

## 2017 YOU SHOW US CONTEST

### Pavement Preservation Evaluation Project



#### City of Greeley – Public Works & Engineering

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#### PROBLEM:

Local Agencies are asked every day to stretch the taxpayer's dollar as far as it can possibly go. Since the early 1970's, the City of Greeley has established a Pavement Management System utilizing a wide variety of street maintenance treatments. These treatments include chip sealing, slurry sealing, emulsion based seal coats and rejuvenating seal coats. As the industry advances, it is important to stay current with new products and techniques, to keep the public infrastructure in as high a quality and safe traveling condition as possible. Greeley's population continues to grow over 100,000 citizens, bringing in additional challenges, traffic and new streets to maintain. The Public Works Department is committed to identifying the most cost-effective methods of maintenance.

#### SOLUTION:

To help address this issue, the Street and Infrastructure Maintenance (SIM) staff developed a plan to create a pilot project to evaluate seal coat materials and processes, placed on the same road at the same time exposed to the same traffic within the city limits - a first of its kind study in Colorado. A test plot of a 1,500 foot long strip of roadway was subdivided and given as wide of a variety of seal coating treatments as possible. The SIM staff reached out to a number of private vendors, asking for any new products that hadn't before been used, or had been used less frequently by Greeley. Although initially there were only a handful of participants, as the project progressed and word spread, other vendors approached the SIM staff about adding their own products to the site. The decision was made that each of 14 sections would be awarded on a "first-come, first-serve" basis, with vendors providing their materials and labor at no cost to the City of Greeley, and the City would provide the traffic control. The program began in July of 2016, took 4 months from start to finish, and saw 14 different products applied. See the table below for final site inventory information.

The City developed 9 criteria upon which the 14 section’s overall quality and durability can be compared; and makes the findings publicly available. The “Keep Greeley Moving” project website includes a complete list of the precise methods of applications, materials used, construction documentation, composite scores by section, and performance over time - viewable online at <http://keepgreeleymoving.com/2016-seal-coat-test/>. The public works article included below also describes the project in additional detail.

**COST, LABOR, MATERIALS:**

The product vendors provided their materials and labor at no cost to the City, and the City provided the traffic control. The project was completed at a total cost to the City of less than \$1,700 in traffic control, and small administrative fees associated with communication efforts, and mailing out information and surveys to the affected neighborhood.

**BENEFITS:**

Local Agencies must be diligent in how they budget limited capital funds for annual maintenance of their asphalt pavements. In response, the City of Greeley developed a program to evaluate new paving options with the potential to extend the service life and improve safety of their aging road network.

The project is considered a great success, having gained regional attention. The SIM staff have hosted a number of other government agencies and private entities on site to observe the sections, and have also developed a presentation for MGPEC to discuss findings. Other local agencies have applauded this project as there has been a lot of discussion amongst local agencies that have wanted to take something like this on, but can’t get it accomplished. In addition, other agencies have been impressed with the amount of time and effort that City employees put into educating and working with the residents in the project neighborhood.

As time goes on, the City of Greeley plans to continually monitor the site each month over the course of the next two years before returning the road to a uniform surface.

<u>Section No.</u>	<u>Applicator</u>	<u>Product</u>	<u>Application Notes</u>	<u>Date of Application</u>
1	Andale Construction	HA5 - High Density Mineral Bond		9/1/2016
2	COBITCO/CoG -Streets Dept.	Reclamite	CoG sanding	9/2/2016
3	COBITCO/CoG -Streets Dept.	Reclamite	CoG sanding	9/2/2016
4	Foothills Paving	1/4" Chip Seal	Fog sealing on 8/20/2016	8/19/2016
5	Foothills Paving	Type II Slurry Seal		8/19/2016
6	Vance Brothers Inc.	ULTRASEAL Type III	Coatings Inc.	10/14/2016
7	Vance Brothers Inc.	Rejuvenate - GSB-88		6/24/2016
8	DISSCO	Rejuvenate - RS-90		9/15/2016
9	Vance Brothers Inc.	ULTRASEAL Type II	Coatings Inc.	10/14/2016
C	Section Empty - Control	-	-	-
10	Vance Brothers Inc./Foothills Paving	Fabric & Double 3/8" Chip Seal	Fog sealing on 9/25/2016	9/23/2016
11	SealMaster	Master Seal	Apex	8/3/2016
12	SealMaster	PMM	Apex	8/3/2016
13	SealMaster	Liquid Road	Apex	8/3/2016
14	SealMaster	Color Pave	Apex - Brickyard Red	8/3/2016



# City of Greeley:

## Public Works Pushing their Pavement Preservation Program in New and Exciting Directions

by John Wood, Pat Hill and Mike Skinner

**Local Agencies are asked every day to stretch the taxpayer's dollar as far as it can possibly go. So in response, Public Works Departments, Departments of Transportation, Home Owner's Association and local business must budget limited capital funds for annual maintenance for their asphalt pavements.**

The City of Greeley, a northern Colorado community of with just over 100,000 residents, is responsible for managing and maintaining their roadway network of 370 centerline miles (852 paved lane miles) using a progressive and well established Pavement Management System (PMS). The City's Pavement Preservation program is a key element of the PMS and has recently been expanded to evaluate new potential products to extend the service life of their aging road network.

