

Helping Governments Win the Battle Against Potholes



POTHOLE KILLERS™



FIXROAD.com

Patch Management, Inc. ***WORLD HEADQUARTERS***

451 Tyburn Road

Fairless Hills, PA 19030 (USA)

Phone: +1 215.949.9400

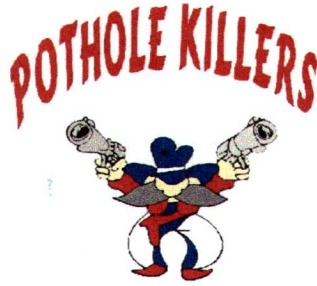
Fax: +1 215.949.3166

Cell: +1 215.740.7095

Toll Free: 877.FIX.ROAD (USA)
(877.349.7623)

Email: BJP@Potholekillers.com

Brian J. Preski, Director
Government Affairs
Patch Management, Inc.
451 Tyburn Rd.
Fairless Hills, PA 19030



Telephone: 215 949-9400
Fax: 215 949-3166
E-mail: bjp@potholekillers.com

October 13, 2015

Governor Nikki Haley
Office of the Governor
1205 Pendleton Street
Columbia, SC 29201

Re: Emergency Spray Patching Pothole Repair

Dear Governor Haley,

As you consider emergency repairs after the devastating floods that have affected your communities, I write to let you know that we stand ready to help make those repairs. Serviceable and available roadways available immediately are critical to rebuilding and alleviating the effects of such disasters. We have proven ourselves having conducted roadway repairs for the PENNDOT, NCDOT, RIDOT, VADOT, NJDOT, and NYSDOT. Please, allow me to introduce our services.

Understanding that each dollar spent within your rebuilding budget is sacred, I respectfully ask that you review the attached materials and the services that the Pothole Killers provides. Simply put, we are focused on spray-patching pothole repair and traditional methods of road repair -- shovels, a dump truck and three or four workers - are not only inefficient and expensive, but are woefully ineffective in solving the problem of roadway repair especially after a major flooding event. Spray patching attacks these inefficiencies by employing:

- "One-man, one-truck" technology allows for greater efficiency and cost-effectiveness.
- All operations are controlled from the cab, reducing traffic hazards, safety risks and the state's and local government's exposure to liability.
- All materials are self-contained on the truck - enough for a full, productive day of patching.
- Average pothole repair takes only 45-60 seconds, is guaranteed and lasts for years.
- The spray patching trucks can be operated day or night, in any kind of weather and can employ on-board GPS technology to better map and address these potholes in a time-efficient manner.

I ask you to consider the use of a proven, cost-saving process that would allow you to rebuild your roadways safely and immediately. **Indeed, in the attached proposed 50 day, 400 hour road repair blitz, we anticipate that we can make 78,000 repairs throughout the State of South Carolina at an average repair cost of only \$12.82 per repair. All labor, materials and equipment included. Of course, this proposal can be modified for a particular SCDOT District of need.**

Thank you for your time and for consideration, please call me to set up a brief meeting, presentation or demonstration. We are ready to deploy trucks, materials and operators to the affected areas of South Carolina immediately.

Sincerely,

Brian J. Preski

Brian J. Preski
Patch Management, Inc.

SUPPORTING DOCUMENTATION

PATCH MANAGEMENT, LLC

"THE POTHOLE KILLERS"

FIG. 1B

10

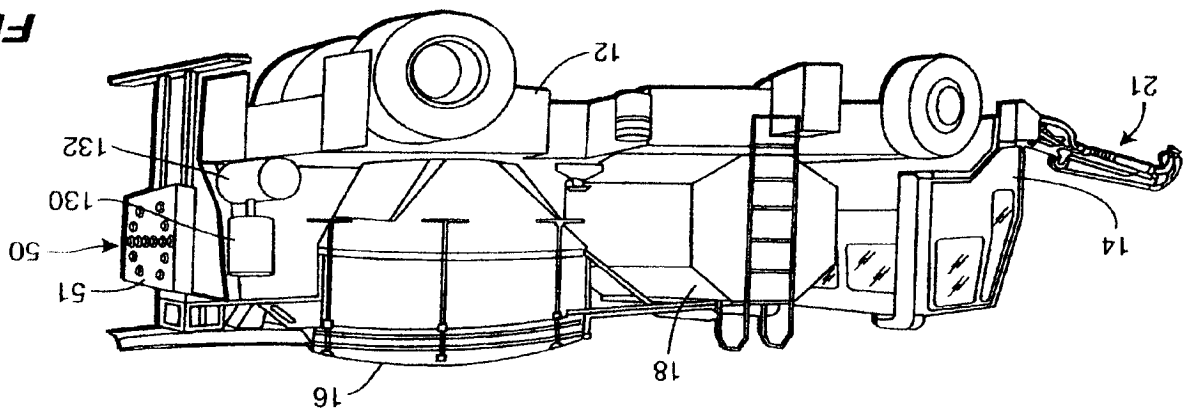
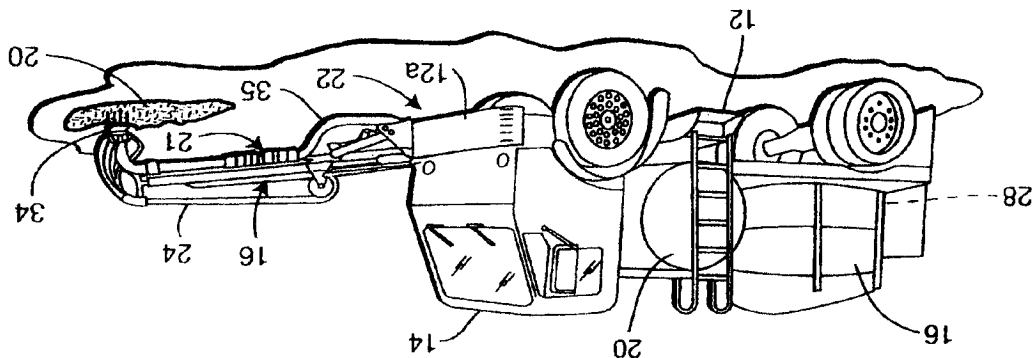


