



June 16, 2022

Meeting Minutes – Concrete Technical Committee

Location: Teams Meeting
Date: June 16, 2022
Time: 9:00 am to 12:00 pm

Attendance

Committee Members:

WisDOT Members –

Bureau of Technical Services (BTS):

- Barry Paye – Director
- Erik Lyngdal – Chief Materials Engineer
- Jim Parry – Quality Assurance Supervisor
- Leslie Hidde – Concrete Quality Assurance Engineer
- Deb Bischoff – QMP Engineer
- Peter Kemp – Pavement Unit Supervisor
- Ali Arabzadeh – Pavement Policy and Research Engineer
- Adam Johnson – Independent Assurance Program Coordinator
- Mark Finnell – Concrete Engineer Consultant (Behnke Materials)
- Signe Reichelt – Test Procedure Manual Consultant (Behnke Materials)

Bureau of Project Development (BPD):

- Mark Zander – Construction Standards Engineer
- Craig Pringle – Construction Oversight Engineer

Bureau of Structures (BOS):

- Aaron Bonk – Chief Structures Design Engineer

Bureau of Aeronautics (BOA):

- Vacant* – Chief Airport Construction Standards

Regional Representatives:

- Alan Rommel – NE Region TSS Chief – Management Liaison
- Travis Mikshowsky – SW TSS Supervisor – TSS Liaison
- Paulo Florio – SW Region Soils & Materials Engineer
- Matt Smith – SW Region Independent Assurance
- Kurt Flierl – SE Region Construction Project Manager
- Vacant* – SE Freeways Design/Construction Interface Engineer
- Brent Ferguson – NC Region Independent Assurance
- Devin Harings – NW Region Pavement Engineer
- Matt Bertucci – NE Region Pavement Engineer

FHWA Members –

- James Pforr – Pavement & Materials/Asset Management Engineer



Industry Members –

- Vacant* – American Council of Engineering Companies Liaison
- Ed Anastas – A.W. Oakes
- Eric Glendenning – BARD Materials
- Paul Mathe – Carew Concrete
- Barry Bohman – Chippewa Concrete Services
- David Meyer – Continental Cement Company
- Dave Stanke – Kraemer North America
- Brian Borowski – Lafarge/Holcim
- Mark LaLonde – LaLonde Contractors
- John McConahy – Mapei
- Scott Grams – Michels Road & Stone
- Tom Ptaschinski – Ptaschinski Construction Company
- James Palmer – St. Mary's Cement Company
- Benny Walker – Todds Redi-Mix Concrete
- Mike Hammitt – Trierweiler Construction Company
- Heath Schopf – Vinton Construction Company
- Jackie Spoor – Wisconsin Concrete Pavement Association
- Kevin McMullen – Wisconsin Concrete Pavement Association
- Cherish Schwenn – Wisconsin Ready Mixed Concrete Association
- Matt Grove – Wisconsin Transportation Builders Association
- Brad Diener – Zenith Tech
- Andrea Breen – Zignego Ready Mix

Resource Members (as needed) –

- Vacant* – BTS Concrete Lab Supervisor – Aggregate Tech Committee Chair
- Brandon Lamers – BPD Construction Oversight, Standards, & Local Program Chief
- Chad Hayes – BPD Construction Oversight Engineer
- Adam Albers – BTS Concrete Materials Lab Coordinator
- Zach Dittberner – Michels Road & Stone
- Tony Zignego – Zignego Company

Guest(s) –

- Tom Sand - Vinton Construction Company

Agenda Items

1. Welcome and Introductions – L. Hidde
 - a. Review etiquette during virtual meeting
 - b. Recording of Meeting
 - c. Direction of Technical Team
 - i. See attached memo.
 - d. Introduce New Members
 - i. Aaron Bonk, Eric Glendenning, David Stanke, Benny Walker, Cherish Schwenn, Brad Diener



2. Review and Finalize Minutes – L. Hidde

a. February 17, 2022 – **APPROVED AS WRITTEN**

3. Technical Committee Charter – L. Hidde

a. 2021 Charter accomplishments

i. Reduction of QMP testing of non-performance

1. Statewide measure is 95% compliance. The internal projects audited met the requirements.

ii. Acceptance & Testing of Partial Sublots

1. Implemented for Class I concrete

iii. Implement revisions for concrete aggregate testing

1. Changes were implemented, but additional revisions will be needed for structure aggregate

iv. Dowel & Tie bar scanning with MITSCAN

a. This has been utilized on a few projects as an investigative tool.

b. WHRP study is ongoing for this machine. Study is on hold until updated software program becomes available.

v. SCM spec revisions

1. Expanded number of SCM's allowed.

vi. Revisions to cooling concrete in hot weather specs

1. Not Completed.

vii. Specification organization improvements

1. This has started with the rewrite of 501.

2. Additional improvements are in the works to reorganize the spec to pull materials into a separate chapter.

viii. PEM Initiative

1. WHRP study complete.

2. Task Force will be developed to determine application to WisDOT specifications

b. 2022-2024 Charter

i. Goals for this charter.

