Roller Compacted Concrete (RCC)

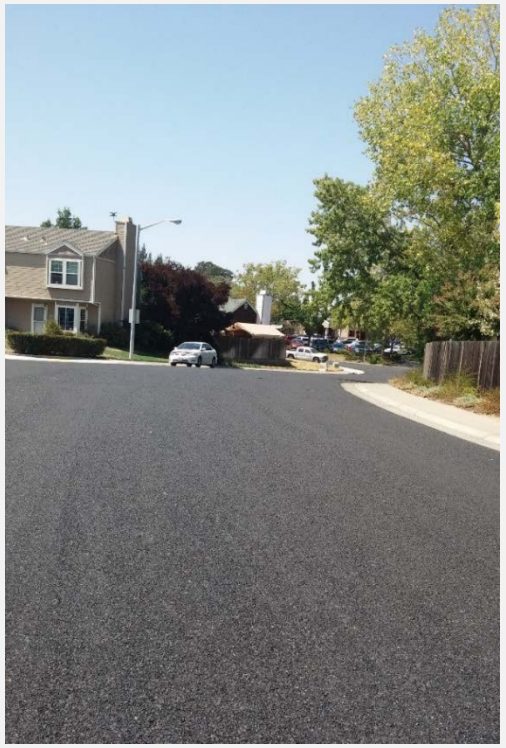
Presented by:

Jason Shykowski

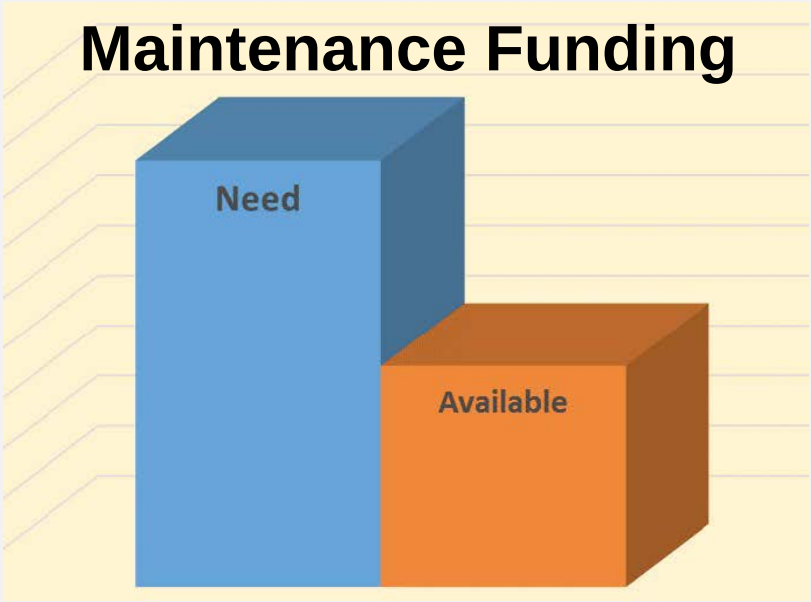
Public Works Engineering

The Challenge

- Street maintenance funding is a challenge
- Primary funding source is gas tax
- Gas tax distributed by population and lane miles
- Gas tax unchanged since 1993 while costs have tripled



The Challenge



- Roseville – 1,000 lane miles of asphalt roadway
- Need to maintain 100 lane miles/year – $8.5 million
- City averages $4.4 million/year available for roadway maintenance - about half of what is needed

RCC – A Promising Solution

Where has it been used?

