

**QUARTERLY PROGRESS REPORT**

**to the**

**NATIONAL COOPERATIVE HIGHWAY RESEARCH  
PROGRAM  
(NCHRP)**

**on Project 17-18(3)**

**LIMITED USE DOCUMENT**

This Quarterly Progress Report is furnished only for review by members of the NCHRP project panel and is regarded as fully privileged. Dissemination of information included herein must be approved by the NCHRP.

**for period**

**October 1, 2004 to December 31, 2004**

**from**

**CH2M HILL**

NATIONAL HIGHWAY COOPERATIVE RESEARCH PROGRAM  
 TRANSPORTATION RESEARCH BOARD  
 NATIONAL RESEARCH COUNCIL  
**PROGRESS SCHEDULE**

**PHASES 1, 2 AND 3, and LEAD STATE ORIENTATION MEETING**

NCHRP Project No. 17-18(3) Phases 1, 2, 3 and Lead State Orientation FY 2004 Month December  
 Research Agency CH2M HILL  
 Principal Investigator Ron Pfefer, Howard Preston, Kevin Slack

RESEARCH TASK	2004												2005				ESTIMATED % COMPLETION							
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A								
<b>PHASE 1</b>	COMPLETE																	100						
<b>PHASE 2</b>																								
1. Identify Promising Strategies	COMPLETE																	100						
2. Meet With Experienced Practitioners	COMPLETE																	100						
3. Develop Draft Implementation Guides	COMPLETE																	100						
4. Demonstrate Programs and Guides	COMPLETE																	100						
5. Refine Materials																			96					
<b>Phase 2 Percent Complete</b>	98%	99%	99%	99%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	<b>99.6</b>						
<b>PHASE 3</b>																								
1. Identify Strategies																								100
2. Meet With Experienced Practitioners																								100
3. Revise Guides								25	50	75	100							100						
4. Agency Quality Review								20	40	60	80	100						95						
5. Refine Materials												17	34	51	68	85	100	42						
<b>Phase 3 Percent Complete</b>	15%	21%	27%	30%	32%	34%	45%	54%	64%	74%	82%	85%	89%	93%	96%	100%	<b>86.1</b>							
<b>LEAD STATE ORIENTATION</b>	COMPLETE																	100						
<b>OVERALL % COMPLETED</b>	77%	79%	81%	82%	82%	83%	86%	88%	91%	93%	95%	96%	97%	98%	99%	100%	<b>96%</b>							

FIG. A -- OVERALL PROJECT SCHEDULE

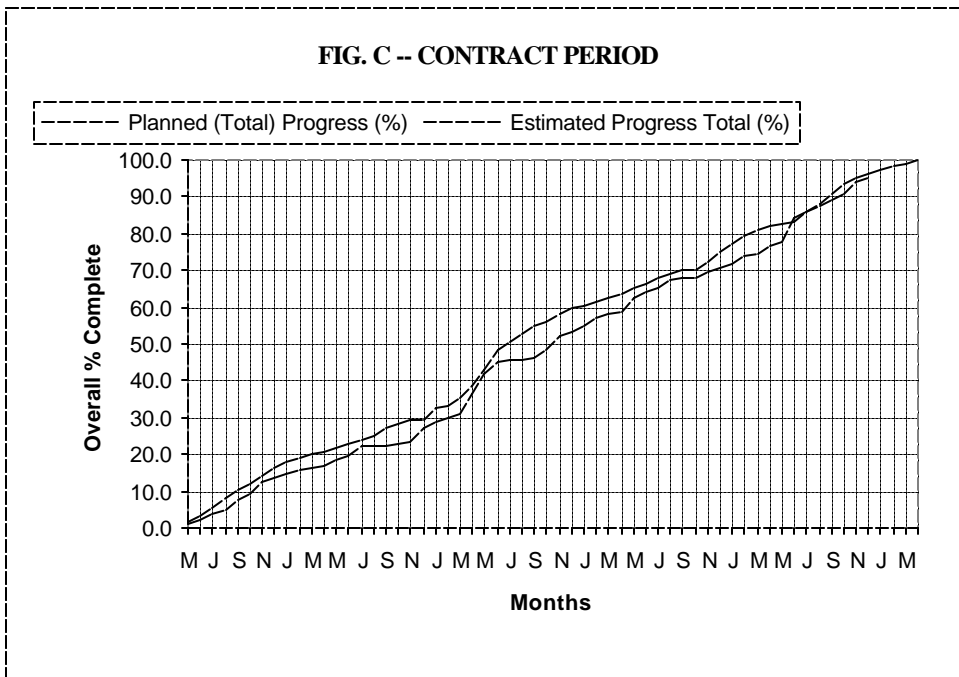
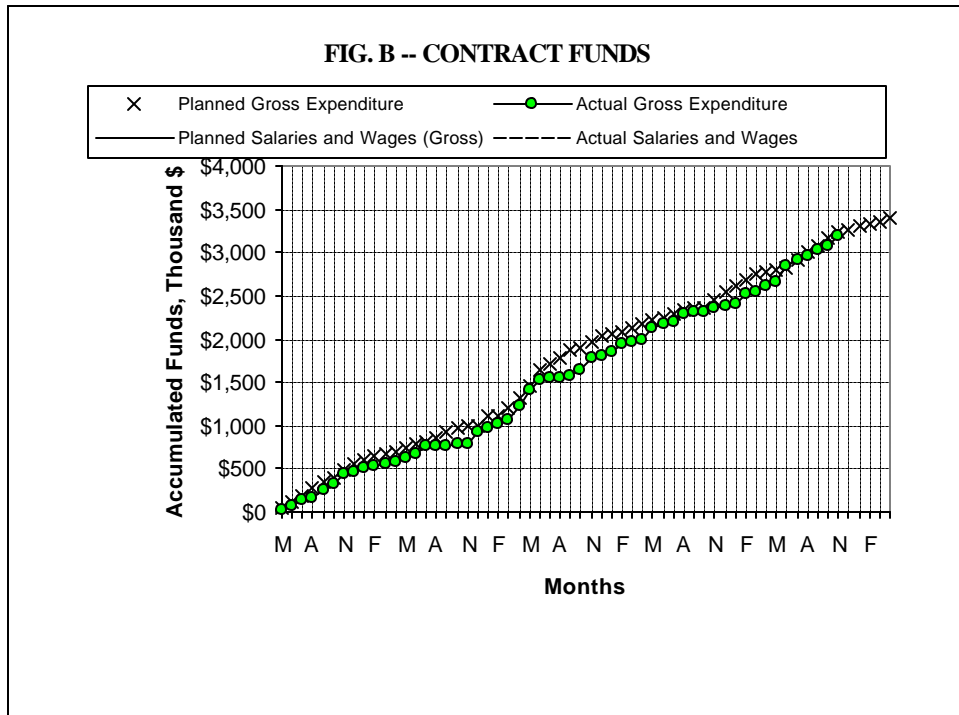
denotes scheduled work      denotes progress      ☆ denotes workshop

**Overall Project Financials (Includes Phases 1, 2, and 3)**

Funds Expended (All Phases)	96.2%	Time Expended	% 85
Contract Amount	\$3,391,574	Starting Date	1-May-00
Expended This Month	\$44,299	Completion Date	30-Apr-05
Total Exp. To Date	\$3,264,122		
Balance	\$127,452		
		Salaries and Wages Estimated This Month	\$32,310
		Salaries and Wages Spent This Month	\$44,299
		Accumulated Salaries and Wages To Date	\$3,264,122

