ACTT WORKSHOP

Minnesota

June 14 - 16, 2004 | Minneapolis, Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION

U.S. Department of Transportation
Federal Highway Administration

Table of Contents

LIST OF FIGURES

Table of Contents

Executive Summary

Accelerated Construction Technology Transfer (ACTT) is a strategic process that uses innovative techniques and technologies to reduce construction time on major highway projects while enhancing safety and improving quality. The process is implemented by conducting 2-day workshops for State Departments of Transportation (DOT). The American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) jointly fund ACTT workshops.

In June 2004, the Minnesota Department of Transportation (Mn/DOT) hosted a workshop that applied ACTT principles and practices to its Crosstown Reconstruction Project (I-35W and Trunk Highway 62 interchange), which will expand capacity along 6 mi (9.6 km) of I-35W and 2 mi (3.2 km) of Highway 62 with an estimated construction cost of more than $200 million.

Originally constructed in the 1950s and 1960s, I-35W traverses the Cities of Minneapolis and Richfield and shares lanes with Trunk Highway 62 in the "Crosstown Commons" section bordering both cities. Currently, the I-35W and Highway 62 interchange serves a heavy demand but operates very poorly—resulting in significant user delay and safety concerns. The project area currently experiences severe congestion and has crash rates up to five times the average for the metropolitan urban freeway system. In 2001, the Minnesota Legislature directed Mn/DOT to defer a project that would have added a high-occupancy vehicle (HOV) lane to I-35W and addressed some of the operational problems but required lengthy closures for Highway 62 during the four-year construction period. The current concept balances requirements identified by the Legislature by adding highway capacity and minimizing right-of-way takings. The project is scheduled to be constructed over 4 years and will reconstruct 6 mi (9.6 km) of I-35W, 2 mi (3.2 km) of Highway 62, and nine interchanges.

Figure 1. Project area

The ACTT Workshop was held on June 14 to 16 in Minneapolis, Minnesota, with approximately 100 attendees from across the United States. The purpose of the workshop was to draw on the participants' expertise to generate specific, practical recommendations for the ongoing development of the I-35W/TH-62 interchange project and to demonstrate how the ACTT process works in a real-life scenario so participants could apply ACTT in their own agencies. The key element of the workshop was the brainstorming session, which brought national and local experts together to search for methods and measures that would help Mn/DOT achieve key project objectives, including minimizing construction time and traffic delays.

The workshop opened on June 14th with welcoming remarks from Carol Molnau, Lieutenant Governor of Minnesota and Commissioner of Transportation, and Al Steger, FHWA Division Administrator for Minnesota. Following the opening remarks, Dave Huft, Research Program Manager for South Dakota DOT illustrated the significance of the workshop as he made the "Why ACTT? Why Now?" presentation. The opening day concluded with a project overview by the project management team and a bus tour of the project area with stops along I-35W at the 58th Street pedestrian overpass, and along Highway 62 at the Penn Avenue and Portland Avenue interchanges.

Over the course of the workshop, participants broke into skill set teams to examine how the ACTT concept could be implemented to accelerate various aspects of the project. The workshop skill sets selected by Mn/DOT were Right-of-Way and Utilities, Structures, Construction, Innovative Contracting, Geotechnical/Materials, Traffic/ITS/Safety/Public Relations, and Environment. Each team focused on applying the ACTT process to the specific concerns of their expertise while the teams collectively searched for methods and measures to help Mn/DOT achieve its goals of minimizing construction time, limiting closures of major traffic movements to 8 weeks during construction, increasing highway capacity, minimizing right-of-way acquisition, providing an advantage for bus transit, and reconstructing an aging facility.

Workshop participants remained focused throughout the workshop and made numerous recommendations, many of which were deemed viable and will be pursued, according to Mn/DOT. As the host agency, Mn/DOT will examine the recommendations and determine which will be implemented on its Crosstown Project.

CHAPTER 1

Accelerated Construction Technology Transfer

Highway construction continues to produce significant disruptions in communities across the nation as Departments of Transportation (DOTs) work to update an aging infrastructure system. While highway construction is unavoidable, excessive construction time is unnecessary and often can be dangerous. It is costly, prolongs workers' exposure to traffic, and subjects travelers to substandard conditions. The Accelerated Construction Technology Transfer (ACTT) initiative aims to minimize travel delays and community disruptions by reducing cost and construction time and improving quality, traffic control, and safety.

1.1 BACKGROUND

ACTT is a process that encourages the use of innovative technologies and methods to accelerate the construction of major highway projects to reduce user delay and community disruption. A complete accelerated construction approach involves evaluating the planning, design, and construction activities within a highway corridor using multiple strategies and technologies. Successful ACTT deployment requires the thorough examination of all facets of a highway corridor with the objective of improving safety and optimizing cost effectiveness while minimizing adverse impacts for the benefit of the traveling public.

Recommendations by Transportation Research Board (TRB) Special Report 249 called for creating a strategic forum to promote accelerated construction in the highway infrastructure. TRB Task Force A5T60 was formed with the objectives of:

- Facilitating removal of barriers to innovation.
- Advocating continuous quality improvement and positive change.
- Enhancing safety and mobility.
- Encouraging the development of strategies that generate beneficial change.
- Creating a framework for informed consideration of innovation.

Fully supporting the task force's mission and objectives, the Federal Highway Administration (FHWA) and the Technology Implementation Group (TIG) of the American Association of State Highway and Transportation Officials (AASHTO) joined the task force in an outreach effort. The result was the formation of a national resource pool known as the "National Skill Sets Council" and completion of two ACTT pilot workshops (one in Indiana and one in Pennsylvania). Following the pilot workshops, TRB Task Force A5T60 transferred the concept to FHWA and AASHTO to continue the effort by conducting future workshops.

With the successful completion of several ACTT Workshops, including workshops in Texas, California, Montana, Washington, Tennessee, and Oklahoma, the Minnesota Department of Transportation (Mn/DOT) hosted an ACTT Workshop in Minneapolis, Minnesota, in June 2004 that focused on its Crosstown I-35W/TH 62 interchange (Crosstown) project.

I-35W traverses the Cities of Minneapolis and Richfield and shares lanes with Trunk Highway 62 in the Commons section bordering both cities. Mn/DOT has proposed to reconstruct I-35W between 42nd Street in Minneapolis and 66th Street in Richfield, which includes the Commons. Currently, the I-35W and Highway 62 Commons interchange serves a heavy demand but operates very poorly—resulting in significant user delay and safety concerns. This project was considered an ACTT candidate for the following reasons:

- Project development had progressed such that a preferred design had been developed into a detailed geometric layout.
- User delays caused by traffic impacts during construction needed to be reduced.

- The project was ready for a formal Value Engineering study.

1.2 PURPOSE OF ACTT WORKSHOP

The purpose of this ACTT Workshop was to explore innovative ways that would help Mn/DOT complete and open to traffic its Crosstown Project faster and with less adverse impact on the traveling public and/or environment. The workshop brought together a national team of recognized experts in skill areas to meet with their local counterparts from Mn/DOT and SRF Consulting Group, Inc. Over the course of 2 days, the ACTT Workshop team explored innovative ways to accelerate construction throughout the project. The workshop included plenary sessions, breakout sessions, skill-set interaction, recommendations, and closing remarks.

1.3 ACTT SKILL SETS

The following skill sets were identified for this ACTT Workshop:

- Right-of-Way and Utilities.
- Structures.
- Construction.
- Innovative Contracting.
- Geotechnical/Materials.
- Traffic/ITS/Safety/Public Relations.
- Environment.

CHAPTER 2

Project Details

2.1 CORRIDOR DESCRIPTION

The proposed I-35W and Highway 62 project will entirely reconstruct I-35W between 42nd Street in Minneapolis and 66th Street in Richfield, including the interchange and Commons with Highway 62. Reconstruction along Highway 62 extends from Penn Avenue to Portland Avenue and includes the Commons, which will be reconfigured to provide separate roadways for both I-35W and Highway 62 and eliminate the shared lanes. Traffic volumes are expected to increase to 250,000 vehicles per day along I-35W, and the project area currently experiences severe congestion, with crash rates up to five times the average for the metropolitan urban freeway system. The project area, shown in Figure 1, is predominantly residential with a few isolated commercial and industrial areas, resulting in limited ability to expand the right-of-way without significant impact. The project is scheduled to be constructed over 4 years and involves reconstructing 6 mi (9.6 km) of I-35W, 2 mi (3.2 km) of Highway 62, and nine interchanges.

2.2 ACTT GOALS

The following goals of the ACTT Workshop are listed by skill set.

2.2.1 Right-of-Way and Utility

Minimize right-of-way takings:

- Number of takings.
- Impacts of roadway to adjoining properties.
- Coordinate between right-of-way, design, utilities, construction, and railroads.

Complete right-of-way acquisition to meet project schedules:

- Urban areas.
- Public interest finding letters.
- Consultant usage.
- Layout versus footprint concepts.

Minimize number of utility relocations:

- Subsurface utility engineering.

Accelerate utility relocations to meet project schedules:

- Master utility agreements.
- Right-of-way available for utility relocations.

Minimize impacts to the environment:

- Building demolitions.
- Utility relocations.

2.2.2 Structures

Reduce construction time for structural portions of the project.
Evaluate alternative wall/bridge types.
Review precast section placement.
Identify the staging areas for precast sections.
Reduce the cost of structures.

Minimize roadway closures.
Identify environmentally friendly construction.

2.2.3 Construction

Review the project staging.
Review alternate material types.
Identify the contractor staging areas.
Minimize the environmental impacts.
Minimize lane closures/complete closure.
Minimize the impact to traffic.
Evaluate multiple contracts versus one large contract.
Minimize cost.
Minimize duration.
Complete the segments during the construction season.

2.2.4 Innovative Contracting

Identify new contracting methods to encourage the contractor to speed up construction.
Refine A + B specifications.
Identify contract administration methods that allow for better utilization of state personnel.
Accelerate the decisionmaking processes on the project.

2.2.5 Geotechnical/Materials

Use new methods and materials that allow for faster construction.
Review new materials testing methods that reduce the time involved or personnel requirements.
Review the vibration monitoring needs.
Review mechanically stabilized earth (MSE) walls and footing types for retaining walls.
Assure the reclamation of contractor pit sites.

2.2.6 Traffic/ITS/Safety/Public Relations

Identify Incident Management Systems (ITS innovations).
Evaluate media relations—keep the public informed (coordination effort).
Reduce or eliminate work zone congestion.
Minimize lane closures versus complete closure.
Review the project staging.
Minimize the work zone cost growth.

2.2.7 Environment

Identify the air quality issues—standards, regulations.
Identify the ozone precursors—project specific versus regional.
Identify fine particulate matter—project specific versus regional.
Identify the air toxins—project specific versus regional.
Identify the water quality issues—grit chamber effectiveness.

2.3 PROJECT GOALS AND OBJECTIVES

The objectives and goals of the project are to:

- Limit the closures of major traffic movements to 8 weeks during construction.
- Increase highway capacity.
- Minimize right-of-way acquisition.
- Provide an advantage for bus transit.
- Reconstruct an aging facility.

2.4 PROPOSED IMPROVEMENTS

The proposed I-35W and Highway 62 project expands capacity along 6 mi (9.6 km) of I-35W and 2 mi (3.2 km) of Highway 62 with an estimated construction cost of $208 million.

The proposed design includes the following:

- Adding a high occupancy vehicle (HOV) lane along I-35W for the entire project length.
- Adding a general purpose lane along I-35W north of Highway 62.
- Adding two dedicated Highway 62 lanes in each direction separated from I-35W in the Commons.
- Providing for a future expansion of Highway 62 east and west of this project.
- Reconfiguring interchange access at several locations.
- Providing for a future bus rapid transit station within the median area at the 46th Street interchange.
- Constructing extensive retaining walls.
- Installing noise barriers.
- Replacing storm sewers.
- Creating water quality treatment basins.
- Reconstructing several municipal sanitary sewers and water mains.

Figure 2 shows the proposed schematic design.

Figure 2. Proposed design

2.5 PROJECT BACKGROUND

The I-35W and Highway 62 project has a long and controversial history dating back to its original design and construction during the 1950s and 1960s. Some of the project's design considerations prior to the ACTT workshop were:

- The planned I-35W alignment was altered to share lanes with Highway 62 in the Commons during the late 1950s and early 1960s.
- The proposed reconstruction of 18 mi (28.8 km) of I-35W described in the 1995 Environmental Impact Statement (EIS) included light rail transit (LRT), park and ride lots, and HOV lanes, but was cancelled for lack of funding.

- A 1996 EIS addendum described a smaller project (referred to as the "Deferred Project") that was considered the minimum safe alternative. It added an HOV lane from 42nd Street in Minneapolis south to I-494.
- The 2001 Minnesota Legislature directed Mn/DOT to defer the project in response to the proposed lengthy closures of major traffic movements during the 4-year construction period.
- The 2002 concept, prepared during late 2001 in response to the 2001 legislative directive, reevaluated the project.

The 2001 legislature directed Mn/DOT to develop alternatives that satisfied the following goals for the I-35W and Highway 62 project's reevaluation:

- Keep construction closures to a minimum.
- Provide an advantage for bus transit.
- Add capacity.
- Do not reduce access to less than that proposed by the Deferred Project.
- No additional right-of-way takings beyond what was needed for the Deferred Project.

Mn/DOT provided a final report of the reevaluation to the Legislature on January 28, 2002. The report summarized the findings of the reevaluation, noting that the 2002 concept satisfied most of the project goals established by the Legislature.

2.5.1 Project Challenges

The junction between I-35W and Highway 62 is one of the most heavily traveled and congested points in the metropolitan highway system. The I-35W and Highway 62 Commons, where I-35W and Highway 62 share lanes between the I-35W/Highway 62 east interchange and the I-35W/Highway 62/TH-121 west interchange, carries an average of more than 150,000 vehicles per day with 214,000 vehicles using the interchanges. Available capacity in the project area is exhausted during the morning and afternoon peak periods (approximately 6 hours per day), and the facility is congested for several hours a day beyond the traditional peak hours.

The capacity and operational problems are compounded by the many forced weaving movements and left exits in the Commons. These operational problems contribute to crash rates on the Commons that are up to five times higher than the average for metropolitan urban freeways. As congestion increases along I-35W and Highway 62, drivers attempt to bypass the area by using local streets, which results in increased congestion and accidents on the local street network. This aging freeway segment requires major, ongoing maintenance and cannot be brought up to today's design standards without complete reconstruction.

Reconstruction of the I-35W and Highway 62 project poses several challenges, including:

Legislative Requirements. The 2001 Minnesota Legislature identified several requirements for the current project (as noted above). Balancing these requirements resulted in the current design, which adds highway capacity and minimizes right-of-way takings. The proposed project staging will allow closures for major improvements to be held to less than the mandated 8-week maximum.

Traffic Operations. The I-35W and Highway 62 corridors run parallel in the Commons for nearly .75 mi (1.2 km), sharing lanes with a local access interchange and a railroad crossing within the Commons area. There are four other local access interchanges immediately adjacent to the Commons. Separating the two highways is vital

to protect the operations of I-35W. Reducing or eliminating weaving movements is complicated because designers want access to be equivalent to the Deferred Project, yet right-of-way takings are to be minimized.

Right-of-Way. The existing right-of-way corridors are narrow and cut through fully developed residential areas. Furthermore, additional right-of-way takings are to be minimized. Shallow groundwater tables and the project area's geology preclude tunneling, and concerns over noise and visual impacts coupled with cost and winter maintenance activities rule out stacking the two highways in the Commons. These constraints led to the current design that separates the two freeways within the Commons yet minimizes the need for additional right-of-way.

Highway Traffic Volumes. Traffic volumes within the Commons are projected to increase from 214,000 to 306,000 vehicles per day by 2030.

Design Standards. The existing I-35W and Highway 62 do not meet current design standards at several locations:

- Two large horizontal curves along I-35W currently do not meet the 55 mph design speed.
- A crest vertical curve just east of Penn Avenue along Highway 62 currently does not meet the 55 mph design speed (with a 6-inch object height for stopping sight distance).
- Several existing bridges do not meet current vertical clearance requirements.

The proposed design must meet a minimum 55 mph for both I-35W and Highway 62.

Aesthetic Enhancements. The Deferred Project identified aesthetic enhancements, and those recommendations remain valid. However, limited funding at that time prevented implementation of some of the enhancements. Mn/DOT's cost participation policy will guide negotiations with Minneapolis and Richfield to identify any enhancements and related city cost participation for the current project.

Municipal Consent. Minnesota state law requires approval from communities when state highway projects increase capacity, require right-of-way, or change access. Because the I-35W and Highway 62 project proposes to do all three of these, municipal consent is required from the Cities of Minneapolis and Richfield. Minneapolis policy makers continue to voice a preference for mass transit improvements over highway capacity improvements. (Note: Minneapolis disapproved the project at their September 3, 2004, council meeting.) Consent is anticipated from Richfield policy makers. (Note: Richfield approved the project at their August 10, 2004, council meeting.)

2.5.2 Public and Agency Involvement

A prominent component of the I-35W and Highway 62 project development has been the public and agency involvement. Agency involvement has included both a Technical Advisory Committee (TAC) and a Policy Advisory Committee (PAC) as well as coordination with review agencies.

The TAC was established to provide technical input on the proposed project and included the following organizations:

- Cities of Minneapolis, Richfield, Apple Valley, and Edina.
- Metropolitan Transit Commission.

- Hennepin County.
- FHWA.
- Metropolitan Council.
- Mn/DOT.
- SRF Consulting Group, Inc.

This committee met frequently during the development of the project to discuss design concepts and related potential impacts/issues.

The PAC was also established and included the following organizations:

- City council members from Minneapolis and Richfield.
- County Commissioners from Dakota and Hennepin Counties.
- State legislators.
- Metropolitan Council.
- Mn/DOT.
- SRF Consulting Group, Inc.

This committee met at key times during the project development process to discuss the design, potential impacts, and related issues.

Public involvement efforts included project newsletters, a Web site, numerous public open houses, and the public hearings held the evenings of the ACTT Workshop as part of the Minnesota Municipal Consent process. Additionally, numerous neighborhood meetings were held to discuss concerns regarding access, construction impacts, transit, and right-of-way acquisition.

2.5.3 Design Development

The I-35W and Highway 62 project has a long history of development. The final report that reevaluated the project after the Legislature deferred the previous project was provided to the Legislature on January 28, 2002. It identified a concept that met the goals established by the Legislature for the project's reevaluation. This is referred to as the 2002 Concept. Design development that has been completed since the 2002 Concept is summarized in the following table.

CONCEPT	TIMEFRAME	DESCRIPTION
Refined Concept	February 2003 to April 2004	Evaluation of numerous concept alternatives was completed to address capacity, operational, and access questions.
Municipal Consent	April 2004 to September 2004	Selection of the preferred concept allowed further refinement to prepare a design layout that satisfied the requirements for Minnesota's Municipal Consent Statute. The design layouts were provided to Minneapolis and Richfield on April 16, 2004. A decision from the cities is required by September 15, 2004.
Mn/DOT Staff Approved Layout	May 2004	The design layout prepared for municipal consent continued to be developed and was submitted for official Mn/DOT review and approval on May 28, 2004.

As part of the design development process, detailed traffic operations analyses were performed using computerized traffic simulations, and a graphic simulation was made available at several public meetings. A computerized visual animation was also prepared that depicted the existing and proposed conditions, and this was also presented at several meetings. Two frames from the visual animation, depicting the proposed conditions looking east along the Crosstown Commons from above the TH-121 area and from Wentworth Avenue, are shown in Figures 3 and 4.

Figure 3. View of Commons from TH 121 area looking east toward Lyndale Avenue

Figure 4. View of Commons from Wentworth Avenue looking at east interchange

2.5.4 Value Engineering

Value Engineering is a program to improve quality, reduce project costs, foster innovation, eliminate unnecessary and costly design elements, and ensure efficient investments. Mn/DOT performed this ACTT Workshop to satisfy the Value Engineering requirements for the project.

During design development, SRF Consulting Group, Inc., incorporated the principles of Value Engineering to provide "continuous" Value Engineering to the project. Specific items that were analyzed in cooperation with Mn/DOT during design development included:

The results of these analyses have resulted in project costs being reduced by $14 million, which is already reflected in the $208 million project estimate. As design development continues through detail design, opportunities to further reduce project costs and enhance the quality will be studied and incorporated as appropriate.

ITEMS	CONSIDERATIONS
Bridge types	Steel versus concrete. Girder versus box. Precast versus cast in place.
Retaining wall types	Cast in place: • Spread footing. • Piled footing. Mechanically Stabilized Earth (MSE). Tie-back diaphragm.
Storm water runoff	Water quality treatment. High flow diversions.
Noise wall types	Wood. Precast concrete.

2.5.5 Environmental Documentation

An Environmental Assessment (EA) and Section 4(f) Evaluation are required for the I-35W and Highway 62 project. The EA was approved by the FHWA on June 24, 2004. Because the area surrounding the project is fully developed, little impact to the natural environment is anticipated. However, two project impacts have been identified:

- The project will have an impact on a neighborhood park in Richfield, but early coordination with the Richfield Park Board has identified potential mitigation measures.
- The existing I-35W bridges over Minnehaha Creek and Parkway need to be replaced with wider bridges, which would reduce natural lighting beneath them. Mn/DOT has proposed increasing the opening between the bridges from 8 to 14 feet to allow additional natural light to pass between the bridges.

2.6 PROJECT STATUS

The current status of the project is presented in the following table.

TASK	DATE
Design layouts provided to Cities of Minneapolis and Richfield.	April 16, 2004
Design layouts submitted for Mn/DOT staff approval.	May 28, 2004
Environmental Assessment (EA) approved.	June 24, 2004
Public hearing for comment on EA.	July 22, 2004
Public comment period on EA ends.	August 19, 2004
Municipal consent process scheduled to conclude.	September 2004
Interstate Access Modification Request (IAMR) is 80 percent complete.	Summer 2004
Final design is in progress.	Summer 2004 to Fall 2005
Bid letting scheduled.	Spring/Summer 2006

CHAPTER 3

Workshop Meeting Details

Mn/DOT and FHWA hosted the ACTT Workshop on June 14 to 16, 2004, at the Crowne Plaza Northstar Hotel in Minneapolis, Minnesota. Approximately 100 individuals representing a variety of interests were in attendance. A list of workshop attendees is presented in Appendix A.

In discussions held prior to the workshop, the following seven skill sets were selected for this project:

- Right-of-Way and Utilities.
- Structures.
- Construction.
- Innovative Contracting.
- Geotechnical/Materials.
- Traffic/ITS/Safety/Public Relations.
- Environment.

A description of each skill set is included in Appendix B.

3.1 OPENING SESSION

The workshop began with opening remarks from:

- Carol Molnau, Lieutenant Governor of Minnesota and Commissioner of Transportation.
- Al Steger, FHWA Division Administrator for Minnesota.

Each of the participants introduced themselves. This was followed by a project overview by Tom O'Keefe, the Mn/DOT Area Manager, and John Griffith, the Mn/DOT Project Manager. David Huft, Research Program Manager for SDDOT, then conducted the "Why ACTT? Why Now?" presentation. The opening day concluded with a bus tour of the project area with stops along I-35W at the 58th Street pedestrian overpass and Highway 62 at the Penn Avenue and Portland Avenue interchanges.

3.2 WORKSHOP PROCESS AND RECOMMENDATIONS

The second day began with an overview of the Minneapolis Municipal Consent public hearing held the night before. Next, the skill teams met to discuss ideas. Before lunch, the general session reconvened to share initial ideas. After lunch, the skill set teams continued developing ideas and intermingled with other teams to ask questions and share ideas. On the remainder of the second and early part of the third day, the teams prepared final recommendations.

Each skill set team completed reporting forms, which are included in Appendix C, and presented their recommendations to the group. Summaries of the group discussions and the top recommendations presented from each skill set are included below. Mn/DOT's action for each recommendation is also shown.

3.2.1 Right-of-Way and Utilities

The Right-of-Way and Utilities Skill Set focused much of its discussion on ways to improve or accelerate the project. The four main topics included overall coordination, process, resources, and new initiatives. The Right-of-Way and Utilities Skill Set developed the following recommendations:

Overall Coordination (Goals 2.2.1.b - Coordination and 2.2.1.c - Project Schedule)

- Set up a right-of-way and utility layout meeting early on in the project.
  - Action: Mn/DOT normally performs early coordination and will do so for this project.
- Have early involvement with the utility office for utility right-of-way purchases.
  - Action: Mn/DOT will meet with utility owners at 30 percent completion of the final design.
- Stage and prioritize the right-of-way acquisition based on critical parcels and construction staging.
  - Action: Mn/DOT will prioritize parcels.
- Obtain authorization to proceed with the total takes before signed Environmental Assessment (EA) and Municipal Consent. (Mn/DOT must assess the risk involved to proceed.)
  - Action: Mn/DOT is proceeding with one hardship case but will wait for municipal consent, since funding limitations will not allow for early acquisitions.
- Conduct early railroad coordination with Canadian Pacific Rail, Progressive Rail, and Mn/DOT Rail Office.
  - Action: Mn/DOT will provide early coordination.
- Determine utility and right-of-way issues at proposed locations of MSE walls.
  - Action: Mn/DOT is currently addressing these issues.
- Define a footprint to obtain adequate right-of-way and proceed with acquisition in order to avoid future restarts of the acquisition process.
  - Action: Mn/DOT will establish a worst-case footprint and move forward.
- Coordinate any right-of-way turnback commitments early in the process.
  - Action: Mn/DOT is currently preparing a Memorandum of Understanding (MOU) with the City of Richfield for Madison Park right-of-way turnback; Mn/DOT will initiate right-of-way setback and turnback discussions for frontage roads.

Policy (Goals 2.2.1.d and 2.2.1.e - Utility Relocations)

- Purchase right-of-way for utility relocations.
  - Action: Mn/DOT can purchase minor amounts of right-of-way for utility relocation, but policy prevents large-scale acquisitions for utility relocations. Mn/DOT will attempt to acquire right-of-way early so all utilities have the opportunity to relocate before construction.
- Obtain as many title orders as possible early on in the process. Identify critical path parcels to help prioritize the titles.
  - Action: Mn/DOT is currently obtaining titles and attempting to prioritize.
- Use Subsurface Utility Engineering (SUE).
  - Action: Mn/DOT will evaluate if SUE should be performed for this project.
- Examine the consultant contracting process more to determine streamlining opportunities.
  - Action: Mn/DOT is using a "turn key" approach for right-of-way services for this project.
- Acquire Peter's Billiards:
  - Access management.
  - Damages.
  - Land sales and acquisition.
  - Action: Mn/DOT will attempt to acquire early to allow the owner the opportunity to have the new building ready once the existing building needs to be removed. Mn/DOT will also try to address access management.

Resources (Goal 2.2.1.c - Meet Project Schedule)

- External:
  - Coordinate interagency agreements.
    - Action: Mn/DOT will evaluate the feasibility of this.
  - Use more fee review appraisers.
    - Action: Mn/DOT will use more if needed.
  - Establish and execute contracts for regulated waste assessments and removals as early as possible.
    - Action: Mn/DOT is shifting to a policy of performing this work prior to construction.

New Initiatives (No specific goal)

- Raise appraisal waiver limits even higher for minimum damage acquisitions (MDA).
  - Action: Mn/DOT will consider this.
- Use relocation and acquisition incentives.
  - Action: Mn/DOT will consider if needed (would require FHWA approval).
- Consider state statute revisions to allow for a 30-day quick-take period.
  - Action: Mn/DOT is not ready to pursue.
- Conduct acquisitions prior to completion of the environmental documentation process.
  - Action: Mn/DOT is proceeding with hardship cases; Mn/DOT will perform a risk assessment for others.
- Implement more CADD (Geopak) in platting and description writing.
  - Action: Mn/DOT will perform as appropriate.
- Look at the right-of-way area as a system to allow for flexibility in contracting.
  - Action: Mn/DOT will perform as appropriate.
- Migrate more rapidly to electronic data and document management and REALMS systems.
  - Action: Mn/DOT anticipates implementation by early 2005.

3.2.2 Structures

To facilitate accelerated construction of this project, the Structures Skill Set divided recommendations into three broad categories: bridges, retaining walls, and materials. There were also recommendations and discussions directed towards specific bridges and ways to construct them faster and more efficiently. The Structures Skill Set developed the following recommendations to be considered during final design:

Bridges (Goals 2.2.2.a - Reduce Construction Time, 2.2.2b - Bridge Types, and 2.2.2.e - Cost of Structures)

- Use drilled shaft or piling option for segmental bridges at pier locations.
  - Action: Mn/DOT will evaluate during final design.
- Use precast substructures.
  - Action: Mn/DOT will evaluate during final design.
- Use higher-capacity piles.
  - Action: Mn/DOT will evaluate during final design.
- Have an early contract for the 42nd Avenue Bridge and Diamond Lake Road Bridge located on the north segment of the project.
  - Action: Funding currently not available.

- Use precast decks.
  - ➢ Action: Not current Mn/DOT practice.
- Install MSE abutment walls.
  - ➢ Action: Not current Mn/DOT practice, but will evaluate for this project.

Specific Bridge Recommendations (Goal 2.2.2.c - Review Precast Section Placement)

Bridge 27V75 (Ramp from I-35W South to TH-62 West) Segmental versus Steel

- Precast Segmental Concrete:
  - Complete construction by July/August 2007. (Assumed September 2005 letting.)
- Steel:
  - Have a steel-only contract 8 months prior to the beginning of construction so all material is onsite to build immediately.
  - Complete construction by fall of 2006. (Assumed September 2005 letting.)
  - Determine if a box section or I-section should be used.
- Determine the critical path of construction to see when this bridge needs to be complete and open to traffic.
  - ➢ Action: Mn/DOT will use a Critical Path Method (CPM) for this project.

Bridges 27V73 and 27V66 (Ramp from I-35W North to TH-62 East)

- Design bridges to be the same type and size.
  - ➢ Action: Mn/DOT will do this.

Bridge 27V68 (TH-62 East over I-35W)

- Add a span in order to square off the end of the bridge.
  - ➢ Action: Mn/DOT will adjust the skew angle of the abutment.

Bridge 27V74 (I-35W and TH-62 over CP Railroad)

- Fabricate bridge structure offsite and install all at once:
  - Use Conspan structure.
  - Salvage existing substructures.
  - ➢ Action: Mn/DOT must obtain railroad concurrence for bridge type.

Retaining Walls (Goals 2.2.2.a - Reduce Construction Time, 2.2.2.b - Wall Types, and 2.2.2.e - Cost of Structures)

- Install MSE walls at all possible locations.
  - ➢ Action: Mn/DOT is implementing this.
- Install sheet pile protection at storm sewer locations instead of supporting retaining wall on piling.
  - ➢ Action: Mn/DOT is evaluating this.

- Slipform rail on the MSE walls.
  - ➢ Action: Mn/DOT is evaluating this.
- Specify cast-in-place (CIP) walls (from a preapproved list) in the plans, but allow for two or three other specific options including:
  - Modular block/crib walls (current policy may not allow).
  - Precast walls.
  - ➢ Action: Mn/DOT will evaluate this during the final design.

Materials (Goal 2.2.2.a - Reduce Time)

- Use high-performance concrete (HPC) on bridge decks to eliminate the need to overlay.
  - ➢ Action: Mn/DOT currently uses when appropriate.
- Use high-performance steel (HPS) where appropriate.
  - ➢ Action: Mn/DOT currently uses when appropriate.
- Use self-consolidating concrete (new to Mn/DOT).
  - ➢ Action: Mn/DOT currently uses when appropriate.
- Determine what type of rebar will be appropriate for this project:
  - Purple coated.
  - Stainless steel.
  - MMFX Steel.
  - ➢ Action: Mn/DOT will evaluate this during the final design.
- Determine the options for lightweight fill. There may be possible settlement issues.
  - ➢ Action: Mn/DOT will evaluate this during the final design.

3.2.3 Construction

The Construction Skill Set's discussion to facilitate accelerated construction on this project resulted in final recommendations from three broad categories: CPM, innovative contracting techniques, and alternate material specifications. The following recommendations were developed:

Critical Path Method (Goals 2.2.2.a - Project Staging, 2.2.3.e - Minimize Closures, 2.2.2.f - Minimize Traffic Impact, 2.2.2.i - Minimize Duration, and 2.2.2.j - Complete Segments during One Season)

- Prepare a preconstruction CPM.
  - ➢ Action: Mn/DOT will use CPM for this project.
- Identify the critical paths and methods to compress:
  - Find out the advantages if 8-week closures are fully utilized.
  - Determine if design changes will compress the critical path.
  - Evaluate the content of Stage 0 and Stages 1-4 to optimize the critical path.
  - ➢ Action: Mn/DOT will use CPM to perform these evaluations.
- Transition the CPM to the contractor. This involves:
  - Contractor review during post bid, preaward phase.
  - Contractor provides regular (monthly) updates during construction phase.
  - ➢ Action: Mn/DOT is interested in pursuing this.

