

# Chapter 1

## INTRODUCTION: SUPPLEMENTAL INFORMATION

AND

# Chapter 2

## ASSET MANAGEMENT PLANNING AND PROGRAMMING FRAMEWORK: SUPPLEMENTAL INFORMATION

# INTRODUCTION AND ASSET MANAGEMENT PLANNING AND PROGRAMMING FRAMEWORK: SUPPLEMENTAL INFORMATION

## Overview

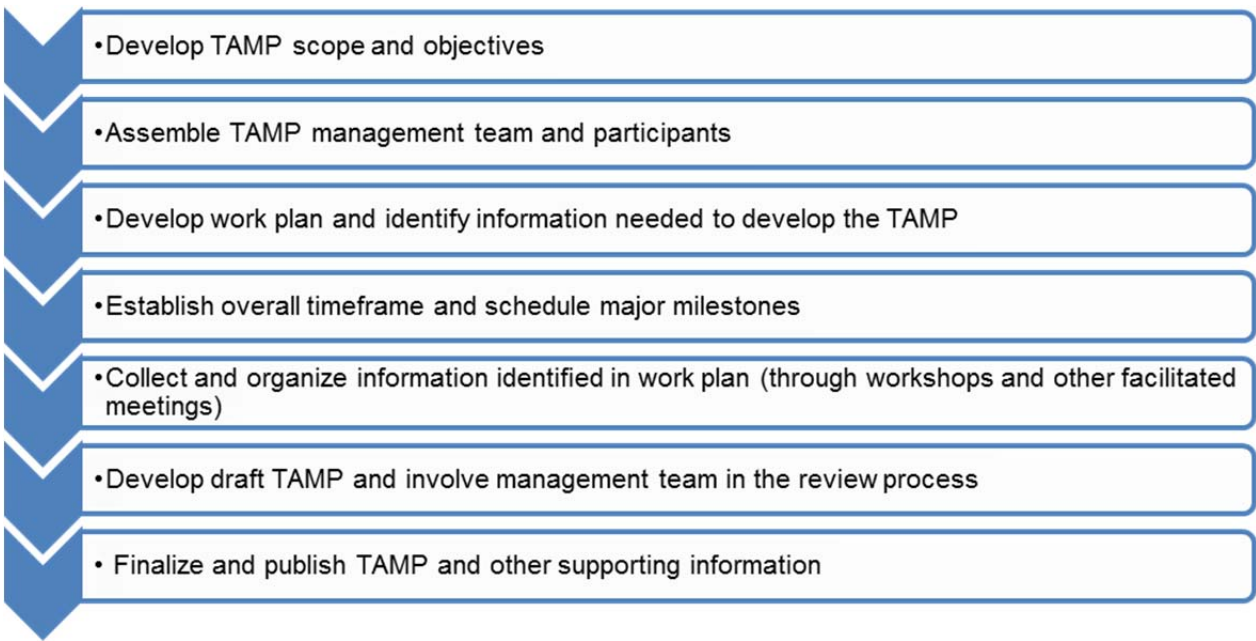
This chapter provides a narrative of the process for the development of MnDOT’s first TAMP. Details are provided regarding the basic processes used to develop each section of the TAMP and the face-to-face meetings held to discuss results and findings at each stage of the TAMP development process. A simple table (Figure 1-4) is also provided that discusses MAP-21 requirements and the section of the TAMP that addresses those requirements.

**Note:**  
*Chapter 2 of the TAMP provides the necessary documentation regarding MnDOT’s planning and programming framework. Therefore, the primary focus of this chapter of the Technical Guide is supplementary information pertaining to the TAMP development process.*

## Process

This section describes the basic processes involved in developing the TAMP, including the roles and responsibilities of various personnel and groups involved. The critical pieces of information required to develop the TAMP are also highlighted, in addition to the various meetings and facilitated workshops conducted during the TAMP development process. The overall TAMP development process flow is illustrated in Figure 1-1.

