

**Task Force 13 Meeting**  
**September 29, 2008**  
**Savannah, Georgia**  
**DRAFT MINUTES – November 5, 2008 EDITION**  
**NOTES IN RED INDICATE**  
**“TASK FORCE TO DO LIST” ITEMS**

**Monday, September 29, 2008**

**John Durkos** welcomed the attendees to Savannah. **Pat Collins** sent his regrets as he could not join us. **Durkos** asked that members try to **send their registration forms to him early so** that the hotel can customize the arrangements. (If you cannot include your registration fee and wish to pay at the door, please send in the registration form as soon as you know that you will attend.)

**Will Longstreet** (Co-chair of Barriers) and **Divyank Pathak** (Co-chair of Publications Maintenance) both of PennDot could not attend due to out-of-state travel restrictions (another parenthetical note by your secretary, **if you need a letter from the Task Force to justify your travel, please let me know** – we especially appreciate and encourage attendance by our State DOT members.)

Task Force 13 is in a transition. We have made huge strides in getting our guides on line. The Task Force will contract with TTI to host our website but volunteer efforts are still needed to review drawings for each of the guides.

**Durkos** did a search and discovered that in 1921 AASHO and AGC first joined forces. In 1969 the AASHO/ACG/ARTBA Joint Committee established Task Force 13 to work on standardizing road and bridge hardware. Unlike most task forces that accomplish a job and disband, TF13 has found a continuing mission to publish hardware guides. **Durkos** noted we were looking for a co-chairs for the Work Zone subcommittee and the Certification of Test Facilities subcommittee as **John LaTurner** will be stepping down. **Andy Artar** of the Marketing Committee put together another mailer for encouraging Task Force 13 attendance. This mailer was sent as an attachment to this Savannah Task Force mailing.

**Karla (Polivka) Lechtenberg** will be talking about ProBoards and the need to review drawings prior to the meetings. Teleconferences may be the way to move these processes forward.

Group Discussion tomorrow will cover MASH 08 implementation and AASHTO Roadside Design Guide.

**Durkos** noted that **Heath Valentine's** wife passed away recently and a card was circulated for him. (Immediately following the meeting we learned that Task Force member Grant Dicke passed away on September 30th)

Task Force Secretary **Nick Artimovich** recapped the minutes of the various subcommittees from the meeting in Hershey.

**Breakout Session A – Subcommittee #2 - Barriers**

(Thank you to Bob Takach for submitting these subcommittee minutes.)

Co-Chairmen: Will Longstreet (PENNDOT) and Bob Takach (Trinity Highway Products LLC)

I. Review of Mission Statement

Bob Takach reviewed Mission Statement. No changes were suggested.

II. Review of Spring 2008 Minutes:

Bob Takach gave recap of meeting minutes from Hershey meeting last spring. The following Work Zone drawings were approved with comments:

**SWC02a-b Positive Connecting Barrier**  
**SWC12 Driven Pins Through Asphalt for F-Shape**  
**SWM03a-b Triton Barrier TL-2 & TL-3**  
**SWC09 Temporary F-Shape Concrete Barrier Element**  
**SWC10 Tie-Down Strap System for F-Shape**  
**SWC11 Bolted-Down F-Shape Concrete Barrier**

The following Guardrail/Median Barrier /Component drawings were approved with comments:

**SET03, Thrie-Beam Bullnose End Terminal**  
**RTM07a-c, Slotted and Bent Thrie Beam Guardrail**  
**PTE06-07, MGS and Thrie Beam Foundation Tubes**  
**SGR28a-f, MGS for use with Round Posts**  
**PDB13a-f, MGS Blockouts for use with Round Posts**  
**PDE17a-c, Round Posts for MGS Guardrail System**

III. In Progress Review of Work Zone Drawings:

Barry Stevens as Tech Rep for the Work Zone Review Group presented following drawings for approval by the Task Force; **SWC02a-b, SWC12, SWM03a-b, SWC09, SWC10, SWC11**. It was agreed that these drawings can now be moved from “in progress” status to “ready”.

A new drawing was brought forth for review. **SWM04 Vulcan Barrier**  
Drawing will be posted to the TF13 Proboards website for review.

Barry brought forth an issue that he also mentioned at the spring meeting about the web page titled Online Hardware Guide Website Index of Submitted Systems. Webpage indicates;

“The systems shown below have *not* been approved for inclusion in the Guide by the Barrier Subcommittee of Task Force 13.”

Barry has suggested that this should be changed to indicate “drawings for the systems shown below have *not* been approved for inclusion in the Guide by the Barrier Subcommittee of Task Force 13.”

#### IV. In Progress Review of Guardrail/Median Barrier /Component Drawings:

Karla Lechtenberg as Tech Rep for the Guardrail/Median Barrier/Components Review Group presented following drawings for approval by the Task Force; **SET03, SGR28a-c, RTM07a-c, PTE06-07, PDB13a-f and PDE17a-c**. It was agreed that these drawings can now be moved from “in progress” status to “ready”.

New drawings were brought forth for group review at the meeting

##### **(2) SYSTEMS**

**SGR29a-b, SGR30**

##### **(6) COMPONENTS**

**FBB08-09, FMW02, FMW03, PDB12, PDB16, PDF04,**

##### **SGR29a-b, 300” Long-Span, W-Beam With Nested Rail**

- 1) Sheet 1, font size on callouts for RW02a on elevation view need to be enlarged to match other callouts.
- 2) Sheet 1, add “Section B-B” above title for “Wood Post Option”
- 3) Sheet 1, either dimension system height to top of rail or to centerline of w-beam, do not indicate both. Tolerance rail height was questioned, but not resolved or agreed to be placed on drawing..
- 4) Sheet 1, elevation view, clarify “splice” callout to “std w-beam lap splice”
- 5) Sheet 1, should “nested” be defined? Dual rails are called out in elevation.
- 6) Sheet 2, last sentence under “INTENDED USE” seems to be a fragment.

##### **SGR30, Timber Guardrail System for Attachment to Noise Wall**

- 1) Sheet 1, elevation view, can the 23 ¾” dimension to the splice vary? Is this a nominal dimension? Please clarify.
- 2) Sheet 2, under END RAIL SECTION it indicates Unit Length = 192”. Is this correct?

