THE STORY OF PAY FOR PERFORMANCE (PFP) & QC/QA

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What is PFP?

- It is a method for accepting HMA
Materials Acceptance

- In order to receive Federal funds the Department must have a process to accept materials. For HMA we have used:
  - QC/QA
  - ERS
  - PFP
  - ??
Other Acceptance Programs

- **Rebar**
  - Annual (re)certification testing
  - Random jobsite sampling
  - 2 failures, decertified

- **Prestress**
  - Materials tested for every pour
  - Not following QC plan or low strength results in an unaccepted product

- **Trees**
  - 1 year warranty
In November of 2009 the FHWA directed IDOT to move away from QC/QA due to several shortcomings.

With 2010 contracts nearing letting, a choice was made to implement PFP statewide on a few, District select projects over 8,000 tons.

Moving forward, a method(s) of acceptance meeting FHWA requirements will be needed for all projects.
Summary of 2010 PFP Projects

- **5 Districts 100% Jobsite Sampling**
- **Disputes:**
  - 18 Mix
  - 45 Cores
- **Final Pay:**
  - High = 102.9%  Low = 92.0%  Ave = 98.84%
  - High = 102.9%  Low = 89.3%  Ave = 98.76%

<table>
<thead>
<tr>
<th>Projects</th>
<th>Tonnage</th>
<th>Binder Mixes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projected</td>
<td>36 (40 w/ carryover)</td>
<td>647,023 (697,533 w/ carryover)</td>
</tr>
<tr>
<td>Constructed</td>
<td>31 (35 w/ carryover)</td>
<td>446,638</td>
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</tbody>
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2010 PFP Assessment

• Dept. was pleased to accept all 35 projects.

• Spec is balanced:
  ◦ ½ of data above and ½ below 100%
  ◦ Ave pay at 99%

• Contractor & Dept. test results compared upward of 97% of time.
Spec. Revisions for 2011

- PFP will continue to be excluded from shoulders, temporary pavements & patching.
- If ramps are included it will be indicated in the plans.
- Deleted table listing old and new PFP supporting documents.
Quality Control by the Contractor:

- Added requirement that Contractor QC results be submitted to Engineer within 24 hours of sampling.
- Deleted Corrective Action Limits table.
- Deleted requirement of notifying Engineer when corrective action limits are exceeded.
Initial Production Testing:

- **Added:** “The Engineer will make Dept. test results of initial production testing available to the Contractor within two working days from the receipt of the samples.”

- **Clarified** that cores must be 4-inch.

- **Added** requirement that cores be taken same day unless otherwise approved by the Engineer.
Dispute Resolution:

- Requirements to Dispute
  - Split results to District prior to receiving District results
  - Exceed Precision Limits.

- Requirements waived if Contractor agrees to pay Lab Fees for Dispute Testing.

- Replaced individual Dust & AC Precision Limits with a single Precision Limit for Dust/AC ratio (0.2)
Dispute Resolution:

- Reduced Precision Limit for VMA to 1.4%
- Clarified that all BMPR results (parameters) for a sample replace all District results.
- Provided clarification as to how results will be analyzed to determine who pays testing fees.
Acceptance by the Engineer and Basis of Payment:

- Quantifying amount of mix/pavement to be removed when criteria exceeded
  - Density Intervals every 0.2 mile
  - For mix - Engineer will need to rely on QC test results to use 105.03 to determine what can remain in place until guidelines can be developed.

- Removed 92% penalty cap / pay floor.
PFP Implementation Schedule
(as outlined in 2/11/10 memo from Christine Reed)

- **2011**
  - Min. 50% of all Interstate or Supplemental Expressway
    - ≥ 8,000 tons / mix

- **2012**
  - All Interstate & Supplemental Expressway
    - ≥ 8,000 tons / mix
2010 PFP Projects vs. Total HMA Tonnages/Projects

2010 **Tonnage**
≥8,000 tons
(4,847,778 total)

2010 **Projects**
≥8,000 tons
(254 total)

- **PFP** 13%  
  87%
- **PFP** 14%  
  86%
2010 Total HMA Tonnages/Projects

**2010 Tonnages**
- ≥8,000 tons (67%) (4,847,778 tons)
- 4,000 - 8,000 tons (21%)
- <4,000 tons (12%)

**2010 Projects**
- ≥8,000 tons (29%)
- 4,000 - 8,000 tons (34%)
- <4,000 tons (37%)
Where Does Acceptance Go From Here?

- Industry proposals – reduce risk
  - Restrict PFP to full depth and interstate overlays greater than 8,000 tons
  - Specify an MTD
  - Use contractor test results
  - Eliminate time lag of pay determination by testing side-by-side

- Department desires
  - Select projects with biggest bang for buck
  - Match testing to staffing
  - Simplify while maintaining FHWA approval
A New ( & Improved) Program

- PFP Lite
- Testing Excellence in Every Ton of HMA
- QCP – Quality Control for Performance
QCP - Spec

- Step based pay w/out PWL statistics.
- Pay Parameters – Voids, VMA, Dust/AC & Density.
- Would apply to:
  - Mixes of any quantity
  - Shoulders & temporary pavements
- Would delete most Std Spec articles currently deleted in PFP.
Definitions

- Sublot – 1000 tons unless otherwise approved by Engineer.
- Density Interval – 0.2 mile.
- Lot – 4 Sublots or 5 Density Intervals (1 mile)
- Density Test – Core random long. & trans., outer 1’ (minus 2”) on unconfined edge included by adding 2% to density.
Sampling

**Mix**

- Engineer witnesses Contractor sampling
- Department secures split samples
Sampling

Density
- Engineer identifies sample locations according to random density procedure
- Engineer witnesses Contractor coring
- Department secures split samples
Testing

- Contractor tests all 4 mix sublots & 5 density intervals.
- Department tests 1 mix subplot & 1 density interval per Lot.
- QC & QA sample test results must compare based on precision limits.
Pay

- Based on Contractor test results.
- If precision limits are exceeded:
  - Dept tests all sublots or density intervals for Lot
  - Dept tests results used for pay for that Lot.
- If pay is based on Dept test results for more than 2 consecutive Lots, the cause needs to be investigated.
Final Pay

Pay = Voids_{20} + VMA_{20} + Dust/AC_{20} + Density_{40}