

TASK FORCE 13 MEETING MINUTES

[DRAFT OF OCTOBER 11, 2012, revised January 30, 2013]

OCTOBER 3-5, 2012

GETTYSBURG, PENNSYLVANIA

Joint Meeting with Roadside Pooled Fund Study and Task Force 13

Wednesday, October 3, 1:55 pm

Please visit the website of the Texas A&M Transportation Institute at <http://www.roadsidepooledfund.org/> for information on past and current research efforts. There is a wealth of information available on a variety of roadside issues.

John Durkos welcomed TF-13 members and Pooled fund members to the joint meeting. Had a round of introductions and Dave Olsen of Washington State DOT gave an overview of the TTI Pooled Fund efforts. That group began in 2005 and research is conducted at TTI. Showed list of members and invited other states to participate.

Top priorities for next year:

- GR at top of 1:1 slope;
- Guidance for raising blockouts of w-beam guardrail;
- 31" guardrail transition using stacked w-beam rail (no thrie beam);
- review of 8" v 12" blockouts on 31" w-beam;
- concrete barrier transition from anchored portable barrier to permanent barrier;

Brian Stock noted that some utility companies are asking for a reduced length of pins used to anchor concrete barriers to pavement because they were impacting buried lines under the pavement. Note that Florida is requesting that 36" pins be shortened to 24"

Roger Bligh led discussion topics:

- Weathering Steel Guardrail;
- MASH implementation – how far along are the states?
- Categorization of impact attenuators

Weathering steel: Used frequently for aesthetic applications, but have seen severe, accelerated corrosion because "patina" does not protect against corrosion in some locations. See FHWA FAQ at: http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/qa_bttabr.cfm#brrs1 Pooled fund study has come up with an inspection procedure that will look at corrosion at splices as well as between splices. Mark Bloschock noted that weathering steel is OK for bridge girders but not really good thing for guardrail; he had to argue with a landscape architect who put it in a salt marsh. Bligh asked how many states had (6) and did not have (2) weathering steel gr. Only WA and TX still install

weathering steel GR. Florida noticed the protective coating on a shipment of their weathering steel guardrail had microfractures which increased upon installation at bolt holes. They have dropped weathering steel (WSG). PennDOT and WV DOT have dropped WSG in part due to FHWA guidance. Discussion ensued about WSG terminals. Schertz noted that NPS and FS are using 10 ga w-beam, but also looking at other coatings. PennDOT is also looking at other coating systems. Dave Reese noted that protection of the coating from the shop to the field is an issue. Garden State Parkway made great use of WSG even in a salty atmosphere. Durkos noted GSP is continuing to install WSG but he is telling them that his product was good when installed, but it is up to the GSP to monitor their guardrail. Also, 10 ga rail should not be used in a terminal unless tested. WA state DOT wanted to drop WSG but there is still a demand from various agencies. Mark Burkhead of PA noted that whatever coating you consider, make sure you still have galvanized base rail. NH DOT is now powder coating over galvanized. Durkos noted that NYS DOT had cor-ten box beam, can the TTI method be used to evaluate box beam too? Likely applicable to both, but don't know if it will be included in the report. There is now a new galvanizing process that is to be used prior to powder coating: it is expensive and not easily available. FHWA can include reference to the TTI Pooled Fund study results to our FAQ site so that all states may use the same method.

State Plans to require MASH compliant hardware

Florida is requiring MASH tested cable barriers. PennDOT just said they follow the Implementation Plan. MASH and 350 products still have the same weight. Are MASH products competitive when on the QPL with 350 products?

Florida adopted the React 350 II for WZ but not for permanent. (not a MASH product.) Wash DOT recently approved a MASH attenuator for their QPL. Richard of Brifen asked why would a state buy a MASH product if it has to compete against 350? Wash DOT went to MASH 31" barrier because it performed better but MASH compliance did not factor into the decision. Florida has a research project doing in-service performance evaluation to see if it warrants upgrading to a different system. Bligh: how do you decide if the in service performance is acceptable or not? FL looking to see if there is a significant difference in performance between pickup and small car regarding underride. This is for median w-beam with a rubrail on the back side. WASH DOT looked at performance of w-beam by height.

Bligh asked if any state foresees full MASH compliance at some date in the future? WASH DOT has no such plans. Would need to see significant improvement in performance to require MASH.

John Durkos went through Mike Dreznes' presentation on categorization of crash cushions. Classifications under MASH and the RDG do not necessarily match well. Should we establish a measuring stick based on the head-on capacity test to compare products?

Use 3 life cycle cost categories:

- Sacrificial (Disposable);
- Partially Reusable;
- Reusable

RDG uses Sacrificial, Reusable, Low Maintenance.

Dreznes proposes, Based on MASH head on capacity Test:

- Sacrificial: less than 50% reusable on site.
- Partially Reusable: 50-90%
- Low Maintenance: more than 90% reusable on site.

Need to decide if those percentages are by cost, length, amount of material?

