition, the community resorted to legal action to block implementation of the project. In two additional cases, (Michigan and Colorado) out-of-court settlements took place, and it is known that, given the urgency of the Grand Rapids bridge replacement, the community had not been engaged during the problem-definition phase.[27] The following paragraphs provide detailed information about the community involvement process for the different cases studied.

- **Edgewater Boulevard.** A visioning exercise carried out by the City of Orlando Transportation Planning Division revealed that the community wanted more than just a road resurfacing project. The idea for the Edgewater Drive improvement project came about during the development of a comprehensive visioning plan for the College Park neighborhood in Orlando, Florida, which began in 1999. This "Neighborhood Horizon Plan," was developed through a series of workshops convened by the City of Orlando and involved several communities in the city. In College Park, the plan identified 74 major measures the community wanted to accomplish, including many relating to Edgewater Drive. The official plan for the neighborhood served as a guide for future planning and neighborhood improvement projects, and it was approved by the College Park Neighborhood Association (CPNA) and accepted by

the Orlando City Council in January 2000. Planning and design work started soon after.

- **T-REX project.** The stakeholders in Denver (CO) were involved in selecting a final project among three alternatives that were presented in a "Major Investment Study" as part of the EIS process.[28] Stakeholders from seven municipalities along the corridor were given three choices: 1) highway improvements only (with additional lanes in each direction), 2) adding a light rail system adjacent to the existing highway (without additional lanes), or 3) both projects. They selected the third option. In addition, the seven municipalities along the corridor were able to include related infrastructure improvements as part of the T-REX project, provided they would pay for such upgrades.

- **US 131 S-curve replacement project in Grand Rapids (MI).** The problem to be addressed was considered urgent; thus, one may argue that it was pre-determined by the nature of the assignment – a reconstruction job that needed to be completed quickly in order to replace decaying parts of the old structure and prevent closing the US 131 freeway.[29] Resources were quickly allocated to speed the planning, design and community consultation. Since then, MDOT has instituted a policy of engaging communities at the local level, through staff at a decentralized office that presents information on future projects on a periodic basis (e.g., as part of their rolling five-year plan development). This provides a good opportunity to "obtain stakeholder input to arrive at the 'best fit' for transportation facilities, while addressing community needs and concerns" (CSS Michigan 2008).

- **Route 9A.** Given its long history, New York City Route 9A illustrates a range of stakeholder involvement approaches. In the 1970s, after a section of this old highway fell down, there was a lack of community involvement during the development of an initial proposal to fix it. It may be argued that because the communities along Manhattan's West Side Highway corridor had not approved this proposal, they resorted to major legal actions. After the initial plan was defeated in court, the community was included in the goal definition stage. A new plan was then developed by a committee appointed by the mayor and governor and led by the chair of the Securities and Exchange Commission. Dozens of public consultation meetings were held where the affected communities expressed their views. Implementation started in the early 1990s and construction was coming to an end when the World Trade Center collapsed on September 11, 2001, destroying parts of Route 9A. Since then, multiple stakeholders have been engaged in developing a visioning plan for the redevelopment of Lower Manhattan. This includes their vision for the redesign of the section of Route 9A, south of Chambers Street.

Whereas community consultation resulted in changes to the proposed project design on some of these projects (and in other cases reviewed), sometimes the problem definition for a project was not developed with full community input from the start. This is often (but not exclusively) the case with projects involving the three "Rs" (resurfacing, restoration or rehabilitation of existing facilities). Nevertheless, as the Orlando example illustrates, even a simple resurfacing project can provide an opportunity to integrate the values of the

communities that will be affected. Indeed, as recent projects demonstrate,[30] the practice of CSS is being expanded to include projects involving the "three Rs."

Finally, before having the problem properly defined, there may be lack of clarity about which agency should take the lead to involve various stakeholders. In such cases, stakeholder involvement during the problem-definition phase might work best when the communities are already engaged – such as the bottom-up approach illustrated by the Orlando case study.

Suggestions for best practices

Good practice would dictate that agencies should engage the communities at the very beginning of the planning stage in order to identify the problem to be addressed. This would prevent community dissatisfaction that could result in legal action delaying or even defeating the project.

Co-defining the problem with stakeholders may be achieved through visioning exercises, where the needs and values of the community are voiced. For large cities, it is recommended that in addition to general visioning plans, agencies should also develop local-level plans, to ensure that particular communities and contextual elements of a site are integrated into the project design and also that modifications to transportation facilities at one location do not affect neighboring corridors or neighborhood streets with a potential concomitant increase in crashes in other neighborhoods.

The plans emerging from visioning efforts where communities are consulted are likely to offer solutions to a more comprehensive set of issues and opportunities to treat them in a synergistic manner. In addition, having plans that are representative of community values or better integrated with other community objectives decreases the likelihood of conflicts and/or potential litigation.

Integration of contextual elements

Guided by the CSS principles, transportation and planning agencies are increasingly working collaboratively with communities to develop transportation projects that fit their "physical setting," while supporting community values and preserving scenic, aesthetic, historic and environmental resources" (AASHTO, n.d.).

Integrating various perspectives and contextual elements into the decision-making process offers an opportunity to consider multimodal alternatives, and/or to better understand how the project may link to broader plans (e.g., regarding land use, other developments, etc.). By taking into account the whole spectrum of contextual characteristics, there is a better chance that the vision for the project (as well as objectives and goals) will be aligned with regional plans, both in transportation and in other policy arenas, while addressing the needs and values of the particular community where the project is located (AASHTO, n.d.).

