

# Nova Scotia 2011 Pavement Preservation

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**Transportation and Infrastructure Renewal**

# Introduction

- Pavement Preservation Treatment Overview
- 2011 Preservation Capital Program
- Featured Project: Contract 2011-111
- Summary



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# Pavement Preservation Overview

## Main treatments in use:

- Micro-Surfacing
- Seal Coat (Type A & B)
- Sand Reseal



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# 2011 Pavement Preservation Capital Program

## Treatment Summary:

- Seal Coats Type A: 50 km (32 mi.)
- Seal Coats Type B: 55 km (35 mi.)
- Micro-Surfacing: 97 km (60 mi.)
- Sand Reseal: No projects



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# 2011 Pavement Preservation Capital Program

## Single Lift Overlays:

- 2010 - Single lift overlays part of Pavement Preservation Program. Not true candidates due to excessive deterioration
- 2011 - Maintenance Paving program created for these projects





2010 Single Lift Overlay Candidate

# Featured Project

Contract 2011-111:

- Irishtown Road, Trunk 6 to end (2.0 km), Cumberland County
- Low volume local road
- Full Depth Reclamation with Portland Cement
- Type B Seal Coat
- One year End Product Warranty Specification

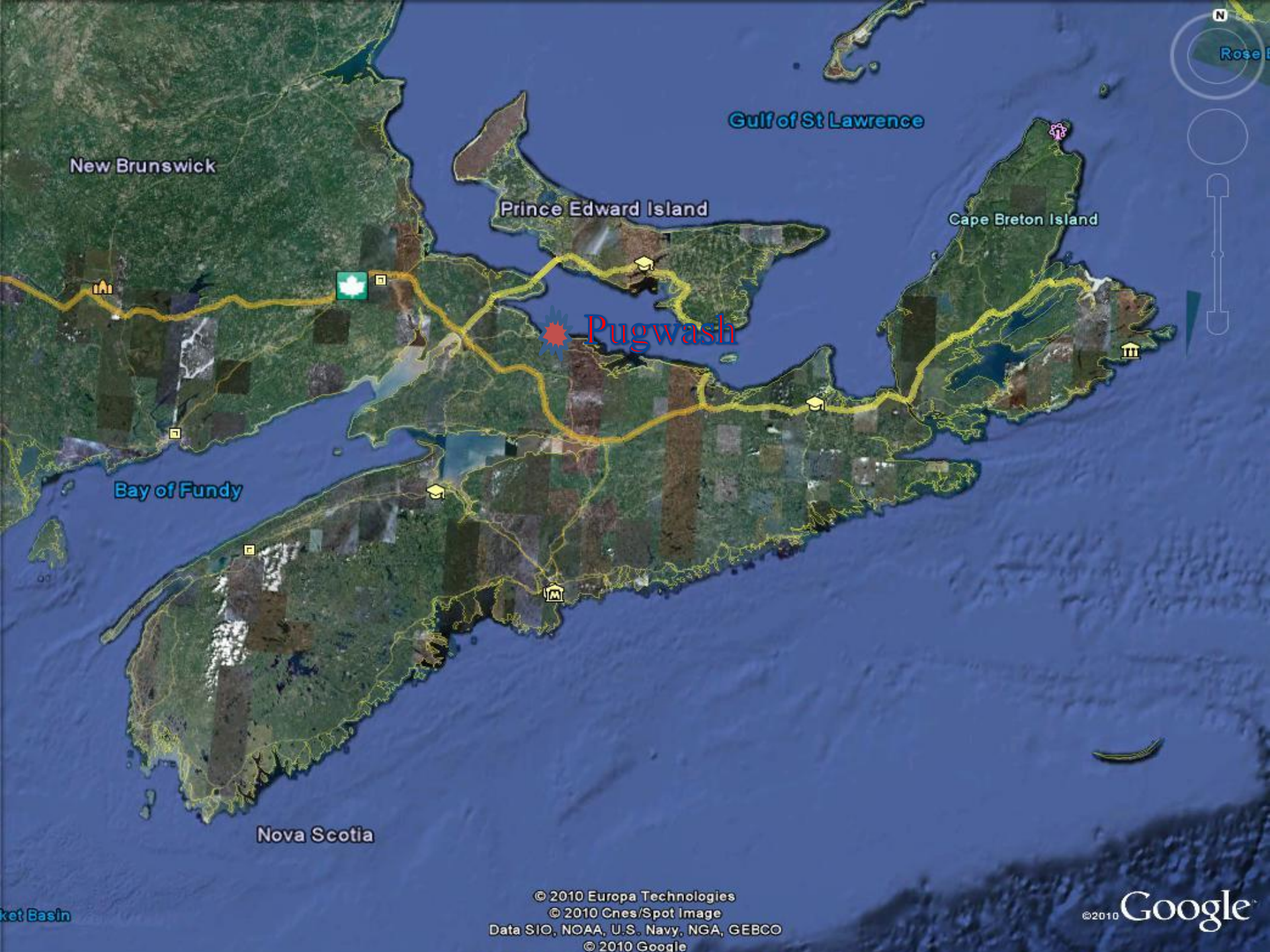


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# Contract 2011-111

- Pulverized/stabilized to depth of 200 mm (8 in.)
- Stabilized full road width (travel lane & shoulders) - change from travel lane only
- 5% Portland Cement added to pulverized base
- 59% base, 36% RAP material
- Type B Seal Coat applied as surface treatment





