WAQTC EXECUTIVE BOARD
2021 SUMMER MEETING MINUTES

MEETING CALLED BY: JOHN BILDERBACK, CHAIR **RECORDER:** DESNA BERGOLD, COORDINATOR	**DATE:** JULY 23, 2021 **TIME:** 11:00 AM MDT **LOCATION:** GOOGLE.MEET

BOARD MEMBERS:

JOHN BILDERBACK, CHAIR, ITD
LARRY ILG, ODOT, VICE CHAIR
L. SCOTT NUSSBAUM, TREASURER, UDOT
MIKE SAN ANGELO, AKDOT & PF
CRAIG WIEDEN, CDOT
OAK METCALFE, MDT
MATT LINNEMAN, NDDOT
SEAN PARKER, ODOT, CHAIR

INVITED GUESTS (QAC MEMBERS):

MISTY MINER, MDOT, VICE CHAIR
DAN GETTMAN, AKDOT & PF LORI COPELAND, ITD
SHARON TAYLOR, NDDOT
GILBERT ARREDONDO, UDOT
KEVIN BURNS, WSDOT
RANDY MAWDSLEY, WSDOT

ABSENT:

MICHAEL VOTH, CFLHD
BRIAN IKEHARA, HDOT
GARRETT WEBSTER, WSDOT

AGENDA ITEMS / OBJECTIVES:

1. **Report on previously proposed revisions**
    a. *R 25, Technician Training and Qualification Programs*– Champion Scott Nussbaum
    b. *Density symbol reconciliation* – Champion John Bilderback
        i. *T 99, Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop*
        ii. *T 180, Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop*
        iii. *T 310; In-Place Density and Moisture Content of Soil and Soil-Aggregate*
    c. *R 35, Superpave Volumetric Design for Asphalt Mixtures* – Champion Oak Metcalfe
    d. ~~*T 23*~~*R 100, Making and Curing Concrete Test Specimens in the Field* – Champion Sean Parker
    e. *T 30, Mechanical Analysis of Extracted Aggregate* – Champion John Bilderback
    f. *T 85, Specific Gravity of Coarse Aggregate* – Champion John Bilderback
    g. *T 88, Particle Size Analysis of Soils* – Champion Sean Parker
    h. *T 121, Density (Unit Weight), Yield, and Air Content (Gravimetric of Concrete)* – Champion Sean Parker – Champion Sean Parker
    i. *T 152, Air Content of Freshly Mixed Concrete by the Pressure Method* – Champion Sean Parker

j. *T 166, Bulk Specific Gravity (G_{mb}) of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens* – Champion Larry Ilg
k. *T 209, Theoretical Maximum Specific Gravity (G_{mm}) and Density of Asphalt Mixtures* – Champion Larry Ilg
l. *T 272, One-Point Method for Determining Maximum Dry Density and Optimum Moisture* – Champion Matt Linneman
m. *T 283, Resistance of Compacted Asphalt Mixtures to Moisture* – Champion Oak Metcalfe – Champion Oak Metcalfe
n. *T 308, Determining the Asphalt Binder Content of Asphalt Mixtures by the Ignition Method* – Champion Oak Metcalfe
o. *T 312, Asphalt Mixture Specimens by Means of the Superpave Gyratory Compactor* – Champion John Bilderback
p. *T 329, Moisture Content of Asphalt Mixtures by Oven Method* – Champion John Bilderback
q. *T 331, Bulk Specific Gravity (G_{mb}) and Density of Compacted Asphalt Mixtures Using Automatic Vacuum Sealing Method* – Champion Larry Ilg

2. 2021 Proposed AASHTO revisions from QAC:

a. *R 47, Reducing Samples of Asphalt Mixtures to Testing Size* (TS 2c) – Champion Larry Ilg
b. *R 76, Reducing Samples of Aggregate to Testing Size* (TS 1c) – Champion John Bilderback
c. *T 176, Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test* (TS 1a) – Champion Sean Parker
d. *T 310, In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)* (TS 1b) – Champion Matt Linneman

