

**TASK FORCE 13 – June 3-6, 2009**  
**SAN ANTONIO, TEXAS**  
**HOTEL CONTESSA**  
**Final Minutes, 09/09/09**

**Wednesday Afternoon, June 03, 2009**

Co-Chair **Pat Collins** of Wyoming DOT welcomed both Task Force 13 and TRB Committee AFB20 members to the first joint meeting between our two organizations. **Collins** recognized **John Durkos** of Road Systems, Inc., his industry Co-Chair, who does most of the work in organizing each meeting with the local host. He also introduced Chair Emeritus **Art Dinitz**, who is also the current Chairman of the AASHTO/AGC/ARTBA Joint Committee's Subcommittee on New Materials and Technologies. Task Force 13 has evolved significantly, through the years where we were struggling to find the money needed to update our guides, along with the fact that the process has grown beyond the point where volunteers can handle it. We are now where we have hired contractors to revise our documents and to host them on the Task Force web site (see [www.aashtotf13.org](http://www.aashtotf13.org)). We now have 5 documents in various stages of preparation. Thanks to **Chuck Niessner** of the National Cooperative Highway Research Program (NCHRP) to help us procure NCHRP funding for three of them and a pooled fund study for the fourth.

**Collins** noted that the Task Force 13 meeting had many participants who were here for the AFB20 meeting as well.

**Durkos** noted that **John LaTurner** "got us out of the dark ages" by drafting our first web site. We are now at the point where AASHTO is referencing TF-13 publications in the Roadside Design Guide and other documents. He also noted the important contribution of AFB20 Chairman **Dick Albin** of the FHWA Resource Center in coordinating these meetings in San Antonio with **Steve Gomez-Leon** of SouthWest Research Institute.

**Durkos** noted that **David Lewis** is seeking photos and stories from TF-13 days past to add to a new newsletter.

**Please register early for future meetings as it makes the process much easier for those coordinating the hotel, meeting rooms, lunches, etc.**

[Subcommittee #1 Publications Maintenance met with the whole Task Force on Wednesday afternoon as it was appropriate for remaining AFB20 members see where TF-13 is with our publications progress. Notes for that subcommittee meeting will be found with the rest of the SubComm notes below.]

## **National Cooperative Highway Research Projects**

**Chuck Niessner** summarized current NCHRP roadway departure related projects. Click on the underlined link below to see the TRB web site on this project (unless, of course, you are reading this from a hard copy. Your clicking will be to no avail except to attract crickets.)

### [NCHRP 17-11](#)

Determination of Safe/Cost Effective Roadside Slopes and Associated Clear Distances

### [NCHRP 17-22](#)

Identification of Vehicular Impact Conditions Associated with Serious Ran-Off-Road Crashes

Prelim final draft report being reviewed by panel

### [NCHRP 17-43](#)

Long-Term Roadside Crash Data Collection Program

RFP on the street

### [NCHRP 17-44](#)

Factors Contributing to Median Encroachments and Cross-Median Crashes Started in March

### [NCHRP 20-07/Task 257](#)

Crash Tested Precast Concrete Barrier Designs and Anchoring Methods

### [NCHRP 22-12\(02\)](#)

Selection Criteria and Guidelines for Highway Safety Features

Report just published – appendices on website

### [NCHRP 22-14\(03\)](#)

Evaluation of Existing Roadside Safety Hardware Using Updated Criteria  
Completed crash tests

### [NCHRP 22-20](#)

Design of Roadside Barrier Systems Placed on MSE Retaining Walls

Prelim draft report has been reviewed by panel

### [NCHRP 22-21](#)

Median Cross-Section Design for Rural Divided Highways

Drafting final report

### [NCHRP 22-22](#)

Placement of Traffic Barriers on Roadside and Median Slopes

Developed finite element models

[NCHRP 22-23](#)

Criteria for Restoration of Longitudinal Barriers  
Preparing preliminary draft final report

[NCHRP 22-24](#)

Guidelines for Verification and Validation of Crash Simulations Used in Roadside Safety Applications  
Executing work plan

[NCHRP 22-25](#)

Development of Guidance for the Selection, Use, and Maintenance of Cable Barrier Systems  
Executing work plan

[NCHRP 22-26](#)

Factors Related to Serious Injury and Fatal Motorcycle Crashes with Traffic Barriers  
Awarded April 2009

[NCHRP 22-27](#)

Roadside Safety Analysis Program (RSAP) Update  
Survey distributed

FY2010 Approved Projects:

- 16-05 Development of Cost Effective Treatments for Roadside Ditches
- 22-20(2) TL-5 barriers on MSE walls

**SouthWest Research Institute Welcome and Introduction**

**Gomez-Leon** presented a preview of Southwest Research Institute. **Gomez** has tried to get SWRI as a presence in the crash test field after about a decade of limited activity.

[Incorporate Gomez-Leon's presentation here.] \* These bracketed notes are for use by our webmaster when posting the minutes to [www.aashtof13.org](http://www.aashtof13.org)

**Federal Highway Administration Office of Safety**

**Mary McDonough**, FHWA Road Departure Team Leader, presented FHWA's Approach to Safety.

**Dean Sicking** commented that a Federal site is needed where all Small Business Innovative Research and Pooled Fund and TRB and State Funded and FHWA transportation research can be listed for referral by other researchers.

**American Traffic Safety Services Association update**

**Donna Clark**: ATSSA: [Incorporate Clark's presentation here]

## **SUBCOMMITTEE MEETINGS**

### **Subcommittee # 1 Publications Maintenance**

**Wes Duffard**, Texas Transportation Institute. Coming in on the “tail end” of our process of publication development he has been pleased to meet the people he has been working with on Task Force products. He also expressed appreciation to work with engineers again. **Duffard** introduced his team leader, **Cliff Murphy**, the Network and Info Systems Group team manager for TTI. Worcester Polytechnic Institute has done a lot of ground work to bring the publications to where they are today. **Duffard** also expressed appreciation to **Will Longstreet** for his detailed procedures for reviewing documents and publications.

