

**MANAGING  
ASPHALT  
PAVEMENTS**  
CONFERENCE AND TRADE SHOW  
MAY 15-17, 2023 ★ WACO, TEXAS

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**MANAGING  
ASPHALT  
PAVEMENTS**  
CONFERENCE AND TRADE SHOW  
MAY 15-17, 2023 ★ WACO, TEXAS

# **MAPS CONFERENCE- SPECIFICATIONS**

Brett Haggerty, PE

Atlas Technical Consultants, LLC

May 17, 2023

# MANAGING ASPHALT PAVEMENTS

CONFERENCE AND TRADE SHOW  
MAY 15-17, 2023 ★ WACO, TEXAS

*PRESENTED BY:*



# SPECIFICATIONS

Brett Haggerty, PE

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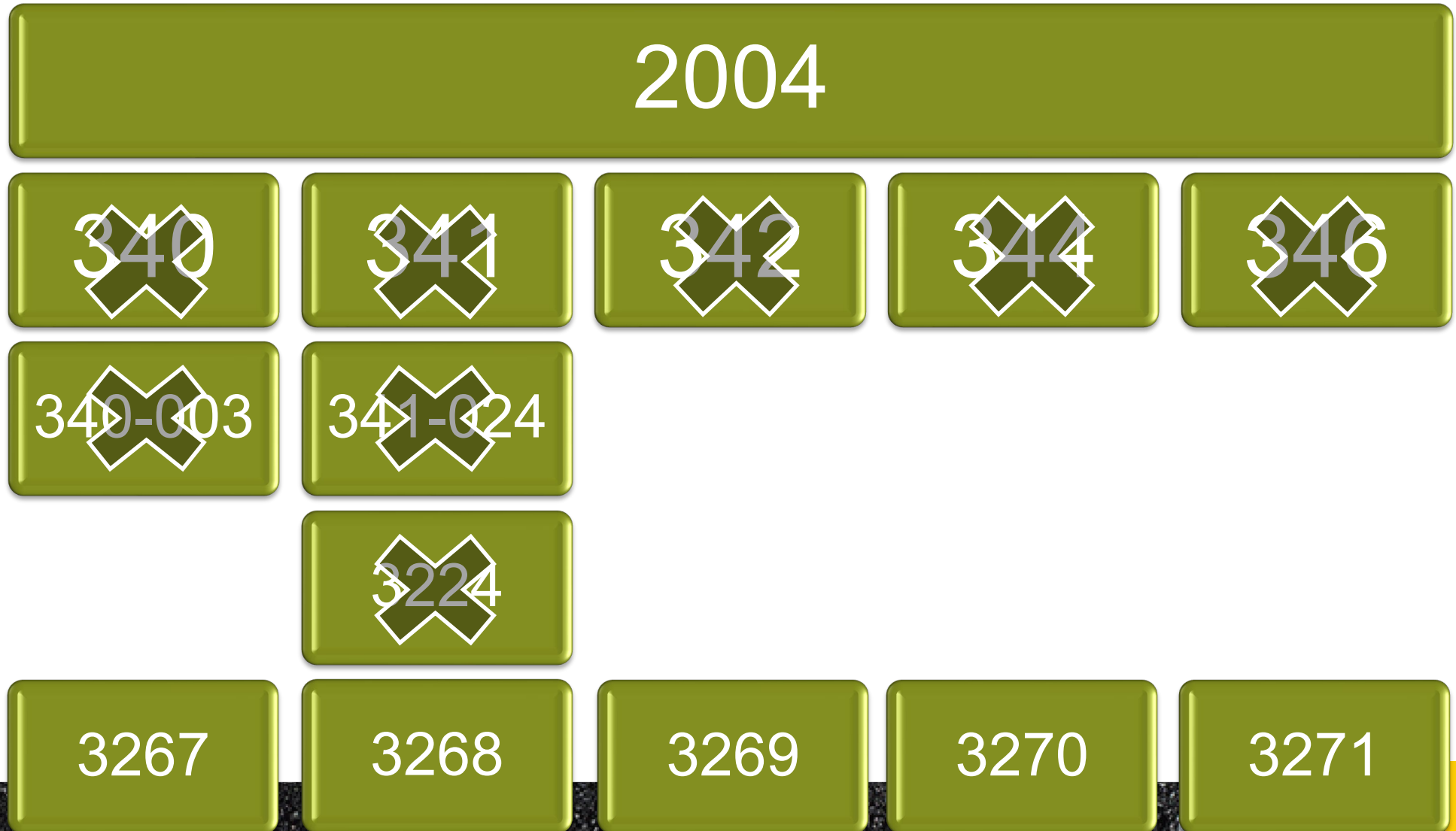
May 17, 2023

# **HMA Specifications – Past 20 Years**

Why are there so many changes over the past 20 years?



