

MINIMUM TRAINING CRITERIA
FOR
POLICE TRAFFIC ACCIDENT RECONSTRUCTIONISTS

FINAL REPORT

Prepared for
U.S. Department of Transportation
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
Contract DTNH22-85-C-05120
\$31,767

Prepared by
THE TRAFFIC INSTITUTE
Northwestern University

Lynn B. Fricke
Roy E. Lucke

March 1987

1. Report No.		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Minimum Training Criteria for Police Traffic Accident Reconstructionists				5. Report Date March 1987	
				6. Performing Organization Code	
7. Author(s) Lynn B. Fricke, Roy E. Lucke				8. Performing Organization Report No.	
9. Performing Organization Name and Address Northwestern University Traffic Institute P. O. Box 1409 Evanston, IL 60204				10. Work Unit No. (TRAIS)	
				11. Contract or Grant No. DTNH22-C-05120	
12. Sponsoring Agency Name and Address US Department of Transportation National Highway Traffic Safety Administration Office of Enforcement and Emergency Med. Services Washington, DC 20590				13. Type of Report and Period Covered Final Report September 1985 - March 1987	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract <p>This report summarizes the development of a set of minimum training criteria for police accident reconstructionists. Prior to this effort, no nationally accepted standards or criteria were recognized for evaluating the qualifications of police engaged in traffic accident reconstruction activities and levels of expertise therefore varied widely.</p> <p>In order to develop the training criteria, a panel was assembled consisting of recognized experts from applicable disciplines, and professional organizations representing police traffic services and related training. The minimum training criteria for police traffic accident reconstructionists were developed at a panel workshop and the conferees then had two opportunities to review and comment on the draft prior to its dissemination to other representatives of the police community for their review. Additional comments were then sought from a broader law police traffic services/training community.</p> <p>The criteria consist of a set of 13 required topic areas and a recommendation as to the number of hours needed to address each topic. Additional recommendations were made concerning prerequisites for reconstruction training and the certification of reconstructionists.</p>					
17. Key Words Accident Reconstruction Accident Investigation Police Training			18. Distribution Statement		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages	22. Price

ACKNOWLEDGMENTS

A project of this nature requires the hard work and cooperation of many people in order to succeed. The authors wish to thank those persons whose efforts were vital to the success of the project.

We must first express our gratitude to the members of the panel who developed the reconstruction training criteria. Their attendance at the workshop in Evanston, Illinois, in January of 1986 made this report possible. They worked, talked, disagreed, and reached compromises over the duration of the workshop that resulted in the heart of the criteria. They then stayed with the project through several rounds of draft reports and made valuable suggestions for revisions. A listing of all panelists is contained in the body of the report.

It is also necessary to acknowledge the efforts of many others who contributed to the review and revision process. Drafts of the criteria were sent to state training directors, members of various traffic safety-related committees and to police membership organizations such as the International Association of Chiefs of Police, National Sheriff's Association, and the National Association of State Directors of Law Enforcement Training.

Finally, we express our gratitude to Mr. David Seiler, the contract technical manager from the National Highway Traffic Safety Administration. Mr. Seiler's active participation in the workshop and in the report preparation process are appreciated.

TABLE OF CONTENTS

	Page
SECTION I: INTRODUCTION	1
Background	1
Purpose	2
Comments	2
Methodology	3
SECTION II: RECOMMENDED MINIMUM TRAINING CRITERIA FOR POLICE TRAFFIC ACCIDENT RECONSTRUCTIONISTS	4
Initial Action	4
Subjects	4
SECTION III: OTHER ISSUES	8
Performance Evaluation for Reconstructionist Certification	8
Additional Recommendations	8
SECTION IV: PANELISTS	10
APPENDIX A: At-Scene Investigation Training Criteria	
APPENDIX B: Technical Accident Investigation Training Criteria	
ADDENDUM	
Complete Panel Recommendations	
Participants in the Workshop and Resumes	
Pre-Workshop Materials Sent to Panelists	

