Flexible Pavements of Ohio

44th Annual Meeting

Ohio Dept of Transportation Asphalt Specifications Update

ODOT Strategic Initiative 5

401.12 Paver Changes

Field Quality Control Supervisor

Smoothness

Joint Density

Wedge Joint

403 Sampling

ODOT Strategic Initiative 5

Title: Continuously Improve the Pavement Management Process

Key Points:

- **ODOT Director Initiated**
- **All areas of ODOT operation are open for review**
- **Main goal is to have more predictable and uniform pavement life across the state so planning and forecasting can accurately budget.**

ODOT Strategic Initiative 5

Title: Continuously Improve the Pavement Management Process

ODOT Division of Construction Management charged with review of all concrete and asphalt specifications and processes.

ODOT Strategic Initiative 5

Title: Continuously Improve the Pavement Management Process

In Asphalt 5 areas were reviewed:

- Acceptance
- Mix design
- Production
- Placement
- Quality Assurance

ODOT Strategic Initiative 5

From these 5 critical areas were chosen for focus:

- Suitable aggregates
- Production monitoring
- Construction Time and Weather
- Compliance with placement specifications
- Acceptance method for general system asphalt

ODOT Strategic Initiative 5

- **Suitable aggregates**

1) **Implement Superpave in District 3 on general system surface courses – recommendation of ODOT/ industry effort of 2 years ago.**
2) **Study and implement Micro Deval test for all gravels. Limit sands from gravel sources that fail Micro Deval.**
3) **Use PG 70-22M for Districts 4,5,11,12 with gravel aggregates because they lead to earlier moisture damage in HMA.**

ODOT Strategic Initiative 5

- Suitable aggregates

ODOT Strategic Initiative 5

- Suitable aggregates


MAR 15 2006


MAR 15 2006

ODOT Strategic Initiative 5

- **Production monitoring**

  1) **ODOT districts charged with supporting an active monitoring program with enough qualified personnel to cover specification and federal requirements**

ODOT Strategic Initiative 5

- **Construction Time and Weather**

1) **ODOT to minimize waivers of weather limitations**
2) **ODOT to minimize use of night paving to essential use only**
3) **Encourage a culture of quality in ODOT inspection from upper management on down to alleviate time pressures on quality**

ODOT Strategic Initiative 5

ODOT to minimize use of night paving to essential use only


AUG 16 2005


AUG 16 2005

ODOT Strategic Initiative 5

ODOT to minimize use of night paving to essential use only

1) Night Time Paving Design Guide – for district designers in selecting how and when to use night paving.
2) Add to night paving specifications: lighting requirements, MTV, daytime review, cold joints sealed with PG binder, smoothness specifications
3) Revise MOP to include special instruction for night paving inspection

ODOT Strategic Initiative 5

- **Compliance with Placement Specifications**

1) Create a deduction for poor tack application.
2) Use District 2 method of a cross check on project quality thru use of monitors
3) Use MOP check lists as part of inspection
4) Implement Field Quality Control Supervisor approval program on all projects

