PAPA/PENNDOT BUS TOUR

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IRI VERIFICATION AND
SAMPLE SET UP FOR LOTS AND SUBLOTS ON DEPARTMENT PROJECTS

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IRI VERIFICATION

- FHWA/PennDOT QA Stewardship Review – June 2019
  - Seven (7) Opportunities for Improvement were Identified
    - PennDOT included contractors' test results in the acceptance decision for ride quality measurements without independent verification.
      - The existing verification process did not entail retesting, but rather a re-analysis by the Bureau of Operations' (BOO) Roadway Inventory and Testing Unit (RITU) of the raw (unfiltered) binary data collected by the contractor and used to determine the IRI values submitted for incentive payment during that construction season.
      - RITU's re-analysis was then compared to the IRI results submitted by the contractor.
  - Began meeting with FHWA in May 2020 to develop an Action Plan to address the seven (7) Opportunities for Improvement
    - There have been ten (10) meetings to date.
    - Five (5) Opportunities have been addressed to date

IRI VERIFICATION

- Revisions to the following documents were created to develop a verification process in which the contractor's test results were independently verified by the Department:
  - Pub 408, Section 404, Evaluation of Asphalt Pavement Ride Quality and Payment of Incentive
  - Pub 408, Section 507, Evaluation of Concrete Pavement Ride Quality and Payment of Incentive
  - Pub 19, PTM No. 428, Measuring Pavement Profile Using a Light Weight Profiler
  - Pub 2, POM B/6/23, Evaluating the Ride Quality of Newly Constructed Pavements
  - Form M-7, Daily IRI Data Collection Form

IRI VERIFICATION

- Revisions for the 2021 Pilot Projects Included:
  - Pub 408, Sections 404 & 507
    - The operator must carry their valid PennDOT certification card during profiling
    - Language for delineating the profiling limits during the verification testing
    - Established one day of Department testing concurrent with the contractor's testing
    - Established verification tolerances:
      - Minimum of 90% of the lots for each lane have a difference less than 6.1 inches/mile
      - Difference in average MRI for each lane is less than 6.1 inches/mile
      - Difference in length of each lane is less than 0.2%.
  - Pub 19, PTM No. 428
    - Defined Mean Roughness Index (MRI) which is the average of the IRI values for each wheel path.
    - Require operators to carry their PennDOT certification card during profiling.
  - Pub 2, POM B/6/23
    - Established the verification will entail one (1) day of smoothness retesting and re-analysis of the raw (unfiltered) binary data collected by the contractor.
    - Districts are to provide 14 days advanced notice to RITU for dates the contractor is scheduled to perform profiling.

IRI VERIFICATION

- Results for the 2021 Pilot Projects:
  - D2: Failed average MRI (Revised verification tolerance) +6.1*
  - D3: Failed distance (Contractor used a wheel for distance calibration) +2.1*
  - D4: Passed all criteria -1.9*
  - D5**: Passed all criteria -2.5*
  - D6: Failed 90% of lots (AMES profiler filtering on dark asphalt surfaces) +4.3*
  - D8: Passed all criteria -1.5*
  - D10:
    - AMES profiler failed 90% of lots & average MRI +9.0*
    - ICC profiler failed 90% of lots & distance (Tested 1 week after RITU) -0.6*
  - D12**: Failed 90% of lots & average MRI (Only 1 lot, 528 ft., tested) -8.9*

* Difference in average MRI for each lane

** Concrete Pavement

IRI VERIFICATION

- As a result of the 2021 Pilot Projects, these additional revisions were made for use on 2022 Pilot Projects:
  - Pub 408, Sections 404 & 507
    - Daily calibration results must be provided to Representative before profiling
    - Final raw (unfiltered) binary data files and a summary printout of IRI and MRI must be provided to the Representative within 24 hours of profiling
    - Virtual meeting with RITU prior to the 1-day of verification testing to coordinate and review verification procedures
    - Revised verification tolerances for 90% of lots and average MRI for each lane
      - Department's results can't exceed the contractor's results by more than 6.1 inches/mile
    - If tolerances aren't met, the Department will review the contractor's testing procedures, equipment, and personnel used in the testing
  - Pub 19, PTM No. 428
    - Raw (unfiltered) binary data files must be provided within 24 hours of profiling

