Spring Meeting Notes

Wednesday, April 16, 2025
TF-13 Spring joint meeting with *Midwest Pooled Fund* Program members
Attendance: 51 one people attended in person & 20 people online (In person – 7 State DOTs were represented UT, WI, IN, MO, WI, KS, MN)

Quick Links to all of the presentations that were presented during our meeting:

- AASHTO Update - Durkos
- AKD20 Update
- ATSSA TF13 Update
- Calspan_EV_CrashTesting_TF13
- George Mason Research Update - Tahan
- MwRSF Pooled Fund Update - Bielenberg
- MwRSF Update - Letchenberg
- NCHRP_22-43_PSST_Update_v2r-Tahan
- Subcommittee 1 - Lohrey
- Subcommittee 2 - Eicher
- Subcommittee 3 - Gaudry
- Subcommittee 5 - Lohrey
- Subcommittee 7 - Lechtenberg
- Subcommittee 9 - Poynor
- TF13-Joint-Meeting-Luminaire-Poles-NCHRP22-43-17-105-updated-Mojdeh-Tahan
- TF13-TRB-NCHRP-Updates-2025
- TTI-Research-Update

Installation Experience and Concerns with Culvert-Mounted Guardrail

Presenter: Ryan Ames (Lovewell Fence)

- **General Experience**
  - Primarily with installations in **Illinois** and **Iowa**.
- **Strong Posts**
  - **Benefits (Contractor standpoint):**
    - Simple and easy to work with.
    - Readily available stock.
    - Plate washers are much easier to use than a single bottom plate (drilling the single plate is very difficult).
    - Epoxy anchors provide the cleanest installation.
  - **Drawbacks:**

        - Require access to the culvert (necessitating extra mobilizations before backfilling).
        - Limited by HMA or PCC shoulders.
        - Field modifications often required to fit the post, adding time.
- **Single Bottom Plate**
    - Has led to the most negative installation experiences.
- **Weak Posts**
    - **Benefits:**
        - Easier to install (no digging required).
        - Can be installed at the same time as standard guardrail.
        - Fewer mobilizations needed.
        - No field modifications required.
    - **Drawbacks:**
        - In Illinois, there are six different versions, creating stocking and fabrication issues.
        - Posts must be fabricated to exact culvert dimensions—zero room for error.
        - Recommendation: **slot the holes** instead of drilling exact holes to allow for tolerance.
- **Common Concerns**
    - Missed items early in plan development.
    - Long-span rail is often a viable and more cost-effective alternative.
    - Rebar conflicts when drilling.
    - Condition of existing culverts can complicate installation.
    - Designers often misunderstand specifications.
    - Miscalculations with culvert posts (spacing, skewing, design not matching field conditions).
    - Issues with arched culverts and mounting flat plates.
    - Payment differences: **IA pays per post; IL pays per foot**.
- **Q&A Highlights**
    - **Erik (WIDOT):** Asked about measurement accuracy.
        - *Answer:* As-built drawings would be ideal.
    - **Durkos:** Suggested standardizing slotting of holes.
        - *Response:* Scott (Midwest) confirmed slots could be incorporated into the part design.
    - **INDOT:** Asked if a joint had been seen at the headwall.
        - *Answer:* No, not observed.
    - **Online Question:** How do rebar and epoxy anchors work together?
        - *Answer:* If drilling directly into rebar, it is a problem. Typically, drilling lands on the edge of rebar, causing holes to be non-vertical.

NCHRP 22-43 Update Guidelines for Evaluating Crashworthiness of Sign Supports and Breakaway Luminaire Poles

Presenters: Mojdeh Pajouh (UNL/MwRSF) and Fadi Tahan (GMU/CCSA)