Washington State has three categories they use. Alaska is working on coming up with such a system as well and this discussion is helpful. Florida is also setting categories based on crash cushion length, but also assessing road type and traffic, but would be interested in our efforts. Bloschock noted that the two major questions were length of attenuator, and length of time to repair (on high speed facility.) Wash DOT is interested in performance of highest type attenuators in order to refine specifications. Secondary impacts are also considered when adding products to QPL.

Self Restoring is a term that causes a lot of concern as it is misleading.

Re-using hardware was an issue, too.

Thursday, October 4, 2012 – Begin Task Force 13 Fall Meeting

John welcomed members to Gettysburg and asked who had never been to Gettysburg, (vast majority). Only 4 members had not attended TF-13 before. Thanked Will Longstreet and Mark Burkhead and Divyang of PennDot for the arrangements at the Eisenhower Hotel and Conference Center. Explained that Gregg Frederick sent his regrets from Wyoming, the State co chair. TF-13 site is the go-to place for the AASHTO Roadside Design Guide to keep the drawings current. We now conduct our drawing reviews on line through our website. No participants from the Drainage Subcommittee this time as Chuck Patterson could not attend. Mike Hare and Rich Brown from Transpo will meet as RXR hardware subcommittee.

Explained all breakout sessions for morning and afternoon. Thanked Karen Boodlal for her help with registration. Durkos stressed the need for early registration. Recognized Art Dinitz Chairman Emeritus as instrumental in the development of Task Force 13. Art noted FHWA has sent out a memo on how states can use [patented / proprietary products](#). AASHTO is making an effort to bring new technology to the states. However users in the field need guides on how to select and use these products. But Art believes there is a waning desire to develop these guides. There was no interest in the AASHTO/AGC/ARTBA Joint Committee to support further guide development. State DOTs recognize Task Force 13, but Art needs our help in developing new task forces to move forward.

Friday morning we learn about recent relevant research. In our last meeting in Lincoln we broadcast those sessions through Adobe Connect.

We had a good meeting Wednesday afternoon meeting with the TTI Pooled Fund group, and we had “active participation.” Input from state DOT people was especially appreciated.

Subcomm #3 will break early and #7 Certification of Test Facilities will begin with new session. Had a round of introductions as a few more members joined us for the morning session.

Will Longstreet gave a presentation on Pennsylvania history through its national park sites.

Nick Artimovich summarized the last subcommittee minutes. (Full Lincoln minutes are posted on line at <https://www.aashtotf13.org/Subcommittees.php?page=481>)

Lance Bullard moved to accept the minutes. Were seconded and approved.

Subcommittee #1 Dusty Arrington Publications Maintenance.

[Reviewed the new TF-13 site](#). Members need to have a user account before you can participate in the drawing reviews. TF13_test_user_01 is test account for anyone who wants to participate at the Gettysburg meeting. Password01 is temporary password for that user account. Members need an Adobe account also. This is not difficult, but it is required by Adobe and we have no control over that.

Any state or manufacturer who wants to submit a drawing must do so through the Technical Representative. Ultimately you will be able to do this on line, but we do not have that functionality yet.

Dusty has ideas of how he would like to rebuild the Barrier Guide. Other guides need to be brought into the TTI site.

Subcommittee #2 Barrier Hardware Karla Lechtenberg

Karla asked how many members of a review group are needed to review a drawing before it can move forward to approval? What percentage? Keith Platte noted that AASHTO needs 2/3 of states to approve a document. Durkos noted that we have met with a number of state DOT groups but we don't get a lot of feedback. While no news is good news, we should like feedback. Durkos suggested 10 members reviewing a document as a minimum. Mauthner noted that Florida gets 100% buy in as they allow reviewers to indicate they have no comments and allows the drawing to go forward. Also, if 10 say a document is OK and 3 think it needs to be submitted, is that OK? Need quality of review as well as numbers. Takach believes we should give more discretion to Tech Reps to judge the number and quality of reviews. Dusty will place the TF-13 Drawing Guide and the “Drawing Review Comment and Discussion” page. Chad suggested each drawing have a checklist that a reviewer can use to indicate their approval. Tech Rep should do a quick review of a drawing before it gets posted for review. Tech Rep should send the drawing back if it does not conform to TF-13 standards.

Dusty is 80% confident that we can add a checklist but not under the current method.

Karla asked again, how many reviewers do we need?

Durkos noted that we have drawings we want to approve and get posted.

Keith Platte offered to ask states what they would expect from our drawing review. Durkos agrees that feedback from the states would be useful. [Suggestion was subsequently withdrawn.]

Barry Stephens moved to agree with Karla that a minimum of 5 reviews are needed to move a drawing forward. David Reese seconded. So moved. If you get 2/3 of reviewers agree to approve with comments then the drawing can go forward. Ok. Both approved.

All links to components and FHWA letters will be in the guide, not within the drawings. Trying to revise the PDF drawings when the external links change is very inefficient. Karla plans to send out the backlog of drawings a few at a time.

Subcommittee #3 Bridge Railings and Transitions Roger Bligh

[Minutes submitted by Kurt Brauner]

Roger Bligh opened the meeting and welcomed those in attendance before announcing that the meeting would be abbreviated so that more time could be given to Subcommittee #7's session on Certification of Test Facilities.

