



Tab 22

Division of Maintenance
Pavement Program

Caltrans Sustainable Pavement

**Tigi Thomas,
Deputy Division Chief, Pavement Program
State Pavement Engineer
HQ Maintenance, Caltrans**

Overview

- Sustainability & The Pavement Asset
- Pavement Types
- Benefits of Sustainable Pavement Strategies
- A few Caltrans Sustainable Pavement Strategies



Safety First



Lead Climate Action

Sustainability & the Pavement Asset

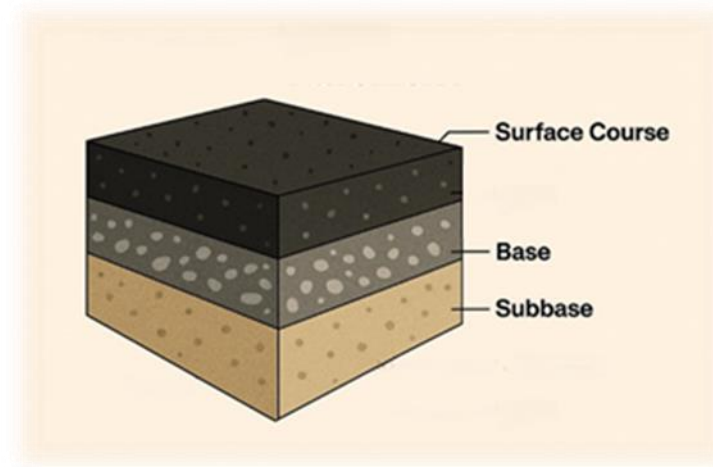
- Largest Asset: ~50, 000 lane miles
- Improve Quality of Life
- People, Planet, Prosperity, Partnerships
- Innovations



Pavement Types: Asphalt and Concrete

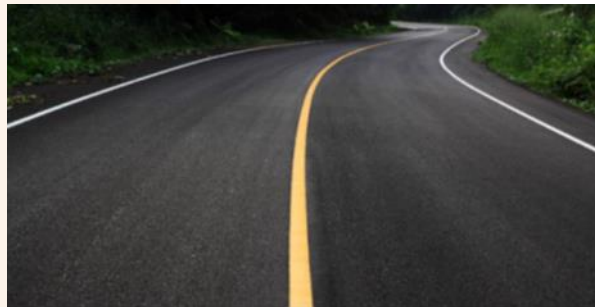
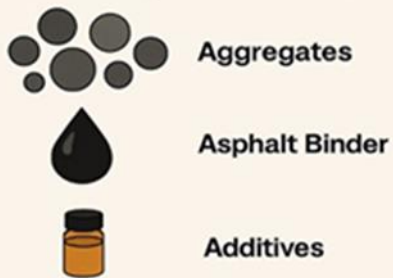
Typical Pavement consists of **layers**:

- Surface Course
- Base
- Subbase
- Subgrade (native soil)