**Duffard** gave an overview of existing sites and what we can expect to see at the next meeting. “Development and Hosting of an Interactive Web Site for the Submittal Approval, and Publication of Standardized Task Force 13 Guides.” Looking for having the system in place by September for the Fall 2009 TF meeting. The process for the Barrier Guide will be followed by the other guides.

[Please insert Duffard’s Powerpoint here.]

**Bran Hoover** currently is the “gate keeper” for the TTI site.

It was agreed that there should be maintained a permanent url of [www.aashtotf13.org/guides](http://www.aashtotf13.org/guides) that would always be a link to the page that lists all Task Force guides. **Durkos** asked all members to develop a “wish list” of features that we want for the TF web site. These enhancements will be incorporated if they involve no or minimal extra programming effort, or will be considered for future website development.

### **Executive Board Session to Discuss Web Site**

Following the Wednesday sessions the TF Executive Board met one on one with **Duffard**. The Executive Committee and Tech Review Team Leaders met to discuss web site details.

Reviewed the submission and review process. Discussed voting process which to date has been at the meetings where 50+ people see them. When they go on line there will be a greater potential, but likely will actually have fewer reviewers.

Need to establish working groups aligned with the TF-13 Subcommittees. The voting is not whether the hardware is appropriate, as it has already been accepted by FHWA. TF13 member review is to ensure that the drawings and specs included are accurate and do not overstate the device’s capability. Most drawings can be handled on line, but may have to meet and review some “the old fashioned way.”

Where are we with designators? Takach is now handling Barriers designators; it is a manual process to make sure there are no inadvertent overlaps. When this is automated it will ensure that there are no duplicates. **Mac Ray** has some coding secrets that he needs to divulge to TTI. The ultimate responsibility for issuing these designators may rest with TTI, Publication Maintenance, or FHWA Office of Safety – keep tuned to this channel for further developments as they unfold.

How do we archive the requests for changes and error correction? What happens when a comment comes in after a drawing has been approved? (send to TechRep.)

We need to establish roles for all ExecBoard members and give Administrative Rights to allow us to make necessary changes. The Secretary can submit minutes and have them reviewed through the drawing review process, too. Planning to have wiki-like links for people to be able to navigate system.

**Rochelle Patterson** will be the TTI “lead” on this process.

FHWA ACCEPTANCE LETTERS NEED TO INCLUDE A LINE INFORMING THE SUBMITTER THAT THEY NEED TO GET THEIR DRAWINGS IN TF-13 FORMAT AND GO TO [WWW.AASHTOTF13.ORG](http://WWW.AASHTOTF13.ORG) FOR THE PROPER TEMPLATE

Convened to a manufacturer sponsored reception on the River Walk. *Our thanks* to the following commercial members who sponsored this event:

- Barrier Systems, Inc.
- Brifen USA
- Formet
- Gibraltar
- Gregory Industries
- Highway Safety Corp
- Hill and Smith
- Impact Absorption
- Nucor
- Plastic Safety Systems
- Quixote / Energy Absorption Systems
- R G Steel
- Road Systems, Inc.
- SCI Products
- Traffix
- Transpo
- Trinity Industries

## Thursday, June 04, 2009

Minutes of the Fall 2008 Savannah meeting were reviewed. **Durkos** moved that they be approved and **Takach** seconded.

**Artimovich** summarized the Savannah subcommittee efforts.

**Dinitz** requested time for a presentation on the Rapid Deployment of Innovative Technologies (proprietary hardware.) He is concerned that the designation of “proprietary” slows or eliminates the use of new innovative products, materials, and technologies. Dinitz believes that FHWA needs to clarify the wording in 23CFR635.411 on Material or Product Selection. Recommends that an acceptance procedure be developed for proprietary products that includes crash testing (or similar lab testing for other types of products) followed by field testing by a minimum of three states for no more than three years, with an evaluation report at the end. This would be a formal process to develop a Public Interest Finding.

### Subcommittee #2 Barrier Hardware – Bob Takach

We want to automate this drawing review process and do it on line to the greatest extent possible.

[\[Incorporate Takach’s PPT here\]](#)

Reviewed their Mission Statement and the drawings that had been discussed in Savannah – changes have been made to reflect comments and now may be voted on so that they may be moved to “ready” status. VOTE was YEA to move the drawings to READY status.

**Collins** noted that we need a formal process for voting electronically, but we need to discern just who should be voting, other than opening it up to the whole membership.

Review of New Drawings:

PROPRIETARY DRAWINGS do not have to show detailed drawings of all components – the end user contacts the product owner for details. Have date of all drawings updated as well. ALL LINKS IN THE PDF must be done in the PDF before submitting.

SGR07e - NU-CABLE High Tension Barrier TL-3

Font size is not recommended size. Dimensions are to be in inches with SI in [brackets]. Logo may go in box on first page. Top elevation is missing arrow to ground line. No ground line hatching. Should show post spacing, either min or max or “varies.” Use “max” not “maximum.” Consider showing cable heights and cable spacing, rather than just reference location to holes. Top two drawings show two different options but that is not spelled out – add “option” after concrete socketed cable line post. FHWA Acceptance letters spell out use on 1:6 or flatter. ASTM A157 should be A153. Call out ASTM spec first. Should also spell out SI equivalent for fasteners. Should cite cable spec that is

already in guide. May cite SI spec for fasteners already in the Guide. Why say meets TL-3 “minimum?” “Redirective safety barrier” is not a term used in 350 – use “longitudinal barrier” instead. Should comment on recycled steel be included? Include in text component parts. Where does link to photo go (it should go onto front page.) Use ACCEPTANCE not APPROVAL. Include galvanizing spec? SI for breaking spec should be in kN not kg. Add info on breaking strength of smaller cable. Top Left arrow leader does not have horizontal wisp. Some do not have arrowheads. Reference various types of acceptable anchor wedge/swaged connections?