Innovative Contracting Techniques (Goals 2.2.2.f - Minimize Impact to Traffic and 2.2.2.c - Contractor Staging Area)

- Use the A+B (Cost + Time) bidding method. Multiple Bs could be used for interim milestones.
  - Action: Mn/DOT will evaluate this.
- Use incentives and disincentives for interim stages and closures.
  - Action: Mn/DOT will evaluate this.
- Use interim milestones for completion dates.
  - Action: Mn/DOT will evaluate this.
- Identify the staging areas outside of the proposed right-of-way. Can Mn/DOT purchase additional right-of-way for staging areas? (Only if for transportation needs.)
  - Action: Mn/DOT will evaluate this.
- Include user costs for road closures.
  - Action: Mn/DOT will evaluate this.

Alternate Material Specifications (Goals 2.2.2.b - Alternate Material Types and 2.2.2.h - Minimize Cost)

- Evaluate the use of high early strength concrete where appropriate. For critical areas like crossovers, mixes are available that can be opened within 4 hours.
  - Action: Mn/DOT will consider this based on CPM analysis.
- Evaluate the use of precast pavement where appropriate.
  - Action: Mn/DOT will consider this based on CPM analysis.
- Evaluate the use of unsealed concrete pavement joints to reduce time and cost.
  - Action: Mn/DOT will consider this based on CPM analysis.
- Evaluate the use of dual-coated epoxy dowel bars as opposed to stainless steel dowel bars. Dual-coated dowel bars are less expensive and more available.
  - Action: Mn/DOT will evaluate this during the final design.
- Determine the parameters for grading materials to allow reuse of onsite materials
  - Action: Mn/DOT will evaluate this during the final design.
- Determine the retaining wall requirements for precast, MSE, continuous diaphragm (not feasible if tie-back extends beyond right-of-way), and cast-in-place.
  - Action: Mn/DOT is currently evaluating this.

3.2.4 Innovative Contracting

The Innovative Contracting Skill Set's discussion to facilitate accelerated construction on this project resulted in these recommendations:

General Recommendations

- Reallocate funding to fund the entire project with a letting in Fall 2005.
  - Action: Mn/DOT's current funding will not allow this.
- Establish one contract for the project.
  - Use advance contracts for bridges and other work that does not affect the mainline traffic, if necessary.
  - Action: Mn/DOT will evaluate this using CPM and funding availability.

Project Delivery Method (Goal 2.2.4.a - New Contracting Methods)

- Use the Design-Build philosophy once the design is between 30 percent and 95 percent complete:
  - Mn/DOT would need to complete a constructability study.
  - Contractor would design and implement the staging and traffic control.
  - Use a stipend for the staging and traffic control.
  - Use the Design-Bid-Build (D-B-B) method with contractor designed staging/traffic management as a best-value selection criterion.
  - ➢ Action: Mn/DOT has been using D-B-B since an earlier construction start with Design-Build is not possible due to funding limitations. Mn/DOT is on schedule with the 30 percent design during the Fall of 2004.

Procurement Process (Goal 2.2.4.b - Refine A + B)

- Use A+B (Cost + Time) bidding:
  - Develop a ramp closure matrix showing the maximum closure times.
  - Establish a cost per day ($/day) pricing for ramp closures and mainline closures and evaluate the bids based on minimizing closure times.
  - ➢ Action: Mn/DOT will use CPM to evaluate this and will consider A + B bidding and Contractor Peer Review.

Final Recommendations (Goals 2.2.4.c - Better Utilization of State Personnel and 2.2.4.d - Decision Making Process)

- Use CPM scheduling and monitor regularly.
  - ➢ Action: Mn/DOT will use CPM for this project.
- Use incentives/disincentives for early completion of major movements.
  - Include ramps, flyovers, and traffic switches.
  - Use substantial incentives so the contractor will go after them.
  - ➢ Action: Mn/DOT will evaluate the use of incentives based upon CPM analysis.
- Examine the use of lane rental (full or temporary lane closure).
  - ➢ Action: Mn/DOT will evaluate the use of incentives based upon CPM analysis.
- Hold a mandatory Pre-Bid Conference.
  - ➢ Action: Mn/DOT will use a mandatory prebid conference.
- Have Mn/DOT conduct post-award workshops and regular meetings on:
  - Partnering.
  - Scheduling.
  - Utilities.
  - Submittals.
  - ➢ Action: Mn/DOT will consider this.
- Use Subsurface Utility Engineering and Master Utility Agreements.
  - ➢ Action: Mn/DOT will evaluate if SUE and Master Utility Agreements should be used for this project.
- Develop an oversight team organizational chart.
  - Determine when to use consultants, such as material testing, Segmental Bridge Inspection, and schedule reviewers.

    - Action: Mn/DOT will evaluate this during the final design.
- Use a construction management system:
    - Link the contractor's document control to everyone involved.
    - Connect the field information to a database.
    - Allow the parties involved to easily have access to the schedule.
    - Action: Mn/DOT will consider this.
- Employ escrow bid documents.
    - Action: Mn/DOT normally requires this on large projects.
- Establish a dispute resolution board (DRB).
    - Action: Mn/DOT will do this.
- Consider dedicating key experts/senior staff full-time to the project to speed up decisionmaking.
    - Action: Mn/DOT will dedicate appropriate staff to the project.

3.2.5 Geotechnical/Materials

The Geotechnical/Materials Skill Set's discussion to facilitate accelerated construction on this project resulted in the following recommendations:

General Recommendations

- Implement early utility location/relocation coordination with local entities.
    - Action: Mn/DOT normally performs early coordination and will do so for this project.
- Identify future improvements desired by utilities, the CP Railroad, Progressive Rail, and Metro Transit early in the process.
    - Action: Mn/DOT will perform early coordination.
- Define the Project Team, Communication Protocols, Reviews, Meetings, etc.
    - Action: Mn/DOT will define these.
- Hold progress meetings with the geotechnical group every 3 months.
    - Action: Mn/DOT will hold regular monthly meetings involving all design groups.
- Provide an MSE wall training course for bridge, construction, and materials groups.
    - Action: Mn/DOT will provide the appropriate training.

Major Issues (Goals 2.2.5.a - New Methods/Materials and 2.2.5.d - MSE Walls)

- Assume the use of MSE walls until proven otherwise. Other wall options, in order of preference, include:
    - Continuous diaphragm walls (Not feasible since the tie-backs would extend outside of Mn/DOT's right-of-way.)
    - Soldier piles lagging, soil nailing (Not feasible since the tie-backs would extend outside of Mn/DOT's right-of-way.)
    - Cast-in place (Used when other wall types are not feasible.)
    - Action: Mn/DOT has already completed this evaluation.
- Recognize the paving limitations on this project due to seasonal constraints resulting in multiple (yearly) mobilizations.
    - Action: Mn/DOT will use CPM to optimize staging and minimize multiple mobilizations.
- Use precast pavement panels to help accelerate the schedule when critical.
    - Action: Mn/DOT will consider this for isolated areas based upon evaluation with CPM.

Structure Foundations (Goals 2.2.5.a - New Materials/Methods and 2.2.5.c - Vibration Monitoring)

- Determine structural loads early to aid in the design.
  - Action: Mn/DOT normally does this.
- Use spread footings unless they are proven inadequate to minimize deep foundation needs (15 percent cost savings on the bridge).
  - Action: Mn/DOT will evaluate spread footing use for bridges and cast-in-place walls.
- Use a load test and constructability contract to confirm high-capacity foundations prior to letting.
  - Action: Mn/DOT will do this if the design identifies a need for high capacity foundations.
- Eliminate end slopes under bridges by using MSE walls.
  - Action: Mn/DOT will consider this.
- Eliminate bridge abutments by using pile bents to the beams with MSE walls.
  - Action: Mn/DOT will evaluate this.
- Specify drilled piling to eliminate vibration problems.
  - Action: Mn/DOT will consider this.

Wall Recommendations (Goals 2.2.5.d - MSE Walls and 2.2.5.b - New Material Testing)

- Investigate eliminating walls when a 1 vertical to 2 horizontal slope is possible.
  - Action: Mn/DOT will evaluate this.
- Use a performance specification for walls from an approved list with a contractor design.
  - Action: Mn/DOT currently uses this for certain wall types.
- Expand the list of approved MSE wall systems.
  - Action: Mn/DOT has an open application process.
- Construct temporary embankments with geofoam fill to reduce slope requirements.
  - Action: Vertical slope designs will be evaluated.
- Use intelligent grading, compaction, and documentation.
  - Action: Mn/DOT is currently considering this.

3.2.6 Traffic/ITS/Safety/Public Relations

The Traffic/ITS/Safety/Public Relations Skill Set's discussion to facilitate accelerated construction on this project resulted in the following recommendations:

General Recommendations

- Incorporate the costs associated with traffic management, work zone safety, and public relations as standard components of construction estimates.
  - Action: Mn/DOT is not currently able to allocate construction funding to operations.
- Use a cost estimation validation process (risk management).
  - Action: Mn/DOT is currently not set up to do this, but should obtain other State DOT information to access.

Work Zone Safety (Goals 2.2.6.a - Incident Management System and 2.2.6.c - Work Zone Congestion)

- Use an Incident Management Plan:
  - ➢ Action: Mn/DOT will develop a plan and consider the following as either Mn/DOT or contract bid items:
    - Freeway Service Patrols: Provide construction funding to fund a Freeway Incident Response Safety Team (FIRST). (Mn/DOT will consider this.)
    - Dedicated State Patrol: Pay the State Patrol to be onsite during critical times and after traffic switches. This is currently done on most major projects. Work with State Patrol to get more officers in the Metro. (Mn/DOT normally does this.)
    - Heavy equipment for incident clearance: Have appropriate equipment available on the job site for incident removal, barrier fixes, etc. (Mn/DOT will consider this.)
    - Establish emergency pull-offs. (Mn/DOT normally does this.)
- Establish safety goals and measures, including:
  - Number of crashes.
  - Incident clearance times.
  - Number of worker injuries.
  - Mn/DOT will evaluate this.
- Use contractor incentives:
  - Create incentives for new and innovative ideas to reduce project time, improve safety, and reduce the impacts to motorists.
  - ➢ Action: Mn/DOT will consider this.
- Provide Work Zone Safety education:
  - Establish extensive coverage of work zone safety through the media, including print, television, Web, and radio.
  - ➢ Action: Mn/DOT will evaluate this. However, this requires additional funding and resources beyond the current practice of limited press coverage.
- Improve special provision effectiveness:
  - Provide support and training for enforcement of special provisions.
  - Include penalty language and enforce it.
  - ➢ Action: Mn/DOT will do this.

Traffic Management (Goals 2.2.6.c - Work Zone Congestion and 2.2.6.d - Lane Closures)

- Maintain existing Traffic Management Systems (TMS) during the construction phase:
  - Use portable Changeable Message Signs (CMS) that are controlled remotely from the traffic management center for real-time traffic information.
  - Maintain camera coverage for incident detection.
  - Maintain non-intrusive detection for traveler information and traffic management.
  - Explore construction-area ramp-metering policies.
  - Establish wireless communications to the traffic management center.
  - Establish contractor disincentives for traffic management systems being out of service.
  - Explore using additional traffic management center staff to support construction projects.
  - Train construction staff on the importance of traffic management systems.
  - ➢ Action: Mn/DOT will consider the use of a temporary TMS for this project.

- Define an alternate route:
  - Complete a systemwide alternate route assessment prior to project staging decisions.
  - Add a temporary third lane to Highway 100 between 36th Street and I-394.
  - Make improvements to the local streets and intersections.
  - Improve the signal timing on parallel arterials.
  - Provide resources and staff to local communities if needed.
  - Provide camera coverage on alternate routes during construction.
  - ➢ Action: Mn/DOT currently not able to allocate funding outside the trunk highway system.
- Regional construction coordination:
  - Coordinate construction and lane closures with all adjacent projects, including city and county projects.
  - Coordinate with maintenance activities.
  - ➢ Action: Mn/DOT will coordinate with other agencies to the extent reasonable.
- Weekend closures:
  - Keep the I-35W mainline open as a first priority.
  - Use historical volumes to determine when TH-62 closures should occur.
  - ➢ Action: Mn/DOT will do this.

Travel Demand Management (Goal 2.2.6.f - Work Zone Cost Growth)

- Promote reverse transit with additional express bus service.
  - ➢ Action: Mn/DOT will coordinate with Transit providers.
- Explore the possibility of additional park-and-ride lots.
  - ➢ Action: Mn/DOT will coordinate with Transit providers.

Public Relations (Goal 2.2.6.b - Media Relations)

- Develop a strategic communications plan that is integrated with:
  - Road design plan.
  - Traffic operations during construction.
  - ➢ Action: Mn/DOT will consider this.
- Develop a communications budget:
  - Establish an adequate budget (up to 1 percent of the project) for communications activities.
  - Budget can be used for advertising, setting up focus groups, etc.
  - ➢ Action: Mn/DOT will consider this with construction activities.
- Coordinate public relations messages:
  - Make sure everyone involved (Mn/DOT, contractors, city, etc.) is on "theme/message" in terms of Public Relations.
  - ➢ Action: Mn/DOT will coordinate this.
- Provide strong internal communication:
  - Lane closures should not take place unexpectedly or with short lead times.
  - ➢ Action: Mn/DOT will evaluate the use of this.
- Conduct mandatory media training for construction staff.
  - ➢ Action: Mn/DOT will consider this.

3.2.7 Environment

The Environment Skill Set's discussion to facilitate accelerated construction on this project resulted in the following recommendations:

Water Quality During Construction (Goal 2.2.7.e - Water Quality)

- Use innovative Best Management Practices (BMPs), such as the use of Polyacrylamide.
  - Action: Mn/DOT will identify a wide range of BMPs for use on the project and include them in the bid documents.
- Require a Certified Erosion Control Specialist onsite to conduct regular inspections.
  - Action: Current Mn/DOT specifications require the contractor to have this. Mn/DOT has partnered with the University of Minnesota to provide training.
- Monitor the outfall to Diamond Lake for erosion runoff either by Mn/DOT or the contractor via a performance specification.
  - Action: Mn/DOT currently has a contractor in place to provide monitoring before, during, and after construction.
- Provide contract pay items for payment of erosion control work and remobilizations.
  - Action: Mn/DOT currently has numerous contract pay items for both the installation and maintenance of temporary and permanent erosion control features.
- Expand the water resource plan notes to include areas to avoid for staging needs.
  - Action: Mn/DOT currently identifies sensitive areas within a plan set. These notes can be expanded to include staging areas.
- Educate the contractor on the importance and sensitivity of erosion control.
  - Action: Mn/DOT's current requirement for a Certified Erosion Control Supervisor addresses this.
- Construct sedimentation ponds prior to construction, such as a pond at Diamond Lake.
  - Action: Mn/DOT normally specifies this in a plan set. Mn/DOT intends to excavate a temporary pond within the existing sediment delta at Diamond Lake and install an upstream grit chamber early in the project.

Water Quality After Construction (Goal 2.2.7.e - Water Quality)

- Market the project benefits of water quality features (for example, perform modeling of Diamond Lake to confirm results).
  - Action: Mn/DOT has already held public meetings regarding the current monitoring efforts at Diamond Lake and will disseminate the results of the ongoing monitoring.
- Maintain grit chambers on a regular schedule that satisfies the manufacturer's recommendations.
  - Action: Both the contractor (during construction) and Mn/DOT (after construction) will clean the chambers before performance would become impaired.
- Use high-efficiency street sweeping or other technologies.
  - Action: Mn/DOT currently performs sweeping, with a pick-up broom, once per year in conformance with the Mn/DOT MS4 application.
- Investigate the partnership opportunities for future storm water tunnel improvements north of 39th Street.
  - Action: Mn/DOT and the City of Minneapolis are jointly funding this study.

- Maintain storm water ponds on a regular schedule.
  - Action: Mn/DOT will perform pond maintenance for Mn/DOT owned ponds on a regular schedule.
- Provide long-term water quality monitoring for Diamond Lake.
  - Action: Mn/DOT currently has a contractor in place to provide monitoring before, during, and after construction.

Air Quality During Construction (Goals 2.2.7.a - Air Quality, 2.2.7.c - Ozone, 2.2.7.c - Fine Particulates, and 2.2.7.d Air Toxins)

- Perform public education and outreach for air quality pollutants.
  - Action: Mn/DOT will consider providing this information via a newsletter or the project Web site.
- Require construction mitigation by using newer equipment and cleaner-burning fuels.
  - Action: Mn/DOT will consider this.
- Exceed the minimum requirements to meet air quality issues.
  - Action: This is always a goal for Mn/DOT projects.

Noise During Construction (Goal 2.2.7.a - Air Quality)

- Investigate the allowable hours of work within each city.
  - Action: Current Mn/DOT practice requires this information in the bid documents.
- Install new noise walls early when feasible.
  - Action: Mn/DOT will specify this as the project staging allows.
- Construct the combined retaining/noise wall systems simultaneously.
  - Action: Mn/DOT will specify this as the project staging allows.

Noise After Construction (Goal 2.2.7.a - Air Quality)

- Work with the neighborhoods to understand shadowing from noise walls, noise benefits, and aesthetics.
  - Action: Current Mn/DOT practice is to remonitor noise levels after construction. The results of this could be shared with the community.
- Use concrete pavement tining that minimizes noise impacts.
  - Action: Current Mn/DOT practice is to specify the Astro-grass drag, which is one of the quietest concrete textures available.

Community Impacts (No specific goal)

- Construct pedestrian and bike trails early when possible.
  - Action: Mn/DOT will specify this as the project staging allows.
- Obtain financial support and partnership for the 66th and Portland Street improvements, such as left-turn lanes.
  - Action: Mn/DOT is not currently able to allocate funding outside the trunk highway system.

- Implement aesthetic design guideline enhancements within the Mn/DOT maximum participation (for example, noise walls).
    - Action: Mn/DOT will implement the aesthetic design guide and provide enhancement money consistent with Mn/DOT's Cost Participation Guidelines.
- Consider constructing the 46th Street transit station concurrently with the project.
    - Action: Mn/DOT is not able to allocate funding for the transit station since funding for transit improvements must be allocated by the Metropolitan Transit Commission (MTC). Mn/DOT will continue to work with MTC to construct the station concurrently with the project.
- Consider expanded bus service during construction and future investment for park-and-ride facilities adjacent to the corridor.
    - Action: Mn/DOT will continue to work with Metro Transit and other transit providers to develop an action plan for this corridor during construction. Mn/DOT currently cannot pay for bus service with trunk highway funding.
- Provide creative land replacement compensation for parkland impacts.
    - Action: Mn/DOT is currently preparing an MOU with the City of Richfield for the Madison Park right-of-way land exchange.
- Provide a communication plan during construction, including Web site updates.
    - Action: Mn/DOT normally provides media briefs and construction information on the Web site.
- Consider terraced retaining walls to provide vegetation opportunities and breaks in the visual impacts of the proposed retaining walls.
    - Action: Mn/DOT is proposing terraced retaining walls at the 60th Street Pond location to allow vegetation installation. Mn/DOT will continue to evaluate opportunities to allow for landscaping within the project limits.
- Provide landscaping near the proposed retaining walls viewed by residences.
    - Action: Mn/DOT will continue to evaluate opportunities to allow for landscaping within the project limits. Typically, Mn/DOT prepares a landscaping plan for implementation 1 to 2 years after construction.
- Consider identifying parking areas for construction workers away from local neighborhoods.
    - Action: Mn/DOT normally restricts the locations in which contractors' personnel are allowed to park.
- Consider life estate for right-of-way.
    - Action: Mn/DOT policy does not allow this.

Other Environmental Items (No specific goals)

- Prepare an environmental commitment tracking system.
    - Commitments made during planning and design.
    - Commitments followed through and/or modified during construction.
    - Commitments made after construction (maintenance).
    - Action: Mn/DOT will consider this if additional funding and resources can be secured for this purpose.
- Consider the protocols for ensuring that contaminated materials are not incorporated into the project.
    - Action: Mn/DOT's current specifications restrict the use of contaminated materials.

- Explore the partnership opportunities to meet mitigation requirements and enhancements (for example, interagency agreement for wetlands).
    - Action: Mn/DOT is evaluating this at a policy level. If implemented, it will be considered for application on this project.
- Evaluate the risk of litigation for non-compliance.
    - Action: Mn/DOT is evaluating this at a policy level. If implemented, it will be considered for application on this project.
- Provide a commitment to public education.
    - Action: Mn/DOT will consider this if additional funding and resources can be secured for this purpose.
- Consider a cost/risk assessment for the project.
    - Action: Mn/DOT is evaluating this at a policy level. If implemented, it will be considered for application on this project.

CHAPTER 4

Next Steps

Mn/DOT's action for each of the recommendations is shown in Chapter 3. Several recommendations will be evaluated for use on this project during the final design. Policy level evaluations will also be performed and implemented on this project if possible. The following summarizes Mn/DOT's actions:

Skill Set	Number of Goals	Goals Not Addressed	Number of Recommendations	Normally Do/ Will Do	Will Evaluate	Will Consider	Will Consider Policy Change	Requires More Funding or Resources	Unable/ Not Ready To Pursue
R/W and Utilities	6	2	23	14	1	4	3	0	1
Structures	7	3	21	7	9	1	0	3	1
Construction	10	2	14	2	8	4	0	0	0
Innovative Contracting	4	0	15	5	5	3	0	1	1
Geotechnical Materials	5	1	19	10	5	4	0	0	0
Traffic/ITS/ Safety/PR	6	1	18	7	3	4	1	3	0
Environment	5	0	38	27	0	2	3	3	3
Totals	43	9	148	72	31	22	7	9	7

APPENDIX A

Workshop Attendees

A. Doug Allison
Assistant Manager of Right-of-Way
NC Department of Transportation
Tel. 919-733-7932 Ext. 338
Fax. 919-733-1390
E-mail: dallison@dot.state.nc.us

Dan Anderson
Office of Innovative Construction
Minnesota Department of Transportation
St. Paul, MN
Tel. 320-255-4231
Fax. 320-255-3257
E-mail: dan.Anderson@dot.state.mn.us

Deb Anderson-Sleeper
Right-of-Way
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1658
Fax. 651-582-1496
E-mail: deb.anderson@dot.state.mn.us

Timothy J. Anderson
Highway Engineer
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6114
Fax. 651-291-6000
E-mail: timothy.Anderson@fhwa.dot.gov

Steve Barrett
Resident Engineer
Minnesota Department of Transportation
Golden Valley, MN
Tel. 763-797-3067
Fax. 763-797-3181
E-mail: steven.barrett@dot.state.mn.us

Ron Berg
J & L Steel
11611 95th Avenue N.
Maple Grove, MN 55369
Tel. 763-315-4720
Fax. 763-315-2108
E-mail: rberg@JLSteel.com

S. Rick Brown
Vice President
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: rbrown@srfconsulting.com

Nelson Canjura
Senior Bridge Engineer
HDR Engineering
2202 N, West Shore Blvd., Suite 250
Tampa, FL 33607
Tel. 813-282-2437
Fax. 813-282-2449
E-mail: Nelson.canjura@hdrinc.com

Jeff Carpenter
Construction Engineer
Washington State DOT
Tel. 360-705-7804
E-mail: carpenj@wsdotwa.gov

Cathy Clark
Minnesota Department of Transportation
7694 Industrial Park Rd.
Baxter, MN 56425
Tel. 218-828-2464
Fax. 218-828-2210
E-mail: cathy.clark@dot.state.mn.us

Keith Compton
Wyoming Department of Transportation
Tel. 307-777-4059
E-mail: keith.compton@dot.state.wy.us

Michelle Crofton
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax: 763-475-2429
E-mail: mcrofton@srfconsulting.com

Michael Culmo
Director of Structural Engineering
CME Engineering
32 Crabtree Lane
Woodstock, CT 06281
Tel. 860-928-7848
Fax. 860-928-7846
E-mail: Culmo@cmeengineering.com

Mohommad Dehdashti
Minnesota Department of Transportation
E-mail: mohommad.dehdashti@dot.state.mn.us

Don Demers
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: ddemers@srfconstulting.com

Andrew Ditter
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-9741
Fax. 651-296-9571
E-mail: andy.ditter@dot.state.mn.us

David Donoho
State Construction Engineer
Tennessee Department of Transportation
Nashville, TN 37243
Tel. 615-741-2414
Fax. 615-741-0782
E-mail: david.c.donoho@state.tn.us

Dan Dorgan
Director, Office of Bridges and Structures
Minnesota Department of Transportation
Oakdale, MN
Tel. 651-747-2101
Fax. 651-747-2108
E-mail: dan.dorgan@dot.state.mn.us

Chris Dumas
Federal Highway Administration, NRC
Baltimore, MD
Tel. 410-962-0096
E-mail: chris.dumas@fhwa.dot.gov

Doug Eisinger
Senior Manager
Sonoma Technologies
Tel. 707-665-9900
Fax. 707-665-9800
E-mail: doug@sonomatech.com

Larry Erickson
Principal Engineer
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: lerickson@srfconsulting.com

Denny Eyler
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: deyler@srfconsulting.com

Klara Fabry
City of Minneapolis
Minneapolis, MN
Tel. 612-673-2443
Fax. 612-673-3316
E-mail: klara.fabry@ci.minneapolis.mn.us

Kathy Facer
HQ Realty Specialist
Federal Highway Administration
Tel. 785-267-7299 Ext. 305
Fax. 785-267-7290
E-mail: Kathleen.Facer@fhwa.dot.us

Curt Fakler
Utilities Coordinator
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1382
Fax. 651-582-1311
E-mail: curt.fakler@dot.state.mn.us

Tom Foley
City of Richfield
Richfield, MN
Tel. 612-861-9791
Fax. 612-861-9796
E-mail: tfoley@ci.richfield.mn.us

Romeo Garcia
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6125
Fax. 651-291-6000
E-mail: romeo.garcia@fhwa.dot.gov

Joe Gladke
Design/Build Program Director
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-3283
Fax. 651-296-9571
E-mail: joe.gladke@dot.state.mn.us

Stan Graczyk
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6119
Fax. 651-291-6000
E-mail: stan.graczyk@fhwa.dot.gov

David Graeber
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6108
Fax. 651-291-6000
E-mail: david.graeber@fhwa.dot.gov

Jerry L. Graham
Principal Traffic Engineer
Midwest Research Institute
Tel. 816-753-7600 x1937
E-mail: jgraham@mriresearch.org

John Griffith
Administrative Engineer Professional
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1206
Fax. 651-582-1308
E-mail: john.griffith@dot.state.mn.us

Dean Gustafson
ITS Program Manager
Virginia Department of Transportation
Tel. 540-332-8999
Fax. 540-332-8914
E-mail: dean.gustafson@virginadot.org

Kevin Hagen
Office of Bridges and Structures
Minnesota Department of Transportation
Oakdale, MN
Tel. 651-747-2223
Fax. 651-747-2108
E-mail: kevin.hagen@dot.state.mn.us

Kevin Hagness
Grad II Engineer
Minnesota Department of Transportation
Golden Valley, MN
Tel. 763-797-3186
Fax. 763-797-3152
E-mail: kevin.hagness@dot.state.mn.us

Craig Hass
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax: 763-475-2429
E-mail: chass@srfconsulting.com

Dan Hayne
Senior Engineering Specialist
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1596
Fax. 651-582-1309
E-mail: dan.hayne@dot.state.mn.us

Kristy Herman
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax: 763-475-2429
E-mail: kherman@srfconsulting.com

Tom Hillstrom
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: thillstrom@srfconsulting.com

Gene Hoelker
Construction and Contract Admin. Engineer
Federal Highway Administration
Tel. 708-283-3520
E-mail: Eugene.hoelker@fhwa.dot.gov

Chuck Howe
Minnesota Department of Transportation
E-mail: chuck.howe@dot.state.mn.us

David Huft
Program Manager
South Dakota Department of Transportation
Tel. 605-773-3358
E-mail: dave.huft@state.sd.us

Bruce Irish
Water Resources Engineering
Minnesota Department of Transportation
Roseville, MN
Tel. 651-634-2156
Fax. 651-634-2411
E-mail: bruce.irish@dot.state.mn.us

Cassandra Isackson
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN 55113
Tel. 651-634-2398
Fax. 651-634-2085
E-mail: cassandra.isackson@dot.state.mn.us

Bernard Izevbekhai
Materials Engineer
Minnesota Department of Transportation
Maplewood, MN
Tel. 651-779-5575
Fax. 651-779-5580
E-mail: bernard.izevbekhai@dot.state.mn.us

Amr Jabr
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN 5113
Tel. 651-582-1412
Fax. 651-582-1368
E-mail: amr.jabr@dot.state.mn.us

Steve Jensen
HDR Engineering, Inc.
Minneapolis, MN
Tel. 763-591-5422
Fax. 763-591-5413
E-mail: steve.Jensen@hdrinc.com

Tom Jerde
Bridge Manager
C.S. McCrossan Construction
Maple Grove, MN
Tel. 763-425-4167
Fax. 763-425-00520
E-mail: tomj@mccrossan.com

Dave Johnston
Resident Engineer
Minnesota Department of Transportation
Hutchinson, MN
Tel. 320-234-2591
Fax. 320-234-6971
E-mail: dave.johnston@dot.state.mn.us

Greg M. Jones
Federal Highway Administration, NRC
Atlanta, GA
Tel. 404-562-3906
Fax. 404-562-3700
E-mail: gregm.jones@fhwa.dot.gov

Curtis Jorgenson
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6124
Fax. 651-291-6000
E-mail: curtis.jorgenson@fhwa.dot.gov

Kevin Jullie
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: kjullie@srfconsulting.com

Brian Kary
Incident Management Engineer
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN 5113
Tel. 651-634-5268
Fax. 651-634-5280
E-mail: brian.kary@dot.state.mn.us

Bob Kimmerling
Principal Engineer
PanGEO, Inc.
3414 NE 55th St.
Seattle, WA 98105
Tel. 206-262-0370
Fax. 206-262-0374
E-mail: rkimmerling@pangeoinc.com

Paul Kivisto
Office of Bridges and Structures
Minnesota Department of Transportation
Oakdale, MN
Tel. 651-747-2130
Fax. 651-747-2207
E-mail: paul.kivisto@dot.state.mn.us

Kevin Kliethermes
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6123
Fax. 651-291-6000
E-mail: kevin.kliethermes@fhwa.dot.gov

Dave Kopacz
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6126
Fax. 651-291-6000
E-mail: david.kopacz@fhwa.dot.gov

Joe Korzilius
Administrative Engineer Professional
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1336
Fax. 651-582-1309
E-mail: joe.korzilius@dot.state.mn.us

Jim Kranig
Minnesota Department of Transportation, RTMC
Roseville, MN
Tel. 651-634-5270
Fax. 651-634-5280
E-mail: jim.kranig@dot.state.mn.us

Rich Lamb
Minnesota Department of Transportation
Maplewood, MN
Tel. 651.779.5595
Fax. 651.779.5616
E-mail: rich.lamb@dot.state.mn.us

Gerry Larson
Office of Environmental Services
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-284-3775
Fax. 651-284-3754
E-mail: gerry.larson@dot.state.mn.us

Mike Leegard
Office of Construction
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-0860
Fax. 651-296-3811
E-mail: mike.leegard@dot.state.mn.us

Kiet Ly
Minnesota Department of Transportation
E-mail: kiet.ly@dot.state.mn.us

Cheryl Martin
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6120
Fax. 651-291-6000
E-mail: cheryl.martin@fhwa.dot.gov

Jody Martinson
Right-of-Way Engineer
Minnesota Department of Transportation, D3
Tel. 218-828-2549
Fax. 218-828-6105
E-mail: jody.martinson@dot.state.mn.us

Jim McCarthy
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6112
Fax. 651-291-6000
E-mail: james.mccarthy@fhwa.dot.gov

Judy Melander
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN
Tel. 651-582-1365
Fax. 651-582-1368
E-mail: judy.melander@dot.state.mn.us

Anjani (Minnie) Milkert
Utility Agreements and Permits Unit
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-282-5256
Fax. 651-296-9868
E-mail: Minnie.milkert@dot.state.mn.us

Vasant Mistry
Office of Bridge Technology
Federal Highway Administration, RM 3203
400 7th Street, SW
Washington, DC 20590
Tel. 202-366-4599
E-mail: vasant.mistry@fhwa.dot.gov