1. Hot Weather Concrete Specifications

2. Cold Weather Concrete Specifications

3. Low Carbon Concrete Definition

4. Specification Organization Improvements



4. SCM Discussion – M Finnell
 - a. See attached SCM memo
5. Specification Reorganization – L Hidde
 - a. The specification is being reorganized to pull materials into a separate Chapter 8.
 - b. A TF may be needed going forward to review the changes.
6. New Task Forces – L Hidde
 - a. Structure Aggregate
 - i. TF is charged with reviewing Structure Concrete Aggregate Testing frequency.
 - b. Buckling Research
 - i. Evaluate and determine actionable items based on the WHRP research project published in February 2022.
 - ii. TF is charged with reviewing the research and determining the next steps forward.
 - c. PEM Research
 - i. Evaluate and determine actionable items base on the WHRP research project to be published in August 2022.
 - ii. TF is charged with reviewing the research and determining how and which measures to move forward with spec implementation.
7. Tech Team Updates
 - a. Fast Track –M Finnell / J Spoor / L Hidde
 - i. Fast Track has 3 groups that are working concurrently on items.
 1. Materials & Constructability: This group has been discussing opening strength of concrete repairs. The group is also working on materials for these repairs and working towards a performance specification.
 2. Education: There is a list of who and how to reach out to for implementation of a Fast Track spec when it is ready.
 3. Spec, CMM, FDM: This group has determined that Fast Track will be in 416 of the spec and items that are not related to these pavement repairs should be moved to appropriate sections of the specifications.
 - b. Curb Shear – K McMullen
 - i. This TF is working on gathering information from all regions to determine the extent of the curb shearing issue.
 - ii. Expansion material requirements are also being looked at to potentially replace the asphalt impregnated fiber board.



- c. SAM – L Hidde / M Finnell
 - i. SAM hit a pause as the department is determining the big picture discussion of where SAM fits in the implementation of the overall concrete goals.
- 8. Other
 - a. SDD's for revised dowel bar size (to 1 ¼") have been updated for June 2022 LET and forward.
 - b. DT2220 & DT2221 are anticipated to be posted by the end of the month.
 - c. Rumbles & Mumbles – a different machine is needed to construct a rumble vs a mumble.
 - d. 2023 Spec has been posted on the website.
 - e. BTS ListServ Link to Sign Up: <https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrcs/qmp/default.aspx>

Action Items – CURRENT

- 1.

Action Items – OLD

- 1. Concrete Pavement Approach Detail – P Kemp
 - a. Region Review Update
- 2. AWP Presentation to all – L Hidde (February 2022) - COMPLETE
- 3. Rumble Strip Notes to all – L Hidde (February 2022) - COMPLETE
- 4. List of questions regarding Rumbles & Mumbles – K McMullen (February/March 2022) - COMPLETE
- 5. Concrete Barrier Strength: Where called out? – L Hidde / M Finnell (February/March 2022) – COMPLETE
 - a. The strength is listed on the SDD. A few older SDD's did not have strength listed and E Emerson will add to them.
- 6. SDD: Change max dowel bar size – P Kemp (June 2022) - COMPLETE
- 7. CMM Updates – L Hidde / M Finnell (August 2022) – IN PROGRESS
- 8. “Old” mix design spreadsheet location – L Hidde / M Finnell (ASAP) – COMPLETE
 - a. Located in Pantry. Provided information in mix design memo to ListServ in March 2022.
- 9. Memo regarding 2022 Mix Design Submittals – L Hidde / M Finnell (ASAP) – COMPLETE
 - a. Memo sent out in March 2022 over ListServ. Memo located at: <https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrcs/qmp/default.aspx>
- 10. List of Task Force Members – L Hidde (February 2022) – COMPLETE
 - a. Task Force Members are listed in the Charter document in BOX.

Action Items – Long Term

- 1. Concrete Strength Task Force – L Hidde / M Finnell – ON HOLD UNTIL WHRP Study Complete



Upcoming Meetings

2022		
June 17, 2022	8:00 am to 10:00 am	TF: Fast Track
June 27, 2022	9:00 am to 11:00 am	TF: Curb Shear
July 13, 2022	1:00 pm to 2:30 pm	TF: SAM
July 15, 2022	8:00 am to 10:00 am	TF: Fast Track
July 25, 2022	9:00 am to 11:00 am	TF: Curb Shear
August 11, 2022	9:00 am to 12:00 pm	CPTC
August 12, 2022	8:00 am to 10:00 am	TF: Fast Track
November 17, 2022	9:00 am to 12:00 pm	CPTC



June 1, 2022

MEMORANDUM: Concrete Pavement Technical Committee Update

Background:

Concrete Pavement Technical Committee (CPTC) has brought together the Wisconsin concrete pavements community to resolve statewide construction issues.

