Task Force 13 Meeting – Draft Minutes dated 05-15-2012

Lincoln, Nebraska – April 18-20, 2012

April 18, 2012

Post-crash test discussion with TF-13 and MWPF Representatives.

A first for Task Force 13, we met with members of the Midwest States Pooled Fund Program. Representatives from Nebraska, Kansas, Iowa, Ohio, Illinois, Missouri, Wyoming, South Dakota, Wisconsin, and Minnesota witnessed a full-scale crash test at MWRSF. The MASH Test 3-11 impacted a pin-and-loop precast concrete barrier, with loops fabricated from A-36 steel rods. The 2270P vehicle was smoothly redirected, with a barrier deflection of approximately seven feet. After the crash test we were transported to the new offices of the MWRSF where the MWPF members joined us for a discussion of common highway safety issues.

Dean Sicking Real world performance of Cable Barrier Systems.

Dean noted he will be leaving UNL after 20 years and moving south. Has confidence that Ron Faller and the team will carry on the strong tradition of roadside safety research at UNL.

UNL has studied cable median barrier failures. Because crash locations are generally diverse, it is difficult to predict when cross median crashes will occur. They collected crash data and looked at A&K (disabling injury and fatal) crashes in detail to determine cause of penetration and/or severity. The study is not yet complete, but they do have a database of 20,000 crashes and got most of the data needed from A&K crashes. The data show a 5% penetration rate nationwide. This is skewed by severity, so real rate (when you consider unreported impacts) is closer to 4%. 7% of the crashes are rollovers, and 0.6% are fatal , with 2.2% being severe injury crashes. Impact angle of severe crashes (rollover and penetration) shows 85th %-ile for A&K crashes is 39 degrees. Dr. Sicking says, “We can do better.”

Ohio has detailed slope data so it is possible to identify cable crash characteristics. Fewer serious injury crashes with low tension cable than with all the high-tension systems – this is statistically significant. Penetration rates exceed 10 percent with 5:1 and 4:1 slopes (all crashes.) (25% of cable crashes go unreported.) Most penetrations are from the backside after car has gone most of the way across the median. Data does not include speed as it would be expensive to reconstruct each crash. However, since median barriers are most often placed on high-speed facilities, we can assume a high average impact speed.

Study of the crash reports shows that the cables themselves can cause severe injuries, even if the barrier prevents penetration. For rollover crashes involving median cable barriers, where crash report states that the rollover began before cable impact, the researchers did not include as a cable-induced rollover. Therefore the majority of these rollover crashes were actually caused by the barriers. Trucks are contained about half the time even though no cable barriers have been tested above TL-4. If the cable barrier breaks the headlights of the impacting vehicle, then the vehicle will likely be captured. Roughly half of all fatalities are caused by barrier and half by penetrations. Washington state data show that low tension cable barriers result in fewer A&K crashes. Low tension results in more penetrations but fewer rollovers.

Scott Rosenbaugh of UNL discussed the proposed test matrices for testing cable barriers. Want to determine critical barrier placement locations. See handout.

State DOT Reports on Cable Median Barriers

A number of the state representatives were asked to brief us on their cable barrier programs. Even though they had no more than a few days to prepare their presentations, the level of detail was impressive and much appreciated.

Scott King, Kansas DOT. Only had cable installed recently. Most medians in Kansas are 60 feet wide. They have been pressured to consider cable median barriers. Dr. Sicking looked at 40,000 Kansas crashes, and there were only 5 cross median fatalities per year across the whole state, this is a very low rate and does not warrant the general application of median barrier. The state continues to review crash data, and they pay special attention to anchor performance. They typically place barrier right down the center of the median. Medians are 6:1 to a flat bottom ditch. Put mow strip under the barrier in the middle. OH, MO, NE also used a similar trapezoidal median.

Maria Ruppe, Ohio DOT. 300 miles of cable median barriers have been installed. They now use 4-cable systems only. Use when median less than 60 feet and ADT over 20,000. They also study medians up to 70 feet wide on a case-by-case basis. They also react to media attention. Had one crash where pickup went over far side cable and broke posts off at the bottom. Their study of crashes statewide found that 1 in 1307 rear end crashes resulted in a fatality, 1 out of 3213 angle crashes were fatal, 1 out of 60 head on crashes were fatal and 1 in 16 cross median crashes result in fatalities. Cable barrier costs just under $100k per mile. Overall, 81 percent of median barrier impacts are PDO, with 18 percent resulting in personal injury. The number of fatals is less than 1 percent. Post foundation construction quality was an issue. End anchors now are reinforced. Ohio specifies a minimum post spacing of 15 feet. Mow Strips are now standard. Do not do double runs of cable – maintenance hates it. Nuisance hits are being repaired all the time. Use of in house vs contract maintenance is district by district. Do check and document cable tension annually.