As has been argued before (e.g., C. de Cerreño & Pierson, 2004), for projects set in urban centers, the "context" considered will vary in terms of the social, political and built environ-

ment, in contrast to projects located in rural or suburban areas. Our literature review and interviews revealed that the following contextual elements are deemed to be important to urban projects:

- Aesthetic and/or historical aspects of the built environment not just the natural resources of the site.

- Interests and values of the public, business and/or other organizations.

- Public policy directions (and coordination between several agencies).

- Intermodal transportation problems, including traffic problems (e.g., congestion, safety) and demands of multiple modes on a single streetscape (such as transit, automobiles, bicycles, pedestrians).[31] Another contextual element to consider is whether the transportation project in an urban area is a response to a development, such as a shopping center or another transportation project or a combination of both. This distinction could materially influence the nature of the public participation, in particular if developers' interests would conflict with the values of the community and/or the developer has more resources to use during the decision-making process. Our cases did not involve this element.

Findings from the case studies

When probed, the interviewed agencies described various contextual elements that had been integrated into the project designs as a result of the community involvement:

- Aesthetic treatments to roadway elements. These ranged from textured concrete elements, arches and lighting on a segment of the US 131 S-Curve Replacement project in Grand Rapids (MDOT 2008) to decorated noise barriers in Denver's T-REX project.

- Archaeological resources. MDOT worked with the Ottawa tribal groups and environmental and professional staff to identify and uncover 42,000 artifacts from early settlers. The project included a marker to recognize the presence of Native American settlements in the area.

- Bicycle lanes or paths. Two of the projects studied (Florida, New York) integrated bicycle lanes or paths alongside the boulevard in response to the community values as expressed during the consultation process. The other two projects included bicycle access to rail stations or parks.

- Parks and landscaping. All projects integrated a "green" element as part of the design, ranging from trees or tree canopies (e.g., Edgewater Drive in Florida), landscaping and/or parks (e.g., US 131 S-Curve Replacement project in Illinois, T-REX in Colorado) as well as parks along the waterfront (e.g., Route 9A in New York).

- Pedestrian friendliness. The Edgewater Drive, in Orlando FL, added awnings, arcades and streetscape improvements as well as retrofits to create shade and a comfortable walking environment. Similarly, the Route 9A project in New York City developed new pedestrian corridors with trees and benches along the waterfront throughout the extent of the project. The US 131 S–Curve Replacement project added nonmotorized pathways and the T-REX project provided easy pedestrian access to the new transit network.

- Pedestrian safety. This was improved by the addition of frequent at-grade crossings with medians and pedestrian bridges (e.g. Route 9A). Other projects also added medians, to provide traffic calming through the core, and restricting turning movements to reduce congestion at various intersections (Edgewater Drive).

- Transit. A light rail system was added as part of the T-REX project in Denver, and additional transit stop was built between both sides of the Grand Valley State University campus in Grand Rapids, MI.

Suggestions for best practices

Agencies should have clear rules about how to incorporate the various contexts that are advanced by different constituencies. It is important to consider how the project will affect the broader context; whenever changes are made in one area of the city, the effects on neighboring communities should be assessed. The rules should be shared with all the stakeholders, especially those affected by a project. Having clear rules of engagement is particularly important in urban centers, which are more likely to concentrate a variety of interests and views. Capacity reductions on main roads in one location may lead to increased traffic in neighboring corridors.

Finally, knowledge of the most important contextual elements that were considered could assist in future project development; thus, records should be kept for future reference. These records could describe the main actors who framed the context and goals of the project, at what stage of the project each actor was engaged, other agencies involved, any major problems that arose, and whether the project was a direct consequence of land development.

Alternatives analysis and selection

After engaging stakeholders in defining the problem to be solved as well as the vision and goals and purpose and needs of a project, the coordinating agency is expected to engage the community in developing various alternative proposals that reflect their values and requirements as expressed during the first consultation stages. As stated earlier, the range of alternatives considered would be limited by how the problem has been defined. Therefore, early involvement of stakeholders is of critical importance because decisions made during the early stages of project development can "limit the flexibility available in the later design stages" (Nehuleni 1999).

Well-defined "Project Purpose and Needs" statements not only frame the development of alternatives but also reveal the values that are important to the community. These values are reflected in the contextual elements that will ultimately shape the project design and implementation. Therefore, the lead authority should encourage a broad definition of the problem to be solved and consider a range of perspectives when developing alternative proposals. Once these are developed, the stakeholders should be involved in deliberating which alternative proposal best fits the community values and needs (Peaks and Hayes 1999; NCHRP 2002; CSS Alternatives Development).

Findings from the case studies

We found that in most of the case studies, the stakeholders engaged in the selection of the final alternative to be implemented. Although the community did not participate in the definition of the problem to be solved, the T-REX case in Denver provides a good example of how the stakeholders may be involved in selecting a final solution among various alternatives. As part of the environmental impact statement's major investment study, stakeholders from seven municipalities along the corridor chose among three alternative projects to select the final project, which included a transit option as well as added road lanes. Similarly, the City of Orlando worked with various communities to incorporate their vision about the preferred design for the Edgewater Drive reconstruction. In the 1990s, the New York State DOT also engaged representatives from various communities at several meetings to select the final project design. The S-Curve Replacement project was seen as not offering much opportunity for alternative designs, given its urgency and nature, however, stakeholders offered comments on the proposed design.

Suggestions for best practices

Good practice would require the lead agency to plan ahead and start the stakeholder engagement early in the process, in order to gather information from all those affected. Engaging the community for the first time to select among various alternatives is likely to result in a narrow range of options. In addition, if people feel left out of key decisions regarding potential alternatives, they are more likely to contest them. Therefore, the lead agency should regard stakeholder input on problem definition, purpose and needs, values, and contextual elements as *required information* for the alternatives analysis process.

