



A Context Sensitive Solutions Webinar

Integrating CSS in Construction, Operations & Maintenance: Lessons Learned and Opportunities to Pursue

June 28, 2011 – U of MN Continuing Education Conference Center



Hosted by MnDOT and the U of MN Center for Transportation Studies

Your Destination...Our Priority





CSS Webinar Presenters & Overview

Scott Bradley, **FASLA** – MnDOT Director of Context Sensitive Solutions

Charleen Zimmer, **AICP** – President of Zan Associates

Jack Broz, **PE** – Transportation Group Leader at H.R. Green Company

- Summary Highlights from a June 2010 Forum that focused on Integrations of CSS in Construction, Operations & Maintenance.
- Preliminary Indications from a May 2011 TH 169 Triangle Project Review and Construction Field Tour focused on pre-construction, construction and post-construction perspectives and dialogue.
- Discussions to Expand Upon Recommendations that have been advanced and with Focus on the “How?” in moving forward.





A Context Sensitive Solutions (CSS) Forum Construction, Operations & Maintenance Integrations

June 29, 2010 – U of MN Continuing Education Conference Center



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Some CSS Forum Opening Remarks

Tom Sorel - MnDOT Commissioner

These discussions today are transformational for us as a department. Beyond that, this will be transformational for the entire CSS discussion in this country.

I've been advocating for this for some time. The day I became Commissioner, I talked a lot about the importance of public trust and confidence and I sincerely believe that innovation needs to be part of that. From a strategic planning standpoint – right through our strategic directions and our flagship initiatives – we've got CSS pretty well embedded in our agency right now. It's now a matter of taking the philosophy to a new level.

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Some CSS Forum Opening Remarks

Tom Sorel – MnDOT Commissioner

We're doing a lot of work on business impact mitigation. We're taking a strong leadership role with our Complete Streets philosophy by working with our local communities and with the Legislature this past session to pass legislation to move that forward. We're working hard with flexible and performance-based design, innovative contracting, innovative financing and sustainability.

We've been conducting some market research with the public, including a Quality of Life pilot study. This represents the next generation of performance measures in our country. We've enlisted the help of 600 people across the state to respond to questions about issues we're interested in and we've already had a lot of success with this [MnDOT Online Community initiative].





Some CSS Forum Opening Remarks

Tom Sorel – MnDOT Commissioner

Here's what we've learned that might be helpful in discussions today.

People told us, without prompting, that transportation is an important element of their quality of life [a contributor on the lower half of their list]. But if you look at inhibitors and detractors, they placed transportation at number two [only behind the economy as an inhibitor or detractor to their quality of life]. So that's important for us to acknowledge and recognize.

As I travel around and interact with my peers across the country, there is no doubt in my mind that we are a leader in CSS and I think we have an opportunity here to take CSS to a new level. I am excited about that.





An Overview of Context Sensitive Solutions

Scott Bradley – MnDOT Director of Context Sensitive Solutions

- Understanding Context
- Understanding the Definition of CSS
- Understanding CSS Philosophy & Strategies
- Understanding CSS Principles
- Understanding MnDOT's Business Case for CSS
- Understanding the Expected Benefits of CSS
- Understanding a Fundamental Challenge of CSS

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Understanding Context

- Interrelated conditions in which something exists
- Constraints and opportunities
- Tying parts together to work as a cohesive whole



What's Most Important Specific to People - Places - Circumstances?





Understanding CSS

FHWA / AASHTO Definition

CSS is a collaborative, interdisciplinary approach that involves all stakeholders in providing a transportation facility that fits its setting. It is an approach that leads to preserving and enhancing scenic, aesthetic, historic, community, and environmental resources while improving or maintaining safety, mobility & infrastructure conditions.



I-90 Between St. Charles and the Mississippi River



CSAH 3 Excelsior Boulevard through St. Louis Park





Understanding CSS

Philosophy and Principles applying to Programs, Services, Planning, Project Development, Construction, Operations, and Maintenance ...





Understanding CSS

FHWA / AASHTO CSS Philosophy / Core Strategies



- Strive towards a shared stakeholder vision to provide a 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 and natural environments





CSS Principles

15 Original CSD (Now CSS) Principles Paraphrased

- Use interdisciplinary teams
- Involve your stakeholders
- Seek broad public involvement
- Use an effective range of communication strategies
- Seek consensus in determining purpose and need
- Address alternatives and all modes of transportation
- Seek safe facilities for all users
- Seek environmental harmony
- Address community / social concerns
- Address aesthetic concerns
- Utilize a full range of design choices and flexibility
- Document project decisions
- Track and meet all commitments
- Use agency resources effectively
- Create lasting value for the public and communities





MnDOT Leadership In CSS

1998 FHWA Designation of 5 CSD “Pilot State” DOTs

CT, KY, MD, MN & UT were selected as pilot state DOTs to further regional and national implementation and mainstreaming of CSD (now CSS)

MnDOT assembled a CSD steering team and advisory group to guide the approach including development and deployment of CSD Training, Policy (Tech Memo) and Marketing in 2000 and emphasis on (6) Core Principles deemed most important for MnDOT.

As a “pilot state”, MnDOT partnered with FHWA ‘s MN Division and the U of MN Center for Transportation Studies to help advance CSS both locally and nationally.





MnDOT Leadership in CSS

Many Award Winning & Nationally Recognized CSS Successes Stories



North Shore Hwy 61 - All American Road



I-35 Extension - Duluth



Stone Arch Bridge Restoration - Minneapolis



TH 23 - Spicer to New London



North Shore Hwy 61 - Silver Creek Cliff



Stone Arch Bridge Re-use - Minneapolis





MnDOT Leadership in CSS

Many Award Winning & Nationally Recognized CSS Successes Stories



TH 60 Bridge - Wabasha



TH 10 - Detroit Lakes



TH 371 Mississippi River Bridge - Brainerd



TH 22 - St. Peter to Mankato



TH 197 Paul Bunyan Drive - Bemidji



Hiawatha LRT Stations - Minneapolis





MnDOT Leadership in CSS

Many Award Winning & Nationally Recognized CSS Successes Stories



Roadside Resource Mgmt Programs



Community Partnership Programs



Visual Quality Management Programs



Plant Selection Expert System



Living Snow Fence Program



Historic Properties Mgmt Programs





CSS & MnDOT's Strategic Vision & Plan

CSS Designated as a Flagship Initiative in December 2009

- To integrate CSS as a business model
- To build customer relationships & trust
- To improve processes & decision-making
- To better balance competing objectives
- To seek collaborative & right-sized solutions
- To improve return on investments
- To achieve more of the benefits of CSS ...



