



Raised median on
Boulevards with
landscaping

Mid-block crossings
with curb extensions
and median refuge

Sidewalk width appropriate to
function of adjacent land

Creating a Context Sensitive Culture for Multi-Modal Transportation Solutions

Karen Mohammadi, P.E., AICP, PTOE
Gresham, Smith and Partners

Pedestrian amenities
such as benches,

Urban Design
Features

Short pedestrian
scaled blocks

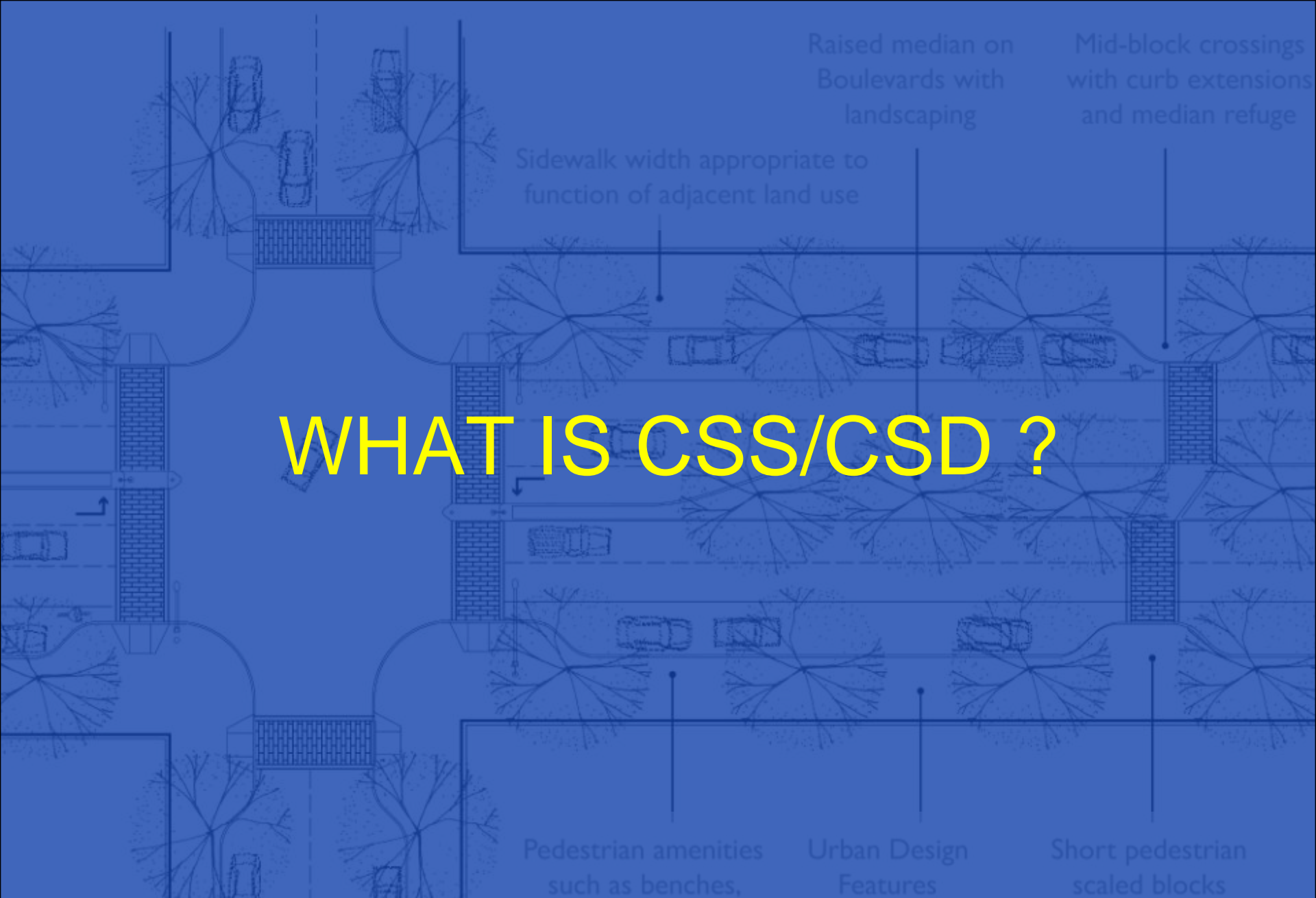
Purpose of Session

- What is Context Sensitive Design (CSD) and Context Sensitive Solutions (CSS)
- What are Organizational Issues with CSD/CSS Implementation
- Tips for Effective Organizational Change

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WHAT IS CSS/CSD ?

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Is This “Context Sensitive” Design ?



Sidewalk width appropriate
function of adjacent

Pedestrian amenities
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Terminology

- “Context Sensitive Solutions”
- “Context Sensitive Design”
- “Thinking Beyond the Pavement”
- “Complete Streets”

*It's really all about the same thing....
a **process** and **project** that are both **highly sensitive to the surrounding context** and **include stakeholders as a meaningful part of the design team.***

CSS/CSD Formally Defined

CSS 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.

A CSS approach considers the total context within which a transportation project will exist.

CSD is the process of designing within that total context.

"finding the best fit"

CSS/CSD Guiding Principles

- Address the transportation need
 - Safe, financially feasible, implementable
- Be an Asset to the Community
 - Accepted by Stakeholders; adds lasting value to the community
- Be compatible with the Natural and Built Environments
 - Implemented with minimal impacts; is aesthetically appropriate

CSD Considers All Users

Older Drivers



Pedestrians



Bicyclists



Transit



Key Elements of a CSD Process...

- **Achieves Balance in:**
 - Safety
 - Mobility
 - Community objectives
 - Environment
- **Multimodal**
- **Involves public, stakeholders**
- **Interdisciplinary teams**
- **Flexibility in design**
- **Incorporate aesthetics**
- **Environmentally-sensitive**



Sustainable Urban Street Design Principles

- General Focus Areas
- Reduce energy consumption
 - Traffic signal coordination, low energy lighting, transit priority, bike lanes, transit lanes
- Reduce consumption of material resources
 - Recycled aggregates, narrow traffic lanes, fewer luminaire poles, higher-strength concrete pavements, precast of modular construction elements
- Reduce impacts to environmental resources
 - Rain gardens for storm water infiltration, diverse plant/tree selections, interconnected bioretention swales, storm water infiltration in planter strips, porous pavement for traffic lanes
- Support healthy urban communities
 - Trash/recycling receptacles, noise-reducing pavement materials, public art, pedestrian refuges in medians, emergency vehicle access
- Support sustainability during implementation
 - Reclamation of demolition materials, use of renewable fuels for construction equipment, use of locally-obtained materials, minimize construction footprint

In the end, CSS/CSD....

