PRESENTED TO THE MAINE TURNPIKE AUTHORITY

OPERATION AND MAINTENANCE ANNUAL REPORT

2014

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HNTB

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October 1, 2014

Maine Turnpike Authority
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Ladies and Gentlemen,

We are pleased to submit our 2014 Operation and Maintenance Annual Report for the Maine Turnpike. This report sets forth our findings as to the condition of the Maine Turnpike and our recommendations concerning maintenance, operation, insurance, and deposits to be made to the Capital Improvement and Reserve Maintenance funds and the Operation and Maintenance budget.

Our findings and recommendations are based on a visual inspection of the turnpike facilities performed between January and June 2014; several additional visual inspections of turnpike facilities made during the year; and, on a careful evaluation of turnpike operation and maintenance procedures. We have periodically reported to the Executive Director, Chief Operations Officer, or Director of Engineering, on other items which warranted prompt attention.

We appreciate the opportunity to provide Consulting Engineering Services and we acknowledge the excellent cooperation of Authority members and personnel in the performance of these services.

Best regards,

Roland A. Lavallee

Roland A. Lavallee, P.E., PLS
Vice President
Director of Operations

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1 INTRODUCTION

This 2014 Operation and Maintenance Annual Report is based on the findings of a visual inspection of turnpike facilities; a review of current operating practices; and a review of the insurance coverage currently in effect, all as conducted by the licensed Professional Engineers of HNTB Corporation. It sets forth observations, conclusions and recommendations concerning the condition, maintenance, repair, and operation of the turnpike and its associated structures. Additionally, this report includes recommendations for the amount of funding required for the proper maintenance, repair, and operation of the turnpike to be deposited into the Capital Improvement fund, Reserve Maintenance fund, and the Operation and Maintenance budget. Finally, recommendations regarding insurance coverage have also been provided.

In 1941, the Maine Turnpike Authority (Authority) was created as an independent state agency and given the mandate to construct a turnpike *"from some point at or near Kittery to a point at or near Fort Kent"*. The legislature intentionally delegated the responsibility for turnpike construction and operation and maintenance to the Authority and precluded any financial commitment by the state.

The original 45 miles of turnpike, Section I, from Kittery to Portland opened to traffic in 1947 and Section II, from Portland to Augusta, was completed in 1955. Almost two-thirds of the 109 mile turnpike is a four-lane divided highway; the other one-third is a six-lane divided highway. Turnpike facilities include 195 structures (177 bridges and 18 minor spans), 19 interchanges, 19 toll plazas, an administration building including the E-ZPass Customer Service Center and the State Police offices, five service areas and nine maintenance facilities.

The Maine Turnpike, designated as I-95, is one of the major north-south highways in the state, extending from Kittery to Augusta, Maine. The turnpike is the only interstate highway from Kittery to Portland, making it one of the most critical elements of Maine's transportation network (see **FIGURE 1**). It also includes a three mile spur from the turnpike mainline to Route 1 and Interstate 295 in Falmouth. The turnpike is a safe and efficient highway that accommodated over 60.7 million trips with 72.5 million transactions in 2013.

The demands placed on turnpike facilities are enormous. Its roadways, bridges, interchanges, toll plazas, service areas and maintenance areas are subjected to increasing stress due to age, traffic levels, high weight limit (100,000 lb. trucks allowed), and the demands of the harsh northern New England climate. To ensure the sound condition and effective operation of the turnpike, the Authority funds and implements aggressive Operation and Maintenance, Reserve Maintenance, and Capital Improvement programs. The vigilance of the Authority through these programs has resulted in a well maintained and efficiently operated turnpike. The Authority looks to continue initiatives such as pavement rehabilitation, bridge rehabilitations and replacements, and system modernization to assure that turnpike facilities meet current safety standards as well as projected demands.

ANNUAL INSPECTION PROGRAM

In accordance with Section 806 of the Bond Resolution dated May 1, 1991, HNTB Corporation, as the consulting engineers, is required to inspect the turnpike at least once a year and submit to the Authority a report

setting forth the following:

- Opinion as to whether the turnpike has been maintained in good repair, working order and condition;
- Advice and recommendations as to the proper maintenance, repair and operation of the turnpike during the ensuing fiscal year and an estimate of the amount of money necessary for such purposes;
- Advice and recommendations as to the amounts and types of insurance to be carried; and,
- Recommendations as to the amount of money that should be deposited into the Reserve Maintenance fund during the upcoming fiscal year.

To comply with the listed requirements, the engineers and staff of HNTB Corporation annually conduct a visual inspection of the entire Maine Turnpike. The inspection covers pavement, cut sections, embankments, bridges, roadway lighting, drainage structures, signs, pavement markings, toll plazas, utility buildings, service areas, maintenance areas, and other facilities. This report is based on observations made during the inspection which was conducted between January and June of 2014. The opinions, statements and recommendations made herein are based solely on conditions revealed by visual inspection. No representation or warranty is made that all defects have been discovered or that defects will not appear later. Inspections of specific turnpike facilities are conducted whenever special attention is warranted.

A detailed Annual Inspection Report was submitted to the Authority in July of 2014, to be used in conjunction with this 2014 Operation and Maintenance Annual Report.

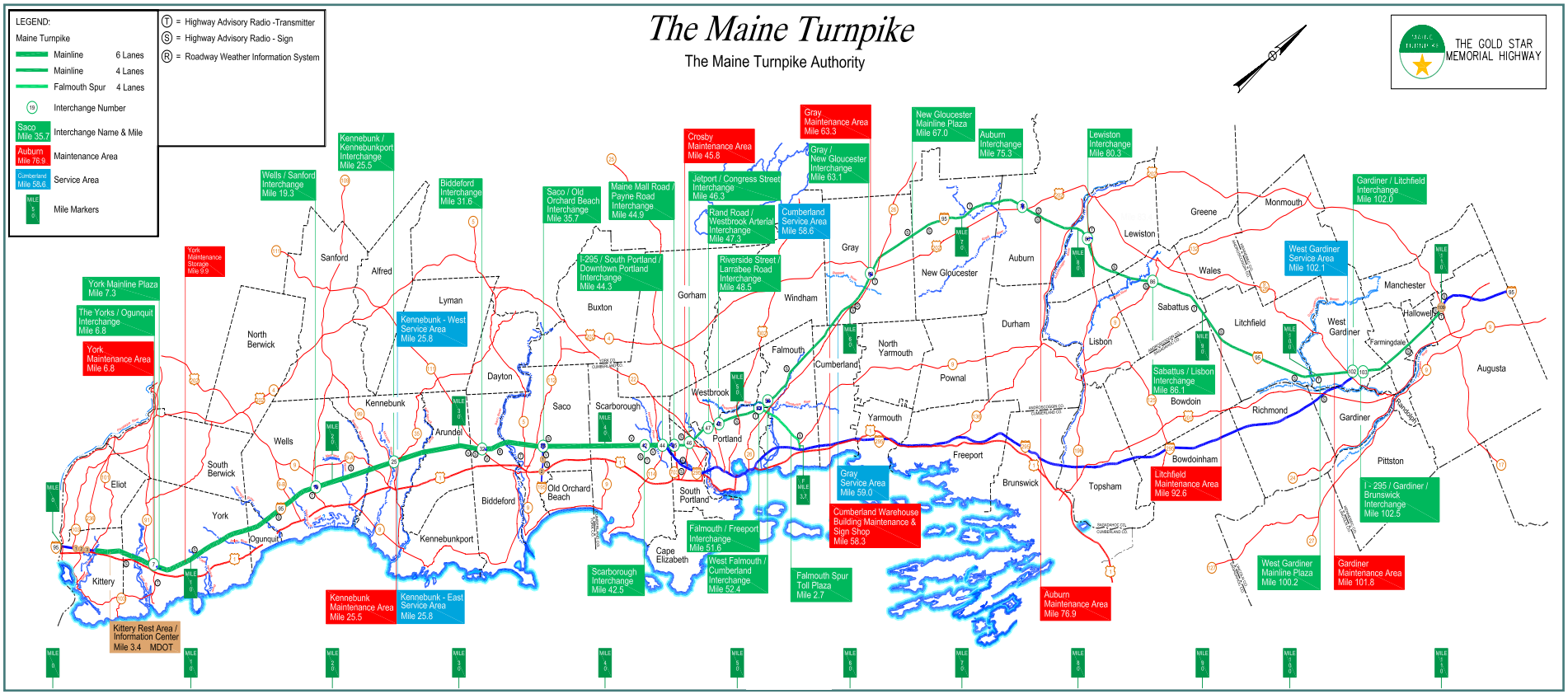

The Maine Turnpike
The Maine Turnpike Authority
THE GOLD STAR MEMORIAL HIGHWAY
LEGEND:
Maine Turnpike
Mainline 6 Lanes
Mainline 4 Lanes
Falmouth Spur 4 Lanes
Interchange Number
Saco Mile 35.7 Interchange Name & Mile
Auburn Mile 76.9 Maintenance Area
Cumberland Mile 58.6 Service Area
Mile Markers
T = Highway Advisory Radio -Transmitter
S = Highway Advisory Radio - Sign
R = Roadway Weather Information System
York Mainline Plaza Mile 7.3
The Yorks / Ogunquit Interchange Mile 6.8
York Maintenance Area Mile 6.8
York Maintenance Storage Mile 9.9
Wells / Sanford Interchange Mile 19.3
Kennebunk / Kennebunkport Interchange Mile 25.5
Biddeford Interchange Mile 31.6
Kennebunk - West Service Area Mile 25.8
Kennebunk Maintenance Area Mile 25.5
Kennebunk - East Service Area Mile 25.8
Kittery Rest Area / Information Center Mile 3.4 MDOT
Saco / Old Orchard Beach Interchange Mile 35.7
Maine Mall Road / Payne Road Interchange Mile 44.9
I-295 / South Portland / Downtown Portland Interchange Mile 44.3
Scarborough Interchange Mile 42.5
Crosby Maintenance Area Mile 45.8
Jetport / Congress Street Interchange Mile 46.3
Rand Road / Westbrook Arterial Interchange Mile 47.3
Riverside Street / Larrabee Road Interchange Mile 48.5
Falmouth / Freeport Interchange Mile 51.6
West Falmouth / Cumberland Interchange Mile 52.4
Gray Maintenance Area Mile 63.3
Gray / New Gloucester Interchange Mile 63.1
Cumberland Service Area Mile 58.6
Gray Service Area Mile 59.0
Cumberland Warehouse Building Maintenance & Sign Shop Mile 58.3
Falmouth Spur Toll Plaza Mile 2.7
New Gloucester Mainline Plaza Mile 67.0
Auburn Interchange Mile 75.3
Auburn Maintenance Area Mile 76.9
Lewiston Interchange Mile 80.3
Sabattus / Lisbon Interchange Mile 86.1
Litchfield Maintenance Area Mile 92.6
Gardiner / Litchfield Interchange Mile 102.0
West Gardiner Service Area Mile 102.1
I - 295 / Gardiner / Brunswick Interchange Mile 102.5
West Gardiner Mainline Plaza Mile 100.2
Gardiner Maintenance Area Mile 101.8
York
Kittery
Eliot
South Berwick
North Berwick
Wells
Ogunquit
Kennebunkport
Arundel
Kennebunk
Dayton
Biddeford
Old Orchard Beach
Saco
Scarborough
South Portland
Portland
Cape Elizabeth
Westbrook
Falmouth
Gorham
Windham
Gray
Buxton
Standish
Sanford
Alfred
Lyman
Cumberland
North Yarmouth
Yarmouth
Freeport
Brunswick
Topsham
Pownal
Durham
New Gloucester
Auburn
Lewiston
Greene
Wales
Sabattus
Lisbon
Litchfield
Bowdoin
Bowdoinham
Richmond
Gardiner
Pittston
West Gardiner
Farmingdale
Hallowell
Manchester
Monmouth
Augusta

FIGURE 1

2 INSPECTION FINDINGS AND CORRECTIVE MEASURES

The Maine Turnpike has been maintained in generally good condition and presents a favorable appearance. Traffic volumes and the age of the facility necessitate continued high levels of maintenance. The Authority's Maintenance forces undertake routine maintenance while private contractors normally construct larger projects which are publicly bid. These contracts include pavement resurfacing, bridge deck replacements, bridge repairs and painting, slope repairs, and new building construction. The following sections summarize the findings of the 2014 Maine Turnpike Inspection by HNTB Corporation.

VEGETATIVE COVER

Vegetative cover generally includes the grass median and side slopes of the roadway. The inspection revealed that most median slopes are in good condition and most side slopes are stable with good vegetative cover. Slope locations requiring minor corrective action are detailed in the Annual Inspection Report. Corrective actions are warranted due to loss of berm drop-off (gravel shoulder directly adjacent to the paved shoulder) and minor gullying which may lead to an erosion issue if not mitigated. In most instances, the Authority's Maintenance forces can accomplish this work.

TURNPIKE MAINLINE

PAVEMENT

Roadway and shoulder pavement is in generally good condition and the riding quality of the turnpike continues to be acceptable. In 2014, approximately 24.8% of the turnpike pavement (based on centerline miles) is rated in good or new condition, 40.5% is rated in generally good condition, and 34.7% is rated in generally fair to good condition. No pavement was rated in marginal condition.

