

Minutes of the Task Force 13 Meeting
Westin Crown Center, Kansas City, Missouri
September 20-21, 2010 [DRAFT OF 9-27-2010] [with SubComm 8 notes] [plus
marketing]

Co-Chair John Durkos welcomed the participants, noting that our Fall meeting is typically held with the AASHTO Technical Committee on Roadside Safety. Went through self introductions. Introduced Art Dinitz as the Task Force Chairman Emeritus, and discussed TF13s place within AASHTO/AGC/ARTBA Joint Committee's Subcommittee on New Materials and Technologies. Gave a brief summary of what is on our agenda for these two days.

Mentioned group dinner at Jack Stack's barbecue for Monday night. Meet at 6:15 from lobby area.

Thanked Joe Jones, Rod Lacy, and all those from Missouri and Kansas DOT who put the meeting logistics together. Thanks to Wyoming DOT for registrations.

Noted that retired co-chair Pat Collins of Wyoming left the position of State Co-Chairman open. Since Dinitz retired, TF13 has had two co-chairs, one from industry and one from a state DOT. We have one nomination to fill the vacant Co-chair position. Durkos asked if there were any other nominations. There being none, Gregg Frederick was voted unanimously as State DOT Co-Chair for Task Force 13.

Durkos also noted that the Task Force 13 Secretary was the subject of an article in the July 4th edition of the Washington Post. The article, with a short accompanying video, may be seen at:

<http://www.washingtonpost.com/wp-dyn/content/article/2010/07/03/AR2010070302946.html>

The Spring 2010 meeting was in Napa, California, and was preceded by a meeting of the Transportation Research Board Committee AFB20 - Roadside Safety. Artimovich summarized the minutes of the various TF13 subcommittees. The minutes of that meeting, and all other meetings of the 21st Century, are posted on the TF13 website, <http://www.aashtotf13.org/News-Bulletins.php> . Roger Bligh moved to accept the minutes. Motion was seconded and approved.

SUBCOMMITTEE MEETING NOTES

Subcommittee #1 Publications Maintenance: Wes Duffard of TTI presided (Mark Bloschock is on the International Scan Tour on Motorcycle Safety.)

Duffard put website on the screen. Went through the basics of the website, most of which is open to the public, including the Guides. Login is only required for Member Resources. The Task Force's publications currently reside on different sites but will be brought onto TTI site. Both old and new Barrier Hardware Guides are available. Many old drawings are still current but they are in metric dimensions. Each Subcommittee is described on the site. **Subcommittee Co-chairs are to go to their sites and ensure that all info is up to date. Additional material, images, etc., are welcome.**

Meeting minutes are on line since 2000. Registration info will also be posted on website for use preceding upcoming meetings. Durkos noted that TTI being host to all the web pages means that registration info can be posted more promptly. Contact information form sends you to your Secretary's email.

Member login: Contact Duffard if you forget your password. For new login requests, contact Duffard or Artimovich.

Member Resources will include Work in Progress, Review and Comment, and TF-13 Forum. Subcomm Co Chairs have administrative rights.

Drawing comment and review process. This process has been discussed through teleconferences. Duffard demonstrated the search feature of the Barrier Hardware Guide which is "in its infancy" as there is only one drawing up to demonstrate the review and comment features. When functional, members will be able to check documents out, add comments, and check them back in.

Demonstrated comment form for making comments on drawings, and on replying to prior comments. You can also associate your comment with one or more drawings or files. PDF Writer will be the software for drawing comments. You will still be able to make comments if you only have PDF Reader. The owner of the drawing(s) will go through the same process to respond to the comments.

Need to "Check Out" the drawings or files if you want to make your notes directly onto the drawing itself. Always checks out the latest version. This does not prevent the document from being checked out by someone else, but there will be a notice posted indicating that the document has been checked out by someone. You download the drawing to your computer, make comments, then request to check back in again. You will be prompted to browse to find the file that you put your comments on.

Program will need to ensure that the document you check-in is the same as the original file but with your comments.