ODOT Strategic Initiative 5

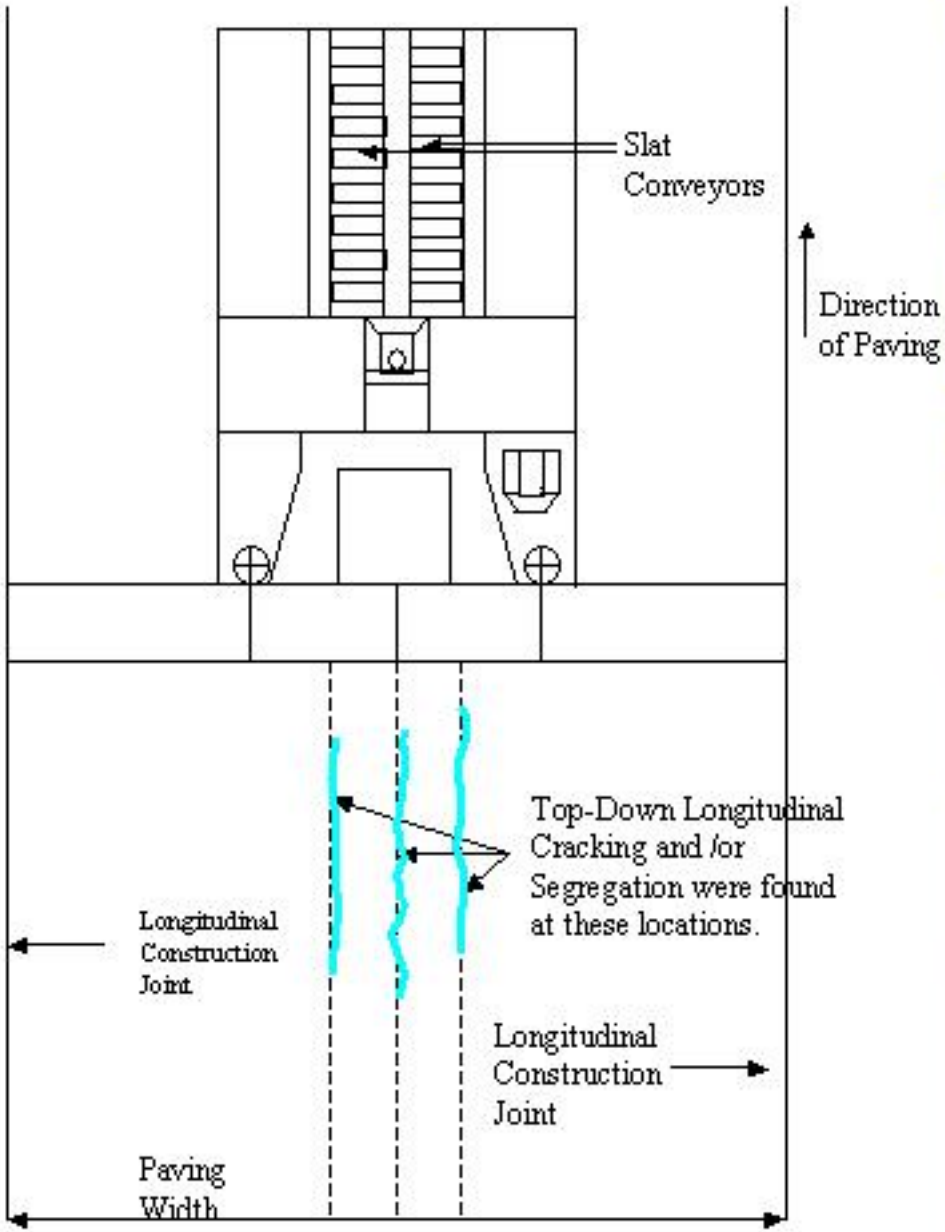
- Acceptance method for general system asphalt overlays

1) Meet with industry to develop a density method on 448 asphalt thru summer.
2) Create specification and obtain approval in late summer/ early fall.
3) Trial projects in each district in 2007.

ODOT Strategic Initiative 5

- Rollout (introduction) of SI 5 to District personnel is formally in early May.
- Some items will appear quickly, some are in place now and some will take time to show up in plans.
- Some aggregate items are in progress and study
- Some items such as 448 density and wedge joints will involve trial projects.

401.12 Paver Changes


Slat
Conveyors
Direction
of Paving
Top-Down Longitudinal
Cracking and /or
Segregation were found
at these locations.
Longitudinal
Construction
Joint
Longitudinal
Construction
Joint
Paving
Width


37"
36"

401.12 Paver Changes

401.12 Paver Changes

- Listing of modified pavers nearing completion – to be on ODOT intranet for project use.

- About 42 paving companies to be listed with paver makes and models.