Bligh then briefly reviewed the functions of the bridge rail subcommittee and the purpose of the online bridge rail guide. He also mentioned the different working groups within the subcommittee (Concrete, Steel, "Other", and Transitions) and requested volunteers to help review the various systems in the guide.

Bligh then introduced Ron Faller, the working group leader for "other" bridge rails. Faller gave a brief review of his group's activity over the past few years and an update on their current status with regard to the number of systems left to review. He presented a plan to review two systems per month and to have all bridge rail systems in his group reviewed by April 2013. Faller then asked for clarification on the "mounting type" descriptor for bridge rails. Currently, the online guide specifies "deck" and "side mounted" to describe how a bridge rail is attached to a bridge. But as Faller pointed out, all bridge rails are deck mounted and suggested we use "top mounted" and "side mounted" instead. Finally, Faller provided an example of a recent system that his group reviewed and asked what the next step in the acceptance process should be. Bligh responded by saying that the working group leader should offer the final acceptance and that the system would not need to go before the subcommittee for a vote. If the working group leader felt the system was acceptable, he should notify the co-chairs for further action.

Following Faller's presentation Bligh introduced Kurt Brauner to discuss the concrete working group. Brauner stated that since the last meeting in April 2012, only 3 additional systems have been reviewed. Brauner then reviewed the current status of the concrete working group saying that out of 42 systems, 3 need follow up actions, 6 have been thoroughly reviewed, and 5 new systems appear ready for acceptance. This leaves 28 systems that have yet to be reviewed. Brauner suggested that the lack of activity may be due to confusion over some obsolete systems being deleted from the guide and that not

enough information is available to properly review some systems. Brauner then pointed to some areas of the online guide that could be improved. The guide's references to FHWA eligibility letters may not be accurate or may link to missing information. Also, some grandfathered systems were never given a specific letter. More could be done here to explain the lack of information. Brauner also mentioned that the sub-titles for the systems could be improved to include a better description of the rail itself. Finally, Brauner presented a plan to review the current list of concrete rails and reassign each volunteer a system or group of systems to review. A periodic reminder will be sent out to encourage more participation prior to the next meeting

Next, Bligh introduced William Williams to review the progress of the steel rail working group. Williams presented a brief tutorial on how to review a bridge rail system and used a recently reviewed rail as an example. Williams then presented various review tools that he created to assist with the review process including a drawing template and a checklist which detailed every part of the system page that should be checked. He also invited his working group members to contact him if they had any difficulty obtaining information or producing the necessary sketches. Williams was prepared to go through all of the systems his group had reviewed but, in the interest of time, the group decided to skip that portion of the presentation.

With that, Bligh thanked the group for attending and turned the meeting over to Subcommittee #7 session on the Certification of Test Facilities.

Subcommittee #4 Drainage Products did not meet.

Subcommittee #5 Sign and Luminaire Supports Rich Brown of Transpo. 10 participants. Restate recommendation to move SS guide to TTI site. Asked to reach out to WZ subcomm re signs on barriers. Arrington has done a study on this subject and will be invited to address Subcomm next meeting. Working on lower cost test (bogie or pendulum) for MASH with UNL. Looking at 7 foot under sign clearance, does MASH mean we need a taller clearance? Looked at slope location: will endorse AFB and TCRS findings. What is effect on two breakaway devices in proximity? Will get report of that study next time. Arrington will also report on upper hinge performance and variety of designs from state to state. Plaxico discussed on-line guide for LS and gave guidance for those who have not completed their drawings. Dusty asked if there should be an in service performance evaluation on breakaway supports under MASH.

Subcommittee #6 Work Zone Devices Greg Schertz and Mike Dreznes.

- Overview of WZ Hardware subcommittee
 - Topics of conversation
 - Truck mounted attenuator delineation
 - There is no standard currently
 - Roadside design guide states that delineation should be used, but is not specified.
 - MUTCD doesn't specify anything with respect to the delineation for

TMA or TTMA

- The group agrees that standardization would be beneficial, but Barry Stephens suggests that the manufacturers are able to handle the various changes the states require.
- Steve from Dimensional Products Inc. suggested that there may have been a paper written detailing this idea.
- Is Black and Yellow the right color??
- Do we want to pursue? YES
- Tony Capella, Barry Stephens, Rick Mauer, Eric Smith, Melissa Finley, Dean Alberson comprise a group to do the homework and create a proposal and problem statement.
- Standardized Connection Design for Temporary Concrete Barriers
 - Every state has their own design details and their reasons for the details. States would be reluctant to move off their design details.
 - If we standardize this it may become cheaper for all of those involved?
 - Tony suggests that it would take an extremely long period of time to try and rewrite a specification for a product that has so much volume already.
 - Would need to show a better performance from a crash test standpoint to get traction with the states.
 - The group suggests that it would be an overwhelming task with little to no impact in such a low cost barrier.
 - Because of shapes and the variety of connections. Just standardizing the connections will not get us there.
 - We discussed briefly about when to take a concrete barrier out of use based on previous impacts and damage.
 - Does this committee need to revisit the water-filled barriers?
 - These vehicles are being redirected via ricochet into traffic and creating additional problems
- Dean Alberson suggestion of standardizing the mounting of signs on portable barriers
 - Gather information on what states are doing, what have been crash tested.
 - Dean to provide information on the design that TTI is working on.
 - Create an opportunity for standardization and save money for a lot of states.
 - All physical testing will have to be run as MASH
 - The new sign support of TTI was crash tested on a 350 F-shape barrier and was tested to MASH.
 - Tony Capella will check on New Jersey product and report to Dean Alberson
 - Work towards creating a standardization guide for a digital work zone devices.

