Race Against Time

STRATEGIES TO MAINTAIN CALIFORNIA’S LOCALLY OWNED BRIDGES

2019 Public Works Officers Institute & Expo - April 5, 2019 - San Diego, California
Introduction

SESSION OBJECTIVES

1) Raise awareness of the fact that our local bridge inventory is deteriorating faster than we can take care of it
2) The federal HBP is not a big enough program to address local bridge needs
3) Encourage investment in the local bridge inventory outside of the federal HBP with simple projects.
...all joints leak, all concrete cracks, and rust never sleeps. We will strive to capitalize our way out of maintenance and maintain our way out of capital. It is our endeavor to educate others that a bridge is as important to a highway as a diamond is to a ring.

-New York State Bridge Maintenance Credo
Introduction

PART 1 - THE PROBLEM
Speaker - Robert Newman, City of Santa Clarita
Local HBP Financial Update
Speaker - Max Katt, Quincy Engineering
Local Streets & Roads Needs Assessment – Bridge

PART 2 - SOLUTIONS TO THE PROBLEM
Speaker - Chris Sneddon, Santa Barbara County
Speaker - Matt Randall, Placer County
Update on new HBP Policies
BIC Goals, Examples, & Asset Management

PART 3 - Q&A WITH PANEL MEMBERS
Part 1 - The Problem

Local Bridges Are Deteriorating Faster Than We Can Replace & Fix Them
LOCAL HBP FINANCIAL UPDATE

Program Financial Policy Recap:

Funding Levels of Local HBP:

$294M / year

$219M - On System

$75M - Off System

Annual Needs: $600M-$1,200M / year

Without increased local funding investment…

…current Rate Requires 200-year life-cycle
LOCAL HBP FINANCIAL UPDATE

Program Financial Policy Recap (continued)

Pre-2010
- Difficulty Delivering HBP OA & Apportionment
- Open Ended Programming for HBP Eligible Projects
- Off-System Waivers Needed Annually for Poor HBP Off-System Delivery
- Toll-Credits Implemented for 100% Funding for Off-System HBP (2010)
- Goal: Improve Overall HBP Delivery (Especially the Off-System Program)

2011-2015
- HBP Delivery Improvement Realized (100%+ OA Delivery)
- Add-Ons & High-Cost Projects “Acceptable”

2016
- HBP Program Commitment Maximum @ 20+Years of Projects
- “Functionally Obsolete” Flag Eliminated with Corresponding Eligibility

2017
- Developed Conceptual Prioritization Policy to Reduce HBP Backlog

2018
- Implemented Project Prioritization
LOCAL HBP FINANCIAL UPDATE

Prioritization Implemented in 2018
LOCAL HBP FINANCIAL UPDATE

Prioritization Implemented in 2018

On-system List:
- 82 projects for $180 million accepted
- 36 projects for $157 million not programmed

Off-system List:
- 19 projects for $54.6 million accepted
- 47 projects for $108.2 million not programmed

83 projects for $265 million total unmet needs
LOCAL HBP FINANCIAL UPDATE

HBP Program Commitment Update

Goal: Reduce Program Backlog to 15-Years

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-System Commitment</td>
<td>$3.6B</td>
<td>$3.6B</td>
<td>$2.7B (16.2 Years)</td>
</tr>
<tr>
<td>Off-System Commitment</td>
<td>$1.7B</td>
<td>$1.5B</td>
<td>$1.1B (18.2 Years)</td>
</tr>
<tr>
<td>Total:</td>
<td>$5.3B</td>
<td>$5.1B</td>
<td>$3.8B</td>
</tr>
</tbody>
</table>

- Making progress but the HBP is still over-committed
- Road-blocks include cost-increases and “add-ons”
- New program policies explained later
- Significant Amount of Unfunded Needs
LOCAL STREETS & ROADS NEEDS ASSESSMENT - BRIDGES

Present Needs Condition Assessment

• Analysis based on local agency NBI data

  Data Accuracy

• Work items assigned by Condition Ratings

  Performance Measures. SD = “Poor”

• Dollar Costs assigned by Work Items

  Comparative Bridge Costs. Cost Inflation

• Present Needs used to predict Annual Needs

  National Bridge Investment Analysis System
LOCAL STREETS & ROADS NEEDS ASSESSMENT - BRIDGES

Work Items by SR, Classification, Condition State

If (SR ≤ 50) & (Bridge is SD or FO)

Bridge qualifies to be **Replaced**

Run Replacement Routine (See Replacement Flowchart)

Does the bridge require Deck Rehabilitation or Deck Replacement?

If (50 < SR ≤ 80) & (Bridge is SD or FO)

Bridge qualifies to be **Rehabilitated**

Run Rehabilitation Subroutine (See Rehabilitation Flowchart)

Does the bridge require Widening?