In many cases there are conflicting contextual elements that compete for resources, particularly in large cities with diverse interests and perspectives. Therefore, an important step is to determine *a priori* the rules by which conflicting elements may be addressed during the project development process. Stakeholders should be included in discussions of the trade-offs involved for each of the conflicting elements, and they should be given a voice in setting priorities. For example, given a problem of limited highway capacity (or high transportation demand), some stakeholders may propose to build additional road lanes while others would like to build HOV lanes and/or expand transit services. The lead agency should also aid in defining trade-offs in benefits and costs among competing alternatives.

Format and tools for stakeholder involvement

Because stakeholders will vary from project to project, especially in urban centers, the lead agency needs to allocate time and resources to properly conduct the necessary "stakeholder analysis" (Thompson 2011).

Chapter 6 discusses tools for identifying all stakeholders to a project. After all relevant stakeholders have been identified, the methods for integrating the public can include:

- Soliciting input from the public for projects in an informal way, such as sending a notice to stakeholders who may possibly be affected and soliciting comments from them.

- Creating formal fora, such as meetings, hearings or open houses.

- Creating formal processes, such as visioning exercises or workshops, to define the nature of the problem and facilitate project development.

- Forming task force groups or committees at different stages of a project to obtain in-depth input.

Findings from the case studies

While all of the cases studied engaged the stakeholders in numerous face-to-face meetings at different stages during the planning and/or design process, our research[32] indicates that some agencies across the country are favoring open houses, workshops and/or visioning exercises and other formats that favor dialogue among smaller groups of participants instead of large meetings where a broad audience merely comments on, or reacts to, a previously prepared proposal.

Regardless of format, these activities were usually led by the owner of the project (e.g., the transportation agency). In two case studies (Denver and Grand Rapids), the lead agency hired a public relations firm to assist with the public outreach campaign but worked in close collaboration with them. In another case (i.e., Orlando) the agency had dedicated staff to address the public's concerns, and the staff was properly trained on public involvement strategies. This is similar to New York State DOT's strategy when the Route 9A project began in the 1990s. At that time, a team was created within the agency to coordinate the public engagement process.

A number of communication tools are available to facilitate stakeholder involvement, including charettes, presentations, simulation or visualization techniques, newsletters, dedicated websites, and toll-free phone services.[33] We found that our case studies employed a variety of these tools. MDOT launched an extensive public awareness campaign that included a website to ask questions, called "Ask the Expert." The live program provided stakeholders an opportunity to call in their questions and receive immediate responses. The outreach included presentations to explain the problems with the Grand River Bridge and possible solutions. An important visualization tool was a presentation facilitated by an

architect to show possible bridge treatments. This was relevant because the bridges over the Grand River contributed significantly to the identity of the city. In addition, and to provide project updates, MDOT instituted a toll-free number and launched a public website, which received more than 20,000 visitors per month. Similar outreach techniques have been utilized by the other projects, including those by NYSDOT (CSS New York 2008), CDOT and the City of Orlando, FL. However, we found no evidence that the agencies have evaluated the effectiveness of these communication tools.

Suggestions for best practices

The lead agency may use in-house staff members or consultants to conduct the stakeholder consultation. In either case, it is important that the personnel be properly trained and possess the skills needed to plan and implement appropriate public involvement strategies. They should be well versed in a number of communication tools, such as presentations, simulation or visualization techniques, and outreach techniques, including charettes, workshops, open fora, etc., and be able to evaluate which ones will be more effective, given the context and community.

Costs and benefits

The process of implementing CSS incurs costs that must be offset by benefits or avoided costs. The major cost is associated with the stakeholder consultation process. In addition, there are costs for integrating community values and contextual factors into the project design. In terms of benefits, it has already been noted that involving stakeholders at all stages of project development can limit or avoid costs associated with project delays from community opposition or legal challenges. While the main benefits come from avoiding the cost of delays (which are much more costly during construction than during the project planning phase), it is hard to ascertain and document avoided costs – costs that were never incurred. A report (C. de Cerreño & Pierson 2008) summarizing the views of DOT representatives from nine major cities called for the establishment of a database of legal proceedings brought against publicly funded transportation projects each year. The database would include cases settled out of court, those heard in court, would note the number of cases that resulted in awards to the plaintiffs, and the amounts paid.[34] This type of information can help in estimating the costs associated with omitting affected communities from the planning process, which become real-dollar benefits for the converse.

There are other types of benefits that should be considered. Public outreach efforts offer good opportunities not only to develop projects that reflect community values but also to strengthen the community's trust and gain their support for funding current and future projects. Indeed, recent research has found that "improved efficiencies and customer satisfaction may result in increased funding for transportation improvements because customers and legislators are more likely to support increased funding for transportation when agencies have been successful in delivering transportation projects more efficiently while meeting community needs" (ICF International 2009). Although difficult to measure, other benefits may include increased trust between agencies and end users, enhanced customer satisfaction, and improved intra-agency morale, Moreover, infrastructure projects are public goods and therefore are legitimized from the involvement of stakeholders and

the democratic input of the most affected constituencies and society at large. Given these complexities, it would be useful to further explore the varieties of tools used for input solicitation and assessment, their usefulness, and whether the benefits gained were perceived to have made the additional cost of public involvement worthwhile.

Finally, some of the costs commonly attributed to stakeholder requests during the public involvement process can reasonably be reinterpreted as costs that should be part of any budget. These include costs for proper disposal of materials and/or for instituting construction and maintenance practices that have the potential to reduce the generation of waste materials (Nehuleni 1999).

Findings from the case studies

While all of the project teams we interviewed recognized that there were some costs associated with the public outreach, stakeholder involvement and/or informational campaigns, all of the respondents indicated that these costs were reasonable and justifiable in relation to the benefits.