3. Written exam 'Retesting Challenges' – full or partial
4. Revisions to *Administration Manual* and *Registration, Policies, and Information Handbook (RPIH)*
    a. Expiry date
    b. SCC pre-requisite
    c. T 23 to R 100
5. Revisions to the 2021 training materials – QAC
    a. Basics
6. FOP library – ready for inclusion in the 2021 Training Materials
    a. FOP for AASHTO R 60, Sampling Fresh Concrete
7. QAC 2022 meeting locations – QAC
8. Other items

TOPIC	Discussion / *Decision*	ACTION REQUIRED BY:
WELCOME	John Bilderback, ITD and WAQTC Executive Board Chair, welcomed the attendees to the meeting. The meeting began with a brief review of the outstanding proposed revisions to AASHTO Standards.	
PREVIOUSLY PROPOSED REVISION		
R 25	*R 25, Technician Training and Qualification Programs*– Champion Scott Nussbaum The proposed revisions were considered editorial except for the addition of 'or subordinate' in 7.2 which has been balloted in the Technical Subcommittee (TS). The editorial revisions are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna Bergold, D B Consulting and WAQTC Coordinator, will verify the revisions are published.*	DESNA BERGOLD
DENSITY SYMBOL	*Density symbol reconciliation* – Champion John Bilderback *T 99, Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop* *T 180, Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop* *T 310; In-Place Density and Moisture Content of Soil and Soil-Aggregate* The revisions are considered editorial and were sent to AASHTO Publications too late to be incorporated into the 2020 Standards. These revisions are not drafted into the standard in the AASHTO Materials Library. Desna alerted Matt Linneman, NDDOT, the revisions Champion. Matt said that the Neoma Cole, TS 2c Chair, is looking into it. This may not be resolved in time for the 2021 Standards publication. *No further action necessary at this time.*	
R 35	*R 35, Superpave Volumetric Design for Asphalt Mixtures* – Champion Oak Metcalfe The proposed revisions are editorial and are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD

TOPIC	Discussion / *Decision*	ACTION REQUIRED BY:
R 100	~~*T 23*~~*R 100, Making and Curing Concrete Test Specimens in the Field* – Champion Sean Parker The revisions were balloted concurrently on Group 1 Rolling Ballot 2020 and approved. The revisions are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD
T 30	*T 30, Mechanical Analysis of Extracted Aggregate* – Champion John Bilderback The revisions were balloted concurrently on Group 3 Rolling Ballot 2020 and approved. The revisions are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD
T 85	*T 85, Specific Gravity of Coarse Aggregate* – Champion John Bilderback The revisions were COMP balloted on Group 3 Rolling Ballot 2020 and approved. The revisions are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD
T 88	*T 88, Particle Size Analysis of Soils* – Champion Sean Parker The revisions were TS balloted and approved. This will be COMP balloted this Fall. *No further action necessary at this time.*	
T 121	*T 121, Density (Unit Weight), Yield, and Air Content (Gravimetric of Concrete)* – Champion Sean Parker The proposed revisions are editorial and are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD

TOPIC	Discussion / *Decision*	ACTION REQUIRED BY:
T 152	*T 152, Air Content of Freshly Mixed Concrete by the Pressure Method* – Champion Sean Parker The proposed revisions are editorial and are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published. Desna will verify the revisions are published.*	DESNA BERGOLD
T 166	*T 166, Bulk Specific Gravity (G_{mb}) of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens* – Champion Larry Ilg The revisions were balloted concurrently on Group 3 Rolling Ballot 2020 and approved. The revisions are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD
T 209	*T 209, Theoretical Maximum Specific Gravity (G_{mm}) and Density of Asphalt Mixtures* – Champion Larry Ilg The revisions were TS balloted with one negative from Tennessee DOT. Allen Myers, TS 3c Chair, asked Desna and Larry for WAQTC's response to the negative and help on the comments. Desna sent Allen a response based on meeting minutes and discussion. Allen forwarded them to Tennessee. This will be COMP balloted this Fall. *No further action necessary at this time.*	DESNA BERGOLD
T 272	*T 272, One-Point Method for Determining Maximum Dry Density and Optimum Moisture* – Champion Matt Linneman The proposed revisions are editorial and are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD
T 283	*T 283, Resistance of Compacted Asphalt Mixtures to Moisture* – Champion Oak Metcalfe The revisions were TS balloted, then COMP balloted and approved. The approved revisions are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD

