The Task Force convened at the Beckman Center at 8 a.m. and began the meeting with self-introductions, followed by approval of the previous year’s meeting minutes. All Task Force members listed on the updated roster (attachment 1) were present except Messrs. Bucik, James, and Marek. New members included Messrs. Focke, Jones, and Soneji. FHWA representatives included Secretary Powers and Messrs. Artimovich, and Taylor from FHWA Headquarters and Frank Julian from FHWA’s Resource Center in Atlanta. Jim McDonnell represented AASHTO and Chuck Niessner represented TRB. Gary Gauthier who manages the California DOT crash test facility also attended. Keith Cota has been confirmed as the TCRS Chairman following Dave Little’s resignation from that post. Steve Walker assumed the Vice-chairman position formerly held by Keith. Secretary Powers announced that his planned retirement will most likely be by mid-2005, pending unforeseen circumstances.

A list of topics was developed for further discussion during the meeting, each of which will be summarized below. Revised chapter assignments were made due to the turnover in Task Force members and those members on the panels for current NCHRP projects were identified. These updated assignments are summarized in attachments 2 and 3.

**Formal Presentations**

A presentation was made by Chuck Niessner who provided a detailed overview of NCHRP projects underway or scheduled to begin during FY 2003 that were of direct interest to the Task Force in regard to updating the Roadside Design Guide (RDG). Current information on the status of all projects can be found at [http://www4.trb.org/trb/crp.nsf](http://www4.trb.org/trb/crp.nsf). A brief status report on those most directly related to material in the RDG follows.

**NCHRP 15-30: Median and Median Intersection Design for High-Speed Facilities**

This project has been tentatively scheduled and a panel will be convened soon to develop a final project statement. Although dealing primarily with the geometric design of medians on non-freeway facilities, it is somewhat related to a new NCHRP problem statement entitled “Median Design and Barrier Considerations for High-Speed Divided Highways in Rural and Urban Areas” which is a follow-on project to 17-14(2) and related efforts. Technical Committee members will have an opportunity to comment on the latter project before it is submitted to the Standing Committee on Research (SCOR) in March.
NCHRP 16-04: Design Guidelines for Safe and Aesthetic Roadside Treatments in Urban Areas

This two-year project was awarded to the Georgia Institute of Technology and is expected to provide specific recommendations and guidelines for incorporation in Chapter 10 of the RDG. Buchan is chairman of the NCHRP panel for this project, which is also expected to develop a matrix for possible crash tests for trees commonly used for landscaping. At this time, a literature search has been completed and project staff has designed a survey instrument to determine “best practices” among selected states and cities. Scheduled completion date is late 2005.

NCHRP 17-11: Determination of Safe Cost Effective Roadside Slopes and Associated Clear Distances

The final report for this project has been completed, but a follow-up project will be needed to establish revised slope/clear zone guidelines for possible incorporation into Chapter 3.

NCHRP 17-14(02): Improved Guidelines for Use of Median Barriers

This project has finally been completed, but panel members do not agree that the data analysis conducted justifies the warrants suggested. FHWA completed a national survey in which each state DOT was asked to plot its freeway cross-median crashes (fatal crashes primarily, but others where practical) against its current warrants to see if and to what extent the current RDG warrants fail to address the concern. Preliminary results indicate that in most states crossover crashes frequently occur where medians are wider than the current 30 foot warrant. Because the median crossover problem varies significantly among states (over 100 fatalities/year in a few states vs. less than 5 fatalities/year in some), Powers suggested that a one-size-fits-all approach the median barrier warrants may not be appropriate. Rather, each DOT might best examine its own crash data to determine where median barrier is best installed. He further suggested that the existing RDG warrant chart could remain the same, except that barrier would be warranted in medians up to 50-feet wide unless state crash data showed a barrier to be non-cost effective and that barrier could be warranted in wider medians, again depending on the results of data analysis. The TCRS Chapter 6 authors will draft proposed re-wording by February 2005 and consider issuing a RDG addendum if updated warrants are proposed.

NCHRP Project 17-20 Problem Statements

Project 17-20 was developed to provide technical support for the Task Force. The three projects were carryovers from last year and include (a) a RDG review to identify significant safety recommendations whose origins are not clear and to identify the research upon which these recommendations were made (Task 2), (b) a re-evaluation of
the flare rates recommended for both permanent and temporary barriers (Task 3), and (c) an evaluation of the crashworthiness of the newer vandal-proof/secure mailboxes (Task 4). The Task Force requested continuation funding of $200K for future projects. The status of each current project is as follows:

**NCHRP 17-20 (Task 2)**

Principal Investigator Kim Nystrom identified specific recommendations in the 2002 RDG that had not been referenced and obtained information on these from Task Force members. She prepared a summary report identifying the sources for these RDG recommendations. The Task Force agreed to expand the contract with additional funding needed to produce a master CD containing the results of this effort. All work on this project has been successfully completed and all files sent to Secretary Powers.