Besides questions about the cost of stakeholder involvement, our questionnaire probed whether changing a project to conform to CSS principles (in general) could result in increased costs. We tried to gather information about overall project cost increases, what caused them, which parties bore the cost, the justifications given and how the increase in cost could have been avoided. We found that all projects experienced moderate cost increases in order to address contextual requirements or values voiced by the various communities. These increases have been estimated to range from five to fifteen percent of the initially estimated price tag. Nevertheless, all agency representatives interviewed felt that the extra investment resulted in a better project. For example, NYSDOT agreed to use stone rather than concrete as paving material for pedestrian corridors and estimated that the durability and aesthetic quality of the stone justified the investment. Similarly, when MDOT decided that instead of merely restoring decaying bridge foundations, it would replace a 1.5-mile road segment and add lanes and shoulders to address safety issues that had plagued the US 131 S–curve since its inception, it was also faced with addressing rerouting of traffic during construction. As a result, permanent improvements to the detour route were completed and helped the city stay in business (consistent with the motto "Road Closed, City Opened") but overall costs increased.

In at least one project (i.e., T-REX in Denver, CO) certain budget elements were discussed with stakeholders. While accommodating requests for some contextual design changes, CDOT offered communities the option to include additional improvements as long as they were willing to pay for them from their own municipal budget. Not all the municipalities approved these enhancements. Finally, , we found that, in general, additional project costs to implement design changes consistent with CSS (the context/values) were often paid using federal funds, while, at least one case, the City of Orlando paid the difference.

Suggestions for best practices

Agencies should always attempt to compare costs of stakeholder involvement processes to the benefits that accrue when the public engagement is successful and comprehensive. However, further research is needed to document the CSS benefits. We recommend that agencies track the costs of stakeholder involvement and of including contextual elements, as well as costs of project delays and legal challenges. Lacking a national database on claims and related liability costs, agencies could at least compile and share anecdotal information about the benefits and costs associated with stakeholder involvement. This information can be utilized in the planning of future projects. Given the recent devolution of planning and funding decisions to the regional and local level, an important benefit of the public involvement processes is to ensure that stakeholders are supportive and engaged in securing funding for projects that can potentially affect their community. Finally, to address concerns about budget creep, agencies could consider integrating the stakeholders in the discussions of budget constraints as part of their consultation process. Such public involvement can educate stakeholders about trade-offs and help them compare costs in relation to benefits.

Exceptions to standards

Another issue was the extent to which transportation infrastructure design standards constrain the CSS process and, consequently, the degree to which the stakeholders' objectives can be reconciled with the standards at a "reasonable" cost. This issue was extensively addressed in the FHWA publication on flexible design standards, but it may continue to warrant attention in light of the integration of multiple transportation modes. Stakeholders, especially the general public and sometimes professionals involved, may be unaware of the reasons why some standards are flexible while others are not. Some standards allow greater flexibility than others. Safety-related standards, such as maintenance of stopping-sight distance, are more difficult to deviate from, while the standards for intersection layouts are more flexible.

We consider it important to inform stakeholders about these issues early on to avoid having to make changes to plans during the design stage or having to redesign and make physical changes to the infrastructure due to higher-then-expected accident rates. These problems can be avoided when the engineering design staff is part of the team responsible for the initial visioning plan.

Findings from the case studies

Our questionnaire asked whether any exceptions to safety-related standards were made, the motivation for these deviations, and whether any unforeseen negative consequences resulted. For standards other than safety standards, the team asked about novel implementations that could be used in other projects. In general, the cases studied followed accepted design standards,[35] and those interviewed felt that they did not have to compromise safety standards to accommodate certain community requirements. In the case of New York, the major deviations from policies and standards involved the design of special

crosswalks and new traffic barriers faced with stone. This design had never been tried before but did not require any exceptions to design standards.

We also probed safety issues in cases that have experienced a decrease in the number of previously available traffic lanes to accommodate alternative transportation modes, traffic calming or redesignation of the streetscape (e.g., Edgewater Drive in Orlando and Route 9A in New York City). The City of Orlando conducted a "before and after" study to analyze accident rates of the road, given that the number of lanes was decreased. This study showed a 68 percent reduction in injuries and a 34 percent reduction in crashes, but no studies were conducted of the possible deleterious effects on alternative routes that may have experienced an increase in motorized traffic due to the lane reduction on Edgewater Drive.

Suggestions for best practices

We recommend that the engineering team be included in the stakeholder involvement, in particular when developing vision and goals statements and the alternative analyses. Moreover, when assessing the impact of a proposed plan of action on safety and mobility, it would be important to consider the entire network effects, not just a corridor.

Evaluation: measuring community participation

An extension of the stakeholder involvement process consists of a formal assessment of satisfaction at different stages of the project development. These assessments may be structured questionnaires or polls, and such inputs could be used in formulating the next stage of the project. The evaluation may be carried at different levels, including metrics to evaluate the consultation process and/or project outcomes, or to measure the staff's performance at the project level or evaluate organization-wide issues (CSS Measurement, n.d.). However, given that many participants may not be available for consultation after the project is finished, evaluation procedures should be established from the onset to ensure that all data are collected in a timely manner and should not be done only *post-facto*.

When attempting to evaluate community involvement, one may consider:

- The extent and quality of the participation.

- The costs and benefits of involving stakeholders.

- The impact of participation on outcomes, performance and sustainability, including an assessment of the influence that different stakeholders had during the process and/or in defining the final project (Marilee 2000).[36] Stakeholders' satisfaction with both the process and the outcome.

