Members
AASHTO Task Force on Geometric Design

Dear Member:

The annual meeting of the AASHTO Subcommittee on Design, Task Force on Geometric Design was held in Charleston, South Carolina during the period July 13 through July 16, 2003. The purpose of the meeting was to review several documents undergoing revision, review the proposed revisions to the superelevation discussion in the Green Book, consider future research, and other administrative matters of concern to the Task Force Membership.

Mr. Robert Walters, Chair, called the meeting to order at 8:05 a.m. on July 14. Mr. Walters announced four changes in the membership due to retirements.

Mr. Kenneth T. Briggs from the Maryland State Highway Administration to replace Mr. Charles Goessel from New Jersey Department of Transportation.

Mr. Reza Maleki from The Port Authority of New York and New Jersey to replace Mr. Robert P. Parisi.

Mr. James Rosenow from the Minnesota Department of Transportation to replace Mr. Ron Erickson.

Mr. Max Valerio from the New Mexico State Highway and Transportation Department to replace Mr. Charlie V. Trujillo.

Mr. Walters welcomed the members and praised the work of the departing members. The Task Force is now at full strength. A copy of the roster and a home mailing list were circulated for correction and additions. A copy of the updated lists is attached.
Mr. Walters noted that three members of the Task Force were recognized at the Subcommittee on Design meeting in Boston, MA with design awards – Don Arkle, Larry Sutherland and Paul Bercich.

ATTENDANCE

The following members were present:

Mr. Don T. Arkle, Alabama Department of Transportation  
Mr. Paul Bercich, Wyoming Department of Transportation  
Mr. James O. Brewer, Kansas Department of Transportation  
Mr. Philip J. Clark, New York Department of Transportation  
Mr. David Hutchison, National League of Cities  
Mr. Jeff Jones, Tennessee Department of Transportation  
Mr. Wayne Kinder, Nevada Department of Transportation  
Mr. John LaPlante, American Public Works Association  
Mr. Donald Lyford, New Hampshire Department of Transportation  
Mr. Mark Marek, Texas Department of Transportation  
Mr. John Pickering, Mississippi Department of Transportation  
Mr. William A. Prosser, Federal Highway Administration  
Mr. James Rosenow, Minnesota Department of Transportation  
Mr. Joe W. Ruffer, National Association of County Engineers  
Mr. Larry Sutherland, Ohio Department of Transportation  
Mr. Max Valerio, New Mexico Department of Transportation  
Mr. Robert L. Walters, Arkansas Highway and Transportation Department  
Mr. Ted Watson, Nebraska Department of Roads

The following were unable to attend due to travel restrictions.

Mr. Reza Amini, Oklahoma Department of Transportation,  
Mr. Kenneth T. Briggs, Maryland State Highway Administration,  
Mr. Reza Maleki, the Port Authority of New York and New Jersey,  
Mr. Norman Roush, West Virginia Department of Transportation, and  
Ms. Karla Sutliff, California Department of Transportation.

Also in attendance during all or part of the meeting were:

Mr. Jim McDonnell, AASHTO Associate Program Director for Engineering,  
Mr. B. Ray Derr, Project Manager, NCHRP, Transportation Research Board,  
Mr. Douglas W. Harwood, Principal Traffic Engr, Midwest Research Institute,  
Mr. John Mason, Associate Dean, College of Engr, Pennsylvania State University
BRIDGE RAIL HEIGHT FOR BICYCLES

NCHRP Project 20-7/Task 168, Determination of Appropriate Railing Heights for Bicyclists is getting underway. The study will determine the critical heights for railings on bridges to provide safety for bicyclists. There is currently a difference in rail heights in the Bike Guide and the Bridge Specs.

A GUIDE TO ACHIEVE FLEXIBILITY IN HIGHWAY DESIGN

Mr. Jim Brewer reported on the status of the context sensitive document – Guide for Achieving Flexibility in Highway Design. The final draft was due at AASHTO on July 11. The document is written for the designer. It is expected that it will be balloted in the fall and presented to the Subcommittee on Design in October. If this schedule holds it would be published in early 2004. (The guide is being balloted with comments due October 24.)