Lt. Governor Carol Molnau
Commissioner
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-297-2930
Fax. 651-296-3587
E-mail: carol.molnau@dot.state.mn.us

Keith Molnau
Office of Bridges and Structures
Minnesota Department of Transportation
Oakdale, MN
Tel. 651-747-2187
Fax. 651-747-2108
E-mail: keith.molnau@dot.state.mn.us

Linda Mullen
Communications Director
WSDOT
Tel. 206-464-1209 and 360-705-7075
Fax. 306-705-6800
E-mail: MullenL@wsdot.wa.gov

Jim Myers
Wyoming Department of Transportation
Tel. 307-332-4151

Tom O'Keefe
Area Manager
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1296
Fax. 651-582-1302
E-mail: tom.okeefe@dot.state.mn.us

Mark Panek
Principal Engineer
Minnesota Department of Transportation
Eden Prairie, MN
Tel. 952-826-6778
Fax. 952-941-5481
E-mail: mark.panek@dot.state.mn.us

Tom Pelnik
Director of Innovative Project Delivery
Virginia Department of Transportation
Tel. 804-786-1103
E-mail: Thomas.Pelnik@virginiadot.org

Dan Penn
Principal Engineer
Minnesota Department of Transportation
Golden Valley, MN
Tel. 763-797-3072
Fax. 763-797-3181
E-mail: dan.penn@dot.state.mn.us

Gary Person
Minnesota Department of Transportation
Tel. 651-779-5598
Fax. 651-779-5510
E-mail: gary.person@dot.state.mn.us

Joe Pignato
R/W Manager
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-284-3599
Fax. 651-297-5399
E-mail: joseph.pignato@dot.state.mn.us

Al Pint
Director, Office of Land Management
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-1132
Fax. 651-297-5399
E-mail: al.pint@dot.state.mn.us

Dave Raley
Senior Engineering Specialist
Minnesota Department of Transportation
Golden Valley, MN
Tel. 763-797-3076
Fax. 763-797-3181
E-mail: dave.raley@dot.state.mn.us

Karl Rasmussen
State Aid Right-of-Way Engineer
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-3306
Fax. 651-282-2727
E-mail: karl.rasmussen@dot.state.mn.us

Tom Ravn
Administrative Engineer Professional
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-6599
Fax. 651-296-9571
E-mail: tom.ravn@dot.state.mn.us

Randy Reiner
C.S. McCrossan, Inc.
Maple Grove, MN
Tel. 763-315-1324
Fax. 763-425-0520
E-mail: randyr@mccrossan.com

Marilyn Remer
Utility Agreements Engineer
Minnesota Department of Transportation
Roseville, MN
Tel. 651-296-7018
Fax. 651-296-9868
E-mail: marilyn.remer@dot.state.mn.us

Nicole Rosen
Traffic Support Engineer
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN 55113
Tel. 651-634-2145
Fax. 651-634-2085
E-mail: nicole.rosen@dot.state.mn.us

Bill Rottschaefer, Principal
SRF Consulting Group, Inc.
One Carlson Parkway, #150
Minneapolis, MN
Tel. 763-475-0010
E-mail: Brottschaefer@srfconsulting.com

Dan Sanayi
Construction and System Preservation Engineer
Federal Highway Administration
Tel. 202-493-0551
E-mail: dan.sanayi@fhwa.dot.gov

Robin Schroeder
Assistant Division Administrator
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6105
Fax. 651-291-6000
E-mail: robin.schroeder@fhwa.dot.gov

Brian Scott
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: bscott@srfconsulting.com

Sidney Scott
Vice President
Trauner Consulting Services, Inc.
Tel. 215-814-6400
Fax. 215-814-6440
E-mail: sid.scott@traunerconsulting.com

Eric Seabury
Rhode Island Department of Transportation
E-mail: eseabury@dot.state.ri.us

Bill Servatius
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-2721
Fax. 651-296-3811
E-mail: bill.servatius@dot.state.mn.us

Brian Smith
Biology/Water Quality Specialist
FHWA Resource Center
Olympia Fields, IL
Tel. 708-283-3553
Fax. 708-649-3501
E-mail: brian.smith@fhwa.dot.gov

Jason Smith
MAP Team Project Delivery Manager
WSDOT
Tel. 425-649-7286, Cell: 360-791-8827
Fax. 425-649-7085
E-mail: SmithJW@wsdot.wa.gov

Rick Smith
Director, Innovative Project Delivery
WS Department of Transportation
Tel. 360-705-7150
E-mail: SmithRick@wsdot.wa.gov

Richard Snow
Rhode Island Department of Transportation
E-mail: rsnow@dot.state.ri.us

Jim Sorenson
Construction and System Preservation Engineer
Federal Highway Administration
Tel. 202-493-0551
E-mail: james.Sorenson@fhwa.dot.gov

Michael M. Sprinkel
Associate Director
Virginia Transportation Research Council
Charlottesville, VA 22903
Tel. 434-293-1941
Fax. 434-293-1990
E-mail: Michael.Sprinkel@VirginiaDOT.org

Alan R. Steger
Division Administrator
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6102
Fax. 651-291-6000
E-mail: alan.steger@fhwa.dot.gov

Mark Storm
Evergreen Land Services Company
Eagan, MN 55122
Tel. 651-882-0200
Fax. 651-882-6564
E-mail: marks@elsco.net

Matthew Storm
Acquisition Manager
Evergreen Land Services Company
Eagan, MN 55122
Tel. 651-882-0200
Fax. 651-882-6564
E-mail: matthews@elsco.net

Steve Stroh
URS Corporation
7650 W. Courtney Campbell Cswy.
Tampa, FL 33569
Tel. 813-286-1711
Fax. 813-287-8229
E-mail: steve_stroh@urscorp.com

Gary Thompson
Office of Innovative Construction
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-205-4400
Fax. 651-296-3811
E-mail: gary.Thompson@dot.state.mn.us

Nick Thompson
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN 55113
Tel. 651-634-5310
Fax. 651-634-5280
E-mail: nick.Thompson@dot.state.mn.us

Jimmy Travis
State Construction Engineer
North Carolina Department of Transportation
Tel. 919-733-2210
Fax. 919-733-8441
E-mail: jtravis@dot.state.nc.us

Butch Trebesh
Ames Construction
Tel. 952-435-7106
Fax. 952-435-0913
E-mail: butcht@ames.com

Lisa Vander Heiden
Public Information Officer
Montana Department of Transportation
Tel. 406-444-7205
Fax. 406-444-7643
E-mail: lvanderheiden@state.mt.us

Jeff Voyen
Vice President, Geotechnical Division
American Engineering and Testing
St. Paul, MN
Tel. 651-659-1305
Fax. 651-659-1379
E-mail: jvoyen@amengtest.com

Kevin Western
Office of Bridges and Structures
Minnesota Department of Transportation
Oakdale, MN
Tel. 651-747-2106
Fax. 651-747-2108
E-mail: kevin.western@dot.state.mn.us

Joel Williams
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-0862
Fax. 651-296-3811
E-mail: joel.Williams@dot.state.mn.us

Gerald Yakowenko
Federal Highway Administration HQ
Tel. 202-266-1562
E-mail: Gerald.Yakowenko@fhwa.dot.gov

Terry Zoller
Metro Construction Engineer
Minnesota Department of Transportation
Golden Valley, MN
Tel. 763-797-3091
Fax. 763-797-3181
E-mail: terry.zoller@dot.state.mn.us

APPENDIX B

Skill Set Descriptions

Right-of-Way and Utilities
Right-of-way, utilities, and railroad delays have a serious impact on accelerated operations. More innovative solutions are required for both short- and long-term sensitive construction projects.

Right-of-way considerations include:

- State laws and procedures covering acquisition and relocation.
- Numbers and types of businesses and residences that may be affected.
- Availability of additional right-of-way.
- Number of outdoor advertising structures in the project area.

Utility considerations include:

- Industry responsiveness.
- Incentive-based agreements.
- Corridor approaches to utility agreements.
- Contracting utility work.
- Non-destructive methods for utility relocations.

When applicable, railroad coordination is essential to a project for construction access or work affecting the railroad's lines.

Structures
Accelerating the construction of structures (such as bridges, retaining walls, and culverts) will require deviation from the standard practices for their design and construction and will include early coordination between the designers and contractors. A system approach from the "ground up" will be necessary instead of emphasis on individual components.

Some of the systems and concepts that are proven to contribute to accelerated construction are:

- Prefabrication.
- Preassembly.
- Incremental launching.
- Life-in.
- Roll-in.

These should be understood and receive priority consideration.

Designers have several options in structure types and materials to meet design requirements, but identifying the most accommodating system while minimizing adverse project impacts should be the objective.

Construction
Accelerated construction may press the contractor to deliver a quality product in a condensed time frame and area while maintaining traffic. Completion milestones as well as the maintenance and protection of traffic are key elements visible to the traveling public. Allowing contractors to have input on design elements that would affect time or quality during construction can improve the effectiveness and efficiency of the overall project

completion. Using automation to enhance construction equipment performance; construction engineering and surveying; data collection and documentation; and contract administration should be explored and implemented.

Innovative Contracting

Innovative contracting includes exploring the state-of-art in contracting practices and obtaining a better knowledge of how these techniques could be selected, organized, and assembled to match the project's needs. Techniques to be considered include:

- Performance related specifications.
- Warranties.
- Design/build.
- Maintain.
- Operate.
- Cost + time.
- Partnering escalation agreements.
- Lane rental.
- Incentives/disincentives.
- Value engineering.

Any other innovative contracting techniques that would apply to the project should also be considered.

Geotechnical/Materials

Subsurface conditions and issues should be explored to assess their impacts on the project. Based on the geography of the project, subsurface investigation may be complicated by traffic volume, environmental hazards, utilities, railroad property, and right-of-way. Options should be pursued to expedite and facilitate turnaround times in material testing for material acceptance and contractor payment. Furthermore, the use of innovative materials should be explored and encouraged on projects to maximize the creative characteristics of the designer and contractor. By identifying project performance goals and objectives, the designer and contractor have the maximum freedom to determine the appropriate methodology for constructing the project.

Traffic/ITS/Safety/Public Relations

The vast majority of our nation's highway projects involve reconstructing existing facilities. Enhanced safety and improved traffic management along the project corridor is desired during and after construction. Evaluating both the construction and maintenance work on a corridor-by-corridor basis may help assess traffic and safety issues more fully then the conventional project-by-project approach. Developing and evaluating specific ideas should identify the need for incentives to enhance safety and improve traffic flow during and after construction.

Effective communication is vital to the success of any project. During construction, providing better information to the traveling public and politicians on the relationships among crashes, delays, mobility, total traffic volume, truck traffic volumes, and the need for lane closures is important. Implementing integrated ITS systems to communicate construction information to motorists via radio, Internet, and wireless alerts, as well as using incident management systems/services, is very effective and should be considered.

Partnering with local entities to inform communities and the traveling public about construction activities and traffic disruptions is needed to successfully manage construction impacts and avoid adverse socioeconomic impacts.

Environment

A project's scope-of-work and construction activities need to reflect environmental concerns to ensure the most accommodating and cost effective product while minimizing natural and socioeconomic impacts.

APPENDIX C

Skill Set Report Forms

RIGHT-OF-WAY AND UTILITIES
Facilitator – Al Pint, Mn/DOT
Note Taker – Joe Pignato, Mn/DOT

FHWA National Experts:
Kathy Facer, FHWA, HQ
A. Doug Allison, NC DOT

Mn/DOT, Local FHWA, or Local Experts:
Deb Anderson-Sleeper, Mn/DOT
Marilyn Remer, Mn/DOT
Karl Rasmussen, Mn/DOT
Curt Fakler, Mn/DOT
Bill Rottschaefer, SRF Consulting Group, Inc.
Jody Martinson, Mn/DOT
Anjani (Minnie) Milkert, Mn/DOT
Matthew Storm, Evergreen Land Services Company
Mark Storm, Evergreen Land Services Company

RIGHT-OF-WAY AND UTILITIES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Interagency coordination agreement.	Have signed agreement with environmental groups (for example, Corps of Engineers and other permitting agencies) to have the site identified later for mitigation. Next step in the process.	New Agreement.
Utility/Right-of-way purchased +/- 1 year in advance.	—	—

RIGHT-OF-WAY AND UTILITIES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Right-of-way (R/W) purchases for utilities, interstates, and state highways.	Coordination of buying of the property for the roadway project.	Statutory changes. AG decision.
Earlier utility office involvement for utility R/W purchasesR/W and utility layout meeting.	—	—
Use more review fee appraisers.	—	—
Title Orders-get as many as possible within reason because it is easy to do.	Identify critical path parcels to help in the process. Prioritize the titles.	—
Coordinating the R/W acquisition associated with the construction staging.	Stage and prioritize the right-of-way acquisition based on critical parcels and construction staging, such as total takes, commercial property, railroads, cemetery, etc.	—
Staged R/W acquisition like design-build (D/B) projects.	—	FHWA requirements.
Only using SUE on D/B. Should think about doing it here.	Assures or finds missing utilities. Needs to use more SUE. Other states have seen benefits associated with using SUE to avoid utility-caused delays.	State policy, education of design personnel.

RIGHT-OF-WAY AND UTILITIES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Get contracts established as early as possible. Associated assessments and abatements.	Possible separate building removals contracts.	Scope of work timing issues.
Proceed or obtain authorization for total takes and apartments before signed environmental assessment (EA) and municipal consent. (Risk but get approval to proceed.)	—	—
Railroad coordination.	CP - David Drach Owner. Progressive Rail - Barry Karlberg Operator. Take railroad and support with trucks. Total acquisition of the rail line.	Two entities ready mix is served by the railroad. Time of years of construction. Cost to shut down the line. Cost of exposure.
MSE Walls.	—	Conflict with utilities and additional R/W needed for the tie backs and geogrid system. Both parallel and perpendicular installations. In cut sections. Directional boring could also be a problem. TMC and signals associated with Mn/DOT could also be a problem. Aesthetics problem associated with large vegetation. Permanent Wall Easement will be needed.
Frontage roads to be part of the city's property.	We buy it and the city maintains it.	Could be too late in the process. Also municipal consent could be a problem.

RIGHT-OF-WAY AND UTILITIES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Peter's Billiards.	Total take how we handle the relocation/loss of visibility. (billboard) Buy them out!!! Partial take. Eliminate the connection of the frontage road and run it along the front or west side of the nursing home. EA say it as mitigation.	Land, building of the new site. Can't assemble property and sell it to them. Could be political. Problem with damages. Federally we could do this but state requirements are stricter. Driveway problems with access management. Bird and Fish????
Higher limit for MDA acquisitions.	—	FHWA.
Coordination.	Overall coordination of functions associated with right-of-way and utilities.	Different functional areas associate throughout Mn/DOT, i.e., surveys, R/W design, and construction.
Time savings issues.	Prioritization of right-of-way acquisition. Staged acquisition based on construction staging. Prequalified list for contracting. Standardized forms for consultants to use. Purchase agreement usage. Early and established construction limits.	Utility relocation would be a problem R/W not available State laws vs. State procedures.
Footprint buy enough right-of-way.	Buy enough right-of-way. Need to analyze the risk and move forward with that decision. Must look at buying enough if you do it. Establish utility corridors, stay within the footprint. Buy changing you will add time. To change a footprint you must provide a "show stopping" reason for the need for additional right-of-way. Along with delay time frame.	Designers need to live within the R/W bought. Changing and changing. Draining being done late in the process. Dollars, public relations.
Deliver projects quicker.	Keep staff appraisers. Flexibility with consultants. Allow upfront work to be performed. Access to county assessors records. Relocation incentives. Shorten up the quick take process.	Statutory changes. Upfront resources. Pilot Project Approval vacation/settling in acquisition.

—

—

RIGHT-OF-WAY AND UTILITIES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Meets and bounds descriptions vs. platting.	Study the process, is platting the best and quickest way to deliver the acquisition.	Staffing. Actual surveying of the plat is a problem.
CAD unit within right-of-way.	Use automated description writing program to identify the taking and print of the description. Areas and description are developed.	Software.
Look at the R/W area as a system to allow for flexibility.	Allows for contracting process to perform a turnkey operation.	—
Electronic hand-offs of parcel data.	Develop investment and implementation of EDMS system along with Mn/DOT's REALMS system.	—

STRUCTURES
Facilitator – Paul Kivisto, Mn/DOT
Note Taker – Kevin Hagen, Mn/DOT

FHWA National Experts:
Steve Stroh, URS Corporation
Vasant Mistry, FHWA, BT
Michael P. Culmo, CME Engineering

Mn/DOT, Local FHWA, or Local Experts:
Romeo Garcia, FHWA
Dan Dorgan, Mn/DOT
Kevin Western, Mn/DOT
Keith Molnau, Mn/DOT
Larry Erickson, SRF Consulting Group, Inc.
Ron Berg, J&L Steel
Mark Panek, Mn/DOT
Nelson Canjura, HDR Engineering
Tom Jerde, C.S. McCrossan Construction

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Staging and early contracts.	Getting work done earlier by starting earlier.	Early steel contracts. Letting bridges on north end of project earlier (if money is available). Using steel in cold weather. Cold weather epoxy with precast boxes. 8 to 9 months to get segments. 170,000 to 190,000 ft^2 of segmental bridges. Possibly change a segmental to steel. Need 100,000 ft^2 of segmental to be economical - could change one ramp. Precast Segmental hasn't been done in MN yet - competition not there yet (more expensive). Takes a while to set up for segmental suppliers but goes good when set up. Precast piers.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Walls.	Ideas to get walls built faster.	Tiebacks into R/W no good. Cast-in place (CIP) footing with precast stem. Emulation = CIP design converting to precast. Could go up to 30 ft. With CIP, footings easy, stems take longer. Secant walls (expensive, large quantity). Local precasters share responsibility with contractors. No room on project for casting yard. Set up precasting to be competitive. Enough volume on this project to bury cost of forms. Aesthetics with precast walls? Can precast anything that can be CIP (counterforts included). Precast counterfort walls done on 394. Give contractors option of CIP or alternate. Contractors required to design alternates. Alternates = CIP, MSE, MBW, tiebacks, crib. Just give the contractor the ground rules for walls then let them finalize design and const. (not sure of what you'll get in end - maybe allow only one type of wall). Have contractors submit designs for options before letting. Giving options may make for a crunch with design later. At this stage we'd want value engineering option. West wall on north segment will be critical - 1 mile on piles. With precast panels, could set up to 20 a day. Battered forms take extra time. Aesthetic of PC walls could be a tough sell (full height vertical joint ~ every 10 ft). MSE issues - temp sheeting retaining 8 ft' at abutments - ½ price of CIP - ½ time of CIP. How is sheeting pulled at MSE/abutment joint? Use temporary block out from abutment. MSE strap length = 0.7H - utility conflicts, settlement issues. Running long lengths of sheeting (only 8 ft high)? Good for contractor? Sheeting may not be needed if slopes are shallow enough. In Florida MSE walls cost $20/vertical sq ft. MSE walls good for different settlements, get costly when forming at top of wall, cast in place or precast option at top of wall. Slip form rail on top of MSE wall. Drainage considerations in MSE walls should not be a problem.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Contracts.		Right now one large contract. May eliminate some small contractors.
Small overpass bridges on north end (not on critical path).		Precast slab structures to speed construction. Superstructures only being replaced. Stay in place precast deck panels on PCB, not on steel (reflective cracking)?
Commons bridges.		MSE wall abutments. Pile footing, Spread footing. Close rail line for a while - side walls. Precast panels - need neoprene pad to set on, then make sure grout gets underneath to provide a solid bearing (solid bearing most important - need gap over beam from edge of neoprene to edge of panel). Decking a bridge doesn't take that long if there aren't traffic issues. Time of pulling forms would be saved. Monolithic, precast decks prefabricated on beams (German construction). Stage the Lyndale Bridge so that it can all be built at once - may not be an issue because there will be a lot of room to work (100 ft) - may be better for traffic if built all at once.
Segmental bridges.		Segment weight = 55T - 60T, 250T crane to lift. Placed by crawler crane. 1 to 2 hours to get one segment placed. Four segments during 8 hour shift, temporarily constructed - need to post-tension later. Traffic OK with temp PT installed. The more segmental bridges, the better for the segmental contractor.
Afternoon Session		
Bridge type specifics.		Br 27V73 - make it segmental to match 27V66? • Need to widen retaining walls. • Too small to make same size segmental as other five. High performance concrete and steel. Self-compacting concrete (no vibration needed, give up strength, tougher for field applications).

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Foundations.		Use 12 in CIP, try to get 75T. Shallow foundations may not work because of future excavations. Sheeting incorporated into foundations to be left in place - tie into footing. • Slurry trench - more expensive, harder. • Why design for worst case? H-pile in front of footing, lagging later if excavation needed. Drilled shafts for piers - possibly 1-8-footer for each pier, soil may be better for shafts on east end of commons. • Works for segmental. • Need temporary footing of bracket off column for temporary erection. Driven piles (18 in). • Load tests prior to letting. • Huge point loads in footings (not always economical - tougher design). • Use heavy wall sections (3/8 in wall on Wakota). • Drive 12 in heavy wall to more than 96T. • Geotech. • Use prestressed piles with steel prices on the rise. • Augercast piles - no vibrations, no problem with water table, just very messy when close to water, need computer automated monitoring, increased inspection demands, 100T at 18 in. • For speed of construction use high capacity piles and pour cap quickly. • Precast piles may not be ideal for MN with varying depths of soil layers. • Room for pile load test? • $60K - $80k for auger pile test. • Deep soil mixing?

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Foundations.		• Micropiles (5-8 in diameter) $100/lf - too expensive. • Drilled shafts have been done in MN recently - could be cost effective, some don't like crosshole sonic logging (CSL), $1K to $2K per test, doesn't replace testing. • Waiting period on fills - no, maybe 72 hours at the most. • Light weight fill to eliminate settlement periods.
Retaining walls.		Construction questions: • Consider other types of walls. • Bringing in fill may limit rate of construction - incentives for speed of construction. • MSE walls are quickest and cheapest. • R/W not an issue on fill situations, other options considered in cut situations. • Utilities can't be under MSE straps, transverse crossing wouldn't be an issue. • Also no trees on top of MSE walls. • Use soil nailing under frontage road near 46th Street. • Walls on north end. • Precast wall types. • Stability of foundations for future excavations. • 1 mile of walls on piling - may control rate of work. Final Recommendations: • Contractors would need list of acceptable wall types in proposal. • WY tee detailed to 30 ft. • High cost, $80/sq ft (high because of long hauling). • Glen Canyon. • Michael Culmo has sketches - will be quicker but not cheaper than CIP.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Retaining walls.		• Aesthetic considerations. • MSE = $25/sq ft. • CIP = $50/sq ft. • Precast = $50/sq ft.
Design-Build (DB).		Staging is the issue. Project must be all DB or none.
MSE walls.		Use at abutments to shorten span lengths.
Bridge 27V68.		Shorten east end span and put another span on the east end? Can't lengthen because we'll get into exiting ramp too much. Split bridge along gore area, stagger abutment.
Bridge 27V75.		Precast box vs. steel. Issues: • Future painting of steel. • Fracture critical steel cap. • PT concrete cap. • Redecking segmental is an issue, not an issue with beam bridges. • Erection not an issue for either. • Consider weathering steel. • Need to paint too. • Removal of precast segments - the whole thing may come down if things go wrong, with beams can better control things. • Aesthetics issues with mixed superstructure types on flyovers. • If bridge needs to open in spring 2007, bridge may need to be steel. • May need early steel contract.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Bridge 27V75.		• Steel tub section vs. steel I-section. North end of bridge controlled by retaining wall heights (approaching 50 ft). Make other flyovers steel if this one needs to be steel. Construction questions: • Use steel for this bridge? • When does it need to be done? - Stage 0 (says construction staging). • Can't start till 2007 now, could start a year earlier if steel used. • Could also benefit by changing location of piers for bridge 27V79 - get farther from travelways (reduce lane closures). • Bridge open by spring 2007 to save the time. Use CIP box superstructure.
		• More money than early steel because have to pay for whole bridge. Steel box cost 20 percent more than steel I-girders, and more difficult to erect. Steel box may end up being economical with less steel because of torsional resistance. Approximately two tubs would be required if tubs are to be used. With tubs, lose deck inspection access. Recommendation: When could seg bridge realistically be opened? • Cast Jan, Feb., March, April. • Erect March to June. • Deck, railing - June, July. • Open August 1, 2007. Steel bridge be opened. • Piers and abuts July, August, September. • Questionable to open by fall 2006. Let this bridge on its own.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Bridge 27V73.	See bridge type specific notes.	Widen out to use precast section? Would have two small cores and four large cores for casting. If made segmental - Stage 1 - four bridges (180 large segments, 91 small segments - could this be done), Stage 2 - two bridges. 6-8 months lead time to cast stage one segments, first segment comes off in 6 months. Number of different sections (two) is not an economic issue. Load restrictions, onsite casting maybe at a location where weight restrictions are an issue. Spend first year doing substructures then ready for segments (do-able).
Abutments.		Geotech questions: • Shorten bridges by eliminating cross slopes. • Use MSE walls to do this. • Drive piles so beams can be set before MSE walls built. • Use 30 ft approach panels for compaction issues behind MSE walls. • Spread footings on bridges.
General bridge.		Self compacting concrete - works best in precasting yards where there is more control. • Usually lose strength. • OK for drilled shafts. • No real advantage for field applications. High performance steel - silent in new code. High performance concrete. • High fly ash. • Silica fume. • Already used by Mn/DOT.
RR Bridge (27V74).		Build bridge offsite then haul into place. Salvage existing substructures. Rigid frame structure. Conspan structure.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Final Recs.	See bridge type specific notes.	Bridge 27V75. Steel: • Needs to be steel only 8 months prior. • Probably done by fall 2006. • Box vs. I-girder. Segmental: • Done by July/Aug 2007. • What really is the critical path? Retaining Walls.

CONSTRUCTION
Facilitator - Steve Barret, Mn/DOT
Note Taker - Kevin Hagness, Mn/DOT

FHWA National Experts:
Gene Hoelker, FHWA
David Donoho, TDOT
Michael M. Sprinkel, Virginia Transportation Research Council
Jeff Carpenter, WSDOT
Mn/DOT, Local FHWA, or Local Experts:
Joel Williams, Mn/DOT
David Graeber, FHWA
Kevin Kliethermes, FHWA
Terry Zoller, Mn/DOT
Dave Raley, Mn/DOT
Randy Reiner, C.S. McCrossan Construction
Don Demers, SRF Consulting Group, Inc.
Steve Jensen, HDR Engineering, Inc.

CONSTRUCTION		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Precast vs. cast-in-place.	Precast retaining walls and structures, temporary ramps, etc. Look for areas that affect traffic the most to speed up the time of disruption.	Early let for precast?
Completion time.	Keep completion time to an absolute minimum.	May force them to have more crews. May pay more money-likely worth it.

CONSTRUCTION		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Jack critical storm sewer (96 in).	Possibly less time and impact to traffic for critical storm sewer sections.	What are costs? Possibly use sheet piling or put proposed storm in median next to existing storm. Which location is more beneficial/cost effective?
Divert storm.	Avoid upgrade to 96 in storm sewer and surge basin.	—
Closures.	Minimize major movement closures to 8 weeks.	This applies to through volumes and major ramp movements. Local ramps could be closed for more time. Nights and weekends for I-35W closures.
Cross sections.	Strive for cross section uniformity to save construction time.	Use concrete shoulders between mainline pavement and curb and gutter to save time.

INNOVATIVE CONTRACTING
Facilitator – Tom Ravn, Mn/DOT
Note Taker – Andy Ditter, Mn/DOT

FHWA National Experts:
Gerald Yakowenko, FHWA, HQ
Sidney Scott, Trauner Consulting Services, Inc.

Mn/DOT, Local FHWA, or Local Experts:
Dan Anderson, Mn/DOT
Mike Leegard, Mn/DOT
Gary Thompson, Mn/DOT
John Griffith, Mn/DOT
Tim Anderson, FHWA
Robin Schroeder, FHWA
Joe Gladke, Mn/DOT
Dave Johnston, Mn/DOT
Butch Trebesh, Ames Construction
Rick Brown, SRF Consulting Group, Inc.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Staging.	Crosstown Commons is charged to keep traffic flowing. Keep same number of lanes but will slow down due to distractions. Commons lends itself to weaving and filling in retaining wall and staging south side. A lot of dancing of traffic back and forth with the staging of	Staging is constrained by funding and compacts the schedule. Stage 0 early 2006. Those two bridges need to be let early. Letting 2005 based on schedule. Sewer work needs to be done early as well. If we don't get those two bridges early, it may push us to 2010. Metal bridges take 8 months to prep. Steel is an issue.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Staging.	the project. North end staging same layout. Stage 0 will reconstruct overpass bridges first. Four main bridges. Two interchanges. We looked at this in staging. We looked at two adjacent bridges closed at one time. Important that the north end has these four bridges constructed first.	
Two contracts.	10 to 25 million as early letting. The big letting in April won't hurt us. Right now there is no funding for that Stage 0. Completed design is late November 2005 letting. The more money for that first stage we can help it out.	Get funding for Stage 0 and contain the sewer work in the same piece. If we don't get the funding, it may push it back.
Gaining time.	Having money available in 2006 and Stage 0.	Two bridges can go first. If you open up too much with a shortened construction season, we may only be able to do those two bridges in that year. You don't want to open up too much.
Precasting.	Two lanes wide. 40 feet wide.	—
Optimistic schedule.	What is your amount of time needed for this?	Intent is to have this go to FY 07. Why not let it earlier and do some winter construction?
How fast?	Bridge design is not the limiting factor.	We need to have the design and profile to be the right one.
Moving up early date.	November letting.	May not gain much for a November letting. Right in the middle of winter but needs bypasses for the bridge to be built.
Closing Crosstown.	Will it accelerate the project?	What if we only do it for one season?

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Controlling operation.	Segmental bridges.	40 ft cannot be done onsite and need to be hauled in.
Size of contract.	D/B. They need to joint venture with large firms. Have the AGC consider fitting it into their program.	
How long will it take to get an RFP?	What do we gain by D/B in terms of time?	Money may not be there for the project to move up.
Funding.	We can't appropriate funds until July 1, 2006.	Money is not available until 2007 for the other projects that are taking that money right now.
Funding for four fiscal years.	Encumbering as we go.	Have to show it as part of our program.
Issues with acceleration.	How does it fit with cash flow?	What is the cash flow analysis? No work done finding out what the maximum payment curve will be.
Funding all at once.	Move it up as early as you can.	Four contracts on Wakota can be difficult. We would like to see the one contract together.
One contract vs. two.	Goal is to use state personnel.	Makes it difficult if you get two different contracts.
Goal to minimize personnel.	Run both at some time is an issue, but if it is done early then it may be out of the way.	Similar to moving utilities out of the way first. This may be a good option.
Utilities.	City sewer, water, and fiber. In terms of utilities and relocation, there does not seem to be a big problem. The City of Bloomington will be involved as well.	Get them involved early.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Two segment projects.	Segment One south of 494. This is one project larger than originally anticipated.	
Lots of projects vs. one.	Marquette contracts 15 and got twiddled down to four and small contracts.	It was split up into legs. One contract would have been much easier.
Larger is better.	Maximizes the contractor's ability to innovate as well. Not have to worry about the other guy controlling your work.	Larger is more flexible.
Moving equipment.	Segmental bridges can be more critical than the other. More flexibility and space can minimize the closure.	
Looks of the final roadway.	Not flexible. 8-week closures may be allowed. Up to 12 weeks may help get it done faster.	Public stopped the projects due to closures. Right now we still need two projects.
Not good D/B.		
Stipend to build the job.	Provide stipend for staging.	Money for staging.
Is this contractible?		Room available.
Mandate staging in this stage.	Need to demonstrate that the project can be built. Mn/DOT needs to say it is safe. We tend to layout staging: more complex, less risk.	Contractor may have a better idea.
Incentive.	Better way to stage it than Mn/DOT and has an incentive better than what Mn/DOT wants done.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
A+B.	We need to provide incentive for staging this way. Pass risk off to the contractor. Money is the only incentive.	Need to structure the contract well.
Priority system created.	Other routes may be attractive to contractors.	Study the criteria for time of closures.
Transit.	Can a shoulder be provided for buses?	Can you maintain the buses? Can that create an incentive to maintain the bus traffic on the shoulder?
Closures rental.	Max number of days it can be closed. Matrix of closures and not have multiple closures.	Build a bypass to save days.
Help to win the job in the bid?	Closures of rental.	Ramps.
Mainline closure rental.	Close for a week and get complex work done.	Setting segments in short durations to set beams.
Police slowdown.	To place beams.	Inform public and tell people to avoid it.
Change driving patterns by information.		
Total closures.	12 weekends on 494. What are the total closures for this project if we decide to allow it? Can we set multiple bridges?	Rental will make the contractor decide to do it correctly.
More than 8 weeks.	Damages will follow for more time. Incentive for less.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
A+B.	Helps contractors win the job vs. incentive/dis.	Will it increase the price to a point of not being affordable?
User costs.	What is the user cost for the roadway?	What if it overruns?
Cap incentives.	Worst case dollars. Incentive is meant to be part of his risk. He is banking on those dollars.	
Contingency.	$208 million… What is the final estimate? We need to identify that contingency.	We all agree upfront, and we need to find the money in the end.
Leaving out staging plan.	Best value for traditional project?	Stipend for the project can be paid.
A+B 200m.	Has that been done before?	NY staging.
Staging.	Have to do the staging and see if this is constructible.	We need to see if we have a contracting process to build the project.
Info staging document.	Develop their own and only having the staging as an info plan.	Separate the staging plan.
Saving effort.	Reduce the plans and eliminate the staging.	Cost of staging plan vs. stipend costs.
Bid vs. build documents.	Different animal for different needs.	What is the level of documentation that the contactor needs to provide to the DOT?