TOPIC	Discussion / *Decision*	ACTION REQUIRED BY:
T 308	*T 308, Determining the Asphalt Binder Content of Asphalt Mixtures by the Ignition Method – Champion Oak Metcalfe* The revisions were balloted concurrently on Group 3 Rolling Ballot 2020 and approved. The revisions are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD
T 312	*T 312, Asphalt Mixture Specimens by Means of the Superpave Gyratory Compactor* – Champion John Bilderback The proposed revisions are editorial and are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD
T 329	*T 329, Moisture Content of Asphalt Mixtures by Oven Method* – Champion John Bilderback The proposed revisions are editorial and are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD
T 331	*T 331, Bulk Specific Gravity (G_{mb}) and Density of Compacted Asphalt Mixtures Using Automatic Vacuum Sealing Method* – Champion Larry Ilg The revisions were balloted concurrently on Group 3 Rolling Ballot 2020 and approved. The revisions are drafted on the document in the AASHTO Materials Library and should be published in the 2021 Standards. *Desna will verify the revisions are published.*	DESNA BERGOLD
2021 PROPOSED REVISIONS		
R 47	*R 47, Reducing Samples of Asphalt Mixtures to Testing Size* (TS 2c) – Champion Larry Ilg Scott Nussbaum, UDOT and WAQTC Treasurer, suggested Larry be prepared for some possible discussion on the proposed revisions. WAQTC's proposed revisions labels one of the processes the 'Apex Method.' Scott feels that using the term 'apex' causes confusion. The standard does not appear to relate to the common	

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	definition of apex, a peak or high point, although the term is used that way in Section 10.2. Larry agreed that the two usages may be confusing. He will be ready for discussion. Desna offered to draft a brief PowerPoint for Larry to present the proposed revisions to the TS Chair. This item is not on the agenda for the meeting. Sean offered to remind Allen of the item. *Larry Ilg will present WAQTC's revisions in the COMP TS 2c Annual Meeting.* *Desna Bergold will draft a PowerPoint on the proposed revisions.*	LARRY ILG DESNA BERGOLD
R 76	*R 76, Reducing Samples of Aggregate to Testing Size* (TS 1c) – Champion John Bilderback *John Bilderback will present WAQTC's revisions in COMP TS 1c Annual Meeting.*	JOHN BILDERBACK
T 176	*T 176, Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test* (TS 1a) – Champion Sean Parker The proposed revisions to this standard were TS balloted in May with no negatives. Sean intends to suggest that the revision be moved to a COMP balloted this fall. *Sean Parker will represent these revisions in the COMP TS 1a Annual Meeting.*	SEAN PARKER
T 310	*T 310, In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)* (TS 1b)– Champion Matt Linneman *Matt Linneman will present WAQTC's revisions in the COMP TS 1b Annual Meeting.*	MATT LINNEMAN
WRITTEN EXAMINATIONS	*Written Examination Testing Protocols* During the recent QAC Summer Meeting, the committee discussed administration of the written examinations to determine if they would propose revisions to the *Administration Manual*. Randy Mawdsley, WSDOT, told the Board that the QAC could not reach an agreement on a uniform re-examination protocol. He then presented a white paper, 'Retesting Challenges,' based on the QAC's discussion, attached. The QAC concluded that if a member agency adopts a more stringent retesting criteria, such as full re-examination upon failure of one or more sections, and continues to accept reciprocity from member agencies that retest on the failed	