Rod Lacy noted that Kansas DOT has a system for sending a drawing out to a mailing list and keeping track of the various comments received. Lacy will share the KDOT manual that describes how Adobe can do this. Lacy also arranged to have one of the KDOT engineers give a presentation on this process on Tuesday morning.

Durkos noted that the website should be discussed in the Subcommittee meetings – provide a wish list of features that your subcommittee would like to see.

Subcommittee #2 Barrier Hardware: Will Longstreet handled the meeting . Will also review drawings.
[Embed Longstreet's PPT here?](#)

"In Progress" drawing list is growing longer. Seven drawings are up for review today.

SGR37 TL-2 Rough Stone Masonry Wall. Should we note that the device was tested to 350 in the title? Consensus was that "MASH" should be noted in the title, but it will be assumed that if "MASH" is not

specified, it was a 350 test. The search feature will also note that the device is 350. Need to describe roughness of the façade. Should there be a note regarding the bearing capacity of the soils?

SGR39 MGS Adjacent to a 3:1 Stone Gabion Wall: Add MASH and Test Level to title. Show extent of gabions in Section AA. Detail B should show RWB01a is on the back side. Actual FHWA Acceptance Number will be added once letter is written. Show slope as 1V/3H. Another section drawing will be added so that one shows a section at the post and one shows a section at the splice.

SGR38 MGS Adjacent to 2:1 fill slope. Many similar comments to SGR39 drawing. Show offset from post to splice.

Still looking for volunteers for Hardware Review Group. Current list of review groups is outdated but it is being updated and will be posted on line. As with other groups it is difficult for members to find time to make these reviews and send in comments. When new RDG is published there will be much more traffic on our site depending on updated drawings. Each subcommittee should have a conference call to review drawings. Could be used to document participation that qualifies you for a registration discount. Hope this is the end of hard-copy reviews at TF meetings. There is a small number of drawings that have been submitted but not yet reviewed. These can be the first reviewed on line during a conference call.

Brian Stock noted that states add modifications to CMB to add non-tested devices, like the sloped end treatment. This is a matter for state design and construction inspection forces to deal with.

SubComm #3 Bridge Railings and Transitions

Malcolm Ray updated the membership on the status of the on-line guide. Added data field to show rail height. Not much in the Transition guide yet but discussed the basics.

What to do about NCHRP Report 350 hardware that failed MASH?. Will not make any changes to the site yet. Will add a disclaimer to site regarding reading anything more into the site than is stated.

[Secretary's note – TCRS established a task force to address this issue.]

William Williams discussed his group's review process. Need reviewers to help track down info when it has not been provided.

Sketches of each system should show height and width, but no rebars or other details.

Subcommittee # 4 Drainage Hardware will not meet formally but Chuck Patterson of VDOT offered to meet with anyone. Durkos suggested he discuss this with the ExecBoard.

SubComm #5 Signs Luminaires and Traffic Signal Supports. This subcommittee is developing two manuals – one for breakaway sign supports and one for luminaires.

25% of signs are generic, 75% are proprietary. You can review drawings on line but you have to send your comments to Dr. Ray directly rather than on-line. Need additional volunteers to help on other types of bases.

The luminaire study is a pooled fund study headed by Wyoming. Ray says that one FHWA letter may lead to a great number of configurations of arms, bases, height, weight, etc. May have a webinar on the use of this guide. Would be of use to states, counties, cities. Programming of site is done, now need to populate with data beyond that of HAPCO that was used to model the database. Manufacturers are being asked to populate a spreadsheet and send it to Ray with their data.

Subcommittee # 6 Work Zone Hardware Covered two major topics.

Labels for non redirective crash cushions. These systems have limitations on their use as they are not designed to deflect impacting vehicles away from the corner of the hazard they shield should a vehicle strike the device at an angle on the side. Discussion ensued regarding the need for a similar label for all crash cushions.

Functionality of used PCBs. Illinois DOT has visual guidelines that have been distributed by ATSSA. SubComm will use the website to continue discussion on both topics.