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Cost creating documents.	Need to set up partnering at the beginning. Create number of sheets. Satisfy expectations.	What we say in our D/B? One team sets up complete traffic control. All developed a cost. The more detail they created, the better they were scored.
D/B/B.	Staging plan will be included with the proposal. That would go out now.	D/B.
D/B at 95 percent.	As long as it is not complete, the statute can allow us to use the best value method.	Use parts of the design project even if it is not the D/B project.
Wall and bridge types should not be as prescriptive.	Prescribing wall types may not be the best thing to do.	Value engineering. Bridge may increase the amount of funds given to value engineering to stimulate the way we build our bridges.
What is the value basis of one construction stage over another?	Can we reduce closures and save time? Can this come out in a construction plan? If the contractor puts the whole staging plan in advance? Adds risk to the contract. But, we save all that upfront work.	We need the staging to convince Minneapolis and Richfield.
Better staging.	How do we measure that? User cost--does it save time.	Is it important enough for us to have high quality and/or should we go to the old way?
Benchmark 4 years.	Everything is based on how we can do this faster. Cost of 5 vs. 4 years. Social cost, safety, but what is the money saved on $s. Are we convinced?	Selling the cost to the Commissioner may be the way to get the money.
Minimizing closures is the only one we can affect.	Are we correct in modifying the project goals? What elements of D/B can we use?	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Minimize traffic impacts.	Goal for the project. Legislation is determined by the legislature. The reason why the project is stopped.	
Old PR killed the project.	We are gun-shy with talking about the project and talking to the paper. They can give a spin that we don't want. But need to spin this the other way.	
Lump sum for the traffic control.	This is what we are willing to pay--can you do it for cheaper? Enough description--can we get the contractor? Would we get a bid?	We were locked into the schedule of values. We have $225 million for this price.
Reverse bidding.	What can we get for $208 million?	
2 months for 212.	4 months--design and construction can be done, but it is a huge effort to do that.	
Cost and pricing for bypasses.	How can we optimize that? Give honest closure times, and we will get a better price. We assume 10 days of closure. You have to bid a cost to those days.	4-year plan needs to be shared and risk managed.
Time in traffic.	Mn/DOT needs to learn what the contractor wants to do. By sharing information, we are educating everyone in the project.	Speculation time is eliminated.
Working side-by-side.	Need to find a way to incorporate that in this project.	Hours put into design scrutiny can reduce downtime.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Minneapolis.	They hold Mn/DOT accountable for the information provided. The PR firm addresses complaints, and we have a better way of doing PR. We need to capture that on this project.	
How can we get this done as fast as we can?	Mn/DOT gets this done. Acceleration is what this will cost us. We need to find a balance for it.	Building fast--what are the issues we can minimize?
Cost savings.	No physical cost savings occurs, it is a soft cost and is to the traveling public. Here is an opportunity to save user costs.	Time frame is critical.
Goal 2009.		
Steel orders will take lead time.		
Precast bridges.	Are the beams too deep for the sections that they could be utilized? Is steel the only option?	
Minneapolis.	They did not want the program to be D/B because of the uncertainty.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Is there flexibility in how we build the project?	Because the design is done, but the way it is constructed is the main flexible thing.	
If money showed up next year.	The main reason to use D/B is to accelerate the money.	We need this to capture the federal dollars, and this is the way to do it.
Go with the staff.	Need to go when politics allow you to go and no-go on projects	Admin changes can kill a project.
Legislature changes in the boundaries.	Helps us to move it up ahead.	
State is learning how to pull the trigger.	30,50,75,95 percent done design. Create a D/B project when the time is right to get a job done, because funding is now available. The State needs to develop a method and system for doing that.	
EIS.	Are they trying to kill these projects? Geometrics wants it to transit coordinated. Wanted LRT. We will settle for BRT and a commitment in dollars. We need to keep this as a commitment to the admin that supported it.	
Hot lanes.	Can you run the infrastructure before hand?	Is this something that can be done later?
Open up Crosstown.	You need to open up the points north.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
City wants to fix the whole system at once.	We need to communicate to the City that this is a sectional approach that needs time and funding to be implemented.	
Construction Manager at Risk.	Can some of these other innovative types benefit the overall project? Completely different than what we currently do.	
Funding.	We are continually not funded up to 100 percent. And our resources are retiring. Contract Administration is used to supplement our larger projects. On D/B, we seem to put our key people out there and fill them in with consultants.	The option is to give all the small projects to consultants. It is difficult to put our own people to them.
Staffing.	Time period of 4 years can create a turn around in staffing. If we were to contract out some of the construction, do we lean more to the front line or supplement our project with the people?	Plug names into the holes using an org chart.
Material testing.	Hiring out certified labs. Use Mn/DOT staff for the leaders of the staff for quality control.	TTI had suggestion. Set up testing facility. D/B would delegate more to the contractor on the job. Other mega jobs, set up a change management team.
Change management team.	Separate team that would do the job of Central Office to handle changes and produce results sooner.	If this is a design-build job, then it might make sense.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Staging operations.	CPM is the only way you are going to be able to find out time.	Helps to implement incentives and disincentives.
Invoice pricing.	Percent of work complete is paid for. It is determined based on the CPM.	We hire outside experts to help us do that.
Task order consultant.	The consultant is paid on certain projects for 2 to 3 weeks at a time. This may be a good idea, but might not be practical.	Might not be able to be done because of the current staffing rules to the contracts.
Staffing org chart.		
Task order consultant.	The consultant is paid on certain projects for 2 to 3 weeks at a time. This may be a good idea, but might not be practical.	Might not be able to be done because of the current staffing rules to the contracts.
Materials testing.	To supplement testing, bring in a consultant like a testing company to run more tests during paving and pouring.	
Contractor staking.	Contractor's responsibility--will work better for it.	Number of stakes goes down.
Field fitting.	Contractor, inspector, and surveyor will be figuring it out together.	
QA/QC.	Contractor has more responsibility in our D/B projects. The idea is the contractor controls their process efficiently. We can then check the project and we don't find anything wrong. But at the end it is not	QC/QA is something, Virginia DOT does not want to get into it. 95 percent meets the spec. But the 5 percent that does not meet spec--it obviously will be representative of the bad pieces of the project. We still need non-random samples and to do the mathematical random samples as well.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
	what we want. Now what? We are stuck with it and might get some money back. It all comes down to knowing that we have good contractors out there. We want a contractor to put the extra money and time into it. A big contractor will bring in the quality with the bond. The amount of testing is not the issue. You have to know you have a contractor that wants quality in the process. Statistical analysis and numbers may only give us the current quality.	
Compliance auditing.	Will give you a threshold across the board. Better place for lower-level people. Something we can sign off and be comfortable with.	Bringing up the skill level of the contractor is something we need to utilize.
Oversight.	How many tests do we run? Make sure the testing is fair.	Losing the experience.
Retired DOT.	Working for the contractor will be attractive for both sides. Experience and contractor run QC.	
Goal to get the job done in less than 4 years.	Huge PR effort. Night work. Vibration. Special permits to work at night and on weekends in Minneapolis.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Do we not need to follow the City ordinances?	Legally no, but we need to continue to solidify the relationships with the city.	In certain cities, we have worn out the welcome and the contractors may get the permits better than the DOT. How can we use the contractors to go into the permit?
What to put in contract?	Night work. Will have to get the permit to do night work. Not a good idea because of the uncertainty.	
Build noise wall as first order of work.	We are going to do innovative contracting. What can we do to make this easier?	
Visual barriers.	Screen it off rather than leaving it open.	Temporary barriers buy you time.
Trucks on side city streets.	Paving driveways and some trees may make home owners happy and take care of things.	Some give-and-take will be part of the solution.
Haul road.	If it is less than 9 tons, then we may have problems.	We can't do it in the Twin Cities.
Contractor working for city at the same time.		
Pre-purchasing.	Steel pricing may warrant buying up front.	
Scrap price is still high.	Index and scrap price for steel do not line up well.	
Preconstruction conferences.	Not mandatory, but they are usually all there.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Crosstown Forum.	The more up-front that is available the better.	
Post-bid conferences.	Four meetings: scheduling, utilities, submittals, and partnering.	Have all four meetings and talk on those targeted topics to be used before the letting. May cost more, but it will allow for the contract to start more smoothly.
Money and timing.	May have to rearrange our statewide priorities. The state tightened their belts to do this for them. ROC-52 is an example. That's the better way to do it, and keeps things from getting bogged down. The pitch was to Doug: Could this happen?	Re-allocation is one of the top things on the financing list.
Innovative contracting.	Hybrid.	
Delivery.	One contract.	
Find money to do Stage 0.	Need to get that done. We need to not lose 2006.	Immediate needs to find that first money for those two bridges would be to achieve a goal to keep the program on schedule.
Funding.	Drives the fact that we can have two contracts.	Get first staging done now.
Stage 1.	There is not a lot of bypass to do Stage 1.	Whenever you let, it's good.
Stage 4.	Complicated section.	
One contract.		

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Hwy 100 South.	This is linked to that roadway. The sooner this is done, we can then get 100 S done.	
Contractor comes up with the staging.		
Best value may be used for D/B.	Stage-Build: 95 percent design and only need to get the staging done.	
A+B.	There is no need for the stipend by using A+B.	
D/B/B.	We can do both A+B and D/B/B.	
D/B.	90 percent design done and then the project becomes D/B and now they are looking at the staging, construction, and traffic management.	
RFP.	Our commitments need to be upheld with the cities.	
Esthetics.	Wall types and what it looks like is already solidified with the cities.	
Warranty design.	Not double up design work. Need to give contractor work that they can trust.	We need to stand behind our work.
Stand by our design efforts.	We want to see if D/B works or not and at what percent.	We have to look at staging plans and structure it. We have to be sure if they did not have the plans. We have to have something laid out well.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Stipend for staging plans.	Accountability for construction staging.	Money well spent for the data, and all the data is ours.
Ramp closure matrix.	Ramp closure matrix could be used to coordinate multiple ramps and rules with the closures. That way we at least have some sort of evaluation for this project. Going to have to set up all the criteria.	
Stipend traffic.		
Documents.	What a contractor needs vs. what Mn/DOT produces.	
Staging plans.	How much would it cost? 3 or 4 months. Two to four people. All three dimensions would have to be looked at. Need three dimensions to get a good price.	$1.2 to $1.4 million to get a project D/B.
Shaving this schedule.	For A+B, could help to manage the ending of the project.	
Winning the job as a contractor.	Road user costs are not easily reported and measured.	
Do we do A+B?	Extra funding due to calendar. Can be done together.	
Ramp closure incentives.	We should not cap the incentive.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Schedule.	Approve updates with the contractor, having payment that is tied to the schedule	
Cost- and resource-loaded schedule.	By attaining resource loading, we get more information about the productivity of the contactor.	
Lane rental.	Forces the contractor to do that job with his subcontractors.	Possibly be able to rent out the complete outright closure of the roadway.
Paving in the middle.	Staging for #4.	
Master utility agreements.	Used for design-build, but we can use it on conventional projects. This is interstate money and we can participate. Contractor-State-Utility to move utilities in a timely manner.	Some favors will need to be done with Minneapolis.
Resource loading for CMP for state personnel.	Updates need to be updated and for all scheduling. Mn/DOT does not do that on a monthly basis. No real indication is told by Artamis.	
Expedition.	Shop drawing linked together and data collected.	Buy the product for the job.
TRAC.	Document control.	Have a digital field data collection method with PDA that plugs into the database to organize field data, photos, and shop drawings.
Escrow bid documents.	Yes, we use it.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Standard DRB.	Design Resolution Boards. Standing group of people.	Good deterrent to getting the two parties to work together.
Establish dispute resolution board.	Have a dispute ladder. You can ultimately go to court.	Are DRB binding?
Quarterly DRB meetings on partnering.	Partnering meetings. Two to three day workshop up front.	Regular partnering meetings.
Warranties.	We currently have not touched on that today. ROC 52 has 5-year warranty on the concrete.	Contractor guarantee and good quality control could be alternative to warranties.
Contractor guaranteed program.	May have some merit to do what they are doing. We have to place some systems to get that to work here in Minnesota.	
Value engineering.	90-10 or more than 50. Dan Dorgan is investigating the way structure foundations. They are in support of a 90-10 split.	May create a double dipping. A negotiated Supplemental Agreement may be the way to go.
Negotiated supplement agreement.	Project specific items are not value engineering.	
Shortlist the D/B.	We would need to shortlist to make sure that it will not go over.	See if we can shave time off of this job.
Shortlist.	Safety, design, schedule, staging, lane rental, and staging.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Can you shave time?	Given the plan we have provided, can you shave time off?	
Staging.	Different contractors have different strengths. The bridge spatiality people and the road people. Hopefully, they will all be the same. How much different can they be? Will the contractor look at a more aggressive staging plan than the current design consultant? What has to be done? Is it necessary to have this method?	The assumptions of the contractor will be on the conservative side.
Incentive.	Motivation to keep the movement open.	
D/B.	Will this add good PR to get the project done?	Under D/B.
Surety bonds.	The bid bond is forfeited if they rescind the bid.	
Two-Step Best Value.	We ultimately want the staging plan to be contractor driven.	
DRB.	DRB is used mainly for Design-Build. It is being used on Wakota. Large projects seem to be a good idea for its use.	
PDAs and database.	Electronic construction documents.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Electronic grade control.	Wilmar District is working on drainage ponds. Grade control: issue is whether or not the design is correct. There is extra work to do that.	Grade control could be provided electronically.
BidX.	Mn/DOT is currently on BidX. We have a Web site that has preliminary plans on the network. The final plans go out as paper. There is a way to look at layouts from the Central Office.	Electronic plans re the long term goal. We are currently providing only preliminary plans.
Web site.	No electronic files are on the Web site. We only provide PDFs. We try to give the same amount of paper work to not give one team a bigger advantage over another. Plans are held until a fair and even release date.	With the Best Value Selection Method, we need to give all the contracts a correct start time.
Adjusted price for technical and cost of D/B.	The project may be a D/B project. We would have to write the RFP to evaluate well broken down categories for the value engineering project.	
Compaction.	This is a specified job. We are currently basing our ordinary compaction with our DCPs.	Compactor with compaction readout equipment and a graphical illustration of the compaction of the grade.
Storm sewer.	At 39th Street drop shaft, there is a head end of a storm sewer water. Takes the drainage from 35W at Minnehaha Creek to the Mississippi River. There is a water pipe that is going to be constructed in from 40th North.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Segmental bridges.	Casting yard will be a big job and will be on the critical path.	
Southbound to Westbound 62 may be a steel bridge.	We are looking at the types of bridges and the amount of time it takes to construct the bridges and how we can stage the bridges in the job.	Critical path needs to be identified.
Drainage system.	There is a downstream condition that needs to be fixed more. The whole tunnel is separately being studied.	
Matrix for closures.	We arbitrarily chose 12 weekends for 494. Can we make good use of total closures for the Crosstown? Total closures at night have historically been acceptable to the general public. It is easier for contractors to do a total closure instead of half stepping. It is something we need to look at. Detours would be 55 and 100 and be better than the 494 job. Maybe on a big job we need to close that thing to save all that time on Albuquerque, NM. They went out and did a big job at night. Weekends would be easier to close this down. Working nights for a long time can burn out the workers.	The potential time advantage and construction advantage could be an attractive consideration.
Public notice requirements for closures.	Traffic management and PR folks will work on that.	If we are working on one side, we may have one movement be taken. It could be worth investigating. Total closure in one direction could be the norm.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
494.	12 total weekends and 40 nights. 70 or total days 494 was closed down and it worked.	Sections could be split.
Direction days.	Maybe we say that there is a points approach to grabbing lanes and movements.	There are certain combinations you cannot do on closures.
Peak closures.	You could allow for non-peak closures. You could reduce peak closures.	Ramp could be closed for eight days and then they need to build a bypass to avoid a penalty.
Mota.	Determine the closures and ramps based on traffic movements.	

GEOTECHNICAL/MATERIALS
Facilitator – Joe Korzilius, Mn/DOT
Note Taker – Bernard Izevbekhai, Mn/DOT

FHWA National Experts:
Chris Dumas, FHWA, NRC, Baltimore
Bob Kimmerling, PanGEO, Inc.
Tom Pelnik, VDOT

Mn/DOT, Local FHWA, or Local Experts:
Rich Lamb, Mn/DOT
Dan Hayne, Mn/DOT
Gary Person, Mn/DOT
Chuck Howe, Mn/DOT
Stan Graczyk, FHWA
Dan Penn, Mn/DOT
Jeff Voyen, American Engineering and Testing

GEOTECHNICAL/MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
General soils.	Groundwater generally > 10 ft below. Granular below existing pavements. Organics found around Portland Avenue, but nominal. Principally granular soils encountered so far.	Build subgrades with select granular material for constructability.
Minimizing bridge spans.	Reduce and avoid spanning over end slopes on embankments.	Investigate MSE walls as tall abutments considering the total deck area over the end slope. The cost of tall abutment is significant cost saving. Bridge can be supported on separate foundation. This removes wall from critical path. Use approach panel as transition.

GEOTECHNICAL/MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Concrete versus asphalt pavement.	ESALs are comparable to projects in which bituminous has been used. Revisit the pavement selection process. Consider reconstruction and future maintenance and life-cycle costs.	Do ESALs and R-Value necessarily imply concrete pavement? Consider Bituminous. Many layers.
Staging Stage 1 temporary bridge temporary pavement.		No issues. Temporary shoe fly are close to permanent. Good idea.
Stage 2.	Bridges identified as critical paths, RR Bridge and Short, and wide bridges Lyndale and Nicollet.	Investigate reducing steps. Consider pile bents and slab spans for these short span bridge extensions
Pavement construction.	Pavement subgrade material as part of the wall construction. Saves on step of the process.	Accelerate pavement construction in Stage 1 MSE walls at the edge of pavement. Identified access for haulage as critical. Haulage of materials in and out quickly considering volume of fill involved. Construction season April to November may be an obstacle to rapid construction.
Stainless steel-clad dowel bars.	Bottleneck issue. Availability.	Identified early as potential material shortage though pavement surfacing is not a critical path, avoid project delays due to non-availability of sufficient dowels. Explore alternates: Hollow tube, FRP etc.
Specification changes.	Maturity method of determining concrete strength. Density of fill. High early strength.	Try maturity methods for bridge and concrete pavement. Thick lift construction from 8-12 in. to up to 2 ft. to accelerate process (fill compaction).
Spread footings.	Spread footings to reduce or eliminate the process of deep foundations. 15 percent savings.	Increase in foundation area due to spread footing may significantly impact ROW. There is a 15 percent savings in cost for bridge abutments. Investigate use of ground improvement methods.

GEOTECHNICAL/MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Piling.	Use high capacity piles to reduce number of piles. Fewer piles smaller caps.	Use high capacity piles. Fewer number of piles and smaller caps.
Concrete piles.	Augered piles can be installed quickly and at a lower cost.	
Alternate wall types.	Look at alternate wall types.	MSE fast and less expensive. Cut walls. Soldier piles. Soil nails. Evaluate stand-up time for test cuts. Slurry walls.
Walls.	Sta. 602.	A retaining wall appears redundant where a 2:1 slope is possible. Eliminate retaining wall in these areas.
Contract for design and construction of walls.		Performance specs for walls. List acceptable wall types. Allow contractor to choose. Tee walls can also be considered. Soldier pile lagging wall.
Scenarios for support in lieu of spanning in-slope.		Scenario for MSE wall: • MSE walls, columns on piles. • MSE walls, pile bents to the beams. • MSE extends beyond the gap and slightly under deck.
Reduce haulage. Especially for temporary construction.	Consider alternate material geofoam.	Use Styrofoam for temporary embankment. Reduces slope and construction time.
Construction specs.	Consider alternate material geofoam.	Select Granular (Modified) down to 5-ft. directly below and in reinforced zone behind walls.

GEOTECHNICAL/MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
What do we need 12 percent spec for granular backfilling? Staging for utilities. Is a lateral drain feasible?	Reuse of onsite soils will speed up grading operation.	Maintain transverse utilities alignment as much as feasible. Get these to manufacturers at early stage.
How far from reinforced soil zone can utilities go? Utility locations.	Maintain minimum setback behind reinforced zone.	These need to be done early so that foundation design will accommodate them. Recommend working some more details.
Where do fiber optics go?	250 ft.	Cannot run conduits on the side of the wall due to esthetics. Conduits are better in the barrier. Directional borings probably. Install conduits for future use.
Precast concrete pavements at critical location around ramps.	Precast panels may help accelerate schedule when critical.	
Can the materials be reused? Do we have to subcut in areas where we potentially have granular material? Can we eliminate joint sealing?	Reuse of onsite soils will speed up grading operation and reduce haul-in-phase. Reuse when onsite material is adequate.	Still drilling in the area . Still need to know if cut is reusable. Uniformity is required.
Pile capacity (what do we need). Precast concrete piles.	Allow higher capacity piles and higher load per pile if and when soils can support it. Precast concrete pile may be a less expensive alternative.	16-24 in verify with a PDA monitoring. Precast concrete piles can be considered. Need to evaluate and take advantage of set-up. Pre-design load test needed.

GEOTECHNICAL/MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Walls.		Tee walls. Do not need deep foundation. Can compaction be achieved under these units. They are subsequently post tensioned for fixity. Good option MSE and alternate wall types.
Use of GPS equipped grading equipment.	Rollers and compactors equipped with GPS.	Intelligent grading and compaction. Review literature from other states and manufacturers.
Continuous update.	3 monthly Geotech progress meetings required. MSE wall training required.	
General notes.		Structural loads need to be done early. Coordination with local authorities on utilities need to be done early.

TRAFFIC/ITS/SAFETY/PUBLIC RELATIONS
Facilitator – Nicole Rosen, Mn/DOT
Note Taker – Brian Kary, Mn/DOT

FHWA National Experts:
Greg M. Jones, FHWA, NRC, Atlanta
Lisa Vander Heiden, MDT
Jerry L. Graham, Midwest Research Institute
Dean Gustafson, VDOT
Linda Mullen, WSDOT
Jimmy Travis, NC DOT

Mn/DOT, Local FHWA, or Local Experts:
Amr Jabr, Mn/DOT
Jim Kranig, Mn/DOT
Judy Melander, Mn/DOT
Bill Servatius, Mn/DOT
Nick Thompson, Mn/DOT
Cassandra Isackson, Mn/DOT
Denny Eyler, SRF Consulting Group, Inc.
Jim McCarthy, FHWA
Cathy Clark, Mn/DOT
Dave Kopacz, FHWA
Brian Scott, SRF Consulting Group, Inc.

TRAFFIC/ITS/SAFETY/PUBLIC RELATIONS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Work Zone Safety		
Incident management plans.	Dedicated Service Patrols for the project, emergency pullouts, dedicated State Patrol. Plans for emergency response.	Freeway Service Patrols: • Set up a method to use project funds for FIRST team. Freeway Service Patrol dedicated to work zone. Implement FIRST for construction. Incident clearance. WZ equipment maintenance; use heavy equipment to clear major (heavy vehicle) incidents. • Difficult to make a contract item. CO Construction to continue to work with RTMC and incident management. • Include towing in contract. Easier to do as part of contract rather than trying to find money after project is let. Dedicated State Patrol: • Pay state patrol to be onsite during critical times and after traffic switches. Currently doing this on most major projects. Work with the State Patrol to get more officers in the Metro.
Establish safety goals and measures.	Number of incidents, clearance times, number of worker injuries, etc.	
Contractor incentives for new/innovative ideas.	Incentive to contractors for new/innovative ideas that will speed up the project, improve safety, and reduce the impact to traffic.	
Work zone safety messages (A8).	Extensive coverage of work zone safety. Use print, television, Web, and radio. Should be fully integrated into every aspect of what we do.	Target audiences, focus on specific topics so that it is part of all media coverage (continue good work—project specific issues also).

TRAFFIC/ITS/SAFETY/PUBLIC RELATIONS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Special provisions enforcement (A6).	Provide support and training for enforcement of special provisions. Let the public know of our successes with safe work zones.	Continue training of new inspectors, project engineers, consultants, and contractors. Management support.
Special provision penalties (A9).	Penalty language is often overlooked for design/build projects.	Project manager/engineer meet with CO to include special provision language to make sure it is included if this goes design build.
Traffic Management		
Alternate routes.	Make improvements to alternate routes to handle the additional traffic.	Systemwide alternate route assessment prior to project staging decisions. Make improvements on local streets and parallel corridors. Improve signal timing. Provide resources if money isn't possible. Add "quick and dirty" third lane to Hwy 100.
Maintaining traffic management system.	Maintain existing TMS during construction for Traveler Information and incident detection.	Portable CMS—make sure they have remote capabilities. Have alternate traffic video setup in place and functional prior to start of work. Wireless, non-intrusive detection. Set up penalties for management systems being down.
TMC (A9).	Add system to measure travel times through work zone. Make sure that TMC has management capability. Offer integrated plan with bus/transit. Approach businesses for alternative work schedules. Use of message signs for commuter information. Use cable TV for project info.	Ensure continuity of system (wireless, if needed). Have a special operational policy for work zone (i.e., ramp wait times not as critical). Consider "Dynamic Merge" in high access areas when closing lanes.
Incident management plan (A6).		

TRAFFIC/ITS/SAFETY/PUBLIC RELATIONS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Regional construction coordination.	Coordinate and organize staging to evaluate impacts from other projects (also maintenance projects).	
Weekend closures (B9).	Allow full night and weekend closures.	35W mainline should be first priority to remain open. Use historical volumes to determine when TH-62 closures can be closed.
Promoting reverse transit.	Providing transit options in the reverse direction of normal commuter flow.	Working with Metro Transit to provide studies to increase transit options in reverse direction of commuter flow.
Public Relations		
Communications budget.	Set aside a budget (1 percent of project) for communications activities. Can be used for advertising, setting up focus groups, etc.	1 percent may be too high. Limited resources. Use for media/advertising. Also, for communication plans.
Coordinate public relations messages.	Make sure everyone involved (Mn/DOT, Contractors, City, etc.) is on "theme/message" in terms of Public Relations.	Make announcements/press conferences as group. However, have one key Mn/DOT person. Have dedicated PAC for project (either state or contractor employee).
Strategic communications plan.	Recognized component in project plan (strategic business partner). Establish pro-active communications plan that integrates with other plans (traffic management, etc.).	Identify target audiences for messages (use focus groups, etc.) Work with other agencies (that have more credibility on environmental issues) to communicate "good news" messages. Early involvement in project development and decisionmaking. Flow chart. Use PACs as key experts to communicate with partners as well as public. Risk assessment.
Better internal communication.	Lane closures and incidents take place unexpectedly or with short lead times.	PAC attends weekly meetings. Invite media to weekly meetings. Education of Mn/DOT construction personnel to inform PACs, RTMC, etc. Media training for individuals involved in project.

ENVIRONMENT
Facilitator – Cheryl Martin, FHWA
Note Taker – Curt Jorgenson, FHWA

FHWA National Experts:
Jason Smith, WSDOT
Doug Eisinger, Sonoma Technologies
Brian Smith, NRC-Olympia

Mn/DOT, Local FHWA, or Local Experts:
Gerry Larson, Mn/DOT
Klara Fabry, City of Minneapolis
Tom Foley, City of Richfield
Tom O'Keefe, Mn/DOT
Tom Hillstrom, SRF Consulting Group, Inc.
Bruce Irish, Mn/DOT

ENVIRONMENT		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
AQ.	Air Quality Pollutant Issues: Ozone CO, toxics, PM2.5, and Ultra Fine, that needs to be addressed and be aware of. CO (required): Have hot spot analysis. Toxics (Not Required): (Benzene) Need public education in trends. With cleaner vehicles and fuels and moving traffic from local streets and more to the free flow highway. Also construction mitigation with newer equipment fleets and cleaner fuels. PM 2.5 (Not Required): Public education. A hot spot analysis and regional analysis. Also using a qualitative analysis. Ozone (Not Required): Regional Transportation plan analysis w/ or w/o the project (emission analysis). Episodic control of construction during high ozone day w/ night time activity. Ultra Fines (no standards): Acknowledge of the emerging issue of ultra fine as a new problem.	Performing a type of public outreach on Air Quality, specifically on these types of contaminants, e.g., a brochure, some other type of publication or communication process. Coordinate w/PR. Have construction mitigation incentives/disincentives plan, such as newer construction equipment fleet and using lower sulfur fuels. Coordinate w/contracts.
AQ.	Have they facilitated transit properly associated with reducing Air Quality?	
Noise.	Reducing noise during construction.	Staging the construction of noise wall in the beginning of construction or leaving the existing wall in place to reduce noise to surrounding communities. But this is not very constructible, according to construction, but a possible use of a temporary noise wall for early construction to reduce noise.

ENVIRONMENT		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
AQ.	Was there proper mitigation of sensitive receptors for air quality?	
WQ.	Evaluation and use of water quality BMPs.	Combining different types of BMPs, such as grit chambers, street sweepers, grass medians, and ponds.
Other.	Wetland mitigation of Minnehaha Creek and partnering with the watershed.	
Other.	Incorporating environmental commitments during a project construction and operation.	Placing a listing of the environmental commitments in the contract. Keep staging area away from regulated areas.
Other.	Opportunities to enhance the community through this project and have access to cross the freeway by bike/ped.	Early construction of bike/ped facilities.
Other.	66th and Portland need protected left turn lanes for parallel routes.	
Other.		
WQ.	Project Liaison to inform the public, specifically Diamond Lake community.	
WQ.	Risk at Diamond Lake of a plume entering the lake during construction and operation w/ only limited ROW. Even with the grit chambers should there be more restrictive impact mitigation w/o taking more ROW.	Have incentive/disincentive coordinated with contract to control pollutant load into the lake. Build the sedimentation pond first in the beginning stages to avoid impacts to the lake, if ROW is available.
Noise.	Opportunity to implement aesthetic design guidelines w/in Mn/DOT maximum participation, e.g., noise walls.	Implement aesthetic design guidelines.

ENVIRONMENT		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Noise.	City noise ordinance is 7pm-7am Mon-Fri, although contracting skill set wants to know if they can build a night. There is a specification and city conflict.	Barrier of obtaining a noise permit to have construction at night. Possible solution: coordinate the construction staging, then have the noisy part of construction during the noise ordinance time and "quiet work" at night.
	Incentives for construction equipment to have 96.	If it clearly stated in specification it can be possible.
AQ.	Incentives for congestion management specifically on ozone day.	
AQ.	Disincentive to stop construction or have night time construction for ozone days.	This might be highly difficult for construction because it slows production and increases the amount of work hours per days.
WQ.	Erosion control incentive to address the minor erosion control work for rapid response for maintenance.	Use polyacrylamide (PAM) for erosion control. Use of inlet protection, rock protection.
WQ.	Temporary and permanent erosion control plan, have minor cost included in the estimate.	
Noise.	Recommend the use of quiet concrete.	Use tying design with not so deep grooves in the concrete.
Noise.	Noise walls that are ground mounted installation can be easily phased in, but if a noise wall transitions to a retaining wall that will not be easy to phase in.	
Other.	Steel box span aesthetics of 27VT5 bridge, how sensitive would this be?	