Findings from the case studies

Most of the cases studied conducted some type of final project evaluation, but such evaluations generally focused on outcome measures as opposed to process measures. For

example, the City of Orlando evaluated the "before" and "after" traffic conditions, comparing traffic flows and accident rates of the Edgewater Drive project.[37] In terms of process measures, all of the project teams conducted some type of evaluation to gauge the extent of public participation (e.g., how many people attended meetings) but only two teams (Denver and Orlando) tested for the degree of satisfaction with the process or project, and just two teams sought feedback from the stakeholders during the project development phase (City of Orlando and New York City for Route 9 reconstruction after 9/11/01). These included questionnaires used before and after the project to seek input from residents and business owners.

Only the Denver team, through a consultant firm, conducted two types of surveys to assess the degree of satisfaction with the overall consultation process. The first assessed the degree of satisfaction among "team" members, and a second was directed at both the team members and stakeholders. The answers to the latter indicated that the public was less satisfied with the project engagement process. On some issues, there has been a discrepancy between the team's perception of the public satisfaction with the process and the answers given by the public, in particular regarding improved walkability and bikeability. Such discrepancy between the level of satisfaction between the leading team and the stakeholders is known as the "Arnstein" gap, which may be used to measure the perception of different participants about the public involvement process[38] (Clark, 2006). An important measure that is rarely evaluated is the degree of influence exerted by various stakeholders during the project development process. While this may not be easy to measure, it is important to keep in mind that without effective integration of the communities' input into the process, the stakeholder involvement could be considered a failure.

Suggestions for best practices

Metrics and procedures should be in place from the beginning of the process to evaluate not just how many people participate at meetings but also the satisfaction of the community and the professional staff with both the community engagement process and the final output. The evaluation could include metrics to assess the influence that various stakeholders had, either during the process or on the outcome, such as information on any project delays, and/or suggested alternative solutions that resulted in improvements. Agencies may involve a third party to conduct the evaluations, and this may provide an objective evaluation of how successfully the management team discharged its obligation to understand the values and needs of the community.

VI. SUMMARY OF SUGGESTIONS FOR BEST PRACTICE REGARDING STAKEHOLDER INVOLVEMENT IN URBAN AREAS

Here we have summarized notable suggestions for best practice discussed in this report:

1. **Adopt CSS policies and procedures.** Some states have adopted legislation to promote context-sensitive design and/or solutions during project development and implementation. Other states should consider following their lead. As a first step, state DOTs could institute organization-wide CSS policies (e.g., guidance and/or procedures and performance measures) and avoid implementing the CSS framework on a project- by-project basis. This will result in consistent procedural treatment throughout each state and across all projects, which will help increase public trust in the public agencies' decision-making process. Attention to the challenges faced by urban settings would provide much-needed guidance to transportation and planning agencies operating in densely populated centers.

2. **Coordinate across agencies.** Engaging other agencies is not only the recommended course of action to ensure collaboration and buy-in from all entities involved, it also provides additional resources when building multidisciplinary teams. Because of the complexity of coordinating several agencies, the lead agency should properly allocate resources to this task, which includes accurate documentation of the interagency involvement process. Furthermore, agency staff should receive formal training on how to implement CSS policies and how to coordinate with other agencies and entities.

3. **Build multidisciplinary teams.** It is important to have a well-qualified team, in particular during the project definition stage. This will ensure that the proposed solutions address potential problems during the entire life cycle of the project, including not just planning, design and construction but also maintenance and operations. Structuring the process to take into account different perspectives will provide better opportunities for optimization. For example, engineers may be available to discuss which engineering standards are flexible and which are not, and the maintenance and operations teams will be able to provide insights to ensure efficient upkeep and operation of the facility.

4. **Integrate stakeholders into the planning process early and continuously.** An efficient and effective community involvement process would dictate that stakeholders be involved at the earliest stage, so as to develop a project that reflects the views and values of the community and thus prevent legal challenges and unnecessary delays at later stages, when it's more costly. An optimal stakeholder engagement process generally involves the following steps:

    a. *Identify all relevant stakeholders.* The lead agency is advised to start the stakeholder engagement early on, in order to gather information from the community and identify all those who may be affected by a project. A detailed "mapping" of relevant stakeholders can help to achieve balanced representation. This map-

ping could identify key representative organizations and neighborhood coalitions that can be engaged to help in the outreach campaign, thus streamlining the process. In identifying stakeholders, agencies should also consider the "broader context" including areas that are not within the project location but that may be indirectly affected by it.

b. *Build consensus.* To ensure a meaningful community involvement it would be important to set a clear collaborative structure to integrate stakeholders into the planning process, and to empower stakeholders, for example by giving them voice and vote in agency-led working groups, at MPOs and/or other decision making bodies. Clear rules of engagement about how to incorporate the various views and perspectives advanced by different constituencies should be in place and broadly shared and discussed with all the stakeholders. Having clear rules of engagement is particularly important in urban centers, which are more likely to concentrate a variety of interests. Furthermore, policies and procedures for stakeholder involvement should be documented for both the lead agency and other participating agencies.

c. *Engage the community to define the problem to be addressed.* Good practice would dictate that agencies should engage the communities at the very beginning of the planning process in order to better define the problem to be addressed. This may be achieved through visioning exercises, where the needs and values of the community are voiced. For large cities, it is recommended that in addition to general visioning plans, agencies should also develop local-level plans, to ensure that particular communities and contextual elements of a site are integrated into the project design.

d. *Integrate contextual elements.* By taking into account the contextual characteristics, there is a better chance that the vision for the project will be better aligned with regional plans both in transportation and other policy arenas, while addressing the needs and values of the particular community where the project is located. Furthermore, multi-modal options are more likely to be considered.

e. *Analyze alternatives for best project selection.* The stakeholders' input about problem definition, purpose and needs, and values, as well as contextual elements is required information for developing the alternatives analysis. The lead agency should aid in defining trade-offs and benefits and costs among competing alternatives. To address concerns about budget creep, agencies may consider integrating the stakeholders in the discussions of budget constraints, as part of their consultation process. When stakeholders and community representatives are involved throughout the planning process, including financial and budgetary discussions, they are better informed to consider potential trade-offs, safety standards and design constraints when selecting the final project.