NCHRP 17-18(3) Progress Report  
 Figures B and C

Dec-04



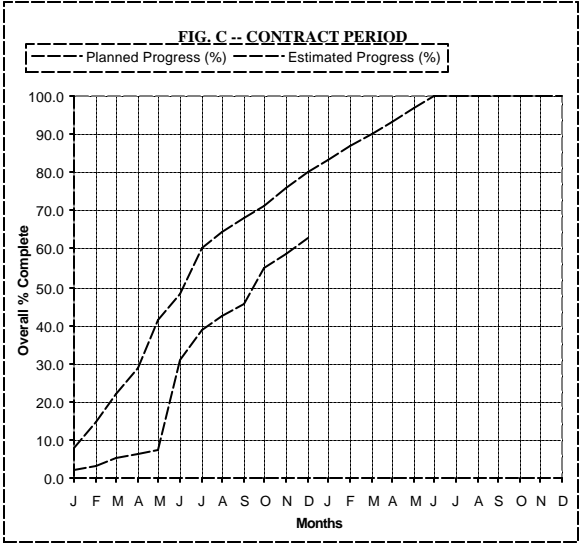
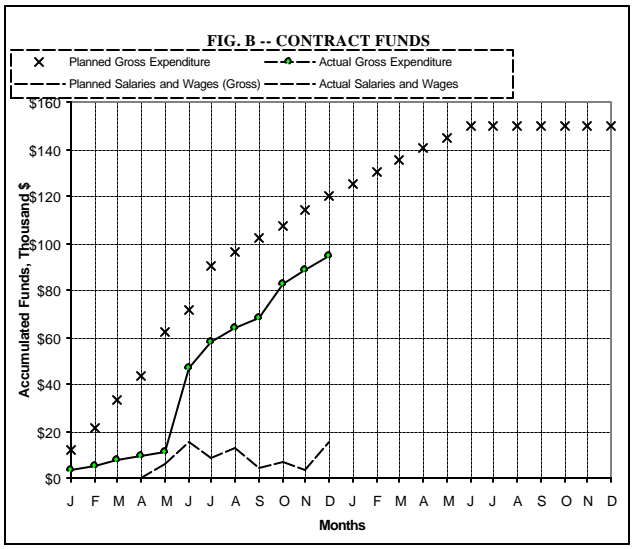
NATIONAL HIGHWAY COOPERATIVE RESEARCH PROGRAM  
 TRANSPORTATION RESEARCH BOARD  
 NATIONAL RESEARCH COUNCIL  
**PROGRESS SCHEDULE**

NCHRP Project No. 17-18(3A) Technical Support for Lead States FY 2004 Month December  
 Research Agency CH2M HILL  
 Principal Investigator Howard Preston & Kevin Slack

RESEARCH TASK	2004												2005												ESTIMATED % COMPLETION
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	
1. Team Communications and Coordination	10	15	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100							70
2. Technical Support to Lead	10	20	30	40	60	70	90	95	100																85
3. Maintenance of Technical Content of Web Guides										10	25	40	50	60	70	80	90	100							
OVERALL % COMPLETED	8%	14%	22%	29%	41%	48%	60%	64%	68%	71%	76%	80%	83%	87%	90%	93%	97%	#####	#####	#####	#####	#####	#####	#####	62.7

FIG. A -- OVERALL PROJECT SCHEDULE

denotes scheduled work denotes progress



Funds Expended	% 48
Contract Amount	\$ 150,000
Expended This Month	\$ 15,725
Total Exp. to Date	\$ 72,077
Balance	\$ 77,923

Time Expended	% 67
Starting Date	1-Jan-04
Completion Date	30-Jun-05

Salaries and Wages Estimated This Month	\$ 6,641
Salaries and Wages Spent This Month	\$ 15,725
Accumulated Salaries and Wages To Date	\$ 72,077

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## Summary of the Problem Being Researched

In the summer of 1988, the AASHTO Standing Committee on Highway Traffic Safety (SCOHTS) established a task force to develop a comprehensive highway safety strategy. The task force worked cooperatively with the TRB to produce the Highway Safety Strategic Plan: 1991-2000, in early 1990. The plan identified a number of strategies applicable to the driver, vehicle, highway environment, and traffic records. The strategies were estimated to cost \$1.46 billion annually, and to save a minimum of 64,000 lives over the coming decade.

In late 1996 and early 1997, in an effort to update and improve upon the existing plan, AASHTO, with assistance this time from FHWA and NHTSA as well as TRB, held workshops designed to arrive at a new plan. Nearly 100 individuals were involved, and they represented driver, vehicle, emergency medical service (EMS), safety management, pedestrian, and bicycle areas, as well as the areas of highway facilities and information management that are more typically identified as within the scope of AASHTO activities. It was a truly comprehensive effort, which involved several stages of development, between the invited experts and individuals acting in a "staff arm" capacity for the effort. The invitees included representatives from federal agencies and TRB, as well as many other stakeholders in the highway safety arena.

In 1998, AASHTO approved the Strategic Highway Safety Plan. The plan included strategies in 22 key emphasis areas that affect highway safety. The goal of the plan, as it moves from the research phase to the implementation phase, is to reduce fatality rate from 1.5 to 1.0 deaths per 100 million vehicle miles traveled (mvmt) by 2008.

### Project Objectives

The objective of the project has been to develop and validate guidance documents to assist state and local agencies in implementing strategies to reduce the fatality rate from 1.5 to 1.0 deaths per 100 mvmt. The targeted areas are being addressed as funding becomes available. The three phases of this project focus on the following areas:

#### Phase 1

- Aggressive Driving
- Head-on Crashes on Two-Lane Roads
- Run-Off-The-Road Crashes on Two-Lane Roads
- Drivers With Suspended and Revoked Licenses
- Hazardous Trees
- Unsignalized Intersections

#### Phase 2 [SPR-2(209)]

- Older Drivers
- Unbelted Occupants
- Pedestrians
- Horizontal Curves
- Signalized Intersections
- Utility Poles

- 
- Heavy Trucks

### Phase 3 [TPF-5(058)]

- Distracted/Drowsy Drivers
- Motorcycles
- Rural Emergency Medical Services
- Work Zones
- Alcohol

The implementation aspect of the first two phases of the project emphasizes program development, evaluation, testing, and measuring, through a demonstration process. The Phase 3 guides will not be demonstrated but will undergo an additional agency review.

Accomplishment of the project objectives will require completion of seven primary tasks for Phase 1 emphasis areas (Tasks 0 through 6) and 5 tasks for Phase 2 and 3 emphasis areas (Tasks 1 through 5). These tasks are outlined below with a brief description of the task objectives.

**Task 0. Amplified Research Plan** – Revise the research plan based on the panel’s comments to the original proposal dated October 25, 1999. This task is not required for the Phase 2 and Phase 3 emphasis areas.

**Task 1. Identify Promising Strategies** – Review appropriate reference materials and survey/interview appropriate persons to arrive at an initial list of promising strategies for each of the emphasis areas.

**Task 2. Establish Recommendations for Strategies and Their Implementation** – Build on the strategies identified in Task 1 through workshops and symposiums and prepare a summary report of findings and recommendations.

**Task 3. Develop Draft Implementation Guides** - Produce a user-friendly implementation guide that may be readily adopted and adapted by state or local agencies to implement one or more strategies in each of the emphasis areas.

**Task 4. Assist Selected States with Implementation Programs and Conduct Assessments** – Test implementation guides by using them to prepare implementation plans with demonstration agencies. Task 4 of Phase 3 will include an Agency Quality Review rather than this demonstration.

**Task 5. Refine Guidance Documents** – Produce final set of implementation guides for each emphasis area by refining the draft documents based upon what was learned in Task 4.

**Task 6. Submit Final Report** – Provide a report that documents the efforts and results of the entire project. This report, originally part of Phase 1, will be deferred until the end of the project, as agreed upon in the modification to the contract made in October 2002.

### NCHRP 17-18(3)A Technical Support for Lead States

A separate contract was awarded to the CH2M HILL for technical support as Lead States develop implementation plans to reduce fatalities related to the Phase 1 emphasis areas. The emphasis area managers will provide support as needed to the Lead States. This project

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also includes updating of materials in the web-based guides as needed, based on results of the Lead State efforts.

## Activities This Quarter

Work continued on both Phase 2 and Phase 3 this quarter. Progress was made on Task 5 of Phase 2 and Tasks 3, 4, and 5 of Phase 3. The following is a review of progress made as of the end of December 2004.

### Phase 2 [SPR-2(209)]

#### **Task 5. Refine Guidance Documents**

Development of the web guides continued. The guides will be delivered to AASHTO and NCHRP at the beginning of next quarter for posting on the AASHTO website with the Phase 1 web guides.

### Phase 3 [TPF-5(058)]

#### **Task 3. Revise Guides**

The internal review of the guides developed in Task 3 was completed in the early part of the quarter.

#### **Task 4. Agency Quality Review**

A workshop was held in Fort Lauderdale, FL, on November 15 and 16, to obtain feedback on the revised guides from agencies that had reviewed the materials. An agenda and list of workshop attendees for each of the Phase 3 workshops is attached to this progress report (Appendix 1).

#### **Task 5. Refine Guides**

Final revisions on the Phase 3 guides began after the Task 5 workshops. The revisions will account for comments received at the workshop, comments received from the panel at the end of the 3<sup>rd</sup> quarter, and internal review comments. Attached to this progress report are responses to panel comments on the guides (Appendix 2).

#### **NCHRP 17-18(3)A Technical Support for Lead States**

CH2M HILL and emphasis area managers for the Phase 1 guides provided technical support to Lead States as requested.

## Schedule and Budget

As of December 31, we estimate that we have completed 99 percent of the Phase 2 work. Also, we estimate that we are approximately 86 percent complete with Phase 3 work. Overall, the project is 96 percent complete to date.

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## Plans for Next Quarter

In the next quarter, work is planned on Phase 2 Task 5, and Phase 3 Task 5.

