

Peer Exchange Report: Project Management for Highway Design Phase

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<p>16. Abstract</p> <p>The Wisconsin Department of Transportation (WisDOT) Division of Transportation Systems Development (with funding and organizational supported provided by the WisDOT Research Program) hosted a peer exchange November 29 – December 1, 2011 in Madison, Wisconsin. Representatives from other state agencies and the Federal Highway Administration (FHWA) met to share experiences regarding project management in the design phase of highway project delivery. Dr. Jennifer Shane from Iowa State University also gave a presentation on behalf of the Strategic Highway Research Program 2 (SHRP 2). The meeting consisted of both presentations and roundtable discussions aimed at highlighting best practices, lessons learned and the state of the industry.</p> <p>This report presents the key observations that came out of the peer exchange discussions.</p>			
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Table of Contents

Introduction.....	1
Objectives	1
Participants	1
Agency Presentations.....	4
Topic #1 – Policies	7
Topic #2 – Staffing	9
Topic #3 – Procedures	11
Presentation: Project Management Strategies for Complex Projects	14
Topic #4 – Tools.....	15
Project Management Roundtable.....	17
Report Out to Senior Management.....	18
Appendix A: Peer Exchange Summary Report	
Appendix B: Peer Exchange Agenda	



WisDOT Project Management Peer Exchange

November 29 – December 1, 2011

Introduction

The Wisconsin Department of Transportation (WisDOT) Division of Transportation Systems Development (with funding and organizational support provided by the WisDOT Research Program) hosted a peer exchange November 29 – December 1, 2011 in Madison, Wisconsin. Representatives from six state agencies outside of Wisconsin and the Federal Highway Administration (FHWA) met to share experiences regarding project management in the design phase of highway project delivery. Dr. Jennifer Shane from Iowa State University also gave a presentation on behalf of the Strategic Highway Research Program 2 (SHRP 2). The meeting consisted of both presentations and roundtable discussions aimed at highlighting best practices, lessons learned and the state of the industry.

This report presents the key observations that came out of the peer exchange discussions.

Objectives

The peer exchange covered a range of topics related to agency practices for keeping projects on time, on schedule and keeping stakeholders well informed. WisDOT is continually trying to improve its application of the Project Management Body of Knowledge (PMBOK), and the goal was to meet with other agencies to share experiences and learn from each other in the areas of policies, procedures, staffing/structure and tools.

Participants

Planning Committee

William McNary

Bureau of Project Development
Wisconsin Department of
Transportation
(608) 266-3721
William.McNary@dot.wi.gov

Steve Luedtke

Bureau of Project Development
Wisconsin Department of
Transportation
(715) 836-7271
Steven.Luedtke@dot.wi.gov

Colleen Bos

CTC & Associates LLC
(608) 577-4805
colleen.bos@ctcandassociates.com

Julie Millard

Bureau of Project Development
Wisconsin Department of
Transportation
(715) 421-8387
Julie.Millard@dot.wi.gov

Dave Platz

FHWA Resource Center
(708) 283-3591
DPlatz@dot.gov

Kim Linsenmayer

CTC & Associates LLC
(608) 628-3806
kim.linsenmayer@ctcandassociates.com

Francis Schelfhout

Bureau of Project Development
Wisconsin Department of
Transportation
(608) 785-9947
Francis.Schelfhout@dot.wi.gov

Visiting Agencies

David Adamson

Utah Department of Transportation
(801) 781-0545
Deadamson@utah.gov

Jennifer Shane

Iowa State University
(515) 294-1703
jsshane@iastate.edu

Maureen Wakeland

Texas Department of Transportation
(512) 416 2262
maureen.wakeland@tdxdot.gov

Jeff Brunner

Minnesota Department of
Transportation
(651) 366-4614
Jeff.Brunner@state.mn.us

Eric Shroeter

Missouri Department of
Transportation
(573) 526-2903
Eric.Schroeter@modot.mo.gov

Tom Wiener

Minnesota Department of
Transportation
(651) 366-4239
thomas.wiener@state.mn.us

Jeff Cutright

Virginia Department of
Transportation
(804) 225-4958
jeffrey.cutright@vdot.virginia.gov

Rick Smith

Washington State Department
of Transportation
(360) 705.7130
SmithRick@wsdot.wa.gov

