

# Bridge Preservation in New Jersey



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# Bridge Preservation in New Jersey

Bridge preservation is defined as actions or strategies that prevent, delay or reduce deterioration of bridges or bridge elements, restore the function of existing bridges, keep bridges in good condition, and extend their life.

Preservation actions may be preventive or condition-driven.

# Bridge Preservation in New Jersey

- **Population: 8.8 Million (2012)**
- **39,000 miles of roadways**
- **3,000 miles of State and US Highways**
- **500 miles of Interstate Highways**
- **6,542 Highway carrying bridges**
- **2,545 State maintained highway carrying bridges**

# State of New Jersey Road Map



# Bridge Preservation in New Jersey

- **NJDOT Bureau of Bridge Maintenance Engineering & Operations has several measures in place to preserve and extend the service life of bridges**
- **All work is done with outside contractors through contracts issued and bid annually**

# Bridge Preservation in New Jersey

- Seven State funded “If & Where Directed” contracts issued annually
- State bridge maintenance funding totals \$55 million annually
- Five Federally funded site specific contracts issued annually
- Federal bridge maintenance funding totals \$20 million annually

# Bridge Preventive Maintenance Program

- Repairs bridges with National Bridge Inventory Deck, Superstructure, and Substructure Ratings of “5” or higher on a scale of “0” to “9”
- Created in 2007 using State funds, expanded in 2009 to be Federally funded

# Bridge Preventive Maintenance Program Background and History

- **2007, 2008: State funded contracts for the repair of bridge decks only**
- **2009: Federally funded contract included in the American Recovery & Reinvestment Act, scope of work expanded to include deck and approaches**

# Bridge Preventive Maintenance Program Background and History

- **2010 – present: Federally funded contracts to include repairs to deck, approaches, and substructure**
- **2010 – present: All contract documents and site locations pre-approved by FHWA prior to funds being authorized for construction**

# Bridge Preventive Maintenance Program Background and History

- **2010: NJDOT and FHWA created guidelines for New Jersey's Bridge Preventive Maintenance Program**
- **2010: NJDOT/FHWA Bridge Preventive Maintenance Guidelines outline the scope of allowable repair work on bridges**

# Bridge Preventive Maintenance Program

- Two Bridge Preventive Maintenance Contracts (BPMC) are put out to bid each year
- Each contract repairs roughly thirty bridges along a single corridor or geographical area
- Each bridge is treated equally, with repairs made from top to bottom

# NEW JERSEY

## POPULATED PLACES

- 100,000 – 499,999 • Paterson
- 25,000 – 99,999 • New Brunswick
- 24,999 and less • Asbury Park
- State capital ★ Trenton

## TRANSPORTATION

- Interstate; limited access highway 
- Other principal highway 
- Railroad 
- Ferry 

## PHYSICAL FEATURES

- Streams 
- Lakes 
- Highest elevation in state (feet) +1803
- The lowest elevation in New Jersey is sea level (Atlantic Ocean).



2009

2008

2007

2012-1

2013-1

2014-2

2014-1

2013

2010

2012

2011

MARYLAND

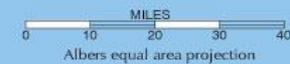
NEW YORK

CONNECTICUT

PENNSYLVANIA

DELAWARE

ATLANTIC OCEAN



# NJDOT Bridge Preventive Maintenance Contracts

© Nations Online Project

# Preventive Maintenance – Scope of Work

- Header reconstruction
- Curb reconstruction
- Repair of spalls in concrete deck
- Removal and re-seal of all fixed and expansion joints
- Sidewalk repair or reconstruction
- Crack sealing on deck

# Preventive Maintenance – Scope of Work

- Application of a corrosion inhibitor to bridge deck
- Repair of settled curbs and sidewalk on approaches
- Repair of spalls in approach slabs
- Fence installation/upgrades
- Traffic line re-striping
- Installation of reflective delineators

# Preventive Maintenance – Scope of Work

- Repair of any deteriorated concrete in piers, abutments, or concrete beams
- Crack sealing of substructure
- Powerwash substructure
- Application of waterproofing epoxy to piers, abutments, and concrete beams
- Total cost per bridge averages approximately \$100,000.00