MINIMUM TRAINING CRITERIA FOR POLICE TRAFFIC ACCIDENT RECONSTRUCTIONISTS

FINAL REPORT

SECTION I: INTRODUCTION

Background

The National Highway Traffic Safety Administration (NHTSA) has recognized the need to develop minimum training criteria for police engaged in traffic accident reconstruction. In order to meet this need the NHTSA requested proposals to develop these minimum criteria and the Northwestern University Traffic Institute (NUTI) was selected for the task. At the time the contractor was selected for this project, no nationally accepted standards or criteria were recognized for evaluating the qualifications of police engaged in traffic accident reconstruction activities. Currently, to testify as an expert witness in a court of law, police officers must meet the standards established by each trial judge. Consequently, those officers who do qualify as experts often have a considerable range of education, training, and experience. Levels of expertise therefore vary widely around the country.

In order to develop the criteria necessary to qualify police as accident reconstruction experts, the NHTSA decided that the NUTI should assemble a panel of recognized experts representing the following disciplines: accident reconstruction; police accident investigation and reconstruction; automotive engineering; traffic engineering; the legal and judicial professions; and administrators from several institutions currently teaching this subject. Also included on the panel were one representative each from the International Association of Chiefs of Police (IACP), National Sheriff's Association (NSA), and the National Association of State Directors of Law Enforcement Training (NASDLET).

The minimum training criteria for police traffic accident reconstructionists were developed at the panel workshop in January 1986. The conferees then had two opportunities to review and comment on the draft prior to its dissemination to other representatives of the police community for additional review. The criteria were then distributed to the executive directors of the IACP, NSA, and NASDLET, and their respective Highway/Traffic Safety Committees. The full report of the panel can be found in the addendum. The addendum also contain the panelist selection criteria established by the NHTSA, the pre-panel workshop materials that were developed, and additional panel recommendations and criteria for subjects ancillary to accident reconstruction.

In November 1986, after considering all comments and suggestions, the final draft of the minimum training criteria for police traffic accident reconstructionists was submitted by the contractor to the NHTSA. In January 1987 it was forwarded to each state director of law enforcement training for review and to request a decision to adopt it as a minimum standard and certify it for use in law enforcement training.

Purpose

The purpose of the distributions was to provide the results of the conference, to outline the recommendations made by the panel participants, and to present the comments received from previous draft reviews. Qualification requirements for police in the accident reconstruction field have never been formally presented. This is the first step in that direction and is not intended to discredit current practitioners but is, however, intended to identify those persons doing marginal work to the detriment of the entire profession and to enhance the image of those persons doing competent work. The conferees recognized that recommendations generated for police would ultimately impact on other disciplines involved in accident reconstruction (both in criminal and civil cases) such as engineers, physicists, psychologists, and others. Recommendations without implementation accomplish little.

All the conference participants and the project team from the NUTI and the NHTSA support the recommendations contained in this report.

Comments

The panel discussed the issue of expressing the training criteria in terms of "hours" rather than in terms of "learning behavior and objectives." This issue could not be resolved by the panel. However, it was their recommendation that hours be retained to emphasize the minimum time each subject should be taught. It was suggested by the panel that students could be given home work assignments in topic "(1), Case Studies" (16 hours allotted), both during the week and over one weekend. This suggestion would lower the total hours for the training criteria and would allow for a more "manageable" two week course.

A draft form of the training criteria was distributed for review and comments in three stages. The initial draft went to the panelists, the second to the executive directors of the IACP, NSA, NASDLET, and their respective traffic safety committees. The final draft was mailed to all the state directors of law enforcement training. The responses received following each distribution were very positive and unanimously favored the need for the criteria.

In January 1987 the final draft was distributed to the state directors of law enforcement training requesting that they review the material, adopt it as a minimum standard and certify it for use in their training. The project schedule allowed them six weeks in which to respond.

Responses to the final draft were received from 14 states. Another six states responded to the previous distribution to the executive directors of the IACP, NSA, NASDLET and their respective traffic safety committees. It is possible that these six states did not feel it was necessary to respond

a second time. Thus, a total of 20 states responded. It is possible that this relatively low response rate is due in part to the short review time allowed because many state training boards only meet periodically.