IRI VERIFICATION

- As a result of the 2021 Pilot Projects, these additional revisions were made for use on 2022 Pilot Projects:
  - Pub 2, POM B/6/23
    - Added a *Checklist for Light Weight Profiling (LWP) IRI Testing* for inspector use in completing the ride quality process.
    - Direct inspector to complete Form M-7, Daily IRI Data Collection Form, each day
    - Ensure the virtual meeting with RITU occurs before the 1-day verification testing
    - Provide direction on who needs to be involved with the review of testing procedures, equipment, and personnel if verification tolerances are not met
    - Require the District to submit all Form M-7s, daily calibration results and all summary printouts in addition to the raw (unfiltered) binary data to RITU for analysis.
  - Form M-7, Daily IRI Data Collection Form
    - Revised the title
    - Revised the instructions
    - Revised Section 3 - Submittals

IRI VERIFICATION

- These revisions were circulated on Step 1 CT, H-22-028, and comments were due on 07/19/2022
  - Comments currently being reviewed and addressed
- Circulate Step 2 CT by the end of August 2022
- Review and address Step 2 CT comments
  - Revise verification tolerances if required based on 2022 Pilot Projects
- Submit to FHWA for final approval by end of September 2022
- Implement revisions to Pub 408, Sections 404 & 507 via SSP until they become effective with Change 6 in April 2023 or Change 7 in October 2023
- Implement revisions to PTM No. 428 and POM B/6/23 via SOL until Pub 19 and Pub 2 are updated

SAMPLE SET UP FOR LOTS AND SUBLOTS

2.a Lots and Sublots. Material will be accepted in the field on a lot by lot basis. Lots will be established cumulatively and will be specific for each JMF. ~~Each lot consists of five equal sublots (n=5).~~Once the sublot size for each specific JMF has been established based on the project's plan quantity, the sublot size will remain unchanged throughout project completion. A completed sublot has a mixture acceptance box sample as specified in Section 413.3(h)2.b and either a core collected according to PTM No. 1 and PTM No. 729, or other density acceptance as specified in Section 413.3(j).

~~A~~ For JMFs placed in quantities of 2,500 tons or greater, a normal lot size is 2,500 tons with five, 500 ton sublots (n=5), unless operational conditions or project size dictate otherwise. If operational conditions or project size dictate, readjustment of the lot will be made as specified in Table D. Breakdowns or stoppages of short periods due to such causes as weather or equipment failure will not be considered as reasons to adjust the lot size. The original lot will be continued when work resumes after short stoppages of less than 5 calendar days. If a lot is ended due to a stoppage of 5 calendar days or more, adjust the lot size and number of sublots as specified in Table D. If the work stoppage is 5 calendar days or more, a new lot will be established.

- CT H-21-013 circulated for review and comment in March 2021
- Included with Pub 408 Change No. 3 effective 10/08/2021
- Will be specific for each contract item of work and JMF
  - ≥ 2,500 tons original contract item plan quantity for any JMF
    - 500 ton sublots from the beginning of the project until the end of the project
      - Nothing mentioned about adjusting sublot size after stoppage of 5 calendar days or more
      - Nothing mentioned about adjusting lot or sublot if paving a different SR, site or project phase

SAMPLE SET UP FOR LOTS AND SUBLOTS

TABLE D
Re-adjustment of Lot Size and Associated Number of Sublots

Remaining Quantity* Following Last Full Lot	Action
Less than 500 tons without a combination of one mixture acceptance sample and one core**	Quantity combined with the previous lot, (n=5)
Less than 500 tons with a combination of one mixture acceptance sample and one core**	One new sublot defined and quantity combined with the previous lot, (n=6)
500 tons to less than 1,000 tons without a combination of two mixture acceptance samples and two cores**	One new sublot defined and quantity combined with the previous lot, (n=6)
500 tons to less than 1,000 tons with a combination of two mixture acceptance samples and two cores**	Two new sublots defined and quantity combined with the previous lot, (n=7)
1,000 tons to less than 1,500 tons without a combination of three mixture acceptance samples and three cores**	Two new sublots defined and quantity combined with the previous lot, (n=7)
1,000 tons to less than 1,500 tons with a combination of three mixture acceptance samples and three cores**	New lot defined, (n=3)
1,500 tons to less than 2,000 tons without a combination of four mixture acceptance samples and four cores**	New lot defined, (n=3)
1,500 tons to less than 2,000 tons with a combination of four mixture acceptance samples and four cores**	New lot defined, (n=4)
2,000 tons to less than 2,500 tons without a combination of five mixture acceptance samples and five cores**	New lot defined, (n=4)
2,000 tons to less than 2,500 tons with a combination of five mixture acceptance samples and five cores**	New lot defined, (n=5)
*For contract items bid on an area basis, compute equivalent tons based on design depth of paving course and design density as specified in Section 110.04(b)4.b. ** If mat density is accepted using pavement cores and mixture acceptance is by lots.	

