

PRESENTED TO THE MAINE TURNPIKE AUTHORITY

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# OPERATION AND MAINTENANCE ANNUAL REPORT



2012

Prepared By:

**HNTB**



October 1, 2012

Maine Turnpike Authority  
2360 Congress Street  
Portland, ME 04102

Ladies and Gentlemen,

We are pleased to submit our 2012 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 April and June 2012; 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,

A handwritten signature in cursive script that reads "Roland A. Lavalley".

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

<b>1</b>	<b>INTRODUCTION</b>	<b>3</b>	<b>5</b>	<b>MAINE TURNPIKE AUTHORITY/ MAINEDOT JOINT INITIATIVES</b>	<b>33</b>
	ANNUAL INSPECTION PROGRAM	3		OPERATIONS & MAINTENANCE	33
<b>2</b>	<b>INSPECTION FINDINGS AND CORRECTIVE MEASURES</b>	<b>6</b>		PARK & RIDE LOT COORDINATION	33
	VEGETATIVE COVER	6		ALTERNATIVES PROGRAM	
	PAVEMENT	6		COORDINATION	33
	BRIDGES	8		PROJECT DEVELOPMENT	34
	DRAINAGE	18	<b>6</b>	<b>PLANNING STUDIES</b>	<b>35</b>
	GUARDRAIL AND CLEAR ZONE	18		THE CENTRAL YORK COUNTY AND GORHAM EAST-WEST CORRIDOR	
	EMERGENCY VEHICLE RAMPS (EVR)	19		STUDIES	35
	LIGHTING	20		SAFETY AND CAPACITY STUDY	36
	SIGNAGE	20		GRAY INTERCHANGE STUDY	36
	ROADWAY MARKINGS	20			
	TOLL PLAZAS	20	<b>7</b>	<b>FUNDING</b>	<b>37</b>
	SERVICE AREAS	22		CAPITAL IMPROVEMENT FUND	37
	MAINTENANCE FACILITIES	22		RESERVE MAINTENANCE FUND	37
<b>3</b>	<b>TOLL COLLECTION SYSTEM</b>	<b>23</b>		OPERATION AND MAINTENANCE FUND	37
	ELECTRONIC TOLL COLLECTION	23		INSURANCE	38
	E-ZPASS GROUP	23		<b>APPENDIX A -</b>	
	ONGOING ACTIVITIES	23		MAINTENANCE AREA BUILDINGS	39
	TOLL SCHEDULE	23		<b>APPENDIX B -</b>	
<b>4</b>	<b>TRAFFIC MANAGEMENT AND TECHNOLOGY</b>	<b>26</b>		SCHEDULE OF INSURANCE	40
	TRAFFIC COUNT STATIONS	26			
	ROADWAY SENSORS	27			
	VARIABLE MESSAGE SIGNS (VMS)	27			
	HIGHWAY ADVISORY RADIO	27			
	CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM	28			
	ZOOM TURNPIKE EXPRESS	28			
	GO MAINE PROGRAM	29			
	PARK & RIDE LOT PROGRAM	29			
	TURNPIKE SAFETY AND LAW ENFORCEMENT	31			

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## 1 INTRODUCTION

This 2012 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 and Reserve Maintenance funds, 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 177 structures (167 bridges with concrete

decks and 10 culverts), 19 interchanges, 19 toll plazas, an administration building including the E-ZPass Customer Service Center and the State Police offices, five service areas, nine maintenance facilities, and associated structures.

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 serves approximately one million motorists every year including commuters, truckers, and visitors to the State of Maine. These motorists accounted for over 60 million trips taken on the turnpike in 2011.

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 lbs. 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 April and June of 2012. 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 June of 2012, to be used in conjunction with this 2012 Operation and Maintenance Annual Report.

