DESERT HILLS IV PAVING COMMITTEE REPORT

WHERE WE WANT TO GO

PRESENTED BY: DH-IV Paving committee

February 19, 2021

The Search

- The committee with input from Pima County and Contractors, determined that further crack and road seal would not be effective and a waste of funds
- Attended seminars and met with county/municipality engineers and contractor representatives from Tucson , Bates, and Ace Asphalt Companies as well as reps from other HOA's
- Focused on finding a process that would provide an "as new" road surface at lowest cost
- Contacted all major utilities and GVC to find out if there were plans to conduct utility projects that would impact roads
  - Tucson Electric, Tucson Sewer Dept. and GV Water responded and indicated no projects planned
  - Cox Communications did not respond

Candidates for Resurfacing

Four methods of resurfacing were explored and a ten-year Life Cycle Cost Analysis (LCCA) conducted for each

- Pulverize and Replace (Bates Asphalt)
- Mill and Overlay (Ace Asphalt)
- Micro Seal (Ace Asphalt)
- Green Asphalt (Tucson Asphalt)

Pulverize and replace removes the six inches of existing asphalt and base

- Pulverized material is reconstituted and compacted to form a new basis
- Two inches of new PAG-2 Arterial hot mix asphalt is applied
- Expected life is 20 years with road seal needed after 1year and crack/road seal every 3-4 years thereafter
- We inspected streets in San Ignacio Vistas that was done 2016
  - Cracks and the beginning of alligator cracking were visible

Mill and overlay removes two inches of the existing asphalt and replaces it with PAG-2 Arterial hot mix asphalt

- Any defects uncovered by milling are corrected
- Manholes, water valve, cleanouts adjusted to final grade with concreate collars
- Expected life is 15+ years with road seal needed after 1year and crack/road seal every 3-4 years thereafter

Micro seal is a is a mixture of fine aggregates (1% Portland cement), emulsified asphalt, water, mineral fillers and 2.5% additional rubber applied by squeegee

- All surfaces are cleaned, cracks ¼ inch and greater are caulked and pre patches are applied to defined areas such as alligator cracking and spalling
- Expected Life is 7-10 years with road seal needed after 1year and crack/road seal every 3-4 years thereafter
- We inspected Villas East which was done in 2018 and sealed in 2019
  - Reflective cracks were visible
  - Roads aesthetically pleasing

Green Asphalt is a proprietary material from Tucson Asphalt applied to a compacted average thickness of one inch

- Roads are swept, cleaned and a tack coat is applied to existing pavement
- Manholes, water valve covers, and cleanouts are brought to final grade with concreate collars
- Green has a 4-year warranty and has 14+ year life expectancy with no maintenance needed
- We inspected HOAs in Green Valley where Green was applied in 2020 (San Ignacio Vistas in May, Canoa Seca Estates II in the Fall of 2020
    - The first HOA done in 2006 elected to crack seal but it was not necessary as cracks were very small
    - None of the applications have ever received a seal coat
    - Twenty-three applications of Green Asphalt completed since 2006
- La Villita Road in Sahuarita and Bisbee Road in Bisbee were done in 2018
    - La Villita is a very smooth driving surface with minor cracking which is most evident in winter
    - City engineers from Bisbee and Sahuarita were very positive about Green Asphalt.
    - Material used in municipalities of Tucson, Nogales and Oro Valley.