### Phase 2 [SPR-2(209)]

#### **Task 5. Refine Guidance Documents**

Early in the first quarter of 2005, the Phase 2 web guides will be delivered to AASHTO and NCHRP. These will be posted on the AASHTO website at [safety.transportation.org](http://safety.transportation.org). The materials will include html versions of the printed NCHRP Report 500 guides, as well as the appendix materials referenced in the guides.

### Phase 3 [TPF-5(058)]

#### **Task 5. Refine Guides**

Revisions to the Phase 3 guides will be completed, and the materials will be submitted to NCHRP for panel review and publication.

#### **NCHRP 17-18(3)A Technical Support for Lead States**

The project team will provide technical support as needs arise.

#### **Problems Encountered**

None to report.



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**Appendix 1**  
**Phase 3 Task 4 Workshop**  
**Agenda and Attendance Roster**  
**Fort Lauderdale, FL**  
**Nov 15-16, 2004**

## Workshop Participants for Drowsy and Distracted Driver Guide

Name	Organization	E-Mail Address
Jerman, Troy	Iowa DOT	<a href="mailto:Troy.jerman@dot.state.ia.us">Troy.jerman@dot.state.ia.us</a>
Knipling, Ron	Virginia Tech Trans. Inst.	<a href="mailto:Rknipling@vtti.vt.edu">Rknipling@vtti.vt.edu</a>
Osberg, Scott	AAA Foundation for Traffic Safety	<a href="mailto:Sosberg@aaafoundation.org">Sosberg@aaafoundation.org</a>
Petrewicz, Jessica	Pennsylvania DOT	<a href="mailto:Jpetrewicz@state.pa.us">Jpetrewicz@state.pa.us</a>
Schwartz, David	Kansas DOT	<a href="mailto:Davids@ksdot.org">Davids@ksdot.org</a>
Shirazi, Hadi	Louisiana DOT	<a href="mailto:Hshirazi@dotd.louisiana.gov">Hshirazi@dotd.louisiana.gov</a>
Stutts, Jane	UNC Highway Safety Research Center	<a href="mailto:Jane_stutts@unc.edu">Jane_stutts@unc.edu</a>
Tang, Peter	Utah DOT	<a href="mailto:Ptang@utah.gov">Ptang@utah.gov</a>

## Workshop Participants for Motorcycle Guide

Name	Organization	E-Mail Address
Banks, David	Van Ryan Banks, Inc.	<a href="mailto:Ceo@vanryanbanks.com">Ceo@vanryanbanks.com</a>
Depue, Leanna	17-18 Panel	<a href="mailto:Depue@cmsu1.cmsu.edu">Depue@cmsu1.cmsu.edu</a>
Evans, Angela	FL DOT – Community of Traffic Safety	<a href="mailto:Angela.evans@dot.state.fl.us">Angela.evans@dot.state.fl.us</a>
Garets, Steve	Team Oregon	<a href="mailto:Steve.garets@oregon.state.edu">Steve.garets@oregon.state.edu</a>
Gaulin, Ray	CT-DOT, Divisions of Highway Safety	<a href="mailto:Raymond.khoury@virginia.dot.org">Raymond.khoury@virginia.dot.org</a>
Kenley, Erin	FHWA – Office of Safety	<a href="mailto:Erin-kenley@fhwa.dot.gov">Erin-kenley@fhwa.dot.gov</a>
Khoury, Ray	Virginia DOT	<a href="mailto:Raymond.khoury@virignia.dot.org">Raymond.khoury@virignia.dot.org</a>
Kyler, Louie	Florida Rider Training Program	<a href="mailto:Gtsmoto@aol.com">Gtsmoto@aol.com</a>
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Meyers, Neil	Missouri Motorcycle Safety Program	<a href="mailto:Meyers@cmsu1.cmsu.edu">Meyers@cmsu1.cmsu.edu</a>
Perrillo, Kerry	FHWA – Office of Safety R&D	<a href="mailto:Kerry.perrillo@fhwa.dot.gov">Kerry.perrillo@fhwa.dot.gov</a>
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Potts, Ingrid	MRI	<a href="mailto:Ipotts@mriresearch.org">Ipotts@mriresearch.org</a>
Welch, Tom	Iowa DOT	<a href="mailto:Tom.welch@dot.state.ia.us">Tom.welch@dot.state.ia.us</a>
Wigle, Diane	NHTSA	<a href="mailto:Diane.wigle@nhtsa.dot.gov">Diane.wigle@nhtsa.dot.gov</a>

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## Workshop Participants for Rural EMS Guide

Name	Organization	E-Mail Address
Bailey, Anita	IDPH/Bureau of EMS	<a href="mailto:Ab Bailey@idph.state.la.us">Ab Bailey@idph.state.la.us</a>
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Cooney, Bob	PDOH – EMS Office	<a href="mailto:Gmodi@state.pa.us">Gmodi@state.pa.us</a>
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Hagen, Don	WISDOT -Bureau of Transportation Safety	<a href="mailto:Don.hagen@dot.state.wi.us">Don.hagen@dot.state.wi.us</a>
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Modi, Gary	Pennsylvania Dept of Transportation	<a href="mailto:Gmodi@state.pa.us">Gmodi@state.pa.us</a>
Torbic, Darren	Midwest Research Institute	<a href="mailto:Dtorbic@mriresearch.org">Dtorbic@mriresearch.org</a>
Wolf, Pete	TDSHS – Bureau of EMS Advisory Corp.	

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## Workshop Participants for Work Zone Guide

Name	Organization	E-Mail Address
Billingsley, Lee	Broward County, Florida	<a href="mailto:Lbillingsley@broward.org">Lbillingsley@broward.org</a>
Bryder, Jim	James E. Bryder – Hwy Safety Engineer	<a href="mailto:Jbryder@nycap.rr.com">Jbryder@nycap.rr.com</a>
Christensen, Larry	Deja Program Development - Oregon	<a href="mailto:Dejaceo@msn.com">Dejaceo@msn.com</a>
Cressman, Norm	Georgia DOT, Traffic Safety	<a href="mailto:Norm.cressman@dot.state.ga.us">Norm.cressman@dot.state.ga.us</a>
Gaither, John	SCDOT, Safety Office	<a href="mailto:Gaitherjw@dot.state.sc.us">Gaitherjw@dot.state.sc.us</a>
Holder, Anne	Oregon DOT, Trans. Safety	<a href="mailto:Anne.p.holder@state.or.us">Anne.p.holder@state.or.us</a>
Holstein, Dave	Ohio DOT	<a href="mailto:Dave.holstein@dot.state.oh.us">Dave.holstein@dot.state.oh.us</a>
Morris, Ron	MoDOT - Construction	<a href="mailto:Ronald.morris@modot.mo.gov">Ronald.morris@modot.mo.gov</a>
Moseley, Reginald	Virginia DOT, Work Zone Safety	<a href="mailto:Reginald.moseley@virginiadot.org">Reginald.moseley@virginiadot.org</a>
Notbohm, Tom	Wisconsin DOT, Bureau of Hwy Operations	<a href="mailto:Thomas.notbohm@dot.state.wi.us">Thomas.notbohm@dot.state.wi.us</a>
Stotlemeyer, Scott	MODOT - MT	<a href="mailto:Scott.stotlemeyer@modot.mo.gov">Scott.stotlemeyer@modot.mo.gov</a>

**Appendix 2**  
**Responses to Panel Comments**  
**on Phase 3 Guides**

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# Response to Panel Comments on Distracted and Drowsy Driving Guide

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**Comment:**

Targets of the objectives are not consistent with material presented. For example, potential legislative changes are discussed but are not addressed as a “target.” Another example is the reference to Fatigue Management programs for Heavy Truck. This section should be expanded and be comprehensive and consistent with content of document.

The document does not mention potential partners in pursuing this goal – federal partners (e.g., FHWA, NHTSA), state partners, technical associations, safety and advocacy groups, educational groups, and so on

**Response:**

We will be developing a table of stakeholders for inclusion with the next draft of the guide, and will add text in the Summary and Introduction sections of the guide referencing the broad range of stakeholders that can play a role in reducing crashes due to distracted and/or fatigued driving. We will also review the individual strategy descriptions to be sure that appropriate stakeholders and partners are identified, and provide examples (primarily through our case studies or profiles) of effective partnerships in this area.

**Comment:**

In addition, no plan of action (particularly with respect to partnerships) is indicated for the various strategies.

**Response:**

For each of our strategies, we will try to be sure that one or more specific “action steps” are identified, especially with regard to creating partnerships (or refer to the Implementation Process section (VI) of the guide, or to earlier guides where such information is already available).