Bridge Technical Committee addresses the construction aspect of structures. The materials and acceptance of the concrete mixture has been the responsibility of the CPTC to determine.

In the past few years, many changes have been implemented in the Portland cement concrete arena. The CPTC initiated all of the changes. Many changes are being made and will continue to be employed in concrete for the foreseeable future. New research and technologies are being explored and considered for implementation. Since the CPTC is comprised of mainly paving contractors with a few ancillary and ready-mix contractors, the modifications to the specifications primarily focused on pavement related issues. However, the advancement of performance engineered mixtures (PEM) in concrete will affect the entire concrete community. As these measures are being developed for implementation, all affected parties are integral to a successful launch.

Goal:

CPTC needs to evolve to be inclusive of other concrete communities. As changes are being evaluated for inclusion, the technical committee is responsible to ensure that any given modification is appropriate for universal (all concrete communities) or specific (ie: structural) applications. By including all stakeholders at the beginning of the process, it is the goal of the department to implement specifications that need minimal revision after the initial launch.

Direction Forward:

The direction of Concrete Pavement Technical Committee starting in June 2022 will include the following:

- Name change to Concrete Technical Committee (CTC)
- Include a minimum of 2 representatives from the bridge community
- Include a minimum of 2 representatives from the ready mix industry
- Include a representative from Wisconsin Ready Mix Concrete Association (WRMCA)
 - Representatives from Wisconsin Concrete Pavement Association (WCPA) and Wisconsin Transportation Builders Association (WTBA) are already represented on the technical committee.



June 16, 2022

MEMORANDUM: Fly Ash Shortage and Concrete Mixture Designs

Background:

The department is aware that fly ash supplies have become tighter than anticipated for this construction season. The source of this shortage is related to maintenance of coal-fired power plants. As a result, fly ash supplies are lower than anticipated and the duration of the shortage is undetermined. The need for reevaluation of accepted concrete mixture designs may be necessary if the mixture is using fly ash as its primary supplementary cementitious material (SCM).

Benefits of Fly Ash:

Fly ash used in concrete provides a plethora of benefits for Portland cement concrete. It increases the workability, increases resistance to fluid penetration (water), increases resistance to deicing salts and improves other properties of concrete. Absence or elimination of this SCM from concrete will negatively impact overall performance, which will require increased maintenance during the concrete's service life. The department wants to stress the importance of SCMs, like fly ash, for the longevity provided to concrete infrastructure.

Handling Fly Ash Changes to previously submitted Concrete Mix Designs:

This fly ash shortage may trigger a reassessment of concrete mixture designs that are currently being used on projects. Guidance on how to handle changes to concrete mixture designs incorporating fly ash are listed below for contracts under the 2022 and 2021 Standard Specifications, respectively. *Review all options prior to selecting:*

Contract under 2022 Specification Requirements:

A. **General (Class I, II, & III)**

1. Amend Quality Management Plan to reflect appropriate changes. (ie: source change, mix modification or new mix design)
2. Source Change Requirements:
 - a. Provide all required certifications for new sources.
 - b. New lots and sublots not required.
3. Mix Modification Requirements (allowed if meets requirements of Standard Spec 710.4(4)):
 - a. Provide updated Mix Design Form from the original submittal to reflect the changes to the mix design (ie: sources, quantities)
 - b. Generate new Contractor Mix ID and MRS Mix ID (132 report prefix). Examples:
 - 802516-FArate
 - 802516-FAsource
 - c. Provide all required certifications for new sources.
 - d. Create new lots and sublots for the modified mixture design.
 - e. New trial batching is not required.
 - f. Altering the following parameters requires a new mix design submittal, see #4 below:
 - Total cementitious content
 - Cement source
 - Aggregate source (aggregate quantities are allowed to be adjusted when changing fly ash quantity)
 - Chemical Admixture manufacturer and product name
4. New Mix Design Requirements:
 - a. Follow "Concrete Mix Design 2022 Construction Season Requirements" Memo dated March, 28, 2022. Link to memo: <https://wisconsindot.gov/Documents/doing-bus/eng-consultants/cnslt-rsrcs/tools/qmp/Mix-design-memo.pdf>
 - b. New trial batching is required.
 - c. Altering the following parameters requires a new mix design submittal:
 - Total cementitious content
 - Cement source
 - Aggregate source
 - Chemical Admixture manufacturer and product name
5. If contractor is proposing an option NOT listed below, Region will contact BTS-Concrete Unit.