Ten Year Life Cycle Cost Analysis

	Initial Application	3 Crack & Seal Coats @ $28,800 ea. On Micro Seal		10 Year Life Cycle Cost
Ace Milling and Re-Pave	**$ 498,750**	**$ 57,600**		**$ 556,350**
Bates Pulverize and Replace	**$ 457,388**	**$ 56,866**		**$ 514,254**
Ace Micro Seal*	**$ 138,885**	**$ $86,400**	**½ to 1"coating**	**$ 225,285**
Green Asphalt	**$ 351,178**	**$ -**	**1" overlay**	**$ 351,178**

Costs provided by contractors and are for the entire HOA

*Micro Seal needs to be Crack Sealed in year1 years 4 and 7 and Micro Sealed again after year 7

May 2017, Pima Hollow Homes HOA

We Recommend Green Asphalt be applied to all Desert Hills IV roads in a cost-effective manner

FROM PROPOSAL TO SAHUARITA TOWN COUNCIL

- The ten-year LCCA favors Green Asphalt with cost savings out to at least 14 years due to no maintenance requirements
    - Funds can be set aside for what may be required in the future
- Four-year warranty vs one year for other processes
- Material is tested by an independent lab
- The product uses a special rubber binder to provide superior asphalt pavement while saving maintenance money and natural resources
- A 1993 scientific study by the California Department of Transportation (Caltrans) found that a one-inch thickness of Green Asphalt outperforms a three-inch thickness with conventional binder
- The product is "self-sealing" which eliminates the need to remove all the old asphalt (mill or excavate), so it reduces the dust, noise, and traffic that result from using traditional asphalt binders

The Cost-Effective Solution

- Recognizing that funds were not available to do the entire project in 2021 at an estimated total cost of **$351,178.24** we asked Tucson Asphalt for an estimate to complete the project in two phases.
- We requested a two-phase approach, expecting the cost between $1.27 - $1.46 per Square ft.
  - The cost per square foot is $1.41 **($193,006.44**) for the first phase which are the south streets. **Via Del Tirol, Placita Helada, Camino Kino plus Placita Travis.**
  - The total project would be completed by 2022 at an estimated total cost of **$351,178.24**
- Tucson Asphalt then proposed a two-phase approach with reduced cost
  - **This will all be accomplished without any increase to our dues!**

Phase 1: By May 31, 2021 $193,006.94

Phase 2: By May 31, 2022 ($158,171.06)

Benefits

- **Green Asphalt Pavement Preservation System**
- **Proven in actual applications**
- **Green Asphalt includes a 4 year Warranty**
- **Proven over 11 years in our Southern, AZ Climate**

QUALITY

- Unique Patent Pending Formula
- Independent and In-house Quality Assurance Program in Place
- High UV resistance to the Sun
- Twice the Rubber, Polymer and 3 to 6 times thicker than Poly chip
- Minimal tire scuffing or digging
- Plant mixed, allows for more Rubber and Polymer versus Field mix controls
- Green Asphalt™ Protects utilities versus reconstruction & increases the original pavement bridge versus other surface treatments
- Green Asphalt is up to 2.5 X stronger than Non-Green (Intellectual Property)
- Increased performance in inactive areas
- Increased impenetrability to water ponding areas
- Meets and exceeds the current and previous requirements by MAG and PAG

ENVIRONMENT

- Unique skeleton produces a very quiet ride with Green Asphalt
- Smooths out rough existing surfaces
- Eliminates 20-ton high vibration milling/pulverizing machines
- Eliminates intense vibration of existing underground utilities
- Eliminates 7 out of 8, 24-ton dump truck loads versus a 4" reconstruction
- Eliminates certain drainage issues due to innate section Thickness and quality of install cuts asphalt plant carbon emissions in half
- No mud, no dust from re-grading and no mud tracking from haul out
- Less unsightly crack seals, reflective cracks are often too narrow to seal and tend to heal in the heat No tracking of oxidized seal coat black dust
- Green Surface air pockets retain less heat and curb Urban Heat Island effects

SAFETY

Reduces traffic issues, "days, versus weeks to complete"

- No loose gravel like a Poly chip, or Chip seal, no windshields broken Stays black longer, Pavement Markings more visible
- Reduced Complaints
- High skid resistance
- Drive on it soon after the roller
- Reduced liability

Deferred Maintenance

- Green reflective cracks are most often too narrow to seal and
- Cracks tend to heal in the heat
- Crack & Seal maintenance deferred to 5 years or more
- No 1st Year Seal needed like a Slurry Seal or Non-Green