To maintain pavement quality and roadway safety, the Authority has a planned program of pavement rehabilitation and the turnpike generally rehabilitates a pavement section every 12 to 15 years. **TABLE 1** illustrates Pavement Contracts over the past 15 years.

TABLE 1 - PAVEMENT CONTRACTS 2000 - 2014

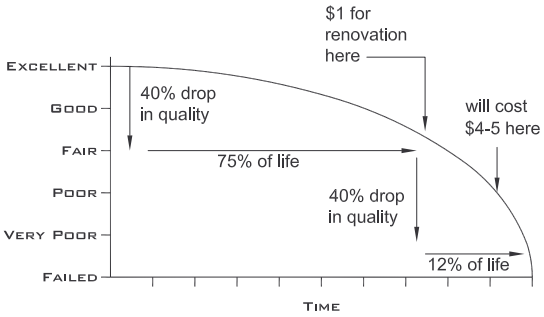
Year	From MM	To MM	Roadway
2014	23.3	30.3	NB/SB
	102.6	109.1	NB/SB
	57.0	59.5	NB
2013	7.4	13.5	NB/SB
	88.0	92.0	NB/SB
	Int. 7 & 44		
2012	30.0	35.0	NB/SB
	92.0	98.0	NB/SB
	102.0	Plaza	NB/SB
	Int. 42, 45 & 53		
2011	13.3	23.3	NB/SB
	Int. 19 & 48		
2010	2.2	7.0	NB/SB
	44.0	51.2	SB
	45.0	51.2	NB
2009	35.3	43.9	SB
	35.4	44.5	NB
2008	57.0	64.4	SB
	80.8	85.2	NB/SB
	Int. 102 & 103		
2007	64.4	68.5	NB/SB
	25.0	Plaza	NB/SB
	58.0	Plaza	SB
	59.0	Plaza	NB
	Int. 36		
2006	45.3	45.8	SB
	74.9	80.8	NB/SB
	Int. 80		
2005	59.4	64.8	NB
	85.2	88.6	NB/SB
2004	98.0	102.6	NB/SB
	102.6	109.1	NB/SB
	Int. 86		
2003	56.6	58.3	NB
	68.4	74.9	NB/SB
2002	99.6	106.2	NB/SB
2001	25.4	28.4	NB/SB
2000	86.0	90.0	NB/SB

Studies indicate that pavement maintained in good condition costs substantially less to preserve than pavement that is allowed to deteriorate to poor condition. Based on this

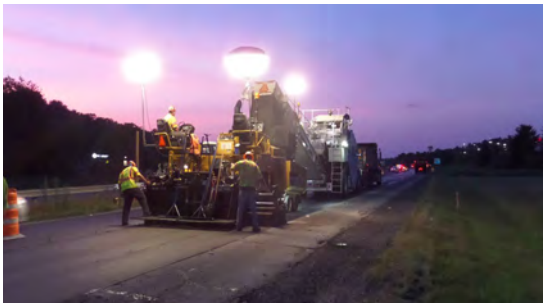
concept, the Authority's resurfacing program consists of rehabilitating one or more sections of roadway, totaling approximately six to seven centerline miles each year, in order to minimize the cost of future repairs.

FIGURE 2 illustrates the rate of deterioration and relative cost of rehabilitation at various times throughout the Life Cycle of a section of Pavement. Evidence that pavement requires rehabilitation includes wheel rutting, excessive cracking, and poor ride quality.

FIGURE 2 - PAVEMENT LIFE CYCLE



In 2014, the Contractor was required to use polymer modified asphalt on the three pavement rehabilitation contracts. The purpose is to alter several characteristics of the asphalt, each of which is intended to improve pavement durability, weatherability and performance, compared to unmodified asphalt. Contract 2014.01 rehabilitates the pavement from Mile 23.3 to Mile 30.3 in the Northbound and Southbound lanes; Contract 2014.08 rehabilitates the pavement from Mile 57.0 to 59.5 in the Northbound lanes only; and Contract 2014.03 rehabilitates the pavement from Mile 102.6 to 109.1 in the Northbound and Southbound lanes. The top 2" of the existing roadway surfaces is being removed and replaced with a 1/2" shim and a 1-1/2" lift of surface pavement. Contracts 2014.01 and 2014.03 mitigate general pavement deterioration and age, while Contract 2014.08 mitigates a rutting issue that is associated with heavy trucks traversing a long incline which results in significant stresses in the pavement and premature rutting. These contracts are currently ongoing.



PAVEMENT REHABILITATION MM 102.6 TO MM 109.1

2015 RECOMMENDATION

Due to generally fair conditions of the pavement, and to maintain pavement quality and roadway safety, HNTB recommends the rehabilitation of the northbound and southbound roadway from Mile 51.2 to Mile 55, and Mile 68.5 to Mile 74.9, and 1.2 miles of the eastbound and westbound Falmouth Spur from approximately the Exit 52 Interchange to the Presumpscott River Bridge. The actual limits will be determined in winter 2015 as part of the final design process. In addition, we recommend the rehabilitation of the pavement at Exits 46 and 52. These projects should also include repairs to the drainage system as warranted.

In addition to rehabilitating the bituminous surface, sealing cracks in pavement is another method of maintaining the pavement in good condition. This sealing reduces the water infiltration through the pavement into the subbase helping to extend the life of the pavement structure. HNTB recommends that MTA Maintenance forces continue the crack sealing program in 2015 in locations where the surface pavement has opened sufficiently.

DISPENSED AT OVER 350 DEGREES THE RUBBERIZED ASPHALT SEALANT IS INJECTED DIRECTLY INTO THE PAVEMENT CRACKS

BRIDGES AND MINOR SPANS

The Maine Turnpike Authority is responsible for the operation and maintenance of 177 bridges, defined as spans measuring more than 20 feet in length, and 18 minor spans measuring between 10 and 20 feet in length. The Authority's operation and maintenance program for these structures involves multiple aspects including developing and maintaining a detailed inventory of Authority-owned structures, scheduling and completing condition and safety inspections, compiling repair and replacement recommendations, and the development and execution of contracts for repair or replacement. The goals of this program are to accurately forecast bridge and minor span repair needs, identify critical deficiencies, repair and upgrade structures on a timely basis, and to maintain the safe condition of MTA bridges and minor spans.

This report quantifies and discusses bridges and minor spans separately. The Federal Highway Administration's (FHWA) National Bridge Inspection Standards require that bridges are inspected on a predetermined schedule and that the inspection data is reported to the National Bridge Inventory. No federal inspection or reporting requirements exist for minor spans. However, the MaineDOT collects and monitors condition data for minor spans for internal use. To provide inspection consistency between the MTA and MaineDOT, and to document the condition of the Authority's minor spans, the inspection of MTA minor spans was completed and reported using bridge inspection procedures in 2013. This practice was continued in 2014 and is expected to continue. Previously, these structures had been inspected as highway culverts.

BRIDGE AND MINOR SPAN INSPECTION PROGRAM

Inspections of Maine Turnpike structures are completed by qualified inspectors in accordance with the National Bridge Inspection Standards established by FHWA. Once these inspections are complete, the condition ratings for each bridge are compiled and transmitted to FHWA for inclusion in the National Bridge Inventory. The inspection data also becomes part of the Authority's records which are used to develop the MTA's repair program.

The following is a discussion of the bridge inspection program:

ROUTINE BRIDGE AND MINOR SPAN INSPECTIONS

All MTA bridges and minor spans undergo routine inspections on an annual basis. The purpose of these inspections are to identify potential safety concerns, document areas of deterioration, and to record condition ratings for key bridge elements. The 2014 routine inspection by HNTB identified that the 177 bridges and 18 minor spans along the turnpike range from fair to very good condition. Structures that have been rehabilitated or reconstructed during the past 20 years were found to be in fair to very good condition, while those that have never been rehabilitated were generally noted to be in fair condition.

UNDERWATER INSPECTION

The Federal Highway Administration requires an inspection of underwater bridge substructures every five years. Accordingly, an underwater inspection was performed in September 2011 for 17 bridges and culverts that carry the turnpike over rivers and water bodies where the substructures or culvert can not be inspected as part of the routine inspection. No serious structural deficiencies were noted during the 2011 underwater inspection. The overall conditions of the exposed portions of the underwater substructures were fair to good with most deficiencies attributed to freeze-thaw deterioration and abrasion from ice and debris. Based on this report, repairs were programmed at multiple locations and substructure repairs are currently underway at York River, Potters Brook, and Vaughan Brook.

The next underwater inspection should be completed in 2016.

DETAILED INSPECTIONS

Detailed inspections are completed on bridges with special features that warrant increased attention and inspection effort. Two sets of turnpike structures, the Androscoggin River Bridges and the York River Bridges, require detailed inspections.

The Androscoggin River Bridges, each measuring 850 feet long, consist of roadway surfaces supported on stringer and floorbeam framing systems. The loads from these roadway framing systems are carried nearly entirely by two primary girders. Because these structures are carried by only two primary girders, the bridge has insufficient redundancy to prevent a progressive collapse of all, or part of, the bridge if one of the primary girders were to fail. As a result, these structures are classified as "fracture critical" and are subject to more rigorous inspection requirements as outlined in FHWA's Bridge Inspection Standards. To achieve compliance with these inspection standards, the Androscoggin River Bridges should have a fracture critical inspection completed at least once every 24 months. The last fracture critical inspection was completed by HNTB in July 2012 and areas requiring repairs were noted. Repairs at this structure are ongoing and are scheduled for completion in fall 2014. The next fracture critical inspection of this structure is scheduled for fall 2014 after the ongoing construction is substantially complete.

ANDROSCOGGIN RIVER BRIDGE

At the York River Bridges, the girder framing system includes pin-and-hanger assemblies. Because routine inspection procedures are insufficient to identify defects in the pins, ultrasonic testing of these elements is necessary. A detailed inspection of the pin-and-hanger systems at the York River Bridges was completed in December 2011. No serious structural deficiencies were noted during that inspection. The next ultrasonic inspection of the pins should be completed in December 2016.

PIN-AND-HANGER ASSEMBLY UNDER A FINGER JOINT AT THE YORK RIVER BRIDGE

SIGN BRIDGE INSPECTION

Routine or ground inspection of the Authority's sign bridges is conducted yearly as part of the routine bridge inspection and no significant issues have been observed. The U.S. Department of Transportation Federal Highway Administration provides guidance that a typical two tower, two or four post sign bridge with a steel superstructure need only be inspected hands-on every six years. Based on this guidance, a hands-on inspection of the Authority sign bridges is scheduled for fall 2014. Information concerning this inspection will be included in the 2015 Annual Report.

SPECIAL DAMAGE INSPECTIONS

Special Damage Inspections are conducted as a result of collisions or when a condition requiring a more detailed inspection is noted. When this occurs, HNTB conducts an immediate field investigation to determine the extent of the damage and whether it is safe for traffic to continue using the structure.

In some cases, emergency repairs or lane restrictions are required to maintain traffic on the structure.

The Dutton Hill Road Underpass at Mile 59.9 was struck by an over height vehicle on March 03, 2014. This followed a similar occurrence on December 23, 2013. HNTB conducted special inspections after both of these occurrences and made recommendations to the Authority for the repair of the impact damage. The design for these repairs is ongoing and repairs are scheduled for fall 2014.

DUTTON HILL ROAD UNDERPASS, MILE 59.9

BRIDGE AND MINOR SPAN REHABILITATION

During the Annual Inspection, structure components such as the concrete deck, superstructure, substructure, culvert, and river channel conditions are assigned condition ratings. Using these ratings, structures requiring repair are further separated into five groups based on their overall condition and the safety implications of their deficiencies.

- **GROUP V -** Bridges are not in need of any repair (typically new or recently rehabilitated).
- **GROUP IV -** Bridges need repair, but of a minor nature. This work can most likely be done by Maintenance crews.
- **GROUP III -** Bridges need repair, but generally the structural safety is not jeopardized at present.
- **GROUP II -** Bridges should be repaired as soon as possible. However, the problem is such that a short delay is not likely to create a safety problem. If left too long, it will become a Group I Bridge.
- **GROUP I -** Bridges need immediate repair. The problem is such that the safety of the highway is in danger if the repair is not made quickly. For example,

TABLE 2 - BRIDGE AND MINOR SPAN TABULATION

BRIDGES						
Year	**Group V**	**Group IV**	**Group III**	**Group II**	**Group I**	**Total**
2014	5	67	105	0	0	177
2013	6	73	98	0	0	177
2012	17	70	90	0	0	177
2011	9	66	100	1	0	176
2010	10	66	99	1	0	176
MINOR SPANS						
Year	**Group V**	**Group IV**	**Group III**	**Group II**	**Group I**	**Total**
2014	1	6	11	0	0	18
2013	1	7	10	0	0	18

heavy concrete deterioration under bridge bearings, scour around bridge foundations, weakened girders due to impact, etc.

TABLE 2, Bridge and Minor Span Tabulation, on the previous page, illustrates the number of structures in each group category based on the 2014 Annual Bridge Inspection. The previous four years of data has also been provided for reference. The grouped structures are then further prioritized for repair or replacement considering factors such as safety, bridge age, importance, rate of deterioration, scour susceptibility, load capacity, and traffic volumes.