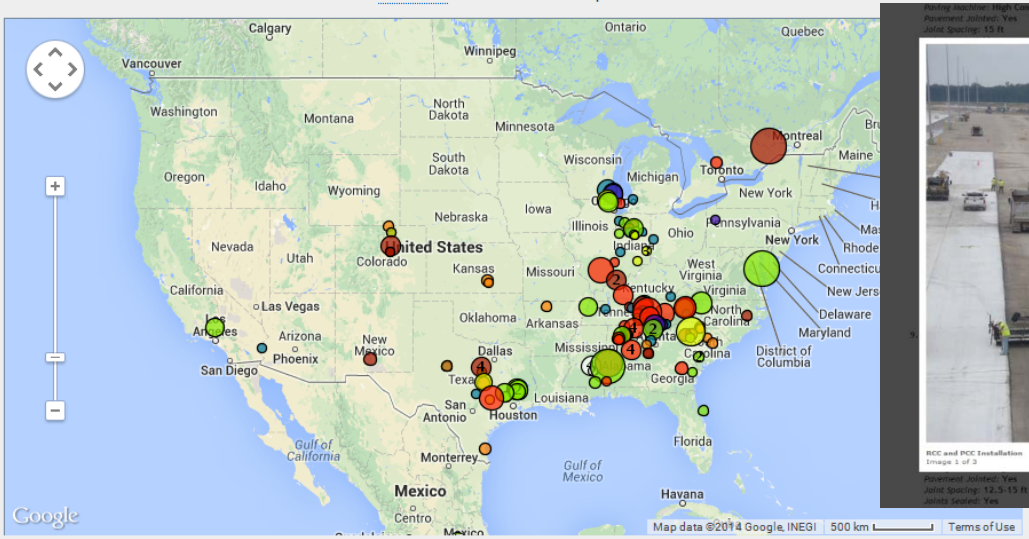
The National RCC Explorer

Instructions

MAP VIEW • TABLE VIEW • DETAILS VIEW

264 Items

98 results out of 264 cannot be plotted.



Application

Airport · Arterial Street · Industrial/Trucking Facility · Local Street · Military

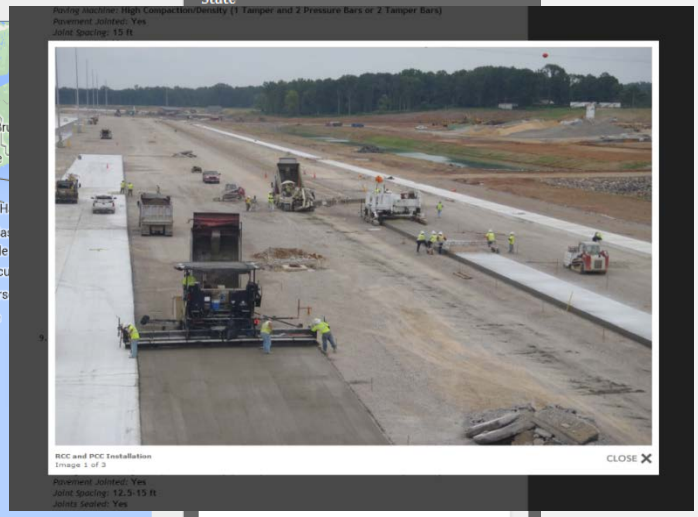
Other (e.g., Logging Facility, Composting Area, Storage Yard) · Port or Intermodal Facility · Widening or Shoulder · mixed

Search

Application

74 Industrial/Trucking Facility
52 Local Street
43 Port or Intermodal Facility
31 Military

State



5 1990 - 1995

Project Size (SY)

