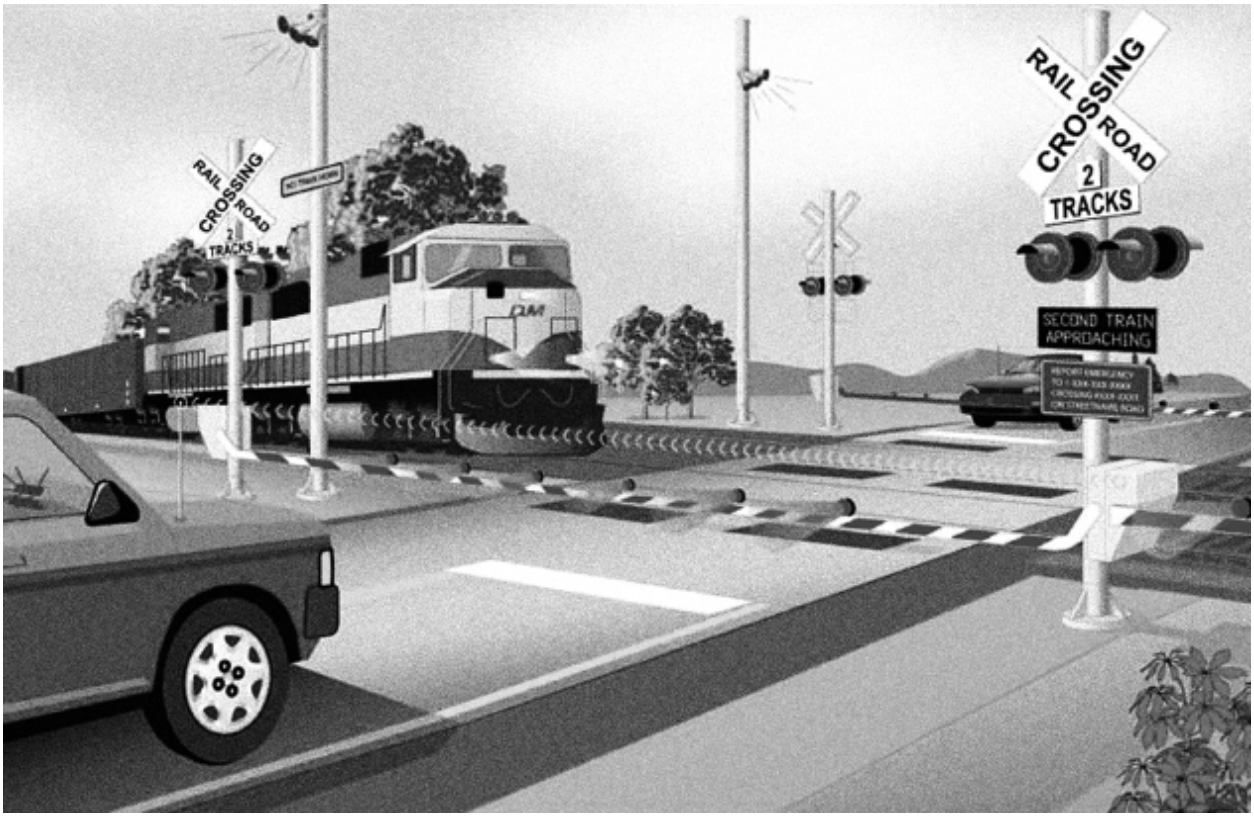
U.S. Department of
Transportation
**Federal Railroad
Administration**

2003 Highway-Rail Grade Crossing Safety Research Needs Workshop

Volume II – Appendices

Office of Research
and Development
Washington, DC 20590



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13. ABSTRACT (Maximum 200 words)
The purposes of the workshop were to provide up-to-date information and research reports from selected organizations, analyze a number of safety research topics by a selected group of delegates from all areas of technology and government organizations associated with the rail industry, and define a new practical list of research needs for the Highway-Rail at Grade Crossing Safety Program of the Federal Railroad Administration's Office of Research and Development and Office of Safety in coordination with other organizations having similar needs.

14. SUBJECT TERMS
Highway-rail grade crossing, rail industry, safety, security, fatalities, research needs, countermeasures.

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Appendix B.
Agenda, Correspondence, and Forms

Contents:

Agenda

Highway-Rail Grade Crossing Safety Research Needs Workshop

June 3 - 5, 2003
US DOT Volpe National Transportation Systems Center
Cambridge, MA

Monday, June 2, 2003

4:00 – 7:00 p.m. Registration at the Holiday Inn – Select, Government Center
15th Floor of Hotel at Five Blossom Street, Boston, MA

Tuesday, June 3, 2003

7:30 – 8:30 a.m. Registration and Continental Breakfast
US DOT Volpe Center – Auditorium - Building 2

8:30 a.m. Welcome to the Volpe Center, Dr. Richard John, Center Director

Opening Remarks, Ms. Jo Strang, Deputy Associate Administrator for Railroad Development, FRA

Workshop Particulars, Anya A. Carroll, US DOT Volpe Center

9:00 a.m. Crossing Improvement and Closure
Team Leader: Debra Chappell, FHWA
Speakers: Kurt Anderson, Railroad Controls, Ltd,
Pre-signal Research
Brian Gilleran, FRA,
Closure Study
Jeff Schultz, Washington State DOT
Crossing Closures in Washington

BREAK

10:30 a.m. Human Factors
Team Leader: Tom Raslear, FRA
Speakers: Jordan Multer, US DOT Volpe Center,
FRA/Volpe Research Overview
Eddy Llaneras, Westat, Inc.
Human Factors Guidelines for ITS
Patrick Sherry, University of Denver,
Post Traumatic Stress Syndrome Research

11:30 a.m. Security and Trespass Prevention
Team Leaders: Rhonda Crawley, FTA/Anya Carroll, USDOT Volpe Center

Speakers: Marco daSilva, Volpe
Trespass Monitoring & Deterrent System Research
William Fleming, MBTA Police
Transit Security
Linda Meadow, Linda J. Meadow & Associates
Pedestrian Safety

LUNCH ON OWN

Tuesday, June 3, 2003

1:30 p.m. Data & Geographical Information Systems
Team Leader: Brian Bowman, Auburn University
Speakers: Steve Laffey, Illinois Commerce Commission,
State of Illinois Crossing Inventory Update Using GIS
Raphael Kedar, FRA,
GIS Achievements to Date – Next Steps
Pamela Caldwell-Foggin, FRA Office of Safety,
US DOT Highway-Rail Grade Crossing Inventory Update

2:30 p.m. Driver/Public Education & Enforcement
Team Leader: Gerri Hall, Operation Lifesaver, Inc.
Speakers: Gary Drouin, Transport Canada
Education Evaluation Program for Direction 2006
Steve Laffey, Illinois Commerce Commission
Public Education & Enforcement Research Study
Jim Bedell, Naperville Police Department
Photo Enforcement

BREAK

4:00 p.m. Intelligent Transportation Systems & Positive Train Control (ITS/PTC)
Team Leader: Jim Smailes, FRA
Speakers: Steve Ditmeyer, FRA
Intelligent Railroad Systems, And Intelligent Grade Crossings
Walt Kulyk, FTA
ITS in Transit
James Cheeks, Jr., ITE
ITS Standards for Intelligent Crossing Controller

5:15 p.m. Close

6:00 – 8:00 p.m. ***Reception*** at the Holiday Inn – Select, Government Center, Five Blossom St., Boston, MA, 15th Floor of Hotel

Wednesday, June 4, 2003

7:00 a.m. Continental Breakfast
US DOT Volpe Center – Auditorium - Building 2

8:00 a.m. Welcome
Organization of Working Groups – Anya A. Carroll

"Rules of Engagement"

Crossing Improvement & Closure, Dee Chappell, FHWA
Human Factors, Tom Raslear, FRA
Security & Trespass Prevention, Rhonda Crawley, FTA/Anya Carroll, Volpe Data & GIS, Brian Bowman, Auburn University
Driver/Public Education & Enforcement, Gerri Hall, OLI
ITS/PTC, Jim Smailes, FRA

Wednesday, June 4, 2003

9:30 a.m. Working Group Discussions

12:00 p.m. Boxed lunches available – 2nd Floor, Cafeteria

1:15 p.m. Reconvene Working Group Discussions

5:00 p.m. Close
US DOT Volpe Center – Auditorium – Building 2

Thursday, June 5, 2003

7:30 a.m. Continental Breakfast
US DOT Volpe Center – Auditorium - Building 2

8:00 a.m. Welcome
Working Group Summaries:

Crossing Improvement & Closure, Dee Chappell, FHWA
Human Factors, Tom Raslear, FRA
Security & Trespass Prevention, Rhonda Crawley, FTA/ Anya Carroll, Volpe
Data & GIS, Brian Bowman, Auburn University
Driver/Public Education & Enforcement, Gerri Hall, OLI
ITS/PTC, Jim Smailes, FRA

10:00 a.m. Discuss/Prioritize High Urgency Research Needs

12:00 p.m. Close

Steering Committee Letter

March 21, 2003

Dear Nominated Steering Committee Member,

The ***2003 Highway-Rail Grade Crossing Safety -- Research Needs Workshop***, sponsored by the US DOT Federal Railroad Administration, and coordinated and hosted by the John A. Volpe National Transportation Systems Center, will be held Tuesday, June 3rd through Thursday, June 5th in Cambridge, MA. The primary objective of this Workshop is to identify specific "high priority" research needs related to technology, methodology, data and hardware to continue the trend of reducing highway-rail grade crossing collisions and fatalities. Please see the attached draft agenda.

You were nominated by the US DOT/FRA to participate in the Steering Committee. The role of the Steering Committee is to recommend speakers and government/academia/industry delegates for the Workshop. Five of the Steering Committee Members will be tasked with leading the working groups in particular topical areas as listed below. We will have one teleconference call or meeting in the D.C. area during the last week of March 2003 or the first week of April 2003 and subsequent e-mail transmissions. The first day of the Workshop will be dedicated to reviewing the current status of research with three presentations on each topic area listed:

Crossing Improvement and Closure
Data and GIS
Driver / Public Education and Enforcement
Human Factors
ITS/PTC

There will be a reception on the evening of the first day. The second full day will be dedicated to reviewing the previously established research needs and determining those that have been completed, reviewing the FRA Strategic plan, reviewing Transport Canada's research program and generating a new set of "high priority" research needs for multimodal/multi-organizational distribution. The third half-day will be used to prioritize the "high priority" research needs established on the second day.

More information will follow this letter about such things as lodging, transportation, and the possibility of a tour of the "Big Dig" on Thursday afternoon. If you cannot attend please let me know as soon as possible so that I can contact someone else as an alternative Steering Committee member. Please contact me at your earliest convenience at:

Telephone: (617) 494-3122
Fax: (617) 494-2318
Mobile: (617) 694-7588
Email: CarrollA@volpe.dot.gov

Thank you very much for your consideration of this important activity. I hope to hear from you soon. If you cannot attend, feel free to suggest another senior-level colleague to participate in your place.

Respectfully yours,

Anya A. Carroll, Principal Investigator,
Highway-Railroad Grade Crossing Safety Research Program
US DOT/ RSPA/ Volpe Center
DTS-75, Railroad Systems Division
55 Broadway, Cambridge, MA 02142

Attachment

Speaker Letter

<<Date>>

<<Name>>
<<Department>>
<<Company>>
<<Street>>
<<CityState>> <<Zip_code>>

Dear <<Name>>,

You have been nominated to speak at the 2003 Highway-Rail Grade Crossing Safety -- Research Needs Workshop, June 3rd through June 5th, 2003 at the John A. Volpe National transportation Systems Center in Cambridge, MA. The Workshop is sponsored by the Federal Railroad Administration, and coordinated and hosted by the Volpe Center. The primary objective of this workshop is to identify specific research needs related to technology, methodology and hardware to continue the trend of reducing crossing collisions and fatalities.

You were recommended by Ron Ries, FRA, as an excellent speaker on Crossing Improvement and Closure. Attached you will find the agenda.

Agenda -- 2003 Grade Crossing ...

The Workshop length will be two and one half days, starting on Tuesday, June 3rd and ending midday on Thursday, June 5th. The first day will be dedicated to reviewing the current status of research with three presentations on each topic area listed:

- Crossing Improvement and Closure
- Data and GIS
- Driver / Public Education and Enforcement
- Human Factors
- ITS / PTC
- Security and Trespass Prevention

There will be a reception on the evening of the first day at the hotel. The second full day will be used to identify previously established research needs that have been completed, and generate additional research needs. The third half-day will be used to prioritize all research needs.

More information will follow this letter about such things as lodging, transportation, and the possibility of a tour of the Boston "Big Dig" on Thursday afternoon.

A biographical sketch to be used as an introduction needs to be submitted by May 2, 2003. Your paper/presentation should be forwarded to the Volpe Center by May 16, 2003 for inclusion on the WEB Site. Therefore, time is short and I will need to know as soon as possible if you are interested in speaking.

If you cannot attend please let me know so that I can contact someone else as an alternative speaker. Please contact me at your earliest convenience at:

Telephone: (617) 494 - 3861

Fax: (617) 494 - 3398

Email: jane.saks@volpe.dot.gov

Thank you very much for your consideration of this important activity. I hope to hear from you soon.

Sincerely,

Jane Saks
Workshop Coordinator
Volpe National Transportation System Center
DTS-929, EG&G

Invitee Letter

<<Date>>

<<Name>>
<<Department>>
<<Company>>
<<Street>>
<<CityState>> <<Zip_code>>

Dear <<Name>>,

You have been invited to the Highway-Railroad Grade Crossing Safety -- Research Needs Workshop, sponsored by the Federal Railroad Administration, and coordinated and hosted by the Volpe National Transportation Systems Center. The primary objective of this workshop is to identify specific research needs related to technology, methodology and hardware to continue the trend of reducing crossing collisions and fatalities. This conference is by invitation only, to have more opportunity for dialogue. Your name was submitted by <<Agency>>.

The Workshop will be held in Boston for two and one-half days, starting on Tuesday, June 3rd and ending midday on Thursday, June 5th. The first day will be dedicated to reviewing the current status of research with three presentations on each topic area listed:

- Crossing Improvement and Closure
- Data and GIS
- Driver / Public Education and Enforcement
- Human Factors
- ITS / PTC

There will be a reception on the evening of the first day. The second full day will be used to identify those previously established research needs that have been completed and generate additional research needs. The third half-day will be used to prioritize all research needs, established and new. Please see the attached agenda.

Agenda -- 2003 Grade Crossing ...

More information will follow this letter about such things as lodging, transportation, and the possibility of a tour of the “Big Dig” on Thursday afternoon. We are limiting the size of the Conference in order to create a meaningful dialogue. If you cannot attend, please let me know by May 1. Please contact me at your earliest convenience at:

Telephone: (617) 494 – 3122

Fax: (617) 494 – 2318

Email: CarrollA@volpe.dot.gov

Thank you very much for your consideration of this important activity. I hope to hear from you soon.

