



# June 12, 2023

## Meeting – HMA Tech Team

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**Location:** Truax Antigo Conference Room / Teams Meeting

**Date:** June 12, 2023

**Time:** 1:00 pm to 4:30 pm

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### Attendance

Kopacz, Daniel - DOT  
Arabzadeh, Ali - DOT  
Kilger, Albert - DOT  
David Hose  
Harings, Devin - DOT  
Cibulka, Bryce D - DOT  
Boggs, James W - DOT  
Albers, Adam - DOT  
Jeremy Barron  
Derek Frederixon  
Barden, Richard - DOT  
Jandrin, Brian - DOT  
Zander, Mark - DOT  
Hayes, Chad - DOT  
Lyngdal, Erik - DOT  
Morovatdar, Ali - DOT  
Carl Johnson  
Mike Byrnes  
Syron, Scott - DOT  
Kemp, Peter - DOT  
Chris Winiecki  
Andreini, Matthew J - DOT  
Peterson, Heidi E - DOT  
Joe Kyle  
Maves, Wendy - DOT  
Pforr, James (FHWA)  
Ward, Lucas W - DOT  
Peplinski, Christopher - DOT

### Agenda Items

- Outside Committee Reports
  - a. Aggregate Tech Team (Tirupan M.)
    - i. **There were no updates**



- b. IRI Team (Deb B.)
  - i. Deb Bischoff Retiring. Duties will be divided and covered.
- c. Atwoods/AASHTOWare Team (Deb B. / Erik L.)
  - i. Project has moved onto the shadow project phase.
- Research Reports (Ali Arabzadeh)
  - a. Project Update
    - Benchmarking Delta Tc. RAM samples being delivered to Rutgers University, they will be tested soon after.
    - BMD pilot: performance testing was performed on test section samples. Data was shared with NCAT. Back calculated moduli comparisons indicate we should perform FWD testing on the test sections. WisDOT will conduct FWD testing, download data from temperature sensors, and will share the data with NCAT researchers.
- Subcommittee Reports
  - a. Density Subcommittee (Brian J.)
    - i. Non-nuclear gauges
      1. Shadow project(s)
      2. Compare the data
      3. Precision and bias
        - a. AASHTO T343-12
        - b. ASTM D7113
      - Gathering some data from non-nuclear gauges. WisDOT has received one project so far and would need more data to draw further conclusions. We ask industry to volunteer some projects to test non-nuclear gauges.
      - Looking to compare other states that use non-nuclear gauges.
      - Two manufactures willing to do demos with non-nuclear gauges.
      - Also considering shadow projects on core only or test strips, so we can compare data.
    - ii. OnStation
      - Fine for use for longitudinal offsets. Continue to use roller/tape measure for transverse offsets.
      - Use a wheel to confirm accuracy of stations once per day.
      - Project leaders/staff are aware that the use of OnStation is approved.
      - BTS is fine with use as long as project leads are.



- iii. Gauge offsets
  - Monitoring test strip data with high and low offsets will continue.
  - Need a CMM update to define the precision of the transverse offsets.
  
- b. Specification Subcommittee (Albert K.)
  - i. Manual of Test Procedures for 2024 Contracts.
    - 1. 2024 specs reference Manual of Test Procedures instead of “as modified in CMM XXX.XX”.
      - MOTP is currently under review by industry and they will let WisDOT know of their feedback by June 25<sup>th</sup>.
      - 2. CMM will still exist in current form as a fallback.
    - No feedback.
  
  - ii. Acceptance Programs Overhaul
    - 1. Consistent lot/sublot sizes
      - a. Mix: 750T / 3750T (recap)
      - b. Density: 1500LF / 7500LF (recap)
    - The mentioned sizes will be applied at project level.
  
    - 2. PWL (without F&t and density test strips) on lower tonnage contracts to replace QMP (density and mix).
      - Helps to address FHWA feedback about our QMP.
      - This topic will be discussed further during the subcommittee meetings
    - 3. Perform more QV testing (i.e., a minimum of 20%) for the QMP program
      - Similar to PWL.
      - Still there is a need to have one QV test per lot.
      - Will discuss more during subcommittee meetings.
  