  - **NCHRP 17-105:** Proposed guide for implementation.
- **Testing Challenges**
  - Current issue: requirement to run **three tests for every condition**.
  - Goal: develop a **"family of devices" test matrix** to reduce testing burden.
  - MASH requires left- and right-side impacts. Additional **center impacts at multiple speeds** were added.
  - Resulted in **18 simulations per post type**.
- **Focus of Testing**
  - Aluminum poles were the primary focus.
  - Slip bases and transformer bases were also evaluated.
  - Conducted **pendulum tests** as well as **MASH 3-60 and 3-61 crash tests**.
    - Findings: the **lowest-speed pickup truck test** proved most critical.
- **Gaps in Standards**
  - No existing tests for **MASH 3-61 or 3-62**.
- **Pole Testing Results**
  - **50 ft pole:** failed due to excessive Occupant Impact Velocity (OIV).
  - **30 ft pole:** failed due to OIV; base did not activate properly. Failure is likely related to lower impact speed/energy.
  - **TTI testing:** two additional pole tests compared with FOIL data. Results were inconsistent, preventing development of a family-of-products approach for poles.
- **Material Findings**
  - Base material thickness varied significantly.
  - Segment strength testing revealed **up to 50% variation** (tensile strength from 22.5 ksi to 33 ksi).
  - Elongation properties were also inconsistent.
- **Key Findings**
  - Base fracture contributed significantly to OIV.
  - Most bases had high yield stress and tensile strength, making it **unlikely that a pole would meet OIV limits**.

NCHRP Report 22-43 Update

Presenter : Faudi

Related Research: NCHRP 17-106

- **Testing Focus**
  - Evaluated **MASH Tests 3-61 and 3-62**.
  - Conducted **pendulum testing at FOIL**.
  - Tested a **12-gauge 2x2 PSST with a plywood sign**.
- **Simulation & Validation**
  - Simulations showed good correlation with pendulum test results.
  - Validation was performed with **TTI crash tests**.

  - Also tested with a **diamond aluminum sign** — simulation results aligned well with physical tests.
- **Simulation Work**
  - Generated multiple simulations, varying testing conditions to capture the majority of hardware use cases (**Slide 24**).
  - Determined that in some conditions, **simulation can be appropriate to estimate OIV performance** for Tests 3-61 and 3-62.
- **Crash Test Matrix**
  - Developed a proposed **crash testing matrix** to support future evaluations (**Slide 35**).
- **Q&A Highlights**
  - **Kevin Schrum:** Asked about base inconsistencies.
  - **Question for Faudi:** What type of soil was used?
    - *Answer:* Standard soil.

Topic 3: Crash Cushion Panel Discussion

Panelists:

- Tony Smiley – Lindsay
- Jeff Shewmaker – Innovative Traffic Solutions
- Geoff Maus – TrafFix
- Erik Emerson – DOT Perspective
- Moderator: Ron Faller

Tony Smiley (Lindsay)

- **Standardized Information Needed for Crash Cushion Applications**
  - Hazard/fixed object profile with dimensions.
  - Foundation type (concrete/asphalt).
  - Traffic direction (unidirectional/bidirectional).
  - Speed or test level requirements.
  - Cushion type/category.
  - Width and length limitations.
- **Best Practices**
  - Wisconsin DOT plan sheets provide good examples.
  - TXDOT offers the most thorough documentation.
- **Standardization of Fixed Object Sizes/Shapes**
  - Proposed limits: **≤ 32" tall, ≤ 24" wide**.
  - Example: a 24" vertical hazard considered ideal.

  - Midwest has tested an F-shape barrier (FPT-5(193)).
- **Crash Cushion User Manuals**
  - Some contain confusing language (e.g., “parts to be provided by customer”).
  - Seen more as an installer/quoting issue.
  - Calls for clearer instructions in quotes and manuals.
- **Adhesives**
  - Manufacturers’ adhesive recommendations should be followed.
  - More training needed; some training already provided by manufacturers.
- **Training and Manuals**
  - Concern that manuals are becoming too long and detailed, though improvements are noted.
  - More systems are now shipped assembled.
  - Online videos and state-specific training (Indiana cited as a good example) are helpful.

Erik Emerson (DOT Perspective)

- **Plans and Documentation**
  - Supports Lindsay’s recommendations on what should be included in plans.
  - Language must clearly state who supplies each component.
- **Standardization**
  - Manufacturers’ checklists share common elements—room for a standardized checklist.
- **Field vs. Tested Conditions**
  - Foundation slabs in the field often differ from tested conditions.
  - Need an acceptable tolerance range.
- **Training and Staff**
  - Correct plans and drawings are essential, but training for construction staff remains critical.
- **Staffing Update**
  - Dick Albin is leaving Federal service (last day this Friday).
  - Office of Safety will be significantly reduced.

Geoff Maus (TrafFix)

- **Device Protection Context**
  - Topics all relate to protecting the object behind the cushion.
- **Examples**
  - Showed a cushion protecting a sound wall without a transition—potential issue for tall vehicles snagging.
  - TrafFix has a standard transition plan using a **6:1 slope**.