Sincerely,

Anya A. Carroll

Workshop Coordinator
DTS-73, Railroad Systems Division
Highway-Railroad Grade Crossing Safety Program
US DOT/ RSPA/ Volpe Center

Breakout Working Group Assignments

2003 Highway-Rail Grade Crossing Safety Research Needs Workshop

Topic Area	Team Leader	Facilitator (Phone Ext.)	Number of People	Room # (Phone Ext.)	Color	Volpe Crossing Staff Support
Crossing Improvement and Closure (CIP)	Dee Chappell, FHWA	Elaine Lyte (x 2555)	15	MIC1 (x 1662)	Red	Adrian Hellman
Human Factors (HF)	Tom Raslear, FRA	Jonathan Mozenter (x 2815)	12	519 (x 2632)	Blue	Monica Gil
Data and GIS (DGS)	Brian Bowman, Auburn University	Marilyn Mullane (x 2516)	14	MIC2 (x 2989)	Green	Suzanne Sposato
Driver/Public Education & Enforcement (DPE)	Gerri Hall, OLI	Linda Sharpe (x 2715)	8	345A (x 1210)	Yellow	Patrick Bien-Aime
ITS / PTC (IT)	Jim Smailes, FRA	Jane Saks (x 3861)	13	Learning Center (x 2099)	Grey	Steve Peck
Security and Trespassing Prevention (STP)	Rhonda Crawley, FTA / Anya Carroll, Volpe Center	Jon Anderson (x 3284)	11	625 (x 1420)	Violet	Marco daSilva

Sample Research Need Form

2003 Highway-Rail Grade Crossing Research Needs Workshop
Research Needs – Crossing Improvement and Closure

1. Topic Area / Number:	CIP-02
2. Title:	**Establish Standards for States Regarding Elimination/Consolidation of At-Grade Crossings**
3. Problem Statement:	Because of local sentiments regarding the elimination/consolidation of grade crossings, the decisions that are made not to close crossings are based on convenience not safety.
4. Research Objectives: Safety X Mobility Global Connectivity Environmental Stewardship Security	Research state laws regarding crossing closures and what processes are required to eliminate crossings. Develop minimum standards on crossing closures that each state would be required to enact. If states do not enact the standards federal dollars will be withheld until the standards are enacted. Meet federal guidelines for grade crossing closures.
5. Relationship to Current Research:	_X_ New __ Supplemental (list organization & title of current research)
6. Potential Benefits of Identified Research Need:	Insure redundant crossings are closed/consolidated which in turn will reduce potential of collisions. This would take the political pressure away from elected officials.
7. Research Need Urgency:	_X_ High __ Medium __ Low
8. Cost of Research:	__ High ≥ $500,000 __ Medium = $100,000 to $500,000 _X_ Low ≤ $100,000
9. Potential Organization to Conduct Research:	
10. Ease of Implementation:	__ Easy __ Medium _X_ Difficult
11. Applicability to High Speed Rail Service:	_X_ Yes __ No
12. Other Comments:	

Ballot Letter

<<Date>>

<<Name>>
<<Department>>
<<Company>>
<<Street>>
<<CityState>> <<Zip_code>>

Dear <<name>>:

The 2003 Highway-Rail Grade Crossing Safety Research Needs Workshop Steering Committee worked hard this summer developing the ballot and detailing the safety needs listing. We all hope you've had a safe and enjoyable summer!

You will find enclosed a CD of Workshop presentations, the ballot with which to vote your priorities, and an evaluation survey on the Workshop with a self-addressed, stamped envelope to return both forms (ballot and survey) to the conference coordinator; a delegates list, and your original receipt faxed to you late June.

You will find a full listing of all research needs for your review during balloting at http://www.volpe.dot.gov/ourwork/frarrcross/postmat.html. If you have any questions regarding the content of the ballot or the detailed research needs on the Web site, please contact the Team Leader(s) for that area.

Please submit in the enclosed self-addressed stamped envelope your ballot and survey by Monday, September 22, 2003 to be counted. Thank you again for your participation in the Workshop as well as submitting your ballot in a timely manner.

Sincerely,

Lorraine
Lorraine G. Brewer
Conference Coordinator

Ballot

2003 Highway-Rail Grade Crossing Safety Research Needs Workshop
High Urgency Research Needs
June 5, 2003

Please rank*	Count	WG Number	Title
	1	CIP-1	Develop "Limited Access Rail Lines"
	2	CIP-2	Innovative Low-Cost Grade Separation
	3	CIP-3.1	Performance Criteria for Use of Light Emitting Diodes (LEDs) in Flashing Lights
	4	CIP-3.2	Pre-Signal Design Guidance and Criteria
	5	CIP-3.3	Pedestrian Treatments at Highway-Rail Grade Crossings/Undercrossings (Separations)
		STP-1 A	Pedestrian Grade Crossing Treatments – Review and Info Report
		B	Pedestrian Grade Crossing Treatments – Stakeholder Consensus
		C	Pedestrian Grade Crossing Treatments – Recommended Practices
		D	Pedestrian Grade Crossing Treatments - Develop Guidelines
	6	CIP-3.4	Wheelchair Crossing Flange-way Gaps at Highway-Rail Grade Crossings
	7	CIP-4	Minimum Standards for Closure/Consolidation of Crossings by States
	8	CIP-5	Warning at Crossings w/Remote Control Train Operations
	9	CIP-6	Modify Design of Existing Signals
	10	CIP-7	Simultaneous vs. Advanced Pre-emption
	11	CIP-8	Standards for Light Rail Transit Street Running Systems
	12	CIP-9	Common Corridor (LRT and freight) Usage and How It Relates to Grade Crossings
	13	CIP-10	Effectiveness of Incentives for Closures, Including Cost Analysis
	14	CIP-11	Queuing Across a Crossing at Stop Control Intersection
	15	CIP-12	Replacement Criteria for Aging Warning Devices

*** Please Rank Order All Research Needs from 1 to 49**

PLEASE RETURN BALLOT BY SEPTEMBER 22, 2003

2003 Highway-Rail Grade Crossing Safety Research Needs Workshop

High Urgency Research Needs

June 5, 2003

Please rank*	Count	Number	Title
	16	CIP-13	Highway Median Barriers
	17	HF-1	Context Evaluation: Developing a Consensus-Based Approach for Establishing Grade Research Crossing Guidelines and Standards in the US Rail Industry (**FRA**)
	18	HF-2	Enhancing Driver Risk Perception at Grade Crossings: Evaluating and Standardizing Advisory and Warning Signs.
	19	HF-3	Develop leading indicators that contribute to accidents
	20	HF-4	Needs Assessment for Emergency Response Teams
		STP-21	Security Awareness Training - Develop Security Awareness Training Programs
	21	HF-5	Comprehensive model of driver behavior for countermeasures assessment
	22	HF-6	Development of Near Miss Data through compilation of elements from various sources
	23	HF-7	Determining Driver Decision Making at Grade Crossings: A Survey of Accident Survivors
		DPE-1	Comprehensive Baseline Study of Incident Precursors and Violator Characteristics
	24	HF-8	Development of New Form for Reporting Trespassing and Facilities and Incident
	25	HF-9	Best Research Practices to Conduct Human Factors Research in Highway-Rail Research
	26	HF-10	Driver Decision-making at Grade Crossings
	27	HF-11	Evaluation Strategies for Improving the Implementation, Utilization, Effectiveness and Impact of Grade Crossing Research in the US Rail Industry

* Please Rank Order All Research Needs from 1 to 49

PLEASE RETURN BALLOT BY SEPTEMBER 22, 2003

2003 Highway-Rail Grade Crossing Safety Research Needs Workshop

High Urgency Research Needs

June 5, 2003

Please rank*	Count	Number	Title
	28	HF-12	Development and Implementation of a Highway-Rail Intersection Human Factors Research Results Database
	29	HF-13	Collection of Data to assess likely conditions for rail suicide or trespass.
	30	HF-14	Assess trauma of railroad employees
	31	STP-3 A	Pedestrian Decision Tree–Review Draft
		B	Pedestrian Decision Tree–Validate Decision Tree
		C	Pedestrian Decision Tree–Recommended Practices
	32	STP-5 A	Securing Multi-Modal Rail Infrastructure–Develop A Threat And Vulnerability Assessment
		B	Securing Multi-Modal Rail Infrastructure–Conduct A Threat And Vulnerability Assessment
		C	Securing Multi-Modal Rail Infrastructure–Develop Implementation Plan
	33	STP-6 A	Obstacle/Intrusion Detection–Technology Survey
		B	Obstacle/Intrusion Detection–Demonstration Of Technology
	34	STP-14	Performance Measures To Improve Security And Decrease Risk–Develop Performance Measures
	35	STP-17	DHS/TSA/FEMA Emergency Preparedness Coordination with FRA–Emergency Preparedness Drills
	36	STP-18A	Cell Phone And Communication Availability–Identifies Technologies And Protocols–Pilot Projects
		B	Cell Phone And Communication Availability–Pilot Projects
		C	Cell Phone And Communication Availability–Recommended Practices

*** Please Rank Order All Research Needs from 1 to 49**

PLEASE RETURN BALLOT BY SEPTEMBER 22, 2003

2003 Highway-Rail Grade Crossing Safety Research Needs Workshop

High Urgency Research Needs

June 5, 2003

Please rank*	Count	Number	Title
	37	STP-19	Credentialing Of Transportation Employees
	38	STP-20A	Detect Chemical, Biological, Nuclear And Explosive Materials - Assess Available Technologies
		STP-20B	Detect Chemical, Biological, Nuclear And Explosive Materials - Assess available technologies
		STP-20C	Detect Chemical, Biological, Nuclear And Explosive Materials - Conduct Pilot Demonstrations
	39	STP-22A	Safe Hazmat Transport Issues At Grade Crossings - Define Issues
		STP-22B	Safe Hazmat Transport Issues At Grade Crossings - Develop Methods For Risk Assessment
		STP-22C	Safe Hazmat Transport Issues At Grade Crossings – Perform Risk Assessments
	40	DGS-1	Crossing Inventory
	41	DGS-3	Using the Web to Advance Safety Initiatives
	42	DGS-5	Synthesis of Current Grade Crossing Analysis
	43	DPE-2	Information Dissemination to Transportation Professionals: 1. Advanced Technology; 2.North American Traffic Laws
	44	DPE-3	Innovative Training for Law Enforcement
	45	DPE-4	Educational Programs and Outreach Assessment
	46	ITSPTC-2	Improve Risk Assessment Models
	47	ITSPTC-3	Identify Data Needs and Requirements for Information Flows Between Railroad Centers, Highway Centers, Railroad Users, Highway Users
	48	ITSPTC-5	Identify the Functional and Safety Requirements for Highway-Rail Grade Crossing ITS Applications
	49	ITSPTC-6	Interface with Intelligent Vehicle Initiative (IVI)

*Please Rank Order All Research Needs from 1 to 49

PLEASE RETURN BALLOT BY SEPTEMBER 22, 2003

Evaluation Form

2003 Highway-Rail Grade Crossing Safety Research Needs Workshop Evaluation Form

Which discussion group were you in? __ 1 (CIP) __ 2 (HF) __ 3 (STP) __4 (DGS) __ 5 (DPE) __ 6 (IT)

1. Please rate:

Excel-lent	Good	Ave-rage	Fair	Poor
5	4	3	2	1

The overall meeting organization and management

Explain _____

_____

2. Please rate:

Excel-lent	Good	Ave-rage	Fair	Poor
5	4	3	2	1

The meeting presentations

Explain

_____

_____

_

3. Please rate:

Excel-lent	Good	Ave-rage	Fair	Poor
5	4	3	2	1

The value of the discussion groups

Explain

_____

_____

__

4. Please rate from 1 to 5:

Very open		Ave-rage		Not very open
5	4	3	2	1

The extent participants in this meeting spoke openly

What would have increased openness? _____

_____

5. Please rate:

Excel-lent	Good	Ave-rage	Fair	Poor
5	4	3	2	1

Your assessment of the content & value of this meeting

Explain _____

_____

6. What part of the meeting had the most value? Why? _____

_____

7. What part of the meeting had the least value? Why? _____

_____

8. On a scale from 1 to 10, how confident are you that concrete actions will result from the workshop? Circle one. 1 2 3 4 5 6 7 8 9 10

Not a chance Extremely confident

Why did you mark the scale the way you did?

_____

9. In thinking about the last three days, what can we do to improve future meetings?

_____

_____

Appendix C.
Presentations

Tuesday, June 3, 2003

OPENING

Welcome to the Volpe Center, Dr. Richard John, Volpe Center Director
Opening Remarks, Jo Strang, Deputy Associate Administrator for Railroad Development, FRA
Workshop Particulars, Anya Carroll, US DOT, Volpe Center

CROSSING IMPROVEMENT AND CLOSURE (CIP)

Overview, Dee Chappell, FHWA
Pre-Signal Research, Kurt Anderson, Railroad Controls, Ltd.
Closure Study, Brian Gilleran, FRA
Crossing Closures in Washington, Jeff Schultz, Washington State Department of Transportation

HUMAN FACTORS (HF)

FRA/Volpe Research Overview, Jordan Multer, USDOT Volpe Center
Human Factors Guidelines for ITS, Eddy Llaneras, Westat, Inc.
Post Traumatic Stress Syndrome Research, Patrick Sherry, University of Denver

SECURITY AND TRESPASS PREVENTION (STP)

Overview, Rhonda Crawley, FTA
Trespass Monitoring & Deterrent System Research, Marco daSilva, USDOT Volpe Center
Transit Security, William Fleming, Massachusetts Bay Transportation Authority Police
Pedestrian Safety, Linda Meadow, Linda J. Meadow & Associates

DATA & GEOGRAPHICAL INFORMATION SYSTEMS (DGS)

Crossing Inventory Update Using GIS, Steve Laffey, Illinois Commerce Commission, State of Illinois
GIS Achievements to Date – Next Steps, Raphael Kedar, Federal Railroad Administration
National Grade Crossing Inventory Update, Pamela Caldwell-Foggin, Federal Railroad Administration

DRIVER/PUBLIC EDUCATION & ENFORCEMENT (DPE)

Photo Enforcement, Jim Bedell, Naperville Police Department
Public Education and Enforcement Research Study, Steve Laffey, Illinois Commerce Commission
Education Evaluation Program for D2006, Gary Drouin, Transport Canada

INTELLIGENT TRANSPORTATION SYSTEMS & POSITIVE TRAIN CONTROL (IT)

Intelligent Railroad Systems and Intelligent Grade Crossings, Steve Ditmeyer, Federal Railroad Administration
ITS in Transit, Terrell Williams, Federal Transit Administration

ITS Standards for Intelligent Crossing Controller, James Cheeks, Jr., Institute of Transportation Engineers, Inc.

