

Cape Seal: An Economical Pavement Maintenance Solution

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When you think of pavement maintenance, chip seal, slurry seal, micro surfacing or asphalt overlay generally come to mind. All of these methods have their advantages and disadvantages. However, by combining chip seal and slurry seal, you get an even better alternative – cape seal. Cape seal provides a finish that is similar to an asphalt overlay, but at a lower cost.

A-1 Chipseal, a contractor serving several cities and counties along the Rocky Mountains' Front Range in Colorado, has performed preventive maintenance construction for 10 years. The company began doing cape seal five years ago and has been introducing it to its customers as a better alternative to chip seal, slurry seal and thin asphalt overlays ever since.



“Chip seal does a good job of sealing the road, but the texture is not always the most desirable because it can be hard and rough,” said Ben Vagher, president of A-1 Chipseal. “With cape seal you get the durability and strength of the chip seal with a smooth slurry seal finish that is more customer-friendly.”

Cape Seal Process

Cape seal combines the processes of chip seal and slurry seal to form a single, more durable surface. Here is how it works:

Step 1: Road Preparation – this includes sealing cracks, patching potholes, leveling the surface and removing weeds and other particles from the edge of the road. Make sure the pavement is clean before starting the next step.

Step 2: Emulsion – spray a thick layer of polymerized oil on the pavement using a distributor truck – preferably one with computerized shot rates to give you a consistent application of oil. A-1 Chipseal uses polymerized oil, CRS-2p, to provide a strong hold for the aggregate.



Step 3: Dispense Aggregate – use a chip spreader to disperse the aggregate on top of the oil evenly. The aggregate itself needs to be cubicle in shape, with little or no flat and elongated pieces, and all the same size, for a consistent finish. Haul trucks will be needed to transfer the aggregate to the chip spreader and should be compatible to the chip spreader for a smooth transition.

Step 4: Roll – use a pneumatic-tire roller, generally 5-10 tons, to press the aggregate into the oil. The first pass must happen immediately after the aggregate has been laid, and each section of the road should be rolled at least twice. This seals off the existing asphalt and gives it a wearing surface. A-1 Chipseal prefers rollers that allow operators to sit sideways on the machine, causing less physical stress on the operator.

Step 5: Remove Extra Aggregate – the next day, broom up any loose aggregate that didn't stick. Many different brooms exist, including kick brooms and side-delivery brooms which push the extra aggregate into a windrow, or vacuum brooms that suck up the excess material.

Step 6: Slurry Seal – use a slurry seal paver to place a layer of slurry on top of the chip seal. This provides added durability and reduces chip loss and traffic noise. The result is a

black surface with a smooth texture. Micro surfacing can be used instead of slurry seal, but is not as common because of higher costs.

Cape Seal Applications

Cape seal works extremely well for residential and collector streets because they require a durable, yet smooth finish for safety. Cape seal works best when the pavement does not have significant structural issues. If the road has many large potholes or major structural problems, an asphalt overlay is needed. Cape seal lasts as long as or longer than chip seal, as well as some asphalt overlays – extending the life of the pavement by up to 10-15 years.

A-1 Chipseal's season starts in May and usually ends in September. The defining factor is the temperature outside – with 50 degrees being a typical measuring point. If the temperature is above 50 degrees – or will be as the process sets – then the job can be done without worry. In locations where freezing occurs, cape seal should be placed only after a long period of dry weather – to prevent water



from being trapped in the pavement. This also holds true for wet-climate areas. It is important that the surface is dry so the water doesn't damage the new surface.

A quality cape seal pavement has a smooth texture, no loose aggregate and excellent skid resistance. It holds up well against weather conditions with a life span of 10+ years. Cape seal reduces future cracking much better than chip seal or slurry seal alone and can be done in two days or less.

“We have heard the theory that it takes 3-5 days to successfully complete a cape seal and we find that inaccurate,” said Vagher. “This process seals the surface, keeping air and water out, and

provides an economical way to stretch your maintenance dollars without holding up the area for more than two days.”

Highly Economical Solution

One of the main attractions of cape seal is its price, although it varies somewhat by region or state. According to A-1 Chipseal, while providing a smoother and potentially longer-lasting finish, cape seal costs only about \$1 more per square yard than chip seal or slurry seal alone.