- **Manual Language**
  - Acknowledged that manuals can be confusing but believes they are improving.
  - TrafFix has placed responsibility on customers to field-cut blockouts for transitions; prefers standardized solutions.
- **Training**
  - Offers multiple training formats.
  - Noted adhesives differ by manufacturer; cited a failure example.
- **Manuals and Resources**
  - TrafFix provides a knowledge base and "Traffix University" for training and technical support.

Jeff Shewmaker (Innovative Traffic Solutions, Inc.)

- **Crash Cushion Topics**
  - Transitions: focus on providing workable solutions.
  - Categories: explored different product families.
  - "La Familia": partnering with FHWA, working toward agreement on test matrices—stating that the "days of pragmatism are over."
  - Market evolution: more product choices than ever; designers face more complex decisions.
- **Design and Evaluation Questions**
  - Is current **MASH guidance** sufficient?
  - How should designers evaluate and choose appropriate systems?
- **Product Types**
  - **Severe Duty:** highest initial cost, requires reset parts, lowest exposure risk, best life cycle performance ("everlasting gobstopper").
  - **Reusable:** less expensive, like a "Pez dispenser."
  - **Sacrificial:** most costly over time ("nacho plate").
- **Data and Reporting**
  - Emphasis on reviewing **damage reports in MASH crash test documentation**.
  - Oregon DOT is already implementing this approach.

Thursday April 17, 2025

Opening of regular session of TF13 Meeting:

- **Welcome & Introductions** – John Durkos

Meeting Business

Spring Meeting Notes

- **Approval of Minutes (Fall 2024 Meeting)**
  - Motion to approve the Fall 2024 minutes, with addendum reflecting Erik Emerson's requested changes, was made by **John Durkos**.
  - Motion was seconded by **Shewmaker**.
  - Motion carried and minutes were **approved as amended**.
- **Treasurer's Report** – Smith
  - Taxes are paid.
  - Most registrations are completed online.

Subcommittee Meetings – Goals, Tasks & Assignments

Subcommittee Reports & Discussions

Subcommittee #1 – Publications Maintenance *(Eric Lohrey's Presentation)*

- **Systems in Guides**
  - Reviewed process for adding systems to the guides.
  - FHWA has issued only one new eligibility letter since October (ReBlock system). Releases are occurring, but very slowly.
- **AASHTO M180-23 Drawing Update**
  - Previously, the specification covered only main panels; now expanded to cover all parts.
  - Original drawings (1990s) have been updated. Many were based on 1995 guide drawings with metric-to-US conversions.
  - Hard-converted metric dimensions will be reconverted back to US customary units; all new drawings will use **dual units**.
  - All items impacted by M180-23 update are complete.
  - TF13 drawings reference "M-180" without year/version; guides specify "current version" since they are references, not contract specifications.
  - **Commentary:** Durkos noted AASHTO will be issuing a memo on correcting this specification.
- **Next Drawing Set**
  - Focus on components from NCHRP 350 devices not used in MASH systems (e.g., BCT posts, box beam, weak posts, timber guardrail).
- **Obsolete (Legacy) Hardware Discussion**
  - Erik Emerson (WIDOT) requested a method to identify obsolete systems (as a teaching tool for younger engineers).
  - Options discussed, including guide examples (GREAT system used as a model).
  - **Concern:** If a system is listed in TF13 guides, it must be clearly marked if obsolete.
    - Only devices pre-NCHRP 350 would be labeled obsolete.
    - Some pre-230 devices are still in use where no alternatives exist.

    - "Obsolete" may have legal implications. Alternative wording considered: *Archived Pre-350* (aligning with FHWA terminology).
- **Motion (Durkos)**
    1. Create new categories in guides to indicate obsolete systems.
    2. Apply only to systems superseded by MASH devices.
    3. Use FHWA's official wording (*Archived Pre-350*).
    - **Seconded:** Carl Gaudry (LADOT).
    - **Approved by voice vote.**
- **Additional Notes**
    - Durkos presented FHWA's *WB Identification & Repair Guideline Document* as a reference example.
    - UDOT has created an internal guide for obsolete items, supporting Emerson's proposal.
    - Discussion noted concerns about FHWA staff reductions; topic to be revisited later in the afternoon.
- **TODO Item**
    - Manufacturers of systems/products in TF13 Guides should submit **photos of their systems**.