**Comment:**

Regarding rumblestrips -- the document does NOT mention any human performance studies for special populations such as drowsy drivers, alcohol or drug impaired drivers, motorcycles, and so on. It is suggested that AASHTO should consider the impact on target populations and should consider pursuing human performance studies (could be road-based, could be simulator based) prior to making this recommendation.

**Response:**

With regard to Strategy A1 pertaining to shoulder and centerline rumblestrips, we will seek FHWA guidance on whether shoulder rumble strips can be recommended as a proven strategy for rural two-lane roadways, and also the most current data on the effectiveness of

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centerline rumblestrips. Given that rumblestrips have been proven to reduce drift-off-road crashes on interstate roadways, we do not believe human performance studies for the special population of drowsy drivers are necessary prior to recommending this strategy.

**Comment:**

The document appears to recommend that employers should be encouraged to offer fatigue management programs working nighttime or rotating shifts. But employees may not only experience fatigue issues due to shift work. A general fatigue management program for all employees should be encouraged. Also, employers should be encouraged to educate their employees on driver distraction, particularly where employees may engage in work activities while driving.

**Response:**

For Strategy D3, we targeted employers with shiftwork operations because shiftworkers are an identified high risk group for drowsy driving crashes, they are a receptive audience, and programs and materials have been developed especially for this population and proven effective. However, we recognize and address the fact that employers are an effective partner for educating workers about safe driving practices regardless of whether the workplace requires shift work or job-related travel. For example, the Network of Employees for Traffic Safety (NETS) has developed many good programs and materials addressing both driver distraction and driver fatigue. We have referenced NETS with respect to Strategy C1, conducting education and awareness campaigns targeting the general driving public. We will also be contacting NETS for a potential workplace program that could be highlighted in the report as a case study or profile.

**Comment:**

The document appears to ignore the increased attention to cooperative systems that integrate vehicle and infrastructure to address some of the problems identified. While these efforts are in their infancy, as a long-term plan it would appear that they should be included in the discussion.

**Response:**

While systems that integrate vehicle and infrastructure to address certain ramifications of drowsy or distracted driving (e.g., weaving in the travel lane, departing the roadway) certainly show promise, we do not feel that they are a good fit for this guide, since its emphasis is on short term, low cost strategies that DOTs (and related state and local agencies) can implement either by themselves or in partnership with others. However, we can add a brief description and reference for these technologies, as a way of educating the reader. One place for this will be in strategies D4 and D5 targeting commercial vehicle operators, since this is where the new technologies and systems have been most highly developed and tested.

**Comment:**

The text on p. V-3 reports that PI&E is “relatively untried,” but in fact it has been used in high crash corridors.



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***Response:***

The text with respect to PI&E being “relatively untried” has since been modified, but we still note that such programs present a challenge to evaluate and prove effective, at least with respect to actually impacting crash occurrence.

**Comment:**

The section on “enforcement of traffic laws” might include recommendations to collect and analyze relevant data, e.g., time of day, day of week.

***Response:***

Strategy C2 with respect to enforcement of traffic laws has also been rewritten. As a result of the November workshop, we plan to add a section in the guide addressing the need for better collection and analysis of crash and other data to document the problem of distracted and fatigued driving (see further discussion below).

**Comment:**

Attempting to equate impairment from drowsiness or distraction with different levels of alcohol impairment is confusing and inappropriate. The mechanisms of impairment are too different. (p.V-13)

***Response:***

We have since omitted any discussion of similarities between driving impairment due to alcohol and that due to drowsiness or lack of sleep.

**Comment:**

Public awareness campaigns tied to changes in law can be very effective (e.g., when DC adopted hands-free cell phone law, had well publicized periods of warning and citations).

***Response:***

While we do not disagree that public awareness campaigns such as the DC or NY State efforts to publicize their laws prohibiting use of hand-held cell phones can be effective in getting word out about the law, and even in decreasing the use of hand-held cell phones over the short term, the evaluation of the NY State law showed no long term effect on cell phone use (even hand-held cell phone use) and no decrease in crashes.

**Comment:**

PI&E needs to be targeted to problem populations and the people who influence them.

***Response:***

We agree that PI&E efforts need to target both problem populations and important “influencers” or intermediaries such as driver education teachers, law enforcement personnel, or the medical community. To some extent, we depend on our data (national and state) to convince potential influencers of the importance of addressing the problem. But probably the best way we can address this in our guide is to include case studies that show how agencies went about involving key stakeholders in their cause (in our case, efforts

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by the Utah DOT to work with public schools, law enforcement, as well as the medical community will be a good example to highlight).

**Comment:**

Re: legislation section: it could be included as a technical note at the end of the guide. Include international experience? Might add DC's cell phone law as an example along side NJ law.

**Response:**

The legislation section (Strategy C2) has since been changed. We can further modify this to include reference to the National Conference of State Legislatures website for information on both U.S. (state) and international experience with regard to cell phones.

**Comment:**

Strategy X.1D1 – 38 states have adopted GDL. The recommendation of 9pm curfew has not been adopted anywhere: most are 12:00 midnight.

**Response:**

Strategy D1 on strengthening GDL requirements for novice drivers recognizes that only 6 states have nighttime driving restrictions starting before 11 pm. We believe that there is strong evidence to support increased adoption by states of earlier nighttime driving restrictions.

**Comment:**

Encouraging fatigue management programs is the most promising strategy but the section is too brief.

**Response:**

The strategy on fatigue management programs for commercial vehicle operators (Strategy D3) has been expanded and will be further expanded in the final draft version of the guide, including incorporating information on the North American Fatigue Management Program.

**Comment:**

Add “college students on breaks/vacations” to potential high risk populations.

**Response:**

“College students on breaks/vacations” are included under strategy D2 – Incorporate information on distracted/fatigued driving into education programs and materials for young drivers.

**Comment:**

Edits:

**Response:**

All the small edits have been taken care of.

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**Comment:**

On Page V-9, we suggest mentioning providing wireless internet for drivers at rest areas. Texas is implementing this at selected locations.

***Response:***

Reference has been added to providing wireless internet for drivers at rest areas. Texas has been contacted regarding this, and we will review what they can provide, to determine if it is appropriate for this section.

**Comment:**

On Page V-15, this strategy needs more work.

This guide needs more work

***Response:***

This was a very early version of the guide that the panel reviewed, and we apologize for the lack of completeness and roughness at the time.

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# Response to Panel Comments on Motorcycle Guide

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## Reviewer #1:

### Comment:

The motorcycle safety implementation guide is unacceptable and needs to be redrafted.

First: It is a rehash of NHTSA's National Agenda for Motorcycle Safety with a few new ideas and not much research. It is written as a policy documents and not a countermeasures guide for state and local governments. Old data (2001) is used throughout the document.

### *Response:*

The NAMS document represents a significant effort by many stakeholders in motorcycle safety. Since many of the recommendations from NAMS have yet to be implemented, the research team felt that including the NAMS recommendations in an implementation guide was the right thing to do. However, the NAMS document has served only as a starting point; additional countermeasures have been included and related research and information have been presented. The AASHTO Strategic Highway Safety Plan Implementation Guides are not intended to “re-invent the wheel” but to be a synthesis of the state of knowledge and practice.

We will review all of the data in the guide and update it with the most current motorcycle data. We have tried to identify all available and relevant motorcycle research and present it in the guide; if the reviewer is aware of any relevant research that has been omitted, we would be glad to incorporate such into the final document.

### Comment:

Second: It is not a very balanced document. Countermeasures are selected and discussed from the point of view of motorcycle organizations. With the exception of the impaired driving section, the implication is that the fault lies with the roadway or the other driver-not the motorcyclist. Yet the majority of motorcycle crashes are single vehicle crashes. In effect, the document moves the agenda of motorcycle organizations forward rather than presenting a factual discussion of countermeasures. In the infrastructure section, for example, a number of countermeasures are suggested that would be tremendously costly to implement and way out of proportion to the size of the problem. (Motorcyclists represent only 2% of vehicles on the road after all.) Only in the roadside barrier discussion is there even the slightest discussion of about how to decide where to pave shoulders, eliminate rough roads, post signs, etc. In the section on unlicensed drivers, there is a long discussion justifying the need for a motorcycle crash causation study. It's a major position of the motorcycle lobby but doesn't belong in a guide for practitioners. ABATE is represented as a “free-spirited” organization. Motorcycling is characterized as “an adventure” that promoted

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a sense of freedom from being “out” in the wind. “This kind of language doesn’t belong in a fact-based implementation guide.