5. **Document costs and benefits.** It would be important for agencies to document the costs and benefits of the stakeholder outreach process. While more difficult to document, the benefits associated with avoided costs from project delays and legal

challenges should be estimated. Such estimates will continue to be based on anec-dotal information until better documentation is compiled or a national database of these costs is developed.

6. **Identify flexible and inflexible design standards; establish an exception process for flexible standards.** The flexibility of design standards should be made clear at the onset of a project to ensure that the stakeholders' vision can be achieved within safety and engineering standards. The process of making exceptions to these types of standards must also be clarified. That would require that the engineering design staff be part of the team responsible for the initial visioning exercises with the communities.

7. **Select and train staff appropriately.** In order to be effective, personnel conducting outreach campaigns should have the appropriate set of expertise and be properly trained. Agencies selecting to employ in-house personnel to conduct the stakeholder consultation are advised to allocate sufficient resources to ensure that they are properly trained.

8. **Evaluate success of the process and outcome.** Metrics and procedures should be in place from the beginning of the outreach process to evaluate not just how many people participate but also the degree to which the community and professional staff were satisfied with the community engagement process and the final output.

VII. CONCLUDING REMARKS

As stated in the report, the major focus has been to identify some best practices for stakeholder participation during the CSS process in urban areas. From our research and interviews it became clear that the early engagement of stakeholders is extremely important, especially in the context of federal policy devolution. Actively involving communities during a project's decision making legitimizes the process and prevents or minimizes legal contests, and thus reduces delays with their associated costs and investment uncertainty that can derail a project. Moreover, when communities are empowered to define the alternative that best represents their values, they are most likely to support the project and advocate for funding.

Our understanding is that the community engagement does not need to be a protracted process. A number of stakeholder involvement practices help expedite the integration of communities' views and values in the decision-making process. The most significant practice, in terms of empowering communities, is engaging stakeholders in visioning exercises to develop community master plans, in particular during the problem-definition phase. Other practices include working with citizen coalitions and representative organizations and/or inviting community representatives to participate as voting members of MPOs.

An important issue that requires attention is integration of CSS-related legislation, policies and procedures with the NEPA legislation and procedures to ensure standardization as much as possible and to make the best use of resources.

SUGGESTIONS FOR FURTHER RESEARCH

It should be reiterated that stakeholder involvement is part of a much broader process and the related best practices should also be evaluated in the overall context of the broader CSS process. One of the major issues meriting further research is an evaluation of the benefits and costs of the CSS process and stakeholder involvement.

We also concluded that there is a paucity of research results for CSS in urban areas and more case studies will be required to fill the gap in this knowledge base. In addition, we recommend that research be undertaken on CSS practices related to freight transportation.

APPENDIX A: QUESTIONNAIRE

A. Context

1. What were the most important contextual elements that dictated the context of this project?

   • Were they primarily issues that related to:

   • Transportation problems,

   • Policy directions,

   • Public interests,

   • Business interests,

   • Other organizations' interests, or

   • Preservation of the natural environment

2. Was the project a direct consequence of a development, such as a shopping center?

3. Who framed the primary contextual elements?

4. At which stage of the project development were they framed?

B. Stakeholder Participation

Legislative body

1. Does the legislative body have a formal CSS policy and/or procedure? What is the nature of the policy? Is it a project-oriented policy or does it go beyond a specific project? Please provide related information.

2. Does the legislative body have a formal policy regarding the involvement of stakeholders in addition to having a planning commission or a council, such as a city council or a board of supervisors? If so, is the policy published and where?

3. Does the legislative body or bodies have formal policies that may influence the implementation of this project? Which of the following policies may apply:

   • Focus on high-density development.

   • Focus on sustainability. If so, is the focus on fuel reduction, decrease of greenhouse gases or another aspect of sustainability?

- Transit-oriented development etc.

4. How would you change any of the policies for more effective and efficient involvement of stakeholders?

5. Is there a policy or procedure for involvement of multidisciplinary teams for planning and design?

Departments

6. Which agency departments were involved in the development and monitoring of the project? At which stage of the project development did they get involved?

   - The goal-setting stage?

   - The conceptual planning/design stage?

   - The land use/project approval stage?

7. What dictated the limits to the stakeholder participation?

Other organizations

8. Which types of stakeholders, besides for the legislative body and the associated departments, were involved in the process? If so, who were they?

   - Other governmental agencies such as a state or local government?

   - Other governmental agencies, such as one that would regulate the environment?

   - Private interest groups, such as the chamber of commerce or an environmental protection organization?

9. At which stage of the project development did they get involved?

   - The goal-setting stage?

   - The conceptual planning/design stage?

   - The land use/project approval stage?

(Are there contact persons for any of these participants and/or contact information available?)

General public

10. Do you have a policy for public involvement and/or outreach? Please provide related information.

11. At which stage of the project development did they get involved?

  • The goal-setting stage?

  • The conceptual planning/design stage?

  • The land use/project approval stage?

Assessment

12. Was there a formal assessment, such as polls or questionnaires of stakeholder satisfaction at any stage of the development? If so, what kind of instruments were used and at what stage of the project development were they implemented?

