

Memorandum

TAB 26

To: CHAIR AND COMMISSIONERS
CALIFORNIA TRANSPORTATION COMMISSION

CTC Meeting: March 26, 2015

From: NORMA ORTEGA
Chief Financial Officer



Reference No.: 4.19 – **REPLACEMENT ITEM**
Action Item

Prepared by: Michael Johnson
State Transportation
Asset Manager

Subject: **TRANSPORTATION ASSET MANAGEMENT PLAN AND PERFORMANCE MEASURES**

RECOMMENDATION:

The California Department of Transportation (Department) recommends that the California Transportation Commission (Commission) approve the following four asset classes for the Transportation Asset Management Plan (TAMP): (1) Pavements; (2) Bridges; (3) Culverts; and (4) Intelligent Transportation System (ITS) elements. In addition, the Department recommends the Commission approve the performance measures for each of these assets.

ISSUE:

On September 30, 2014, the Governor signed Legislation (Senate Bill [SB] 486, Chapter 917) requiring the Department, in consultation with the Commission, to prepare a robust asset management plan to guide the development of the State Highway Operation and Protection Program (SHOPP) and requires the Commission to adopt related targets and performance measures that reflect state policy goals and objectives. The statute allows for the Department to prepare the asset management plan in phases.

The Moving Ahead for Progress in the 21st Century (MAP-21) established federal regulation governing asset management requirements for all National Highway System (NHS) roads and bridges.

Specific asset classes under MAP-21 include Pavement and Bridges, however, SB 486 does not direct asset classes nor does it define performance measures.

BACKGROUND:

Asset management is a strategic and systematic process of operating, maintaining, and improving physical assets. Its focus is on engineering and economic analysis, based upon quality information, to identify a structured sequence of maintenance, preservation, repair, rehabilitation, and replacement actions that will achieve and sustain a desired and sustainable state of good repair over the lifecycle of the assets at minimum practicable cost.

As prescribed by SB 486, the Department is required to develop an asset management plan for the State Highway System with local projects coordinated, but not included, into the plan. The TAMP is required to be fully implemented by July 1, 2020, with Phase 1 beginning in July 2016. The Department is proposing that Phase 1 of the TAMP include the following items:

TAMP Milestone	Target Date
Identification of the assets to be included in the TAMP	March 2015
Recommended performance measures	March 2015
Establishment of baseline conditions	October 2015
Performance target setting	October 2015

The first step in the development of the asset management plan is the definition of asset classes to be included in the plan and the associated performance measures for the defined assets. Once the asset classes and performance measures have been approved, the condition baselines and performance targets can be established. Consistent with federal requirements, and after careful consideration of the new mission for transportation, the Department recommends the inclusion of four asset classes and associated performance measures into the asset management plan, as described below.

Asset Class	Measurement Units	Performance Measure
Pavements	Pavement Area	Good, Fair, Poor
Bridges	Deck Area	Good, Fair, Poor
Culverts	Culvert Length	Good, Fair, Poor
ITS Elements	% Operational	Operational or Not

The four noted asset classes account for approximately 70 percent of the total SHOPP fiscally constrained budget and represent key physical elements of the transportation system. A breakdown of the assets recommended for inclusion in the plan are as follows:

Asset Class	Percentage of 2015 SHOPP Ten Year Needs
Pavement	29%
Bridges	27%
Culverts	7%
ITS Elements	7%
Sub Total	70%

The four recommend asset classes were selected for the following reasons:

- They collectively represent 70% of the 2015 SHOPP Ten Year Needs
- They lend themselves well to asset management (defined inventory, measureable condition, predictable deterioration rates and project size that justifies their inclusion)
- Directly support the departments stewardship, sustainability and system performance goals

A summary listing of additional highway system assets not recommended for inclusion in the Transportation Asset Management Plan are listed in Appendix 1.