Additional Federal Highway Administration Attendees

John Berg

FHWA – Wisconsin Division
(608) 829-7515
john.berg@dot.gov

Tracey Blankenship

FHWA – Wisconsin Division
(608) 829-7510
tracey.blankenship@dot.gov

David Unkefer

FHWA Resource Center
404-562-3669
david.unkefer@dot.gov

Additional Wisconsin Department of Transportation Attendees

Wendy Arneson
North Central Region
(715) 421-7391

Wendy.Arneson@dot.wi.gov

Ryan Luck
Southeast Region
(262) 548-8754

Ryan.Luck@dot.wi.gov

Brenda Schoenfeld
Southwest Region
(608) 333-6194

Brenda.Schoenfeld@dot.wi.gov

Lalitha Balachandran
Southwest Region
(608) 243-3382

Lalitha.Balachandran@dot.wi.gov

Todd Matheson
Bureau of Highway Maintenance
(608) 266-1202

Todd.Matheson@dot.wi.gov

Dan Segerstrom
Northeast Region
(920) 492-7718

daniel.segerstrom@dot.wi.gov

Mike Bauman
Bureau of Technical Services
(715) 421-7393

Michael.Baumann@dot.wi.gov

Norman Pawelczyk
Northeast Region
(920) 492-7708

Norman.Pawelczyk@dot.wi.gov

Cheryl Simon
North Central Region
(715) 365-5728

Cheryl.Simon@dot.wi.gov

Deb Bennett
Bureau of Project Development
(608) 246-3812

Deborah.Bennett@dot.wi.gov

Jared Kinziger
Northeast region
(920) 492-7713

Jared.Kinziger@dot.wi.gov

Norbert Simonis
Southeast Region
(262) 521-4418

Norbert.Simonis@dot.wi.gov

Beth Cannestra
Bureau of Project Development
(608) 266-3707

Beth.Cannestra@dot.wi.gov

Rose Phetteplace
Southwest Region
(608) 890-1218

Rose.Phetteplace@dot.wi.gov

Robin Stafford
North Central Region
(715) 365-5750

robin.stafford@dot.wi.gov

Paul Conlin
Northwest Region
(715) 833-5364

Paul.Conlin@dot.wi.gov

Karl Pierce
Southeast Region
(608) 829-7517

Karl.Pierce@dot.wi.gov

Rhonda Stevens
Bureau of Project Development
(608) 266-0279

RhondaM.Stevens@dot.wi.gov

Paul Keltner
Bureau of Traffic Operations
(414) 227-2141

Paul.Keltner@dot.wi.gov

Keith Robinson
Bureau of Project Development
(715) 421-8304

Keith.Robinson@dot.wi.gov

Christy Tomczak
Bureau of Project Development
(715) 392-7975

Christy.Tomczak@dot.wi.gov

Phil Keppers
Northwest Region
(715) 395-3027

Philip.Keppers@dot.wi.gov

Jim Rohe
Southwest Region
(608) 785-9038

James.Rohe@dot.wi.gov

Paul Vraney
Northeast Region
(920) 492-2232

Paul.Vraney@dot.wi.gov

Najoua Kstontini
Bureau of Structures
(608) 266-2657

najoua.kstontini@dot.wi.gov

Becky Rooyackers
Northeast Region
(920) 492-2394

Rebecca.Rooyackers@dot.wi.gov

Project Management Peer Exchange - Day 1

Agency Presentations

Wisconsin DOT

Julie Millard presented on WisDOT's project management program:

- Project management at WisDOT follows a decentralized structure. WisDOT's philosophy is the assigned project manager manages the project from scoping to construction complete. Handoffs occur between phases as a consequence of staff movements within the organization resulting from transfers, promotions, career changes and retirements.
- WisDOT has focused on building consistency in practices by providing everyone with a standard set of tools, integrating systems as much as possible. By connecting disparate systems for tracking information, WisDOT is able to organize and present the data to do better analysis.
- In the past, some of the tools were too labor intensive and project managers did not feel they gained significant benefit out of using them.
- Currently the focus is on identifying appropriate business processes and then ensuring tools are readily available and easy to use to support those processes.
- They also recognize the need to provide good education in training, since engineers do not inherently have the skills to be project managers.
- WisDOT released their Project Management Plan (PMP) application, and they are now on version 2, which incorporated many user requests. They also use Contract Manager (Primavera) for risk management documentation and budgeting and P6 (Primavera planner/scheduler). Federal major projects use the Primavera products

Utah DOT

David Adamson presented on the Utah Department of Transportation's project management program:

- Utah is also looking at people and processes and trying to ensure the tools they provide are useful for the delivery team. The tools should support the process and not just present another hassle or task.
- They have a decentralized structure with five or six project managers in each region.
- They augment their resources with consultants as needed and also use consultants heavily in project engineering roles (80-90%).
- Their project managers select their team members with management guidance.
- Their project managers handle projects from cradle to grave (planning, environmental, design and construction).
- UDOT is current writing a new project management guide that covers tools, processes, etc.
- They are also working on the infrastructure to report with greater transparency on where project dollars are spent.

Texas DOT

Maureen Wakeland presented on the Texas Department of Transportation's project management program:

- Texas has 25 districts and is very decentralized.
- TxDOT, as a whole, has gone through extensive changes in staffing and leadership based on the Sunset Review, an organizational review required by the legislature. Sunset Review was followed by a management and organizational review conducted by Grant Thornton.
- TxDOT has developed and communicated a very strong portfolio management plan that ensures every penny is programmed into projects, and that resources are managed and scheduled appropriately.

- They maintain a four-year plan for future projects with funding, resources and scheduling planned. They have two methods for estimating portfolio resources. The first method is a formula for estimating needed resource needs at a portfolio level. The preferred method is for project managers to estimate the workload in P6. Output from P6 is used for forecasting resource needs for each project in the four-year plan. Agency resource needs are then aggregated at the portfolio level.
- Like Utah and Wisconsin, Texas emphasizes the importance of focusing on the process rather than the tool.
- Texas maintains a Project Tracker website to gather individual project development milestone and construction information. The TXDOT Tracker website gives high-level reporting of agency performance measures, such as design-on-time and design-on-budget efforts.
- Their program management ensures that program funds allocated to districts are planned to support program goals.
- Their project management office focuses on establishing standard operating procedures, business rules and quality control/ quality assurance.
- They currently have a timeliness milestone report but would like to move beyond just managing and monitoring the key milestones.
- TxDOT has learned that
 - Executive sponsorship is critical for implementing project management processes and procedures.
 - Workflow processes are very important.
 - Staff competencies are changing with greater emphasis on collaboration, leadership, innovation and creativity
 - You need dedicated staff with the right skills.

Missouri DOT

Eric Shroeter presented on the Missouri Department of Transportation's project management program:

- He reviewed the structure and funding of MoDOT. Their funding comes from a road fund rather than from annual appropriations.
- Their project managers and core teams are from their districts, but some roles are filled by their central office (environmental, bridges, geotech and bid letting).
- Their central office also maintains the Engineering Policy Guide (EPG).
- Their project managers choose their own team members for the core team (design, right of way, utilities, traffic, maintenance, construction and materials).
- Project managers sign and seal the plans and are held accountable for the budget and schedule.
- A resident engineer takes the lead after the project is awarded and is responsible for contract administration, inspections and contract payments.
- He has monthly video conferences to get updates from project managers to get a report on the status of their projects.
- MoDOT emphasizes results more than process.
- They do surveys of the public to see if they are meeting their needs. Projects are expensive and inconvenient to the public, so the goal is to ensure that they do projects that are of great value and deliver them quickly.
- They have a Tracker program for quarterly reporting on 17 tangible results, but the program is starting to fail.
- MoDOT publishes project delivery measurements to their website and also sends them to legislators.
- They scrutinize change orders carefully and come in under their estimated budgets most of the time. They have worked to change the culture of the agency regarding changes after the design phase.

