


**Roads Condition
Review and Why We Need
More Durable Surfaces**


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Stanislaus County
Department of Public Works**

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Stanislaus County


- More than 1,500 miles of roads
- More than 230 bridges
- County service that every single resident needs and depends upon
- It's a service that is complained about daily
- It's the service that is taken for granted too often
- It's the biggest asset and biggest liability that the County owns
- It's our economy and our lifeblood, without Roads and Bridges we simply don't function!



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Items to be Covered


- History of HUTA Funding
- History of Roadway Resurfacing
- FY 16/17 Proposed Budget
- Current Road Condition
- Interlocking Concrete Pavement as an Alternative to Asphalt Concrete
- Summary



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10 – Year History of HUTA Funding


Year	Fuel Excise Tax Rate / gallon	Fuel Sales Tax Rate (Prop 42 base w/out spillover) / gallon	Fuel Tax Swap Excise Rate / gallon	Total Local Share of Fuel Tax / gallon
2007	\$0.18 (Local Share is \$0.0646)	\$0.173 (Local Share is \$0.0761)		\$0.1407
2008	\$0.18 (Local Share is \$0.0646)	\$0.173 (Local Share is \$0.0761)		\$0.1407
2009	\$0.18 (Local Share is \$0.0646)	\$0.173 (Local Share is \$0.0761)		\$0.1407
2010	\$0.18 (Local Share is \$0.0646)	\$0.173 (Local Share is \$0.0761)		\$0.1407
2011	\$0.18 (Local Share is \$0.0646)		\$0.173 (Local Share is \$0.0416)	\$0.1062
2012	\$0.18 (Local Share is \$0.0646)		\$0.177 (Local Share is \$0.0481)	\$0.1127
2013	\$0.18 (Local Share is \$0.0646)		\$0.180 (Local Share is \$0.0485)	\$0.1111
2014	\$0.18 (Local Share is \$0.0646)		\$0.215 (Local Share is \$0.0623)	\$0.1269
2015	\$0.18 (Local Share is \$0.0646)		\$0.180 (Local Share is \$0.0467)	\$0.1113
2016	\$0.18 (Local Share is \$0.0646)		\$0.120 (Local Share is \$0.0204)	\$0.0850
2017	\$0.18 (Local Share is \$0.0646)		\$0.300 (Local Share is \$0.0170) - Projected	\$0.0816



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History of Roadway Resurfacing


Year	Overlay (Miles)	Slurry Seal (Miles)	Chip Seal (Miles)	Total (Miles)
2008	32.87	6.1	47.14	86.11
2009	26.2	43.74	0	69.94
2010	0	0	43	43
2011	11.05	11.49	59	81.54
2012	17.87	0	46.4	64.27
2013	8.1	5.74	75	88.84
2014	13.24	7.32	110	130.56
2015	0	0	0	0
2016	7	0	0	7
	116.33	74.39	380.54	571.26



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Summary of Recent HUTA Revenue


- Fiscal Year 2014-15 Actual HUTA Revenue was **\$14,464,086**
- Fiscal Year 2015-16 Projected HUTA Revenue is **\$11,091,304**
- Fiscal Year 2016-17 Projected HUTA Revenue is **\$10,135,702**



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FY 16/17 Proposed Budget


- State Gas Tax is projected to go down an additional \$1 M.
- Proposed cuts include:
 - Elimination of Conventional Chip Program
 - Elimination of Urban Slurry Program
 - Elimination of 6 field positions
 - 50% reduction of pothole patching
 - Substantial reduction in bridge maintenance, shoulder maintenance, and roadway striping



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FY 16/17 Proposed Budget

- With cuts there is still a revenue shortfall of \$1.7 million.
- \$1.7 million shortfall consists of the following:
 - \$824,210 shortfall in Roadway Operations
 - \$875,790 shortfall in Projects (leveraged money for 11 projects with \$5,561,129.33 of state and federal funds, the more than \$5.5 million will be lost without the match of \$875,790)


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FY 16/17 Proposed Budget

- At proposed basic level of funding many road repair and requests will go unresolved.
- Reduced staffing and greatly reduced equipment funding will result in unknown issues requiring Board action and funding throughout the year.