Wednesday, June 4, 2003

Organization of Working Groups - Anya Carroll, US DOT Volpe Center
"Rules of Engagement"

Appendix D.
Additional Reference Material Distributed to Delegates

General
1995 Highway-Rail Research Needs Workshop, Volume I, January 1996
1995 Highway-Rail Research Needs Workshop, Volume II, January 1996
Transport Canada Research Status_May 2003
5YR Plan_FRA
FTA_RRCROSS
Transport Canada Research_May 23-2003

Crossing Improvement & Closure
Closure of US Highway-Rail Grade Crossings: A Status Report, TRB Paper, January 2002
Evaluation of Alternative Detection Technologies for Trains and Highway Vehicles at Highway Rail Intersections, February 2003
Railroad Horn Systems Research, January 1999
Preliminary Evaluation of the School Street Four-Quadrant Gate Highway-Railroad Grade Crossing, TRB paper, January 2002
Guidance on Traffic Control Devices Highway-Rail Grade Crossings, November 2002
Community Involvement Assessment of North Carolina DOT - Rail Division Traffic Separation Studies: A Proactive Approach to Improving Safety, November 2002
NCHRP Synthesis 307: Systems Engineering Processes for Developing Traffic Signal Systems, 2003

Human Factors
Study of Acoustic Characteristics of Railroad Horn Systems, July 1993
NCHRP Report 488: Additional Investigations on Driver Information Overload, 2003
Freight Car Reflectorization, January 1999
Use of Auxiliary External Alerting Devices to Improve Locomotive Conspicuity, July 1995
NCHRP Report 470: Traffic Control Devices for Passive Railroad-Highway Grade Crossings, 2002
Evaluation of Retroreflective Markings to Increase Rail Car Conspicuity, October 1998
Recognition of Rail Car Retroreflective Patterns for Improving Nighttime Conspicuity, July 2001
Effectiveness of Marketing Campaigns for Grade Crossing Safety, Project details only, August 1996
Driver Behavior at Rail-Highway Grade Crossings: A Signal Detection Theory Analysis, 1996
Field Evaluation of a Wayside Horn at a Highway-Railroad Grade Crossing, June 1998

Data & Geographical Information Systems
NCHRP Synthesis 301: Collecting, Processing, and Integrating GPS Data into GIS, 2002
Report on High Risk Crossings and Mitigation Efforts by State, February 2003
North Carolina "Sealed Corridor" Phase I - US DOT Assessment Report: Report to Congress, August 2001
NCHRP Synthesis 311: Performance Measures of Operational Effectiveness for Highway

Segments and Systems, 2003
Assessment of Risks for High-Speed Rail Grade Crossings on the Empire Corridor, August 2000

Driver/Public Education & Enforcement
The Use of Photo Enforcement at Highway-Rail Grade Crossings in the U. S., TRB Paper, January 2002
NCHRP Synthesis 310: Impact of Red Light Camera Enforcement on Crash Experience, 2003
Highway/Rail Grade Crossing Safety and Public Awareness Among Six Key Target Audiences Survey Executive Summary Texas Statewide November 7-8, 1995
A Survey of Advertising Executives' Attitudes Toward Highway-Rail Safety

Intelligent Transportation Systems & Positive Train Control
Advance warning for Railroad Delays in San Antonio, No date given on report
ITS Standards for Highway Rail Intersection, Workshop Proceedings, July 1999
In-Vehicle signing for school buses at Railroad-Highway Grade Crossings; Evaluation Report, August 1998
ITS Technologies at Highway Rail Intersections: Putting It To The Test, Workshop Proceedings, May 1999
Operational Test of Low-Cost Active Warning System for Low-Volume Highway Rail Intersections in Minnesota, ITS America Paper, April 2003
Vehicle Proximity Alert System for Highway Railroad Grade Crossings: Prototype Research, April 2001
FTA_Train Control
FTA Intelligent Vehicle Initiative

Security & Trespass Prevention
GAO: Rail Safety and Security: Some Actions Already Taken to Enhance Rail Security, but Risk-based Plan Needed, April 2003
Intruder and Obstacle Detection Systems for Railroads, Requirements Workshop Proceedings, December 2001
TCRP Report 69: Light Rail Service - Pedestrian and Vehicular Safety, 2001
TriMet Light Rail: Pedestrian Design Considerations, Excerpt of Chapter 15 only, No date given on excerpt
FTA_Security
TRB Special Report_Security_#270

Intelligent Railroad Systems , Steve Ditmeyer, Federal Railroad Administration

FTA Security Planning Guide

Keller, A.S. and Rickley, E.J. *The Safety of Highway-Railroad Grade Crossings – Study of the Acoustic Characteristics of Railroad Horn Systems*. Report Nos. DOT/FRA/ORD-93/25; DOT-VNTSC-FRA-93-1. US DOT Volpe Center. July 1993.

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Lerner, N.D., Llaneras, R.E., Mcgee, H., et al. . Transportation Research Board (TRB) of the National Academies. *Additional Investigations on Driver Information Overload.* National Cooperative Highway Research Program (NCHRP) Report 488.

Weiland R.J. *Intelligent Transportation System Standards for the Highway-Rail Intersection– Report for the Workshop on ITS Standards for the Highway-Rail Intersection, July 22-23, 1999– Arlington, VA.* [Online] Available: http://www.fra.dot.gov. HRI ITS.

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Lerner, N.D., Llaneras, R.E., Mcgee, H.W., Stephens, D.E. *Traffic Control Devices for Passive Railroad-Highway Grade Crossings.* National Cooperative Highway Research Program (NCHRP) Report 470. TRB/NRC. National Academy Press. Washington, D.C. 2002.

Mcgee, H.W., Eccles, K.A. *Impact of Red Light Camera Enforcement on Crash Experience-A Synthesis of Highway Practice.* National Cooperative Highway Research Program (NCHRP) Synthesis 310. Transportation Research Board. Washington, DC 2003.

GAO. *Rail Safety and Security – Some actions Already Taken to Enhance Rail Security, but Risk-based Plan Needed.* GAO-03-435. GAO. April 2003.

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, Safety of highway-railroad grade crossings. Research needs workshop. Volume II – Appendices. Carroll, A.A., Helser, JL., Eds. (Report No. DOT/FRA/ORD-95/14.2; DOT-VNTSC-FRA-95-12.2, pp. F9-F56). Washington, DC: U.S. Department of Transportation.]

Gou, M., Bellavigna-Ladoux, O. *Impact Of Heavy Vehicles On Crossing Safety -- Development of an Adapted Design Tool.* Centre de développement technologique École Polytechnique de Montréal. Transport Canada. May 2003.

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Dubois G., Gauthier. *Second Train Event Safety Sign-Concept Development.* TP 14232E. Transport Canada. October 2003.

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Choros, J., Carroll, A., Baker, G., et al . *San Joaquin High Speed Rail Grade Crossing Data Acquisition Characteristics, Methodology and Risk Assessment.* Draft, November 2002.

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Hellman, A.D., Carroll, A.A., and Chappell, D.M. *Evaluation of the School Street Four-Quadrant Gate / In Cab Signaling Grade Crossing System.* Report No. DOT-VNTSC-FRA-03-04. June 2003.

Appendix E.
Final Day Discussions and Closing Remarks

2003 HIGHWAY-RAIL GRADE CROSSING SAFETY RESEARCH NEEDS WORKSHOP

TRANSCRIPTS

Cambridge, Massachusetts

Thursday, June 5, 2003

BETA REPORTING

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P R O C E E D I N G S

MS. CARROLL: Good morning again to our third and final day. Today we'll be able to discuss all of the hard work that the groups put together yesterday. I don't remember quite the percentage that Albert Einstein quoted of the use of your brain, but from the hum in the building yesterday, I'd say we surpassed that by two or three times and from the output I saw yesterday.

There's a couple of particulars that I'd like to mention to you before we start our presentations this morning. In your registration packet, there's an evaluation form for the workshop. It should have a blue title on it. It's a single page. If you happen to have the time this morning to fill it out, if you could leave it with the registration desk, we'd appreciate that. Another form will go out in the mail with some other items that I'll mention in just a few minutes. So one way

or another we'd like to get your feedback on the workshop.

Also, people have been asking for a delegates list. We finally got that generated, and it's on the registration desk table, a copy of all the delegates and their particulars so you can contact them if you'd like. Also on the back table or on the registration desk, there is a CD available. FTA has just produced a new guidance document on security planning. Both Rhonda and I felt that it was important, because it's a new topic, that you all have that information to take back with you. So there is a CD on security planning guidelines that's on the registration desk.

As I mentioned, we're going to be doing a mailing to all the delegates. As you can see, we've lost some of them. Some of them weren't able to stay for the entire time. So in your mailing, and I may actually put it on the website as well for

easy access, we will send you a CD with all of the presentations that you will -- you have and you will be seeing today over the last two and a half days. There will also be a ballot.

After the break, I think we'll have copies of all of the high-urgency research needs, the titles, for you to review as we move through our discussions of the high- urgency needs from each group. I think it's -- we're pressed for time to actually due some balloting activities, but that will be in the mail to you.

We'll also, if you don't manage to pick up a delegates list, we'll put that in the mailing as well, the full delegates list. We'll put in a copy of the evaluation form if you didn't get a chance to fill one out today.

A few more particulars, we are planning to close the workshop at noon today. There will be a shuttle bus that

goes back to the hotel between 12:00 and 2:00. If you are going on the Big Dig tour, you'll be able to go back to the hotel and change and bring your luggage back here. We have storage space available for your luggage, and the delegate consensus late yesterday was that the tour bus will be coming back here to the Volpe Center to drop the delegates off.

As far as the Big Dig tour is concerned, if some of you would like to see the presentation that will be here in the auditorium from 1:00 to 1:45 even though you're not going on the tour. So if you do have a later flight today and you're not signed up for the tour, you may want to get the historical background on the Big Dig.

So with that, I think I can go back to my podium. So our agenda this morning is we're going to have summaries of all the working groups this morning. Most of the team leaders and their facilitators

and sundry people worked late into the night last night to organize these presentations for you. So I guess we can go in order because all the CDS -- all the presentations are now on this laptop.

So our first group is Crossing Improvement and Closure and Dee Chappell.

MS. CHAPPELL: Thank you, Anya, and good morning to everybody.

You're going to have to forgive me this morning. I'm not too good with speaking a little extemporaneously this morning because, as the kids say, I'm out of gas. So forgive me if I read directly from the slides. I have my team here, and I personally want to thank the Red Team for hanging in there with me and avoiding the group mutiny I think they were going to have if we went any later than what we did. So that's why we left early because I was under threat to proceed expeditiously.

Anyway, to move on here, we came

up with some great ideas. My team, I really appreciate your help again. Once again, I always like to start off with my thought of the day which I think should be the thought of everybody from yesterday. This came from one of my supervisors when I worked in Florida because everybody wanted things this way and that way and everything, and he just, at a meeting one day, he just stood up and said, "You know what? Life isn't a cafeteria. You just can't have a little bit of this and a little bit of that. You have to work together." That's what we all did today.

Just to give you a little gist of what I'm going to present here is our research needs vetting process that the Red Team took place. The candidate research needs, the prioritized research needs. We went through a ballot and came up with our priorities and acknowledgments.

Vetting Progress, you pretty much

saw this slide yesterday. Just some resolution. The group decided to stay in one, as one team, because there were issues with closure as well as crossing improvements that dovetail and everybody wanted to just have participation on both.

We did the, looked through the workshop results, did some brainstorming, came up with something old and something new and something in between. There were some things from the '95 workshop that were, upgraded, if you will, to reach the research need for 2003, again, consensus while consolidating and prioritizing.

Just digging right into it here, I'm going to give you the list of all the candidates we came up with real quick. I'm not going to go into a little bit. I'll get into the ones that we decided that were high priority for the CIP group.

What you see for high urgency in parentheses are the costs that we associated

with each one. So I'm just going to flip through casually here so that you can read different things. You'll notice that some of these things we've been talking about for years here. So we did get into the weeds a little bit to just talk about what was needed.

As you can notice, we did have quite a few high urgency needs here, and you'll notice the range for the cost have gone from high to low. What you see here at the bottom, the highway median barriers. The reason why it is in gray is because this is a research need that was identified from the '95 workshop and we still say, yes, we still need to have this on the radar screen. It's definitely still an issue here.

You get into some gray shading here where we looked at the treatment of multi- use trail crossings adjacent to grade crossings. High to medium, there was a different emotion here, so we said, okay.

Let us stay to the middle of the road. Of course, if you're going to have high to medium, you have to have medium to high. Once again, we have our urgency here.

Going down a little bit here, you'll notice the compilation of PR efforts in closure cases. We want to see if we've got to get that message out there. Is it being received? How well is it being received? Because we definitely have to have buy-in from everybody, but I'm preaching to the choir and everybody about that.

Just flipping through here again. One thing that we did pick up on, and, sorry, Jerry, we sort of overlapped into you here. We dabbled it in and we said, well, this is probably something that Jerry has picked up on as well. Because there was a discussion from the MetroLink people that, is there a way that we can get our tracking engineers into the one-stop shopping

location for educational materials, background materials, et cetera? Just have a one-stop shop, we did it for you.

Of course, low urgency, one of the things in Federal Highway that we are concerned with now is work zone safety. One of the things I did bring up and there was a discussion is that although there is a work zone outside of the grade crossing right of way, it still could have an effect to the grade crossing. The gentleman from MetroLink stated that they just had a fatality not long ago because of traffic being backed up and because the work zone was outside of the distance to the grade crossing. The railroads weren't informed. There was no flagman and somebody was stopped in the tracks.

Okay. Getting into the details here. We did our voting here. Limited access rail lines. I'll talk about it in a little more detail here. You'll also notice

that, again, we pulled something from the old and upgraded it here and said, yes, let's keep this on the radar screen. This is an important issue. We had a four-way tie for three, and again you'll see that you have some from the '95 workshop.

Other research needs, these are the honorable mentions. They received votes; however, we said that we would just deal with the ones that really bubbled to the top, if you will. These actually all were tied with each other. So you'll see that we did have some consensus and some emotion on a lot of issues. A lot of issues weren't really voted on that heavily because we discussed that there was some ongoing research on a number of these issues or there are documents that are out there right now.

Okay. Getting out to research need Number 1. Thanks to our good friend, Mr. Gilbert here, he brought up some very

good points here. His point for our number one was highly voted on here. I'm just going to read, because like I said I'm out of gas, "Develop federal guidelines for limiting new crossings and develop criteria to have high-rail volume rail lines designated as limited-access rail lines."