- 3) Sheet 3, Hole depth on plan view of concrete post is not indicated. Use “D” to indicate diameter on holes, rather than the diameter symbol &. This is typical on all sheets. List dimension first, then D.
- 4) Sheet 3, Rebar size & grade were questioned. Maybe add a note to sheet to suggest to end user to refer to MN DOT for additional details on post.
- 5) Sheets 5 & 6, Timber Spec?

#### **FB08-09, Round Head Bolt with Washer and Hex Nut**

- 1) Sheet 1, Dimension shank size (diameter) on detail of bolt.
- 2) Sheet 1, question was brought up, Is new drawing for this part necessary? Could it be added to an existing drawing? Bob Takach verified that this type of bolt does not exist in current guide, so need for drawing is OK.
- 3) Sheet 2, Under “Specifications” ANSI F568 should be ASTM F568. Review remaining specs for similar corrections.

#### **FMW02, Temporary Barrier Connector Pin**

- 1) Sheet 1, Use “D” to indicate diameter on holes, rather than the diameter symbol &. List dimension first, then D.
- 2) Sheet 1, more dimensions are required on plate such as holes size, hole location, plate thickness, etc.
- 3) Sheet 1, Verify size of hole drilled at bottom of pin.
- 4) A question was asked if it was acceptable to have “TEMPORARY” in the title. Consider changing to “portable” or “precast”. Should this be discussed by the Work Zone subcommittee?
- 5) Sheet 2, Specification page font style & size should be as per default TF13 template
- 6) Sheet 2, Under Specifications” Is pin black or galv?

#### **FMW03, Temporary Barrier Connector Pin with Retaining Bolt**

- 1) Sheet 1, Use “D” to indicate diameter on holes, rather than the diameter symbol &. List dimension first, then D.
- 2) Sheet 1, more dimensions are required on plate such as holes size, hole location, plate thickness, etc.
- 3) Sheet 1, Callout on 1/2” bolt spec. It should read ASTM Grade 8.
- 4) A question was asked if it was acceptable to have “TEMPORARY” in the title. Consider changing to “portable” or “precast”. Should this be discussed by the Work Zone subcommittee?
- 5) Sheet 2, Specification page font style & size should be as per default TF13 template
- 6) Sheet 2, Under Specifications” Is pin black or galv?

#### **PDB12, W-Beam Tapered Timber Blockout for Timber Guardrail Post**

- 1) Sheet 1, Use “D” to indicate diameter on holes, rather than the diameter symbol &. List dimension first, then D. Indicate hole is on center of face, not by dimensioning from side of block, remove dimension.
- 2) Sheets 1 & 2, remove ‘W-BEAM’ from drawing title.

- 3) Sheet 2, under “Specifications” change “nominal dimensions indicated” to “dimensions indicated.”
- 4) Sheet 2, Specification page font size & style should be as per default TF13 template.

**PDB16, CRT Timber Post for Thrie-Beam Guardrail**

- 1) Sheet 1, Use “D” to indicate diameter on holes, rather than the diameter symbol &. List dimension first, then D. Indicate hole is on center of face not by dimensioning from side of post, remove dimension.
- 2) Sheet 2, Remove last sentence of first paragraph under “Specifications” This post does not fit into a tube.
- 3) Sheet 2, Correct designator callout in table, should be PDB16.
- 4) Sheet 2, Specification page font size & style should be as per default TF13 template.

**PDF04, BCT Timber Post for Thrie-Beam Bullnose End Terminal**

- 1) Sheet 1, Use “D” to indicate diameter on holes, rather than the diameter symbol &. List dimension first, then D. Indicate holes are on center of face, not by dimensioning from side of post, remove dimension.
- 2) Sheet 1, on side view, at ¾” holes callout add additional leader line to point to other ¾” hole and remove “TYP” from callout.
- 3) Sheet 2, Specification page font size & style should be as per default TF13 template.

Two System Drawings submitted by MwRSF that were not reviewed at Savannah due to time constraints are **SGR31 and STC01**. Hard copies of system drawing SGR31 were distributed to all meeting attendees to encourage them to review at their convenience. These will require Tech Group /General Membership review, via the discussion board site.

Per Standard Operating Procedure the review process should be done online.

The appropriate Technical Review Group, see website link

<http://www.aashtotf13.org/Work-in-process.asp>

and the general membership should **continue** the review process via the Proboards discussion board site. <http://barrierguide.proboards31.com/>

**Subcommittee # 1 Publications Maintenance** –

Co-chairs are not present, so Roger Bligh gave update of TTI contract proposal. VDOT volunteered to maintain the TF website up till now. WPI has some publications, TTI has the barrier guide. TTI submitted a formal proposal and TF13 decided to select their option and sent a formal RFP. TTI has proposed and will discuss the details at the executive session this evening. Wes Duffard will be co-chair with Divyang and be

responsible for day to day operations, act as gate keeper, will be funded for travel to one or two meetings per year.

All TF work to be housed in one location on TTI servers. **Need a formal mechanism for transferring info to TTI for inclusion onto the site.** Certain items may need to be voted on, but need a formal transmittal so that TTI knows what to post.

Drawing review and submittal process. How are drawings submitted? Takach says 1<sup>st</sup> step is to request a designator for the drawing, according to Standard Operating Procedures. From that point the requestor gets template and submits drawing to the tech rep. (identified on web site). Should be reviewed for proper format before going to tech reps.

Proposal is for bare bones to convert all portions to the unified TTI site. Potential for making improvements to the functionality of the site is there but Task Force will need to agree on this once things are under way. Discuss potential improvements at subcomm meetings.

Durkos clarified what “tech reps” are, they act as a hardware review group

Karla is barrier tech rep chair. LaTurner is rep for crash cushions. Chuck Norton is rep for terminals. Work Zone TCD is Barry Stephens.

Chuck Norton moved to approve Hershey minuets, seconded by numerous members.