# Specs 20 years ago



# Specs 10 years ago

2014

~~340~~

~~341~~

~~342~~

~~344~~

~~346~~

3076

3079

3077

3080

# Specs 1 year in the future

2024

~~340~~

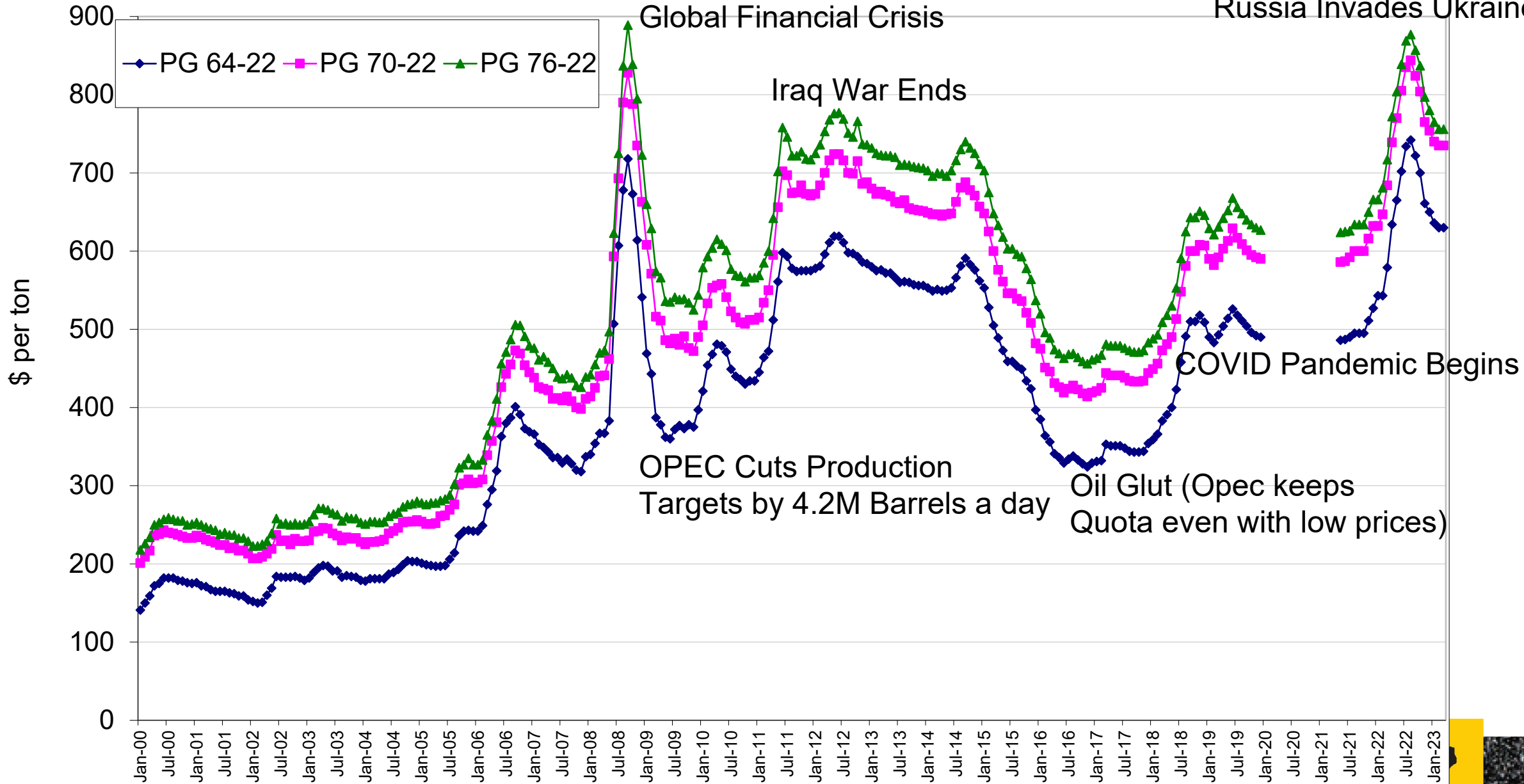
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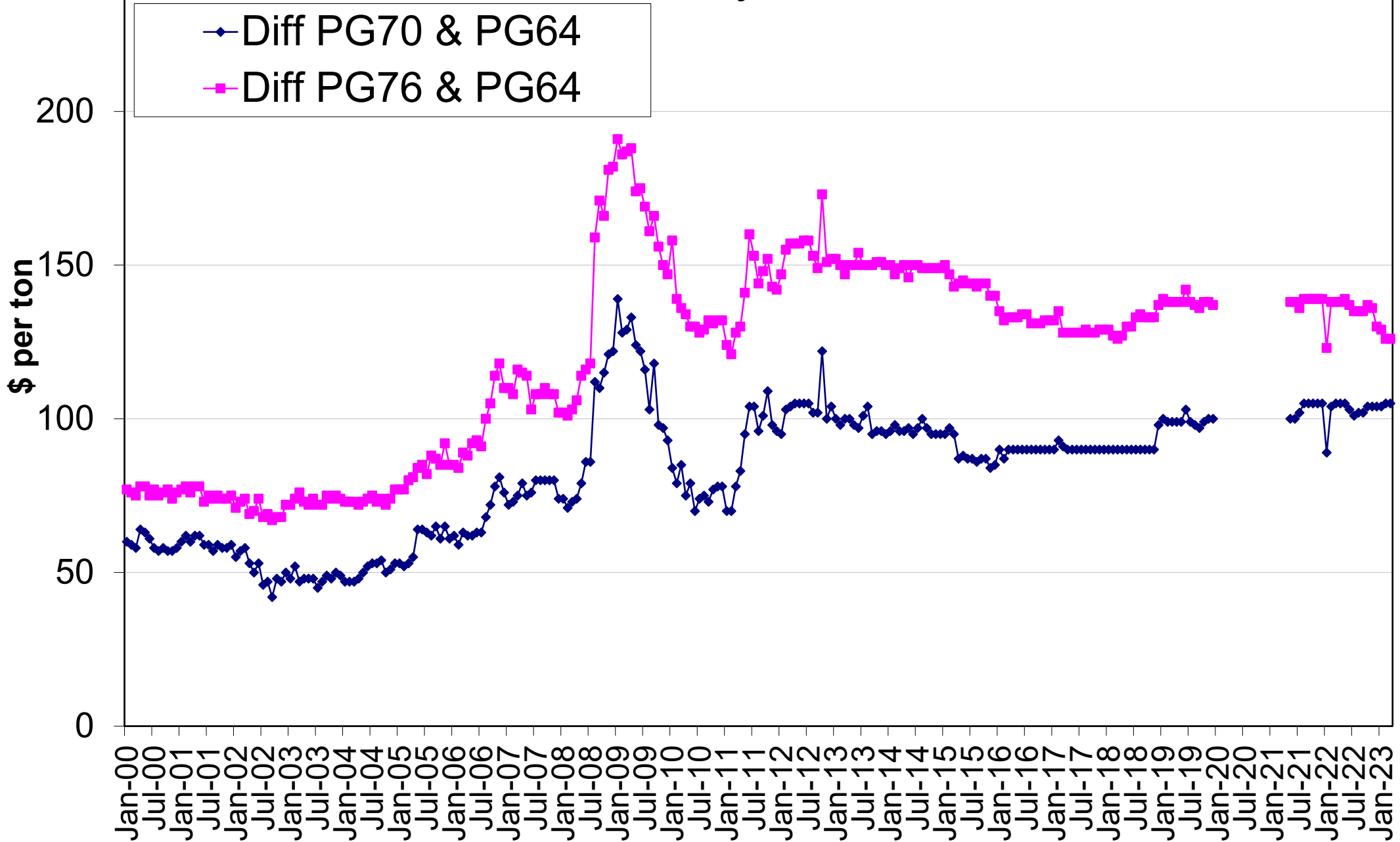
346

# Louisiana Asphalt Index





### Cost to Add Polymers



# Focus on just the 341 & 344 Specifications

- 341: Dense Graded Mixtures (Old Bread & Butter) vs
- 344: Superpave Mixtures (New Bread & Butter)

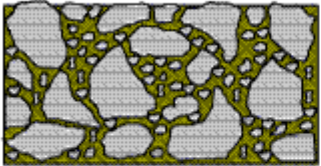


Fig. 3. 3a Dense-graded mix cross section

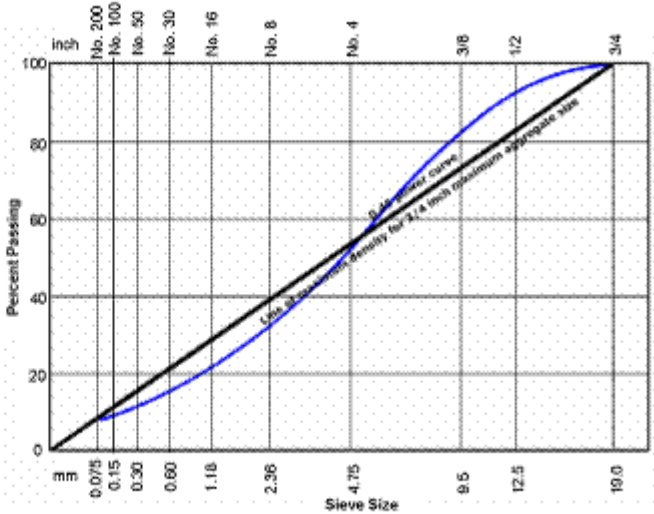


Fig. 3. 3b Typical gradation curve for a dense-graded mix.