**NCHRP 17-20 (Task 3)**

Mark Ayton, with assistance from Ron Seitz, had originally prepared a problem statement intended to verify the longitudinal barrier flare rates currently recommended in the RDG. Since a similar effort has been partially funded by the Midwest States Pooled Fund program, the Task Force agreed to supplement the pooled fund effort under this project to avoid duplication of effort and to expedite examination of this issue. The project is scheduled for completion in February 2005.

**NCHRP 17-20 (Tasks 4 and 5)**

Taylor reported on the work done at the National Crash Analysis Center (NCAC) to date on heavy mailboxes. Several Finite Element Analyses (FEA’s) were done and the results validated by full-scale crash tests. The heavy boxes performed acceptably when mounted on steel posts and on wood posts when attached with through-bolts. When attached to wood posts with lag bolts, however, the mailbox separated and penetrated the vehicle’s windshield. Additional funding ($25K) was added to this project (Task 5) to develop a performance envelope for intermediate mailbox weights and to finalize installation guidelines that will eventually be considered for inclusion in the RDG.

**NCHRP 22-09: Improved Procedures for the Cost Effectiveness Analysis of Roadside Safety Features**

The project has been completed with the results published as NCHRP Report 492, *Roadside Safety Analysis Program (RSAP) – Engineer’s Manual.* AASHTO will send copies of a CD (which includes the Engineer’s Manual) to previous purchasers of the 2002 RDG and will include it with future purchases of the Guide. It was noted that the example problem currently in Appendix A of the Guide is based on an earlier version of RSAP and is incorrect. Niessner has had discussions with King K. Mak, who will revise the example as needed under an extension to his contract. The
revision will be disseminated as an addendum and/or posted on the AASHTO website as an errata sheet to the RDG when it is completed. Additional problems with the program have since surfaced and efforts are underway to determine the extent of these problems and the cost and time required to correct them.

**NCHRP 22-14(02): Improved Procedures for Safety Performance Evaluation of Roadside Features**

Several Task Force members participate in the NCHRP panel for this update of NCHRP Report 350. A panel meeting has been tentatively scheduled for the third week in November, at which time some decisions may be made on the test vehicles proposed to replace the small car and the 4400-lb pickup truck, as neither currently represents the vehicle fleet. State DOTs are concerned that drastic changes in test requirements may precipitate a new round of testing and hardware development. Test (and review) agencies are concerned that several of the evaluation criteria are too subjective and can lead to inconsistent conclusions among reviewers.

**NCHRP 22-17: Recommended Guidelines for Curbs and Curb Barrier Combinations**

This project has been completed and summary findings and recommendations were presented to TCRS members. This information will be reviewed by RDG chapter authors and appropriate modifications to the RDG regarding the use of curb/guardrail combinations will be presented at next year’s meeting.

**NCHRP 22-19: Aesthetic Concrete Barrier and Bridge Rail Designs**

Lance Bullard of TTI is the Principal Investigator on this project that will identify and catalogue existing crashworthy barriers (roadside barriers and bridge railings) that are also considered aesthetic. This project was originally scheduled for completion in the fall of 2004, but full scale crash testing of prototype aesthetic treatment for NJ-shape concrete barriers is currently underway. The charge to develop and test a new aesthetic bridge railing has been dropped since several currently exists and the likelihood of designing anything significantly different is considered slight. A similar project to catalogue and provide information on all crashworthy bridge rails was initiated by FHWA (Martha Nevai in the California Division) and will be modified and completed as a Task Force 13 effort.

**Proposed NCHRP Project 20-7 Proposals (Problem Statements)**

Several new project proposals to be reviewed by the AASHTO Standing Committee on Research (SCOR) were discussed and ranked by Technical Committee members. These are listed below in order of ranking:
Effectiveness of Barrier on Non-level terrain: This was the highest priority and is intended to identify performance limits of several barrier types when the impacting vehicles travel up (or down) a slope before contact with the barrier. In addition to roadside installations, it will specifically address median barrier type and placement in sloped medians. Anecdotal crash experience and limited full-scale testing has revealed that, in some situations, backside hits result in penetration of some barriers.

Barrier System Maintenance Procedures: This was intended to quantify the point at which W-beam (and other barrier types) need repair after crash or snowplow damage. If the rail is torn on one or both edges, its tensile strength is seriously compromised and it should be replaced. But if the rail is merely flattened somewhat or if the tears are interior, can the barrier remain unrepaired? The project was intended to answer such questions and provide guidelines for field personnel.

Measures of Validity for Roadside Safety Modeling: If we are going to accept FEA as an alternative to actual crash testing, we need to establish some criteria by which its "believability" can be assessed. That essentially is the intent of this project.

Development of a Safer Concrete Barrier: This project was proposed to develop and test a “new” concrete barrier shape that does not lift impacting vehicles so high off the ground. Some thought it would be more productive to develop a retrofit design to improve the crash performance of the many miles of concrete barrier already in place nationwide.

Guidelines for Slope Traversability: This project was intended to revisit the current AASHTO guidelines for recoverable, traversable, and critical slopes using today's vehicles.

Development of Guidelines for Determining Guardrail Length of Need: Low rating by Committee members.