We discussed it for a quite awhile here and we agreed that it is a high urgency but at a medium cost. I think a lot of this has to do with the issues that the railroaders are going through as far as closures and dealing with the litigation process.

Need Number 2, Innovative low-cost grade separation. Mr. Poichuk had a very impassioned discussion on this, and we all did agree that this -- we should look at this again. Let us upgrade it here so this problem statement has been revised. It's not a summary, it's a revision because it's been out there before. Grade separation is

the only completely effective protection for grade crossings. The cost of grade separation must be decreased before it can be fully implemented. However, institutional barriers, e.g. aesthetics -- forgive my spelling -- to traditional practices have blocked progress to date. We looked at it as a high urgency but a medium cost.

We have a caveat that Steve did put on there to try to provide a better explanation of why it should be a research need that should be addressed and pretty much it was talking about looking at incremental costs. If you look at the cost of it as one lump sum, yes, it's a lot. But if you look at it from the perspective of an incremental cost, then maybe there's something that can be done about that. Also, he stressed that this should be, still should be increased to include pedestrian issues.

Going into the three-way tie here, Mike Shumsky from North Carolina DOT, and I can't think of the other gentleman's name who worked with you on this. I'm sorry. Performance criteria for use LEDs and flashing lights at grade crossings. I'm preaching to the choir about the use of LEDs here, but we want to look at as far as the brightness is concerned because we know over time, the brightness of the LEDs do degrade.

One of the caveats that that team did put together is saying that research should investigate the effects of fast rise and fall time, which is explained here, the fall time on conspicuity and perceived brightness.

Research Need Number 3, pre-signal design, guidance and criteria. I thank Kurt Anderson for bringing this to our attention here and bringing the discussion on this issue here. As the Department statement reads, "There are no guidelines to

determine when preemption does not adequately clear traffic cues at grade crossings and when pre-signals should be recommended. Pre-signal design criteria, for example, near-side versus far-side placement, pavement markings, et cetera, need to be determined." We looked at it as a high urgency, medium cost.

Our third place here, pedestrian treatments at railroad crossings and undercrossing, such as tunnels here. Current edition at MUTCD has no guidance/standards for ped/bike paths or sidewalks at highway-rail grade crossings. Many streets have adjacent sidewalks. To improve safety for pedestrians and bikes, standards for treatments should be developed to ensure safety and consistency. This is one of those that was in between here, as you can note with our target here between high to medium and the cost between medium and low.

Some of the specifics that were discussed on what kind of treatments we should look at. Are crossings over and under the grade crossing and also Z-gates.

The fourth third place, wheelchair crossing, flange-way gaps at railroad crossings. This was a '95 research need that we did some upgrading and Scott Windley, thank you very much for bring us a lot of great information on this and a great background on it. He modified it based on some information that was developed by Axis Board and Los Tibo provided some great information via paper to our discussion here.

I think we're all pretty much aware of the flange-way gap situation here and definitely, we want to move forward on this and we want to keep this on the radar screen as the ADA was an enacted actually in 1991 here and they have draft guidelines that I'm sure many, if not all of you, have

read out on the website at the access board website. If you have not, they have it talking about transportation facilities. Their definition of "facilities" does include grade crossings. They are located at www.access-board.gov. They are part of the Department of Justice here.

SPEAKER: ----

MS. CHAPPELL: You're independent, but you -- I thought you were tied to it. I apologize. Okay.

High urgency and high cost here. What's different about this one here is that Scott brought up the point that the objective is also for safety and mobility. Most of them you'll notice that we've been talking about safety, safety, safety. This is one that has a combination of safety and mobility. Implementation is medium. Different here which brought on a whole new discussion is that it's applicable to high-speed rail. So with that there was a

further comment that we did add in conversation here. We were talking about the flange filler and wheelchair design should be both looked at. Maybe there is some kind of compromise that can take place because one of the considerations for even if you get a larger wheel going across the crossing, the front wheel can twist and fall into the flange. So a larger wheel may not necessarily be that. Maybe a wider one. We don't know. This is what we need to look at. Scott mentioned that RESNA, and I'm sorry he'd have to repeat what RESNA stands for. I was cross-eyed by then.

MR. WINDLEY: Rehabilitation Standards for North America.

MS. CHAPPELL: They're working on a standard for wheelchairs, and he suggested that somebody who has a background such as RESNA to look at redesign should be done and it may not necessarily be somebody who is on the engineering side for rail but they

should work together on that.

As for as the applicability of high- speed rail, it should be more clear after the, I guess, a better definition of high- speed rail. We got into a big discussion on, well, what is high-speed rail?

Also, although we said high cost, we shouldn't look at that as a deterrent. It goes back to what I was saying with Mr. Poichuk, that we're looking, like, over time, at incremental costs, if you will. So that's why maybe a high cost in the final end, but it is something that we definitely need to address.

The last one that we had for our discussion today, minimum standards for closure/consolidation by states. Again, Mr. Gilbert, he came two for two today for our meeting here. Summary, it's because of the local sentiments regarding the elimination/consolidation of grade

crossings. The decisions that are made not to close crossings are based upon convenience and not safety. Standards should be developed for states regarding elimination/consolidation of at-grade crossings. I think that's bad English. Sorry about that. It was one o'clock in the morning when I got to this one.

We did talk about the objective, once again, the safety, and we had to bring reality into the whole scenario. But the implementation of this would be difficult, but that should not to deter us from trying here because this is going to be an ongoing problem and this will also be addressed in the FRA crossing consolidation document as Brian Gilleran has passed around and talked to people about that they're presently updating.

That's pretty much all I have. I just want to thank these people. This was the Red Team here. Some of these people

you've seen. I made new friends here. I plan to keep communication going here and I hope that each and every one of you will stay in contact and pass information on to each other.

What I'm most impressed about, and I have to thank Anya and her team on this whole thing is that, as you notice, these things are swirling up because are brains are swirling right now, is that if you will look at the makeup, the demographics of this team, we have transit, we have heavy rail, we have the manufacturers here, we have the installers, we have the implementers, we have the thinkers, the doers, the shakers, the movers here. I thank you very much for coming here and helping us put this together. I really do. Thank you.

MS. CARROLL: Thank you, Dee. What we're going to do this morning is we're going to hear from all of the team leaders, and hopefully, by the time we take our

break, you'll have the list with the titles in front of you so that if you want to discuss one of the highly urgent needs, we'll be able to do that.

So with that, we'll go to our next team. Number 2 on the bottom. Our team leader this morning for Human Factors is Tom Raslear.

MR. RASLEAR: Thank you, Anya, and before I get started, I would like to thank the Human Factors team for working very diligently yesterday at this. I don't know if we competed in terms of the number of projects that were suggested, but we had a total of 55 or 56 projects which we then had to whittle down.

The process that we used was to go around the room repeatedly suggesting projects and putting them up on the butcher block paper until we ran out of ideas. That occurred, as I said, at around 55 or so projects. We then prioritized them

individually, gave them a rank of 3, 2 or 1 in terms of what we thought their priority was as individuals. Then our facilitator took all of that information and got averages for each of the 55, 56 projects.

At that point, we chose the top 20 projects that were listed in rank order, and those were the ones that we decided that we would work with. On examination of those 20 projects, we decided that we could consolidate some of them, and we wound up with a list of 14 high priority items. Those are what you will see next -- well, not next but --

You'll notice that we have nothing in the medium and low urgency columns because we had so much material to deal with. I think that the reason why the sum there only comes to 13 is that one of the items didn't get listed in terms of cost or something like that.

MS. CARROLL: I probably was too

tired last night.

MR. RASLEAR: Well, I just filled the numbers in on my -- Anya did this presentation for me not realizing that I was doing the same thing. I did put cost and urgency next to the ones that were missing it. But I just would have put an extra one in the middle category because that's always a safe thing to do. So we wound up with just the high urgency items in our list. They mostly fall into the medium category. There's a couple of high cost and a couple of low cost ones.

So here they are in -- I don't think this is exactly in rank order, but it may be. The first one, Context Evaluation, developing a consensus-based approach for establishing grade crossing -- Grade Crossing Research Guidelines and Standards in the US Rail Industry. I think the idea here is that there are lost of different things that you need to consider with

regards to the guidelines and standards. There's many different stakeholders, and unless you have input from all of the stakeholders and their opinions are considered and properly taken into consideration, the decisions that you're going to reach concerning what you do in terms of establishing standards and guidelines are going to be very difficult to impalement. They're going to be difficult to put into actual practice.

So this is, if you will, a social engineering type of project in which we attempt to get the buy-in before the process is actually decided upon and give everybody their say and have them view it as their own piece of work.

The next one is Enhancing Driver Risk Perception at Grade Crossings, Evaluating and Standardizing Advisory and Warning Signs. It occurred to some of us as we looked even at the picture on the cover

of the folder for this meeting that there are many, many different things that one sees and one encounters at grade crossings and it's extremely non-standardized. At some grade crossings there can be tons of information; at others there is very little. Drivers don't know what to expect as they come to a particular grade crossing, particularly if they're not familiar with it what types of information they're going to be presented with. It would help the drivers to understand their degree of risk if there was uniformity and standardization with regards to the signage that is placed at grade crossings, not just for the particular signs, but for the total configuration.

The next project, Develop Leader Indicators that Contribute to Accidents. This, of course, relates directly to grade crossings. There are lots of things that happen at grade crossings before accidents

actually happen that can queue us into the fact that there's a problem at that particular grade crossing. People break gates, for instance, that was mentioned by Tim DePaepe as one of the things that queues him into the fact that there's a problem at a grade crossings. Motorists get aggravated by crossings that malfunction. They take the liberty of breaking the gates so that they don't have to continually see this thing down when there are no trains in the near vicinity. There are lots of things like that that can be used as leading indicators that tell us that problems exist -- pardon me -- in a particular location and that we need to start to pay attention to them.

Needs Assessment for Emergency Response Teams. Here we go to a number of issues. What type of training do emergency response teams need when they go to a grade crossing accident? What type of

familiarization do they need to have with regards to real operations, with rail equipment that they may have to deal with, with other needs within the community that they may not be aware of. It's essential that you have community involvement, rail operator involvement as well as emergency response teams participate in this type of a process so that there's a clear understanding of what the actual needs are of this totality in dealing with an emergency or an incident at a grade crossing.

Here's one I particular like, Comprehensive Model of Driver Behavior for Countermeasure Assessments. The idea here is that we need to consider all of the things that go into driver behavior, all of the inputs that are impinging upon somebody as they approach a grade crossing and make a decision as to what their actions are going to be in that particular situation. If we

don't know -- if we don't include all of the possible things that are going to affect driver behavior, our countermeasures are going to be incomplete. They will not totally address the problems that the driver faces, and we won't have countermeasures as a result that are the most effective and the most comprehensive for that particular grade crossing situation.

This is going to be a very difficult thing to do. Any comprehensive model of behavior is difficult to accomplish and that being said, I think it's still something that needs to be worked at. It will be gotten to in degrees rather in a totality, but that's the way these types of things tend to go.

Development of Near-miss Data through Compilation of Elements from Various Sources. This is similar to the previous project about leading indicators, but here there are a number of sources of near-miss

data that can be obtained and put together to look at the issue of what may be happening at grade crossings on a national basis as opposed to simply a localized basis.

Determining Driver Decision Making at Grade Crossings, a Survey of Accident Survivors. This goes to the discussion that I started yesterday about naturalistic decision making I believe. In this particular case, and there's a topic related to this, you would talk to the accident survivors concerning what it was that they did at the grade crossing, why they made the bad decision that they did. In this case, you know absolutely it was a bad decision because they were in an accident, to get more information about why they did what they did, and then be able to generate countermeasures to ameliorate that.

Development of a New Form for Reporting Trespassing. Well, we kept the

typos. Trespassing fatalities and incidents, is how that should read.

MS. CARROLL: I did a spell check.

MR. RASLEAR: It was perfectly correct. I've been there, too.

Right now, I believe there is an inadequate recording with regards to trespassing fatalities and incidents. One of, and I forget if it's going to come up in the next set of topics or not. One of the things that I became aware of that surprised me is that if it's a suicide, for instance, on the tracks, that doesn't get reported in our database. That's an important source of information that's missing. I think that's part of what this goes to is that we need more information about trespassing fatalities and incidents, including the suicides.

Best Research Practices to Conduct Human Factors Research in Highway-Rail Research. There area number of different

ways that you can conduct human factors research. The idea here is that we put together a guide of best practices, what types of methodologies are available, what types of situations are they best suited to, what types of data needs to be collected under the particular methods and what types of situations they're best used with so that we get better quality grade crossing human factors research and it better serves our purposes then.

Driver Decision-making at Grade Crossings, this is again a naturalistic decision making, potentially a naturalistic decision-making project. I think the writeup actually calls for a review of the literature on decision-making models, the different approaches that can be taken so that that whole range of possibilities can be explored as to what might be the best approach to use with regards to grade crossings, and then further, to break the

grade crossings out into the different types so that one can have a catalogue of what the decision-making strategies are at the various types of grade crossings and also the various types of conditions that exist. Are the people under conditions under fatigue? Is there a lot of stress? Are they familiar with the grade crossing? Et cetera, et cetera.

Evaluation Strategies for Improving the Implementation, Utilization, Effectiveness and Impact of Grade Crossing Research in the US Rail Industry. This sort of says it all really. What we want to do is to not only produce research, we want to have it implemented. We want to have it used. We want it to be maximally effective. Evaluation strategies can be developed that will maximize the utilization of the information that we generate. We don't simply want reports to sit on a shelf. We can say, yes, we produced these ten reports.

They're out there. The information is available, and have nobody actually use them. The evaluation, program evaluation strategies exist out there for us to take the information and make sure that it gets into the hands of the right people and that it's actively used to improve grade-crossing safety.

Development and Implementation of a Highway-Rail Intersection Human Factors Research Results Database. Fred Coleman generated this idea, and I think it's an excellent one. The idea is to put together a database that can be accessed, and he's already got a start on this from work that he's previously done, which lists all of the human factors research that's been done on grade crossings so that one can see what has been done, what issues have been resolved, what issues remain open, have access to the data that's been generated over many, many years and is located in various locations

which often are not easily accessed.

The final two, Collection of Data to Assess Likely Conditions for Rail Suicide and Trespassing. The idea here is, I think, generated from something that has happened in the UK. Interestingly enough, they looked to see where on their system suicides were occurring. It turned out that they were clustered around mental institutions. Surprise, surprise. I don't know that we do anything like that in this country. There are definitely locations that may tend themselves to people committing suicides because of proximity to treatment facilities, perhaps because of the openness of the situations. There many be times of the year when suicides on the rails are more prevalent or times of day.

If we have that type of information, we can do things to prevent suicides and trespassing from occurring. So again, it's an information need which if we

have it, we can use it effectively to enhance safety.