### **SubComm #3 Bridge Railings and Transitions**

(Thank you to Kurt Brauner for submitting these minutes)

The meeting was called to order by Roger Bligh who then briefly informed the committee about the status of the online hardware and transition guides. Roger then introduced Dr. Malcolm Ray who gave the committee a tutorial presentation on the bridge rail guide. Dr. Ray mentioned that approximately 150 bridge rail systems have been incorporated into the online guide and are ready for review. Even though his contract is scheduled to end in December, Dr. Ray indicated he would continue to assist with implementation of newly submitted systems and handling of review comments through the next TF-13 meeting.

The guide can be accessed at the following link:

<http://civil-ws2.wpl.edu/Documents/Roadsafe/Guides>

A link for the guide needs to be added to the TF-13 web site under TF-13 Publications.

Dr. Ray mentioned that the online document can utilize various types of information such as drawings, photographs, video clips, test reports, etc., and that all of the available

information for a given bridge rail system are linked. The dynamic page that is generated for each system also has an area for comments. This area will archive all comments and will allow reviewers/users to add their own. Submitted comments will be reviewed by an administrator to make sure it is a legitimate comment before posting it to the guide.

All new additions to the guide should be sent to Dr. Ray (or the current web site administrator) who would then assign the entry a designator and link the information into the guide and its search functions. It was recommended that, after posting, the original submitter review the material and post a comment that he/she has reviewed the systems online page and that it is acceptable. Dr. Ray suggested that the entry contain a link to the submitter's information page which would contain his/her e-mail address, contact info, etc. The guide can display a list of all user and submitter contact information, but this list is not searchable.

Bligh suggested that the subcommittee develop a procedure that can be followed for submitting new systems for incorporation into the online guide. The procedure might include a template for the simplified cross-section drawing, a check list for required information (photographs, etc.), and a check list for keywords and search criteria (e.g., material, test level, test specification, etc.), and contact information. The co-chairs (Bligh and Brauner) will develop a draft procedure for presentation to the subcommittee at the next TF-13 meeting.

Dr. Ray then displayed the search features incorporated into the online guide wherein a user can filter the search results based on material, test level, etc. The group suggested that under the "Approval" search, the status indicator "AASHTO Approved" be removed from the search criteria. AASHTO will probably not review and approve these details. Therefore, having a search category for "AASHTO Approved" could be misleading to users of the document. The status indicator "Submitted" can also be removed since all newly submitted systems can be assigned a status indicator of "In Review." Also, it was suggested that under the "Test Specification" search criteria, that "Update" be changed to "MASH."

It was agreed that systems developed and tested under older guidelines (e.g., Report 230 or 1989 AASHTO Bridge Rail Guide Specification) be permitted in the guide only if FHWA has accepted them as being Report 350 equivalent. Nick Artimovich indicated that FHWA was completing a review of bridge rail systems tested under the 1989 AASHTO Bridge Rail Guide Specification to determine their appropriate test level under NCHRP Report 350.

Finally, Dr. Ray showed the group the preliminary structure of the new online transition guide and asked the group to think of useful search criteria that could be used to filter the search for the various systems included in the guide. In addition to "Test Specification" and "Test Level," the members suggested the "Rail Type" used in the transition section (e.g., W-beam, thrie beam, box beam, timber, other), "Post Type" (e.g., steel, timber, other), type of "Rubrail/Curb" (e.g., W-beam, channel, curb, none), and "Parapet End

Type” (e.g., flared back, tapered, vertical face, etc.). It was also recommended that a list of compatible bridge rail and guardrail systems be displayed for each transition entry.

The meeting was then adjourned.

#### **SubComm #4 Drainage Hardware**

Did not meet in Savannah but Nathan Paul did note that the states have not shown great interest in helping with Drainage Hardware guide due to budget constraints. **Will check with AASHTO Hydraulics Subcommittee to see if they have any interest.** Hydraulics has a Spring meeting and we should get on their agenda.

#### **Subcomm # 5 Sign and Luminaire Supports.**

A Guide to Small Sign Support Hardware – Mac Ray  
Complete from a programming point of view. **Need content, and check of material that is in place.** Mac walked us through the website.

All **members who submitted info are to go on the site, review their drawings,** and either submit comments or note that systems are OK! Want to use “comments” feature so that we do not have to go through drawing review at the meetings.

Guide to Luminaire Support Hardware.

Have just begun, using the same format as the sign support guide. Asked if he should limit systems to those that are crashworthy. Vote was for breakaway only, but will address the pooled fund states to see if they want to include fixed base supports or not. **Will invite mfgs to provide info on their structural certifications to the state highway agencies.** At the next meeting Mac hopes to have a more functional mock up of the web site.

#### **Subcommittee #6 Work Zone Hardware**

(Thank you to Barry Stephens for submitting these subcommittee minutes.)

- Call To order
  - Meeting called to order at 1:10 by Co-Chair Barry Stephens
  - 21 people in attendance
- Approval of previous meeting minutes
  - Minutes from spring meeting in Hershey were read, and approved
- Introductions of each participant
- Old Business
  - Barry reviewed WZ Subcommittee’s mission statement
  - Barry mentioned the need for a co-chair from a DOT. Andy Keel, Florida DOT, agreed to serve in this capacity until he retires (soon)...contingent on his boss’ approval. Andy Keel was elected unanimously.
  - “End of Useful Life” Discussions for WZ Hardware