Subcommittee #2 – Barrier Hardware Review Groups *(Eicher)*

- **Short Radius Guardrail (SRGS)**
    - Installation issues noted: a center slot for the rail element exists but is not shown on current drawings.
    - A new drawing will be generated to reflect this change.
    - Update will also affect the system drawing and bill of materials.
    - Inquiry made whether any states are deviating from SRGS standards.
- Resource Chart **Update**
    - Karen Boodlal (KLS Engineering) provided an update on the resource charts.
    - Input requested from attendees to ensure consistent headings and terminology across charts.
- **Requests & Updates**
    - George requested additional photos of systems for inclusion in the guides.
- **Discussion Topics Covered**
    - Guardrails / Median Barriers
    - Crash Cushions
    - End Treatments / Terminals
    - Resource Charts

Subcommittee Sessions

Subcommittee #3 – Bridge Railing & Transition Hardware *(Carl Gaudry, LADOT)*

- **Working Groups:** Concrete, Steel, Other.
- **Guide Systems:** 139 systems listed; 7 currently under review. Goal is to review 4 systems every 6 months with all systems reviewed by year-end.
- **To-Do Items:**
  - Review *MASH Equivalent Bridge Railings* – discussion on whether these railings should be incorporated into the TF13 Guide. Decision pending AASHTO's updated guide and proposed modifications to the LRFD Bridge Design Guide.
  - Review NCHRP 20-07(395) links for details on rails and reports.
  - Discussion on how to report rail status (e.g., tested, simulated).

Subcommittee #11 – Delineation *(Tim Lang)*

- No formal presentation.
- Raised the idea of dissolving the subcommittee due to: limited content, minimal participation, and no significant activity since 2019. Suggested moving content to **Subcommittee #6 – Work Zone Systems**, or discussing in NPTPE & ATSSA forums.
- **Motion:** Tim Lang moved to dissolve Subcommittee #11 and merge responsibilities into Subcommittee #6.
  - Seconded: John Durkos.
  - Motion passed; Subcommittee #11 officially sunset.

Subcommittee #7 – Certification of Test Facilities *(Lechtenberg/Kovar)*

- **Standardized ILC Reporting**
  - Background: Need for standardization of information and reports.
  - Sampled test reports across participating labs in ILC. Developed a "best-of" report format for MASH reports: easy-to-read, clear, and 508 compliant.
  - Draft standard submitted to AASHTO as part of converting MASH into a specification.
  - Next Step: Circulate the latest version to labs for final comments.
- **Accreditation Audits**
  - TTI completed audit.
  - Midwest audit scheduled later this year.
  - Calspan – issues with audit execution in Europe.
  - Idiada Karco – last audit focused on calibration rather than testing procedures; has not yet had 2025 audit.
  - Need to maintain master list and ensure labs on ILC list remain current.
- **ILC Top Prioritization**
  - Used Menti poll to survey labs on priorities.
  - 9 ILC items identified for labs to vote on.

  - Concerns raised:
    - **Soil** – preparation, installation, and soil testing prior to testing. An active NCHRP project 22-51 is addressing this. Labs asked if receiving soil data would allow them to evaluate compaction results.
    - **Vehicles** – not all labs have access to the same fleet as listed in the MASH vehicle fleet.
- **Open Discussion**
  - Proposal: Update and publish lab contact information, identify labs participating in ILCs, and link to their ISO 17025 accreditation certificates.
  - Linking certificates was declined.
  - Jennifer suggested adding accreditation details directly into reports.
  - **Motion:** Jim moved to close Subcommittee #7 discussion; seconded by Karla. Motion approved (room applause).

Subcommittee #5 – Sign, Luminaire & Traffic Signal Support Hardware *(Lohrey)*

- Systems tested must cover wide variations—often involving up to three manufacturers per system, leading to many non-standard combinations.
- Discussion: Must all systems be tested to TL-3? Current practice is to add new devices under breakaway provisions.
- Referenced NCHRP Reports: 03-199(01), 22-43 (with 17-105), 22-55, 22-65.
- OR DOT (Scott Jolo) is considering adding items to the Pooled Fund Project:
  - MASH evaluation of square tube slip-base sign supports.
  - Evaluation of multi-post large sign supports with slip bases and slip hinges.
- Scott expressed enthusiasm for ongoing testing.