In addition, higher priorities are typically assigned to bridges and minor spans that are classified as "structurally deficient". A structure classified as structurally deficient is not necessarily unsafe; however, these structures require repair and maintenance in the near future to ensure their continued safe operation. There are several key structural components that are considered by FHWA in reaching this classification. These components primarily include: Deck, Substructure, Superstructure, and Culvert. If any one of these components has a condition rating of 4 or less (indicating that an element is in 'poor' condition), the bridge is considered "structurally deficient". A primary focus of the Authority's bridge program is to repair or rehabilitate structurally deficient bridges. Two structurally deficient bridges were repaired in 2013 and four structurally deficient bridges are either under construction or are scheduled for construction in 2014.

During the 2014 bridge inspection, eight structurally deficient bridges were identified out of a total of 177 (4.5%), well below the national and Maine averages. An additional two minor spans out of a total of 18 (11.1%) were also identified as being structurally deficient.

TABLE 3, Structurally Deficient Structure Summary, provides a listing of Maine Turnpike structures currently classified as "structurally deficient". The table also identifies programmed repair or rehabilitation dates for these bridges. The Authority's

TABLE 3 - STRUCTURALLY DEFICIENT STRUCTURE SUMMARY

Structure Name	Structure Type	Mile Marker	Status
Cape Neddick River Box Culvert	Minor Span	9.60	Programmed for repair in 2015
Josias River Box Culvert	Minor Span	11.80	Programmed for repair in 2015
Stroudwater River Overpass (Northbound)	Bridge	46.7	Currently under construction
Piscataqua River Overpass - Structure # 28	Bridge	55.5	Programmed for rehabilitation in 2014
Piscataqua River Overpass - Structure # 31	Bridge	56.7	Programmed for rehabilitation in 2014
Gray Interchange Underpass	Bridge	63.1	Gray interchange study ongoing. Disposition of bridge will be decided upon completion of study.
Lewiston Interchange Overpass (Southbound)	Bridge	80.31	Programmed for replacement in 2015
Maxwell Road Underpass	Bridge	90.00	Programmed for rehabilitation in 2017
Ferrin/West Road Underpass	Bridge	91.00	Currently under construction
Small Road Underpass	Bridge	95.10	Programmed for rehabilitation in 2017
Lunts Hill Road Underpass	Bridge	99.00	Programmed for rehabilitation in 2015
Ramp E Underpass (I-295 Toll Plaza)	Bridge	102.01	Programmed for repair in 2015

planned bridge and minor span rehabilitation program is reviewed and adjusted after each year's inspection program.

2014 Bridge Rehabilitation and Replacement Projects

Several rehabilitation and repair contracts were issued for Maine Turnpike Structures in 2014. These contracts included deck replacement, repairing concrete deterioration, replacing substandard bridge elements such as joints, railings and endposts, increasing bridge under clearance, and improving load capacity.

The following is a brief summary of the 2014 bridge work:

- **Mile 5.2 York River Overpass (NB & SB)**

The project includes new bridge wearing surface, deck repairs, pile jacket repairs and concrete repairs to the substructure. The project is scheduled for completion in late 2015.

York River Overpass, Mile 5.2

- **Mile 3.10 Cutts Road Underpass**

This project involves furnishing and installing additional web stiffeners. This construction, scheduled for completion in 2015, will result in an improved load rating.

- **Mile 25.0 Mousam River Overpass (NB & SB)**

The bituminous wearing surface and waterproof membrane was removed and replaced as part of this project. This work will be completed in 2014.

- **Mile 27.2 Kennebunk River Overpass (NB & SB)**

This project, scheduled for completion in 2014, involves the removal and replacement of the bituminous wearing surface and waterproof membrane.

- **Mile 33.0 Saco River Overpass (NB & SB)**

This bridge rehabilitation project consists of repainting the original 1946 steel beams. This work is substantially complete.

Saco River Overpass Bridge Painting, Mile 33.0

- **Mile 46.7 Stroudwater River Overpass (NB & SB)**
  [NB Structurally Deficient]

The work includes substructure repairs, the replacement of the northbound bridge joints and the removal and replacement of the bituminous wearing surface and waterproof membrane on the southbound bridge along with deck repairs. The northbound bridge will also receive a bituminous overlay. This work is scheduled for completion in 2014.

STROUDWATER RIVER OVERPASS, MILE 46.7

- **MILE 47.9 MAINE CENTRAL RAILROAD OVERPASS (NB & SB)**

The work includes the replacement of the northbound bridge joints and a bituminous overlay. This work is scheduled for completion in 2014.

- **MILE 50.0 FOREST AVENUE OVERPASS (NB & SB)**

The work includes the replacement of the bridge joints and the removal and replacement of the bituminous wearing surface and waterproof membrane along with deck repairs. This work is scheduled for completion in 2014.

- **MILE 51.2 RIVERSIDE STREET OVERPASS (NB & SB)**

The work includes the addition of steel plates to the existing joint and the removal and replacement of the bituminous wearing surface and waterproof membrane along with deck repairs. This work is scheduled for completion in 2014.

- **MILE 55.5 PISCATAQUA RIVER OVERPASS (NB & SB)**
  [Structurally Deficient]

- **MILE 56.6 PISCATAQUA RIVER OVERPASS (NB & SB)**
  [Structurally Deficient]

Work on these projects is scheduled to commence in September 2014. The work involves the superstructure replacements, concrete substructure modifications and repairs, approach work and paving. The work is scheduled for completion in 2015.

- **MILE 62.9 CENTER STREET UNDERPASS**

This project is scheduled for completion in 2014. It involves the removal and replacement of the bituminous wearing surface and waterproof membrane along with deck and substructure repairs.

- **MILE 82.5 NO-NAME RIVER BOX CULVERT**

Repairs at this location includes removal and replacement of deteriorated concrete. The repairs are currently ongoing and are scheduled to be substantially complete in November 2014.

NO-NAME RIVER BOX CULVERT, MILE 82.5

- **MILE 84.3 LISBON ROAD UNDERPASS**

This project is scheduled for completion in 2014. It involves the removal and replacement of the bituminous wearing surface and waterproof membrane along with deck and substructure repairs.

- **MILE 91.0 WEST ROAD UNDERPASS**

The work includes replacement of the existing bridge superstructure (bridge beams, roadway deck, curbs, and railing), and abutment and pier repairs. The bridge superstructure is also being raised to minimize the potential for impacts by over height vehicles. Rehabilitation of this structure is currently underway and scheduled to be substantially complete in November 2014.

West Road Underpass, Mile 91.0

- **Mile 96.6 Potters Brook Box Culvert**

Repairs at this location structure include removal and replacement of deteriorated concrete and repair of riverbed erosion. The repairs are currently ongoing and are scheduled to be substantially complete in November 2014.

- **Mile 101.7 Route 126 Underpass**

The work consists of general repairs and modifications to the bridge including raising the superstructure to increase under clearance over the Mainline Turnpike roadway. The work includes pavement and membrane replacement, concrete deck, parapet, fascia, fascia overhang, pier, and abutment repairs; end post replacements; bridge joint replacements; protective coatings; new concrete approach slab placement; installing bearing bolsters; bridge approach reconstruction and paving as well as guardrail modifications. The work is scheduled for completion in late 2014.

Route 126 Underpass, Mile 101.7

- **Mile 106.9 Litchfield Road Underpass**

The work includes replacement of the existing bridge superstructure (bridge beams, roadway deck, curbs, and railing), and abutment and pier repairs. The bridge superstructure is also being raised to minimize the potential for impacts by over height vehicles. Rehabilitation of the Litchfield Road Underpass is currently underway and scheduled to be substantially complete in November 2014.

Litchfield Road Underpass, Mile 106.9

- **Mile 106.94 Vaughan Brook Box Culvert**

Repairs at this location structure include removal and replacement of deteriorated concrete and repair of riverbed erosion. The repairs are currently ongoing and are scheduled to be substantially complete in November 2014.

Vaughan Brook Box Culvert, Mile 106.94

- **Mile F1.7 West Falmouth Road Underpass**

This project is scheduled for completion in 2014. It involves the removal and replacement of the

bituminous wearing surface and waterproof membrane along with deck and substructure repairs.

2014 EMERGENCY BRIDGE REPAIRS

Emergency bridge repairs are periodically required and are usually related to a collision. Minor repairs are completed by maintenance; however, significant repairs warranting heavy equipment or specialty services such as heat straightening are completed through construction contracts.

The Goddard Road Southbound Underpass was damaged in July 2013 by heavy equipment that was operating under the bridge. The repair required heat straightening of the damaged steel girder and was completed by contract in spring 2014.

GODDARD ROAD SB OVERPASS, MILE 79.6, 2013 BRIDGE HIT WAS REPAIRED BY CONTRACT IN 2014

Welds on the southbound joint at the Forest Avenue Overpass failed in the Spring of 2014. This joint is scheduled for replacement in fall 2014. A contract was issued for the installation of steel plates to function as a temporary repair until the installation of the new joints is complete. This temporary repair was completed.

2015 BRIDGE REHABILITATION AND REPLACEMENT RECOMMENDATIONS

METAL "PORK CHOP" BRIDGE RAILINGS

Since 2009, the MTA has rehabilitated nine bridges that had metal “pork chop” railing systems. These pork chop rail systems were typically in poor condition due to rust and section loss and the repair and repainting of these bridge rails was not cost effective. Only three bridges with this deteriorated rail system remain; the two Lewiston Interchange bridges at Mile 80.3 and the Exit 45 Overpass at Mile 44.9. The Lewiston Interchange bridges are scheduled for replacement starting in late 2014. A retrofit of the railing system at Exit 45 is scheduled for construction in 2015. With the completion of this scheduled work, the metal pork chop bridge railing system will no longer be a concern.

LEWISTON INTERCHANGE "PORK CHOP" BRIDGE RAIL

RECOMMENDED 2015 BRIDGE PROJECTS

Based on the preceding factors, and the findings of the 2014 Bridge Inspection Program, HNTB recommends the repair, rehabilitation or replacement of five structurally deficient structures and three bridges with metal pork chop bridge railings in 2015. The remaining structurally deficient bridges should be scheduled for repair or rehabilitation over the next five years as part of the Maine Turnpike Authority's Capital Improvement Program. In addition, the rehabilitation of several additional structures is recommended to repair areas of deterioration and to improve bridge under clearance.

The following is a brief description of each bridge recommended for repair in 2015:

- **MILE 1.8 ROUTE 1 ON-RAMP UNDERPASS**

The recommended work entails substructure and joint repair.

- **MILE 9.6 CAPE NEDDICK RIVER BOX CULVERT**
  [Structurally Deficient]

This double concrete box culvert exhibits areas of advanced concrete deterioration throughout the structure. The recommended work includes chipping and patching areas of deteriorated concrete within the culvert and on its headwalls and wingwalls.

CAPE NEDDICK RIVER BOX CULVERT, MILE 9.6

- **MILE 11.8 JOSIAS RIVER BOX CULVERT**
  [Structurally Deficient]

This double concrete box culvert exhibits areas of advanced concrete deterioration throughout the structure. The recommended work includes chipping and patching areas of deteriorated concrete within the culvert and on its headwalls and wingwalls.

JOSIAS RIVER BOX CULVERT, MILE 11.8

- **MILE 11.9 CLAY HILL ROAD UNDERPASS**

Our inspection of this structure identified several areas of deterioration to the concrete abutments and piers and along the pavement surface. HNTB recommends deck repairs, substructure repairs, installation of a new waterproofing membrane, and the replacement of the bituminous wearing surface.

- **MILE 44.9 INTERCHANGE 45 UNDERPASS**

The 2014 bridge inspection of this underpass identified several areas of deterioration including substructure, "pork chop" bridge rail, and the pavement surface. However, this bridge is within the area of a possible connector road to Gorham so we recommend that long-term repairs be minimized until the final disposition of this bridge is decided. For 2015, we recommend substructure repairs, deck repairs, installation of new waterproofing membrane, and pavement, and modifications to the substandard bridge rail system.

- **MILE 46.4 JETPORT INTERCHANGE UNDERPASS**

Our inspection revealed that the bridge has deteriorated pavement and the asphaltic plug joints warrant repair. The recommended repairs at this location include deck repair, installing new waterproofing membrane, the replacement of the bituminous wearing surface, and the repair of the asphaltic plug joints. The paving limits should extend onto the approach roadways and additional shim pavement should be placed at the bridge approach to mitigate the settlement of the approach roadway.

- **MILE 71.6 BALD HILL ROAD UNDERPASS (NB & SB)**

These two bridges, one carrying northbound traffic and one carrying southbound traffic, have deteriorated abutments and pavement. The recommended repairs at this location include repair of the concrete abutments and deck, installing new waterproofing membrane, and the replacement of the bituminous wearing surface.

