The Future of Our Infrastructure, A Caltrans Perspective for ACI Fall 2017 Convention

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This Presentation...

1. The 10-year Pavement Condition Goal
2. Caltrans concrete project spending predictions for the near future
3. Fast repair strategies
4. 100-year pavement designs
5. Cement is important to recycling
12 Caltrans Districts with Varying Needs
Caltrans Pavement Goal

2016

Green
32,000 LM (64%)

Yellow
8,500 LM (17%)

Red
9,000 LM (18%)

2027

Green
40,000 LM (80%)

Yellow
5,000 LM (10%)

Red
5,000 LM (10%)

If no work, over 65,000 lane miles need to be repaired

SB1 adds $17 billion to get there
Many Truck Routes and Urban Areas are Concrete

This route is 30 years old!
Urban Areas

Concrete versus Asphalt

Concrete: 70%
Asphalt: 30%
Most Rural Roads are Asphalt
Rural Areas

Concrete 30%

versus

Asphalt 70%
Pavement Spending

- **Asphalt Pavement**
- **Concrete Pavement**

<table>
<thead>
<tr>
<th>Year</th>
<th>Asphalt Pavement</th>
<th>Concrete Pavement</th>
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<tbody>
<tr>
<td>2017</td>
<td>52%</td>
<td>47%</td>
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<tr>
<td>2018</td>
<td>44%</td>
<td>56%</td>
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<tr>
<td>2019</td>
<td>67%</td>
<td>33%</td>
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<tr>
<td>2020</td>
<td>67%</td>
<td>33%</td>
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Percentage of Total Funding
## Concrete Pavement Spending

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<td>Joint Sealing</td>
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<td>Grind PCC for Smoothness - CAPM</td>
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**TOTAL Pavement Spending for Asphalt:** 53%

**TOTAL Pavement Spending for Concrete:** 47%

**TOTAL Pavement Spending:** 357 95 148 801 1,437 1,177 1,026 1,101 959 1,102 8,204

*Amount in million dollars.*
Strategy #1
COLD FOAM EQUIPMENT TRAIN
5% cement added

- Bitumen Truck
- Recycler
- Water Truck
- Sheepsfoot Roller
- Grader
How Does It Work?

Display showing:
- Operational and working data
- Preselection, foamed bitumen: Added bitumen (% by weight)
- Water for foaming process (% of bitumen quantity)

Setting the injection width when working with overlap

Preselection, water:
- Added water (% by weight)

Microprocessor

Water pump for foam generation

Printout of working data

M - Measurement of the added bitumen and water
A - Control of the pumps for bitumen and water
V - Measurement of the rate of advance
1 - Supply of hot bitumen or emulsion, if required
2 - Infeed of water-and-cement slurry
3 - Supply of water (to achieve optimum compaction)

R - Control of the pulsed nozzle cleaning function
Typical Recycler
Cement in Front of Recycler
Foamed Recycled Material

- No Dust
- Relatively Quiet
Lessons Learned

Need to provide adequate signage, traffic management plan for travelers to remind them they are riding on an unpaved surface and to keep speeds down.
Strategy # 2

PRECAST SLAB REPLACEMENT

More effective the projects are, the easier to compete and obtain statewide funds to build.
Long Life Pavement Design

Concrete pavements are being built with new technology to last for 100+ years!
Casted Dowel Bar Slots
Strategy # 3
Continuously Reinforced Concrete Pavement
Traditional Jointed Concrete
Traditional Jointed concrete
US-40/I-80 Section: Steel Design

LONGITUDINAL STEEL

Section A – lower grade
- 0.62 percent steel
- ½” φ @ 4” c/c

Section B – higher grade
- 0.5 percent
- ½” φ @ 5” c/c

TRANSVERSE STEEL
- ½” φ @ 5-ft c/c
Condition Prior to Overlay was “Excellent”
Close Up Condition Showing “Excellent”
CRCP...50-100 years
Paving over steel
In Conclusion

- **HIGH** Goals
- **MORE** Money
- **NEW** Strategies

California needs more Contractors who are talented and capable!