



Agency Guidelines

FOR ADDRESSING TACK TRACKING

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Background

Asphalt pavements are designed to behave as a single bonded structure under loading. However, since most pavements typically are made up of multiple layers, it is critical that the layers be properly bonded together or else there is the potential for a number of premature pavement distresses to occur, such as slippage, delamination, and fatigue cracking.

Tack coats are used to bond pavement layers together, and if the proper materials are used, handled, and applied correctly, experience has shown that they will provide an excellent bond between layers. However, one drawback of many tack coats is that they will stick to the tires of construction vehicles that drive over them. This material that adheres to the tire is then removed and is generally deposited on a pavement surface elsewhere. In addition to removing the tack material from the pavement surface where it is most needed to provide a good bond between layers, the “tracked” material can also create aesthetic or safety concerns (low friction) in other locations where it is deposited.

Tracking of tack coat materials can be a major problem from a performance, safety, and aesthetics perspective. If it is a recurring problem with an agency or contractor, it needs to be addressed. The following is general guidance that an agency may consider when addressing issues related to tack tracking on both a statewide and project level.

Statewide Level

If an agency is having recurring problems with tracking on their asphalt paving projects, the issue needs to be discussed with the paving industry in their area to determine the best methods of mitigating the problem and developing practical solutions. Depending on what is causing the tracking, there are different solutions available – and some may be more practical, easier to implement, and less costly than others.

One option would be to develop a small, focused team of agency, contractor, and materials supplier personnel to identify what they believe to be the source of the problems and recommend solutions.



Once a team is formed, the next step would be to determine what the primary cause(s) are for the problem(s). As an example, a partial list of potential sources of tracking and some of their corresponding solutions is in Table A5-1. Some topics that should be considered when developing any program level (i.e., statewide) changes include:

1. Is there a need to include additional training information on tracking causes and solutions in the agency's asphalt paving qualification courses? Having more knowledgeable inspectors can go a long way in identifying and resolving tracking problems before they become excessive. As an alternative, some agencies have developed training sessions that are given during the winter months where material suppliers present the latest information on storage, handling, and application of various tack materials.



2. Is there a need to make tack tracking an agency and contractor quality control (QC) inspection item? Since tracking cannot be quantitatively measured, it is essential that inspectors are properly trained on assessing tracking in order to maintain consistency across project lines.

3. If the contractor has a QC plan for their paving operations, should a requirement be included for them to monitor and address tracking?

Making this a requirement under the QC plan provides the contractor with the latitude and flexibility at the project level in determining the best course of action to address a specific problem, without imposing restrictive method specification requirements that may or may not address the problem. For example, if the cause of a tracking problem is that the underlying surface hasn't been adequately cleaned, requiring a trackless tack coat material to be used statewide will not address that problem. If contractors do not routinely have QC plans for their paving projects, the issue will probably need to be addressed in the agency's specifications and/or approved materials lists.

4. With respect to specification changes, in general it is best to allow the contractor to have options on how best to address their problems.

For example, don't require a spray paver if the contractor can demonstrate they can fix the problem without using one. The same applies to other options, such as trackless products. If tracking on projects is typically due to the tack not having adequate time to break and cure prior to the paving operations beginning, then the contractor should have the opportunity to address that issue prior to requiring a new material. Consideration should be given to making more extensive solutions a requirement if the contractor doesn't address the problem as required.

5. With respect to the use of specific method-type specification requirements, it is important to keep in mind that those types of requirements are not always accurate.

For example, specifying the minimum breaking and curing times for a tack coat might not always be accurate, depending on the conditions that may exist that were not in consideration when the specification was written. Conditions (temperature, humidity, wind, etc.) change quite frequently and it is difficult to come up with a "one-size fits all" solution.

6. With respect to including "end-result" requirements, it is important to realize that statements like "free of any tracking" may not always be practical, as some tracking may occur even under the best of circumstances, and may,

in some cases originate from the asphalt mixture, depending on the binder content in the mixture.

It is important to recognize that the specifications will need to somehow differentiate between an acceptable amount and an unacceptable amount, which is difficult since it is, most often, a visual determination.



7. If an Approved Products List (APL) is developed or used for certain products (non-tracking tack for example), it is important that the requirements for approval be clearly identified. A number of agencies that have APLs for trackless tack have specific requirements, such as the product must have test sections where cores will be taken and bond strength tests will be run. A typical bond strength requirement is 100 psi when measured with the NCAT Bond-Strength test.

Project Level

In order to address tracking at the project level, one method of assuring that adequate attention is given to preventing tracking from occurring on a project is to make it a discussion item at the pre-paving conference. Items that could be covered include the following:

1. Specifications and any revision related to tack materials and processes;
2. The type of tack material to be used;
3. Application rates (total and residual), how they are calculated, and acceptable ranges;
4. Distributor calibration requirements;
5. Estimated time required for breaking and curing;
6. Typical causes and potential solutions for tracking;
7. Actions to be taken if tracking occurs;
8. How to determine if the tack has properly broken and cure.

Another option is to have subject matter experts available to attend the pre-paving conference. Also make them available during construction the first time a new product or process is used. Subject matter experts may be requested to attend by project personnel, industry representatives or both. The following items could be covered:

1. Assist with inspection items checklist review;
2. Assist with equipment review;
3. Ensure application rates are within acceptable range;
4. Review the application, breaking, and curing of the emulsion;
5. Summarize lessons learned during a post-paving conference.

Reference Materials

There are a number of reference materials available concerning tack coat best practices:

1. Federal Highway Administration. *Tack Coat Best Practices – TechBrief*. Office of Asset Management, Pavements, and Construction, 2016.
2. *Best Practices for Emulsion Tack Coats*. Quality Improvement Publication 128, National Asphalt Pavement Association, 2013.
3. NCHRP Report 712. *Optimization of Tack Coat for HMA Placement*. National Cooperative Highway Research Program, 2012.

Table A5-1 Sources and Potential Methods of Addressing Tracking

Source of Tracking	Description	Method of Addressing
Underlying surface is dirty or dusty.	If the underlying surface is dirty or dusty, the tack coat material will adhere to the dust or dirt, and not to the underlying pavement surface.	Properly clean the surface - either through mechanical brooming; by flushing the surface with water; blowing off debris using high-pressure air; or a combination of these. Allowing traffic on the underlying surface (if feasible) is another method of assuring that the surface is adequately cleaned.
Unbroken/Uncured Asphalt Emulsion	If the emulsion has not had adequate time to break and fully cure, the residual asphalt will not adhere to the underlying surface and the material will track if any vehicles drive on it.	Allow the tack coat emulsion to properly break and cure before driving or paving over it.
		Make certain that the application rate for the emulsion is correct and the emulsion has not been diluted outside of the producer's recommendations.
		Use a trackless tack product that has a shorter cure time.
		Use an additive that can reduce the cure time for the emulsion (i.e., NanoTac).
		Use a hot-applied product, either straight asphalt binder or a hot-applied trackless product.
		Use a spray paver
Inadequate stiffness of the residual asphalt binder	Once an emulsion has fully broken and cured, any tracking that occurs is likely due to the residual asphalt of the emulsion being too soft. High air and pavement temperatures are the most important factors affecting this type of tracking behavior.	Use a reduced-tracking emulsion which has a harder residual binder.
		Use a hot-applied product, either straight asphalt binder or a hot-applied trackless product.
		Use a spray paver