Aggregate size and the amount of slurry needed can fluctuate and determine the price for each job. Depending on the pavement and its condition, A-1 Chipseal uses anywhere from ¼-inch to ½-inch aggregate for chip seals, and 20 to 30 pounds of slurry per square yard. In Colorado, cape seal generally costs about

\$2.50 to \$2.75 per square yard – a tremendous difference from the \$6.40 per square yard cost of a milling, utility adjustment and asphalt overlay.

Ron Martinez, street superintendent for the town of Parker, CO, has cape seal in his 5-year plan for area cul-de-sacs and minor collector streets. “It is not feasible to treat each road with an asphalt overlay,” said Martinez. “Cape seal is a cost-effective way to get more life out of our city roads, allowing us to take care of our residential areas quickly with a product that raises the value of the street. In the past, we have had chip seal projects peel up from residential trash trucks, whereas the cape seal does not. Cape seal comes the closest to matching the surface texture of an asphalt overlay.”

Gaining Popularity

Although cape seal is said to have originated in South Africa in the 1950s, its use is not that common in the United States. It is gaining popularity, but is more common on small residential and collector streets. To this day, it is still unknown whether it can handle the consistent weight of heavy vehicles, or stand up to high traffic volumes. This is something that will need more

research before it is expanded onto more commercial roads. Many conditions can affect the cape seal's efficiency, including traffic volume; strength and quality of emulsion; pavement condition; aggregate gradation; snowplow traffic; turning, starting and stopping of traffic; and elevation.



One potential reason to use cape seal on high-volume roads is its durability against snowplow blades. Most cities and counties use carbide blades on their snowplows, which can break apart chip seal with down pressure. Unlike other preventive maintenance methods, cape seal protects well against these sharp carbide blades and does not deteriorate near as quickly.

“We see a huge potential for this process on area streets,” said Vagher. “There is a strong need for it in Colorado and across the country. It provides our customers with a good return on their investment. Once people try this, it is an easy sell and makes sense.”

You Can Count On A-1 Chipseal

President Ben Vagher started A-1 Chipseal more than 10 years ago. He has more than 30 years of experience in the asphalt industry and is using his expertise to serve customers in Colorado – working from Fort Collins to Colorado Springs. A-1 Chipseal does most of its work for city, county and state governments, with a small portion of its business coming from private work. It has grown significantly every year, starting with 15 employees 10 years ago and growing to more than 50 today. A-1 Chipseal has two chip seal crews and two slurry seal crews, with 12 to 15 employees on each, helping complete jobs faster and open roads for the public.

The company has built its reputation on honesty and experience. It takes the feelings and opinions of people in the communities seriously, as well as the municipal representatives that it works with. A-1 Chipseal listens to customers, helping them avoid complications with the

pavement work. It also strives to improve its product, testing new rock and seals for customers when needed.

“We use only the best aggregate in the state,” said Troy Beer, estimator/project manager for A-1 Chipseal. “We are the aggregate specialists in our area and know the material and how it reacts. We are also extremely honest with our current and potential customers. We won’t try and sell them something that won’t work. We want what’s best for the customer and won’t put down a product that is going to fail.”

Along with high-quality aggregate, A-1 Chipseal uses high-quality equipment – including Bergkamp’s truck-mounted slurry seal pavers. With more than 16 years of experience in the industry, Beer highly recommends Bergkamp equipment.

“Basically, we do not have to do anything to the equipment to get it running efficiently,” said Beer. “Some of the other machines I have used in the past require a lot of tinkering and adjusting to get a quality product, but the Bergkamp equipment handled everything right away with nearly no adjustments. I’ve also worked with Bergkamp slurry equipment that was 12 years old. Other than normal maintenance I didn’t have any problems with them.”

A-1 Chipseal continues to grow in work load and employees. Since the company started more than 10 years ago, it has increased its chip seal business from 1-½ million square yards to 5 million square yards per year, and its cape seal business from 10,000 square yards to ½-million square yards per year. “Cape seal is our strongest growth opportunity,” said Vagher. “It could easily double this year.”

For more information about A-1 Chipseal, visit www.a-1chipseal.com.

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