Asphalt Institute Foundation Research Initiative Proposal
Sustainability

Problem Statement

Research proposals are needed to develop practices and methodologies that will enhance the sustainability of bituminous (asphalt) paving.

Background Information

Research into the sustainability of the bituminous (asphalt) paving industries should focus on significant issues that ultimately will ensure a sustainable future of the liquid asphalt industry.

1. What are the necessary requirements for a sustainable bituminous pavement? Research should consider, but not be limited to the following:
    a. Identifying the characteristics and properties of a sustainable bituminous pavement.
        i. Are those characteristics and properties consistent with public acceptance?
        ii. Can those characteristics and properties be achieved at a price acceptable to owners?
    b. Identifying research that will enable the liquid asphalt industry and/or the bituminous paving industry to effectively utilize recycled waste materials without reducing the long-term performance of the pavements.
        i. Non-limiting examples include waste plastics, reclaimed asphalt singles (RAS), Ground Tire Rubber and other possible future waste streams – provided that the life cycle of pavement performance is not compromised (and possibly improved beyond the current practices) while having no negative impact on future recyclability. An ideal solution may be a mode-of-research approach that provides a hierarchy of procedures or practices to address waste streams as they arise.
    c. Evaluating the impact of removing odor from liquid asphalt on sustainability.
        i. Odor is perceived as a nuisance issue rather than a health-related issue. Processing, chemical treatment, and/or other approaches to eliminating or greatly reducing asphalt odors are required.
    d. Evaluating how sustainable practices may lead to a reduction in the environmental footprint of the bituminous industry.
        i. An example is the effective utilization of waste streams and reduction in the public's exposure to odor.
        ii. Can the potential impact on the environment be quantified?
    e. Evaluating how industry can advance strategies that encourage new methods of producing bituminous mixtures based on alternative mixing equipment, new types of binder additives, and targeted applications rather than the traditional mixes and approaches that are used currently for all projects.
        i. What approaches are needed to convince owners to pay for differentiated quality and performance (i.e. a good-better-best approach to materials and pavements)?
    f. Evaluating how current and new pavement preservation practices can be used in a proactive fashion to address the use of recycled materials and the requirements for a sustainable bituminous pavement?
        i. What research is needed to identify novel pavement preservation methodologies?
        ii. How can effective pavement preservation enhance the net present value of investment in bituminous pavement infrastructure thus positively impacting public acceptance and use of asphalt pavements?
2. Based on your research proposal what strategies can be advanced to enable the private sector to design, build, operate and maintain major roadways on a sustainable basis?

a. Who are the partners in this effort (e.g. contractors, material suppliers, engineering consultants, and researchers)?
b. What is the role of government agencies in such an environment?
c. How can innovation be encouraged to provide sustainable pavements?
d. How can accountability be guaranteed?

Expected Impacts

By assuring the sustainability of the end-product (i.e. bituminous pavements), the sustainability of the component materials (specifically bitumen or liquid asphalt) are also assured.