FIG. 1A

10



THE POTHOLE KILLER

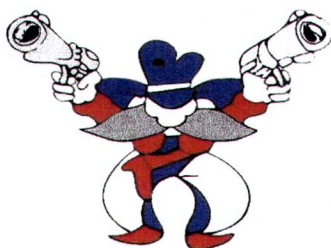
Our state of the art spray patcher, the "Pothole Killer" can tackle your toughest patching and repair challenges, including:

Potholes ■ Utility Cuts ■ Alligator Cracks ■ Bridge Deck Repair
Sink Holes ■ Concrete Repair ■ Edge Erosion, Raveling and Rutting

With Patch Management's exclusive services, you'll get these advantages:

- "One-man, one truck" efficiency and cost effectiveness.
- All operations controlled from the cab, reducing safety risks, traffic hazards, and liability.
- All materials contained on the truck, enough for a full, productive day of patching.
- Average pothole repair takes 45-60 seconds, lasts for years.
- The "Pothole Killer" can be operated day or night, and in any kind of weather.
- On-board GPS technology.
- Simple, affordable rental or lease options available to suit your budget.
- Environmentally Friendly.
- All work is guaranteed.

POTHOLE KILLERS



1-877-FIX ROAD
www.fixroad.com

Contact us at crb@potholekillers.com

SECTION 1 – Overview of our System

Patch Management, Inc
451 Tyburn Road
Fairless Hills, PA 19030



TM

Telephone: 215 949-9400
Fax: 215 949-3166
E-mail: crb@potholekillers.com

Overview of our System:

The spray injection patching application has been in use since the late nineteen eighties. The application involves the use of a specialized truck with specific materials that was developed and is protected by U.S. patent. The truck uses separate compartments to store the specialty materials that are manufactured and delivered at the repair location on demand. Through ongoing research and development by Patch Management the materials are also modified that will enable the application to be successful in temperatures where conventional patching materials or methods are not as successful. PMI has demonstrated the ability to successfully use the spray injection patching application during conditions when temperatures are below 32 degrees and when moisture is present.

It is important to note, each of the steps of this application are controlled by the patcher operator from within the interior of the vehicle via hand operated controls



The spray injection patching application is a four step process as outlined below:

1. The spray injection patcher uses a high volume, low velocity blower to blow out small loose debris, and or any water from the area to be repaired.
2. The next step is to apply an asphalt emulsion used as the "tack coat" this is a bonding material that provides an adhesive base for the material to bond with.

PK2000 Leasing – PK2000 Contract Services
www.fixroad.com



Patch Management, Inc
451 Tyburn Road
Fairless Hills, PA 19030



Telephone: 215 949-9400
Fax: 215 949-3166
E-mail: crb@potholekillers.com

3. The next step is where the asphalt emulsion is atomized and coats the properly sized aggregate that is used to fill the deficiency, the coated material is delivered to the repair site via air conveyance. The repair is completed from the bottom of the deficiency to the existing surface elevation, compaction is not required as all voids are filled by the aggregate and emulsion.
4. This step is where a dry material is used to provide a barrier i.e., dry aggregate incorporating this process permits immediate user access to the repaired area while the repair materials cure to provide a long lasting repair. **Note** PMI is currently testing the use of recycled tire rubber material for this phase of the application in place of a dry aggregate.

Note: For areas where pedestrian traffic is predominate we incorporate an additional process, we use a mechanical vibratory tamper to set all patch materials, and leave the repaired area in a broom clean condition.

Unique features of the PMI PK2000 Spray Injection Patcher:

The PK2000 patcher is designed to protect the environment by incorporating the use of a patented reduced capacity recirculation cleansing system that eliminates the need to discharge any cleaning agents or asphalt products during the daily cleaning activity.

The PK2000 system and materials that are modified by PMI and are pending patent protection permits this technology to be used year round, even when temperatures are below 32 degrees.