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	sections only, there is no 'conflict with any guidance contained herein.'* Therefore, there is no need to modify the *Administration Manual*. Scott asked if the QAC is expecting to maintain the two-tiered scoring system. Randy assured him that the QAC is not recommending any revisions to the scoring system. Scott also wondered if there is a perception that it is easier to pass the written exam in one state over another would technicians travel to the 'easier' state. All agreed it's possible, but there are other variables. The Board reviewed the *Administration Manual* and determined that revising the Re-examination section would help clarify the intent. The second sentence will be revised to state, 'The one exception is on the written examination, an initial exam score above 70 percent overall, but below 60 percent on one or more test methods, a re-examination on only those test methods may be administered at the agency's discretion.' With this revision, the Examination Process in Annex A will be revised to indicate that the partial re-examination is at the agency's discretion. Discussion Item Oak Metcalfe, MDT, asked which agencies provide training. Craig Wieden, CDOT, said that CDOT provided in-person training until COVID-19 and then developed videos for on-line training. John said that ITD only trains ITD personnel. Scott said that UDOT requires training, and they provide the training manuals, but the training is conducted at their work site by qualified technicians. Proof of training is provided by their senior technician. Randy says that WSDOT uses a third-party provider for training. *Revisions to the* Administration Manual *will be included in the Fall update.* * *Administration Manual* – AGENCY PERSONALIZATION / ALTERATION OF MATERIALS	DESNA BERGOLD
ADMINISTRATION MANUAL AND REGISTRATION, POLICIES, AND INFORMATION HANDBOOK		
EXPIRY DATE	Currently the *Administration Manual* says, 'A Certification obtained in this manner will expire no later than the indicated three (3) or five (5) years from the last day of the month in which requirements were successfully completed.' Randy said that this has caused WSDOT issues during state audits because of the way their database presents the information. It appears that the date of the certification starts before all the elements are complete. WSDOT is proposing revising the last sentence under the	

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	Qualification/Certification Reciprocity section to say, 'Any Certification obtained in this manner will expire a maximum of five (5) years from the date of successfully **completing** all requirements.' They are also proposing corresponding language in the Certified Technician Registry and Certification Renewal Policy sections. Scott clarified that these revisions are addressing two things, when the certification starts and when it ends. He asked if there was opposition on the certifications expiring the last day of the month. Randy said that they and some other agencies weren't using the last day of the month but the audits only had an issue with the start date. During the QAC meeting it was determined that AKDOT, CDOT, UDOT, and ITD use the last day of the month and would have to change their systems if the expiration date is the date of exam completion. Scott suggested a change in the proposed wording that would satisfy the initial certification date and allow expiration to be the last day of the month or 'date to date.' The Board fine-tuned the language. Qualification/Certification Reciprocity Last two sentences to read: A technician must successfully complete all requirements before obtaining WAQTC-wide Certification. A Certification obtained in this manner will expire no later than the indicated three (3) or five (5) years from the last day of the month in which requirements were successfully completed Certification Renewal Policy Second sentence will be struck as redundant, first sentence will read: Certification renewal is required to be completed by the certification's expiration date. Certified Technician Registry Final bullet will have the second sentence removed as redundant. First sentence will read: The day, month, and year of the Certification expiration. *Revisions to the* Administration Manual *will be included in the Fall update.*	DESNA BERGOLD

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SCC PRE-REQUISITE	The prerequisite for an SCCTT certification is a current qualification in CTT. The QAC determined it should also include, 'ACI Concrete Field-Testing Technician-Grade 1.' This reciprocity is allowed for a CTT Qualification. *Revisions to the* Administration Manual *will be included in the Fall update.*	DESNA BERGOLD
T 23 TO T 100	The 2021 AASHTO T 23 Standard will be revised to a Practice upon publication, with a new number, R 100, and new revision date. The *Administration Manual* reference will be changed to AASHTO R 100. *Revisions to the* Administration Manual *will be included in the Fall update.*	DESNA BERGOLD
REVISIONS TO THE 2021 TRAINING MATERIALS		
LIST	Desna distributed a list of the QAC proposed revisions to the training materials before the meeting, attached. John said that he reviewed the list and didn't think there were any major revisions. He asked if there was anything controversial. Sean agreed that the revision this year were pretty light. He briefly walked through the list. The Board approved the revisions. *Revisions to the* Training Materials *will be included in the Fall update.*	DESNA BERGOLD
FOP LIBRARY		
R 60	*FOP for AASHTO R 60, Sampling Fresh Concrete* The QAC developed this FOP for inclusion in the FOP Library for use by member agencies. Oak said that MDT is using the R 60 practice to sample concrete for acceptance and would like it approved. <u>Discussion item:</u> Oak asked if WAQTC TM 2 is still going to be available. Desna said that TM 2 will still be in the training materials but the FOP for AASHTO R 60 will be available for use. Oak asked if any member agencies are using TM 2 for sampling concrete. Craig said that CDOT has their own method.	