TRANSPORTATION GLOSSARY

Jim Brewer also reported on the status of the rewrite and update of the Transportation Glossary, NCHRP Project 20-7/Task153. Jim is the chair of the panel. The first draft of the Glossary has been distributed to the appropriate AASHTO committees and Task Forces for review. Bob Walters asked Paul Bercich, Don Lyford, Ted Watson, Jeff Jones and Bill Prosser to act as reviewers for the Task Force. A number of comments that included deletions, additions and revisions to the terms and definitions in the material incorporated into the Glossary were submitted. The contents and volume of terms in the Glossary were discussed at some length. It is expected to be completed in late fall 2003 and be available in both a hard copy and a CD version.

GEOMETRIC DESIGN RESEARCH NEEDS

Mr. John Mason made a presentation on research needs. He stressed the need for basic research to support the various elements of design. The list of research needs developed through a brainstorming session at the joint meeting with TRB geometric committees in Santa Fe, NM in Jul 2002 was distributed to the Task Force. A draft of a white paper on development of a geometric design long-range research program was distributed to the members, also. He requested the Task Force identify the top 10 topics for research to be presented to the Geometric Design Subcommittees at the joint meeting in Williamsburg, VA in 2004. The topics should be provided to Jim Brewer. Ray Derr will conduct a TRIS search on the topics. Included in the material was a draft outline and an agenda for a 1-day TRB sponsored workshop for our joint meeting.

During the meeting the following initial list of 10 topics that may require additional research was developed:

Medians on high-speed roads
Rumble strips (Ped & Bike use, bus stops, etc)
Cross slope and max rollover
Horizontal curves – How do we drive them? & Is a new model required?
Decision sight distance
TRB 214 update
Lane widths (General)
Two-way left-turn lanes (5 & 7 lanes)
Superelevation transitions
Interchange spacing

HIGHWAY SAFETY MANUAL

The status of the Highway Safety Manual was presented. A prototype chapter on two-lane rural routes is available for review. The manual is being developed for an audience of day-to-day decision makers/engineers to enable them to compare the safety aspects of alternatives. The rural routes covered in the chapter are considered to be arterials or numbered routes. Currently the chapter on urban/suburban arterials is under development (NCHRP 17-26). Two additional projects are underway for the development of this manual (NCHRP 17-27 – Prepare Parts I and II of the Highway Safety Manual and NCHRP 17-29 – Safety Prediction Models for Rural Multi-lane Highways for Use in the Highway Safety Manual). Larry Sutherland is a panel member for NCHRP 17-29.

INTERIM GUIDE - GEOMETRIC DESIGN GUIDE FOR TRANSIT FACILITIES ON HIGHWAYS AND STREETS – PHASE I

This guide is being developed under Project 20-7, Task 135. The guide appears to be a good resource. After considerable discussion, the Task Force recommended that the guide be presented as a compendium of reference material and be made available on the web. It should be presented without reference to AASHTO. Bob Walters will advise AASHTO Headquarters of the Task Force recommendation.

TCRP D-09 is a continuation project to develop a handbook providing design guidelines and a decision making process for selecting appropriate transit facilities. The project will build on and implement recommendations from Task 135.

NCHRP PROJECT 15-21 – REVIEW OF TRUCK CHARACTERISTICS AS FACTORS IN ROADWAY DESIGN

Doug Harwood reported on his findings for this research project. His recommendations include revisions to design vehicles including the addition of new design vehicles and the elements affected by the recommended changes to the design vehicles. Thirteen truck characteristics and 16 geometric design issues were reviewed during the course of the project. A truck speed profile model was developed in the form of a spreadsheet to estimate the truck speed profile on an upgrade and is recommended for design application to replace the charts for critical length of grade. A report and the recommendations will be published as NCHRP Report 505.
**SUPERELEVATION**

The proposed rewrite of the superelevation discussion in Chapter 3 was reviewed and several comments on the text provided. The Task Force approved the revisions subject to resolution of the comments. The Task Force recommended the publication of the superelevation update as an interim policy until incorporated into the Green Book and recommended forwarding it for ballot.