    - 4. The use of uncorrelated gauges is no longer acceptable
      - a. Cores
      - b. Correlated gauges
        - To use correlated gauge, we’ll need cores on a test strip.
        - To make this more practical we’ll consider options to assist with logistics.
        - Will discuss more during subcommittee meetings.
  
    - 5. Other changes
      - a. Job-site sampling behind the paver.  
<https://www.youtube.com/watch?v=FIQMx6e5mZM>



b. Discussion on the first 50 ton of mix.

- Under BTS's radar for making changes in the future.

i. Gradation changes on No. 8 sieve (see the last row in the table).

1. Table

SIEVE	PERCENT PASSING DESIGNATED SIEVES							
	NOMINAL SIZE							
	No. 1 (37.5 mm) (1 1/2 inch)	No. 2 (25.0 mm) (1 inch)	No.3 (19.0 mm) (3/4 inch)	No. 4 (12.5 mm) (1/2 inch)	No. 5 (9.5 mm) (3/8 inch)	No. 6 (4.75 mm) (3/16 inch)	SMA No. 4 (12.5 mm) (1/2 inch)	SMA No. 5 (9.5 mm) (3/8 inch)
Existing 2.36-mm (No. 8)	15 - 41	19 - 45	23 - 49	28 - 58	32 - 67	90 max	15 - 25	18 - 28
PREV. 2.36-mm (No. 8)	23 - 41	27 - 45	35 - 49	40 - 58	48 - 67	90 max	15 - 25	18 - 28
NEW 2.36-mm (No. 8)	15 - 41	19 - 45	32 - 49	36 - 58	40 - 67	90 max	15 - 25	18 - 28

2. Effective for November 2024 letting

- See adjustments in red listed in the bottom row of the table.
- As a fine mix state we want to ensure we aren't coarsening our mixes.
- With these adjustments, less than 1% of mixes would have been flagged in 2022.
- No feedback.

ii. STSPs/SPVs

1. Revised Interlayer STSP (removal of 211/390/plunge milling language) to be published for 2024 contracts (effective for November lettings).

- Standalone and specified as needed.
- No feedback.

2. Plunge Milling SPV to be published for 2024 contracts (effective for November lettings).

- More generalized spec language.
- No feedback

3. Removing Distressed Pavement Milling SPV

- Change of the SPV into an STSP
- Inclusion of SDD in the STSP

- An STSP draft will be shared with pavement engineers from all

regions.

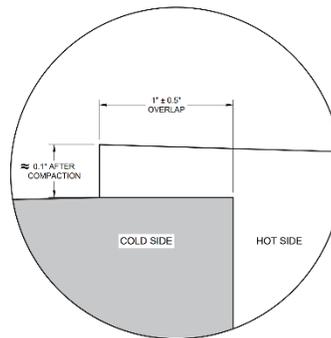
1. Longitudinal Joint Density

- a. The incentive decreased to \$0.20/LF for 2024 contracts (effective for November lets).
- b. Data will be analyzed to set new targets and incentives.

- Proposal to go back to 0.40/LF for 2025 construction season.
- Will be discussed further during the subcommittee meetings

ii. SDD 13C19

1. Increased the approximate symbol for overlap detail.
2. Emphasized the importance of the overlap height during the Inspector Training Course



[SDD 13C19](#): Overlap Details

- No feedback.

iii. RAP Gsb

1. So far, 18 mixes have been tested to develop a regression model/equation
2. More data points are needed to refine the model
3. For a PBR greater than 25%, the extraction method must be used to maintain the accuracy of VMA
4. The industry can perform the measurements on extracted aggregate.

- HMA Unit is currently working on developing a model. This requires an extensive effort for data mining

b. Percent Within Limits (PWL) Subcommittee (Dan K.)

i. 2022 summary

- Only 11 projects didn't get 100% pay for nuc density.