- **MILE 80.3 LEWISTON INTERCHANGE OVERPASS (NB & SB)**
  [SB Structurally Deficient]

Our inspection of these structures identified multiple areas of deterioration to the concrete abutments and piers, the bridge joints, and along the pavement surface, and the "pork chop" bridge rail system warrants replacement. In addition, a new bridge is required at this location to accommodate the ongoing interchange ramp reconstruction. HNTB recommends complete replacement of these structures. In addition, we recommend the clearance between the bottom of the bridge to the roadway pavement beneath the bridge be increased to minimize the potential of over height vehicle collisions with the bridge.

- **MILE 99.0 LUNTS HILL ROAD UNDERPASS**
  [Structurally Deficient]

The 2014 inspection identified deterioration of the concrete deck, joints, and substructure concrete. The recommended work on this bridge includes replacement of the concrete deck and joints, and replacement of the bridge substructure. In addition, we recommend the clearance between the bottom of the bridge to the roadway pavement beneath the bridge be increased to minimize the potential of over height vehicle collisions with the bridge.

- **MILE 102.01 RAMP E UNDERPASS (I-295 INTERCHANGE BRIDGE)**
  [Structurally Deficient]

The 2014 inspection of this underpass identified several areas of deterioration including substructure and pavement surface. This bridge serves as the canopy of the Exit 103 Toll Plaza and the bridge is currently not open to traffic. Major rehabilitation or construction of a new toll plaza is planned for 2019. For 2015, we recommend substructure repairs and other minor repairs. The bridge should continue to be monitored and major repairs should be contemplated as part of the 2019 Toll Plaza Project.

- **MILE 3.60 - FALMOUTH SPUR ROUTE 9 UNDERPASS**

The 2014 inspection of this underpass identified several areas of deterioration to the concrete abutments and piers, and to the pavement surface. We recommend substructure and deck repairs, installation of new waterproofing membrane, and pavement.

2014 BRIDGE PAINTING

The Authority has implemented an effective painting program by issuing painting contracts. This painting program is important because it reduces the potential for costly future repairs to correct steel corrosion. Since 1990, 52 Authority-owned bridges have been repainted. The Saco River Overpass (NB and SB original steel beams) was painted in Spring 2014 and the partial painting of the Androscoggin River Overpass (NB and SB) is ongoing and is scheduled for completion in fall 2014.

Many of the bridges warranting painting are also scheduled for rehabilitation. During project development, the cost of repainting existing steel girders versus replacing the steel girders should be considered for all bridge rehabilitation projects. This analysis should consider cost, the load capacity of the existing girders, and the condition of the existing paint system.

HNTB does not recommend the painting of any bridges in 2015.

BRIDGE OPERATIONS AND MAINTENANCE PROGRAM

HNTB recommends the following annual bridge maintenance activities on Maine Turnpike bridges:

- Decks - Sweep (power broom) and flush with ordinary water (preferably power rinse) particularly the gutter areas. Patch obvious delaminations and potholes, scaling. Remove loose spalls over lanes of traffic.

- Parapets - Power rinse.

- Superstructure - Pressure rinse the beams/girders and bearings particular at the joint locations.

The Authority maintains detailed bridge files as part of their bridge Operations and Maintenance Program. In accordance with FHWA requirements, these bridge files contain inventory and appraisal information such as bridge geometrics and age, as-built drawings, condition ratings, safe load capacities, and scour evaluations.

In 2014, the following initiatives were undertaken to update the Authority's bridge files:

LOAD RATING OF IN-SERVICE BRIDGES

In 2014, the Maine Turnpike completed its initiative to develop updated load ratings for all 177 Authority-owned bridges. Load ratings are used primarily to understand the safe load capacity of bridges and to identify structures that should be posted for load limits. Additionally, load ratings are used to evaluate overweight permit load requests and to prioritize bridge repair projects. These uses require that bridge load ratings be reliable, uniformly consistent, and current. The results of these load ratings were reported to FHWA and are saved in the Authority's bridge files. HNTB recommends the completion of a bridge load rating when bridge construction with significant alterations are completed or when significant deterioration may impact a load rating.

BRIDGE INSPECTION PROCEDURES

In March 2013, FHWA issued a memorandum regarding new legislation established under the Moving Ahead for Progress in the 21st Century Act (MAP-21). This new legislation modifies existing inspection standards for bridges located on the National Highway System and requires the collection of element level data for those structures beginning October 1, 2014. Additional guidance is expected to be provided by FHWA's Office of Bridge Technology later this year.

HNTB will work with the Maine Turnpike Authority to understand what effect the new standards will have on the Authority's existing inspection program and to identify and implement any required changes resulting from this legislation.

FUNCTIONALLY OBSOLETE

The Maine Turnpike Authority's bridge inventory includes structures that are classified as "functionally obsolete". Functionally obsolete bridges have features that are not incompliance with current design guidelines such as narrow lane or shoulder widths, or the inability to handle current traffic volume, speed, size, or weight. The Authority should consider reducing the total number of functionally obsolete bridges in its inventory. Improvements, such as bridge raising and shoulder widening, should be considered as part of the Authority's Capital Improvement Program.

DRAINAGE

The roadway's surface drainage system, consisting of drainage ditches, catch basins and cross culverts, was inspected and found to be in fair to good condition.

Catch basin repair is typically included as part of the pavement rehabilitation projects. This practice appears to be adequate to maintain the catch basins in fair to good condition.

Routine ditch and side slope repairs are required for proper upkeep of the highway. Turnpike Maintenance forces routinely clear debris from drainage ditches and regrade the surrounding areas as necessary. In addition, side slope, drainage and ditch repairs are now completed by a contractor as part of the pavement rehabilitation projects. These programs appear to be adequate to maintain the side slopes and ditches in fair to good condition.

Numerous rivers and streams pass under the turnpike through box culverts and culvert pipes. All box culverts and pipes 60" in diameter or greater are inspected every year (a total of 70 individual culvert ends), and are in satisfactory condition. Culvert pipes 36" to 54" are inspected every five years and were last inspected in 2013. They are in satisfactory condition. In addition, cross culverts 12" to 36" in diameter from Mile 50-60, 68-75, and the Falmouth Spur were inspected. Many of the cross culverts are reinforced concrete under the core roadway but change to metal under the side slopes. While the concrete portion of the culverts are generally in fair to good condition, many of the metal pipe ends are in poor condition. Common issues observed are rusted flow lines, disconnected joints, and disconnected metal flared end sections. These conditions lead to erosion issues on the side slope which may eventually impact the roadway.

The Maine Turnpike Authority's Maintenance forces conduct drainage repairs annually. Over the past year, Maintenance has constructed the following repairs:

- MM 89.0 NB and SB – replaced 24-inch culvert end and extended culvert to flatten roadway side slope and remove guardrail.
- MM 89.0 NB – replaced 12-inch CB outlet and extended pipe to flatten roadway side slope.
- MM 50.5 SB – replaced 12-inch CB outlet and slope drain pipe.

Periodically the Authority issues contracts to repair drainage issues that the Authority's Maintenance forces cannot repair due to their location or the type of equipment required to cost effectively complete the repair. A contract to repair a damaged culvert end and eroded slopes at Mile 53 was awarded and completed in fall 2013, and additional repairs are scheduled at this location in fall 2014.

HNTB RECOMMENDATION

We recommend the locations rated poor in the detailed Annual Inspection Report be monitored by the Authority. Locations that can reasonably be repaired by Turnpike Maintenance should be repaired. Areas that are not feasible for repair by Turnpike Maintenance should be programmed for repair. These repairs include the complete removal of the deteriorated metal pipe ends and their replacement with high density polyethylene or concrete pipe, along with slope and drainage channel stabilization. Drainage repairs should be included in the Pavement Rehabilitation Contracts.

GUARDRAIL AND SAFETY IMPROVEMENTS

The Authority has continued its program of improving safety by upgrading large sections of their roadway sideslopes each year. These improvements include removal of vegetation, installation of impact attenuating guardrail end treatments, installing additional guardrail and adjusting the rail height. Safety improvements have also been made to the median. These improvements include closing some median openings that are not critical for authorized vehicles, and constructing new median openings at areas with adequate sight distance. Non-crash attenuating guardrail terminal end sections of the existing median openings have been replaced with impact attenuating units. In addition, guardrail heights have been adjusted and the strength of the guardrail has been increased at locations where the guardrail was in close proximity to bridge piers.

Most of the turnpike guardrail and guardrail end treatments have been upgraded to NCHRP 350 guidelines. HNTB recommends

the guardrail from Mile 74 to 75 be upgraded as part of the Mile 68.5 to Mile 74.9 Paving Project and the guardrail on the Falmouth Spur be upgraded in 2015 and 2016 as part of planned construction projects.

The clearing of vegetation in close proximity to the roadway commenced in 2012 with clearing from Mile 92.8 to Mile 100.3. This program continued in 2013 with clearing from Mile 82.9 to Mile 93.0, and in 2014 from Mile 51 to Mile 63.

Mile 53.4, Looking South (Before)

Mile 53.4, Looking South (After)

This clearing improves safety by removing vegetation in close proximity to the roadway and helps with winter maintenance by minimizing the shading of the roadway.

2015 RECOMMENDATION

HNTB recommends the Authority continue to include guardrail improvements with the 2014 Paving Projects. HNTB also recommends that the Authority continue the clearing of vegetation in close proximity to the roadway. Clearing should be programmed from Mile 63 to Mile 75 in 2015.

EMERGENCY VEHICLE RAMPS (EVRS)

To promote improved safety, the Authority is constructing Emergency Vehicle Access Ramps (EVRs). The EVRs are gated ramps between the mainline and a local road that allows authorized vehicles such as MTA vehicles, fire trucks and police vehicles access to the mainline. These EVR's improve safety by minimizing the need for median openings and allow authorized vehicles to reverse direction without having to cross mainline traffic. The MTA and HNTB have identified critical locations along the Maine Turnpike where EVRs are desired and feasible. Locations are based upon criteria such as interchange spacing, plowing routes, and access for emergency vehicles.

Locations where the Authority is considering ramps are:

- **CAPTAIN THOMAS ROAD, MILE 14.8 - OGUNQUIT**
- **HACKETT ROAD, MILE 76.9 - AUBURN**
- **TWO ROD ROAD**
- **ROUTE 26 (UPGRADES TO EXISTING RAMP)**

2015 RECOMMENDATION

HNTB recommends the Authority study the feasibility of constructing Emergency Vehicle Ramps. The feasibility studies should address safety, cost, environmental and property impacts.

LIGHTING

The roadway lighting system is generally in good condition. During the inspection, we noted that most interchanges and service plazas had a few lights that were out. We understand that the turnpike replaces these lights as required to maintain acceptable lighting levels.

In 2010, the MTA implemented a pilot study by installing Light-Emitting Diode (LED) lighting at the Cumberland Service Area, Exit 46 Area, at the Exit 45 canopies, Crosby Maintenance, and the Kennebunk Park & Ride lot. While LED lights are more costly to purchase, they have longer service life and use substantially less electricity to operate. In 2011, LED light fixtures were installed at Interchange 48 as part of a construction project to extend the acceleration lanes. This program continued in 2012 with the installation of LED luminaires at Interchanges 45, 53 and 75 as part of the acceleration lane lengthening projects; and in 2014 with the installation of new LED highway lighting installed at the newly reconstructed Lewiston Interchange ramps, and with the replacement of the existing high mast 1,000 watt light fixtures at Saco and West Gardiner with LED fixtures. As a result of these changes, lighting maintenance and power consumption has been reduced.

HNTB RECOMMENDATION

The Maine Turnpike should continue to maintain their roadway lighting system on a regular basis to minimize the number of outages. In addition, the Authority should continue to install LED lighting when new lighting fixtures are warranted.

SIGNAGE

The MTA maintains its signs in generally good condition. The MTA routinely replaces signs that are damaged, faded, or otherwise in poor condition. A sticker with the month and year the sign was fabricated is affixed to each sign to allow MTA Maintenance forces to readily assess the sign's age. The existing guide signs are scheduled to be replaced in 2018/2019 at which point they should be close to the end of their expected life.

In 2012, MTA contracted with 3M to capture sign attributes, locations, and photographs for all signs within the turnpike right-of-way. Included in 3M's deliverables were the sign photos and a GIS sign database. The MTA has been enhancing the database with night time retro-reflectivity inspection results, sign updates, and other pertinent data.

The MTA Sign Shop fabricates the majority of the regulatory, route marker, warning, and specialty signs on the Maine Turnpike. The Authority also procured signs from the MaineDOT Sign Shop on a limited basis. Maine Logo, Inc. maintains all logo signs along the Maine Turnpike as part of a separate contract with the MTA.

HNTB RECOMMENDATION

HNTB recommends the Authority continue to monitor, maintain, and replace signs as needed.

ROADWAY MARKINGS

The Authority's Maintenance forces re-stripe the turnpike once a year to maintain roadway markings in good condition. The Authority is also utilizing reflectorized pavement marking tape installed in grooves at interchange ramps and to supplement the white skip lines on the mainline. The tape improves visibility of the pavement markings in wet conditions.

Double yellow lines in two-way traffic areas in theinterchanges, as well as new pavement, are typically painted twice a year. The paint lines are adequately maintained.

HNTB RECOMMENDATION

HNTB recommends the MTA continue their current practice.

