

1-1-2007

Automated Spray Pothole Patching Truck

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DOI: 10.5703/1288284315765

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Recommended Citation

ECT Team, Purdue, "Automated Spray Pothole Patching Truck" (2007). *ECT Fact Sheets*. Paper 56.
<http://dx.doi.org/10.5703/1288284315765>

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AUTOMATED SPRAY POTHOLE PATCHING TRUCK

THE NEED

State highway agencies have spent \$300 million to \$400 million per year to fix potholes. Texas Transportation Institute (TTI) estimated that local highway agencies, which maintain most of the roads in this country, spend about twice that much. In most cases, highway agencies patch potholes using locally available cold-mix materials applied with the semi-permanent method or the throw-and-roll method. Established under the Federal Transportation Act of 1987, the Strategic Highway Research Program (SHRP) conducted a study that investigated the performance of various cold-mix patching materials and methods, including the spray-injection method. The study found that material had the most effect on the quality and durability of the patch. For best results, SHRP recommended that highway agencies use high-quality cold-mix patching materials. In addition, SHRP found that the spray-injected method was often more efficient and productive than many other methods, requiring fewer people and no compacting.

THE TECHNOLOGY

The RA-300 patcher, manufactured by Rosco Manufacturing, Madison, S.D., is a fully automated spray patching road maintenance vehicle, which fills potholes and cracks on the road. A operator can control all patching functions with the control panel and joystick from the safety and comfort of the truck cab. The operator is not required to leave the cab during any step of the process. The optional tank heating system uses heat from the engine to keep aggregate from freezing in the hopper so you can patch with ease even in cold weather. The RA-300 uses an aggregate feed hose from the hopper slide gate to the front bumper. The result is a patented feed system with no moving parts. Low pressure air moves material from hopper to patch with no paddles, chain drives or belts. The aggregate hopper can hold up to 5 cubic yards of material, which is enough for a full day of patching. The hinged hydraulically activated lid with rubber seal allows easy loading and protection from the elements. The nozzle has no spray ring to clean, no gaskets to replace, and features heated lines that extend all the way to the end. The result is dependable, clog-free, maintenance-free operation you can rely on, patch after patch. The emulsion tank features a wide 12" load hatch on top of tank to make



loading easier. The RA-300 includes an arrow-board mounted on the back of the chassis for safety.

The spray patch method Rosco Manufacturing using is as following:

1. The hole is cleaned. A high volume blower provides a blast of air to remove loose rock and debris.
2. A tack coat of hot emulsion is applied to the area to be patched.
3. Aggregate and hot emulsion are combined with forced air and shot into the hole.
4. A dust coat of aggregate is applied. Traffic can flow immediately.
- 5.

The machine's ability to fill potholes in cold temperatures means crew do not have to wait for warmer weather to make repairs. Previously, weather delays allowed potholes to degenerate and made the crews' work more difficult. The application of this equipment can reduce repair cost and provide fast and better service.

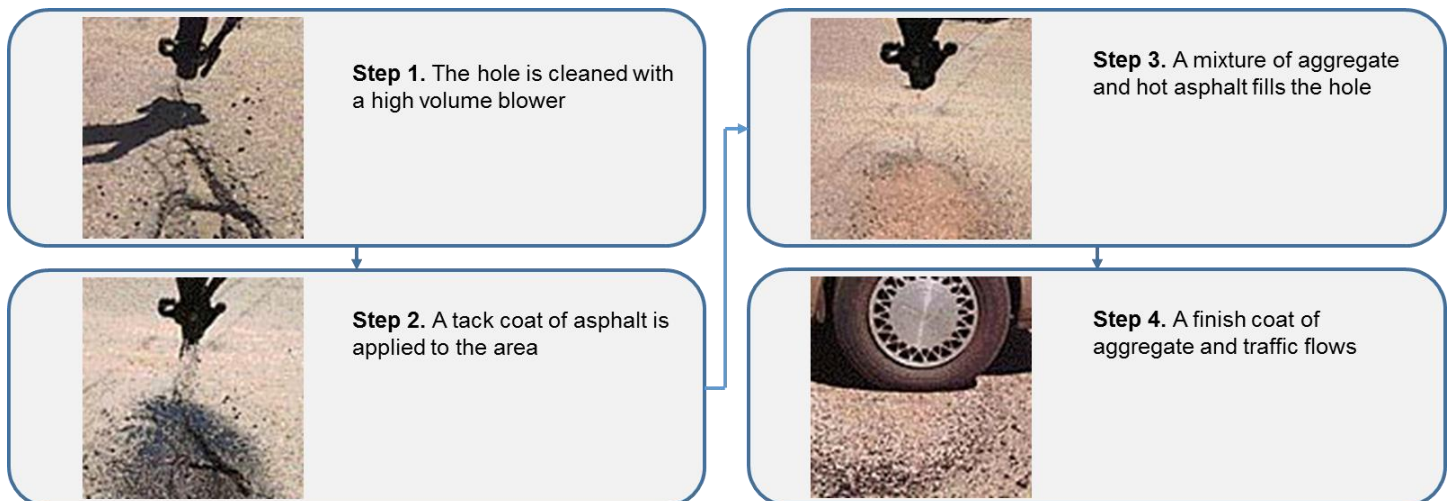


FIGURE 1 4 STEP PATCHING PROCESS

THE BENEFITS

The benefits from applying this products are:

- Simplicity.
- Increase of the strength and life of the patch by applying spray patching method.
- Decrease of the time involved in patching and patching costs:
 - Use of less labor to repair potholes. The RA-300 is a one-person operation, as compared to conventional throw-and-go methods that use two or more workers.
 - Cost-efficient method of roadway repair. It is less expensive with a 45 percent cost savings compared to conventional throw-and-go patching with edge seal.
 - Replacement of traditionally labor-intense throw-and-go patching technique.



- Safety advantage:
 - Safe environment for patching in heavy traffic or after dark.
 - The one-person operation completely controlled from the comfort and safety of the truck cab.
- Year-around patching of roadways (temperature must be above 0 degrees F).

The National Research Council's Strategic Highway Research Program in Washington, DC, found that spray pothole patches could be put in place more quickly, were less costly, and lasted much longer than conventional roadway patching methods.

STATUS

The innovation was introduced in the United States in the early 1990s. Rosco was the first manufacturer to offer the pothole patcher in a working model as a main-line product for customer use.

BARRIERS

Relatively high price of the equipment



POINTS OF CONTACT

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REVIEWERS

Peer reviewed as an emerging construction technology

DISCLAIMER

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PUBLISHER

Emerging Construction Technologies, Division of Construction Engineering and Management, Purdue University, West Lafayette, Indiana