Asphalt Concrete Pavement

Components of HMA



Concrete Pavement

Components of the Concrete Surface Layer

Cement



Aggregate



Water

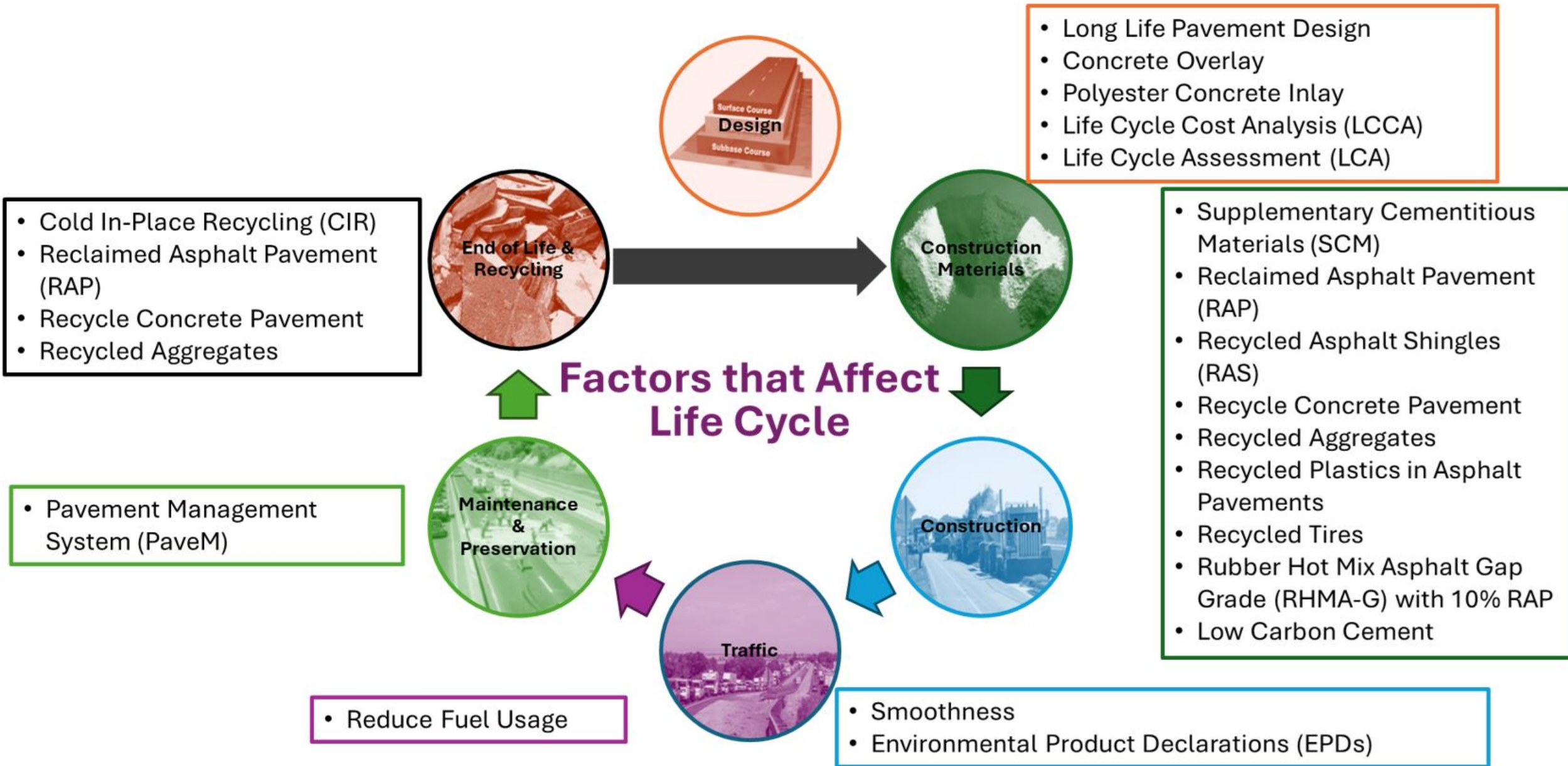
Benefits of Sustainable Pavement Strategies

- **Benefits:**
 - **Conserve** natural resources (virgin materials)
 - **Reduce** waste
 - **Reduce** life cycle costs
 - **Reduce** greenhouse gas (GHG) emissions
 - Promote longevity (**Long-Life pavement**)

Build durable, resource-efficient pavements that minimize environmental impact and support California's climate and sustainability goals.



Pavement Life Cycle and Sustainable Strategies



Sustainable Pavement Strategies

1. Reclaimed Asphalt Pavement (RAP)
2. Cold Recycling of Asphalt Pavement
3. Low Carbon Cement



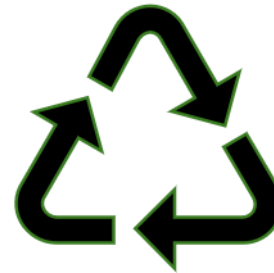
Reclaimed Asphalt Pavement (RAP)

- Old, removed asphalt material that is crushed and recycled into new asphalt mixes
- RAP is substituted for virgin aggregate in asphalt concrete.
- Aggregate supplies are dwindling in CA.
- **Benefits:**
 - Minimizes need for new materials (aggregate and binder)
 - Reduces GHG emissions
 - Reduce pavement waste



Cold In-Place Recycling of Asphalt Pavement (CIR)

- Reuses existing pavement materials on-site
- Another 10-20 years of life!!
- **Benefits:**
 - Minimizes need for new materials
 - Reduces GHG emissions
 - Reduce pavement waste
 - 20-30% reduction in cost compared to traditional construction



Recycled roads can be recycled again!

Low Carbon Cement

- Cement clinker (limestone, clay) is the core ingredient
- Producing clinker is the most energy-consuming and releases CO₂ emissions
- Replacing portion of clinker with Portland Lime Cement Concrete (PLC) and other blended cements.
- **Benefit:**
 - Reduces GHG emissions (CO₂ emissions)



Questions?

Tigi M Thomas

(916)704-9245

tigi.thomas@dot.ca.gov

Thank You