Value

- Tucson Asphalt's Green Asphalt Pavement Preservation saves 40-60% more
- Typical Pavement Treatment Costs per Pima County, "We have inserted **The Green Asphalt for an additional comparison

Source: *Pima County Transportation Committee /DocumentsTab/TAC_Presentation-1_ updated _20170802.pdf*

1. Fog Seal Expected life: 4years Cost: $1 - $2 Per square yard $35,200 per mile
2. Chip Seal Expected life: 7 years Cost $4 per square yard $70,400 per mile
3. Micro Surface Expected Life: 7 years Cost $5-$6 per square yard $105,600 per mile

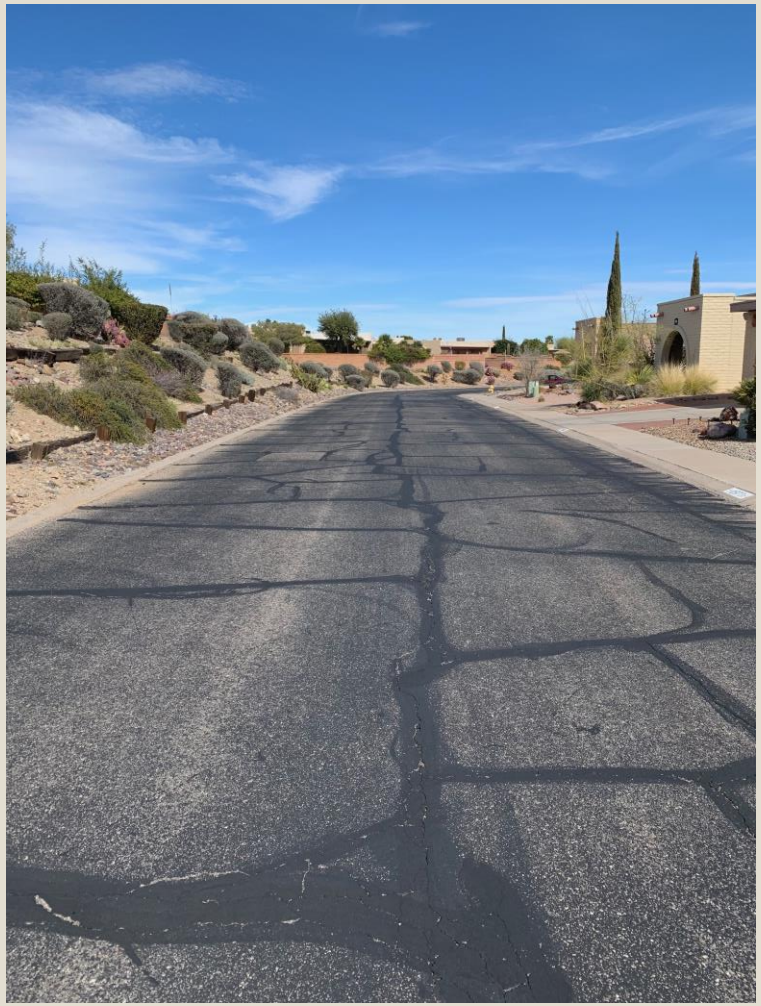
****Green Asphalt** Expected Life: 11+ years Cost: $9 per square yard $158,400 per mile

4. Mill and overlay 15 years Cost: $14 per square yard $246,400 per mile
5. Reconstruct Expected Life Cost: 20 years Cost: $45 per square yard $792,000 per mile

There are 17,600 square yards in a typical mile of 30' wide pavement.

KINO

Travis



Conclusion?

SHALL WE PROCEED WITH RESURFACING OUR STREETS WITH GREEN ASPHALT ?

Thank you from your Desert Hills IV Paving Committee

Larry Bivins (Chair)

Phyllis Buchanan

Jan Weatherbee

“Always moving forward towards improvement”