- Requires a collaborative, interdisciplinary approach in which citizens, agencies and other stakeholders are **all** a meaningful part of the design team.

The CSS/CSD process revolves around people.

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What is "Context" ?

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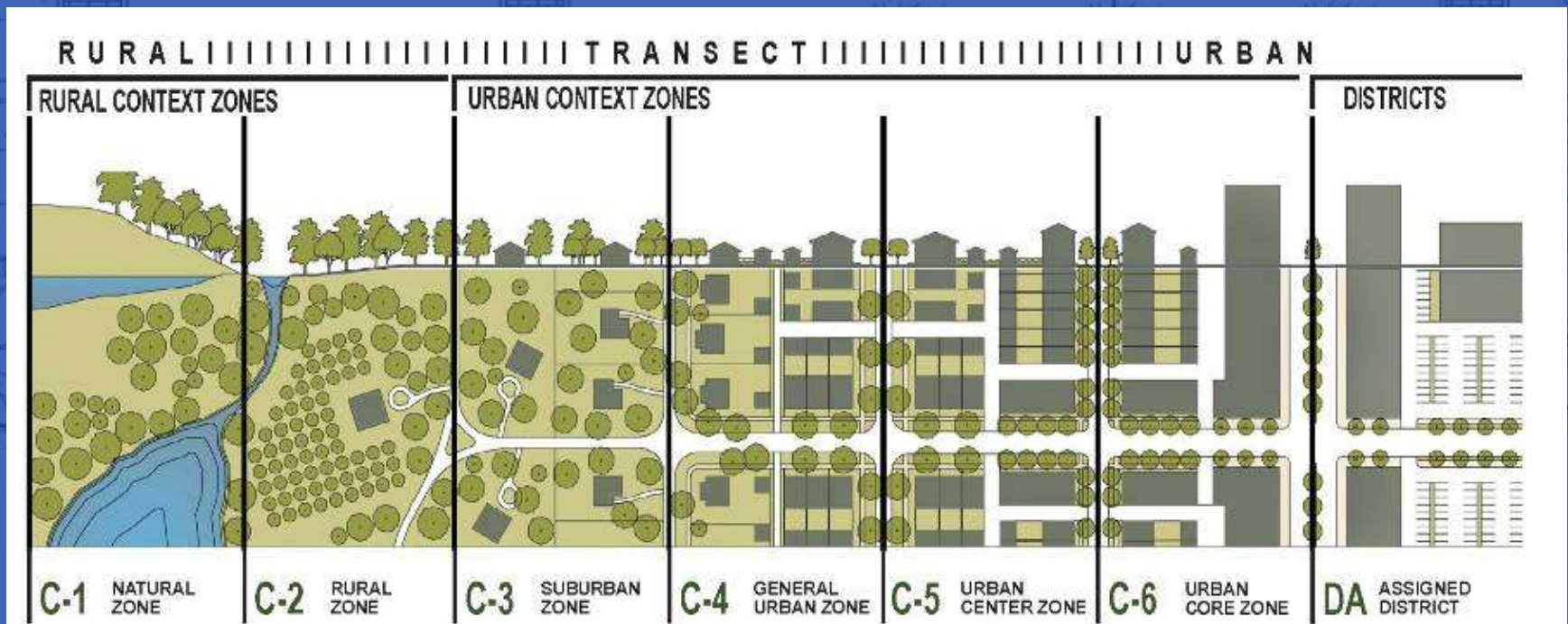
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Context Zones – An Organizing System for Transportation Design

A shorthand for different parts of urban and rural areas emphasizing characteristics/design criteria that best complement those areas.



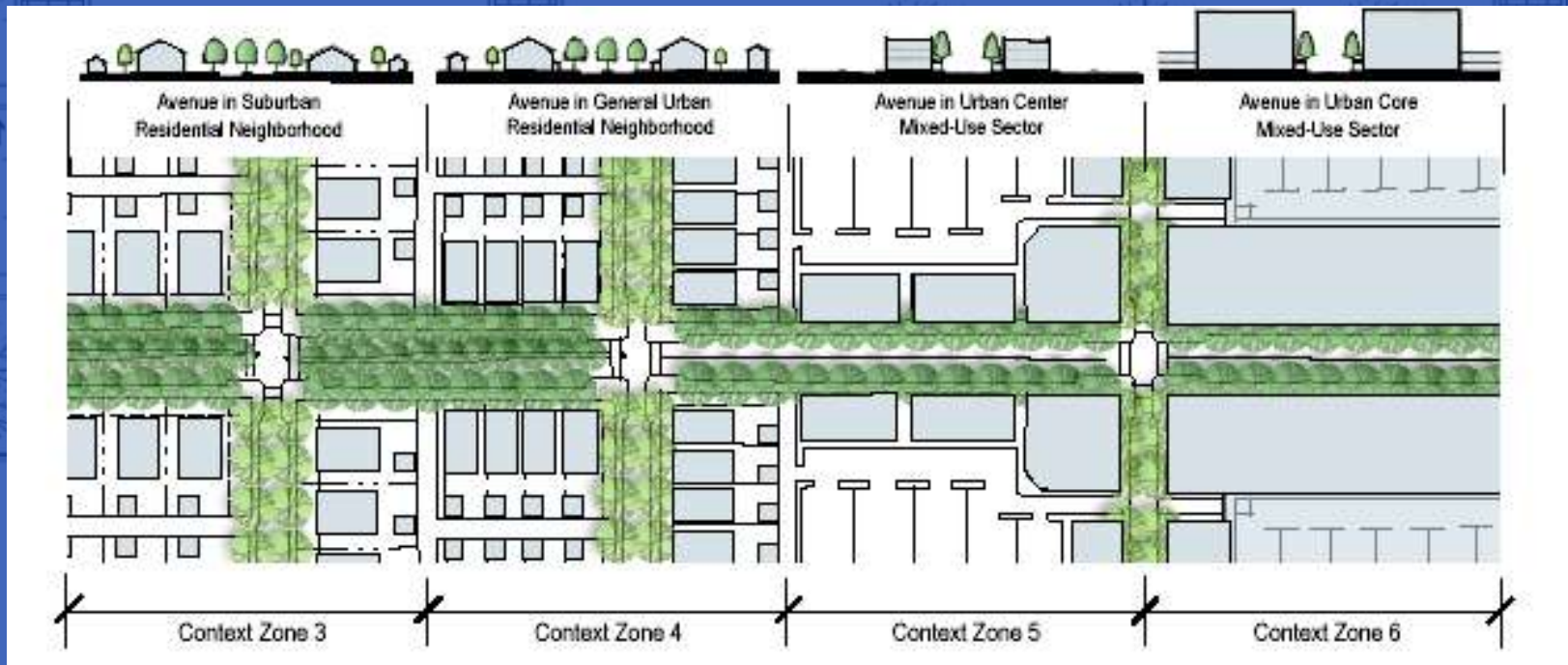
Source: Duany Plater-Zyberk and Company

Ohio Transportation Engineering Conference
October 28-29, 2008

CSD Rule....