Tying More Key Pieces Together



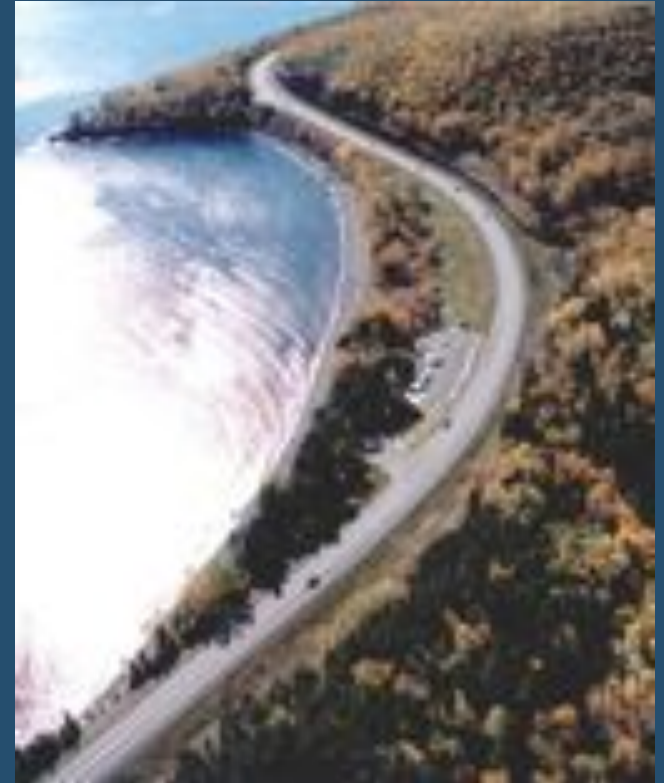


CSS Benefits Research

National Cooperative Highway Research Program Report 642 (2010)



Based Upon 33 Case Studies
From Across the United States



Like MN TH 61 Reconstruction
(North Shore of Lake Superior)





CSS Benefits – Agency Emphasis

Correlated To Applying CSS Principles (NCHRP Report 642)

01. Improved predictability of project delivery
02. Improved project scoping and budgeting
03. Improved long-term decisions and investments
04. Improved environmental stewardship
05. Optimized maintenance and operations
06. Increased risk management and liability protection
07. Improved stakeholder & public feedback
08. Increased stakeholder & public participation, ownership & trust
09. Decreased costs for overall project delivery
10. Decreased time for overall project delivery
11. Increased opportunities for partnering





CSS Benefits – User Emphasis

Correlated To Applying CSS Principles (NCHRP Report 642)

12. Minimized impact to human and natural environments
13. Improved mobility for users
14. Improved walk-ability and bike-ability
15. Improved safety (motorists, pedestrians, bicyclists)
16. Improved multi-modal options (including transit)
17. Improved community satisfaction
18. Improved quality of life for communities and the public
19. Improved speed management
20. Design features appropriate to context
21. Minimized construction related disruption
22. Improved opportunities for economic development



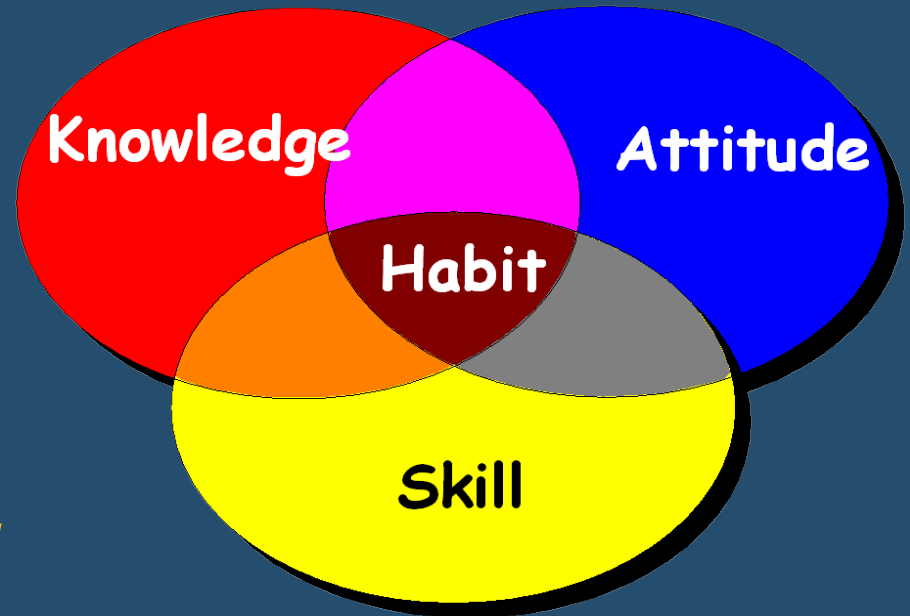


A Fundamental CSS Challenge

CSS Requires New Habits ...

Resistance to change can be driven by failure to challenge perceptions and assumptions

Today's challenges require new Habits shaped by new skills, new knowledge, and new attitudes



(S. Covey)

“We are what we repeatedly do ... excellence is not an act but a habit”

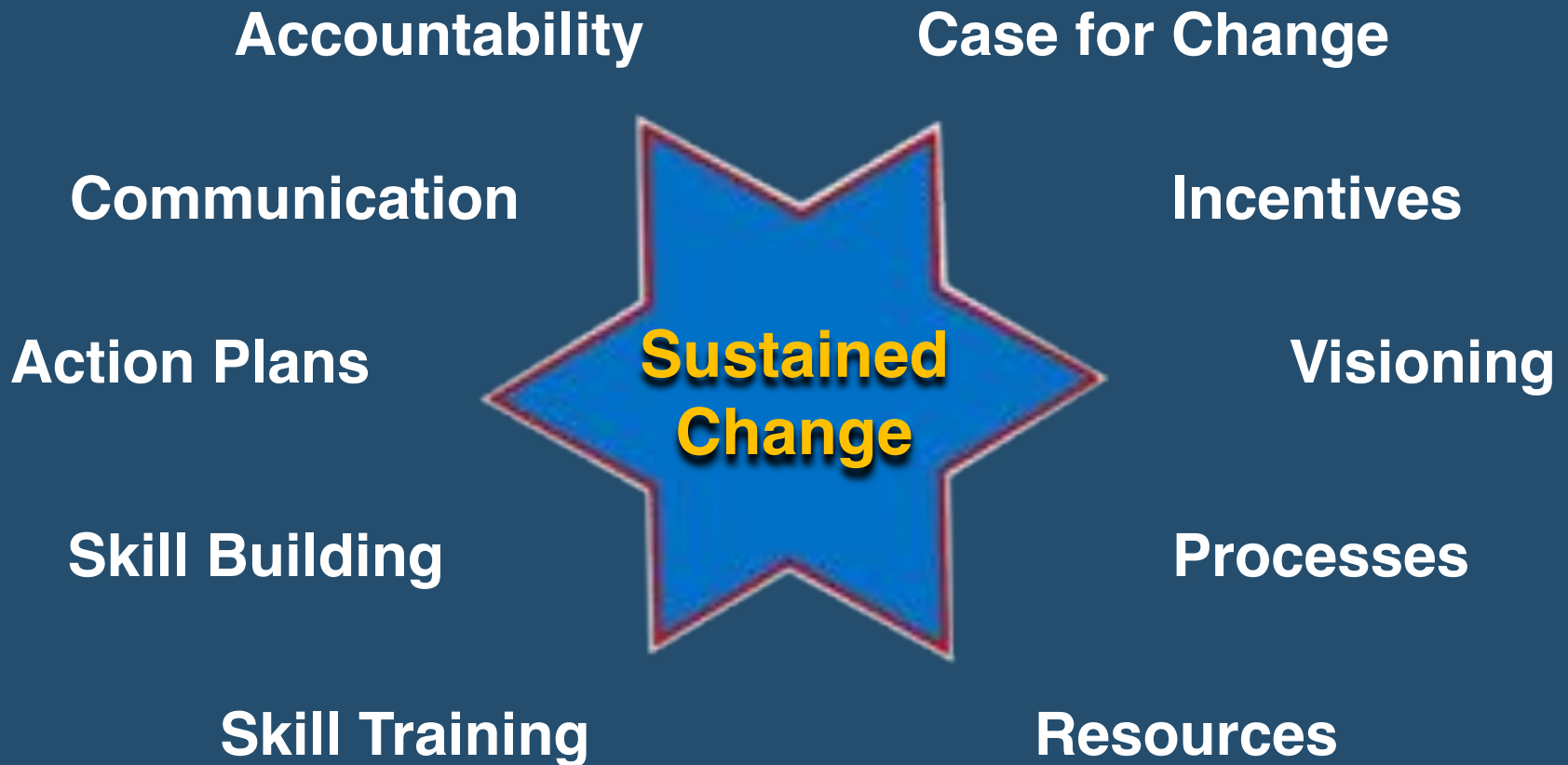
(Aristotle)