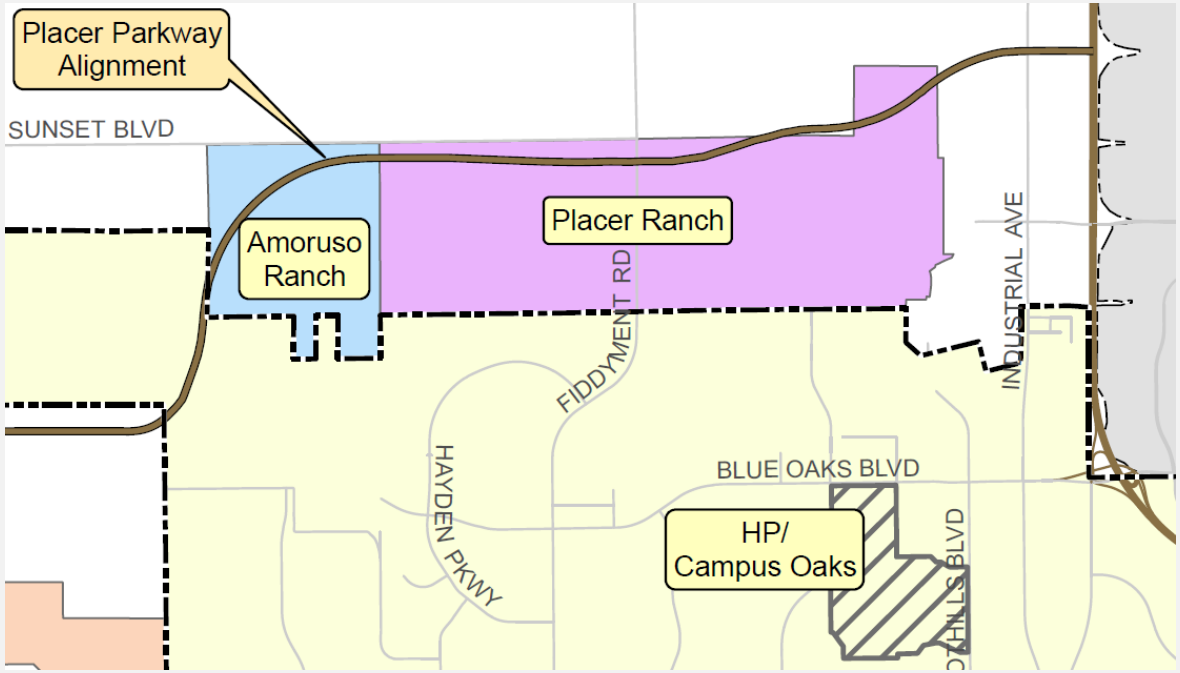
165 0 - 50000
28 50000 - 100000
8 100000 - 150000
7 150000 - 200000

Nominal Maximum Size Aggregate

Cost Comparisons

RCC/AC Cost Comparison for Pleasant Grove			
Option	*Construct*	*50-yr. Maint.*	*Lifecycle Cost*
RCC over cement-treated subgrade	$914,186	$490,000	$1,404,186
RCC over aggregate base	$1,156,673	$490,000	$1,646,673
Asphalt over cement-treated subgrade	$1,254,962	$785,840	$2,040,802
Asphalt over aggregate base	$1,509,170	$785,840	$2,295,010

RCC – A Promising Solution



- Maintenance Interval Comparisons
  - RCC – 20 to 25 years
  - Asphalt – 7 to 10 years