- This topic was originally brought up at spring meeting by Matt Lupus, FHWA.
  - Relative to Portable Concrete Barrier (PCB); many have large cracks, spalls, or are in general disrepair. Are they crash worthy or should they be taken out of service?
  - Barry showed slides of existing Illinois DOT guidelines for inspecting PCB.
  - Recommendation was made at Spring meeting to develop a NCHRP problem statement to investigate this issue using scientific methods. Goal would be to keep PCB in service for as long as practical, yet set easy to understand criteria for pulling them when they've reached the end of the serviceable life.
  - Brian Stock from Easi-Set passed around example pictures of failing PCB from Florida that were sold as “culls” but used on an active WZ project.
  - Ken Opiela mentioned that NCHRP 22-22 is working on addressing damage to guardrail. Perhaps this work could be used as a bench-mark for addressing service life issues for other WZ hardware, including PCB.
  - Donna from ATTSA is pursuing adding the Illinois DOT inspection guidelines into the ATSSA WZ hardware inspection guidelines.
  - Barry showed example of inspection template he developed for evaluating condition of Triton Barrier in the field. Template could be used by other manufactures.
  - Started discussions on the NCHRP problem statement. First recommendation was to change the title to reflect PCB only versus all work zone hardware. All WZ hardware is too broad a topic.
  - Group discussed and agreed that only non-proprietary systems should be addressed. Proprietary products will require inspection criteria from the original manufacturer. Group further decided that the NCHRP problems statement should be narrowed to focus only on PCB, not other types of non-proprietary WZ hardware. This is because damaged PCB seems to be the biggest issue.
  - Due to time constraints, group discussions on developing the NCHRP problem statement had to be cut off. Barry Stephens, Ken Opiela and Jim Kennedy agreed to work together to finish this effort prior to the start of the TCRS meeting, scheduled to start the next day. (Note – This effort was completed and the draft of the problem statement is attached. TCRS reviewed this submittal and agreed that this problems statement was worthy of investigation and would be one of their top four for submittal up the chain. The TCRS committee member who will act as liaison on this project is Paul Fossier, Louisiana DOT.)
- New Business
    - Use of word “temporary”

- Discussion – Topic from main Committee meeting. Using the word may be problematic; testing is the same although the device may be used in permanent or temporary applications.
- Motion to suggest to main committee dropping the usage of the word “temporary”, except in situations where the manufacturer specifically requests it. Motion passed, all in favor.
- Other Business
  - Is there a need for guidelines addressing the use of longitudinal channelizing devices? - This was classified as a use-warrant and falls outside the scope of this Subcommittee.
  - Is there a need to develop standards for night WZ lighting devices? – some felt this was being address by others.
- Adjournment

Meeting adjourned at 2:00

**SubComm #7 Certification of Test Facilities.** **La Turner** reported and noted that **Kelsy Chiu** of KARCO will step in to take his place. Subcomm seeking more uniformity of testing procedures and results. Karco, ETech, and SafeTech are accredited. All others are well under way and should be accredited by next summer. Interlaboratory accreditation continues as it is a requirement for maintaining accreditation. Discussed MASH 08 and the gray areas and how to interpret them.

(Thank you to John LaTurner for submitting this PowerPoint presentation of the minutes. The presentation has been saved as a separate file:)



**SubComm #8 Rail Highway Crossing Hardware.**

Postponed meeting until Spring 2009. Mark Ayton co chair did not get approval for travel.

**Marketing Subcommittee**

**Andy Artar** the Marketing Subcommittee Chair, developed a commercial type ad for Task Force 13 that was attached to the invitations to all members. **Keel** developed a logo that we may adopt and use to identify ourselves. **Jim McDonnell** assented to use of AASHTO seal in the TF logo.

## New Standardization areas

As this former subcommittee has no members, the Task Force discusses this as a whole.

**Ron Faller** noted a need to standardize Cable Barrier Testing in V Ditches. Significant angle changes can occur when the vehicle crosses a v ditch and hits back slope. Vehicle contact with slope can change vehicle angle of impact with the device. How do we know if we are testing the barrier or the slope? Is the test repeatable? Say angle is 20 degrees, but slope changes impact angle to 35 degrees. Is the lab responsible for this, or do we all need to address ditch testing? Soil induced changes to heading angle of vehicle into the barrier. Numerous labs are testing high tension cables. MWRSF uses a 36 foot wide ditch, others use narrower ditches which may have a profound effect on the performance. How do we standardize this?

We also discussed the need to standardize critical impact points for cable barrier testing. We are looking for worst case for pickup override and the small car underride. These are two different CIPs. Never imagined the slope impact would alter vehicle approach angle.

Pickup truck tests, override on front slope is not a particular problem. Conference calls resulted in resolution to bring this before the wider crash testing community. This may require changes to MASH08 or supplemental info.

What is the right ditch width? Should states be surveyed to determine where these problems are occurring? Can a 20-7 project help us identify these variations?

Lance noted that impacts into sharp slopes will cause vehicle to climb the slope at a steeper angle rather than flatten out. At TTI one test like this passed, and one failed, even when leaving the runway under the same conditions.

If tests are run in one ditch width and passed, a state may wish to use a different median width.

Whether there is rounding at the slope break point and/or ditch bottom will have a significant effect.

NCHRP Project 22-25 on cable median barrier location: NCAC has investigated the slope effects of various median configurations for the FHWA. This effort will be completed soon. Additional analyses of cable barriers on slopes are expected to be undertaken under NCHRP project 22-25 which has been awarded to the NCAC. Certainly, the panel will consider slope issues under this project, but these would need to be communicated to the NCHRP or panel prior to their interim meeting planned for December 2008.

Barrier on non-level terrain 22-21 and Median Design 15-30 are also looking at issues that may include useful info.

Can't wait for a big NCHRP study as there are tests that need to be run.

**No resolution at this time.** Asked Chuck Niessner to highlight the NCHRP projects that address similar issues.

### **FHWA Issues**

Artimovich and Opiela covered FHWA issues. **Ask Ken for his PPT**

### **Executive Board Meeting** - Monday afternoon

In attendance were Durkos, Fredrick, McDonnell, LaTurner, Cota, Artar, Stephens, Takach, Bligh, Brauner, Hare, Buchan, Paul, Patterson, Artimovich

1. Roger Bligh - TTI contract for IT services for TF-13. Handout last rev 09/28/2008. Initial up front cost to convert Ray's publications and get them up and running on TTIs server. Annual costs would be modest. Also proposed options for improving efficiency of the web site. \$13,765 to get this going. The big chunk of \$8820 is for converting Rays files. If he can do this for us, that will save \$\$\$.
- Will contact Ray for this info. Ongoing maintenance efforts comprised of storage and hosting space and time needed per drawing submitted. Total annual maintenance fee is projected to be \$2000. **Still need to have a mechanism for formally sending documents to TTI for posting. Record should be kept of these transmittals. Put this on a separate Web Site ToDo list.(ie add Labeling guidance to web site) Each co-chair should list web site changes in their meeting minutes.** Discussion ensued as to whether we are required to pay taxes. May need to have formal review of our books. Need to work out who gets bill from TTI. Who authorizes payment of that bill? Who authorizes work to be posted against the contract? Assume Longstreet and Pathak will OK the invoice; exec board will concur and send payment. **All on ExecBoard review the TTI document and send concurrence or comments to Durkos.**
2. Location of next meeting. Agreed to go to TTI at College Station. Need to set a date. Fall 2009 will be in Delaware, and McDonnell asks that we move these forward so we can meet Sept 15 NCHRP deadline and fall within the end of AASHTO fiscal year.
3. Due to lack of time no other major subjects were covered.