All of the responses were very positive to standardized training requirements. The six states that responded only to the earlier mailing had not been asked in the previous mailing to adopt the training as a standard. Thus they did not respond directly to that question. For the 14 states that did respond to the final draft, several types of responses were received. Seven states said they did not set standards to certify reconstructionists. Three states said they are recommending adoption and will act at their next training council meetings. One state said they let the courts decide who is an expert. Another state said it is not their policy to grant blanket approval/certification of any program. One state expressed concern that if they adopted the standard it would detract from those people already testifying in court without the minimum training. The last state said they would not adopt the standard because specific performance objectives were not addressed.

Methodology

The methodology used to accomplish the task of developing minimum training criteria consisted of several steps:

- (a) Before the panel met they received materials for their review which included general guidelines, an explanation of workshop logistics, and a list of conference objectives prepared by the NUTI project team (See Addendum).
- (b) Upon arrival the conference participants were divided into three groups. At least one representative from each discipline was in every group.
- (c) A chairperson and recording secretary were appointed for each group. The groups were instructed to reach a consensus on each assignment and any differences between groups were resolved in post meeting sessions by the appointed representatives.
- (d) The proposed criteria was then worked into rough draft form by the project staff. The drafts were twice reviewed by the participants and the final draft product was submitted to the NHTSA.

SECTION II: RECOMMENDED MINIMUM TRAINING CRITERIA FOR POLICE TRAFFIC
ACCIDENT RECONSTRUCTIONISTS

Initial Action

Prior to discussing criteria the conference committee developed the following objectives and pre-admission considerations for the police traffic accident reconstruction course.

Objectives:

- (a) To develop a level of proficiency and training so that the student is capable of determining, explaining, and reconstructing how the collision occurred by analyzing and interpreting data.
- (b) To serve as a basis, with proper continuing education and/or experience, for enabling the student to testify in a court of law at an expert level.

Prerequisites

- (a) A proficiency evaluation test should be administered prior to the students acceptance for the reconstruction course. The testing could be done by local established training facilities. This test would evaluate the candidate's proficiency in pre-reconstruction level topics.
- (b) Candidates must provide proof (certificates) that they have successfully completed approved at-scene and technical accident investigation courses. (See Appendices A and B for the panel's recommended at-scene and technical courses).

The conference participants agreed that the below listed criteria and hours of study would be acceptable "minimum training requirements for police traffic accident reconstructionists." This subject matter should not be considered as the only topics to be taught, but are sufficient in nature to assure that the student completes the minimum requirements. The panel discussed the performance objectives vs. hours issue and decided to list the hours, keeping in mind that they provided a guideline for the academic institutions.

SUBJECT

HOURS

- (a) Process of accident reconstruction.

2

This topic should give the student an understanding of the approach to accident reconstruction, the methodology to determine and organize issues, the ability to evaluate data and recognize the limitations of the data provided.

(b) Mathematical process of accident reconstruction. 20

This topic deals with the application of mathematics and physics (engineering mechanics) to explain traffic crashes. The bases (assumptions) of the various accident reconstruction equations are to be discussed. The student should be made familiar with the derivations (proofs) of the equations starting with generally accepted equations found in a typical elementary physics or engineering mechanics book. The sensitivity of the equations to the input data are to be discussed with examples. Equations to be included are basic speed from skids, combined speed, radius of a curve, sideslip (critical speed), fall, vault, flip, time, distance and acceleration. When to use equations as well as their actual use should also be taught.

(c) Conservation of energy. 3

The concepts of work and kinetic energy followed by examples and problems are to be presented. The principles of energy and how this relates to the module of instruction on speed estimates from damage are to be presented.

(d) Articulated/large truck studies. 8

This training is to include an introduction to the dynamics and handling characteristics of large trucks. This includes such subjects as weight shift/sloshing, braking capabilities and systems, roll-over, jack-knife, and trailer swing-out.

(e) Motorcycles. 4

The various types of motorcycles and motorcycle dynamics will be taught. The inherent problems associated with reconstructing motorcycle traffic accidents should be discussed along with pedalcycles.

(f) Human factors. 2

This subject should discuss applications and variations in perception time, reaction time, driver/pedestrian response, perception delay and driver/pedestrian strategies and tactics. This topic should also include discussion of factors influencing driver/witness reliability (trauma and witness perception).