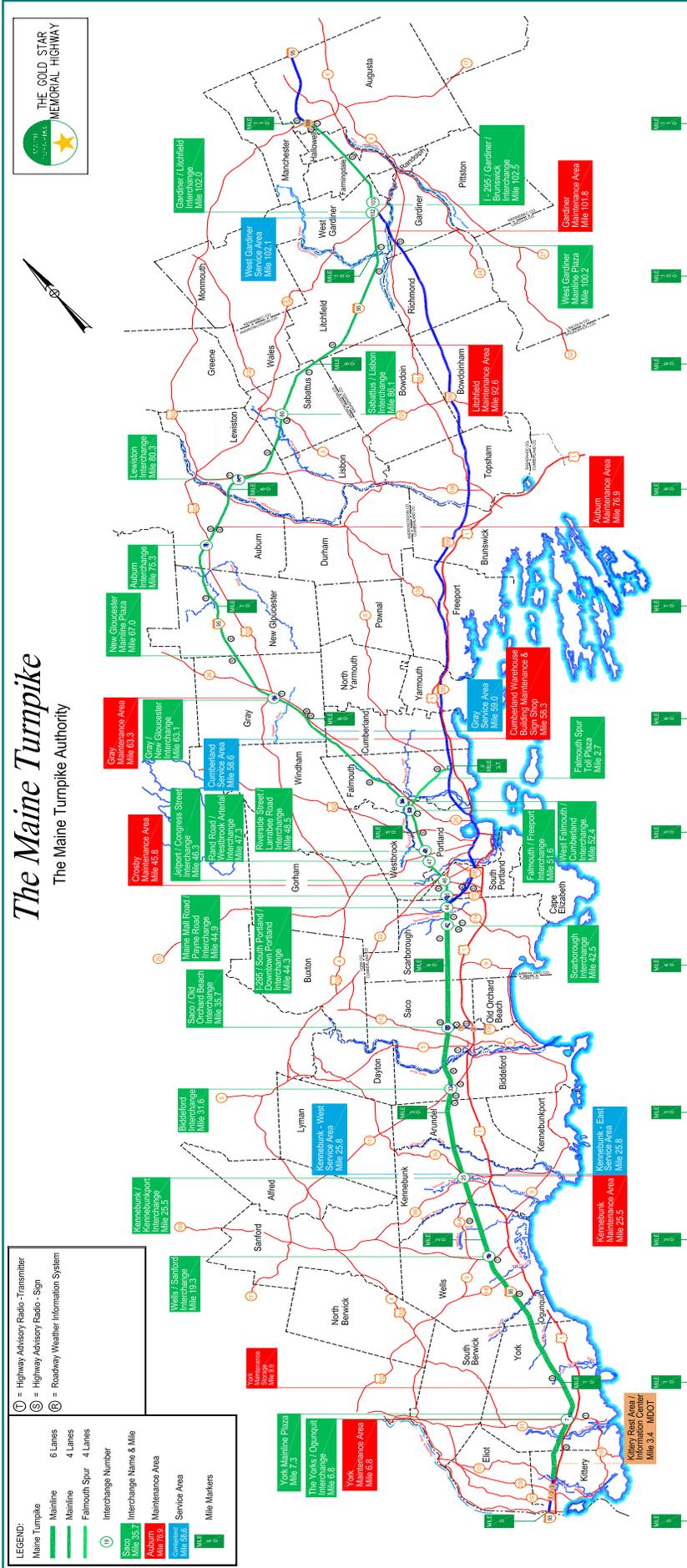


FIGURE 1

## 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 2012 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 gulying which may lead to an erosion issue if not mitigated. In most instances, the Authority's Maintenance forces can accomplish this work.



### PAVEMENT

Roadway and shoulder pavement is in generally good condition and the riding quality

of the turnpike continues to be acceptable. Approximately 47% of the turnpike pavement (based on centerline miles) is rated in good-to-new condition, and approximately 39% is rated in generally good condition - potential exists for minor maintenance. The remaining 14% is rated in fair-to-satisfactory 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 17 years.

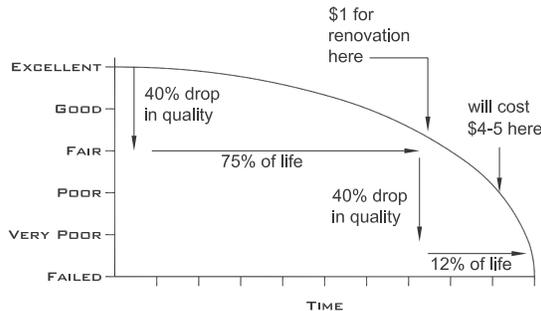
**TABLE 1 - PAVEMENT CONTRACTS 1996 - 2012**

Year	From MM To MM		Roadway
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
1999	45.8	50.5	NB/SB
	Int. 35		
1998	28.4	33.4	NB/SB
	Int. 7	Ramps	NB
	Int. 63		
1997	33.35	42.36	NB/SB
1996	42.5	54.7	NB/SB
	90.0	95.0	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**