***Response:***

The research team respectfully disagrees with this reviewer’s claim that countermeasures were selected from the point of view of motorcycle organizations and that “the fault lies with the roadway”. We recognize that there are many causes of motorcycle crashes; the roadway, the motorcyclist, and the other driver can each play a role. In fact, the Traffic Safety Facts document produced by NCSA (June 2004) reports that 46% of fatal motorcycle crashes are single-vehicle crashes, thus implying that 54% of fatal motorcycle crashes involve multiple vehicles. More importantly, the task given to the research team is to develop a guidance document that stresses a comprehensive approach, in keeping with the AASHTO Plan.

As reported in the NAMS document, NHTSA and many motorcycle organizations agree that a motorcycle crash causation study is needed. While the research team realizes that including an objective related to motorcycle crash data may be considered beyond the scope of the guide, we feel that motorcycle crash data is not nearly as readily available as some of the other emphasis areas, such as horizontal curves and unsignalized intersections. Phase IV of this project will include the development of a guide focusing solely on data needs. It may be the decision of the panel to defer all discussions about data needs to that particular guide. On this issue, we seek guidance from the panel, recognizing that a decision to move discussion of data to the Data guide will affect several guides.

Strategies directed at reducing speeding will be added to the guide.

The descriptive adjectives have been removed from the guide.

***Comment:***

Third: The countermeasures are not organized into Proven, Tried and Experimental; there is extremely little discussion of effectiveness; and there is very little discussion of costs.

***Response:***

The countermeasures will be designated as Proven, Tried and Experimental in the final revision. Unfortunately, there is currently little scientific research available to quantify effectiveness of these strategies; therefore, many of these countermeasures will likely be categorized as experimental.

***Comment:***

Fourth: The discussion of motorcycle helmets is buried in the document and tilts toward voluntary use of helmets. There is absolutely no discussion about the impact of repealing mandatory laws. Use of helmets should play a far more prominent role in the implementation guide. It is one of the most effective countermeasures that can be implemented. The discussion should focus on the use of helmets without taking sides in the debate over mandatory or voluntary use.

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**Response:**

The research team considered the placement of the motorcycle helmet strategy and felt that it was necessary to first understand the scope of the problem (e.g. Strategy 1.1 A1) before presenting countermeasures. Beyond this, the research team felt it was necessary to begin with strategies that were most within the jurisdiction of highway agencies (e.g., roadway improvements, signing, etc).

The strategy addressing FMVSS 218 compliant helmets has been substantially revised. It now includes a discussion of the impact of repealing mandatory helmet laws, based on available scientific literature. It also includes both a discussion of mandatory helmet laws as well as a discussion of voluntary use of helmets.

**Comment:**

Fifth: The document asserts that motorcycle education and training are the most effective countermeasures, when, in fact, there is conflicting research on the effectiveness of training. Much more research needs to be conducted about the effectiveness of motorcycle training, the conditions under which such training should be offered, the need for graduated training, the delivery mechanisms, etc. The list of studies on the effectiveness of training is incomplete. The discussion of training makes the case for more training rather than discussing how the training should be provided and by whom.

**Response:**

The research team conducted an extensive search of available scientific literature regarding the effectiveness of motorcycle training and could only identify one published report regarding motorcycle effectiveness (California Motorcycle Safety Program; Program Effectiveness: Accident Evaluation, Systan, Inc., 1996). It is the opinion of the research team that scientific publications regarding automobile driver training programs are not relevant given the differences between operating a car and operating a motorcycle.

NHTSA is expected to release findings from a comprehensive state-by-state review of rider training and licensing programs, including a detailed review of those states who have demonstrated promising practices in motorcycle safety, rider education and training and licensing. The research team has included this study in the guide: "Motorcycle Rider Education and Licensing; A Review of Programs and Practices," NHTSA 2005.

The research team agrees that more research is needed regarding the effectiveness of motorcycle rider training and the best method of implementing appropriate motorcycle rider training programs. Due to the lack of research, this strategy will be considered experimental. Also, we will revise any language that suggests motorcycle education and training are the "most effective countermeasures".

**Comment:**

Sixth: The examples seem to be drawn largely from Oregon and Minnesota – states where the author has had considerable experience. However, it is important to know what other states are doing.

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**Response:**

The research team conducted an extensive search for additional examples of programs being implemented. It is known that programs are being implemented in other states; however, this information is not readily available through the public domain. If the reviewer is aware of programs in other states and can provide us with related information, we would gladly include it in the guide. Thank you.

**Comment:**

Seventh: There are discussions about the inadequacies of motorcycle data throughout the document. Information about other countermeasures also suffers from the lack of adequate data. Why shouldn't the motorcycle data discussion be part of a broader discussion about data in the Phase IV guidebook on data rather than be separated out in the motorcycle guidebook?

**Response:**

While we recognize there are data inadequacies in other emphasis areas, the research team believes that the inadequacies in motorcycle crash data are far greater than many of the other emphasis areas, such as horizontal curves and unsignalized intersections. As mentioned in an earlier response, we will take guidance from the panel on whether this should be dealt with explicitly in this guide or addressed solely in the Phase IV data needs guide.

**Comment:**

Eighth: The document shows a lack of understanding of what different state agencies do. It assumes that the state DOTs all have ownership of motorcycle data and all are responsible for motorcycle programs. In fact, many different state agencies may be involved.

**Response:**

The research team is aware that state DOTs do not necessarily have ownership of motorcycle data and may or may not be responsible for motorcycle programs. It is the hope of the research team, and in fact a key element of the implementation process, that various stakeholders would come together and work as a team. Thus, those responsible for motorcycle programs and/or motorcycle data would collaborate with the state and local highway agencies to assemble necessary data and effectively implement appropriate strategies and countermeasures. We will review the document to ensure that this is clear to the readers and make editorial changes as necessary.

The team would like to thank Reviewer #1 for taking the time to review this document.

**Reviewer #2:**

**Text:**

*Opponents of mandatory helmet laws cite what they view as a serious problem. Enactment of mandatory helmet laws results in the marketing and use of novelty or 'beanie style' helmets (Peek-Asa, 1999, Turner, 2000). These helmets are not for sale in most motorcycle dealerships, but can be purchased at motorcycle rallies and swap meets. Such helmets are intended to give the appearance*

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*that the rider is wearing a helmet, and thereby minimize the chances of the rider being stopped by law enforcement officials for a helmet law violation.*

**Comment:**

It is correct that novelty helmets are available at rallies, swap meets, etc... They are very affordable - I have seen them for \$10-\$30 (as opposed to my compliant helmet, which cost about \$135 on sale). It is my personal experience that there are many riders wearing novelty helmets that are not aware that the protection they offer is inadequate (rather non-existent). It may be the perception that novelty helmet wearers are intentionally defying state helmet laws in wearing non-FMVSS-218 compliant helmets. However, some of the problem is that many riders with good intentions are just not knowledgeable about what compliant helmets look like and the benefits of wearing one instead of opting for the more "affordable" models. Some of this problem appears to be a public education issue.

**Response:**

The research team has observed similar findings during "ride-alongs" with police agencies; however, all of this is anecdotal and unpublished. The team does agree that the lack of awareness of what a 218 compliant helmet looks may influence a rider's decision; therefore, the document now includes a link to the Washington State Motorcycle Safety Program which has developed a pamphlet indicating what a 218 compliant helmet looks like.

**Text:**

*These helmets do not comply with FMVSS 218 due to a minimal coverage area, the lack of any impact-absorbing material, and inadequate retention systems.*

**Comment:**

FMVSS 218 is a performance standard rather than a design standard. The above statement is correct meaning that type of helmet design contributes to or causes failed performance. There are many other visual characteristics of non compliant versus compliant helmets. We might want to consider that even some helmets manufactured to comply with FMVSS-218 and appear to be compliant do not pass the performance standards set by NHTSA.

**Response:**

The research team agrees that there are some helmets which may claim to meet FMVSS 218 but do not pass when tested under NHTSA contract. However, the team felt that this was beyond the scope of the document and consequently did not discuss this issue.

**Text:**

*Motorcycle safety experts and advocacy groups agree that FMVSS 218 compliant helmets are effective at reducing the frequency and severity of head injuries. Where helmet laws do not exist and are not viewed as a viable approach, and where the input and contributions of the motorcycle user community are considered as essential to success, a strategy emphasizing voluntary compliance of FMVSS 218 helmets may be the centerpiece of a motorcycle safety program.*

**Comment:**

Good information but this paragraph seemed a little difficult to follow.



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***Response:***

The section that addresses FMVSS 218 has been revised.

The team would like to thank Reviewer #2 for taking the time to review this document.

**Reviewer #3:**

**Comment:**

The revised draft for helmet usage reasonably well reflects my understanding of the guidance the panel at the debriefing after the June 22-23 workshop.

***Response:***

Thank you for taking the time to review the document.