The Department also recommends that the Commission adopt the recommended performance measures for the four recommended asset classes. Condition assessments of “Good”, “Fair” or “Poor” are based on federal criteria established for MAP-21 for the Pavement and Bridge assets. For Pavements, the condition classification is based on the pavement roughness, cracking and rutting. For Bridges, the condition classification is based on the lesser of the bridge deck, superstructure or substructure ratings as defined for the National Bridge Inventory (NBI). Culvert conditions are based on an aggregate inspection score of the condition of various attributes of the culvert. Intelligent Transportation System (ITS) elements are classified as operational or not based on field testing or observation.

The Department recommends that the MAP-21 performance measures and units for Pavements and Bridges be adopted to ensure consistency and compliance with federal law. The Department further recommends that the Culvert performance measure mirror the measures for Bridges and Pavements. ITS elements are recommended to be measured based on the percentage of the inventory that is operational to serve the traveling public.

Project Prioritization Pilot

The Transportation Asset Management Plan will use a prioritization approach to evaluate benefits across all assets. This approach will prioritize projects in alignment with the Department’s new mission, vision, goals and objectives.

Upon approval of the asset classes and performance measures, the Department plans to run a pilot test process, parallel with traditional project selection methods, for the 2016 SHOPP development. The lessons learned during the pilot test, will be incorporated into the project selection methods for full implementation of the 2020 SHOPP.

Attachment

This listing provides a summary of highway assets recommended for inclusion or exclusion from the Transportation Asset Management Plan.

Included Asset Classes
Highway Pavement
Rigid Pavement
Flexible Pavement
Highway Structures
Bridges
Tunnels
Highway Drainage
Culverts
Highway Operations
Highway Loop Detectors
Ramp Meters
Changeable Message Signs

Excluded Asset Classes
Overhead Signs
Pump Houses
CCTV Cameras
Weigh In Motion Scales
Highway Barriers
Bridge Barriers
Roadside Rest Facilities
Park and Ride Facilities
Highway Lighting
Highway Signs
Sidewalks
Traffic Management Centers
Equipment Shops
Labs
Maintenance Stations

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As prescribed by SB 486, the Department is required to develop an asset management plan for the State Highway System with local projects coordinated, but not included, into the plan. The TAMP is required to be fully implemented by July 1, 2020, with Phase 1 beginning in July 2016. The Department is proposing that Phase 1 of the TAMP include the following items:

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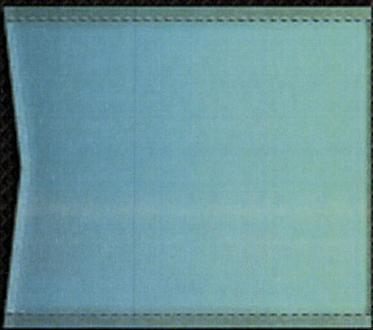
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Caltrans - Asset Management Implementation

March 2015



Asset Management Plan Definition

- An asset management plan is a strategic plan for managing an organization's infrastructure and other assets to deliver an agreed standard of service.
- Typically, an asset management plan will cover more than a single asset, taking a system approach -especially where a number of assets are co-dependent and are required to work together to deliver an agreed standard of service.

Asset Management Requirements Comparison

MAP-21

(23 U.S.C. 119(e)(1))

Minimum Requirements

- A summary listing of the pavement and bridge assets
- A description of the condition of those assets
- Asset management objectives and measures
- Performance gap identification,
- Lifecycle cost and risk management analysis,
- A financial plan, and
- Investment strategies

Government Code

(14524)

Minimum Requirements

- CTC may define “focus areas”, for analysis and evaluation related to our TAMP
- Caltrans will prepare a robust asset management plan to guide the selection of projects in the SHOPP
- The commission shall adopt targets and performance measures for the TAMP
- The TAM Plan is defined as a “document assessing the health and condition of the state highway system”
- Projects limited to capital improvements relative to maintenance, safety and rehabilitation... without adding new lanes”
- Define the information to be included in the SHOPP, the review process, (14526.6)