SGR07f - NU-CABLE TL-4 Same editorial comments as last drawing.

Use inches, not feet/inches. Under Components fasteners have a metric dimension before English. Arrows should point to center of cables. Remove ovals that look like isometric. Watch for periods after dimensions at end of sentences. Call out both rope specs. What spec is the cable hanger and strap? Should an elevation view be shown on TL 3 also. Include turnbuckle spacing.

SGM25 – NU-GUARD-31 Median Barrier

Include rear view of post showing slot. No inch hashes. Not to two decimals. Post is a new weight. Post is a new component. Do not describe components that have designators. No ground line cross hatching. 6:1 approach slopes will be revised to 10:1. Plan views should be shown above elevation view. Dimensions for embedment depth? Washer is a new component, use 3 ½ rather than 3.5? ¼ inch is 6mm not 5mm. Label views as ELEVATION, PLAN, CROSS SECTION. Note post orientation.

SGR32 – NU-GUARD-27 Roadside Barrier

Plastic or wood block? Get block specs correct. Cross section enlargement may be useful. Add working width. Hidden lines in blackout. Mixed fonts in lower left on front. Dimension extension lines should not touch the object. Arrowheads need to be consistent in size and whether they point to surface of object or somewhere in space.

SGR33 – NU-GUARD-31 Roadside Barrier

Show dimension to height of post, height of bolt hole, as well as to rail? Show direction of travel? Hidden rail end line not shown on splice here or on other drawings. Number of splice bolts need to be consistent to show it is “per panel.”

END OF DRAWING REVIEWS

Our goal is to have no more hard copy drawing reviews after Fall 2009 meeting. **LaTurner** asked if comments can be marked up on the drawings themselves? This should be able to be done with PDF.

## **Contract for Task Force 13 Publication Updates**

Mac Ray went on-line to show us the web site. The guides are still temporarily located at WPI.

<http://civil-ws2.wpi.edu/Documents/Roadsafe/Guides/bridgeRailGuide/index.php>

Showed “browse” page that shows a summary of all hardware. Selected one rail “at random” to show what information is presented.

Can also search by Material, Mounting Type, Approval, Test Spec, etc.

The site still needs photographs of various systems. States, manufacturers, and individual users are encouraged to submit them for use on the web site.

When these guides move from WPI to TTI users will not notice any difference in the look and functionality.

Capacity of TTI site will not allow “unlimited” storage for files, so the various subcommittees should discuss what should be placed on line.

## **Subcommittee #3 Bridge Railings and Transitions**

**Roger Bligh** introduced the Guide developed by **Ray** and asked for a status report on the Bridge Rail guide and an introduction to the Transition Guide.

[Incorporate MAC RAY's PPT]

Barrier guide has a Technical Review Group and they envision a similar approach for the Bridge Railings and Transition guides. **Durkos** also asked for the subcommittees to provide a “wish list” of web site improvements that we would like to see. **Dinitz** asked if BR retrofit systems would also be included. The answer was yes.

Currently have 113 railings in the Guide – everything from the Caltrans/FHWA site is there. **We need your help (yes, you! You with your fingers on the keyboard.** If you are reading this, you are a TF-13 member and we would appreciate your help to weed out errors. Please read on:)

Contractually the project is done. Now the content review by TF-13 is needed. Make sure everything you have submitted is there and correct! For generic devices, the original owner of the information (i.e. State DOT ) should be referenced for contacts. (The Caltrans site included a number of rails that were the same but were submitted by different states – let's cut the duplication where applicable.)

**ALL MEMBERS** should go to the site and search for all the entries that are in the IN REVIEW status, and look them over. Comments may be submitted in the text box



associated with the system. NO SYSTEMS are TF-13 APPROVED yet, so you must search for the IN REVIEW rails.

Not many transitions (6 or so) have been submitted yet but the format is similar.

**Ray** will continue populating these guides until the next meeting when all goes to TTI.

**Bligh** asked what would we like to see as submittal criteria? Input screen should ask for all the input items on the search criteria. This information will be enough to establish a designator.

Hardware guide needs a sample detailed drawing with correct fonts and line weights, etc. This will be a visual guide and will not contain detailed design or spec information. Want minimum of two good photos of rail from ON the bridge and from OFF the bridge. Test reports can be linked as compressed / pdf files. Select one high speed video per test, and only send two or three of them per system. Submit between two and six good quality photographs of the overall bridge. [This guidance is appropriate for other subcommittees as well.]

TTI can do a basic check of the submission to make sure dwgs, pics, videos, etc., are OK and will then send the submission to the TF-13 review team. Splitting up the review task into five systems per week to members of the review team might make this a more doable task.

Working Groups: Roger sent list around. Also got volunteers to act as group leaders for concrete, steel, other, and transitions.

### **Subcommittee #5 Sign and Luminaire Support Hardware**

See Mac's PPT on Sign Support Guide, above.

If you submitted material, go on line and check it out. Review it in the same detail we have reviewed the barrier drawings at TF-13 meetings. We also need photos of the product. By Fall TF-13 meeting we would like to have a dozen of these to vote on.

Prototype guide is on line and is available for review. It is the same as the other guides and looks and works the same. Programming is almost done and dynamically linked to component guide.

Pooled fund panel has not replied if they want call boxes, signal supports, etc to be included. TF-13 believes non-breakaway architectural/aesthetic hardware should NOT be included in the guide unless tested and accepted as complete systems (ie – no “decorative fluted bases” covering up frangible couplings unless tested together.)

Not possible to include info on structural aspects of the support other than an example letter to a state.

The HAPCO pole catalog was used as a basis for setting up search criteria for pole size, number and type of mast arms, size of luminaire, length of mast arm, etc.