- In the next five years, they will reduce staff by 1,200 saving \$512 million, which will be invested in road and bridge projects.

Washington State DOT

Rick Smith presented on the Washington State Department of Transportation's project management program:

- Their project management office is located under program management in their agency, but they have a "dotted line" reporting relationship to the Chief Engineer.
- They have a formal Project Management Process backed by executive order, which assisted greatly in getting tools and procedures implemented.
- They are somewhat siloed with handoffs between phases (scoping, design and construction)
- They utilize a Cost Estimate Validation Process, which is a risk-based estimating process, using a statistically valid method for expressing cost and schedule estimates as a range. This is a scalable process comprised of a base component and a risk component (risks and uncertainties).
- The project management office has developed an online guide with a web-based interface that guides staff to the tools and templates, which support project management at all phases.
- WSDOT got a big short-term bump in budget for projects from an increase in the gas tax, but in the long run, they are looking at reductions and will be losing hundreds of engineers.
- They make project management and reporting system training available online for WSDOT staff and outside agencies.

Virginia DOT

Jeff Cutright presented on the Virginia Department of Transportation's project management program:

- VDOT has been actively focused on adopting a project management culture with the establishment of a Project Management Office (PMO), policies, tools, procedures and training.
- Partnering with the University of Virginia and the Virginia Construction Alliance, they established the first Transportation Project Management Institute.
- The PMO provides statewide policy, support the districts, manages statewide programs and provides specialized training.
- The goals were to set clear expectations and promote consistency across the state.
- The districts are responsible for the vast majority of project management in the state. The only exceptions are projects that cross multiple districts.
- Their Integrated Project Management (IPM) tool is available via the web and helps streamline and automate processes. It is also project manager-centric, so it displays what each project manager is working on.
- The PMO identified the competencies of successful project managers and developed training to support the development of those skills.
- VDOT employs a lot of consultants, so that is part of their staffing model.
- Some of their challenges include:
 - Funding, since they have had no increase in the gas tax since 1996.
 - They have an aging infrastructure and have to prioritize maintenance before new construction.
 - They have lost over 3,500 employees.

Minnesota DOT

Jeff Brunner presented on the Minnesota Department of Transportation's project management program:

- Their PMO is situated within Engineering Services.
- Design is done in the districts, although the PMO office does review the plans.
- Like Virginia, their goal is to change the culture of MnDOT to a project management culture. They are developing an implementation plan for long-term, sustained change.

- Two years ago, MnDOT had a Peer Review to assess how to transform MnDOT into a strong project management organization.
- They have made changes in training to make it more effective for all project managers and to bring it into line with the PMBOK. They also emphasize the use of project management plans.
- They need better project management tools to track project status across the agency.
- They are still working to enhance the role and definition of the project manager within MnDOT, but recognize that leadership skills are a core competency.
- MnDOT is also working to identify and communicate performance measures to help the agency to become less reactive in assessing the status of projects.

Topic #1 – Policies

Bill McNary introduced this topic and reviewed WisDOT's policy, authorship and location.

- Bill laid out the definition of policy: a course of action under given conditions that guides and determines present and future decisions.
- WisDOT's policy is written by the Project Management Unit through the Project Management Steering Committee.
- It is published in the Facilities Development Manual (FDM) 1-10-1
- WisDOT's policy addresses the processes to be followed and the standards to be met when working on projects. It explains the role of project managers and staff and how to complete their projects efficiently.
- WisDOT's policy is for all projects, not just design projects.

The visiting states all shared information on their policies:

Missouri

- Missouri publishes an Engineering Policy Guide (EPG), which combines all their design policies together into one searchable engineering policy guide.
- By having one document available electronically from one location, they ensure that people are always accessing the most updated materials.
- Missouri also stressed that these are just guidelines that often provide a range of things to consider rather than prescriptive steps to follow.
- They have a process for establishing new policy or changing existing policy that involves different levels of approval or even a ballot depending on the level of change.
- They also have a policy administrator who does not write the policy but oversees a quarterly update process.
- Missouri developed a bonus program for construction, design and maintenance/safety. They let employees share in the savings realized in their project areas. The maximum bonus was \$1200 per year. The bonuses were tied to tangible measurements and were paid to entire teams.

Texas

- Texas has a project development manual that is accessible online and open to the public.
- The project management office has initiated a contract with a research university to develop rules related to risk management and cost estimating.
- TxDOT has their functional teams (environment, utilities, etc) write many of their own business rules because they have the best knowledge of those subject areas. It eases implementation when rules are written by the subject area experts rather than by a central project management office.
- They provide monthly webinars for training on these rules.

Utah

- Utah has design manuals that are written by the entities that use them that are separate from a project management manual.
- The existing project management manual was written by a consultant and is mostly checklists that focus on the tools not the process. It doesn't give a good vision of what a project manager should do.
- They are currently trying to write a manual following the sequence of how the project is delivered. It is a dynamic document with many links, and they are getting experts and managers to review it.
- A challenging policy area for UDOT has been getting schedule information. They are looking at tying payroll to updating the schedules to ensure it gets done.
- Having better schedule information will allow them to deliver reports to the project managers to support better management.

Virginia

- Virginia has an online project management manual that outlines roles and responsibilities, major deliverables and resources.
- They try to strike a balance between providing too much detail for established project managers yet providing enough detail for newer project managers.
- The PMO provides a toolbox for each phase that includes forms that are an available resource though not required.
- They are conducting surveys to determine what types of resources work best.
- VDOT has learned that being too prescriptive does not work.
- Training provided at the Transportation Project Management Institute has been very successful.

