

# top 10 list



## WAYS TO GET MORE DURABLE HMA PAVEMENTS

### #10 COMPLETE QUALITY ASSURANCE (QA) TESTING AND INSPECTION

Premature pavement failures can be mitigated by completing proper Quality Assurance (QA) testing and inspection. QA specification is an important component of commitment to overall quality management. According to Transportation Research Circular, No. E-C010 and E-C173, QA is an all-encompassing term, that includes these components: “**Quality Control (QC)**”, “**Acceptance**” and “**Independent Assurance (IA)**”. Proper QA including inspections conducted by qualified technicians and inspectors should be part of any HMA paving project to ensure long-term performance.

The following checklist outlines key QA definitions and important reminders to effectively control the production and lay down of quality HMA pavements.



## KEY DEFINITIONS

- **Quality Assurance (QA):** This consists of is all the planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality. QA emphasizes a producer's responsibility for performing applicable and necessary QC activities, plans and/or protocols approved by the agency/owner.
- **Quality Control (QC):** Also termed process control; consists of QA actions to ensure materials and products conform to the specification and/or end result requirements; whether manufactured or processed by the contractor or procured from suppliers or subcontractors. This typically includes sampling and testing by the contractor to monitor the process, but usually does not include acceptance sampling and testing by the agency/owner.
- **Acceptance:** Includes sampling, testing, and the assessment of test results to determine whether or not the quality of produced material or construction is acceptable in terms of the specifications.
- **Inspection:** This consists of observing and monitoring production and paving operations to ensure compliance with plans and specifications. Effective inspection at every stage of the operation can be the difference between a poor or excellent performing pavement.
- **Independent Assurance (IA):** These are third party activities requiring an independent and unbiased assessment of process control, acceptance, and inspection procedures, to verify reliability.



## IMPORTANT REMINDERS

- Developing a QC plan is vital for paving success. Such plans must be accepted and approved prior to implementation, and adhered to at all times. The plan should include the sampling procedures and techniques to be used, which will consist of how sample frequency and locations should be determined, how samples should be collected for testing, how the calibration should be accomplished for sampling devices, and how mix design samples should be collected.
- QC/QA records during the production and paving of the mixtures are vital pieces of information regarding the level and the consistency of quality as well as any discrepancies between the contractor's and the agency/owners.
  - + Mixture design and QC/QA data sheets provide important information on the volumetric characteristics of the mixtures, and indications of the quality of production and placement.
- Many tests are completed prior, and during production and placement to compare the characteristics of HMA. Producing high-quality pavement requires control of a select few of these characteristics. Density, asphalt content and aggregate gradation are three of the most commonly controlled characteristics.
- Precise and accurate testing is an essential part of asphalt pavement QC/QA programs. Only qualified and/or certified technicians and inspectors should perform all QC/QA sampling and testing, and inspection protocols.
- For additional references to QA/QC, refer to Asphalt Institute's Manual Series No. 22 "Construction of Quality Asphalt Pavements".

Constructing quality and cost-effective pavements is the objective of all stakeholders in the road building industry. Implementing proper QA and inspection plans and programs promotes the construction of better performing and longer lasting roadways by decreasing HMA variability throughout the production and placement operations. Ultimately, industry and agencies/owners must eventually get to developing specifications centered on performance testing which can be used in the mix design phase with volumetric controls in the field first, followed by performance testing which may be used in QC/QA.



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