Does the bridge require Strengthen?

Does the bridge require Seismic Retrofit?

Legend:

FO = Functionally Obsolete
HWY = Highway
Ped = Pedestrian
RR = Rail Road
SD = Structurally Deficient
Struc. = Structure
LOCAL STREETS & ROADS NEEDS ASSESSMENT - BRIDGES

Costs for Replace, Rehab, Strengthen, Widen, Seismic

Construction, Preliminary Engineering, Environmental, ROW, Utilities, Permits
Construction Engineering, Restoration

![Flowchart showing decision process for bridge costs based on location and type.]

![Graph showing Caltrans Construction Cost Index from 1970 to 2015.]
LOCAL STREETS & ROADS NEEDS ASSESSMENT - BRIDGES

2018 Present Needs Cost

- Bridge Strengthening, $520,000,000, 11%
- Bridge Widening, $370,000,000, 8%
- Deck Rehab and Deck Replacement, $490,000,000, 10%
- Bridge Seismic Retrofit, $75,000,000, 1%
- Bridge Replacement, $3,400,000,000, 70%

$4.9 Billion “Total Needs”
LOCAL STREETS & ROADS NEEDS ASSESSMENT - BRIDGES

10-Year Annual Projection (NBIAS)

Bridge Investment Needs by Annual Budget

~$500 - $600 MM/Year
LOCAL STREETS & ROADS NEEDS ASSESSMENT - BRIDGES

10-Year Annual Projection (NBIAS)

Average Sufficiency Rating by Annual Budget

Percent Poor by Annual Budget

~$600 MM/Year
LOCAL STREETS & ROADS NEEDS ASSESSMENT - BRIDGES

Bridge Needs Takeaways

• Cost Numbers vary based on methods and assumptions

• A large percentage of the Inventory is coming due for replacement

• It is more costly to replace a bridge now compared to original construction

California LA Bridge Needs

$62,747,906,054 Total Funds for 100 years for Local Agency Bridges,
$627,479,061 Total Annual Funds for Local Agency Bridges.
SUMMARY OF “THE PROBLEM”

• California’s Local Bridges are deteriorating faster than we are fixing or replacing them

• Reliance on the HBP
  • HBP doesn’t provide enough funding for all local bridge needs
  • HBP is still overcommitted
  • Local Agencies are requesting more HBP funding than the available

Discussion Questions:

1) Approximately what portion of local funding goes to bridge investment?

2) What’s keeping your agency from investing in bridge assets?
PART 2 - THE SOLUTION

Broaden Investment In Local Bridge Assets
NEW HBP POLICIES

DLA-OB 19-01 Project Delivery Policy

“Meters” Projects Into Program

Delivery Failure Penalties without Communication by February 1st

No New Projects for Agencies...

- w/PE>10-Years w/o ROW Authorization
- w/ROW>5-Years w/o ROW Certification

Exceptions will be granted with status report

- Example – Historic Bridges

Solution to Over-Committed Program and Delayed Project Delivery
NEW HBP POLICIES

FHWA Policy Improvements

Result of Federal Audit of California HBP

Call for updated current & future ADT

Long Approach Limits to 10% Structure Cost

Clarifications required for non-participating bid items

Clearer policies for new bridge width eligibility

Solution to help focus HBP funding on bridge needs
NEW HBP POLICIES

High Cost Project Policy Changes

- Program is committed to fund $2.1 billion of High Cost Projects
- Available funding not sufficient to fund all needs
- Potential cash flow or additional metering requirements in future

Solution to help ensure HBP funding is available for a wide range of needs
NEW HBP POLICIES

Renewed Focus on Scour Critical Bridge Requirements

- Caltrans reports that POA’s are not being updated
- FHWA ER Funds not available if Scour POAs are not completed with documentation
- Scour projects are highest priority in FTIP funding and prioritization policies
- Don’t forget your Scour POA Commitments!

Solution to keep agencies accountable and help fund most important needs
NEW HBP POLICIES

Asset Management for Locally Owned NHS Bridges

- Caltrans Implementing California Transportation Asset Management Plan

- Percentage of local bridges very low

  Solution to fund most important NHS needs

  Question: Would it be helpful to implement Asset Management for local bridges? State-wide or on a Local Level?
PREVENTATIVE MAINTENANCE

Maintenance Similar to an Overlay that Anyone Can Complete

• Deck Treatment / Repair
• Joint Repair
• Barrier Repair
• BIC Eligible
**SIMPLE BRIDGE INVESTMENT CREDIT PLAN**

- Get BIC approved
- Perform work
- Final credit approval
- Use the credit

Generally applied to smaller maintenance projects

1) Use local funds for maintenance
2) Apply credit to a larger HBP project match
SIMPLE BRIDGE INVESTMENT CREDIT PLAN

EXAMPLE

Get BIC approved  Perform work  Final credit approval  Use the credit

DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number: 51C0016
Facility Carried: JALANA ROAD
Location: 7.7 MI WEST OF SR 1
City: 
Inspection Date: 05/09/2017
Inspection Type: Routine FC Underwater Special Other

Bridge Inspection Report

WORK RECOMMENDATIONS
RedDate: 02/23/2010  EstCost: 
Action: Deck-Methacrylate  StrTarget: 4 YEARS
Work By: LOCAL AGENCY  DistTarget:
Status: PROPOSED  EA: 

Treat the deck cracks with methacrylate.

