



# HIGH DENSITY MINERAL BOND



**City of Bastrop**  
**Strategy for Pavement Preservation**  
**Total Project Size: 185,609 SY**  
**Proposal for HDMB Project**

## Summary:

The highest return on investment (ROI) is achieved by installing HA5 - High Density Mineral Bond.

Performance is calculated to be two to three times longer compared to using seal coats and premium seal coats.

Beyond the preservation benefits that HA5 provides, residents experience less community intrusion as road closures are needed much less frequently.

## Performance History of Surface Treatments

The biggest items to focus on for preservation treatments are:

- » What will provide the maximum extension of pavement life per every dollar spent?
- » Validating a product's performance goes beyond pictures of black roads. Initially, all tools for pavement preservation turn a road black, but HA5 has proven to slow the age hardening of asphalt pavement that leads to cracking and deterioration.

# HA5<sup>TM</sup> High Density Mineral Bond

A breakthrough that is changing the aging characteristics of asphalt, and confirmed by university testing, is igniting enthusiasm for a profound reduction in pavement life-cycle costs.

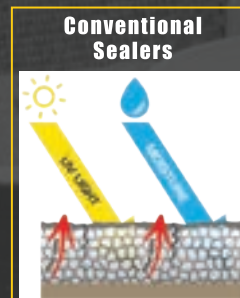
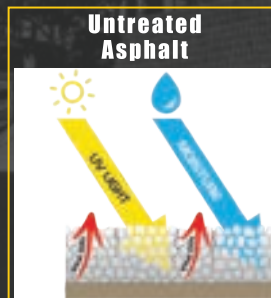
**RESEARCH PROVES  
HA5 DELAYS AGE  
HARDENING**

**67%**

DELAY IN ASPHALT AGING



## HOW HA5 IMPACTS ASPHALT AGING



"Using conventional as well as leading-edge testing methods to identify the age hardening of the asphalt binders, researchers have identified a 67% delay in the age hardening of the asphalt binder with HA5 installed as a pavement preservation strategy. This ability to reduce flexibility loss supports an in-field case study where after just a four-year period a side-by-side comparison identified cracking to be reduced by nearly 9 times with HA5 installed."

"Transportation Research 2020" Dr. Shakir Shatnawi, P.h.D., P.E. Former State Pavement Engineer and Division Chief at Caltrans with 30 years of experience in pavement design, management, and preservation.

For more information visit:  
[www.holbrookasphalt.com/HA5](http://www.holbrookasphalt.com/HA5)





# HIGH DENSITY MINERAL BOND

## HA5 Treatment Report

Below are core samples taken from roadways comparing municipality specified, time-tested pavement preservation treatments. Look closely at each core. The HA5 core aesthetically looks to be the most desirable with the darkest surface. However, what the engineering community has identified is the darker color beneath the surface. This uncovers HA5's ability to retain the critical oils and resins that keep asphalt pavements flexible. ***More flexibility results in pavements lasting longer with less cracking and other manifestations of deterioration***

### Core Sample Comparison



#### Slurry

Date Pavement Installed:  
**1999**

Preservation:  
**Type II Slurry**



#### Chip Seal

Date Pavement Installed:  
**1999**

Preservation:  
**Chip Seal**



#### HA5

Date Pavement Installed:  
**1995**

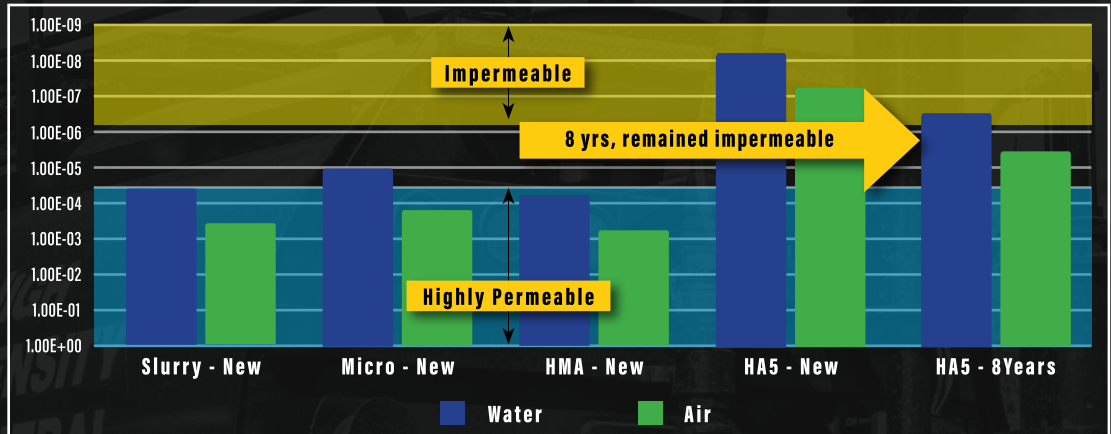
Preservation:  
**HA5 (High Density Mineral Bond)**

A report from the engineering firm Rosenberg & Associates, assessing a side-by-side of HA5 to a premium seal coat installation, found **9x less cracking** in the HA5 treated section compared to the premium seal coat treated section after a **4-year period**.