A note of appreciation and thanks to the New York Department of Transportation, in particular Rick Wilder, Senior Engineer, for their efforts in developing NCHRP 439 into an update of the existing superelevation provisions in the Green Book.

**A POLICY ON ACCOMMODATION OF UTILITIES WITHIN FREEWAY RIGHT-OF-WAY**  
**A GUIDE FOR ACCOMMODATING UTILITIES WITHIN HIGHWAY RIGHT-OF-WAY**

Several comments were made on the draft of each of these publications. The comments will be incorporated into the appropriate draft and forwarded to Bob Walters to coordinate with the Right-of-way Subcommittee. Comments from the Right-of-way Subcommittee are expected by October 1. After resolution of any comments, the two documents will be sent to AASHTO Headquarters for balloting.

**GUIDE FOR THE PLANNING, DESIGN, AND OPERATION OF PEDESTRIAN FACILITIES**

Doug Harwood briefed the Task Force on the current status of issues and changes to the text and exhibits in response to the technical comments received on the August 2001 draft. The guide is being done as NCHRP Project 20-7/Task161. The review of the August 2001 draft generated 48 general comments, 1290 technical content-related comments, and 775 editorial comments. A spreadsheet has been developed to show the 1290 comments received from reviewers, as well as the action taken on the comment. 59% (750) of the comments made specific changes to the guide with 22 comments referred to the project panel. 18% of the comments are pending or unresolved and will be addressed in some fashion in the final. 23% of the comments received have no action pending due to a conflict with law or other documents pertaining to the issue, with 14 comments being referred to the project panel. The guide is being revised for consistency with the 2001 Green Book and addressing Access Board issues. A final draft of the guide is expected in August.

**TECHNICAL CORRECTIONS – GREEN BOOK 2001**

Bill Prosser presented a list of additional technical corrections found in the 1st and 2nd printing of the Green Book. After review and discussion the list was approved. The list will be furnished to AASHTO Headquarters to post on the web.
AASHTO HEADQUARTERS

Jim McDonnell reported the establishment of councils to provide coordination on cross cutting and overlapping issues between existing Task Forces and Subcommittees. An informational copy of the material should be expected in the near future. A schedule of proposed Joint AASHTO/FHWA International Scans for FY2004 and FY2005 was distributed.

Jim also solicited volunteers to work with the American Trucking Association in several meetings in the Washington, DC area on Causation of Crashes in Work Zones. Max Valerio, Wayne Kinder, and Phil Clark volunteered to assist in these meetings.

APPLICATION OF EUROPEAN 2+1 ROADWAY DESIGNS

A Research Results Digest summarizing the results of NCHRP Project 20-7/Task 139 on 2+1 Roadway Design was reviewed for application to highways in the United States. This cross section has a continuous three-lane design to provide additional passing opportunities by alternating passing sections on the facility. After discussion Bob Walters appointed a team to develop a section on this design for inclusion in a future Green Book. Jeff Jones, Jim Brewer, Max Valerio, and Bill Prosser comprise the team. Doug Harwood volunteered to assist if needed.

A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS 2001

Each chapter of the Green Book was reviewed and discussed to develop a listing of the items that may require updating for the next edition. The list is not meant to be all encompassing, but an initial list of work to be accomplished.

The following items were identified as needing research or revision as the result of completed research:

Foreword - Add a statement on Context Sensitive Solutions

Chapter 1 - No additional work required.

Chapter 2 - Update truck characteristics
Revise Design, Operating, and Running Speed as result of research
Add reference to Pedestrian Guide and ADAAG
Update Access Management to include additional research
Strengthen discussion on the Older Driver
Add Context Sensitive Design/Solutions to the discussion on Environment

Chapter 3 - Replace Superelevation and Transition discussion
Revise discussion on elements affected by truck characteristics – critical length of grade, offtacking, pavement widening, decel on grades, etc.
Update Passing Sight Distance based on research
Chapter 4 - Improve Pedestrian Facilities discussion – say correct things about pedestrians – shoulders are not ped facilities
Add discussion on curbs on high-speed facilities

Chapter 5 - Add principles from Very Low-volume Local Roads
Add information on traffic calming items from ped guide