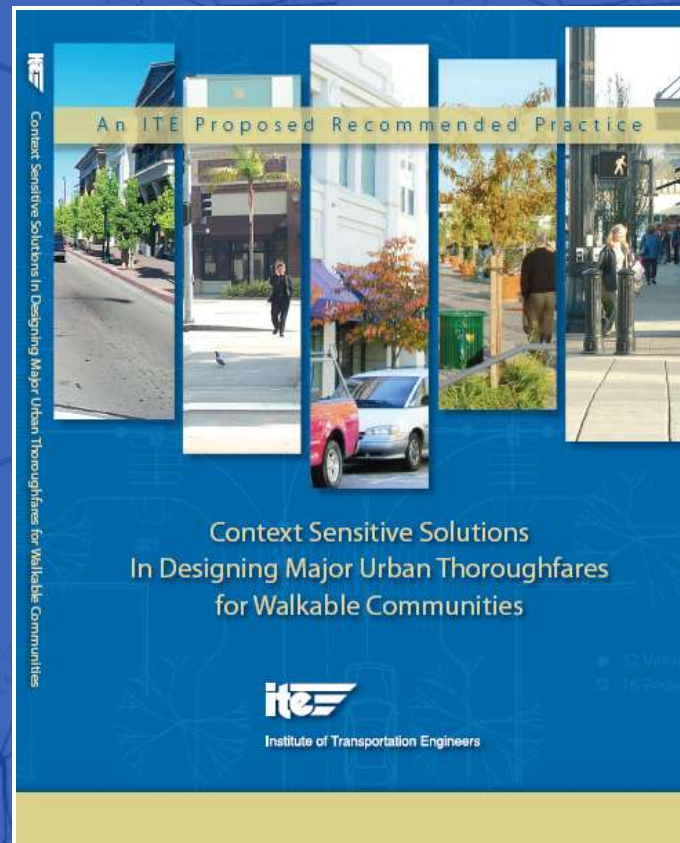
Design Changes as Context Changes

Transportation design is not just sensitive to context—but part of the context and its design helps define the overall place.



Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities

An ITE Proposed Recommended Practice



- Goal is to publish in early 2009

Many Technical and Steering Committees Involved

- Traffic and design engineers
- Transportation planners
- Land use planners
- Architects
- Urban designers
- Landscape architects
- Transit planners
- Organization Reps (APWA, AASHTO)
- Over 60 reviewers and balloters

Focus of the Proposed RP

- **“Major”**: facilities that function as arterials and collectors, speeds 35mph or less
- **“Urban”**: development intensity, mix of land uses and design features combined to make walking, transit and biking efficient and attractive transportation choices



Photo: Skidmore, Owings, and Merrill LLP

CSD Design Framework

- **Context zones:**
 - Divides urban areas from suburbs to most urban downtowns
- **Street classification system** based on:
 - Functional class (arterial, collector)
 - Thoroughfare type (boulevard, avenue and street)
- **Features of thoroughfare types** and context zones that result in compatibility



Report Objectives

- Establish principles of CSS for urban areas
- How to apply to improvement projects
- Approach to balancing conflicting interests
- Address thoroughfare design at network scale
- Create a design framework
- Present criteria and guidance
- Consistent with established guidance

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Contents of the Proposed RP

- Introduction
 - Overview
- Planning
 - Network and corridor planning
 - Design framework
- Design
 - Principles, criteria, guidelines
 - Roadside
 - Traveled way
 - Intersections
 - Design in constrained rights-of-way
 - Flexibility
 - Examples

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Figure 1: An urban street in Columbus, OH.

Objectives

The CSS publication was developed to provide guidance and design tools for practitioners working on the design of urban thoroughfares. The publication provides a framework for planning and design in urban areas by emphasizing a collaborative and interdisciplinary approach, coupled with an emphasis on the holistic application of design guidelines. The of CSS principles should include: long-range transportation and land use planning processes, and consistent throughout the entire project development process.



Figure 2: The streetscape suggests a mix of urban uses.

Context Sensitive Solutions in Designing Major Urban Thoroughfares for Multihousehold Communities

Successful urban thoroughfare design requires an emphasis on both context and thorough design. The book explores the history of the urban environment that create and shape urban centers. It provides a new framework for context sensitive solutions (CSS) in urban environments. The framework includes:

- Landscape and urban form context: urban form and urban design principles that are both functional and aesthetically pleasing, and that are both functional and aesthetically pleasing.
- Urban form and urban design principles that are both functional and aesthetically pleasing, and that are both functional and aesthetically pleasing.
- Urban form and urban design principles that are both functional and aesthetically pleasing, and that are both functional and aesthetically pleasing.

The **Character of Contextual Design** is a framework for urban design that is based on the principles of context sensitive solutions (CSS). It provides a framework for urban design that is based on the principles of context sensitive solutions (CSS). It provides a framework for urban design that is based on the principles of context sensitive solutions (CSS).



Figure 4: A street in an urban center, showing a mix of urban uses and building heights.

Four Issues / Overview

The publication also addresses:

- The relationship between urban design and urban form.
- The relationship between urban design and urban form.
- The relationship between urban design and urban form.

Figure 4: A street in an urban center, showing a mix of urban uses and building heights.

“Fact Sheet” Series



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WHY DID CSS/CSD EVOLVE?

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CSS/CSD developed due to...



- Great interest in preserving cultural and natural resources
- Public concern over intrusions on the landscape and community
- Customer dissatisfaction with highway projects

Many Communities and Practitioners Now Want Project Development That....

