



Materials Information Tracking System / Producer Lab Analysis and Information Details (MITS/PLAID)

Virginia Department of Transportation

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What is MITS/PLAID

MITS & PLAID is...

- **A centralized online database where Hot Mix Asphalt (HMA) & Central Mix Aggregate (CMA) job mixes and sample results are submitted and approved and**
- **Can be viewed by the Department and the Producer.**

MITS: Materials Information Tracking System

- **Department Side**

PLAID: Producer Lab Analysis and Information Details

- **Producer Side**

Purpose

- **Ability to monitor acceptance testing results and the quality assurance results, both for the Producer and Department.**
- **Saves time as all the information is in one place**
- **The Contractor can see VDOT QA test results**
- **Action can be taken immediately if a discrepancy is found between VDOT test results and Producer test results – close to real time monitoring**

Allows VDOT personnel to:

- Approve job mixes
- Enter QA testing data
- Enter project information
- See contractors submitted data
- Close out lots & projects
- Run lot adjustments
- Run comparison reports

PLAID

Allows producers to:

- **Submit job mixes**
- **Submit sample data, test results & tonnages**
- **See VDOT testing results**
- **Run a report of all their submitted data**
- **Run Control Charts**
- **Submit TL102's to District Materials Office**

District Contacts for MITS & PLAID

1. **Bristol:** Brian Truelove
2. **Salem:** Clyde Landreth
3. **Lynchburg:** Tim Karnes
4. **Richmond:** Doug Chappell
5. **Hampton Roads:** Robert Byrum
6. **Fredericksburg:** Ron Jackson
7. **Culpeper:** David Routt
8. **Staunton:** Pat Hydrick
9. **Northern VA:** Ronnie Seale

Statewide: Angela Beyke

Future capability

- TL-50 uploader

Any requests for new capability, please send to Angela Beyke at angela.beyke@vdot.virginia.gov

**WHAT CAN WE DO WITH ALL
THIS DATA?**

- **Analyze the quality of the material**
- **Evaluate the health of the Asphalt Program**
- **Evaluate specification changes with production data**
- **Monitor specification compliance**

Quality Measures

MITTS & PLAID allows us to look at:

- **Variability of test results**
- **Testing results and whether they are inside of the allowable tolerance**
- **Control Chart notifications**
- **Adjustment points given per lot, per project or per mix.**
- **Statistical analysis between VDOT & Producer results**

By using these features, we get a good idea on the quality of material being produced in the plants

2016 Production Data

Sieve	Number of Flags
1 in	146
3/4 in	656
1/2 in	702
3/8 in	1,015
#4	1,427
#8	1,910
#16	21
#30	412
#50	0
#100	0
#200	853
AC	1,780

- **11,384 samples submitted**
- **5,220 had at least 1 gradation flag**
- **Most commonly flagged sieves:**
 - **#8, #4, AC**

Flag= Test value outside of the allowable tolerance for 8 samples

2016 Production Data

Property	Number of Flags
VTM	193
VMA	145
VFA	315
pVCA	5
F/A Ratio	482

- **5,540 samples submitted**
- **921 had at least 1 volumetric flag**

Flag= Test value outside of Specification requirements

Evaluating the Health of the Program

Quality Management Report (QMR)

- **Deliverable:** To provide users with an automated and visual graphical tool to summarize production data out of MITS & PLAID. It can be used at district & statewide levels to summarize the health of the program.