### **SubComm # 7 Certification of Test Facilities**

#### **EDITOR'S NOTE**

**Some crash testing was done prior to the final adoption of MASH and the test conditions were based on what MASH was expected to look like. When "MASH" is formally adopted (and this happened on June 11, 2009, when Jim McDonnell informed the TCRS that SCOH had voted to approve both MASH and the AASHTO/FHWA Implementation Plan) FHWA will ask each manufacturer to submit a summary of their MASH testing to show that they have met the actual MASH criteria. FHWA will then review those against the Acceptance Letters that have been written and ask for re-testing where deficiencies were found, including the following:**

- a) Testing cable barrier installations that are less than 600 feet in length.**
- b) 2270P vehicles that do not conform to the U.S.A. "Quad Cab" Pickup Truck criteria**

**Manufacturers will have two years to re-test under correct MASH conditions before the old letters are removed from the list.**

**Jeff Shewmaker** of SafeTech and **Kelsey Chiu** of Karco are the co-chairs.

Special Topic: Crash testing of crashworthy barriers for use in median ditches. There is a need to standardize on ditch design for MASH testing going forward. There are two distinct scenarios:

- 1) The barrier is designed so that it may be placed anywhere on the slope including in the ditch, and
- 2) The barrier is designed to be installed 4 feet down from the slope break point.

The following comments were recorded:

Opened discussion with median ditch slopes at 1V:4H with 46 feet from top of break point to top of break point.

**Mauer:** just setting high and low cable heights does not guarantee vehicle will get caught.

**Bligh:** 6:1 was assumed to be OK based on flat testing. [This is not necessarily true, but]  
**Sicking** says successful 4:1 testing should tell us 6:1 is ok.

Should Report 230 soft soil be the standard? Are you going to use saturated soil? Let's deal with soft soil later.

If you are NOT testing in the bottom, where are you going to place the barrier?

**Bligh:** When testing on a smaller ditch and you catch the pickup, what happens when the vehicle hits the back slope after engaging the cable? Do we need to run another test with a 26 foot wide ditch? That will be test #1.

Proposal to make the 30 foot width as the most critical for backside hit (that is, where the pickup impacts the cable barrier on the fill slope and deflects barrier so much that the vehicle crosses the ditch and contacts the cut slope on the other side.

Ron **Faller** kindly provided his notes on the agreed-upon test matrices which your secretary found to be more complete than his own. Please note that these scenarios are for testing a barrier that has passed tests 3-10 and 3-11 on flat terrain:

**Scenario No. 1 – barrier may be placed anywhere in the median**

**Test 1** – 2270P vehicle impacting cable barrier placed between 12 to 13 ft from slope break point on foreslope using either a 46 or 30 ft ditch width based upon what ditch width shows to provide the worst case (most critical evaluation) in MwRSF crash testing program. Later crash testing evaluations would use one ditch width for this 2270P test from that time forward.

**Test 2** – 1100C vehicle impacting cable barrier 4 ft up the back slope from the ditch bottom using 46 ft ditch width – soft soil condition - TBD

**Test 3** – 1100C vehicle impacting cable barrier 4 ft up the back slope from the ditch bottom using 46 ft ditch width – strong/hard soil condition similar to 350 soil condition and compaction

**Test 4** – 1100C vehicle impacting cable barrier 4 ft down the back slope from the back-side slope break point using 46 ft ditch width – strong/hard soil condition similar to 350 soil condition and compaction

**Scenario No. 2 – barrier to be placed 4-ft from upper slope break point on either slope**

**Test 1** – 2270P vehicle impacting cable barrier placed between 4 ft from slope break point on foreslope using 46 ft ditch width for new tests (allowing prior 2270P tests on ditch widths 24 to 26 ft wide or greater)

**Test 2** – 1100C vehicle impacting cable barrier 4 ft up the back slope from the ditch bottom using 46 ft ditch width – soft soil condition - TBD

**Test 3** – 1100C vehicle impacting cable barrier 4 ft up the back slope from the ditch bottom using 46 ft ditch width – strong/hard soil condition similar to 350 soil condition and compaction

**Test 4** – 1100C vehicle impacting cable barrier 4 ft down the back slope from the back-side slope break point using 46 ft ditch width – strong/hard soil condition similar to 350 soil condition and compaction

[These may be discussed and finalized at the Fall 2009 meeting in Rehoboth, Delaware.]

Will need to find one lab that can provide 30 foot wide ditch to run that test. If that passes without the overturning behavior we saw in an earliest proprietary test, then all future testing may be conducted on a standard 46-foot wide ditch.

Discussed Inter Laboratory Collaborations – have 6 of 7 labs participating. 2009 ILC results for Report 350 testing looked very tight. THIV had some variability. TTI, SafeTech, Etech, Karco are accredited. Others are nearly complete.

**Executive Committee:**

Collins, Durkos, Artimovich, Hare, Bligh, Shewmaker, Stephens, Takach, Dinitz, Brauner,

Agreed that system by system review was satisfactory. Joint meeting with AFB20 was a success. May very well get away with 1.5 days from Wednesday noon at future conjoined meetings.

We need non-industry co-chairs for work zone devices subcommittee. We understand that **Eric Hemphill** of NTTA, **Ken Smith** of Yodock Wall, and **Greg Schertz** of FHWA volunteered.

Limit on photos and documents to post on the web site. Limit to 1 or 2 videos (wmv or other compressed files) and 6 photos.

How often and how frequently do we notify individuals to review drawings? Give two weeks to review.

Should we send them to the general membership or just to subcommittee “members?”  
Vote YES, YES WITH CHANGES, NO [AND WHY] OR ABSTAIN.

Possible Spring 2010 dates for joint TF13 & AFB20 meetings: May 17-21 or June 7-11.  
We must coordinate with AFB Chairman Dick Albin.