- Is flexible to meet local objectives
- Improves street compatibility with adjacent land uses
- Balances land use and transportation functions
- Supports adjacent activity and economic development
- Provides truly multimodal facilities
- Creates quality public space



Formal Evolution of CSS/CSD

- 1969 **NEPA** Interstate Era – Focus on Construction
- 1991 **ISTEA** Close of Interstate Era – Focus on Community
- 1994 AASHTO NHS Design Standards Policy
- 1995 National Highway System (NHS) Act
- 1997 TEA21 & FHWA “**Flexibility in Highway Design**”
- 1998 “**Thinking Beyond the Pavement**” Conference and **CSD Pilot State Program**
- 2002 **FHWA “Vital Few Goal”** on Environmental Stewardship and Streamlining – **CSS Objective**
- 2002 **Presidential Executive Order on Environmental Stewardship and Infrastructure**
- 2004 AASHTO “**A Guide for Achieving Flexibility in Highway Design**”
- 2005 **SAFETEA-LU: More focus on flexible design and meeting community desires**

Qualities of Excellence in Transportation Design (USDOT)

- The project **satisfies 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.
- The project is a **safe facility** for both the user and the community.
- The project is in **harmony with the community**, and it **preserves environmental, scenic, aesthetic, historic, and natural resource** values of the area, i.e., exhibits context sensitive design.
- The project **exceeds the expectations of both designers and stakeholders** and achieves a level of excellence in people's minds.
- The project involves **efficient and effective use of the resources** (time, budget, community) of all involved parties.
- The project is designed and built with **minimal disruption to the community**.
- The project is seen as having **added lasting value to the community**.

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Characteristics of the Process Contributing to Excellence (USDOT)

- **Communication** with all stakeholders is open, honest, early, and continuous.
- A **multidisciplinary team** is established early, with disciplines based on the needs of the specific project, and with the inclusion of the public.
- A **full range of stakeholders** is involved with transportation officials in the scoping phase. The purposes of the project are clearly defined, and consensus on the scope is forged before proceeding.
- The highway development **process is tailored** to meet the circumstances. This process should examine multiple alternatives that will result in a consensus of approach methods.
- A **commitment to the process** from top agency officials and local leaders is secured.
- The **public involvement process**, which includes informal meetings, is tailored to the project.
- The **landscape, the community, and valued resources are understood** before engineering design is started.
- A **full range of tools for communication** about project alternatives is used (e.g., visualization).

Evolution of Project Delivery

- **In the beginning:**
DAD = Decide, Announce, Defend
- **Followed by:**
RAC = Review and Comment
- **Expanded to:**
Collaboration, Advisory Committees, Public Involvement
- **Current Goal:**
POP = “Publicly-Owned” Project

What are the Benefits of CSS/CSD?

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Benefits of CSS/CSD (USDOT)

- CSS solves the right problem by broadening the definition of "the problem" that a project should solve, and by reaching consensus with all stakeholders before the design process begins.
- CSS conserves environmental and community resources. CSS facilitates and streamlines the process of NEPA compliance.
- CSS can save time. It shortens the project development process by gaining consensus early, and thereby minimizing litigation and redesign, and expediting permit approvals.
- CSS can save money. By shortening the project development process and eliminating obstacles, money as well as time is saved.
- CSS builds support from the public and from the regulators. By partnering and planning a project with the transportation agency, these parties bring full cooperation, and often additional resources as well.
- CSS helps prioritize and allocate scarce transportation funds in a cost-effective way, at a time when needs far exceed resources.
- Group decisions are generally better than individual decisions. Research supports the conclusion that decisions are more accepted and mutually satisfactory when made by all who must live with them.
- CSS is the right thing to do. It serves the public interest, helps build communities and leaves a better place behind.

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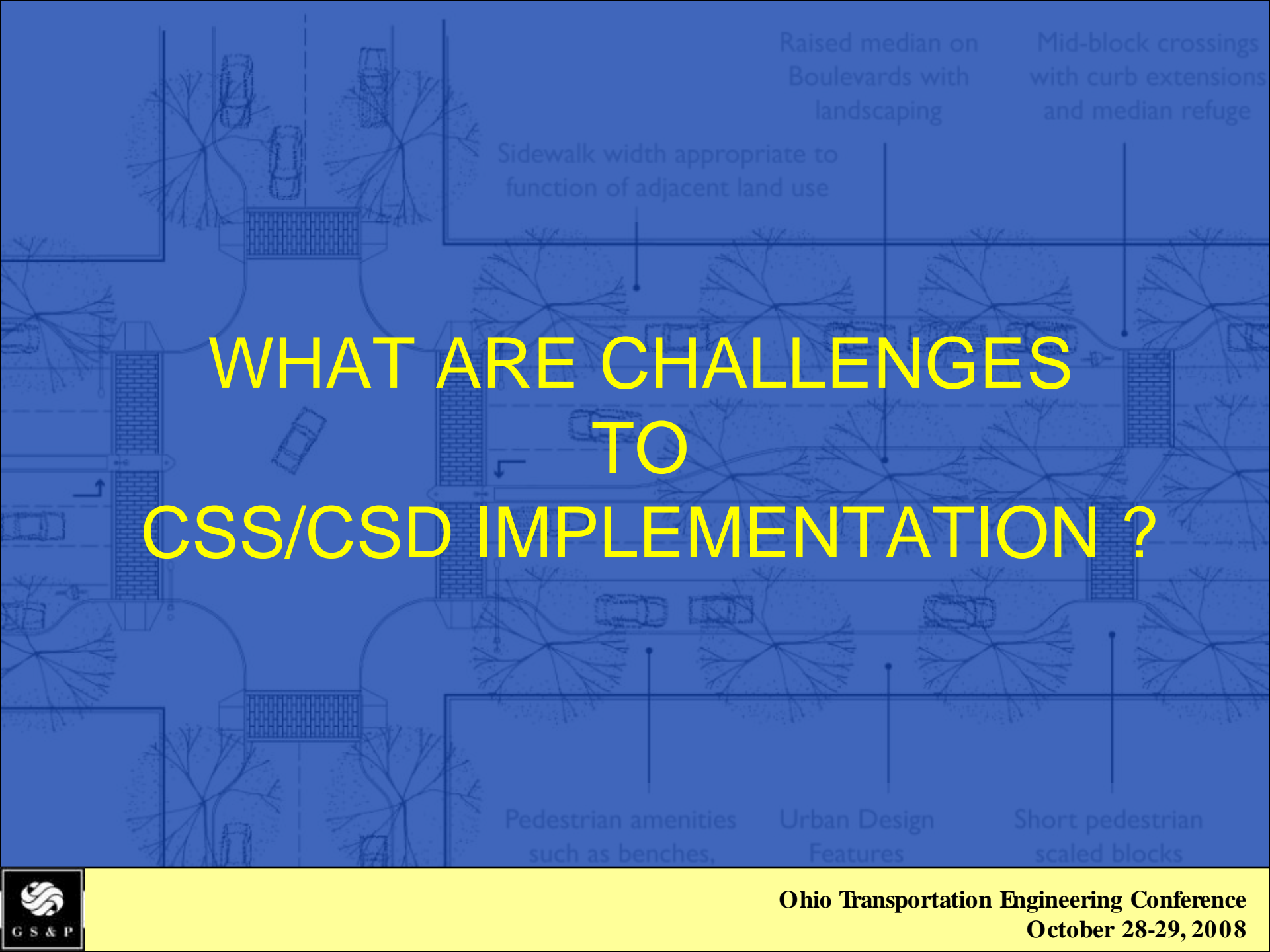
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NCHRP 480: A Guide to Best Practices for Achieving Context Sensitive Solutions, TRB

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WHAT ARE CHALLENGES TO CSS/CSD IMPLEMENTATION ?