Washington

- Washington has many separate manuals and sometimes they are in conflict.
- They do not have a project management manual, although they do have a high-level online guide.
- WSDOT posts good examples of project management plans online to offer guidance for project managers.
- It's valuable to have some systematized and stable guidance available.
- When policies change, they set a deadline by which staff need to switch to the latest version.

Minnesota

- Minnesota does not have a project management manual, though they have many design manuals.
- MnDOT does make processes and procedures available online.

Recommended Practices

- Policy should be high-level guidance, not checkboxes or otherwise too prescriptive.
- If you report on it or measure it, it will get done. Make sure you are measuring the right things. Determine what results you want and then set up procedures and tools to measure them.
- Agencies need the backing of executive leadership in approving and implementing policy effectively.
- ARRA projects required more data for reporting and it worked, because everyone from the top down knew it was required.
- Combine design policies together, so that staff does not have to check multiple documents to find all the applicable policy.
- Host good examples of project management plans online to offer guidance for project managers.
- "Close the loop" to make sure you have procedures and tools that support your policy and result in data that demonstrates value to agency stakeholders.

- Transparency drives accountability.
- Performance measurement should be a natural outcome of project management efforts, not a separate set of tasks.
- Once performance measures are established, be open to revising them as the environment changes.
- Stakeholders who use the policy must be involved in its development, so they are prepared to take ownership and help implement the policy in the regions.

Common Challenges

- Defining and communicating project management roles and responsibilities.
- Sometimes the most important things are hard to measure (for example, quality), but you should measure what you can.

Topic #2 – Staffing

Julie Millard reviewed WisDOT’s staffing structure for three different kinds of projects: local program projects, state highway rehabilitation projects and federal mega projects.

- WisDOT has a decentralized structure with centralized leadership and support for project management.
- WisDOT project managers are responsible for the schedule and budget.
- In Wisconsin, project managers are involved from scoping through project closure.
- Project managers and other team members follow the documentation of the Facilities Development Manual.
- Training is provided for in-house staff on the PMP and MIIP applications.
- WisDOT project managers oversee project teams consisting of (1) all in-house staff, (2) combination of in-house and consultant staff, and (3) all consultant staff working on the project.

Each of the visiting states reviewed their approaches to staffing:

Utah

- Utah has project management staff at each region, with some centralized staffing resources.
- Specialty areas of the project teams are decentralized and do not have additional centralized resources available.
- UDOT staffs with consultants to supplement their regional staff and has a good system in place for contracting. They use some mixed teams of in-house staff and consultants.
- Consultants get limited access to their web-based system. They have their own consultant management portion of the system, which includes consultant contracts and allows them to put their project team information directly into the system.
- When UDOT uses consultant project managers, they sign confidentiality waivers. They typically use consultants on things like sidewalk programs that are not a lot of money, but this can be a lot of hassle. There is always oversight needed for the consultants.

Virginia

- In Virginia, the districts handle all project management, unless there is a project so large that it covers two or more districts.
- They outsource about 70% of their design work; 85% for bridge designs.
- The staff who write their policy typically come from a design background, so they are grounded in the subjects for which they are writing policy.
- They do not give consultants direct access to their tools.

Washington

- In Washington, the regions handle all the design work. There is no central plan review; the regions check the plans specifications and estimates (PSE).
- Their project managers are segmented: some are construction, some are design and some are mixed.
- Washington does a high percentage of outsourcing.
- They do not provide consultants with access to their information systems.

Minnesota

- Minnesota has one centralized project manager, but otherwise, the rest of the project managers are from the districts.
- They outsource about 30 to 35% of their design work.
- They do not provide consultants with access to their systems. That type of information is filtered through their project managers.

Missouri

- The districts do all of the design work in Missouri, with the exception of bridges and structures.
- Consultant use is very limited, mostly for bridges. They try to share resources between districts rather than use consultants.
- Consultants do not have access to their systems.
- They are downsizing but with a conscious goal of maintaining core competencies.

Texas

- Texas is decentralized; the districts are responsible for design work.
- They track the production hours per day of designers and assign each one a production level which is used to plan resources and schedule their 4-year work plan.
- Executive leadership supports the business rules that ensure everyone is assigned a production level.
- They get about \$6 million production rate per designer per year.
- Production data allows them to make sure each staff member is working effectively.
- Longer term, they hope that tracking actual hours spent on developing projects, will aid them in better estimating and negotiating consultant work for the agency. They do not give consultants access to their tools.

Recommended Practices

- Leadership skills are a core competency for project managers.
- Develop a centralized project management group to help improve core competencies of regional and district project managers.
- Train staff in PMI and PMBOK standards as they apply to your own environment.
- In using consultants, recognize that the DOT is still responsible for the product.

Common Challenges

- Defining and communicating project management roles and responsibilities.
- Core competencies must be maintained in order to do effective consultant oversight.

Project Management Peer Exchange - Day 2

Topic #3 – Procedures

Francis Schelfhout introduced the subject of procedures:

- He defined a procedure as an established, particular way of accomplishing something or a series of steps followed in a regular and definite order.
- He reviewed the eight development phases of the WisDOT design project lifecycle and the documentation that exists for the related procedures in the Facility Development Manual.
- There are seven milestones tracked for both financial and development status.
- Project team members are assigned to different areas of expertise by location.
- Ideally, team members participate from scoping through completion, although that is not always possible.
- Each phase provides an opportunity for check-in/ approval, but that happens infrequently.

Each visiting state shared information on their procedures:

Missouri

- Missouri indicated that their process is almost identical to WisDOT in terms of phases, milestones and opportunities for check-in.

Texas

- Texas is similar to Missouri and Wisconsin.
- They have historically worked in silos between subject areas (for example, environmental), but the goal is to have them working more collaboratively and with more transparency.
- They are currently trying to improve their change management plan and foster better communication across the agency.
- The public wants more information about project costs and changes and is holding them more accountable.
- TxDOT PMO is still a maturing organization, thus the project governance rules are still a work in progress. They do not have an audit team that is trying help ensure the districts are following the established business rules.

