

Asphalt vs. PCC

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My thoughts on this...

If you ask me anything I don't know, I'm not going to answer...Yogi Berra



PRESENTATION OVERVIEW

- History of their use.
- History in Nevada.
- NDOT Pavement Selection Policy.
- Benefits of each.
- Other Factors.



GREAT RIVALRY CONCRETE VS AC

- Industrial Revolution Larger Traffic
- The battle started in the late 1800's
 - NY City, 1872 AC
 - Ohio, 1891 Concrete
- 1920's
- 1950's
 - Research financed by the FHWA/TRB
- Today: AC covers 94% of roads with 60% of the Interstate being concrete.



Nevada's Highways

- 131 centerline-miles concrete, 5345 centerline-miles asphalt
 - 20 year design life
 - Concrete problems
- RTC concrete intersections



NDOT Pavement Selection Policy (considerations)

- Design Life
 - Urban Interstate 35 year
 - All Other 20 year
- Scope and Budget
 - Existing pavements Overlay vs. Reconstruction
- Construction Traffic Control Costs and Delays to traveling public
 - Urban vs. Rural
 - Day vs. Night
 - Frequency of Maintenance Activities



NDOT Pavement Selection Policy (continued)

- Frequency of future traffic disruption
 - Rehabilitation strategies and cycles
 - Pavement Management System
- Life Cycle Cost Analysis (LCCA)(Realcost Software supplied by FHWA)
 - 35 year minimum
 - 4% discount rate (adjustment for the opportunity value of time)
 - discount rate = interest rate inflation (used to increase interest to the FHWA)



(LCCA continued)

- Remaining service life after 35 years
 Agency and User costs
- Urban vs. Rural
- Present Worth



I-580 Extension Maintenance and Rehabilitation Timeline

Pavement Ty	pe																		-
Concrete	0 2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	Life in years
15-20 year rehabilitation frequency																			
	New const 11" concre 2" asphalt	ruction te								Profile Spall	e grind repair, ab repl	ind air, replace replacement			Profil Spall	e grind repair, ab repl	j , replace		
	6" aggrega	te base								1/0 51		aceme			2 /0 31		aceme		
Asphalt	0 2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	Life in vears
8 year rehabilitation frequency	New construction 3/4" asphalt friction layer 7" asphalt 24" aggregate base			1.5" coldmill, 2.5" PBS with OG				1.5" coldmill, 2.5" PBS with			, h OG		3" coldmill.		1.5" coldmill, 2.5" PBS with OG				
												4" PBS with OG							



I-580 Extension Maintenance and Rehabilitation Timeline

Pavement Type

Concrete 15-20 year rehabilitation frequency	New cor same co as asph	2 nstruc onstru alt	4 tion ction ti	6 ime	8	10	12	14	16	18	20 5-7 m impac and p	22 oonths at to 1-5 ossibly	24 ;80 7 US 39	26 5	28	30 5-7 m impac and pe	32 onths t to I-5 ossibly	34 80 US 39	36 5	Life in years
Asphalt 8 year rehabilitation frequency	n vew construction same construction time as concrete			6 ime	8 10 12 14 5-7 months impact to I-580 and possibly US 395			14	16 18 20 22 5-7 months impact to I-580 and possibly US 395			22 9 5	24 26 28 5-7 months impact to I-580 and possibly US 395			30)5	32 5-7 m impac and po	34 onths t to I-58 ossibly	36 30 US 39	Life in years



Benefits of Concrete

- Lasts longer
- Longer period of time between maintenance cycles
- Does not rut
- Will hide poor subgrades
- Better load carrying capability
- Better splash/spray for later years AC surface
- Improved fuel economy



Benefits of Asphalt

- Lower upfront costs
- Quicker to Construct
- Easier/Quicker to repair
 Drive over after paving
- Repairable by NDOT Maintenance
- Lower salt/sand usage in the Winter
- Better splash/spray for 1 3 years



Politics

- Each material has lobbying efforts
- Contractors
- Stakeholders



Conclusion

- My thoughts...
- NDOT's direction
- Questions?