Standard industry practices require purging of approximately 2-5 gallons of cleaning solvent per day (standard is diesel fuel) from the asphalt circuit as a means of performing the daily cleaning application. As a result of this process there are inherent exposures i.e., spilling potential, storage and disposal requirements and the use of diesel fuel.

Our bio-degradable cleaning agent is re-circulated internally and is not required to be purged outside the asphalt circuit during the cleaning process. Because the material is biodegradable we can return it to the emulsion storage tank and use the material in the patching application therefore this application requires no storage or disposal liabilities.

The materials we use are environmentally safe and do not require DOT placards.

PK2000 Leasing – PK2000 Contract Services
www.fixroad.com



Patch Management, Inc
451 Tyburn Road
Fairless Hills, PA 19030



Telephone: 215 949-9400
Fax: 215 949-3166
E-mail: crb@potholekillers.com

TM

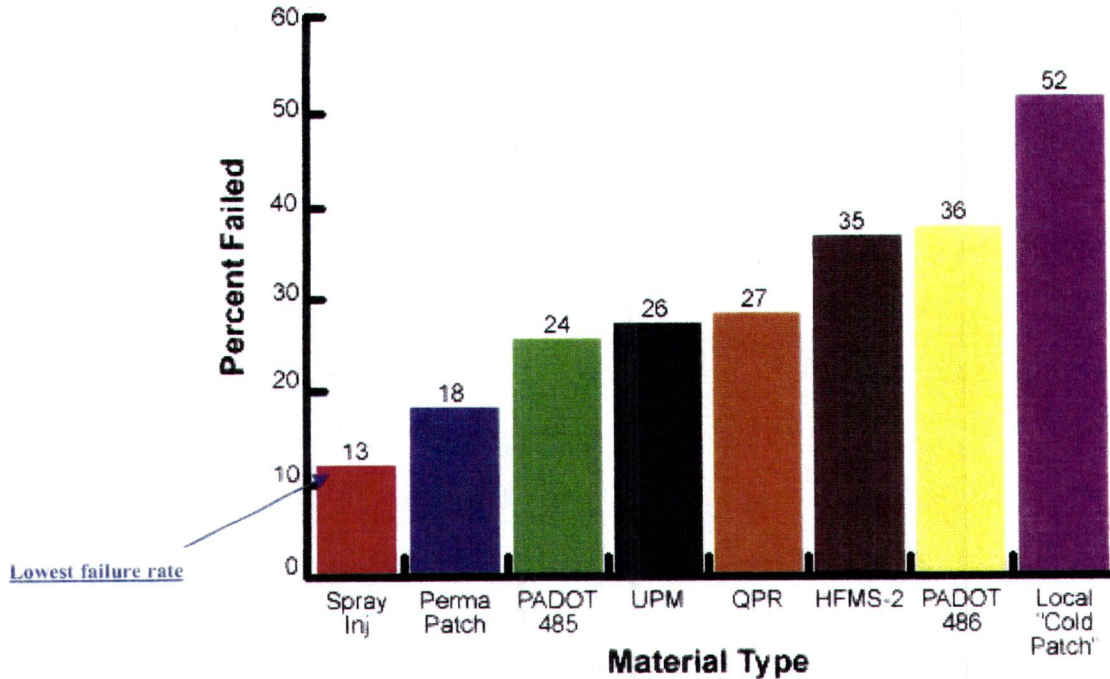


Figure A-1

Strategic Highway Repair Program (data)					
INPUT		Throw and roll A	Throw and roll B	Semi permanent	Spray injection
Crew Size		2	2	4	1
Wages/Day		300	300	1200	150
Traffic Control Costs		280	280	280	0
Repair Life - Months		3	21	12	21
Cost \$/ft 3 w/o delay		\$ 44.38	\$ 8.66	\$ 42.08	\$ 6.70
Cost \$/ft3 - user delay		\$ 106.88	\$ 17.57	\$ 83.75	\$ 15.63

Figure A-2

PK2000 Leasing – PK2000 Contract Services
www.fixroad.com



Patch Management, Inc
451 Tyburn Road
Fairless Hills, PA 19030



TM

Telephone: 215 949-9400
Fax: 215 949-3166
E-mail: crb@potholekillers.com

Key points of the PMI program:

- Recycle system designed to eliminate the need to store, dispose of or use of hazardous materials (from the daily cleaning activity)
- Use of environmentally safe materials in the patching application
- Use of recycled materials in our patching application (used tire rubber)
- We manage the quality control of the program to ensure the application is meeting the user's objectives, industry and our standards.
- Guarantee on all repairs made when using our system
- Accountability reporting of all repairs made via a report that identifies the date, time and location of all repair activity (asset management)
- With our system you can have direct access to the operator via text messaging for dispatch purposes
- No need for storage tanks we provide all the materials on demand
- A skilled operator can perform 100 plus repairs per day
- Ability to perform repairs year round even when traditional materials are not successful or not available due to the temperature and weather conditions.
- No waste of materials, the materials are maintained in the compartments of the PK2000 patcher until you're ready to make a repair, unlike cold patch which has a shelf life and if not used it becomes unusable and is a disposal issue because of the chemical components. Our materials are not hazardous and we are not required to carry DOT placards.
- We provide all technical support to ensure the program is successful
- We provide full maintenance and repairs on the equipment if we can not make the repair we will replace the equipment within 24 hours if you choose to lease the equipment and perform the repairs using your work forces.
- You have no capital outlay since the program is designed as a rental. Under this format you are assured to have the most advanced technology since we upgrade our equipment as we make improvements.
- The application can be performed day or night year round.
- The capabilities of the PK2000 includes other types of repairs to be made in addition to potholes, i.e., edge erosion, alligator cracks, sink holes, utility cuts, repairs to concrete surfaces, bridge decking, parking lots, on / off ramps, linear deficiencies etc.