Fig. 3.5a Gap-graded (Performance-Designed or SMA) mix

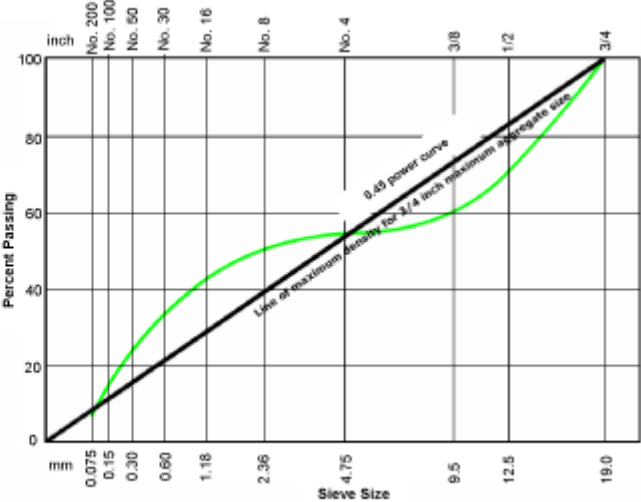
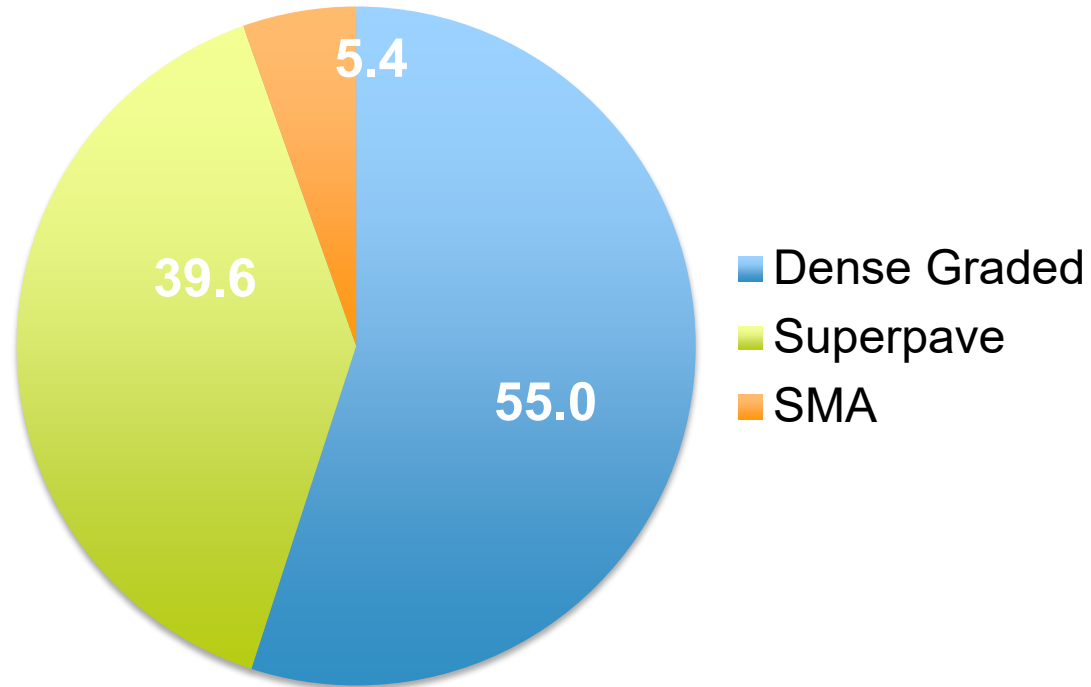
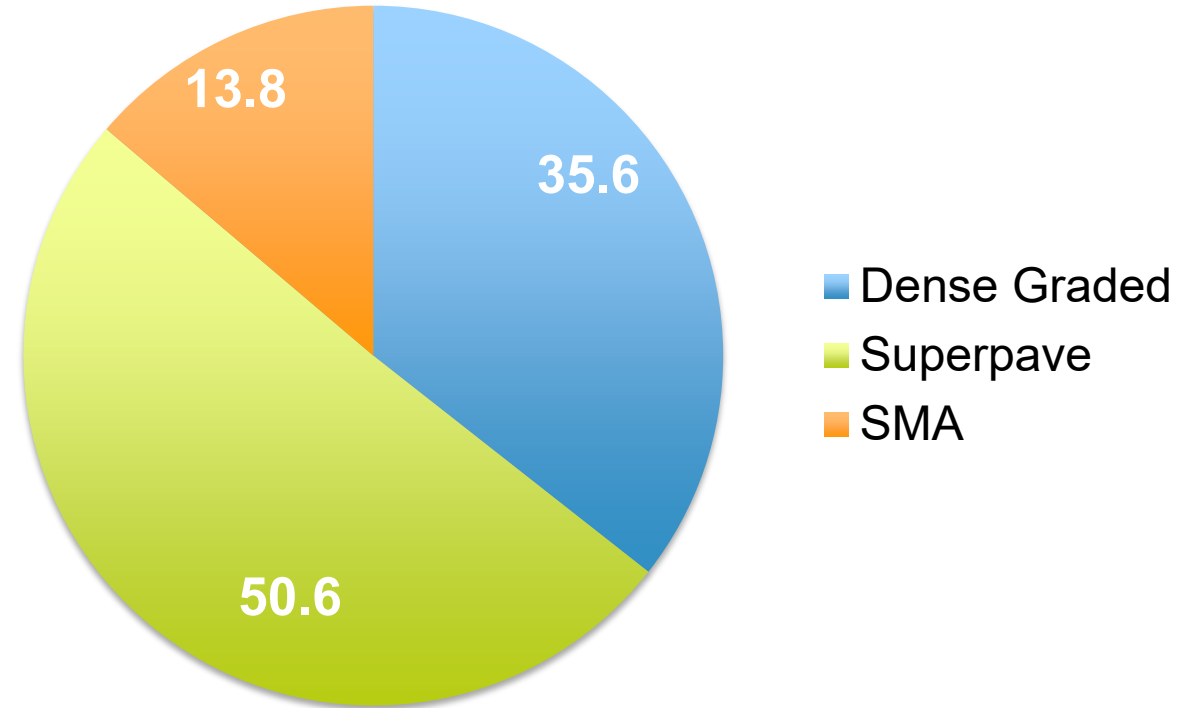


Fig. 3.5b Typical gradation curve for a gap-graded mix.

# TxDOT Usage by Mix Type

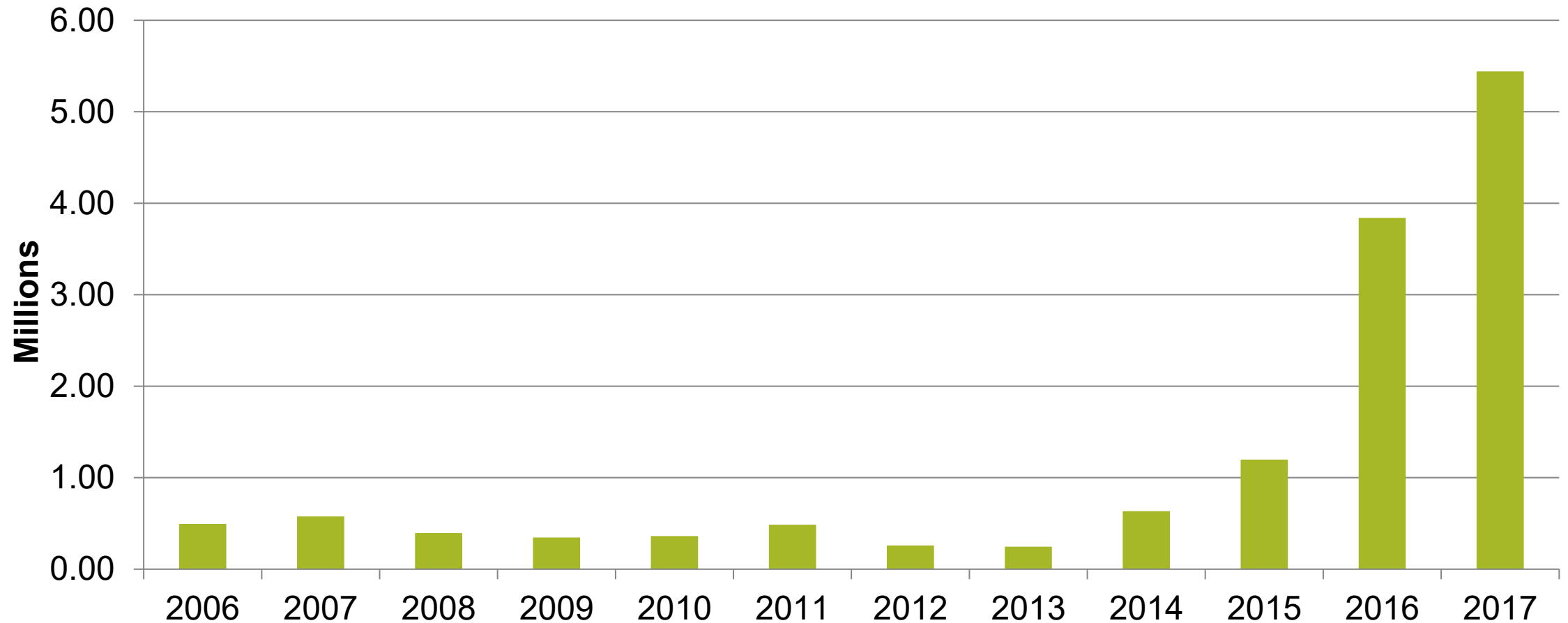


2017



2021

# TxDOT use of Superpave Mixes (tons)





# Dense Graded (341 Mixture) in 2004

- Texas Gyrotory Compactor (<https://youtu.be/9gjdjczyZHc>)
- Recycled material is too risky (variable & existing low cost)
- Hotter the better, White smoke is no problem
- Grade bump to address rutting





# Superpave (344 Mixture) in 2004

- Superpave Gyrotory Compactor (<https://youtu.be/soxLGQk8lwQ>)
- Recycled material is too risky (variable & existing low cost)
- Hotter the better, White smoke is no problem
- Modify N-Design based on Traffic Load