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Condition of Stanislaus County Roads

 <p>ADT 3,522</p>	 <p>ADT 1,896</p>
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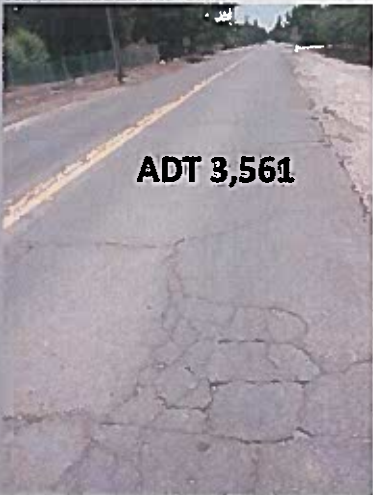
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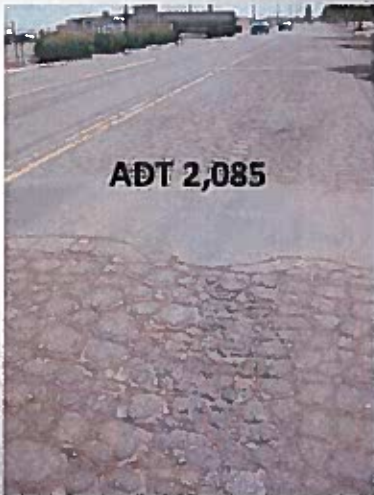
Condition of Stanislaus County Roads


 ADT 207

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Condition of Stanislaus County Roads

 ADT 3,561

 ADT 2,085


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Condition of Stanislaus County Roads




ADT 3,857

ADT 19,609

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Condition of Stanislaus County Roads



ADT 2,777

ADT 2,777



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10 Years Ago...

I presented "Use of Concrete Pavers as a Roadway Standard" at the 8th International Conference on Concrete Block Paving, Nov. 6-8, 2006 San Francisco, CA.



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Interlocking Concrete Pavement

- Concept dates back to the ancient Roman Empire, Appian Way was built in 312 B.C.

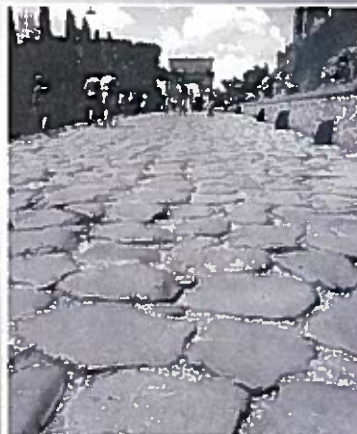




Figure 1. The Roman Appian Way: early interlocking pavement



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Interlocking Concrete Pavement


- Concrete pavers were developed in the Netherlands in the late 1940's as a replacement for clay brick streets.
- Currently in Europe approximately three billion square feet are installed annually.
- Concrete pavers came to North America in the 1970's.



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Interlocking Concrete Pavement


- The paving system offers the advantages of high strength concrete materials and flexible asphalt pavement.
- Research in the United States and overseas has shown that the combined paver and sand layers stiffen as they are exposed to greater numbers of traffic loads. The resulting resilient modulus is equivalent to the same thickness of asphalt. The 3.125 inch (80mm) thick pavers and 1 inch thick bedding sand have an AASHTO layer coefficient at least equal to the same thickness of asphalt.



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Concrete Pavers - Pro's vs Con's


- Pro – Less long term cost
- Pro – More durable, longer life cycle
- Pro – Aesthetically pleasing
- Pro – Natural speed control
- Con – Higher capital cost
- Con – Striping concerns
- Con – Roadway noise at higher speeds
- Con – Construction challenges / staging



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Asphalt Maintenance Economics


- Original Cost, Base Included = \$5.00 / SF
- Maintenance Interval - @10 years microsurface / chip seal = cost \$0.50 / SF, @20 years chip seal / overlay with minor patching – cost \$1.00 / SF, @30-40 years complete reconstruct – cost \$7.00 / SF
- Using a 100 year time period
- Cost NPV per SF = \$5.00 + \$7.35 = \$12.35



