ATTACHMENT C

TCRS Strategic Plan

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CHAPTER 1

INTRODUCTION

The objective of this research is to develop a strategic plan for AASHTO Technical Committee on Roadside Safety (TCRS) that guides the technical committee activities in its role as the focal point for roadside safety policies and guidance. Strategic planning makes good ideas possible by laying out what needs to happen in order to achieve the TCRS vision. This document presents one such plan for achieving TCRS's vision of leadership in the area of roadside safety.

BACKGROUND

This section includes a review of currently active strategic plans for the American Association of State Highway and Transportation Officials (AASHTO), groups and committees within AASHTO, the Federal Highway Administration (FHWA) roadway departure team, other relevant groups, and past roadside safety strategic plans. This review is wide-ranging including groups which the TCRS is organizationally a part of and groups with whom the TCRS may choose to share direction. For example, Toward Zero Deaths: The National Strategy has a vision "of a highway system free of fatalities through a sustained and even accelerated decline in transportation-related deaths and injuries." [TZD14] While TCRS is a formal member of this organization it certainly share the same overall goals and objectives.

The American Association of State Highway and Transportation Officials (AASHTO) 2014-2019 Strategic Plan vision "supports members in the development of transportation solutions that create economic prosperity, enhance quality of life, and improve transportation safety in our communities, states, and the nation as a whole." AASHTO's mission statement indicates it "…supports its members through policy development, advocacy, technical services, and leadership development and through advancing partnerships and promoting innovation." [AASHTO14] AASHTO's values include:

- Safety-focused (in operations and through relentless pursuit of safer transportation);
- Innovative and Adaptable (forward-looking and willing to explore new solutions and adapt to evolving member needs);
- Collaborative (active in partnership and inclusive to those with shared vision and values);
- Accountable (open and transparent, responsive to stakeholder needs, operating with integrity); and
- Service-Oriented (activities and initiatives are aimed at supporting member departments and their interests).

The 2014-2019 AASHTO strategic plan outlines the following goals and strategies: (1) provide value to members, (2) provide innovative technical and professional services and products, (3) be a leader in national transportation policy development, and (4) communicate the value of transportation. [AASHTO14]

AASHTO Standing Committee on Highways (SCOH) 2010 – 2014 Strategic Plan established a vision "to be the leader of technical innovations and policy development for the highway transportation system." And a mission "in support of the AASHTO Strategic Plan, develop and advocate policies, technical standards, services, and innovations to enable the nation and member states to have a world-class highway network as part of a safe, efficient, and sustainable multi-modal transportation system supporting the nation's economy and quality of

life." [AASHTO10] One of the objectives of the AASHTO SCOH 2010-2014 plan is to cut fatalities in half by 2030.

AASHTO Subcommittee on Design Strategic Plan (SCOD) strategic plan was adopted July 17, 2008. The AASHTO SCOD vision is that the SCOD "…will be the national voice and leading source of innovation and technical guidance for transportation design projects and programs. Their mission is that the SCOD "…leads transportation project development and delivery through the creation and promotion of practices to achieve safe, efficient, and effective solutions to meet transportation needs." [AASHTO08] Among the SCOD goals and strategies are: (1) develop design solutions that meet the purpose and needs of a project, address its context, and protect the natural and human environment; (2) improve the quality and cost effectiveness of projects, (3) improve safety for the traveling public and the workforce and (4) foster collaboration within AASHTO and with other organizations and disciplines.

The Federal Highway Administrations (FHWA) Roadway Departure (RwD) team developed a strategic plan with a vision to "[p]ursue a proactive approach that will lead Toward Zero Deaths and serious injuries involving roadway departure events. The FHWA RwD mission is to "[e]xercise leadership in the highway community to reduce the risk of roadway departure fatal and serious injury crashes from occurring. The RwD Team's primary leadership role is with the engineering community and includes:

- Developing, evaluating, and deploying life-saving countermeasures; and,
- Promoting data-driven application of safety treatments" [FHWA13]

The FHWA RwD goal is to "[r]educe national roadway departure fatalities by a minimum of 500 per year from the existing 17,000 per year to 8,500 per year by the year 2030." [FHWA13]

McGinnis developed a "Strategic Plan for Improving Roadside Safety" under NCHRP 17-13 and it was published by NCHRP as a web-only document in 2001. [McGinnis01] The original objective of NCHRP 17-13 was to "identify the research areas with the highest potential payoffs for improving roadside safety considering the various issues." The research objective changed course throughout the effort, concluding that a detailed strategic plan was warranted prior to identifying high payoff issues. McGinnis made several observations in the conduct of NCHRP 17-13 which are relevant to this effort:

- "For progress to be made in roadside safety, it is vital that there be a strategic, multi-organizational approach to improving highway safety in general and roadside safety in particular."
- "All members of the roadside safety community need to work together to maximize the effectiveness of their coordinated efforts through the formation of strategic partnerships."
- "Highway crashes occur when something goes wrong. It could be a mechanical failure, roadway deficiency, driver error, medical emergency, or a combination of these factors. Addressing the roadside safety problem requires that all elements of the roadside-vehicle-driver system be considered." [McGinnis01]

While McGinnis' efforts strayed from the original objective of the research, the stated missions of the resulting strategic plan have seen varying degrees of advancement over the last decade. The five mission statements include:

- Increase the awareness of and support for roadside safety;
- Build and maintain information resources and analysis procedures to support continued improvement of roadside safety;
- Prevent vehicles from leaving the roadway;

- Prevent vehicles from overturning or from striking objects on the roadside when they leave the roadway; and
- Minimize injuries and fatalities when overturn occurs or when objects are struck on the roadside.

This review of currently active strategic plans for AASHTO and AASHTO groups and the recent roadside safety strategic plan indicate that policy development, a reduction in fatalities and injuries and collaboration are concerns within these other plans which the TCRS may consider explicitly or consider offering support for in the development of the TCRS plan. Significantly, the other committees in AASHTO directly linked to TCRS also identify safety as an important part of their strategic plans. Key collaborating organizations like FHWA RwD TRB Committee AFB20 likewise share the goal of reducing the frequency and severity of roadside crashes.

APPROACH

There are many approaches to strategic planning. The approach believed to be best suited for a group with many individuals providing input at various times over a short period and believed to best satisfy the objectives of the research is the "VMOSA" approach. The VMOSA approach provides an easily remembered map which can be followed by the many participants throughout the planning process. VMOSA is an acronym with each letter representing a step of the strategic planning process: Vision Statement (the dream); Mission Statement (the what and why); Objectives (how much accomplished when); Strategies (the how); and Action Plans (who will do what).

Initially, prior to any background information gathering, a joint meeting of TRB Committee AFB20 and TCRS was held in July 2014. This meeting provided an early opportunity to gain feedback from many interested parties. The VMOSA roadmap was discussed, participants were given different options for provided feedback including:

- Project blog,
- E-mailing the contractor,
- Phoning the contractor, and
- List of upcoming meeting were feedback would be solicited.

Two breakout sessions were held at this first meeting in July 2015 to (1) identify strategic plan goals and objectives and (2) identify major issues facing the community. The breakout sessions were summarized and the results presented and discussed at the joint session with both AFB20 and TCRS attendees.

Following the July 2014 joint meeting of TRB AFB20 and TCRS, the TCRS had a separate meeting to discuss business. The preliminary background information and statistics on roadside safety as well as the proposed approach were discussed with the TCRS at the business meeting and the future project discussions and schedule were outlined. Future discussions included: possible discussions and feedback solicitations at both the September 2014 and April 2015 AASHTO/AGC/ARTBA Task Force 13 (TF 13) meetings, the TRB annual meeting in January 2015 and intermediary web-conferences with the project panel. It was agreed that the following TCRS annual business meeting (i.e., 2015 meeting) could host a discussion on implementation, resulting in a one year schedule with multiple venues for feedback from the broader roadside safety community.

CHAPTER 2
TCRS STRATEGIC PLAN

This chapter is intended to be a stand-alone white paper which can be updated and maintained by the TCRS as needed in the future. This chapter documents the vision, mission, and objectives of the TCRS strategic plan. The strategies and actions suggested to achieve these objectives are detailed separately for each mission statement as follows:

- Chapter 3. Comprehensive Roadside Design Guide (RDG),
- Chapter 4. Pioneering Manual for the Assessment of Safety Hardware (MASH), and
- Chapter 5. Data informed decision making.

Each of these chapters have been written as stand-alone papers to facilitate future updating and revision. This plan presented in this chapter and the white papers presented in the following chapters can and should be continuously maintained.

TCRS VISION

Following the VMOSA approach, the vision statement would address the question: "under ideal conditions, how would things look if the issues important to TCRS were completely, perfectly addressed?" It is critical to be mindful that TCRS is an element of the larger AASHTO organization and the strategic plan should also be supportive of the larger organization's plans. The TCRS vision statement, therefore, should address the question: "how can TCRS support other AASHTO strategic plans in their planning?"