Subcommittee #6 – Work Zone Hardware *(Seguin/Schrum)*

- **FHWA Status**
  - Staffing significantly reduced.
  - Departure of Dick Albin noted.
  - Map presented showing which states approve products without FHWA letters.
  - Current highway bill: FHWA must continue issuing letters unless another agency assumes responsibility.
- **Discussion & Motions**
  - Consideration of posting products on TF13 site without FHWA letters.
  - Motion made (by Greg with Xcessories Squared) to adopt a matrix excluding DOT QPL inclusions – not seconded, discussion continued.

    - Poll of attendees: consensus that work should proceed as though no FHWA letters will be forthcoming.
    - Ron Faler (Midwest) asked to note that his attendance did not indicate agreement; he wanted further information before supporting the approach.
    - Motion proposed by Mark, seconded by Todd: *Approach AASHTO for discussion on FHWA's lack of letter issuance.*
        - Approved by voice vote.
- **Other Updates**
    - The RDG rewrite author intends to reference TF13 as the source for highway systems and device information (John confirmed).
    - Question raised about TCRS position.
    - Jim Kovar and Ron highlighted issues with wording in certain proposals.

Update from the Midwest Pooled Fund Program Meeting – Bielenberg

- **Overview and Priorities of 2025 Program**
    - 22 member states; newest member: North Dakota. The program has been running for 36 years.
    - 37 members in person; 50+ joined online.
    - Group photo taken.
    - Discussion on electric vehicle (EV) proposals and other testing for 2026.
- **Project Updates**
    - **DOT Containment System**: Testing results were reviewed (watched Wednesday afternoon).
    - **High Tension Cable Systems for NY**: Designing a new system, including an end terminal. Planned full-scale crash tests (3-32 and 37b).
    - **Culvert Systems**: Strong post design attached to culverts.
    - **MGS Surface Mounted Post**: Phase 2 of the surface-mounted strong post for MGS.
    - **Median Barriers**: Testing with top-mounted fixed objects.
- **Consulting & Support**
    - Annual Consulting Service Support: Funding to address issues raised by member states.
    - LS-DYNA Modeling Enhancement Support.

Subcommittee #9 Update – Marketing – Poyner

- **Newsletter**:
    - Discussed newest newsletter; request for more ideas for the next issue.
    - LinkedIn group set up privately; needs to be updated to open group.
- **Open Slot**:

- Continued discussion on the open slot for Task Force 13 leadership.

Task Force 13 Executive Meeting

- **AASHTO Attendance**:
  - John Durkos, as the M180 facilitator, is the best candidate to attend AASHTO; will meet with the executive committee afterward to follow up. Editor's Note: Durkos did not attend but 4 other TF13 members did attend the August 7th meeting in Hartford, CT.
  - Carl Gaudry (LADOT) confirmed that Task Force 13 is mentioned in the draft of the RDG.
- **Projector Purchase**:
  - It was decided not to purchase a projector for future meetings. We will pay for hotel rental as it will be compatible with other AV equipment used to broadcast meetings.
- **Room Sound Quality**:
  - The room sound quality was weak; a better system will be needed for the next meeting.
- **Subcommittee #1 Second Chair**:
  - Chad Heimbecker was recommended to approach for the role. Editor's Note: Chad was later confirmed.
- **Actionable Topics**:
  - Actionable topics to be shared prior to meetings for better preparation.
- **Drawing Changes (Eric L's Proposal)**:
  - Eric L recommended changes to the short-radius drawing (A&B with holes, C-D without). Editor's Note: A new drawing has been completed and approved.
  - Karla opposed this, as some states may already be using the current drawings.
- **Next Meeting Location**:
  - The next meeting should be easily accessible by air. Possible locations:
    - TTI: Will inquire about crash test viewing availability.
    - Calspan has offered to host.
    - GMU will look at offering the FOIL.
    - Other potential locations: Michigan, Wisconsin (TCRS Vice-Chair active), Caltrans, MODOT.

Task Force 13 Dinner (was held at the TopCat restaurant)

Friday, April 18, 2025

Opening

- Ron Faller shared video footage of the tornadoes that struck Lincoln last year while many were leaving town.

Affiliated Committee / Activity Reports

TF13 Agenda Topics – *Durkos*

- Provided an update on relevant TF13 topics.

AASHTO M180-23 Update

- Brief update on progress: agreement in principle reached with AASHTO.
- Changes will be coordinated with the ATSSA M180 Taskforce.

Jennifer – Safe Roads R&D

- Contractor for the AASHTO Technical Service Program (TSP).
- Discussed survey regarding **self-certification**.
  - EN 1317 uses self-certification in the CE process.
- A more detailed update is expected at the **Summer TRB meeting**.