PK2000 Leasing – PK2000 Contract Services
www.fixroad.com



SECTION 2 – Strategic Highway Repair Program Data

Strategic Highway Research Program (SHRP) project H-106

Executive Summary

The Strategic Highway Research Program (SHRP) project H-106 has begun to evaluate the effectiveness of many different materials, procedures, and pieces of equipment used for performing routine maintenance activities. Four main areas are being investigated: pothole repair in asphalt pavement, crack treatment (sealing and filling) in asphalt pavements, joint resealing in PCC pavements, and spall repair in PCC pavements. In three of the four repair areas—crack treatment, joint resealing, and spall repair—the repairs were installed with the understanding that a majority of the repairs would be in service from 5 to 10 years or beyond.

Pothole Repair

Using the data collected during the test site installations, laboratory testing, and the limited field performance of the different patch types over an 18-month period, several preliminary findings have been drawn from this study. When the two procedures have been compared directly, the throw-and-roll technique has proved just as effective as the semi permanent procedure for the three materials. Spray injection devices are a viable way to repair potholes in asphalt pavements, although the procedure depends on the skill of the operator. • Preliminary testing should be done to ensure the compatibility of the aggregate and binder that will be used to avoid premature failures and re-patching operations. The patches in the wet-freeze region are exhibiting a lower rate of success than those placed in the dry-freeze region (48 versus 93 percent). The lowest rate of survival has been observed at the Ontario test site 3. Either the throw-and-roll or spray injection technique should be used when patching during winter conditions; this reduces the time crews spend in traffic and improves safety for both the workers and the traveling public.

Patch Management, Inc
451 Tyburn Road
Fairless Hills, PA 19030



Telephone: 215 949-9400
Fax: 215 949-3166
E-mail: crb@potholekillers.com

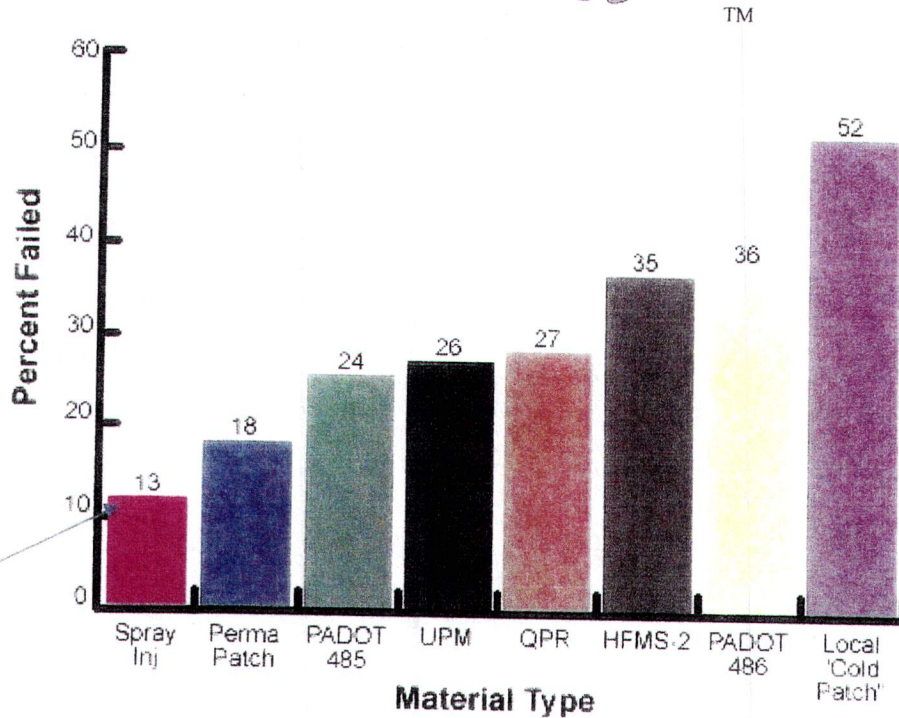


Figure A-1

Strategic Highway Repair Program (data)					
INPUT		Throw and roll A	Throw and roll B	Semi permanent	Spray injection
Crew Size		2	2	4	1
Wages/Day		300	300	1200	150
Traffic Control Costs		280	280	280	0
Repair Life - Months		3	21	12	21
Cost \$/ft 3 w/o delay		\$ 44.38	\$ 8.66	\$ 42.08	\$ 6.70
Cost \$/ft3 - user delay		\$ 106.88	\$ 17.57	\$ 83.75	\$ 15.63