### **TUESDAY SEPTEMBER 30, 2008**

**Durkos** welcomed TCRS members who joined us this morning.

**Niessner** updated NCHRP projects:

Fourteen active projects in roadside safety area, thanks to AFB20 and TCRS contributing problem statements. The underlined links in blue should connect you directly to the appropriate page on the TRB website.

17-11(2) Clear recovery guidelines for including in RDG. Contract signed Sept 08  
See [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      Summarizing NASS data and preparing final report.

[NCHRP 17-43](#) Long-Term Roadside Crash Data Collection Program . NASS “data” and 17-43 is pending the delivery and review of the 17-22 report by the panel.

[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  
Preparing draft final report

[NCHRP 22-14\(03\)](#) Evaluation of Existing Roadside Safety Hardware Using Updated Criteria Work plan submitted.

[NCHRP 22-20](#) Design of Roadside Barrier Systems Placed on MSE Retaining Walls.  
Conducted final crash test.

[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.  
Developing models for Phase II

[NCHRP 22-23](#) Criteria for Restoration of Longitudinal Barriers. Crash and pendulum testing completed.

[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.      Panel is reviewing the draft survey. Can add questions regarding median profiles to answer TTI and MWRSF questions on appropriate scenarios for crash testing.

Approved for FY 009:

17-44 Factors leading to median crashes

22-26 Factors related to serious MC crashes into barriers

22-27 RSAP update

**Fredrick** gave a summary of the annual meeting of the AASHTO Subcommittee on Bridges and Structures. **Dean Sicking** spoke at SCOBS re MASH08 .

**AASHTO Summary Jim McDonnell –**

AASHTO's stated Goal is to save 42000 lives each year "Toward Zero Deaths."

National Surface Transportation Policy and Revenue Study Commission. Recommended a restructuring of the federal program to reduce 108 programs to 10 major focus area, including safety where the Fed share of safety projects would be 90 percent. The initial goal is to cut fatalities in half by 2025 with improvements to reduce roadway departures, especially low cost improvements like guardrail and striping.

AASHTO released "Transportation - Invest in our Future". Reduce fatalities by ten thousand each decade. Need tougher laws, vehicle infrastructure integration. The report noted 60 percent of fatal crashes involved vehicles leaving road or lane.

The AASHTO president's (Pete Rahn MO DOT) emphasis area is to reduce number of fatalities attributed to lane departure crashes through targeted solutions.

Issued a report titled "Driving Down Lane Departure Crashes"  
[https://bookstore.transportation.org/item\\_details.aspx?ID=1217](https://bookstore.transportation.org/item_details.aspx?ID=1217)

Downloads.transportation.org [slash] pld-1.pdf

NCHRP 500 Series (<http://safety.transportation.org/guides.aspx> )

Strategic Highway Safety Plan required for each states. All states complied by Oct 2007. Lane departures featured in all plans.

AASHTO Highway Safety Manual – analysis tool - draft in early 2009, balloting in mid 2009. Akin to Highway Capacity Manual in that it calculates potential safety value of improvements. 900 to 1000 pages.

AASHTO's Tech Implementation Group TIG [www.aashtotig.org](http://www.aashtotig.org) focus technologies include cable median barrier, low profile, road safety audits.

MASH08. Publication expected early 2009

Roadside Design Guide: A new edition is due in 2010 Will refer readers to TF-13 web sites for hardware rather than try to illustrate all available hardware.

Reauthorization of Federal transportation bill. The current law, Safety Lu, will expire on Sept 30, 2009. AASHTO asks for \$45 billion to \$75 billion per year over six year span.

**AASHTO recommendations for safety:**

- Develop national agenda for safety
- Increase highway safety funding and flexibility
- Continue improvement of states strategic highway safety plans
- Enhance safety data collection and sharing

- Recommend model statues and best practices on ways to drive down fatalities
- Increase safety improvements in vehicles more quickly
- Encourage safety improvements in drivers
- Increase funding for safety research.

**ATSSA: Donna Clark**

Membership recruitment looking for more contractors for the Guardrail Committee. The association has produced a series of webinars and drafted input on Reauthorization issues.

Training includes “Guard Rail Installer Training” and “Longitudinal Barrier Systems”

Have webinars on w-beam, BR, cable barriers, crash cushions

ATSSA Foundation – worker memorial – school program – poster contest

Work Zone Safety Grant – trained 6000 people last year.

ITS Safety and Mobility Solutions by ATSSA

Reauthorization policy “Toward Zero Deaths” includes numerous specific recommendations to reduce fatalities. This publication is on line at: <http://www.atssa.com/galleries/default-file/Toward%20Zero%20Deaths%20FINAL.pdf>  
Donna pulled out the guardrail related information into a separate publication that she can make available to TF members.

Number of total fatals and worker fatals have dropped in 2007.

Noted legislative visits in Washington, DC, planned for 2009 on April 23 ATSSA fly in.

2009 ATSSA Traffic Expo in San Jose. <http://www.atssa.com/cs/atssa-2009-traffic-expo>

**Task Force 13 New and Old business:**

Executive Board Meeting

Spring 2009 meeting will be in April in College Station Texas. Date to be set.

Fall 2009 meeting will be in Rehobeth, Delaware, in conjunction with TCRS.

Contract with TTI was principal subject of discussion. Board will review details of proposal and likely have signed contract by spring meeting.

Talked about Andy Keels logo, and Andy Artar’s marketing flyer.

Drawing review must be done, if not on line between meetings, then must be done at the meetings.