Figure 1-1: TAMP Development Process



## TAMP SCOPE

The MnDOT TAMP formalized and documented key information on the following six asset categories:

- Pavements
- Bridges
- Highway Culverts
- Deep Stormwater Tunnels
- Overhead Sign Structures
- High-Mast Light Tower Structures

For each asset class, the following information was incorporated into the TAMP:

- Asset inventory and conditions
- Asset management objectives and measures
- Performance gap assessment
- Life-cycle cost (LCC) considerations
- Risk management analysis
- Financial plan and investment strategies
- Asset management process enhancements

## TAMP DEVELOPMENT MANAGEMENT AND TIMEFRAME

The development of MnDOT's TAMP was led by Mr. Mark Nelson, Mr. Kirby Becker, and Mr. Matthew Malecha from MnDOT's Office of Transportation System Management. Mr. Nelson served as the contact for the FHWA pilot study and Mr. Becker and Mr. Malecha served as Project Managers for the consulting contract with Applied Pavement Technology, Inc. (APTech). The TAMP development effort commenced in June 2013 and a final version of the TAMP was completed in July 2014.

## PARTICIPANTS IN DEVELOPING THE TAMP

The TAMP was developed through the cooperative efforts of several committees, Work Groups, and outside contractors, as described below.

### STEERING COMMITTEE

The Steering Committee provided general direction to the TAMP effort and assisted in communicating the purpose and progress to other stakeholders. The Steering Committee met every other month (six times) during development of the TAMP to provide direction on risk, life-cycle cost, performance measures and targets, financial plan and strategies, and next steps.

### PROJECT MANAGEMENT TEAM

A multi-disciplinary Project Management Team (PMT) managed the overall TAMP effort and was very involved in project management tasks, such as work plan development. The PMT also collaborated with the outside contractors on a regular basis and served as members of the technical Work Groups. Similar to the Steering Committee, the PMT met every other month (six times) during development of the TAMP. Members on the PMT also served on the Steering Committee.

## WORK GROUPS

Work Groups were developed for each specific asset category and a separate Work Group to help facilitate the risk assessment and management process. These groups assisted in documenting current practices in terms of risk management, life-cycle costing, gap identification, and financial planning. The groups also helped develop and review defined levels of service, performance measures and targets, and maintenance and capital cost estimates for identified asset categories. During development of the TAMP, there were more than twenty Work Group meetings to discuss the above information.

## FHWA PILOT STUDY SUPPORT

The FHWA Office of Asset Management supported three state DOTs in a pilot project to develop their first TAMPs, which will serve as models to be studied and as examples for other state or local transportation agencies. Along with MnDOT, agencies participating in the TAMP pilot were the Louisiana Department of Transportation and Development (LADOTD) and the New York State Department of Transportation (NYSDOT).

The contractor for the FHWA pilot project was AMEC, with technical assistance from Cambridge Systematics. The FHWA contractor was responsible for providing technical assistance to and helping to develop TAMPs for the three pilot states. Key contacts for the AMEC/Cambridge Systematics team include Mr. Jonathan Groeger, AMEC, and Mr. Joe Guerre, Cambridge Systematics.

## MNDOT CONTRACTOR SUPPORT

MnDOT contracted with Applied Pavement Technology, Inc. (APTech) to assist with the development of MnDOT's comprehensive TAMP. As part of the contract, APTech, in coordination with MnDOT facilitated meetings of the PMT, Steering Committee, and Work Groups and assisted with the development of a comprehensive TAMP and a corresponding Technical Guide. Ms. Katie Zimmerman was the Principal Investigator for APTech. She was assisted by Mr. Prashant Ram, APTech, and Mr. Paul Thompson, an individual consultant to the team.

## INFORMATION NEEDED TO DEVELOP THE TAMP

Figure 1-2 summarizes the key information and work activities required to develop the TAMP. Much of the information was obtained through facilitated teleconferences, Work Group assignments, and face-to-face meetings/workshops with the participants involved in the TAMP development process.

