



MEMO

DATE: March 22, 2016

SUBJECT: Use Guidelines for Percent Within Tolerance (PWT) for Bituminous Pavement Projects

TO: District Executives

FROM: R. Scott Christie, P.E. *Brian Thompson /s/ for*
Deputy Secretary for Highway Administration

These Use Guidelines supersede the previously issued MEMO, Use Guidelines for Percent Within Tolerance – Laboratory Testing Section (PWT-LTS) Standard Special Provision dated October 13, 2015.

PWT is recognized as a National “Best Practice”. The commitment to the use of PWT specifications should increase quality by using a graduated payment system which rewards closer adherence by the producer to the Job Mix Formula (JMF) and by the Contractor to in-place field density targets. The Department’s PWT Standard Special Provisions (SSP) contain four parameters that would affect payment:

1. Pavement in-place density (PF_D)
2. Asphalt Content (AC) of the mixture (PF_{AC})
3. Percent passing the #200 sieve of the mixture (PF_{200})
4. Percent passing the Primary Control Sieve of the mixture. (This pay parameter was added to the PWT SSP and is not included in Publication 408, Section 409 pay equations for lot acceptance. This parameter was added to provide more emphasis on the overall gradation of the mixture.) (PF_{PCS})

Overall Lot Pay Factor (OLPF) = $(0.50 \times PF_D) + (0.30 \times PF_{AC}) + (0.10 \times PF_{200}) + (0.10 \times PF_{PCS})$

The Department is incorporating a PWT bituminous pavement acceptance approach on numerous projects in the 2016 construction season. For the 2016 construction season, Districts can choose to incorporate PWT on a project through the use of PWT- LTS or PWT-HOLA.

PWT-LTS:

The Department developed two PWT-LTS SSP’s. The first PWT-LTS SSP is for all Federally funded projects and all projects on the National Highway System (NHS). This SSP includes Theoretical Maximum Specific Gravity (Gmm) Verification sampling and testing. The use of this SSP will eliminate the need to include SSP b04091 SECTION 409 FOR SPECIFIC GRAVITY (Gmm) in the Contract. The second PWT-LTS SSP does not include Gmm

Verification sampling and testing and is for 100% State funded projects not on the NHS. Acceptance testing will be completed at the Department's Materials Testing Laboratory facility located in Harrisburg, PA.

PWT-HOLA:

The Department developed two PWT-HOLA SSP's where the Department Representative performs the acceptance testing. The first PWT-HOLA SSP is for all Federally funded projects and all projects on the NHS. This SSP includes Theoretical Maximum Specific Gravity (Gmm) Verification sampling and testing. The use of this SSP will eliminate the need to include SSP b04091 SECTION 409 FOR SPECIFIC GRAVITY (Gmm) in the Contract. The second PWT-HOLA SSP does not include Gmm Verification sampling and testing and is for 100% State funded projects not on the NHS. Both SSP's require NECEPT Bituminous Level 1 or Level 2 Plant Technicians to conduct acceptance testing using the Contractor's or Producer's equipment.

A revised PWT-HOLA SSP for 100% State funded projects not on the NHS is expected to be available for use by April 2016. The revised SSP will provide the Department option to have acceptance testing performed by the Contractor or Producer with the Department Representative present to only observe the acceptance testing. This SSP will still require NECEPT Bituminous Level 1 or Level 2 Plant Technicians to witness acceptance testing performed by the Contractor or Producer using the Contractor's or Producer's equipment.

A period of 3 to 5 years is expected before the wide-spread use of PWT-HOLA is capable of being utilized. There is a recognized need for additional qualified technicians and training for local acceptance testing realized by both the Department and Industry. Industry also recognizes the need for additional testing equipment and laboratory space to handle increased workloads that accompany local acceptance testing. The availability of certified local acceptance technicians and the capacity of anticipated bidders with a current AMRL On-Site Laboratory Assessment capable of supplying the project must be considered. With these challenges in mind, Districts should consider utilization of PWT-HOLA from projects advertised with a PWT-LTS SSP if requested by the Contractor, post-bid. The change from PWT-LTS to PWT-HOLA must come at no change to the value of the Contract. In Districts where these challenges are not anticipated to be a concern, PWT-HOLA can be included in the bid package.

Acceptance testing will be completed in laboratory test facilities identified by the Contractor and accepted by the Department. The testing facility will be required to demonstrate successful completion of an AMRL On-Site Laboratory Assessment including successful correction of any assessment findings within the last two years, or through other certification approved by the Department. The location of the approved laboratory test facility is to be included in the Local Acceptance Quality Control (LA QC) Plan which is to be submitted to the District Materials Engineer (DME)/District Materials Manager (DMM) at least three weeks before the planned start of paving. The DME/DMM will not accept the LA QC Plan without an acceptable laboratory test facility identified.