13. What were the results and how were the results used in the further development of the project?

Costs of the stakeholder involvement

14. What were the costs associated with the stakeholder participation?

15. Who bore the costs?

16. Were these costs justified? Provide reasons for the response.

Conflict resolution

17. Was there any significant resolution of conflicting objectives of stakeholders? If so, was it a result of agreement based on gathering input or was it a result of a legal maneuver?

18. What kind of input or legal maneuver was used?

C. Project Cost Increases

1. Was there an increase in the cost of the project as a consequence of making the project more contextual?

2. If there was an increase in cost, what percentage of the overall project costs did this increase amount to?

3. What determined the limits to the cost increases?

4. Who bore the cost of the increases?

5. How was the increase in cost justified?

6. Could the increase in cost have been avoided? If so, how?

D. Standards

1. Which were the primary planning and design standards and policies used in the planning and design of the transportation project?

2. Were there any major deviations from the policies and standards?

3. If there were deviations from the policies and standards, what were the main deviations?

4. If there were deviations from the policies and standards, what were the reasons for doing so?

5. Were any of these deviations related to safety standards? If so, what did they consist of? Were there any deleterious effects from this deviation(s)? Is so, what were the effects?

6. Were any special studies conducted? If so, why were they conducted, were they useful and who bore the cost?

ENDNOTES

1. The concern about project delays created by public engagement process is often expressed informally. Some reports discuss these concerns; see, for example, page 17 of the ICF International report "Final Context Sensitive Solutions Integration Guide" (2009) or Brianne Leigh Kessler, 2004, "Stakeholder Participation: "A Synthesis of Current Literature"; available online at http://www.mpa.gov/pdf/publications/Stakeholder_Synthesis.pdf. The ICF report indicates that in discussions and interviews with senior and middle management staff at state DOTs, they have expressed concerns about the organizational implications of CSS, ranging from added costs and complexity for project delivery and/or requiring public involvement on even simple projects.

2. The Context Sensitive Solutions Clearinghouse is funded by the FHWA's Office of Planning, Environment and Realty's Surface Transportation Environment and Planning (STEP) Cooperative Research Program. Further information is available at: http://contextsensitivesolutions.org/content/topics/misc/about/

3. The benefits ensuing from stakeholder involvement and community engagement during the decision-making process have been discussed at TRB (e.g. http://onlinepubs.trb.org/onlinepubs/problems/A2A05-03.pdf). The project "Mobility and the Elderly: Successful Ageing in a Sustainable Transport System" provides a succinct summary of benefits: "from a pragmatic point of view, the main benefit of citizen participation is that it creates widespread support, which increases the acceptance and legitimacy of policy plans. By making citizens responsible for the achieved results, resistance against incorporated decisions can be avoided. They would better understand the need for a certain project and perhaps be more willing to accept compromises. Also, it can reduce the lack of trust in governmental institutes." MESsAGE project: "State of the Art," p. 58, 2007. Avoiding legal challenges is an important reason cited by others, such as Allison C. de Cerreño (2004).

4. We found that the pool of available "urban" case studies was limited, in particular because we were seeking projects that were nearly completed. Only a few projects had applied the CSS approach when the projects under consideration started close to a decade ago.

5. See for example "NCHRP 25-25, Task 62: Improving Public Outreach for Transportation Projects by Use of Citizen Coalitions" prepared for AASHTO by Leigh Lane and Leah Flax, 2010.

6. As indicated by those we interviewed in Orlando, FL or by the NYC experience with PlanNYC.

7. FHWA's Transportation Enhancements Program; http://www.fhwa.dot.gov/safetealu/factsheets/transenh.htm.

8. This list expands on that presented on a Rudin Center's paper by Allison L.C. de Cerreño and Pierson (2004), p.ii.

9. To illustrate, in New York City a project may involve coordination among various agencies, such as NYCDOT, NYSDOT, the NYC Planning and/or NYC Design and Construction Department, the Metropolitan Transportation Authority (transit) the port authorities of New York and New Jersey, as well as the New York Metropolitan Transportation Council (the local MPO).

10. The recent NCHRP Report 642, states that: "Multimodalism has become more prominent in the development of new projects. A problem for evaluating this multimodal approach is the lack of a means that could estimate the levels of choice, access and mobility of all users of the system. Another shortcoming is the lack of a proper measurement of transportation impacts on livability and land uses along the corridor. The current system of rating transportation is Level of Service, which is concerned exclusively with vehicle mobility. Evaluation of transportation needs based solely on this criterion often leads to construction of larger roadways, which may not always be necessary or desired by the community. A recent method to better estimate the mobility levels of all users of a transportation system has been developed through a real world demonstration of a tool designed to measure accessibility to various modes of transportation." Stamatiadis, Nikiforos (2009), Op. Cit., p. 5, citing Dotson, B. and E. Lowenstein. The Real Accessibility Index.

11. For further information refer to various streetscape design manuals, such as those for New York City (http://www.nyc.gov/html/dot/downloads/pdf/sdm_lores.pdf), Los Angeles (http://www.laconservancy.org/dgstreet.pdf), Omaha (http://www.omahabydesign.org/projects/urban-design-element/civic-omaha/the-omaha-streetscape-handbook/) and/or Toronto (http://www.toronto.ca/planning/urbdesign/streetscapemanual.htm), among many others.

12. A private company carried out the stakeholder involvement process for the Mandela Park project on behalf of Caltrans. Neither the agency representative nor our team was able to locate the current information for this company, which apparently is no longer in business.