The review of other relevant strategic plans revealed that the National Strategy has a vision of a highway system free of fatalities. AASHTO has a vision to improve transportation safety in our communities, states, and the nation. SCOH has a vision to be a the leader in technical innovations and policy development and the SCOD has a vision to be a leading source of innovation and technical guidance for transportation design projects and programs.

Through consideration of these vision statements and discussion with the community, it was determined that the TCRS vision statement is to: *Lead roadside policy development, support safety innovations, and be an information resource to promote a decline in lane departure related deaths and serious injuries*.

TCRS MISSION

The TCRS mission statement or statements should describe what TCRS is going to do and why it is going to do it. The mission statements should be coordinated with the other AASHTO groups for the same reasons discussed above. AASHTO's mission statement includes supporting its members through policy development, advocacy, technical services, and leadership development and through advancing partnerships and promoting innovation. SCOH mission statement is to "… develop and advocate policies, technical standards, services, and innovations to enable the nation and member states to have a world-class highway network as part of a safe, efficient, and sustainable multi-modal transportation system supporting the nation's economy and quality of life." The SCOD mission statement includes the "… creation and promotion of practices to achieve safe, efficient, and effective solutions to meet transportation needs." The missions from the "Strategic Plan for Improving Roadside Safety" developed in 2001 should not be neglected when developing a Strategic plan for the TCRS. While each mission statement may not necessitate individual incorporation, the unresolved objectives should be recognized. Recall the 2001 mission statements for roadside safety were to

increase the awareness of and support for roadside safety; build and maintain information resources and analysis procedures to support continued improvement of roadside safety; prevent vehicles from leaving the roadway; prevent vehicles from overturning or from striking objects on the roadside when they leave the roadway; and minimize injuries and fatalities when overturn occurs or when objects are struck on the roadside.

Through considerations of the mission statements of these companion organizations, the mission statements from the previously developed roadside safety plan, and discussions with the community, the following TCRS mission statements are proposed:

> *In support of the AASHTO SCOH and SCOD Strategic Plans, (1) develop, implement, and maintain policies which reduce fatal and serious-injury lane departure crashes, (2) develop evaluation standards to support roadside safety innovation and decision making, and (3) monitor the effectiveness of implemented policies and testing standards to assess the progress being made and implement changes as needed to continue moving toward zero roadside fatal and serious-injury lane departure crashes.*

TCRS OBJECTIVES

The TCRS objectives should be specific measurable outcomes or results associated with the vision and mission statements. One of the SCOH objectives, for example, is to cut fatalities in half by 2030. These objectives are proposed in support of the TCRS vision and three mission statements:

A. Critique and improve the underlying assumptions within the RDG and MASH through the analysis of field performance and assessment of available data.
B. Identify standards that are outdated, lacking, or not supported by current data analysis within the current RDG and MASH that should be addressed in upcoming revisions and conduct research to satisfy those needs.
C. Keeping up with the dynamic changes in roadside policy can be costly (i.e., budget and schedule); make changes to the RDG and MASH only when the change is likely to result in measurable gains.
D. Provide tools which support making design and policy decisions.
E. Determine the most effective means to communicate the MASH standards and RDG guidance to promote consistency in interpretation and implementation in the field.
F. Develop and publish a RDG and MASH which are based on quantifiable performance measures and specific design goals.
G. Identify and implement methods which will foster innovation in hardware development.

The strategies and actions universal to the entire plan are discussed below. The strategies and actions which are unique to the RDG, MASH, or a long-range plan are proposed and detailed in the following three chapters, which are stand-alone white papers:

- Chapter 3, *Comprehensive Roadside Design Guide* (RDG), strategies and actions in support of achieving a RDG with specific design goals which can be easily updated as new data analysis and research becomes available.

- Chapter 4, *Pioneering Manual for the Assessment of Safety Hardware* (MASH), strategies and actions in support of achieving an updated MASH to foster innovation while ensuring changes are made only when measurable gains are likely to result.
- Chapter 5, *Data informed decision making*, strategies and actions to provide a long-range plan for establishing policy, guidance, and standards based on the collection and analysis of data and making changes to these policies, guidance, and standards based on this collection and analysis.