Enabling & Sustaining Change Management

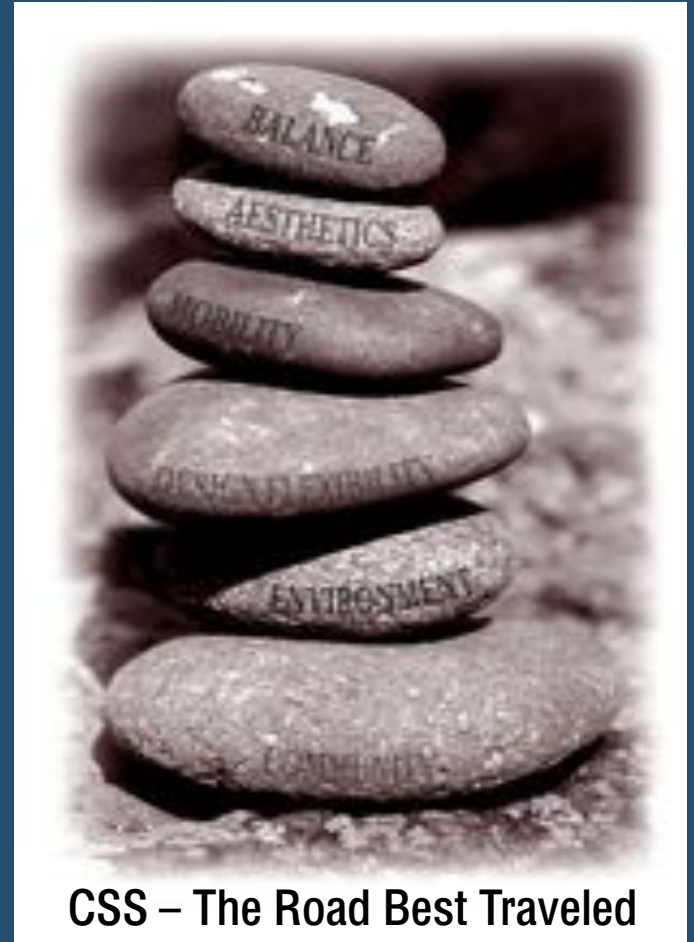
Ingredients Necessary for a Culture of Innovation





For More Info Contact:

Scott Bradley – Director of CSS
scott.bradley@state.mn.us



CSS – The Road Best Traveled





CSS in Construction, Operations & Maintenance Webinar

CSS: Creative Thinking and Innovative Problem Solving

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Innovations

- Processes/partnering/contracting methods
- Construction staging
- Construction techniques and materials
- Design options
- Maintenance methods and materials



TH 36 North St Paul – Full Closure – Summer 2007



TH 36 – North St. Paul

- A + B Bidding
- No Excuse Locked Incentive
- Lane Rental
- Intelligent Compaction





TH 36/Margaret Street



Gateway Trail Portal





TH 36/Margaret Street



Completed Bridge



TH 36 – North St. Paul



•Pre construction Market Survey



•Post construction Market Survey



Hwy 610 Maple Grove Design-Build



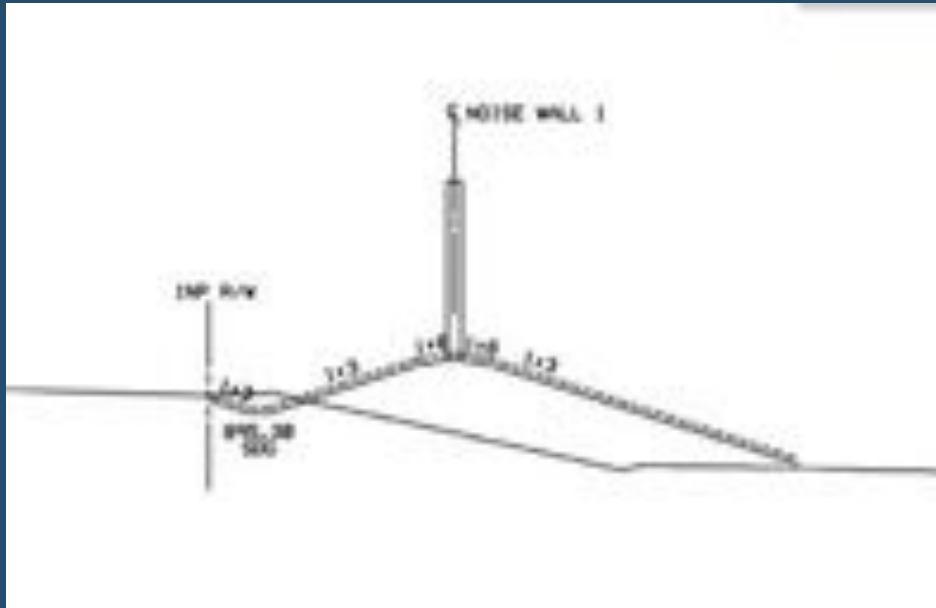
Profile Change



Hwy 610 Maple Grove – Alignment Shift



Hwy 610 Maple Grove – Design-Build



Noise Wall Berms





Valley Creek Road/I-494



Thin Brick Mock-up





Valley Creek Road/I-494

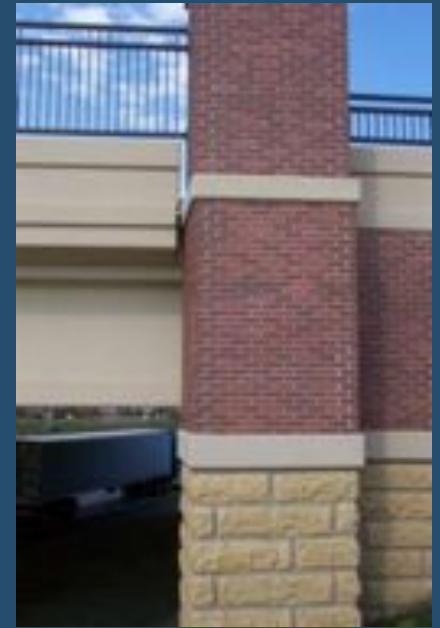


Thin Brick Installation





Valley Creek Road/I-494





Valley Creek Road/I-494



Complete Bridge





I-35W/Minnehaha Pkwy



Transparent Noise Barrier





I-35W/Minnehaha Pkwy



Transparent Noise Barrier





Passive Blowing Snow Control









02/23/2010

Mn/DOT Montgomery Truck Station Photo





Why Is Innovation Important?