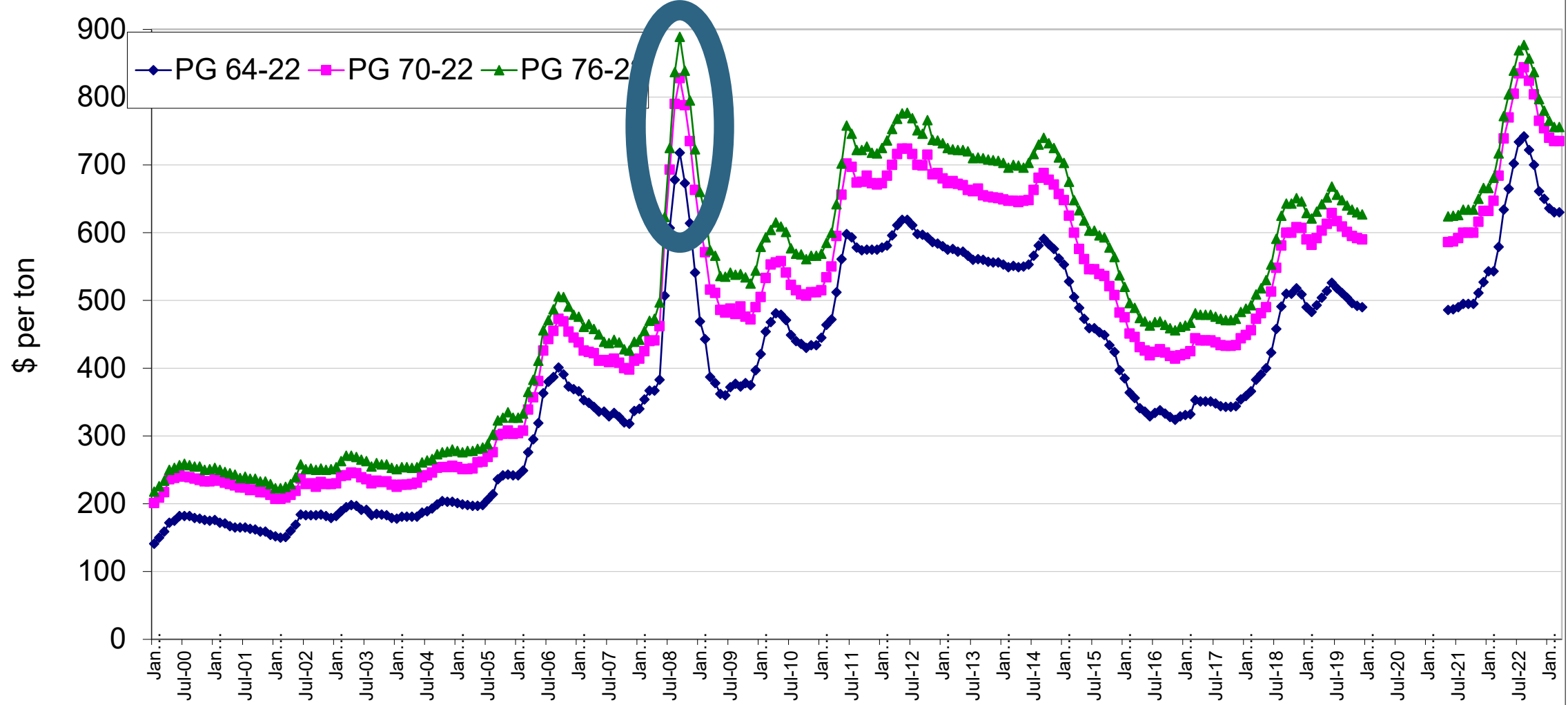
Table 1. AASHTO R 35 Superpave Gyrotory Compaction Effort

20-Year Design Traffic, ESALs (millions)	$N_{\text{design}}$ (Number of Design Gyrations)
< 0.3	50
0.3 to < 3	75
3 to < 10	100
10 to < 30	100
$\geq 30$	125



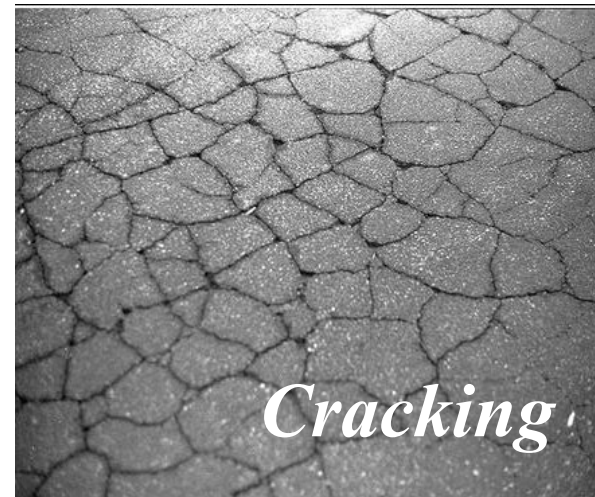
# Then 2008 Happened

Louisiana Asphalt Index



# What Else happened in 2009

- Hamburg implementation had huge impact on asphalt rutting (drastically reducing it)
- Increased need for sustainability (recycle) & environmental controls (lower emissions)





# Dense Graded (341 Mixture) in 2010

- Texas Gyrotory Compactor, or Superpave
- ~~Recycled material is too risky (variable & existing low cost)~~
- ~~Hotter the better, White smoke is no problem~~
- ~~Grade bump to address rutting~~
- Recycled Asphalt Pavement & Recycled Asphalt Shingles
- Warm Mix Asphalt
- Use of lower PG binder with recycled material
- Thermal Cameras & IR Bars



# Superpave (344 Mixture) in 2010

- Superpave Gyratory Compactor
- ~~Recycled material is too risky (variable & existing low cost)~~
- ~~Hotter the better, White smoke is no problem~~
- ~~Modify N-Design based on Traffic Load~~

Table 1. AASHTO M 312-01 Superpave Gyratory Compaction Effort

Traffic, ESALs	(Number of Gyrations)
< 0.3	50
0.3 to < 3	75
3 to < 10	100
> 10	150





# How to get more asphalt in the mix?

**Table 7**  
**Laboratory Mixture Design Properties**

Mixture Property	Test Method	Requirement
Target laboratory-molded density, %	Tex-207-F	96.5 <sup>1</sup>
Design gyrations (N <sub>design</sub> )	Tex-241-F	50 gyrations <sup>2</sup>
Tensile strength (dry), psi	Tex-226-F	85-200 <sup>3</sup>
Boil test <sup>4</sup>	Tex-530-C	-

1. May be adjusted within a range of 96.0–97.0% when shown on the plans or allowed by the Engineer when using the TGC (Tex-204-F Part I)

**Table 10**  
**Laboratory Mixture Design Properties**

Mixture Property	Test Method	Requirement
Target laboratory-molded density, %	Tex-207-F	96.0
Design gyrations (N <sub>design</sub> )	Tex-241-F	50 <sup>1</sup>
Indirect tensile strength (dry), psi	Tex-226-F	85–200 <sup>2</sup>
Dust/asphalt ratio <sup>3</sup>		0.6–1.6
Boil test <sup>4</sup>	Tex-530-C	–

1. May be adjusted within a range of 35–100 gyrations when shown on the plans or specification or mutually agreed between the Engineer and Contractor.

2. The Engineer may allow the IDT strength to exceed 200 psi if the corresponding Hamburg Wheel rut depth is greater than 3.0 mm and less than 12.5 mm.

3. Defined as % passing #200 sieve divided by asphalt content.

4. Used to establish baseline for comparison to production results. May be waived when approved.

# Dense Graded (341 Mixtures) 2014

Table 5  
Allowable Substitute PG Binders and Maximum Recycled Binder Ratios

Originally Specified PG Binder	Allowable Substitute PG Binder	Maximum Ratio of Recycled Binder <sup>1</sup> to Total Binder (%)		
		Surface	Intermediate	Base
<b>HMA</b>				
76-22 <sup>2</sup>	70-22 or 64-22	20.0	20.0	20.0
	70-28 or 64-28	30.0	35.0	40.0
70-22 <sup>2</sup>	64-22	20.0	20.0	20.0
	64-28 or 58-28	30.0	35.0	40.0
64-22 <sup>2</sup>	58-28	30.0	35.0	40.0
76-28 <sup>2</sup>	70-28 or 64-28	20.0	20.0	20.0
	64-34	30.0	35.0	40.0
70-28 <sup>2</sup>	64-28 or 58-28	20.0	20.0	20.0
	64-34 or 58-34	30.0	35.0	40.0
64-28 <sup>2</sup>	58-28	20.0	20.0	20.0
	58-34	30.0	35.0	40.0
<b>WMA<sup>3</sup></b>				
76-22 <sup>2</sup>	70-22 or 64-22	30.0	35.0	40.0
70-22 <sup>2</sup>	64-22 or 58-28	30.0	35.0	40.0
64-22 <sup>4</sup>	58-28	30.0	35.0	40.0
76-28 <sup>2</sup>	70-28 or 64-28	30.0	35.0	40.0
70-28 <sup>2</sup>	64-28 or 58-28	30.0	35.0	40.0
64-28 <sup>4</sup>	58-28	30.0	35.0	40.0

1. Combined recycled binder from RAP and RAS.
2. Use no more than 20.0% recycled binder when using this originally specified PG binder.
3. WMA as defined in Section 341.2.6.2., "Warm Mix Asphalt (WMA)."
4. When used with WMA, this originally specified PG binder is allowed for use at the maximum recycled binder ratios shown in this table.