**Reviewer #4:**

**Comment:**

I reviewed the draft strategy on helmet usage. Its emphasis on enactment and enforcement of mandatory helmet use laws is good but by itself may not yield the benefits we are looking for. I offer the following CA data to demonstrate this. Review the graph on sheet 2 titled "Motorcyclists Killed and Injured by Helmet Usage (1996-2001). The graph of killed and injured using helmet is going up and the one for "not used" is flat, (Attachment A).

***Response:***

The research team would like to thank Reviewer#4 for taking the time to generate this series of very relevant graphs. We agree that the helmet use trend is increasing while the helmet not used trend is remaining flat.

The research team interprets this data to mean the following:

- There is an increase in the use of helmets in CA
- There is no change in the number of riders who don't wear a helmet in CA

But it could also be interpreted as follows:

- Wearing a helmet is more dangerous and more likely to kill the rider
- You are "better off" if you don't wear a helmet

Unfortunately, none of these interpretations or observations can be considered reliable until they are compared with the exposure population. In other words, how many helmeted riders are on the roads in CA versus how many unhelmeted riders? Such exposure data would also tell us what percentage of CA riders wear compliant helmets and what percentage of CA riders do not wear compliant helmets. With this data, it would then be possible to determine the risk of being killed while wearing a helmet or not wearing a helmet.

Until such exposure data is available, we can merely report on the frequencies and benefits of using an FMVSS 218 compliant helmet. Thank you for your comments.

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## Reviewer #5:

### Comment:

Anyone looking just at the chart that Reviewer#4 mentions might conclude that it's better not to wear the helmet as there are almost 4 times as many riders killed and injured wearing a helmet as there are riders who don't wear a helmet. It of course doesn't reflect the #'s of riders either wearing or not.

The majority of fatalities, though, would seem to occur in the "not used" line according to the data in the report. The result would seem to be then, that as ridership or risk is increasing, the result is predominantly increases in injury related crashes. Thus the rise in the top line. That could translate then that helmets are helping keep fatalities flat.

I am no statistician, so my rationale may be off base.

Are the 2 data groups, fatalities and injuries shown as separate graphs anywhere in anyone's data?

### *Response:*

The research team agrees that such conclusions require exposure data in order to determine the total number of riders who are wearing a helmet and the total number of riders who are not wearing a helmet. Annual trends might show an increase in the number of riders and this may also explain the increase in fatalities. A review of the exposure data regarding helmeted and unhelmeted riders would also allow one to compute the relative risk of being killed (or injured) while wearing a helmet and while not wearing a helmet – thus clearly explaining the differences between fatal accidents involving helmeted riders fatal accidents involving unhelmeted riders.

The team would like to thank Reviewer #5 and suggest that he also review the comments generated for Reviewer #4. Thank you for taking the time to review this document.

## Reviwer#6:

### Comment:

Reviewer#5, I believe that you are "exactly right" (as the NASCAR commentators would say). That is, the data would have to show how many total riders wear or do not wear a helmet. Then one could see the actual likelihood of serious injury or death as a percentage of the overall rider population. But I, like you, do not profess to know statistics that well, so I will leave the final numbers to those experts.

### *Response:*

Unfortunately, such exposure data has not been collected in California. It is for this reason that the team has presented Strategy 1.1 A2 which includes expanding existing exposure data collection protocols to include motorcycles. Further data collection could include differentiation between compliant and non-compliant helmets.

Thank you for taking the time to review this document.

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## Reviewer #7:

### Comment:

Two concerns. On page two, fourth paragraph, "While it has been argued...percent increase in rider fatalities." should either be removed or the backup support indicating the percent change should be provided. Also, page three, fourth paragraph, second sentence "Users of these helmets are no safer than if they are riding helmet less." should not be included unless there is adequate supporting documentation for this statement.

### *Response:*

The statement "While it has been argued ..." was written in response to those groups that claimed that a 100% increase in Louisiana fatalities were due to an increase in motorcycle registrations. In reality, there was a 17% increase in motorcycle registrations concurrent with the 100% increase in fatalities. The team will review this statement and provide backup support as suggested.

There is scientific literature available to support the statement that the users of novelty helmets are no safer than if they are riding helmet-less (Hurt, Thom, Smith, AAAM, 1996). This reference will be added to the key reference section. Thank you for your comments.

## Reviewer #8:

### Comment

Strategy 1-1B needs to consider addressing the use of RPMS/traffic buttons and their effect on motorcycles.

### *Response:*

The research team will consider incorporating this issue within Strategy 1.1 B5 – Maintain the roadway to minimize surface irregularities and discontinuities or another appropriate strategy. Thank you for your comments.

## Reviewer #9:

### Comment:

This is well written and covers the issues succinctly. The motorcycle rider advocates still will not like it though. I would recommend the paper could go into a little more detail on the specific arguments that motorcycle advocates give against mandatory helmet laws.

### *Response:*

The research team did consider this approach during development of the helmet related strategy; however, the team felt that any discussion of the position of the anti-helmet law advocates would shift focus away from the strategy which is to increase voluntary use of FMVSS 218 compliant helmets, and our position is not to represent advocacy of any position, but rather to state what we consider valid facts that we can find. .

Thank you for taking the time to review this document.

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**Reviewer #10:**

**Comment:**

We agree, in principle, with Objective 1.1F. However, there are some specific points we'd like to comment on.

Page 2, paragraph two under Helmet Use Laws states that "mandatory motorcycle helmet laws are unpopular with a large segment of the motorcycling community." It is the "large segment of the motorcycling community" that is misleading. In reality, the group that opposes mandatory helmets with such fervor is a relatively small segment of the motorcycling population. This is not unlike other controversial issues where the minority is more vocal, and consequently gets more attention, than the silent majority. It is our opinion that the majority of the motorcycling community favors mandatory helmet laws. Perhaps the wording could be "...are unpopular with some segments of the motorcycling community."

**Response:**

We will revise the statement to read "some members of the motorcycling community".

**Comment:**

Suggestion: recommendation of a "mandatory helmet use law" should include specific guidelines for making it a primary offense. In Missouri, we have a mandatory helmet law but it is an infraction with no loss of points, no possibility of additional fines or penalties and a maximum \$25 fine. In short, MO law enforcement will not typically stop violators because most prosecutors and judges will not impose the fines. No money in it!

**Response:**

Other reviewers have commented that the document should put more emphasis on the need for adequate and appropriate helmet law enforcement, adjudication, and sanctioning. Your comments will be taken into consideration when this section is developed further. Such a discussion, however, may be most appropriate in the attributes tables under "Keys to Success" or "Legislative Needs". Thank you.

**Comment:**

Page 3, paragraph four, 3rd sentence. "These helmets [novelty] are not for sale in most motorcycle dealerships,...." This is an untrue statement. In point of fact the number of motorcycle dealerships that do sell novelty helmets exceeds those that do not.

**Response:**

We will review this statement and modify it to reflect that these novelty helmets are available in many places such as swap meets and/or motorcycle dealerships.

**Comment:**

Page 4, paragraph two, Communicate the benefits.....does not list the state motorcycle safety programs when outlining possible partnerships with other agencies. State motorcycle safety

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programs could be the single greatest asset when implementing this strategy yet they are not mentioned.

*Response:*

We agree completely with your comment and will make this addition to our document. Thank you.

**Comment:**

Pages 4 & 5, Revise Helmet Standard FMVSS 218 includes a statement about creating a "regularly updated list of FMVSS-approved motorcycle helmets" as an approach to aid law enforcement officials. This is a flawed approach. The differences are great and easily visible. An "approved list" would never be up-to-date, and it's unrealistic to think that law enforcement officials would carry such a list with them even if it were up-to-date. A better solution would be to aid law enforcement by training them to identify a fake or novelty helmet from any approved helmet. The NHTSA has developed a fine training video and fact sheet that is used when presenting to the law enforcement community. It is a 12 ½ minute video or DVD titled "Fake Helmets," Unsafe on Any Head.

*Response:*

We agree that the differences between 218 helmets and novelty helmets are easily visible. Law enforcement officials have been trained in the identification of non-compliant FMVSS 218 helmets and the team is aware of the video and training sheet that is available from NHTSA. These documents will be added to the key reference section in the document.

The problem that exists at the present time is the fact that FMVSS 218 is an engineering based standard, and law enforcement officials are not qualified to make an engineering assessment of a rider's helmet – particularly at the scene. Consequently, in many states, riders have gone to court and stated that they believed that their helmet was 218 compliant as indicated by the sticker on the back of the helmet – and since the citing officer or presiding judge is usually not qualified to make an engineering judgment, the citation is often thrown out. For this reason, law enforcement officers in many states do not stop riders whom they know are wearing non compliant helmets.