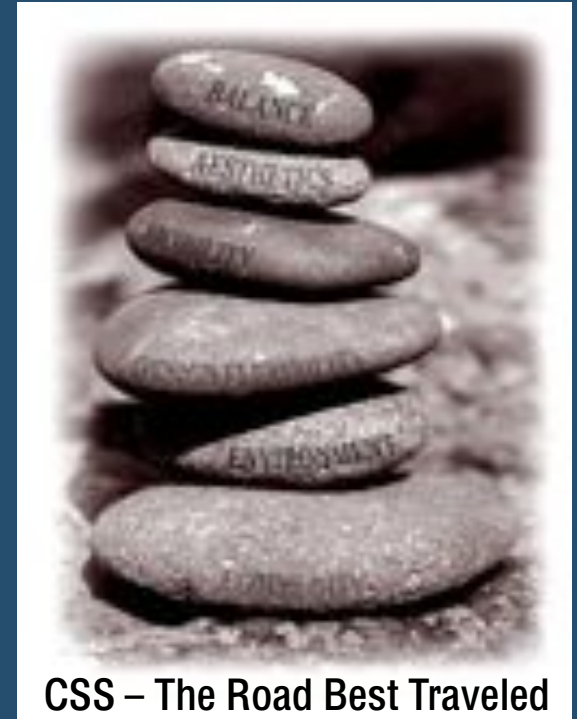
- Solves problems
- Saves time and cost
- Helps get to “yes”





CSS in Construction, Operations & Maintenance Webinar

Discussion



CSS – The Road Best Traveled

Your Destination...Our Priority





CSS in Construction, Operations & Maintenance Webinar

Construction Panel Presentations

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TH 10 in Detroit Lakes

- S-Curve near downtown (20 mph)
- Crash History
- Lack of Frontage Roads
- 60 Trains/day
- Back-ups onto TH 10





Stakeholders

- Mn/DOT Materials, Traffic, Design, CRU
- **City of Detroit Lakes**
- Becker County
- State Historic Preservation Office
- **Chamber of Commerce – and all businesses**
- **BNSF Railroad**
- **Pelican River Watershed and DNR**
- Residents
- Utilities





Consider HOW to Build

- Lesson learned from Design-Build
 - First, what to build
 - Then, HOW to Build
 - Then design details

- Design input from Construction, Maintenance, permitting, ROW





Design Temporary Conditions

- Traffic shifts
- Temporary drainage
- Winter stages
- Snow berms/fencing
- Maintenance of traffic elements





Contractor's Business Liaison

- Reported Directly to the Contractor's PM
- Responsible for communication to every business
 - What work would be done
 - When it would start
 - How access to their business would be maintained
 - When it would end
- Provided a structure to communicate changes to schedule





CPM Schedule

- Performance Specification to manage any contractor proposed schedule change
- Changes to entire project schedule were required
- Requirement to present change to stakeholders prior to Mn/DOT acceptance





Watershed approval? Watershed SUPPORT! Watershed FUNDING!!!



- Special Culvert Design and Fish spawning criteria
- Rain gardens and mechanical water quality treatments and pervious pavement for the Boat Ramp



TH 10 in Detroit Lakes- Historic Impacts

- Historic Character: Depot, Graystone Hotel and Post Office become focal point of new plaza



Overlook and Railroad create “Pinch Point”

- Narrowing of TH 10 allowed the extension of a frontage road with parking for the overlook.
- Rain gardens and mechanical water quality treatments and pervious pavement for the Boat Ramp





TH 59 and TH 34 upgrades facilitate traffic flow during construction



Grade crossings upgraded to “whistle-free” criteria





Project open to traffic 2008

- Underpass separates Roosevelt Avenue from RR and TH 10
- City embraces downtown expansion plan
- Construction shortened through A+B along with incentives
- Maintenance Agreements!





TH 169 in Saint Peter



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Started as Resurfacing Project

- Pedestrian safety problems needed to be addressed
- City wanted to replace very old underground utilities
- Businesses want attractive downtown
- Historic district - SHPO got involved





Historic Downtown





Stakeholders

- Mn/DOT Materials, Traffic, Design, CRU
- **City of Saint Peter**
- Nicollet County
- **State Historic Preservation Office**
- Saint Peter Heritage Preservation Committee
- Nicollet County Historical Society
- **Chamber of Commerce – and all businesses**
- Gustavus Adolphus College
- Residents – including the Lady who doesn't want anything done





Staging: Closed Road In Downtown



Reopened in 133 Calendar Days – Faster Is Usually Better!



Maintenance of Traffic



- Detours
- Hours/days of operation
- Cross-street/access closures
- Haul routes
- On-street parking



Detours

- In-town Detour
- Truck Detour
- Enforcement

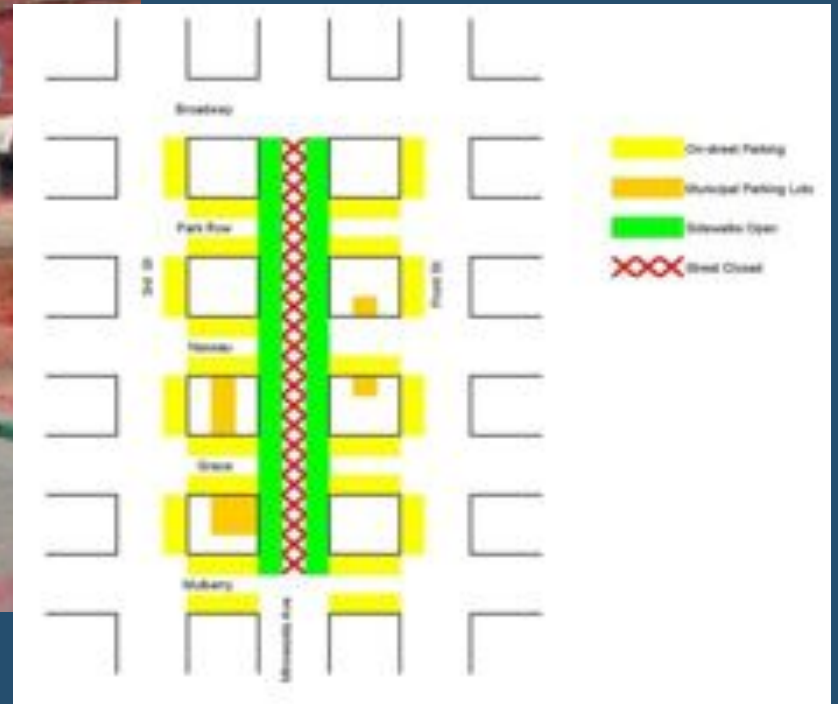


Business Signing

- Signing on Detours
- Access to Parking
- On-Street Parking
- Sidewalk Access
- Deliveries
- Mail



Access to Businesses





Information to Businesses

- Project duration and timetables
- Lane and road closures – detours
- Access and customer parking impacts
- Visibility
- Noise, dust, vibration
- Public participation opportunities
- Water Service interruptions



Pedestrian Access





Stormwater and Utilities



Downstream Defenders



Historic Buildings

- ADA
- Historic Preservation
- Vibration





Streetscaping/Maintenance Agreements





Discover 169 Campaign



DISCOVER
Saint Peter



Final Outcome – Great Downtown





CSS in Construction, Operations & Maintenance Forum

Operations & Maintenance Panel Presentations



Your Destination...Our Priority





CSS in Construction, Operations & Maintenance Forum

Panel 3 - Operations & Maintenance Case Study Presenters

Steve Lund - MnDOT Office of Maintenance Director

Bev Farraher - MnDOT Metro District Maintenance Engineer

Scott Bradley - MnDOT Director of Context Sensitive Solutions

Brief case study examples related to CSS barriers, challenges and innovations in MnDOT operations & maintenance activities





Operations & Maintenance Panel Presentations

O & M Still Trying To Make The Link

- CSS is a big tent
- Traditional maintenance initiatives matter
- The most obvious:
 - Environmental efforts
 - Customer market research efforts