Table 4  
Maximum Allowable Amounts of RAP<sup>1</sup>

Maximum Allowable Fractionated RAP <sup>2</sup> (%)			Maximum Allowable Unfractionated RAP <sup>3</sup> (%)		
Surface	Intermediate	Base	Surface	Intermediate	Base
20.0	30.0	40.0	10.0	10.0	10.0

1. Must also meet the recycled binder to total binder ratio shown in Table 5.
2. Up to 5% RAS may be used separately or as a replacement for fractionated RAP.
3. Unfractionated RAP may not be combined with fractionated RAP or RAS.

# Superpave (344 Mixtures) 2014

Table 5

Allowable Substitute PG Binders and Maximum Recycled Binder Ratios

Originally Specified PG Binder	Allowable Substitute PG Binder	Maximum Ratio of Recycled Binder <sup>1</sup> to Total Binder (%)		
		Surface	Intermediate	Base
<b>HMA</b>				
76-22 <sup>2</sup>	70-22 or 64-22	20.0	20.0	20.0
	70-28 or 64-28	30.0	35.0	40.0
70-22 <sup>2</sup>	64-22	20.0	20.0	20.0
	64-28 or 58-28	30.0	35.0	40.0
64-22 <sup>2</sup>	58-28	30.0	35.0	40.0
76-28 <sup>2</sup>	70-28 or 64-28	20.0	20.0	20.0
	64-34	30.0	35.0	40.0
70-28 <sup>2</sup>	64-28 or 58-28	20.0	20.0	20.0
	64-34 or 58-34	30.0	35.0	40.0
64-28 <sup>2</sup>	58-28	20.0	20.0	20.0
	58-34	30.0	35.0	40.0
<b>WMA<sup>3</sup></b>				
76-22 <sup>2</sup>	70-22 or 64-22	30.0	35.0	40.0
70-22 <sup>2</sup>	64-22 or 58-28	30.0	35.0	40.0
64-22 <sup>4</sup>	58-28	30.0	35.0	40.0
76-28 <sup>2</sup>	70-28 or 64-28	30.0	35.0	40.0
70-28 <sup>2</sup>	64-28 or 58-28	30.0	35.0	40.0
64-28 <sup>4</sup>	58-28	30.0	35.0	40.0

1. Combined recycled binder from RAP and RAS.
2. Use no more than 20.0% recycled binder when using this originally specified PG binder.
3. WMA as defined in Section 344.2.6.2., "Warm Mix Asphalt (WMA)."
4. When used with WMA, this originally specified PG binder is allowed for use at the maximum recycled binder ratios shown in this table.

Table 4

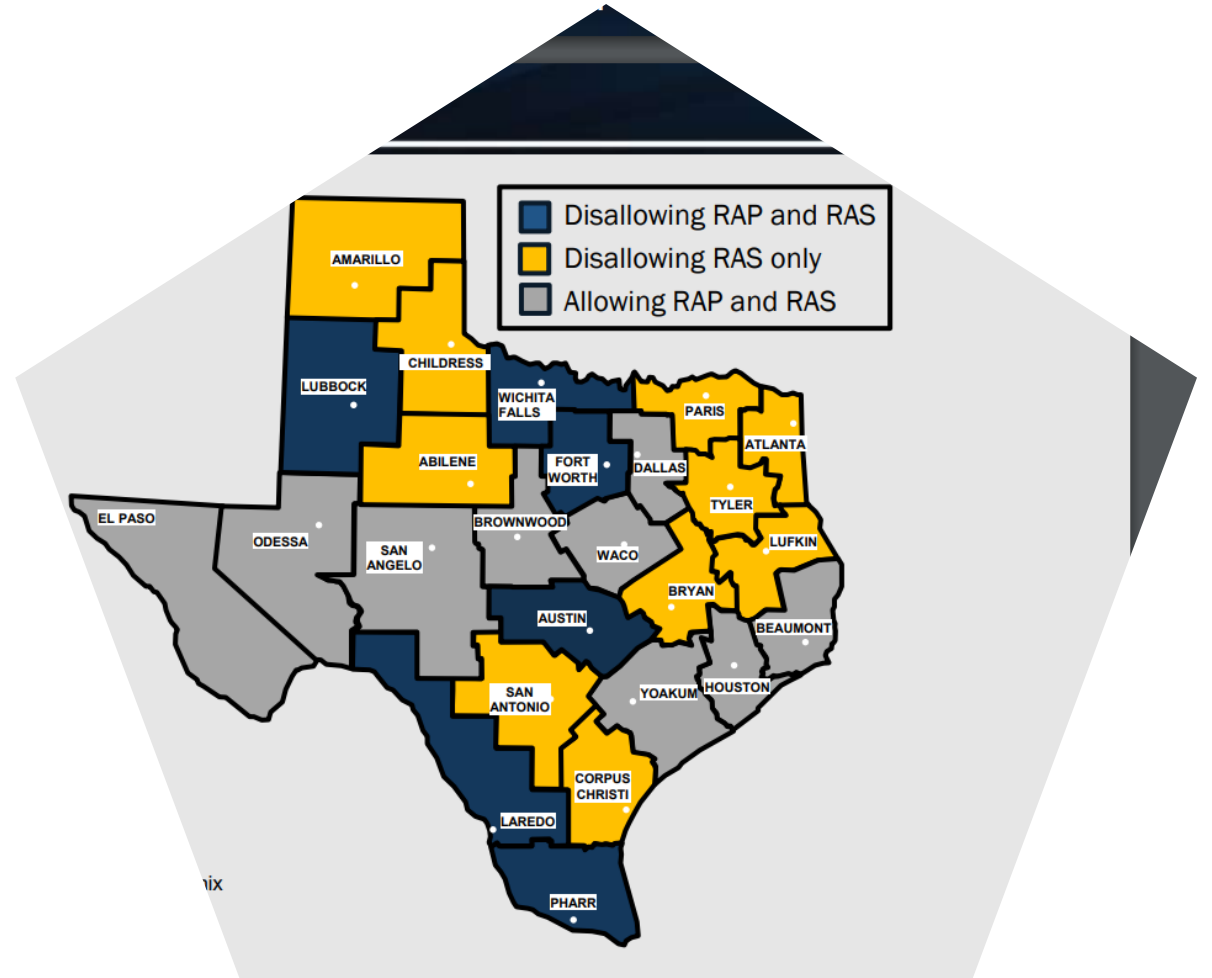
Maximum Allowable Amounts of RAP<sup>1</sup>

Maximum Allowable Fractionated RAP <sup>2</sup> (%)			Maximum Allowable Unfractionated RAP <sup>3</sup> (%)		
Surface	Intermediate	Base	Surface	Intermediate	Base
20.0	25.0	30.0	10.0	10.0	10.0

1. Must also meet the recycled binder to total binder ratio shown in Table 5.
2. Up to 5% RAS may be used separately or as a replacement for fractionated RAP.
3. Unfractionated RAP may not be combined with fractionated RAP or RAS.