Erik Emerson, Wisconsin. WisDot uses the Caltrans thresholds for warrants. 0.5 cross median crashes per year, .12 fatal crashes… Cross median crashes are very localized. Most CMC are single vehicle. Significant overrepresentation at : Entrance and Exit ramps 5% each. Left curves 5% . Downstream from bridges 10%. CMC are overrepresented in winter. Cables reduce CMC but increased # of impacts. High tension barriers have lower repair costs. Not enough data to show difference in performance between the various high tension cable barrier manufacturers. Geometric issues only explain a small portion of the variability in CMC occurrence. Grading/drainage, soils, proper placement, deflection distance, are significant issues that need to be addressed. Other hazards also need to be considered (terrain, trees, etc.)

Chris Poole. Iowa DOT. Started with 3.5 miles of high tension cable median barriers in 2003, and now have 230 miles. Had 9 fatalities in two crashes within 10 days, so a 5-year program was implemented in one year. Now they place the barriers 12 feet from the left lane, even if regrading of slope is needed. 8:1 in front, 4:1 or flatter behind for at least 10 feet. A new project will regrade the slope to 8:1 to center of median. Have a lot of runs shielding bridge piers and sign bridges that are only 200 to 300 feet long. Like everyone else they have had problems with broken footings. Approx 1000 hits on cable. No multi vehicle cross median crashes since installation at these locations. Caught about 15 tractor trailer trucks.

Joe Jones, Missouri DOT. In 1990s they installed a lot of low tension cable due to serious crashes in news. Began installing CMB in any median 60 feet or less. In 2007 looked at warrants and came up with two sets of priorities. No longer do double runs as it is a maintenance nightmare. Had a project with driven sleeve, no concrete, but drove it thru a mow strip and are having excellent performance. Have 94% success rate in preventing cross median crashes. Have about 600 miles of cable barriers in place now.

Design Challenges and other concerns.

Research Perspective

Scott Rosenbaugh, MWRSF.

Vehicle Override: Post and cable interaction with 2270P as the CIP for cable systems is the post for the pickup truck (mid-span for small car.) All vehicles: foreslope override and bouncing off the back slope.

Vehicle underride is a concern with 1100C and 1500A vehicles.

Occupant Compartment Crush is allied with underrides: Crushing of a-pillar is a problem.

Vehicle stability, and penetration between cables are two additional issues,

Roger Bligh, TTI. "Worst practical case" of crash testing does not necessarily work with cables on slopes as they do with other barriers on the flat and level. The idea that 6:1 slopes were equivalent to flat and level is not necessarily true. Capturing bumper and cable engagement is a necessary but not sufficient condition. Can't assume that proper height will solve all problems.

Manufacturer Perspective

Richard Butler, Brifen. Don't have enough money to do all these tests. States are happy with performance of cable barriers. Need to standardize info that the states provide on soils. Need to have a matrix decided upon before manufacturers will move forward and conduct the crash testing. Need to get 22-25 guidelines out to the states.

Rick Mauer, Nucor Marion. Need to standardize barrier placement in the field. Need consistent grading. Need uniform information from the states on soils. Need to get info to states on post spacing on curves. Would like to get data on crashes from the states. Maintenance and cable tension needs to be more consistent. Need to agree on a test matrix.

Wrap up by Ron Faller: Where do we go from here? When MWRSF began their project they didn't have a goal of developing a test matrix on slopes. TCRS needs to address the issue of testing; do we have each manufacturer run all tests. Roger Bligh suggests that testing at 4 feet off break point may be satisfactory. Dean Sicking would like to get his crash study finalized before agreeing on final recommendations.

TCRS and AFB20 need to discuss these issues in Irvine and determine a course of action on the need for cable barrier testing. [Secretary's note: This is on the agenda for discussion by the TCRS in July.]

Additional hardware topics

Kevin Schrum MWRSF-UNL B/C Based Selection Guidance for Crash Cushions

First, some definitions:

Redirecting Sacrificial – some part needs to be replaced

Non Redirecting Sacrificial – completely replace

Low Maintenance – minor costs to put back into service.

Used RSAP to evaluate costs. Surveyed states to get costs on Redirective Sacrificial: QuadGuard, Tau II, TRACC, Quest; Non-Redirective Sacrificial: Sand Barrels, [low maintenance:] QuadGuard Elite, React 350. SCI. Published report recommends what traffic volumes and highway functional class warrant which type of crash cushion.

Roger Bligh spoke briefly on Guardrail End Terminal length vs Functional length. Now end terminals use regular line posts. Want to make sure that the terminal installed uses this regular section for as long as the crash tested length.

Task Force 13 Meeting in the Grande Manse, Lincoln, Nebraska,
April 19, 2012

Durkos welcomed members to Lincoln for the first time since 1998. Noted Co-chair Gregg Fredrick was unavailable. Thanked Ron Faller and Larry Bock of UNL for their work in hosting both the meeting on Wednesday afternoon and the two days of the Task force.

After the usual round of introductions and review and approval of the minutes of the September 2011 meeting in Rapid City, the Task Force Subcommittee sessions began.

Subcommittee #1 – Publications Maintenance

Dusty Arrington has taken over as the Task Force 13 Web Site contract representative from Wes Duffard. TTI is no longer doing the programming of our website directly, but contracting within Texas A&M for that work. Dusty showed attendees how to use the site, focusing on the needs of the general user, and on the drawing review processes. We will have training sessions in the future, just let Dusty know if you are interested you can be added to the invitation list.

