

Manual for Chip Seals

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Chip seal, also known as seal coat, is one of several valuable preservation treatments for roads, which usually receive light to medium traffic volumes; it has also performed well on higher-volume roadways and is usually placed over existing asphalt concrete pavement. Chip seals are placed by spraying the pavement with a binder, either an asphalt emulsion or a hot applied binder, from a distributor truck, and then immediately applying a uniform application of a cover aggregate (chips or screening) using a self-propelled chip spreader. The aggregate is rolled as soon as possible to ensure embedment and adhesion of the aggregate to the fresh binder. This manual presents the best practices for design and construction of chip seals, including scrub seals and Geosynthetic Reinforced Chip Seals (GRCS), and it further includes guides for troubleshooting construction problems. It also includes guide specifications for both emulsion and hot applied chip seals.

Study Methods

The project consisted of conducting a detailed literature review followed by the development of a detailed manual to help agencies and industry select the right chip seal treatment, design and construct the treatment, and provide guides for quality assurance. The manual also includes detailed troubleshooting guides in case something goes wrong during construction for chip seals.

Key Findings

The key findings are the best practices for the design and construction of chip seals. Most needed information about chip seals is in this document, which can be easily used by both local agencies and industry.

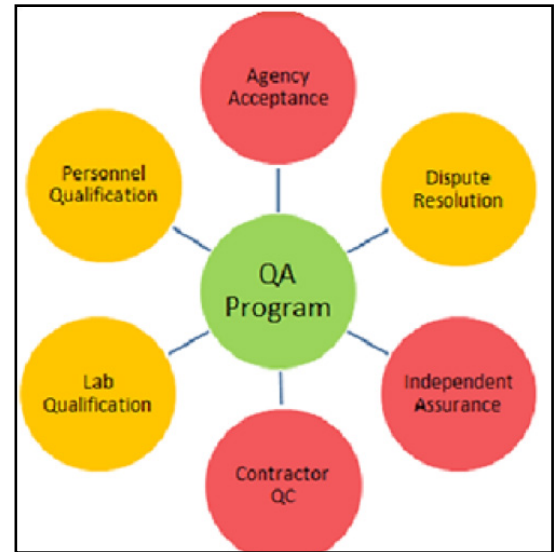
Policy Recommendations

This manual, if followed, should prevent most failures in the construction of chip seals. It is imperative that better specifications be used to ensure better performance and fewer failures.

All agencies need to have a pre-construction meeting and make sure the contractor submits a quality control plan and the agency does provide for certified inspectors to monitor the construction.

Photo

Quality assurance (QA) establishes the core elements required to achieve quality materials and workmanship for construction projects as shown in the figure below. QA has been required over the last 20 to 30 years in hot mix asphalt, but it is still developing for pavement preservation treatments.



Core Elements of a Quality Assurance Program

About the Authors

Dr. Hicks is currently program manager for the California Pavement Preservation Center (CP2 Center) at CSU Chico. Prior to joining the Center, he taught at Georgia Tech and Oregon State University for 30 years, rising to the positions of Distinguished Professor of Civil Engineering and Associate Dean for Research for the College of Engineering. After retiring from OSU in 1997, he started a consulting career with MACTEC Engineering, providing consulting services to the Caltrans and other organizations. He is a registered Civil Engineer in the states of California, Oregon, and Alaska.

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To Learn More

For more details about the study, download the full report at transweb.sjsu.edu/research/1845A



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