(g) Speed change estimate from damage. 2

The concept of speed change estimates from barrier equivalent velocities (BEV) is to be discussed. The inherent limitations of the application of BEV in actual vehicle collisions shall be included.

(h) Expert testimony and technical report writing. 4

The student should be able to present his findings both in writing and in actual courtroom testimony through appropriate report writing and courtroom presentation techniques. As part of the "scenario" a simulated courtroom setting would be an ideal forum for teaching this subject matter.

(i) Human injury and motion in crashes. 4

Students are to be taught the relationships between injuries sustained and the expected motion of both vehicle occupants and pedestrians in collisions. Determination of pre-crash locations/positions of persons involved in the crash must be taught. Anatomy should be covered to the extent that a student could read an autopsy or hospital injury report and understand it.

(j) Conservation of momentum. 8

The concepts of linear momentum followed by examples and problems will be presented. Skills in doing momentum problems such as the determination of pre/post-crash speeds, approach and departure vehicle angles will be taught. Graphical and/or mathematical approaches may be taught.

(k) Use of computers in crash reconstruction. 2

This topic taught will make the student aware of some of the computer programs currently available for crash reconstruction. At the minimum, an overview of CRASH3 and/or EDCRASH should be presented. A general discussion of the input data and the output should be discussed along with the limitations of computer programs.

(l) Case studies 16

This topic will form an integral part of the course. Experience is absolutely required in doing actual case studies. A minimum of eight case studies are to be done individually or in concert with others. Teams should be limited to two persons with the individuals exchanging role of principal investigator. The cases must include a variety of vehicle types as well as pedestrians. Typical issues to be included are time distance relationships, first contact positions, maximum engagement and separation, occupant movement, traffic control devices, driver strategy and tactics and human factors considerations. The cases should require the use of various equations, separately or in combination, and methodologies presented such as fall, flip, critical speed, speed from skid, conservation of momentum and speed estimates from vehicle damage.

(m) Case study presentation and simulated testimony.

10

It is essential that the case studies be reviewed with the students. Simulated testimony experiences with the instructor "cross-examining" the students on their case presentations will provide the student with "firing-line" experience. It is important that only experienced individuals perform the cross-examinations.

The conference participants agreed that an institution conducting a traffic accident reconstruction course should determine the total time frame for course subject matter and administrative needs. The conference participants strongly felt that an adequate proficiency evaluation of the student's capabilities must be made at the conclusion of the course. This evaluation would be made by using case study quizzes and closed/open book exams and that a minimum of six hours be allotted for this evaluation.

SECTION III: OTHER ISSUES

In addition to recommending the content of a training course for police traffic accident reconstructionists, the panel members also defined the areas of traffic accident reconstruction, and recommended performance and experience criteria for reconstructionists. The areas of reconstruction involve three factors: human, vehicular and environment during three time phases: pre-impact, impact and post-impact. This results in a nine cell matrix in which each of the elements of the cells in the matrix can be addressed.

Performance Evaluation for Reconstructionist Certification

For performance evaluation, a two-part approach was recommended. First, an individual must show training in accident investigation and reconstruction by successful completion of an approved accident reconstruction course. The second part of the performance evaluation takes the form of a formal qualifying examination such as those given in other fields. The examination should be uniform across the country (or at least a state). The State of Illinois, for example, started a performance evaluation by examination for police traffic accident reconstructionists in the fall of 1986.

In order to meet the experience criteria, the panel recommended that a candidate accident reconstructionist have a sponsor who is a certified reconstructionist review his/her work. At least one year of experience after taking a reconstruction course was recommended before certification was possible. The candidate must satisfy the sponsor that a minimum number of cases have been done, and the sponsor will review these cases with the candidate prior to the candidate being recommended for certification.

Additional Recommendations

The participants in the conference believed that their recommendations should not be limited to the establishment of training criteria for reconstructionists. Discussions were held on other topics that directly relate to the training criteria and the ultimate certification of police accident reconstructionists. These other areas include the certification of individuals practicing in the field, instructor requirements, and how to implement the training criteria and certification recommendations.