Chapter 6 - Add information from Very Low-volume Local Roads as appropriate
Add discussion on pedestrians

Chapter 7 - Incorporate recommendations resulting from research on lane widths, channelized right turns, and right turn deceleration lanes (NCHRP 3-72)
Add discussion on safety of u-turns at unsignalized median openings (NCHRP 17-21)
Add discussion on pedestrians and access management

Chapter 8 - Add information developed for improved guidelines for median safety (NCHRP 17-14)

Chapter 9 - Reorganize chapter for improved flow of information
Add discussion on continuous flow intersections
Add information on lane widths, channelization of right turns and right turn deceleration lanes (NCHRP 3-72), and speed reduction techniques at intersections (NCHRP 3-74)
Add information on crossing treatments at roundabouts and channelized left turn lanes for pedestrians with vision disabilities (NCHRP 3-78)
Add discussion of low clearance vehicles at rail grade crossings
Refine design criteria on roundabouts (NCHRP 3-65)

Chapter 10 - Reorganize chapter
Reduce the discussion on grade separations
Additional discussion of SPUI’s
Incorporate information from synthesis on access location and design in vicinity of interchanges (NCHRP Synthesis 34-12)
Add discussion on pedestrians at free flow ramp terminals
Add information on roundabout terminals
Incorporate information from research on acceleration lane lengths

Bob Walters made the following chapter assignments for the Green Book.

Foreword and Chapter1 – Norm Roush
Chapter 2 – Don Arkle and Reza Amini
Chapter 3 – Bill Prosser, Jim Rosenow, and Karla Sutliff
Chapter 4 – Larry Sutherland and Mark Marek
Chapter 5 – Joe Ruffer and Don Lyford
Chapter 6 – Paul Bercich and Ted Watson
RESEARCH ACTIVITIES

Ray Derr presented the TRB report on research activities. He noted that an e-newsletter is available on the web. TRB moved into their new building at 500 Fifth St, NW, Washington, DC 20001 in July. Ray provided a comprehensive report on approved projects related to geometric design and discussed activities in a number of on-going projects.

New Projects:

Project 15-25 – Alternatives to Design Speed for Selection of Roadway Design Criteria. Bill Prosser is a member of the project panel. The goal of this research effort is to reevaluate the current design element selection procedures to determine the most appropriate basis for element selection.

Project 15-26 – Passing Sight Distance Criteria. Norm Roush, Jim Brewer and Bill Prosser are panel members. This research is needed to provide passing sight distances consistent with today’s conditions and resolve inconsistencies between the Green Book and the MUTCD.

Project 20-7/Task 176 – Update of Exhibits for AASHTO Green Book. The study will update the pictures and graphics in the Green Book.

Proposed Projects:

One new project has been proposed and one project is to be resubmitted. The new project proposes the development of design guidelines for acceleration and deceleration lanes for freeways. The project proposes to look at lane lengths, type of lane (parallel and taper), spacing, widths and sight distance requirements and develop revised or additional criteria for the Green Book. Larry Sutherland and Bill Prosser will prepare the first stage problem statement.

The proposal to look at median and median intersection design for high-speed facilities was not approved for this year’s research program. Mark Marek will rework the first stage statement and resubmit. The objective of this research is to review current median and median intersection design information and identify areas where guidance is lacking or needs to be expanded/supplemented and develop guidance to reflect optimal safety and operational characteristics for incorporation into a future edition of the Green Book.
CLOSING

The next meeting of the Task Force will be in Williamsburg, Virginia on July 14 through 16, 2004. The meeting will be in conjunction with two committees from the Transportation Research Board – A2AO2, Geometric Design and A3AO8, Operational Effects of Geometric Design.

Tentatively, the 2005 meeting will be in Woods Hole, Massachusetts hosted by Larry Sutherland. In 2006, a meeting in Jackson, Wyoming has been suggested with Paul Bercich hosting.

The meeting was adjourned at 11:30 a.m. on July 16 with an expression of appreciation to Bob Walters for making the arrangements for the meeting location.

Sincerely yours,

William A. Prosser
AASHTO Task Force on Geometric Design