Subcommittee #7 Certification of Test Facilities Kelsey Chiu began with an overview of the last meeting.

Today the Subcommittee reviewed the results of the Inter Laboratory Comparison (ILC) where the 1500A vehicle numerical analysis was run based on 2270P vehicle test results. Karco reviewed their results and made corrections to their procedures. TRC noted that automobile crash testing procedures (as compared to highway hardware testing procedures) were much more prescriptive and did not lead to as much spread of data. Caltrans noted that the procedures may have been missing a negative sign that led to misunderstanding and that these quantities ought to be standardized to negative or positive or to use the absolute value. Bligh noted that the sign convention is stated in the manual and that you should get the correct number and sign. However since the intent is to look at the magnitude of a result they should all reported as positive. LaTurner believes that the sign can be critical and should follow the proper sign convention. MWRSF also concurs that signs should be followed. Bligh noted that Delta V and OIV are similar in magnitude by opposite in sign. Have had no response from Holmes Solutions regarding their numbers that seem out of the ballpark.

Evaluation thresholds do not indicate whether the force should be positive or negative. Should we recommend that the absolute value be reported and that this be included in the MASH reporting requirements? Polivka asked if using the neg or pos would make any difference on the results? LaTurner noted that the THIV depended on sign convention. If consistency is important, let us vote on using absolute value, and solicit comments from all labs. Polivka volunteered to email all ILC members and ask their opinion on using absolute value.

Bligh suggested re run another ILC on this analysis, LaTurner and Polivka agreed. LaTurner will send out a data set. The software used for the analysis will also be solicited.

Six labs showed how they mount accelerometers. Described each lab's procedures with photographs.

Caltrans, E-Tech (uses a back up accelerometer mounted 1m behind cg), Karco, MWRSF (use a mounting plate for instrumentation. May also use a seat frame that is transferred from vehicle to vehicle), SWRI (accelerometers are mounted near the rear of the pickup cab.), TTI (also use a mounting plate)

Standardized method would include:

- Level
- aligned to vehicle axis
- welded or bolted to vehicle?
- using existing bolts for common mounting
- Mass of mounting plate
- Vertical location of accelerometers and gyros

Adding mass to the mounting plate may have pos and neg benefits.

These recommendations should be sent to all the labs and ask for input. Some may not be able to conform because of the size of the sensor hardware. Can LSDyna be used to analyze these mounts to see what the implications are? Goal is to strive for a common mounting system, but will be difficult if everyone doesn't use the same transducers (due to size.) Kelsey will send his PPT to Lechtenberg for posting onto the MWRSF site.

FHWA funding was approved for research on the MASH pendulum. Whether R&D funding can be used is unknown. As of now, there is no acceptable way to fully evaluate roof crush or windshield damage according to MASH. The FHWA project would focus on developing new crushable nose honeycombs.

Bligh: MASH has max trailer length of 50 feet. Common sizes are 48 ft or 53 feet. Can we use the 53 foot trailer? Is the 50 ft max important? Polivka will check with Sicking.

MASH section 4.2.1. deals with the center of gravity height of pickup trucks. Sill a challenge to TTI to find pickups that meet the criteria. Tire sizes have an effect. Has anyone else used larger tires to reach CD? Are these larger tires legit according to MASH? Do they raise the ballast to achieve cg? LaTurner places ballast on an angle to move the cg. Bligh notes that MASH does not permit use of ballast. How do you achieve the 28 inch height? This is another inquiry that should be sent to all the labs to see how they handle it.

Bligh: Tolerances on impact conditions. Struggling with TL-4 trucks. Tolerances on Impact Severity is 8% and that is hard to achieve – much tighter than individual tolerances on speed and angle. Where did 8% come from? May have to aim higher to get within IS. NCHRP Report 350 recommended 12%. Question for Sicking.

SubCommittee #8 Rail Highway Crossing Hardware

The subcommittee reviewed its mission statement and minutes of the last meeting. The mission of the Subcommittee is to promote safety to reduce injuries and fatalities through communication between Dot's, railroads, designers, and industry pertaining to rail/highway grade crossing safety. To develop a

centralized source for standardized designs, materials and hardware pertaining to the safety of Grade Crossings.