The conference participants recommended that a certification board be formed to certify existing accident reconstructionists using criteria such as:

1. Submit proof of testimony as a reconstruction expert in a court of law and pass a certification test and/ or
2. Submit satisfactory documentation of training, experience and education and then pass a certification test.

SECTION IV: PANELISTS

POLICE

Kenneth Baker
Indiana State Police

Lt. Phil Brown
Pickway County Sheriff Dept.
Circleville, Ohio

Michael Carter
Los Angeles Police Dept.

Joseph S. Fisk
Idaho State Police

Lt. Joseph Jacobs
Arkansas State Police

Myron Lofgren
Minnesota Highway Patrol - Retired

R. Scott McAllen
Minnesota Highway Patrol

Gerald D. Murphy
Massachusetts State Police

Colonel Larry Thompson
Arizona Dept. of Public Safety

Arnold Wheat
Arvada Police Dept. - Retired
Colorado

LEGAL

Judge Lester A. Bonaguro
Cook County Circuit Court
Illinois

David Hugel
State's Attorney Coordinator
Maryland

ENGINEERING

Terry Day
Automotive Engineer
Talbot Engineers, Inc.

Wilton D. Nelson
Automotive Engineer
General Motors - Retired

Robert R. Roberts
Traffic Engineer
University of South Carolina

Robert Romberg
Transportation Safety Institute
Oklahoma

EDUCATION

William C. Morton
Central Missouri State University

Richard E. Stephens
University of North Florida

CRITERIA FOR ACCIDENT RECONSTRUCTIONISTS CONSIDERATIONS FOR A FRAMEWORK

Introduction

Although the title of the project under which the workshop is sponsored refers only to training criteria for accident reconstructionists, the objectives and further explanation given by NHTSA clearly indicate the desire to consider a broader range of options for implementing criteria for accident reconstructionists. For example, the stated purpose for the workshop is to "draft minimum training and performance proficiency criteria for traffic accident reconstructionists."

In order to achieve this, it is suggested that the workshop participants should consider the various types of criteria which may be employed. Furthermore, the choice of criteria should reflect considerations both with regard to the mechanisms for their implementation and the time factors involved. Each of these is discussed below, for the consideration of the workshop participants.

Types of Criteria

There are a variety of professional disciplines which may be looked at for examples of criteria for licensing or certification. These encompass a wide range of criteria. They may be categorized, generally, as:

- Education/Training;
- Performance; and
- Experience.

The use of training criteria is common in the professions. This includes the possibility of:

- criteria for evaluation of the training programs, such as:
 - subjects covered;
 - performance objectives established;
 - time devoted to each subject;
 - proportion of time allocated to case studies; and
 - proportion of time allocated to theory and derivation; and
- criteria based upon the amount and type of education a person has; and
- criteria for the evaluation of instructors of training programs.

Performance criteria may be alternatively based on actual on-the-job performance, tests simulating job conditions, paper test, or oral examinations.

Experience may be measured in a variety of ways. The most basic is the number of years working in accident reconstruction. Additional options include requiring work under a certified

person, work of a specified character, and use of number of cases instead of a time measure.

Mechanisms For Implementation

There are also a variety of mechanisms available to carry out the evaluation of candidate reconstructionists. One of the most basic would be a letter, or letters of recommendation. Another possibility involves the use of a review board at which an oral interview might be employed. The use of objective criteria involves only a clerical staff and the submission, or collection of the data to derive the appropriate measures. Several combinations of the above options are possible.

Inherent in the selection of criteria, and the mechanisms for their implementation, is the consideration of the institutional context within which the process will occur. The operation of any system will require staff time record systems and communication systems. The institutional context for the implementation will also have an affect on the degree of credibility and support within the profession. A major consideration in matching the criteria selection and institutional context will be the costs associated with the proposed system. These are all important considerations for the workshop.

Time Factors

There is an added dimension to the considerations of criteria that has not been discussed above. The system recommended may either be applied at one point in time (as in current professional engineering licensing) or may have some form of continuing requirements (as in current pilot licensing). The options include some provision for evidence of continuing education, evidence of continuing active practice, and periodic performance evaluation in order to maintain good standing.