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	Scott said that UDOT is using TM 2. Randy said that WSDOT is using TM 2. Oak said that one of the major differences of the two practices is sampling after ½ yd^3 is discharged per TM 2 or in the middle third of the load per R 60. He said that from a quality assurance standpoint the middle of the load is more representative but from a quality control standpoint he understands that having a large amount of unacceptable material remaining in the forms is not desirable. Mike said that they use TM 2. He says that from the supplier's standpoint, if they can get paid for nearly half a load it pays for the materials. He also thinks that if the material is properly handled it should be uniformly mixed. Oak said that MDT applies a penalty, not just for the unacceptable material that remains in place, but for the entire lot. Desna said that Misty Miner, MDT, has volunteered to Champion the FOP. *The Executive Board approved the FOP for AASHTO R 60, and it be included in the FOP Library in the Fall update.*	DESNA BERGOLD
QAC MEETING LOCATIONS	It is unknown if 'in person' meetings will be feasible in the coming year. The QAC proposed continuing with the interrupted schedule when 'in person' meetings become an option. The 2022 QAC Winter Meeting will be held Jan. 31st through Feb. 4th. If this meeting can be held in person, the QAC proposes it take place in Reno NV. The 2022 QAC Summer Meeting will be held July 18th through the 22nd. If this meeting can be held in person, the QAC proposes it take place in Farmington UT, the location originally planned for the 2020 Summer Meeting. If these meetings are not to be held 'in person,' they will be scheduled as virtual meetings. The locations are approved. John suggested working with the hotels now. Desna suggested making a final decision for the QAC Winter Meeting during the Executive Board Fall Meeting. At that time a deadline will be set for a decision for the QAC Summer Meeting. Randy asked when the Fall Meeting will be held. The Board decided to schedule it for Nov. 5th. Perhaps a date for a final	

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	decision for the QAC Summer Meeting can be set at the Executive Board Fall Meeting. Desna suggested that the Board discuss setting a recurring date for the Fall Meeting such as the first Friday in November. She will include it on the meeting agenda. *Desna will begin arranging accommodations for the 2022 QAC meetings at the approved locations.* *The 2021 Executive Board Fall Meeting will be held Nov. 5th.*	DESNA BERGOLD
OTHER		
ASTM E329	Sean wanted everyone to be aware that ASTM adopted a new *E329 Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.* Oak said that this is the ASTM version of *AASHTO R 18 Standard Recommended Practice for Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories.* *Discussion item, not further action necessary.*	
PROMETRIC	Randy said that he and Scott have been discussing the steps to contract with Prometric. Scott asked the Board to approve moving forward. He would like the WAQTC to recommend Prometric as a preferred provider based on WSDOT's extensive research. Scott said due to lack of travel this past year, WAQTC has the funds to pay for the initial costs. UDOT can modify the contract with D B Consulting to access these funds. *The Executive Board approved pursuing a contract with Prometric.*	SCOTT NUSSBAUM RANDY MAWDSLEY

Retesting Challenges QAC

During the recent QAC Summer meeting, the committee discussed written examinations and their administration. Currently, member agencies require a score of 70 percent, with no procedure less than 60 percent (3 of 5 questions correct) to pass. If the overall score is 70 percent or higher, with one or more procedures scoring less than 60 percent (2 or fewer correct), the candidate is allowed to take a second exam on just the failed procedure(s). Reexamination of a single procedure requires a passing score of 70 percent which, in practice, means 80 percent (4 of 5 correct.) Reexamination of two or more procedures require an overall 70 percent which allows at least 60 percent on one procedure and 80 percent or greater on another.

The QAC members discussed the merits of revising the Administration Manual to require a full reexamination if any procedure is failed.

Advantages of the current system:

- Allows the certification to be conducted in one day. Reexamination of one or more methods, when applicable, allows the candidate a brief period to study and retake the exam on just the failed methods.
- Allows flexibility in the administration of the certification program.

Advantages of full reexamination:

- Candidates may be more likely to take the exams seriously and study appropriately.
- Exams are prepared in advance and ready for reexamination.
- Eliminates confusion on the scoring of the reexamination.
- Allows flexibility to deliver exams electronically.

During the meeting, the QAC members were polled, and four members are in favor of full reexaminations and four are in favor of the current system.