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Typical CSS/CSD Concerns

- CSS costs more
- CSS takes more time
- CSS compromises standards, are less safe, increase liability
- We should not deviate from existing standards
- It's always best to minimize exceptions and variances
- It's our job to remove or minimize risk

Identified Challenges to CSS/CSD Acceptance & Implementation (AASHTO)

2005 survey says:

- **#1 Resistance to change (56%)**
Solution = Leadership
- **#2 Perceived higher cost (42%)**
Solution = Training
- **#3 Lack of understanding of CSS/CSD (40%)**
Solution = Training
- **#4 Liability concerns (16%)**
Solution = Documentation & Implementation

FHWA CSS Pilot States: Lessons Learned

- **Need broad skill requirements for project managers**
- **Use diverse project teams throughout**
- **Need for training in CSS**
- **Need for additional skills and resources**
- **Need to develop and share specific policies and procedures**
- **Have to keep promises thru all stages**
- **Must have very good information management**

FHWA CSS Pilot States: Some Staff Observations

- *“We have reached the realization that the highway department does not know what is best for everyone.”*
- *“If you are a customer-focused organization, these concepts are logical and inevitable.”*
- *“Context sensitive design is a fancy term for common sense.”*
- *“Context sensitive design is a philosophy.”*



When to use CSS/CSD?

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CSS/CSD Should be Used on....

- **CSD/CSS applies essentially anywhere and everywhere.** That is, every project has a context as defined by the terrain and topography, the community, users, and the surrounding land use.
- The CSD/CSS approach **applies to urban streets, suburban arterials, rural highways, low volume local roads, and high traffic volume freeways.** The particular CSS (solution) will depend on the context.
- **Bottom line: Use on each and every project at the appropriate level**

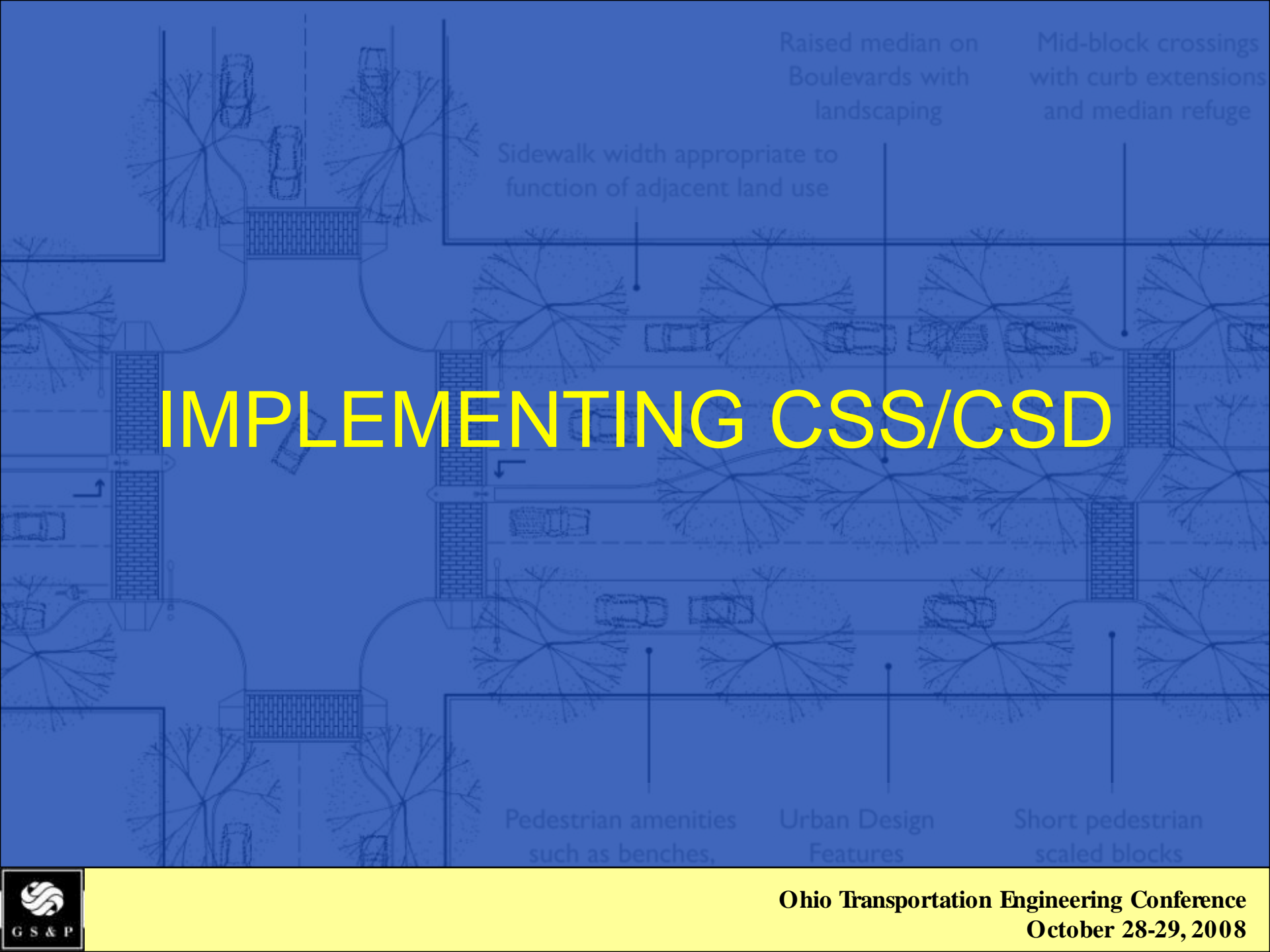
Conclusions

For most of us, CSS/CSD means a shift from...

Transportation goals are #1

to...

Transportation is on **equal footing** with the community desires and the environment



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IMPLEMENTING CSS/CSD

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How do you implement CSS/CSD?

