Session 4:

APPLYING CONTEXT SENSITIVE SOLUTIONS TO ALL MODES OF TRANSPORTATION

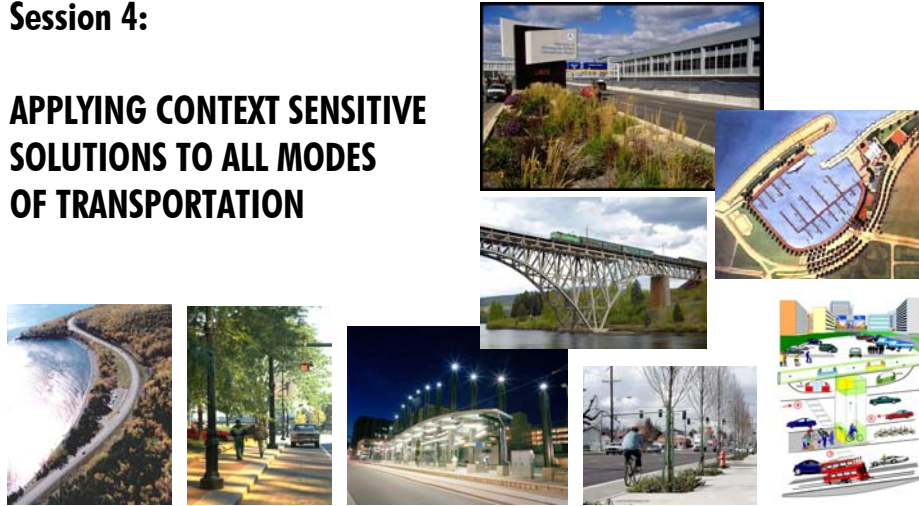HNTB   Session 4: Applying CSS to All Modes of Transportation

Welcome to the last of the overview sessions. This is a fairly easy session to grasp: CSS applies to all modes of transportation. No exceptions.

Highways have always gotten star billing. They were the first mode to practice CSS principles (remember the first national conference in Maryland was called, "Thinking Beyond the Pavement") and therefore are a major source for CSS examples.

Nonetheless, CSS can apply to other modes as well: pedestrians, bicyclists, and transit are obvious. CSS also can be applied to passenger and freight railroads, harbors, and even airports. Indeed, in Michigan, airports are in the forefront of applying CSS practices, particularly to the aesthetics of terminals.

CSS and Transportation Modes

- Highways
  - Urban or rural
  - Free access or controlled access
  - Two-lane or multiple lanes

Columbia River Gorge Scenic Byway, OR

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CSS was initially developed out of a concern about the relationship between highways and their context. That is why so many CSS case studies are about highways, particularly urban freeways and wilderness roads—places where the social or environmental context impinged on the ability of highway designers to use standard concepts and forms.

Highways can be urban or rural; free or controlled-access; or have two-lanes or multiple lanes. There are many ways by which a highway can be defined. Regardless of definition, MDOT wants the principles of CSS applied to the planning, design, construction, maintenance, and operation of any highway in Michigan.

For new construction, planning the alignment would be a significant CSS issue. How the facility would fit the character of the existing town or landscape would be issues needing resolution during design. Disruptions caused by construction, maintenance, or operations would need to be managed, using CSS methods, to the satisfaction of the affected population.

CSS and Transportation Modes

- Pedestrians
  - Sidewalks
  - Trails

Cincinnati, OH

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Issues that may be best solved using CSS methods for pedestrians include system continuity concerns during the planning phase. During design, CSS may consider

- location of sidewalk or trail
- sidewalk width
- sidewalk location and width on bridges
- placement of obstacles (such as signs and lights) in sidewalk right-of-way
- pedestrian lighting, marking and signaling crossing
- curb cut orientation
- the use of bump-outs and islands to reduce crossing distance
- pedestrian amenities such as benches and kiosks
- ornamental railings on bridges
- pavement materials and patterns

During construction, CSS will come into play when considering how to maintain pedestrian access. During maintenance and operations, CSS methods will inform the best ways to continue to provide a safe walking surface.