## TECHNICAL PRESENTATIONS

**Karla Lechtenberg** presented a number of recent crash tests from the Midwest Roadside Safety Facility:

TL-1 Curb Type Railing Glue Lam Bridge Rail Tested to MASH08 Passed 19 ¾ height.

MGS W-to-Thrie Beam Transition to bridge rail transition – uses asymmetrical thrie beam to w-beam transition piece.

HighTension Cable Median Barrier: non proprietary high tension cable barrier. Showed small car test. The barrier was placed four feet up from bottom of ditch, 13.5 inches from the ground to the bottom cable with 10.5 inch spacing. Significant damage with cables cutting into windshield and 5.5 inches of roof crush leading to failure. Ditch was 46 feet total width. 16 foot spacing on posts. Met occupant risk but failed deformation criteria.

**Carl Ochoa** of Vista Engineering described the Ochoa GPS: Ochoa GPS- General Purpose Solution of Nonlinear Dynamic Analysis of Roadside Features with Occupant Impact Assessment

Where is our industry headed in regard to our ability to more efficiently implement roadside features that improve vehicle occupant safety at the best possible price? Dr. Carl Ochoa, originator of new physics insights and improved theory underpinning what have been called “reduced offset” guardrails, has looked into this question in some detail while coming up with Gregory’s GMS Guardrail that significantly extends G4(1S) guardrail capabilities. Dr. Ochoa offers some encouraging insights regarding what the future holds, based upon his crash-test-validated solution of the nonlinear dynamic equations that describe vehicle impacts with barriers (-and other roadside features, too). He points out that calculation of key quantities such as Critical Impact Points is made far easier, without sacrificing accuracy. This new solution has revealed previously unknown key non-dimensional ratios that characterize impact events, making trends much easier to understand and quantify. This has some far-reaching implications in regard to efficiencies in planning, instrumenting, conducting, interpreting, and comparing of crash tests and related test data. One key to achieving computational efficiency in his method is explicit (vs. numerical) integration of equations. This enables the analysis to run 1000x faster, making the analysis method far more practical for trend analysis. The new method may be used to guide detailed Finite Element Analysis (FEA) models. Ochoa notes that FEA model size is growing – and complexity is growing too. As many questions are raised by these analyses as are answered. Built-in modeling errors are unavoidable, with the result that models may be difficult to compare due to similarities being obscured by various modeling errors. LS-DYNA and Barrier VII have been in use for 15 and 35 years, respectively. Both require highly trained users. At best these models are only as good as the mathematical assumptions that are used to attempt to replicate reality. Some major European product developers have dropped modeling because of the updating effort (i.e. cost and labor intensities) required for models. Ochoa discussed the example of a single guardrail post in soil. The tweaks necessary to replicate the behavior of a single post end up removing us from real similarity with reality of actual barrier behavior.



Ochoa did not show any details of his analysis, but he believes GPS is a substantially improved theory and more reliable analysis tool for roadside hardware. It is a reliable predictive procedure that has revealed previously unknown trends in crash test data. It enables correlating fundamental performance characteristics across a range of vehicle types and installation variables. The analysis has the potential to enable Occupant impact severity evaluation of various RDG features (including combinations of features) by a user base that is many times larger than our present user base. (Carl Ochoa submitted these notes for inclusion in the final minutes.)

**Roger Bligh** discussed the recent Research at TTI on NCHRP Project 22-20 Barriers on MSE [mechanically stabilized earth] walls. He recognized Panel Members and generous contributions of the Reinforced Earth Company. AASHTO specs call for designing barriers on structures to withstand a 55 kip load, which leads to a huge moment slab to resist the overturning forces. TTI did the structural analysis, bogie testing, and FEA. Then built an MSE wall topped with various barrier shapes (not connected above grade, but the moment slab was continuous along wall.) Conducted bogie testing on the sections, then modeled pickup impacts. Finally, built full scale MSE wall with vertical wall on top and ran MASH08 test 3-11. Roll angle of 39 degrees was unexpected for impact into vertical wall, but the test was successful and resulted in minimal barrier and wall damage. They are now developing guidelines for design of the barriers on top of MSE walls.

**Mac Ray** discussed crash testing of MDS Bridge Railings. Have TL4 and TL5 versions at 48.5 and 62.675 inches tall respectively. They are steel safety shaped barriers between F and Jersey shapes. Each 20 foot long section is on a sliding base attached using 8 epoxied bolts. Tests were done at BAST in Germany, testing pretty much equivalent to MASH 08 tests except for pickup test which was not done.

**Kevin Groeneweg** discussed the development and crash testing of the Mobile Barrier Trailer.” Link to [www.mobilebarriers.com](http://www.mobilebarriers.com) Portable work zone trailer for short term operations crash tested with MASH08 pickup at TL-3.

**Barry Stephens**, of EASI spoke on the topic of Self Restoring Crash Cushions – How should they be designed? He showed the REACT350 durability testing where they ran the 820C test, ran a 2000P test then ran another 2000P test. The attenuator still passed 350 criteria after 3<sup>rd</sup> test, which was run five days after first impact. This is evidence that the device is “capable of withstanding multiple head on impacts without any maintenance or refurbishment and still pass the advertised NCHRP Report 350 test level.” This statement is Stephens’ recommendation for a Self Restoring Barrier definition. Is the REACT 100 percent maintenance free? No, as loose or damaged cables must be addressed. If it does not come back to at least 90 percent the maintenance crew must pull it out, or replace cartridges. Barry listed a hierarchy of maintainability.

**Barry Stephens** also presented information on the Vulcan Portable Steel Barrier. Tested to EN1317 and has received FHWA Acceptance to TL-4. Have anchored, wheeled, gate, and moveable versions.

**Dick Albin**, FHWA Resource Center, discussed Cable Barrier Connections. Connecting low tension cables to spring compensators, compensators to anchor. Most specs for cable anchors have very little detail of how this connection is made. Washington DOT has recently had crashes where the cable connections came loose. Cable end pulled out from the end of the wedge anchor. Roadside Safety Pooled Fund Program (managed by WSDOT) funded a project to develop a new connection that could be assembled in the field and used as a field retrofit in the low tension system. Evolved into a larger project than anticipated. Looked into Epoxy ends, swaged ends, Precision Surlock mechanical connection, Nucor Steel Marion Connector. Crash tested the Epoxy connection under same conditions as low tension generic cable system. Test was successful.