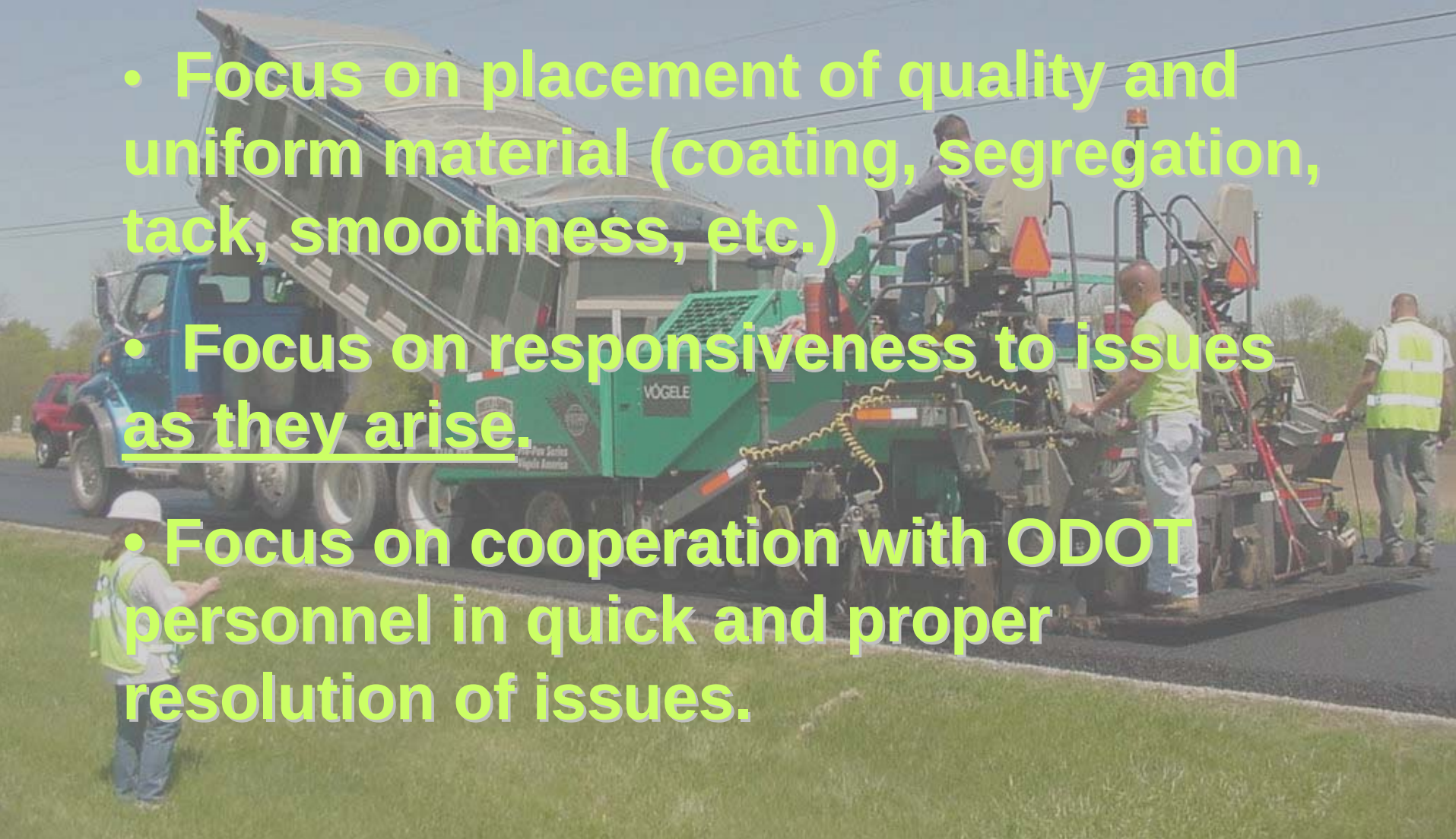
- Companies to give certification letter to project – read 401.12!

- After changes in place this year 401.12 will be revised to make modifications a general requirement.

Field Quality Control Supervisor

- Similar to Approval program for Mix design and Testing technicians in place at ODOT for nearly 20 years .
- Part of contractor Quality Control Plan
- Required of all paving companies per 401, 403 and Supplement 1041.
- Training Required – given by FPO for over 300 personnel