UNIVERSAL TCRS STRATEGIES AND ACTIONS

Strategies and action which are common to the entire plan and proposed to address the question: "how is TCRS going to achieve the objectives" are outlined here and discussed below. The actions are shown in italic font and the strategies are outlined here and shown in bold font below:

- Engage other groups to clarify roles within the community;
- Increase the awareness of, support for, and knowledge of roadside safety;
- Consider tort liability as it relates to roadside issues;
- Take advantage of available resources and assets;

Engage other groups to clarify roles within the community

In support of the TCRS vision, engage the FHWA, AASHTO committees, and TRB committees to improved communication and coordination and clarify the roadside safety policy and hardware standard development, establishment, and implementation roles. For example, the RDG currently discusses FHWA acceptance letters (5.1.1), stating the "longitudinal barriers used on the National Highway System (NHS) should be accepted as crashworthy by the Federal Highway Administration (FHWA)." [AASHTO11] The FHWA, however, states "eligibility letters are provided as a service to the States and are not a requirement for roadside safety hardware to be eligible for reimbursement on Federal-aid highway projects." [FHWA14] AASHTO and FHWA each seem to be delegating the responsibility to determine if roadside hardware has passed the appropriate crash tests to each other. Furthermore, FHWA has policy guidance limiting longitudinal barriers to test level three or better on NHS roadways unless a comprehensive study has been conducted. TCRS is poised to introduce new guidance based on comprehensive studies for the use of different test level barriers. It is unclear who has responsibility for determining if hardware meets the crash test specification which TCRS is responsible for publishing. Clarifying these roles with the FHWA with improve the ability of the TCRS to provide its guidance and standards with clarity.

Clarification of roles between different AASHTO groups may also be needed. For example, the AASHTO Highway Safety Performance committee recently started publishing the Highway Safety Manual (HSM) in 2010, which includes crash prediction models for roadside safety. These models do not agree with the guidance within the Roadside Design Guide. Both the AASHTO Subcommittee on Bridges (SCOBS) and the TCRS are considering publication of the results of NCHRP 22-12(03), Guidelines for the Selection of Bridge Rails. The potential for conflicts exist with these two AASHTO groups as well as geometric design, environmental, and hydrology groups. Coordination within these AASHTO groups in needed on a reoccurring basis to ensure that issues related to roadside safety and addressed in either the RDG or MASH are not contradicted in other AASHTO publications.

Action: *Develop a comprehensive list of AASHTO groups where conflicts are likely to evolve between publications and invite these groups to review plans for updating the RDG and MASH*.

Action: *Members of TCRS or contractors knowledgeable of pending changes to the RDG and MASH should review advanced copies of draft AASHTO publications to facilitate coordination and avoid conflicts.*

Action: *Clarify which agency or group is responsible for determining roadside hardware meets the crash test specification*.

Increase the awareness of, support for, and knowledge of roadside safety

In support of the TCRS vision, an effort should be made to increase the awareness of, support for, and knowledge of roadside safety. Engaging with other AASHTO and TRB groups, as suggested throughout this plan, will help the TCRS realize an increased awareness of roadside safety. Encouraging participation by younger engineers will increase the knowledge base available to the community in the future. Consider conducting RDG chapter author panel sessions regularly at joint meetings to provide two-way communication on the objectives and needs of the RDG.

Action: *Establish guidelines and standards which encourage consideration of roadside issues from planning through construction and maintenance of the highway.*

Consider tort liability

Consider tort liability as it relates to roadside issues. How do laws vary from state to state? How is implementation of the guidance in the RDG affected by the tort liability laws in each state? How much should the RDG deal with installing hardware in less-than-optimum conditions? Are some parts of Report 350/MASH "required" and others optional (e.g., Does the inclusion of in-service performance in both Report 350 and MASH create a legal duty to perform these evaluations?)?

Action: *Engage with AASHTO or TRB groups with experience in tort liability who may provide insight for subsequent publications of roadside guidance and crash test specifications to enhance the implementation nationally and remove ambiguitie*

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Take advantage of available resources and assets

Take advantage of available resources and assets such as people's willingness to act or a tradition of self-help and community pride. For example, the AASHTO/AGC/ARTBA Task Force 13 (TF13) currently publishes hardware guides through volunteer efforts. TRB AFB20 has traditionally contributed significantly to the development of RNS for TCRS. Continued maintenance of the white papers and associated RNS prepared under this effort will ensure that the white papers remain current and continue to meet the needs of the TCRS and roadside safety community.