Prior to 2008, pavement rehabilitation generally consisted of the removal of the top layer of pavement on the travel lanes and shoulders, establishment of a 1/4"/ft. cross slope to improve drainage, repair of damaged pavement, sealing of cracks, reconstruction of drainage structures, berm drop-off correction, and overlaying the roadway with new bituminous concrete pavement. However, the costs associated with this work have dramatically increased over the past several years, primarily due to the high and volatile pricing of liquid asphalt. To maintain a cost effective pavement rehabilitation program, the Authority modified the work in 2008 by eliminating the removal and replacement of the pavement surface on the shoulders when appropriate, and reduced the removal of existing pavement to 1-1/2". This program prioritizes the pavement rehabilitation of the travel lanes, which is the area most warranting repair and includes the vital elements of

rehabilitation of drainage structures, and pavement repair as warranted. Another cost saving measure introduced was the use of 15% Recycled Asphalt Pavement (RAP). The use of RAP is also environmentally beneficial as less material needs to be mined or pumped and transported for use on the road. Since 2011, the Authority has specified the addition of a latex additive to the asphalt. The latex's purpose is to alter several characteristics of the asphalt, each of which help improve pavement durability, weatherability, and performance, compared to an unmodified asphalt.

In 2012, the Authority issued three pavement rehabilitation contracts. Contract 2012.01 rehabilitated the pavement from Mile 30 to Mile 35. This project consisted of removing the existing wearing surface of the travel lanes and replacing it with new hot bituminous pavement. Contract 2012.02 rehabilitated the pavement from Mile 92 to Mile 98 and at the West Gardiner Mainline Toll Plaza. Due to the limited rutting in this area, the entire roadway received a hot bituminous shim course and a hot bituminous overlay. These two projects are substantially complete. Contract 2012.17 will be completed in the fall of 2012. It includes the rehabilitation of the pavement at Interchange 42 and Interchange 45 as well as the extension of the acceleration lanes at Interchange 45.

In 2011, HNTB recommended the rehabilitation of the pavement at Interchange 52 as part of the Interchange 52 Bridge Rehabilitation project. This project was delayed, and will now be completed in 2013.

**2013 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 7.4 to Mile 13.5, and Mile 88.6 to Mile 92.6. In addition, we recommend the rehabilitation of the pavement at Interchange 7 and Interchange 44. These projects should also include repairs

to the drainage system as warranted.

In addition to rehabilitating the bituminous surface, sealing cracks in pavement is



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

another method of maintaining the pavement in good condition to reduce future maintenance costs. This sealing reduces the water infiltration of the pavement into the subbase helping to extend the life

of the pavement structure. In 2002, the Maine Turnpike's Maintenance forces began a comprehensive crack sealing program. HNTB recommends continuing the crack sealing program in 2013 in locations where the surface pavement has opened sufficiently.

## BRIDGES

The Maine Turnpike Authority's bridge operation and maintenance program involves multiple aspects. This effort includes developing and maintaining a detailed inventory of Authority-owned bridges, scheduling and completing bridge condition and safety inspections, compiling repair and replacement recommendations, and the development and execution of contracts for bridge work. The goals of this program are to accurately forecast bridge repair needs, identify critical bridge deficiencies, repair and upgrade bridges on a timely basis, and to help maintain the continued safe condition of MTA bridges.

### BRIDGE INSPECTION PROGRAM

Inspections of Maine Turnpike bridges are completed by teams of qualified bridge inspectors in accordance with the National Bridge Inspection Standards established by the Federal Highway Administration (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 bridge records which are used to develop the MTA's bridge repair program.

The following inspections were completed in 2012:

### ROUTINE BRIDGE INSPECTIONS

All MTA bridges 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 2012 routine inspection by HNTB identified that the 177 bridges along the turnpike range from poor-to-very good condition. Bridges that have been rehabilitated or reconstructed during the past 20 years were found to be in fair-to-very good condition, while bridges that have never been rehabilitated were generally noted to be in fair condition.

### 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 floor-beam framing systems. The loads from these roadway framing systems are carried 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. While the inspection found no fractures, it did reveal locations of moderate corrosion and measurable section loss. As a result, repairs are recommended in 2013. The next fracture critical inspection should be completed in July 2014.

At the York River bridges, the girder framing system includes the use of 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 the 2011 inspection.