Then finally, Assess Trauma of Railroad Employees. This goes back to the Pat Sherry Project of Critical Incidents Stress Debriefing. The idea is to not only provide that type of program for locomotive crews, but for all rail employees who are affected by a critical incident on the railroad. That would include people who are roadway workers, potentially supervisors, anybody who has -- who is affected by an incident because they see what has happened and actually everybody who does needs to have access to critical incident stress debriefing and what other programs that are available to help them.

So that's the work that we accomplished. We have the other projects listed, and I would hope that they all get put into the proceedings even if they aren't ranked so that the information is available.

Again, I'd like to thank the team that worked with us on this. They did good work. It was grueling work. I'd also like to thank Anya and staff here at the Volpe Center who put this workshop on. It was excellent work, very nicely organized. I think we all ought to give her a round of applause. I thank you all for your indulgence.

MS. CARROLL: Thank you, Tom. One thing that I'm noticing as I'm listening to the detail of these needs, because I didn't really get to even read the titles last night. What I've noticed is we're going to see that we'll be able to consolidate some of the needs from the different groups. I'm sure Rhonda will touch base on that in just a minute. But I think there's somewhere near about 70 high research -- high urgency research needs that were developed yesterday. I think there is -- there will be some consolidation of those. Just as a

background information, in 1995, we had 39 highly urgent research needs that we developed. So we're building upon what we did in '95, and we're also creating new ones.

So with that, we'll go to our next team leader and my co-lead. I make her do all the work. Rhonda Crawley from FDA, talking about Security and Trespass Prevention.

MS. CRAWLEY: Thank you, Anya. Anya joked about me doing all the work. That is so untrue. Anya and I were up just working on our presentations until about eight o'clock. Little did she know, I was fading fast, terribly fast. I mean I have a health-related need that requires me to eat on a regular basis. By the time I got to the hotel, I was completely wiped out, incoherent. So I want to thank Anya for having the presence of mind to put together what you see here.

Just to start off a little bit about how we went about doing this. Are all our team members here, first of all? Because I'd like of you to come down front. I want to acknowledge you right up front because I thought we had a fantastic group. We had a Linda Meadow, Judy Gertler, Brent Ogden, Marco daSilva, Anya, Dave Skinner, Andy Davis and Albert Richardson. Come on down. Come on down. I'm not going to be down here by myself because this was truly a team effort. I was multitasking yesterday, and Anya and I were tag team leading this charge. I think it's very important to recognize this group.

We had a very diverse group with very diverse opinions. I'm going to ask them, as I go through, to jump in and help when you can on this presentation. I see Linda's not here. I think she took off, but Linda Meadow was a key player in this along with everyone on the team.

We started out just sort of brainstorming, everyone getting their ideas up there. We eventually collapsed down and married together a number of them, and we came up with 22, a total of 22 high-urgency projects. As you can see, we have just about every block filled in from medium urgency to low, and also the range also falls from high to low in cost.

We had to sort of -- we decided to organize this a little bit differently. Anya and I both know what it is to try to get things funded, so we decided we needed to have some flexibility on what we could fund in the face approach. So our first general category was focused on Pedestrian Grade Crossing Treatments. The initial thought that there would be multiple tasks associated with all of these, and this would be the stages by which we would approach the problem.

First of all, identifying, you

know, what's out there now? Coming up with recommended practices, and also then developing guidelines to the industry for best practices and treatments for pedestrian grade crossings.

The next category has to do with there are a number of decision trees that are out there, but there is a concern expressed by some that these decision trees came together, and they hadn't really been validated. We haven't really gone out there and put them to the test. In some cases they might have been used at a particular transportation agency or a particular rail agency, but then one size doesn't necessarily fit all. So we wanted to see some validation of these trees. As a result of that research, have a recommended best practices document available.

Always with any approach to security or trespass, you need to have good data. One of the weak links we identified

was incident reporting as it related to trespassing. Guys, I want to ask you to help me out a little bit here about how we define that because I'm not really recalling.

Brent, is there a little bit of thought that you could give us about how we decided to put that in?

MR. OGDEN: Brent Ogden, here. Hello. We were dividing up, looking at pedestrians in terms of either occurring at a grade crossing in which case it was a sanctioned activity, or else just being the right of way, in which case it was defined as trespassing. But because we also had security issues, we distinguished malicious behavior from what you might call accidental or, you know, just people that are just getting out into the right of way in places that they don't belong for whatever reason, but not with the intent to cause harm.

So therefore, we thought it was

very important to try to get the incidence on trespassers. This would help distinguish between, let's say, situations where it might be eventually associated with a suicide versus just kids cutting through to make a shortcut versus someone that's out there to maybe even, you know, survey all the facilities and maybe even enter them with the intent to cause harm.

MS. CARROLL: I just pulled up our research need, and basically, the problem statement says, Develop procedure for reporting and logging trespass incidents. Structure data to support countermeasure analysis. So I think what Brent was alluding to is that we have categories of trespass, whether it be malicious intent or a suicide or other. So it sort of piggybacks on what Tom's group had put together.

MS. CRAWLEY: Thank you, Anya and Brett.

Moving along to our next category, Security and Multimodal Rail Infrastructure. As we looked at post-9/11 concerns, and they're the top of the Department of Transportation has been looking at threat and vulnerability assessments for all of the physical infrastructure within the transportation network. As many of you know, the Office of Homeland Security has been providing some major, major funding to do a comprehensive threat and vulnerability assessments, which we have included here. Then, more importantly, from identifying what the vulnerabilities are and what the potential scenarios or threats may be against our two respective modes being transit and rail transit, is an implementation plan and corrective actions.

So we took a phase approach to this. I know a lot work has been done at FTA in this area. It was felt that FTA could also provide some assistance to FRA

because we've been down this road with our own, with the larger transit agencies, and we've learned a lot about how to approach them and the problems with repeatedly going to transit agencies, asking them to identify what their weaknesses, and it's a very sensitive topic for most agencies. But more importantly, you have to come back with how they're going to be able to address that. That's always the bottom line. How do they take corrective action once you identify and do the assessment?

The next area, Intrusion Detection. Again, there's work underway. We thought that this needed to be a collaborative effort between multiple agencies including FTA, FRA, the Transportation Security Administration, Homeland Security and others that have been looking at putting intrusion detection technologies in obscure places, in tunnels and so forth.

So initially, we felt it was important to identify or to do a technology survey and find out what's currently out there. What's applicable for the rail transportation environment? Then to conduct demonstration projects. In fact, there's going to be a -- I know there's been work done in California at BART, and we're in the process of doing a proof of concept here in Boston for the Silver Line. I believe Anya's group has been involved with at and obviously at the Volpe Center.

Performance Measures to Improve Security and Decrease Risk. That's always an important aspect of everything we do. I know within the Department of Transportation, they always ask me this, how do you measure performance? So developing performance measures is key to that along with the report out on how successful we are in improving security and decreasing risk as we continue to be in this very, very

heightened security environment.

Emergency Preparedness in Coordination with the FRA. Initially, my presentation on the first day that FTA had provided funding to 83 different transit agencies. We do emergency preparedness drills. We've also been doing security forms, bringing different entities together, the police, the fire, the local authorities, the politicians, so they can understand what it takes in a major crisis to be able to respond and recover. So we thought it was important that FRA learn from what we've done, and we work with the rail industry to also be coordinated and being prepared.

The next issue, which really has to do with communications and not only availability, but there's a lot of work and interest going on post-9/11 about inner-operability of communication networks. We, again, put this in as a phased approach, one, to identify the technologies and

protocols that are already either available or being looked at, doing a number of pilot projects. I know that at the Federal Transit Administration, we have a communications project going on right now looking at this very issue in collaboration with other partners. Then, the end result of that of course would be recommended best practices.

The next category, Credentialing of Transportation Employees. This is an area that came directly out of 9/11. If you recall some of the stories behind how the 9/11 hijackers had, you know, driver's licenses and other pieces of identification that gave them access not only to get on a plane and travel about freely in the United States and open up bank accounts and so forth to live supposedly a normal American life. Well, in the transportation environment, there are lots of easy access points and lots of ways to attack a system

if you are a transportation employee. So the issue of credentialing and knowing who your employees are and doing appropriate background checks is an ongoing effort. So certainly, this group needs to be aware and piggyback on that work as well.

The next category, Detection of Chemical, Biological, Nuclear and Explosive Materials. This work mainly has been done in the military environment. They have a lot of knowledge and understanding about detection technologies. Chemical agent detection is not something that's new. We're doing work here in Boston at the T and also in Washington in this area.

There are other agencies along with the national laboratories, through the Department of Energy, through the National Institute of Justice, the Department of Homeland Security. They're looking at biological strategies. Along with biological strategies, decontamination.

Because, you know, once you detect, you know you have something, then how do you clean it up and how do you jumpstart getting people back in the system? So all of that, including radiological detection, a nuclear detection, exposed detection that's already available, but how these things can work in the transportation environment have been problematic. It's not just a matter of slapping a detector on a wall like a smoke detector. That's something that we've learned. There's a lot of work that's gone into that. We feel as though we focus well as team, that we need to continue to assess available technologies and conduct demonstration projects that not only identify the capabilities of these different technologies, but also how they're going to work on a day-to-day basis in realtime in the transportation environment.

Security Awareness and Training. Develop Security Awareness Training

Programs. I mentioned in my presentation on Tuesday the Federal Transit Administration through the Transportation Safety Institute and through the National Transit Institute have developed a security awareness course. This is information that can be shared across modes and will be ongoing effort as we learn more and as new technologies and new strategies are developed.

I'm going to ask a member of the team to talk a little bit about this next Category, Safe HAZMAT Transport Issues at Grade Crossings. Anya, do you want to take that?

MS. CARROLL: Yes. This need was basically my idea. I happened to attend the Midwest Highway-Rail Grade Crossing Seminar two weeks ago in Oklahoma City. At that seminar, they had two presentations, one by the UP Railroad and the other one by the Department of Energy talking about the transportation of spent nuclear fuels to

Yucca Mountain. During the discussion period after those presentations, I asked some questions about how they've considered the risk at grade crossings when they do pick a dedicated route. It was an open-ended question. So I thought this was an opportunity for all the modes to work together to define what issues there are with transporting spent nuclear fuel as well be dedicated train or by regular freight train. That has not been decided. But to define the issues as a first step, develop methods for risk assessment and then actually help DOE and the industry and the public determine what risks we are seeing. So that was the basis of that research need.

MS. CRAWLEY: Thank you. Well, again it comes back full circle to our team. Any member of the group like to add anything to our presentation? Okay. Well, that's pretty much what we accomplished yesterday. I want again to thank the team and thank

Anya for all of her good work.

MS. CARROLL: As you can see, every team has a different approach. Our next group is Data and GIS, and Dr. Brian Bowman from Auburn University, if I can ask you to step up.

DR. BOWMAN: The Data and GIS, we had a real nice group of -- it was mixed up quite well. We had state representatives. We had representatives from the railroad, academia, industry consultants, FRA, Volpe. It gave us a nice insight into the users and the suppliers and some of the research needs.

We really, when I started looking at all the projects everybody had, I don't know how you got it done by five o'clock or so. But we essentially wound up with two high- cost, high-urgency items, and the rest of them were split as you see here.

The way which we organized ourselves is that we really sat down and did

a lot of brainstorming to start with. Then we started looking at what we had suggested in 1995 and how that was accomplished and things that were never really touched. We were rather, maybe disappointed and surprised that there wasn't a lot of work done on our 1995 ideas.

But we wound up with 39 topics. Fifteen of them we discussed from 1995. We got 13 from other work groups so when I was saying I wanted to get a lot of interaction, I got it. Four of them were near-term possibilities related to the inventory. What we did was we had somebody in our group, Pamela, who was working with the inventory. She really, instead of putting those into her research needs, she took them back -- she's going to take them back with her and see about getting some near-term improvements made with the inventory. See if there's any possibilities of not waiting on it. We got one that we didn't know what

in the heck it was, so we slipped that aside.

One of them was good, I thought it was a very good idea, we wound up making that a separate research statement, and then seven were really incorporated into other statements. So we really appreciate the input we got from other groups, and we didn't ignore them at all.

When we look at the high-urgency projects, look at the high urgency, high cost. We had a lot of interaction in our group on the inventory. In fact, a lot of the items from the 1995 that were not acted upon were pertaining to some inventory items. The state representatives that we had made the statement, I've heard this from other states as well, really, the crossing inventory in its current configuration does not have the accuracy that they need for their work. They maintain different inventories within the state, and that they

are frustrated and that oftentimes they will even send changes in and for some reason they're not really incorporated. So they don't really rely on the accuracies of the FRA database. They have their own state database that they use.

Some of the things that were brought up were, gee, it would be nice if we could get some realtime web updates, if we had that capability. So this high-cost, high-urgency item is inherited again from 1995, and it has to do with the inventory getting new data items in there that are of use to research, trying to make sure that there's some time table set up so they know what triggers an update or some periodic update guidance for the inventory.

The second one is when to advance safety initiatives is something that, well, I was a little surprised. There were a few in our group that you could really get some good information from the public out there,

and if you make the web available to them, you have two advantages: one, you can get some data from them. That's when our taken alert concerned individuals as to things that go around, like the 1-800 program, and also get some improvement on accuracy as to the location of the crossing. They were talking about some cell phone use in that was mentioned. Also, they use the web to educate the public. So it was looked as something maybe as a new technique that¦s out there. When we were here in '95, the web wasn't talked about that much. It was really in its infancy. Maybe it's something that should be looked at to go ahead, and then take it to improve safety and the quality of the data we have.

Medium cost, a lot of the discussion we had was on GIS, and it was on the database that we have and also in the fact in many cases, we don't know what we do have, and we don't know what other states

are doing. So we really came up with two synthesis ideas or synthesis projects related to data.

One was that, you know, there's procedures out there that should be used when you're out to analyze a grade crossing to see what deficiencies exist and what countermeasure should be put in place. We mentioned about using a diagnostic teams, but actually what is used by different states and the procedures that they go through. Some countermeasures that come up for different problems is not really quantified or known. It was mentioned that, gee, it would be nice if there was some way we could take and summarize this so we knew what other states were doing. So that's the high-urgency, medium-cost project that we had.

The medium-urgency and medium-cost project, another synthesis comes into place here and this is on the GIS. Again, the GIS

is something that¦s relatively new. There's a lot of different agencies and utilities and companies going in different directions with different products and integrating them or bringing them together is difficult.