While the team agrees that the development of an approved helmet list may be a challenge, the existence of an external reference standard provides law enforcement with the documented evidence that they need to give and support citations to riders wearing non compliant 218 helmets.

**Comment:**

Page 6, Information or Organizations Currently Implementing this Strategy lists on 2 states, WI and WA, as implementing the "protective apparel" strategy. It is our opinion that this number is much higher. Considering that there are 46 official state motorcycle safety programs, as well as the military organizations and others, its unfair and unwise to make it seem like only two states are doing anything in the area of protective apparel. Perhaps simply stating these are examples of strategies or "contact your local state motorcycle safety program for activities involving this strategy" would be better wording. A complete list of all state motorcycle safety programs is found either at the Motorcycle Safety

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Foundation's website at <http://msf-usa.org/> or the National Association of State Motorcycle Safety Administrators at [http://www.smsa.org/membership/state\\_listing/](http://www.smsa.org/membership/state_listing/).

***Response:***

The research team agrees with the reviewer that the actual number of states that are implementing the protective apparel strategy is much higher. We will modify the wording and provide the two website links for further information.

**Comment:**

Pages 6 and 7, Organizations that support mandatory helmet laws: lists only NHTSA. This is an incomplete list. The National Safety Council, The Motorcycle Industry Council, most official State Motorcycle safety programs, etc. You'd better list them all or no list at all.

***Response:***

The research team agrees with this comment and has discussed the issue at length. Both lists will be removed from the document (i.e. those supporting helmet laws and those opposed to helmet laws).

**Reviewer #12:**

**Comment:**

Page I-I-2 (and through-out)

Add updated Statistics.

***Response:***

We will include the most up-to-date FARS and National Household Travel Survey information available. Thank you.

**Comment:**

Page I-I-4 (and elsewhere) “The objective is to reduce this risk [of fatal injury to alcohol impaired motorcycle operators] by increasing public awareness of the problem.” There is scant if any evidence that increased public awareness reduces the risk of driving or riding under the influence of alcohol.

***Response:***

The research team agrees that public education alone may have limited or no success. We will modify this statement to indicate that the objective is to reduce the risk of rider impairment through the combined efforts of public education, organizational policies, legislation, law enforcement and economic actions where applicable and where feasible.

**Comment:**

The only reference to enforcement in the entire Guide is in the context of impaired riding, and it receives very little attention even there. This is a major shortcoming of the Guide. The Guide appears to be almost entirely an education-plus-engineering approach to the problem. That will not suffice.

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*Response:*

The research team will add text, where appropriate, to emphasize the importance of law enforcement. Thank you for your comment.

**Comment:**

Might there not be some mention of the potential use of motorcycle safety checkpoints to apprehend unlicensed or improperly licensed motorcycle operators? Also, the use of paid and earned media in conjunction with enforcement should be mentioned. NHTSA has included a focus on impaired riding in its State and community planning information for the National “You Drink and Drive You Lose” high visibility enforcement Crackdown, August 27- September 12, 2004.

*Response:*

The research team discussed this potential strategy and concluded that the logistics associated with motorcycle safety checkpoints (e.g. vehicle removal, transfer, etc.) makes it highly unfavorable with many law enforcement agencies. For this reason, we decided not to add it as a strategy. We do agree that any type of public awareness campaign must be supported by combined efforts (see comment above).

**Comment:**

Page I-I-4

**The most effective preemptive measure** (by whose measure?) in reducing the number of motorcycle crashes due to human factors is to assure proper training and licensing of motorcyclists before they reach the roadways.

*Response:*

The research team acknowledges that there is no evidence to suggest that rider training is the most effective preemptive measure. The team will review this statement and make it more general. Thank you for your comment.

**Comment:**

Page I-I-5

Even more alarming was that more than 40 percent of motorcyclists involved in fatal crashes were improperly licensed and **educated** (Is this true?) Improperly educated or do not complete rider education and training.

*Response:*

The research team agrees that the riders were not improperly educated – but rather did not complete any rider education and/or training. This statement will be edited. Thank you for your comment.

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**Comment:**

Page I-I-6

11.1 D1 Increase the awareness of the causes of crashes due to unlicensed or untrained motorcycle riders. (What research shows this?)

**Response:**

The Hurt Report found that a significant number of riders who were killed in motorcycle crashes had no license and/or were untrained at the time of the accident.

**Comment:**

Page IV-1

ROW: Spell Out

**Response:**

We will spell it out.

**Comment:**

Please explain how timeframes and costs are determined.

Define low, moderate, moderate to high, high. For example, how was it determined that to “Form strategic alliances... (1.1 G1)” would be moderate to high cost?

**Response:**

The terms low, moderate, moderate to high, and high are meant to be relative terms, comparing the cost and timeframe of one strategy to another. Both initial implementation and continuing support of strategies are considered when determining the categories. These will be reviewed in the final revision of the guide and modified as appropriate.

**Comment:**

Page V-11: The chart of 1995 Motorcycle Data should not be shown. Given the huge changes in motorcycle registrations, engine sizes and rider demographics that have occurred in recent years, this chart almost certainly does not reflect the current status.

**Response:**

The research team agrees and will try to locate more recent data; however, it is unlikely that more recent data exists.

**Comment:**

Page V-23: Spell out “AMF” (Accident Modification Factor) and define it.

**Response:**

“AMF” will be spelled out and defined in the final revision.



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**Comment:**

Pages V-23 through V-26: “Provide full paved shoulders” is discussed in detail as a recommended strategy for reducing motorcycle crashes. Buried in the fine print on page V-24 is this statement: “it is difficult to determine whether the provision of full paved shoulders results in a net safety benefit.” We had better determine whether this strategy actually helps or hurts before we invest a considerable amount of money in implementing it.

***Response:***

At this time, there is no scientific data available on the effectiveness of this strategy in reducing motorcycle crashes. Our discussions with stakeholders and our review of research indicate that it will likely improve motorcycle rider safety. However, since it has not been proven, this strategy will be considered experimental and unproven. Text in the guides state that experimental strategies should be subjected to carefully controlled pilot evaluations before larger scale implementation is considered.

**Comment:**

Page V-59: Would it not be possible to at least discuss the possibility of setting lower illegal per se BAC limits for motorcyclists?

***Response:***

The research team has taken this issue under consideration, but believes this issue is beyond the scope of this document. Thank you for your comment.

**Comment:**

Page V-59: The notion of sending DREs to talk to motorcycle clubs seems pretty far-fetched. Clubs that aren't into drugs don't need to hear the talk. Clubs that are won't listen.

***Response:***

The research team believes that stakeholders, including motorcycle groups, can help identify which clubs would be most receptive to DRE's. The text clearly states that this kind of activity will have absolutely no effect unless alliances are formed with the motorcycle community.

**Comment:**

Page V-66: Would it not be helpful to offer a brief description of “shuttle services” provided at some rallies (e.g., Sturgis) to prevent impaired riding?

***Response:***

Thank you for this information. We will consider adding it to our list of the exemplary strategies used to reduce impaired riding.

**Comment:**

Page V-74: Would it not be useful to provide some discussion of the strategy of cross-checking registration and driver licensing files, and sending letters to all registered

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motorcycle owners who don't have motorcycle endorsements on their licenses, as was done in Maryland?

*Response:*

The research team agrees. This information has been added to the document. Thank you.

**Review of Objective 1.1F—Reduce the Severity of Motorcycle Crashes**  
**Strategy 1.1 F1—Increase the Use of FMVSS 218 Compliant Helmets**

**Comment:**

General Comments: AASHTO's Strategic Highway Safety Plan identified 22 goals to pursue in order to significantly reduce highway crash fatalities. Data recently released from NHTSA's FARS indicate that the number of motorcycle fatalities increased again. In 2003, the number of motorcycle fatalities increased to 3661 from 3270 in 2002, an increase of 12 percent.

As indicated in the description for Strategy 1.1 F1, the most widely known strategy for increasing the use of FMVSS 218 approved motorcycle helmets is the enactment and enforcement of mandatory helmet use laws. Also, the description indicates (page 2) that mandatory use helmet laws result in a reduction in motorcycle fatalities. AASHTO's recommendation (see page 3) to communicate the benefits of helmet use and work toward making voluntary use of FMVSS 218 compliant helmets more widely accepted in States that do not have mandatory laws needs to be revised, that is, strengthened for a number of reasons. First, as indicated on page 5, under exhibit v-1, the effectiveness of strategies for increasing the voluntary use of FMVSS 218 approved helmets has not been satisfactorily quantified in the technical literature. There is no evidence that this approach will work.