Steven M. Lund, P.E.
State Maintenance Engineer





Operations & Maintenance Panel Presentations

Environmental Arena

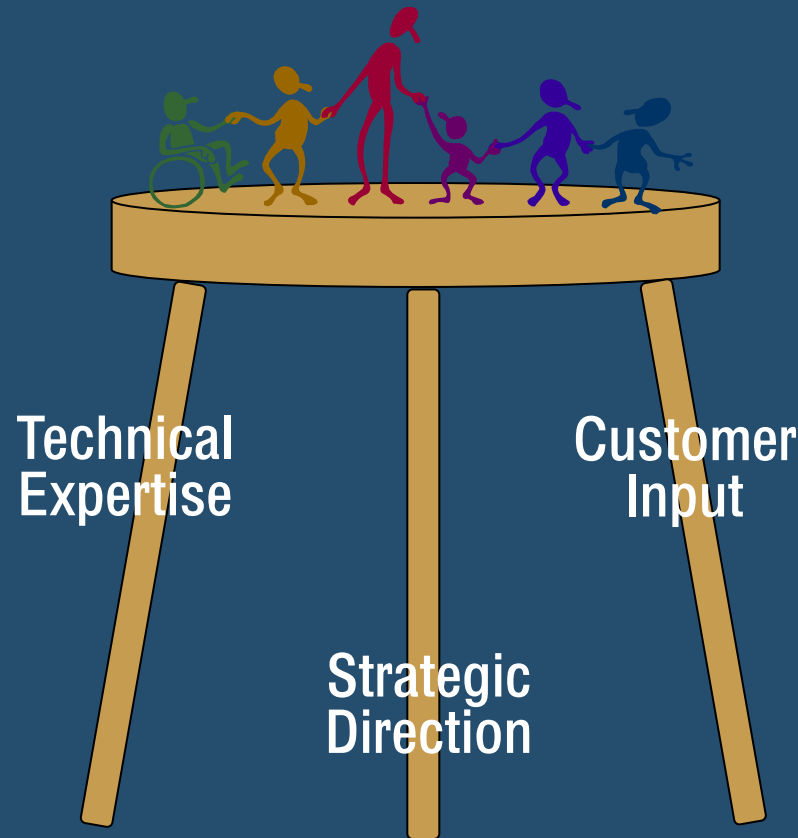
- Many examples for all seasons
- Snow and ice control efforts and chemical usage
 - Training
 - New Technologies
 - Alternative Chemicals





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Customer Satisfaction - Business Planning Model





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Customer Survey Efforts - Driven by the Customer

- Business Planning (Products & Services)
- Omnibus Surveys (Customer Tracking)
- Bare Lane (Snow & Ice Focus)



Three Distinct Areas of Market Research and Customer Focus
Bare Lane Customer Survey Effort Used to Develop Winter Performance Measure





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New Strategy for Customer Input – Online Community

- Opportunity for ongoing, customer feedback and interactions
 - Goal: customer-driven planning and decisions ...
(get to know customers and their values, needs and service expectations)
- Sample of 600 MN residents invited to participate (about one year)
 - Online Community Target:
 - Census reflection - gender, age, income, ethnicity, geography
 - Augment - transit, ethnicity, disabled community
- Private for Mn/DOT's use only (not public)
- Three-way communications:
 - Mn/DOT to Customers
 - Customers to Mn/DOT
 - Customers to Customers
- Consultant: Communispace (has built and managed 350+ communities)





Operations & Maintenance Panel Presentations

Equipment Demo Day - Innovations





Operations & Maintenance Panel Presentations

More CSS Links – Road Sand Screener



We used to sweep up thousands of tons of sand in the spring and dispose of it in landfills which is very expensive. After purchasing a Screener, we now stockpile the sweepings and drive the Screener around to screen all the stockpiles.

We then test the stockpiles ... recycle the recyclables ... use the environmentally cleared material for fill ... and only landfill the remains providing huge cost savings and environmental benefits. The Screener paid for itself in the first year of operation.

Bev Farraher
Metro Maintenance Engineer





Operations & Maintenance Panel Presentations

Emerald Ash Borer Web Site & Sale of Logs

With as many as a billion ash trees in the state, emerald ash borer can be a huge problem for us. Nobody, to our knowledge, is collecting the necessary information from across the state as to where the problems are and what's being done about it. This initiative is very significant as far as tracking what has happened and in the pursuit of our larger goals.

We are talking to our information technology folks to hopefully create a database that will aggregate all of the data around the state to further enable our staff and others in efforts to manage the emerald ash borer problem.





Operations & Maintenance Panel Presentations

Graffiti Prevention & Deterrence Program

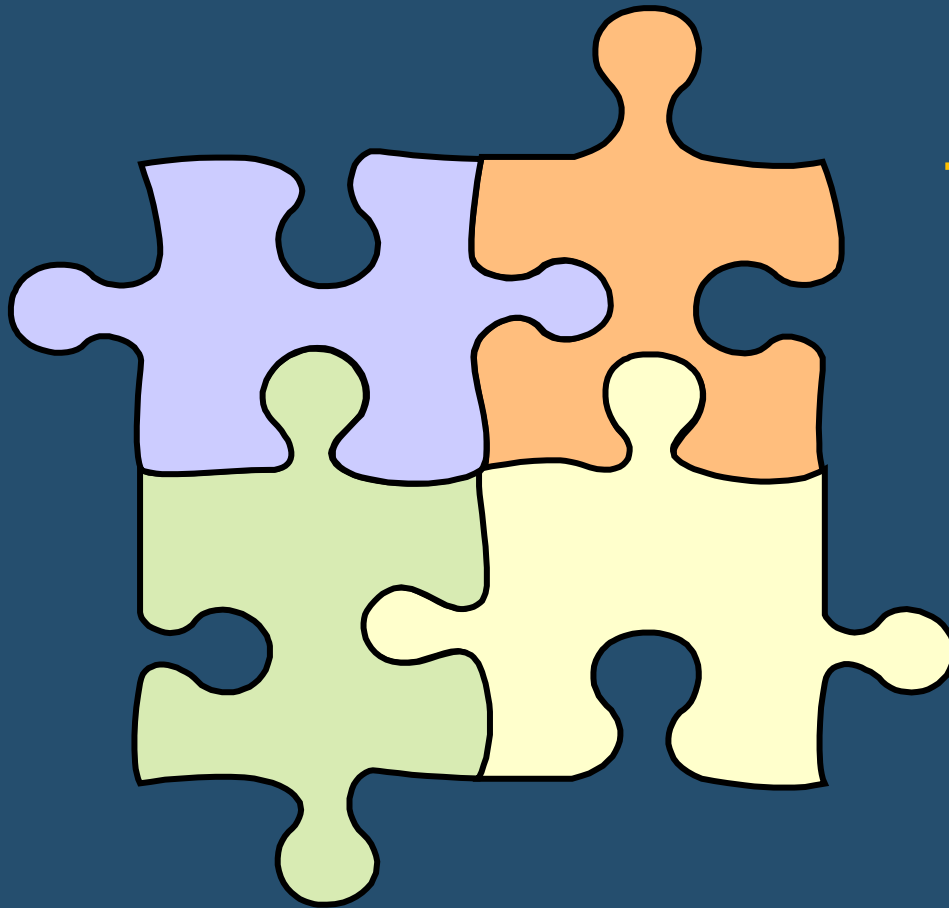
We spent \$160,000 on graffiti removal last year and we do not want to spend that again next year ... we would like to prevent it. This is not only a safety issue with obscuring signs ... it is also an issue for communities and neighborhoods dealing with gang control.

Our goal is to deter graffiti tagging using Q-Star cameras equipped with motion detectors, lights and recorded warnings. Our partners (St. Paul & Minneapolis) have agreed to work to prosecute vandals.