Action: *Ask AFB20 to create subcommittees or focus groups to help maintain the white papers developed under this effort (i.e., RDG, MASH, and Safety Performance).*

Action: *Coordinate with TF13 to foster the relationship and ensure continued publication and maintenance of the hardware guides as a means to communicate information about available hardware to the user agencies.*

Action: *Request NCHRP conduct research identified within the white papers and appendixes of this plan. .*

IMPLEMENTATION

Implementation is proposed to be discussed directly with the TCRS at the July 2015 business meeting. Anticipated discussion topics include:

- What changes can be implemented in the next revision of the 2017 RDG given the availability of recently completed research? Which changes need to wait for a later revision?
- What chapters need more research and should have research needs statements to support the chapter development?
- Who will carry out these actions? Is support needed?
- By when will each implementation stage take place?
- What resources are needed?
- Communication: who should know what and how should communication take place?

CHAPTER 3
COMPREHENSIVE RDG

Attachment D: Comprehensive RDG white paper

CHAPTER 4
PIONEERING MASH

Attachment E: Pioneering MASH white paper

CHAPTER 5
DATA INFORMED DECISION MAKING

Attachment F: Data-Informed Programs white paper

CONCLUSION

The proposed TCRS vision is to *lead roadside policy development, support safety innovations, and be an information resource to promote a decline in lane departure related deaths and serious injuries*. This proposed vision is supported by the proposed TCRS mission statements:

1 Develop, implement, and maintain policies which reduce fatal and serious lane departure injuries,
2 Develop evaluation standards to support roadside safety innovation and decision making, and
3 Monitor the effectiveness of implemented policies and testing standards to assess the progress being made and implement changes as needed to continue moving toward zero roadside fatal and serious lane departure injuries.

The objects proposed in support of the TCRS vision and three mission statements:

A. Critique and improve the underlying assumptions within the RDG and MASH through the analysis of field performance and assessment of available data.
B. Identify standards that are outdated, lacking, or not supported by current data analysis within the current RDG and MASH that should be addressed in upcoming revisions and conduct research to satisfy those needs.
C. Keeping up with the dynamic changes in roadside policy can be costly (i.e., budget and schedule); make changes to the RDG and MASH when the change is likely to result in measurable gains.
D. Provide tools which support making design and policy decisions.
E. Determine the most effective means to communicate the MASH standards and RDG guidance to promote consistency in interpretation and implementation in the field.
F. Develop and publish a RDG and MASH which are based on quantifiable performance measures and specific design goals.
G. Identify and implement methods which will foster innovation in hardware development.

The strategies and actions suggested to achieve these objectives for each mission statement and the overall plan are detailed in separate chapters. The strategies and actions universal to the TCRS plan are discussed Chapter 2. Chapter 3, Chapter 4, and Chapter 5 are "white papers" in support of each of the mission statements. Chapter 2, Chapter 3, Chapter 4, and Chapter 5 are stand-alone chapters which can and should be continuously updated. Appendixes with research needs statements (RNS) supporting the plans documented in Chapter 3, Chapter 4, and Chapter 5 are attached to this document at Appendix A, B, and C respectively.

Chapter 3 *Comprehensive Roadside Design Guide* (RDG) presents the strategies and actions in support of mission statement 1: to *develop, implement, and maintain policies which reduce fatal and serious lane departure injuries* for achieving a RDG with specific design goals and which can be easily updated as new data analysis becomes available.

Chapter 4, *Pioneering Manual for the Assessment of Safety Hardware* (MASH) offer strategies and actions in support of mission statement 2: to *develop evaluation standards to support roadside safety innovation and decision making* for achieving a MASH to foster innovation while ensuring changes are made when measurable gains are likely to result.

Chapter 5, *Data informed decision making*, proposes strategies and actions to in support of mission statement 3: to *monitor the effectiveness of implemented policies and testing standards to assess the progress being made and implement changes as needed to continue moving toward zero roadside fatal and serious lane departure injuries* Chapter 5 also provides a long-range plan for establishing policy, guidance, and standards based on the collection and

analysis of data and making changes to these policies, guidance, and standards based on this collection and analysis.

The proposed vision, the three mission statements, the proposed objectives, white papers, and the appendixes with RNS satisfy this research project's objective, "to develop a strategic plan for TCRS that guides the technical committee activities in its role as the focal point for roadside safety policies and guidance." This strategic plan is envisioned to be used to stimulate the implementation of the three white papers and accompanying RNS, which can be viewed as "mini-plans." Each of these documents can and should be referenced freely when proposing new research, as the funding agency will be able to better understand how each funded problem statement fits within the TCRS plan.

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