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Concrete Paver Maintenance Economics


- Original Cost, Base Included = \$7.50 / SF
- Maintenance Interval - @5 year intervals joint sanding – cost \$0.05 / SF, at 20 year intervals moderate stone replacement – cost \$0.50 / SF
- Using a 100 year time period
- Cost NPV per SF = \$7.50 + \$1.34 = \$8.84



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Asphalt versus Concrete Pavers


- Concrete Pavers are approximately 3/4 the cost of Asphalt Concrete over a 100 year period.
- Maintenance cost for concrete pavers for the same period is 1/5 the cost Asphalt Concrete



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Causes of Asphalt Concrete Failure


- Heavy Traffic Loads, resulting in rutting
- High Air Temperatures, resulting in rutting
- Age, resulting in fatigue and failure



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Roadway Standard


- Concrete Pavers
- 4" x 8" x 80 mm
- Placed at 90 degree herringbone
- Color = black and tan blend
- Placed on structural section



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Projects Built 2005-2007


- Cornerstone Subdivision ~400,000 SF
- Irongate Subdivision ~500,000 SF
- Wagner Woods Subdivision ~70,000 SF
- Palm Grove Subdivision ~70,000 SF




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Projects Built 2008

- Main Street Reconstruction ~50,000 SF
- Stockton Avenue Reconstruction ~30,000 SF
- Mistlin Sports Park – Parking Lot ~200,000 SF

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Cornerstone Under Construction




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Features of Installation




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Pavers in Ripon "Looking Good"




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Adjacent Roads Built the Same Year!



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Use of Concrete Pavers in Stanislaus County