1. From publications group need template standardized rail grade crossing hardware
2. Facts page Mike Stanko more detail of accident data
3. Links page to FRA AREMA STATE Standards AAR
4. Photo of Rail Accident/video
5. Standard drawing page
 - a. Crossing surfaces (rubber, asphalt, wood, concrete and composites)
 - b. Passive protection, (Signalization, median separators, road surface treatments and signing)
 - c. Active protection (gates and arresters)
6. Crossing Geometry (profile, skews, and visibility)

At the request of John Durkos, we are adding some notes about the possible inclusion of Airport hardware devices. Some discussion was batted around about who and how airports are designed and some requests from airport developers that could cause liability issues with the manufacturer or installation company.

1. Need for standardization of airport practices and devices.
2. Does this require a separate sub-committee or should it be rolled into one of the current sub-committees.

Sept 20th 2010 subcommittee meeting in Kansas City MO.

- Discussion on contacts from all 50 states Dean and Mark will check for legacy list.
 - page to FRA AREMA STATE Standards AAR
- After further study and discussion it was decided that AREMA has already compiled a list of standardized drawings and we should link to their information.
- We had discussion about Airport Hardware and it was the sentiment of the Subcommittee that this issue falls outside of our scope at this time.
- Dean Alberson d-alberson@tamu.edu 979-458-3874
- Mark Ayton mark.ayton@onterio.ca 905-704-2295
- Chuck Patterson chuck.patterson@vdot.virginia.gov 804-512-8076
- Mike Hare mike@qwickkurb.com 334-538-2665

Drop Nick an email about crash testing acceptance letters for any type of railroad hardware.

New Mission Statement

The mission of **Subcommittee # 8 - Rail Highway Crossing Hardware** is to promote safety to reduce injuries and fatalities through communication between Dot's, railroads, designers, and industry pertaining to rail/highway grade crossing safety.

Durkos reiterated the need for all co-chairs to review their website pages to recommend improvements.

Marketing Subcommittee: Rick Mauer reported:

Distribution of proposed newsletter – should be TF13, AFB20 & TRB, ATSSA members, Mary McDonough has list of 900 members that are interested in HW Safety issues.

Suggestions for topics

Progress of the web-site

Spotlight New Co-Chair of the Task Force– Greg Fredericks – WY DOT – Replacing the retiring Pat Collins.

List sub-committees and do a feature story on one committee each news letter.

FAQs

31” FHWA Letter

Brief on each TF13 committee

Spot light on one of the committees

Changes at AASHTO personnel & FHWA (after formal announcement)

FHWA Office of Safety Issues Artimovich and McDonough

Artimovich gave a briefing on the proposed memo on guardrail to be left in place.

McDonough spoke on issues within FHWA Headquarters and the excellent cooperation we have received from Task Force 13. Good news in Safety is fatalities are down. Some changes in Office of Safety and FHWA. Dwight Horne is retiring and David Nicol is being transferred to take Dwight’s position. Safety is eliminating one Office Director and teams are being changed. McDonough is being given a new team and will no longer participate in TF-13. Durkos expressed his appreciation to McDonough.

Executive Board Meeting

Durkos, Frederick, Brauner, Patterson, Dinitz, Ayton, Takach, Duffard, Mauer, Chiu, Bligh, Longstreet

Topics: Website Task Force 13 Activity Photos. (Should be posted on line? Perhaps password protected.)
Webinar for parts of meeting. Training users on TF 13 Website. Incentives for reviewing drawings. Next meeting location. Drainage Hardware SubComm? (Probably will table the issue until it comes to a head. Should we survey the states to see if there is an interest? Get Nathan Paul’s survey to see if there is any real interest. There is an AASHTO committee on Hydraulics that may be of use in determining interest. Frederick will contact the AASHTO liaison to see if there is any interest.)