New Brunswick

Gulf of St Lawrence

Prince Edward Island

Cape Breton Island

Pugwash

Bay of Fundy

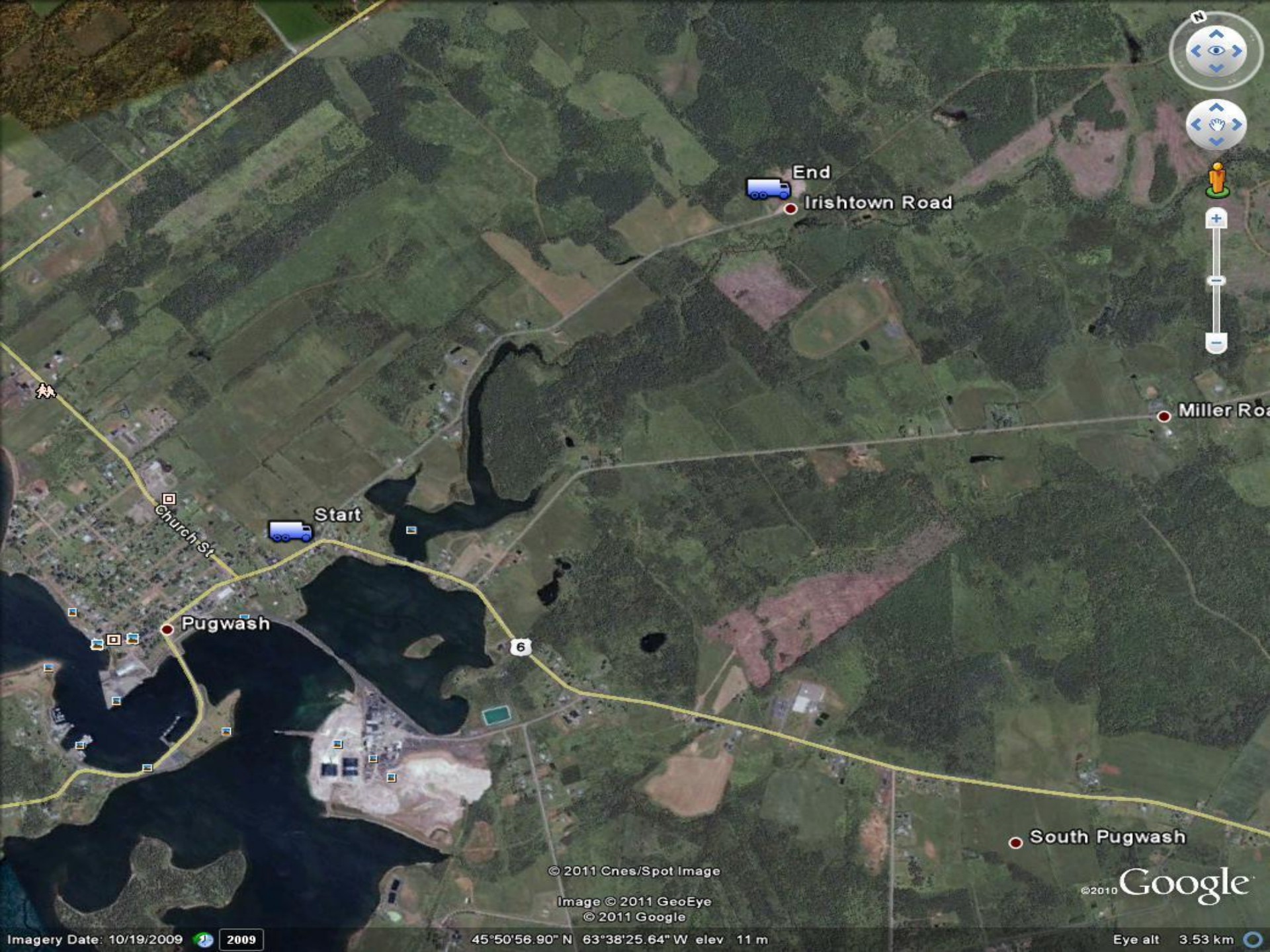
Nova Scotia



ket Basin

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End

Irishtown Road



Start

Church St

Pugwash

6

Miller Road

South Pugwash

© 2011 Cnes/Spot Image

Image © 2011 GeoEye

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©2010 Google

Imagery Date: 10/19/2009 2009

45°50'56.90" N 63°38'25.64" W elev 11 m

Eye alt 3.53 km

# Irishtown Road Pulverization



# Contract 2011-111

- Awarded to Cumberland Paving Limited
- Tender Cost: \$480,000 (\$240,000/km)
- Contractor completed Full Depth Reclamation with Portland Cement prior to Seal Coat Type B application