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I-5 at Westley Triangle



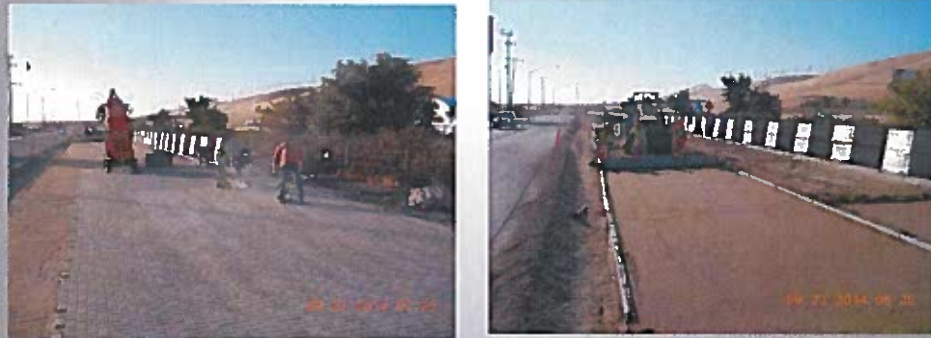
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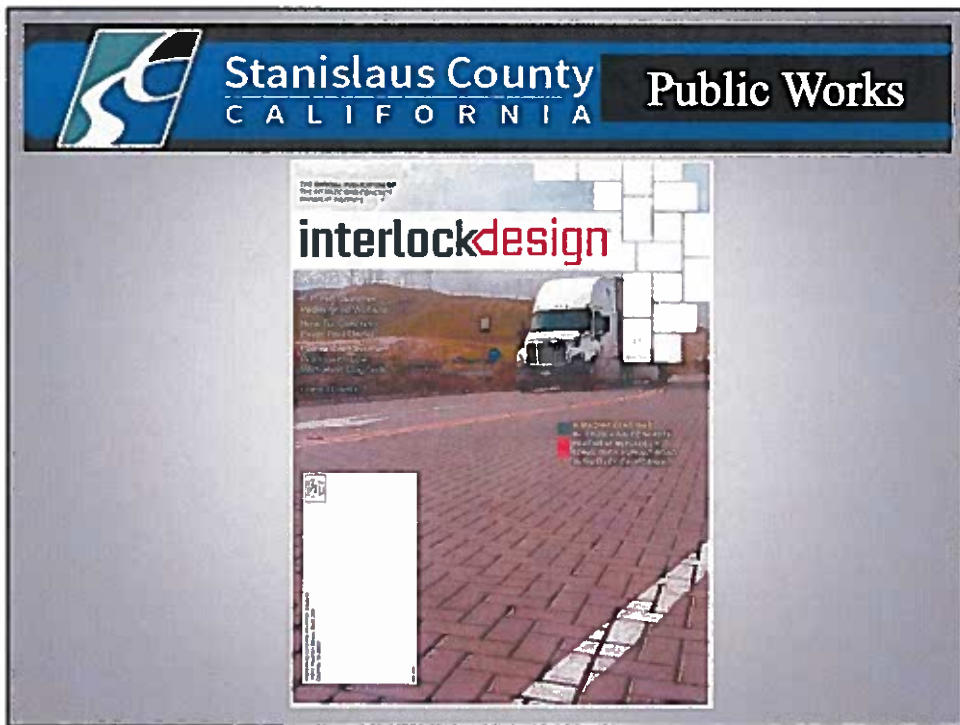
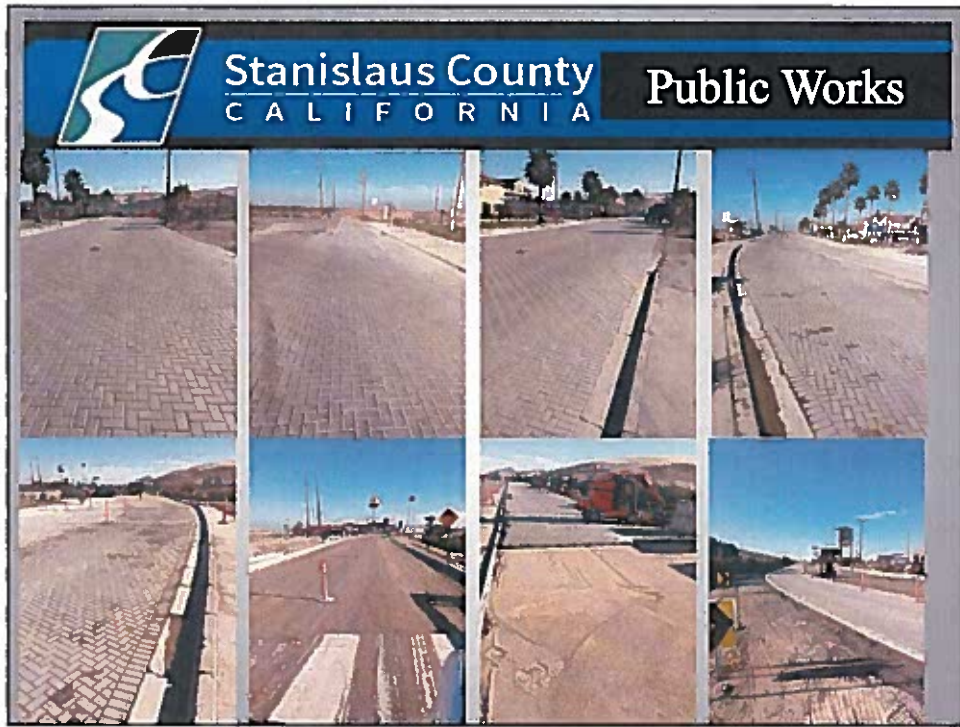
Heavy Truck Traffic




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**170,000 SF of Pavers, with bid costs range of
\$4.50-\$6.00 / SF**








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What is Next?

- Stanislaus County's Industrial Business Park at the Crows Landing Airfield
- 1,500 acre site - ~400 acre General Aviation Airport, ~1,100 acre Industrial Business Park
- Internal Roads include ~3,500,000 SF
- Proposed to be Concrete Block Pavers



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Summary

- Stanislaus County Roads are falling apart
- Road and Bridge Maintenance funding is inadequate and falling dramatically
- Inaction by State Legislation is creating an infrastructure catastrophe
- Providing roads and bridges is not an option, nor is paying for them (upfront maintenance vs claims and lawsuits vs vehicle damage)
- The longer we wait, the more it will cost
- A more durable roadway surface is key to success