Duffard asked if we wanted to put videos of subcommittee summaries, tech presentations, etc posted on our website. Ask Donna Clark about ATSSA webinars and how they process those.

Training users to use our website: could put together a screen shot video of how to use the check out, comment, and upload features. Frederick had a suggestion to use our open slots – Kansas DOT person will describe their drawing review process.

Incentive for reviewing drawings. Expect to have at least two conference calls to review drawings at a specific time. Bligh believes it should be a webinar format. Duffard believes that a teleconference where all users just log into the site to review the drawings will work OK. Recommend that the Barrier Guide set a date in mid October to have another conference call to set up a Webinar in early Dec.

Next Meeting Site – Spring with AFB20: Two proposals in Cleveland and one in Gettysburg. AFB20 favors Cleveland as it is close to much of the Task Force membership and we have never been to that city for a meeting.

Web site: Include an icon of the cover of the new Roadside Design Guide to be a hot link to the individual guides. Debated the need for including portraits on web site. TF 13 credibility is there. We do not need to highlight individuals. The Joint Committee gives us the unique, legal ability to bring together all the players.

Bligh: Should include a simple list of Government Agencies, State DOTs, Universities, manufacturers, industry organizations, etc to show the breadth of participation.

Tuesday, September 21, 2010

Update on NCHRP Testing: Chuck Niessner of NCHRP

Three new projects have been approved for FY2011. Completed 4 this year. 13 are underway. The active and recently completed projects below have a live link in the e-version of these minutes.

NCHRP 16-05	Guidelines for Cost-Effective Safety Treatments of Roadside Ditches
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Survey being Distributed to state DOTs.

17-11(2) Currently resolving issues with database. Little asked if the study will look at recoverability? Bligh said that was not a goal, but it will be an outcome of the severity analysis of the study.

NCHRP 17-43	Long-Term Roadside Crash Data Collection Program
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The work plan has been submitted.

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

17-54 Roadside features in HSM –Develop more quantitative data and crash modification factors to use in the HSM. A new Project RFP is on the street. The Project Panel is set and Dick Albin is TCRS monitor.

NCHRP 20-07/Task 257	Crash Tested Precast Concrete Barrier Designs and Anchoring Methods
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Completed by Dick McGinnis. Albin asked that an E copy of the report be sent to all TCRS members.

22-12 (03) TL2 thru TL-5 Bridge Rails Contract Signed July 2010 and Mac Ray is the contractor.

NCHRP 22-14(03)	Evaluation of Existing Roadside Safety Hardware Using Updated Criteria
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Completed Published as RRD 349

NCHRP 22-20	Design of Roadside Barrier Systems Placed on MSE Retaining Walls
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Project has been completed and will be published as NCHRP Report 663

NCHRP 22-20(02)	Design Guidelines for TL-3 through TL-5 Roadside Barrier Systems Placed on Mechanically Stabilized Earth (MSE) Retaining Walls
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Follow on project. This project is for design forces, not warrants. Concrete barrier is placed directly on top of the wall and a moment slab is used to deal with forces. Conducting simulations on TL3 to TL5 on MSE walls

NCHRP 22-21	Median Cross-Section Design for Rural Divided Highways
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Draft final report been submitted

NCHRP 22-22	Placement of Traffic Barriers on Roadside and Median Slopes
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Interim report submitted.

NCHRP 22-23	Criteria for Restoration of Longitudinal Barriers
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Completed as NCHRP Report 656

NCHRP 22-24	Guidelines for Verification and Validation of Crash Simulations Used in Roadside Safety Applications
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Revising the draft final report.

NCHRP 22-25	Development of Guidance for the Selection, Use, and Maintenance of Cable Barrier Systems
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Completing draft barrier placement guidelines. There will be a workshop to review the guidelines.

NCHRP 22-26	Factors Related to Serious Injury and Fatal Motorcycle Crashes with Traffic Barriers
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Interim report approved by project panel. Getting details from trauma centers on extent of injuries.

NCHRP 22-27	Roadside Safety Analysis Program (RSAP) Update
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Executing approved work plan. Beta testing workshop is planned for this fall.