- RCC allows more funding for existing asphalt roads

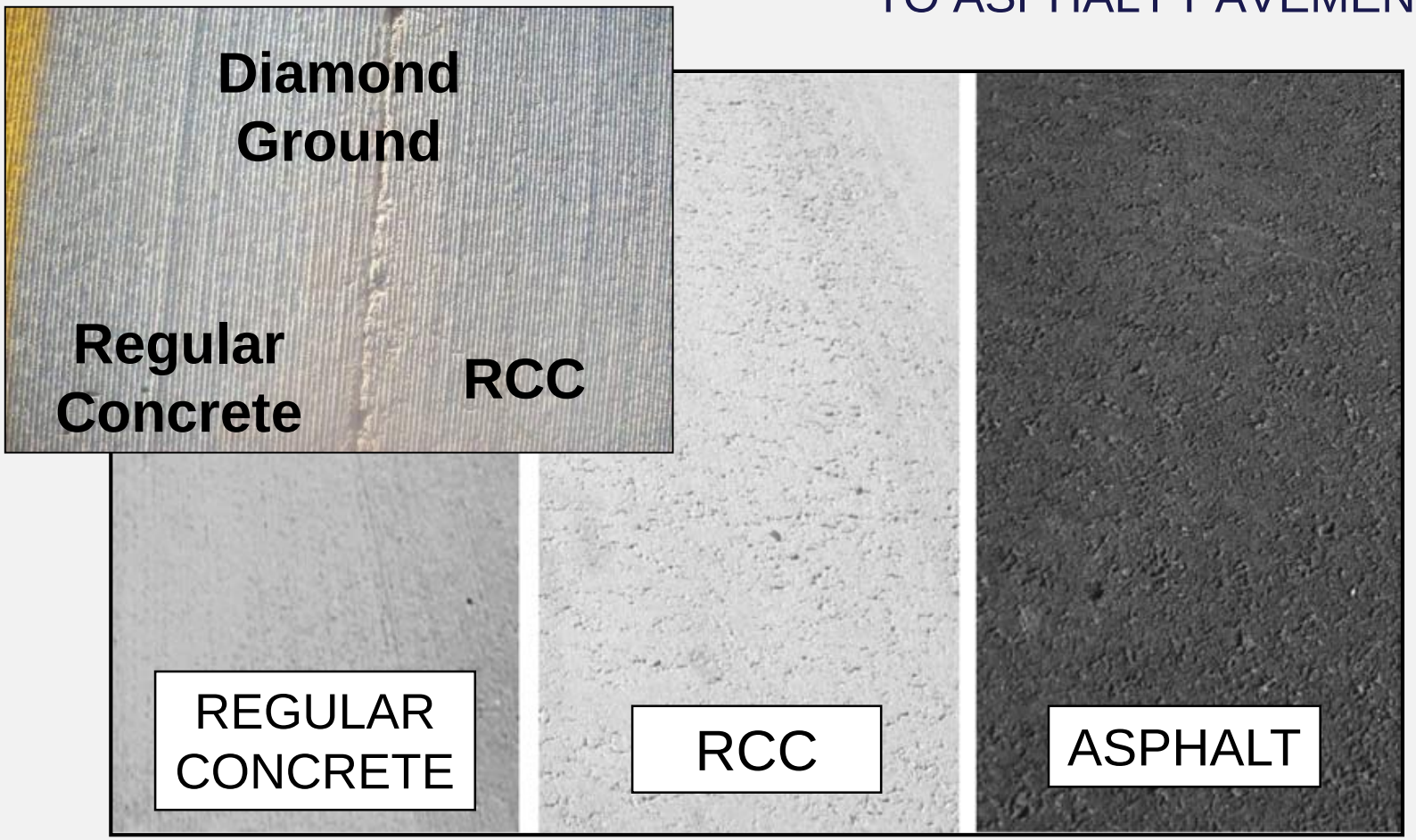
What does RCC look like?

Diamond Ground Arterial

Troweled Residential

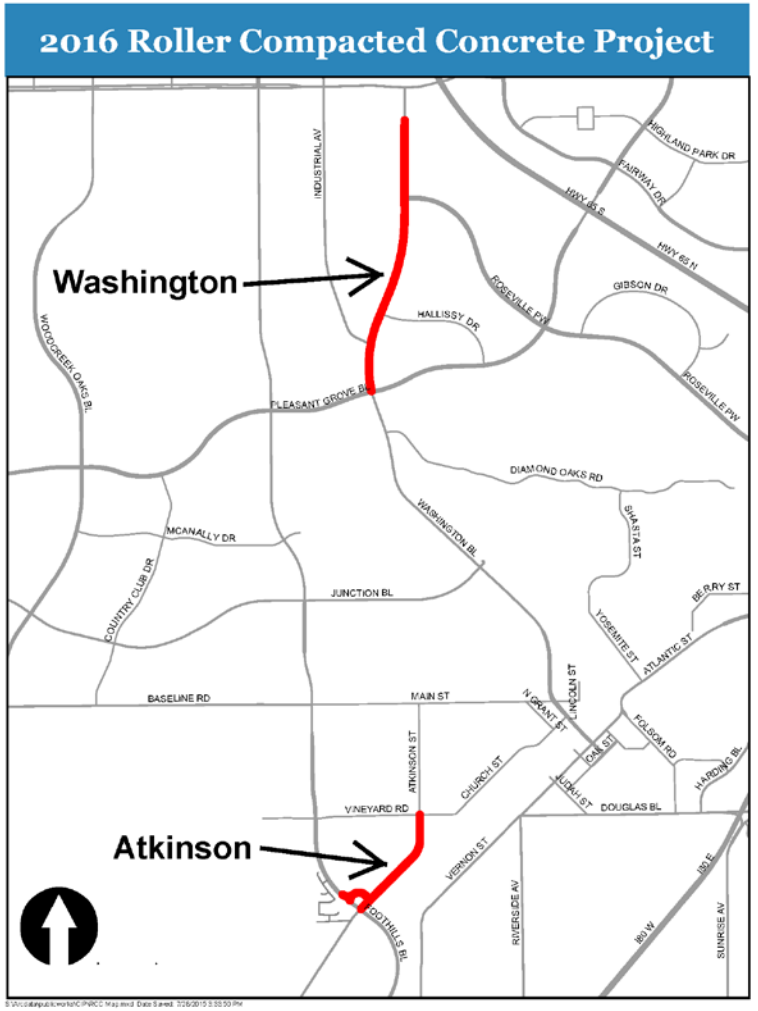
What does RCC look like?