Draft website is at http://stage.aashtotf13.org Dusty needs all Subcommittee Co-Chairs to send him info to update their pages. New stage site is more like a modern website. Left column has links within the site, right column has news. Links in left column bring up a photo of the publication in questions. Dusty has ideas on how to index products, and they want to make it easier to find the various devices.
He then went through log-in process, which is needed if you want to do more than just look at the publications. Members can now create their own account and reset their password, or register as a new user. This process requires members to add an email address. All Task Force 13 members please log in to www.aashtotf13.org and register or update your profile with your current information. Even if you rarely attend meetings, please visit the website now and update your information. If you have not been a regular participant in Task Force activities, this is an excellent time to start making a contribution to highway safety through TF-13. You will need Acrobat Reader X (Ten) loaded on your computer in order to review drawings. Use www.acrobat.com to download the latest Reader. To review drawings and add comments, you need to also have an Adobe account, which is free of charge. When you load a drawing, you will be prompted to register or enter your account info. Once you have an Adobe account, the TF-13 site will be able to identify your comments by name. There will be a YouTube video prepared that will walk you through a drawing review demonstration.

When you click on "Drawing Review and Comment" you will see all the review groups you are assigned to. You are to review the drawing(s) assigned to you. By right-clicking on a drawing file name you can save the drawing to your computer for review. In order to post comments on the drawing, you must download it to your computer and use the comment features of Adobe Reader X. If you just look at the drawing on the TF-13 website, you will not have that Adobe Reader X commenting functionality.
When you open the drawing and you are a new user, you will be asked to login to the Adobe site. If you are OK with the drawing as-is, change the status to "Approved." If you have minor comments, change status to "Approved with changes." If you have significant comments, then change status to "Resubmittal required. It is up to Tech Reps and Subcommittee Co Chairs to decide whether the drawing is OK.

Karla Lechtenberg led the barrier hardware drawing review.

Subcommittee #3 Bridge Railings and Transitions.

Roger Bligh opened the meeting and welcomed those in attendance. Bligh then briefly reviewed the functions of the bridge rail subcommittee and showcased the Task Force 13 website, specifically the

online bridge rail guide. He demonstrated how to use the guide and its features followed by a brief review of a typical rail system and the information available to the user.

Bligh then reviewed the various working groups within the bridge rail subcommittee (concrete, steel, other, and transitions) and requested volunteers to help review the various systems. A sign-up sheet was distributed to the group.

Next, Bligh discussed the review process, what information is required on a typical system, and how to use the website to make comments. Common review issues were discussed such as missing or incorrect information, the rail not having been crash-tested, etc. Bligh then mentioned that in the future, the website may feature tools to help expedite the review process including guides, checklists, and automated fields.

Bligh then introduced Kurt Brauner, the concrete rail working group leader. Brauner proceeded to make a presentation on the status of the concrete systems. Prior to the meeting, Brauner had assigned 17 systems to be reviewed. Of those 17, only 3 had been reviewed. Brauner discussed possible reasons for the inactivity including recent comments not being published and the fact that some of the assigned rails had been removed at the request of Mr. Tillat Satter of CALTRANS. Brauner then reviewed some unique problems with the supplemental files on his assigned system and urged the reviewers to check all the supplemental files to determine if they are accurate and belong with the system. Finally, Brauner mentioned that CALTRANS had recently uploaded several new rail systems into the guide and that being new, these systems were more in keeping with the guide requirements and would be easy to review.

Bligh then addressed the group on behalf of William Williams, the leader of the steel rail working group, and gave a presentation on that group's status. Prior to the meeting, Williams had scheduled a conference call with his working group members to discuss the review process and the potential problem areas. He then assigned each member one or more systems to review. The group has a total of 43 steel rail systems they are trying to review. Based on feedback from his group members, Williams reported on several typical review problems including incorrect pictures, inaccurate documents, missing information, etc. To assist with the reviews, Williams distributed an AutoCAD template to help the reviewers generate any missing sketches. Finally, Williams highlighted several successfully reviewed systems.

Following the steel presentation, Bligh discussed other topics affecting the bridge rail guide, particularly the removal of obsolete systems. This lead to a discussion of what, if any, rails should be removed. The argument was made that if a rail was crash tested under an older standard, we should include it in the guide and make a note of its limited functionality. Bligh stated that the intent of the guide was to only include NCHRP 350 or MASH equivalent systems but agreed that the list of removed systems should be reviewed to ensure that no rails were mistakenly taken out of the guide.

Bligh then discussed the future direction of the bridge rail subcommittee and expressed his desire for a more streamlined on-line review process which could incorporate pull-down menus, automated

notifications, checklists, etc. He also discussed the need for an automated on-line submittal process that can be linked to the bridge rail guide database and provide notification to the subcommittee chairs and appropriate review group leader. Functionality to maintain subcommittee and review group membership lists to assign drawing systems for review was also discussed.

The group then briefly discussed the need to have the deck details recorded somewhere in each bridge rail system. It was agreed that any required deck information could be obtained from the contact person associated with that system and the details included in the supplemental files.