Potential meeting locations: Lincoln/Omaha, College Station, Woods Hole, Irvine, Sacramento, Westchester County NY, Mystic CT,

## Friday, June 05, 2009

Reports from Subcommittee Co-Chairs-

**Subcomm #3 BR and Transitions: Kurt Brauner** LADOTD (Thanks to Kurt for these minutes.)

The meeting was called to order by Roger **Bligh** who briefly discussed the status of the online hardware and transition guides. Arthur **Dinitz** asked if retrofit rail designs would be included in these guide. Bligh agreed that they should be reviewed by our subcommittee and included in the online guides.

**Bligh** then introduced Dr. Malcolm **Ray** who gave the committee an update on the bridge rail guide. Dr. **Ray** informed the group that the online guides are up and running and that we need to focus on the content. He mentioned that the bridge rail guide alone has over 100 systems ready for review.

Dr. **Ray** asked those people who have submitted drawings to go online and post a comment verifying that the material was uploaded correctly. Any revisions or corrections can be addressed using the “comments” feature on the website.

Now that the online guide is ready, Dr. **Ray** encouraged the group to begin reviewing the entries for the various systems and look at the details, pictures, attachments, links, etc. and to make comments through the website. Reviewers can even upload their own attachments if necessary.

**Bligh** asked about archiving these review comments. It was decided that any archiving would be handled under the new contract with Texas Transportation Institute (TTI).

Dr. **Ray** then discussed how designators are generated for new systems and what identifying information was needed: Type of system, material, shape, test level, etc.

From there, the group discussed how to submit new systems. Bligh suggested using an electronic submission process that included drop down menus that would provide the information required to generate a designator and keywords for searches.

It was decided that since the guides are intended to be visual in nature, those submitting new systems would need to include at least two or three good photos and a simplified drawing showing the critical dimensions (e.g., rail height). Supplemental information could include a crash test report and a couple video clips. This led to a discussion of the storage limits of the new server. The committee agreed that it would be best to specify a compression format for the test reports (e.g., PDF) and videos (e.g., WMV) and to limit the number of pictures and video clips that will be accepted and posted to the guide. The quality and applicability of the photos can be addressed in the review process.

**Bligh** then asked for volunteers to be “Technical Representatives” who would lead smaller work groups that would review a specific type of rail. These technical representatives are as follows:

Steel:	<b>John Williams</b>
Concrete:	<b>William Williams</b>
Transitions:	<b>Mark Bloschock</b>
Other:	<b>Ron Faller</b>

Then, **Bligh** asked for volunteers for these groups and a sign up sheet was passed around the subcommittee. **Bligh** will circulate the resulting working group lists. **Ray** agreed to help initiate the review process by passing out a few systems at a time to each of the working groups. John **Durkos** asked how we would classify retrofits and upgrades but it was decided that those would be handled on a case by case basis.

The meeting was then adjourned.

#### **Subcomm # 6 WZ Barry Stephens** EASI (Thanks to Barry for these minutes.)

- Call To order
  - Meeting called to order by Co-Chair Barry **Stephens**
  - 23 people in attendance
- Approval of previous meeting minutes
  - Minutes from fall meeting in Savannah were reviewed and approved.
- New Business
  - Co-chair Andy **Keel** is nearing retirement and not sure when he'll next attend a TF-13 meeting. Thus, he recommends finding a new co-chair. **Stephens** asked for a replacement from a Government agency. Greg **Schertz** ([greg.schertz@fhwa.dot.gov](mailto:greg.schertz@fhwa.dot.gov)) from FHWA volunteered. **Action item – begin training of Greg by including him in the TF-13 communications.**
  - **Stephens** noted that he has served as co-chair for many years and believes its time to step aside to give someone new the opportunity to lead this subcommittee. Ken **Smith** ([myonname@netzero.net](mailto:myonname@netzero.net)) of Ken Smith & Associates (a consultant for Yodock Wall Company) volunteered. **Action item – begin training of Ken by including him in the TF-13 communications.**
  - Reviewed mission statement & scope of committee
  - Find Fall 2008 meeting - Problem statement for “Service Life determination for Portable Concrete Barrier” was determined to be in top 4 by TCRS but not selected. **Action Item - Consider proposing this research topic again in the future when more research dollars are available.**
  - **Stephens** covered topics discussed at AFB20 earlier in the week
    - TRB joint subcommittee is being formed to focus on positive protection in work zones. Sponsoring TRB Committees include ABB55, AFB20 and AFH10. Jim **Bryden**

- ([jbryden@nycap.rr.com](mailto:jbryden@nycap.rr.com)) is the designated chair. **Action Item – those interested in volunteering should contact Bryden.**
- Open discussion on the impact of MASH on development of new WZ devices
    - Stephens received correspondence that ATSSA’s membership was poled and not willing to contribute to cost of MASH testing of temporary sign supports at this time. Reasons cited include a) concern that some States may chose to stick with 350 guidelines rather than upgrade to MASH b) the Country seems to be gravitating toward lower weight cars, not the heavy cars in MASH and c) there is no evidence that existing temporary signs are working improperly in field.
    - ATSSA’s statement regarding vehicle mix moving to lighter cars was addressed by Dean **Sicking** (Univ. Nebraska, Midwest Roadside Safety Facility). **Sicking** commented that his data does not indicate that the US fleet is downsizing at this time, especially in the small car category. **Sicking** also stated that he believes testing of existing hardware to MASH standards should be seriously considered, as his test lab has done some testing of existing portable signs with pickups and has noted failures.
    - General discussion that upon adoption of MASH by AASHTO, market forces may determine the testing of existing devices to MASH. Concerns are that current MASH implementation program is not a mandate and has no deadline. Also current plans allow 350 products indefinitely into the future as decided by each State. One manufacture qualifying his product to MASH will not necessarily lead others to follow because State DOTs avoid sole-source bids. Thus, two or more manufactures must meet MASH before other manufactures will feel compelled to follow. Finally, MASH devises, because they must pass an elevated testing criteria, may inherently cost more and thus, when they compete economically against their 350 cousins, the 350s will win. The exceptions to this will be new MASH devises that cost the same or less than their 350 cousins (i.e. – MGS, etc.).
  - Question was asked - *For WZ hardware, is there a need to re-test using MASH pickup, especially if hardware does not rise above the hood?*
    - Generally discussion and agreement, even from **Sicking**, that engineering judgment may be possible in certain cases like this and testing would NOT be required to receive MASH acceptance.
  - *Would we learn anything by testing Longitudinal Channeling Devices (LCD’s) with new MASH pickup?*
    - General discussion that the 2270p would penetrate the LCD, just like the small car, and vehicle response is not a huge concern. **Sicking** interjected that he thought a 2270p test at TL-3 conditions should be conducted to verify that vehicle response is okay.