- Barrier pins length (24”) with utility conflicts
 - As a group we have decided that this is more of a construction issue rather than a work zone hardware issue.
- When do you have to have positive protection of a barrier?
 - Should there be more clarification and how do channelizing devices fit into this.
 - ATSSA is developing a positive protection training course and an assessment tool detailing when to use positive protection.
 - Mike Dreznes is suggesting that ATSSA include channelizing devices
 - As a group we are not going to interfere with the efforts of ATSSA, but we as a group are going to provide support where needed.
 - Mike, Mark, Dean and Gary on the list to support ATSSA from this group as advisories.
- Greg to get information from Barry Stephens about his water-filled barrier concerns.
- Mike Dreznes stated that there is confusion with Roll Ahead distances with respect to TMA/TTMAs.
 - Shadow vehicle with TMA – acknowledge roll-ahead
 - Shadow vehicle without TMA – acknowledge roll-ahead
 - Don’t assume that you need a TMA to be concerned with the roll-ahead distances.

Subcommittee # 7 Certification of Test Facilities Lance Bullard

Minutes submitted by Kelsey Chiu:

Task Force 13
 Subcommittee 7 – Certification of Test Facilities
 Gettysburg, PA
 10/04/12
 Meeting Minutes

1. **Lance Bullard (TTI)** – Introduction
2. **Will Longstreet (FHWA)** – Incorporation of Finite Element Analysis (LS-DYNA) & Validation & Verification (NCHRP 22-24)
 - 2.1. Roadside safety hardware – federal aid eligibility reimbursement process - Posted May 21 Memorandum
 - 2.1.1. FHWA letters no state eligible for reimbursement; originate from office of safety
 - 2.1.2. non-significant structural modifications require FEA
 - 2.2. Attachment A
 - 2.2.1. New Hardware
 - 2.2.1.1. FEA recommended
 - 2.2.2. Modified Hardware
 - 2.2.2.1. Significant
 - 2.2.2.1.1. Height, length, face geometry, mass, material, component type, component configuration, location
 - 2.2.2.2. Non-Significant

- 2.2.2.2.1. Effect is positive or inconsequential
 - 2.2.2.2.1.1. Engineering analysis – BARRIERIV or Pendulum/bogie testing
- 2.2.2.2.2. Effect is uncertain
- 2.2.3. Eligibility Form is on FHWA website
- 2.3. **TRB/AFB20 Computational Mechanics Subcommittee requests TF13 consideration of the addition of the FEA and V&V workgroup (or ILC) to the existing SC7 in support of the May 21 memo.**
 - 2.3.1. FHWA will be receiving the actual analysis from manufacturer/test lab?
 - 2.3.2. How can TF13 and SC7 help with this analysis given that AFB20 is a group of the experts
 - 2.3.2.1. FHWA wants an increased level of confidence that what they are receiving is valid
 - 2.3.2.2. Potentially run an ILC in a similar fashion to the test labs ILC for comparison and review
 - 2.3.2.3. FHWA would like to know if TF13 is willing to assist to essentially ensure that existing methods are correct
 - 2.3.2.4. **Ron Faller (MwRSF)** has concerns that this group still needs to work on the testing accreditation/ILC (proficiency testing) before moving forward on integrating the FEA/V&V.
 - 2.3.2.5. Currently there are no labs present at SC7 that are accredited to perform analysis within their ISO scope.
 - 2.3.2.6. **Roger Bligh (TTI)** comments that there would be a benefit to performing some sort of ILC type activity within the simulation community, but thinks that discussion is necessary on what body is the best to handle/coordinate such activities.
 - 2.3.2.7. Question brought up that if a company performs FEA analysis but does not participate in this group, would FHWA not accept their analysis?
 - 2.3.2.8. Approximately half of the attending test labs do not perform any form of simulation or FEA
 - 2.3.2.9. Brought up that is this topic better for another subcommittee within TF13?
 - 2.3.2.9.1. **John Durkos (Road Systems)** thinks that it may be the same small group of people involved that are already involved in SC7
 - 2.3.2.10. Show of hands
 - 2.3.2.10.1. Majority of group think this needs to be addressed – almost the entire room
 - 2.3.2.10.2. How many members think that this should be addressed in SC7 with doubling of time allotted – 8 members
 - 2.3.2.10.3. How many members think that this should be addressed somewhere other than SC7 – 6 members
 - 2.3.2.10.4. How many members don't believe this belongs in TF13 – 2 members
 - 2.3.2.10.5. Conclusion: majority of group think that TF13 should address this issue in some way. TF13 is agreeing to vet the topic.
 - 2.3.3. Recommendation
 - 2.3.3.1. Allow time at the next TF13 meeting to discuss the topic. Anyone involved in simulation is asked to go back and discuss the topic within their company and then bring more information back to that meeting. **Will Longstreet** is asked to coordinate this effort.
 - 2.3.3.2. **John Durkos** asks for an Adobe Connect session for the next meeting so that others can be involved.