- Every project is unique
- Must balance project needs with community needs
- Apply flexibility
- Don't be afraid to use design exceptions
- Be open to re-evaluate decisions
- Revise standards if needed
- Recognize “real” safety implications

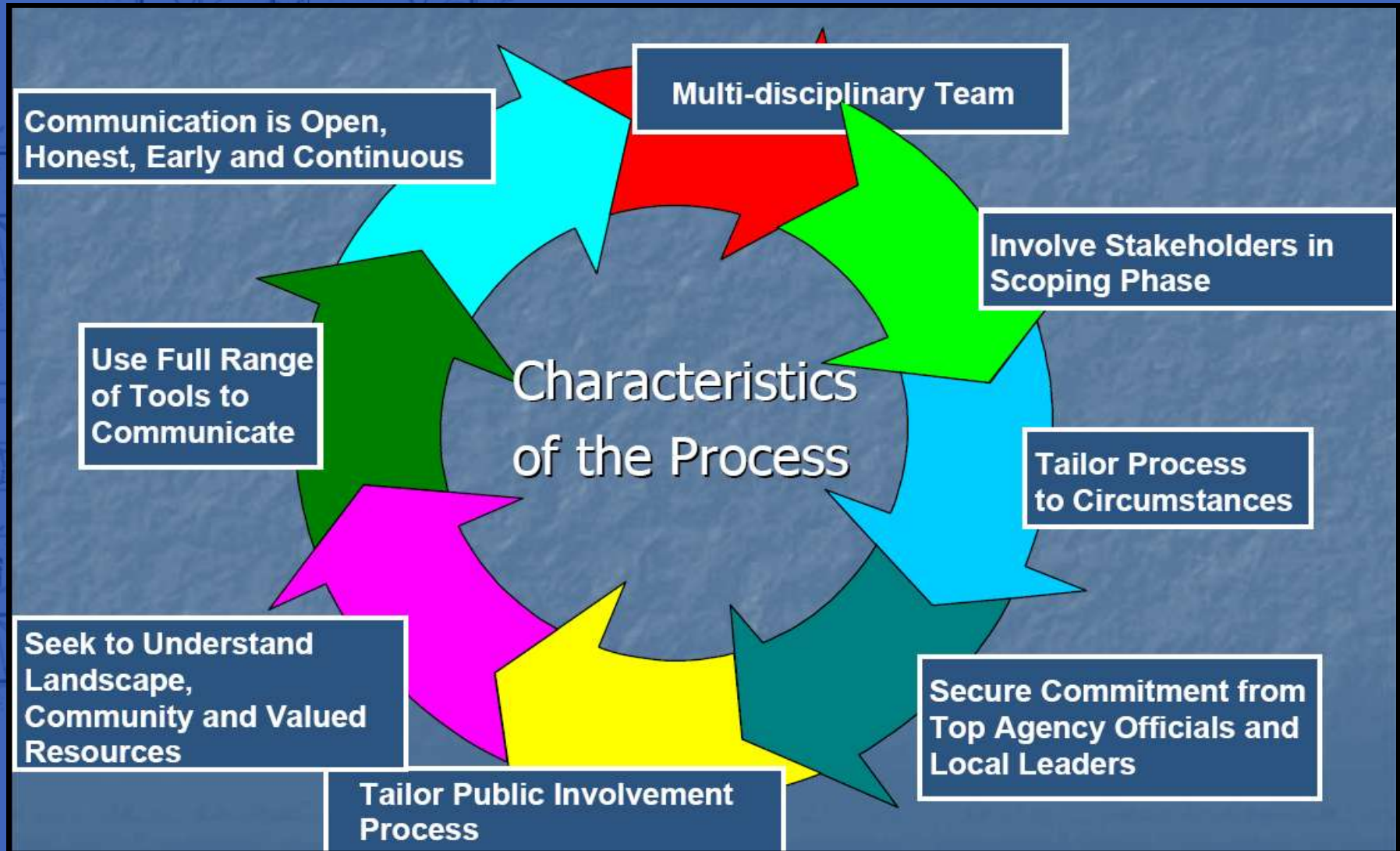
Public Involvement Process

- Integrated with the planning and design process
- Internal research
- External research
- Potential stakeholders
- Project-specific stakeholders
- Develop plan
- Involve stakeholders
- Identify competing objectives

Decision process

- What are the decision points ?
- Who will make each decision ?
- Who will make recommendations for each decision ?
- Who will be consulted on each decision ?
- How will recommendations and comments be given to decision-makers ?

The CSS/CSD Process



CSS Project Quality Goals

Qualities of the Project

Project Satisfies Purpose and Need

Project is a Safe Facility

Project is in Harmony with the Community



Project exceeds Expectations of Designers and Stakeholders

Project is Seen as Having Added Lasting Value to the Community

Project is Built with Minimal Disruption to the Community

Project Involves Efficient & Effective Use of Resources



Some Examples of Context Sensitive Solutions & Design

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Utilizing input from the Town of Alta, Utah, this bridge was aesthetically replaced for major structural deficiencies.



This four-lane road in Bellevue WA was converted to a median diverter facility with bicycle lanes near a transit stop.



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Euclid Avenue, a four-lane minor arterial adjacent to the University of Kentucky in Lexington, was resurfaced and re-stripped into a three-lane roadway with bike lanes over a distance of approximately one mile. The route serves local traffic and regional commuters, has a mixed land use of retail and housing, carries 20,000 ADT along with significant pedestrian and bicycle volumes.



Oregon DOT Design Concept



A typical suburban street - five lanes of traffic, no sidewalk, an unimaginative use of space.



A photo illustration that shows how to convert this arterial into a "complete" street.

• McEwen Drive/I-65 Interchange

- High-capacity, single-point urban interchange
- Pedestrian-friendly treatments
- Special concrete & stone applications
- Gateway entry features
- Special aesthetics and landscaping to blend with surrounding built and natural environments
- One state and one national award to date

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WELCOME

TO

HISTORIC

FRANKLIN

Local Reactions to CSS/CSD

- Isn't our land use density too low to use CSD?
- Our residents have a NASCAR mentality...moving vehicles is priority #1.
- I really don't see the benefits of CSS/CSD.
- It just adds more time, work & money to our projects, and we don't have it.
- Is this what our citizens really want?
- Who represents the average driver that uses the streets every day?
- We will need a lot of training to make this work.
- How do we really determine what looks good?
- What about setting priorities on how we spend our limited funds? More CSS/CSD means less overall projects.
- Rich communities can do CSS/CSD...our community doesn't have that kind of money.
- It's important to involve stakeholders that are reasonable and know how to compromise.
- Does CSS/CSD have anything to do with this "sustainability" I keep hearing about?

Lessons Learned So Far

- The process does take more time and resources, especially on the front end.
- The process can increase the cost of the project if not controlled, but that cost has value to the citizens.
- Reasonable stakeholders are needed.
- You have to work with people, like it or not!
- Some projects are easier than others.