Publication No. FHWA-HI-05-008

Executive Summary

Accelerated Construction Technology Transfer (ACTT) is a strategic process that uses innovative techniques and technologies to reduce construction time on major highway projects while enhancing safety and improving quality. The process is implemented by conducting 2-day workshops for State Departments of Transportation (DOT). The American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) jointly fund ACTT workshops.

In June 2004, the Minnesota Department of Transportation (Mn/DOT) hosted a workshop that applied ACTT principles and practices to its Crosstown Reconstruction Project (I-35W and Trunk Highway 62 interchange), which will expand capacity along 6 mi (9.6 km) of I-35W and 2 mi (3.2 km) of Highway 62 with an estimated construction cost of more than $200 million.

Originally constructed in the 1950s and 1960s, I-35W traverses the Cities of Minneapolis and Richfield and shares lanes with Trunk Highway 62 in the "Crosstown Commons" section bordering both cities. Currently, the I-35W and Highway 62 interchange serves a heavy demand but operates very poorly—resulting in significant user delay and safety concerns. The project area currently experiences severe congestion and has crash rates up to five times the average for the metropolitan urban freeway system. In 2001, the Minnesota Legislature directed Mn/DOT to defer a project that would have added a high-occupancy vehicle (HOV) lane to I-35W and addressed some of the operational problems but required lengthy closures for Highway 62 during the four-year construction period. The current concept balances requirements identified by the Legislature by adding highway capacity and minimizing right-of-way takings. The project is scheduled to be constructed over 4 years and will reconstruct 6 mi (9.6 km) of I-35W, 2 mi (3.2 km) of Highway 62, and nine interchanges.

Figure 1. Project area

The ACTT Workshop was held on June 14 to 16 in Minneapolis, Minnesota, with approximately 100 attendees from across the United States. The purpose of the workshop was to draw on the participants' expertise to generate specific, practical recommendations for the ongoing development of the I-35W/TH-62 interchange project and to demonstrate how the ACTT process works in a real-life scenario so participants could apply ACTT in their own agencies. The key element of the workshop was the brainstorming session, which brought national and local experts together to search for methods and measures that would help Mn/DOT achieve key project objectives, including minimizing construction time and traffic delays.

The workshop opened on June 14th with welcoming remarks from Carol Molnau, Lieutenant Governor of Minnesota and Commissioner of Transportation, and Al Steger, FHWA Division Administrator for Minnesota. Following the opening remarks, Dave Huft, Research Program Manager for South Dakota DOT illustrated the significance of the workshop as he made the "Why ACTT? Why Now?" presentation. The opening day concluded with a project overview by the project management team and a bus tour of the project area with stops along I-35W at the 58th Street pedestrian overpass, and along Highway 62 at the Penn Avenue and Portland Avenue interchanges.

Over the course of the workshop, participants broke into skill set teams to examine how the ACTT concept could be implemented to accelerate various aspects of the project. The workshop skill sets selected by Mn/DOT were Right-of-Way and Utilities, Structures, Construction, Innovative Contracting, Geotechnical/Materials, Traffic/ITS/Safety/Public Relations, and Environment. Each team focused on applying the ACTT process to the specific concerns of their expertise while the teams collectively searched for methods and measures to help Mn/DOT achieve its goals of minimizing construction time, limiting closures of major traffic movements to 8 weeks during construction, increasing highway capacity, minimizing right-of-way acquisition, providing an advantage for bus transit, and reconstructing an aging facility.

Workshop participants remained focused throughout the workshop and made numerous recommendations, many of which were deemed viable and will be pursued, according to Mn/DOT. As the host agency, Mn/DOT will examine the recommendations and determine which will be implemented on its Crosstown Project.

CHAPTER 1

Accelerated Construction Technology Transfer

Highway construction continues to produce significant disruptions in communities across the nation as Departments of Transportation (DOTs) work to update an aging infrastructure system. While highway construction is unavoidable, excessive construction time is unnecessary and often can be dangerous. It is costly, prolongs workers' exposure to traffic, and subjects travelers to substandard conditions. The Accelerated Construction Technology Transfer (ACTT) initiative aims to minimize travel delays and community disruptions by reducing cost and construction time and improving quality, traffic control, and safety.

1.1 BACKGROUND

ACTT is a process that encourages the use of innovative technologies and methods to accelerate the construction of major highway projects to reduce user delay and community disruption. A complete accelerated construction approach involves evaluating the planning, design, and construction activities within a highway corridor using multiple strategies and technologies. Successful ACTT deployment requires the thorough examination of all facets of a highway corridor with the objective of improving safety and optimizing cost effectiveness while minimizing adverse impacts for the benefit of the traveling public.

Recommendations by Transportation Research Board (TRB) Special Report 249 called for creating a strategic forum to promote accelerated construction in the highway infrastructure. TRB Task Force A5T60 was formed with the objectives of:

- Facilitating removal of barriers to innovation.
- Advocating continuous quality improvement and positive change.
- Enhancing safety and mobility.
- Encouraging the development of strategies that generate beneficial change.
- Creating a framework for informed consideration of innovation.

Fully supporting the task force's mission and objectives, the Federal Highway Administration (FHWA) and the Technology Implementation Group (TIG) of the American Association of State Highway and Transportation Officials (AASHTO) joined the task force in an outreach effort. The result was the formation of a national resource pool known as the "National Skill Sets Council" and completion of two ACTT pilot workshops (one in Indiana and one in Pennsylvania). Following the pilot workshops, TRB Task Force A5T60 transferred the concept to FHWA and AASHTO to continue the effort by conducting future workshops.

With the successful completion of several ACTT Workshops, including workshops in Texas, California, Montana, Washington, Tennessee, and Oklahoma, the Minnesota Department of Transportation (Mn/DOT) hosted an ACTT Workshop in Minneapolis, Minnesota, in June 2004 that focused on its Crosstown I-35W/TH 62 interchange (Crosstown) project.

I-35W traverses the Cities of Minneapolis and Richfield and shares lanes with Trunk Highway 62 in the Commons section bordering both cities. Mn/DOT has proposed to reconstruct I-35W between 42nd Street in Minneapolis and 66th Street in Richfield, which includes the Commons. Currently, the I-35W and Highway 62 Commons interchange serves a heavy demand but operates very poorly—resulting in significant user delay and safety concerns. This project was considered an ACTT candidate for the following reasons:

- Project development had progressed such that a preferred design had been developed into a detailed geometric layout.
- User delays caused by traffic impacts during construction needed to be reduced.

- The project was ready for a formal Value Engineering study.

1.2 PURPOSE OF ACTT WORKSHOP

The purpose of this ACTT Workshop was to explore innovative ways that would help Mn/DOT complete and open to traffic its Crosstown Project faster and with less adverse impact on the traveling public and/or environment. The workshop brought together a national team of recognized experts in skill areas to meet with their local counterparts from Mn/DOT and SRF Consulting Group, Inc. Over the course of 2 days, the ACTT Workshop team explored innovative ways to accelerate construction throughout the project. The workshop included plenary sessions, breakout sessions, skill-set interaction, recommendations, and closing remarks.

1.3 ACTT SKILL SETS

The following skill sets were identified for this ACTT Workshop:

- Right-of-Way and Utilities.
- Structures.
- Construction.
- Innovative Contracting.
- Geotechnical/Materials.
- Traffic/ITS/Safety/Public Relations.
- Environment.

CHAPTER 2

Project Details

2.1 CORRIDOR DESCRIPTION

The proposed I-35W and Highway 62 project will entirely reconstruct I-35W between 42nd Street in Minneapolis and 66th Street in Richfield, including the interchange and Commons with Highway 62. Reconstruction along Highway 62 extends from Penn Avenue to Portland Avenue and includes the Commons, which will be reconfigured to provide separate roadways for both I-35W and Highway 62 and eliminate the shared lanes. Traffic volumes are expected to increase to 250,000 vehicles per day along I-35W, and the project area currently experiences severe congestion, with crash rates up to five times the average for the metropolitan urban freeway system. The project area, shown in Figure 1, is predominantly residential with a few isolated commercial and industrial areas, resulting in limited ability to expand the right-of-way without significant impact. The project is scheduled to be constructed over 4 years and involves reconstructing 6 mi (9.6 km) of I-35W, 2 mi (3.2 km) of Highway 62, and nine interchanges.

2.2 ACTT GOALS

The following goals of the ACTT Workshop are listed by skill set.

2.2.1 Right-of-Way and Utility

Minimize right-of-way takings:

- Number of takings.
- Impacts of roadway to adjoining properties.
- Coordinate between right-of-way, design, utilities, construction, and railroads.

Complete right-of-way acquisition to meet project schedules:

- Urban areas.
- Public interest finding letters.
- Consultant usage.
- Layout versus footprint concepts.

Minimize number of utility relocations:

- Subsurface utility engineering.

Accelerate utility relocations to meet project schedules:

- Master utility agreements.
- Right-of-way available for utility relocations.

Minimize impacts to the environment:

- Building demolitions.
- Utility relocations.

2.2.2 Structures

Reduce construction time for structural portions of the project.
Evaluate alternative wall/bridge types.
Review precast section placement.
Identify the staging areas for precast sections.
Reduce the cost of structures.

Minimize roadway closures.
Identify environmentally friendly construction.

2.2.3 Construction

Review the project staging.
Review alternate material types.
Identify the contractor staging areas.
Minimize the environmental impacts.
Minimize lane closures/complete closure.
Minimize the impact to traffic.
Evaluate multiple contracts versus one large contract.
Minimize cost.
Minimize duration.
Complete the segments during the construction season.

2.2.4 Innovative Contracting

Identify new contracting methods to encourage the contractor to speed up construction.
Refine A + B specifications.
Identify contract administration methods that allow for better utilization of state personnel.
Accelerate the decisionmaking processes on the project.

2.2.5 Geotechnical/Materials

Use new methods and materials that allow for faster construction.
Review new materials testing methods that reduce the time involved or personnel requirements.
Review the vibration monitoring needs.
Review mechanically stabilized earth (MSE) walls and footing types for retaining walls.
Assure the reclamation of contractor pit sites.

2.2.6 Traffic/ITS/Safety/Public Relations

Identify Incident Management Systems (ITS innovations).
Evaluate media relations—keep the public informed (coordination effort).
Reduce or eliminate work zone congestion.
Minimize lane closures versus complete closure.
Review the project staging.
Minimize the work zone cost growth.

2.2.7 Environment

Identify the air quality issues—standards, regulations.
Identify the ozone precursors—project specific versus regional.
Identify fine particulate matter—project specific versus regional.
Identify the air toxins—project specific versus regional.
Identify the water quality issues—grit chamber effectiveness.

2.3 PROJECT GOALS AND OBJECTIVES

The objectives and goals of the project are to:

- Limit the closures of major traffic movements to 8 weeks during construction.
- Increase highway capacity.
- Minimize right-of-way acquisition.
- Provide an advantage for bus transit.
- Reconstruct an aging facility.

2.4 PROPOSED IMPROVEMENTS

The proposed I-35W and Highway 62 project expands capacity along 6 mi (9.6 km) of I-35W and 2 mi (3.2 km) of Highway 62 with an estimated construction cost of $208 million.

The proposed design includes the following:

- Adding a high occupancy vehicle (HOV) lane along I-35W for the entire project length.
- Adding a general purpose lane along I-35W north of Highway 62.
- Adding two dedicated Highway 62 lanes in each direction separated from I-35W in the Commons.
- Providing for a future expansion of Highway 62 east and west of this project.
- Reconfiguring interchange access at several locations.
- Providing for a future bus rapid transit station within the median area at the 46th Street interchange.
- Constructing extensive retaining walls.
- Installing noise barriers.
- Replacing storm sewers.
- Creating water quality treatment basins.
- Reconstructing several municipal sanitary sewers and water mains.

Figure 2 shows the proposed schematic design.

Figure 2. Proposed design

2.5 PROJECT BACKGROUND

The I-35W and Highway 62 project has a long and controversial history dating back to its original design and construction during the 1950s and 1960s. Some of the project's design considerations prior to the ACTT workshop were:

- The planned I-35W alignment was altered to share lanes with Highway 62 in the Commons during the late 1950s and early 1960s.
- The proposed reconstruction of 18 mi (28.8 km) of I-35W described in the 1995 Environmental Impact Statement (EIS) included light rail transit (LRT), park and ride lots, and HOV lanes, but was cancelled for lack of funding.

- A 1996 EIS addendum described a smaller project (referred to as the "Deferred Project") that was considered the minimum safe alternative. It added an HOV lane from 42nd Street in Minneapolis south to I-494.
- The 2001 Minnesota Legislature directed Mn/DOT to defer the project in response to the proposed lengthy closures of major traffic movements during the 4-year construction period.
- The 2002 concept, prepared during late 2001 in response to the 2001 legislative directive, reevaluated the project.

The 2001 legislature directed Mn/DOT to develop alternatives that satisfied the following goals for the I-35W and Highway 62 project's reevaluation:

- Keep construction closures to a minimum.
- Provide an advantage for bus transit.
- Add capacity.
- Do not reduce access to less than that proposed by the Deferred Project.
- No additional right-of-way takings beyond what was needed for the Deferred Project.

Mn/DOT provided a final report of the reevaluation to the Legislature on January 28, 2002. The report summarized the findings of the reevaluation, noting that the 2002 concept satisfied most of the project goals established by the Legislature.

2.5.1 Project Challenges

The junction between I-35W and Highway 62 is one of the most heavily traveled and congested points in the metropolitan highway system. The I-35W and Highway 62 Commons, where I-35W and Highway 62 share lanes between the I-35W/Highway 62 east interchange and the I-35W/Highway 62/TH-121 west interchange, carries an average of more than 150,000 vehicles per day with 214,000 vehicles using the interchanges. Available capacity in the project area is exhausted during the morning and afternoon peak periods (approximately 6 hours per day), and the facility is congested for several hours a day beyond the traditional peak hours.

The capacity and operational problems are compounded by the many forced weaving movements and left exits in the Commons. These operational problems contribute to crash rates on the Commons that are up to five times higher than the average for metropolitan urban freeways. As congestion increases along I-35W and Highway 62, drivers attempt to bypass the area by using local streets, which results in increased congestion and accidents on the local street network. This aging freeway segment requires major, ongoing maintenance and cannot be brought up to today's design standards without complete reconstruction.

Reconstruction of the I-35W and Highway 62 project poses several challenges, including:

Legislative Requirements. The 2001 Minnesota Legislature identified several requirements for the current project (as noted above). Balancing these requirements resulted in the current design, which adds highway capacity and minimizes right-of-way takings. The proposed project staging will allow closures for major improvements to be held to less than the mandated 8-week maximum.

Traffic Operations. The I-35W and Highway 62 corridors run parallel in the Commons for nearly .75 mi (1.2 km), sharing lanes with a local access interchange and a railroad crossing within the Commons area. There are four other local access interchanges immediately adjacent to the Commons. Separating the two highways is vital

to protect the operations of I-35W. Reducing or eliminating weaving movements is complicated because designers want access to be equivalent to the Deferred Project, yet right-of-way takings are to be minimized.

Right-of-Way. The existing right-of-way corridors are narrow and cut through fully developed residential areas. Furthermore, additional right-of-way takings are to be minimized. Shallow groundwater tables and the project area's geology preclude tunneling, and concerns over noise and visual impacts coupled with cost and winter maintenance activities rule out stacking the two highways in the Commons. These constraints led to the current design that separates the two freeways within the Commons yet minimizes the need for additional right-of-way.

Highway Traffic Volumes. Traffic volumes within the Commons are projected to increase from 214,000 to 306,000 vehicles per day by 2030.

Design Standards. The existing I-35W and Highway 62 do not meet current design standards at several locations:

- Two large horizontal curves along I-35W currently do not meet the 55 mph design speed.
- A crest vertical curve just east of Penn Avenue along Highway 62 currently does not meet the 55 mph design speed (with a 6-inch object height for stopping sight distance).
- Several existing bridges do not meet current vertical clearance requirements.

The proposed design must meet a minimum 55 mph for both I-35W and Highway 62.

Aesthetic Enhancements. The Deferred Project identified aesthetic enhancements, and those recommendations remain valid. However, limited funding at that time prevented implementation of some of the enhancements. Mn/DOT's cost participation policy will guide negotiations with Minneapolis and Richfield to identify any enhancements and related city cost participation for the current project.

Municipal Consent. Minnesota state law requires approval from communities when state highway projects increase capacity, require right-of-way, or change access. Because the I-35W and Highway 62 project proposes to do all three of these, municipal consent is required from the Cities of Minneapolis and Richfield. Minneapolis policy makers continue to voice a preference for mass transit improvements over highway capacity improvements. (Note: Minneapolis disapproved the project at their September 3, 2004, council meeting.) Consent is anticipated from Richfield policy makers. (Note: Richfield approved the project at their August 10, 2004, council meeting.)

2.5.2 Public and Agency Involvement

A prominent component of the I-35W and Highway 62 project development has been the public and agency involvement. Agency involvement has included both a Technical Advisory Committee (TAC) and a Policy Advisory Committee (PAC) as well as coordination with review agencies.

The TAC was established to provide technical input on the proposed project and included the following organizations:

- Cities of Minneapolis, Richfield, Apple Valley, and Edina.
- Metropolitan Transit Commission.

- Hennepin County.
- FHWA.
- Metropolitan Council.
- Mn/DOT.
- SRF Consulting Group, Inc.

This committee met frequently during the development of the project to discuss design concepts and related potential impacts/issues.

The PAC was also established and included the following organizations:

- City council members from Minneapolis and Richfield.
- County Commissioners from Dakota and Hennepin Counties.
- State legislators.
- Metropolitan Council.
- Mn/DOT.
- SRF Consulting Group, Inc.

This committee met at key times during the project development process to discuss the design, potential impacts, and related issues.

Public involvement efforts included project newsletters, a Web site, numerous public open houses, and the public hearings held the evenings of the ACTT Workshop as part of the Minnesota Municipal Consent process. Additionally, numerous neighborhood meetings were held to discuss concerns regarding access, construction impacts, transit, and right-of-way acquisition.

2.5.3 Design Development

The I-35W and Highway 62 project has a long history of development. The final report that reevaluated the project after the Legislature deferred the previous project was provided to the Legislature on January 28, 2002. It identified a concept that met the goals established by the Legislature for the project's reevaluation. This is referred to as the 2002 Concept. Design development that has been completed since the 2002 Concept is summarized in the following table.

CONCEPT	TIMEFRAME	DESCRIPTION
Refined Concept	February 2003 to April 2004	Evaluation of numerous concept alternatives was completed to address capacity, operational, and access questions.
Municipal Consent	April 2004 to September 2004	Selection of the preferred concept allowed further refinement to prepare a design layout that satisfied the requirements for Minnesota's Municipal Consent Statute. The design layouts were provided to Minneapolis and Richfield on April 16, 2004. A decision from the cities is required by September 15, 2004.
Mn/DOT Staff Approved Layout	May 2004	The design layout prepared for municipal consent continued to be developed and was submitted for official Mn/DOT review and approval on May 28, 2004.

As part of the design development process, detailed traffic operations analyses were performed using computerized traffic simulations, and a graphic simulation was made available at several public meetings. A computerized visual animation was also prepared that depicted the existing and proposed conditions, and this was also presented at several meetings. Two frames from the visual animation, depicting the proposed conditions looking east along the Crosstown Commons from above the TH-121 area and from Wentworth Avenue, are shown in Figures 3 and 4.

Figure 3. View of Commons from TH 121 area looking east toward Lyndale Avenue

Figure 4. View of Commons from Wentworth Avenue looking at east interchange

2.5.4 Value Engineering

Value Engineering is a program to improve quality, reduce project costs, foster innovation, eliminate unnecessary and costly design elements, and ensure efficient investments. Mn/DOT performed this ACTT Workshop to satisfy the Value Engineering requirements for the project.

During design development, SRF Consulting Group, Inc., incorporated the principles of Value Engineering to provide "continuous" Value Engineering to the project. Specific items that were analyzed in cooperation with Mn/DOT during design development included:

The results of these analyses have resulted in project costs being reduced by $14 million, which is already reflected in the $208 million project estimate. As design development continues through detail design, opportunities to further reduce project costs and enhance the quality will be studied and incorporated as appropriate.

ITEMS	CONSIDERATIONS
Bridge types	Steel versus concrete. Girder versus box. Precast versus cast in place.
Retaining wall types	Cast in place: • Spread footing. • Piled footing. Mechanically Stabilized Earth (MSE). Tie-back diaphragm.
Storm water runoff	Water quality treatment. High flow diversions.
Noise wall types	Wood. Precast concrete.

2.5.5 Environmental Documentation

An Environmental Assessment (EA) and Section 4(f) Evaluation are required for the I-35W and Highway 62 project. The EA was approved by the FHWA on June 24, 2004. Because the area surrounding the project is fully developed, little impact to the natural environment is anticipated. However, two project impacts have been identified:

- The project will have an impact on a neighborhood park in Richfield, but early coordination with the Richfield Park Board has identified potential mitigation measures.
- The existing I-35W bridges over Minnehaha Creek and Parkway need to be replaced with wider bridges, which would reduce natural lighting beneath them. Mn/DOT has proposed increasing the opening between the bridges from 8 to 14 feet to allow additional natural light to pass between the bridges.

2.6 PROJECT STATUS

The current status of the project is presented in the following table.

TASK	DATE
Design layouts provided to Cities of Minneapolis and Richfield.	April 16, 2004
Design layouts submitted for Mn/DOT staff approval.	May 28, 2004
Environmental Assessment (EA) approved.	June 24, 2004
Public hearing for comment on EA.	July 22, 2004
Public comment period on EA ends.	August 19, 2004
Municipal consent process scheduled to conclude.	September 2004
Interstate Access Modification Request (IAMR) is 80 percent complete.	Summer 2004
Final design is in progress.	Summer 2004 to Fall 2005
Bid letting scheduled.	Spring/Summer 2006

CHAPTER 3

Workshop Meeting Details

Mn/DOT and FHWA hosted the ACTT Workshop on June 14 to 16, 2004, at the Crowne Plaza Northstar Hotel in Minneapolis, Minnesota. Approximately 100 individuals representing a variety of interests were in attendance. A list of workshop attendees is presented in Appendix A.

In discussions held prior to the workshop, the following seven skill sets were selected for this project:

- Right-of-Way and Utilities.
- Structures.
- Construction.
- Innovative Contracting.
- Geotechnical/Materials.
- Traffic/ITS/Safety/Public Relations.
- Environment.

A description of each skill set is included in Appendix B.

3.1 OPENING SESSION

The workshop began with opening remarks from:

- Carol Molnau, Lieutenant Governor of Minnesota and Commissioner of Transportation.
- Al Steger, FHWA Division Administrator for Minnesota.

Each of the participants introduced themselves. This was followed by a project overview by Tom O'Keefe, the Mn/DOT Area Manager, and John Griffith, the Mn/DOT Project Manager. David Huft, Research Program Manager for SDDOT, then conducted the "Why ACTT? Why Now?" presentation. The opening day concluded with a bus tour of the project area with stops along I-35W at the 58th Street pedestrian overpass and Highway 62 at the Penn Avenue and Portland Avenue interchanges.

3.2 WORKSHOP PROCESS AND RECOMMENDATIONS

The second day began with an overview of the Minneapolis Municipal Consent public hearing held the night before. Next, the skill teams met to discuss ideas. Before lunch, the general session reconvened to share initial ideas. After lunch, the skill set teams continued developing ideas and intermingled with other teams to ask questions and share ideas. On the remainder of the second and early part of the third day, the teams prepared final recommendations.

Each skill set team completed reporting forms, which are included in Appendix C, and presented their recommendations to the group. Summaries of the group discussions and the top recommendations presented from each skill set are included below. Mn/DOT's action for each recommendation is also shown.

3.2.1 Right-of-Way and Utilities

The Right-of-Way and Utilities Skill Set focused much of its discussion on ways to improve or accelerate the project. The four main topics included overall coordination, process, resources, and new initiatives. The Right-of-Way and Utilities Skill Set developed the following recommendations:

Overall Coordination (Goals 2.2.1.b - Coordination and 2.2.1.c - Project Schedule)

- Set up a right-of-way and utility layout meeting early on in the project.
  - Action: Mn/DOT normally performs early coordination and will do so for this project.
- Have early involvement with the utility office for utility right-of-way purchases.
  - Action: Mn/DOT will meet with utility owners at 30 percent completion of the final design.
- Stage and prioritize the right-of-way acquisition based on critical parcels and construction staging.
  - Action: Mn/DOT will prioritize parcels.
- Obtain authorization to proceed with the total takes before signed Environmental Assessment (EA) and Municipal Consent. (Mn/DOT must assess the risk involved to proceed.)
  - Action: Mn/DOT is proceeding with one hardship case but will wait for municipal consent, since funding limitations will not allow for early acquisitions.
- Conduct early railroad coordination with Canadian Pacific Rail, Progressive Rail, and Mn/DOT Rail Office.
  - Action: Mn/DOT will provide early coordination.
- Determine utility and right-of-way issues at proposed locations of MSE walls.
  - Action: Mn/DOT is currently addressing these issues.
- Define a footprint to obtain adequate right-of-way and proceed with acquisition in order to avoid future restarts of the acquisition process.
  - Action: Mn/DOT will establish a worst-case footprint and move forward.
- Coordinate any right-of-way turnback commitments early in the process.
  - Action: Mn/DOT is currently preparing a Memorandum of Understanding (MOU) with the City of Richfield for Madison Park right-of-way turnback; Mn/DOT will initiate right-of-way setback and turnback discussions for frontage roads.

Policy (Goals 2.2.1.d and 2.2.1.e - Utility Relocations)

- Purchase right-of-way for utility relocations.
  - Action: Mn/DOT can purchase minor amounts of right-of-way for utility relocation, but policy prevents large-scale acquisitions for utility relocations. Mn/DOT will attempt to acquire right-of-way early so all utilities have the opportunity to relocate before construction.
- Obtain as many title orders as possible early on in the process. Identify critical path parcels to help prioritize the titles.
  - Action: Mn/DOT is currently obtaining titles and attempting to prioritize.
- Use Subsurface Utility Engineering (SUE).
  - Action: Mn/DOT will evaluate if SUE should be performed for this project.
- Examine the consultant contracting process more to determine streamlining opportunities.
  - Action: Mn/DOT is using a "turn key" approach for right-of-way services for this project.
- Acquire Peter's Billiards:
  - Access management.
  - Damages.
  - Land sales and acquisition.
  - Action: Mn/DOT will attempt to acquire early to allow the owner the opportunity to have the new building ready once the existing building needs to be removed. Mn/DOT will also try to address access management.

Resources (Goal 2.2.1.c - Meet Project Schedule)

- External:
  - Coordinate interagency agreements.
    - Action: Mn/DOT will evaluate the feasibility of this.
  - Use more fee review appraisers.
    - Action: Mn/DOT will use more if needed.
  - Establish and execute contracts for regulated waste assessments and removals as early as possible.
    - Action: Mn/DOT is shifting to a policy of performing this work prior to construction.

New Initiatives (No specific goal)

- Raise appraisal waiver limits even higher for minimum damage acquisitions (MDA).
  - Action: Mn/DOT will consider this.
- Use relocation and acquisition incentives.
  - Action: Mn/DOT will consider if needed (would require FHWA approval).
- Consider state statute revisions to allow for a 30-day quick-take period.
  - Action: Mn/DOT is not ready to pursue.
- Conduct acquisitions prior to completion of the environmental documentation process.
  - Action: Mn/DOT is proceeding with hardship cases; Mn/DOT will perform a risk assessment for others.
- Implement more CADD (Geopak) in platting and description writing.
  - Action: Mn/DOT will perform as appropriate.
- Look at the right-of-way area as a system to allow for flexibility in contracting.
  - Action: Mn/DOT will perform as appropriate.
- Migrate more rapidly to electronic data and document management and REALMS systems.
  - Action: Mn/DOT anticipates implementation by early 2005.

3.2.2 Structures

To facilitate accelerated construction of this project, the Structures Skill Set divided recommendations into three broad categories: bridges, retaining walls, and materials. There were also recommendations and discussions directed towards specific bridges and ways to construct them faster and more efficiently. The Structures Skill Set developed the following recommendations to be considered during final design:

Bridges (Goals 2.2.2.a - Reduce Construction Time, 2.2.2b - Bridge Types, and 2.2.2.e - Cost of Structures)

- Use drilled shaft or piling option for segmental bridges at pier locations.
  - Action: Mn/DOT will evaluate during final design.
- Use precast substructures.
  - Action: Mn/DOT will evaluate during final design.
- Use higher-capacity piles.
  - Action: Mn/DOT will evaluate during final design.
- Have an early contract for the 42nd Avenue Bridge and Diamond Lake Road Bridge located on the north segment of the project.
  - Action: Funding currently not available.

- Use precast decks.
  - ➢ Action: Not current Mn/DOT practice.
- Install MSE abutment walls.
  - ➢ Action: Not current Mn/DOT practice, but will evaluate for this project.

Specific Bridge Recommendations (Goal 2.2.2.c - Review Precast Section Placement)

Bridge 27V75 (Ramp from I-35W South to TH-62 West) Segmental versus Steel

- Precast Segmental Concrete:
  - Complete construction by July/August 2007. (Assumed September 2005 letting.)
- Steel:
  - Have a steel-only contract 8 months prior to the beginning of construction so all material is onsite to build immediately.
  - Complete construction by fall of 2006. (Assumed September 2005 letting.)
  - Determine if a box section or I-section should be used.
- Determine the critical path of construction to see when this bridge needs to be complete and open to traffic.
  - ➢ Action: Mn/DOT will use a Critical Path Method (CPM) for this project.

Bridges 27V73 and 27V66 (Ramp from I-35W North to TH-62 East)

- Design bridges to be the same type and size.
  - ➢ Action: Mn/DOT will do this.

Bridge 27V68 (TH-62 East over I-35W)

- Add a span in order to square off the end of the bridge.
  - ➢ Action: Mn/DOT will adjust the skew angle of the abutment.

Bridge 27V74 (I-35W and TH-62 over CP Railroad)

- Fabricate bridge structure offsite and install all at once:
  - Use Conspan structure.
  - Salvage existing substructures.
  - ➢ Action: Mn/DOT must obtain railroad concurrence for bridge type.

Retaining Walls (Goals 2.2.2.a - Reduce Construction Time, 2.2.2.b - Wall Types, and 2.2.2.e - Cost of Structures)

- Install MSE walls at all possible locations.
  - ➢ Action: Mn/DOT is implementing this.
- Install sheet pile protection at storm sewer locations instead of supporting retaining wall on piling.
  - ➢ Action: Mn/DOT is evaluating this.

- Slipform rail on the MSE walls.
  - ➢ Action: Mn/DOT is evaluating this.
- Specify cast-in-place (CIP) walls (from a preapproved list) in the plans, but allow for two or three other specific options including:
  - Modular block/crib walls (current policy may not allow).
  - Precast walls.
  - ➢ Action: Mn/DOT will evaluate this during the final design.

Materials (Goal 2.2.2.a - Reduce Time)

- Use high-performance concrete (HPC) on bridge decks to eliminate the need to overlay.
  - ➢ Action: Mn/DOT currently uses when appropriate.
- Use high-performance steel (HPS) where appropriate.
  - ➢ Action: Mn/DOT currently uses when appropriate.
- Use self-consolidating concrete (new to Mn/DOT).
  - ➢ Action: Mn/DOT currently uses when appropriate.
- Determine what type of rebar will be appropriate for this project:
  - Purple coated.
  - Stainless steel.
  - MMFX Steel.
  - ➢ Action: Mn/DOT will evaluate this during the final design.
- Determine the options for lightweight fill. There may be possible settlement issues.
  - ➢ Action: Mn/DOT will evaluate this during the final design.

3.2.3 Construction

The Construction Skill Set's discussion to facilitate accelerated construction on this project resulted in final recommendations from three broad categories: CPM, innovative contracting techniques, and alternate material specifications. The following recommendations were developed:

Critical Path Method (Goals 2.2.2.a - Project Staging, 2.2.3.e - Minimize Closures, 2.2.2.f - Minimize Traffic Impact, 2.2.2.i - Minimize Duration, and 2.2.2.j - Complete Segments during One Season)

- Prepare a preconstruction CPM.
  - ➢ Action: Mn/DOT will use CPM for this project.
- Identify the critical paths and methods to compress:
  - Find out the advantages if 8-week closures are fully utilized.
  - Determine if design changes will compress the critical path.
  - Evaluate the content of Stage 0 and Stages 1-4 to optimize the critical path.
  - ➢ Action: Mn/DOT will use CPM to perform these evaluations.
- Transition the CPM to the contractor. This involves:
  - Contractor review during post bid, preaward phase.
  - Contractor provides regular (monthly) updates during construction phase.
  - ➢ Action: Mn/DOT is interested in pursuing this.