Figure A-2

PK2000 Leasing – PK2000 Contract Services
www.fixroad.com



Section 3 – Minimum Specifications for Spray Patching Services

Minimum Specifications for Spray Patching Services:

Scope of Work:

The vendor shall supply the truck mounted spray injection patcher, a PK2000 model or approved equal, as specified herein with a skilled operator and the materials as specified to perform spray injection patching on a daily basis. The Philadelphia Parking Authority reserves the right to accept or reject equipment proposed. If an alternate model is proposed; the alternate model must meet all specifications herein to be considered. The provider must supply a, complete system with a skilled operator and all labor and materials required to perform spray injection patching as specified herein billing will be based on a 7.5 hour workday. Materials consumed beyond the daily allocated, level will be to be invoiced to the Agency at the approved value based on a validated consumption.

Aggregates are based on a per ton delivered, validated by a third party weight ticket, Emulsion is invoiced by the gallon of materials delivered to the patcher validated by a metered ticket and is based on the type of material provided that is dependent on ambient conditions.

The provider must have a minimum of five years verifiable experience providing services equal to the services requested. The provider is responsible to perform all maintenance of the equipment to ensure 7.5 hours of productivity per day. Note one workday equals 7.5 hours.

The provider must respond to the call for services within 24 hours of receiving the notice of need for services from the agency. Note: The provider may be required to supply services at multiple locations using more than one piece of equipment in any workday if requested by the agency.

The provider will receive locations of where repairs are to be performed from the designated Agency Manager, all repairs must be performed in accordance with industry standards, and all repairs will be warranted against failure for a period of not less than one year. Any repair that is identified to the provider that has failed will be repaired at no additional cost to the Philadelphia Parking Authority.

At the end of each workday, the provider will make available to the Agency a computerized listing of the locations where the truck has completed repairs that will contain; Time, Date, and location of the repair event. The provider must perform quality control inspections to ensure the program achieves the highest level of productivity attainable. The provider must issue the agency with a weekly progress report of all activity.

Equipment:

The spray injection patcher will be a PK2000 or approved equal and must be equipped with an environmentally designed high-pressure air re-circulation closed loop system to clean the asphalt emulsion circuit without the use of hazardous materials. The cleaning process must be capable of being performed from within the cab of the patcher, and shall not incorporate the discharge of any materials outside the closed loop circuit. The spray patcher will be equipped with automated controls so that the operator is not required to exit the vehicle to perform any application of the repair or cleaning process, the patcher must have the ability to perform linear patching while moving in a forward direction, The patcher will be equipped with a directional arrow board mounted on the rear of the patcher capable of providing a visual warning to pedestrians and approaching vehicles. The patcher must be driven by the chassis power plant PTO no auxiliary engines are acceptable.

Maintenance and Support of Spray Injection Equipment

The Equipment provider shall be responsible for the full performance capability of all equipment provided to perform the required services under this request. The equipment provider must perform all predictive and preventative maintenance on equipment when required; to ensure that equipment is fully functional at all times while under contract. In addition, if a mechanical issue cannot be corrected within 1 hour the provider must have the ability to provide a replacement to continue the patching services.

MINIMUM SPECIFICATIONS FOR AUTOMATED SPRAY PATCHING SERVICES

Any unit submitted not conforming to these specifications will be rejected, and it will be the responsibility of the manufacturer / provider to conform to the requirements unless deviations have been specifically cited by the contractor and acceptance made on the basis of the exceptions by Philadelphia Parking Authority :

The complete unit shall conform to the requirements of the federal motor vehicle code. Code requirements shall include, but not be limited to the following:

1. Gross vehicle weight requirements.
2. Bridge formula weight requirements.
3. Legal axle weight requirements.
4. Vehicle length/width/height requirements.
5. All pressurized tanks and fill openings shall be ASME certified.
6. Materials used must not be considered hazardous (non- carcinogenic)
7. The equipment must be environmentally compliant, and not incorporate the use of any solvent based cleaner.
8. The daily cleaning process must not require any materials to be omitted outside of the closed system.

SPRAY PATCHING APPLICATION

The truck mounted Asphalt Spray Machine shall be designed and constructed to repair larger cracks, potholes, and broad areas. The Asphalt Patching Machine should be completely controlled by one person from the driver's position of the cab. This machine with materials must be capable of patching successfully at temperatures as low as 0 degrees F. Operational features of the equipment provided shall be designed to use air volume to complete items 1-4:

1. **Clean** - dust shall be removed from the pothole by high velocity airflow, creating a clean, hard surface.
2. **Tack** - a mixture of air and asphalt emulsion ** spray shall be applied as a binder for the pothole repair.
3. **Fill** – with a compact mixture of air, asphalt, and aggregate that shall be applied at a high velocity to fill the pothole.
4. **Dry Coat** - a mixture of air and aggregate, or a recycled rubber material shall be applied to permit traffic on the repaired area without tracking. This is the final step on roadways.