Advice for Getting Started in CSS/CSD

- Budget enough resources for the process and possible design outcomes.
- Schedule enough time for the process.
- Train your staff on CSS/CSD, or bring in outside help as needed.
- Keep management and elected officials informed.
- Get policies and procedures in place first.
- Just get started...small projects are OK
- Don't wait till it's forced on you !

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TIPS FOR GETTING YOUR ORGANIZATION READY FOR CSS/CSD

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Organizational Change is Tough

- Policies and procedures and attitudes can only change if PEOPLE make that change happen
- Requires a thoughtful and successful approach to helping people develop new skills, encourage new behaviors, and change attitudes of staff, managers, leaders

Must Make Case for Change

- Change will only happen if people believe they need to change
- Must convince staff that the additional work is worth the effort
- Must have a vision...what will the change look like....how will the future be different
- Must have a strategy with actions, schedules and responsibilities to implement the change
- Training is needed...how to use CSS principles and practices
- Internal communication must be regular, open, two-way
- External communication must let others inside and outside the agency know what is being changed
- Everyone must accept CSS as the new way of doing business !

Leadership is Key!

Leadership is creating a vision and direction for the organization and mobilizing people to accomplish the vision and direction.

Requirements

- Needs to be a “top-down” Initiative
- Leadership at all levels is required
- Must transition from:
 - Grudging acceptance
 - Consensus
 - Believers
 - Advocates
 - Passionate sellers

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Key Steps to Success

- Create Awareness
- Build Understanding
- Develop Competency
- Set Direction
- Build Organizational Capacity
- Mobilize Commitment

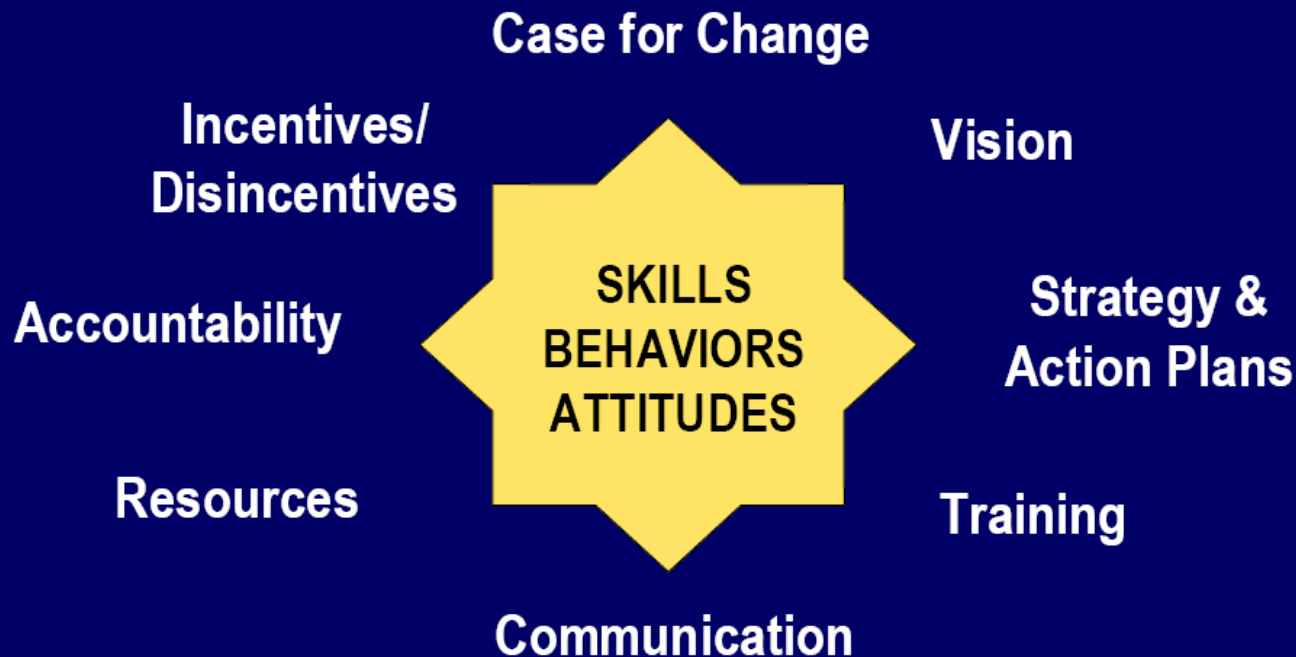
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Changing Your Agency's Culture

Institutionalizing Change



What is a Model CSS Culture?

- Truly Customer-focused
- Environmentally sensitive
- Supportive of all modes
- Honestly appreciate diversity of opinion

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Organization-Wide Implementation

- Requires comprehensive evaluation of:
 - Policies
 - Processes
 - Procedures
 - Standards
- To ensure CSS/CSD Compatibility



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Organizational Self-Assessment

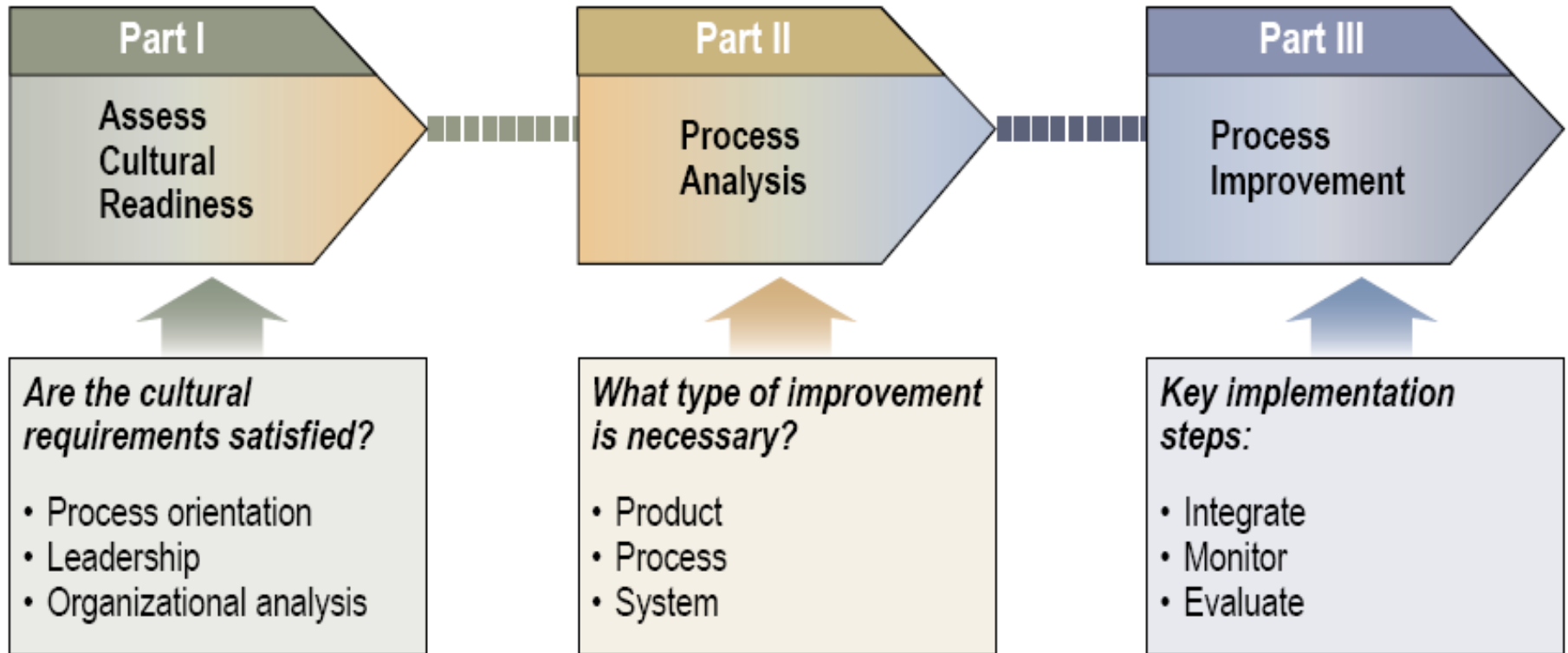
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NCHRP 480 – Achieving Best Practices