Innovative Contracting Techniques (Goals 2.2.2.f - Minimize Impact to Traffic and 2.2.2.c - Contractor Staging Area)

- Use the A+B (Cost + Time) bidding method. Multiple Bs could be used for interim milestones.
  - Action: Mn/DOT will evaluate this.
- Use incentives and disincentives for interim stages and closures.
  - Action: Mn/DOT will evaluate this.
- Use interim milestones for completion dates.
  - Action: Mn/DOT will evaluate this.
- Identify the staging areas outside of the proposed right-of-way. Can Mn/DOT purchase additional right-of-way for staging areas? (Only if for transportation needs.)
  - Action: Mn/DOT will evaluate this.
- Include user costs for road closures.
  - Action: Mn/DOT will evaluate this.

Alternate Material Specifications (Goals 2.2.2.b - Alternate Material Types and 2.2.2.h - Minimize Cost)

- Evaluate the use of high early strength concrete where appropriate. For critical areas like crossovers, mixes are available that can be opened within 4 hours.
  - Action: Mn/DOT will consider this based on CPM analysis.
- Evaluate the use of precast pavement where appropriate.
  - Action: Mn/DOT will consider this based on CPM analysis.
- Evaluate the use of unsealed concrete pavement joints to reduce time and cost.
  - Action: Mn/DOT will consider this based on CPM analysis.
- Evaluate the use of dual-coated epoxy dowel bars as opposed to stainless steel dowel bars. Dual-coated dowel bars are less expensive and more available.
  - Action: Mn/DOT will evaluate this during the final design.
- Determine the parameters for grading materials to allow reuse of onsite materials
  - Action: Mn/DOT will evaluate this during the final design.
- Determine the retaining wall requirements for precast, MSE, continuous diaphragm (not feasible if tie-back extends beyond right-of-way), and cast-in-place.
  - Action: Mn/DOT is currently evaluating this.

3.2.4 Innovative Contracting

The Innovative Contracting Skill Set's discussion to facilitate accelerated construction on this project resulted in these recommendations:

General Recommendations

- Reallocate funding to fund the entire project with a letting in Fall 2005.
  - Action: Mn/DOT's current funding will not allow this.
- Establish one contract for the project.
  - Use advance contracts for bridges and other work that does not affect the mainline traffic, if necessary.
  - Action: Mn/DOT will evaluate this using CPM and funding availability.

Project Delivery Method (Goal 2.2.4.a - New Contracting Methods)

- Use the Design-Build philosophy once the design is between 30 percent and 95 percent complete:
  - Mn/DOT would need to complete a constructability study.
  - Contractor would design and implement the staging and traffic control.
  - Use a stipend for the staging and traffic control.
  - Use the Design-Bid-Build (D-B-B) method with contractor designed staging/traffic management as a best-value selection criterion.
  - ➢ Action: Mn/DOT has been using D-B-B since an earlier construction start with Design-Build is not possible due to funding limitations. Mn/DOT is on schedule with the 30 percent design during the Fall of 2004.

Procurement Process (Goal 2.2.4.b - Refine A + B)

- Use A+B (Cost + Time) bidding:
  - Develop a ramp closure matrix showing the maximum closure times.
  - Establish a cost per day ($/day) pricing for ramp closures and mainline closures and evaluate the bids based on minimizing closure times.
  - ➢ Action: Mn/DOT will use CPM to evaluate this and will consider A + B bidding and Contractor Peer Review.

Final Recommendations (Goals 2.2.4.c - Better Utilization of State Personnel and 2.2.4.d - Decision Making Process)

- Use CPM scheduling and monitor regularly.
  - ➢ Action: Mn/DOT will use CPM for this project.
- Use incentives/disincentives for early completion of major movements.
  - Include ramps, flyovers, and traffic switches.
  - Use substantial incentives so the contractor will go after them.
  - ➢ Action: Mn/DOT will evaluate the use of incentives based upon CPM analysis.
- Examine the use of lane rental (full or temporary lane closure).
  - ➢ Action: Mn/DOT will evaluate the use of incentives based upon CPM analysis.
- Hold a mandatory Pre-Bid Conference.
  - ➢ Action: Mn/DOT will use a mandatory prebid conference.
- Have Mn/DOT conduct post-award workshops and regular meetings on:
  - Partnering.
  - Scheduling.
  - Utilities.
  - Submittals.
  - ➢ Action: Mn/DOT will consider this.
- Use Subsurface Utility Engineering and Master Utility Agreements.
  - ➢ Action: Mn/DOT will evaluate if SUE and Master Utility Agreements should be used for this project.
- Develop an oversight team organizational chart.
  - Determine when to use consultants, such as material testing, Segmental Bridge Inspection, and schedule reviewers.

    - Action: Mn/DOT will evaluate this during the final design.
- Use a construction management system:
    - Link the contractor's document control to everyone involved.
    - Connect the field information to a database.
    - Allow the parties involved to easily have access to the schedule.
    - Action: Mn/DOT will consider this.
- Employ escrow bid documents.
    - Action: Mn/DOT normally requires this on large projects.
- Establish a dispute resolution board (DRB).
    - Action: Mn/DOT will do this.
- Consider dedicating key experts/senior staff full-time to the project to speed up decisionmaking.
    - Action: Mn/DOT will dedicate appropriate staff to the project.

3.2.5 Geotechnical/Materials

The Geotechnical/Materials Skill Set's discussion to facilitate accelerated construction on this project resulted in the following recommendations:

General Recommendations

- Implement early utility location/relocation coordination with local entities.
    - Action: Mn/DOT normally performs early coordination and will do so for this project.
- Identify future improvements desired by utilities, the CP Railroad, Progressive Rail, and Metro Transit early in the process.
    - Action: Mn/DOT will perform early coordination.
- Define the Project Team, Communication Protocols, Reviews, Meetings, etc.
    - Action: Mn/DOT will define these.
- Hold progress meetings with the geotechnical group every 3 months.
    - Action: Mn/DOT will hold regular monthly meetings involving all design groups.
- Provide an MSE wall training course for bridge, construction, and materials groups.
    - Action: Mn/DOT will provide the appropriate training.

Major Issues (Goals 2.2.5.a - New Methods/Materials and 2.2.5.d - MSE Walls)

- Assume the use of MSE walls until proven otherwise. Other wall options, in order of preference, include:
    - Continuous diaphragm walls (Not feasible since the tie-backs would extend outside of Mn/DOT's right-of-way.)
    - Soldier piles lagging, soil nailing (Not feasible since the tie-backs would extend outside of Mn/DOT's right-of-way.)
    - Cast-in place (Used when other wall types are not feasible.)
    - Action: Mn/DOT has already completed this evaluation.
- Recognize the paving limitations on this project due to seasonal constraints resulting in multiple (yearly) mobilizations.
    - Action: Mn/DOT will use CPM to optimize staging and minimize multiple mobilizations.
- Use precast pavement panels to help accelerate the schedule when critical.
    - Action: Mn/DOT will consider this for isolated areas based upon evaluation with CPM.

Structure Foundations (Goals 2.2.5.a - New Materials/Methods and 2.2.5.c - Vibration Monitoring)

- Determine structural loads early to aid in the design.
  - Action: Mn/DOT normally does this.
- Use spread footings unless they are proven inadequate to minimize deep foundation needs (15 percent cost savings on the bridge).
  - Action: Mn/DOT will evaluate spread footing use for bridges and cast-in-place walls.
- Use a load test and constructability contract to confirm high-capacity foundations prior to letting.
  - Action: Mn/DOT will do this if the design identifies a need for high capacity foundations.
- Eliminate end slopes under bridges by using MSE walls.
  - Action: Mn/DOT will consider this.
- Eliminate bridge abutments by using pile bents to the beams with MSE walls.
  - Action: Mn/DOT will evaluate this.
- Specify drilled piling to eliminate vibration problems.
  - Action: Mn/DOT will consider this.

Wall Recommendations (Goals 2.2.5.d - MSE Walls and 2.2.5.b - New Material Testing)

- Investigate eliminating walls when a 1 vertical to 2 horizontal slope is possible.
  - Action: Mn/DOT will evaluate this.
- Use a performance specification for walls from an approved list with a contractor design.
  - Action: Mn/DOT currently uses this for certain wall types.
- Expand the list of approved MSE wall systems.
  - Action: Mn/DOT has an open application process.
- Construct temporary embankments with geofoam fill to reduce slope requirements.
  - Action: Vertical slope designs will be evaluated.
- Use intelligent grading, compaction, and documentation.
  - Action: Mn/DOT is currently considering this.

3.2.6 Traffic/ITS/Safety/Public Relations

The Traffic/ITS/Safety/Public Relations Skill Set's discussion to facilitate accelerated construction on this project resulted in the following recommendations:

General Recommendations

- Incorporate the costs associated with traffic management, work zone safety, and public relations as standard components of construction estimates.
  - Action: Mn/DOT is not currently able to allocate construction funding to operations.
- Use a cost estimation validation process (risk management).
  - Action: Mn/DOT is currently not set up to do this, but should obtain other State DOT information to access.

Work Zone Safety (Goals 2.2.6.a - Incident Management System and 2.2.6.c - Work Zone Congestion)

- Use an Incident Management Plan:
  - ➢ Action: Mn/DOT will develop a plan and consider the following as either Mn/DOT or contract bid items:
    - Freeway Service Patrols: Provide construction funding to fund a Freeway Incident Response Safety Team (FIRST). (Mn/DOT will consider this.)
    - Dedicated State Patrol: Pay the State Patrol to be onsite during critical times and after traffic switches. This is currently done on most major projects. Work with State Patrol to get more officers in the Metro. (Mn/DOT normally does this.)
    - Heavy equipment for incident clearance: Have appropriate equipment available on the job site for incident removal, barrier fixes, etc. (Mn/DOT will consider this.)
    - Establish emergency pull-offs. (Mn/DOT normally does this.)
- Establish safety goals and measures, including:
  - Number of crashes.
  - Incident clearance times.
  - Number of worker injuries.
  - Mn/DOT will evaluate this.
- Use contractor incentives:
  - Create incentives for new and innovative ideas to reduce project time, improve safety, and reduce the impacts to motorists.
  - ➢ Action: Mn/DOT will consider this.
- Provide Work Zone Safety education:
  - Establish extensive coverage of work zone safety through the media, including print, television, Web, and radio.
  - ➢ Action: Mn/DOT will evaluate this. However, this requires additional funding and resources beyond the current practice of limited press coverage.
- Improve special provision effectiveness:
  - Provide support and training for enforcement of special provisions.
  - Include penalty language and enforce it.
  - ➢ Action: Mn/DOT will do this.

Traffic Management (Goals 2.2.6.c - Work Zone Congestion and 2.2.6.d - Lane Closures)

- Maintain existing Traffic Management Systems (TMS) during the construction phase:
  - Use portable Changeable Message Signs (CMS) that are controlled remotely from the traffic management center for real-time traffic information.
  - Maintain camera coverage for incident detection.
  - Maintain non-intrusive detection for traveler information and traffic management.
  - Explore construction-area ramp-metering policies.
  - Establish wireless communications to the traffic management center.
  - Establish contractor disincentives for traffic management systems being out of service.
  - Explore using additional traffic management center staff to support construction projects.
  - Train construction staff on the importance of traffic management systems.
  - ➢ Action: Mn/DOT will consider the use of a temporary TMS for this project.

- Define an alternate route:
  - Complete a systemwide alternate route assessment prior to project staging decisions.
  - Add a temporary third lane to Highway 100 between 36th Street and I-394.
  - Make improvements to the local streets and intersections.
  - Improve the signal timing on parallel arterials.
  - Provide resources and staff to local communities if needed.
  - Provide camera coverage on alternate routes during construction.
  - ➢ Action: Mn/DOT currently not able to allocate funding outside the trunk highway system.
- Regional construction coordination:
  - Coordinate construction and lane closures with all adjacent projects, including city and county projects.
  - Coordinate with maintenance activities.
  - ➢ Action: Mn/DOT will coordinate with other agencies to the extent reasonable.
- Weekend closures:
  - Keep the I-35W mainline open as a first priority.
  - Use historical volumes to determine when TH-62 closures should occur.
  - ➢ Action: Mn/DOT will do this.

Travel Demand Management (Goal 2.2.6.f - Work Zone Cost Growth)

- Promote reverse transit with additional express bus service.
  - ➢ Action: Mn/DOT will coordinate with Transit providers.
- Explore the possibility of additional park-and-ride lots.
  - ➢ Action: Mn/DOT will coordinate with Transit providers.

Public Relations (Goal 2.2.6.b - Media Relations)

- Develop a strategic communications plan that is integrated with:
  - Road design plan.
  - Traffic operations during construction.
  - ➢ Action: Mn/DOT will consider this.
- Develop a communications budget:
  - Establish an adequate budget (up to 1 percent of the project) for communications activities.
  - Budget can be used for advertising, setting up focus groups, etc.
  - ➢ Action: Mn/DOT will consider this with construction activities.
- Coordinate public relations messages:
  - Make sure everyone involved (Mn/DOT, contractors, city, etc.) is on "theme/message" in terms of Public Relations.
  - ➢ Action: Mn/DOT will coordinate this.
- Provide strong internal communication:
  - Lane closures should not take place unexpectedly or with short lead times.
  - ➢ Action: Mn/DOT will evaluate the use of this.
- Conduct mandatory media training for construction staff.
  - ➢ Action: Mn/DOT will consider this.

3.2.7 Environment

The Environment Skill Set's discussion to facilitate accelerated construction on this project resulted in the following recommendations:

Water Quality During Construction (Goal 2.2.7.e - Water Quality)

- Use innovative Best Management Practices (BMPs), such as the use of Polyacrylamide.
  - Action: Mn/DOT will identify a wide range of BMPs for use on the project and include them in the bid documents.
- Require a Certified Erosion Control Specialist onsite to conduct regular inspections.
  - Action: Current Mn/DOT specifications require the contractor to have this. Mn/DOT has partnered with the University of Minnesota to provide training.
- Monitor the outfall to Diamond Lake for erosion runoff either by Mn/DOT or the contractor via a performance specification.
  - Action: Mn/DOT currently has a contractor in place to provide monitoring before, during, and after construction.
- Provide contract pay items for payment of erosion control work and remobilizations.
  - Action: Mn/DOT currently has numerous contract pay items for both the installation and maintenance of temporary and permanent erosion control features.
- Expand the water resource plan notes to include areas to avoid for staging needs.
  - Action: Mn/DOT currently identifies sensitive areas within a plan set. These notes can be expanded to include staging areas.
- Educate the contractor on the importance and sensitivity of erosion control.
  - Action: Mn/DOT's current requirement for a Certified Erosion Control Supervisor addresses this.
- Construct sedimentation ponds prior to construction, such as a pond at Diamond Lake.
  - Action: Mn/DOT normally specifies this in a plan set. Mn/DOT intends to excavate a temporary pond within the existing sediment delta at Diamond Lake and install an upstream grit chamber early in the project.

Water Quality After Construction (Goal 2.2.7.e - Water Quality)

- Market the project benefits of water quality features (for example, perform modeling of Diamond Lake to confirm results).
  - Action: Mn/DOT has already held public meetings regarding the current monitoring efforts at Diamond Lake and will disseminate the results of the ongoing monitoring.
- Maintain grit chambers on a regular schedule that satisfies the manufacturer's recommendations.
  - Action: Both the contractor (during construction) and Mn/DOT (after construction) will clean the chambers before performance would become impaired.
- Use high-efficiency street sweeping or other technologies.
  - Action: Mn/DOT currently performs sweeping, with a pick-up broom, once per year in conformance with the Mn/DOT MS4 application.
- Investigate the partnership opportunities for future storm water tunnel improvements north of 39th Street.
  - Action: Mn/DOT and the City of Minneapolis are jointly funding this study.

- Maintain storm water ponds on a regular schedule.
  - Action: Mn/DOT will perform pond maintenance for Mn/DOT owned ponds on a regular schedule.
- Provide long-term water quality monitoring for Diamond Lake.
  - Action: Mn/DOT currently has a contractor in place to provide monitoring before, during, and after construction.

Air Quality During Construction (Goals 2.2.7.a - Air Quality, 2.2.7.c - Ozone, 2.2.7.c - Fine Particulates, and 2.2.7.d Air Toxins)

- Perform public education and outreach for air quality pollutants.
  - Action: Mn/DOT will consider providing this information via a newsletter or the project Web site.
- Require construction mitigation by using newer equipment and cleaner-burning fuels.
  - Action: Mn/DOT will consider this.
- Exceed the minimum requirements to meet air quality issues.
  - Action: This is always a goal for Mn/DOT projects.

Noise During Construction (Goal 2.2.7.a - Air Quality)

- Investigate the allowable hours of work within each city.
  - Action: Current Mn/DOT practice requires this information in the bid documents.
- Install new noise walls early when feasible.
  - Action: Mn/DOT will specify this as the project staging allows.
- Construct the combined retaining/noise wall systems simultaneously.
  - Action: Mn/DOT will specify this as the project staging allows.

Noise After Construction (Goal 2.2.7.a - Air Quality)

- Work with the neighborhoods to understand shadowing from noise walls, noise benefits, and aesthetics.
  - Action: Current Mn/DOT practice is to remonitor noise levels after construction. The results of this could be shared with the community.
- Use concrete pavement tining that minimizes noise impacts.
  - Action: Current Mn/DOT practice is to specify the Astro-grass drag, which is one of the quietest concrete textures available.

Community Impacts (No specific goal)

- Construct pedestrian and bike trails early when possible.
  - Action: Mn/DOT will specify this as the project staging allows.
- Obtain financial support and partnership for the 66th and Portland Street improvements, such as left-turn lanes.
  - Action: Mn/DOT is not currently able to allocate funding outside the trunk highway system.

- Implement aesthetic design guideline enhancements within the Mn/DOT maximum participation (for example, noise walls).
    - Action: Mn/DOT will implement the aesthetic design guide and provide enhancement money consistent with Mn/DOT's Cost Participation Guidelines.
- Consider constructing the 46th Street transit station concurrently with the project.
    - Action: Mn/DOT is not able to allocate funding for the transit station since funding for transit improvements must be allocated by the Metropolitan Transit Commission (MTC). Mn/DOT will continue to work with MTC to construct the station concurrently with the project.
- Consider expanded bus service during construction and future investment for park-and-ride facilities adjacent to the corridor.
    - Action: Mn/DOT will continue to work with Metro Transit and other transit providers to develop an action plan for this corridor during construction. Mn/DOT currently cannot pay for bus service with trunk highway funding.
- Provide creative land replacement compensation for parkland impacts.
    - Action: Mn/DOT is currently preparing an MOU with the City of Richfield for the Madison Park right-of-way land exchange.
- Provide a communication plan during construction, including Web site updates.
    - Action: Mn/DOT normally provides media briefs and construction information on the Web site.
- Consider terraced retaining walls to provide vegetation opportunities and breaks in the visual impacts of the proposed retaining walls.
    - Action: Mn/DOT is proposing terraced retaining walls at the 60th Street Pond location to allow vegetation installation. Mn/DOT will continue to evaluate opportunities to allow for landscaping within the project limits.
- Provide landscaping near the proposed retaining walls viewed by residences.
    - Action: Mn/DOT will continue to evaluate opportunities to allow for landscaping within the project limits. Typically, Mn/DOT prepares a landscaping plan for implementation 1 to 2 years after construction.
- Consider identifying parking areas for construction workers away from local neighborhoods.
    - Action: Mn/DOT normally restricts the locations in which contractors' personnel are allowed to park.
- Consider life estate for right-of-way.
    - Action: Mn/DOT policy does not allow this.

Other Environmental Items (No specific goals)

- Prepare an environmental commitment tracking system.
    - Commitments made during planning and design.
    - Commitments followed through and/or modified during construction.
    - Commitments made after construction (maintenance).
    - Action: Mn/DOT will consider this if additional funding and resources can be secured for this purpose.
- Consider the protocols for ensuring that contaminated materials are not incorporated into the project.
    - Action: Mn/DOT's current specifications restrict the use of contaminated materials.

- Explore the partnership opportunities to meet mitigation requirements and enhancements (for example, interagency agreement for wetlands).
    - Action: Mn/DOT is evaluating this at a policy level. If implemented, it will be considered for application on this project.
- Evaluate the risk of litigation for non-compliance.
    - Action: Mn/DOT is evaluating this at a policy level. If implemented, it will be considered for application on this project.
- Provide a commitment to public education.
    - Action: Mn/DOT will consider this if additional funding and resources can be secured for this purpose.
- Consider a cost/risk assessment for the project.
    - Action: Mn/DOT is evaluating this at a policy level. If implemented, it will be considered for application on this project.

CHAPTER 4

Next Steps

Mn/DOT's action for each of the recommendations is shown in Chapter 3. Several recommendations will be evaluated for use on this project during the final design. Policy level evaluations will also be performed and implemented on this project if possible. The following summarizes Mn/DOT's actions:

Skill Set	Number of Goals	Goals Not Addressed	Number of Recommendations	Normally Do/ Will Do	Will Evaluate	Will Consider	Will Consider Policy Change	Requires More Funding or Resources	Unable/ Not Ready To Pursue
R/W and Utilities	6	2	23	14	1	4	3	0	1
Structures	7	3	21	7	9	1	0	3	1
Construction	10	2	14	2	8	4	0	0	0
Innovative Contracting	4	0	15	5	5	3	0	1	1
Geotechnical Materials	5	1	19	10	5	4	0	0	0
Traffic/ITS/ Safety/PR	6	1	18	7	3	4	1	3	0
Environment	5	0	38	27	0	2	3	3	3
Totals	43	9	148	72	31	22	7	9	7

APPENDIX A

Workshop Attendees

A. Doug Allison
Assistant Manager of Right-of-Way
NC Department of Transportation
Tel. 919-733-7932 Ext. 338
Fax. 919-733-1390
E-mail: dallison@dot.state.nc.us

Dan Anderson
Office of Innovative Construction
Minnesota Department of Transportation
St. Paul, MN
Tel. 320-255-4231
Fax. 320-255-3257
E-mail: dan.Anderson@dot.state.mn.us

Deb Anderson-Sleeper
Right-of-Way
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1658
Fax. 651-582-1496
E-mail: deb.anderson@dot.state.mn.us

Timothy J. Anderson
Highway Engineer
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6114
Fax. 651-291-6000
E-mail: timothy.Anderson@fhwa.dot.gov

Steve Barrett
Resident Engineer
Minnesota Department of Transportation
Golden Valley, MN
Tel. 763-797-3067
Fax. 763-797-3181
E-mail: steven.barrett@dot.state.mn.us

Ron Berg
J & L Steel
11611 95th Avenue N.
Maple Grove, MN 55369
Tel. 763-315-4720
Fax. 763-315-2108
E-mail: rberg@JLSteel.com

S. Rick Brown
Vice President
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: rbrown@srfconsulting.com

Nelson Canjura
Senior Bridge Engineer
HDR Engineering
2202 N, West Shore Blvd., Suite 250
Tampa, FL 33607
Tel. 813-282-2437
Fax. 813-282-2449
E-mail: Nelson.canjura@hdrinc.com

Jeff Carpenter
Construction Engineer
Washington State DOT
Tel. 360-705-7804
E-mail: carpenj@wsdotwa.gov

Cathy Clark
Minnesota Department of Transportation
7694 Industrial Park Rd.
Baxter, MN 56425
Tel. 218-828-2464
Fax. 218-828-2210
E-mail: cathy.clark@dot.state.mn.us

Keith Compton
Wyoming Department of Transportation
Tel. 307-777-4059
E-mail: keith.compton@dot.state.wy.us

Michelle Crofton
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax: 763-475-2429
E-mail: mcrofton@srfconsulting.com

Michael Culmo
Director of Structural Engineering
CME Engineering
32 Crabtree Lane
Woodstock, CT 06281
Tel. 860-928-7848
Fax. 860-928-7846
E-mail: Culmo@cmeengineering.com

Mohommad Dehdashti
Minnesota Department of Transportation
E-mail: mohommad.dehdashti@dot.state.mn.us

Don Demers
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: ddemers@srfconstulting.com

Andrew Ditter
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-9741
Fax. 651-296-9571
E-mail: andy.ditter@dot.state.mn.us

David Donoho
State Construction Engineer
Tennessee Department of Transportation
Nashville, TN 37243
Tel. 615-741-2414
Fax. 615-741-0782
E-mail: david.c.donoho@state.tn.us

Dan Dorgan
Director, Office of Bridges and Structures
Minnesota Department of Transportation
Oakdale, MN
Tel. 651-747-2101
Fax. 651-747-2108
E-mail: dan.dorgan@dot.state.mn.us

Chris Dumas
Federal Highway Administration, NRC
Baltimore, MD
Tel. 410-962-0096
E-mail: chris.dumas@fhwa.dot.gov

Doug Eisinger
Senior Manager
Sonoma Technologies
Tel. 707-665-9900
Fax. 707-665-9800
E-mail: doug@sonomatech.com

Larry Erickson
Principal Engineer
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: lerickson@srfconsulting.com

Denny Eyler
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: deyler@srfconsulting.com

Klara Fabry
City of Minneapolis
Minneapolis, MN
Tel. 612-673-2443
Fax. 612-673-3316
E-mail: klara.fabry@ci.minneapolis.mn.us

Kathy Facer
HQ Realty Specialist
Federal Highway Administration
Tel. 785-267-7299 Ext. 305
Fax. 785-267-7290
E-mail: Kathleen.Facer@fhwa.dot.us

Curt Fakler
Utilities Coordinator
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1382
Fax. 651-582-1311
E-mail: curt.fakler@dot.state.mn.us

Tom Foley
City of Richfield
Richfield, MN
Tel. 612-861-9791
Fax. 612-861-9796
E-mail: tfoley@ci.richfield.mn.us

Romeo Garcia
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6125
Fax. 651-291-6000
E-mail: romeo.garcia@fhwa.dot.gov

Joe Gladke
Design/Build Program Director
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-3283
Fax. 651-296-9571
E-mail: joe.gladke@dot.state.mn.us

Stan Graczyk
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6119
Fax. 651-291-6000
E-mail: stan.graczyk@fhwa.dot.gov

David Graeber
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6108
Fax. 651-291-6000
E-mail: david.graeber@fhwa.dot.gov

Jerry L. Graham
Principal Traffic Engineer
Midwest Research Institute
Tel. 816-753-7600 x1937
E-mail: jgraham@mriresearch.org

John Griffith
Administrative Engineer Professional
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1206
Fax. 651-582-1308
E-mail: john.griffith@dot.state.mn.us

Dean Gustafson
ITS Program Manager
Virginia Department of Transportation
Tel. 540-332-8999
Fax. 540-332-8914
E-mail: dean.gustafson@virginadot.org

Kevin Hagen
Office of Bridges and Structures
Minnesota Department of Transportation
Oakdale, MN
Tel. 651-747-2223
Fax. 651-747-2108
E-mail: kevin.hagen@dot.state.mn.us

Kevin Hagness
Grad II Engineer
Minnesota Department of Transportation
Golden Valley, MN
Tel. 763-797-3186
Fax. 763-797-3152
E-mail: kevin.hagness@dot.state.mn.us

Craig Hass
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax: 763-475-2429
E-mail: chass@srfconsulting.com

Dan Hayne
Senior Engineering Specialist
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1596
Fax. 651-582-1309
E-mail: dan.hayne@dot.state.mn.us

Kristy Herman
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax: 763-475-2429
E-mail: kherman@srfconsulting.com

Tom Hillstrom
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: thillstrom@srfconsulting.com

Gene Hoelker
Construction and Contract Admin. Engineer
Federal Highway Administration
Tel. 708-283-3520
E-mail: Eugene.hoelker@fhwa.dot.gov

Chuck Howe
Minnesota Department of Transportation
E-mail: chuck.howe@dot.state.mn.us

David Huft
Program Manager
South Dakota Department of Transportation
Tel. 605-773-3358
E-mail: dave.huft@state.sd.us

Bruce Irish
Water Resources Engineering
Minnesota Department of Transportation
Roseville, MN
Tel. 651-634-2156
Fax. 651-634-2411
E-mail: bruce.irish@dot.state.mn.us

Cassandra Isackson
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN 55113
Tel. 651-634-2398
Fax. 651-634-2085
E-mail: cassandra.isackson@dot.state.mn.us

Bernard Izevbekhai
Materials Engineer
Minnesota Department of Transportation
Maplewood, MN
Tel. 651-779-5575
Fax. 651-779-5580
E-mail: bernard.izevbekhai@dot.state.mn.us

Amr Jabr
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN 5113
Tel. 651-582-1412
Fax. 651-582-1368
E-mail: amr.jabr@dot.state.mn.us

Steve Jensen
HDR Engineering, Inc.
Minneapolis, MN
Tel. 763-591-5422
Fax. 763-591-5413
E-mail: steve.Jensen@hdrinc.com

Tom Jerde
Bridge Manager
C.S. McCrossan Construction
Maple Grove, MN
Tel. 763-425-4167
Fax. 763-425-00520
E-mail: tomj@mccrossan.com

Dave Johnston
Resident Engineer
Minnesota Department of Transportation
Hutchinson, MN
Tel. 320-234-2591
Fax. 320-234-6971
E-mail: dave.johnston@dot.state.mn.us

Greg M. Jones
Federal Highway Administration, NRC
Atlanta, GA
Tel. 404-562-3906
Fax. 404-562-3700
E-mail: gregm.jones@fhwa.dot.gov

Curtis Jorgenson
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6124
Fax. 651-291-6000
E-mail: curtis.jorgenson@fhwa.dot.gov

Kevin Jullie
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: kjullie@srfconsulting.com

Brian Kary
Incident Management Engineer
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN 5113
Tel. 651-634-5268
Fax. 651-634-5280
E-mail: brian.kary@dot.state.mn.us

Bob Kimmerling
Principal Engineer
PanGEO, Inc.
3414 NE 55th St.
Seattle, WA 98105
Tel. 206-262-0370
Fax. 206-262-0374
E-mail: rkimmerling@pangeoinc.com

Paul Kivisto
Office of Bridges and Structures
Minnesota Department of Transportation
Oakdale, MN
Tel. 651-747-2130
Fax. 651-747-2207
E-mail: paul.kivisto@dot.state.mn.us

Kevin Kliethermes
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6123
Fax. 651-291-6000
E-mail: kevin.kliethermes@fhwa.dot.gov

Dave Kopacz
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6126
Fax. 651-291-6000
E-mail: david.kopacz@fhwa.dot.gov

Joe Korzilius
Administrative Engineer Professional
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1336
Fax. 651-582-1309
E-mail: joe.korzilius@dot.state.mn.us

Jim Kranig
Minnesota Department of Transportation, RTMC
Roseville, MN
Tel. 651-634-5270
Fax. 651-634-5280
E-mail: jim.kranig@dot.state.mn.us

Rich Lamb
Minnesota Department of Transportation
Maplewood, MN
Tel. 651.779.5595
Fax. 651.779.5616
E-mail: rich.lamb@dot.state.mn.us

Gerry Larson
Office of Environmental Services
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-284-3775
Fax. 651-284-3754
E-mail: gerry.larson@dot.state.mn.us

Mike Leegard
Office of Construction
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-0860
Fax. 651-296-3811
E-mail: mike.leegard@dot.state.mn.us

Kiet Ly
Minnesota Department of Transportation
E-mail: kiet.ly@dot.state.mn.us

Cheryl Martin
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6120
Fax. 651-291-6000
E-mail: cheryl.martin@fhwa.dot.gov

Jody Martinson
Right-of-Way Engineer
Minnesota Department of Transportation, D3
Tel. 218-828-2549
Fax. 218-828-6105
E-mail: jody.martinson@dot.state.mn.us

Jim McCarthy
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6112
Fax. 651-291-6000
E-mail: james.mccarthy@fhwa.dot.gov

Judy Melander
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN
Tel. 651-582-1365
Fax. 651-582-1368
E-mail: judy.melander@dot.state.mn.us

Anjani (Minnie) Milkert
Utility Agreements and Permits Unit
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-282-5256
Fax. 651-296-9868
E-mail: Minnie.milkert@dot.state.mn.us

Vasant Mistry
Office of Bridge Technology
Federal Highway Administration, RM 3203
400 7th Street, SW
Washington, DC 20590
Tel. 202-366-4599
E-mail: vasant.mistry@fhwa.dot.gov

Lt. Governor Carol Molnau
Commissioner
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-297-2930
Fax. 651-296-3587
E-mail: carol.molnau@dot.state.mn.us