The historical interpretation of the highlighted section of the Administration Manual, below, has been, 'You can make it more difficult, but you can't make it easier.' Therefore, the committee concluded that if a member agency adopts a more stringent retesting criteria and continues to accept reciprocity from member agencies that use the current practice, there is no 'conflict with any guidance contained herein,' and there is no need to modify the *Administration Manual*.

AGENCY PERSONALIZATION / ALTERATION OF MATERIALS

Member Agencies are not authorized to make any changes to any materials, such as course materials or administrative procedures that fall under the jurisdiction of the TTQP with the following exceptions: Agencies may include in the RP&IH their own Agency specific information, fee structure, cancellation and refund policies, course allocations, individualized registration forms, or other such information as defined in this manual.

The written examination questions may be organized or compiled according to Agency preference as long as the content and procedure adheres to the guidance provided in this manual and the exam reflects that it is a product of the WAQTC TTQP. Agencies may provide supplemental administrative guidance for Agency specific issues in the RP&IH as long as it is not in conflict with any guidance contained herein. The addition of Agency specific supplemental information, such as Agency specific test methods, contract administration guidance, specification information, or quality assurance program information to Qualification courses is not considered a change to the program."

QAC 2021 Proposed Revisions to the WAQTC Training Materials

General files

Terminology

Revisions to the Terminology section include adding or editing definitions for:

- Hot mix asphalt (HMA)
- J-Ring
- Passing ability
- Recycled (reclaimed) asphalt materials
- Recycled asphalt paving (RAP)
- Recycled asphalt shingles (RAS)
- Static segregation
- Stone matrix asphalt (SMA)
- Slump flow
- Visual stability index (VSI)
- Warm mix asphalt (WMA)

Aggregate (AgTT)

Basics of Aggregate

Full update

FOP for AASHTO R 90, Sampling Aggregate Products

Review Questions

- New date
- Add 'What are the differences in Methods A, B, and C when sampling from a stockpile?'

FOP for AASHTO R 76, Reducing Samples of Aggregate to Testing Size

PowerPoint:

- Correct PowerPoint Slide 12

FOP for AASHTO T 255, Total Evaporable Moisture Content of Aggregate by Drying

FOP

- New date
- Apparatus add:
  - Forced draft oven (preferred)
  - other device/method allowed by the agency.
- Procedure add:
  - Step 5aii and 9aii: 'or other heat sources as allowed by the agency.'
  - Table 3: or 'any other device/method allowed by the agency.'

PowerPoint:

- Revisions to match the FOP revisions.

FOP for AASHTO T 27 /T 11; Sieve Analysis of Fine and Coarse Aggregates and Materials Finer Than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing

FOP:

- New date
- Correct Table 1 heading, 'Minimum Dry Mass' in Student
- Correct headings in the example gradation tables.
- Method B: Replace 'Adjusted Individual Mass Retained (AIMR) with 'Total Individual Mass Retained (TIMR).'
- Method B: Replace 'Adjusted Cumulative Mass Retained (ACMR) with 'Total Cumulative Mass Retained (TCMR).'

PowerPoint:

- Revisions to match the FOP revisions.

FOP for AASHTO T 335, Determining the Percentage of Fracture in Coarse Aggregate

FOP:

- New date
- Add 'to the nearest 1 percent' in Step 5.
- Correct instructions for calculations.
- Use variables in example calculations.
- Correct accuracy in example calculations.
- Replace 'principle' with 'principal'

PowerPoint:

- Revisions to match the FOP revisions.

FOP for AASHTO T 176, Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test

FOP

- Add a 'balance or scale' to Apparatus.
- Remove 'full' from Step 6.
- Label Step 6b 'Manual Method.'
- Make Note 7 a part of Step 10 in the Procedure.

PowerPoint:

- Revisions to match the FOP revisions.

Written exams

Editorial revisions include correcting gradation tables intermediate masses and labels.

Asphalt (AsTT I and II)

Basics of Asphalt

Full update

FOP for AASHTO T 166, Bulk Specific Gravity (G_{mb}) of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens

FOP:

- New date
- New AASHTO date
- Revise 77 ± 1.8°F to 77 ± 2°F

PowerPoint:

- Revisions to match the FOP revisions.