TOLL PLAZAS

TOLL COLLECTION EQUIPMENT

A May 2013 Toll System Assessment Report outlined that the legacy cash toll system installed in 2004 provides acceptable levels of performance, reliability and system uptime availability based on the originally intended functionality; however it is reaching the end of its anticipated life. The Authority has implemented a program of converting its legacy cash toll collection system at all the side toll plazas to a new toll collection system which is called the Infinity System. The new Infinity System has specific infrastructure requirements such as the need for vehicle detection loops to be installed in a concrete roadway slab with non-metal reinforcement. These slabs are required to have a specific length due to how the loops embedded in the concrete slab interface with the vehicle and the other toll collection equipment.

The Infinity offers the following advantages to the MTA:

- Provides programmed system enhancements for violation enforcement in staffed lanes, video audit and reducing maintenance costs.
- Use of loops embedded in concrete slabs for vehicle classification eliminates the maintenance concern of treadles.

EXIT 19 TOLL PLAZA

This system has been installed at the New Gloucester mainline toll and its implementation is substantially complete at Exits 25, 42, and 47. Construction of the system is currently ongoing at Exits 19, 46 southbound, and 48.

TOLL PLAZAS

The MTA has 19 toll plazas that include tollbooths, canopies, utility buildings and other structures. The tollbooths and canopies are rated in fair to good condition while other components, such as concrete slabs, bumpers and tunnels, are rated in poor to fair condition. Repairs to these components at various locations have been completed over the past several years by MTA Maintenance forces and major repairs are currently programmed for construction along with the toll system upgrade at each toll plaza. Significant repairs are currently under construction at Exits 19 and 48 as part of the toll system upgrade. The following sections specifically discuss the MTA's mainline toll plazas.

TABLE 4 - TABULATION OF TRAFFIC, REVENUE AND E-ZPASS USAGE

Traffic Characteristic	York	Exit 44	Exit 52	New Gloucester	W. Gardiner I-95	Gardiner I-295
Annual Traffic (millions)	15.9	8.0	3.8	6.3	3.4	3.8
Annual Revenue ($millions)	$55.7	$7.6	$3.6	$15.3	$6.2	$7.7
Share of Total Turnpike Revenue	45.7%	6.2%	3.0%	12.6%	5.1%	6.3%
Truck% (MTA Classes 3-6)	11.1%	6.2%	5.3%	12.2%	11.5%	8.6%
E-ZPass Usage (overall)	70.2%	69.3%	63.3%	67.1%	58.9%	54.7%

The six mainline plazas shown in Table 4 generated $96.1 million in toll revenue in 2013, which accounted for approximately 79% of all toll revenue collected by the Authority. The other 21% of toll revenue was generated by the 11 side toll plazas. A Tabulation of Traffic, Revenue and E-ZPass Usage is illustrated in **TABLE 4**.

Some items of note:

- York Toll Plaza accounts for almost half of all turnpike revenue.
- In general, E-ZPass usage appears to decline the farther north you go on the system.
- Trucks consistently make up 11-12% of the total traffic, with the exception of the Gardiner I-295 Toll Plaza.
- E-ZPass usage among trucks is extremely high - in the vicinity of 90% at most mainline plazas. This number has continued to climb in recent years.

YORK TOLL PLAZA

The existing York Toll Plaza was constructed in 1969 and is challenged by both operational and safety issues and the existing toll system is reaching the end of its useful life. The plaza is rated in fair to poor condition. However, decisions relating to the replacement of the toll system should consider the practicality of installing the toll system in the deficient infrastructure or whether the infrastructure should be upgraded at the same time in the existing location or an alternate location.

The Authority is in the process of developing a comprehensive plan and implementation schedule for this facility. A study of all electronic tolling at York was recently completed and concluded it was not practical. With that study concluded, the Authority commenced another study to determine the best location to construct an Open Road Tolling (ORT) plaza to replace the existing York Toll Plaza. ORT lanes allow E-ZPass patrons to safely proceed through the toll plaza at highway speeds without slowing or stopping. This study will look at the existing location as well as other locations. At the completion of this study, the Authority will decide on the future of the existing York Toll Plaza. If the Authority determines that the existing toll plaza is to remain for the foreseeable future, HNTB recommends a comprehensive review of the plaza conditions so that a detailed plan for operations, safety, and rehabilitation is developed.

EXISTING YORK TOLL PLAZA

NEW GLOUCESTER TOLL PLAZA

On April 1, 2013, the MTA opened the Open Road Tolling (ORT) lanes at New Gloucester. Additionally, all the cash toll collection equipment has been replaced. This plaza is rated in good condition.

WEST GARDINER I-95 TOLL PLAZA

The conversion of this toll plaza to ORT is currently in the design phase. This project is scheduled for construction in 2015-2016. This plaza is currently in fair to good condition.

WEST GARDINER I-295 TOLL PLAZA

The existing West Gardner I-295 Mainline Toll Plaza is rated in fair to poor condition and is functionally obsolete. The age of the toll plaza, the outmoded conditions of the existing tollbooths, canopy, and tunnel,

and location under an existing bridge make upgrade and expansion of the existing facility problematic.

The feasibility of ORT will likely be studied at this location. This project is scheduled for construction in 2019-2020.

EXIT 44 I-295 TOLL PLAZA

Exit 44 connects the Maine Turnpike to I-295 south of Portland. This plaza is vitally important to the interstate transportation network and is rated in fair to good condition, although the plaza is becoming functionally obsolete. The conversions of Exit 44 to ORT is scheduled for 2016-2017.

EXIT 52 FALMOUTH SPUR TOLL PLAZA

Exit 52 connects the Maine Turnpike to Interstate I-295 north of Portland and is an integral part of the transportation network. As with Exit 44, this plaza is also becoming functionally obsolete. The conversion of the Exit 52 Toll Plaza to ORT is currently in the design phase and construction is scheduled for 2015-2016.

SIDE TOLL PLAZAS

The MTA has programmed the replacement of all the cash toll collection equipment at all the toll plazas along with an infrastructure repair and upgrade. This program is currently ongoing. Significant repairs are currently under construction at Exits 19 and 48. Repairs and toll system upgrades at the remaining side toll plazas are programmed for 2015 and 2016.

SERVICE AREAS

There are five service plazas in four locations on the turnpike.

In 2007, new buildings were completed and parking was improved for cars and trucks at Kennebunk NB and SB, Cumberland SB, and Gray NB service plazas. The new service plaza located at the confluence of the turnpike (I-95) and I-295 in West Gardiner opened in November 2008.

Each location has a service station, food services, and a convenience store. The service plazas are in good condition, however, HNTB noted several areas where repairs are warranted at the service plaza buildings. These areas should be repaired as part of ongoing maintenance activities.

MAINTENANCE FACILITIES

Nine maintenance facilities are located along the turnpike. Each maintenance area has a different combination of buildings ranging from material storage, vehicle and equipment storage to repair facilities and offices as shown in **APPENDIX A**. Between 1992 and 2012, seven of the nine Maintenance Facilities were upgraded. All the maintenance areas are in fair to good condition.

HNTB RECOMMENDATION

Our inspection noted damaged roof trusses at multiple locations in the old salt storage buildings that are currently used for cold storage. These roof trusses should be repaired.

3 TOLL COLLECTION SYSTEM

ELECTRONIC TOLL COLLECTION

The MTA operates its Electronic Toll Collection (ETC) system as a closed-barrier toll system from the York Toll Plaza north to the New Gloucester Toll Plaza, and as an open-barrier toll system from the New Gloucester Toll Plaza north to the turnpike terminus in Augusta. The open-barrier toll system allows free travel between interchanges within the limits of the mainline barrier toll plazas on the northern section of the turnpike. All trips between Exit 75 in Auburn and Exit 86 in Sabattus are toll-free. It is estimated that toll-free trips account for roughly 3% of all Maine Turnpike trips.

NEW GLOUCESTER TOLL PLAZA

E-ZPASS GROUP

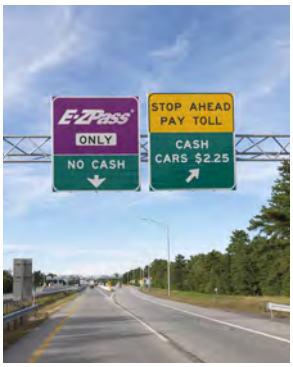
On February 1, 2005, the Maine Turnpike Authority implemented its current ETC system, E-ZPass. One of the greatest benefits to the Authority for converting to E-ZPass was admittance into the E-ZPass Group, formerly known as the Inter Agency Group (IAG). The E-ZPass Group includes 26 toll agencies that operate over 47 toll roads, bridges and tunnels in 15 states from Maine to North Carolina to Illinois. The E-ZPass Group's primary objective is the operation of a regionally compatible toll system with seamless travel based on common operating protocols and policies. The backbone of the E-ZPass Group's system is a network of multiple customer service centers and computer systems used to support the 26.3 million E-ZPass toll tags currently in circulation.

Membership in the E-ZPass Group allows the MTA a voice in one of the largest interoperable and reciprocal ETC systems in the world. This group collectively manages the procurement and deployment of the E-ZPass technology.

Started in 1990 with seven agencies, today the E-ZPass Group boasts 15.7 million active accounts.

TOLL SCHEDULE

On November 1, 2012, the Maine Turnpike Authority increased cash and E-ZPass toll rates to raise an additional $21.4 million annually in toll revenue to meet 30-year plan of maintenance and rehabilitation of the turnpike's network of bridges, interchanges and pavement as well as paying off debt.



For cash-paying passenger vehicles, the updated toll is $3.00 at the York Toll Plaza; $2.25 at the New Gloucester Toll Plaza; $1.75 at the West Gardiner Toll Plaza; $1.50 for motorists traveling north from Exit 19 in Wells, and south from Exit 63 in Gray; and $1.00 at all other locations. Maine E-ZPass fares increased by 15%, from 6.7 cents per mile to 7.7 cents per mile. The E-ZPass fares are also structured in such a way that they are equal to or less than the cash rate for a particular movement.

A passenger car traveling the full length of the turnpike pays $7.00 (6.6 cents per mile), and $28.00 (26.4 cents per mile) for five-axle tractor trailers. E-ZPass patrons who have an E-ZPass tag from other toll system highways are charged the cash fare.

For those who acquire their E-ZPass tag from the Maine Turnpike Authority, the following discount programs are available:

* VOLUME BASED DISCOUNT PROGRAM

The Maine Turnpike Authority offers the Volume Based Discount Program to all Maine E-ZPass account holders. Under this system, frequent travelers of the turnpike receive a 25% discount off their total fare for 30-39 one-way trips per month, and a 50% discount off their total fare per month for 40 or more one-way trips per month.

The Volume Based Discount Program replaces the previous Commuter Discount Program that was in effect from 1982 through 2012. The new discount program will be applied as shown in the table below.

* PERSONAL

Patrons who drive a motorcycle, passenger car, van, or pickup with four tires or less can establish a Personal Account. Advantages of a personal account include having tolls automatically deducted from your pre-paid balance when traveling on the Maine Turnpike or other E-ZPass compatible facility, and paying the same or oftentimes less than the cash fare. Trips are charged based on the lesser of the current cash fare or the E-ZPass rate per mile fare. Passenger cars with a Maine-based E-ZPass account save an average of 33% compared to the cash rate.

* BUSINESS

Business Accounts are intended for commercial vehicles. As with passenger cars, commercial vehicles having an E-ZPass tag from the Maine Turnpike Authority are charged the lesser of the current cash fare or the underlying per-mile rate. Commercial vehicles that enroll in this program can establish either a pre-paid or a post-paid account. The post-paid account requires a $5,000 surety bond, and it qualifies the account holder for a volume discount (see below). The pre-paid account does not require a surety bond, but neither does it provide a volume discount.

* POST-PAID PLAN VOLUME DISCOUNT

Commercial vehicles having a post-paid E-ZPass account with the Maine Turnpike Authority receive an additional "volume discount" based on the amount of their monthly tolls. The table below describes how the Post-Paid Plan Volume Discount program works. In essence, all tolls in excess of $50 for the month are discounted by up to 20%. On a systemwide basis, post-paid E-ZPass business accounts receive an average volume discount of nearly 18%. This discount program is in addition to the already-discounted E-ZPass fares described above.

MONTHLY E-ZPASS CHARGES	POST-PAID PLAN VOLUME DISCOUNT (BUSINESS ACCOUNTS ONLY)
Between $0 and $50	No discount
Between $50 and $100	10% discount off everything over $50
Between $100 and $300	$5 discount plus 15% off everything over $100
Over $300	$35 discount plus 20% off everything over $300

NUMBER OF TRIPS PER MONTH	VOLUME BASED DISCOUNT PROGRAM (Personal Accounts Only)
30-39 account trips per month	25% discount applied to monthly account trips
40 + account trips per month	50% discount applied to monthly account trips

4 TRAFFIC MANAGEMENT AND TECHNOLOGY

Since opening in 1947, the Maine Turnpike has served as the transportation lifeline for the state. In 1956, a total of 3.8 million vehicles traveled on the turnpike. This volume rose to over 60 million in 2003, and it has stayed at or above this level ever since.

Two common measures of turnpike traffic are annual Vehicle-Miles Traveled (VMT) and annual number of trips. In 2013, the Maine Turnpike logged 1.19 billion VMT while serving just under 61 million trips.

