Construction Inspection Reminders for 2014

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Representatives of VDOT (consultant or inspector) must be familiar with the VDOT Road and Bridge Specifications as well as Special Provisions that are found in the contract.

VDOT field representatives and contractor play a vital role in the execution of the Quality Assurance Program (QAP).

The QAP focuses on the processes, procedures and individuals responsible for accepting asphalt concrete (AC) in the field.
General notes and other written information not in a SP or SPCN in No Plan and Minimum Plan Concept contracts carry the same weight as plans.
Key Inspection Points

Prior to Density Acceptance
- Site preparation
- Milling
- Tacking
- Equipment
- Placement
- Compaction

Density Acceptance
- General requirements
- Small quantity applications
- VTM-76
- QC test sections
- Independent assurance
- Verification testing and sampling
- Referee procedure
Have to Know What You Are Looking At
Site Preparation

- Two main areas of concern
  - Repairing failed areas
  - Clean surface
Site Preparation

Failed areas not patched lead to failed overlays

Two approaches to correct failures:

- Specify patching type, material and locations in contract
- Use Special Provision (SP) for Surface Preparation and Restoration Prior to Plant Mix Overlay (Volume 2)
Useful Patching?
Site Preparation

- Dirty surfaces lead to delamination and failures
Milling

Why mill a road?
- Remove material distress
- Maintain surface elevation
- Improve cross-section

What things must be inspected?
- Presence of scabbing
- Positive drainage
- Cleanliness
- Performance milling
- Time frames
- Run-on conditions
Scabbing
Milling

How to address scabbing?
- New milling teeth, slowing the machine, changing the mill depth
- Spec Requirement?
- SS for Section 515 – Planing or Milling Pavement (Volume 2)
- Section 515.05 – Measurement and Payment

How to address drainage?
- Cut slots, mill and fill, planning
- Spec requirement?
- Section 315.05(c)
How is a milled surface cleaned?

- Sweeping and vacuum truck
- Traffic
- SP for Placement of Asphalt Concrete Overlays under Procedures
What is performance milling?
- Milling that results in a mean texture depth of 2.0 mm or less
- Done with special milling heads
- Performed to improve ride, leave high-speed routes open to traffic, minimize scabbing

Is it required in contracts?
- No, at the contractor’s option unless specified
- Described in SS for Cold Planing (Milling) Asphalt Concrete Operations (Volume 2)
Other Milling Inspection Items

- Applicable timeframes for traveling on milled surfaces set in SS for Cold Planing (Milling) Asphalt Concrete Operations
- Run-on situations are to be squared up for Roadways with Posted Speed Limit of 55 mph or Greater
What two categories of tack coat materials are approved by VDOT?
- Conventional Tack – Section 310
- Non-Tracking Tack Coat – Volume 2

What is the specified application rate for conventional tack on mainline? Where is it found?
- 0.05 – 0.10 gal/sy for undiluted
- Section 310.03

What is the specified application rate for non-tracking tack coat on mainline?
- Rate recommended by the manufacturer
Purpose of Tack Coat
Trackless Tack Coat
Tacking – Mainline

Which meets specifications?
Tacking – Proper Mainline
Tacking – Longitudinal Joints

- Proper application to result in joint density
- Width of application for first paving pass?
  - 2 feet – 18 to 20 inches under first pass, 4 to 6 inches protruding beyond first pass
  - For second pass, vertical face of first pass and approximately 1 foot into lane to be paved
- Is This Good Joint Tacking?
Tacking – Transverse Joints

Proper application to result in joint density

Where is it specified?