- Air voids looking great. No projects below 100%
- Density pay factors increased slightly.
- Air void pay factors stayed the same.
- Incentives/ton: pay factors for density are not accounting for dispute resolution in 2022 in the analysis. This will be corrected for 2023.
- 400 more joint miles paved this year compared to last year.
- As confinement increases, the average density increases. As the traffic level increase, the density decreases.
- Proposed new LJD targets: determined based on 2 years of data and 225 points. We're confident these are achievable.
  - a. HT mixes are now asking less compared to the LT/MT counterparts.
  - b. Frederixon: any discussion about a tiered system instead of an all or nothing system?
    - i. DOT is open to this discussion; however, we would prefer to keep this system simple. Potentially only 1 tier.
- Data entry issues due to copy/pasting from data submission sheet to PWL worksheet. Be careful when copying data.
  - a. Frederixon: Email servers block macro enabled spreadsheets.
    - ii. In the version notes on pantry there are instructions for how to re-enable macros after it's downloaded.
- Use the button when saving sheets.
  - ii. Early zone on test strip before rolling pattern is established
- We feel this is still the best way, so we will leave as is.
  - iii. PWL Production Worksheet V3.1.1.
    - 1. Nuclear and Core worksheets combined.
- Info tab > select which method
  - 2. New notification system for Gmm/Gmb.
- No feedback
  - 1. VMA/update current Gsb (aggregate bulk specific gravity)
- VMA was never a part of the calculation. It's being checked now to make sure that we're changing this as the Gsb is changing.



ii. Core Only Pilots

1. Coring shoulders, so gauges are not needed on project (future spec)

- Will be writing a proposal that will include frequency information.
- Will work with FHWA on this.

2. Removing density test strip requirement.

a. A proposal will be shared with industry

- Barron: What is the number of cores allowed for the initial test strip?
  - i. Dan K: gauges won't be used for acceptance in this case, so it's informational testing for use of the gauge.
  - ii. Scott S: could do the first 5 QV locations. Will be enough to get your correlation and rolling pattern established.

iii. Adding VMA/AC to PWL Incentive (future spec)

- We have volunteers from regions to work on a taskforce to work on this.
- No feedback was provided.

iv. The influence of polymer modification on the Gmm and Gmb values

1. Is there a need to, for instance, have 2 test strips for the same mix design with S, H, V binders?

- Same mix design, changing from an S to an H. Do we need another vol test strip for this? Volumetrics should stay the same. We're looking for feedback on this issue.
- Is the 275F compaction temperature appropriate?
  - i. Scott S: should not change volumetrics

b. Mix Acceptance Subcommittee (Jeff A.)

i. TSR Removal in favor of HWT? (future spec)

- Data indicates that mixes are passing in terms of resistance to moisture damage. But other performance tests (e.g., HWTT) are showing that they are performing poorly because of moisture damage.
- Practically, the test takes longer, but workload wise it is the same.
- Deb: We haven't been able to confirm that HWT can replace TSR. We should keep both until we can prove that to each other.
- Frederixson: Iowa uses HWT only for mixes that have quartzite,



otherwise TSR is still allowed.

- ii. WMA Technology and the WMA Additive Used as Compaction Aid
  1. Separate mix design ID for WMAs
  2. When WMA is used as compaction aid, it needs to be mentioned in the mix design
    - a. CMM 836.5: Sample identification
    - b. 254 (Asphalt Mix Verification)
  - Additives for compaction aid should be mentioned in the comment box of the mix design.
  - Johnson: Including it on the verification sample would be a better option because we don't always know if a compaction aid will be used. It's a field determined option.
- c. Mix Performance Subcommittee (Albert K.)
  - i. Presentation of BMD results/patterns/bias.
    - Current BMD specs were shown. We have tested 287 PWL mixes in 2020-2022. Will continue to collect PWL mix samples in 2023.
    - As traffic level increases, the expected rut depth decreases.
    - As gradation is finer, the CT index increases.
    - Proposed traffic level criteria presented. Will be in the revised BMD SPV. Targets may be adjusted with field performance data in the future.
    - Difference in aging procedures leads to test result bias.
  - ii. Efforts to reduce sampling preparation/aging differences.
    1. NCAT presentation (Webinar)
      - The researchers emphasized that mixture conditioning/aging methods have a significant influence on the results.
    2. New sample preparation/aging guidance
      - A testing procedure will be shared with the participants.
    3. Upcoming round robin
      - A round robin will be conducted in 2024 and will allow us to compute precision and bias statements for these tests.
      - Small differences in aging/conditioning can produce large differences in test results.



