

Dundee High School was able to realize cost and environmental savings using FDR to reconstruct their parking lots. Using FDR also resulted in time savings and an increased structural section.

\$490,000 on 28,000 sy project compares to remove and replace

13% reduction in greenhouse gas emissions

Two-week reduction in construction using FDR

Increased structural number of 0.52

BACKSTORY:

Dundee High School (DHS) opened in Fall of 2001 and since that time, the parking lots had been neglected with very minor maintenance over the past 20 years. Craig Family Athletic Complex improvements planned to begin in 2020 and included parking lot improvements. The parking lots consisted of an average of 4.7 inches of hot mix asphalt (HMA) over 3 – 6 inches of aggregate base.

PROBLEM:

Common failures throughout the site included full depth cracking and stripping within the pavement. Drainage conditions were considered adequate. Initial scope was for complete removal and replacement of poor areas; essentially reconstructing portions of the lots. Realizing there must be a better, more cost-effective solution, in spring 2018, a Dundee School Board member and project consultant contacted Asphalt Materials, Inc. (AMI) to discuss possible cost saving options for reconstructing the parking lots.

SOLUTION:

AMI used the tools within roadresource.org to explain the cost and environmental benefits of using in-place recycling. A 6-inch FDR treatment with engineered emulsion was selected as the most cost effective and environmentally friendly solution to complete reconstruction. Heritage Research Group provided lab support and Wadel Stabilization, Inc. performed the FDR.

DHS was able to recognize a cost savings of nearly \$490,000 while increasing the overall structural number by 0.52. By selecting a recycling approach, in lieu of a traditional removal and replacement approach, allowed them to fund other needed school grounds improvements. The recycling solution also allowed an environmental savings through a reduction in greenhouse gas emissions of 13% (using the Road Resource Sustainability Calculator). Because the parking lots are for a public high school, the window of construction during the summer was limited to avoid work while school was in session. Going with the recycling approach also allowed a time savings of at least a two weeks which provided a more comfortable window to avoid conflicts during increased staff, student and bus traffic. After optimizing the recycling solution, the parking lots still had an excess volume of RAP that they were able to repurpose for other needs around the school grounds.

PHOTOS:



Parking lot prior to FDR



Performing FDR with emulsified asphalt



Compaction of FDR mix



Completed parking lot