Chip Sealing

of

Bituminous Concrete Pavement

DRAFT ENGINEERING BRIEF

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Chip sealing of bituminous concrete pavement is a maintenance technique from the family of liquid asphalt surface treatment options. Chip sealing consists of the application of a liquid asphalt binder onto the existing pavement surface immediately followed by a treated aggregate cover within the scope of the specification. There is no structural value associated with this maintenance application.

Chip sealing is utilized on existing bituminous concrete pavement to preserve the structural integrity of the pavement and extend the existing pavement service life. Typical pavement candidates for this maintenance application are seven to ten years old, exhibit minimal surface cracking, minimal stone polishing and minor surface oxidation. Chip sealing is a cost effective, preventative maintenance technique that preserves the roadway and retards future deterioration and is considered a thin surface treatment. To be effective, chip sealing must be accomplished prior to the pavement experiencing structural damage.

Connecticut has witnessed an evolution of binder materials utilized in the chip sealing process. Road tars were replaced by cutback asphalts which have since been replaced by emulsified asphalt grades. SBR latex modified emulsified asphalt binders are the predominant emulsified asphalt products available to the Connecticut market for chip sealing operations. Asphalt rubber binder is also in use by Connecticut public agencies. Emulsified asphalt grades and asphalt rubber binder products being specified and marketed in Connecticut are extremely moisture and temperature sensitive. Care must be taken that chip sealing operations be confined to warm weather months and only when the pavement is dry and properly prepared. Best results are achieved when mostly dry conditions prevail for several weeks following an emulsified asphalt chip seal application allowing the binder to fully set.

Aggregate selection is also critical to the successful performance of chip sealing. Quarry stone meeting the specification requirements must be tested for compatibility with the liquid asphalt binder which is the responsibility of the Contractor. Quarry stone must be clean and properly fractured. Pre-coating of the aggregate with a small amount of asphalt binder is considered to be a best practice to ensure a good bond between the aggregate and pavement surface. Appropriate consideration should be given to allowing the

Contractor to perform a turn-key chip sealing operation, within the scope of the specification, and providing a one year warranty for the work accomplished.

Chip sealing performed on properly prepared bituminous concrete pavement and meeting the specification requirements typically has a service life of five to ten years. Traffic conditions and environmental factors combine to influence actual service time achieved. Average daily traffic (ADT) counts and traffic speed are two factors to be considered when selecting roadways for chip sealing maintenance applications. There are no established tables or published studies to provide guidance. The current Connecticut practice of limiting emulsified asphalt chip sealing to roadways with up to 3,000 ADT and asphalt rubber chip sealing to roadways with up to 10,000 ADT are prudent measures at this time. Appropriate consideration should be given to benchmarking chip sealing operations at higher ADT in order to expand pavement preservation techniques for a broader inventory of Connecticut roadways.

Contract payment is determined by the square yard of work performed and includes the cost of all materials, equipment, tools, and labor to complete the work in a satisfactory manner. This square yard unit of pavement requires that the specific pavement be identified for contract bidder review and that daily inspection of contracted work be conducted to insure compliance to the bid specifications.

Workers must adhere to all safety protocols relative to traffic control and work zone safety for this maintenance operation.