FIGURE 3 illustrates the trends of both of these measures over the past 13 years. Neither Annual Trips nor VMT has experienced growth over the past decade. In fact, VMT levels in 2013 were slightly lower than the levels observed in 2002.

In 2013, the annual number of trips held steady compared to 2012. For the third consecutive year, the turnpike served nearly 61 million trips. However, VMT in 2013 declined by about 2% compared to the year prior. Since the high-water mark of 2004, trips have declined by about 2.5% while VMT has declined by nearly 10%.

The average trip length on the Maine Turnpike was 19.5 miles in 2013. This is down by nearly 10% since 2000, when the average trip was 21.6 miles. Some of this reduction in trip length may be attributed to the growth in shorter trips in the Greater Portland area. Another factor appears to be that travelers making the long-distance trip between Greater Portland and Augusta are tending to use I-295 as opposed to the turnpike.

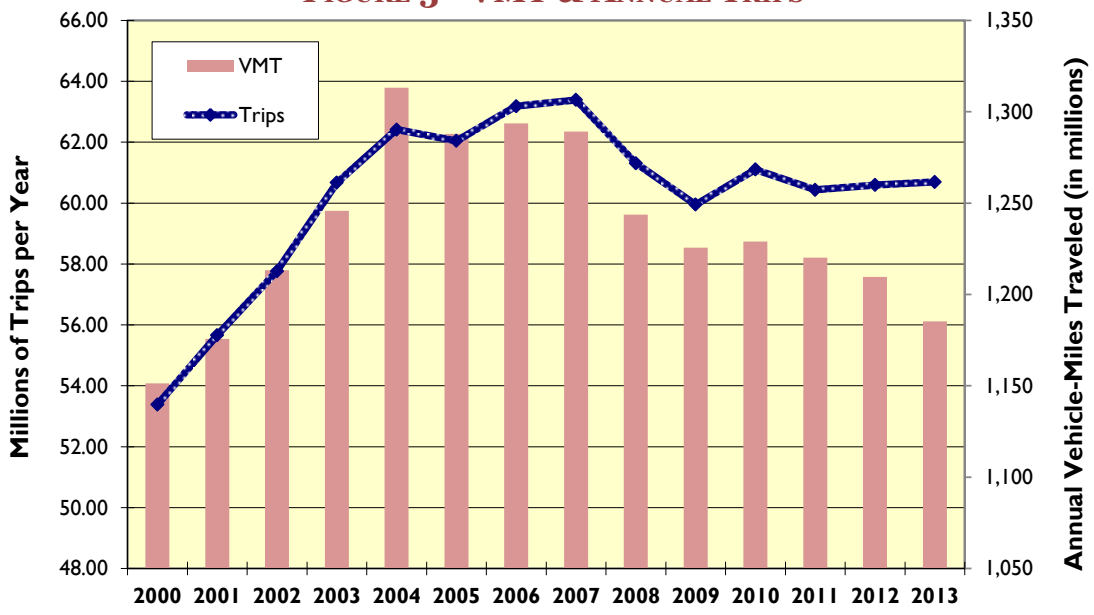
COMMUNICATION

The Maine Turnpike plans to install a fiber optic line in the Portland area, and recently installed conduit under the Stroudwater River Bridge as part of the 2014 Bridge Repair Contract to facilitate this initiative. This fiber optic line will be used to improve turnpike communication.

REDUCED SPEED LIMIT SIGNS

As part of an overall effort to reduce vehicle speeds and accidents during poor travel conditions, Maine Turnpike Maintenance added eight new flashing 45 MPH Reduced Speed Limit signs that are controlled remotely from the turnpike communication center. These

FIGURE 3 - VMT & ANNUAL TRIPS



new signs supplement the existing 10 manually operated reduced speed limit signs. The next phase is a conversion to allow the existing signs to be controlled remotely by the communication center.

TRAFFIC COUNT STATIONS

To gather accurate and timely traffic data, the Authority began installing traffic count stations at interchanges in 1996. Each station is composed of a Type 170 Controller housed in a traffic cabinet. The controller utilizes loop detectors placed in each mainline lane and on each entrance and exit ramp to continuously record traffic volume and speed data. The system, via software and dial-up telephone connections, enables the Authority to collect the data automatically at predetermined intervals. The data is then transferred to a database for analysis. By 2004, all interchanges were equipped with traffic count stations.

With the more frequent failure of the aging traffic loops, and the more regular disruption of the traffic loops during paving projects, the Authority and HNTB determined that upgrading the traffic count stations to newer technology was necessary to provide continued count and speed data to the Authority. The MTA is upgrading the count stations to side-fired radar technology to replace the loops. Upgrades to the count stations were completed in 2014.

ROADWAY SENSORS

Roadway Weather Information Systems (RWIS) were installed in the fall of 2008 at the Saco River Bridge Overpass in Saco and at the Eagles Nest Bridge Overpass in Gray.

The RWIS measures the surface temperature of the road, road state (wet, dry, snow, ice), and roadway friction. These RWIS units provide information that can help maintenance supervisors make cost effective decisions regarding frost, chemical applications, and whether any precipitation on the pavement will freeze or thaw. The pavement sensors are also used to understand road conditions. Road conditions can be reported as dry, damp, wet, frost or ice. The MTA is planning to install additional RWIS units in 2015.

VARIABLE MESSAGE SIGNS (VMS)

The Authority currently maintains a network of Variable Message Signs (VMS) to provide motorists with critical real-time traffic information. The VMS are installed at 14 different locations along the turnpike, primarily focused in the more heavily traveled southern section. The signs typically advise turnpike patrons of current traffic conditions, weather restrictions, accidents, delays, etc. Message displays are controlled by turnpike dispatchers from the communications center at the Maine Turnpike Authority Headquarters. The 14 VMS were recent upgraded with new controllers and power supplies, which has extended the useful life of the VMS.

Twenty-five Portable Changeable Message Signs (PCMS) have been deployed long-term throughout portions of the turnpike for incident management purposes and can be controlled from the communication center in the same manner as the fixed VMS.

HIGHWAY ADVISORY RADIO

The Maine Turnpike Authority installed its first Highway Advisory Radio (HAR) transmitter in Saco in 1997.

Transmitters along the turnpike are located in strategic locations to provide information at critical decision points along the highway, typically at or near interchanges. The radios are supplemented by signs advising motorists to tune their radios to 1610 AM to receive real-time turnpike information. Prerecorded messages are continually broadcast to provide information about traffic conditions, weather, and construction zones. The communications center has the ability to control and quickly

HIGHWAY ADVISORY RADIO

TABLE 5 - HIGHWAY ADVISORY RADIO TRANSMITTER LOCATIONS

TOWN / CITY	GENERAL LOCATION	MILE MARKER
York	I-95 SB at York Toll Plaza	7.3
Wells	I-95 SB at Sanford Road Overpass	19.1
Kennebunk	I-95 NB at Fletcher Street Overpass	25.3
Saco	I-95 NB at Boom Road Underpass	33.4
Scarborough	I-95 NB at Holmes Road Underpass	43.0
Falmouth	Exit 53 On-Ramp	53.0
Gray	I-95 SB at Gray Maintenance	63.3
Auburn	Exit 75 NB On-Ramp	75.4
Lewiston	Exit 80 SB On-Ramp	80.3
Litchfield	I-95 NB at Marsh Road Underpass	89.2
West Gardiner	I-95 NB at West Gardiner Toll Plaza	100.2
Augusta	I-95 SB, N. of Winthrop Street Underpass	108.7

update messages. The HAR system is a significant resource for providing information to motorists. In 2007, the Authority upgraded the 11 transmitter sites and the software platform located in the communications center. This upgrade synchronized all the HAR transmitters improving coverage on the mainline.

An additional HAR transmitter was installed in 2011 in the vicinity of the Kennebunk Service Plazas to better cover the gap in reception between the two adjacent transmitters. The Highway Advisory Radio Transmitter Locations are listed in **TABLE 5**.

CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM

There are currently 12 CCTV cameras transmitting streaming video 24-hours a day, seven days a week, to monitors located in the communications center at the turnpike headquarters. Still images from these cameras are also viewable on the Maine Turnpike website.

The CCTV cameras are located at the following locations:

- **YORK TOLL PLAZA - NB & SB**
- **EXIT 25 (ROUTE 35) - NB & SB**
- **EXIT 32 (ROUTE 111) - NB & SB**
- **BETWEEN EXITS 32 & 36 (BOOM RD) - NB ONLY**
- **BETWEEN EXITS 36 & 42 (FLAG POND RD) - NB & SB**
- **EXIT 42 (HOLMES RD) - NB ONLY**
- **EXIT 63 (GRAY) - NB & SB**

These cameras allow the communications center to view traffic in the vicinity of these heavily traveled interchanges.

Two additional CCTV cameras are located with the RWIS that were installed in the fall of 2008 at the Saco River Bridge in Saco and Eagles Nest Overpass in Gray. These cameras are providing still images viewable through the RWIS website only at this point in time, but the cameras do have the capability to provide streaming video. It is anticipated that these cameras will be incorporated into the CCTV system in the near future.

Four additional trailer-mounted CCTVs were purchased after 2010 for temporary work zone monitoring and incident management.

OVER HEIGHT VEHICLE DETECTION SYSTEM

Many of the turnpike bridges have been struck and damaged by over height loads. This issue has been mitigated by the Authority's policy of increasing the under clearance as part of bridge rehabilitation projects and by constructing new bridges with a minimum of 16.5' of under clearance. However, a number of bridges still have minimal under

clearance and have a potential for damage if struck by an over height vehicle. The Authority is addressing this concern by the implementation of an Over Height Vehicle Detection Systems at select locations. These systems detect over height vehicles and send a signal to a flashing sign that notifies the driver of an over height vehicle to come to a stop. The turnpike's communication center is also notified of the occurrence and receives video of the incident. A system was installed on Warren Avenue in 2012 and an additional system was installed at the Auburn Interchange in 2013. A system is scheduled to be installed on the mainline in West Gardiner in 2014.

ZOOM TURNPIKE EXPRESS

The Maine Turnpike Authority provides partial funding for the ZOOM Turnpike Express, a commuter bus service operating between Biddeford, Saco, and Portland. Currently, the Maine Turnpike Authority and ZOOM have a Memorandum of Understanding for July 2014 to June 2016. The MTA provides a designated bus pickup and drop-off area at the Exit 36 Park & Ride lot; and the MaineDOT has parking at the Exit 32 Park & Ride lot in Saco. The MTA also pays for wi-fi on the buses.

The commuter bus provides an alternative to driving on the most heavily traveled commuter route in the state. Averages of about 67,000 vehicles per day travel the section of the turnpike between Biddeford and Portland. Typically, ZOOM buses serve about 125 travelers per weekday. Ridership on the ZOOM Turnpike Express for fiscal year 2013 was 29,441. This ridership level is below the record set in fiscal year 2009, yet since fiscal year 2008, yearly ridership has been above 29,000.

A regular one-way fare on ZOOM costs $5, with a 10 ride ticket costing $39. There are also monthly commuter cards available for $100 and a quarterly pass for $260. ZOOM riders are eligible to transfer for free to any connecting Shuttle bus, Metro, or South Portland bus route.

GO MAINE PROGRAM

Since April 2013 the Maine Turnpike Authority has administered the GO Maine program. This is a state wide program that helps commuters find information on commuting options. Recently an advisory committee has been formed and updated the GO Maine Mission Statement to:

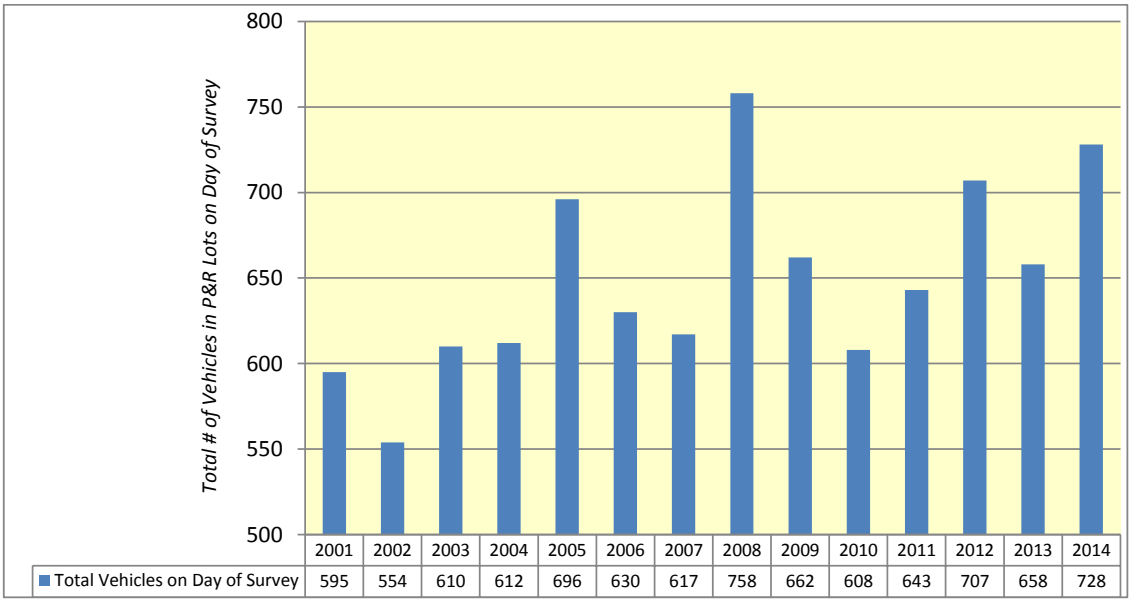
GO Maine is a statewide commuter service which promotes healthy, economical, and eco-friendly modes of travel by:

- Providing ride matching for commuters;
- Assisting employers and employees with commuter options; and,
- Working with planning agencies, businesses, advocacy groups, and other partners to reduce the number of single occupancy vehicles in Maine.