Greeley has been using a variety of surface maintenance treatment products since the late 1970's as the staple of their annual street program including; Chip Seals, Slurry Seals, Emulsion Seal Coats and Rejuvenating Seal Coats.

Each treatment is designed to perform differently, and treat a varying range of roadway distresses. With such a wide variety of preservation products available to agencies, it can be overwhelming to find the right products for the job. In the summer of 2016, the City's Street and Infrastructure Maintenance staff created a pilot program to compare performance of locally available seal coat products side-by-side.

The idea to create the test section was developed by city staffers Pat Hill (Pavement Management Coordinator) and John Wood (City Engineering), in the late spring of 2016. Both expressed their frustration at the time in the lack of available local performance data to evaluate products placed at the same time and exposed to the same user conditions. What came about was a plan to create a pilot project to evaluate seal coat materials and processes, placed on the same road at the same time exposed to the same traffic within the city limits, a first of its kind study in Colorado.





# Residential Test Sections



No.	Applicator	Product
1	Andale Construction	HA5 - High Density Mineral Bond
2	COBITCO/CoG -Streets Dept.	Reclamite
3	COBITCO/CoG -Streets Dept.	Reclamite
4	Foothills Paving	1/4" Chip Seal
5	Foothills Paving	Type II Slurry Seal
6	Vance Brothers Inc.	ULTRASEAL Type III
7	Vance Brothers Inc.	Rejuvenate - GSB-88
8	DISSCO	Rejuvenate - RS-90
9	Vance Brothers Inc.	ULTRASEAL Type II
X	Left open as control	N/A
10	Vance Brothers Inc./Foothills Paving	Fabric & Double 3/8" Chip Seal
11	SealMaster	Master Seal
12	SealMaster	PMM
13	SealMaster	Liquid Road
14	SealMaster	Color Pave

Engineering staff developed a set of guidelines for the product vendors to submit materials and application methods. Staff then carefully evaluated the street network for a test section candidate and ultimately chose an asphalt pavement section located in the Promontory subdivision on the west side of Greeley. The ten year old asphalt pavement was in good condition with a Pavement Quality Index (PQI) score of 72. Pavement condition for all city streets in

Greeley are rated from 0 to 100 (100 being new pavement) on a regular basis. The test section pavement condition was typical of a ten year old pavement and exhibited distress in the form of missing surface fines, longitudinal cracking, transverse environmental cracking, and a few select patches from previous utility repairs. Average Daily Traffic (ADT) is 200 to 250 with one percent commercial traffic. The road had previously been crack filled in 2014,



but no other maintenance had been performed. Staff selected the road for the pilot and felt it was a typical representative pavement section exhibiting common distress for a 10 year old asphalt in northern Colorado. Public Works then developed a request for vendors to participate in the performance study with the goal to apply one of every type of seal coat material.

Material vendors responded, the city received multiple requests to participate and have the suppliers place their products in the test section to be compared against their competition. The test section was subdivided into 15 one hundred foot back to back sections, extending across

both lanes of traffic from curb line to curb line (31in wide). Between July and early October 2016, 14 identical sections were given a range of treatments, with the 15th segment left untreated to act as a control. Products evaluated included:

- **Double-chip seal with fabric**
- **1/4 "chip seal**
- **Type 2 slurry seal**
- **Emulsion based seal coats with fillers**
- **Surface rejuvenators**

The variety in products that were placed provides a well-rounded selection of seal coat materials for comparison.



Application of these materials required a series of short road closures. Working with the forty plus home owners living adjacent to the test section, the City realized that communication, responsiveness and customer service was critical because the products would be placed over a period of four months. With such a high number of small traffic control setups, excellent written and verbal communication with the neighborhood was critical. Vendors were allowed to place their products according to their specifications and procedures, allowing for some sections to be reopened after a just a few hours, while others took up to 24 hours to fully cure.

At the conclusion of the project, the City thanked all the home owners and asked for their input in an initial survey collecting public feedback on the products applied on their street that they see and drive on every day.

To analyze the performance of the preservation products, staff developed a process to evaluate the seal coats and publish the findings over the next two years. A visual condition survey was created and is performed every month. Additionally, staff created a website (KeepGreeley-Moving.com) where product information, construction details, and general updates are posted. Public Works staff is conducting monthly evaluations of each section to observe the deterioration of each product over time. Individual test sections are graded with the same monthly criteria. Each section's performance will be compared to the control section. Greeley's climate can vary from a hot, dry summer to a cold, freezing winter, providing the best possible test section for these materials.

Over the next two years, City staff will monitor and report the conditions of the test section and the public is encouraged to visit the web site for updates.

The City of Greeley would like to thank the following vendors for their participation providing and applying materials; Foothills Paving Inc. (Wheat Ridge), Vance Brother Inc. (Denver), Andale Construction Inc. (Wichita, KS), COBITCO Inc. (Denver), Denver Industrial Sales & Service Co. (DISSCO) (Denver), and SealMaster (Denver).

We also like to thank our traffic control provider, Northern Colorado Traffic Control (Greeley). For more information or to schedule a visit please call John Wood at 970-336-4181 or Pat Hill at 970-350-9540 or [pat.hill@greeleygov.com](mailto:pat.hill@greeleygov.com). For a detailed report on the sections and participating vendors, please visit <http://keepgreeleymoving.com/2016-seal-coat-test/>