Asset Management Comparison

MAP-21 (23 U.S.C. 119(e)(1))

- Extent of Inventory
 - NHS Only
 - Includes local NHS assets
- Assets Included
 - Pavements
 - Bridges

Government Code (14524)

- Extent of Inventory
 - State Highway System
 - Local projects coordinated but not included
- Assets Included
 - Not specifically defined
 - Implied to be all State Highway projects

Asset Management Phases

TAM
Phase 1

Prior to Jan 2016

- Establish Asset Classes
- CTC Approval of Asset Classes
- Implement SHOPP Management Tool
- Pilot the SHOPP Prioritization Method
- Baseline Inventory
- Baseline Condition
- Establish draft Performance Measures
- CTC Approval of Draft Performance Measures
- Develop target performance levels.

TAM
Phase 2

Prior to Jan 2017

- Establish new fiscal target setting method
- Finalize Perf. Measures.
- CTC Approval of final Performance Measures
- Move Prioritization to PID Stage.
- Business process changes
- Software Development

TAM
Phase 3

Prior to Jan 2018

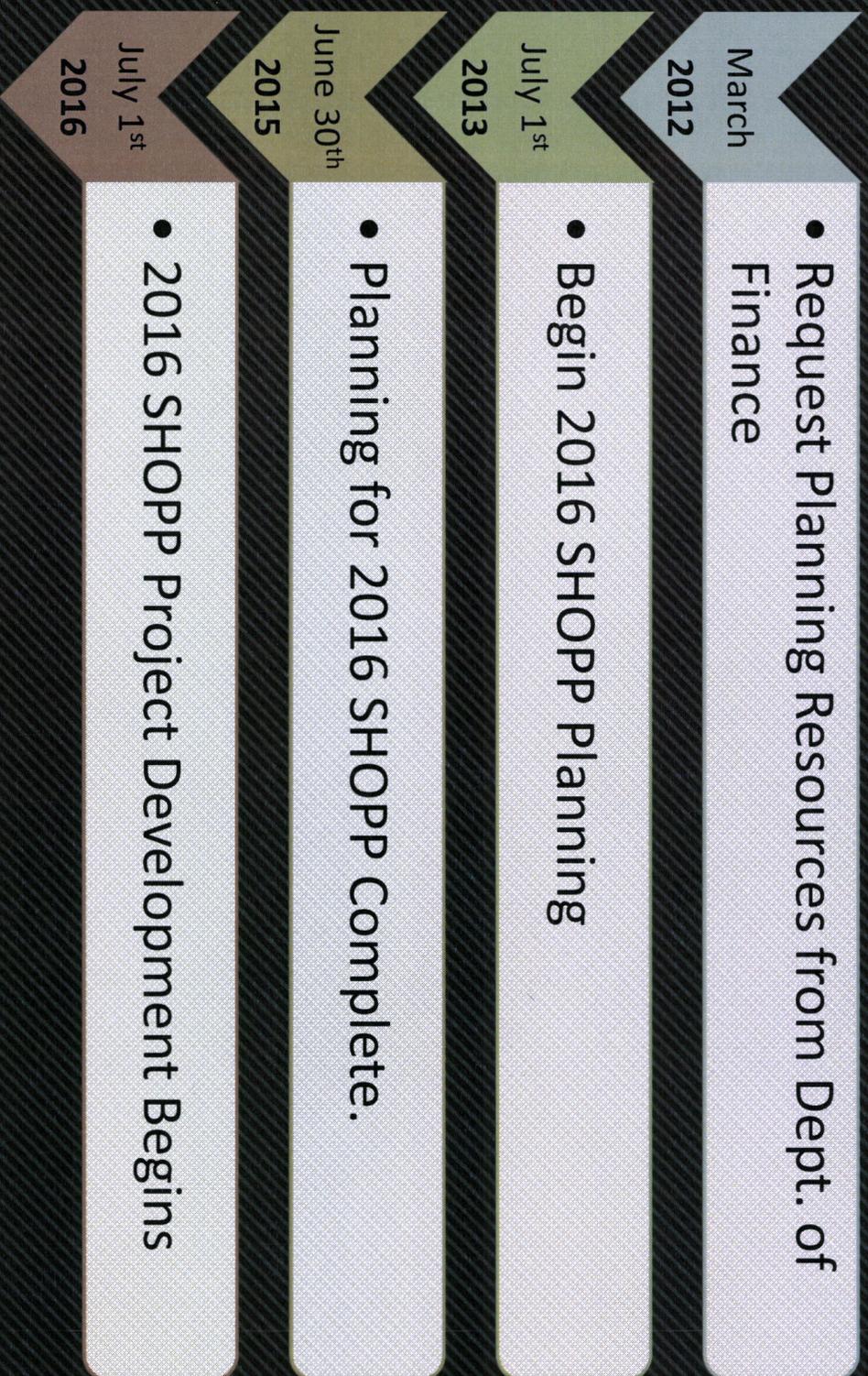
- Multi-Asset Pilot Projects in SHOPP
- Fund allocation business changes
- Asset Management
- Software Development