** Step 4 is used in residential and urban parking locations as an additional step.

5. **Final process** to be used in any residential area or where pedestrian traffic is common – The repaired area must be mechanically tamped to set the repair materials, all repaired areas will be broom clean removing any loose materials before moving to the next repair.

** Asphalt emulsion must be suitable for the weather conditions when being applied even if surface temperatures are below 0 degrees Fahrenheit.

HYDRAULIC SYSTEM

Should be dual hydraulic pump with a minimum 10 GPM per section driven directly from the truck PTO, All hoses shall meet SAE SPEC 2000 PSI working pressure, 6000 burst pressure minimum. Unit shall have a minimum of 20-gallon hydraulic reservoir with provisions for drain and clean out. Unit must include minimum 10-micron filtration system with site gauge and temp rating. The hydraulic system shall be powered from a chassis power plant only (power take off unit) PTO; no auxiliary drive engines will be acceptable.

AIR SYSTEM

Shall be 4' x 4' high volume, low pressure-positive displacement blower and shall be hydraulically driven by truck PTO and capable of 450 CFM. Inlet air to blower must be filtered through a highly efficient industrial permanent usable dry type air cleaner (never needs replacement), and equipped with a suitable silencer to reduce blower noise. Cab mounted pressure-sensing gauge is to be included.

AGGREGATE HEATING AND VIBRATING SYSTEMS

The contractor shall provide an aggregate heating and an aggregate vibrating system to be used with the above equipment. The aggregate heating system shall allow the rock to remain free flowing in cold weather and freezing conditions.

The aggregate vibrator system shall allow for the dislodging of bridged material if the material becomes lodged in the aggregate hopper. These systems are necessary during winter or in adverse weather conditions to ensure an easier, smoother distribution of aggregate is achieved.

AGGREGATE SYSTEM

The aggregate storage tank shall hold a minimum of 5 cubic yards of aggregate. The tank to be equipped with a cover to prevent aggregate from bouncing out when transported and to seal the tank so it can be pressurized to equalize the pressure developed in the aggregate supply hose. The tank should have the ability to feed aggregate to the air delivery system with no conveyors, augers, and hydraulic pumps/motor mechanisms. The aggregate should be metered, into the air system without the use of mechanical air lock or water pad type positive feed systems. This system should have no moving wear parts and should be capable of delivering up to 22,000 pounds of aggregate per hour to the aggregate placement nozzle. The system should be designed to work with local aggregate up to ¾ in size and should not be adversely affected by fines or dirty material. The aggregate flow should be remotely adjustable, allowing the gates to open and close without resetting the rate. Tank shall contain a stainless steel insert with a replacement slide gate wear surface.

LIQUID ASPHALT EMULSION TANK

The unit shall be equipped with a 400-gallon liquid emulsion tank (ASME certified). The tank is to be insulated with a minimum of 4" of insulation and completely covered by a weather tight skin. The tank shall be heated by two (2) 4500 watt 240 volt thermostatically controlled heater elements operating at 120 volts. An alternative heat source shall be provided to maintain heat on the work site, and shall be regulated automatically to prevent over or under heating of materials. The alternative heat systems should be equipped with a ½ inch hose delivery into a water flue supplied from the truck engine at 150° thermostatically controlled. Fill opening for asphalt should be a minimum of 12". A 5" dial thermometer, and an emulsion level indicator, visible from the operator's cab shall be attached to the emulsion tank.

ASPHALT EMULSION FEED AND FLUSH SYSTEM

The asphalt air system shall be pressurized to deliver asphalt to completely cover aggregate at full feed capacity. The delivery system should be capable of maintaining 60 PSI throughout the petroleum resistant delivery hose. The emulsion shall be drawn from the bottom part of the tank to maintain good circulation over the heat tube. The tank should be equipped with easy access 3-way valve with flush and delivery positions. The flush system should have 30-gallon minimum capacity and should have provisions for storing used flush material the tank must be ASME certified. Asphalt controls must be equipped to have a cable shut-off redundancy assuring operators ability to shut off the flow of emulsion in case of power failure. All tanks must be ASME setup when operating pressure is 65 PSI.

ENVIRONMENTAL CONTROLS:

The spray injection patcher must be equipped with a system designed to clean the emulsion tank and hoses and incorporate a method to discharge a biodegradable cleaning material through the rear of the machine for cleaning purposes, without having to expel any material asphalt or emulsion through the front of the machine. The system during the dust cleaning activity in addition, the dust cleaning system shall be capable of being activated from within the cab of the vehicle by the operator without having to exit the cab.

BOOM ASSEMBLY

The patcher shall be equipped with a 3-stage Telescopic boom, constructed of wear-resistant material, steel pipe, (Not PVC pipe). Shall be one piece hydraulic double acting-cylinder design-boom that shall swing, hoist, and extend with mounted nozzle assembly that delivers air, aggregate, and asphalt and shall be equipped with a mechanical device that locks the boom in vertical position, and a 1" locking pin for preventing swing while in the stowed traveling position.