Keith Molnau
Office of Bridges and Structures
Minnesota Department of Transportation
Oakdale, MN
Tel. 651-747-2187
Fax. 651-747-2108
E-mail: keith.molnau@dot.state.mn.us

Linda Mullen
Communications Director
WSDOT
Tel. 206-464-1209 and 360-705-7075
Fax. 306-705-6800
E-mail: MullenL@wsdot.wa.gov

Jim Myers
Wyoming Department of Transportation
Tel. 307-332-4151

Tom O'Keefe
Area Manager
Minnesota Department of Transportation
Roseville, MN
Tel. 651-582-1296
Fax. 651-582-1302
E-mail: tom.okeefe@dot.state.mn.us

Mark Panek
Principal Engineer
Minnesota Department of Transportation
Eden Prairie, MN
Tel. 952-826-6778
Fax. 952-941-5481
E-mail: mark.panek@dot.state.mn.us

Tom Pelnik
Director of Innovative Project Delivery
Virginia Department of Transportation
Tel. 804-786-1103
E-mail: Thomas.Pelnik@virginiadot.org

Dan Penn
Principal Engineer
Minnesota Department of Transportation
Golden Valley, MN
Tel. 763-797-3072
Fax. 763-797-3181
E-mail: dan.penn@dot.state.mn.us

Gary Person
Minnesota Department of Transportation
Tel. 651-779-5598
Fax. 651-779-5510
E-mail: gary.person@dot.state.mn.us

Joe Pignato
R/W Manager
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-284-3599
Fax. 651-297-5399
E-mail: joseph.pignato@dot.state.mn.us

Al Pint
Director, Office of Land Management
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-1132
Fax. 651-297-5399
E-mail: al.pint@dot.state.mn.us

Dave Raley
Senior Engineering Specialist
Minnesota Department of Transportation
Golden Valley, MN
Tel. 763-797-3076
Fax. 763-797-3181
E-mail: dave.raley@dot.state.mn.us

Karl Rasmussen
State Aid Right-of-Way Engineer
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-3306
Fax. 651-282-2727
E-mail: karl.rasmussen@dot.state.mn.us

Tom Ravn
Administrative Engineer Professional
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-6599
Fax. 651-296-9571
E-mail: tom.ravn@dot.state.mn.us

Randy Reiner
C.S. McCrossan, Inc.
Maple Grove, MN
Tel. 763-315-1324
Fax. 763-425-0520
E-mail: randyr@mccrossan.com

Marilyn Remer
Utility Agreements Engineer
Minnesota Department of Transportation
Roseville, MN
Tel. 651-296-7018
Fax. 651-296-9868
E-mail: marilyn.remer@dot.state.mn.us

Nicole Rosen
Traffic Support Engineer
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN 55113
Tel. 651-634-2145
Fax. 651-634-2085
E-mail: nicole.rosen@dot.state.mn.us

Bill Rottschaefer, Principal
SRF Consulting Group, Inc.
One Carlson Parkway, #150
Minneapolis, MN
Tel. 763-475-0010
E-mail: Brottschaefer@srfconsulting.com

Dan Sanayi
Construction and System Preservation Engineer
Federal Highway Administration
Tel. 202-493-0551
E-mail: dan.sanayi@fhwa.dot.gov

Robin Schroeder
Assistant Division Administrator
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6105
Fax. 651-291-6000
E-mail: robin.schroeder@fhwa.dot.gov

Brian Scott
SRF Consulting Group, Inc.
Minneapolis, MN
Tel. 763-475-0010
Fax. 763-475-2429
E-mail: bscott@srfconsulting.com

Sidney Scott
Vice President
Trauner Consulting Services, Inc.
Tel. 215-814-6400
Fax. 215-814-6440
E-mail: sid.scott@traunerconsulting.com

Eric Seabury
Rhode Island Department of Transportation
E-mail: eseabury@dot.state.ri.us

Bill Servatius
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-2721
Fax. 651-296-3811
E-mail: bill.servatius@dot.state.mn.us

Brian Smith
Biology/Water Quality Specialist
FHWA Resource Center
Olympia Fields, IL
Tel. 708-283-3553
Fax. 708-649-3501
E-mail: brian.smith@fhwa.dot.gov

Jason Smith
MAP Team Project Delivery Manager
WSDOT
Tel. 425-649-7286, Cell: 360-791-8827
Fax. 425-649-7085
E-mail: SmithJW@wsdot.wa.gov

Rick Smith
Director, Innovative Project Delivery
WS Department of Transportation
Tel. 360-705-7150
E-mail: SmithRick@wsdot.wa.gov

Richard Snow
Rhode Island Department of Transportation
E-mail: rsnow@dot.state.ri.us

Jim Sorenson
Construction and System Preservation Engineer
Federal Highway Administration
Tel. 202-493-0551
E-mail: james.Sorenson@fhwa.dot.gov

Michael M. Sprinkel
Associate Director
Virginia Transportation Research Council
Charlottesville, VA 22903
Tel. 434-293-1941
Fax. 434-293-1990
E-mail: Michael.Sprinkel@VirginiaDOT.org

Alan R. Steger
Division Administrator
Federal Highway Administration
St. Paul, MN
Tel. 651-291-6102
Fax. 651-291-6000
E-mail: alan.steger@fhwa.dot.gov

Mark Storm
Evergreen Land Services Company
Eagan, MN 55122
Tel. 651-882-0200
Fax. 651-882-6564
E-mail: marks@elsco.net

Matthew Storm
Acquisition Manager
Evergreen Land Services Company
Eagan, MN 55122
Tel. 651-882-0200
Fax. 651-882-6564
E-mail: matthews@elsco.net

Steve Stroh
URS Corporation
7650 W. Courtney Campbell Cswy.
Tampa, FL 33569
Tel. 813-286-1711
Fax. 813-287-8229
E-mail: steve_stroh@urscorp.com

Gary Thompson
Office of Innovative Construction
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-205-4400
Fax. 651-296-3811
E-mail: gary.Thompson@dot.state.mn.us

Nick Thompson
Minnesota Department of Transportation
1550 W. County Rd. B2
Roseville, MN 55113
Tel. 651-634-5310
Fax. 651-634-5280
E-mail: nick.Thompson@dot.state.mn.us

Jimmy Travis
State Construction Engineer
North Carolina Department of Transportation
Tel. 919-733-2210
Fax. 919-733-8441
E-mail: jtravis@dot.state.nc.us

Butch Trebesh
Ames Construction
Tel. 952-435-7106
Fax. 952-435-0913
E-mail: butcht@ames.com

Lisa Vander Heiden
Public Information Officer
Montana Department of Transportation
Tel. 406-444-7205
Fax. 406-444-7643
E-mail: lvanderheiden@state.mt.us

Jeff Voyen
Vice President, Geotechnical Division
American Engineering and Testing
St. Paul, MN
Tel. 651-659-1305
Fax. 651-659-1379
E-mail: jvoyen@amengtest.com

Kevin Western
Office of Bridges and Structures
Minnesota Department of Transportation
Oakdale, MN
Tel. 651-747-2106
Fax. 651-747-2108
E-mail: kevin.western@dot.state.mn.us

Joel Williams
Minnesota Department of Transportation
St. Paul, MN
Tel. 651-296-0862
Fax. 651-296-3811
E-mail: joel.Williams@dot.state.mn.us

Gerald Yakowenko
Federal Highway Administration HQ
Tel. 202-266-1562
E-mail: Gerald.Yakowenko@fhwa.dot.gov

Terry Zoller
Metro Construction Engineer
Minnesota Department of Transportation
Golden Valley, MN
Tel. 763-797-3091
Fax. 763-797-3181
E-mail: terry.zoller@dot.state.mn.us

APPENDIX B

Skill Set Descriptions

Right-of-Way and Utilities
Right-of-way, utilities, and railroad delays have a serious impact on accelerated operations. More innovative solutions are required for both short- and long-term sensitive construction projects.

Right-of-way considerations include:

- State laws and procedures covering acquisition and relocation.
- Numbers and types of businesses and residences that may be affected.
- Availability of additional right-of-way.
- Number of outdoor advertising structures in the project area.

Utility considerations include:

- Industry responsiveness.
- Incentive-based agreements.
- Corridor approaches to utility agreements.
- Contracting utility work.
- Non-destructive methods for utility relocations.

When applicable, railroad coordination is essential to a project for construction access or work affecting the railroad's lines.

Structures
Accelerating the construction of structures (such as bridges, retaining walls, and culverts) will require deviation from the standard practices for their design and construction and will include early coordination between the designers and contractors. A system approach from the "ground up" will be necessary instead of emphasis on individual components.

Some of the systems and concepts that are proven to contribute to accelerated construction are:

- Prefabrication.
- Preassembly.
- Incremental launching.
- Life-in.
- Roll-in.

These should be understood and receive priority consideration.

Designers have several options in structure types and materials to meet design requirements, but identifying the most accommodating system while minimizing adverse project impacts should be the objective.

Construction
Accelerated construction may press the contractor to deliver a quality product in a condensed time frame and area while maintaining traffic. Completion milestones as well as the maintenance and protection of traffic are key elements visible to the traveling public. Allowing contractors to have input on design elements that would affect time or quality during construction can improve the effectiveness and efficiency of the overall project

completion. Using automation to enhance construction equipment performance; construction engineering and surveying; data collection and documentation; and contract administration should be explored and implemented.

Innovative Contracting

Innovative contracting includes exploring the state-of-art in contracting practices and obtaining a better knowledge of how these techniques could be selected, organized, and assembled to match the project's needs. Techniques to be considered include:

- Performance related specifications.
- Warranties.
- Design/build.
- Maintain.
- Operate.
- Cost + time.
- Partnering escalation agreements.
- Lane rental.
- Incentives/disincentives.
- Value engineering.

Any other innovative contracting techniques that would apply to the project should also be considered.

Geotechnical/Materials

Subsurface conditions and issues should be explored to assess their impacts on the project. Based on the geography of the project, subsurface investigation may be complicated by traffic volume, environmental hazards, utilities, railroad property, and right-of-way. Options should be pursued to expedite and facilitate turnaround times in material testing for material acceptance and contractor payment. Furthermore, the use of innovative materials should be explored and encouraged on projects to maximize the creative characteristics of the designer and contractor. By identifying project performance goals and objectives, the designer and contractor have the maximum freedom to determine the appropriate methodology for constructing the project.

Traffic/ITS/Safety/Public Relations

The vast majority of our nation's highway projects involve reconstructing existing facilities. Enhanced safety and improved traffic management along the project corridor is desired during and after construction. Evaluating both the construction and maintenance work on a corridor-by-corridor basis may help assess traffic and safety issues more fully then the conventional project-by-project approach. Developing and evaluating specific ideas should identify the need for incentives to enhance safety and improve traffic flow during and after construction.

Effective communication is vital to the success of any project. During construction, providing better information to the traveling public and politicians on the relationships among crashes, delays, mobility, total traffic volume, truck traffic volumes, and the need for lane closures is important. Implementing integrated ITS systems to communicate construction information to motorists via radio, Internet, and wireless alerts, as well as using incident management systems/services, is very effective and should be considered.

Partnering with local entities to inform communities and the traveling public about construction activities and traffic disruptions is needed to successfully manage construction impacts and avoid adverse socioeconomic impacts.

Environment

A project's scope-of-work and construction activities need to reflect environmental concerns to ensure the most accommodating and cost effective product while minimizing natural and socioeconomic impacts.

APPENDIX C

Skill Set Report Forms

RIGHT-OF-WAY AND UTILITIES
Facilitator – Al Pint, Mn/DOT
Note Taker – Joe Pignato, Mn/DOT

FHWA National Experts:
Kathy Facer, FHWA, HQ
A. Doug Allison, NC DOT

Mn/DOT, Local FHWA, or Local Experts:
Deb Anderson-Sleeper, Mn/DOT
Marilyn Remer, Mn/DOT
Karl Rasmussen, Mn/DOT
Curt Fakler, Mn/DOT
Bill Rottschaefer, SRF Consulting Group, Inc.
Jody Martinson, Mn/DOT
Anjani (Minnie) Milkert, Mn/DOT
Matthew Storm, Evergreen Land Services Company
Mark Storm, Evergreen Land Services Company

RIGHT-OF-WAY AND UTILITIES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Interagency coordination agreement.	Have signed agreement with environmental groups (for example, Corps of Engineers and other permitting agencies) to have the site identified later for mitigation. Next step in the process.	New Agreement.
Utility/Right-of-way purchased +/- 1 year in advance.	—	—

RIGHT-OF-WAY AND UTILITIES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Right-of-way (R/W) purchases for utilities, interstates, and state highways.	Coordination of buying of the property for the roadway project.	Statutory changes. AG decision.
Earlier utility office involvement for utility R/W purchasesR/W and utility layout meeting.	—	—
Use more review fee appraisers.	—	—
Title Orders-get as many as possible within reason because it is easy to do.	Identify critical path parcels to help in the process. Prioritize the titles.	—
Coordinating the R/W acquisition associated with the construction staging.	Stage and prioritize the right-of-way acquisition based on critical parcels and construction staging, such as total takes, commercial property, railroads, cemetery, etc.	—
Staged R/W acquisition like design-build (D/B) projects.	—	FHWA requirements.
Only using SUE on D/B. Should think about doing it here.	Assures or finds missing utilities. Needs to use more SUE. Other states have seen benefits associated with using SUE to avoid utility-caused delays.	State policy, education of design personnel.

RIGHT-OF-WAY AND UTILITIES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Get contracts established as early as possible. Associated assessments and abatements.	Possible separate building removals contracts.	Scope of work timing issues.
Proceed or obtain authorization for total takes and apartments before signed environmental assessment (EA) and municipal consent. (Risk but get approval to proceed.)	—	—
Railroad coordination.	CP - David Drach Owner. Progressive Rail - Barry Karlberg Operator. Take railroad and support with trucks. Total acquisition of the rail line.	Two entities ready mix is served by the railroad. Time of years of construction. Cost to shut down the line. Cost of exposure.
MSE Walls.	—	Conflict with utilities and additional R/W needed for the tie backs and geogrid system. Both parallel and perpendicular installations. In cut sections. Directional boring could also be a problem. TMC and signals associated with Mn/DOT could also be a problem. Aesthetics problem associated with large vegetation. Permanent Wall Easement will be needed.
Frontage roads to be part of the city's property.	We buy it and the city maintains it.	Could be too late in the process. Also municipal consent could be a problem.

RIGHT-OF-WAY AND UTILITIES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Peter's Billiards.	Total take how we handle the relocation/loss of visibility. (billboard) Buy them out!!! Partial take. Eliminate the connection of the frontage road and run it along the front or west side of the nursing home. EA say it as mitigation.	Land, building of the new site. Can't assemble property and sell it to them. Could be political. Problem with damages. Federally we could do this but state requirements are stricter. Driveway problems with access management. Bird and Fish????
Higher limit for MDA acquisitions.	—	FHWA.
Coordination.	Overall coordination of functions associated with right-of-way and utilities.	Different functional areas associate throughout Mn/DOT, i.e., surveys, R/W design, and construction.
Time savings issues.	Prioritization of right-of-way acquisition. Staged acquisition based on construction staging. Prequalified list for contracting. Standardized forms for consultants to use. Purchase agreement usage. Early and established construction limits.	Utility relocation would be a problem R/W not available State laws vs. State procedures.
Footprint buy enough right-of-way.	Buy enough right-of-way. Need to analyze the risk and move forward with that decision. Must look at buying enough if you do it. Establish utility corridors, stay within the footprint. Buy changing you will add time. To change a footprint you must provide a "show stopping" reason for the need for additional right-of-way. Along with delay time frame.	Designers need to live within the R/W bought. Changing and changing. Draining being done late in the process. Dollars, public relations.
Deliver projects quicker.	Keep staff appraisers. Flexibility with consultants. Allow upfront work to be performed. Access to county assessors records. Relocation incentives. Shorten up the quick take process.	Statutory changes. Upfront resources. Pilot Project Approval vacation/settling in acquisition.

—

—

RIGHT-OF-WAY AND UTILITIES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Meets and bounds descriptions vs. platting.	Study the process, is platting the best and quickest way to deliver the acquisition.	Staffing. Actual surveying of the plat is a problem.
CAD unit within right-of-way.	Use automated description writing program to identify the taking and print of the description. Areas and description are developed.	Software.
Look at the R/W area as a system to allow for flexibility.	Allows for contracting process to perform a turnkey operation.	—
Electronic hand-offs of parcel data.	Develop investment and implementation of EDMS system along with Mn/DOT's REALMS system.	—

STRUCTURES
Facilitator – Paul Kivisto, Mn/DOT
Note Taker – Kevin Hagen, Mn/DOT

FHWA National Experts:
Steve Stroh, URS Corporation
Vasant Mistry, FHWA, BT
Michael P. Culmo, CME Engineering

Mn/DOT, Local FHWA, or Local Experts:
Romeo Garcia, FHWA
Dan Dorgan, Mn/DOT
Kevin Western, Mn/DOT
Keith Molnau, Mn/DOT
Larry Erickson, SRF Consulting Group, Inc.
Ron Berg, J&L Steel
Mark Panek, Mn/DOT
Nelson Canjura, HDR Engineering
Tom Jerde, C.S. McCrossan Construction

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Staging and early contracts.	Getting work done earlier by starting earlier.	Early steel contracts. Letting bridges on north end of project earlier (if money is available). Using steel in cold weather. Cold weather epoxy with precast boxes. 8 to 9 months to get segments. 170,000 to 190,000 ft^2 of segmental bridges. Possibly change a segmental to steel. Need 100,000 ft^2 of segmental to be economical - could change one ramp. Precast Segmental hasn't been done in MN yet - competition not there yet (more expensive). Takes a while to set up for segmental suppliers but goes good when set up. Precast piers.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Walls.	Ideas to get walls built faster.	Tiebacks into R/W no good. Cast-in place (CIP) footing with precast stem. Emulation = CIP design converting to precast. Could go up to 30 ft. With CIP, footings easy, stems take longer. Secant walls (expensive, large quantity). Local precasters share responsibility with contractors. No room on project for casting yard. Set up precasting to be competitive. Enough volume on this project to bury cost of forms. Aesthetics with precast walls? Can precast anything that can be CIP (counterforts included). Precast counterfort walls done on 394. Give contractors option of CIP or alternate. Contractors required to design alternates. Alternates = CIP, MSE, MBW, tiebacks, crib. Just give the contractor the ground rules for walls then let them finalize design and const. (not sure of what you'll get in end - maybe allow only one type of wall). Have contractors submit designs for options before letting. Giving options may make for a crunch with design later. At this stage we'd want value engineering option. West wall on north segment will be critical - 1 mile on piles. With precast panels, could set up to 20 a day. Battered forms take extra time. Aesthetic of PC walls could be a tough sell (full height vertical joint ~ every 10 ft). MSE issues - temp sheeting retaining 8 ft' at abutments - ½ price of CIP - ½ time of CIP. How is sheeting pulled at MSE/abutment joint? Use temporary block out from abutment. MSE strap length = 0.7H - utility conflicts, settlement issues. Running long lengths of sheeting (only 8 ft high)? Good for contractor? Sheeting may not be needed if slopes are shallow enough. In Florida MSE walls cost $20/vertical sq ft. MSE walls good for different settlements, get costly when forming at top of wall, cast in place or precast option at top of wall. Slip form rail on top of MSE wall. Drainage considerations in MSE walls should not be a problem.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Contracts.		Right now one large contract. May eliminate some small contractors.
Small overpass bridges on north end (not on critical path).		Precast slab structures to speed construction. Superstructures only being replaced. Stay in place precast deck panels on PCB, not on steel (reflective cracking)?
Commons bridges.		MSE wall abutments. Pile footing, Spread footing. Close rail line for a while - side walls. Precast panels - need neoprene pad to set on, then make sure grout gets underneath to provide a solid bearing (solid bearing most important - need gap over beam from edge of neoprene to edge of panel). Decking a bridge doesn't take that long if there aren't traffic issues. Time of pulling forms would be saved. Monolithic, precast decks prefabricated on beams (German construction). Stage the Lyndale Bridge so that it can all be built at once - may not be an issue because there will be a lot of room to work (100 ft) - may be better for traffic if built all at once.
Segmental bridges.		Segment weight = 55T - 60T, 250T crane to lift. Placed by crawler crane. 1 to 2 hours to get one segment placed. Four segments during 8 hour shift, temporarily constructed - need to post-tension later. Traffic OK with temp PT installed. The more segmental bridges, the better for the segmental contractor.
Afternoon Session		
Bridge type specifics.		Br 27V73 - make it segmental to match 27V66? • Need to widen retaining walls. • Too small to make same size segmental as other five. High performance concrete and steel. Self-compacting concrete (no vibration needed, give up strength, tougher for field applications).

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Foundations.		Use 12 in CIP, try to get 75T. Shallow foundations may not work because of future excavations. Sheeting incorporated into foundations to be left in place - tie into footing. • Slurry trench - more expensive, harder. • Why design for worst case? H-pile in front of footing, lagging later if excavation needed. Drilled shafts for piers - possibly 1-8-footer for each pier, soil may be better for shafts on east end of commons. • Works for segmental. • Need temporary footing of bracket off column for temporary erection. Driven piles (18 in). • Load tests prior to letting. • Huge point loads in footings (not always economical - tougher design). • Use heavy wall sections (3/8 in wall on Wakota). • Drive 12 in heavy wall to more than 96T. • Geotech. • Use prestressed piles with steel prices on the rise. • Augercast piles - no vibrations, no problem with water table, just very messy when close to water, need computer automated monitoring, increased inspection demands, 100T at 18 in. • For speed of construction use high capacity piles and pour cap quickly. • Precast piles may not be ideal for MN with varying depths of soil layers. • Room for pile load test? • $60K - $80k for auger pile test. • Deep soil mixing?

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Foundations.		• Micropiles (5-8 in diameter) $100/lf - too expensive. • Drilled shafts have been done in MN recently - could be cost effective, some don't like crosshole sonic logging (CSL), $1K to $2K per test, doesn't replace testing. • Waiting period on fills - no, maybe 72 hours at the most. • Light weight fill to eliminate settlement periods.
Retaining walls.		Construction questions: • Consider other types of walls. • Bringing in fill may limit rate of construction - incentives for speed of construction. • MSE walls are quickest and cheapest. • R/W not an issue on fill situations, other options considered in cut situations. • Utilities can't be under MSE straps, transverse crossing wouldn't be an issue. • Also no trees on top of MSE walls. • Use soil nailing under frontage road near 46th Street. • Walls on north end. • Precast wall types. • Stability of foundations for future excavations. • 1 mile of walls on piling - may control rate of work. Final Recommendations: • Contractors would need list of acceptable wall types in proposal. • WY tee detailed to 30 ft. • High cost, $80/sq ft (high because of long hauling). • Glen Canyon. • Michael Culmo has sketches - will be quicker but not cheaper than CIP.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Retaining walls.		• Aesthetic considerations. • MSE = $25/sq ft. • CIP = $50/sq ft. • Precast = $50/sq ft.
Design-Build (DB).		Staging is the issue. Project must be all DB or none.
MSE walls.		Use at abutments to shorten span lengths.
Bridge 27V68.		Shorten east end span and put another span on the east end? Can't lengthen because we'll get into exiting ramp too much. Split bridge along gore area, stagger abutment.
Bridge 27V75.		Precast box vs. steel. Issues: • Future painting of steel. • Fracture critical steel cap. • PT concrete cap. • Redecking segmental is an issue, not an issue with beam bridges. • Erection not an issue for either. • Consider weathering steel. • Need to paint too. • Removal of precast segments - the whole thing may come down if things go wrong, with beams can better control things. • Aesthetics issues with mixed superstructure types on flyovers. • If bridge needs to open in spring 2007, bridge may need to be steel. • May need early steel contract.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Bridge 27V75.		• Steel tub section vs. steel I-section. North end of bridge controlled by retaining wall heights (approaching 50 ft). Make other flyovers steel if this one needs to be steel. Construction questions: • Use steel for this bridge? • When does it need to be done? - Stage 0 (says construction staging). • Can't start till 2007 now, could start a year earlier if steel used. • Could also benefit by changing location of piers for bridge 27V79 - get farther from travelways (reduce lane closures). • Bridge open by spring 2007 to save the time. Use CIP box superstructure.
		• More money than early steel because have to pay for whole bridge. Steel box cost 20 percent more than steel I-girders, and more difficult to erect. Steel box may end up being economical with less steel because of torsional resistance. Approximately two tubs would be required if tubs are to be used. With tubs, lose deck inspection access. Recommendation: When could seg bridge realistically be opened? • Cast Jan, Feb., March, April. • Erect March to June. • Deck, railing - June, July. • Open August 1, 2007. Steel bridge be opened. • Piers and abuts July, August, September. • Questionable to open by fall 2006. Let this bridge on its own.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Bridge 27V73.	See bridge type specific notes.	Widen out to use precast section? Would have two small cores and four large cores for casting. If made segmental - Stage 1 - four bridges (180 large segments, 91 small segments - could this be done), Stage 2 - two bridges. 6-8 months lead time to cast stage one segments, first segment comes off in 6 months. Number of different sections (two) is not an economic issue. Load restrictions, onsite casting maybe at a location where weight restrictions are an issue. Spend first year doing substructures then ready for segments (do-able).
Abutments.		Geotech questions: • Shorten bridges by eliminating cross slopes. • Use MSE walls to do this. • Drive piles so beams can be set before MSE walls built. • Use 30 ft approach panels for compaction issues behind MSE walls. • Spread footings on bridges.
General bridge.		Self compacting concrete - works best in precasting yards where there is more control. • Usually lose strength. • OK for drilled shafts. • No real advantage for field applications. High performance steel - silent in new code. High performance concrete. • High fly ash. • Silica fume. • Already used by Mn/DOT.
RR Bridge (27V74).		Build bridge offsite then haul into place. Salvage existing substructures. Rigid frame structure. Conspan structure.

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Final Recs.	See bridge type specific notes.	Bridge 27V75. Steel: • Needs to be steel only 8 months prior. • Probably done by fall 2006. • Box vs. I-girder. Segmental: • Done by July/Aug 2007. • What really is the critical path? Retaining Walls.

CONSTRUCTION
Facilitator - Steve Barret, Mn/DOT
Note Taker - Kevin Hagness, Mn/DOT

FHWA National Experts:
Gene Hoelker, FHWA
David Donoho, TDOT
Michael M. Sprinkel, Virginia Transportation Research Council
Jeff Carpenter, WSDOT
Mn/DOT, Local FHWA, or Local Experts:
Joel Williams, Mn/DOT
David Graeber, FHWA
Kevin Kliethermes, FHWA
Terry Zoller, Mn/DOT
Dave Raley, Mn/DOT
Randy Reiner, C.S. McCrossan Construction
Don Demers, SRF Consulting Group, Inc.
Steve Jensen, HDR Engineering, Inc.

CONSTRUCTION		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Precast vs. cast-in-place.	Precast retaining walls and structures, temporary ramps, etc. Look for areas that affect traffic the most to speed up the time of disruption.	Early let for precast?
Completion time.	Keep completion time to an absolute minimum.	May force them to have more crews. May pay more money-likely worth it.

CONSTRUCTION		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Jack critical storm sewer (96 in).	Possibly less time and impact to traffic for critical storm sewer sections.	What are costs? Possibly use sheet piling or put proposed storm in median next to existing storm. Which location is more beneficial/cost effective?
Divert storm.	Avoid upgrade to 96 in storm sewer and surge basin.	—
Closures.	Minimize major movement closures to 8 weeks.	This applies to through volumes and major ramp movements. Local ramps could be closed for more time. Nights and weekends for I-35W closures.
Cross sections.	Strive for cross section uniformity to save construction time.	Use concrete shoulders between mainline pavement and curb and gutter to save time.

INNOVATIVE CONTRACTING
Facilitator – Tom Ravn, Mn/DOT
Note Taker – Andy Ditter, Mn/DOT

FHWA National Experts:
Gerald Yakowenko, FHWA, HQ
Sidney Scott, Trauner Consulting Services, Inc.

Mn/DOT, Local FHWA, or Local Experts:
Dan Anderson, Mn/DOT
Mike Leegard, Mn/DOT
Gary Thompson, Mn/DOT
John Griffith, Mn/DOT
Tim Anderson, FHWA
Robin Schroeder, FHWA
Joe Gladke, Mn/DOT
Dave Johnston, Mn/DOT
Butch Trebesh, Ames Construction
Rick Brown, SRF Consulting Group, Inc.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Staging.	Crosstown Commons is charged to keep traffic flowing. Keep same number of lanes but will slow down due to distractions. Commons lends itself to weaving and filling in retaining wall and staging south side. A lot of dancing of traffic back and forth with the staging of	Staging is constrained by funding and compacts the schedule. Stage 0 early 2006. Those two bridges need to be let early. Letting 2005 based on schedule. Sewer work needs to be done early as well. If we don't get those two bridges early, it may push us to 2010. Metal bridges take 8 months to prep. Steel is an issue.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Staging.	the project. North end staging same layout. Stage 0 will reconstruct overpass bridges first. Four main bridges. Two interchanges. We looked at this in staging. We looked at two adjacent bridges closed at one time. Important that the north end has these four bridges constructed first.	
Two contracts.	10 to 25 million as early letting. The big letting in April won't hurt us. Right now there is no funding for that Stage 0. Completed design is late November 2005 letting. The more money for that first stage we can help it out.	Get funding for Stage 0 and contain the sewer work in the same piece. If we don't get the funding, it may push it back.
Gaining time.	Having money available in 2006 and Stage 0.	Two bridges can go first. If you open up too much with a shortened construction season, we may only be able to do those two bridges in that year. You don't want to open up too much.
Precasting.	Two lanes wide. 40 feet wide.	—
Optimistic schedule.	What is your amount of time needed for this?	Intent is to have this go to FY 07. Why not let it earlier and do some winter construction?
How fast?	Bridge design is not the limiting factor.	We need to have the design and profile to be the right one.
Moving up early date.	November letting.	May not gain much for a November letting. Right in the middle of winter but needs bypasses for the bridge to be built.
Closing Crosstown.	Will it accelerate the project?	What if we only do it for one season?

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Controlling operation.	Segmental bridges.	40 ft cannot be done onsite and need to be hauled in.
Size of contract.	D/B. They need to joint venture with large firms. Have the AGC consider fitting it into their program.	
How long will it take to get an RFP?	What do we gain by D/B in terms of time?	Money may not be there for the project to move up.
Funding.	We can't appropriate funds until July 1, 2006.	Money is not available until 2007 for the other projects that are taking that money right now.
Funding for four fiscal years.	Encumbering as we go.	Have to show it as part of our program.
Issues with acceleration.	How does it fit with cash flow?	What is the cash flow analysis? No work done finding out what the maximum payment curve will be.
Funding all at once.	Move it up as early as you can.	Four contracts on Wakota can be difficult. We would like to see the one contract together.
One contract vs. two.	Goal is to use state personnel.	Makes it difficult if you get two different contracts.
Goal to minimize personnel.	Run both at some time is an issue, but if it is done early then it may be out of the way.	Similar to moving utilities out of the way first. This may be a good option.
Utilities.	City sewer, water, and fiber. In terms of utilities and relocation, there does not seem to be a big problem. The City of Bloomington will be involved as well.	Get them involved early.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Two segment projects.	Segment One south of 494. This is one project larger than originally anticipated.	
Lots of projects vs. one.	Marquette contracts 15 and got twiddled down to four and small contracts.	It was split up into legs. One contract would have been much easier.
Larger is better.	Maximizes the contractor's ability to innovate as well. Not have to worry about the other guy controlling your work.	Larger is more flexible.
Moving equipment.	Segmental bridges can be more critical than the other. More flexibility and space can minimize the closure.	
Looks of the final roadway.	Not flexible. 8-week closures may be allowed. Up to 12 weeks may help get it done faster.	Public stopped the projects due to closures. Right now we still need two projects.
Not good D/B.		
Stipend to build the job.	Provide stipend for staging.	Money for staging.
Is this contractible?		Room available.
Mandate staging in this stage.	Need to demonstrate that the project can be built. Mn/DOT needs to say it is safe. We tend to layout staging: more complex, less risk.	Contractor may have a better idea.
Incentive.	Better way to stage it than Mn/DOT and has an incentive better than what Mn/DOT wants done.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
A+B.	We need to provide incentive for staging this way. Pass risk off to the contractor. Money is the only incentive.	Need to structure the contract well.
Priority system created.	Other routes may be attractive to contractors.	Study the criteria for time of closures.
Transit.	Can a shoulder be provided for buses?	Can you maintain the buses? Can that create an incentive to maintain the bus traffic on the shoulder?
Closures rental.	Max number of days it can be closed. Matrix of closures and not have multiple closures.	Build a bypass to save days.
Help to win the job in the bid?	Closures of rental.	Ramps.
Mainline closure rental.	Close for a week and get complex work done.	Setting segments in short durations to set beams.
Police slowdown.	To place beams.	Inform public and tell people to avoid it.
Change driving patterns by information.		
Total closures.	12 weekends on 494. What are the total closures for this project if we decide to allow it? Can we set multiple bridges?	Rental will make the contractor decide to do it correctly.
More than 8 weeks.	Damages will follow for more time. Incentive for less.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
A+B.	Helps contractors win the job vs. incentive/dis.	Will it increase the price to a point of not being affordable?
User costs.	What is the user cost for the roadway?	What if it overruns?
Cap incentives.	Worst case dollars. Incentive is meant to be part of his risk. He is banking on those dollars.	
Contingency.	$208 million… What is the final estimate? We need to identify that contingency.	We all agree upfront, and we need to find the money in the end.
Leaving out staging plan.	Best value for traditional project?	Stipend for the project can be paid.
A+B 200m.	Has that been done before?	NY staging.
Staging.	Have to do the staging and see if this is constructible.	We need to see if we have a contracting process to build the project.
Info staging document.	Develop their own and only having the staging as an info plan.	Separate the staging plan.
Saving effort.	Reduce the plans and eliminate the staging.	Cost of staging plan vs. stipend costs.
Bid vs. build documents.	Different animal for different needs.	What is the level of documentation that the contactor needs to provide to the DOT?