The need to archive old bridge rail systems was also discussed. These rails could be used for local / county roads or on other non-standard applications. It was agreed that this archive would have to be separated from the active on-line guide and some notification regarding their crashworthiness would also have to be readily apparent.

Finally, in the time remaining, the group reviewed a rail system that was deemed ready for acceptance. However, a few minor issues were noticed and the rail was tabled for further action.

With that, Bligh thanked the group for attending and adjourned the meeting.

Subcommittee # 7: Certification of Test Facilities:

1) David Whitesel and John Jewell of Caltrans are on the webcast
2) Lance went over an ILC of vehicle dimensions and CG locations.
    a) All data from four participating labs (TTI, E-Tech, Caltrans, MwRSF) was within 15%.
    b) TTI changed the tires to a size used by MwRSF and was able to get CG in the window.
3) ILC results of 1500A analysis
    a) MwRSF had an issue with what is going on with the ILC data.
    b) What are we doing with the data and any outliers?
    c) KARCO has been requested to have a formalized report issued by the subcommittee
        i) What do we need to include in the standardized report?
    d) **Action item: we will work on getting a standardized report format. An email will be sent out for what we should include. As an interim standard, ± 3 standard deviations. The draft format will be sent out for comment.**
    e) All labs are asked to look over the sign conventions and make sure that they are reported according to MASH
    f) **Action Item: John Laturner of E-Tech will initiate an ILC for the 1500A calculations that we may be able to use to verify sign convention and accuracy.**

g) Jeff Shewmaker recommends using a 1500A calculation to appease auditors but perhaps doing other ILC activities for additional comparison.
    i) KARCO, MwRSF and TTI have been unofficially told that more than just a data set is necessary.

4) 2010 request for bogey that was sent in to FHWA by MwRSF
    a) Nick Artimovich will send an email to Ken to see what the situation is.
5) Dodge pickup vertical CG ILC
    a) MwRSF, TTI, KARCO, TRC are having issues with the cost of shipping the vehicle.
    b) General consensus is that the labs would like to see it done, but the cost is an issue.
    c) John Jewell would like to see a collection of all labs methods with write-ups, photos and videos to compare the current methods.
    d) John Laturner mentions that it may be possible to use the data and input to come up with a standardized method for all labs to follow for CG measurement.
    e) 20-7 FHWA funding
        i) Must be sponsored by an AASHTO sub-committee to get funding
        ii) This may be an avenue to have the cost of shipping paid for.
    f) **Action item: Lance to work on a request for funding for the shipping of the vehicle for CG comparisons.**
6) **Action Item: send out an email to request procedures for CG measurements**
7) EN1317 Testing
    a) TTI, MwRSF, E-Tech and Safe are accredited for the testing. E-Tech, TTI and Safe have performed accredited testing.
8) Moving average or phaseless filter to process acceleration data
    a) MwRSF, Phaseless
    b) E-Tech, Moving Average 2
    c) TRC, Phaseless
    d) Trap uses a moving average
    e) Safe Technologies, moving average (trap)
    f) KARCO, moving average (trap)
    g) Caltrans, moving average (trap)**??**
9) May be able to do an ILC on how you do the data and then a data comparison for the set from John Laturner. Use the same data set for both this and the 1500A calculations.

10) ASI Calculations
    a) E-tech, MwRSF, TRC are not using trap.
    b) KARCO, Safe Technologies, TTI, Caltrans trap
11) Potential ILCs
    a) Cleveland list
    b) Safe Technolgies thinks that the video analysis would be a good option
12) **Action Item: Dusty of TTI will send out a video file for analysis. Method will be to send out a .cine or a .tiff file to measure.**
13) Timelines for ILCs
    a) Lance recommends sending out the minutes, then prioritizing and setting timelines for each of the options.
14) Soil requirements in MASH led by Karla Polivka
    a) Soil strength performance test concerns
    b) Who is doing the soil testing:
        i) TTI did initially, using the same soil they do not do it over. Initial dynamic test done once, static test every soil installation
        ii) E-tech does the same for reported tests.
        iii) KARCO has done one test requiring soil and did a dynamic and static.
        iv) TRC has attempted the soil tests but has not done a MASH test requiring it. They do not have a passing dynamic test.
        v) Caltrans has not done the soil testing and has not run a MASH test.
        vi) MwRSF
            (1) Checks the sieve analysis for each shipment. They use one baseline dynamic test and then use a static test for each.
        vii) FHWA will be expecting to see the soil test for units that are submitted.
    c) MwRSF High Baseline Issues
    d) Hinged post issues
        i) Load cells not designed for dynamic use
    e) New Hinged Post proposed by MwRSF using tension load cells
        i) This new design makes the load cell data match the accelerometer data better
    f) Does the group think that with the equipment used now that the accelerometer data can provide the load data to eliminate the compression load cell?

i) E-Tech says yes. There is an initial spike, but overall the data is acceptable.
ii) TRC agrees that the accelerometer is acceptable and proposes that a load cell mounted behind the bumper of the bogey is even a better option.
iii) KARCO does not disagree.
iv) Caltrans and Safe have no comment.

g) Will FHWA accept soil test using accelerometer data:
   i) The acceptance would have to come from AASHTO TCRS.
   ii) FHWA will not make the decision in the change, the decision must come from AASHTO.

h) Deflection data:
   i) E-Tech, from accelerometers
   ii) KARCO, from video
   iii) TTI, from video
   iv) TRC, video, have tried several different things including string pots.
   v) There does appear to be a difference when using the accelerometers vs. video when it comes to measuring the post.

i) If there is a change to using the accelerometer data instead of load cells, should there be a change to the minimum strength or the 20 inch deflection?
   i) Lance opines that if we are going to look at changing the method that we should probably then look at changing the requirements as well.

j) Karla will send out the slideshow since we did not make it all the way through.