FOP for AASHTO R 66, Sampling Asphalt Materials

Review Questions

- Change 'HMA' to 'asphalt mixtures'

FOP for AASHTO T 30, Mechanical Analysis of Extracted Aggregate

FOP:

- New date
- New AASHTO date
- Revise Mass Verification Section
- Include mass verification steps in Procedure
- Move Mass Verification formula and example to Calculations
- Correct Reported Percent Passing example calculation
- Revise Annex B1 Table

PowerPoint:

- Revisions to match the FOP revisions

WAQTC TM 13, Volumetric Properties of Asphalt Mixtures

Performance Exam Checklist:

- Correction in answer sheet mid calculation.

Concrete (CTT)

Basics of Concrete

Full update

WAQTC TM 2, Sampling of Freshly Mixed Concrete

FOP (editorial):

- Scope, change 'method' to 'practice'
- Step 3, Sampling from paving mixtures, change 'material' to 'increments'
- Step 4, change to 'Transport sample to the testing location.'
- Start Step 5 with 'Remix'
- Change 'samples' to 'sample' in multiple uses

PowerPoint:

- Revisions to match the FOP revisions.

FOP for AASHTO T 309, Temperature of Freshly Mixed Portland Cement Concrete

Review Questions

- New date
- Replace question 4.

FOP for AASHTO T 121, Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete

FOP (editorial)**:**

- Revise example equations to use the term 'concrete mass.'

Performance Exam Checklist:

- None

PowerPoint:

- Revisions to match the FOP revisions.

FOP for AASHTO T 152, Air Content of Freshly Mixed Concrete by the Pressure Method

FOP (editorial)**:**

- Student: Add discussion on air-entraining agents

FOP for AASHTO R 100 ~~T 23~~, Making and Curing Concrete Test Specimens in the Field

FOP:

- New AASHTO date
- New date
- Revised to 'FOP for AASHTO R 100'
- Revised 'procedure' to 'practice'

Review Questions

- New date
- Revised to 'FOP for AASHTO R 100'

Performance Exam Checklist:

- New date
- Revised to 'FOP for AASHTO R 100'

PowerPoint:

- Revisions to match the FOP revisions

Written Exams

Revise the FOP for AASHTO T 23 to the FOP for AASHTO R 100. Other editorial revisions for formatting.

Embankment/ Base and In-place Density (E&B/IPD)

Basics of Compaction and Density Control

Full update.

FOP for AASHTO T 255/T 265, Moisture Content of Aggregate and Soil

FOP:

- New date
- Apparatus add:
  - Forced draft oven (preferred)
  - other device/method allowed by the agency.
- Procedure add:
  - Step 5aii and 9aii: 'or other heat sources as allowed by the agency.'
  - Table 3: or any other device/method allowed by the agency.

PowerPoint:

- Revisions to match those in the FOP.

FOP for AASHTO T 99, Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop and T 180, Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

FOP:

- New AASHTO date
- New date
- Editorial revisions in Scope
- Procedure Step 10: add 'remove one of the cut faces' and move 'ensuring that all layers are represented.'
- Replace the variable 'D' with 'ρ' in the formulas and examples.

Performance Exam Checklists:

- Include US Customary units

PowerPoint:

- Revisions to match the FOP revisions.

FOP for AASHTO T 272, One-point Method for Determining Maximum Dry Density and Optimum Moisture

FOP:

- New date
- Sample: new Step 3, 'Pass the material through the appropriate sieve.'
- Procedure Step 10: add 'remove one of the cut faces' and move "ensuring that all layers are represented.'

Performance Exam Checklists:

- Include US Customary units

PowerPoint:

- Revisions to match the FOP revisions.

FOP for AASHTO T 85, Specific Gravity and Absorption of Coarse Aggregate

FOP:

- New AASHTO date
- New date
- Add 'and basket fully submerged' in Steps 2 and 5

PowerPoint

- Revisions to match the FOP revisions.

FOP for AASHTO T 310, In-place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods

FOP (editorial)**:**

- Move 'This procedure provides a rapid, nondestructive technique for determining the in-place wet density and moisture content of soil, aggregate, and soil-aggregate mixes.' from Significance into Scope.

FOP for AASHTO T 355, In-place Density of Asphalt Mixtures by Nuclear Methods

FOP (editorial)**:**

- Replace 'percent compaction' with '% Compaction' in formulas.

Written Exams

Replace *D* with ρ. Other editorial revisions include correcting question numbering.