The considerations outlined above represent the major elements of a framework for criteria development. There are other aspects which the workshop participants may wish to address. These all merit careful forethought and discussion.

ATTACHMENT 3

MINIMUM TRAINING CRITERIA FOR ACCIDENT RECONSTRUCTIONISTS

Workshop Agenda

Date	Time	Activity
Monday, January 6	8:00 - 9:00	Registration Coffee & Rolls
	9:00 - 9:30	Welcome and Introductions
	9:30 -10:00	Workshop Structure and Objectives
	10:00 -10:30	Participant Assignment to Working Groups
	10:30 -10:45	BREAK
	10:45 -11:45	Overview Presentation of Framework and Issues
	11:45 -12:30	Discussion of Objectives, Framework, Issues & Procedures
	12:30 - 1:45	LUNCH
	1:45 - 5:00	Working Group Sessions

Tuesday, January 7	8:30 -10:30	Working Group Sessions
	10:30 -11:00	Break & Informal Group Interchange
	11:00 -12:30	Working Group Sessions
	12:30 - 1:45	LUNCH
	1:45 - 3:00	Working Group Sessions
	3:00 - 3:30	Break & Informal Group Interchange
	3:30 - 5:00	Working Group Sessions

MINIMUM TRAINING CRITERIA FOR ACCIDENT RECONSTRUCTIONISTS

Workshop Agenda (continued)

Date	Time	Activity
Wednesday January 8	8:30 -10:30	Reports from Working Groups & Discussion of Reports
	10:30 -10:45	BREAK
	10:45 -12:30	Reports from Working Groups & Discussion of Reports
	12:30 - 1:45	LUNCH
	1:45 - 3:45	Reports from Working Groups & Discussion of Reports
	3:45 - 4:00	BREAK
	4:00 - 5:00	Reassignment of Participants to New Working Groups & Presentation of New Working Group Objectives

Thursday January 9	8:30 -10:30	Working Group Sessions
	10:30 -11:00	Break & Informal Group Interchange
	11:00 -12:30	Working Group Sessions
	12:30 - 1:45	LUNCH
	1:45 - 3:00	Reports from Working Groups & Discussion of Reports
	3:00 - 3:15	BREAK
	3:15 - 5:00	Reports from Working Groups & Discussion of Reports

Friday January, 10	8:30 -10:30	Discussion of Remaining Issues
	10:30 -10:45	BREAK
	10:45 -11:30	Ratification of Results & Final Direction to the Project Team
	11:30 -12:00	Workshop Closing

Attachment 4

CONFERENCE OBJECTIVES FOR ESTABLISHING MINIMUM TRAINING CRITERIA FOR ACCIDENT RECONSTRUCTIONISTS

The purpose of this paper is to present the objectives that are to be accomplished during the January 6-10 project conference. It will also provide a discussion of the issues related to those objectives. It is anticipated that conference participants will review these objectives prior to the conference so that the conference can concentrate on their achievement.

PRIMARY OBJECTIVE:

Establish Minimum Training Criteria For Accident Reconstructionists

The primary objective of this project is clearly stated in its title. The proposed methodology for accomplishing it is to hold a one-week conference where the conference participants will develop those criteria. The proposed criteria will then be worked into rough draft form by the project staff. The drafts will be reviewed by the conference attendees, among others, through at least two iterations. The final product (consisting of both proposed criteria and suggestions for their implementation) will then be submitted to the National Highway Traffic Safety Administration.

During the conference, representatives from different disciplines involved in the reconstruction process will need to resolve issues concerning the establishment of training criteria. The primary focus will be on course content. A separate mailing will provide you with examples of the content of courses currently being taught. Issues relating to course content include (but are not limited to):

- The subject matter for course modules (in sufficient detail to determine what is meant);
- Establishment of knowledge and/or performance objectives for each module;
- The time devoted to each module;
- The proportion of time spent on case studies; and
- The proportion of time spent on theory and derivation.

In addition to course content, there are other intermediary objectives that must be met before the primary objective can be attained. The following, additional objectives and their related issues are examples of these. Others will probably arise during the conference.

