



Widening excavation



Surface removal/trench widening



Pulverization



Emulsion FDR processing



PAVING • MILLING • STABILIZATION

**Project Profile:**

**Christian Co. Highway #1**

(Nokomis Road)  
Christian County, Illinois  
Summer 2006/2008/2010

**Challenges**

The existing 11.5-mile roadway is a full depth bituminous pavement with extensive transverse and longitudinal cracking, rutting and surface oxidation. The average daily traffic is approximately 3,300 vehicles per day of which 350 to 400 are loaded trucks from two local limestone quarries. The 11-foot wide pavement was too narrow for the heavy traffic and maintenance of the aggregate shoulders was a continuous safety problem. The location of the quarries made it necessary to keep the roadway open to traffic during construction.

**Solution**

- Removal of the existing aggregate shoulders (3 feet wide by 10 inches deep) to accommodate 3 feet of additional pavement width.
- Removal of 2 inches of the existing bituminous pavement by cold milling and placing the millings in the widening trench.
- Pulverizing the remainder of the existing 11-foot wide bituminous pavement (8 to 11 inches) deep.
- Incorporate (3 percent by weight) engineered asphalt emulsion (Fortress), provided by SEM Materials, to a width of 14 feet.
- Grade and compact then allow to cure until the moisture content is below 2.5 percent.
- Trim roadway with a full lane width rotomill, using a 30-foot averaging ski, to a cross-slope of 2 percent.
- Place 3.5 inches of HMA in two lifts to a total pavement width of 28 feet.
- Install 2-foot wide aggregate shoulders using the material excavated from the widening trench.
- Stripe the lane width back to 11 feet with a 3-foot wide bituminous safety shoulder and a 2-foot wide aggregate shoulder.

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Compaction



HMA overlay



Finished surface



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**Construction Phasing**

**Phase 1:** Remove aggregate shoulders, perform 2 inches cold milling and place millings in widening trench. (2 days using a Wirtgen 1900 Combo Cutter for trench removal and a Wirtgen W-2000 & W-1900 for 2 inch surface removal)

**Phase 2:** Pulverize remaining bituminous pavement 8 to 11 inches deep. (3 days using two Wirtgen 2500S stabilizers)

**Phase 3:** Incorporate asphalt emulsion, grade and compact. (2 days using two Wirtgen 2500S stabilizers and associated equipment)

**Phase 4:** Curing. (7 days)

**Phase 5:** Trimming to final grade and slope. (2 days using a Wirtgen W-2200)

**Phase 6:** Place 7000 tons of HMA binder and surface course. (5 days)

**Phase 7:** Place 2-foot wide aggregate shoulders. (1day)

**Phase 8:** Pavement striping. (1 day by sub contractor)

**Results**

- Project completed on time and on budget.
- New pavement structure consisting of 9 inches of emulsion stabilized base course with a 3.5 HMA asphalt surface capable of handling 80,000-pound loads.
- Expanded overall pavement width of 28 feet allowing for a 3-foot safety shoulder on each side of the roadway.
- Extended service life of roadway by using in place materials which saved money, time and resources.