**KEYS TO PAVEMENT PRESERVATION:**  
*The Right Treatment, on the Right Road, at the Right Time.*

*For more information visit:*  
**[www.holbrookasphalt.com/HA5](http://www.holbrookasphalt.com/HA5)**

## AIR & WATER PERMEABILITY COMPARISON



Research on binder elasticity and pavement permeability proves that asphalt treated with HA5 significantly increases the useful life of asphalt pavement and therefore dramatically lowers the cost of transportation infrastructure.

## ROI

Primary Treatment Strategy	Avg PCI	(Subdivision Public Acceptance Rating) PAR	\$/Centerline Mile*	Cost of Ownership Savings
1. Do Nothing	70	4	\$5,642,846.54	0%
2. Partial Recon/ Surface removal	73	4	\$3,612,576.63	36%
3. Mill & Overlay	76	6	\$3,099,706.96	45%
4. Thin Overlay	75	6	\$2,961,391.49	48%
5. Seal Coat/Mastic Sealer	79	7	\$2,639,047.53	53%
6. FOG/Rejuvenator	81	7	\$2,590,647.40	54%
7. Type II Slurry	86	4	\$1,281,249.01	77%
8. Micro Surface	80	5	\$1,247,331.18	78%
9. Chip Seal	80	2	\$1,115,431.75	80%
10. High Density Mineral Bond (HA5)	88	9	\$954,838.49	83%

- Highest Return on Investment (ROI)
- Highest Pavement Condition Index (PCI)
- Highest Public Acceptance Rating (PAR)

Every agency's design specifications and goals are different but HA5 has proven its effectiveness at extending design life no matter what your goals look like.



Data analysis provided by Scot Gordon, PE, IAM, President, Roadway Asset Services, LLC. Scot has a Bachelor's and Master's degree in civil engineering from Texas A&M University with 30 years experience involving design of major highway infrastructure, evaluation and research of pavements, soil stabilization, and pavement management plan development.





# HIGH DENSITY MINERAL BOND

Proactive DOTs, Municipalities, and HOAs across the country have uncovered a strategy that saves them money while effectively preserving their pavement assets using HA5 High Density Mineral Bond

- » Lower & more predictable costs
- » Extends pavement life
- » Unmatched Durability
- » No loose or grainy residue
- » Fewer premature failures
- » High Homeowner acceptance

Garland, TX



Sachse, TX



Claremore, OK



Alabama DOT



St. George, UT



Queen Creek, AZ



Matthews, NC



Rocklin, CA



Nashville, TN



For more information visit:  
[www.holbrookasphalt.com/HA5](http://www.holbrookasphalt.com/HA5)

## 2025 City of Bastrop Revised Streets List

Street	Square Yards
Allbright	782
Hill St	5,201
Beech	1,924
Jefferson	4,417
Spring St	861
Pecan St	12,433
Buttonwood St	2,737
Bear Hunter	8,443
Olaa	2,373
Homonu	1,795
Pahala	1,648
Aloha	3,652
Koui	483
Reva	504
Kohala	1,282
Duff	6,721
Eskew	1,426
Maynard	2,997
Hasler	2,394
Austin	2,459
Haysel St	1,749
Jackson	3,502
Driftwood Ln	4,144
Shallowford Pl	2,635
Aster Pl	1,925
Childers Dr	16,957
Hamilton Pool Ln	2,412
Trailstone Dr	11,161
Cold Springs Loop	3,475
Watercourse Way	3,986
Hidden Springs Dr	5,201
Calm Water Loop	1,651
Deep Eddy Cove	2,453
Clear Water Pass	4,065
Headwaters Dr	4,487
Swift Water Loop	4,370
Perkins St	2,733
Baron Creek Trail/Bluffview Dr/ Strand Ln/Roarding Fork	8,724
Tributary Way	2,318

Rainmaker Ln/Rainmaker Cove	6,996
Oxbow Terrace	1,770
Marines Landing	1,790
Mercer St	1,463
Breakwater Dr/Rimrock Ct	6,762
Edgewater Trail	2,329
Crooked Trail	2,391
Carter	4,933
Cedar	4,695
<b>Total</b>	<b>185609</b>