What we'd really like to do is get something set up from the data group discussion where you'd be able to take and identify railroad grade crossings by the longitude and latitude. But if the state's using a different system than the railroad is using, then taking and getting them where they will take an interlink or cooperate with each other is a problem. So we want to get a synthesis to find out what the current practice is, what the feasibility is of getting these to interlink or to work together, and that comes into this other one too, this linking and diverse data elements. You know, if you've ever performed research on accidents at grade crossings and you want to get more than just the vehicle train

crashes, like vehicle-vehicle or vehicle-fixed objects in the vicinity of the crossing, it's really difficult locating the grade crossings. The railroads -- I mean the roadways accidents usually put up by milepost. I know some state are starting to change that, you know, identifying where the crossings are at and the radius from that makes it difficult.

So linking of diverse data elements is trying to look at the different data strategies and techniques used by the railroads and the states and come up with some way that we can take and integrate these together as well as local municipalities so that we can get the tools that we need to do meaningful data crash analysis.

Detailed grade crossing crash analysis, I had mentioned the fact that we had gotten one idea that we wrote a separate statement from, and this one idea from a

separate work group, and this is it. You probably are aware that General Motors and some other manufacturers what are called black boxes in the vehicle. What these essentially do is that they will take and keep a constant record of vehicle trajectory, braking action, driver response, some of them even measure eye movement of the driver. That will take it and record this for a certain period of time. In the case of an accident, that is locked in place then.

We thought that this was a very good idea. It might give an opportunity to do a pilot project to see if we could get a data set large enough to maybe get some real good insights into what the driver's doing prior to a crash. I realizing that the data sets are going to be small to start with, but we thought that that was a real good idea.

Medium urgency, medium cost.

Improve Crash Trespasser Data for Safety Research. One of the things that has been mentioned is the fact that we had a very difficult time identifying where trespasser crashes or accidents really happened at. That's going back to trying to get some more data items or a different way of looking at crashes, the way it was recorded for facilitating the analysis of vehicle-vehicle and vehicle- fixed object crashes.

Well, I guess that's it. I thought I had one more slide. Anyway, short and sweet. Maybe not sweet, but short. I've got to tell my wife I was pollinated.

MS. CARROLL: Thank you, Brian. That's three groups now that talk about a need for trespasser data. Pardon me while I put Gerri Hall's presentation up. So let's see if Gerri's group mentions trespassers as well. There we go. Gerry.

MS. HALL: Thank you. I had to use mine. Anya was so kind as to stay up

late and do little mini slide presentations for us, but I wanted to show you that I even have Canadian content. We had the most Canadians per capita than any other committee. Yay, Canada. Good job.

In any event, we are the international gold team hence, and we had a very lively discussion. We had a great assortment of people. We had Tim DePaepe from the BRS, Gary Drouin from Transport Canada, Louis- Paul Tardif who works with their education committee, Dominic Bua from here in Massachusetts who is a civil engineer. A good representation, we had Sergeant Jim Bedell from Naperville Police, and Chief Fred Fraini who now works with the FRA and Lois Keck who's a medical anthropologist and a public health researcher. So we had a really wonderful team for us. The a team that we had from us from Volpe is also very helpful. I thank Linda Sharpe and Steve Popkin, Kate Peck and

Patrick Bien-Amie for helping us.

It was a good day and it's interesting. I listen to all of these presentations that have come before and it occurs to me that nothing we do in education and enforcement happens in a vacuum. We are all relating to what has been discovered by the researchers and what has been done by the engineers. So it is no surprise, and you will find it not at all surprising that a lot of our research needs funnel back to the kinds of information that you all need in the engineering area and in the enforcement area and in the education area simultaneously to make things happen.

We did take a lean-and-mean approach. We decided that as much as we could synthesize our areas into something small and concise, we would be in the competition to be selected this time. When we went back to the 1995 objectives, we found out that none of our projects had been

selected for intensive research, but I think that we're a near-win this time because there are so many people that are looking at the same focus areas.

With that, I will show you what our high-urgency points were. You see, Anya's stuff falls together better than mind does. But in any event, we had four items that we included as high urgency. Medium urgency and low urgency items were not necessarily not urgent or not important, but they really were being dealt with in some way or another and we thought that we would be very careful in how we placed high urgency on a project.

On that, I would move on and say that of the ten items that we looked at from 1995, many of them, in fact, as I explained on the first day, were covered by Operation Lifesaver shortly thereafter because I was hired and we began to sort of reorganize how we approached education. But

at the bottom line, we looked simply at why, who, what, how and when. Why are we doing this? We're trying to save lives. Who? Who are we reaching? Are we reaching the right people? What are we giving them for information? Are the right people receiving the critical information that they need? How are we delivering that information? In 1995, as people have noted, we didn't have the web, we didn't have the kind of internet interrelation that we have today. When are we reaching these people? Are we reaching them at critical points when they can use the information and not after the fact when the horse has already left the barn. Finally, what are the critical learning points?

That's what we come down to with our four high-urgency needs. I look at everything we -- I took notes. Human Factors, five of the items under Human Factors fall into our first item. A

Comprehensive Baseline Study of Incident Precursors and Violator Characteristics. In a nutshell, in order to increase the effectiveness of education and enforcement programs now, we must be able to have up-to-date demographic, attitudinal and behavioral characteristics of not only the violators and the victims, but also those trespassing and committing unlawful grade crossing behavior even if they are not necessarily cited.

It was very useful having Sergeant Bedell on our team because he talked about the fact that the police are only at crossings and watching this kind of behavior from time to time. They're only capturing the tip of the iceberg as far as citations are concerned. If we had the ability to go to high-risk crossings, maybe those that had been identified by close calls and to really observe what is happening there. He says that he knows just on anecdotal evidence

that you'll find probably, if they're citing two people a week, there are 20 violators a day in trespassing and grade crossing potential disaster or potential tragedy in those locations.

So we are right with the Human Factors group in saying that we need to develop not only the leading indicators that contributed to incidents. We need to look at the near- miss circumstances. We need to survey survivors. Lois was very useful in this. They do studies after public health incidents where they will interview the families and people around the victim also to try to determine some of the circumstances surrounding an incident.

We need to better trespass -- we need better trespass data. Absolutely everybody is correct in this area. We really don't know what our problem area is. We have been knocking ourselves out in both education and especially police law

enforcement to try to get to the core of why our trespass incidents are creeping up.

Canada is having good success. At the same time, they're having an 18 percent reduction in trespass incidents. Danny Gilbert tells me that the railroads are experiencing something like an 18 percent increase in trespass incidents. So ironically, our focus in Canada and United States is nearly the same as how we're approaching our educational programs, but the impact is all different. Canadians don't operate the same way Americans do, and we need some good data in both countries to do what we need to do to reach the audiences that we need to reach.

Let me back up just a second and explain that we also kept in our mind that NITSA had done a survey, and maybe Danny Gilbert remembers what the NITSA survey date was. I think it was '93, '94, '95, something like that. Do you remember, Anya?

MS. CARROLL: It was presented in 1995 at the first workshop.

MS. HALL: Okay. That NITSA document gave us the most valuable information we had from between 1996 and today on the demographics of where did these victims come from. It used zip codes to identify what kind of socioeconomic bracket, what kind of radio stations they listened to. I mean this has helped us with everything. It's helped us with our public service campaigns so we can target our radio PSA outreach. It's helped us understand that victims in those areas are more likely to be listening to country music, believe it or not. So you know, it really focuses how we can do our job. Education and enforcement people cannot work unless we've got the data to go beyond the low-hanging fruit.

That's where we are today. We have hit a slump in our ability to reduce

incidents at highway-rail grade crossings and trespass incidents because we just don't have the data. So thank you, everyone, for bringing this up. I think it's extremely important.

We wanted to know what the exposure and risk rates were at some crossings. Why do people take these risks? This is right down the human factors row. What other factors? Advertising, the media are influencing these people. This is part of your social anthropology and your health anthropology issue is going back and finding out what kinds of other influences.

We believe at our office, at Operation Lifesaver, that the media and advertisers are influencing people to buy things using dangerous imagery from a railroad perspective. They're showing people walking down the middle of the tracks or beating trains. If you¦re influencing someone to buy something, you're influencing

somebody to do something.

So a lot of factors play in. I think that we can make a lot of progress. The trespass and security area, we talked about trespass data. Every single group almost has talked about the need for better data so that we can do our jobs the way that we need to do them. So that's our number one absolute priority. If we can also play into that the same kinds of data points we received in that NITSA survey, that would be very valuable as well.

So that's really the additional point that we bring to our plea for this information and so that it can used also to convince law enforcement agencies that there is a problem. The two citations they're making doesn't convince them that they need to go out and help us enforce. If you'll recall, when I first opened this, I said, you know, we also have to go to our own partners and make sure that they are not an

impediment to our progress because they do not have the information they need to help us make progress.

The brings us to number 2 and that is Effective Information Dissemination to Transportation Professionals. This one crosscuts between engineering and they people who deliver transportation services. We, several of us have had notifications from people at the NTSB that for all that we have done to update the MUTCD, The Manual of Uniform Traffic Control Device Standards and the findings that have been issued by NTSB and the technical working group recommendations that have gone out, there are a huge number of local highway-rail engineers that may have received this information but don't understand that this is absolutely critical, that you're not getting it all if you're only getting the MUTCD. You need to have these other advisory documents, and you need to be using

them.

That brought us down to whether we are really using all of the mechanisms possible to deliver information that is essential to, again, our partners in highway-rail engineering. Dominic was very valuable with this effort because he is a responsible engineer, has the documents, and he received two, a communication from George Blatt saying that on a project that he was working with in another state that had been delivered to the state highway folks saying, are you using these documents, because we are alarmed. We're seeing that people are still not taking into account certain practices that have proven to be less than effective. So Dominic is going back and trying to analyze where this is coming from, but we need to get to the bottom of this sort of information.

The second elements in this was that both the law enforcement community and

the transportation providers, and especially Louis-Paul pointed out the needs of NAFTA and the trucking community and some of these folks to understand the variants in laws and regulations that affect their operations and how they apply the laws. Now, this is a little complicated because I'm talking both about the user and about the law enforcer that's dealing with the user. But North American laws vary from state to state and across international boundaries. If you're professional drivers, and your transportation professionals are not aware of all of those variations, then are educational efforts are flawed.

Similarly, if the enforcement is aware of how much variation there is in the law, there is a belief in the law enforcement community that there would be an effort to try to become more consistent in our regulatory approach. Guess what? This all leads right back to data collection and

human factors and why are we doing what we're doing and what are we trying to do with the laws.

Perhaps if we had better information that told us what kinds of human factors are causing people to do the things that they're trying to do, we could better target our enforcement efforts and our sanctions as well and come up with a better structure to surround it.

This is closely related to our third item which is that law enforcement needs also to receive information about grade crossing safety and trespass prevention security. They are not always aware of the dimension of this problem or the potentially disastrous impact that it has for their community safety.

Law enforcement these days is just almost primarily focused on security and the safety of their communities. If they do not understand that highway-rail grade crossing

safety and that trespass/security issues are critically important to the overall safety of their communities, then we have failed to do our job because they're not helping us deliver. So innovative training approaches was our third area of concern.

Finally, we come back to our educational programs, not only Operation Lifesaver¦s education programs, for the public. This is for children, for adults, for critical users like commercial drivers, et cetera. The programs that we are delivering are based on information that we received from the NITSA study, from a lot of other studies, from our current ongoing studies. Gary and I talk about -- Gary Drouin from Transport Canada and I talk about how before we go out with a public service campaign or an educational effort, we try to do target focus research to determine that we're giving the right messages out. But you know what? If we

could have global information, if we could have that kind of a database, it would be really useful to us.

So we want to also not only look at how we're applying the programs to the key audiences that we perceive based on data, but we want to be able to have the funding, as Steve Laffey pointed out, to assess what it is we're doing. It is so difficult in the public education field to assess what it is that we are accomplishing, but we need to do that. We are not necessarily as effective as we could be if we do not look at critical teachable moments in the life of a child, critical training moments in the career of a professional driver, using the data we have to deliver the information and the ways in which people are receiving it. So this means that we need to really look at our educational efforts, assess how we deliver, how we could deliver better.

What are the innovative kinds of things that we could? Lois Keck, coming from a completely different persuasion and a different place brought really wonderful, new insights to us about how the public health community is trying to reach people. She talked about HIV outreach which goes into the hairdresser¦s salon. Well, I don't know where we have to go for truck drivers, but let's find it, you know. It's an exciting time and we have extraordinary new means at our fingertips to try to deliver our safety information both to the engineering, enforcement, and education community who are aware of the problem and trying to deliver to the public. But also, how do we better reach the public and serve their needs and assess what it is that we have tried to do for them so that we can improve our efforts year after year?

So that just about concludes what I have to say. Let me just quickly note

that our medium-urgency needs is Measuring the Effectiveness of Enforcement and Sanctions. We know that there are model policies since this relates also to the FRA model legislation for trespassing, highway-rail grade crossing. Those included recommended fine and sanction levels.

Where that model policy-making, those model legislative pieces have come into play, it would be really useful to assess the effects of different penalty systems, different sanctioning systems to see what works best. Again, we can be more efficient and more effective.

Finally, we didn't want to overlook Vijay's efforts with the 911 and Radio 1-800 number, Railroad 1-800 numbers for reporting problems. The public needs to know how to help. The 911 operators, this was in need in 1995. It's not completed. We're anxious about that because it's eight years later and this is a very, very

important area. We only gave it low urgency because we recognized that it is being worked on. So, go, Vijay. Keep getting those short lines and regional railroads in line. We hope that everything is being done possible with the 911 folks. That concludes my presentation.

If I ever do this again, I will fight anyone that tries to get Tim DePaepe away from me as a scribe. He was excellent.

MS. CARROLL: Thank you, Gerri. Well, that's the fifth group that's mentioned trespass and data, so I think that might come out as one of the highest-urgency needs that we may have.

Our next and last group, not least though, is the Intelligent Transportation and Positive Train Control Group. If I can get this computer to work -- There we go. I'd like to invite Jim Smailes up to discuss what their findings were, and here we go. Jim.

Oh, excuse me. There was a note that I got. There is a set of rental keys to a rental car that was left at the guard's desk. If anybody does have a rental car, you want to check and make sure you still have your keys. The guard has a set of rental car keys. They were found at the security desk. Thank you. Jim.

MR. SMAILES: Our group met yesterday and we began with a presentation that I made to try and get everybody in the room on the same sheet of paper. It included details that you all heard on Tuesday in the various presentations. But I included information, detailed information on the two positive train control demonstrations that are underway in Michigan and Illinois because those two systems will provide very accurate train location data, the estimated time to arrival of the train at the crossing and the duration of the time that the crossing will be blocking.

The thinking is using that information, passing that to the highway and transportation side somehow, we can then divert traffic to more efficient routes, or if the route that goes through the crossing that will be blocked happens to be the most efficient route, the folks will just have to wait depending the type of train. If it's a commuter train that's only going to be through the crossing in a minute and then it doesn't matter so much. If it's a freight train that's going to take 20 minutes, then that's something else again.