Operations & Maintenance Panel Presentations



Tying More Pieces Together

Scott Bradley
Director of Context Sensitive Solutions





Operations & Maintenance Panel Presentations

TH 38 Collaborative Visioning, Corridor Management Planning & Solutions

Received the "Best CSS Project Award" in AASHTO's 2005 National Best Practices in CSS Competition, and an FHWA Excellence in Highway Design Award, for clearly demonstrating all 15 of the CSS Principles and for providing a compelling example of applying flexibility in design to balance competing objectives and optimize return on investments.

Demonstrated extensive early and continuing involvement of public, private, and multiple agency stakeholders, including operations and maintenance reps, resulting in collaboration and consensus to not only define corridor issues and needs but to propose project solutions and opportunities in setting the stage for more cost-effective joint ventures and stewardship in guiding management of the TH 38 corridor and the land adjacent to it.

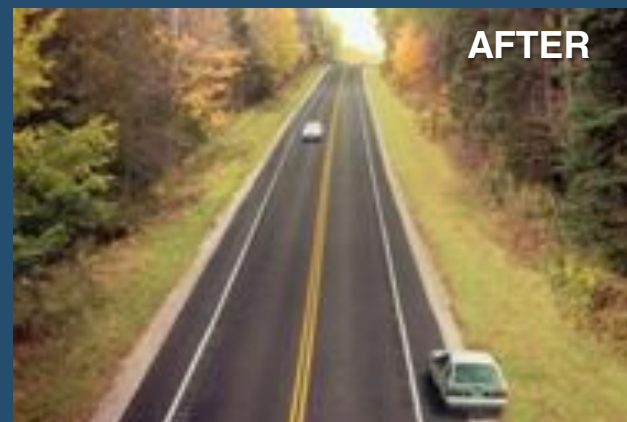
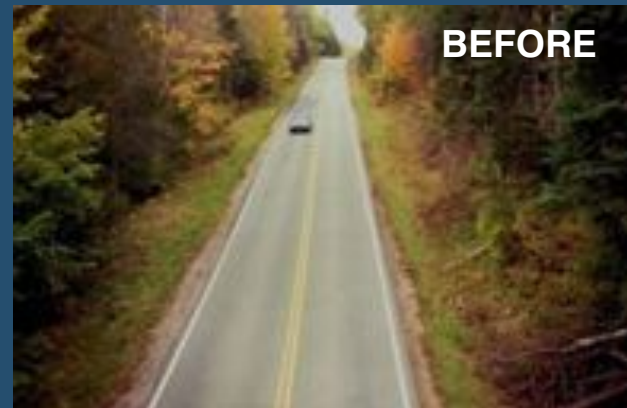
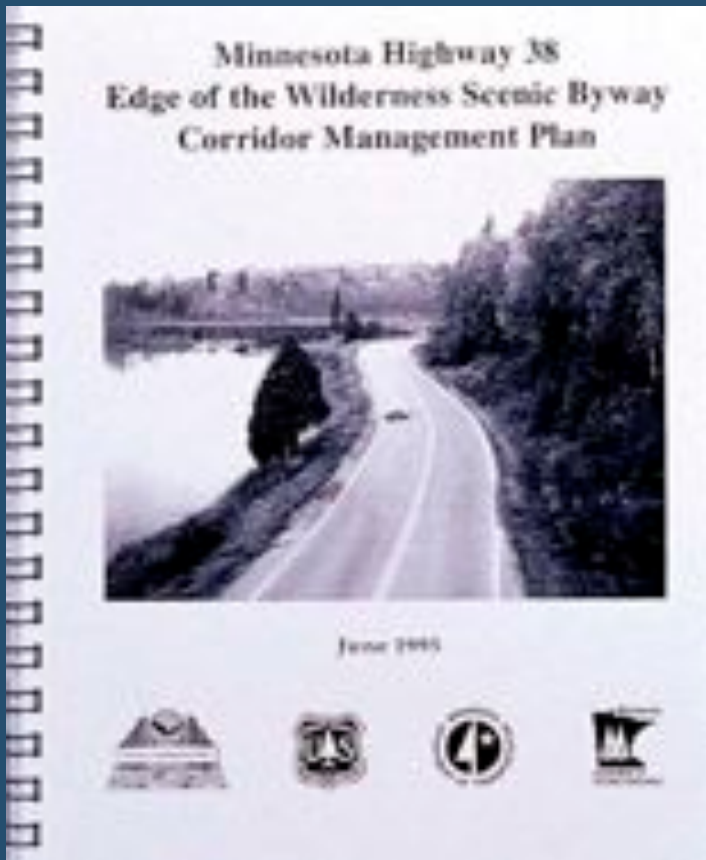
Consequently, TH 38 reconstruction projects were advanced 10 years ahead of any likely programming schedules while reducing potential costs and adverse impacts by more than 40% and reducing annual post-reconstruction crashes by more than 55%.





Operations & Maintenance Panel Presentations

TH 38 Collaborative Visioning, Corridor Management Planning & Solutions





Operations & Maintenance Panel Presentations

TH 8 Taylors Falls Underpass Collaborative Visioning, Partnering & Solutions

Among other awards for context sensitivity and the benefits of collaborative visioning, partnering and solutions, the TH 8 Taylors Falls Pedestrian Underpass & Scenic Overlook project was an FHWA Excellence in Design Award winning project. A potential project opportunity was initially queried in the field by MnDOT Metro District design, construction, operations and maintenance staff who recognized the possibility to further improve safety, mobility and infrastructure conditions while enhancing user experiences and the community and natural environment.

I was given the opportunity to try and make a case and find the support, money, and partners to make a project happen and to manage its development. Through a cooperative agreement with a comprehensive maintenance plan and schedule, MnDOT funded and administered hard infrastructure construction and the City took responsibility for funding, installing and maintaining the project's soft infrastructure elements including operations and maintenance of most of the project's hard infrastructure investments.





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TH 8 Taylors Falls Underpass Collaborative Visioning, Partnering & Solutions





Operations & Maintenance Panel Presentations

Steven's Square 17th Street Partnership Project Along I-94 in Minneapolis

The award winning Stevens Square 17th St. community partnership project was also a potential opportunity that was elevated by MnDOT Metro District design, construction and maintenance staff to address neighborhood crime, safety, quality of life and revitalization concerns that had been identified in the Stevens Square community along I-94 across from the downtown Minneapolis Convention Center.

This was a unique twist upon MnDOT's formal community roadside landscape partnership program ... design and technical support by MnDOT using Mpls. Neighborhood Revitalization Program funding for hardscape construction elements on and off Mn/DOT right of way ... hardscape work contracted by the City with construction inspections by MnDOT ... landscape materials funded by MnDOT via cooperative agreement with installation and perpetual maintenance responsibility held by the City and sponsored community and neighborhood volunteer groups.





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Steven's Square 17th Street Partnership Project Along I-94 in Minneapolis





Operations & Maintenance Panel Presentations

Innovative Beaver Creek Travel Info Center Blowing & Drifting Snow Control

In the epic winter of 1998, the Beaver Creek TIC truck parking lot blew shut with more than 6 feet of snow cover more than 25 times resulting in more than \$30,000 of snow removal cost for that year. MnDOT District 7 operations folks were looking for a much more cost-effective approach to address this problem.

Landscape architect Don Obernolte worked with George Welk and Keith Bloomgren from District 7 operations to design and construct a landform that could control the blowing and drifting snow problem without the need for and ongoing costs and maintenance requirements of conventional structural or living snow fences. Development of the snow control berming and catchment areas resulted in a parking area that now blows clear of snow in tough winters.





