Maine Bridges

Inspection, Management, Funding & Repair

Mid-Coast Regional Planning Commission
Annual Meeting 2016

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Outline

• MaineDOT Organization
• Maine Bridge Statistics
• Bridge Inspection
• Bridge Management
• MaineDOT Work Plan
• Funding
• Keeping or Bridges Safe
• Project Delivery
MaineDOT
Organizational Chart
January 2016

Commissioner
David Bernhardt, P.E.

Deputy Commissioner
Jonathan Nass, Esq.

Freight & Business Services
Rob Elder

Creative Services
Meg Lane

Chief Engineer
Joyce Taylor, P.E.

Employee Development
Rhonda Fletcher, P.E.

Environmental
Judy Gates

Human Resources
Becky Greene

Results & Information
Andy Dickmore, P.E.

Transportation Research
Dale Peabody, P.E.

Bureau of Finance & Administration
Karen Doyle, CGFM

Bureau of Planning
Herb Thomson

Bureau of Project Development
William Pulver, P.E.

Bureau of Maintenance & Operations
Dale Doughty, C.G.
Bridge Maintenance
M&O

Bridge Committee

- Bridge Inspection
- Load Rating
- Posting
- Maintenance Repairs/Preservation

Delivery of Capital Projects
Design & Construction

Bridge Program
Project Development

Bridge Management
Results & Information

- Asset Management
- Work Plan Development

MaineDOT
Integrity • Competence • Service
Maine Bridge Data

• 2,515 Bridges (span longer that 20’)
• 1,374 Minor spans (spans 10 to 20’)
• State of Maine owns and manages 2,744 bridges (70%)
• Maine’s bridge network replacement cost - $7.56 Billion
• Average service life of traditional bridges is 70 years
• Average service life of metal culverts is 50 years
• MaineDOT inspects about 2,000 bridge each year with a staff of ±12
• 265 bridges and minor spans in Knox and Waldo Counties
Average Bridge Age

Chart 1

Traditional Bridge Inventory by Age

Steel Culvert Inventory by Age
Bridge Condition

Condition of State Owned Bridges & Minor Spans - 2014

- Good: All deck, superstructure, substructure, culvert, and structural evaluation ratings greater than or equal to 7.
- Fair: At least one deck, superstructure, substructure, culvert, or structural evaluation rating less than 7; superstructure, substructure and culvert rating must be greater than 4.
- Poor: At least one superstructure, substructure, or culvert rating less than or equal to 4.
Bridge inspection

MaineDOT inspects all bridges and minor spans on public ways at least once every 24 months in accordance with National Bridge Inspection Standards (NBIS)

- Inspections are reported annually to FHWA
- Data used to determine the safe load capacity of our bridges and candidates for MaineDOT’s capital and maintenance work
National Bridge Inspection Standards (NBIS)

• Federal regulations establishing requirements for:
  – Inspection Procedures
  – Frequency of Inspections
  – Qualifications of Personnel
  – Inspection Reports

First established in the 1971 as a result of the collapse of the 2,235 foot Silver Bridge, at Point Pleasant, West Virginia
Types and Frequency of Inspections

- **Initial (Inventory)** – The first inspection of a new bridge or an existing bridge after a major rehabilitation
- **Routine** – Regularly scheduled inspections to determine the physical and functional condition of the bridge (not to exceed every 24 months)
- **Damage** – unscheduled inspection to assess structural damage (as needed)
- **In-Depth** – A close up, hands-on inspection to identify deficiencies not readily detectable using Routine Inspection (as needed)
- **Special** – Used to monitor known or suspected deficiencies such as settlement, scour or fatigue (typically 6 to 12 months)
Inventory Items – bridge characteristics such as location, structure type, measurements, age, inspection dates, etc.
**Appraisal Ratings** – rating of a bridge components adequacy

**Examples** – under clearance, waterway adequacy, geometry
Condition Ratings – Assigns a good, fair, or poor rating to major bridge elements such as the deck, superstructure, substructure, channel or culverts
Bridge Management
Data Driven Asset Management

Bridge Management is responsible for analyzing available bridge data to:

- Select and prioritize Work Plan candidates
- Long term asset planning

http://www.maine.gov/mdot/about/assets/hwy/
Bridge Management

- Starts with Agency Collected Inspection Data
- Deighton dTIMS Bridge Management software
- Analysis focuses on condition of:
  - Condition Ratings
  - Appraisal ratings
  - Corridor Priority
  - Customer Service Level
MaineDOT Asset Management - Highways

Below is MaineDOT’s methodology to provide a fair, structured framework to prioritize programs and projects. There are two parts - the Highway Corridor Priority (HCP), and the Customer Service Level (CSL).