There are three main components of the administration of this program. They are: Program Administration and Coordination, Rideshare and Technology Services, and Marketing, Education and Outreach. The MTA and the MaineDOT's goal is to have a robust, updated, and well-functioning database of commuters who wish to carpool or commute by another means other than a single occupancy vehicle. In the past year, GO Maine has attended many wellness fairs, trade shows and other events. Marketing materials for employers have been created. The GO Maine Advisory Committee is working on creating a statewide commuter event to spread the word about commuting options in the state.

The Maine Turnpike plans to continue to manage the database to ensure that good commuter matches are made as well as reach out to local businesses, municipalities, and others, to tell people about the program and how easy it is to find a carpool match.

TABLE 6 - PARK & RIDE LOT USAGE - 2001 THROUGH 2014



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Vehicles on Day of Survey	595	554	610	612	696	630	617	758	662	608	643	707	658	728

PARK & RIDE LOT PROGRAM

The Authority strongly encourages motorists to utilize its Park & Ride lots to reduce congestion on the turnpike through ridesharing. Currently, the Authority maintains a network of 16 Park & Ride lots located at or near most interchanges. The Authority monitors the use of these lots to assure that adequate capacity is available.

TABLE 6 summarizes overall Park & Ride Lot Usage from 2001 through 2014 (on the day of the survey). The following observations may be drawn from Table 6:

- Total Park & Ride lot usage has stayed in a fairly narrow range from about 550 vehicles (recorded in 2002) to just over 750 vehicles (recorded in 2008).
- Although lot usage has both risen and fallen over the years, the overall trend has been very gradual growth. A regression analysis suggests that average growth has been about 1.1% per year.
- In 2014, total usage on the day of the survey was 728 vehicles. Given that a total of 1,181 spaces were available, the overall system operated at about 62% of its capacity. By comparison, in 2002, the Park & Ride lots were operating at less than 50% capacity.

Four relative spikes in usage have been noted over the past decade:

- The first was in the fall of 2005, when fuel prices rose rapidly in the wake of Hurricane Katrina.
- The second was in the spring of 2008, when fuel prices hit record highs.
- The third was in the spring of 2012, when fuel prices again climbed abruptly after a temporary reprieve in prices over the winter.
- The fourth was in 2014. This is mostly associated with more patrons using the new, larger lot in Lewiston.

TABLE 7, on the following page, summarizes Park & Ride Lot Usage Per Location, on the day it was surveyed, as part of the 2014 Annual Inspection of the Maine Turnpike. The table also records the number of spaces available at each lot, as well as each lot's operational capacity.

TABLE 7 - PARK & RIDE USAGE PER LOCATION - 2014

Town	Location	Owner	Spaces	2014 Volume	% Capacity
York	Chases Pond Road, US-1 Connector	MaineDOT	26	20	76.9%
Wells	Maine Tpk Exit 19, adj. to Wells Trans Ctr.	MTA	100	47	47.0%
Kennebunk	Maine Tpk Exit 25 SB, on Rt. 35	MTA	52	36	69.2%
Biddeford	Maine Tpk Exit 32, on Rt. 111	MTA	155	113	72.9%
Saco	I-195 Exit 1, on Industrial Park Road	MaineDOT	135	109	80.7%
Scarborough	Maine Tpk Exit 42, shared w/ Cabela's Parking Lot	MTA	66	29	43.9%
S. Portland	Maine Tpk Exit 45, on Rt. 703	MaineDOT	111	33	29.7%
Portland	Maine Tpk Exit 46, adj. to toll plaza	MTA	68	28	41.2%
Westbrook	Larrabee Road, near Maine Tpk Exit 47	MaineDOT	91	45	49.5%
W. Falmouth	Maine Tpk Exit 53, adj. to toll plaza	MTA	19	8	42.1%
Gray	Maine Tpk Exit 63, on US-202	MTA	74	63	85.1%
Auburn	Maine Tpk Exit 75, on US-202	MTA	137	93	67.9%
Lewiston	Maine Tpk Exit 80 - Route 196	MTA	93	77	82.8%
W. Gardiner	Maine Tpk Exit 102, near Rt. 126	MTA	54	27	50.0%
		Overall	**1,181**	**728**	**61.6%**

As Table 7 indicates, the three busiest lots on the turnpike are at Saco (Exit 36; Owned by MaineDOT), Gray (Exit 63), and Lewiston (Exit 80). Each serves over 70 vehicles. Saco serves well over 100 vehicles.

Four lots - York, Saco, Gray and Lewiston - are currently operating at over 75% capacity. The capacity issue at the Saco lot has been alleviated by the addition of an overflow lot on Route 112. The Gray Park & Ride Lot is planned to be relocated and expanded in 2015. However, the other two lots have no such adjacent area to provide relief. Overall usage of the Park & Ride lots increased from 658 vehicles in 2013 to 728 vehicles in 2014.

TURNPIKE SAFETY AND LAW ENFORCEMENT

In 2013, approximately 671 crashes were reported on the Maine Turnpike and its ramps. This is a 9% decrease from 2012 (737 crashes) as reported by the Maine Turnpike Authority. The majority of crashes are in the northbound direction (329 vs. 287), with the remaining 55 of the crashes occurring on the Maine Turnpike ramps.

From 2011 - 2013, there were eight (8) High Crash Locations (HCL) on the Maine Turnpike, which includes the mainline, toll plazas, and interchange ramps. This is a

reduction of one over the number of HCL's from 2010 - 2012. Three additional HCL's are documented at intersections adjacent to the turnpike ramps. A High Crash Location is defined as a roadway node or segment that has more than eight crashes in a three-year period, and a Critical Rate Factor (CRF) greater than 1.0. A Summary of HCL and CRF Locations (2011 - 2013) is shown in **TABLE 8**. HNTB recommends that the crash data for High Crash Locations be reviewed to understand if mitigation measures are warranted.

Law enforcement services on the turnpike are provided by Troop G of the Maine State Police. Troop G is funded entirely by the MTA and located in the MTA Administration Building. With access at Exit 46, Troop G has a safe entry/exit to the turnpike mainline, and good accessibility to the public. In addition, Troop G now benefits from a modern facility with state-of-the-art law enforcement components similar to other recently constructed state police facilities.

Troop G currently has 29 troopers assigned to the turnpike. At full strength, Troop G has 35 troopers. They patrol the entire turnpike, 24-hours a day, 365 days per year. This provides turnpike patrons with a very high level of coverage.

These troopers are dedicated to making the road safer by enforcing speed limits; assisting disabled motorists; detecting and apprehending operators who are under the influence of drugs or alcohol; and, enforcing other Maine State laws.

TABLE 8 - SUMMARY OF HCL AND CRF LOCATIONS (2011 - 2013)

	Town / City	Location Description	Crashes	CRF
Northbound Mainline	York	NB approach to York Barrier Toll Plaza	8	2.71
	Auburn	Merge area from Washington Street	9	6.40
	Biddeford	Biddeford / Saco Town Line	16	1.09
Southbound Mainline	New Gloucester	Mayall Road to Bennett Road	13	1.00
	New Gloucester	New Gloucester Barrier Toll Plaza to Mayall Road	10	1.46
	Falmouth	Leighton Road to Mountain Road	16	1.01
	York	Diverge area to Spur Road	8	1.69
Ramps	Biddeford	Biddeford Toll Plaza	9	1.69
	Biddeford	Intersection - Ramps with Route 111	52	1.10
	Auburn	Intersection - Ramps with Route 202/100	9	6.81
	West Gardiner	Intersection Exit 102 Ramps & Routes 9/126	20	14.29

5 MAINE TURNPIKE AUTHORITY/MAINEDOT JOINT INITIATIVES

OPERATIONS & MAINTENANCE

As part of 2013 LD 1538 (the MTA Omnibus Bill), the MTA is providing transportation dollars or credit to the MaineDOT for projects and initiatives that will provide a benefit to the MTA. This includes MaineDOT projects that physically connect to the Maine Turnpike or are consistent with the overall Maine Turnpike Authority mission. Alternative Programs, such as the ones identified below, are included in these transportation dollars provided to MaineDOT.

The Maine Turnpike Authority and the Maine Department of Transportation have a long history of working together to provide an efficient transportation system. Since 1995, the Authority has been providing winter maintenance and litter patrol for a fee on a two mile stretch of I-95 (from Kittery to York) owned and maintained by the MaineDOT (sharing with NHDOT, the winter maintenance of the Piscataqua River Bridge). In 2004, the two agencies agreed that the Maine Turnpike Authority would provide winter maintenance on I-195, and the MaineDOT would provide winter maintenance at the Kittery Rest Area and the Park & Ride lot in South Portland. Additional discussions occur annually to confirm that all overlap points are being covered in the most efficient manner.

The Authority has also procured signs from the MaineDOT Sign Shop on a limited basis. The MTA coordinates with the MaineDOT when developing Pavement Rehabilitation projects. This relationship has provided more consistent Interstate paving specifications between the two agencies.

The MTA and MaineDOT also work together regarding storm-water issues. Permitting processes through MaineDEP are reviewed jointly by both agencies and three party agreements are signed so that MaineDOT and MTA are treated the same for transportation purposes.

This working relationship also involves the planning and construction of projects. Both agencies worked together on the recently constructed Maine Turnpike Gardiner Service Plaza project, the Gorham East-West Corridor and Central York County Studies, and the paving of a two mile section of MaineDOT owned I-95 in Kittery where MaineDOT reimbursed the MTA the cost.

PARK & RIDE LOT COORDINATION

The MTA and MaineDOT continue to coordinate on the use, condition, and improvements to Park & Ride lots. The MTA, in coordination with MaineDOT, performed an updated inventory of all Park & Ride lots throughout the State of Maine in the spring of 2013. This involved an inventory of available parking spaces, an assessment of signing and amenities, and a count of the number of vehicles served by each lot. A follow-up report is anticipated in 2014, to be prepared by MaineDOT, that focuses on the usage characteristics of the lots that were surveyed. Information and findings from this report will be used by both agencies to identify near-term Park & Ride lot needs.

The Maine Turnpike Authority and MaineDOT agree to continue to work to identify future Park & Ride lot needs through the continued inventory and evaluation of these lots.

ALTERNATIVES PROGRAM COORDINATION

The Maine Turnpike Authority has participated in and funded all or part of Alternative Programs that were deemed to have a direct or indirect benefit to the Maine Turnpike. Examples of these Alternative Programs include GO Maine and ZOOM Turnpike Express. These are described in more detail in Chapter 4.

PROJECT DEVELOPMENT

The Maine Turnpike Authority coordinates with the MaineDOT on projects that are located near the Maine Turnpike. In West Gardiner, the MTA is coordinating with the MaineDOT on improvements to the Route 126/Exit 102 Intersection, and in Auburn the MTA is coordinating with the MaineDOT on the planning of a bus terminal and parking area.

6 PLANNING STUDIES

As the Authority evaluates possible new transportation projects, various planning studies must be undertaken to evaluate and identify the best available alternatives. Recent or ongoing planning studies are described in the following paragraphs.

THE CENTRAL YORK COUNTY AND GORHAM EAST-WEST CORRIDOR STUDIES

In response to growing pressures to improve east-west connections in York and Cumberland Counties, the 123rd Maine State Legislature directed the MaineDOT and MTA to study the opportunity to enhance, expand, and preserve highway connections west of Route 1 in York and Cumberland Counties, specifically noting the Gorham and Sanford areas.

Jointly, the MaineDOT and MTA developed a scope of services for two separate studies to directly address this resolve. The resolve specifically requires that these studies assess all modes of transportation in addition to land use strategies, in accordance with the Sensible Transportation Policy Act (STPA) and the Growth Management Act (GMA).

Both the York and Cumberland County studies are referenced in the MaineDOT's Long Range Plan and the PACTS Destination Tomorrow Long Range Plan, and are consistent with the mission statement in the MTA's 10 Year Plan. The following details each study:

- ### GORHAM EAST-WEST CORRIDOR STUDY

The Gorham East-West Corridor Study began in the spring of 2009 and is a major new transportation and land use study of the corridor immediately west of Portland. This area is the location of what has historically been the fastest-growing residential market in Maine. The study's goal is to evaluate all the options and find the right package of alternatives to protect homeowners' quality of life over the long-term, without adding excess transportation capacity.

