BACKGROUND

In 1998, a 3-inch cold-in-place recycled (CIR) treatment was used to mitigate reflective cracking on a lightly traveled (ADT<5,000) four-lane divided highway (S.R. 695). The 3-inch CIR base was overlaid with a 2-inch hot-mix asphalt (HMA) wearing surface. The potential for rutting was a concern because of lower densities and finer gradation measured in the CIR layer. In 2008, research was initiated to evaluate, quantify, and document this rehabilitation treatment's performance.

Evaluation of a Cold In-Place Recycled (CIR) Rehabilitation Treatment

FINDINGS

- The CIR rehabilitation was successful at mitigating reflective cracking. The CIR rehabilitated pavement had 65% less reflective cracking than the adjacent control pavement (referred to hereafter as "the control").
- Overall, rut depths were 10% less severe for the CIR rehabilitated pavement than the control; however, where longitudinal joints were located in the wheel path, CIR treated pavement rut depths were 83% more severe than the control.
- CIR pavement rut depths were 60% to 183% more severe on uphill grades>=4% than downhill grades>=4%.
- For selected applications, a life-cycle cost (LCC) pavement analysis suggests a 37% cost savings for CIR treated pavements vs. traditional pavement treatments over a 48-year analysis period.

RECOMMENDATIONS & IMPLEMENTATION

- Use CIR rehabilitation treatments to mitigate reflective cracking on selected lower volume roadways, as per final report guidelines. In 2009, the Chief Engineer directed Pavement Management to re-introduce the CIR rehabilitation treatment in each Maintenance District through new pilot projects.

For more information, contact Mr. James M. Sime, P.E. @ (860) 258-0309 or james.sime@ct.gov

Improving Winter Highway Maintenance in Connecticut

Background

In the fall of 2004, the Connecticut Academy of Science and Engineering (CASE) was charged with examining and recommending improvements to winter maintenance activities conducted by the Connecticut Department of Transportation (ConnDOT), based on the best practices of other public works Agencies. The goal of the study was to support the Department's efforts to provide the public with clearer highways, increased safety, reduced costs, and lessened environmental impact with regard to snow and ice events in the state. There were concurrent complimentary efforts in 2005 and 2006 by the Offices of Maintenance and Environmental Planning to re-engineer snow and ice control practices and secure top-management support and resources to implement changes.

Findings

- Change the emphasis from operational de-icing (plowing, salting and sanding) to preventative anti-icing (pre-wetting and material application) by activating maintenance forces in a pre-storm mode;
- Make more efficiently use materials by acquiring updated equipment and methods;
- Move away from sand to salt as the primary operational material applied to de-ice;
- Acquire advanced equipment to expand material options, vary application rates, and reduce operational costs;
- Make use of road weather information services;
- Implement an overall organizational culture change using training resources; and,
- Develop processes for continual improvements over time, with deliberate data collection and tracking effort to support the process.

Recommendations and Implementation

- During the winter of 2006, ConnDOT implemented the report recommendations and they are considered to be successful.

For more information, contact Mr. James M. Sime, P.E. @ (860) 258-0309 or james.sime@ct.gov

BACKGROUND

Following up on earlier research performed by several states and the National Center for Asphalt Technology (NCAT) at Auburn University, the University of Connecticut's Advanced Pavement Lab (CAP Lab) was charged with evaluating the longitudinal notched wedge (NW) joint on hot-mix asphalt (HMA) pavements in Connecticut. By placing one lift with a wedge joint on the edge, then placing a second overlapping lift, it was believed the early deterioration of traditional butt joints could be avoided.

Evaluation of Notched Wedge Pavement Joints vs. Traditional Butt Joints for Use in Connecticut

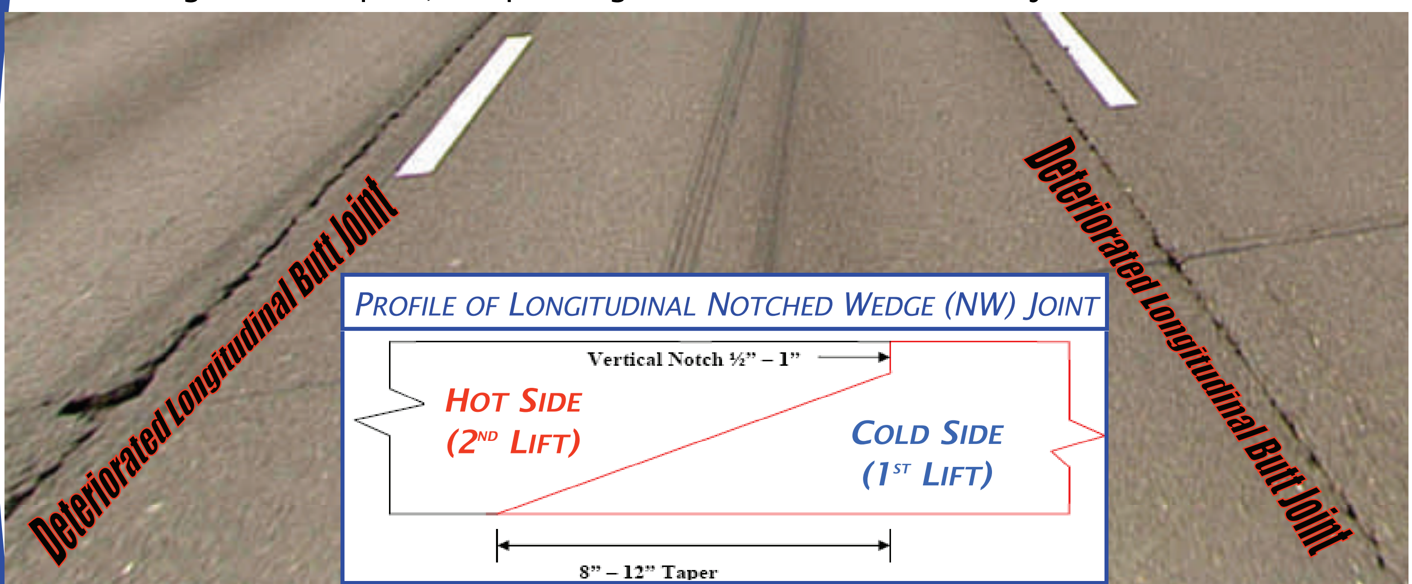
FINDINGS

Results from the NW joint study, when NW joints were compared with butt joints:

- NW joint placement did not impede or disrupt the paving process;
- NW-jointed pavements had higher second-lift density levels and more uniform density profile in both lifts;
- NW joints provided smoother joint crossings for vehicles during construction;

BUT:

- The wedge portion of the NW joint released some large aggregates when exposed to traffic during construction; and,
- During the 2nd lift pass, a "squeezing" of tack coat out of the NW joint was observed.



RECOMMENDATIONS & IMPLEMENTATION

As a result of this research, the following recommendations were implemented:

- For quality acceptance purposes, an averaging method for densities from both the hot side and cold side of a NW joint was developed and used;
- Apply tack coat to only the outer third of the wedge before the 2nd lift is placed;
- Change specifications to allow NW joint usage on 1½" - 3" lift depths; and,
- Paving with the NW joint is implemented and performance will be monitored over time.

For more information, contact Mr. James M. Sime, P.E. @ (860) 258-0309 or james.sime@ct.gov