3. **Karla Lechtenberg (MwRSF)** – Proposed changes to MASH Appendix B – Soil Performance Testing
 - 3.1. Proposed areas of change: instrumented post; location of post; soil requirement on test day; force measurement; displacement measurement; impact speed; minimum resistance;
 - 3.2. Instrumented Post
 - 3.2.1. Changes from compression load cell to tension load cell
 - 3.2.2. Eliminates bending and uneven loading
 - 3.2.3. Possible replaced by accelerometers to calculate forces
 - 3.3. Location of Post for Soil Testing
 - 3.3.1. Currently should be in the ‘immediate vicinity’
 - 3.3.2. Posts should be near but on level terrain, not on a slope
 - 3.4. Soil requirement on test day
 - 3.4.1. Add language that will specifically allow a dynamic test on the day of or before that would just be compared to dynamic strength requirements.
 - 3.5. Force Measurement
 - 3.5.1. Currently states that accelerometers are not acceptable
 - 3.5.2. Accelerometers have been compared to the tension load cell method and have been found to be ~15% lower than the load cell.
 - 3.5.3. Accelerometer data is thought to be a conservative method of measuring the force
 - 3.5.4. Propose to allow accelerometer data with caveats
 - 3.5.4.1. Impact head must absorb less than 5% of energy
 - 3.5.4.2. Surrogate vehicle pitch and yaw must be held to a minimum
 - 3.6. Displacement Measurement
 - 3.6.1. MASH specifies electronic measurement – which could include accelerometers or video
 - 3.6.2. Propose to add language that specifically allows accelerometers or video for the displacement measurement/calculation.
 - 3.6.3. Caveats
 - 3.6.3.1. Impact head crush ≤ 1 in.
 - 3.6.3.2. Surrogate vehicle pitch and yaw must be held to a minimum
 - 3.7. Target Impact Speed
 - 3.7.1. Currently 20 mph
 - 3.7.2. If soil maintains $F_{ave} \geq 12$ kips, surrogate vehicle of 1500 lb will not reach 20 inches of displacement.
 - 3.7.3. Proposed change to 20 – 25 mph
 - 3.8. Minimum Resistance
 - 3.8.1. Currently an absolute minimum of 7,500 lb between 5 and 20 inches of deflection. This does not allow for minor dips or clips near the end of the limit.
 - 3.8.2. Proposed edit to change to average force or energy minimum
 - 3.8.3. Do not want total energy over 20 inches; energy must be checked at multiple points (eg. 5 in. intervals)
 - 3.8.4. Two proposed methods:
 - 3.8.4.1. Total energy from 5-20 inches
 - 3.8.4.2. Energy by interval between 5-20 inches in 5 in. intervals
 - 3.9. Similar Soil Tolerance
 - 3.9.1. Currently states $\pm 10\%$
 - 3.9.2. Propose adding a table with example to clarify what 10% is.
 - 3.10. Analysis performed by
 - 3.10.1. MASH does not specify who/where sieve analysis is conducted.

- 3.10.2. Propose to add language recommending labs conduct their own sieve analysis on each new batch of soil.
- 3.11. Sieve sizes
 - 3.11.1. MASH does not specify sizes of sieves for analysis
 - 3.11.2. Propose to use the six sieve sizes (minimum) included in NCHRP report 350 and AASHTO M 147 grade B soils: No. 200, No. 40, No. 10, No. 4, 3/8 in., 1 in.
4. Motion to propose (**Bullard**) the outlined changes to MASH Appendix B with Method 1 of the minimum soil resistance value. Second by **Ron Faller**.
 - 4.1. No opposition to the motion.
5. **Lance Bullard (TTI)** – MASH TL-5 Dry Van Trailer Specifications
 - 5.1. Current spec says 80,000 lb at 50 ft max, cargo bed height 50 in ± 2 in.
 - 5.2. Industry has gone to 53 ft. trailers.
 - 5.3. ATA is proposing standardizing at 53 ft. trailer.
 - 5.4. Informal TTI survey has confirmed that manufacturers are making 53 ft. trailers.
 - 5.5. Proposal is to recommend a change to the MASH specification to 53 ft. trailer length maximum and lower the cargo bed height.
 - 5.6. Motion to propose a maximum length of 53 ft by **Ron Faller**. Second by **Dusty Arrington**.
 - 5.6.1. No opposition to the motion.
 - 5.7. Motion to propose a cargo bed height of 50 ± 2 in. by **Dusty Arrington**. Second by **Barry Stevens**.
 - 5.7.1. No opposition to the motion.
6. Results of the current ILC are to be addressed outside of the meeting by email by **Lance Bullard**.
7. **Kelsey Chiu** to send out report format for comment on the previous 1500A ILC results to the subcommittee.
8. **Ron Faller** suggests an ILC that includes intermediate results for method comparison.