Summary of Action Items:

1) We will work on getting a standardized report format. An email will be sent out for what we should include. As an interim standard, ± 3 standard deviations. The draft format will be sent out for comment.
2) John Laturner of E-Tech will initiate an ILC for the 1500A calculations that we may be able to use to verify sign convention and accuracy.
3) Lance to work on a request for funding for the shipping of the vehicle for CG comparisons.
4) Send out an email to request procedures for CG measurements
5) Dusty of TTI will send out a video file for analysis. Method will be to send out a .cine or a .tiff file to measure.

Other Subcommittee Summaries
All co-chairs are to go on web site and update your Subcommittee information, content, mission statement, co-chairs. Get this info to Dusty or John. Also, all members should create a "wish list" of improvements to the website for Phase III with TTI's contract.

Subcommittee # 2 : Crash Cushions and Terminals Review Group – John Durkos. Reviewed just one drawing but reviewed it thoroughly. Many comments were "easy fixes" but could not be accepted as is. Decided to approve drawing when the owner addresses the comments. Reviewers must save drawings with comments to their hard drive or they will not have access to that drawing when it comes to voting on a revised drawing.

Is owner of a proprietary device obligated to include TF13 designators for the individual generic components? State person wants the generic parts called out. Proprietary manufacturers are concerned about liability. Decision: should not be a requirement but is an option if the manufacturer wishes to do so.
Subcommittee #2 Barriers Review Group: Karla Lechtenberg, reviewed 5 drawings. Most were components of systems that had already been reviewed.

Subcommittee # 3: Bridge Railings & Transitions. [See Kurt Brauner's notes above.]

Subcommittee #4: Drainage. Chuck Patterson. John Sickles of ADS will join the subcommittee, now have two members. Sent their survey to 65 people in states. Half knew it existed, none had used it. Some noted that the following should be added: stormwater management structures, trash collection structures, LRFD requirement for underground utilities.

Subcommittee #5: Sign Luminaire, Traffic Signal Support Hardware.
Anyone who currently uses the link provided from the Roadside Design Guide page sees the unfinished Sign Support Guide. Sub Committee 5 voted and would like to recommend to the executive committee to move the Sign Support Guide to the TTI site, when feasible, so visitors can see a completed "released" set of products without all of the comments and un-approved products that currently appear. The committee feels there is a sufficient quantity of "TF13 Approved" products listed to make the move.

Dean Alberson suggested the Sign & Luminaire Sub Committee 5 work with Work Zone Hardware Sub Committee 6 regarding the placement of signs, reflectors, and other attachments onto the tops of work zone barriers. The consensus was that there may need to be some standardization in that area.

We discussed the 7 ft. minimum (& 5 ft. for some cases) clearance height, and whether it is sufficient. The possibility was raised that increasing the minimum may help some devices pass MASH TL3 truck testing. Dan Waddle will write a Problem Statement to be reviewed at our next meeting.

Barry Sladek will check into EN tests that may have been done for Luminaires. He will also report at our next meeting on MASH testing of Luminaires. We would like to reach out to other Luminaire manufacturers to be at our next meeting to participate further in this discussion.

We had a discussion and a consensus that slope conditions should be looked at when installing signs in these locations. Should each foundation/anchor meet the 4" maximum breakaway height or should it be the average of the ground around it? There was a feeling that impacts of this nature may compromise the breakaway performance of the installation/system. We plan to discuss this further at our next meeting.

We had a discussion regarding the interactions that could occur between two roadside devices if they are placed into close proximity with one another. It was brought up that Sub Committee 5 and 6 might both have an interest in whether breakaway performance is impacted from that. Perhaps some guidelines are

needed to identify how close some categories of roadside devices can be to others. Dean Alberson will write a Problem Statement for this situation.

