

Rural Road Reclamation Tests in Texas

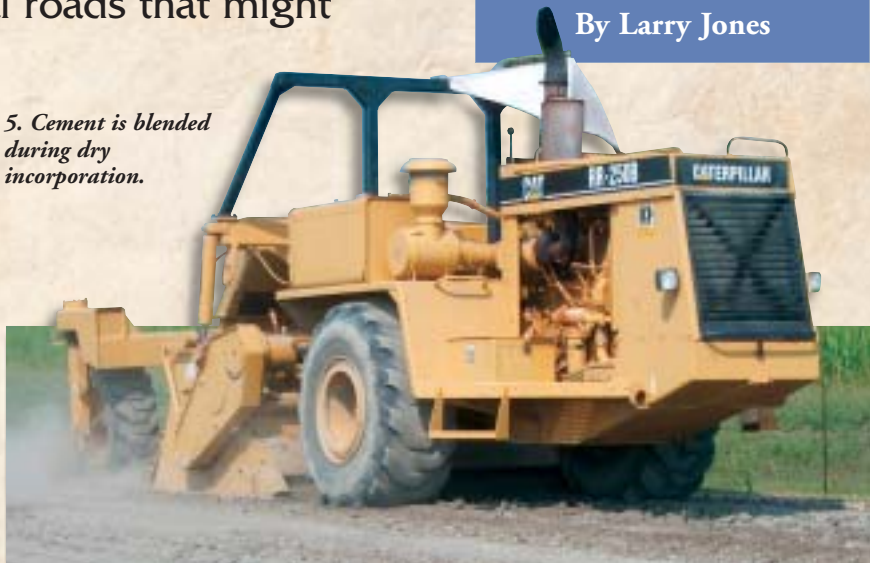
The Lone Star State tests a new product for in-place road reclamation of rural roads that might save time and money.

By Larry Jones

Ellis County, TX, was looking for more cost-effective ways to build rural roads with greater strength and longer service life. The condition of county rural roads was getting worse as more people moved in and roads were carrying traffic loads well beyond their design.

TXI (www.txi.com), a long-time manufacturer of cement in Ellis County, had a solution. Company researchers

5. Cement is blended during dry incorporation.



1. Example of an existing road in Ellis County, TX.

3. Stabilization Cement is placed.



had been engaged in a project to create a new type of cement with the added benefit of significantly increasing the strength of the roadbed. The new product was designed with a higher free lime content. Free lime reacts with clay soils to produce a firmer and denser sub-base. When Ellis County contacted the company to ask about the cement as a stabilization material, the timing was perfect. The company was ready to take its new product—Stabilization Cement—public and conduct a field test.

For years, rural county roads across

4. Stabilization Cement is scarified in place.



2. Second lane of test section is tilled.



6. Just add water.

Texas and other states have been built by compacting gravel, spraying on a coat of liquid emulsified asphalt, and then covering the asphalt with a thin layer of pea gravel, a process commonly known as chip sealing. Adding the new gravel is by far the most expensive portion of the rural road building process. The resulting roads are economical, but with limited weight carrying capacity, reduced traffic load, and shorter useable life due in part to water infiltration.

Enemy of Rural Roads

Water infiltration into the roadbed is among the worst enemies of the typical rural county road. This occurs in many county roads due to shallow or non-existent ditches. In turn, inadequate ditches are primarily due to narrow rights-of-way, on which most rural county roads were originally established. As traffic increased, roadway surfaces were widened to meet demand, but the width of the rights-of-way remained constant and now do not permit construction of ditches deep enough to allow the road to properly drain. The roadbed absorbs excessive moisture, potholes develop, and rutting of the traffic lanes becomes excessive to the point that reconstruction of the road is necessary. The result? Sections of roads with poor drainage and shallow ditches deteriorate prematurely.

TXI donated six tankers of its Stabilization Cement to stabilize five test sections on both Kirkpatrick and Cut-Off Roads in Precinct 2. The test sections were scarified in place 6-in deep, Stabilization Cement was added and blended, and the surfaces were compacted



7. Vibratory roller brings up end of processing sequence.

with vibratory rollers, followed by rubber-tired rollers. (Scarification and blending on more heavily traveled roads would require scarification and blending 8 to 10 in. deep.) The company, at no charge, also provided lab technicians and expert field personnel throughout the test to help the entire stabilization and construction process.

This was new territory for the county as well as TXI. The primary problem in this new process was providing water to the site quickly enough. The first two pours needed water faster than anticipated, but by the time the three final pours were completed, the water logistics had been solved. Various quantities of material were used in different types of soils. The objective was to economically create a roadbed that had significantly improved strength while maintaining its characteristics when subjected to moisture. On each road, control sections were included using identical mechanical processes and construction techniques without adding Stabilization Cement.



9. Completed test section.

During recent rains there was clear evidence that the stabilization worked in the short term. The new stabilizer can be used for well below the cost of adding gravel and delivers a stronger road that is water resistant and will allow more and heavier traffic while lasting longer. **GE**

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8. Pea gravel is placed over hot asphalt to complete chip sealing.