But as the discussion, as the presentation went along, we would go off on side discussions and eventually came to the point where we started to jot down ideas on yellow post-it notes. Jane Sax and Steve Peck were the support staff, and Jane was very good at making sure we stayed focus and writing down ideas. In about 15 or 20 minute, we had many, many ideas that we had

mounted on the wall and started to categorize. There were about 13 or 14 areas, and as we went through and culled the ideas and discussed them. We consolidated them into eight research needs, and as we discussed how much they would cost and what their urgency was, we ended up with four that were high urgency, but we felt they were all medium cost, and four medium urgency and the cost low, medium and high as you can see.

In the high-urgency needs, Improve Risk Assessment Models. We didn't prioritize these four. We discussed them, but they're different and we didn't prioritize them. Higher -- improved risk assessment models. Then we did an improved risk assessment model for the Empire Corridor and the high speed passenger service that's there.

The discussion I heard earlier about nuclear materials, I think maybe we

can add to this. We were thinking in terms of risk assessment of a passenger train or a freight train hitting a heavy vehicle, a heavy commercial vehicle at a grade crossing. But if the train were a freight train carrying hazardous materials hitting the heavy vehicle at the crossing, that would be an even greater risk. So that's something that we can add to that.

Identify Data Needs and Requirements for Information Flows Between Railroad Centers, Highway Centers and Rail and Highway Users, this is the communication data, just what is needed to flow between the rail information system and the highway and traffic control center so that both sides will be able to adjust their operations if need be to avoid grade crossing accidents and to optimize the use of their transportation systems.

The third one is to Identify the Functional and Safety Requirements for its

Applications at Highway-rail Grade Crossings. As we were discussing just what could be done with ITS at grade crossings, there are a lot of potential applications, but they have not been quantified from a functional standpoint where the requirements that are needed to meet public safety. All of these new systems must be cost effective of course and the safety-related requirements would require a fail-safe design, a failure-mode analysis and specific responses to and reporting of failures and problems. We'd have to set up a structure to deal with the liability, implementation issues for ITS applications at grade crossings.

Then the final high urgency one, Interfaced with the Intelligent Vehicle Initiative, the folks in the Next Generation program and I met with the Intelligent Vehicle Initiative staff last year, and IVI has a very long-range program, like, out 20

years. We were hoping to be able to get something a little more, a little sooner, implemented a little sooner. So what we're trying to do is do some research to show the potential advantages of using IVI technologies at grade crossings, develop an inventory of ITS equipment that's presently on commercial vehicles and will also involve Federal Motor Carriers Safety Administration and NITSA in doing that.

Medium -- no, that's it. Our four medium urgency projects, just so that you will all know, we looked at stalled highway vehicle detection feasibility analysis because there are various ways to detect stalled vehicles in a crossing. But once you detect that stalled vehicle, then what do you do with the information? How do you get it to the emergency services people to get the vehicle out of the way or do you get -- how do you get it to the railroad so that they can adapt train operations?

Let's see. Four. We also want to study the issues associated with transferring responsibility of highway-rail grade crossing activation from the railroads to road authorities per ITS architecture. In the ITS architecture, the traffic control devices at a grade crossing are in the highway side. Right now, even though there are traffic control devices for highway vehicles, they're actually maintained and operated by the railroad. So just so how should that transfer take place? Should it take place?

The seventh project that we came up with, Continue the Investigation of Off-track Train Detection Systems. We've looked at a number of off-track train detection systems that work in some ways but also have shortcomings. They're not as effective as track circuits, not as reliable. This was related to trying to develop low cost, active warnings because of all the passive

crossings that we have.

Finally, the last one we came up with just at the end of the day was Field Testing of its Intelligent Vehicle Initiative and PTC Technologies at TTC creating a test bed there for testing these new technologies in a real-world environment. That's what we came up with.

MS. CARROLL: Thank you, Jim. Well, that team didn't come up with trespass as an issue, but five out of six ain't bad.

I'd like all the Team Leaders to stand up and all the Volpe and Contractor Support Staff and let's just give them one more big round of applause for all the hard work, all the effort for the last two and a half months. We couldn't have done it without you.

We're going to take a short break for about 20 minutes. We'll meet back here at 10:30. Hopefully, by then we will have a listing from each group of all the high

urgency needs that you'll have in front of you so that we can move on with our discussion.

Also, as far as your -- let's see. Another note I got. We would like you to update your registration information to make sure it's correct so that when we mail out the detailed delegate list that it is as accurate as possible and the receipts for the payment of the workshop will be faxed and the originals will be mailed to you next week.

So have a good break and we'll see you back at 10:30.

(Recess)

MS. CARROLL: Thank you very much for being very prompt in coming back into the room. We only have a short amount of time left, about an hour and a half for discussion and wrap-up. So I would like to start our discussion.

We did lose a few team leaders,

and I would ask that anybody in the respective groups answer questions as they come up about the high urgency needs. As I explained to you before, this is a listing of the high-urgency needs, and there will be a ballot that we will be distributing by mail for you to fill out and rank your perspective on all these high-urgency needs. There actually has been a request that we include the other needs in the package with the ballot in case some of you feel that some of the ones that the groups have decided are not high urgency and may be high urgency for you. So we'll have a place of you to write in a high-urgency need on the ballot that may be one of the other needs that was established.

So with that, there's only, well, I guess there's a few rules of engagement. We've all left our baggage elsewhere I hope, and we've all had a very productive two and a half days. My slide up there brings up

back, whisks you back in time to Tuesday morning when we started this discussion. So what I'd like to do is open up the floor to anybody who has a comment on any of the highly urgent research needs for any of the working groups, if you have a discussion point or issue that you want to bring up. I actually can start the discussion because I took a few notes.

Starting with the CIP Group, I just wanted to make the comment about the standards for LED light fixtures. I hope you all had a chance to review Transport Canada's work and under their Direction 2006 Program, they are quite active in moving towards developing standards for grade crossing LED lights.

The other need I wanted to make a comment was the flange-way gap. I'm the chair of the TRB Committee for Highway-Rail Grade Crossings and that number is A3805. We have developed a research need. It's

working through the TRB process. The states are now commenting on our work statement. Hopefully, within the next year, something will come out on that. The other additional comment I have for flange-way Gap is that there's also concern internationally, in the international community with Australia and also Transport Canada. So it's a worldwide issue and we're working on addressing it.

The minimum standards for closing crossings. North Carolina has been very diligent in putting together a process. We hope to work with them to develop some guidelines that will be used for that purpose.

Under the Human Factors area, there was some discussion about standards and guidelines. I would suggest that the TWG Report be the basis of anybody's review of standards and guidelines in the grade crossing area. That was a year and a half long effort. A lot of energy, similar to

this workshop, was put into that. I think it's a worthwhile effort and that should be the baseline. I know in our group, we had some updates for that TWG Report which emphasized light rail transit and the opening of new crossings.

Also, for the Human Factors group, if you're looking at reviewing signage, it's a longstanding need and concern amongst the grade crossing research community. The use of advanced signs that will tell you the difference between a passive and active crossing so that people will understand what they're coming up to.

I would just like to re- emphasize Gerri Hall's need for demographics of victims and survivors. I think that's a very important research issue that we could accomplish pretty quickly and at a low cost.

So with that, those are my comments. Would anybody else like to make a comment about any of the research needs?

MR. DROUIN: Gary Drouin, Transport Canada. Regarding the law enforcement, we do have an interactive CD that addresses both the law enforcement, but also the chief coroners. The CD's completed, but in addition to that, we do have a video that goes along with it. The French version is completed. We're just doing the English one. But as soon as that's done, we'll definitely get in touch with Gerry. It may serve as a good base to start off the research in that particular area.

MS. CARROLL: You must be really tired. I'm sure somebody has some issues that they would like to bring up as part of the research needs.

MR. PALANISAMY: Hi, my name is Andy Palanisamy. I'm with Jet Propulsion Lab. This is not with respect to the Research Needs Workshop. This is more of a general request for everybody working in the

industry. There has been no specific place where I could go in and just try and find what previous research has been done on trespass or even for the matter with hangup incidents or anything that relates to railroad grade crossing.

Working with the general program office which is a source of electronic document library or any document that relates to ITS, gets posted. So anybody who wants to do a little bit of research on what has been done or what's going on in the industry will get a chance to go on the website and just type in the address, so they will get to know what other documents that are available for research or for other purposes. There's no such place where I can go in and find information regarding trespass or any other railroad-related information. It is all, like, spread across different sources.

The primary place which I thought

would be available was Operation Lifesaver, the website didn't give me enough information. Sorry, Gerry, I disappointed you, but it would be incredible if somebody wants to take up this initiative and create a database or a compendium of all these reports, a one-stop shop for all these reports.

MS. HALL: I would comment most of our information is hard copy. We don't have a lot of things on digital, so -- oh, he has the microphone. Most of the information that we actually have on hand is in hard copy and not in digital. If you want to come over to the office and make copies of whatever I have, you're welcome to.

MR. PALANISAMY: But it is, like -- after when we get a chance to make contacts with people, we will make it a point to request them and can they gave an electronic copy of your document so that way we can forward it to either you or to Anya.

That's it.

MR. COLEMAN: Thank you, Andy. This is Professor Fred Coleman from the University of Illinois. I was a member of the subcommittee with A3805, the same committee that Anya Carroll is the chair of. Several years ago we developed an annotated bibliography for the database as a database that was connected to the A3805 website. Through 2000, we have received 900 citations from TRIS and from private files of railroad searches such as Jean Russell, Dick Mather, et cetera, et cetera, where we had posted the abstracts or synopsis of various railroad highway grade crossing research topics, and those topics are searchable by groups, by topic areas such as trespass or human factors or warning devices, et cetera, et cetera.

If you can get to the TRBA3805 website or just search on A3805 using Google or railroad highway grade crossings.

Typically, the A3805 website will come up. On the opening page of the website is a link to the annotated bibliography.

One of the topics that was listed as a high priority, high urgency topic was HF-12. It's on your first sheet there. That is dealing with the development and implementation of a highway-rail intersection. Human factors research results database which is, if you will, a key component or a tangential project to the work that's already been performed by myself, Steve Britch at Virginia DOT and others who developed the original database, the annotated bibliography database that is attached to the A3805 website.

So we did recognize at that time and back in 1999 or so that the data was spread all over, that there needed to be one key depository or a depository where people who were interested in getting updated on various aspects of railroad grade crossing

research could go and find that material.

Now, it is, does contained only annotated bibliographies, it is searchable. But clearly, there's a need to continue to build on that effort and make it more useful for this user community. Thank you.

MR. FRITTER: I've got a concern about the --

MS. CARROLL: Could you please state your name and your organization. Thank you.

MR. FRITTER: Steve Fritter, United Transportation Union. There is, as you had mentioned, Anya, there's so many issues that are similar between the groups that it would seem appropriate that we condense these numbers by grouping ones that are so very similar or the same before we would move on to vote in ballot form for some that are redundant and which, you know, might come out differently than if beforehand we look at it and reassess and

put some together. So I would urge somehow for that to happen.

MS. CARROLL: That's a very good point, and we will consider that. What we would do is we would not lose track of the different groups who have identified a need in that area, but we may collapse them and make sure that each group is listed with their research need as one topic, specifically, for the trespasser area of reporting and data collection. I think that five out of the six groups had that as a need. So I think we will go through some consolidation process before we actually issue the ballot, but we would keep each group's piece as part of that research need. Thank you very much for your thought.

MS. FOGGIN: Pamela Foggin with the FRA. The discussion that we had on linking data was animated in our group, and we gave it a medium priority, but I know from my perspective and listening to the few

comments today that the urgency may need to be reevaluated because I know that it would be very helpful if there could be some sort of keyword, key phrase, key whatever that when you go into your search, you put in and it would bring up everything associated with, we'll say, grade crossings, or an area of the grade crossing. It would help research, but it would also help those of us that aren't in research but need the information to move forward in some other arenas.

The other thing is, is when you issue the ballots, the titles are not always comprehensive enough or they don't have, at least for me, enough to remind me of what they are. So the ballot, when you do collapse and issue the ballot, if you could contain, offer a couple of sentences of what it really is about, that would be helpful.

MS. CARROLL: Okay. Well, maybe what we can do is since all the delegates

were very diligent in filling out the forms, at least the ones that I saw, is that there is normally a one- or two- statement objective that goes with the title. We'll consider that as a very good comment, and we'll consider that in the process. Thank you very much, Pamela.

MR. DePAEPE: Tim DePaepe, Brotherhood of Railroad Signalmen. I was just going to make one comment and have one question. Under the one low cost for the crossing improvement and closure or high urgency, the standards for LED performance, I believe AAR has some standards in their book that they provide to all of the railroads. So you might want to check that out if you want to see someone who has already done something.

My question had to do with the balloting, Anya.

MS. CARROLL: Yes, I'm here.

MR. DePAEPE: I mean just to remind

us all where we're going to go from here. There's approximately 50 or 60 items here. Like you just said, I assume we're going to get, like, the one sheet with the statement and so we have some more information. But what is the goal of Volpe? Are we looking to get ten to do some research on, five, fifteen? I just assume it's going to be like a straight balloting like we did in our rooms and you'll take the highest ones and go from there.

MS. CARROLL: Well, what we would hope to do with the balloting effort is to have the delegates come to a consensus on ranking the projects. As you've heard from many of the groups, one of the things they did was look at the 1995 Research Needs, and obviously, some have been accomplished; some have been halfway accomplished; and some of them have not been addressed yet.

I think it's up to the modal administrations that are listed on that research need form that need to look at

these needs and establish where they fit in their program. We obviously all know that the economics right now are very, very difficult not only for the federal government but for the states, the suppliers and everyone. So I think it's a very crucial point for you to think about these things and rank them based on your perspective, and then I will make the effort to deliver them to the modal agencies as soon as possible because the '05 budget request is on the table right now. So that's the answer to your question. Does that answer your question?

MR. DePAEPE: I guess the follow-up is that so maybe none of it will get funded? It will be purely a result of the funding that we secure in order to move forward on the research?

MS. CARROLL: That's a possibility. I mean, yes.

MR. DePAEPE: Okay.

MR. GILBERT: Danny Gilbert, Norfolk Southern. I'd like to make a recommendation that, you know, there's a lot of people that have left here that have a lot of good experience and data, and you'd hate to leave them out. There's a lot of things in here that I believe could be consolidated, and what I'd like to recommend is let's go back. Don't do the balloting now. Give everybody the opportunity to review them when they have enough time to do it, and then send out an email to everyone with the top rankings in each group and let them ballot from there, and that way everyone gets to vote on them.

