# Federalizing Bridge Preservation
# California's Plan

Michael B. Johnson P.E.
California Department of Transportation
Western Bridge Preservation Partnership
May 2012

# Federal Authority

- FHWA Policy Memo dated October 8, 2004
  - "Timely preservation activities are necessary to ensure proper performance of the transportation infrastructure"
  - FHWA should, "proactively work with their state partners" to develop preservation programs.
  - "Final eligibility determination should be the result of collaboration between the division and State DOT".
  - "FHWA supports the increased flexibility of using Federal-aid funding for cost-effective preventive maintenance".

# Federal Constraints

- FHWA Policy Memo dated October 8, 2004
  - "In no way shall preventive maintenance projects adversely impact the safety of the traveled way"
  - "Capacity increasing projects are not considered preventive maintenance".

- Legislative Constraints
  - Title 23 U.S.C 116 (d) – requires a sound inspection program and "systematic process" such as bridge management to identify eligible work activities"

# Systematic Process

- FHWA guidance related to evaluating the systematic process (FHWA bridge preservation guide).

1. How are the needs identified?
2. Prioritize the needs
3. Have remedy to address need
4. Define outcome or goal
5. Define resources needed to achieve goal
6. Define time frames
7. Demonstrate cost effectiveness
8. Demonstrate extension of life
9. Dedicate adequate resources

# Systematic Process Challenges

- The following are the tough systematic process items to achieve:
  1. Prioritize the needs
  2. Demonstrate cost effectiveness
  3. Demonstrate extension of life

# The Caltrans Plan

- Preservation needs are primarily identified by inspectors during a bridge inspection.
- Inspectors place a priority on every work recommendation based on their field inspection.
- Inspectors are all licensed engineers.
- Federalized bridge preservation activities are managed and resourced just as any other project.
- Benefits of activities in the plan are intuitive and backed up by the Pontis Bridge Management System models.
- Cost effectiveness and life extension can be evaluated using Pontis.

# The Caltrans Plan

- We defined nine bridge preservation activities:
  - Concrete Deck Overlays
  - Concrete Deck Crack Sealing
  - Concrete Deck Rehabilitation
  - Full and Spot Steel Painting
  - Joint Seal Repair or Replacement
  - Scour Mitigation
  - Bridge Mechanical & Electrical Repair
  - Superstructure Strengthening
  - Steel Fatigue Mitigation

# Example Activity

- Activity: Joint Seal Replacement
  - Purpose: Properly functioning joint seals prevent the accumulation of material in the joint that could restrict thermal movement of the bridge or lead to corrosion of steel members. Restricted thermal movements are know to cause considerable damage to both superstructure and substructure components.
  - Eligibility: Bridge joint seal elements in condition states 2, 3 or 4 are eligible.
  - Prioritization: Urgency identified by the inspector during the inspection will be used to prioritize.

# Example Activity

- Activity: Superstructure Strengthening
  - Purpose: Strengthening provides a viable alternative to replacement for bridges with lesser load capacity but otherwise in good condition.
  - Eligibility: Bridges with load carrying capacity to demand ratios of less than 1.0 at the operating level. A current load rating is required.
  - Prioritization: Priority will be given to lower capacity to demand ratios and then to higher ADTT's.

# The Caltrans Plan – Other Lessons

- Other components of the Caltrans Plan:
  - Programmatic exception to geometric design and safety standards.
  - Exemption from the "10 Year Rule" for the use of HBP funding.
- Unsuccessfully sought single item FTIP listing for the program.

# Summary

- Bridge preservation activities are cost effective and can be funded with HBP funds.
- Gaining Preservation Plan approval requires a systematic process of management be in place.
- Communication with the FHWA Division office is a critical components.
- Bridge management systems such as Pontis can satisfy several tough program “tests”.
- Even with approval, the funding requires additional project overhead that reduces the overall effectiveness.