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Innovative Beaver Creek Travel Info Center Blowing & Drifting Snow Control





Operations & Maintenance Panel Presentations

Model MnDOT & Fond du Lac Tribe Roadside Vegetation Management MOU

A "model" MnDOT & Fond du Lac Band of Lake Superior Chippewa Roadside Vegetation Management Memorandum of Understanding (MOU) was signed May 15, 2009 by MnDOT Commissioner Tom Sorel & Tribal Chairwoman Karen Diver defining goals and agreements in regards to their commitments in working cooperatively together to manage vegetation along Highways 2, 210 & I-35 in mutually acceptable ways within Reservation boundaries.

The Tribe expressed concern over the use of herbicides within Reservation boundaries and loss of culturally significant plants and plant habitat. MnDOT has responded with use of mechanical or other means of control in areas where the Tribe does not want herbicide use.





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Model MnDOT & Fond du Lac Tribe Roadside Vegetation Management MOU





Operations & Maintenance Panel Presentations

TH 61 Collaborative Creativity & Problem Solving at Silver Creek Cliff

A rock slide had filled a tunnel catchment ditch to capacity on the south side of the TH 61 Silver Creek Cliff tunnel while work was ongoing in construction of the Gitchi-Gami State Trail and Overlook around Silver Creek Cliff on the historic old Hwy 61 alignment. Chuck Saline and Herb Naegle, representing MnDOT District 1 construction and maintenance, looked for creativity and opportunity in addressing the problem in conjunction with the construction work on the adjacent Gitchi-Gami trail, overlook and trailhead parking area.

They collaborated with landscape architect Don Obernolte to use the rock fall material in gabion baskets as a retaining wall to substitute for a proposed reinforced soil slope and for expanding the parking lot size threefold by leveling it with the rock material. A separate and costly operations contract for rock fall clean out was avoided and the changes were made without additional cost to the Gitchi-Gami contract work while enabling the project to be built more quickly. Innovative and context sensitive approaches (blowing in compost, plunge pools, etc.) were also employed in preventing storm water runoff and erosion from the site ensuring successful native vegetation establishment adjacent to Lake Superior.





Operations & Maintenance Panel Presentations

TH 61 Collaborative Creativity & Problem Solving at Silver Creek Cliff





Operations & Maintenance Panel Presentations

MnDOT Plant Selector Expert System Development

The 5th and most recent upgrading of the online MnDOT PlantSelector offers a more professional, user-friendly and easier to maintain interface. Return on investment is calculated to be 355% at year three (2012) with a MnDOT time & cost savings estimate of more than \$500,000 annually.

Collaboration with interdisciplinary experts and volunteers from the upper Midwest and Canada yielded a highly acclaimed tool that enables novices and professionals alike to select the most appropriate plants for Minnesota roadside functions and site conditions.



FHWA Environmental Excellence Award Winner





Operations & Maintenance Panel Presentations

Camp Ripley Dry Stack Stone Wall Restoration Workshop

This initiative was launched by landscape architect Carol Zoff in her project management capacity for restoration of historic roadside properties along the Great River Road. The August 12th & 13th, 2009 Workshop was sponsored by MnDOT with assistance from Camp Ripley MN National Guard (TH 115 near Little Falls) and instruction by the Dry Stone Conservancy (based out of Kentucky).

The workshop was designed for property managers and stone masons to provide a basic understanding of the age-old craft and requirements necessary to appropriately maintain and repair historic dry stack structures. Each day started with a brief classroom session followed by hands-on learning (with certified dry stone craftsmen) in restoring a Camp Ripley wall segment ... participants were also able to observe ongoing contract restoration work in the field.

Additional Workshop objectives included: history & value of the walls, review of original designs & current restoration plan, damage identification, proper repair techniques, construction documents, utility permit requirements, ongoing maintenance and dry stone mason certification requirements.





Operations & Maintenance Panel Presentations

Camp Ripley Dry Stack Stone Wall Restoration Workshop





Operations & Maintenance Panel Presentations

Aesthetic Initiative Measurement System (AIMS)

AIMS Two-Phase Process: (Recipient of FHWA Environmental Excellence Award)

Phase I - **focus group traveler's responses to views** (from vans)

Phase II - **large population traveler's responses to specific views** (online visual survey)

AIMS Functions:

- **A tool to analyze public perception of existing and proposed highway views**
- **A tool to inform highway design and management decision-making**
- **A tool for monitoring traveler's visual experiences and preferences**

Phase I Findings:

- **To achieve attractiveness and to avoid unattractiveness, invest in maintenance**
- **Views of landscape context create the most attractive views**
- **Highway location and design should intentionally open or screen views**
- **All urban highways should include a comprehensive planting design strategy**
- **All structures in the right-of-way should meet a minimum level of aesthetic quality**

Phase II Findings:

- **(See Phase II Image Comparisons Slide)**





Operations & Maintenance Panel Presentations

Aesthetic Initiative Measurement System Phase 1





Operations & Maintenance Panel Presentations



AIMS Phase II Highest Ratings of Attractiveness

AIMS Phase II Lowest Ratings of Attractiveness



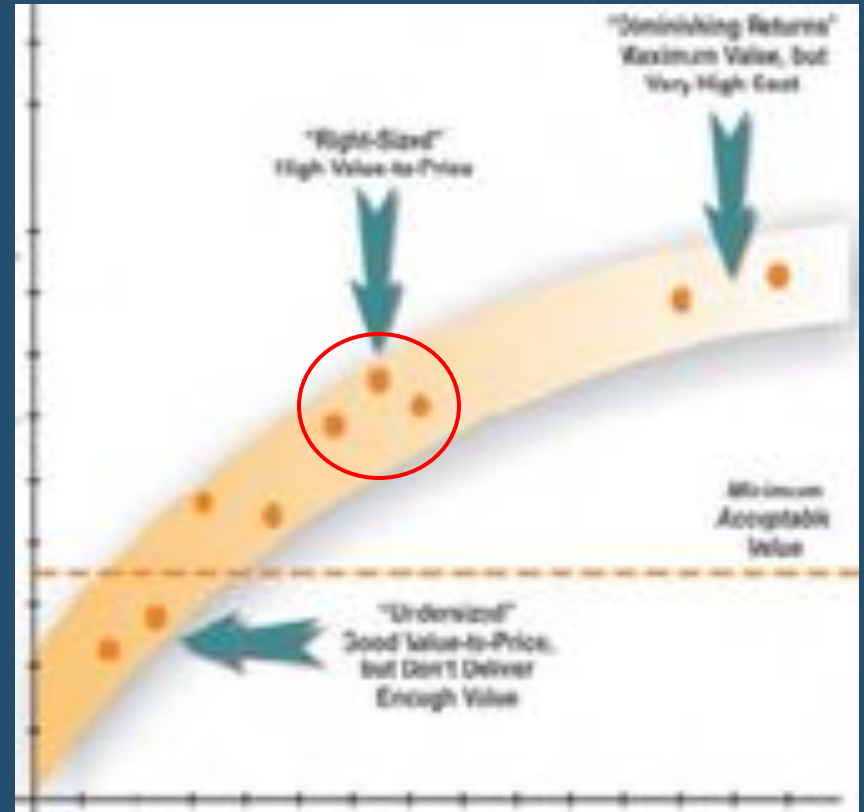
Operations & Maintenance Panel Presentations

TH 100 Operations Retrofit in St. Louis Park – High Benefit to Cost Ratio



Narrowed existing shoulders & lanes to add a third lane in each direction. A marked reduction in crashes and 13:1 Benefit to Cost Ratio with decreased congestion and increased throughput .