PIN-AND-HANGER ASSEMBLY AT THE YORK RIVER BRIDGE

### 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 the 15 bridges that carry the turnpike over rivers and water bodies. 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. Deterioration previously noted at the York River bridge and the Saco River

bridge continues to progress and significant repairs in the near future are warranted. HNTB recommends repairs to these structures be programmed for completion over the next three to five years. The next underwater inspection should be completed in 2016.

### SPECIAL DAMAGE INSPECTIONS

Occasionally, an over height vehicle hits the underside of a bridge, or a vehicle collides with a section of bridge railing. 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 bridge. In some cases, emergency repairs or restrictions are required to maintain traffic on the bridge.

At the request of the Maine Turnpike, HNTB conducted two special strikes inspections in 2012 resulting from bridge strikes by high loads at the following locations:

- **INTERCHANGE 53**
- **INTERCHANGE 102**



INTERCHANGE 102 UNDERPASS HIGH LOAD HIT

Based on these inspections, HNTB recommended repairs.

### BRIDGE REHABILITATION

The Authority's planned bridge rehabilitation program is reviewed and adjusted following the conclusion of each year's bridge inspection program. During the inspection,

**TABLE 2  
BRIDGE TABULATION**

Year	Group V Bridges	Group IV Bridges	Group III Bridges	Group II Bridges	Group I Bridges	Total Number of Bridges
2012	17	70	90	0	0	177
2011	9	66	100	1	0	176
2010	10	66	99	1	0	176

bridge components such as the concrete deck, superstructure and substructure are assigned condition ratings. Using these ratings, bridges requiring repair are further separated into five groups based on the overall condition of the bridges 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, heavy concrete deterioration under bridge bearings, scour around bridge foundations, weakened girders due to impact, etc.

**TABLE 2**, Bridge Tabulation, illustrates the number of bridges in each group category based on the 2012 Annual Bridge Inspection. 2011 and 2010 data has also been provided for reference.

The grouped bridges are then further prioritized for repair or replacement considering factors such as safety, bridge

**TABLE 3  
STRUCTURALLY DEFICIENT BRIDGE SUMMARY**

Bridge Name	Mile Marker	Status
Piscataqua River - Structure # 28	55.5	Programmed for Rehabilitation in 2015
Hurricane Road Underpass	56.6	Programmed for Rehabilitation in 2013
Piscataqua River - Structure # 31	56.7	Programmed for Rehabilitation in 2015
Gray Interchange Underpass	63.1	Gray Interchange Study Ongoing
Old Lisbon Road Underpass	81.8	Programmed for Rehabilitation in 2013

age, importance, rate of deterioration, load capacity, and traffic volumes.

In addition, higher priorities are typically assigned to bridges that are classified as “structurally deficient”. A bridge classified as structurally deficient is not necessarily unsafe; however, these bridges 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 and Superstructure. If any one of these components has a condition rating of 4 or less (indicating that element is in ‘poor’ condition), the bridge is considered "structurally deficient".

As a result of the HNTB 2011 Annual Inspection, we noted 15 structurally deficient bridges. Based on this information, the focus of the Authority’s 2012 bridge program was to repair or rehabilitate structurally deficient bridges. Ten structurally deficient bridges were repaired or rehabilitated in 2012.

During the 2012 bridge inspection, five structurally deficient structures were identified out of a total of 177 (2.8%), well below the national and Maine averages.

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

**2012 BRIDGE REHABILITATION AND REPLACEMENT PROJECTS**

Rehabilitation and repair contracts were issued for several Maine Turnpike Bridges in 2012. These contracts included repairing concrete deterioration, replacing substandard bridge elements such as railings and endposts, increasing bridge under clearance, and improving load capacity.

The following is a brief summary of the 2012 bridge work:

- **MILE 25.0 - MOUSAM RIVER BRIDGE OVERPASS (NB)**
- **MILE 25.0 - MOUSAM RIVER BRIDGE OVERPASS (SB)**

Repairs at the Mousam River bridges includes addressing areas of erosion at the north abutment, repairing deteriorated substructure concrete, and minor repairs to the roadway deck expansion joints. This work is anticipated to be complete by October 2012.



EROSION AT MOUSAM RIVER BRIDGE

- **MILE 33.0 - SACO RIVER OVERPASS DECK REPAIR AND RESURFACING (NB)**
- **MILE 33.0 - SACO RIVER OVERPASS DECK REPAIR AND RESURFACING (SB)**

Work at these two bridges, one carrying



SACO RIVER OVERPASS DECK REPAIR AND RESURFACING

northbound traffic and one carrying southbound traffic, completed in August 2012, includes repairing areas of concrete deck deterioration and the removal and replacement of the waterproof membrane and bituminous overlay.