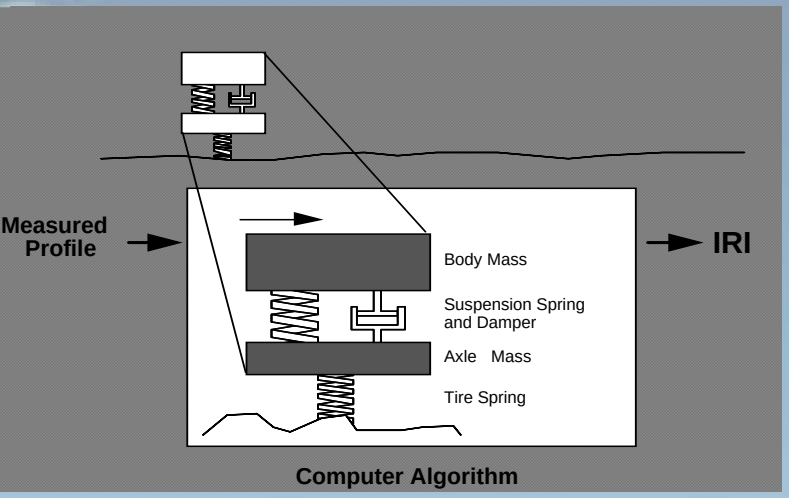
Field Quality Control Supervisor



- Focus on placement of quality and uniform material (coating, segregation, tack, smoothness, etc.)
- Focus on responsiveness to issues as they arise.
- Focus on cooperation with ODOT personnel in quick and proper resolution of issues.

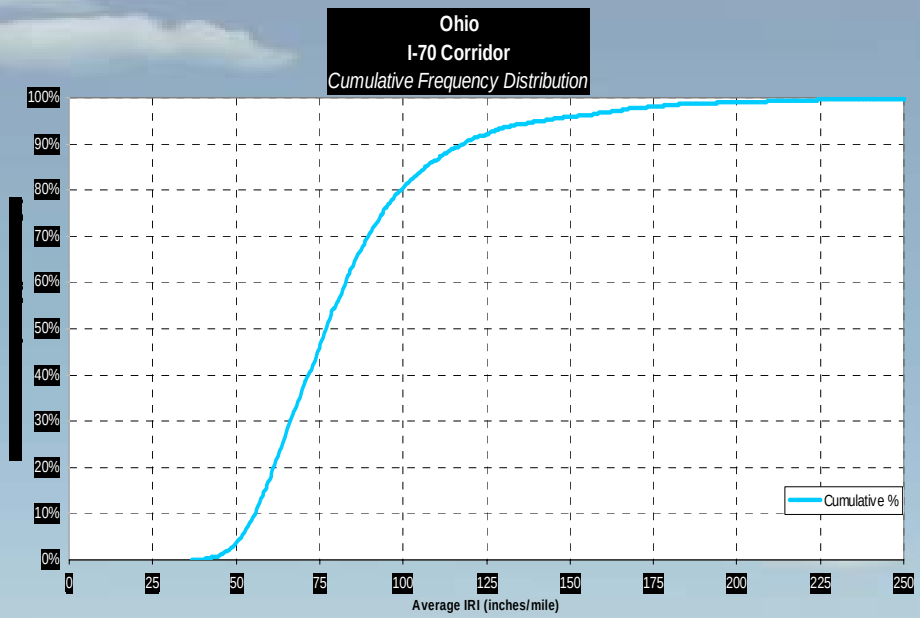
Field Quality Control Supervisor

- List of approved personnel to be on ODOT web site for project access.
- Phase in as 2006 projects progress.
- Technically applies to projects sold under 2005 C&MS book.



Smoothness

- PN 420 changes nearly approved – more applications and projects – still 2 opportunities!
- PN for 401.19 incentive for thin lifts in place
- Both IRI and PI in use temporarily
- Initial meetings of various industries to formulate a bridge and transition ride specification.
- ProVal software to eventually be required on future IRI jobs.



Smoothness

- New test track for equipment approval to be built in September at the state fairgrounds.
- Operator to be part of new approval.
- Approval of high speed equipment for IRI to begin in 2007
- Program run by Brian Schleppi, 614 752 5745, Office of Pavement Engineering

Joint Density

Joint Density

Joint Density

Joint Density

- In 2004 ODOT studied 26 projects (446) with about 78 lots or 468 joint cores (6 per lot).
- Confined joints had an average density of all lots of 91.45 % with a Std Dev of 2.10.
- Unconfined joints had an average density of all lots of 90.01% with a Std Dev of 1.64.
- The difference between the joint density and mat density on the average of all data was 2.76% for confined and 4.41% for unconfined joints.