- *Should manufacturers of portable sign stands to be proactive in re-designing their stands?*
  - General Discussion – many manufactures feel that their existing portable signs are working okay and the need to upgrade to MASH, other than due to market forces, is not high on their priority list.
- Open question was discussed on the need for new WZ device standards. None were brought forth by the group during the breakout, but see “action-item” below.
- Adjourned at approximately 2:00
- **Action Item (added topic tied to TF-13 group discussion) – Consider developing a standard covering inertial barrel arrays (standard barrel sizes, standard array configurations, address intermixing of different brands of barrels, address use of elevating pallets, address use on elevated curbs or islands, etc.). Review this topic during the next WZ subcommittee meeting in the Fall of 2009.**

**Subcomm #5 Sign and Luminaire Supports** Art Dinitz was asked to step in for this meeting

Neither co chair could attend. There was a review by Mac **Ray** on the guides. Still needs good photos from industry of their products. Fairly complete but still in progress. Luminaire support guide (funded by WY led pooled fund study) will allow reference to size, height, mast arms, etc. Art thanked WY and LA for their staunch support in producing TF-13 guides over the early years.

**Subcomm # 7 Cert of Test Facilities** Jeff **Shewmaker** of SafeTechnologies

Discussed cable barrier testing in ditches. Dr. **Sicking** was the self-appointed moderator of the session and helped establish two matrices: the first has cables placed anywhere on slope, and the other was to place at 4 feet off the break point. Thanked Gene **Buth** for a presentation he never got to show.

4 of 7 labs are ISO 17025 accredited and all will be done by September. ILCs show very good comparison between labs. Are working on correcting the TRAP program with respect to THIV.

**Subcomm # 8 Rail Highway Crossings** Mike Hare

Hare made a plea for any help with his charge for making a resource guide for our section of the new website.

**Proprietary Products** Art Dinitz (get notes from **K Smith**)

Need to clarify and speed process to get new products into use in the highway industry.

**Reports from Special Subcommittees:**

**Marketing**, **Andy Artar**: The industry has seen increases in steel prices again showing improvement on demand. Also wants to re-work logo to incorporate AASHTO and ARTBA’s new logos. Noted **Dave Lewis’s** request for a newsletter – Marketing chair will contact **Lewis**. May be able to use the newsletter as a marketing tool to encourage



participation from state people. **Donna Clark** of ATSSA agreed to be Co-Chair of Marketing and work on a proposal in Delaware.

### **New Standardization Areas**

Tubing manufacturer rep offered suggestion to standardize tube sizes, grades, minimum orders, so prices could be reduced. **Dinitz** said they surveyed states early on and selected most common shapes that the states responded with, and his manual has helped to standardize shapes used by those states. **Collins** noted that states have railings that they like and will not change, but there are other potential areas where savings are possible. There is the potential for economies of scale by standardizing these tubes. **Get names and affiliations of the individuals concerned for new subcommittee.**

**Durkos:** Saw **Kempen's** January 2009 TRB presentation on truck escape ramps when he said 'standardization was needed' and **Durkos** jumped on this. **Kempen** had looked into this in detail and found that escape ramps were unique sites and that standardization was very difficult. Should not use in curves. 0.8 G load is pretty much standard. Have gravel beds and arrestor nets. **Collins** noted one ramp in Wyoming where the truck would have to cross the road to use the ramp. Rebuilt it with arrestor net and it has worked well.

**Stephens:** Should we standardize the arrays of sand barrel attenuators?

Concrete barrier segments are tweaked by each state but should be standardized. Should we refuse to accept minor changes? Should FHWA recommend that concrete barrier designs be standardized?

#### **EDITOR'S NOTE**

**Jim McDonnell (AASHTO) was contacted to look into this.**

What about interaction between cable barriers and other barriers? We need design guidance on terminating cable barriers with, or adjacent to rigid or semi rigid barriers. Some cable manufacturers have accepted transitions. In some cases, w-beam can shield the cable end from snow loads. **HAVE A BREAK OUT SESSION ON CABLE BARRIER TERMINALS IN CONJUNCTION WITH OTHER BARRIER SYSTEMS.**

**Ron Faulkenberry** of Gibraltar, and Richard Porter of Nationwide will co-chair this ad hoc group.

**Collins** brought up **New - Old business:**

Location of 2010 Spring meeting?: Have offers of College Station, TX. Lincoln/Omaha NE, Sacramento CA, Westchester NY or Mystic CT. Plurality was for Sacramento, with Westchester/Mystic in second place, though we may defer to AFB20 if they have a selected venue. 13 said they would change their vote to Park City (Chuck **Norton** would coordinate).

### **Executive Committee Summary:**

As far as voting on publications go we will notify **Dinitz** of the Joint Committee, system by system, and leave it at that. (see earlier notes)

Consider compressing TF-13 schedule back into 1.5 days. Also ask AFB20 if the subcommittee can start on Monday so that TF-13 can go Thurs morn to Friday noon.

### **Technical Presentations:**

#### **Ron Faller MWRSF**

Rough Stone Masonry Guardwall: for FHWA Central Federal Lands Highways Division and NPS: What was lowest height for TL-2? 22 inch met TL-2 and did not expect 18 inch to work. Also tried 20 inch by elevating approach pad in front. Met 350 but recommend that new construction be at 22 inch and allow 2 inch overlay. No cracking of wall. No separation of mortar joints.