The study began when the municipalities of Gorham, Westbrook, Scarborough, and South Portland signed a joint resolution in 2007 asking for such a study, specifically to assess the feasibility of a new Turnpike Spur that will connect to the new Gorham Bypass. The resolution states that existing ways to manage traffic congestion, such as widening roads and adding turning lanes, will have a negative effect on their downtowns, village centers and neighborhoods. Both the MTA and MaineDOT officials believe that integrating all modes of transportation (transit, bike, pedestrian) is an integral part of the study.

A Draft Study Report was completed in the spring of 2011. Study findings determined that a combination of land use, transit, and roadway actions could help to improve transportation mobility, mode choice, and community quality of life. Study recommendations included identification of additional tasks to further evaluate and identify possible funding for specific land use, transit, and roadway actions.

Additional analysis was completed to better determine the feasibility of the recommended actions identified in the Draft Study Report, specifically the roadway improvement scenario that will address current and future safety and congestion. Findings from this additional analysis were presented to the Maine Turnpike Authority Board and MaineDOT to determine next steps.

A Final Study Report was completed in the fall of 2012. A copy of the Report can be found at **www.gorhamcorridor.org**. The Maine Turnpike Authority and MaineDOT are currently in discussion with the Army Corps of Engineers (ACOE) to determine the range of alternatives to be evaluated in the

next phase of study.

- **CENTRAL YORK COUNTY STUDY**

This study was completed in fall of 2012. The final study can be found at **www.connectingyorkcounty.org**. As a result of one of the study recommendations, the MTA is planning to increase capacity at Exit 19 in Wells by adding a second left turn lane.

SAFETY AND CAPACITY STUDY

Periodically, the MTA requests that a System-Wide Traffic Operation and Safety Study of the Maine Turnpike be conducted to assess both current and future operating conditions of all interchanges, mainline sections, ramps, and toll plazas between Kittery and Augusta. HNTB recently completed this study for the MTA in the fall of 2012.

Based on the data collected and results of the analyses performed for this study, a series of recommendations were presented. These recommendations include possible future improvements (such as roadway or interchange ramp widening, addition of toll plaza capacity, and safety improvements), an approximate time table of when the improvements become necessary, and an estimate of the forecasted construction costs. This document is used by the MTA as a long-range planning tool.

GRAY INTERCHANGE FEASIBILITY STUDY

The Gray Interchange Feasibility Study was completed in the fall of 2013. This study evaluated the transportation operations and efficiency, safety improvements, environmental impacts, and construction costs for the alternatives that are evaluated at the Exit 63 Interchange. As a result of that study, two alternatives were advanced for additional evaluation.

Over the past year, the MTA in coordination with VHB and HNTB, have developed a design for the Gray Interchange which addresses the current and future safety and efficiently issues at the current interchange location. The new design will include a relocation of the southbound on and off ramps to the west side of the turnpike, which will eliminate the need for southbound traffic to travel over the turnpike, which is currently accommodated with the interchange bridge. Also, as part of the interchange upgrades, the MTA will relocate the existing Park & Ride Lot onto Route 26A in 2015. The work at this interchange is scheduled to begin in 2016.

7 FUNDING

Funds for the operation, maintenance and improvement of the Maine Turnpike are deposited into accounts designated for specific purposes. These accounts are:

- **CAPITAL IMPROVEMENT FUND:**

  Includes specific projects to upgrade roadway facilities and improve highway safety, such as the Electronic Toll Collection system.

- **RESERVE MAINTENANCE FUND:**

  Includes projects that exceed the constraints of normal maintenance, such as bridge reconstruction programs.

- **OPERATION AND MAINTENANCE FUND:**

  Includes routine operation and maintenance work carried out by Authority personnel such as daily operations, repairs, and improvements.

The details of each fund are described below, as well as the recommended amounts of money to be deposited for fiscal year 2014. In addition, the recommendation regarding insurance coverage is included.

CAPITAL IMPROVEMENT FUND

As part of the Sensible Transportation Policy Act, the Authority identified projected deficiencies in turnpike facilities that needed to be addressed in the near- and long-term. From this planning effort, the Authority developed a Capital Improvement Program which detailed the need to significantly expand the extent of rehabilitation and maintenance work. It was clear that routine maintenance programs could no longer stem the deterioration of turnpike facilities nor provide the higher level of operational efficiency made possible by current technologies.

The Capital Improvement Program was proposed for projects that require a faster pace of reconstruction work due to compelling public safety interests and for projects intended to significantly enhance operations. At the end of 2014, we estimate this fund will have a balance of $56,608,094. Including carryover projects from 2014, we estimate $40,971,055 in Capital Improvement expenditures in 2015.

Since the available balance in the Capital Improvement Fund exceeds the estimated 2015 Capital Improvement expenditures, no additional deposit to the Capital Improvement Fund is required.

We recommend $0.00 be deposited in the Capital Improvement Fund for 2015 projects.

RESERVE MAINTENANCE FUND

The Reserve Maintenance Fund dedicates the revenue required to keep turnpike infrastructure safe and in proper operational condition. This category normally funds contract work, which exceeds the scope of routine maintenance such as bridge rehabilitation, bridge painting, and annual paving projects. The recommended deposit to the Reserve Maintenance Fund for fiscal year 2015 is $37,000,000.

OPERATION AND MAINTENANCE FUND

Operation and Maintenance work is usually carried out by Authority personnel and includes activities such as administration, toll collection, snow plowing, minor repair work, sign replacements and other activities. We estimate that the cost of Operation and Maintenance during 2015, exclusive of Reserve Maintenance and Capital Improvement expenditures, will be in the amount of $41,228,821. This estimate is based on careful examination of 2014 expenditures and

an evaluation of factors expected to influence these costs during 2015.

INSURANCE

Based on the replacement values provided by HNTB, the current turnpike insurance coverage appears to adequately protect the properties, interests, and operations of the Authority. Insurance is provided under a number of policies including a comprehensive commercial package; worker's compensation; and public officials and employee's liability. A detailed schedule of insurance is presented in **APPENDIX B**.

APPENDIX A - MAINTENANCE AREA BUILDINGS

DESCRIPTION	York Mile 7	Old York Mile 10	Kennebunk Mile 25	Crosby Mile 46	Sign Shop Mile 58	Gray Mile 63	Auburn Mile 77	Litchfield Mile 93	Gardiner Mile 102	TOTAL
Maintenance Garage, 3 Bay		1						1		**2**
Maintenance Garage, 4 Bay			1			1			1	**3**
Maintenance Garage, 5 Bay				1						**1**
Maintenance Garage, 8 Bay			2	1		1	1	1		**6**
Maintenance Garage, 10 Bay			1	1						**2**
Salt Shed	1		1	1		1	1	1	1	**7**
Sand/Salt Storage Building	1		1	1		1	2	1	1	**8**
Flammable Storage Building	1		1	1						**3**
Storage/Body Shop Building						1				**1**
Cold Storage Building	1	1	2	1	1		1	1	1	**9**
Hazardous Waste Storage Vault						1				**1**
Central Inventory Building					1					**1**
Sign Shop					1					**1**
Storage/Tool Shed					1		1			**2**
Office Building				1						**1**
Office Building, 6 Bay Garage						1				**1**
Office Building, 7 Bay Garage							1	1	1	**3**
Office Building, 10 Bay Garage			1							**1**
Office Building, 14 Bay Garage	1									**1**
Fuel Distribution System	1			1			1			**3**
Generator Building	1		1	1		1	1	1	1	**7**

APPENDIX B - SCHEDULE OF INSURANCE

Comprehensive Package Policy Including Turnpike Property
Underwritten by the Acadia Insurance Company **Agent: Cross Insurance**

Commercial Package
Policy No. CFA1000627-32 **Term: October 1, 2014 - October 1, 2015**

Risk	Coverage	Limit	Remarks
Fire and Related Blanket	Buildings	$ 83,588,694	Agreed Amount and
	Contents	$ 26,495,453	Replacement Cost
	Extra Expense & Loss of Rents	$ 3,611,500	
	Boiler and Machinery	Included	
	(Excludes bridges, overpasses & underpasses)		
	Scheduled Property:		
	Miscellaneous Unscheduled Locations**	$ 500,000	
	Bridges, Overpasses, and Underpasses	$260,321,000	
	Ordinance of Law Coverage	$ 10,000,000	
	Fine Arts**	$ 200,000	
	Property In Transit*	$ 100,000	
	Business Income -	$ 10,000,000	
	(Specific to flood/quake/auto accident to the roads only)		
Inland Marine			
a. Direct Physical loss or damage	Scheduled Maintenance Equipment	$ 3,273,905	
b. Direct Physical loss or damage	Valuable Papers*	$ 500,000	
	EDP Includes E-ZPass Equipment*	$ 1,292,714	
	Radar Counters, Radios, camera equipment, Signs and transmitting equipment		
	Message Boards	$ 360,834	
	Flood & Earthquake	$ 10,000,000	

*Included in the Contents Limit on Policy

Business Auto
Policy No. CAA1000628-32 **Term: October 1, 2014 - October 1, 2015**

Comprehensive	Bodily Injury Liability, CSL, BI & PD	$ 1,000,000	Each Occurrence
	Uninsured Motorist	$ 1,000,000	Each Occurrence
	Medical Payments	$ 5,000	Per Person
	Hired & Non-Owned Liability	$ 1,000,000	
	MCS-90		Included
Auto Physical Damage	Comprehensive and Collision	$ 1,000	
	Deductible Applies to PPT and applies to light trucks	$ 3,000	
	Hired Physical Damage	$ 200,000	
	Garagekeepers	$ 100,000	

Comprehensive General Liability Policy
Underwritten by Acadia Insurance Co. **Agent: Cross Insurance**

General Liability
Policy No. CLA5062485-11 **Term: October 1, 2014 - October 1, 2015**

Comprehensive General Liability	
Each Occurrence Limit	$1,000,000
Personal & Advetising Injury	$1,000,000
General Aggregate Limit	$2,000,000
Products-Completed Ops Aggregate	$2,000,000
Fire Legal Liability	$ 500,000
Premises Medical Payments	$ 5,000
Employee Benefits Liability	$1,000,000

Comprehensive Crime
Underwritten by Zurich American Insurance Company **Agent Cross Insurance**

Policy No. MPL 5834934-02 **Term: October 1, 2014 - October 1, 2015**

Crime	Coverage	Limits	Deductible
	Employee Theft	$2,000,000	$15,000
	Forgery or Alteration	$2,000,000	$15,000
	On Premises	$2,000,000	$15,000
	In Transit	$2,000,000	$15,000
	Computer Fraud	$2,000,000	$15,000
	Funds Transfer Fraud	$2,000,000	$15,000
	Money Orders/Counterfeit Money	$2,000,000	$15,000
	Electronic Data or Computer Programs Restoration Cost	$ 50,000	$15,000
	Investigative Expenses	$ 10,000	$0

Worker's Compensation Self-Insurance Excess Policy
Underwritten by New York Marine & General Insurance Company; Agent: USI Insurance Services

Policy No. WC2013EPP00249 **Expires: February 1, 2014 - February 1, 2015**

Policy in keeping with the laws of the State of Maine; cancellation; 60 days

$750,000 Insurers retention for each accident or each employee for disease insurer's Limit of Indemnity for each employee for disease

1. As respects Coverage A (worker's compensation)
   $25,000,000 Each Accident
   $25,000,000 Aggregate - Disease
2. As respects Coverage B
   $1,000,000 Each Accident
   $1,000,000 Aggregate - Disease

$21,406,622 Total Estimated Annual Remuneration - February 2014-2015
Claim Service: Cannon, Cochran Management Service, Inc.

Public Officials and Employees Liability
Underwritten by ACE American Insurance Company **Agent: Cross Insurance**

Policy No. EON M00608592 002 **Term: October 1, 2014 - October 1, 2015**

Public Officials Employee Liability	Elected and appointed officials and all full-time and part-time employees	$5,000,000 each loss and aggregate for each policy year	Retention: $50,000 loss

Fidelity Bond-Public Officials
Underwritten by Travelers Insurance Company: **Agent TD Insurance , Inc**

Member of Authority	Term	Amount of Bond	Remarks
Peter S. Mills Executive Director Policy No. 105619973	May 24, 2014-2015	$ 500,000	Insures faithful performance of duties by the individual
Douglas D. Davidson Treasurer Policy No. 105220484	January 1, 2014-2015	$ 500,000	
Jonathan Arey Secretary Policy No. 105220456	January 2, 2014-2015	$ 50,000	

Fiduciary Responsibility
Underwritten by ACE Insurance Company **Agent: Cross Insurance**

Policy No. G25749522 002 **Term: October 1, 2014 - October 1, 2015**

Limit $2,000,000
Provides protection for your errors/omissions or negligent acts in connection with handling of employee benefit plans: Maine State Health Insurance Plan; Maine State Dental Insurance Plan; Maine Turnpike Group Life Insurance Plan; and Maine State Retirement System

Group Hospital-Surgical
Effective April 1999

Primary Coverage	Anthem Blue Cross of Maine State Select Program	Full semi-private room allowance

Self-Insured Workers Compensation Bond
Underwritten by Travelers Insurance Company

Policy No. 103464379

Obligee: Maine Insurance Bureau

HNTB