**Ron Falkenberry**, of Gibraltar Cable Barrier Systems asked to speak to the Task Force on some specific topics regarding cable barriers. His company has seen specifications for cable barriers change frequently, sometimes just before project letting. Length between anchors, post spacing, and 3 vs 4 cables. Concerned that some reports have come out attempting to show performance of cable barrier systems that have not objectively evaluated all the high tension systems. Wedge type fittings and swaged fittings rated the same should perform the same. He believes contractor installation is the problem. Gibraltar is a proponent of 3 cables because you can get NCHRP 350 performance with 25 percent less cost for the cables. Post spacing – some states specify max spacing, but he believes the states should use a performance specification rather than spacing because some manufacturers can meet the spec with longer post spacing than others. Dean Sicking disagreed and noted that unless you clamp cable to each post, then the length between anchors does make a significant difference (ten to 12 percent greater deflection when you go from 300 to 600 foot between anchors.)

**Steve Draganis** Barrier Systems presented information on the Barrier Guard 800 which is a steel shell barrier. Barrier Guard 800 fits together tightly with pinned end connections. Can install up to 1000 ft per hour. On bridges can reduce deflection with intermediate anchoring. A low deflection system has a T-Top that adds stiffness. A variable length unit can be used over bridge expansion joints. The Barrier Guard weighs approx 60 pounds per foot.

**Ken Opiela** detailed recent efforts on a number of studies conducted by the National Crash Analysis Center. 1. Cable Barriers, It was noted that the angle of impact was not observed to change at point of impact in six tests at the FOIL on v-shaped medians with 6:1 side slopes. Discussed the analyses of the relationships between cable barrier design, placement, and median configurations that were first identified in the NC median cable barrier simulations. Graphs depicting these effects were presented to show the nature of these effects. While much of this analysis was done using commercially available vehicle dynamics software, it was found the reliability of these tools broke down for 4:1 or sharper slopes because these tools did not account for the forces incurred when vehicle bottoms scraped on the ground surface. The more rigorous vehicle simulation models had to be used to analyze the vehicle dynamics for these situations. The analyses provided insights on the relative effects of median cross section shape, slopes, and width. For

example, V bottom ditches had greater variability of vehicle trajectory than flat bottom ditches. It was noted that the simulation models could be used to isolate influences on the steering moment induced when a vehicle crosses a ditch and hits back slope as a means to establish crash testing protocols. . It was noted that the reverse engineering of Chevy Silverado has been completed and that this 2270p vehicle has been validated and used in crash simulations into w-beam and concrete barriers (simulation results were shown). Also it was noted that updates to the tractor-trailer model are advancing with the expectation that it will be available in 2009. The NCAC and FOIL assisted Virginia Tech in their NCHRP 22-23 study to determine damaged guardrail replacement guidelines. Sicking noted that the pendulum test into w-beam resulted in up to one inch of movement in the splice, a behavior he has never seen in a crash test. This detail needs to be taken up with the VT team. Finally, results of simulation analyses of the impacts of the new MASH protocols were shown. IT was noted that this would be reported by the end of the year

### **Joint Discussion with AASHTO Technical Committee on Roadside Safety**

Presentation by Dean Sicking on MASH08 and the results of the balloting with the state's questions. Dean began by summarizing the needs for updating 350. The test for TL-4 using the Single Unit Truck was probably the greatest change from NCHRP Report 350. In MASH we have picked the 90<sup>th</sup> percentile vehicle for the pick up, rather than 95<sup>th</sup> as in Report 350. 2 Percentile small car was selected. Enumerated a number of the other changes between 350 and MASH08.

**Subcommittee on Design Comments** include the following: (response in paren.)

- Requested a 75 mph crash test – (this would be 95% impact speed and 99% impact energy and is unrealistic.)
- Change in CIP for cable barrier – just upstream of post.
- Clarify that 600 foot test length includes terminals (this is stated)
- Questioned increase in vehicle mass (no doubt that vehicles have increased in size and will continue to do so due to NHTSA regulations)
- Will make testing too costly.
- Concern about effect on height of GR and TL4 barrier
- Add statement that document does not address implementation
- Recommended to move chapter 7 to appendix
- Question about requiring test GR at minimum height with PU (this will modestly reduce max deflection of GR but makes sense to keep this requirement.)

### **Subcommittee on Bridges and Structures Comments**

- Plaintiffs lawyers will use this against DOTs (McDonnell of AASHTO asked two state DOT attorneys to review the document and they agreed )
- Concern about bridge hardware rating -either meets or doesn't meet current criteria

- Questioned the safety improvement from 350 to MASH08
- Questioned the 4 inch roof intrusion limit for breakaway devices.
- Concerned about increased energy of TL-4 test
- Requested a note that LRFD barrier design loads should be revised.
- Move Chapter 7 to appendix.
- Concerned about TL-4 failure with 32 inch high safety shape.

**Other non state concerns with MASH testing criteria:**

- Errors identified with Appendix B (these have already been corrected)

Median width for test of 1:4 – 1:4 conducted in depressed medians. Barriers are not capable of being placed at the ditch bottom because of moist soil conditions in most states. Should we test in maximum allowable width? Test in standardized ditch? Test in a critical location? MWRSF theory is to test barrier so that it can be placed anywhere on the slope.

Recent TTI testing has the vehicle yawing significantly once it hits the embankment on the other side of the ditch. Discussion ensued over past testing of various barriers with different vehicles. Sicking noted that tire-soil interaction is critical to testing involving ditches.

Real world medians generally have 1:4 slopes for narrower medians and 1:6 for wider. MASH08 already has requirement for near side pickup hit and far side small car hit.

LaTurner – is there some way to bypass this steering issue by limiting steering movement? Not appropriate.

Opiela – NCAC simulation efforts recognize that soil-tire interaction is critical. Sicking – that depends on when it rained last time?

Dean Alberson - ditch widths range from 24 feet to 42 feet.

Brifen - there are numerous tests that have been run with various slopes, widths, and vehicles. We should use this to help us determine which width to use.