B. Class I (pick one of the following options):

1. Reduction in Fly Ash Replacement Rate

- a. A change in replacement rate is considered a mixture modification.
 - i. Must maintain minimum replacement rate of 15% (Standard Spec 501.3.2.2.2).

2. Change Fly Ash Source (same class):

- a. Class C Fly Ash (*Pavements & Cast-In-Place Barrier*)
 - i. Changing from Class C of one source to Class C of another source is considered a source change per Standard Spec 715.3.1.2.1(1).
- b. Class C Fly Ash (*Structures*)
 - i. Changing from Class C of one source to Class C of another source is considered a mixture modification.
- c. Class F Fly Ash
 - i. Changing from a Class F fly ash on the department's APL to a Class F fly ash not on the department's APL is considered a mix modification. The replacement rate must reduce to 15% if current mixture is above 15% per Standard Spec 501.2.4.2.2.3 (2).
 - ii. Changing from a Class F fly ash on the department's APL to a Class F fly ash to another source on the department's APL is considered a source change. Replacement rate can also change within this mix modification.

3. Change in SCM Type

- a. Change in SCM type is considered a new mix design.
 - i. Trail batching **is** required.
- b. Possible SCM changes include:
 - i. Class C fly ash to Class F fly ash or vice versa.
 - ii. Fly ash (any class) to slag
 - iii. Fly ash (any class) to silica fume
 - iv. Fly ash (any class) to another SCM allowed under Standard Spec 501.2.4.2

C. Class II and Class III (select appropriate contractual requirement):

1. If contractually required to use 15% to 30% SCM replacement (*2022 spec*):

- a. Must follow the 15% minimum SCM requirement per Standard Spec 501.3.2.2.2.
- b. Allowed to follow any option under Class I concrete.

2. If contractually required to use 0% to 30% SCM replacement (*per ASP 6 or signed CCO*):

- a. Allowed to follow any option under Class I concrete.

Contract under 2021 Specification Requirements

A. General (Class I, II, & III)

1. Amend Quality Management Plan to reflect appropriate changes. (ie: source change, mix modification or new mix design)

2. Source Change Requirements:

- a. Provide all required certifications for new sources.
- b. New lots and sublots are not required.

3. Mix Modification Requirements (allowed if meets requirements of Standard Spec 710.4(5)):

- a. Provide updated Mix Design Form from the original submittal to reflect the changes to the mix design (ie: sources, quantities)
- b. Generate new Contractor Mix ID and MRS Mix ID (132 report prefix). Examples:
 - 802516-FArate
 - 802516-FAsource
- c. Provide all required certifications for new sources.
- d. Create new lots and sublots for the modified mixture design.
- e. New trial batching is not required.
- f. Altering the following parameters requires a new mix design submittal, see #4:
 - Total cementitious content
 - Cement source
 - Aggregate source (aggregate quantities are allowed to be adjusted when changing fly ash quantity)
 - Chemical Admixture manufacturer and product name

4. New Mix Design Requirements:
 - a. Class I
 - i. Submit new mix design along with required WS5014 Concrete Mix Design Certification
 - ii. Trial batching is required.
 - b. Class II & Class III
 - i. Submit new mix design and required documentation.
 - c. Altering the following parameters requires a new mix design submittal:
 - Total cementitious content
 - Cement source
 - Aggregate source
 - Chemical Admixture manufacturer and product name
5. If contractor is proposing an option NOT listed below, Region will contact BTS-Concrete Unit.

B. Class I (pick one of the following options):

1. Reduction in Fly Ash Replacement Rate
 - a. Pavements and Cast-In-Place Barrier
 - i. A change in replacement rate is considered a mixture modification.
 - b. Structures
 - i. A change in replacement rate will be considered a mixture modification.
 - Must maintain minimum replacement rate of 15% per Standard Spec 715.2.3.2(2).
2. Change in Fly Ash Source (same class):
 - a. Class C Fly Ash (*Pavements and Cast-In-Place Barrier*)
 - i. Changing from Class C of one source to Class C of another source is considered a source change per Standard Spec 7115.3.1.2.1(1).
 - b. Class C Fly Ash (Structures)
 - i. Changing from Class C of one source to Class C of another source is considered a mixture modification.
 - c. Class F Fly Ash
 - i. Changing from Class F of one source on the department's APL to Class F of another source on the department's APL is considered a source change.
 - ii. Changing from an APL Class F ash to a non-APL Class F ash is not allowed per Standard Spec 501.2.6.3.
3. Change in SCM Type
 - a. Change in SCM type will be considered a new concrete mixture.
 - i. Trial batching **is** required.
 - b. Possible SCM changes include:
 - i. Class C fly ash to Class F fly ash or vice versa
 - ii. Fly ash (any class) to slag
 - iii. Fly ash (any class) to silica fume
 - iv. Fly ash (any class) to pozzolan

C. Class II and Class III

1. Allowed to follow any option under Class I concrete.