VALUE (all benefits)



PRICE (cost + impacts)





Integrating CSS in Construction, Operations & Maintenance

Some Lessons Learned and Themes That Emerged From the June 2010 Forum



Your Destination... Our Priority





Lessons Learned From The June 2010 Forum

Some Themes That Emerged

- Construction, operations and maintenance staff need to provide early and continuous input in project development and design
- Internal and external communications and coordination need to be improved across all functional areas
- Construction, operations & maintenance staff often do not know what commitments were made in project development and design
- It is important to be more flexible and to try different approaches [outside of standards] to meet challenging circumstances
- Lack of available time and resources is a concern
- CSS in construction, operations and maintenance will improve stakeholder and community acceptance





Follow-up Participant Surveys From June 2010 Forum

Seeking To Rank Priorities & Action Items

- For improving internal and external communications
- For improving construction contracting practices
- For improving delivery of operations and maintenance services
- For improving the use of staff and financial resources
- For improving CSS during construction
- For improving CSS during operations and maintenance
- For developing additional CSS-related training opportunities





Pre-Construction, Construction & Post-Construction Integrations in Context Sensitive Solutions TH 169 Triangle Project Review & Construction Field Tour



May 17, 2011 in Brooklyn Park & Osseo

Your Destination... Our Priority





Follow-up Surveys Sent To Triangle Project Review Participants

Seeking To Rank Priorities & Action Items

- For improving internal and external communications
- For improving construction contracting practices
- For improving delivery of operations and maintenance services
- For improving the use of staff and financial resources
- For improving CSS during construction
- For improving CSS during operations and maintenance
- For developing additional CSS-related training opportunities





Some Follow-Up Priorities

Pre-Construction Recommendations

- Make sure construction, operations & maintenance folks are involved early (before commitments are made)
- Make sure commitments are deliverable (constructability & maintainability)
- Document and track all commitments and communicate them to future teams
- Work collaboratively with local governments and property owners
- Seek innovative solutions that can address issues and save time and money





Some Follow-Up Priorities

Construction Recommendations

- Get involved in pre-construction processes and activities
- Make sure plans, specifications and provisions are developed appropriately and maintain flexibility for incorporating innovations
- Use innovative and best value contracting methods
- Understand all the commitments made in pre-construction and the level of discretion that you have
- Consult with operations and maintenance folks prior to construction (operability and maintainability)
- Document and track all commitments and communicate them to future teams
- Recognize issues as they arise and respond quickly
- Work collaboratively with local governments and property owners
- Seek innovative solutions that can address issues and save time and money





Some Follow-Up Priorities

Post-Construction Recommendations

- Get involved in pre-construction and construction processes and activities
- Understand all the commitments made previously and the level of discretion that you have
- Seek development of appropriate and effective maintenance agreements
- Work collaboratively with local governments and property owners
- Seek innovative solutions that address issues and save time and money



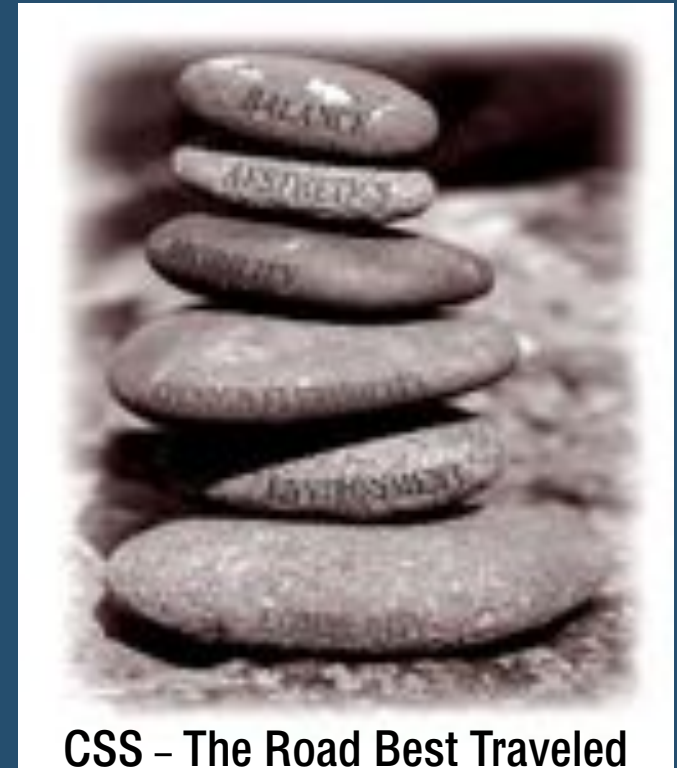


A Context Sensitive Solutions Webinar

Integrating CSS in Construction, Operations & Maintenance

Q & A Discussions ...

Facilitated by :
Charleen Zimmer, AICP (Zan Associates)



CSS - The Road Best Traveled

Your Destination...Our Priority



What's Next?

- CSS related training opportunities
- CSS related outreach opportunities
- Developing a new MnDOT- hosted CSS website and resource center

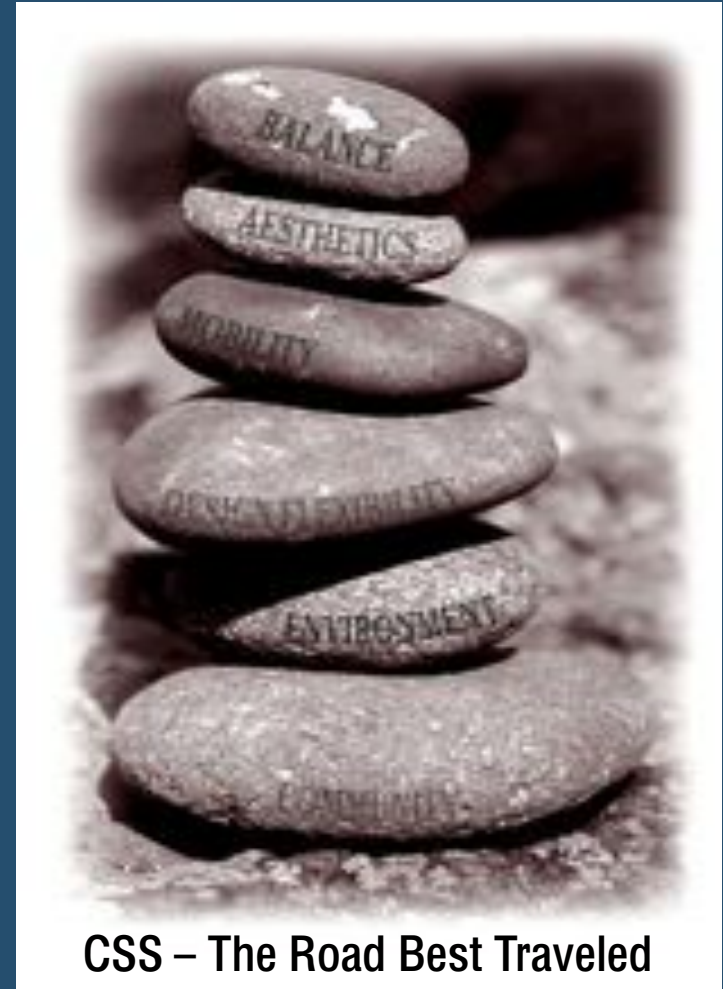
www.dot.state.mn.us - search A to Z for Context

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