*Response:*

The strategy addressing FMVSS 218 compliant helmets has been substantially revised. It now includes both a discussion of mandatory helmet laws as well as a discussion of voluntary use of helmets. The team agrees that there is no data available to show that strategies for increasing voluntary use of 218 helmets are effective. There are many states which have tried to promote the voluntary use of FMVSS 218 helmets (eg. Washington); but none of them have collected data to indicate effectiveness of their strategy.

**Comment:**

Unintended consequences:

First, after a number of years, the State of Louisiana recently reinstated a helmet use law targeting all motorcycle riders. [With the 1999 repeal of Louisiana's motorcycle helmet use law fatalities increased by over 100 percent and helmet use decreased to a low of 46 percent by 2002.] Those who would weaken or kill helmet use laws could seize on AASHTO's recommendation as an alternative, thus substituting known benefits for unknown benefits.

*Response:*

The document clearly states that helmet laws are effective at reducing motorcycle rider fatalities and several scientific citations are provided. It also includes a discussion of the

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impact of repealing mandatory helmet laws. Anyone attempting to use this document for the purposes mentioned by the reviewer would have to ignore this portion of the document.

**Comment:**

Second, those who would weaken or kill helmet use laws will likely seize on this recommendation as another argument for changing or removing mandatory helmet laws in the remaining States.

**Response:**

As mentioned in the previous response, the research team has made substantial revisions to the strategy that addresses helmet use. With these revisions, we find it hard to imagine how one could interpret this guide in such a way as to weaken a helmet use law.

**Comment:**

New recommendations:

Based on the evidence presented in this section of the AASHTO report, we suggest AASHTO conclude in Strategy 1.1 F1 that helmet use laws are and have been an effective means of reducing crash-related injury among motorcyclists.

AASHTO may consider as one option for increasing compliance to FMVSS 218 the following:

Pilot test various public information and education approaches for their effectiveness in increasing voluntary use of FMVSS 218 helmets by targeting motorcycle riders of all ages. Only after demonstrating effectiveness in increasing in the use of DOT compliant helmets or number of crash victims wearing helmets should such publicity- based approaches be used routinely.

**Response:**

Currently, Strategy 1.1 F1 indicates that helmet use laws are an effective means of reducing crash-related injury among motorcyclists. This strategy will be identified as “Proven.” Text in the guide recommends using a pilot program for strategies labeled “experimental.”

**Comment:**

Additional Edits/Comments

1. Periods missing after bullets on first page.

Response: Thank you.

2. Please list seven States that CODES system is currently located (1st paragraph second page).

Response: Thank you – we will make this editorial change.

3. Helmets were found to be 67 percent effective in preventing brain injuries in a crash (2nd bullet page 2)

Response: We will provide the appropriate reference for this statement (NHTSA, 2004).

- 
4. Increasing the usage of effective, FMVSS 218 compliant helmets is universally accepted as a key..... (Question: universally by whom?)

Response: The use of motorcycle helmets is a universally accepted countermeasure for the reduction of serious head injuries (World Health Organization, 2003)

5. Neither of these approaches has been found to be effective....(3rd paragraph third page).

Response: Thank you – we will make this editorial change.

6. Include a Title/Header: Strategies/Recommendations (location between 6th paragraph and 1st recommendation on third page).

Response: Thank you – we will review this and make the editorial change if necessary and if appropriate.

7. in (typo in Exhibit V-1, 2nd bullet under Expected Effectiveness)

Response: Thank you.

Thank you very much for taking the time to provide us with these very helpful comments.

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# Response to Panel Comments on Rural Emergency Medical Services (EMS) Guide

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## Reviewer #1:

### Comment

Overall the draft document is very good. There are just a couple of areas that need to be updated regarding current efforts that directly relate to the objectives and strategies.

Page V-25 - first full paragraph - add reference to the National EMS Information System (NEMSIS) Project that is currently under development - it is discussed on page V-50, but should be referenced here.

### *Response*

A reference to NEMSIS is provided at the end of the subject paragraph in the November 2004 draft of the guide, so this comment has been addressed.

### Comment

Page V-42 - After the fourth full paragraph - add a brief description of the EMS Performance Measures Project funded by NHTSA and its Federal partners, through the National Association of State EMS Directors, to develop EMS Performance Measurement Guidelines, that would include a range of EMS performance indicators that could be used in any and all EMS system configurations.

### *Response*

A reference to the EMS Performance Measures Project is provided at the end of the General Description section in the November 2004 draft of the guide, so this comment has been addressed.

### Comment

Page V-53 - 54 - FYI -The NEMSIS Business Model calls for local data to primarily be submitted through State EMS Offices to a National EMS Database, the location and governance of which has not yet been finalized. That should be considered in finalizing the strategies and perhaps the objective itself. Many States already require such data submission.

### *Response*

This comment will be considered in the next revision to the guide.

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## Reviewer #2:

### Comment

Crash statistics are an important decision making tool. Studies indicate that many ped and bike crashes do not generate a collision report and hence are not captured in databases. Better information sharing with enforcement can help. Use crash data, volumes, congestion data, access issues (air lift, etc.) to help determine how many and where to locate facilities and coverages by EMS.

### *Response*

This comment will be addressed in revisions to Strategy A4 – Integrate information systems and highway safety activities.

## Reviewer #3:

### Comment

On page V-9, the use of this sign is not in compliance with the MUTCD. The manual only allows the “H” symbol sign to be installed for hospitals open 24 hours, 7 days a week. Also, the proposed sign message for the strategy has too much information and will be confusing to the driver.

### *Response*

Reference to this sign was removed in the November 2004 draft of the guide, so this comment has been addressed.

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# Response to Panel Comments on Work Zone Guide

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**Comment:**

Objective 19.2 D Improve Driver Compliance With Work Zone Traffic Controls. (pg 45)

Speeding in work zones has to be the primary violation of concern. With properly reduced speeds all other hazards are mitigated - to the point of being a non-concern. Although expectations that increased enforcement will lead to a safer work zone for all involved, evidence suggests that this effect does not last when the enforcement ends.

Implementation of automated speed enforcement devices solves most of the problems associated with work zone enforcement. The technology can be used in tunnels, on bridges and narrow one-lane detours or restricted lanes. It can be synchronized with yellow flashing workers present lights and mounted on poles, barrels, etc. Combined with a well scripted P.I.& E campaign it will be accepted by the motoring public. Revenues generated by violations could be used to purchase the latest safety equipment for workers or to assist families of workers injured on the job. Except for unusual and exotic projects it reduces the drain on law enforcement personnel, freeing them for more relevant duty.

Automated speed enforcement needs more consideration and possible pilot testing in states that approve such enforcement strategies.

**Response:**

Additional discussion will be added to the automated enforcement section of this strategy.

**Comment:**

Description of Strategies, Page 1: Third bullet – only mention of peds, bikes missing entirely. Unsatisfactory treatment of non-motorized traffic and work zones. Last two lines – The target(s) should be project designer, construction company workers and the driver. (The most difficult to reach is the driver)

**Response:**

These changes will be made.

**Comment:**

Description of Strategies, Page 2: 19.2E1 Enhanced enforcement combined with public education campaigns and public service announcements like Caltrans COZEEP and MAZEEP

**Response:**

Discussion will be included to link Strategy D1 on enhanced enforcement to E1 on public education campaigns. Example programs will be highlighted.

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**Comment:**

Description of Strategies, Page 3: 19.2 F1 Yes data sharing among agencies . followup on medical records.

***Response:***

Additional details on use of medical records will be added to the discussion

**Comment:**

Description of Strategies, Page 64: Should include “Status of lighting if at night” and “weather conditions”

***Response:***

These will be added.

**Comment:**

Description of Strategies: On pages 25 -26, the use of RPMs needs to be added to methods for improving visibility.

***Response:***

This will be added.

**Comment:**

Description of Strategies: On page 34, the lack of a warrant for the temporary/portable signal needs to be discussed.

***Response:***

Discussion of the lack of a signal warrant will be added, mentioning that a warrant does not exist for use of temporary signals and that decisions to use them are generally made on a case-by-case basis. Discussion with workshop participants indicates a range of thinking among agencies on the use of temporary signals.

**Comment:**

Description of Strategies: On page 35, the section on training needs to indicate an engineer develops the signal plan. Also, who has authority to revise or adjust the signal timing plan should be indicated as a potential difficulty. The engineer is not in the field can the crew just revise the signal timing? Who is responsible?

***Response:***

Discussion on these issues will be added.

**Comment:**

Description of Strategies: On page 74, is the law enforcement used really on normal duty activities? Our history with this has all been over time pay for police enforcement.



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***Response:***

Discussions with DOT representatives shows a variation in how this is handled from state to state. The discussion in the text will be broadened.

**Comment:**

All the strategies have question marks (?)

***Response:***

These were placeholders for the Proven, Tried, and Experimental ratings and will be replaced with "P," "T," or "E."