22-28 Criteria for Restoration of Longitudinal Barriers Phase 2. Request for proposals is out on the street.

[NCHRP 22-29](#) Performance of Longitudinal Barriers on Curves and Super-Elevated Roadway Sections
Initial panel meeting will be held in October 2010 to draft the RFP.

Affiliated Committee Activity Reports

Keith Platte of AASHTO: Jim McDonnell took position of Director of Engineering and Platte is now the liaison for Subcommittee on Design. He discussed the new numbers on Highway fatalities, updated us on the re-write of the Roadside Design Guide, and the potential for reauthorization of the highway act.

Number of fatalities is the lowest since 1950 and we all can be proud of this as an industry. See

<http://www.nhtsa.gov/PR/DOT-165-10>

RDG – to be balloted within next two months if changes can be finalized this week. Publication target date is Summer 2011. Will need to coordinate the new RSAP which may be out at the same time or shortly thereafter.

Current highway funding extension expires at Dec 31, 2010. Additional extensions are likely.

Mike Sharkady ATSSA: Showed video on Work Zone Training Grants. Information on those grants and the training courses offered by ATSSA may be found at <http://www.atssa.com/cs/Federal-Highway-Administration-work-zone-safety>

Roger Bligh: TRB Committee AFB20 Roadside Safety Met with TF-13 with San Antonio in 2009 and Napa in 2010. Focus of the Napa meeting was managing risks of roadway departure crashes. Discussed Computational Mechanics and International Research Subcommittees and the new Joint Subcommittee on Positive Protection in Work Zones.

First session dealt with keeping vehicles on the roadway through Rumble Strips, increased Pavement Friction, and retroreflective Signing and Delineation.

Second session focused on reducing the potential for roadway departure crashes covering topics including the Safety Edge, Slope Traversability, Predicting Median Incursion Outcomes, Roadside Slope on Rollover Risk.

Third session dealt with minimizing the severity of crashes with cable barriers in narrow medians, Barriers on slopes, and Attachments of other devices such as signs and light poles to rigid barriers.

Fourth Session on Motorcycle crashes and roadside barriers in the US and overseas.

Breakout sessions on

- Managing risk on rural highways
- Barrier attachments and designing tall barriers
- Testing to MASH
- RSAP issue
- AFB20 Strategic Plan
- Critical Research Needs
 1. WZ barrier crashes
 2. Side impacts
 3. MC

Jiten Soneji, Delaware DOT Update on AASHTO Subcommittee on Bridges and Structures. Showed TL-4 crash test for 32 inch high Jersey barrier. What do we do about this failure? In Delaware they have a design-build project with 32 inch barrier as it meets current code. But because the bridge has a 75 to 100 year life span they are concerned about building a bridge with a parapet that may be superseded in the near future. Legally ok because it meets current criteria. What happens later when barrier is damaged? Discussion ensued regarding the need for testing 34" Jersey barrier.

Bligh noted that TTI tested the 36 inch high Texas constant slope barrier passed which was requested by TXDOT.

Art Dinitz on Joint Committee in Lake George NY. On Dec 31 we face end of transportation funding. Expect 2 million jobs will be lost by late 2011 if highway program does not continue. Industry has finally all come together to form a push for reauthorization of the transportation bill. Industry is pushing for a performance based program and accountability for results.

Victor Mendez of FHWA is pushing accelerating technology and innovation deployment. Joint Committee, TIG, and others should promote new materials, equipment, and methods.

The AASHTO/AGC/ARTBA Joint Committee looks at industry problems and tries to solve them on a coordinate basis. New technologies are the lifeblood of the industry. Subcommittee on New Materials and Technologies has Task Force 13 among others. TF13 is the only one meeting on a continuing basis. There is also an NCHRP panel looking into how proprietary devices can be deployed more quickly.

New and Old Business

2011 Spring Meeting with AFB20. Timing challenge with AFB20 because we want ours earlier in the spring, and they want theirs in the summer. Late May or early June is best compromise. Have three proposals on the East Coast to better balance things. Gettysburg and Cleveland are the current proposals. Costs for both are good. Gettysburg has history. Cleveland has Rock and Roll hall of Fame.

