

Extending the Lifetime of Roadway Improvements

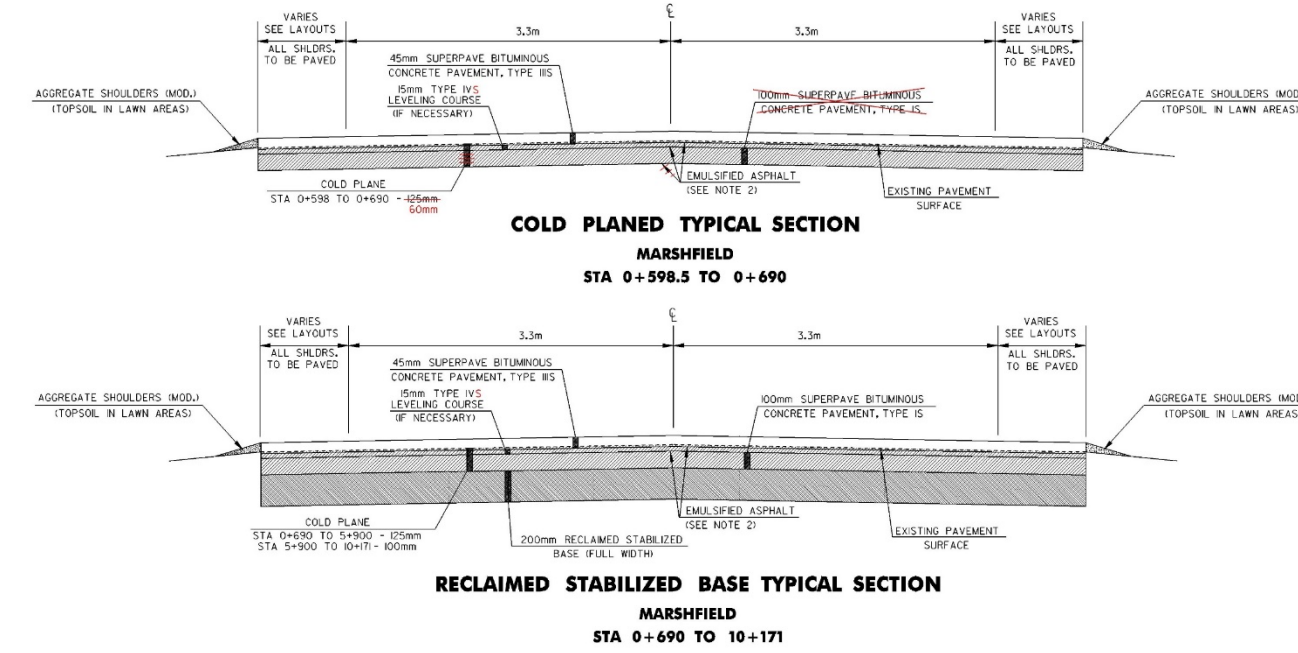
In 1992, the VT AoT began its new Pavement Life Project as many new paving treatments were being developed, with the goal of analyzing which treatments held out the longest before repaving and had the greatest performance in regards to cracking and rutting. Up until this time, only a small handful of paving treatments had been developed; since then, VTrans has utilized 20 different types of pavement surface to endure the region's demanding climate.

To cast a wide net for gathering data, the Research Section in 2017 studied various treatments in 64 sites across the state. In 2017, 21 sites reached the end of their functional life, allowing the team to analyze the pavement's performance.

Best Match for Environment

How is Your Local Road Doing?

The ride might feel a little rough during your commute, and you might be scratching your head trying to remember when the last time a paving crew came through. Indeed, some roads have to wait years beyond the 8 year average lifespan before they are improved, despite their condition. Ideally, data gathered for the Pavement Life Project—along with analysis done by the Research Section—ensures that when your road is repaved, it is constructed with a more durable treatment that is suited to resisting the specific challenges that your local environment poses to road structures, and offers safe and comfortable transit to its users.