Guidelines for Implementation

PWT applies to all bituminous paving items of Sections 309, 311, 316, 409, 410, and 411, and is not applicable to other paving items such as Stone Matrix Asphalt (SMA), gap-graded asphalt rubber mixtures, FJ-1 Wearing Courses, asphalt warranty pavements, etc. Mixture acceptance by certification for particular project items would not exclude the use of PWT. Likewise, density acceptance can be determined by pavement cores, non-movement, or optimum rolling pattern.

The standard deviation component of PWT will impact the density pay factor when pavement cores are used for density acceptance. The District shall consider the variability of the base to which the item is being placed upon, especially on non-Restricted Performance Specifications (RPS) roadways, when determining the method for density acceptance. Districts are to review the bituminous paving items within the project to determine the method for density acceptance prior to bid. Consideration should be given to including the intent to determine density acceptance by pavement cores in the bid documents as a Special Provision so that potential bidders will be informed of the intent and can plan their work and pricing accordingly. See attached example. In addition, density acceptance must again be discussed at the Preplacement Meeting held at least two weeks before placing bituminous paving mixtures.

Since PWT specifications create graduated pay factors, Contractors must achieve consistent density results near the middle of the target field density range (91.5% to 98.0% Standard and 92.0% to 98.0% RPS) to maximize payments. Previously, many resurfacing projects have included standard wearing course items which would receive full payment for density when all individual cores were at least 90% and the lot average was at least 92%. PWT specifications may see reduced pay factors for density on pavements that are at or near the bottom of the density range.

The eCAMMS system will be updated to compute PWT Pay Factors and Lot Payments effective with samples submitted (setup) on March 17, 2016. If Districts need to compute PWT Lot Payments on samples submitted (setup) before March 17, 2016, the Districts will need to compute the Lot Payment for each lot of material using eCAMMS Testing Reports from LTS and the PWT Payment Calculator spreadsheet that has been developed. This spreadsheet is available for download via the ECMS website under References / File Cabinet.

When completing the TR-447 Form or setting up samples in eCAMMS for PWT testing on or after March 17, 2016, in the CMS/ECMS Contract and WBS section of the TR-447 Form or TR-447 Sample Setup page, please enter "2011" in the 408 Year field, enter "9" into the Version field, and enter either "409APWT" (Standard) or "409BPWT" (RPS) in the Section field which will automatically populate the Measurement field in eCAMMS with an "E". In addition, please include in the Remarks section of the TR-447 Form if the lot is a terminated lot as defined in the PWT SSPs. Then, on the eCAMMS TR-447 Sample Setup page and in the General section, click the Terminated Lot checkbox.

When completing the TR-447 Form or setting up samples in eCAMMS for PWT testing before March 17, 2016, in the same CMS/ECMS Contract and WBS section of the TR-447 Form or TR-447 Sample Setup page, please leave the 408 Section field blank and check the Special Provisions checkbox and then enter in the appropriate "PWT-LTS" or "PWT-HOLA" in the

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field next to the Special Provisions checkbox. In addition, please include in the Remarks section of the TR-447 Form and the eCAMMS TR-447 Sample Setup page if the lot is a terminated lot as defined in the PWT SSP's.

The Innovation and Support Services Division (ISSD) of the Bureau of Project Delivery (BOPD) and the Asset Management Division (AMD) of the Bureau of Maintenance and Operations (BOMO) will be working with the Districts to monitor use, costs and analysis of PWT implementation. To assist in the collection of data from projects utilizing PWT, the Contract Adjustment Types "PWT-LTS" and "PWT-HOLA" have been added for use in ECMS. Project personnel must enter both negative and positive adjustments utilizing the appropriate "PWT-LTS" or "PWT-HOLA" Contract Adjustment Type in ECMS. The corresponding eCAMMS report along with the "PWT Lot Payment" or "PWT Partial Lot Payment" indicating the Defective, Penalty Payment, Full Payment, Bonus Payment adjustment is to be attached to the adjustment as supporting documentation.

On projects let on or after March 24, 2016, the Department will allow for any roadway not having a RPS paving item to have the PWT OLPF waived when any PWT density pay factor is less than 100%. At the Contractor's written request, the entire Lot will be re-evaluated for acceptance based upon Publication 408 Section 409. The result of the re-evaluation will be used for determining acceptance of the Lot. Any "PWT-LTS" or "PWT-HOLA" adjustment for the Lot will be reversed. A second adjustment with the comment section stating "**Density Reversal**" will be entered to reverse the previous adjustment. The corresponding eCAMMS report is to be attached to the adjustment as supporting documentation.