SUPPORTING OBJECTIVES:

Define the Areas of Accident Reconstruction. The phrase "accident reconstruction" can mean many different things. It can be used to include the entire process of determining what happened in a traffic accident from initial data gathering through cause analysis, or to simply assembling data about one aspect of the accident. Another paper in this set provides generally accepted definitions of the levels of accident reconstruction. An issue to be resolved by the conference, however, is to determine what specific skills are to be included among the criteria to be established.

Before defining the training criteria for reconstructionists, the prerequisites for being a reconstructionist must be also be established. While it is important to establish prerequisites so that the focus of the workshop can be narrowed, it must be done quickly so that work can concentrate on actual criteria for reconstructionist training. Types of reconstruction must also be examined. As stated above, "reconstruction" can be broadly applied. Consideration may need to be given to training criteria for specialized areas such as lamp or vehicle damage examination as well as general "reconstructionist" criteria.

Determine the Need For, and Given the Need, Establish Minimum Experience Criteria For Accident Reconstructionists. As mentioned above, some prerequisites for becoming a reconstructionist must be established. In addition to basic knowledge, a reconstructionist should also have some degree of experience. If there is agreement that such experience is needed, the kind and amount must be established. For example, is classroom experience alone sufficient, or must a candidate reconstructionist also have some prior field experience that utilized pre-reconstructionist skills? Will it be necessary to develop a sort of "provisional reconstructionist" category where an individual who has had adequate training can work in the field with an experienced partner until they have obtained sufficient experience to be considered a full-fledged reconstructionist?

Determine the Need For, and Given the Need, Establish Minimum Performance Criteria for Accident Reconstructionists. There are individuals who can achieve very high scores on tests of knowledge in a given field, but are unable to apply that knowledge to real-world situations. To be a successful (or more importantly, competent) reconstructionist, an individual must be able to demonstrate an ability to apply knowledge to actual accident cases. One of the training criteria should be a requirement that the trainee demonstrate an ability to conduct actual accident reconstructions.

Since the proposed process of establishing training criteria would tend to initially "certify" a person, that person will probably not have a case history that could be evaluated. Furthermore, since all cases are different, making comparisons among individuals, and against some standard, would be difficult to do in a credible manner. A more appropriate vehicle would seem to be a test using a set of standard case studies. Depending on the extensiveness of the system desired, this could include field data collection activities or just paper exercises designed to rate the ability of the reconstructionist to ask the right

questions, choose the right information and formulas, and arrive at valid conclusions. This could include an examination of performance under a mock court or deposition setting to determine the ability of the individual to perform "under fire."

Determine the Need For, and Given the Need, Establish Criteria For Certifying Those Already Operating in the Field. There are many individuals with a diversity of skills, talents, and qualifications who are claiming status as competent reconstructionists. Many of these, however, have very limited training and experience thus resulting in a significant difference in the quality of accident reconstruction nationally. Some method for either "grandfathering" or requalifying those practicing in the field may need to be developed. A related task will be to determine if there should be a national "certifying" agency and what form that agency could take. Two alternatives are an independent, professional organization such as exists for emergency medical technicians, or the states, possibly through police training boards.

Determine the Need For, and Given the Need, Establish Minimum Trainer Criteria For Accident Reconstructionists. While the provision of minimum training criteria for reconstructionists is important, it is no less important to establish criteria for those who will do the training. There are two obvious requisites for being a competent trainer: 1) strong technical knowledge of the material and 2) the ability to teach. If the need for trainer certification is accepted, the same issues discussed above for reconstructionists must be resolved. These include the certifying agency, types of certification, experience, and performance.

Develop Recommendations For Implementation of the Proposed Criteria. It will be ultimately futile to develop a valid set of training standards and criteria if no one will adopt and use them. The acceptance of the criteria by courts, states, the insurance industry, and professional organizations is critical. To facilitate this acceptance, representatives of most of these agencies are included among the conference participants.

When establishing criteria, the ultimate use and acceptance of the criteria must be of greater concern than any individual's perception of what might be "best." No matter how good a set of criteria are established by this project, the project must be considered unsuccessful if they are not widely used and accepted. In addition to meeting "user" needs, conference participants will also need to discuss specific strategies for marketing the criteria.