13. The concept of context zones (CZ) is used to classify an area's surroundings. For example, the Institute of Transportation Engineers defines four urban zones according to their development density and intensity, including CZ 6 (a densely populated urban core), CZ5 (urban center), CZ4 (general urban) and CZ3 (suburban). CZ2 and CZ refer to semi-rural and rural contexts. The key elements associated with each urban zone are described on the ITE's "Fact Sheet 2: Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities," available at: http://www.ite.org/css/FactSheet2.pdf

14. The Federal Transit Administration's New Starts program funds locally planned, new "guideway" infrastructure investment projects, including heavy and light rail, commuter rail, bus rapid transit systems, etc. Funding includes alternative analyses, a preliminary engineering phase, i.e. for the completion of the NEPA process, and a final design phase. Community members are included in the alternatives analysis.)

15. The TRB, "Performance Measures for Context Sensitive Solutions – A Guidebook for State DOTs" (2004), Op. Cit., indicates that "the concept and principles of CSS were first developed in 1998 at the national 'Thinking beyond the Pavement' Conference held in Maryland." (NCHRP 2004).

16. In 2003, the Federal Highway Administration identified "Environmental Stewardship & Streamlining" as one of its three "Vital Few Goals." Environmental Stewardship & Streamlining includes the objective of incorporating CSS into the transportation planning processes of all 50 states. In 2004, the FHWA and partners launched its comprehensive ContextSensitiveSolutions.org website, and in the following year core principles of CSS were promoted in the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

17. A discussion of the costs and benefits of stakeholder involvement is discussed in more detail in section VI.

18. Information gathered from various sources, including the Online Resource Center for Context Sensitive Solutions (ContextSensitiveSolutions.org); TRB; Context Sensitive Design Around the Country (2004), FHWA (2007), and several articles and reports cited throughout the text and the bibliography of the current report.

19. Various communities across the nation have adopted "complete streets" policies or laws to explicitly consider the interests of multiple street users For more information on complete streets, visit http://www.completestreets.org.

20. A discussion of the costs and benefits of stakeholder involvement is provided in section 6.2.9. Additional benefits from CSS ensue from the synergies of considering the entire context of a transportation facility, not just the social dimension but also the surrounding environment, the historical and aesthetic elements.

21. This issue was raised at a recent consultation conducted by the Rudin Center on another project involving representatives from several states DOTs and transit agencies who discussed the importance of understanding the role of each party before going to the public. Not doing so can create mistrust about one or another agency, or both.

22. Such as when communities and business organizations are engaged to maintain benches, trees and/or other amenities.

23. The FHWA (2005) Executive Order 13274 – Purpose and Need Work Group Baseline Report Op. Cit., states that "resource agencies have expressed concern that transportation agencies are too narrowly focused on the proposed project solution and define purpose and need accordingly. Broader purpose and need statements might allow for a wider range of reasonable alternatives. There is fertile ground for improved interagency guidance on the proper scoping of purpose and need, including when statements are too narrow and when broader statements are unreasonable."

24. These arguments follow the concepts proposed by Sherry Arnstein and summarized in the article "The Ladder of Citizen Participation," Journal of the Institute of American Planners 35:4 (1969): 216-224.

25. In Grand Rapids, the agencies were faced with a choice between just doing a limited repair that addressed the immediate structural problem or replacing the entire S-curve to address some of the operational issues that existed since it was constructed. The original S-curve was basically a six-lane cross-section, with three lanes in each direction, no shoulders, and a tight curve. As a solution, an entire segment of the road was built – an eight-lane freeway (plus a short segment of ten-lane freeway), with full shoulders inside and outside, and the curve was smoothed out.

26. The Mandela Park project in Oakland, CA, also is reported to have involved stakeholders in defining the problems as part of a community master plan. However, our team was unable to contact the consulting company that led the outreach process for Caltrans. As of late 2009 and early 2010, Amphion Environmental, Inc. seemed to no longer be conducting business. Therefore, our team was unable to find out which stakeholders were contacted as part of that outreach.

27. The settlements were related to disputes over property that needed to be repossessed to accommodate a different road alignment. Another case involved a dispute about the placement of noise barriers that were in close proximity to nonresidential buildings.

28. The identification and documentation of the purpose and need for a proposed transportation infrastructure project are important components of environmental review under the National Environmental Policy Act (NEPA) and under certain other environmental laws and regulations, as stated in Executive Order 13274 of the FHWA (2005), Op. Cit.

29. Some of the bridge pilings were sinking, causing structural problems that needed to be addressed promptly.

30. Our literature review demonstrated that in recent years there are more "three Rs" type of projects that have utilized the CSS approach. The Context Sensitive Solutions website lists some of these cases.

31. These categories are also useful for identifying the subjects to be considered during the public involvement process as well as the groups/stakeholders that should be engaged and invited into the process.

32. Including information gathered through workshops held with representatives from various state DOTs and Transit agencies, as part of the Rudin Center's broad research on this issue.

33. For further insights about communication tools, refer to: Public Involvement Techniques for Transportation Decision Making. Federal Highway Administration, Federal Transit Administration, U.S. Department of Transportation, Sept. 1996.

34. At a meeting organized by the NYU Rudin Center, representatives from the departments of transportation or public works from nine major cities indicated they were concerned about the increasing number of tort claims against highway agencies. While a FHWA report suggested that these claims had been rising steadily since the early 1970s, nobody had verified information about the actual number of cases. It was thus recommended that such information be gathered and disseminated.

35. Based on AASHTO standards

36. As used by other federal organizations, including the U.S. Food and Agricultural Organization.

37. Florida DOT now has a guide titled "Measuring the Effectiveness of Community Impact Assessment," to provide guidance on how to evaluate the impact of the community engagement effort during project development.

38. Given this discrepancy, and to demonstrate objectivity, the leading agency may consider engaging a third party to conduct the evaluation of the outreach and public involvement campaigns.

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