Evaluation of Traffic Median Cable Barriers: This project, proposed by Arizona DOT, recommended testing at higher impact conditions than currently required to determine the performance limits of cable barrier. The Technical Committee chose not to open that can of worms.

The following two projects have essentially been completed:

Pedestrian/Bicycle Barrier Heights (20-7, Task168)

The discrepancy between the minimum bicycle rail height of 54 inches in the AASHTO bridge specifications and the recommended 42-inch height contained in the AASHTO Bicycle Guide continues to be a source of some frustration among
designers. Washington State DOT previously submitted an NCHRP problem statement to study and resolve the issue, and it was funded under Project 20-7 (Task 168). This report was completed and its authors, with the Albany, NY consulting firm of Clough, Harbour & Associates, LLP, concluded that a minimum railing height of 48 inches would be adequate in most instances but that a higher railing might be appropriate at specific locations. Frederick indicated that the Bridge Subcommittee had no intention of changing its current minimum height of 54 inches.

Clear Zone Discrepancies in AASHTO documents (20-7, Task 171)

Albin initially prepared a summary of discrepancies in AASHTO/FHWA documents regarding the definition of clear zone and subsequently prepared a problem statement for the 20-7 program to address this matter. This project was funded as NCHRP Project 20-7 (Task 171) and was completed in October 2004 and is undergoing a final review. Upon completion, appropriate members of the Task Force will review the final recommendations to determine if revisions are needed in the RDG to minimize confusion with other AASHTO documents.

One new project was awarded on September 1, 2004. Dr. Malcolm Ray will update the 1995 AASHTO Guide to Standardized Highway Barrier Hardware under Project 20-7 (192). Scheduled completion date is August 30, 2005.

**Miscellaneous Discussion/Action Items**

**Survey of State DOTs regarding the Roadside Design Guide**

Last year the Technical Committee discussed the development of a “customer” survey regarding the content and format of the 2002 AASHTO Roadside Design Guide. that will be sent to AASHTO member departments and FHWA field offices. Carried over to this year, the survey is intended to identify any unresolved roadside issues that should be addressed in the next RDG update, as well as any suggested changes in RDG format, content or organization. The Task Force will use these survey results to guide development of the next revision.

Assuming the survey is complete by mid-year, decisions can be made regarding items like 1) status of a proposed chapter on low-volume roads, 2) reorganization of Chapters 5 and 6 (Roadside Barriers and Median Barriers) to eliminate duplication in content, 3) future location of content regarding barrier transitions (currently in Chapter 7 Bridge Railings), or 4) Proposed addition of appendix on in-service evaluations. If we decide to proceed on any or all of these items, appropriate assignments will be made with the goal of reviewing draft revisions at the fall 2005 meeting.

**Domestic Scanning Tour Proposal**

The Task Force agreed that there seemed little to be gained at present from an international roadside safety scanning tour, but believed that there were some areas of
interest in the U.S. One suggested area was state policies and practices for upgrading safety features in conjunction with 3R-type projects

Barrier Run-out Lengths

As assigned, this task was to be undertaken by Rod Lacy who would review the original Nebraska Dept of Roads study done by Dean Sicking, and related articles published in the Transportation Research Record by Sicking and Dick McGinnis. The goal was to summarize the issues concerning Sicking’s proposed run-out lengths using the AASHTO method of barrier design and develop a proposal for addressing this issue. At the TCRS meeting, Dr. Richard McGinnis presenting the results of his recent review of the runout length issue and concluded that reduced runout lengths appear reasonable for speeds up to 90 km/h, but that the current RDG recommended runout lengths should be used for barrier design on facilities with operating speeds over 100 km/h. Subsequent to the meeting, former Chairman Little sent copies of Dr. McGinnis’ presentation to all members.

Proposed RDG Chapter on Roadside Design for Low-Volume Roads

Last year Powers presented a draft version of a proposed new RDG chapter to address roadside design on low volume roads and streets, and requested members of the Technical Committee to review it and offer comments on both format and content. Committee members assigned to this chapter will then consolidate these comments and a second draft will be prepared for review. Few comments were received and most were editorial in nature, with the exception of NYSDOT’s detailed comments/recommendations. Members were asked once again to review the draft and to submit comments and recommendations primarily on chapter content. A response was requested no later than November 30, but anything received by April 1, 2005 will be appreciated.

Summary of On-going Testing Efforts

Clocksin reported on the testing currently underway at the Midwest Roadside Safety Facility as part of their multi-state pooled-fund program. It was agreed that that agency’s quarterly report would be made available to Task Force members so each person can remain aware of information that may be appropriate to incorporate into the next RDG update. Some on-going projects include a new 4-strand cable system (on sloping terrain), drainage grates on transverse slopes, flare rates for w-beam guardrail, and grading for guardrail terminals.

Fall 2005 Annual Meeting

The meeting adjourned at 10:30 a.m. The next TFRS meeting will also be held in conjunction with the Task Force 13 fall meeting, and has been tentatively scheduled to be held at Orange Beach, Alabama immediately following the Task Force 13 meeting during the week of September 19th, 2005.