Specification Areas

• Field Technician Program
• PWL
• Warranty
• Smoothness Specification
ASPHALT FIELD AND COMPACTION TECHNICIAN

SUMMARY

- Each paving crew needs an AFCT
- AFCT must be Contractor’s employee
- Recertification every 2 years
- Written test and practical
401.6.1- Quality Control Testing (Continued)

The Contractor shall maintain necessary equipment and qualified personnel including at least one certified Asphalt Field and Compaction Technician at each project during paving operations. Additionally, a certified Asphalt Field and Compaction Technician with certification to perform nuclear density testing of asphalt pavements shall perform all testing necessary to assure compaction of the asphalt meets specification requirements. Compaction Technicians may serve as Asphalt Field and Compaction Technicians for asphalt compaction testing until December 31, 2017.
Changes to the Program

Attended AFCT January

- WV DOH: 27
- Contractors: 57
- Consultants: 19

Class Stats:
- 103 Attendees
- 98% Passing rate
Percent Within Limits

PWL Rules!
History of PWL in WV

2013

7 Projects
3 Full Spec
4 Shadow

2014

4 Projects
3 Districts

2015

10 Projects
½ Emergency

2016

14 Projects
MCS&T

2017

THE WAY FORWARD
The Daily C

Sunday, August 30, 2017

2018 All NHS Asphalt PWL

This work shall consist of constructing one or more courses of asphalt, mixed mechanically in a plant, composed of aggregate and asphalt material designed in accordance with the Marshall or grades, weights or Rer thicknesses, and cross fall sections shown on the Plans or established by the Engineer. The unit of measurement for asphalt will be by the ton (megagram), square yard or cubic yard, or cubic yard per mile. Rela...
Understanding PWL Calculations

1. Determine the Mean
2. Establish the Standard Deviation
3. Calculate the Upper and Lower Quality Index

\[
Q_u = \frac{USL - \bar{X}}{s} \quad Q_L = \frac{\bar{X} - LSL}{s}
\]

\[
\bar{X} = \frac{\sum X}{n}
\]

\[
s = \sqrt{\frac{\sum (X - \bar{X})^2}{n - 1}}
\]
4. Enter Table 1 in MP 401.13.50
5. Use the upper and lower quality level to calculate Percent Within Limits

\[ PWL = (P_u + P_L) - 100 \]
Do I have to do the MATH...?!
Before Construction

- Pre Paving Meeting
- Paving Plan
- Lot Layout
- Sampling Plan
Additionally the following Materials Procedures (MP) for Square Yard Paving may be obtained by contacting the Materials Control, Soil and Testing (MCS&T) Division:

- a. MP 401.02.31  QC & Acceptance
- b. MP 401.07.20  Sampling Loose Asphalt Pavement Mixtures
- c. MP 401.07.21  Sampling Compacted Asphalt
- d. MP 401.07.22  Thickness of Asphalt Concrete Using Cores
- e. MP 401.07.23  Bond Strength
- f. MP 401.07.24  Pavement Macrotexture
- g. MP 401.07.25  Evaluation of Asphalt Pavements
- h. MP 401.13.50  Determination of PWL
Laying Out Paving Plan

- Remember Lot Sizes
  - 2500 tons per lot
  - 500 ton sublots
- Determine square yards per lot / sublot
- Cover square yards to square feet
- Divide square feet by the pull width

Linear Feet Per SubLot
Laying Out Paving Plan

- Remember Lot Sizes
  - 2500 tons per lot
  - 500 ton sublots

- Determine square yards per lot / sublot

- Cover square yard to square feet

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- Linear Feet Per SubLot

Fast Lane and Shoulder:

- 2435.00 kg/m³
- 94% Passing Density
- 2288.90 Target Density
- 0.0624 English Conversion
- 142.83 lb/ft³
- 1.5 SY Conversion
- 214 lbs/sy
- 2500 TN/Lot
- 5000000 Lbs/Lot
- 23338 SY/Lot
- 210044 SF/Lot
- 16 Ft. Lane Width
- 13128 Ft./Lot

- 2626 Ft./Sublot
Laying Out Paving Plan

Linear Feet Per SubLot

[Diagram showing linear feet per sublot with various sublots and their corresponding linear measurements]
Laying Out Paving Plan
Laying out Sampling Plan

- Lots are established
- Generate sample locations
- How do we select the locations?

RANDOM NUMBERS
Laying out Sampling Plan

• Where do we get Random Numbers?
Laying out Sampling Plan

- Where do we get Random Numbers?
Layout Joint Lots

- 10,000 ft of joint
- 2,000 ft SubLots
- Core centered on the joint

\[
\begin{align*}
2,000 \text{ ft} & \times 0.8514 & \text{Starting STA} & \rightarrow & 89+20 \text{ ft} \\
1703 \text{ ft} & & \text{Random Number} & + 1703 \text{ ft} & \rightarrow & 106+23 \text{ ft} \\
& & \text{Sample STA} & & \\
\end{align*}
\]
Questions on layout
PWL FAQs and Key Points

- Consistency
- 24 hour Test Results
- Sister Samples
- Field Samples v Plant Samples
- Verification
- Calibration Samples
- ReCalibration of Oven
Contractor’s Keys to Success