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Cost creating documents.	Need to set up partnering at the beginning. Create number of sheets. Satisfy expectations.	What we say in our D/B? One team sets up complete traffic control. All developed a cost. The more detail they created, the better they were scored.
D/B/B.	Staging plan will be included with the proposal. That would go out now.	D/B.
D/B at 95 percent.	As long as it is not complete, the statute can allow us to use the best value method.	Use parts of the design project even if it is not the D/B project.
Wall and bridge types should not be as prescriptive.	Prescribing wall types may not be the best thing to do.	Value engineering. Bridge may increase the amount of funds given to value engineering to stimulate the way we build our bridges.
What is the value basis of one construction stage over another?	Can we reduce closures and save time? Can this come out in a construction plan? If the contractor puts the whole staging plan in advance? Adds risk to the contract. But, we save all that upfront work.	We need the staging to convince Minneapolis and Richfield.
Better staging.	How do we measure that? User cost--does it save time.	Is it important enough for us to have high quality and/or should we go to the old way?
Benchmark 4 years.	Everything is based on how we can do this faster. Cost of 5 vs. 4 years. Social cost, safety, but what is the money saved on $s. Are we convinced?	Selling the cost to the Commissioner may be the way to get the money.
Minimizing closures is the only one we can affect.	Are we correct in modifying the project goals? What elements of D/B can we use?	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Minimize traffic impacts.	Goal for the project. Legislation is determined by the legislature. The reason why the project is stopped.	
Old PR killed the project.	We are gun-shy with talking about the project and talking to the paper. They can give a spin that we don't want. But need to spin this the other way.	
Lump sum for the traffic control.	This is what we are willing to pay--can you do it for cheaper? Enough description--can we get the contractor? Would we get a bid?	We were locked into the schedule of values. We have $225 million for this price.
Reverse bidding.	What can we get for $208 million?	
2 months for 212.	4 months--design and construction can be done, but it is a huge effort to do that.	
Cost and pricing for bypasses.	How can we optimize that? Give honest closure times, and we will get a better price. We assume 10 days of closure. You have to bid a cost to those days.	4-year plan needs to be shared and risk managed.
Time in traffic.	Mn/DOT needs to learn what the contractor wants to do. By sharing information, we are educating everyone in the project.	Speculation time is eliminated.
Working side-by-side.	Need to find a way to incorporate that in this project.	Hours put into design scrutiny can reduce downtime.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Minneapolis.	They hold Mn/DOT accountable for the information provided. The PR firm addresses complaints, and we have a better way of doing PR. We need to capture that on this project.	
How can we get this done as fast as we can?	Mn/DOT gets this done. Acceleration is what this will cost us. We need to find a balance for it.	Building fast--what are the issues we can minimize?
Cost savings.	No physical cost savings occurs, it is a soft cost and is to the traveling public. Here is an opportunity to save user costs.	Time frame is critical.
Goal 2009.		
Steel orders will take lead time.		
Precast bridges.	Are the beams too deep for the sections that they could be utilized? Is steel the only option?	
Minneapolis.	They did not want the program to be D/B because of the uncertainty.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Is there flexibility in how we build the project?	Because the design is done, but the way it is constructed is the main flexible thing.	
If money showed up next year.	The main reason to use D/B is to accelerate the money.	We need this to capture the federal dollars, and this is the way to do it.
Go with the staff.	Need to go when politics allow you to go and no-go on projects	Admin changes can kill a project.
Legislature changes in the boundaries.	Helps us to move it up ahead.	
State is learning how to pull the trigger.	30,50,75,95 percent done design. Create a D/B project when the time is right to get a job done, because funding is now available. The State needs to develop a method and system for doing that.	
EIS.	Are they trying to kill these projects? Geometrics wants it to transit coordinated. Wanted LRT. We will settle for BRT and a commitment in dollars. We need to keep this as a commitment to the admin that supported it.	
Hot lanes.	Can you run the infrastructure before hand?	Is this something that can be done later?
Open up Crosstown.	You need to open up the points north.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
City wants to fix the whole system at once.	We need to communicate to the City that this is a sectional approach that needs time and funding to be implemented.	
Construction Manager at Risk.	Can some of these other innovative types benefit the overall project? Completely different than what we currently do.	
Funding.	We are continually not funded up to 100 percent. And our resources are retiring. Contract Administration is used to supplement our larger projects. On D/B, we seem to put our key people out there and fill them in with consultants.	The option is to give all the small projects to consultants. It is difficult to put our own people to them.
Staffing.	Time period of 4 years can create a turn around in staffing. If we were to contract out some of the construction, do we lean more to the front line or supplement our project with the people?	Plug names into the holes using an org chart.
Material testing.	Hiring out certified labs. Use Mn/DOT staff for the leaders of the staff for quality control.	TTI had suggestion. Set up testing facility. D/B would delegate more to the contractor on the job. Other mega jobs, set up a change management team.
Change management team.	Separate team that would do the job of Central Office to handle changes and produce results sooner.	If this is a design-build job, then it might make sense.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Staging operations.	CPM is the only way you are going to be able to find out time.	Helps to implement incentives and disincentives.
Invoice pricing.	Percent of work complete is paid for. It is determined based on the CPM.	We hire outside experts to help us do that.
Task order consultant.	The consultant is paid on certain projects for 2 to 3 weeks at a time. This may be a good idea, but might not be practical.	Might not be able to be done because of the current staffing rules to the contracts.
Staffing org chart.		
Task order consultant.	The consultant is paid on certain projects for 2 to 3 weeks at a time. This may be a good idea, but might not be practical.	Might not be able to be done because of the current staffing rules to the contracts.
Materials testing.	To supplement testing, bring in a consultant like a testing company to run more tests during paving and pouring.	
Contractor staking.	Contractor's responsibility--will work better for it.	Number of stakes goes down.
Field fitting.	Contractor, inspector, and surveyor will be figuring it out together.	
QA/QC.	Contractor has more responsibility in our D/B projects. The idea is the contractor controls their process efficiently. We can then check the project and we don't find anything wrong. But at the end it is not	QC/QA is something, Virginia DOT does not want to get into it. 95 percent meets the spec. But the 5 percent that does not meet spec--it obviously will be representative of the bad pieces of the project. We still need non-random samples and to do the mathematical random samples as well.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
	what we want. Now what? We are stuck with it and might get some money back. It all comes down to knowing that we have good contractors out there. We want a contractor to put the extra money and time into it. A big contractor will bring in the quality with the bond. The amount of testing is not the issue. You have to know you have a contractor that wants quality in the process. Statistical analysis and numbers may only give us the current quality.	
Compliance auditing.	Will give you a threshold across the board. Better place for lower-level people. Something we can sign off and be comfortable with.	Bringing up the skill level of the contractor is something we need to utilize.
Oversight.	How many tests do we run? Make sure the testing is fair.	Losing the experience.
Retired DOT.	Working for the contractor will be attractive for both sides. Experience and contractor run QC.	
Goal to get the job done in less than 4 years.	Huge PR effort. Night work. Vibration. Special permits to work at night and on weekends in Minneapolis.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Do we not need to follow the City ordinances?	Legally no, but we need to continue to solidify the relationships with the city.	In certain cities, we have worn out the welcome and the contractors may get the permits better than the DOT. How can we use the contractors to go into the permit?
What to put in contract?	Night work. Will have to get the permit to do night work. Not a good idea because of the uncertainty.	
Build noise wall as first order of work.	We are going to do innovative contracting. What can we do to make this easier?	
Visual barriers.	Screen it off rather than leaving it open.	Temporary barriers buy you time.
Trucks on side city streets.	Paving driveways and some trees may make home owners happy and take care of things.	Some give-and-take will be part of the solution.
Haul road.	If it is less than 9 tons, then we may have problems.	We can't do it in the Twin Cities.
Contractor working for city at the same time.		
Pre-purchasing.	Steel pricing may warrant buying up front.	
Scrap price is still high.	Index and scrap price for steel do not line up well.	
Preconstruction conferences.	Not mandatory, but they are usually all there.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Crosstown Forum.	The more up-front that is available the better.	
Post-bid conferences.	Four meetings: scheduling, utilities, submittals, and partnering.	Have all four meetings and talk on those targeted topics to be used before the letting. May cost more, but it will allow for the contract to start more smoothly.
Money and timing.	May have to rearrange our statewide priorities. The state tightened their belts to do this for them. ROC-52 is an example. That's the better way to do it, and keeps things from getting bogged down. The pitch was to Doug: Could this happen?	Re-allocation is one of the top things on the financing list.
Innovative contracting.	Hybrid.	
Delivery.	One contract.	
Find money to do Stage 0.	Need to get that done. We need to not lose 2006.	Immediate needs to find that first money for those two bridges would be to achieve a goal to keep the program on schedule.
Funding.	Drives the fact that we can have two contracts.	Get first staging done now.
Stage 1.	There is not a lot of bypass to do Stage 1.	Whenever you let, it's good.
Stage 4.	Complicated section.	
One contract.		

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Hwy 100 South.	This is linked to that roadway. The sooner this is done, we can then get 100 S done.	
Contractor comes up with the staging.		
Best value may be used for D/B.	Stage-Build: 95 percent design and only need to get the staging done.	
A+B.	There is no need for the stipend by using A+B.	
D/B/B.	We can do both A+B and D/B/B.	
D/B.	90 percent design done and then the project becomes D/B and now they are looking at the staging, construction, and traffic management.	
RFP.	Our commitments need to be upheld with the cities.	
Esthetics.	Wall types and what it looks like is already solidified with the cities.	
Warranty design.	Not double up design work. Need to give contractor work that they can trust.	We need to stand behind our work.
Stand by our design efforts.	We want to see if D/B works or not and at what percent.	We have to look at staging plans and structure it. We have to be sure if they did not have the plans. We have to have something laid out well.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Stipend for staging plans.	Accountability for construction staging.	Money well spent for the data, and all the data is ours.
Ramp closure matrix.	Ramp closure matrix could be used to coordinate multiple ramps and rules with the closures. That way we at least have some sort of evaluation for this project. Going to have to set up all the criteria.	
Stipend traffic.		
Documents.	What a contractor needs vs. what Mn/DOT produces.	
Staging plans.	How much would it cost? 3 or 4 months. Two to four people. All three dimensions would have to be looked at. Need three dimensions to get a good price.	$1.2 to $1.4 million to get a project D/B.
Shaving this schedule.	For A+B, could help to manage the ending of the project.	
Winning the job as a contractor.	Road user costs are not easily reported and measured.	
Do we do A+B?	Extra funding due to calendar. Can be done together.	
Ramp closure incentives.	We should not cap the incentive.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Schedule.	Approve updates with the contractor, having payment that is tied to the schedule	
Cost- and resource-loaded schedule.	By attaining resource loading, we get more information about the productivity of the contactor.	
Lane rental.	Forces the contractor to do that job with his subcontractors.	Possibly be able to rent out the complete outright closure of the roadway.
Paving in the middle.	Staging for #4.	
Master utility agreements.	Used for design-build, but we can use it on conventional projects. This is interstate money and we can participate. Contractor-State-Utility to move utilities in a timely manner.	Some favors will need to be done with Minneapolis.
Resource loading for CMP for state personnel.	Updates need to be updated and for all scheduling. Mn/DOT does not do that on a monthly basis. No real indication is told by Artamis.	
Expedition.	Shop drawing linked together and data collected.	Buy the product for the job.
TRAC.	Document control.	Have a digital field data collection method with PDA that plugs into the database to organize field data, photos, and shop drawings.
Escrow bid documents.	Yes, we use it.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Standard DRB.	Design Resolution Boards. Standing group of people.	Good deterrent to getting the two parties to work together.
Establish dispute resolution board.	Have a dispute ladder. You can ultimately go to court.	Are DRB binding?
Quarterly DRB meetings on partnering.	Partnering meetings. Two to three day workshop up front.	Regular partnering meetings.
Warranties.	We currently have not touched on that today. ROC 52 has 5-year warranty on the concrete.	Contractor guarantee and good quality control could be alternative to warranties.
Contractor guaranteed program.	May have some merit to do what they are doing. We have to place some systems to get that to work here in Minnesota.	
Value engineering.	90-10 or more than 50. Dan Dorgan is investigating the way structure foundations. They are in support of a 90-10 split.	May create a double dipping. A negotiated Supplemental Agreement may be the way to go.
Negotiated supplement agreement.	Project specific items are not value engineering.	
Shortlist the D/B.	We would need to shortlist to make sure that it will not go over.	See if we can shave time off of this job.
Shortlist.	Safety, design, schedule, staging, lane rental, and staging.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Can you shave time?	Given the plan we have provided, can you shave time off?	
Staging.	Different contractors have different strengths. The bridge spatiality people and the road people. Hopefully, they will all be the same. How much different can they be? Will the contractor look at a more aggressive staging plan than the current design consultant? What has to be done? Is it necessary to have this method?	The assumptions of the contractor will be on the conservative side.
Incentive.	Motivation to keep the movement open.	
D/B.	Will this add good PR to get the project done?	Under D/B.
Surety bonds.	The bid bond is forfeited if they rescind the bid.	
Two-Step Best Value.	We ultimately want the staging plan to be contractor driven.	
DRB.	DRB is used mainly for Design-Build. It is being used on Wakota. Large projects seem to be a good idea for its use.	
PDAs and database.	Electronic construction documents.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Electronic grade control.	Wilmar District is working on drainage ponds. Grade control: issue is whether or not the design is correct. There is extra work to do that.	Grade control could be provided electronically.
BidX.	Mn/DOT is currently on BidX. We have a Web site that has preliminary plans on the network. The final plans go out as paper. There is a way to look at layouts from the Central Office.	Electronic plans re the long term goal. We are currently providing only preliminary plans.
Web site.	No electronic files are on the Web site. We only provide PDFs. We try to give the same amount of paper work to not give one team a bigger advantage over another. Plans are held until a fair and even release date.	With the Best Value Selection Method, we need to give all the contracts a correct start time.
Adjusted price for technical and cost of D/B.	The project may be a D/B project. We would have to write the RFP to evaluate well broken down categories for the value engineering project.	
Compaction.	This is a specified job. We are currently basing our ordinary compaction with our DCPs.	Compactor with compaction readout equipment and a graphical illustration of the compaction of the grade.
Storm sewer.	At 39th Street drop shaft, there is a head end of a storm sewer water. Takes the drainage from 35W at Minnehaha Creek to the Mississippi River. There is a water pipe that is going to be constructed in from 40th North.	

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Segmental bridges.	Casting yard will be a big job and will be on the critical path.	
Southbound to Westbound 62 may be a steel bridge.	We are looking at the types of bridges and the amount of time it takes to construct the bridges and how we can stage the bridges in the job.	Critical path needs to be identified.
Drainage system.	There is a downstream condition that needs to be fixed more. The whole tunnel is separately being studied.	
Matrix for closures.	We arbitrarily chose 12 weekends for 494. Can we make good use of total closures for the Crosstown? Total closures at night have historically been acceptable to the general public. It is easier for contractors to do a total closure instead of half stepping. It is something we need to look at. Detours would be 55 and 100 and be better than the 494 job. Maybe on a big job we need to close that thing to save all that time on Albuquerque, NM. They went out and did a big job at night. Weekends would be easier to close this down. Working nights for a long time can burn out the workers.	The potential time advantage and construction advantage could be an attractive consideration.
Public notice requirements for closures.	Traffic management and PR folks will work on that.	If we are working on one side, we may have one movement be taken. It could be worth investigating. Total closure in one direction could be the norm.

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
494.	12 total weekends and 40 nights. 70 or total days 494 was closed down and it worked.	Sections could be split.
Direction days.	Maybe we say that there is a points approach to grabbing lanes and movements.	There are certain combinations you cannot do on closures.
Peak closures.	You could allow for non-peak closures. You could reduce peak closures.	Ramp could be closed for eight days and then they need to build a bypass to avoid a penalty.
Mota.	Determine the closures and ramps based on traffic movements.	

GEOTECHNICAL/MATERIALS
Facilitator – Joe Korzilius, Mn/DOT
Note Taker – Bernard Izevbekhai, Mn/DOT

FHWA National Experts:
Chris Dumas, FHWA, NRC, Baltimore
Bob Kimmerling, PanGEO, Inc.
Tom Pelnik, VDOT

Mn/DOT, Local FHWA, or Local Experts:
Rich Lamb, Mn/DOT
Dan Hayne, Mn/DOT
Gary Person, Mn/DOT
Chuck Howe, Mn/DOT
Stan Graczyk, FHWA
Dan Penn, Mn/DOT
Jeff Voyen, American Engineering and Testing

GEOTECHNICAL/MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
General soils.	Groundwater generally > 10 ft below. Granular below existing pavements. Organics found around Portland Avenue, but nominal. Principally granular soils encountered so far.	Build subgrades with select granular material for constructability.
Minimizing bridge spans.	Reduce and avoid spanning over end slopes on embankments.	Investigate MSE walls as tall abutments considering the total deck area over the end slope. The cost of tall abutment is significant cost saving. Bridge can be supported on separate foundation. This removes wall from critical path. Use approach panel as transition.

GEOTECHNICAL/MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Concrete versus asphalt pavement.	ESALs are comparable to projects in which bituminous has been used. Revisit the pavement selection process. Consider reconstruction and future maintenance and life-cycle costs.	Do ESALs and R-Value necessarily imply concrete pavement? Consider Bituminous. Many layers.
Staging Stage 1 temporary bridge temporary pavement.		No issues. Temporary shoe fly are close to permanent. Good idea.
Stage 2.	Bridges identified as critical paths, RR Bridge and Short, and wide bridges Lyndale and Nicollet.	Investigate reducing steps. Consider pile bents and slab spans for these short span bridge extensions
Pavement construction.	Pavement subgrade material as part of the wall construction. Saves on step of the process.	Accelerate pavement construction in Stage 1 MSE walls at the edge of pavement. Identified access for haulage as critical. Haulage of materials in and out quickly considering volume of fill involved. Construction season April to November may be an obstacle to rapid construction.
Stainless steel-clad dowel bars.	Bottleneck issue. Availability.	Identified early as potential material shortage though pavement surfacing is not a critical path, avoid project delays due to non-availability of sufficient dowels. Explore alternates: Hollow tube, FRP etc.
Specification changes.	Maturity method of determining concrete strength. Density of fill. High early strength.	Try maturity methods for bridge and concrete pavement. Thick lift construction from 8-12 in. to up to 2 ft. to accelerate process (fill compaction).
Spread footings.	Spread footings to reduce or eliminate the process of deep foundations. 15 percent savings.	Increase in foundation area due to spread footing may significantly impact ROW. There is a 15 percent savings in cost for bridge abutments. Investigate use of ground improvement methods.

GEOTECHNICAL/MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Piling.	Use high capacity piles to reduce number of piles. Fewer piles smaller caps.	Use high capacity piles. Fewer number of piles and smaller caps.
Concrete piles.	Augered piles can be installed quickly and at a lower cost.	
Alternate wall types.	Look at alternate wall types.	MSE fast and less expensive. Cut walls. Soldier piles. Soil nails. Evaluate stand-up time for test cuts. Slurry walls.
Walls.	Sta. 602.	A retaining wall appears redundant where a 2:1 slope is possible. Eliminate retaining wall in these areas.
Contract for design and construction of walls.		Performance specs for walls. List acceptable wall types. Allow contractor to choose. Tee walls can also be considered. Soldier pile lagging wall.
Scenarios for support in lieu of spanning in-slope.		Scenario for MSE wall: • MSE walls, columns on piles. • MSE walls, pile bents to the beams. • MSE extends beyond the gap and slightly under deck.
Reduce haulage. Especially for temporary construction.	Consider alternate material geofoam.	Use Styrofoam for temporary embankment. Reduces slope and construction time.
Construction specs.	Consider alternate material geofoam.	Select Granular (Modified) down to 5-ft. directly below and in reinforced zone behind walls.

GEOTECHNICAL/MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
What do we need 12 percent spec for granular backfilling? Staging for utilities. Is a lateral drain feasible?	Reuse of onsite soils will speed up grading operation.	Maintain transverse utilities alignment as much as feasible. Get these to manufacturers at early stage.
How far from reinforced soil zone can utilities go? Utility locations.	Maintain minimum setback behind reinforced zone.	These need to be done early so that foundation design will accommodate them. Recommend working some more details.
Where do fiber optics go?	250 ft.	Cannot run conduits on the side of the wall due to esthetics. Conduits are better in the barrier. Directional borings probably. Install conduits for future use.
Precast concrete pavements at critical location around ramps.	Precast panels may help accelerate schedule when critical.	
Can the materials be reused? Do we have to subcut in areas where we potentially have granular material? Can we eliminate joint sealing?	Reuse of onsite soils will speed up grading operation and reduce haul-in-phase. Reuse when onsite material is adequate.	Still drilling in the area . Still need to know if cut is reusable. Uniformity is required.
Pile capacity (what do we need). Precast concrete piles.	Allow higher capacity piles and higher load per pile if and when soils can support it. Precast concrete pile may be a less expensive alternative.	16-24 in verify with a PDA monitoring. Precast concrete piles can be considered. Need to evaluate and take advantage of set-up. Pre-design load test needed.

GEOTECHNICAL/MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Walls.		Tee walls. Do not need deep foundation. Can compaction be achieved under these units. They are subsequently post tensioned for fixity. Good option MSE and alternate wall types.
Use of GPS equipped grading equipment.	Rollers and compactors equipped with GPS.	Intelligent grading and compaction. Review literature from other states and manufacturers.
Continuous update.	3 monthly Geotech progress meetings required. MSE wall training required.	
General notes.		Structural loads need to be done early. Coordination with local authorities on utilities need to be done early.

TRAFFIC/ITS/SAFETY/PUBLIC RELATIONS
Facilitator – Nicole Rosen, Mn/DOT
Note Taker – Brian Kary, Mn/DOT

FHWA National Experts:
Greg M. Jones, FHWA, NRC, Atlanta
Lisa Vander Heiden, MDT
Jerry L. Graham, Midwest Research Institute
Dean Gustafson, VDOT
Linda Mullen, WSDOT
Jimmy Travis, NC DOT

Mn/DOT, Local FHWA, or Local Experts:
Amr Jabr, Mn/DOT
Jim Kranig, Mn/DOT
Judy Melander, Mn/DOT
Bill Servatius, Mn/DOT
Nick Thompson, Mn/DOT
Cassandra Isackson, Mn/DOT
Denny Eyler, SRF Consulting Group, Inc.
Jim McCarthy, FHWA
Cathy Clark, Mn/DOT
Dave Kopacz, FHWA
Brian Scott, SRF Consulting Group, Inc.

TRAFFIC/ITS/SAFETY/PUBLIC RELATIONS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Work Zone Safety		
Incident management plans.	Dedicated Service Patrols for the project, emergency pullouts, dedicated State Patrol. Plans for emergency response.	Freeway Service Patrols: • Set up a method to use project funds for FIRST team. Freeway Service Patrol dedicated to work zone. Implement FIRST for construction. Incident clearance. WZ equipment maintenance; use heavy equipment to clear major (heavy vehicle) incidents. • Difficult to make a contract item. CO Construction to continue to work with RTMC and incident management. • Include towing in contract. Easier to do as part of contract rather than trying to find money after project is let. Dedicated State Patrol: • Pay state patrol to be onsite during critical times and after traffic switches. Currently doing this on most major projects. Work with the State Patrol to get more officers in the Metro.
Establish safety goals and measures.	Number of incidents, clearance times, number of worker injuries, etc.	
Contractor incentives for new/innovative ideas.	Incentive to contractors for new/innovative ideas that will speed up the project, improve safety, and reduce the impact to traffic.	
Work zone safety messages (A8).	Extensive coverage of work zone safety. Use print, television, Web, and radio. Should be fully integrated into every aspect of what we do.	Target audiences, focus on specific topics so that it is part of all media coverage (continue good work—project specific issues also).

TRAFFIC/ITS/SAFETY/PUBLIC RELATIONS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Special provisions enforcement (A6).	Provide support and training for enforcement of special provisions. Let the public know of our successes with safe work zones.	Continue training of new inspectors, project engineers, consultants, and contractors. Management support.
Special provision penalties (A9).	Penalty language is often overlooked for design/build projects.	Project manager/engineer meet with CO to include special provision language to make sure it is included if this goes design build.
Traffic Management		
Alternate routes.	Make improvements to alternate routes to handle the additional traffic.	Systemwide alternate route assessment prior to project staging decisions. Make improvements on local streets and parallel corridors. Improve signal timing. Provide resources if money isn't possible. Add "quick and dirty" third lane to Hwy 100.
Maintaining traffic management system.	Maintain existing TMS during construction for Traveler Information and incident detection.	Portable CMS—make sure they have remote capabilities. Have alternate traffic video setup in place and functional prior to start of work. Wireless, non-intrusive detection. Set up penalties for management systems being down.
TMC (A9).	Add system to measure travel times through work zone. Make sure that TMC has management capability. Offer integrated plan with bus/transit. Approach businesses for alternative work schedules. Use of message signs for commuter information. Use cable TV for project info.	Ensure continuity of system (wireless, if needed). Have a special operational policy for work zone (i.e., ramp wait times not as critical). Consider "Dynamic Merge" in high access areas when closing lanes.
Incident management plan (A6).		

TRAFFIC/ITS/SAFETY/PUBLIC RELATIONS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Regional construction coordination.	Coordinate and organize staging to evaluate impacts from other projects (also maintenance projects).	
Weekend closures (B9).	Allow full night and weekend closures.	35W mainline should be first priority to remain open. Use historical volumes to determine when TH-62 closures can be closed.
Promoting reverse transit.	Providing transit options in the reverse direction of normal commuter flow.	Working with Metro Transit to provide studies to increase transit options in reverse direction of commuter flow.
Public Relations		
Communications budget.	Set aside a budget (1 percent of project) for communications activities. Can be used for advertising, setting up focus groups, etc.	1 percent may be too high. Limited resources. Use for media/advertising. Also, for communication plans.
Coordinate public relations messages.	Make sure everyone involved (Mn/DOT, Contractors, City, etc.) is on "theme/message" in terms of Public Relations.	Make announcements/press conferences as group. However, have one key Mn/DOT person. Have dedicated PAC for project (either state or contractor employee).
Strategic communications plan.	Recognized component in project plan (strategic business partner). Establish pro-active communications plan that integrates with other plans (traffic management, etc.).	Identify target audiences for messages (use focus groups, etc.) Work with other agencies (that have more credibility on environmental issues) to communicate "good news" messages. Early involvement in project development and decisionmaking. Flow chart. Use PACs as key experts to communicate with partners as well as public. Risk assessment.
Better internal communication.	Lane closures and incidents take place unexpectedly or with short lead times.	PAC attends weekly meetings. Invite media to weekly meetings. Education of Mn/DOT construction personnel to inform PACs, RTMC, etc. Media training for individuals involved in project.

ENVIRONMENT
Facilitator – Cheryl Martin, FHWA
Note Taker – Curt Jorgenson, FHWA

FHWA National Experts:
Jason Smith, WSDOT
Doug Eisinger, Sonoma Technologies
Brian Smith, NRC-Olympia

Mn/DOT, Local FHWA, or Local Experts:
Gerry Larson, Mn/DOT
Klara Fabry, City of Minneapolis
Tom Foley, City of Richfield
Tom O'Keefe, Mn/DOT
Tom Hillstrom, SRF Consulting Group, Inc.
Bruce Irish, Mn/DOT

ENVIRONMENT		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
AQ.	Air Quality Pollutant Issues: Ozone CO, toxics, PM2.5, and Ultra Fine, that needs to be addressed and be aware of. CO (required): Have hot spot analysis. Toxics (Not Required): (Benzene) Need public education in trends. With cleaner vehicles and fuels and moving traffic from local streets and more to the free flow highway. Also construction mitigation with newer equipment fleets and cleaner fuels. PM 2.5 (Not Required): Public education. A hot spot analysis and regional analysis. Also using a qualitative analysis. Ozone (Not Required): Regional Transportation plan analysis w/ or w/o the project (emission analysis). Episodic control of construction during high ozone day w/ night time activity. Ultra Fines (no standards): Acknowledge of the emerging issue of ultra fine as a new problem.	Performing a type of public outreach on Air Quality, specifically on these types of contaminants, e.g., a brochure, some other type of publication or communication process. Coordinate w/PR. Have construction mitigation incentives/disincentives plan, such as newer construction equipment fleet and using lower sulfur fuels. Coordinate w/contracts.
AQ.	Have they facilitated transit properly associated with reducing Air Quality?	
Noise.	Reducing noise during construction.	Staging the construction of noise wall in the beginning of construction or leaving the existing wall in place to reduce noise to surrounding communities. But this is not very constructible, according to construction, but a possible use of a temporary noise wall for early construction to reduce noise.

ENVIRONMENT		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
AQ.	Was there proper mitigation of sensitive receptors for air quality?	
WQ.	Evaluation and use of water quality BMPs.	Combining different types of BMPs, such as grit chambers, street sweepers, grass medians, and ponds.
Other.	Wetland mitigation of Minnehaha Creek and partnering with the watershed.	
Other.	Incorporating environmental commitments during a project construction and operation.	Placing a listing of the environmental commitments in the contract. Keep staging area away from regulated areas.
Other.	Opportunities to enhance the community through this project and have access to cross the freeway by bike/ped.	Early construction of bike/ped facilities.
Other.	66th and Portland need protected left turn lanes for parallel routes.	
Other.		
WQ.	Project Liaison to inform the public, specifically Diamond Lake community.	
WQ.	Risk at Diamond Lake of a plume entering the lake during construction and operation w/ only limited ROW. Even with the grit chambers should there be more restrictive impact mitigation w/o taking more ROW.	Have incentive/disincentive coordinated with contract to control pollutant load into the lake. Build the sedimentation pond first in the beginning stages to avoid impacts to the lake, if ROW is available.
Noise.	Opportunity to implement aesthetic design guidelines w/in Mn/DOT maximum participation, e.g., noise walls.	Implement aesthetic design guidelines.

ENVIRONMENT		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Noise.	City noise ordinance is 7pm-7am Mon-Fri, although contracting skill set wants to know if they can build a night. There is a specification and city conflict.	Barrier of obtaining a noise permit to have construction at night. Possible solution: coordinate the construction staging, then have the noisy part of construction during the noise ordinance time and "quiet work" at night.
	Incentives for construction equipment to have 96.	If it clearly stated in specification it can be possible.
AQ.	Incentives for congestion management specifically on ozone day.	
AQ.	Disincentive to stop construction or have night time construction for ozone days.	This might be highly difficult for construction because it slows production and increases the amount of work hours per days.
WQ.	Erosion control incentive to address the minor erosion control work for rapid response for maintenance.	Use polyacrylamide (PAM) for erosion control. Use of inlet protection, rock protection.
WQ.	Temporary and permanent erosion control plan, have minor cost included in the estimate.	
Noise.	Recommend the use of quiet concrete.	Use tying design with not so deep grooves in the concrete.
Noise.	Noise walls that are ground mounted installation can be easily phased in, but if a noise wall transitions to a retaining wall that will not be easy to phase in.	
Other.	Steel box span aesthetics of 27VT5 bridge, how sensitive would this be?	