Vertical concrete barrier for FRP decks: Vertical, used TTIs X bolt design. 32 inches tall with 16 foot segments. 8 one inch vertical bolts. Had 4 inches deflection with a MASH pickup test, also showed spalling and cracking near joints.

Safety investigations of WZ devices: Report 350 recommends 2000P if we believed windshield damage to be a problem. Evaluated 350 devices and estimated which were critical for failure. Had penetration of windshield using rigid substrates and failed MASH. Two tests were shown: 1) PSST dual support on H stand. Single support AL X foot print with AL panel with pickup. 2) Small car with low panels and rigid substrates. Proprietary device hit windshield but did not penetrate, tripod device caused major hole in windshield.

#### **Mike Haley, TAPCO:**

Demonstrated the TAPXO Retroreflectometer. It has an internal GPS (for linking to inventory system) and can read RFID tags placed on aluminum substrates.

<http://www.tapconet.com/store/products/4f68f4b2-272f-41dc-ae00-12a04b3f73a5/1/Retroreflectometer.aspx>

Can be used for all signs, or for spot checking other methods of maintaining the retroreflectivity of your signs.

#### **Bill Neusch, Gibraltar:**

Discussed his findings and personal opinions on high tension cable barriers. Gibraltar has done over 20 tests and have 1050 miles in place. 4-cable and 3- cable, with and without sockets, etc. Have rigid, semi rigid, and flexible systems, but cable barrier is the softest system available. Experienced 75 percent driveaway from impacts with Gibraltar systems.

Showed cable anti-terrorist barrier. Noted that added posts increase the stiffness of the system and that more is not necessarily better. 30 foot post spacing is even softer (showed pickup on flat terrain.)

Mentioned small vehicles and underrides. Most cable systems allow the bottom cable to ride up the post. (for example Nucor and Trinity cables can rise up unless the cable interlocks with vehicle.) so the more posts you have the greater tendency to ride up the post, creating uplift and leading to underride. Each system has an optimum post spacing.

Adding 4<sup>th</sup> cable just puts another cable within the same span as their 3 cable system. 4<sup>th</sup> cable has no benefit in capturing vehicles. Increases cost to add 4<sup>th</sup> cable.

Disagrees with states that specify 10 foot post spacing with 4 cables. Should specify performance, not number of cables or post spacing. (Most states do limit post spacing to 20 foot) Bid process gives DOTs an effective and economical product.

**Artar:** how did your system perform on 4:1 slope with 30 foot post spacing? **Neusch:** TL-4 system at 25 degrees caught small car on that slope. With pickup needed 20 foot spacing because with the 30 foot spacing the truck contacted the opposite embankment and rolled.

**Mark Bloschock: Vertex Engineering. Epoxy Anchors:**

Crash cushions. Anchoring crash cushions is critical. Crash cushion with loose or poorly grouted anchors can buckle and pull out. Conducted crash cushion inspections and did non destructive tests on anchors. Found examples of improper anchor installations.

**Gary Lallo, Hill & Smith:**

Zoneguard, Portable Steel Barrier 32 inch height. Base width of 27.5 inches.

<http://www.hillandsmith.com/highwayproducts/zoneguard.html>

Have a standard system which is anchored only at the end of the run and a minimum deflection system with anchorages every 33 feet. Standard system deflected 79 inches under MASH test 3-11. SUT was able to be driven after the 4-11 test.

Minimum deflection system had max deflection of 5 inches under MASH 3-11. Anchors were simple pins in some tests, while epoxy anchors were used in others.

**Tim Cox, Plastic Safety Systems:**

Manufacture WZ TC equipment, temporary portable rumble strip. Customer wanted a rumble strip that could keep up with moving work zone.

<http://www.plasticsafety.com/road-quake-temporary-portable-rumble-strips>

Won ATSSA innovative products award. 2009

**William Williams of TTI – Recent Testing:**

Aesthetic curb mounted bridge rail. Type T-1F Steel post and 2 extra aluminum bridge rails installed after post installed. Bullet shaped railings bolt in place. Added reinforcement to curb where needed. MASH 3-11 test

Designing bridge piers and abutments for vehicle collisions. Evaluate LRFD pier design load of 400 kips. TTI feels 400 kips is not enough. Have modeled, and will impact a rigid column instrumented for load measurement.

Design and testing of TXDOT T223 bridge railing. Increased height of T203 from 27 to 32 inches. Looks like Kansas Corral concrete rail. Strength mid span was 75 to 85 kips. Reduced deck damage.

Optimized Rockingham precast concrete barrier connection by reducing steel to still meet TL-3. One end has a slot; other end has a “T” and reduced the length of the slot-and-T down to one foot.

### **Mark Bloschock – Pavement Stitching**

Went through a presentation of road surface problems for bikers. Showed method for stapling lanes together.

## Wednesday Morning, June 03, 2009

For those who began their week in San Antonio on Wednesday here are notes on the AFB20 Breakout group summaries:

**Dr. Gerald Ullmann:** Work Zone Joint Subcommittee on Positive Protection has been proposed. At this meeting we reworked the proposed scope of the joint subcommittee, and it will be sent to Jim Bryden who will be the chair of the Joint Subcommittee.

**Mike Dreznes:** Strategic Plan Update. Reviewed the six goals of the Strategic Plan and came up with the following priorities:

1. Develop an improved website to serve as an AFB20 clearing house for roadside hardware design info.
2. Sponsor a major conference on Roadside Safety every two years.
3. Promote research to support advance in computational mechanics.
4. Conduct webinars and create training materials
5. Post list of research projects on roadside safety, similar to NCHRP list.
6. Develop a safety hardware installation certification program.
7. Identify and engage existing industry user groups like PennDot Guiderail Mentors.
8. Develop and publish circulars and papers. Terminology like safety fence, verge, etc.

Need members or friends to volunteer to help with these efforts.