MDOT
Michigan Department of Transportation

CSS and Transportation Modes

- Bicycling
  - Shared roads
  - Off-road trails
  - Transit coordination

Lansing, MI

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Issues for incorporating bicycling into the multi-modal mix that may be best solved using CSS methods:

• During planning, an analysis of system location and continuity, especially in relationship to large trip generators such as college campuses or commercial or recreational destinations.

• During design, the width of designated lanes, their exclusivity (are they shared with vehicles or pedestrians?), pavement surface type, and lane markings.

• During construction, detours and access to destinations

• During operations and maintenance, a CSS approach could be used to determine how best to keep the lanes clear of sand, leaves, and snow.

In one TSC in the UP, not only were bicycles routes planned, designed, and constructed in coordination with local units of government, but maintenance included the removal of winter sand, particularly from intersections where trails and roads crossed. Here, sand would naturally build up, posing a hazard to bicyclists attempting to stop or turn. So, to improve operations and bicycle safety, the TSC routinely removes sand from bicycle trails.

CSS and Transportation Modes

- Transit
  - Bus
  - LRT
  - Commuter rail

LRT station, Minneapolis, MN

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For transit, CSS should be used during the planning process to determine the modes of transit needed by the community, the location of routes, stations, park-and-ride facilities, and major transfer hubs.

During design, the location of stops, the architectural character of stops and the amenities provided at stops could be determined by a CSS process. During operations and maintenance, scheduling, safety, and cleanliness issues typically dominate the discussion.

CSS and Transportation Modes

- Rail
  - Intercity passenger
  - Freight
  - Intermodal

Transit-oriented development Anoka, MN

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Similar to transit and airports, a CSS approach could be used to resolve several issues for the planning, design, construction, operations, and maintenance of passenger rail, particularly:

- Locating the system of routes
- Location of stations
- The architectural character of the stations
- The design of the linkages to parking lots, rental car facilities
- How do people move between a rail station and the core commercial centers in a region?

Construction issues would be like those for highways and resolved using CSS in a similar manner. Operational and maintenance issues needing a CSS approach would be similar to those issues related to transit.

Utilizing CSS during the planning and design of rail-freight facilities that operate 24 hours a day, especially inter-modal facilities, would be critical for neighbors. This can be especially difficult when working with private railroad companies. Defining traffic patterns, lighting schemes, and noise mitigation would be central issues needing resolution.

CSS TRAINING MANUAL   June 2006

CSS and Transportation Modes

- Airports
  - Airside
  - Landside

Cherry Capital Airport, Traverse City, MI

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Planning new or expanded airports is a major issue that could be helped by a CSS approach. During design, the orientation of travelers from commercial cores to the airport and the design of an airport's entrance — especially its ability to orient stressed travelers to the right destination — is critical and would benefit from a CSS approach. CSS could also be employed in determining flight paths and schedules, noise mitigation, and solutions to other disruptions caused by modern airports to adjacent neighborhoods and businesses.

CSS can also be applied during the planning, design, construction, maintenance, and operation of harbors, marinas and ferry landings. During planning, location would be a significant CSS issue. How the facility would fit the fabric and character of the existing town or landscape would be issues needing resolution during design. Disruptions caused by construction, maintenance, and operations would need to be managed to the satisfaction of the affected population using CSS methods.

Conclusion

- MDOT employs elements of CSS in all transportation modes
- Applying a CSS approach is appropriate for all transportation modes
- Applying a CSS approach is appropriate for each project
- Public appreciates MDOT successes

Detroit, MI

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In conclusion, there is no mode of transportation that cannot benefit from a CSS approach to its planning, designing, constructing, maintenance, or operations. All modes should use a CSS approach.