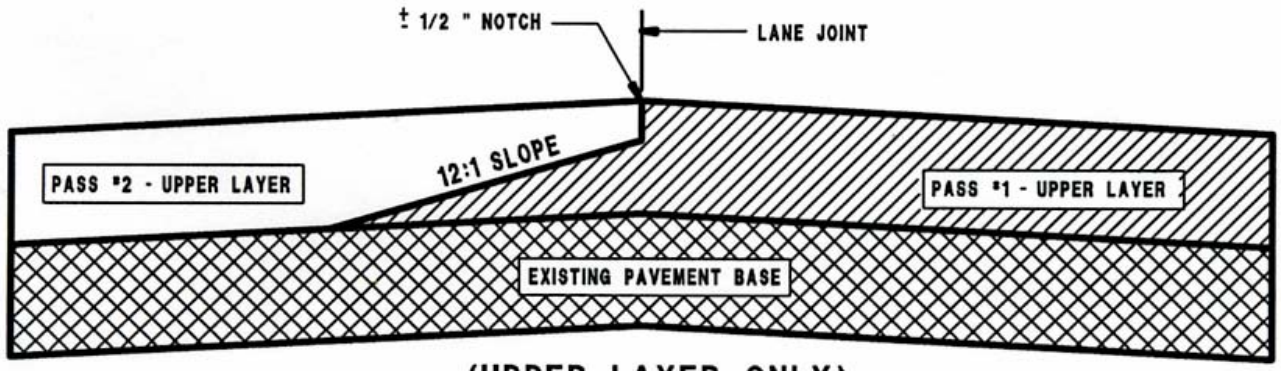
Joint Density

- Research nationally shows joint densities with proper compaction can be expected to be within 1.5 to 2.0% of the mat density.
- With this in mind a group of industry and ODOT reps created a new density pay schedule when 3 of 10 cores in a lot are taken from joints.
- This schedule is in section 446 of boiler plate Supplement 800. It is now in all jobs sold under the C&MS 2005 specification book.

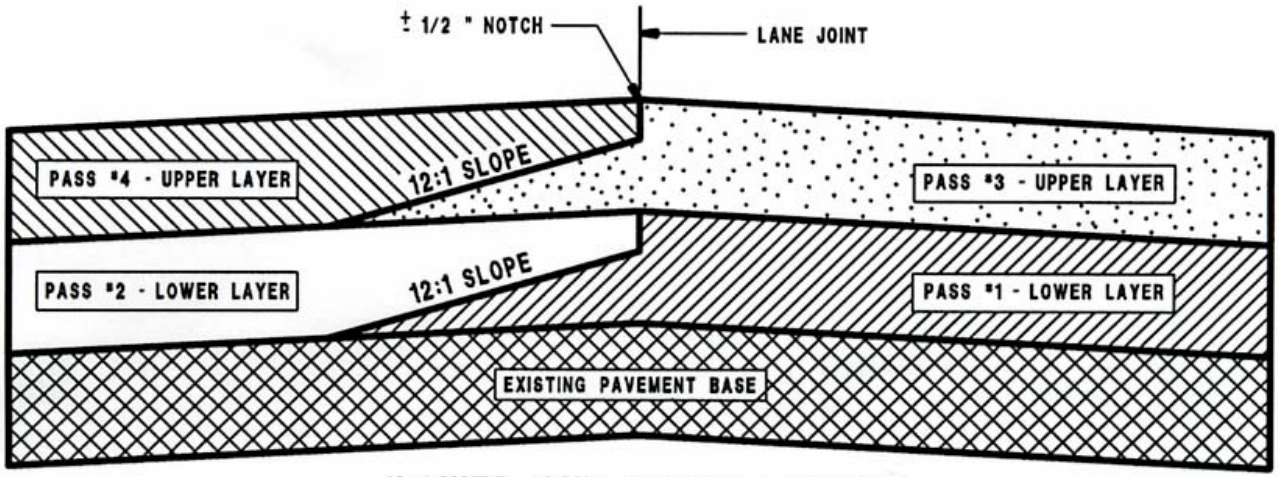
Joint Density

- The schedule adjusts the pay factor based on expected density of lots of10 cores where 3 cores come from joints. This expectation is lower than lots where 10 cores come from the mat. However, the effect will be to substantially raise the density at joints increasing the average and standard deviation of joint density values.
- After July 2007 no bonus will be paid for lots where any single joint core is less than 91.0%.
- This change applies to vertical face and wedge type joints.