Utah

- Utah has many procedures that the Project Management Office does not own. They are liaisons who help facilitate the project delivery process. They try to help bridge silos by communicating procedures and providing training across the agency.
- Program managers are the drivers for procedures.
- UDOT reviewed a typical project flow. The committed advertising day is a key milestone for Utah scheduling, because that is when they actually start executing the project plan. Plan at Hand, PSE, and Comment/Review are also key meetings.
- From kick-off to scoping is considered the project planning phase.
- Scoping happens at a senior level.
- Initial estimates are important, but sometimes the standard process is bypassed and a “back of the napkin” estimate is what starts off the life of the project.
- Their enterprise project management tool is the only way to advance a project from one stage to the next. There are milestones that enforce compliance; however, the tool is relatively new and therefore has not been tested much.

- UDOT has a PIO at each region, and they also use consultants to help coordinate public involvement. They have a tool that presents a project manager with 10 questions to help determine the right scenarios for public involvement.
- Utah has milestone meetings as the design develops, but too often people wait until the end to really check the plans carefully.

Minnesota

- The PMO does not establish procedures but will play a role in facilitating and communicating about procedures.
- Minnesota is not very formal about project plans, so their process does not include all the steps that other states have.
- They also don't formally identify team members, especially outside of districts at an early stage.
- It's the project manager's job to get those job roles involved as needed, but specific people are not identified up front.
- Letting dates are also not a particular focus, and they move somewhat regularly. Consultants can come in at any point in the process.
- MnDOT is moving towards performance-based design, although they are still determining what that means.
- MnDOT does centrally review major changes to schedule or large cost increases.
- They have a very formalized scoping process that involves people throughout the department providing input to the scoping document.
- Currently, they are focused on improving total cost estimation and check-ins throughout the process.
- Minnesota handles communication with the public by providing a website where people can sign up for daily project updates.
- There are currently no hard stops to review quality prior to letting.

Virginia

- Traditionally, each area (design, hydraulics, bridges) has put out their own policy and procedures, but project managers would like to see the PMO operate as a clearinghouse for the whole organization, distributing new policy on a regular schedule.
- Virginia has two estimating systems.
 - One system is based on historical data that allows you to enter key parameters and pulls from past data to give you a base estimate. Then you can tailor it to the specific circumstances for that project. This is used early in the plan development cycle.
 - There is also a unit-based estimate system using the specific bid items in the design. This is used as the plans are nearing advertisement.
- Virginia conducts a team meeting at each milestone to discuss project issues. Standard forms are utilized to ensure each discipline is represented and to help identify issues requiring further attention as the design progresses.

Texas

- The PMO is heavily involved in establishing procedures for schedule and resource management functions within their project management information system tool; they get involvement from professionals in the districts and regions, and that helps with implementation of project management principles.
- They also have a Project Management Steering Committee that they involve in evaluating and recommending business rules. Otherwise, the PMO, Finance Division and Chief Engineer are responsible for the procedures.

- Texas is developing a workgroup to improve planning estimates. In developing the estimated construction costs, engineers can access average low bid prices by district over a rolling 12-month period. They are also looking at commodity pricing trends to develop better estimate forecasts.
- They have stayed within 6 % of estimates relative to the low bid; their short-term goal is to improve their cost and schedule estimating accuracy for projects four to six years in advance
- Texas sometimes designates a PIO to communicate with the public on design and construction projects.

Missouri

- In Missouri, there are central office liaisons who help the districts develop procedures and ensure they are embedded in the online policy guide.
- Estimating has always been a focus. Projects have been coming in under estimate, but that means that money was unnecessarily committed that could have been used on another project.
- They look at both historical and item costs to develop estimates.
- MoDOT is also looking at commodity price trends.
- They update estimates once a year regardless of the project's status.
- Project managers are responsible for communicating with project stakeholders, including central office and the public.
- There are milestones throughout the design process for members of the core team to check in on the design process and sign off on the progress. The project manager is responsible to make sure it happens, but everyone should be working together to meet the timelines.

Recommended Practices

- Develop an on-line procedural guide that allows staff to follow links to drill down for more information.
- The PMO should facilitate resolution of conflicting procedures.
- Incorporate the SHRP 2 five-dimensional mapping process when scoping complex projects.
- Web-based tools and templates can help streamline and automate processes while ensuring consistency.
- Look at both historical data and item costs in developing cost estimates. Cost estimates should take into account trends for volatile commodities, like fuel.
- Milestones are necessary to get approval from different areas, such as maintenance and bridges, so designs are approved as they are being developed.
- Indiana has an independent team of senior staff who do a quality assurance review as part of their design process. They saved money on downstream changes this way.

Common Challenges

- Developing guides for procedures that balance between having enough information for new engineers and not too much for experienced staff.
- Most states try to maintain a “shelf” of backlog projects that are available to start, but ARRA has cleaned out most state's backlogs.
- Getting project teams to review and approve plans as they go through the phases of design, rather than waiting and finding problems at the end.

Presentation: Project Management Strategies for Complex Projects

Dr. Jennifer Shane, Iowa State University, presented project management strategies for complex projects, which resulted from a SHRP 2 research project. The project developed a model that takes into account five dimensions of project management. The tool helps in mapping a project based on its dimensions and then looks at the outcomes of complex projects. The objective was to develop practical strategies for managing complex rapid renewal projects. They also developed tools and training to support these strategies. More information about the project is available on the TRB website:

<http://144.171.11.40/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2677>.

The Research Project

- 18 case studies conducted
- They defined a complex project as “any project where standard practice does not apply.”
- Their research identified five causes of complexity:
 - Inexperience (with a terrain for ex).
 - Technical challenges (first time of a certain type of bridge, for ex).
 - Non-technical (stakeholders or politics).
 - Changes in funding sources (private source, for ex).
 - Multiple external parties (municipalities, environmental groups, community groups).
- Most of the time people focus on three dimensions of project management: time, schedule and technical details.
- This project identified two additional dimensions:
 - Financing (the funding source and what constraints exist).
 - Context (For example, political issues outside the project).