# By 2018



- \*-Courtesy of Ryan Barborak, TxDOT

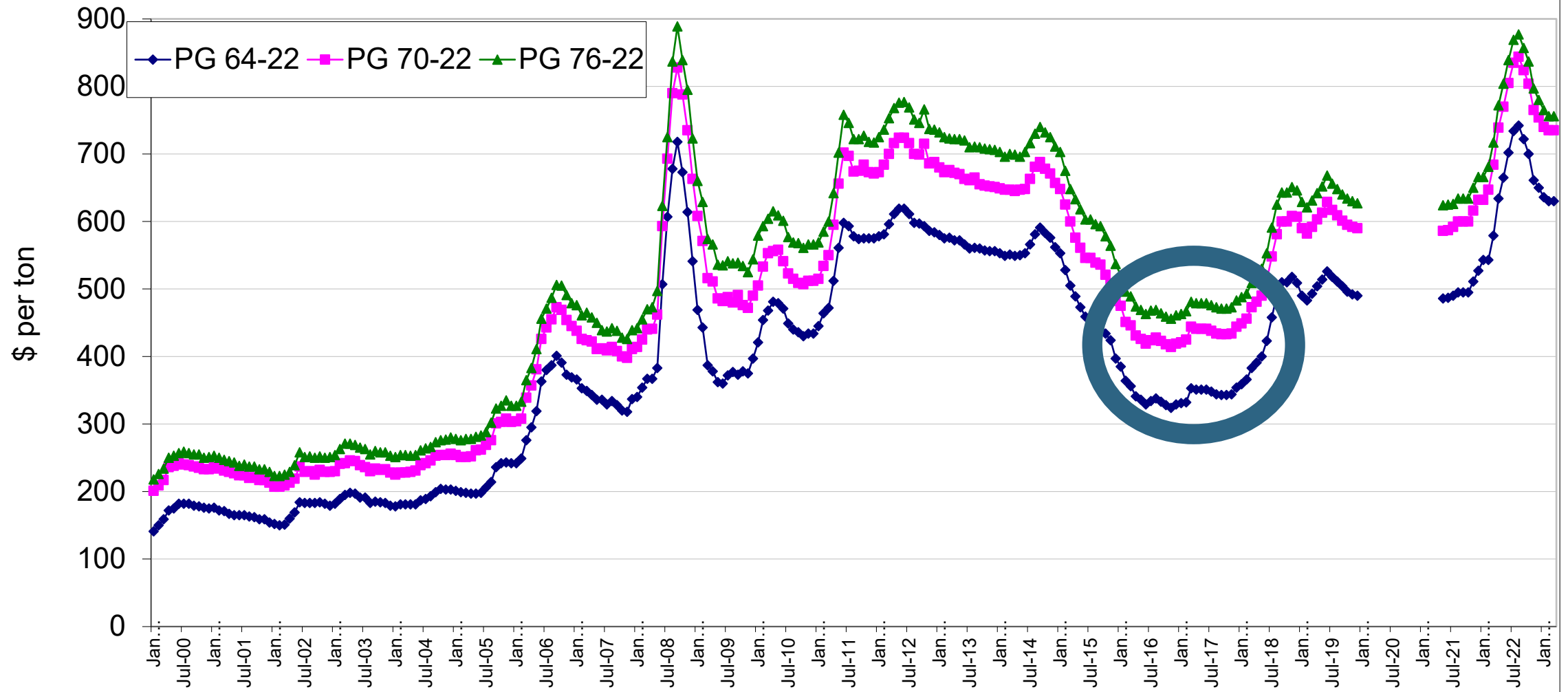
# Tack Coat Impacts

- [https://youtu.be/QfFI5S\\_86zU](https://youtu.be/QfFI5S_86zU) (1:45)



# What Else Happened in 2018?

Louisiana Asphalt Index



# Dense Graded (341 Mixtures, SS3076) 2019

**Table 5**  
**Allowable Substitute PG Binders and Maximum Recycled Binder Ratios**

Originally Specified PG Binder	Allowable Substitute PG Binder for Surface Mixes	Allowable Substitute PG Binder for Intermediate and Base Mixes	Maximum Ratio of Recycled Binder <sup>1</sup> to Total Binder (%)		
			Surface	Intermediate	Base
76-22 <sup>4,5</sup>	70-22	70-22	10.0	20.0	25.0
70-22 <sup>2,5</sup>	N/A	64-22	10.0	20.0	25.0
64-22 <sup>2,3</sup>	N/A	N/A	10.0	20.0	25.0
76-28 <sup>4,5</sup>	70-28	70-28	10.0	20.0	25.0
70-28 <sup>2,5</sup>	N/A	64-28	10.0	20.0	25.0
64-28 <sup>2,3</sup>	N/A	N/A	10.0	20.0	25.0

1. Combined recycled binder from RAP and RAS. RAS is not permitted in surface mixtures unless otherwise shown on the plans.
2. Binder substitution is not allowed for surface mixtures.
3. Binder substitution is not allowed for intermediate and base mixtures.
4. Use no more than 10.0% recycled binder in surface mixtures when using this originally specified PG binder.
5. Use no more than 20.0% recycled binder when using this originally specified PG binder for intermediate mixtures. Use no more than 25.0% recycled binder when using this originally specified PG binder for base mixtures.

**RAS.** Use of post-manufactured RAS or post-consumer RAS (tear-offs) is not permitted in surface mixtures unless otherwise shown on the plans. RAS may be used in intermediate and base mixtures unless otherwise shown on the plans. Up to 3% RAS may be used separately or as a replacement for fractionated RAP in accordance with Table 4 and Table 5. RAS is defined as processed asphalt shingle material from manufacturing of asphalt roofing shingles or from re-roofing residential structures. Post-manufactured RAS is processed manufacturer's shingle scrap by-product. Post-consumer RAS is processed shingle scrap removed from residential structures. Comply with all regulatory requirements stipulated for RAS by the TCEQ. RAS may be used separately or in conjunction with RAP.

**Table 9**  
**Laboratory Mixture Design Properties**

Mixture Property	Test Method	Requirement
Target laboratory-molded density, % (SGC)	Tex-207-F	96.0
Design gyrations (N <sub>design</sub> for SGC)	Tex-241-F	50 <sup>1</sup>
Indirect tensile strength (dry), psi	Tex-226-F	85–200 <sup>2</sup>
Boil test <sup>3</sup>	Tex-530-C	–

1. Adjust within a range of 35–100 gyrations when shown on the plans or specification or when mutually agreed between the Engineer and Contractor.
2. The Engineer may allow the IDT strength to exceed 200 psi if the corresponding Hamburg Wheel rut depth is greater than 3.0 mm and less than 12.5 mm.
3. Used to establish baseline for comparison to production results. May be waived when approved.

The work performed and materials furnished in accordance with this Item and measured as provided under Article 3077.5.2, "Measurement," will be paid for at the unit bid price for "Tack Coat" of the tack coat provided. These prices are full compensation for materials, placement, equipment, labor, tools, and incidentals. Payment adjustments will be applied as determined in this Item; however, a payment adjustment

# Superpave (344 Mixtures, SS3077) 2019

Table 3

Allowable Substitute PG Binders and Maximum Recycled Binder Ratios

Originally Specified PG Binder	Allowable Substitute PG Binder for Surface Mixes	Allowable Substitute PG Binder for Intermediate and Base Mixes	Maximum Ratio of Recycled Binder <sup>1</sup> to Total Binder (%)		
			Surface	Intermediate	Base
76-22 <sup>4,5</sup>	70-22	70-22	15.0	25.0	30.0
70-22 <sup>2,5</sup>	N/A	64-22	15.0	25.0	30.0
64-22 <sup>2,3</sup>	N/A	N/A	15.0	25.0	30.0
76-28 <sup>4,5</sup>	70-28	70-28	15.0	25.0	30.0
70-28 <sup>2,5</sup>	N/A	64-28	15.0	25.0	30.0
64-28 <sup>2,3</sup>	N/A	N/A	15.0	25.0	30.0

1. Combined recycled binder from RAP and RAS. RAS is not permitted in surface mixtures unless otherwise shown on the plans.
2. Binder substitution is not allowed for surface mixtures.
3. Binder substitution is not allowed for intermediate and base mixtures.
4. Use no more than 15.0% recycled binder in surface mixtures when using this originally specified PG binder.
5. Use no more than 25.0% recycled binder when using this originally specified PG binder for intermediate mixtures. Use no more than 30.0% recycled binder when using this originally specified PG binder for base mixtures.

**RAS.** Use of post-manufactured RAS or post-consumer RAS (tear-offs) is not permitted in surface mixtures unless otherwise shown on the plans. RAS may be used in intermediate and base mixtures unless otherwise shown on the plans. Up to 3% RAS may be used separately or as a replacement for fractionated RAP in accordance with Table 4 and Table 5. RAS is defined as processed asphalt shingle material from manufacturing of asphalt roofing shingles or from re-roofing residential structures. Post-manufactured RAS is processed manufacturer's shingle scrap by-product. Post-consumer RAS is processed shingle scrap removed from residential structures. Comply with all regulatory requirements stipulated for RAS by the TCEQ. RAS may be used separately or in conjunction with RAP.