See the glossary for the descriptions of each level in the priorities.

This data is available for viewing in the MaineDOT Map Viewer. Go to our "Search Map by Town" page to view maps by town.

Customer Service Level (CSL)

The second part of the method is determining the Customer Service Level (CSL) that measures MaineDOT managed highway assets (Priority 1-5) in three areas. The CSL uses customer-focused engineering measures to track highway (1) Safety, (2) Condition and (3) Serviceability, and grades them similar to a report card (A – F). The information below lists the individual measures that make up the overall service level grade. To view this data in our map viewer, click on a header below.

Safety

Crash History
Pavement Rutting
Paved Roadway Width
Bridge Reliability
Bridge Management

Typical Bridge scopes include:

- Culvert Rehab and Culvert Replacement
- Bridge Rehab and Bridge Replace
- Deck Rehab and Deck Replace
- Substructure Replacement
- Superstructure Replacement
- Joint Repair and Replace
- Paint Replace
- Wearing Surface Repair and Wearing Surface Replace
- Scour Countermeasures

dTIMS can also be used to determine long term funding levels needed to keep our bridge inventory in a state of good repair
MaineDOT

Work Plan

Calendar Years 2016-2017-2018

January 2016
Work Plan Development

• 3 Year plan

• The final prioritization of projects for the Work Plan is done by the Bridge Committee

• Office and field reviews are conducted throughout the year to further refine candidate list

• Committee also reviews funding and scope for the first two years
Funding, Resource Assumptions and Resource Allocation

Funding

Development of the Work Plan requires that the funding that is available to support the work described first be identified and categorized according to eligibility. The major funding sources that combine to provide the financial resources that support the Work Plan include:

- Federal Highway Administration (FHWA) Formula Funds
- Federal Transit Administration (FTA) Formula Funds
- Federal Aviation Administration (FAA) Formula and Entitlement Funds
- USDOT TIGER and Other Federal Competitive Grant Programs
- Federal Highway Administration Grant Anticipation Revenue (GARVEE) Bonds
- State Highway Fund
- State TransCap Revenue Account
- State Multimodal Transportation Accounts
- State General Obligation Bonding
- Funds Transferred from Other State Agencies
- Municipal and Private Funds

These funding sources must generally be directed to specific uses, with some restrictions:

- FHWA dollars must be used on federally eligible highway and bridge projects and programs, allocated by category (e.g., the National Highway System and bridges, Surface Transportation Program (STP), and Highway Safety Improvement Program.)
- FTA dollars can be used on federally eligible buses and bus facilities, certain ferry systems, passenger rail and transit operations.
- FAA dollars must be used for federally eligible projects on Maine’s public airports.
- State Highway Fund dollars must be used to support the highway and bridge system, and cannot be used to support non-highway-and-bridge needs.
- State General Obligation Bond funding must be used on capital projects and is often directed to specific uses.
- Legislative requirements exist for certain uses (e.g., Local Road Assistance Program.)
MaineDOT Sources of All Funds
FY16-FY17
$1,105.6 Million

FY16/17 budget with estimated statewides, $50M GARVEE and pending $85M GO bond

- Federal Funds, $387.6M, 35%
- Highway Fund, $499.3M, 45%
- All Bonding, $135.0M, 12%
- Multimodal Funding, $27.7M, 3%
- Other, $21.1M, 2%
- TransCap Capital cash, $35.0M, 3%
Funding

1. TIGER Grants (Transportation Investment Generating Economic Recovery)
   - Three bridge projects for approximately $30M

2. Federal Funding
   - Reauthorization of the federal surface transportation programs (the FAST Act) has a modest increase in federal funding

3. State Funding
   - $100M in general Obligation bonding for CY2017 has been approved to voters in November
• Report on progress since 2007 report (scour, improved inspections, load rating & posting)
• Define current status of our bridges
• Establish strategies to improve overall condition of bridges
• Find opportunities to impact cost
• Identify funding needs

2007 KOBS resulted in increased bridge funding from roughly $70M to $110M over a four year period

KOBS Report 2014

- Status of bridges 2007-2014
  - # bridges older than the average (70 yrs) increased by 4%
  - Condition
    - 2% increase in good condition bridges
    - 4% decrease in fair bridges
    - 2% increase in poor bridges

- 2014 KOBS focuses on extending the life of our bridges through timely preservation and designing new bridges for longer life through quality designs, construction and materials

- Recommends a funding level of $140M per year to improve poor bridges and preserve fair and good bridges