Aside from choosing what treatment might look best on paper, highway engineers must take additional factors into consideration. Moisture, for example, can greatly increase pavement cracking as temperatures drop. A polymer-based emulsion between asphalt layers might be the solution for roadways with many culverts, wetlands, and roadside brooks and rivers. Other factors that affect road improvements are conditions at the time of paving, as Vermont is no stranger to frequent rain. Once all outside factors are considered, and the roadway's environment is identified, pavement treatments that perform strongly in those environments can be recommended for future improvements.



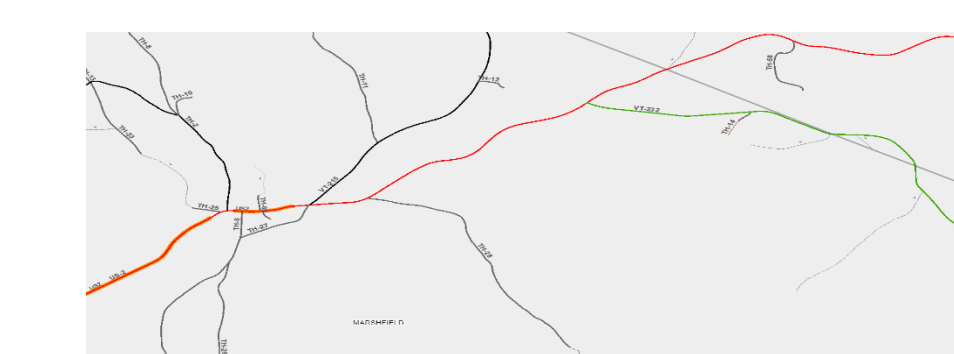
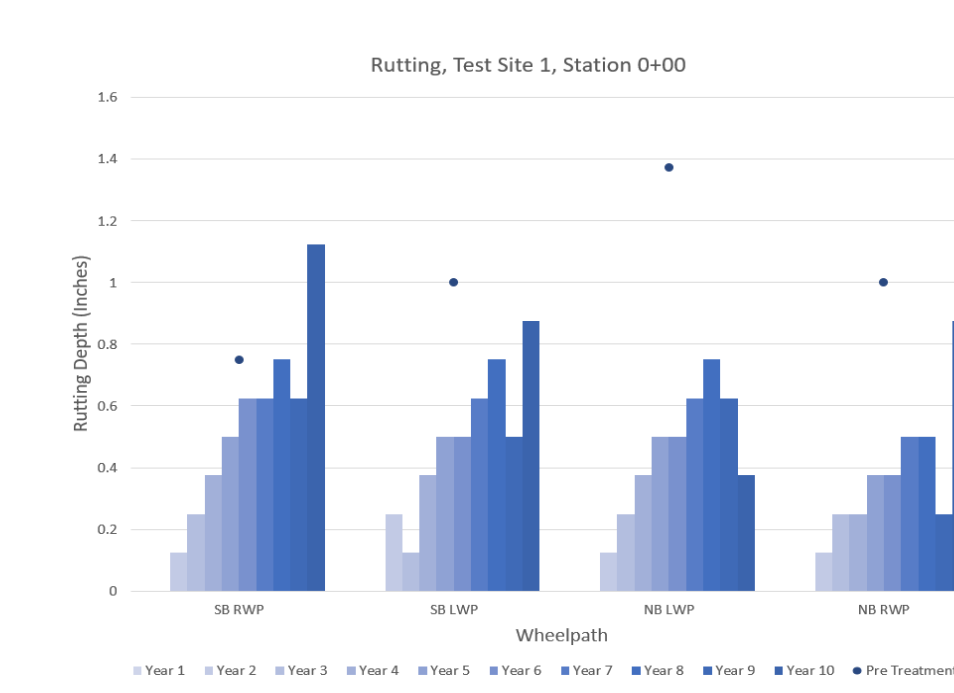
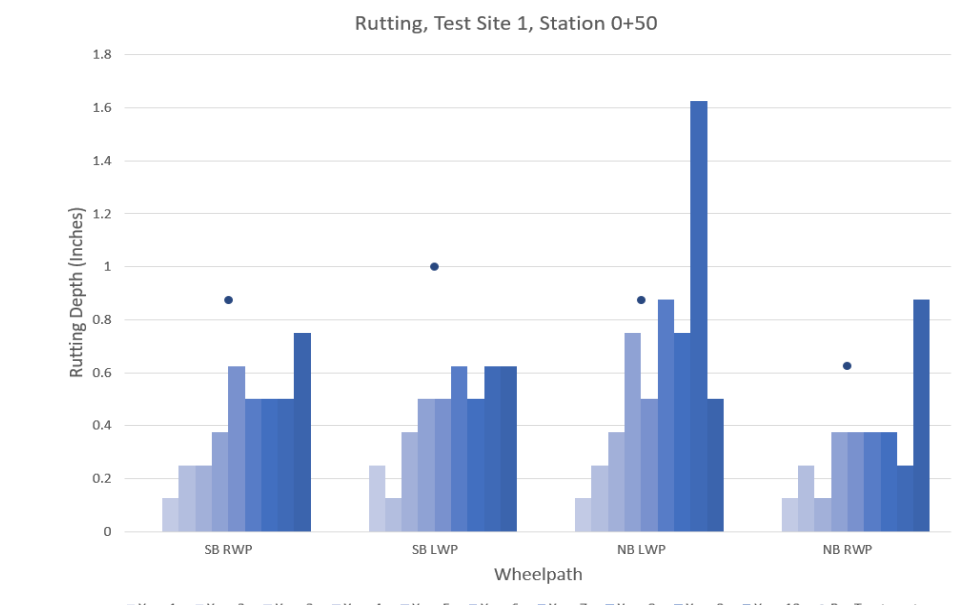
The Key to Detailed Analysis of Pavement Distress: Localized Data



