

Cost Effective Paving Solutions for Municipalities

*Association of Modified Asphalt
Producers Annual Meeting*

*Councilman Tim Glanzman
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Where is Spring Valley, Texas?



Where is Spring Valley, Texas?



Background information...

- Incorporated in 1955
- Primarily residential with zoning restrictions
- Population 3,611
- Approx. 20 miles of streets
- Aging infrastructure
 - 2.25 miles of streets less than 10 years old
- Revenue Sources
 - property, sales, & franchise taxes
 - utility fees
 - fines, fees, & permits

Aging infrastructure ...



Aging infrastructure ...



Pavement project experience...

City Council & residents frustrated with recent pavement projects.

- Are we getting superior quality and being cost effective?
- Project timelines not being met
- Negative impact on traffic patterns
- Residential impact on homeowners “living the project”

Residential pavement construction impacts residents where they live – not just their commute...



The pavement design process...

There had be a better way...

- Start with a clean slate – a willingness to construct projects differently
- Primary focus on pavement performance
- Secondary focus on speed of construction

Perception of pavement options...

Portland cement

- Higher initial cost
- Very long construction timeline
- Significant neighborhood disruption
- Perception of higher quality & longer service life
- Perception of low/no maintenance

Asphalt

- Lower initial cost
- Shorter project duration
- Less neighborhood disruption
- Perception of lower quality & shorter service life
- Perception of higher maintenance

Asphalt had to overcome a perception of shorter life span. The perception did not match experience and documentation of asphalt performance.

The three most important factors...

In real estate the three most important things are location, location, and location.

In paving the three most important factors are:

1. Performance
2. Performance
3. Performance

High performance asphalt pavements...

Constructively challenging conventional wisdom and perception with facts

Find a decision maker who will champion the process

Utilize available resources to encourage education:

- AMAP, AI, APA, and State Associations
- Experience and support of State DOT
- SUPERPAVE and Performance Graded Asphalts

View asphalt as a portfolio of potential solutions for pavement rehabilitation and maintenance

High performance asphalt pavements...

Supporting project and process literature

- “Quantification of the Effects of Polymer Modified Asphalt in Reducing Pavement Distress” – AI Publication ER-215
- “Pavement Type Selection Process”
- Perpetual Pavements – Better Roads “The Quest for Long Life Pavements”, Perpetual Pavement: Structured for the Future”, and APA CD on perpetual pavements
- Maryland Intersection Contest Results – “Asphalt Wins”
- “Open Graded Friction Courses – Smooth, Quiet, and More Durable Than Ever”
- Better Roads “How Asphalt Pavements Mitigate Tire Noise”
- Public Works “Managing Storm Water with Porous Asphalt”
- Civil Infrastructure – “Real Road Value”
- “Evaluation of Expenditures on Rural Interstate Pavements in Kansas”

Use literature and materials targeted to your audience.

Choosing a polymer modified surface course...

“Quantification of the Effects of Polymer Modified Asphalt in Reducing Pavement Distress” – AI Publication ER-215

- AMAP, AI, and industry sponsored project
- Utilized state project & evaluation data to quantify PMA performance
- **Findings**
 - **Enhanced Performance**
 - ✓ 3 to 10 years increase in service life
 - **Superior Pavement Distress Resistance**
 - ✓ Fatigue Resistance
 - ✓ Rut Resistance
 - ✓ Thermal Cracking

Asphalt benefits & target audiences ...

Decision Makers



Asphalt Benefit	City Council	City Engineer	City Residents
Lower initial cost	High	?	?
Good service life/performance	High	High	High
Shorter project duration	High	?	High
Lower maintenance costs	High	?	?
Ease of maintenance	?	?	High
Reduced noise/quieter ride	?	?	High

Impact and value of any particular “benefit” will vary based upon the audience and its impact to them!

For residential neighborhood road construction, which area has the longest timeline and is most disruptive to residents?

A. Underground utilities

B. Asphalt pavement courses

C. Concrete curbs & driveway details

Curb & driveway construction details ...

1950's streets

Current standard

“Lay down” curb
for pilot project



Choosing the “wrong” curb & driveway details would have wiped out the shortened project duration benefit of the asphalt pavement choice!

Asphalt Pilot Project...

Raylin Drive & Cam Court Rehabilitation

- Original concrete streets from the 1950's
- High priority street due to condition and number of residents served
- Replacement of water line with minimal sanitary sewer & storm sewer upgrades
- Pavement specifications
 - First performance graded asphalt for Spring Valley (PG 70-22 polymer modified asphalt)
 - 2.5 inches of asphalt surface course (PG 70-22 PMA), 8 inches of asphalt base course (PG 64-22)
 - First polymer modified asphalt project in Spring Valley
- Concrete curbs & gutters with asphalt pavement – another first

Thanks to Gary Fitts & the Asphalt Institute for their consulting & support!

Pilot project condition before rehabilitation ...

Raylin Drive



Cam Court



Construction begins



Concrete street and cul de sac heavily cracked, beyond cost effective maintenance methods, and in need of complete full depth reconstruction.

Pilot project after rehabilitation ...

Raylin Drive



Cam Court



Total project cost of \$429K with \$258K of paving. Project duration of 121 days.

Asphalt Pilot Project...

Short Term Benefits of Asphalt

- Lower initial pavement cost – estimates range from a 7% to 20% reduction on materials alone
- Estimated project construction days shortened by 39 days – 25% savings
- Less neighborhood disruption
 - Drive on base material temporarily
 - Residents have ability to park in front of their house during driveway construction
 - Limited inaccessible driveways to less than a week
 - Reduced “cut-through” traffic due to shortened project timeline

Asphalt Pilot Project...

Longer Term Benefits of Asphalt

- City Engineer estimate of asphalt pavement life has changed from 12 years to 40 years
- Low level and “easy” maintenance expected
- Perpetual pavement concept – mill and replace the surface course and essentially we have a new road
- City Council and Residents overwhelming view the project as successful
- Initial proof of high quality pavement and shortened project timeline – continued long term monitoring of maintenance & life cycle costs

*And if you remember nothing else
from my presentation – I'd humbly
suggest three points...*

1. Performance
2. Performance
3. Performance

Thank you for your attention - Any questions?

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Supplemental Slides

Comparing pavement construction process steps...

Portland cement	Asphalt - Conventional	Asphalt – Fast Track
Saw cut street centerline	Saw cut street centerline	Pavement demolition & removal – full section
Remove one lane of pavement	Remove one lane of pavement	Install temporary driving surface – crushed concrete
Install temporary driveway crossings	Install temporary driveway crossings	Install temporary driveway crossings
Lime stabilized subgrade	Lime stabilized subgrade	Lime stabilized subgrade
Place concrete forms; block-out for driveways – 1 st pour	Install base course – 1 st pass	Install base course – 1 st pass
Place reinforcing & pour concrete – 1 st pour	Slip form curbs	Slip form curbs
Cure concrete; strip forms – one week minimum	Install base course – 2 nd pass	Install base course – 2 nd pass
Remove Temporary driveway crossings	Construct surface course – 1 pass	Construct surface course – 1 pass – full section
Place concrete forms & reinforcing for driveway block-outs	Repeat above steps for remaining traffic lane	
Cure concrete; strip forms – one week min. – driveway block-outs		
Place concrete forms & reinforcing for driveways		
Cure concrete; strip forms – 3 days min. – driveways		
Place curbs		
Repeat above steps for remaining traffic lane		