Subcommittee #6 Work Zone Hardware:

Chair: Greg Schertz

- Recap of last meeting and overview of Subcommittee Mission Statement.
- Co-chair position vacated by Ken Smith. Mike Dreznes, International Road Federation, volunteered to fill the position. No objections.
- Presented several different discussion topics and asked if participants had other ideas.
    - Greg: Work zone devices tested to MASH may have unanticipated results – little discussion
    - Greg: Temporary concrete barrier design standardization – little discussion
    - Greg: Mounting hardware/standardization for signs, etc. on top of temporary barriers
        - Dean Alberson said TTI is conducting a study on this topic and will report back to the subcommittee at a later date.
    - Rick Mauer, Gregory Industries: Need for standardization of markings on the back of truck mounted attenuators. Rick showed some common examples and said the specification changes from buyer to buyer and agency to agency. There is no standard or guidance in the MUTCD. Most participants thought this would be a good effort to pursue. Greg Schertz agreed to contact members of the NCUTCD to see if this topic has been discussed in the past and if so, what the outcome was. If it has not been addressed in the past by the NCUTCD, Barry Stephens and Rick Mauer agreed to draft a problem statement for a future effort. A comment was made to look into any recent efforts/research on marking emergency vehicles.
    - Mike Dreznes, IRF: United States should consider revisiting the MASH standard for the small test vehicle. Discussed loosing industry markets in Europe and other countries because those countries need devices tested to smaller vehicles. This item was discussed in the summary provided to the full Task Force and Dean Sicking provided reasons of why we should not go back to a lighter vehicle in this country. General agreement at that time not to pursue this for the near future.
    - Concern was raised about inconsistent terminology use for crash cushions. This was further discussed in a later presentation at the full task force meeting.

Subcommitee #7 Certification of Test Facilities See notes above.

Subcommitee #8 Rail Highway Crossings
No meeting of the RXR subcommittee.

Executive Board Meeting

Present were Durkos, Schertz, Mauer, Bloschock, Chiu, Arrington, Bullard, Bligh, Longstreet, Patterson, Takach, Kirchgesner, Brauner, Artimovich, Rich Brown from Transpo.

Topics of interest: Drainage committee membership, Chuck will wrap up survey to see what interest there is with an updated guide.

Adobe connect operation. Acoustics in this room were bad, but the operation did work. Friday's informal presentations will also be available this way. Hope to be able to do this for the fall meeting as well. Can we find a means of two way phone communication?

Review groups went very well. Captured a lot of comments that would not have been brought in front of the group. Had an issue with too many people trying to view a drawing.

TTI contract. Invite all subcomm co chairs and all tech reps to participate in next teleconference to discuss what should be prioritized in the next phase.

Fall 2012 meeting location. Just have to make a decision of Camp Hill (last week in October) vs Gettysburg (first week in October.) TCRS and AFB20 are meeting together in 2012, but in 2013 we will likely be able to meet with AFB20 again. Suggestions: Canada has issues with passports and out-of-country travel; Sarasota, Florida, and College Station, Texas are potential options.

Mauer wants a Marketing Committee slot on the first day so folks can think it over and discuss on Second day.

RXR subcommittee wants to get its guide on the TF-13 website. There are a number of other RXR committees in various organizations around the country. TF-13 was just to maintain a list of contact people.

Should TF-13 website show other FHWA maintenance guides? We are not trying to be a general clearinghouse for hardware publications.

Task Force 13 – Friday April 20, 2012 Final Day in Lincoln, Nebraska

Task Force To Do List:

All members sign up to participate in a Review Group

All Co-chairs review your subcommittee's home page to correct and update information and to add additional content as needed.

All members make sure you have a user name and password for the www.aashtotf13.org web site. You can register on your own.

Some subcommittees have committed to prepare Research Problem Statements, including Signs on top of temporary barriers, interaction of roadside safety hardware, delineation of the rear of work vehicles and TMAs.

Subcommittees should consider the field application of hardware within their area of interest – the next step beyond good design and successful crash testing.

General announcements. The Task Force meeting is scheduled to go until Noon. Will be using ADOBE Connect to broadcast some of the presentations to members who are in remote locations.

Congratulations to all members who have read these minutes. You are rewarded with a $25 discount from the registration fee for the next meeting. Just cite your Task Force 13 website username on the registration form. [This is a not-too-subtle means of encouraging all members to take full advantage of our website.]

Will Longstreet made a presentation on the FHWA Eligibility Process. This process will be posted on the FHWA Office of Safety web site as soon as it receives final approval from management.

Scheduled Presentations:

Donna Clark ATSSA: National Work Zone Awareness Week is next week in Missouri. Also will have the annual Fly-in in Washington, DC. Midyear meeting is in August in Hilton Head, SC. Webinar Wednesdays next one is shadow vehicles and TMAs. ATSSA was awarded another safety grant from FHWA. Still working on Positive Protection training course, including a decision tree for the need of PP, and what PP is most appropriate. States should indicate their interest in hosting a PP course. Six states per year for the next three years. Have had a number of states express interest so far.

Last year ATSSA had an ADA Demo Project with Caltrans in Sacramento. Showed a DVD of that project. Are also developing a guidance document to go with the DVD. Guardrail committee will have a round table discussion in San Diego 2013 annual meeting. Will involve a number of state reps and contractors that work in those states.

Durkos noted that ATSSA fly in is very important and members should support the effort to pass a new highway bill. Asked Pete Speer to address this issue. House passed a "holder" bill, now Senate will go to conference with House so they can prepare a final bill. There is a strong emphasis on safety. ATSSA makes it easy to contact your elected officials in Washington.

National Association of County Engineers by Laura Huizinga of Barrier Systems

NACE annual meeting was held recently, with Secretary LaHood emphasizing distracted driving. Locals point out that greatest safety needs are on local roads but little Federal or State funding gets down that far.