# Preventive Maintenance Header Repair

**BEFORE**



**AFTER**



**NJ Route 18 Northbound over US Route 9 Southbound, BPMC 2010**

# Preventive Maintenance Header Repair

**BEFORE**



**AFTER**



**NJ Route 33 Westbound over US Route 9 Southbound, BPMC 2012**

# Preventive Maintenance Curb Repair

**BEFORE**



**AFTER**



**NJ Route 79 over NJ Route 18, BPMC 2010**

# Preventive Maintenance Deck Repair

**BEFORE**



**AFTER**



**Dutch Lane Road over NJ Route 18, BPMC 2010**

# Preventive Maintenance Deck Repair

**BEFORE**



**AFTER**



**Yellow Meeting House Road over Interstate 195, BPMC 2011**

# Preventive Maintenance Joint Re-Seal

**BEFORE**



**AFTER**



**Old Texas Road over NJ Route 18, BPMC 2012**

# Preventive Maintenance Joint Re-Seal

**BEFORE**



**AFTER**



**Sylvania Avenue over Memorial Drive and NJ Transit; BPMC 2012**

# Preventive Maintenance Sidewalk Installation

**BEFORE**



**AFTER**



**Gordon's Corner Road over NJ Route 18, BPMC 2010**

# Preventive Maintenance Corrosion Inhibitor

## APPLICATION PHOTOS



Brighton Avenue over NJ Route 18, BPMC 2010

# Preventive Maintenance Fence Installation

**BEFORE**



**AFTER**



**NJ Route 34 Southbound over NJ Route 18, BPMC 2010**

# Preventive Maintenance Fence Installation

**BEFORE**



**AFTER**



**NJ Route 33 Business over NJ Route 33 Freeway, BPMC 2012**

# Preventive Maintenance Traffic Line Re-Striping

## POST-CONSTRUCTION PHOTOS



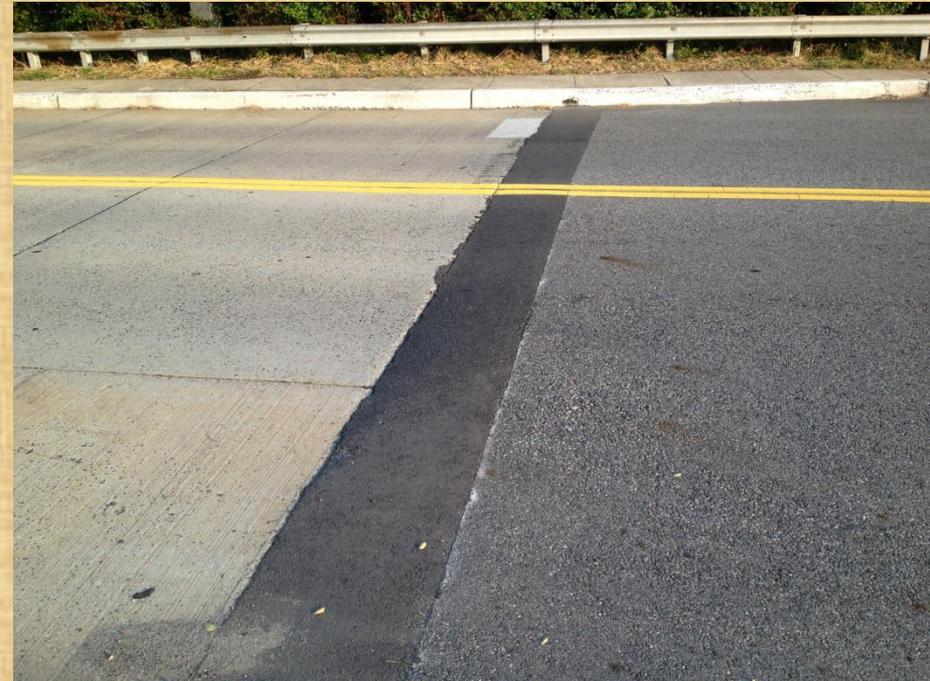
Gordon's Corner Road over NJ Route 18, BPMC 2010

# Preventive Maintenance Hot Mix Asphalt Patch

**BEFORE**



**AFTER**



**Wyncrest Road over NJ Route 18, BPMC 2012**

# Preventive Maintenance Substructure Concrete Repair

**BEFORE**



**AFTER**



**Deal Road over NJ Route 18, BPMC 2010**

# Preventive Maintenance Substructure Concrete Repair

**BEFORE**



**AFTER**



**Squankum Road under NJ Route 18, BPMC 2012**

# Preventive Maintenance Waterproofing Epoxy

## POST-CONSTRUCTION PHOTOS



**NJ Route 18 North and South over NJ Route 66, BPMC 2012**

# **Preventive Maintenance Coordination with Painting Program**

- **Coordination between Preventive Maintenance and Bridge Painting began in 2012**
- **Both programs are Federally funded**
- **Coordinated programs greatly extend lifespan of bridges**