2011 Fall meeting in Rapid City SD about this same time frame.

Durkos discussed the Executive Board (details above).

Technical Presentations

William Williams. Recent Testing at TTI. Mounting signs on barriers in work zones. Developed a sign mounting design meeting TL-3 on 30 foot portable concrete barrier. Puncture of windshield would be a failure, and you don't want the sign to fracture and enter opposing roadway. First concept was just a steel pipe pole. Second Concept includes ramped shield to deflect vehicle. Third concept included box on top of barrier to and strap near the base. The third concept was tested and passed.

Retrofit of single slope traffic trail on 6 inch deck. Used widely spaced anchors to connect a single slope barrier to the existing deck. Doweled expansion joint added enough strength at the joint to meet TL-3.

LRFD 80,000 truck into an instrumented pier. Measured 600 kips from 50 mph, which is substantially greater than the 400 kip loading required by LRFD.

Will Longstreet: Tech Transfer Guardrail Training. Longstreet's Power Point presentation can be linked here.

Dhafer Marzoughi of NCAC. Assessment of Vehicle Dynamics on Sloped Medians. Used 5 vehicle models 820, 2000, 1100, 2270, Crown Vic on median widths from 16 feet to 56 feet. 4:1 slopes. Firm surface. V ditch median. Tried to determine worst case for crash testing. Looking at override with pickup and underride with small car.

Vehicle hits the lowest point when the median width is between 40 and 48 feet and that is greatest potential for underride. For both 1100 and 820. Crown Vic minimum is between 36 and 44 feet.

Vehicle (both pickups) hits highest point at 10 to 12 feet from the median edge.

Recommended three tests that would evaluate all override and underride. Does not account for situation where pickup hits the cable barrier, crosses the ditch, then impacts the slope on the other side of the median.

Bernie Roman MeadowBurke: Product to allow mounting of glare screens and reflectors on top of barriers. Cast in channel to the center top of the barrier that permits installing devices on the barrier.

Opinions were that barrier did not need to be crash tested with the channel installed. Cost is approximately \$60 per ten foot barrier.

Todd Salfrank Kansas DOT E-Plans drawing review process. Bureau of Local Projects. 105 counties, several cities and counties. Former process was a 15 week review if all sectors needed to look at them, especially considering that only had a 6 week window to complete the reviews. Adobe has an option for a shared review. Invite parties to review the plans directly on the server. Send out an e-mail link to the file. All parties needed full access to the server. OR use option to send out an e-mail with link to the drawing and have reviewer send back their comments to someone who will post them live. Reviewers do not have to own Adobe, just need Acrobat Reader. See <http://www.ksdot.org/burlocalproj> and scroll down to "E-Plans" for more info.

Karla Lechtenberg: MWRSF Recent Testing. Project to determine the maximum height rail for the 31-inch tall Midwest Guardrail System. Tested to look for vehicle underride and wheel snag for 34 inch tall MGS. Test article had the mid span splices and 12 inch blockouts which are characteristic of the MGS. Crash test showed minimal snagging on the posts. Knocked out a few posts and all occupant risk criteria were met. Tried raising it another two inches and tested at 36 inches and it passed with the small car. Steel posts for both. Still want to evaluate the pickup to ensure it can take increased loads at the taller height.

Universal Breakaway Steel Post for Bullnose. Fracturing bolt concept similar to steel slip base. Ran 350 tests 3-30, 3-31, and 3-38 pickup at 20 degrees to CIP. Pickup captured easily. All occupant risk criteria met. Have not yet run 3-31.

Tuesday Afternoon Joint Meeting with AASHTO Technical Committee on Roadside Safety

Durkos asked for a vote regarding the three topics shown on the schedule and the topics are covered in the order of preference.