ATSSA – American Traffic Safety Services Association (Perry)

- **Save the Date**:
  - Expo 2026: Feb 20–24, Houston, TX.
  - Midyear: Aug 19–22, Milwaukee, WI.
- **Key Updates**:
  - M-180 updates.
  - W-beam Guardrail Identification & Repair Guidelines – to be updated in 2025.
  - Work Zone Training Grant.
  - New Products Rollout: 20 new products in the past year.
  - MASH Joint Taskforce: strong focus on **self-certification** (similar to old Category II items under NCHRP 350).

TRB Committee AKD20 – Roadside Safety (Kovar)

- Focus: Development and forging of roadside hardware and countermeasures.

Spring Meeting Notes

- Membership: 32 members, 407 "friends."
- Committee rotation challenges – 13 members rotated off; still adjusting.
- Friends remain critical contributors.
- Seeking **paper reviewers** (late summer–early August).
- Discussed subcommittees and awards presented.
- **Joint Subcommittee on Work Zone Safety & Mobility Management** – chaired by Joe Yodok.
- **Key Dates**:
  - Paper submission: June 1 – Aug 1.
  - Summer Meeting: Aug 10–13, Providence, RI (in conjunction with TCRS).
  - Paper reviews: Aug 15 – Sept 15.
  - TRB 2026 Annual Meeting: Jan 11–15, Washington, DC.

AASHTO Technical Committee on Roadside Safety (Durkos)

- **Roadside Design Guide (RDG):**
  - Publication expected in 2026.
- **MASH Conversion:**
  - Most of the work has been completed and submitted to AASHTO.
  - Additional expert groups are contributing.
  - Full draft expected **End of 2025**.
  - Balloting in 2026; publication in 2027.

AASHTO Technical Service Program (TSP) – MASH Support

- Survey distributed by Jennifer (Safe Roads R&D) – results to be shared with TF13 members.
- Question raised: Will TSP review FHWA letter requests?
  - Answer: **No**.

NCHRP Projects – Anne-Marie Turner

- Provided background on the National Academies as a nonprofit and its history.

  Went over the problem statement – research process

  - **NCHRP 17-11(03):** "Development of Clear Recovery Area Guidelines" apps.trb.org

Spring Meeting Notes

- **NCHRP 22-29B:** "Evaluating the Performance of Longitudinal Barriers on Curved, Superelevated Off-Ramps" apps.trb.org

- **NCHRP 22-37:** "Development of a MASH Barrier to Shield Pedestrians, Bicyclists, and Other Vulnerable Users from Motor Vehicles" apps.trb.org

- **NCHRP 22-38:** "Development of MASH TL-3 Deflection Reduction Guidance for 31-inch Guardrail" apps.trb.org

- **NCHRP 22-39:** "Guardrail Performance at Various Offsets from Curb MASH TL-3 Applications" apps.trb.orgrip.trb.org

- **NCHRP 22-41:** "Proposed Modification to AASHTO LRFD Bridge Design Specifications, Section 13—Railing" apps.trb.org

- **NCHRP 22-43:** "Implementation of MASH for Sign Supports, Breakaway Poles, and Work Zone Traffic Control Devices" (also known in some documents as "Proposed AASHTO Guidelines for Implementation of Crashworthy Sign Supports, Breakaway Poles, and Work Zone Traffic Control Devices") apps.trb.org

- **NCHRP 22-44:** "A Transportation Agency Data Collection Practice for Use with In-Service Performance Evaluations (ISPEs)" apps.trb.org+1

New Relevant Projects:

- NCHRP 03-119(01): Application of MASH Test Criteria to Breakaway Sign and Luminaire Supports and Crashworthy Work-Zone Traffic Control Devices
- NCHRP 07-33: Evaluate the Benefits of Increasing Clear Zone at Higher Speed/Traffic Volume/Crash Locations
- NCHRP 15-79: Development of Guidance for Non-Standard Roadside Hardware Installations
- NCHRP 17-105: MASH Crashworthiness of Luminaire Poles (Final; combined with Project 22-43)
- NCHRP 22-32A: Development of Methods to Evaluate Side Impacts – Phase II
- NCHRP 22-40: Update to AASHTO M 180-18 and Associated Highway Guardrail Specifications
- NCHRP 22-42A: Impact Performance Assessment of Barrier Performance at High Speeds
- NCHRP 22-50**:** Crashworthiness of Roadside Hardware on Curbed Roadways
- NCHRP 22-51: Impact of Soil Stiffness on the Performance of Crash Testing and Roadside Safety