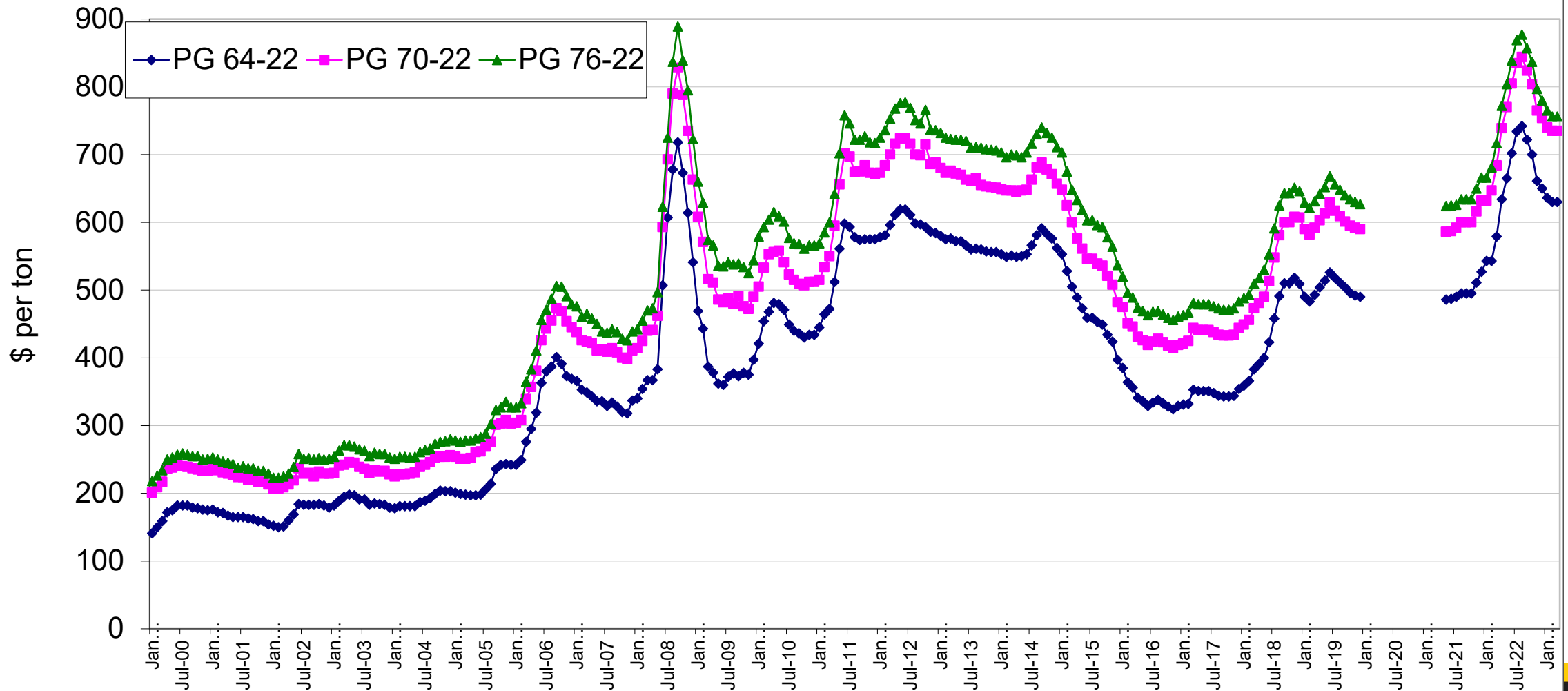
The work performed and materials furnished in accordance with this Item and measured as provided under Article 3077.5.2, "Measurement," will be paid for at the unit bid price for "Tack Coat" of the tack coat provided. These prices are full compensation for materials, placement, equipment, labor, tools, and incidentals. Payment adjustments will be applied as determined in this Item; however, a payment adjustment





# Can we predict what changes might be coming?

Louisiana Asphalt Index





# 2019-SS3076 vs. 2024-341 (Possible)

**Table 5**  
**Allowable Substitute PG Binders and Maximum Recycled Binder Ratios**

Originally Specified PG Binder	Allowable Substitute PG Binder for Surface Mixes	Allowable Substitute PG Binder for Intermediate and Base Mixes	Maximum Ratio of Recycled Binder <sup>1</sup> to Total Binder (%)		
			Surface	Intermediate	Base
76-22 <sup>4,5</sup>	70-22	70-22	10.0	20.0	25.0
70-22 <sup>2,5</sup>	N/A	64-22	10.0	20.0	25.0
64-22 <sup>2,3</sup>	N/A	N/A	10.0	20.0	25.0
76-28 <sup>4,5</sup>	70-28	70-28	10.0	20.0	25.0
70-28 <sup>2,5</sup>	N/A	64-28	10.0	20.0	25.0
64-28 <sup>2,3</sup>	N/A	N/A	10.0	20.0	25.0

1. Combined recycled binder from RAP and RAS. RAS is not permitted in surface mixtures unless otherwise shown on the plans.
2. Binder substitution is not allowed for surface mixtures.
3. Binder substitution is not allowed for intermediate and base mixtures.
4. Use no more than 10.0% recycled binder in surface mixtures when using this originally specified PG binder.
5. Use no more than 20.0% recycled binder when using this originally specified PG binder for intermediate mixtures. Use no more than 25.0% recycled binder when using this originally specified

**Table 5**  
**Allowable PG Binders and Maximum Recycled Binder Ratios**

Originally Specified PG Binder	Allowable Substitute PG Binder for Surface Mixes	Allowable Substitute PG Binder for Intermediate and Base Mixes	Maximum Ratio of Recycled Binder <sup>1</sup> to Total Binder (%)		
			Surface	Intermediate	Base
76-22	70-22	70-22	15.0	25.0	30.0
70-22	Note 2	64-22	15.0	25.0	30.0
64-22	Note 2	Note 2	15.0	25.0	30.0
76-28	70-28	70-28	15.0	25.0	30.0
70-28	Note 2	64-28	15.0	25.0	30.0
64-28	Note 2	Note 2	15.0	25.0	30.0

1. Combined recycled binder from RAP and RAS. RAS is not permitted in surface mixtures unless otherwise shown on the plans.
2. No binder substitution is allowed.

# Balanced Mix Designs & Rejuvenators & Tack?

- Cracking: Overlay Tester, IDT, SCB, IDEAL-CT
- Rutting: Hamburg
- Rejuvenators to address the impacts, add in asphaltenes (light ends)
- TRAIL

# What Should be the Focus for HMA?

Quality: is it performance or is it quantity (i.e. smoothness vs. thickness)

Can owners maintain quality through verification: JMF changes, RAP/RAS, do things slip by, what gets measured gets done, what gets incentive gets done (thickness gets done, tack doesn't)

Finding time to revisit the specifications: COSA is still working with standards from 15 years ago

# Some issues in the past

Some LG specs are old and don't account for changes that TxDOT has made to assist with material availability and prices

-Grade dumping, only so much binder that can stay on hand. Did you get a lower PG grade that wasn't anticipated for?

Are some suppliers providing inaccurate bids?

- Example: John Doe contractor calls Jane Doe producer for cost on Type D PG64-22. Gives price of \$100/ton for a mixture that is TxDOT approved. Does this match what the owner wants or designed for?
- Do owners have time to review all submittals in compliance with their requirements or accepting based on TxDOT approval for a different spec?
- Does this put owners in a risky situation for other contractor competitors?