Mash implementation plan. The current short radius guardrail is a NCHRP Report 230-tested device that is still acceptable notwithstanding 350 or MASH. Yuma county version was tested under 1989 guide specs for bridge railings at PL-1 condition. TTI did a paper study to see if it could be accepted under 350 as TL-2.

Durkos surmised that in the future TCRS will set a date to begin installing MASH hardware but will allow Report 350 hardware. Lacy noted that we have some MASH hardware but we are a long way from having full MASH systems including terminals, transitions, etc.

Florida has stated that by 2012 they want cable barrier to meet MASH. That state is looking for feedback. This is indicative of phasing in different products under MASH, as was done in 1998-2002 for NCHRP Report 350 hardware under the 1998 AASHTO/FHWA agreement.

Durkos noted that there is no incentive to take a 350-tested product and test to MASH.

AASHTO balloted the implementation plan and agreed that 350 hardware was acceptable but that MASH was needed for new testing.

Cable barriers are such a new product that we have learned a great deal over the last 10 years and that is now incorporated into MASH and evaluated by simulation.

Lacy noted 350 made great improvements in roadside hardware and we don't need to invalidate those with MASH.

Durkos noted three phase process to develop MASH beginning with NCHRP Project 22-14 by King Mak before Report 350 was updated.

Asked TCRS to consider the comments they heard when setting future goals.

Question on pendulum testing under MASH. Artimovich noted that pendulum tests cannot demonstrate how a breakaway device affects the integrity of the windshield or the amount of roof crush that would result.

Update on Roadside Design Guide.

Steve Walker said we will ballot the 2011 RDG Go to Subcommittee on Design then Standing Committee on Highways. With MASH coming on line the RDG includes a lot of products. Includes links to TF13 website for product details and will be sending a lot of people to TF13. Chapter 5 will revise – shorten run out lengths per Dean Sicking. Result in shorter GR for length of need. Added info on MGS and 31 inch barriers. Added info on mow strips and leave outs. Covered Zone of Intrusion near piers. Added LRFD criteria for protecting piers. Revised to jive with FHWA Guardrail Height Memo of May 17, 2010. That memorandum may be seen on the FHWA website here:

http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/policy_memo/memo051710

Chapter 6 had updates including high-tension cable barriers.

Chapter 7 Included improved photographs and majority of references to the TF13 site.

Chapter 8 on crash cushions and terminals included new products.

Chapter 9 on WZ. Added steel barriers and water filled barriers vs channelizing devices. Updated other products.

Suburban Chapter 10. Lot of examples. Has new concept of enhanced lateral offset of 4 foot minimum with 6 foot desirable.

Chapter 11 describes both lightweight plastic mailboxes and heavy "bat-proof" or secure, locking mailboxes.

Chapter 12 is new on low volume roads establishing clear zone criteria.

No implementation date needed for 2011 RDG.

Durkos asked TCRS for feedback on our website. What do they want to see? Noted that our home page will have a hot link for RDG users to take them right to the drawings index. Lacy noted that keeping the website up to date will be critical and the drawings will need links to manufacturers. TF13 guides are catalogs, not design guidance and will refer to testing and contact info.

Ask WES Duffard to see that FHWA Acceptance Letters are copied to TTI's site so that they are not subject to FHWA IT errors and changes.

Testing of Cable Median Barriers in 1:4 ditches.

Dean Sicking believed both soft and hard soil tests need to be run.

Discussed cable barrier tests needed for 1:4 median slope testing. Given TCRS the charge to determine where and when the tests will be run. Once run it will be decided which, if either, is the worst case, then FHWA and TCRS will concur on the matrix and distribute it. UNL agreed to send their generic cable barrier hardware to TTI and TTI agreed to test it with SCOR funding mentioned by Chuck Niessner.

Dinitz gave a presentation on implementation on new technology. TIG and promotion of proprietary products. Dinitz advocates Public Interest Findings to allow the use of a proprietary products exclusively. Artar notes that PIF are used to keep other manufacturers out of a state's market and is opposed to PIFs.

End of minutes.

Respectfully submitted,

Nicholas Artimovich

TF-13 Secretary.