Figure 1-2: Information Needed to Develop the TAMP

SECTION	INFORMATION/WORK ACTIVITIES REQUIRED
Asset Management Planning and Programming Framework	<ul style="list-style-type: none"><li>Describe the objectives of the asset management program.</li><li>Describe existing asset management policy and various plans and programs currently in place to support asset management.</li><li>Discuss MnDOT's overall capital and operations/maintenance investment priorities.</li><li>Document the process used to develop the above items.</li></ul>
Asset Management Performance Measures and Targets	<ul style="list-style-type: none"><li>Summarize the performance measures and targets documented to be used in the TAMP.</li><li>Assess the adequacy of the performance measures to make investment decisions and make any recommendations for changes.</li><li>Determine whether any additional performance measures are needed to report progress towards national goal areas.</li><li>Document the process for developing performance measures and establishing performance targets.</li><li>Recommend to the Steering Committee any changes to performance measures that might be required.</li><li>Document the process for using performance data to support asset management investment decisions at MnDOT.</li></ul>

Asset Inventory and Condition	<ul style="list-style-type: none"> <li>• Develop an asset register showing the inventory count of each asset, current replacement value, current age and condition, office responsible for the data, and confidence in the data.</li> <li>• Compile documentation on the procedures used to assess asset condition.</li> </ul>
Risk Management Analysis	<ul style="list-style-type: none"> <li>• Describe MnDOT's process for assessing and managing risks.</li> <li>• Document agency and program risks that could impact MnDOT's ability to achieve the goals documented in the TAMP.</li> <li>• Summarize agency and program risks in a risk register that includes the likelihood and consequences of occurrence and recommendations for mitigation.</li> <li>• Document the process used to evaluate risks.</li> </ul>
Life-Cycle Cost Considerations	<ul style="list-style-type: none"> <li>• Describe "life-cycle costs" and explain why they are important.</li> <li>• Provide an example of a typical deterioration model.</li> <li>• Describe strategies for managing assets over their whole lives, from inception to disposal, illustrating the use of a sequence of activities including maintenance and preservation treatments.</li> <li>• Document the typical life-cycle cost of the assets included in the TAMP.</li> <li>• Document the typical life-cycle cost of adding a new lane-mile of roadway and document a process for considering future maintenance costs when evaluating potential roadway expansion projects.</li> <li>• Document the tools used by the agency to manage assets effectively over their life-cycles.</li> </ul>
Performance Gaps	<ul style="list-style-type: none"> <li>• Describe short- and long-term asset management planning horizons. At a minimum, the TAMP will reflect a 10-year planning horizon.</li> <li>• Link the performance to national goal areas, as appropriate.</li> <li>• Present an analysis of future funding versus condition scenarios.</li> <li>• Illustrate the performance gap between existing conditions and future condition targets.</li> <li>• Estimate the cost of addressing the gap in performance.</li> <li>• Document the process used to conduct the performance gap analysis.</li> </ul>
Financial Plan and Investment Strategies	<ul style="list-style-type: none"> <li>• Summarize historic funding levels for the five assets included in the TAMP.</li> <li>• Describe the amount of funding expected to be available for these assets over the next 10 years and describe where these funds will come from.</li> <li>• Describe how these funds will be allocated over the 10-year horizon.</li> <li>• Document the sources of information used to develop the financial plan.</li> <li>• Document any assumptions made in preparing the financial plan.</li> <li>• Present recommended investment strategies that will enable MnDOT to achieve its performance targets (using information from the previous sections).</li> <li>• Document the process used to evaluate and select investment strategies.</li> </ul>
Implementation and Future Developments	<ul style="list-style-type: none"> <li>• Document a governance plan for the TAMP, including how it will be used and when it will be updated.</li> <li>• Describe priorities for asset management process enhancements and implementation.</li> <li>• Provide plans for expanding the TAMP to include other assets.</li> </ul>

## MEETINGS AND WORKSHOPS

During the TAMP development process, several face-to-face meetings and facilitated workshops (in addition to numerous teleconference calls) were conducted to review progress, discuss action items and gain feedback from the management team on a wide range of topics. A schedule of these meetings and the key agenda topics are summarized in Figure 1-3.