MS. CARROLL: Oh, yes. We plan to go out with a mailing, Danny. We're not going to do it right now. The information we gave you was just so that if you want to pick out a need that you want to talk to, you have that information in front of you.

Yes. We have lost probably about

half of our delegates over the two and a half days, so we will go out with a mailing and it probably won't be for two -- we're going to try and make it within the next two weeks.

Way in the back there?

MR. WINDLEY: Anya, this is Scott Windley with the US Access Board, and you were mentioning about the TRB project on flange-way gap. To our knowledge, that didn't rank very high through the process. As we all know, if it doesn't rank very high, it's not likely to get funded with the limited resources. So I, you know, it's news to me that, you know, I'm not debating you. It's just to my knowledge, it was ranked fairly low. I'd just like to ask a question about that.

MS. CARROLL: Okay. I haven't checked on it recently. We had a discussion at our January meeting. There is a subgroup in the committee that is following that. I

think it's Ron Eck from our committee, West Virginia University, West Virginia DOT --

SPEAKER: It's West Virginia University.

MS. CARROLL: Okay -- who is following that. So on our website, if you go to TRB and go to A3805, you will find a listing of our committee members, and you can contact Ron Eck directly to find out what the status is. I have not checked since January. But thank you for your concern.

MR. PALANISAMY: Hi, this is Andy Palanisamy again. This is a very low cost approach for the educational outreach committee. Is it possible that somebody can work on creating a Yahoo group for discussions, any of the people right here or maybe outside this group who may want to participate in that? If somebody can moderate the group and keep the discussions in certain areas like trespass going on,

instead of just waiting for an opportunity like this to get together. Because it is absolutely free and anybody can just jump on it and follow the threads of discussion. So it's just a suggestion.

MS. CARROLL: From my understanding, Andy, TRB is -- Fred, were you involved in the discussion, was it two years ago, when TRB mentioned that they were going to put a bulletin board up for the committees to be available to do on-line discussions? Do you recall?

SPEAKER: Yeah. I think it was a couple of years. Not this year, but the year before that we discussed how do we do that. Yeah.

MS. CARROLL: There is some movement then within TRB to put up bulletin boards for each one of the groups, the committees, so it's somewhere in the process.

MR. PALANISAMY: Okay.

MS. CARROLL: Anyone else?

MR. DROUIN: Well, it's just maybe to answer -- well, not answer but provide a few comments to what was just said about the online. I do it regularly. When I want to find out what the youth are thinking, things like that, I just go in any window, website, whatever chat room and I just throw in a comment about trespassing and how do you perceive the risk in that. It's nothing scientific, but nothing prevents you from going in there and asking the question. Yes, there's no scientific background information, but at least you get the real-live information right there, so I've done it quite often.

MS. CARROLL: Please state your name and organization.

MS. HALL: Yes. This is Gerri Hall, Operation Lifesaver. We have discussed the possibility of having some sort of a chat room on our site for things;

however, you have to monitor it continually and I do not have the staffing to do that. What might be more useful is to create some sort of a list serve group where you could put out a question to a group of people who have an email, and a professional group that is controlled so you can have a question answered or a discussion.

MR. PALANISAMY: Again, the same issue, but creating a Yahoo group is not going to be something that has to be done formally. It can be very informal, and it can be regulated within this group because you can circulate information through these meetings or conferences and just keep it within the community and keep it more of a technical group other than the TRB A3805, because there are not many people out there in the industry that are aware of this group existing, A3805, and I believe there are certain other groups that are working on it like a transportation community newsletter

or something like that that we get every day. You can just regulate them to one news digest at the end of the evening so you don't have to get emails from everybody. That one news digest will give you the complete information that what happened in the day, who has posted information. Or if you don't get a posting at the end of the day, you don't get anything. So each way you'll be notified only, but you will get the information. So it is a very cost-effective way. That's all I can say.

The DOTs joint program officers are looking into having something like that so they can ask people from across the seas, like from Europe and Japan to get on board with that, so.

MS. CARROLL: Thanks for your thought.

MR. VESPA: I'm Sesto Vespa from Transport Canada. Anya, in looking over this list, I think this was mentioned

before, there a number that look quite similar and maybe I misunderstood what these are. But for example, few things that are actually the same name, Pedestrian Grade Crossing Treatments, Recommended Practice. I see it again. I presume I just don't understand what the differences are between these and those will be provided in the follow-up material?

MS. CARROLL: As you saw in the presentations and with the team leaders' comments as they were presenting that there are a few typographical errors and maybe duplications and errors. The specific example that you mentioned came out of my group, and we actually had a stepped process where we would do a literature survey, then we would create some sort of standard. I think the third step was supposed to read Stakeholder Consensus, and then it went to developing some sort of standards or guidelines. So that was a typographical

error and all of that will be fixed before you get your ballot.

MR. VESPA: Yes. I presume that those may not be considered separate projects, maybe the same with just the implements, because what you're basically doing is giving an implementation process there, and I don't think that most people in the research field have to be told how to implement projects. The reason why I'm saying that is because we might otherwise prioritize projects, and the same project might come out on top two or three different times. In fact, there may be other areas that we may have to put up at the top part of the list as well. Anyway, I'm just mentioning that as an issue.

Another the issue that I have is, for example, where there are some projects that may be already going. For example, we have the Standards for LED Performance. We've done a lot of work in this area, as

you know, in Canada. In fact, we've finalized a report. We've done a lot of very intense technical analysis, laboratory field work, human factors work. We've published -- well, we're just in the process of publishing a very thick report and we've also has US Volpe participation as well. So I'm wondering where there are projects and maybe I'm going whether you want to maintain them on this list or whether you want to just sort of leave it on there anyway for people to consider.

But the third item, one of my points is it would be nice when you send out this material if you can also ask respondents whether they would be prepared to participate in the project. Because also, that's often something that's very important to know. Anya, you and I, Canada and the US have participated in many joint projects. It would be nice to identify a number of joint projects we might be able to

share resources on. So I'm just putting that forward as a suggestion if there are other companies or organizations that might want to participate in the project, we might ask them to state whether they would be interested in participating. You maybe already have intentions to do that.

MS. CARROLL: Thank you, Sesto. To address your first comment, Rhonda Crawley and I, specifically, for the security and trespass prevention had a specific reason for breaking each phase of the research out, and that is because we know the status of the economy and moving projects forward, you may be able to actually publish a literature survey or information report and get it out there in a short time with low cost, but it may be a year or two before you can get back to that issue based on the funding that is allocated. So that's the reasoning that Rhonda and I created those needs that way.

But as she showed them, I mean she showed them as a group, so we'll have to discuss with the Steering Committee how we want to handle that. We'll have more teleconferences to discuss those kinds of things.

The other issue that you mention is the supplemental research. On the form, there was a check box and a place to write who is actually doing supplemental research in the area. For example, with your LEDs, when we review that research need, we will make sure that we address the fact that Canada has been doing that and that it would be a supplemental research area and based on our Memorandum of Cooperation between Transport Canada and FRA, we would hope that we would not duplicate any efforts that you have already done.

To answer your third question, based on what agency gets the funding to do any piece of a particular research. They

have their ways and means of contracting. You know, so it depends truly on who gets the funding and how they want to contract out with it. So I don't think that we will move forward in asking people if they want to participate in the conduct of the research just yet. I hope that answers your comment.

MR. MOZENTER: Jonathan Mozenter, Volpe Center. I just have a quick announcement for those who are in the Human Factors group. Somebody left behind a yellow notepad with some really detailed notes. If it's yours or you know whose it is, please let me know.

MR. COLEMAN: Professor Fred Coleman, University of Illinois. My concern is how, or should I say what would be the process to combined the different priority research needs that may have some common themes into a research area or a higher need research project.

I haven't heard, or maybe I haven't for some reason picked up on it, but I'm not clear on what the process is going to be and who is going to be involved in that process with respect to how these are going to be sorted, how these are going to be combined, et cetera, et cetera, and what might be the roles of the various delegates that, you know, worked on these things for quite awhile.

Because obviously, all of us were not, you know, party to the discussions that took place across the six groups and therefore may not have gotten a sufficient flavor.

But again, my point is what is going to be the process to do that that when we receive the ballot, or whatever the item is, to vote on those things that there's going to be both a comfort level in terms of how those things were arrived at and combined, et cetera, et cetera.

MS. CARROLL: I think the Steering Committee, based of the team leaders and others who were or were not here today will have a post-event teleconference. I'm jotting these issues down to bring up to each group, to the Steering Committee group. But within our specific group of Security and Trespass Prevention, we laid out a plan as to how we were going to edit and look at our needs and that is going to be by a group effort.

We are going to edit our specific needs here at Volpe and then distribute to our working group for additional comments and that kind of thing. But it will be a decision of the Steering Committee. Our Steering Committee is listed in front, on the inside page of your agenda. All the modal agencies, including NHTSA, Ron Engle from NHTSA was a very active Steering Committee participant. He could not be here with us over the two and a half days.

So we will involve all of the Steering Conference in a teleconference to decide some of these issues. So I can't tell you exactly how they'll be handled, but we will not -- we'll try not to work any working group's piece of the puzzle if we do consolidate research needs.

Anyone else have a comment? A question? Oh, I guess you guys get to leave early.

Okay. As far as wrap-up, I've got a few action items from our discussion today about balloting and about maybe some further enhancements to communication of research needs and things of that nature. I will, again, remind you all that there will be a future mailing.

In that mailing, we will send you a copy, a CD of all the presentations that you've seen over the last two and a half days. I know that from the feedback that I've already gotten personally being the

taskmaster that I am, I think people's brains were whirling by about two o'clock in the afternoon on the first day. It was quite packed as far as information, the length and the depth of the information that was presented. I hope it was all worthwhile to all of you.

Yesterday's session was quite intense as well. I can tell you team leaders stayed up, I don't know how late. I think the latest I heard was one in the morning this morning putting together the presentations for you today, but we felt it was very important that at least you get a sense of the information that was created in each group and the intensity and the deliberation that they used to create those needs.

Also in the mailing, we will have some sort of balloting information for you. We've already discussed how we would go about doing that. It was also a suggestion

that we would provide the other needs besides the high urgency needs for you to review.

There was a comment made about at least stating the objective of the research needs so that the title has some depth to it, so we'll consider doing that. A list of updated delegates, I know some of you have actually corrected some mistakes on your registration forms this morning. So that list, that new list, will be coming out. So you'll be hearing from us.

I'm going to ask the Steering Committee as to whether they want to update the website to make the information available to more than just the delegates that were here today and maybe make available PDFs for for downloading, you know, the research statements in total.

Right now, our plan is not to do that quite yet. We plan to have the research needs in total in the proceedings

as well as the deliberations and the result of the consensus ranking by the delegates.

So we'll have to consider some things like that so that we enhance our communication with all of the other individuals who couldn't be with us because they were in Kitty Hawk, North Carolina or other places. So that's some of my thoughts.

I would just like to give Steve Ditmeyer five minutes to give us his thoughts. FRA funded this entire activity. I will say that some of the modes did compensate some of our speakers as well as FRA for being here today. So Steve.

MR. DITMEYER: Anya, thank you. On behalf of Administrator Rutter and all the other management staff of FRA, I sincerely want to thank all of you for being here and going through this workshop.

This is not simply a major railroad safety issue. This is the single

most important railroad safety issue. Again, for that, this work that you have been doing here the last three days is very, very important and will have major impact.

I'd also like to make special thanks to Anya Carroll and the Volpe Center crew. Their role in structuring and facilitating this conference has been remarkable. Again, if I can propose a round of applause for the Volpe staff.

Finally, as I'm about to embark on a new career adventure in academe, I'd like to thank both my old friends here as well as new friends that I've made here this week. For all of your support, and, but again, to all of you I say this has been very, very successful.

The inputs, the material from here will, I guarantee you, provide direction for the R&D efforts of FRA and FTA and the other modal administrations. You will have an impact. So again, I thank you all. Have a

safe journey and also enjoy the Big Dig this afternoon.

MS. CARROLL: Thank you, Steve, and good luck in your digs. Well be thinking about you. With that if there's no -- oops. Transport Canada has more words. They have more words, multi-cultural words than I know.

MR. DROUIN: (Speaks in French.) No, just joking.

MS. CARROLL: I wouldn't know what you were joking about.

MR. DROUIN: On behalf of my Canadian colleagues that are here, Transport Canada and the Canadian government, I just want to thank everyone at the Volpe Center, the FRA, for having included us in the deliberations and the discussions.

There is an MOU, but on top of that, I think the cordiality -- is that how you say that? Anyway, we really felt comfortable in working with the groups, and

I just wanted to say thank you to everyone. Merci.

MS. CARROLL: Merci beaucoup. One last thought I had since I've got you here and not everybody is here, but there are a few other grade crossing workshops, conferences that I would want to make. Sorry to say that you all missed the Southern Region's Highway-Rail Crossing Meeting, which is occurring right now in Kitty Hawk, North Carolina.

But the next national conference on Highway-Rail Grade Crossing Safety is in San Antonio, Texas, and it's sponsored by the Texas Transportation Institute and Texas A&M University, I think it's Texas A&M. You can go to their website. It's in early

November. I think it's, like, the 12th through the 14th. If anybody has the exact date. What? The 3rd to the 5th of November.

Gary, could you update the group

on the D2006 annual conference in November? 2

MR. DROUIN: Yes. Once again, I believe it's the 23rd to the 25th, but we can provide that information a little bit more accurately. But -- we're hosting it. It will be in Montreal once again. We have a survey after each one and people elected to have it in Montreal. Of course everyone is welcome. There is no registration fee.

MS. CARROLL: Merci beaucoup.

MR. DROUIN: The information will be provided definitely through Anya. I'm sure through the community that's here. So you're all welcome and Montreal is a great city. You can get a lot -- get into a lot of mischief, but I think the end result, besides the fun part, even the session is quite informative, so you're all welcome.

MS. CARROLL: It happens to fall around our Thanksgiving Day week, so it may or may not conflict with some people's plans. The other one that's coming up,

there are two coming up that are international conferences. It's the World Rail -- the World Congress on Railroad Research is happening in Edinborough, Scotland. It's at the end of September through the beginning of October.

That's another one that may be of interest to you. The last one that I would like to mention is the 8th International Highway- Rail Grade Crossing Safety Symposium. It will be held in April 2004.

I sit on the steering committee with that. The seven international was held in Melbourne, Australia last year. It happens every two years. We tend to work with the national conference so that there's a grade conference every year. So the national conference is this year in San Antonio.

The international conference will be in Sheffield, England at Sheffield University in April. I'll make sure when

the next flier comes out that all of the delegates that we've invited here receive a copy.

So with that, if nobody else -- nobody has any other comments, you get to leave early today. Thank you very much for your attendance and your hard work. I applaud you.

(Whereupon, at 11:18 a.m., the PROCEEDINGS were adjourned.)

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