SURFACE APPEARANCE AND TEXTURE OF RCC IS SIMILAR TO ASPHALT PAVEMENT



Pilot Project

- Design this winter
- Construction next summer
- Three locations to test varying construction techniques, traffic conditions, and finishes
- Advertise nationwide
- Pre-qualify contractors



Outreach

- BIA and Utilities expressed interest in a pilot project
- Will continue outreach during design and construction
- Any revisions to City standards will include input from stakeholders

CITY OF ROSEVILLE CALIFORNIA

Roller Compacted Concrete (RCC)

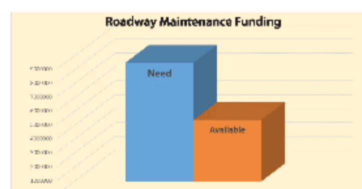
What is it?

- Roller Compacted Concrete (RCC) is a relatively dry concrete mix that is installed with a paving machine and then rolled, just like asphalt.
- It is sometimes called "white asphalt."
- This installation method keeps construction costs lower than conventional concrete and very competitive with asphalt.
- RCC is generally 4" to 10" thick, installed in a single lift, and does not contain any reinforcing steel.
- The City of Roseville requested a cost analysis from both a roadway contractor and an independent consultant. Both concurred that the RCC construction costs are about the same or lower than asphalt concrete (AC) costs for new roads.

Arterial RCC

RCC/AC Cost Comparison for Pleasant Grove (about ½ mile in length)			
Option	*Construction Cost Estimate*	*50 yr. Maint. Cost Estimate*	*Lifecycle Cost Estimate*
RCC over cement-treated subgrade	$914,185	$490,000	$1,404,185
RCC over aggregate base	$1,156,673	$490,000	$1,646,673
Asphalt concrete over cement subgrade	$1,254,862	$785,940	$2,040,802
Asphalt concrete over aggregate base	$1,509,170	$785,840	$2,295,010

RCC/AC Cost Comparison for Westpark Phase 4 Residential (about ½ mile in length)			
Option	*Construction Cost Estimate*	*50 yr. Maint. Cost Estimate*	*Lifecycle Cost Estimate*
Asphalt concrete over cement-treated subgrade	$292,919	[illegible]	[illegible]
RCC over cement-treated subgrade	$223,940	[illegible]	$384,123
Asphalt concrete over aggregate base	$244,607	$215,392	[illegible]
RCC over aggregate base	$255,897	[illegible]	[illegible]



The Challenge

- The City maintains about 1,000 lane miles of asphalt roadway
- Proper asphalt preventative maintenance requires maintaining 100 lane miles per year at a cost of about $8.5 million
- The City has on average $4.4 million per year available for roadway maintenance — about half of what is needed
- Maintenance funds generally come from the Gas Tax paid at the pump
- Gas Tax is distributed to local government based on road lane miles and population

Public Works Department roseville.ca.us/RCC

Questions

RCC Paving Operation