315.05 (f)
Equipment

Haul equipment – Supplemental Specification for Section 315

- Section 315.03(a)
- Volume 2
- Clean metal bodies or inert material
- Approved release agent (i.e. no diesel)
- Use of tarp – solid without tears to cover entire load

Asphalt pavers – Section 315.03(b)

Roller – Section 315.03(c)
Material Transfer Vehicle – Supplemental Spec for Section 315

Section 315.03(e)

Required for SMA and other specialty mixes

Minimum 15 ton combined capacity between device and paver

Ability to remix in device or paver hopper
Placement

Aspects of placement

- Temperatures
  - Base
  - Mix
- Paver items
AC Temperatures

- **Plant** – Max is 350F or as specified by supplier
- **Field** – Depends on designated mix and if WMA technology is used
What is the minimum for non-Warm Mix Asphalt used as a base mix or intermediate mix?
   40F – per Special Provision for Section 315.04(b)2

How about for Warm Mix Asphalt base or intermediate mix?
   Same requirements

What about surface mixes with Warm Mix Asphalt?
   40F – per Special Provision for Section 315.04(a)

Use the nomograph for non-Warm Mix Asphalt when base temperature between 40F and 80F.
Challenges of Cold Weather Paving
Temperature Segregation

- Challenge in cold weather
- WMA alone does not fix segregation
- Ways to address:
  - Higher plant temperature – WMA and Conventional
  - Avoid long hauls
  - Complete coverage of the load
  - Use of MTV with remixing
  - Other WMA technologies than foaming
Placement – Paver Items

- Longitudinal joints must be offset 6”
- Continuous line for steering the paver
- Grade control with ski, joint shoe
- Section 315.05(c)
Compaction

Primary purpose for most AC mixes is to reduce in-place air voids

Improves material performance

General questions about compaction:

For most asphalt mixes, what is the minimum roller size?

For most asphalt mixes, what is the maximum roller speed?

For open graded asphalt base and porous friction courses, what is the minimum number of roller passes?
For the overlap of roller passes, what is the minimum overlap? Where is that found in the specs?

- 6"
- SP for Section 315.05(d) in Volume 2
Per VDOT Specification, does the roller operator roll toward or away from the pavement’s crown?

If a cold joint exists, which direction should the roller proceed with the initial passes?

Why?
Tender Mix
Why is SMA and other specialty mixes different?

SMA specific requirements:
- 3 mph max roller speed
- Highest frequency
- Lowest amplitude
A Bridge to the Next Topic
Density

- New specifications for 2014
- General density requirements
- Thin lift applications
- Small quantities
- Trench widening
Density Inspection

The Virginia Department of Transportation (VDOT) requires that the Contractor perform density testing on the surface, intermediate and base courses of asphalt mats in order to determine if the specifications can be met by the job-mix used.
Nothing NEW, but remember:

All paving requires a certified Asphalt Field Level 2 technician

Mandatory monitoring of longitudinal joint density by Density Technician

- Joint testing locations same as QC locations
- 4” of joint for SM and IM; 6” of joint for BM
- Minimum density is 95% of mat target for each location; corrective action if not met
Why the fuss over joint density?
Establish a roller pattern and control strip
Random testing locations for control strip and test section
Typically, new QC lot at beginning of each production cycles
3 to 7 sublots per acceptance lot
Average for all sublots must be 98% - 102%
  Two failing consecutive sublots require corrective action
  Final payment based on Table III-4
Density Specifications – Thin Lifts

Application rates of 125 lbs/sy or less:
- Roller pattern and control strip only
- Cores not required
- 100% requires 98% - 102% of target density
- Payment based on Table III-4

SM-4.75A @ 90 lbs/sy
Density Specifications – Small Quantities

Small quantity applications – locations where a roller pattern and control strip cannot be established

- Typical length is 1,000 feet or less
- Cores only for acceptance
- **Frequency is every 100 tons**
- Minimum density is 91.5% of Gmm

Density testing requirements for patches

- 1 plug/core for first 20 tons
- 1 plug/core for every 500 tons thereafter
Density testing requirements for trench widening:
- 1 plug/core for first 500 linear feet
- 1 plug/core for every 2,500 linear feet thereafter

Type 1 Widening – no minimum density requirement, but minimum 5 passes with 8 ton roller

Type 2 and Type 3 Widening – minimum 91.5%