Case Studies

- Dr. Shane reviewed many case study examples of complex projects as they related to the five dimensions of project management. For example:
 - The Green Street project in Canada, which had uncertainty related to new, unproven recycling technologies that used different asphalt mixes in different parts of the street, based on how that part was used.
 - Doyle Drive leading up to Golden Gate Bridge had a very uncertain situation in terms of utilities. No one was sure what was there and would be found during the utility verification.
 - The Lewis and Clark Bridge, which required a helicopter to get people back and forth in order to provide access to the hospital.

Results

- She also reviewed the process of complexity mapping.
 - You score your projects based on each of the five dimensions and map out your complexity.
 - The map can help with resource loading based on staff skills and competences.
 - A project manager might create a map at the start of a project and continue to remap as it proceeds and some of the uncertainties are resolved.
- The project resulted in a guidebook, which helps identify complexity and provides tools that can be used to help with the project.
 - It includes five critical development methods. For example, defining critical success factors outside the normal goals of on time and on budget, such as keeping the neighborhood happy.
 - It also includes 13 Project Execution Tools. Some of these tools apply only to very specific projects, whereas others are fairly broad.
 - They also developed training to support the mapping process and the guidebook.

Topic #4 – Tools

Steve Luedtke gave the history of project management tools at WisDOT up to the introduction of the PMP tool in 2004 and PMP version 2 in 2007. Steve reviewed all the tools that are in place currently, including the situations for which they are used.

- Contract Manager (Primavera) – a project management tool for managing multiple complex projects, which is required for federal major projects.
- P6 (Primavera) – a scheduling tool for managing multiple complex projects, which is also required for federal major projects.
- PMP – the WisDOT tool for tracking most improvement projects from scoping through award.
- MIIP – a reporting tool for improvement projects, combining program budget and actual cost financial data.
- FIIPS – a planning application to facilitate the scheduling, estimating, funding, and tracking of improvement projects.
- BOXI – An enterprise reporting tool
- PSE – a tool to track the completion of critical project milestones, prior to letting.

Each of the visiting states reviewed the tools they use for project management:

Minnesota

- Minnesota conducted analysis to determine if they should continue with home grown systems or select an off-the-shelf system.
- They went with an off-the-shelf system because of the challenges of getting a custom tool that fits what everyone wants.
- They are also looking at the next generation of AASHTO-ware.
- They learned some lessons about automating bad processes in the past. Tools allow you to revamp your processes, and you should focus on that rather than just installing the tool.

Virginia

- They have tools that are grouped together including the Six-Year Improvement Plan, Project Pool, iPM, Schedule and Dashboard. Information is shared between these systems.
- Projects are initially entered into project pool.
- Once a project is funded, it moves to their iPM system, which has schedule and cost information.
- Their project dashboard pulls in information such as schedule, cost, and right of way to one central location and is available on the web to anyone. It has an interactive map that shows where projects are located.
- Their next system will be off-the-shelf, so there's not so much customization and interfacing of systems.

Utah

- Utah has an Oracle-based database program that handles construction management, including engineer's estimates and bidding with contractors.
- Their EPM system was originally built around project management and scheduling. It also includes payroll, right of way, project management and project development.
- The scheduling part doesn't work well, but they are switching to P6 or MS Project Enterprise and that will be integrated with EPM in the future.
- They have learned the importance of keeping the tool simple, so people will want to use it.
- They have good consultant management and right of way systems.
- The people assigned to do the work should be the ones updating the system.
- Utah recommends an executive dashboard with indicators on projects scope, schedule (preconstruction and construction), budget, etc that will let users drill down into the data.

Texas

- Texas uses P6 and is working on a data warehouse.
- They are also looking at developing management dashboards.
- They are interested in developing a web component of the system but have limited skill sets on this topic within their agency.
- They have two timesheets right now with their PeopleSoft system and their P6 system. Converting to one-time sheet is a complex technical challenge, on which they are still working.
- They also have an antiquated legacy financial system that makes it challenging to do financial analysis. There is some grass roots interest in enhancing the existing financial system.
- They rolled out an enterprise file management system recently; some districts have their own systems.

Missouri

- Missouri's current system only tracks a dozen milestone points. It's an old system that is failing. They will try to keep it simple as they select a new system.
- They use Site Manager for construction projects once they are awarded.
- The state requires all agencies to use the same financial system, but they have a new web-based system that interfaces with the state's system.

Recommended Practices

- Focus on developing business processes rather than letting the tools dictate the process. Don't let the tool become the task.
- Integrate systems for easier and more consistent reporting.
- Provide limited consultant access to web-based enterprise tools (as opposed to providing no access).
- Develop a corporate document management tool.

Common Challenges

- Avoiding duplication between systems.
- Foster end-user buy-in to tools and processes by keeping it simple.

Project Management Roundtable

Julie Millard led off this roundtable discussion by explaining the survey WisDOT conducted this fall regarding project management and reviewing the survey results and then opened the floor to all the attendees for an open discussion on project management at WisDOT. The following were some of the key takeaways of the discussion:

Common Challenges

- It's been a challenge to get people to think about project management as more than just using the tools.
- Wisconsin frequently faces project delivery timeframes that are unrealistic from the start.
- Having unrealistic scopes and schedules weakens the project management process.
- Project managers need to be included in the scheduling process more, so that when a schedule is unrealistic, they can document that for management.
- Quality suffers when you force too many projects into a reduced timeframe by calling in favors to utility companies and other parties.
- Agencies need tools that will help identify when resources (environmental, right of way, utilities) are a constraint.
- Agencies need a tool that can help with project management and assessment along the way and that provides the information to help rectify problems.
- Project managers need to see the value of entering project data.