# Pricing example

- Compare local price impacts
  - TxDOT
  - City of Austin
  - City of San Antonio
- TxDOT HMA Specs
  - 3076 Dense Graded, Implemented for letting February 2020
  - 3077 Superpave, Implemented for letting February 2020
- City of Austin
  - 340S, Limited modifications since 2016
- City of San Antonio
  - Standard Specifications, Item 205, Implemented June 2008

# Impact to pricing

Average Unit Price List ( June 2023)

205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (10" COMP DEPTH) ( < 10,000 SY)	SY	16	\$59.00
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (1.5" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	8	\$12.62

205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (7" COMP DEPTH)(20% MAX RAP)(NO RAS)(PG 64-22)	SY	4	
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (8" COMP DEPTH)(20% MAX RAP)(NO RAS)(PG 64-22)	SY	11	\$43.00
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (9" COMP DEPTH) ( > 10,000 SY)	SY	3	\$48.97
205.2	HOT MIX ASPHALTIC PAVEMENT TYPE B (10" COMP DEPTH) ( < 10,000 SY)	SY	16	\$59.00
205.3	HOT MIX ASPHALTIC PAVEMENT TYPE C (2" COMP DEPTH)(NO RAP)(NO RAS)(PG 70-22)( < 10,000 SY)	SY	3	\$20.00
205.3	HOT MIX ASPHALTIC PAVEMENT TYPE C (2" COMP DEPTH)(NO RAP)(NO RAS)(SAC A)(PG 76-22)( > 10,000 SY)	SY	3	\$15.10
205.3	HOT MIX ASPHALTIC PAVEMENT TYPE C (3" COMP DEPTH)	SY	10	\$15.66
205.3	HOT MIX ASPHALTIC PAVEMENT TYPE C (4" COMP DEPTH) ( > 10,000 SY)	SY	3	\$19.00
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (1.5" COMP DEPTH) (1,000 SY < X < 5,000 SY)	SY	8	\$12.62
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) ( < 1,000 SY)	SY	5	\$58.40
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (1,000 < X < 5,000 SY)	SY	6	\$15.42
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) (5,000 < X < 10,000 SY)	SY	0	\$14.75
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH) ( > 10,000 SY)	SY	6	\$14.09
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH)(NO RAP)(NO RAS)(SAC C)(PG 64-22)(5,000 < X < 10,000 SY)	SY	0	\$13.37
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH)(NO RAP)(NO RAS)(PG 64-22)(1,000 < X < 5,000 SY)	SY	5	\$15.30
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (2" COMP DEPTH)(NO RAP)(NO RAS)(PG 70-22)(5,000 < X < 10,000 SY)	SY	5	\$20.00
205.4	HOT MIX ASPHALTIC PAVEMENT TYPE D (3" COMP DEPTH)(NO RAP)(NO RAS)(PG 70-22)( < 5,000 SY)	SY	5	\$27.60



# Impacts to Pricing



## Bid Item Averages

BID ITEM	BID ITEM DESCRIPTION	UNIT OF MEASURE	Min. Bid Item Qty	Max. Bid Item Qty	Avg. Unit Price	Min. Unit Price	Max. Unit Price	Std. dev. of Unit Price	Median Unit Price
3076-6001	D-GR HMA TY-B PG64-22	TON	13,707.1	117,568.0	\$88.44	\$62.62	\$106.50	\$16.48	\$94.00
3076-6040	D-GR HMA TY-D PG70-22	TON	1,691.0	1,691.0	\$95.40	\$95.40	\$95.40		\$95.40

Low Bidder

District

San Antonio

County

(All)

Project Classification

(All)

Vendors

(Select to Exclude)

(All)

3076-6006	D-GR HMA TY-B PG70-22	TON	968.0	968.0	\$185.00	\$185.00	\$185.00		\$185.00
3076-6023	D-GR HMA TY-C PG70-22	TON	7,524.0	7,524.0	\$106.56	\$106.56	\$106.56		\$106.56
3076-6024	D-GR HMA TY-C SAC-A PG70-22	TON	85.0	85.0	\$375.00	\$375.00	\$375.00		\$375.00
3076-6025	D-GR HMA TY-C SAC-B PG70-22	TON	5,080.0	22,497.0	\$110.09	\$76.30	\$125.00	\$19.47	\$117.17
3076-6026	D-GR HMA TY-C SAC-A PG70-22 (EXEMPT)	TON	4.0	22.0	\$900.00	\$550.00	\$1,250.00	\$494.97	\$900.00
3076-6027	D-GR HMA TY-C PG70-22 (LEVEL-UP)	TON	5,210.0	5,210.0	\$102.00	\$102.00	\$102.00		\$102.00
3076-6033	D-GR HMA TY-C SAC-B PG76-22	TON	671.0	671.0	\$124.74	\$124.74	\$124.74		\$124.74
3076-6040	D-GR HMA TY-D PG70-22	TON	1,691.0	1,691.0	\$95.40	\$95.40	\$95.40		\$95.40



# Impacts to Pricing



## Bid Item Averages

**Filters:**

Standard Specification

Code

3077

Bid Item

(All)

Actual Let Date Range

Previous year

Bidder Rank

Low Bidder

District

San Antonio

County

(All)

Project Classification

(All)

Vendors

(Select to Exclude)

(All)

Adjust filters to refine your analysis of bid item average costs.

Use Qty Filter:

NO

Show Chart

Data Date: 4/21/2023 2:19:32 AM

BID ITEM	BID ITEM DESCRIPTION	UNIT OF MEASURE	Min. Bid Item Qty	Max. Bid Item Qty	Avg. Unit Price	Min. Unit Price	Max. Unit Price	Std. dev. of Unit Price	Median Unit Price
3077-6023	SP MIXESSP-CSAC-B PG70-22	TON	5,645.4	20,695.0	\$112.67	\$99.81	\$128.75	\$11.72	\$108.74
3077-6033	SP MIXESSP-CSAC-A PG76-22	TON	8,204.0	63,004.0	\$104.77	\$84.54	\$125.00	\$28.61	\$104.77
3077-6065	SP MIXESSP-DSAC-A PG76-22	TON	2,009.0	2,009.0	\$95.64	\$95.64	\$95.64		\$95.64
3077-6066	SP MIXESSP-DSAC-B PG76-22	TON	2,009.0	21,020.0	\$85.42	\$83.05	\$87.80	\$3.36	\$85.42
3077-6075	TACK COAT	GAL	13.0	14,556.0	\$7.37	\$1.10	\$20.00	\$8.55	\$4.19
3077-6081	SP MIXES SP-C SAC-B PG70-22 (EXEMPT)	TON	498.0	508.0	\$177.64	\$161.25	\$194.03	\$23.18	\$177.64





# Impacts to Pricing

Entity	Material Type	Average Bid Price/Unit/Year	Average Bid Price/Ton*	Percent Difference
City of Austin	Type B, 4" (COA Item 340S-B)	\$45.00/SY/2021	\$204.55	117%
TxDOT-Austin	Type B PG64-22 (SS3076)	\$94.04/ton/2022	\$94.04	
City of San Antonio	Type B, 10", <10,000SY (COSA Item 205)	\$59.00/SY/2022	\$107.28	21%
TxDOT-San Antonio	Type B PG64-22 (SS3076)	\$88.44/ton/2022	\$88.44	

\*-SY to Ton conversion based on 110lbs/sy-in



# Impacts to Pricing

Entity	Material Type	Average Bid Price/Unit/Year	Average Bid Price/Ton*	Percent Difference
City of Austin	Type D, 2" (COA Item 340S-B)	\$20.44/sy/2021	\$185.82	54%
TxDOT-Austin	Type D PG76-22 (SS3076)	\$120.58/ton/2022	\$120.58	
City of San Antonio	Type D, 1.5", 1000-5000SY (COSA Item 205)	\$12.62/sy/2022	\$152.97	60% (Dense Graded) 79% (Superpave)
TxDOT-San Antonio	Type D PG70-22 (SS3076)	\$95.40/ton/2022	\$95.40	
TxDOT-San Antonio	Type D SAC-B PG76-22 (SS3077)	\$85.42/ton/2022	\$85.42	

\*-SY to Ton conversion based on 110lbs/sy-in



# Pricing

Why's there such a big difference?

- **Material Costs**
  - PG70-22 is ~\$100/ton more than PG64-22
    - ~5% increase in HMA when going from PG64-22 to PG70-22
  - PG76-22 is ~\$50/ton more than PG70-22
- **Smaller Quantities**
  - More changes needed at the plant on a daily basis
  - More mix designs
- **Risks Owned by the Contractor**
  - Different owner requirements/Specifications
    - Tack Coat
    - Smoothness, pay by tonnage or square yard
  - Inconsistent incentive/disincentives
    - LMD, In-Place Air Voids
    - Thicknesses
    - Tighter tolerances on gradation & asphalt content

# How do we get on the same page?

- Local PIQ & AGC Meetings
- Conferences
  - TACERA
  - Short Course
- TxDOT District Engineer and Material Engineers
- TxAPA Resources
- Spec Updates
- General Note Reviews