SAMPLE SET UP FOR LOTS AND SUBLOTS

2.a.2 For JMF's placed in quantities less than 2,500 tons. For JMF's placed in quantities of greater than 500 tons and less than 2,500 tons, the tonnage will be considered a lot. The lot will be divided into five equal sublots.

For JMF's placed in quantities of 500 tons or less, mixture acceptance will not be applicable for PWL pay factor adjustments and will be accepted by certification. If density acceptance is by pavement cores, the tonnage will be considered a lot and the lot will be divided into three equal sublots. Density acceptance will be determined using PWL pay factor adjustments.

- Will be specific for each contract item of work and JMF
  - > 500 tons to < 2,500 tons original contract item plan quantity for any JMF
    - Divide quantity into 5 equal sublots. Sublot size for this JMF will not change throughout the project.
  - ≤ 500 tons original contract item plan quantity for any JMF
    - Mixture acceptance will be by certification.
    - If density acceptance is by pavement cores, divide quantity into 3 equal sublots. Sublot size for this JMF will not change throughout the project.

SAMPLE SET UP FOR LOTS AND SUBLOTS

2. Preplacement Meeting. At least 2 weeks before placing asphalt paving mixtures, schedule an asphalt preplacement meeting with the Representative to review at a minimum the specification, paving operation QC Plan, sequence of paving operations, mixture acceptance, density acceptance and the care and custody of asphalt acceptance samples.

- Sampling procedures may be altered if:
  - Special provision in the contract
  - Change is agreed to in writing by the Contractor and the Department
    - May occur at the preplacement meeting
    - May occur due to an unforeseen field condition
    - All field personnel must be notified

SAMPLE SET UP FOR LOTS AND SUBLOTS

Header

MIXTURE ACCEPTANCE AND DENSITY ACCEPTANCE

Provision Body

Mixture acceptance and density acceptance of Superpave Mixture Design items according to the following chart:

Item #	Description	Mixture Acceptance		Density Acceptance			Stations or Segment/Offset	Exemptions
		Certification - Section 413.2(i)2	Loose Box - Section 413.3(h)2	Non-Movement Section 413.3(j)2	Optimum Roller Pattern - Section 413.3(j)3	Pavement Cores - Section 413.3(j)4		
0316-0537	SUPERPAVE ASPHALT MIXTURE DESIGN, FLEXIBLE BASE REPLACEMENT, PG 64S-22, 3 TO < 10 MILLION ESALs, 25.0 MM MIX	X		X				
0413-0193	SUPERPAVE ASPHALT MIXTURE DESIGN, WEARING COURSE, PG 64S-22, < 0.3 MILLION ESALS, 9.5 MM MIX, 1 1/2" DEPTH, SRL-G	X			X			
0413-0383	SUPERPAVE ASPHALT MIXTURE DESIGN, WEARING COURSE, PG 64E-22, 0.3 TO < 3 MILLION ESALS, 9.5 MM MIX, 1 1/2" DEPTH, SRL-H		X			X		
0413-1019	SUPERPAVE ASPHALT MIXTURE DESIGN, WEARING COURSE (SCRATCH), PG 64S-22, < 0.3 MILLION ESALS, 9.5 MM MIX, SRL-L	X		X				
0413-1024	SUPERPAVE ASPHALT MIXTURE DESIGN, WEARING COURSE (SCRATCH), PG 64S-22, 0.3 TO < 3 MILLION ESALS, 9.5 MM MIX, SRL-L	X		X				
0413-2074	SUPERPAVE ASPHALT MIXTURE DESIGN, WEARING COURSE (LEVELING), PG 64S-22, 0.3 TO < 3 MILLION ESALS, 9.5 MM MIX, SRL-L	X		X				

Project Specific Details

Questions or Comments??

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