Exhibit G-1 *Organizational Redesign Process*

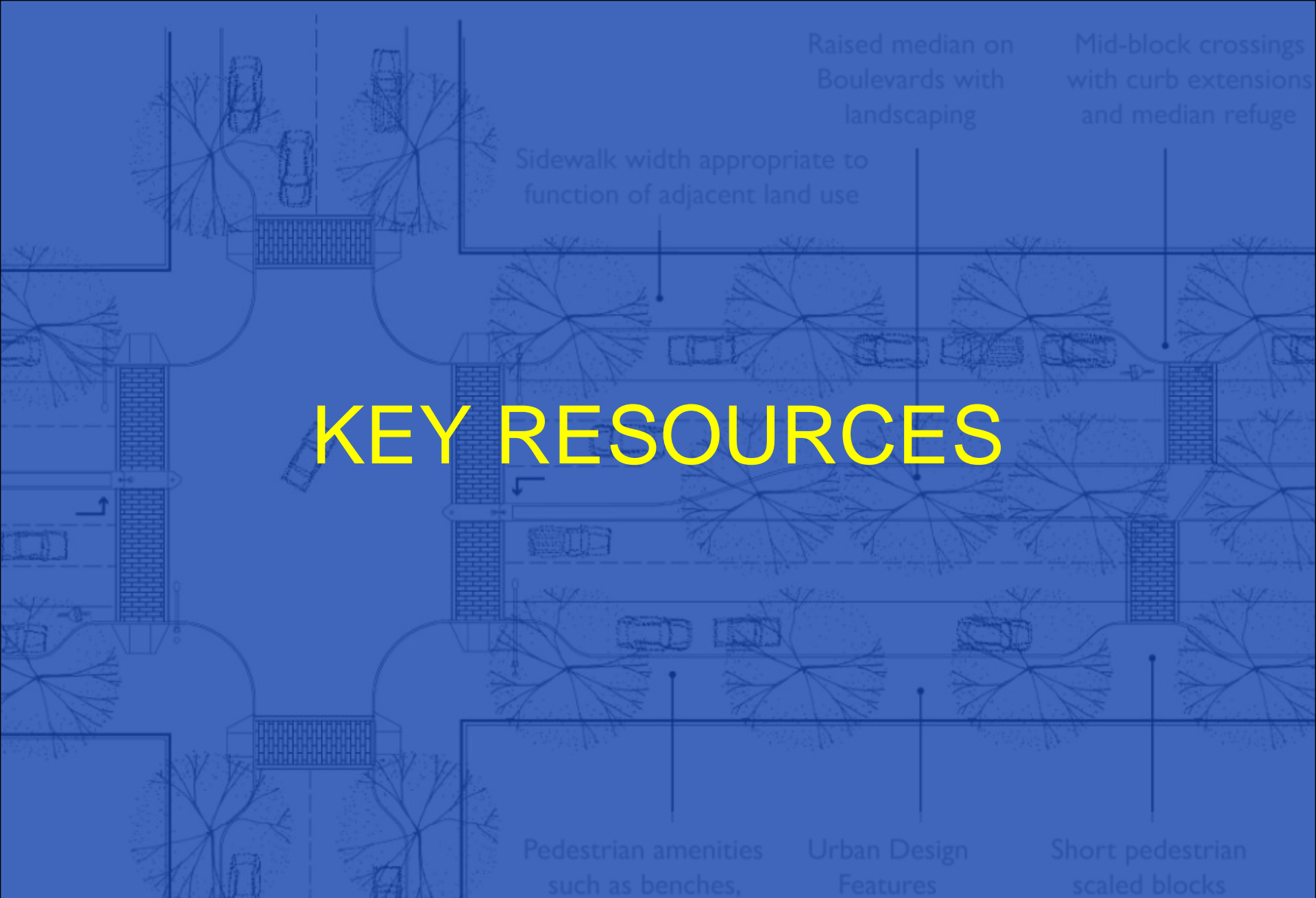


CSD_166_2

SOURCE: Utah Department of Transportation

Agency Checklist

- ✓ We have adequate resources assigned
- ✓ Expectations are clear and communicated to all levels
- ✓ Accountability is defined (individual and organization)
- ✓ Performance measures defined and measured
- ✓ Incentives and disincentives are available
- ✓ CSS philosophy is in overall department/agency strategy
- ✓ All work done collaboratively in multi-disciplinary teams
- ✓ Staff has adequate public involvement skills or is outsourced to those who do
- ✓ Senior management buy-in has been achieved
- ✓ CSS/CSD is integrated into all processes and standards
- ✓ Training is in place for all CSS/CSD aspects



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KEY RESOURCES

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Key CSS/CSD Toolbox Resources

- Documents:
 - Flexibility in Highway Design, USDOT
 - A Guide to Achieving Flexibility in Highway Design, AASHTO
 - NCHRP 480: A Guide to Best Practices for Achieving Context Sensitive Solutions, TRB
 - NCHRP 69: Performance Measurement for CSS – A Guide for State DOTs
 - Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities, ITE/CNU
- www.fhwa.dot.gov/csd
- www.contextsensitivesolutions.org

Recommendations?

Learn about these emerging design initiatives and techniques...

Understand the intent and basis of their recommendations...

Be ready to work with them when the time comes....
and it will come.





Thank You !

Questions ?

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