OPERATOR CONTROLS AND FEATURES

All operator controls shall be at easy access from the driver's position. The unit shall be designed so that all patching, function cleaning of the surfaces, tack coat, and application of high density patch and dust coating can easily be performed from the driver's position. Driver's emulsion control valve must have easy On/Off momentary control from the operator's joystick. Joysticks to control Boom In/Out, Boom Left/right, emulsion valve Open/Close. Aggregate gate must be equipped with all standard clearance and warning lights. The control panel must be equipped with a combination of digital gauges with monitoring capabilities for rock level indicator, asphalt level indicator, all system indicators and a backup of the 12v power source. There shall be an on board system capable of providing communications with field office, via two-way text messaging

ACCOUNTABILITY REPORTING

The Spray patcher must incorporate the necessary equipment to provide reports of vehicle positioning and tracking that can provide the following minimum data: Date, Time, Location address with the POTHOLE FILL stamp in the report, and the unit must have the ability to receive and send text messages to the program manager for communication purposes.

TECHNICAL SUPPORT

The awarded contractor shall provide technical support addressing both equipment and the patching process and any related problems and questions during normal workdays and work hours for the term of the service provided.

QUALITY CONTROL EVALUATIONS

The contractor shall provide no less than one (1) Quality Control Evaluation every three months during the term of the contract.

These evaluations will be conducted within seven (7) working days of a request by the agency. The request will be to conduct of a review of the machine conditions, operations, materials, and quality of the patches being produced. Refresher training and technical support will be provided to the operators during this review if deemed necessary by the contractors technical representative. A written report will to be provided to the Director of Public Works within seven (7) days of the evaluation.

ASPHALT EMULSION

The materials supplied for the spray injection patcher shall be compatible for the time of year when the activity is being performed. Summer applications, when temperatures above 10° C (50°F), works best with CRS-2, RS-2, or HFRS-2 grades. Limiting the penetration of the residue to a maximum of 135 within the range allowed in the emulsion specifications has also shown beneficial in the performance of spray-injected patches placed in warm weather.

Winter applications (below 10° C (50° F) call for CMS-2, MS-2, or HFMS-2 emulsion, Requiring the penetration of the residue to be a minimum of 135 within the range allowed in the emulsion specification has also shown beneficial in the performance of spray-injected patches placed in cool weather.

AGGREGATE

For optimum aggregate coating under either application, it has been documented through experience that the emulsion temperature should be maintained at 65° C (150°), and the emulsion's Saybolt Furol viscosity at 50° C (122°) should be limited to 250 seconds.

Aggregate sizes that work best for spray injection are AASHTO or ASTM size No. 9 [4.75 to 1.18 mm (No. 4 to No.16)] with no more than 3 percent passing the 75 um (No. 200) sieve. Crushed aggregate material recommended for spray injection. Using the emulsions described in Section 3, an asphalt emulsion content of approximately seven percent by weight of aggregate works best for warm weather conditions, while spray injection placed in winter conditions perform well at an asphalt emulsion content of about five percent by weight of aggregate.

Section 4 – Proposed Guarantee

PROPOSED GUARANTEE

All work will be performed in accordance with manufacturers' specifications and all warranties applied.

Where Patch Management Inc. provides its Spray Injection patching repairs, we will warrant our work against failure for a period of ninety days (90) from the date of the application. When PMI has been notified of a possible failure the repair will be reviewed by a PMI representative to confirm the repair has failed or if the issue is the surrounding area adjacent to the repair which has failed.

When PMI has evaluated and determined that 10% of the work performed has failed, PMI will schedule to return and perform the necessary repairs at no additional cost to the customer.

Section 5 – Cost and Material Usage Computations

SOUTH CAROLINA COST ANALYSIS

a) Proposed Program Cost \$1,000,000

b) Hourly Rate \$250.00/hour

a/b = 4,000 hours

4,000 Potential hours/ 40 hour work week = 100 weeks of potential work

100 weeks of potential work/50 weeks a year = 2 years' worth of work for 1 truck

or

10 trucks working a blitz of 400 hours

400 hours / 8 hour work day = 50 days

MATERIALS USAGE/POTHOLE REPAIR

10 Trucks employing 5 ton (2000 lbs) of stone per day = @100,000 lbs of stone/day

10 Trucks employing 120 gallons of emulsion @ 8.3 lbs/gallon = @9,960 lbs of emulsion/day

Accordingly, @ 109,960 lbs of materials would be placed on the roadways/day by 10 trucks

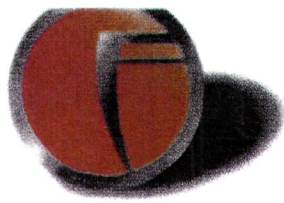
109,960 lbs of material/day x 50 work days = 5,498, 000 lbs of materials on roadways by 10 trucks/50 days

The average repair is @ 70 lbs material then, 10,960 lbs of material/70lbs = @156 repairs/day/truck

156 repairs/day/truck x 10 trucks x 50 workings days/year = @ 78,000 repairs/50 days

\$1,000,000 cost / 78,000 repairs = Average Pothole repair cost of \$12.82

ALL WORK IS GUARANTEED FOR 90DAYS. – No refilling of the same hole multiple times!