Opportunities for WisDOT

- Provide core competency training opportunities related to project management principles. Wisconsin needs to train more for project management than for the tool.
- Better define the project management role (expectations and responsibilities) and the role of consultants
- Use project management tools and reports as a way to help staff with problem solving and resources rather than solely as a means of accountability.
- Management needs to help ensure project team members understand that they are entering data for a purpose.
- People doing the work should enter the data. This includes giving consultants limited access to tools to enter their own data.
- Develop resource management tools that help identify where there are capacity issues with different types of resources.
- Tools can also help track why estimated schedules are different than what was originally estimated, so management can address the biggest sources of delays.
- Other states use design/build for large projects with short timeframes
- Consider integrating Critical Path Methodology into scheduling.
- Allocate resources for continuous improvement of project management practices. You're never done.

Project Management Peer Exchange - Day 3

Report Out to Senior Management

The following WisDOT managers attended the morning's reporting session to hear from the visiting states and other attendees about the findings of the peer exchange: Rory Rhinesmith, Don Miller, Rebecca Burkel, Dave Vieth, Aggo Akyea, John Corbin and Daniel Yeh. George Poirier, Jesse Yung and Kirk Fredrichs also attended on behalf of the FHWA.

Each of the visiting states shared their summary thoughts with the managers:

- **Missouri:** WisDOT staff need to know what you consider "doing a good job."
- **Texas:** Texas has focused on scheduling and resource management in recent years and got the help of a consultant to identify the right tools. They developed a strategic plan and goals related to project management. This was a top-down process at Texas, whereas WisDOT seems to be a bottom-up movement looking for direction from managers.
- **Utah:** WisDOT Leadership needs to set expectations and then let staff develop solutions. Resources are always going to be an issue. Design/Build is an excellent option for larger projects. Harness the passion and momentum in the room and support their efforts at improvement.
- **Virginia:** Project management is more than a set of tools.
- **Minnesota:** MnDOT is leading a similar effort to improve project management led by senior management. WisDOT management needs to establish the roles and expectations of project managers.

Julie Millard shared the goal of the Peer Exchange: to get feedback from other states and within WisDOT regarding project management maturity in order to develop a road map for improvement. She would like to see this road map incorporated into division goals. She also described the recent survey of WisDOT project managers, which indicated that employees are stressed and feel there are many silos built up between project team areas.

Management Q&A

Rory Rhinesmith indicated that he appreciated the information and was not surprised by some of the key points in the report. He wanted to better understand what is needed to move project management forward. The issue seems to be the implementation of performance management based on good, data-driven reports. WisDOT needs to learn how to document and communicate the positive things that are happening. How do you do that?

- In Missouri, communications started with senior management using video conferences because the staff respond well to hearing directly from managers. Having performance measures in place helps the staff to recognize the value that is placed on project management.
- Texas was driven by business needs and used a strategic planning process to help develop a plan of action. They developed strategies based on schedules and what resources were needed to meet their goals. The timeline, goals and resources determined budget needs and then they measured performance based on the established goals. Their project management office leads the effort to standardize procedures.
- Utah has limited resources, but senior managers are very accessible to project management staff. They also make good use of dashboards to drill down and analyze all aspects of the delivery process.
- In Virginia, leadership realized that VDOT needed to change and established expectations for better project management. They held people accountable, and things are improving despite some struggles. There are also monthly meetings with managers.

- Minnesota found their project managers were often unable to answer questions about their projects. They have done a number of key initiatives using webcasts to all department staff that have been very effective.

Don Miller notes that the past administration was very top down, but the new administration is trying to get director and other levels of management involved in establishing performance management. Management is supportive and wants the staff engaged, and one reason WisDOT held the peer exchange was because of struggles with tools like P6 and PMP. How have other states rolled performance measures into programs with active management for all sizes of projects?

- Missouri kept things simple and focused on results. They collect only the information needed to measure results and meet milestones. They also survey the public to see if they are meeting their needs. Their tools do not drive their process.
- Texas has milestones that roll up into internal and external reporting for stakeholders.
- Utah has an in-house enterprise system that has good and bad points. Scheduling is the worst part, and staff are seeing the tools as tasks and don't see the value. The team needs to get value and have it help them deliver projects.
- Virginia project managers didn't understand how the information was being used until they got clarification from senior managers, which was helpful.
- Minnesota defined their process first and then selected tools to support that. Managers need to explain purpose and value of information gathered using the tools. It's important to keep it simple and not overwhelm staff with entering data.

Rebecca Burkel asked if visiting states have standard reports across the state to review at meetings?

- In Missouri, the districts all produce the same reports. They publish them so staff can compare efforts, and they are mailed to legislators. They are also posted on the MoDOT website, so the public can read them.
- In Minnesota, they have central reports.

Dave Vieth asked how other states get information from the public about performance?

- In Missouri, they select projects from each district and survey customers and contractors about how they went. External feedback has changed their focus.

Rory Rhinesmith asked Beth Cannestra and Rose Phetteplace what their "aha" moments were from the peer exchange:

Rose:

- Develop and communicate goals and performance measures that drive our project management system.
- Hold project teams accountable through active engagement by senior management.
- Allow enough time and resources to effectively manage projects.

Beth:

- Management setting the vision
- Addressing the silos that exist by having a consistent message
- The need for discussion with the management team as a whole for a broader understanding

Rory Rhinesmith asked if WisDOT is consistent with other states on the expectations of a project manager? WisDOT has a long history of getting redistribution of federal dollars. Do we have enough resources? We need to better understand our true capacity.

- Minnesota: One difference seems to be the concept of the shelf. If you had resource loading schedules, it would help manage the shelf and identify what is important.
- Texas: We determined that we needed many more resources to deliver the backlog of projects and so did extensive planning work on what type of resources were needed to meet the four-year

project plan. An outcome of the analysis, was that it was determined that more environmental and other specialty skills were needed

- Bill McNary: The quickest way to get an understanding of capacity is to look at the number of delivery budgets that we put together for our projects and see how much preliminary design was needed for all projects. If you roll that up, you will get a flavor of the amount of work needed.