• Stick to paving plan
• Consistency
• Don’t make big adjustments
• Consistency
• Best Practices in the Field and Plant
• Consistency
WEST VIRGINIA 9 YEAR WARRANTY
Quick Intro

- Special Provision Bundle

[Document Image]
Contractor uses the processes of their choice
  - Anything in DDs or
  - Approved procedure (Other States Specs)

Contractor maintains road, must meet certain criteria every year for 9 years
  - Smoothness / Roughness – IRI
  - Pavement Surface Rating (PSR)
  - Threshold Limits
PERFORMANCE CRITERIA

- **Smoothness / Roughness** –
  - International Roughness Index (IRI)
    - Incentive/Disincentive - $< 65 / > 81$

- **Pavement Surface Rating (PSR)**
  - Incentive/Disincentive - Sliding Scale : 80

- **Threshold Limits**
  - Warranted Work, NOT optional!

- **General Observations**
- Scanned with our van
Pavement Survey

- Measure, rate, and quantify distresses, rutting
- 0.1 mile roadway segments
- Two per mile, STA 0.4 – 0.5, Random
GENERAL OBSERVATIONS

- Anything of note on the **entire length** of roadway
  - Longitudinal Cracks
  - Transverse Cracks
  - Segregation

- Other small gouges, scratches, etc
OTHER MAJOR POINTS

- Lane Rental (set dollar amount)
  - per Lane per Mile per Day
  - Contractor bids the number of days needed
  - After exceeding days bid, contractor pays Division the rental fee

- Idea is to promote quality work upfront
  - “Get in, get out, stay out”

- Document *Everything*
  - MCS&T
  - District Personnel
  - Contractor
BONUS AND PENALTY

- Rated each year
  - IRI
    - <65 Bonus
    - >81 Penalty
  - PSR
    - >98-85 Bonus
    - <95-80 Penalty

- Year Nine
  - IRI
  - PSR
Warranty vs nonWarranty

Graph showing the comparison between Warranty and nonWarranty with lines for US 35, Clendenin, Penalty, and Bonus.
Projects

6 - Warranty

2 - Ex Warranty
WHAT YOU NEED TO KNOW:
SPECIFICATION 720
OVERVIEW OF SECTION 720

• Updated Certification process for both Operator and Equipment

• Two Classifications of roads:
  • NHS: QC Testing Required
    • Similar Price adjustments as SP 720
  • Non-NHS: QC Testing not Required
    • Price adjustments based on % improvement

• Minimum Length of project: 0.2 miles
NHS ROUTE SCHEDULES

• Schedule 1: 4 inches or More

• Schedule 2: 4 inches < 3 inches

• Schedule 3: 2 inches < 1 inch

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**TABLE 720.5.2**
NHS Pavement Projects

<table>
<thead>
<tr>
<th>IRI for each 0.1-mile section (in/mi)</th>
<th>Price Adjustment ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.0 or Less</td>
<td>+600</td>
</tr>
<tr>
<td>30.1 to 60.0</td>
<td>-20(IRI) + 1,200</td>
</tr>
<tr>
<td>60.1 to 65.0</td>
<td>0</td>
</tr>
<tr>
<td>65.1 to 95.0</td>
<td>-20(IRI) + 1,300</td>
</tr>
<tr>
<td>95.1 or Greater</td>
<td>Corrective Action Required</td>
</tr>
</tbody>
</table>

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**TABLE 720.5.3**
NHS Pavement Projects

<table>
<thead>
<tr>
<th>IRI for each 0.1-mile section (in/mi)</th>
<th>Price Adjustment ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>46.0 or Less</td>
<td>+600</td>
</tr>
<tr>
<td>46.1 to 76.0</td>
<td>-20(IRI) + 1,520</td>
</tr>
<tr>
<td>76.1 to 80.0</td>
<td>0</td>
</tr>
<tr>
<td>80.1 to 120.0</td>
<td>1,200 - 15(IRI)</td>
</tr>
<tr>
<td>120.1 or Greater</td>
<td>-600</td>
</tr>
</tbody>
</table>

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**TABLE 720.5.4**
NHS Pavement Projects

<table>
<thead>
<tr>
<th>IRI for each 0.1-mile section (in/mi)</th>
<th>Price Adjustment ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>46.0 or Less</td>
<td>+300</td>
</tr>
<tr>
<td>46.1 to 76.0</td>
<td>-10(IRI) + 760</td>
</tr>
<tr>
<td>76.1 or Greater</td>
<td>0</td>
</tr>
</tbody>
</table>
NON-NHS ROUTES

• Based on Percent Improvement
• Non-NHS Criteria:
  • > .2 miles
  • 16 feet or wider
  • 1 in. or more of new pavement
  • ADT of 100 or more
• No negative price adjustments
• Bonus if…..
  50% Improvement + < 170 IRI
<table>
<thead>
<tr>
<th>Where:</th>
<th>Percent</th>
</tr>
</thead>
</table>

**Pre-F&E Smoothness Data**

Project Name: [Project Name]

Date: [Date]

Data was collected using the Division's High Speed Iterative Profile Method (HSIP).

Incentive

\[
\frac{t - 900}{100} \times 100
\]
Specification Areas

• Field Technician Program
• PWL
• Warranty
• Smoothness Specification
QUESTIONS