**FISHER
ASSOCIATES**

TRANSPORTATION

Issue 22

Alert

Bridges • Highways • Traffic Corridors • Transportation Systems • Planning • Environment

Potholes Be Gone!

Patching pavement is pricey; Or is it?

Hate potholes? So does your County. They spend a lot of time and money filling cracks and potholes; resources they would rather spend fixing roads and bridges. One local county has found a fast way to fill their potholes, saving time, money, and better yet, your car.

Traditionally, local municipalities fix their potholes using a crew of four to five people, five days per week, driving two trucks, weather permitting. On a good day, the crew can cover three to four miles of pot filled holes a day. There are 20,400 miles of county maintained roads in the State – a lot of ground to cover!

Here's another pothole problem: counties usually buy their pothole patch material once per year. They make an estimate, based on previous years, on how much material they will need. This can waste money, as material not used in a timely manner will seize and become useless.

Did you think filling potholes was this much work? Thankfully, there is a better way.

Steuben County, in the Southern Tier of New York State, has started leasing a compact, but powerful six wheeled truck, affectionately known as "the Pothole Killer," from Patch Management (PMI) of Morrisville, PA. The Pothole Killer is a self-contained spray patching vehicle. A precarious looking contraption, the truck has a nine foot, operator controlled arm that extends out in front of the vehicle. Through this single extension, the machine blows air into the pothole to clean it, sprays it with a protective layer of oil, and then fills it with the right amount of patch material. The whole process only takes 45-60 seconds.

The Pothole Killer quickly and safely produces pothole and road surface repairs that are more effective, more economical, and longer lasting than any other patching

method. Because the truck holds all the materials needed to patch the potholes, and mixes them on an as needed basis, users save money otherwise spent on wasted materials. However, the biggest money saver is not in the material savings; it is the reduced cost of labor. The truck is fully operated by one person. The use of this machine has cut labor by more than half, allowing Steuben County to use its labor forces on other worthy projects. It also can cover three times as many miles in a single day. Bryce Foster, the Steuben County Department of Public Works' Deputy Commissioner, said this new method has saved his department up to \$300,000 per season. The effectiveness of the Pothole Killer has also reduced the phone call complaints to Bryce's office by 80%. When asked if he would recommend this method to other municipalities, he said, "absolutely!"

Another unique capability of the Pothole Killer system is that Patch Management has patent pending system designs and

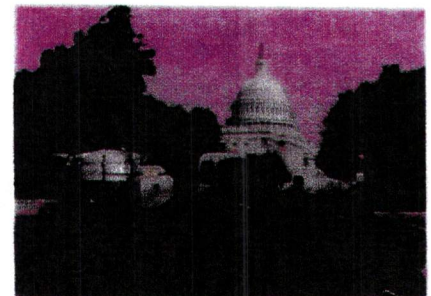
materials that are designed to work in extreme weather conditions where traditional materials are known not to be effective, i.e., below 40 degrees. PMI has successfully tested their system and materials to -17 degrees.

Any size municipality or business can take advantage of the Pothole Killer's savings. Some communities pool resources and split time with the machine. The cost of the rental includes training, allowing municipalities to use their own workforce to operate the truck.

Should you find yourself in need of road repair that involves potholes, call in a killer, the Pothole Killer. You'll save time, money, your work force will not be standing on the road surface performing the repairs, and you will please your constituents.

In this issue:

Potholes Be Gone!	1
First Flush Runoff Impacts Highway Design	1
Top 10 Tip for Navigating Potholes	2
Birth of a pothole	3
Sign Codes Good For Government and Business	4



A Pothole Killer in front of the Capital Building.



1-877-FIX ROAD

For more information about rental rates and availability, contact Patch Management, Inc., at 877-FIX-ROAD.

SOUTH CAROLINA COST ANALYSIS

a) Proposed Program Cost \$1,000,000

b) Hourly Rate \$250.00/hour

a/b = 4,000 hours

4,000 Potential hours/ 40 hour work week = 100 weeks of potential work

100 weeks of potential work/50 weeks a year = 2 years' worth of work for 1 truck

or

10 trucks working a blitz of 400 hours

400 hours / 8 hour work day = 50 days

MATERIALS USAGE/POTHOLE REPAIR

10 Trucks employing 5 ton (2000 lbs) of stone per day = @100,000 lbs of stone/day

10 Trucks employing 120 gallons of emulsion @ 8.3 lbs/gallon = @9,960 lbs of emulsion/day

Accordingly, @ 109,960 lbs of materials would be placed on the roadways/day by 10 trucks

109,960 lbs of material/day x 50 work days = 5,498, 000 lbs of materials on roadways by 10 trucks/50 days

The average repair is @ 70 lbs material then, 10,960 lbs of material/70lbs = @156 repairs/day/truck

156 repairs/day/truck x 10 trucks x 50 workings days/year = @ 78,000 repairs/50 days

\$1,000,000 cost / 78,000 repairs = Average Pothole repair cost of \$12.82

ALL WORK IS GUARANTEED FOR 90DAYS. – No refilling of the same hole multiple times!