A Strike-off Letter (SOL) containing these Use Guidelines will be issued within the next two weeks, and will be incorporated into the next update of Publication 2 and Publication 242.

Should you have any questions or concerns, please contact Steven L. Koser, P.E., Chief, Pavement Testing and Asset Management Section, at 717-787-6899.

4950/AMO/hmq

cc: Renee Sigel, Division Administrator, FHWA
Charles Goodhart, Executive Director, PAPA
Assistant District Executives – Construction
Assistant District Executives – Design
Assistant District Executives – Maintenance
Maintenance Service Executives
Richard Roman, P.E., Director, BOMO
Brian Thompson, P.E., Director, BOPD
J. Michael Long, P.E., Chief, Asset Management Division, BOMO
Melissa Batula, P.E., Chief, Highway Delivery Division, BOPD
Christine Reilly, P.E., Chief, Innovation and Support Services Division, BOPD
Steven Koser, P.E., Chief, Pavement Testing and Asset Management Section, BOMO
Joseph Robinson, P.E., Chief, Construction Quality Assurance Section, BOPD
Robert Horwhat, P.E., Chief, Materials Engineer, BOPD
Lydia Peddicord, P.E., Chief, Pavement Design and Analysis Unit, BOPD
Timothy Ramirez, P.E., Engineer of Tests, BOPD

SPECIAL PROVISION

<input type="checkbox"/> Project: xxxxx	Standard / Non - Federal (100% State)		Final
Short Description:	SR XXXX to XXXXXXXXXXXXXXXXXXXXXXXXXX on SR XXXX-XXM/SR522-56M"	Org Code:	XXXX
County:	XXXXXXXXXXXX	SR: XXXX	Section: XXX
District:	XX	Group ID: Resurface	Municipality: XXXXXXXX

General

Type: Project Specific

Addendum: 0

Detail

Index or Category:

Sequence ID: 0

Version: 0

District:

Provision Name: rXXXXXX MIXTURE ACCEPTANCE AND DENSITY ACCEPTANCE

Completed: Yes

Associated Items

Item Number	Item Description
No records found.	

Header

MIXTURE ACCEPTANCE AND DENSITY ACCEPTANCE

Provision Body

Mixture acceptance and density acceptance of Superpave Mixture Design items in accordance with the following chart:

Item #	Description	Mixture Acceptance		Density Acceptance			Stations or Segment/Offset	Exemptions
		Certification - Section 409.2(f)2	Loose Box - Section 409.3(h)2	Non-Movement Section 409.3(j)2	Optimum Roller Pattern - Section 409.3(j)3	Pavement Cores - Section 409.3(j)4		
0316-0337	Superpave Asphalt Mixture Design, Flexible Base Replacement, PG 64-22, < 0.3 Million ESALS, 25.0 MM Mix	X		X			Entire Project	
0409-0492	Superpave Asphalt Mixture Design, HMA Wearing Course, PG 64-22,		X			X	Entire Project	

	0.3 to < 3 Million ESALS, 9.5 MM Mix, SRL-H						
0409-2495	Superpave Asphalt Mixture Design, HMA Wearing Course (Scratch), PG 64-22, 0.3 to < 3 Million ESALS, 9.5 MM Mix, SRL-L	X		X			Entire Project
9409-0001	Superpave Asphalt Mixture Design, HMA Wearing Course, PG 76-22, 0.3 to < 3 Million ESALS, 9.5 MM Mix, SRL-H	X			X		Entire Project
9409-0002	Superpave Asphalt Mixture Design, HMA Wearing Course (Scratch), PG 76-22, 0.3 to < 3 Million ESALS, 9.5 MM Mix, SRL-L	X		X			Entire Project
9411-0492	Warm Mix Asphalt (WMA), Wearing Course, PG 64-22, 0.3 to < 3 Million ESALS, 9.5 MM Mix, SRL-H		X			X	Entire Project
9411-2495	Warm Mix Asphalt (WMA), Wearing Course (Scratch), PG 64-22, 0.3 to < 3 Million ESALS, 9.5 MM Mix, SRL-L	X		X			Entire Project

Audit Information

Created By	Created On	Modified By	Modified On
XXXXX X XXXXXXXXXX/PennDOT	XX/XX/XXXX XX:XX:XX AM	XXXXX X XXXXXXXXXX/PennDOT	XX/XX/XXXX XX:XX:XX AM

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