Wedge Joint



(UPPER LAYER ONLY)



(LOWER AND UPPER LAYERS)

TYPICAL PAVEMENT CROSS SECTIONS OF TAPERED NOTCHED LONGITUDINAL JOINTS


GALION

Wedge Joint

- Desired is no joint crack and high joint density in vicinity of joint to minimize premature failure
- NCAT studies show that next to joint cutting the wedge joint can give overall best performance if constructed properly.
- Performance hinges on how it is specified. ie equipment requirements, density, etc and placed.
- There is a need to evaluate if better density can indeed be consistently achieved with the wedge joint equipment.

Wedge Joint

- **Trial Specification – PN 415**

‘Unless a hot joint is constructed or full width construction is used, place a wedge joint in surface and intermediate courses where no confinement of the course’s first pass at the cold joint exists. …

‘Provide a sloped wedge with a width of no more than 6.0 inches (152mm) and an angle of no more than 10 degrees from horizontal for any lift up to 1.75 inches (38mm) thickness. Provide a sloped wedge with a width of no more than 10.0 inches (254mm) and an angle of no more than 15 degrees from horizontal for any course over 1.75 inches (38mm) up to 3 inch lift thickness. …

Wedge Joint

- **Equipment**

‘Do not use wedge joint equipment unless it has been approved by the Laboratory and meets the above requirements….

‘The wedge joint device will pre-compact, rather than strike off, the asphalt concrete by means of a longitudinal, uniformly decreasing material height of the asphalt concrete forced under the wedge joint device as the spreading equipment moves forward. …

‘coat the vertical entire face of the cold joint with a certified PG asphalt material binder to provide 100% coverage of the joint…

Wedge Joint

- **Trials – by Plan Note in 2005**

One in District 1, 2 in district 2

Due to concerns with compaction of the wedge it was decided to conduct additional trials in 2006.

Wedge Joint

- **Trials - Proposal Note 415**

So far-

Dist 9

PID # 25425 Bro-52-10.53
PID # 25459 Ros-35-4.39
PID # 25477 Bro-41-0.41
PID # 21927 Ros-35-14.40

Dist 6

MAR-100/MRW-61/MAR/MRW-309, PID 25805
PIC-22/188, PID 25817

Dist 1

76575	All-65/117-6.58/var.	1-19-06	Filed	Addendum
25143	Har-68/235-19.23/19.26	2-09-06	Filed	Already included
24306	Def-18-4.08	7-01-06	S3	Plan Package
22791	Wya-294-3.23	7-01-06	S3	Plan Package

403 Sampling

403 Sampling

http://www.fhwa.dot.gov/pavement/materials/matnote11.cfm#qapfc

DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
23 CFR Part 637
[FHWA Docket No. 94-13]
RIN 2125-AD35
QUALITY ASSURANCE PROCEDURES FOR CONSTRUCTION
AGENCY:Federal Highway Administration (FHWA), DOT.
ACTION:Final rule.

"Verification testing shall be performed on samples that are taken independently of the quality control samples"

Does "taken independently" infer that split samples are not permitted? Ans. For purposes of verification sampling and testing the samples have to be independent samples not split samples.

403 Sampling

- **403 Current:** ‘the Monitoring Team will randomly choose one Department split sample in every four production days for VA testing to confirm Contractor testing and mix control …

- **403 Revised:** ‘The Department VA sample location will be chosen randomly by the Monitor, including where in the truck to take the sample. The Contractor technician will take the sample from the truck with the monitor witnessing. The Monitor will keep the sample in his/her possession until delivered to the District lab or testing is complete. The Monitor will have enough sample taken to split with the contractor. The Monitor will split the sample in the contractor lab. The Monitor will have the sample tested in the District lab or as noted below….

403 Sampling

- **403 Current:** ‘the Monitoring Team will randomly choose one Department split sample in every four production days for VA testing to confirm Contractor testing and mix control …

- **403 Revised:** ‘The Department will use it’s VA test result, the Contractor result of the split as well as the two previous contractor quality control and/or sublot tests in the comparison for the Department VA testing. ….

403 Sampling

- **403 revisions:** These changes are not expected to be in projects until sales in the fall of 2006.

Thanks for your attention!!!

Ohio Dept of Transportation

Asphalt Specification Update