Introduction

• Overview of California Pavement Preservation Center (CP2C)

• CP2C work with warm mix asphalts
  • On-going
  • Previous emissions research for National Asphalt Pavement Association (NAPA)
    • 2001 NAPA warm mix tour of Frankfurt, Germany, Copenhagen, Denmark, and Oslo, Norway
Overview of CP2C

- Started in January 2006 as a Caltrans Contract to support Pavement Preservation
  - 3rd Party for Caltrans and Industry
  - Experts in evaluation of new pavement preservation products and processes
  - Partners in preservation research and education

- Grown and developed over last 2 years
  - Currently involved in a number of Pavement Preservation activities for Caltrans and other agencies
**CP2C Staffing**

- California State University, Chico
  - Dr. Stroup-Gardiner, Technical Director
  - Dr. Hicks, Senior Project Manager
  - Pavement Preservation Engineer
- Memorandums of Understanding (under development)
  - CSU Long Beach
  - CSU Pomona
  - Others as we grow
- Consultant support as needed
CP2 Center Tasks for Caltrans

- Task 1 – Benefits of Pavement Preservation
  - Research and publications focusing on life extensions and economic benefits
- Task 2 – Training and Education
  - Maintenance Technical Advisory Group (MTAG)
- Task 3 – Improve Pavement Preservation Performance
- Task 4 – Innovation and Technology Transfer
  - 3rd party documentation for Innovation Projects
  - Innovation Database development and management
CP2 Center Tasks for Caltrans

- Task 5 – Technical Assistance
  - CalAC software revisions
  - Failure investigations, forensics, requests for information and contacts
- Pavement Preservation Task Group
  - 22 Task Groups dedicated to preservation topics
  - Task Groups represented by both Caltrans and Industry
**CP2 Center Tasks for Caltrans**

- Task 6 – Promote Pavement Preservation
  - Annual Pavement Preservation Conference
    - Oakland, California April 8-9, 2009
  - International Pavement Preservation Conference
    - Newport Beach, California April 2010
- CP2 Center quarterly Newsletter
- Publish research
CP2C Involvement with Warm Mix

• Documentation of Warm Mix Demonstration Project (Task 4 Innovation)

• California Integrated Waste Management Board (CIWMB) project to investigate Terminal Blends and Warm Asphalt
Task 4 Innovation Documentation

Warm Mix Projects

Last Summer

- Morro Bay, California
  - Polymer modified and windrowed
  - 3 warm mix technologies used
- Point Arena Project
  - Long hauls
  - Cool weather

This Summer

- District 11
  - 3 to 4 different technologies
  - RHMA open graded
Crumb Rubber and Warm Asphalt

- Traditional: Field blended, equipment mobilization
- Terminal blend: Blended in line for each truck
  - Benefits:
    - More use of recycled materials
    - Less fuel consuming equipment needed
    - Easier to supply multiple projects
  - Disadvantage
    - Full blending
    - High temperatures needed to provide workability
Where next?

- Confirm:
  - Emissions minimized when temperatures are below 150°C (302°F)
  - Reduction needs to focus on temperature not change in temperature

- Evaluate:
  - Warm mix technologies with a range of asphalt paving products
    - RHMA-O, Thin lifts, hot (warm) applied surface seals?
Questions?