While automated methods of gathering roughness data are faster and span a larger area, sections of roadway are grouped into averages. The Pavement Life Project utilizes data measured at the micro level. Rutting in the wheel paths, for example, can cause vehicle spray and hydroplaning. A section of pavement may have an acceptable average rutting, but more specific data collected by hand for the Pavement Life Project may show that rutting has reached hazardous depths.

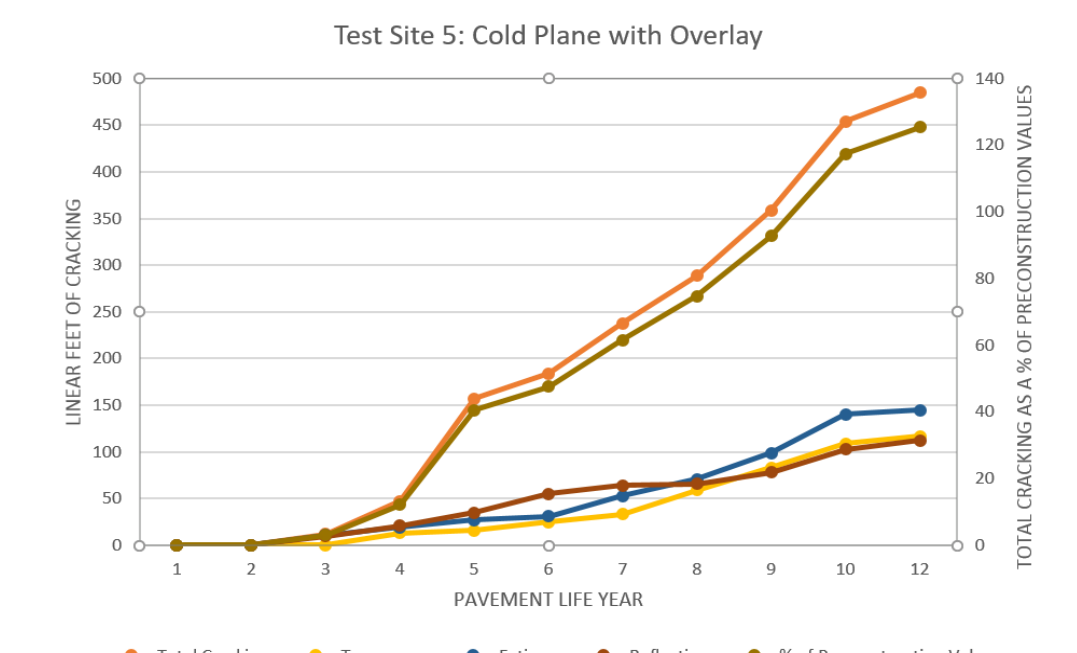
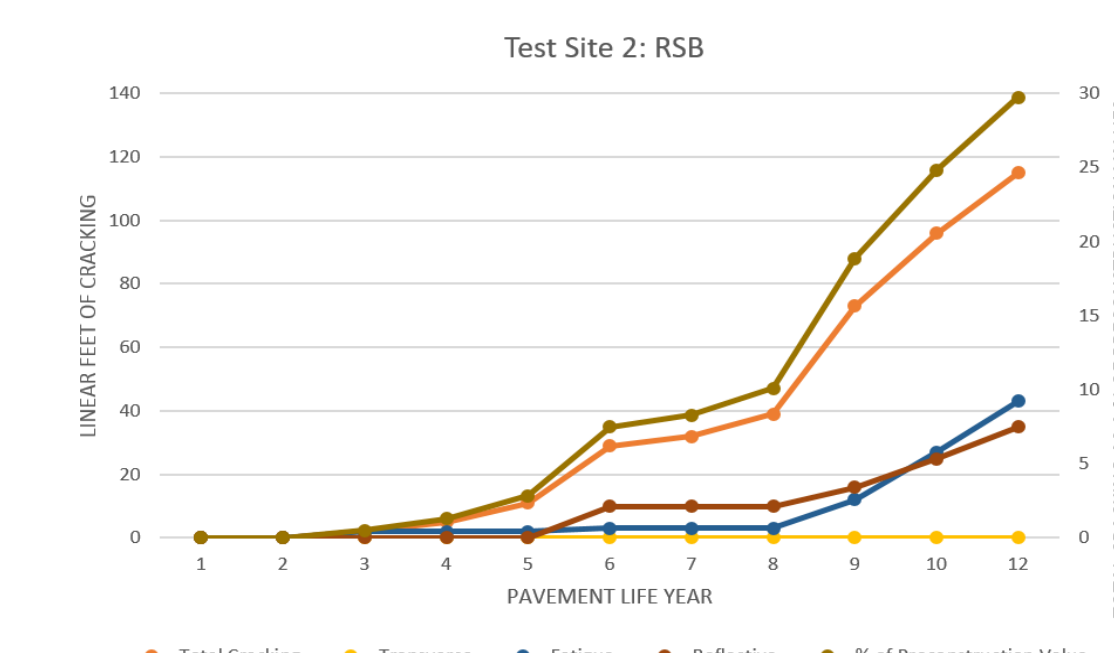


Comparisons



In anticipation of a helpful comparison, many of Vermont's state routes and highways have been built with more than one type of paving treatment along their lengths, offering a clearer contrast between separate treatments employed by the same contractor, built in similar environments. Sites are subdivided into test sites of 100 ft. sections along the span of the improvement. Cracking and rutting is measured and recorded each year to establish how much linear feet of cracking a test site holds, and what depth the rutting has reached.

An important residual benefit of the Pavement Life Project is in-person identification of sections of highway that reach an unsafe level of distress. The research team often discovers rutting that is significantly deeper than the threshold of failure.



In the years to come, the Research Section will continue development of the Pavement Life Project. Key goals include:

- Consistent Collection of Data Year to Year
- Detailed Analysis of Sites at End of 'Pavement Life'
- A Master Pavement Life Report Based on Compilation and Analysis of Individual Site Reports
- A More Thorough Understanding and Practical Application of Pavement Distress and Treatments

Steps Forward