- **MILE 35.7 - SACO INTERCHANGE BRIDGE (EB)**
- **MILE 35.7 - SACO INTERCHANGE BRIDGE (WB)**

Repairs at the Saco Interchange bridges include removing deteriorated concrete wearing, repairing deteriorated substructure concrete, bearing repairs, deck overhang repairs, repairing the bridge deck expansion joints, and the installation of new waterproofing membrane and asphalt overlay.



SACO INTERCHANGE BRIDGE

- **MILE 42.0 - INTERCHANGE 42 UNDERPASS**

Repairs to this underpass were included in Contract 2012.17, Rehabilitation of Interchange 42 Pavement. The repairs included removal of the existing bridge pavement and waterproof membrane, concrete deck repair, and the installation of waterproof membrane and bituminous overlay.

- **MILE 52.6 - LEIGHTON ROAD UNDERPASS**

Several areas of deterioration are being repaired at the Leighton Road underpass as part of Maine Turnpike Contract 2012.06. This work includes repairs to the concrete bridge piers and abutments, removal and replacement of the existing bridge deck expansion joints, and removal and replacement of the existing waterproofing membrane and bituminous overlay. In addition, the bridge superstructure is being raised to improve the vertical clearance over the Maine Turnpike.



LEIGHTON ROAD UNDERPASS

- **MILE 53.4 - MOUNTAIN ROAD UNDERPASS**

Repair work at the Mountain Road underpass includes repairs to the concrete bridge piers and abutments, removal and replacement of the existing bridge deck expansion joints, and removal and replacement of the existing waterproofing membrane and bituminous overlay.



MOUNTAIN ROAD UNDERPASS

- **MILE 61.6 - HUNTS HILL ROAD OVERPASS (NB)**
- **MILE 61.6 - HUNTS HILL ROAD OVERPASS (SB)**

Both bridges carrying the Maine Turnpike over Hunts Hill Road are being repaired as part of MTA Contract 2012.06. The work includes patching deteriorated substructure concrete at

the bridge abutments and median closure walls.



HUNTS HILL ROAD OVERPASS

- **MILE 70.2 - CHANDLER MILL ROAD UNDERPASS**  
[Structurally Deficient]

Rehabilitation of the Chandler Mill Road underpass is currently underway and is scheduled for completion in November 2012. 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 as part of the work to minimize the potential for impacts by over height vehicles. Once this work is completed the bridge will no longer be classified as structurally deficient.



CHANDLER MILL ROAD UNDERPASS

- **MILE 86.7 - FURBUSH ROAD UNDERPASS**  
[Structurally Deficient]

Rehabilitation of the Furbush Road underpass is currently underway and is scheduled for completion in November 2012. 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 as part of the work to minimize the potential for impacts by over height vehicles. Once this work is completed the bridge will no longer be classified as structurally deficient.



FURBUSH ROAD UNDERPASS

- **MILE 107.7 - CENTRAL STREET BRIDGE OVERPASS (NB)**
- **MILE 107.7 - CENTRAL STREET BRIDGE OVERPASS (SB)**

Both bridges carrying the Maine Turnpike traffic over Central Street, one carrying northbound traffic and one carrying southbound, are being repaired as part of Maine Turnpike Contract 2012.12. The work includes patching deteriorated substructure concrete at the bridge abutments and piers, bearing modifications and replacements, and reconstruction of the bridge endposts, deck repairs, and the replacement of the waterproof membrane and bituminous wearing surface.



CENTRAL STREET BRIDGE OVERPASS

- **MILE FS1.1 - FALMOUTH SPUR OVER THE PRESUMPCOT RIVER OVERPASS (EB)**
- **MILE FS1.1 - FALMOUTH SPUR OVER THE PRESUMPCOT RIVER OVERPASS (WB)**

These two 30' wide bridges carry eastbound and

westbound traffic over the Presumpscot River and are being rehabilitated as part of MTA Contract 2012.05.



PRESUMPSCOT RIVER BRIDGE OVERPASS

The rehabilitation scope includes removal and replacement of the existing concrete decks and painted metal "pork chop" bridge rails, repairing areas of deterioration on the bridge piers and abutments, installation of stone downspouts to control bridge runoff, and replacement of the bridge endposts.