- Department is drafting a procedure for everyone to follow.
- iii. New SPV based on mixture traffic level instead of binder modification level.
  - No feedback was received.
- iv. Reduced sampling for benchmarking (only sampling mixtures with little data).
  - Data is obtained from select PWL and non-PWL projects
- v. Requests for Mix Design Properties to be relaxed for future revisions of SPV.
  - DOT is discussing this currently. Will report on this in next tech team.
- vi. Efforts to define interlaboratory variability (d2s).
  - After sharing a procedure and conducting the round robin study, we will investigate calculating the d2s
- vii. SIP calculation methods
  - Some use Iowa method, some depend on the value from their equipment.
  - May not have a large impact but will contribute to inter-lab variability.
- viii. SN and CRD
  - These reduce the interlaboratory variability
- ix. BMD Roadmap (Ali A.)
  - Anticipate full BMD implementation in 2028.
  - Milestones and target end dates presented.
- Auto extractors
  - a. IA evaluation
    - IA evaluations to be performed before end of construction season.
    - Should decrease inter-lab variability.
  - b. Round robin study
    - i. Most of the participants have picked the samples from Truax Building
  - c. Regions' status



- i. SW – Lax has an auto extractor. Madison will be receiving their unit soon.
  - ii. NCR – Rapids has had one since last year. Working towards installing one in Rheinlander; working on bidding.
  - iii. NE – Have had theirs since last year.
  - iv. NW – Superior will not have an auto extractor. Eau Claire is hoping to get one this summer yet, but they are not planning to start using it until next season. There were some shipping-related issues.
  - v. SE – Has one.
- AASHTOWare Specification Reorganization
    - a. Will include BOS staff to draft material categories related to HMA and BOS.
    - b. Will create a taskforce to review the reorg draft.
    - c. Progress
      - i. 703.1 PG Binder – Done
      - ii. 703.X SC Asphalt – REMOVE
        - 1. DNR Limitations
        - 2. Conformance Spec AASHTO M141 no longer recognized
        - 3. No current specs use this material to our knowledge.
        - 4. If needed, will make SPV for material.
      - iii. 703.2 MC Asphalt – Done
      - iv. 703.3 Emulsified Asphalt – Done
      - v. 703.4 Polymer Liquid Binders - BOS
      - vi. 704.1 Mineral Filler – Done
      - vii. 704.2 Hydrated Lime Antistripping Agent – Done
      - viii. 704.3 Liquid Antistripping Agent – Done
      - ix. 704.4 Stone Matrix Asphalt Stabilizer – Cellulose Fiber – Done
      - x. 704.5 Warm Mix Additive – Done
      - xi. 704.6 Polymer Resin – BOS
      - xii. 704.7 Thermoplastic Polymer Modifier -BOS
      - xiii. 705.1 HMA/SMA – Mostly Done
        - 1. QMP Program Replacement
        - 2. Loose external document references
      - xiv. 705.2 Asphaltic Surface – In Progress
      - xv. 705.3 Pavement Interlayer – In Progress
      - xvi. 705.4 Polymer Overlay System – BOS
      - xvii. 705.5 Overlay Polymer Modified System – BOS
      - xviii. 705.6 Cold In-Place Recycle – To Remain STSP for now
      - xix. 705.7 Cold Patch – To Do



- Other items
  - a. Exposure of coarser/lower layer mixes to cold weather during the cold months
    - i. Concerns regarding the occurrence of distresses due to higher permeability of No.3 mixes
    - ii. Typically happens during carryover projects.
    - iii. Nobody has experienced any distressed 3 mixes exposed to cold temperatures.
    - iv. Scott: 19mm carryover projects, one rural and one urban. They both raveled severely.
      - 1. If it's a planned carryover, we should use a 4 mix in the lower layer. That would produce a better project in the end.
      - 2. We will put this on the list to make an FDM update.
    - v. Boggs: Only sees problems when you have heavy traffic on incomplete pavement structures. Not from permeability issues.
  - b. Pay attention to make sure that samples are not labeled incorrectly
    - i. Lately a sample came that was labeled an HT when it was an LT. This pertains to QV and QC sampling.
    - ii. Boggs: Through our HTCP program we could send out a memo about labeling correctly.
  - c. Extra items
    - i. Barden: for binder and tack samples, remember to use the current dt1352. If you cannot find it contact Dick Barden.