Keith Cota – Is this question appropriate for a 20-7 project to establish test parameters for cable tests on slopes? Sicking noted that we already know that higher angle leads to greater reorientation. We should await the results of the survey to collect this width and slope data. Mauer notes that some failures are random. Alberson- we get yawing impacts in the real world all over the place. Sicking – small car, low angle impact is critical, from ISPE. Cota – we are not ready to change MASH-08 to standardize ditch testing. RDG may note there are variations in real world installations that may not be covered.

Sicking - we could pick one of those solutions to accept today, but go forward with research to see if we could improve the guidance for testing.

The 22-25 project can look at this situation if the manufacturers can provide info on where they have installed cable barriers on varying median slopes and widths. **Sicking and Faller will provide a template for a questionnaire for the states and cable manufacturers to be used in conjunction with NCHRP Project 22-25, with an additional request for median cross section information.**

States need this guidance to provide their cable installers.

## **IMPLEMENTATION OF MASH 08**

Keith Cota summarized MASH 08 and balloting of the Manual and the Implementation Plan. Sicking did a good job of summarizing the comments. Negative comments seemed to apply to amount of damage that would require replacement. Nothing in the comments was overbearing. The TCRS will have a discussion on those comments and what needs to be done before sending it to SCOH.

What happens when a 350 device is tested to MASH and fails, how do we deal with that?

We want Implementation Plan to be a living document that will change over time as necessary. It will be the groundwork for the states to use in transitioning between 350 and MASH.

Sicking: Some are still requesting 350 testing for proprietary products. Generic are all MASH08.

Durkos: Is anyone starting a 350 matrix for an all new product program? States and foreign counties are using 350 and EN1317 and their testing will continue.

Albin suggested we change the drop dead date to 2011. Rory likes to stick with MASH08. Keith says we will discuss the date at TCRS.

Artimovich noted that MASH approval will be announced to TF13 mailing list. MASH will then be added to 23CFR through the Federal Register process.

Cota said TCRS will respond to state comments and tell SCOH what we did, and ask that MASH be balloted. If SCOH thinks one of these comments is significant, it may request reballoting.

Jim McDonnell said none of the comments would affect MASH to a degree that would jeopardize SCOH approval.

Durkos: Interested in Rewrite of Roadside Design Guide

Cota: Wed afternoon and on Thursday we will be concentrating on rewrites of chapters. Probably will not be ready to do final ballot on chapters this week. Next meeting in

Delaware we will be able to Ballot in TCRS to send it forward to AASHTO. RDG will attempt to include info on recent cable barrier testing. Adding a new chapter on low volume roads. Mirrors flexibility on low volume roads in Green Book. Also providing more guidance on urban situation. NCHRP 16-04 provided additional guidance for this.

RSAP-TCRS would like an adjusted program. Has been a challenge to keep this program up to date. NCHRP project to update RSAP was accepted for FY09 but won't be ready for RDG2010.

Is the cut off date for research flexible? In Seattle we agreed that Oct 2007 was end of research to incorporate new info. We may try to add more info but it should not delay RDG2010.

Sicking's Length of Need research will be included.

Adjourn at 4:05 pm. Reconvene at College Station.

#### SECRETARY'S MISCELLENEOUS NOTES ADDED POST MEETING:

The 3rd European Road Congress, which was held in Brussels on 25 June 2008, attracted over one hundred and fifty participants and saw the interventions of numerous stakeholders, as well as a number of eminent keynote speakers. The key road sector event was organized by the European Union Road Federation (ERF), the Brussels Programme Centre of the International Road Federation (IRF) and carried the title "Making Roads Ready for the Future".

ALL the Task Force's draft on-line guides are now attached to the main TF13 website (<http://www.aashtotf13.org>). There are lots of old dead no-longer useful links from prior versions floating around so Mac Ray wanted to make sure everyone got to the correct sites.

#### **Grant Dicke 1955 ~ 2008 Kept business ahead of curve, Highway safety focus of family firm**

By Joan Giangrass Kates | Special to the Chicago Tribune October 4, 2008

Dicke Tool Co. adapted well during its first century of business, switching from manufacturing tools to highway safety products as interstate highways began crisscrossing America.

Yet despite its success, Grant Dicke saw potential for more when he became the fourth generation head of the [Downers Grove](#)-based company, in the early 1990s.

"He took new approaches to marketing and expanded our line of distributors all

over the country," said Paul Wander, regional sales manager for the company.

Responding to demand to protect highway workers, the lifelong Downers Grove resident focused on creating a product line that included everything from reflective signs to top-of-the-line safety clothing.

"Things really took off when Grant began taking a long, hard look at what it would take to keep workers safe," Wander said.

Mr. Dicke, 52, president of Dicke Tool Co. and a longtime volunteer firefighter in Downers Grove, died Tuesday, Sept. 30, in Good Samaritan Hospital, Downers Grove, after collapsing at home, apparently from a massive stroke.

Founded in 1886 on Lake Street in Chicago, Dicke Tool moved to Warren Avenue in Downers Grove in the early 1900s. Several years later the company needed to rebuild after a fire destroyed its original building. That event led to the Dicke family's long-held interest in fire safety.

In 1976, Mr. Dicke followed in the footsteps of his father and grandfather, becoming a member of the Downers Grove Volunteer Fire Department.

He attained the rank of lieutenant, before the department disbanded in 1993. In the ensuing years, he continued to support the full-time Fire Department, friends said.

"Grant used to accompany his father to the firehouse all the time as a boy," said Bob Lang, also a former Downers Grove volunteer firefighter. "He got an education just by hanging out."

A 1973 graduate of Downers Grove North High School, Mr. Dicke studied dentistry for a while at the [University of Illinois](#) in Chicago, before joining the family business. He became company president in the early 1990s.

"He was very analytical in his approach to things and demanding in a quiet way," said Wander. "He led in an understated way."

Mr. Dicke married his wife, Vera, in 2000. "He was at a really wonderful point in his life," Lang said.

In addition to his wife, survivors include a son, Thomas; a daughter, Grace; and a sister, Mary Maly.

Services will be held at 10 a.m. Saturday in St. Andrews Episcopal Church, 1125 Franklin St., Downers Grove.