[Secretary's note: here is the link to the FHWA product eligibility process:

http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/acceptprocess/

Subcommittee # 8 Highway - Rail Crossing Hardware

This subcommittee did not meet in Gettysburg but did prepare the following Problem Statement:

Draft Problem Statement

With the proposed increase in Higher Speed Rail (HSR), increased use of transit and freight rail, the traffic safety issues at highway-rail grade crossings will be magnified.

Many of the older/existing systems in use today may have low cost, but have shown to be short lived and costly to repair. The added effect of higher ADT rates of traffic coupled with a higher percentage of trucks, shortens the life of the crossings even more.

Some of the new technology available for highway-rail grade crossings offers enhanced safety. Use of surface mounted LED fixtures to provide additional warning at both passive and active crossings, is one example. Use of substantial raised curbs with delineation posts and deflectors would be another example of a safety feature designed to reduce "Drive Around" by vehicles queued at a grade crossing.

Co-Chairs Mike Hare and Mark Ayton

Executive Board Meeting

In attendance were: Mauer, Schertz, Dinitz, Longstreet, Clark, Durkos, Arrington, Brauner, Bullard, Bligh, Chiu, Brown, Takach, Artimovich

Next meeting location. AFB20 and TCRS will meet in New Orleans in 2013 in July. We will again meet with MWRSF in the spring, most likely in Lincoln, NE. Dates will be April 17, 18, and 19, 2013. Fall meeting will be in College Station with TTI Pooled Fund.

TTI Website Contract. Dusty mentioned a number of improvements including re programming the barrier guide and allowing tech reps to upload drawings. TTI needs to have the contract a little more specific. Also needs \$ for fixing bugs, website maintenance. Dusty needs a general statement from us as to what we want the site to do, and he can write the statement of work that specifies what his people have to do to accomplish this. Durkos proposed a teleconference to discuss these issues. Dusty will prepare a needs statement and we will tell him how we want that stuff to be done.

The proposed work should be able to be done in the first year of our next 2 year contract. Website maintenance will continue.

Dusty's contractor wants to have full access to database in order to search and sort better. Dusty will give them a copy of the database, but set up a protocol as to how they can make changes.

Let's not have Keith canvas AASHTO about our review and approval process. That is up to us to set. Only really need a very small number of good reviewers on each drawing.

Adjourn at 5:48

Friday, October 5, 2012

Durkos thanked Will Longstreet for setting up last night's dinner at the Dobbin House.

Next year's meeting will again be with the pooled fund groups in Lincoln, Nebraska, and College Station, Texas. We will likely witness a crash test at those facilities.

Held a moment of silence for Kathy Johnson of Coral Sales and Transpo Industries. Kathy passed away Wednesday October 3.

A reminder to co-chairs to get their subcommittee minutes to the Secretary for inclusion in the Task Force minutes.

Roger Bligh has volunteered to give a summary of AASHTO T-7 Tech Subcommittee for GR and BR, held in Austin TX July 10, 2012. William Williams Highlighted Lake Ponchartrain BR replacement, TxDOT Aesthetic BR with pickets, TxDOT T131RC retrofit bridge rail. Bligh gave an overview of Task Force 13 and our guides. Noted our links to the Roadside Design Guides. They would like us to include test reports when possible. Some states were opposed to adhesive anchors for anchoring parapets as they saw significant loss of strength after only a few years, other states reported better performance. Proper installation is key. Bloshock noted an NCHRP study on long term performance of adhesive anchors that will soon be published. (Anything under sustained load will creep out of the hole. Rare impact loads should not be a problem.) Mark was asked to give a summary at the Spring 2013 meeting. MASH TL-4 discussion of minimum rail height. 36" is new minimum. Design impact loads going up from 54 kips to 80 kips.

Keith Platte of AASHTO

- RDG and TF-13,
- Fatalities Update,
- MAP 21,
- APEL,
- Changes at AASHTO

"Thank you" on behalf of AASHTO to TF-13 to our work on the on line guides.

Trend of fatalities dropping has ended. Appears to be a jump back up to the 2009 levels nationwide.

MAP 21 Two Year Bill at current funding levels \$37 billion annually. (HTF only brings in about \$27 billion per year.) Streamline programs, performance measures, expedite project delivery. [See AASHTO Website for their take on MAP21]

AASHTO [Product Evaluation List APEL](#). States load evaluations of products to share with all member agencies. An avenue for new products. Similar to [NTPEP](#) but for products that do not have standard evaluation or test methods. States now can charge a fee for the evaluation because of downturn in the economy and the states can't do it for free any more. They may contract with universities to do the study. WA, LA, NV, SC have said they don't have the funds... This encompasses all proprietary products, not just safety.