These bridges are classified as "functionally obsolete" and the improvements will not remedy that classification.

## 2012 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, 48 bridges have been repainted, the last five in 2008. In 2009, HNTB recommended that the Authority temporarily suspend their bridge painting program since the bridges with the greatest amount of paint deterioration were also in need of significant rehabilitation. Accordingly, a decision was made to delay painting additional bridges until more definitive rehabilitation scopes could be developed for each bridge. The Authority now evaluates the cost of repainting, versus replacing, structural steel on all future bridge rehabilitation projects. This analysis considers cost, the load capacity of the existing girders, and the condition of the existing paint system.

In 2011, HNTB recommended that the MTA restart their bridge painting program in consideration of the fact that multiple bridges, which are not scheduled for rehabilitation in the next five to 10 years, are beginning to exhibit advanced deterioration of their paint systems.

In 2012, the Authority issued Contract 2012.07 for the painting of the following three bridges:

- **CHASES POND ROAD, MILE 6.8**
- **BURNT MILLS ROAD, MILE 19.9**
- **GORHAM ROAD UNDERPASS, MILE 44.0**

This work is scheduled to be substantially complete in late-fall 2012.

## 2012 EMERGENCY BRIDGE REPAIRS

Two repair contracts were issued to correct damage caused by over height vehicle hits in 2012. In addition, contract documents are currently being developed to repair over height vehicle damage at the Interchange 102 Underpass.

Although the Authority is typically reimbursed for the cost of these repairs from its insurance or that of the vehicle operator, damage to bridges caused by over height vehicles continues to be a concern. The Authority is addressing these concerns by reviewing and often improving under clearance when bridges are rehabilitated. An additional measure being implemented by the Authority is the installation of over height vehicle detection systems at select locations. This system detects an over height vehicle and sends a signal to a flashing sign to notify 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 additional systems are being considered for Auburn Interchange and the mainline in West Gardiner.

The following is a summary of the emergency bridge repairs issued for construction in 2012 to repair damage from over height vehicles:

• **MILE 52.4 - WEST FALMOUTH/  
CUMBERLAND INTERCHANGE UNDERPASS**

This project includes repairs to two bridge girders damaged by an over height vehicle impact in April 2012. This work, which will be completed as part of the ongoing West Falmouth/ Cumberland Interchange Underpass Rehabilitation Contract, is scheduled for completion by December 2012.

- **MILE 75.3 - AUBURN INTERCHANGE OVERPASS (NB)**
- **MILE 75.3 - AUBURN INTERCHANGE OVERPASS (SB)**

This project includes repairs to three girders damaged by two separate over height vehicle impacts that occurred in 2006 and 2007.

The Auburn Interchange overpass repair contract, which was issued for construction in July 2012, is scheduled for completion in October 2012.



AUBURN INTERCHANGE OVERPASS

• **MILE 102.0 - GARDINER/LITCHFIELD INTERCHANGE UNDERPASS**

Work at the Gardiner / Litchfield Interchange underpass will repair multiple girders damaged by an over height vehicle. A repair contract was developed and issued for construction in September 2012. The repair work is scheduled for completion in 2013.

**2013 BRIDGE REHABILITATION AND REPLACEMENT RECOMMENDATIONS**

**STRUCTURALLY DEFICIENT BRIDGES**

The repair or replacement of structurally deficient bridges has been, and should remain, a priority for the MTA. This focus has allowed the Authority to reduce the number of structurally deficient bridges in their inventory to 2.8%. For comparison, approximately 11% of the nation's bridges are classified as "structurally deficient".

**METAL "PORK CHOP" BRIDGE RAILINGS**

Over the past several years, the MTA has rehabilitated many of its bridges that have metal "pork chop" railing systems. These pork chop rail systems are typically in poor condition due to rust and section loss and we have determined that repair and repainting of these bridge rails is not cost effective. HNTB recommends a continued emphasis on these structures so that they are programmed for rehabilitation as soon as feasible. The rehabilitations should

**TABLE 4  
BRIDGES WITH METAL "PORK CHOP" BRIDGE RAILING**

Bridge Name	Mile Marker	Status
South Portland Interchange Underpass	44.90	Currently in Fair Condition
Falmouth Spur Interchange Underpass	51.60	Programmed for Rehabilitation in 2013
Lewiston Interchange Overpass (NB)	80.30	Programmed for Replacement 2014
Lewiston Interchange Overpass (SB)	80.31	Programmed for Replacement 2014
Presumpscot River Overpass, Falmouth Spur (EB)	FS 1.10	Bridge Rehabilitation Underway
Presumpscot River Overpass, Falmouth Spur (WB)	FS 1.10	Bridge Rehabilitation Underway

include the replacement of the existing bridge rail system with a rail system meeting current crash test standards.