Spring Meeting Notes

- NCHRP 22-52: Development of a Crashworthy Tangent End Treatment for Low-Speed and Curbed Roadways
- NCHRP 22-53: Delineation of Linear Roadside Hardware Systems and Roadside Obstacles
- NCHRP 22-54: MASH Hardware Evaluation with New Proposed Test Vehicles
- NCHRP 22-55: Implementation of MASH Surrogate Test Vehicles for Sign Supports, Breakaway Poles, and Work Zone Traffic Control Devices
- NCHRP 22-56: Development of Non-proprietary Prefabricated Solutions for Concrete Barrier Systems for Accelerated Bridge Construction
- NCHRP 22-57: Procedures for Development of MASH Full-Scale Test Matrices for Additional Roadside Safety Devices
- NCHRP 22-58: National In-Service Performance Evaluation Guidelines for Defining Acceptable Roadside Safety Hardware
- NCHRP 22-59: Safety Risks of Occupant Compartment Damage During Crashes
- NCHRP 22-60**:** Guidelines for Crash Testing Roadside Safety Hardware for Motorcycles
- NCHRP 22-61: Crashworthiness of Roadside Hardware Impacted by Battery Electric Vehicles
- NCHRP 22-62: Tool for Estimating the Deflection of Temporary Traffic Barriers with Reduced Impact Angles
- NCHRP 22-63: Verification and Validation Guidelines to Use Computer Simulation as an Alternative to Full-scale Crash Testing

She presented a great graphic that showed all the project with projected completion time

Last Years proposals:

- **NCHRP 17-134 [Pending]** *Center Line Buffer Areas for Safety: Implementation Guidelines and Tool* *apps.trb.org*

- **NCHRP 17-136 [Pending]** *Safe System Approach for Including Trees in Urban and Suburban Roadway Contexts* **apps.trb.org**

- **NCHRP 22-64:** *Method for Using ISPEs in Crash-Testing Protocols* (Pending) apps.trb.org
- **NCHRP 22-65:** *Examination of Current U.S. and EU Crash Test Evaluation Criteria for Sign and Luminaire Support Structures and Work Zone Devices*[apps.trb.org] apps.trb.org
- **NCHRP 22-66:** *Determining Critical Impact Points and Angles for Assessing Roadside Safety Hardware* [apps.trb.org] apps.trb.org
- **NCHRP 22-67:** *Investigation and Validation of V-Ditch Traversability Related to Crash Testing Cable Barrier Systems* [apps.trb.org] apps.trb.org

Texas A&M Transportation Institute – Current Research (Kovar)

Spring Meeting Notes

Flared Guardrail

- Both 7:1 and 11:1 designs failed.
- Test 3-10 (7:1, small car) failed due to **trailing rail rupture**.
- A shallower flare was tested, but the pickup truck failed.
- Attempted to replicate rail rupture and pocketing in simulations.
- Investigated 18:1, 21:1, and 27:1 flare rates using both 3-10 and 3-11 tests.
- Crash Test Results:
  - 3-10 (21:1, small car): **Passed**.
  - 3-11 (21:1, pickup): **Failed** – rail ruptured at a splice (previous rupture had not occurred at a splice).
- Next step: Crash test a 25:1 flare rate for potential success.

Flared PCB (Portable Concrete Barrier)

- 30 ft single-slope JJ hook profile tested at 7°.
- Ran simulation to determine maximum flare rate and CIP.
- Used 6 barrier segments, with 3 flared.
- Tested 3-10 and 3-11 at 12:1 flare rate – **worked successfully**.

TL-5 Single-Slope Embedded into Asphalt

- Same system previously presented.
- Embedded **8 in.** with **asphalt cover**.
- Measured **2.1 in. dynamic deflection** with **44.5 in. working width**.

Update on Emerging Vehicle Pooled Fund Update

- New pooled fund effort: *Design Transportation Infrastructure for the Emergent Vehicle Fleet*.
- Lead state: **Texas**.