QMR

- **Sent to the District Materials Engineers, Quality Assurance Managers and Asphalt technicians monthly during the production season.**
- **Lists:**
 - **Number of samples submitted**
 - **District's sampling percentage**
 - **Current number of gradation and volumetric flags on samples submitted (Both Producer & VDOT samples)**
 - **Lab comparison flags between split samples– D2S**
 - **Total of tonnage produced during month**

District Sampling Rate	21.0%
Number of Producer	496
Number of VDOT	104

Statewide Sampling	21.9%
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Producer Samples		
	Number of Flags	%
1"	2	0%
3/4"	29	6%
1/2"	29	6%
3/8"	51	10%
No. 4	60	12%
No. 8	53	11%
16	0	0%
30	2	0%
50	0	0%
100	0	0%
200	30	6%
AC	98	20%
VTM	10	2%
VMA	7	1%
VFA	7	1%
VCA	0	0%
F/A Ratio	8	2%
Total Samples	231	47%

VDOT Samples		
	Number of Flags	%
1"	8	8%
3/4"	8	8%
1/2"	16	15%
3/8"	21	20%
No. 4	24	23%
No. 8	34	33%
16	0	0%
30	1	1%
50	0	0%
100	0	0%
200	16	15%
AC	29	28%
VTM	19	18%
VMA	8	8%
VFA	13	13%
VCA	0	0%
F/A Ratio	3	3%
Total Samples	43	41%

D2S flags		Mix Type	Tonnage
	Number of Flags		
1"	6	SM-9.5A (50 gyration)	57249.7
3/4"	5	SM-9.5D (50 gyration)	51293.3
1/2"	3	BM-25.0A	35290.1
3/8"	6	IM-19.0A	24839.2
No. 4	1	SM-9.5A	18015.9
No. 8	1	SMA-9.5 (76-22)	12598.8
16	0	IM-19.0D	10719.1
30	1	SM-9.5D	7724.69
50	0	SM-12.5A (50 gyration)	7529.02
100	0	SM-12.5E HP (50 gyration)	4817.28
200	0	SM-12.5E (50 gyration)	3768.51
AC	6	Asphalt Stabilized Open-Graded Material	545.07
Gmm	6		
Gmb	11		

Specification Compliance

Specifications require that:

- The Contractor shall input such test results **within 24 hours of sampling** to the Department through PLAID, unless otherwise approved by the Materials Engineer.

How are we doing?

2016 Production Results

District	Negative %	Within 24 %	Within 36 %	Within 48 %	Within 72 %	Within 96 %	Over 96 %
BRISTOL	0.5	79.7	89.7	91.5	96.5	97.6	99.5
CULPEPER	0.0	74.3	86.5	89.4	93.4	96.1	99.9
FREDERICKSBURG	1.7	81.9	90.7	92.1	95.0	96.6	98.0
HAMPTON ROADS	1.1	62.7	81.5	86.2	91.3	94.3	98.8
LYNCHBURG	0.0	81.7	91.4	93.3	95.6	96.9	99.1
NORTHERN VIRGINIA	0.0	66.4	84.7	87.3	92.4	95.8	100.0
RICHMOND	2.1	85.5	90.9	92.3	94.9	95.5	97.8
SALEM	0.4	86.5	92.8	94.1	96.5	97.9	99.5
STAUNTON	0.1	69.8	82.6	87.9	94.2	96.3	99.9
State	0.7	75.3	87.5	89.9	94.1	96.1	99.2 ¹⁸

Analysis of Specification Changes

In 2016, Asphalt designs for Surface Mixes moved to 50 gyrations (from 65) and other key volumetric properties were adjusted.

Data from MITS from 2015 and 2016 was able to be analyzed to determine if the changes yielded benefit

2015 Asphalt Content vs 2016 Asphalt Content

Mix Type	2016 (50 gyrations)	2015 (65 gyrations)	Difference
SM-12.5A	5.54	5.40	0.14
SM-12.5AL	5.80	5.47	0.33
SM-12.5D	5.62	5.40	0.22
SM-12.5E	5.58	5.43	0.15
SM-9.5A	5.62	5.49	0.13
SM-9.5AL	5.91	5.75	0.16
SM-9.5D	5.71	5.50	0.21
SM-9.5DL	5.79	5.46	0.33
SM-9.5E	5.86	5.73	0.13

Questions?