ENGINEERS ESTIMATE

<table>
<thead>
<tr>
<th>Methacrylate</th>
<th>CONTRACTOR: tbd</th>
</tr>
</thead>
<tbody>
<tr>
<td>item</td>
<td>description</td>
</tr>
<tr>
<td>1</td>
<td>CONSTRUCTION SITE MANAGEMENT</td>
</tr>
<tr>
<td>2</td>
<td>PREPARE WATER POLLUTION CONTROL PROGRAM</td>
</tr>
<tr>
<td>3</td>
<td>TRAFFIC CONTROL SYSTEM</td>
</tr>
<tr>
<td>4</td>
<td>METHACRYLATE BRIDGE DECK</td>
</tr>
</tbody>
</table>

Total approved cost estimate $110.00

- Must be HBP eligible work
- Build to same standards
- Agreed upon credit max

Approved cost $110
**SIMPLE BRIDGE INVESTMENT CREDIT PLAN**

**ENGINEERS ESTIMATE**

<table>
<thead>
<tr>
<th>item</th>
<th>description</th>
<th>unit</th>
<th>qty.</th>
<th>unit price</th>
<th>amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CONSTRUCTION SITE MANAGEMENT</td>
<td>LS</td>
<td>1.0</td>
<td>$10.00</td>
<td>$10.00</td>
</tr>
<tr>
<td>2</td>
<td>PREPARE WATER POLLUTION CONTROL PROGRAM</td>
<td>LS</td>
<td>1.0</td>
<td>$10.00</td>
<td>$10.00</td>
</tr>
<tr>
<td>3</td>
<td>TRAFFIC CONTROL SYSTEM</td>
<td>LS</td>
<td>1.0</td>
<td>$15.00</td>
<td>$15.00</td>
</tr>
<tr>
<td>4</td>
<td>METHACRYLATE BRIDGE DECK</td>
<td>SY</td>
<td>75.0</td>
<td>$1.00</td>
<td>$75.00</td>
</tr>
</tbody>
</table>

Total approved cost estimate $110.00

**FINAL PAY INVOICE**

<table>
<thead>
<tr>
<th>item</th>
<th>description</th>
<th>unit</th>
<th>qty.</th>
<th>unit price</th>
<th>amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CONSTRUCTION SITE MANAGEMENT</td>
<td>LS</td>
<td>1.0</td>
<td>$10.00</td>
<td>$10.00</td>
</tr>
<tr>
<td>2</td>
<td>PREPARE WATER POLLUTION CONTROL PROGRAM</td>
<td>LS</td>
<td>1.0</td>
<td>$5.00</td>
<td>$5.00</td>
</tr>
<tr>
<td>3</td>
<td>TRAFFIC CONTROL SYSTEM</td>
<td>LS</td>
<td>1.0</td>
<td>$10.00</td>
<td>$10.00</td>
</tr>
<tr>
<td>4</td>
<td>METHACRYLATE BRIDGE DECK</td>
<td>SY</td>
<td>75.0</td>
<td>$1.00</td>
<td>$75.00</td>
</tr>
</tbody>
</table>

Total construct cost $100.00

**Get BIC approved**  **Perform work**  **Final credit approval**  **Use the credit**

**Scenario A:** Actual cost <$110 ➞ BIC credit = $100

**Scenario B:** Actual cost >$110 ➞ BIC credit = $110

**EXAMPLE**
SIMPLE BRIDGE INVESTMENT CREDIT PLAN

Get BIC approved
Perform work
Final credit approval
Use the credit

Bridge Replacement → $1,000 project
HBP (88.5%) → $885
BIC Credit → $100
Local Match → $15

Local Match Reduced by 87%
FUTURE POLICY IDEAS

Funding Ideas
• State for Federal HBP Swap
• Terminate Toll-Credit Match for Off-System Bridges
• Project Funding Cap

Organizational or Management Ideas
• Implement Local Bridge Asset Management
• Revisions to Eligibility Requirements
• Expansion of Bridge Investment Credit
• Maintenance Crew Training

Changes to Existing Policy or Feedback on Recent Changes