Covered changes in AASHTO management, Horsley, Basso, and Kane retiring.

Donna Clark ATSSA: Legislative briefing and fly in April 10 and 11, 2013 in Washington, D.C. Formed a High Friction Surfacing Council, 17 members. Working on specs and testing. Annual Convention February 22-26, 2013, in San Diego. ATSS Foundation – Charitable Giving. National Work Zone Awareness Week April 15-19 2013 in Washington DC area. Teen road safety audit project piloted in Tampa in 2012 meeting.

Rick Mauer, Marketing Committee:

The marketing committee – is looking for relevant new to be place in our new letter.

Proposed for our next issue will an article by Dusty Arrington – on how to update drawings.

Any new article ideas would be greatly appreciated.

Recent Relevant Research

Mark Bush of NCHRP was not able to attend. Nick Artimovich summarized the following NCHRP roadside related projects. Please click the links to the NCHRP WebSite which are active on the electronic version of these minutes.

NCHRP 12-90	Guidelines for Shielding Bridge Piers
NCHRP 16-05	Guidelines for Cost-Effective Safety Treatments of Roadside Ditches
NCHRP 17-11(02)	Development of Clear Recovery Area Guidelines
NCHRP 17-43	Long-Term Roadside Crash Data Collection Program
NCHRP 17-44	Factors Contributing to Median Encroachments and Cross-Median Crashes
NCHRP 17-54	Consideration of Roadside Features in the Highway Safety Manual
NCHRP 17-55	Guidelines for Slope Traversability
NCHRP 17-61	Work Zone Crash Characteristics and Countermeasure Guidance
NCHRP 22-12(03)	Recommended Guidelines for the Selection of Test Levels 2 Through 5 Bridge Rails

22-17(04) Crash testing of Cable Barriers on Sloped Medians for MASH Matrix

NCHRP 22-20(02)	Design Guidelines for TL-3 through TL-5 Roadside Barrier Systems Placed on Mechanically Stabilized Earth (MSE) Retaining Walls
NCHRP 22-21	Median Cross-Section Design for Rural Divided Highways
NCHRP 22-22	Placement of Traffic Barriers on Roadside and Median Slopes
NCHRP 22-25	Development of Guidance for the Selection, Use, and Maintenance of Cable Barrier Systems
NCHRP 22-26	Factors Related to Serious Injury and Fatal Motorcycle Crashes with Traffic Barriers
NCHRP 22-27	Roadside Safety Analysis Program (RSAP) Update
NCHRP 22-28	Criteria for Restoration of Longitudinal Barriers, Phase II
NCHRP 22-29	Performance of Longitudinal Barriers on Curved, Superelevated Roadway Sections

Technical Presentations

William Williams TTI Recent Crash Testing

Lake Ponchartrain Bridge retrofit after hurricane Katrina. Illinois 2399-1 BR was tested at PL2 by GSBK of 1989. Post spacing was optimized for the bridge, 7 foot spacing to miss rebar. Exceeded strength level for TL-4. 5 mile bridge, two sides, 30,100 adhesive anchors being used. Partly funded by Roadside Safety Pooled Fund. www.roadsidepooledfund.org Looking for new member states.

T101RC bridge rail that meets MASH to replace the T101RC 27" rail. Used to retrofit rails with safety curbs. T131RC is 36 inches tall, anchored to 8" wide by 11" tall curb. 5 foot post spacing. 6 inch thick concrete deck. 6x6 inch tubes Passed Test 3-11. Also designed and tested a transition to this rail. Uses 31" high nested thrie beam approach transition.

Retrofit of rail to meet TL-5 for Buenos Aires Argentina. Based on CA742 rail from TF13 website. Also needed to design a splice connection to get across expansion joints.

NCHRP 22-20(2) TL-5 Crash Test on top of MSE wall. Truck redirected and remained upright. 42" tall F-shape.

Guardrail on 2H:1V slope. Modified G4(1S) 8 foot long posts, 31" rail heights, standard posts spacing splices between posts. Simulation showed good performance. Passed 3-30 and 3-31 full scale tests. Deflection was 4.3 ft with pickup.

Karla Lechtenberg MWRSF.

MGS Downstream Anchorage. Trailing end anchor. Impacted with test 3-31 at post 6 from the end and this was the limit of redirection. OIV was close to maximum on 3-30 test. Used simulation to establish CZ requirements downstream of this anchor.

MGS bridge rail adapted to box culverts. Used 4x4 socket attached to edge of culvert top. Evaluated various options to attach this 4x4 to the headwall. Bogie tests used to verify that deck would not be damaged.

Lateral stiffening of PCBs without anchoring into bridge deck, sponsored by WisDot. Used standard 12.5 long segments with pin and loop. Used a 10 gage cover plate and 5x5 box on both sides of entire barriers. 42" dynamic deflection was not as little as they expected. Truck was more stable than when impacting plain barrier that had 80" of deflection.