TAM
Complete

Jan 2020

- Software complete
- TAMP Implemented

Typical SHOPP Project Cycle



4 Years - 3 Months

Caltrans Transportation

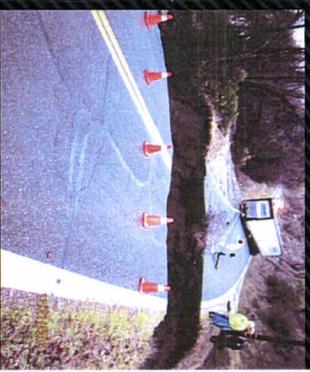
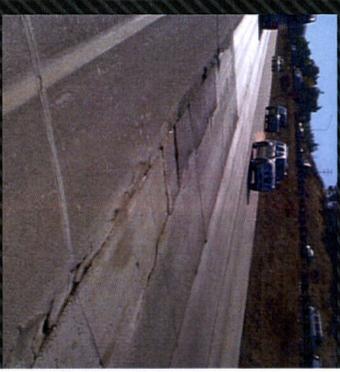
Asset Management

Implementation

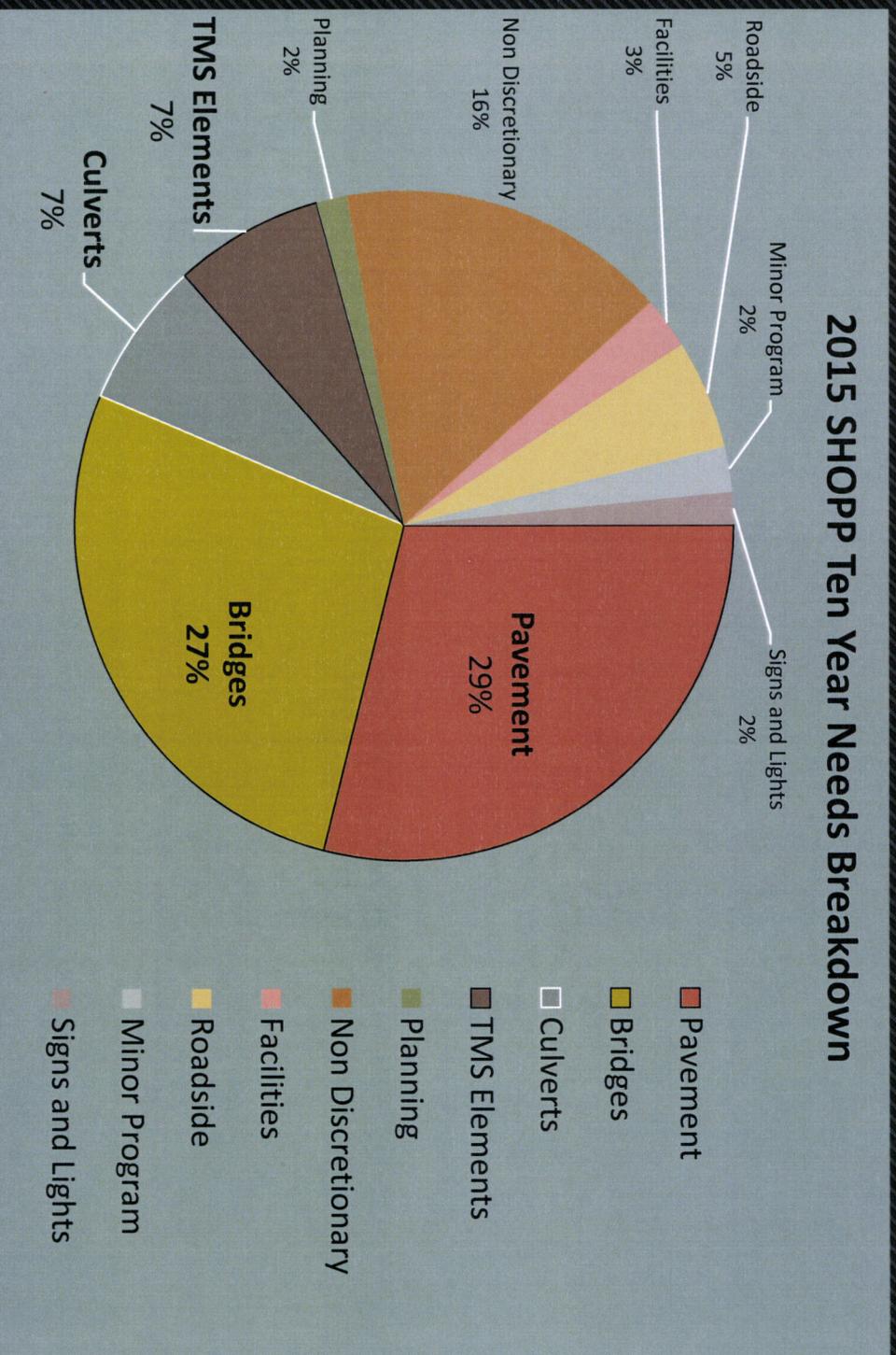
Phase 1

Asset Classes

- Caltrans is recommending the following asset classes:
 - Pavement – Required by MAP-21
 - Bridges – Required by MAP-21
 - Culverts
 - Intelligent Transportation System Elements
- Seeking CTC approval of proposed asset classes



Asset Classes



- These four assets represent 70% of 2015 SHOPP 10 Year needs

Inventory Definition and Condition Baseline

- **The inventory for the four asset classes will be defined.**
- **The current breakdown of condition for the asset classes will be presented.**
- **The baseline will provide a basis for future operational and condition targets.**
- **The current inventory numbers, condition baselines and condition targets to be submitted for approval in the Fall of 2015.**

SHOPP Project Prioritization

- Multi – Objective prioritization methodology piloted at the programming stage
- Prioritization provides benefit cost analysis of projects
- Improves transparency of project benefits by objective
- Dynamic policy and budget scenario capability

Performance Measures

- Performance measures for the four asset classes are defined

Asset	Measurement Units	Current Measure	Proposed Measure	MAP-21 Req.
Pavements	Area	Distressed Miles	Good, Fair, Poor	Yes
Bridges	Area	Distressed Bridges	Good, Fair, Poor	Yes
Culverts	Length	# Rehabilitated	Good, Fair, Poor	No
ITS Elements	Percent	ITS Replacement	Operational or Not	No

- MAP-21 performance measure not final yet
- Seek CTC approval of performance measures

Summary

- Asset Management Plan – Phase 1 underway
- Seek CTC approval for four asset classes (pavement, bridges, culverts and ITS elements)
- Pilot of new SHOPP project prioritization method
- Inventory, condition baseline, a draft targets reporting in October 2015
- Seek CTC approval of performance measures