Steve Maher noted that TRB HQ already handles webinars to help develop them.

**Ida Van Schalkwyk** summarized the Highway Safety Manual breakout session. She discussed questions like how can we improve considerations of roadside safety design elements? What is the relationship between AMFs [accident modification factors] and current severity indices? Other needs include:

Identify older research that may now be obsolete.

Review AMF for less rigid barriers.

Improve roadside data collection

New research to update KAB [killed, A injury, B injury] vs KABCO applications

Interaction of AMF values such as median barrier vs. median width.

**Van Schalkwyk** also summarized the discussion on testing of barriers on sloping median ditches. It was resolved that a task group at TF-13 discuss this issue and report out. The results are presented under the Subcommittee 7 minutes – Certification of Test Facilities.

**Roger Bligh:** Identification of research needs. Came up with 5 priority projects:

1. Collection and analysis of Roadside Encroachment Rate Data DOUG GABAUER / SICKING / MCGINNIS
2. Low cost roadside safety devices for low volume and low speed roads. LA TURNER / SEITZ / FALLER / RAIFE G
3. Analysis of non-tracking impacts with roadside features and safety devices. SICKING / GABLER
4. Performance of longitudinal barriers on curves and superelevated roadway sections. BIELENBERG / DURKOS / ALBERSON
5. What is the relationship between roadside AMFs and current severity indices? IDA / DIXON / MILTON / CONRON / RAIFE G

**Keith Cota:** Update of Roadside Design Guide. 2006 update only dealt with Chapter 6 on median barriers.

Goal was to incorporate research, resolve Green Book conflicts, reference TF-13 and FHWA Acceptance Letters but take out the drawings in the appendix.

Refer to MASH and the Implementation Plan. I.P. is a living document that can be updated, but changes will require re-balloting thru AASHTO.

Adding new chapter on low volume roads.

Adding new chapter on urban areas.

Research completed as of Fall 2008 will be the latest incorporated into new RDG.

TCRS will vote during Sept 23-25 meeting in Rehobeth Beach Delaware. Expect ballot to go to SCOH in the Fall of 2010.

### **Summary of Ongoing Research:**

New England Transportation Consortium – Keith Cota

Established in 1985. All 6 New England states participate. ConnDOT is the lead agency.

Each state kicks in \$100K and get 6 to 8 projects per year.

Roadside projects tend towards bridge railings. Keith would like to see more efforts towards roadside safety.

Have worked on Modified Eccentric Loader Terminal as a TL-2 design. Did a two bar curb mounted bridge rail at TL-4 and a TTI study on TL3 and TL4 transitions to the NETC bridge rails.

See [www.netc.uconn.edu](http://www.netc.uconn.edu) and [www.netc.umass.edu](http://www.netc.umass.edu)

What else can AFB20 do? Can we add them to our mailing list? Let us do this for TF-13 as well. Cota will also send the AFB20 research topics to NETC for their consideration.

**Chuck Niessner** summarized current **NCHRP** roadway departure related projects. These are enumerated in the Task Force 13 notes above.

### **Ken Opiela**

Update of TFHRC Research

Document Past Research Efforts – He handed out list of past and current research efforts.

Went through NCAC work on simulating vehicle handling through median ditches.

Discussed Silverado model meeting MASH TL-3 quad cab truck criteria.

Cooperated with MWRSF on simulation of TL-2 12 foot post spacing guardrail.

### **Scott Rosenbaugh**

MWRSF Pooled Fund Study

TL-3 MGS Bridge Rail – low volume system that does not require a transition (MASH)

Standardizing posts for MGS Transition. Original design used three different posts in the transition. Reduced this to W6x9 and W6x15

Also working to adapt this transition to use wood posts.

MGS placed at edge of 2:1 slope.

Performance limits of MGS with 6 inch curbs. (How far behind curb can we put the MGS?)

High tension 4-cable barrier on 4:1 V ditch – want to be able to place it anywhere in the ditch. Working on cable attachment to posts.

Warrants for median barriers - paper study on cross median crashes in Kansas. Found to be weather sensitive.

### **Roger Bligh** – Roadside Safety Pooled Fund of TTI

AK, CA, LA, MN, PA, TN, TX, WA are the states currently participating.

Pinned down concrete barrier for limited deflection

Long Span Guardrail 27 inch TL-3 with two posts omitted – failed

Concrete barrier for use in front of slopes or on MSE walls without large moment slabs.

T-Intersection (Short Radius) Guardrail

Steel posts over underground structures, using moment slab to anchor posts

US11 Lake Ponchartrain Bridge Rail Replacement

Evaluation of field applied fittings for cable barriers

Alternative designs for guardrail posts in mowing strips.

Vehicle crash wall for mechanically stabilized earth retaining wall (shield for base of MSE wall.)

Development of portable concrete barrier with large drainage opening

Guardrail installed at face of steep slopes.

[www.roadsidepooledfund.org](http://www.roadsidepooledfund.org) if you want the scoop on all of these projects~

### **Closeout of AFB-20**

This was the first time we combined AFB20 with TF-13

Need to have more advanced notice for both meetings, especially for international visitors. This does save travel costs for those who usually attend both meetings. Also a

single round trip saves time. Manufacturers believe it to be more efficient, too. If we combine them in the future we may be able to cut a day off the week. Hotels usually ask to guarantee a certain number of rooms, so early planning works both ways.

Should there be a theme for next summer? Strategic planning group thought that Maintenance was an issue. Barriers on slopes are also an emerging issue. MASH and RDG will also be new documents.

Kansas City (out of contention as we will meet with TCRS in Kansas City in the fall), Irvine, Lincoln,

### **AFB20 Positions**

**Sicking** agreed to be Research Needs Coordinator

**Van Schalkwyk** will be the Secretary Treasurer

Still need a communications coordinator.

Should we have a Major Roadside Safety Conference every 3 or 4 years?

If you are agreeable to this concept, please consider what skills you could contribute to this effort.

Thank you