

Transportation Literature Search



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Pavement Joint Adhesive Evaluation

Prepared for
Bureau of Highway Construction
WHRP Flexible Pavements Technical Oversight Committee

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Transportation Literature Searches are prepared for WisDOT technical staff in highway development, construction and operations. The bibliography below is representative, rather than exhaustive, of available studies on the topic. Primary online resources for the literature searches are the Transportation Libraries Catalog ([TLCat](#)), the Transportation Research Information Service ([TRIS Online](#)), and various academic and scientific databases. Online copies of publications are noted when available. Hard copies of all cited literature may be obtained through the WisDOT Library.

KEYWORDS

Terms used in web-based searches were: asphalt; pavement; joint; longitudinal; adhesive; test; performance; construction. Combinations included: asphalt pavement, longitudinal joint.

CROSS-REFERENCES

Terms listed by engines producing useful sources include: longitudinal joint; pavement joint; joint sealers; adhesives; inspection; asphalt pavement; asphalt concrete; materials; hot mix asphalt.

LIBRARY OF CONGRESS DESCRIPTORS

Library of Congress descriptors were not identified by productive databases.

CITATIONS

Title: Technical Report 00-18, Longitudinal Joint Treatment – Interim Report, Third Year

Author(s): Maine Department of Transportation, Transportation Research Division

Date: March, 2004

Doc ID/URL: <http://www.maine.gov/mdot/transportation-research/pdf/report0018i3.pdf>

Description: 10 pages

Contents: In an effort to reduce the amount of joint failures the Maine Department of Transportation (MDOT) is currently evaluating two projects. One project is monitoring the results of using multiple rolling techniques and a proprietary pre-compaction device. The other project involves developing a longitudinal joint density specification for Superpave mixes. This experimental project will evaluate the application of a joint sealer and joint adhesive in an effort to reduce the amount of longitudinal joint separation.

Title: Tech Notes – Longitudinal Joint Construction Techniques

Author(s): Washington State Department of Transportation, Pavements Branch

Date: February, 2003

Doc ID/URL: <http://www.wsdot.wa.gov/biz/mats/pavement/Longitudinal%20Joint%20Construction.pdf>

Description: 4 pages

Contents: A footnoted report, this briefing on construction techniques draws heavily on the July 2001 version of the Kandahl, et al, paper – NCAT Report No. 2002-03, Evaluation of Eight Longitudinal Joint Construction Techniques for Asphalt Pavements in Pennsylvania – above.

Title: Compaction at the Longitudinal Construction Joint in Asphalt Pavements, Final Report

Author(s): University of Kentucky, Lexington, Kentucky Transportation Center. L. John Fleckenstein, David L. Allen, and David B. Schultz, Jr.

Date: March, 2002

Doc ID/URL: http://www.ktc.uky.edu/Reports/KTC_02_10_SPR200_00_1F.pdf; KTC-02-10/SPR208-00-1F, Final Report

Description: 84 pages

Contents: Researchers sought to evaluate the level of compaction at the construction joint in hot mix asphalt pavements on new and existing projects; to determine the level of water infiltration and segregation at the joint and its effect on joint performance; to determine the most promising joint construction methods around the nation and worldwide by reviewing specifications, experiences, and construction practices for joint construction and the prevention of joint segregation; to develop specifications and construction methods to ensure the level of density necessary at the joint for proper performance; and to review special paving equipment (attachments) for improving densification for the unsupported edge. Four methods of joint construction were evaluated in this study. These were the notched wedge (12:1), restrained edge, joint re-heater, and Joint Maker. In addition, a number of joint adhesives were used. Among the major conclusions is the following: Preliminary performance data indicate that all projects are currently performing well with projects having joint adhesives performing as well as, or better than, projects without joint adhesives. It is recommended that other projects be constructed using joint adhesives.

Title: NCAT Report No. 2002-03, Evaluation of Eight Longitudinal Joint Construction Techniques for Asphalt Pavements in Pennsylvania

Author(s): National Center for Asphalt Pavement. Prithvi S. Kandhal, Timothy L. Ramirez, and Paul M. Ingram

Date: February, 2002

Doc ID/URL: <http://www.eng.auburn.edu/center/ncat/reports/rep02-03.pdf>

Description: 26 pages

Contents: Premature deterioration of multilane hot mix asphalt (HMA) pavements can occur at the longitudinal joints in the form of cracking and raveling. The National Center for Asphalt Technology (NCAT) initiated a national study of evaluating various longitudinal joint construction techniques in 1992 in an effort to select technique(s) which improve the performance of longitudinal joints. Test sections were constructed in Michigan, Wisconsin, Colorado, Pennsylvania, and New Jersey. This paper gives the 6-year performance evaluation of eight different techniques utilized on a 1995 paving project in Pennsylvania where longitudinal joint constructed using rubberized joint material gave the best performance closely followed by the joint made with cutting wheel. Test sections using rolling from hot side 152 mm away from the joint and the New Jersey wedge joint also performed reasonably well with no significant cracking. The remaining four test sections using edge restraining device, joint maker, rolling from hot side, and rolling from cold side developed cracking at the longitudinal joint to different extents.

Title: Experimental Construction Project 00-18, Longitudinal Treatment Construction Report

Author(s): Maine Department of Transportation. Brian Marquis

Date: May, 2000

Doc ID/URL: <http://www.maine.gov/mdot/transportation-research/pdf/report0018c.pdf>

Description: 8 pages

Contents: Maine DOT tested three sealants for HMA longitudinal joints.

Title: Bituminous Sealants for Pavement Joints and Cracks: Building the Basis for a Performance-Based Specification

Author(s): National Research Council of Canada, Ottawa. J-F Masson, Institute for Research in Construction

Date: Unavailable; 2000 or later

Doc ID/URL: <http://irc.nrc-cnrc.gc.ca/fulltext/nrcc42898.pdf>

Description: 15 pages

Contents: Bituminous crack sealants are used to seal cracks and joints in pavements. In Canada and in regions experiencing harsh climates, sealants often fail prematurely, however. This is, in part, because it is difficult to select the best sealants, those that can withstand demanding conditions, based on the existing ASTM D3405 specification. Consequently, users would like to have a performance-based specification that allows for selecting appropriate sealants. The aim of this paper is to serve as a building block in the development of such a specification. For that purpose, sealant failures, field performance in cold climates, standard test results, sealant aging, rheology and adhesion are reviewed.

Title: NCAT Report No. 97-4, Longitudinal Joint Construction Techniques for Asphalt Pavements

Author(s): National Center for Asphalt Technology. Prithvi S. Kandhal, and Rajib B. Mallick

Date: August, 1997

Doc ID/URL: <http://www.eng.auburn.edu/center/ncat/reports/rep97-4.pdf>

Description: 26 pages

Contents: Twelve longitudinal joint construction techniques were examined on 30 HMA test sections in Michigan, Wisconsin, Colorado, and Pennsylvania. The focus was on pavement density and performance in terms of cracking and raveling; a rubberized tack coat joint adhesive was recommended for performance over two years.