MGS Stiffness transition with 4" curb. Failed MASH TL-3. (without curb, vehicle snagged and pocketed but still met MASH OIV and RD. Rail tore when tested with the curb.)

Dhafer Marzougi NCAC / GWU Recent Research Efforts

Sloped Terrain Testing: Objective is to validate vehicle dynamics analysis tools, not intended for slope traversability guidelines, though info could be useful there too. 32' wide, 6:1 median and 32' wide 4:1 median. Vehicles used in the traversability tests included the Kia Rio, Toyota Camry, Crown Victoria,

Dodge Ram 1500 Pickup. Speeds varied from 10 to 60 mph except when they didn't want to damage the vehicle too severely. Have completed 6:1 tests and are building the 4:1 sloped ditch now.

Tire and Suspension Failure Testing: Tested various components to failure to incorporate info into models.

Vehicle Modeling Update: 2010 Toyota Yaris fine mesh model represents the 1100C vehicle. 1.5 million elements so it can be used for impacts from all angles. Since there have been no crash tests involving the Yaris, the model was compared to a Kia Rio crash test into CMB. The model does meet V&V evaluation. Currently working on 2012 Toyota Camry 1500 kg vehicle.

Evaluated the retrofit to G9 Thrie Beam. The G9 failed a crash test under NCHRP 22-14(3). Compared to test of Silverado 63.3 mph, 26.4 degree (TTI Test for 22-14(3) project.) Ran V&V and it meets. The following simulations were done: 1) Compared to target conditions of 62.1 and 25 deg, Still appeared to fail. 2) Retrofit with 14 in deep blockout instead of the crash-tested 8 in blockout. Same negative performance. 3) Tried 14" with cut out at bottom. Still not much difference, a little improvement, but not much. 4) Tried 32.5 inch rail height instead of 31.5 inch as tested. Showed higher roll. 5) Tried half size blockout. Eliminated lower half of blockout, only connected with one bolt. Shows almost no roll. Good performance. Post bends more easily because of only one bolt connection.

Also looked at median thrie beam. Only slight improvement but vehicle would still roll.

Evaluated retrofit of G4(1S) w-beam median barrier. Compared model to TTI test. V&V passed. , Increased rail height but this did not help much as truck still overrides. 3" higher rail appears to work (31" rail height appears to work.)

Subsequent to the meeting, Eduardo Arispe of FHWA TFHRC noted they have two Small Business Innovative Research projects looking at developing low-friction coatings for concrete barriers to try and prevent vaulting/rollovers.

Will Longstreet – FHWA Focus State Outreach

See the FHWA website that outlines the Focused Approach to Safety: <http://safety.fhwa.dot.gov/fas/>
John Durkos, Motorcoach Crashes and NTSB Recommendations

Showed various crashes that have led to the NTSB recommending high performance roadside barriers, median barriers, and bridgerails. The latest NTSB letter to AASHTO on barriers may be seen at: <http://www.nts.gov/doclib/reclatters/2012/H-12-025-027.pdf>

Aaron Jones of BruBelt.

Project manager in Switzerland, Brugg cables. Brubelt consists of wire rope embedded in polymer belt used for high voltage transmission, communications, wire ropes, and many other uses. Have us facility in Rome Georgia, which is a Brubelt cut-to-length facility. Brubelt may be an alternative to wire rope for cable barrier system. Because it is much wider than a conventional wire rope cable, the bottom cable may capture vehicle rather than allow it to go under. May also be a softer impact for motorcyclists. Brubelt wants to learn more about our testing, and want states to consider where Brubelt can be used. Steel cables are a "dynamic rope." Approximate cost is 10 to 20 percent greater than standard wire rope of the same strength. Custom designs require about 300 meters to be run before real production starts.

John Mauthner Florida DOT Tallahassee.

One state's perspective when it comes to roadside barriers.

1. Crash cushions,
2. longitudinal barriers,
3. implementing research.

Developing standards and performance criteria for crash cushions. Categorize per RDG: Sacrificial, Partially Reusable, Low Maintenance (reusable.) Look at hits per year, cost to repair, cost to replace. Synthesis 20-05, Topic 44-14 Median barrier mounted signs. Had signs that they had to mount on the median.

Longitudinal barrier research. Looking at G4(1S) based on FHWA memo. Looking at w-beam with rubrail for median and roadside crashes.

Looking at difference in performance for crossover crashes between small car and pickup.

ISPE on Cable Median Barrier. Looking at percent of cross-over and non cross-over crashes as they relate to site, vehicle type, and crash severity. Also looking at before and after. Costs to repair, too. Looking at NCHP 711 as well as MASH Cable barrier test requirements.

Will be updating their barrier design standards.

Fall 2012 Task Force 13 Wrap up

John Durkos thanked the Adobe Connect participants.

Spring 2013 meeting will be with the MWRSF pooled fund group. May be in a member state but will likely be in Lincoln. Ron Faller suggested we include the presentations available on our website. Need to archive presentations. Mark Bloschock has agreed to make a presentation on anchor bolts at Spring 2013. Meeting Adjourned at 12:32 pm.

-end-