CCSA / George Mason University – Tahan

- Presented research on identifying **failure factors with EVs**.
- **Market context:** 18% of cars sold globally in 2023 were EVs; U.S. share was ~8%.
- Focused on **MGS (Midwest Guardrail System) failures**.
- Goal: Use current tools to understand what caused failed tests.
- Simulations:
  - Vehicles: Hyundai Accent & Toyota Yaris.
  - Barrier heights:32, 34" and 36” MGS
  - Modified ICE vehicle model characteristics to better approximate EV properties.
- Tesla Model 3 (from Caresoft):

  - Initially developed for NCAP (New Car Assessment Program) testing; had to be modified for gravity (springs).
  - Successfully mimicked **w-beam Tesla failure** on MGS.
  - Thrie-beam MGS simulation: still in progress, needs more refinement.
- **NCHRP Project 22-63**: Developing **V&V guidelines** for simulation use across roadside safety hardware and test levels.
  - Goal: Create a uniform template for simulation input/output.
  - Seeking engagement from the research community.
- Discussion: Should **Subcommittee #10** be restarted?
  - Consensus: Too early, but possible in the future.
  - Eric L. noted the previous subcommittee was similar to #7, which could be a research pathway.

Midwest Roadside Safety Facility – Lechtenberg

Flare Approach Guardrail Transition

- Completed 2 phases: flare rate analysis, then CIP for small car & pickup.
- 18.75" post spacing, 12 ga, 15:1 flare, buttress support.
- Increased energy by 30% → failed (OIV & toe pan intrusion).
- Increased post length → failed (rollover & floor damage).
- Reduced flare to 20:1 → failed (rollover).
- Reduced flare to 25:1 with W6x9 posts → **Passed with pickup**.
- Ran small car → **Passed** (though results were "ugly").
- Both small car & pickup passed final evaluation.
- Two remaining concerns: buttress area & transition to thrie beam were also successfully tested.

Surface-Mounted MGS

- Goal: emulate W6x8.5 with 40" embedment.
- Issue: mounting to concrete increased capacity; posts needed weakening.
- Target: 9–10 kips at 15".
- Bogie testing was done.

AGT Retrofit Option for Post Conflicts

- Initial loads: 16–17 kips at 24" height.
- Goal: change post type from W6x9 to W6x15.
- Adjustments:
  - Added slots/holes, modified anchor rods.
  - Final design: ¼" fillet, 1.25" × 3" slots, 7/8" anchor rods embedded 6", 1" base plate.
- Evaluated slab design: 9" from edge, tied into roadway. (Crash testing not funded.)

- Bogie testing was done.

TL-2 Bridge Rail (funded by WSP Global Canada)

- Small car: minimal rail damage, minor deck cracking.
- Pickup: passed.
- Summary report TRP-03-484-24 available on MwRSF website.

Calspan – Olsson (Finite Element Models of EVs)

- Update on EV-related activities.
- Compared **EV vs ICE (Internal Combustion Engine) vehicles** in sales, specs, and structural design.
- Showed front-end geometry of **top 100 best-selling vehicles**.
- EV structural details highlighted; comparisons made in **NCAP crash impulse tests**.
- **NHTSA is funding EV FEA models**, though progress has slowed.
- Explained **OEM-grade models** vs **GMU open-source models**:
  - OEM: 10M elements, includes battery packs, ~25% longer to run.
  - GMU: 5M elements, simpler but faster.
- Working with barrier manufacturers to show proprietary systems can perform with EVs.
- Currently using Tesla Model 3 and Model Y; pickup model TBD.
- Also testing **crash cushions**.
- Observation: 60% of new EVs over the next 5 years will be **larger sedans/SUVs**, impacting safety hardware needs.

New / Old Business – Durkos

- **2025 Industry Meeting Dates**:
  - AKD20 (now AKL13): Aug 10–13, Providence.
  - ATSSA Midyear: Aug 19–21, Milwaukee.
  - Fall TF13: Sept–Oct. Editors note: 10/14-16 Washington DC Dulles -
  - AASHTO Annual: Nov 17–20, Salt Lake City, UT.
  - TRB: Jan 11–15, 2026, Washington, DC.
  - ATSSA Expo: Feb 20–24, 2026, Houston, TX.
- **Executive Committee**
  - Possible meeting at Caltrans (in principle).
  - Review of **Task Force 13 "To Do List"** (Mauer).
  - Email request to TF13 members for photos of systems/parts for guides.
  - John to confirm with AASHTO how TF13 is being referenced in the new RDG.

        - Carl Gaudry (LADOT) shared a few examples.
    - John will meet with AASHTO and report back to the Exec Committee on whether TF13 criteria for adding systems should be updated.
- **Adjournment**: 11:45 a.m.