AASHTO

Durkos thanked Jim McDonnell of AASHTO for his efforts in promoting Task Force 13. Jim has moved on in AASHTO as the Program Director for Engineering, and has been replaced by Keith Platte, who sent a slide show. Fatality numbers are going down. We need a highway bill to be able drive the numbers down more. 3528 copies of RDG have been sold compared to 4902 copies of the Green Book. Phil

Tenhulzen of NDOR noted that RDG changed definition of L sub R (runout length.) Sicking and McGinnis discussed runout length for years and TCRS decided that the length of need for barriers went down. Sicking noted they revisited Cooper data which showed shorter distances. 17-22 study came up with final input. Looked at higher speeds but runout lengths were actually shorter. Now looking at every crash in Kansas near guardrails including running behind the guardrail, to refine GR lengths. Preliminary data shows that L sub R may go shorter yet. MGS may also have an effect. Looking to minimize total crashes by minimizing length of barrier to just what is needed.

Artimovich gave a presentation on AFB20. They will be meeting with the AASHTO Tech. Committee on Roadside Safety in late July this year. The meeting will consist of the general meeting with TCRS, plus three subcommittees: International Roadside Research, Computational Mechanics, and Positive Protection in Work Zones.

TF-13 Marketing Subcommittee. Rick Mauer said they would like to have more members in addition to Donna. Would like to get Marketing Subcommittee on the website. Have put out a newsletter. Next newsletter will have a focus on EPA and drainage issues. They will also be the ones to post items to the TF13 Website calendar. Now offering CEUs. Please sign up if you need CEUs from TF13 participation.

UPDATE ON ROADSIDE SAFETY RESEARCH

Mark Bush of NCHRP has taken over from Chuck Niessner dealing with roadside safety projects. Mark was originally from Detroit and worked with Michigan DOT for many years, including working with local agencies. Also worked in private industry. In 2010 he was with SHARP-2 program. Inherited 35 roadside safety projects from Niessner, and updated us on the following. If you are reading the e-version, the blue project numbers are hyperlinks to the NCHRP page detailing each project.

NCHRP 12-90	Guidelines for Shielding Bridge Piers

Contract Pending

NCHRP 16-05	Guidelines for Cost-Effective Safety Treatments of Roadside Ditches

TTI interim report submitted

NCHRP 17-11(02)	Development of Clear Recovery Area Guidelines

TTI Issues with database. Interim report expected late spring.

NCHRP 17-43	Long-Term Roadside Crash Data Collection Program

VA Polytechnic Institute. Interim report approved. $100K continuation request approved. Working on MOU with NHTSA

NCHRP 17-44	Factors Contributing to Median Encroachments and Cross-Median Crashes

MRI-Global. Prelim Draft Final Report expected in May

NCHRP 17-54	Consideration of Roadside Features in the Highway Safety Manual

Roadsafe LLC. Interim Report Submitted. Panel met on May 8.

NCHRP 17-55	Guidelines for Slope Traversability

Contract Pending

NCHRP 17-61	Work Zone Crash Characteristics and Countermeasure Guidance

RFP drafted. Contract Pending

NCHRP 22-12(03)	Recommended Guidelines for the Selection of Test Levels 2 Through 5 Bridge Rails

Roadsafe LLC. Executing Work Plan. $100K cont request approved

22-17(04) Crash testing of Cable Barriers on Sloped Medians for MASH Matrix
TTI No cost time extension. One test conducted. Pending 2nd test on barrier location.

NCHRP 22-20(02)	Design Guidelines for TL-3 through TL-5 Roadside Barrier Systems Placed on Mechanically Stabilized Earth (MSE) Retaining Walls

TTI. $110K approved for phase 2 work plan

NCHRP 22-21	Median Cross-Section Design for Rural Divided Highways

MRI-Global PDFR being reviewed

NCHRP 22-22	Placement of Traffic Barriers on Roadside and Median Slopes

Interim Report Received

NCHRP 22-25	Development of Guidance for the Selection, Use, and Maintenance of Cable Barrier Systems

GWU. In NAS Review for Publication. Sicking asked if engagement with 2 cables are required. Noted that most crash tests capture with just one cable.

NCHRP 22-26	Factors Related to Serious Injury and Fatal Motorcycle Crashes with Traffic Barriers

VA Poly. Ext to allow additional cases. PDFR exp in October.

NCHRP 22-27	Roadside Safety Analysis Program (RSAP) Update

Roadsafe LLC. End in June of 2012. Executing approved work plan.

NCHRP 22-28	Criteria for Restoration of Longitudinal Barriers, Phase II

Roadsafe LLC. Interim Report expected in June.

NCHRP 22-29	Performance of Longitudinal Barriers on Curved, Superelevated Roadway Sections

Cing-Dao Kan, Thru June of 2014, in Phase 1.

Potential New Standardization Areas
WZ standardization of concrete barriers. Minor differences between states mean that no two are the same. Artimovich asked if, going forward, could test labs recommend using standardized temporary barrier hardware? Sicking noted that states have a big investment in their current standards and are not interested in changing.