WisDOT Project Management Peer Exchange

November 29 – December 1, 2011

FHWA | MN DOT | MO DOT | SHRP 2 | TX DOT | UT DOT | VA DOT | WA DOT | WI DOT

Common challenges

- Demand for shorter delivery times with unrealistic schedules.
- Remaining effective with fluctuating funding levels and priorities.
- Defining and communicating project management roles and responsibilities.
- Focusing on developing business processes rather than letting the tools dictate the process.
- Foster end-user buy-in to tools and processes by keeping it simple.
- Organizational silos make hand-offs difficult.
- Developing a culture of project management within the agency.
- Allocate resources for continuous improvement of project management practices. You're never done.

Opportunities for WisDOT

- Develop and communicate goals and performance measures that drive our project management system.
- Hold project teams accountable through active engagement by senior management.
- Allow enough time and resources to effectively manage projects.
- Implement more formalized and extensive project management training.
- Clearly define and communicate expectations for project managers, and support them in meeting those expectations.
- Increase transparency internally and externally to drive accountability.

Next Steps

- Develop a road map for future improvement of project management.
- Division management incorporates information from peer exchange into division goals.

Recommended practices

Policies and Performance Measurement

- Determine what results you want and then set up procedures and tools to measure them. If it gets measured it gets done.
- "Close the loop" to make sure your procedures and tools support your policies and result in data that demonstrates value to agency stakeholders.
- Collaborate on developing, implementing, reviewing/revising policies.

Staffing

- Define and maintain project management core competencies. Support with training curriculum for effective project oversight.
- Support and resource the centralized project management group to help improve core competencies of regional project managers.
- Gather metrics on consultant and in-house staff productivity to help allocate resources.

Procedures

- Develop an on-line guide that allows staff to follow links to drill down for more information.
- Resolution of conflicting procedures should be led by the PMO.
- Incorporate five dimensional process when scoping complex projects.

Tools

- Don't let the tool become the task.
- Keep tools simple and scalable.
- Integrate systems for easier and more consistent reporting.
- Provide limited consultant access to web-based enterprise tools (as opposed to providing no access).
- Develop a corporate document management tool.



Project Management

WisDOT Peer Exchange | November 29 – December 1, 2011

AGENDA

Tuesday, November 29, 2011 – Hill Farms, Room 364

8:15 – 8:30	Registration and Refreshments
8:30 – 9:00	Welcome Messages <ul style="list-style-type: none"> • Julie Millard, Wisconsin DOT • Rory Rhinesmith, Wisconsin DOT • Dave Platz, FHWA (facilitator)
9:00 – 9:30	WisDOT Project Management Background <ul style="list-style-type: none"> • Julie Millard, Wisconsin DOT
9:30 – 10:45	Visiting Agency Program Presentations (20 minutes each) <ul style="list-style-type: none"> • David Adamson, Utah DOT • Maureen Wakeland, Texas DOT • Eric Schroeter, Missouri DOT <p>Brief question and answer session to follow.</p>
10:45 – 11:00	BREAK
11:00 – 12:15	Visiting Agency Program Presentations (20 minutes each) <ul style="list-style-type: none"> • Rick Smith, Washington State DOT • Jeff Cutright, Virginia DOT • Jeff Brunner, Minnesota DOT <p>Brief question and answer session to follow.</p>
12:15 – 1:00	LUNCH
1:00 – 3:00	Policies <ul style="list-style-type: none"> • Brief introduction of topic by Bill McNary, Wisconsin DOT. • Facilitated question and answer/round table discussion.
3:00 – 3:15	BREAK
3:15 – 4:30	Staffing <ul style="list-style-type: none"> • Brief introduction of topic by Julie Millard, Wisconsin DOT. • Facilitated question and answer/round table discussion.
4:30 – 5:00	Recap Discussions and Takeaways



Project Management

WisDOT Peer Exchange | November 29 – December 1, 2011

Wednesday, November 30, 2011 – Hill Farms, Room 364

8:15 – 8:30	Networking and Refreshments
8:30 – 8:40	Welcome Dave Platz (FHWA) provides welcome, recap of Tuesday meeting, and overview of goals for the day.
8:40 – 10:30	Procedures <ul style="list-style-type: none">• Brief introduction of topic by Francis Schelfhout, Wisconsin DOT.• Facilitated question and answer/round table discussion.
10:30 – 10:45	BREAK
10:45 – 11:30	Strategic Highway Research Program 2 <ul style="list-style-type: none">• Presentation by Dr. Jennifer Shane from the Innovative Project Management Strategies for Complex Projects team
11:30 – 12:15	LUNCH
12:15 – 2:15	Tools <ul style="list-style-type: none">• Brief introduction of topic by Steve Luedtke, Wisconsin DOT.• Facilitated question and answer/round table discussion.
2:15 – 2:45	BREAK
2:45 – 4:30	WisDOT Project Managers Roundtable Discussion <ul style="list-style-type: none">• Brief introduction of topic by Julie Millard, Wisconsin DOT.• Facilitated round table discussion.
4:30 – 5:00	Recap Discussions and Takeaways



Project Management

WisDOT Peer Exchange | November 29 – December 1, 2011

Thursday, December 1, 2011 – Hill Farms, Room 364

8:15 – 8:30	Networking and Refreshments
8:30 – 8:40	Welcome Kim Linsenmayer (CTC & Associates) provides welcome, recap of Wednesday meeting, and overview of goals for the day.
8:40 – 10:00	Group Development of Executive Summary Report Prepare brief (one-page) reporting document on peer exchange highlights, participant takeaways and next steps for WisDOT.
10:00 – 10:30	BREAK and Report Printing
10:30 – 11:30	Report to Senior Management Facilitated report to WisDOT senior managers.
11:30 – 12:00	Closing Remarks