Figure 1-3: Meetings and Workshops Conducted During the TAMP

DATES	MEETING/WORKSHOP AGENDA TOPICS/DISCUSSION ITEMS
May 29, 2013	<p>Project Kick-Off Meeting:</p> <ul style="list-style-type: none"> <li>Establish parameters for developing the TAMP</li> <li>Develop TAMP Work Plan</li> </ul>
June 13, 2013	<p>Steering Committee (SC) Meeting:</p> <ul style="list-style-type: none"> <li>TAMP objective and scope</li> <li>Review work plan and schedule</li> <li>Role of Steering Committee in TAMP development</li> </ul>
July 29-30, 2013	<p>PMT Meeting:</p> <ul style="list-style-type: none"> <li>Review content of Asset Register</li> <li>Discuss objective and plan for the LCC section of the TAMP</li> </ul> <p>LCC Workshop:</p> <ul style="list-style-type: none"> <li>Review information provided by asset Work Groups on LCC</li> <li>Discuss LCC modeling strategies for the TAMP</li> </ul>
September 20, 2013	<p>Risk Assessment Workshop:</p> <ul style="list-style-type: none"> <li>Provide overview on risk management</li> <li>Discuss and validate undermanaged risks identified</li> <li>Prioritize undermanaged risks and identify strategies for mitigation</li> </ul>
September 26, 2013	<p>PMT Meeting:</p> <ul style="list-style-type: none"> <li>Review preliminary life-cycle cost analysis results</li> <li>Identify next steps in risk assessment</li> <li>Discuss key information required to develop investment strategies and performance targets</li> </ul>
November 14-15, 2013	<p>PMT Meeting:</p> <ul style="list-style-type: none"> <li>Discuss preliminary recommendations on investment strategies and performance measures</li> <li>Discuss recommendations for asset management process improvements</li> </ul> <p>SC Meeting:</p> <ul style="list-style-type: none"> <li>Discuss strategies to overcome undermanaged risks</li> <li>Prioritize asset management process improvements</li> <li>Review and refine recommendations for investment strategies and performance targets</li> </ul>
Jan 21-22, 2014	<p>PMT Meeting:</p> <ul style="list-style-type: none"> <li>Review and recap completed work activities</li> <li>Discuss draft TAMP development approach</li> </ul> <p>SC Meeting:</p> <ul style="list-style-type: none"> <li>Finalize investment strategy recommendations</li> <li>Recommend business process changes Present recommended investment strategies</li> </ul>
Mar 20-21, 2014	<p>PMT Meeting:</p> <ul style="list-style-type: none"> <li>Review draft TAMP and gain critical feedback</li> <li>Discuss plans for development of TAMP Technical Guide</li> <li>Discuss TAMP governance and application recommendations</li> </ul> <p>SC Meeting:</p> <ul style="list-style-type: none"> <li>Discuss TAMP governance plan and structure and list of process enhancements that MnDOT will implement</li> <li>Discuss future activities of the Steering Committee</li> </ul>

## Supporting Data and Documentation

Figure 1-4 summarizes the MAP-21 requirements and the section of the TAMP that addresses those requirements.

Figure 1-4: Summary of MAP-21 Requirements

MAP-21 REQUIREMENT(S)	SECTION OF TAMP/NOTES
Develop a risk-based asset management plan to improve or preserve asset condition and the performance of the system	Entire document
Include strategies that result in achievement of state targets for asset condition and performance of NHS, and supporting progress towards achievement of national goals	Chapters 2, 3, and 8
States are <u>encouraged</u> to include all infrastructure assets with the right-of-way corridor in the TAMP	Chapter 1 MnDOT expanded beyond MAP-21 requirements to include pavements and bridges on the entire state highway system, as well as highway culverts, deep stormwater tunnels, overhead sign structures, and high-mast light tower structures
Include a summary listing of pavement and bridge assets on the NHS in the state, including a description of their condition	Chapter 4
Document asset management objectives and measures	Chapters 2, 3
Identify performance gaps	Chapter 7
Include a life-cycle cost analysis for the assets in the TAMP	Chapter 6
Include a risk management analysis	Chapter 5
Include a financial plan and investment strategies	Chapter 8
Document the process used to develop the TAMP	Chapters 1, 2, and 9
Develop a risk-based asset management plan for the NHS to improve or preserve condition of the assets and the performance of the system	Entire document