# Preventive Maintenance Coordination with Painting Program



Monmouth Road over NJ Route 18; BPMC 2010, BPC 2013-3

# Preventive Maintenance Coordination with Painting Program



**Sylvania Ave over Memorial Dr, NJ Transit; BPMC 2012, BPC 2010-3**

# Concrete & Structural Repair Program

- Two State funded contracts (North & South) administered annually
- Repair locations determined by:
  - NJDOT Structural Evaluation Team
  - Maintenance Crews
  - Consultant Inspections
  - Citizen Complaints

# Concrete & Structural Repair Program

- Repairs categorized by:  
Emergency, Priority 1, Priority 2
- Contractor performs repairs utilizing six crews of six laborers each
- Contract operates 24/7 for emergent situations

# Concrete & Structural Repair Program

## Scope of Work

- Deck spalls
- Parapet repairs
- Sidewalk repairs
- Deck joint/header repairs
- Pier column repairs
- Pier cap repairs
- Abutment repairs
- Backwall repairs

# Concrete & Structural Repair Program

## Scope of Work

- Bearing pad repairs
- Wingwall repairs
- Concrete arch repairs
- Box culvert repairs
- Concrete approach/transition slab repairs
- Stone wall repairs
- Tunnel repairs

# Concrete & Structural Repair Program Hole Through Deck



# Concrete & Structural Repair Program Hole Through Deck



# Concrete & Structural Repair Program Hole Through Deck



# Concrete & Structural Repair Program

## Hole Through Deck



# Concrete & Structural Repair Program

## Overhead Patch Repair



# Concrete & Structural Repair Program

## Overhead Patch Repair



# Concrete & Structural Repair Program

## Overhead Patch Repair



# Concrete & Structural Repair Program Overhead Patch Repair



# Concrete & Structural Repair Program Overhead Patch Repair



# Concrete & Structural Repair Program Failed Joint Repair



# Concrete & Structural Repair Program Failed Joint Repair



# Concrete & Structural Repair Program Failed Joint Repair



# Concrete & Structural Repair Program Failed Joint Repair



# Concrete & Structural Repair Program

## Failed Joint Repair



# Concrete & Structural Repair Program Failed Joint Repair



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# Concrete & Structural Repair Program Failed Joint Repair



# Concrete & Structural Repair Program Failed Joint Repair



# Concrete & Structural Repair Program Header Repair



# Concrete & Structural Repair Program Header Repair



# Concrete & Structural Repair Program Header Repair



# Concrete & Structural Repair Program Header Repair



# Concrete & Structural Repair Program

## Header Repair



# Concrete & Structural Repair Program 1914 Tunnel Repair



# Concrete & Structural Repair Program 1914 Tunnel Repair



# Concrete & Structural Repair Program 1914 Tunnel Repair



# Concrete & Structural Repair Program 1914 Tunnel Repair



# Concrete & Structural Repair Program 1914 Tunnel Repair



# Concrete & Structural Repair Program 1914 Tunnel Repair



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# Concrete & Structural Repair Program 1914 Tunnel Repair



# Concrete & Structural Repair Program 1914 Tunnel Repair



# Concrete & Structural Repair Program 1914 Tunnel Repair



# Concrete & Structural Repair Program Coordination with Painting Program

- **Coordination between Concrete & Structural Program and Bridge Painting began in 2012**
- **End beams painted where joints failed and rust is evident**
- **Cleaning, washing, and painting all done with hand tools**

# Concrete & Structural Repair Program Coordination with Painting Program



**End beam; US Route 202 over NJ Route 29 before painting**

# Concrete & Structural Repair Program Coordination with Painting Program



End beam; US Route 202 over NJ Route 29 after painting

# Bridge Preservation in New Jersey

- Continuous maintenance keeps the bridges of New Jersey in a state of good standing
- Close relationship between NJDOT and FHWA maximizes Federal funding
- Coordination between maintenance programs greatly extends the service life of bridges

# Bridge Preservation in New Jersey



**Thank you!**

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