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# Contract 2011-111

## FDR-PC Specifications:

- NSTIR Mix Design
- Pulverize to 100% passing 75 mm (3 in.) sieve
- Cement placement to time of mixing not to exceed 30 minutes
- Compaction: 98% max. dry density

# Contract 2011-111

## FDR-PC Specifications:

- Moisture content to be within 2% of optimum
- Finished surface to be cured before 24 hours
- Micro-cracking within 24 to 72 hours -  
Modulus to be reduced by 50 to 70%
- Contractor to maintain FDR base
- Quality Control provided by NSTIR Rep.



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# Contract 2011-111

## FDR-PC Specifications:

- Compaction acceptance criteria - mean compaction greater/equal to 98% max. dry density. Individual not less than 98%.
- Thickness acceptance criteria - 90% of all greater than specified. No thickness 40 mm less than specified



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# Contract 2011-111

## Seal Coat Type B Specifications:

- Contractor responsible for all aspects of mix design
- Emulsified asphalt (HF-150s, HP-200 or CRS-2P)
- 1<sup>st</sup> course stone: 14 mm (3/4 in.)
- 2<sup>nd</sup> course stone: 10 mm (1/2 in.)



# Contract 2011-111

## Seal Coat Type B Specifications:

- Fog Seal applied (emulsion) after final sweeping
- Contractor responsible for QC
- NSTIR responsible for QA
- One year warranty period

# Contract 2011-111

## Seal Coat Warranty:

- One year warranty from completion and visual acceptance of the work
- Acceptance criteria conditions to be met (Min. 99% coverage, no streaking or raveling, even texture, no over rich or bleeding areas)
- Failed areas to be repaired by Contractor

# Contract 2011-111

## Seal Coat Warranty:

- Repairs to be maintained for additional 1 year
- Final acceptance review at end of warranty term (NSTIR with Contractor)
- Security deposit retained until final acceptance

# Contract 2011-111

## FDR-PC Mix Design:

- Reclaimed Asphalt (RAP): 36%
- In-Situ Base Aggregate: 59%
- Portland Cement: 5.0%
- Cement Spread Rate: 21.9 kg/m<sup>2</sup> (40 lbs/yd<sup>2</sup>)
- Optimum Moisture Content: 7.1%

# Contract 2011-111

## Seal Coat Type B Mix Design:

- 14 mm SC3: 16 kg/m<sup>2</sup> (29 lbs/yd<sup>2</sup>)
- 10 mm SC2: 14 kg/m<sup>2</sup> (26 lbs/yd<sup>2</sup>)
- 1<sup>st</sup> Emulsion (HP-200) : 2.4 l/m<sup>2</sup> (0.5 gal/yd<sup>2</sup>)
- 2<sup>nd</sup> Emulsion : 2.2 l/m<sup>2</sup> (0.47 gal/yd<sup>2</sup>)
- Fog Seal : 1.2 l/m<sup>2</sup> ( 0.26 gal/yd<sup>2</sup>)

# Contract 2011-111

## Irishtown Road Quantities:

- FDR-PC: 18,000 m<sup>2</sup> (21,500 yd<sup>2</sup>)
- Portland Cement: 290 tonnes
- Seal Coat Type B: 14,500 m<sup>2</sup> (17,400 yd<sup>2</sup>)

# Contract 2011-111

## Project Timeline:

- Pulverization: August 29, 30
- FDR-PC: Sept. 7 - 11
- Seal Coat: Sept. 14 - 16



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# Contract 2011-111

## Project Issues:

- Compaction Failures (QA): Several ranging from 95.5% to 98%
- Accepted by Project Engineer
- Seal Coat emulsion tracked by vehicles



# Contract 2011-111

## Initial Completion Survey:

- Conducted by Project Engineer
- No outstanding issues reported
- Section to be monitored for performance
- Final acceptance review at end of one year warranty period



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Stabilizing Pulverized Base



Portland Cement Application



# Cement Measuring System (QA)



Weighing Cement ( $\text{kg}/\text{m}^2$ )

# Padfoot Roller - Deep Compaction





Compaction Testing

# Seal Coat Application





# Seal Coat





Fog Seal Blotter Sand







# Summary

- Contract 2011-111 completed September 2011 with no major issues
- Will be closely monitored for performance
- Pavement Preservation Program back on track with removal of single lift overlay treatments



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# Questions?



Nova Scotia Christmas Tree at Boston Common -  
Thank you gift to New England for aid received after 1917 Halifax  
Explosion (Dec. 6)

# Contract 2011-111

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