Delineators. Florida has been working with NTPEP on high durability delineator standards. No other state has such a standard. NTPEP no longer working on this. Texas noted failing delineators are expensive. Want to see more robust testing for high performance delineators. Heights and sizes of delineator posts / reflectors are not standardized. Some states require 48" tall post, Texas found 36" tall post is more supportable. This should be a topic in the WZ subcommittee.

Durkos noted that some contractors didn't like plastic butterfly delineators because the nut on the guardrail didn't tighten. Speer noted that plastic was better because it did not impair bolt pull-thru. Florida mounts them on the post.

Sound Walls standardization? No interest.

Work zone intrusion devices – WZ subcomm voted No because of electronics. However these are CO2 cartridges and air horns.

Connecting devices on top of concrete barriers? Alberson notes it is premature. Florida is interested. Standardization of Tube sizes in bridge rails. Too much variation? Drop from list?

Technical Presentations (had 28 participants through Adobe Connect)

Dusty Arrington TTI Task Force 13 Website. Went through the website for those using Adobe Connect.

Dean Alberson TTI Crash testing:

Box Culvert Guardrail. Steel post bolted to top of box. Rail is 31 inches from roadway surface. 9 inches of cover over the box, making post taller than just 31 inches. Truck successfully redirected. Tear initiated when w-beam contacted flange, but rail did not rupture.

Texas two tube rail on curb, 36 inch overall height. Successfully redirected 3-11. Substantial damage done to deck, however.

TXDOT Aesthetic picket rail. Steel post and 3-tube. Top is round pipe, lower two are rectangular. Ran 3-10 and 3-11. Both successful. Some spalling on back side. Cast in place anchors.

Pinned PCB with angled pin. Needs to avoid hitting rebar in the deck when drilling hole for pins. Asked vendors to demonstrate their devices to help locate rebars. Very successful, should be easier to drill and miss This report will be forthcoming.

Peter Speer of Pexco – Test and evaluation of surface mounted flexible channelizer posts.
History of testing on NTPEP. Examples of test results. What you might see in the marketplace interpreting those results. Need for high performance testing. One example of high performance testing. Conclusion.

Tennessee is lead state for testing channelizing devices. 14 to 18 month timeframe for NTPEP testing. NTPEP study simply reports data and offers no judgment. High performance testing was abandoned because the cars bumper was ripped off after 40 impacts. There is a need for high performance testing standards to fairly evaluate these products.

Mike Dreznes of International Road Federation – Crash Cushion Classification Clarification.
Non Redirective, 5 tests required
Redirective Gating, 7 tests under 350 8 under MASH
Redirective non gating. Do not pass through nose. 8 tests. 9 under MASH (for staged system)
Roadside design guide does not discuss gating/non-gating very much. RDG uses sacrificial, re-usable, low maintenance - self restoring. What criteria were used? Don't have very good criteria for classifying crash cushions. Need objective guidelines for applying various types of crash cushions. Should use results of test 3-31 head on capacity test. 1) Less than 50 percent useable after such a hit 2) 50 to 90% reuseable, 3) Less than 90% of original cost needs to be replaced. Impacted at least 3 times a year.
Durkos noted Tech Reps have been focusing on drawings. We should be looking at classification as well.
Dreznes also noted that the summer meeting of AFB20 will be in Irvine, CA. Subcommittee 2 Will be in Milan Italy on July 17.

Dean Sicking Trailer Truck Mounted Attenuator TTMA-100
Uses standard trailer hitch. Eliminates mounting hardware. Can attach arrow boards and VMS directly to trailer. Eliminates need for dedicated truck. Tested with blocked vehicle. Designed to meet MASH.
Uses heavy gage galvanized steel. Uses tube bursting technique.
Some customers concerned about simple pintle hook connection. May allow vehicle and trailer to rotate upon impact. Test 3- 54 head-on offset with pickup showed no tendency for TMA to rotate about the connection. Also captured vehicle during impact. Shadow vehicle was blocked. "Anti Rotation" devices on other trailers add no advantage.

Carla Lechtenberg UNL MWRSF
MGS without blockouts 2270P passed. Knocked down some posts. 34" dynamic deflection. Posts yielded in soil rather than rotating.

MGS with wood posts. 6x8 Southern Yellow Pine. Just to verify that wood and steel posts both worked. 3-10 and 3-11 passed, no occupant risk issues.

Minimum effective length of MGS. Used LS Dyna to select 75 feet as the target value. Passed 3-11 test.

Curved 3 cable barrier for NYS DOT. 360 foot radius. 27" cable height. Successfully redirected pickup. Then tried flatter radius (440 ft) and truck overrode the barrier. Will now try raising cable height.
Can soils be too stiff?

Will Longstreet FHWA Office of Safety

Discussed new FHWA Eligibility Review process. The new FHWA form for submitting requests to FHWA may be found here:
http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/forms/rqsteligibilityform.pdf

New and Old Business:
Fall meeting in Pennsylvania.
2013 meetings may be in conjunction with AFB20 and TCRS again.

Meeting adjourned at 12:30 p.m. on Friday, April 20.