Four bridges with the metal “pork chop” rails will remain in service after completion of the 2012 bridge repair program.

**TABLE 4**, Bridges with Metal “Pork Chop” Bridge Railing, on the previous page, lists the remaining six bridges with this rail type. Ongoing and programmed repairs for these bridges are also listed.

**RECOMMENDED BRIDGE PROJECTS**

Based on the above priorities, and the findings of the 2012 Bridge Inspection Program, HNTB recommends the rehabilitation of two structurally deficient bridges, Hurricane Road underpass and Old Lisbon Road underpass in 2013. The three 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, including one with metal “pork chop” railings, is recommended to repair areas of deterioration, to improve bridge under clearance, and to increase bridge load capacity.

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

- **MILE 33.00 - SACO RIVER OVERPASS (NB)**
- **MILE 33.00 - SACO RIVER OVERPASS (SB)**

These two bridges, one carrying northbound traffic and one carrying southbound, have deteriorated substructures, bridge bearings and structural steel. The project should include underwater concrete substructure repairs, substructure concrete repairs, bearing replacement, and structural steel repairs. The painting of the original structural steel should be considered in the near future.

- **MILE 51.6 - FALMOUTH SPUR INTERCHANGE UNDERPASS**

This structure carries the Interchange 52 traffic over the mainline. This bridge is one of the four remaining bridges with painted metal “pork chop” bridge rails. These rails are in poor condition due to rust and section loss and we have determined that repair and repainting of these bridge rails is not cost effective. We recommend removal of the bridge rails and their replacement with a rail system that meets current standards.

- **MILE 52.0 - BLACKSTRAP ROAD UNDERPASS**

The 2011 inspection of the Blackstrap Road underpass, originally built in the 1950’s, identified deterioration of the concrete deck, bridge girders and substructure concrete. Therefore, the work on this bridge should include replacement of the concrete deck and joints, and repairs to the bridge substructure. Raising the bridge superstructure is also recommended to minimize the potential for impacts by over height vehicles.

- **MILE 56.60 - HURRICANE ROAD UNDERPASS [Structurally Deficient]**
- **MILE 56.61 - HURRICANE ROAD OVER PISCATAQUA RIVER**

Our inspection of these structures identified several areas of deterioration including the concrete abutments, joints, and pavement. HNTB recommends joint and deck repairs, substructure repair, installation of a new waterproof membrane, and the replacement of the bituminous wearing surface.

- **MILE 70.8 - SNOW HILL ROAD UNDERPASS**

The 2012 inspection of the Snow Hill Road underpass, originally built in the 1950’s, identified deterioration of the concrete deck, bridge girders, and substructure concrete. Additionally, a load rating of the existing girders found them to be undersized by

modern standards. Therefore, the work on this bridge should include replacement of the superstructure (steel girders, concrete deck and joints), and repairs to the bridge substructure. Raising the bridge superstructure is also recommended to minimize the potential for impacts by over height vehicles.

- **MILE 78.9 - ANDROSCOGGIN RIVER OVERPASS**

The Androscoggin River bridge was built in 1955 as part of the construction of the turnpike extension. Both northbound and southbound structures were modified in 1995 to widen the roadways. The bridge is a non-redundant, fracture critical structure with various levels of deterioration throughout. In February 2012, the Androscoggin River Bridge (northbound and southbound structures) was modeled and load rated by HNTB Corporation. The load rating results showed that during traditional operations, meaning two lanes of traffic within the designated traffic lanes, the bridge is considered structurally adequate. However, recent inspections have revealed locations of moderate corrosion with measurable section loss to the primary longitudinal girders. HNTB recommends repairs and strengthening of the bridge in 2013.

- **MILE 81.6 - OLD LISBON ROAD UNDERPASS [Structurally Deficient]**

The 2012 inspection of the Old Lisbon Road underpass, originally built in the 1950's, identified deterioration of the concrete deck, bridge girders, and substructure concrete. Additionally, a load rating of the existing girders found them to be undersized by modern standards. Therefore, the work on this bridge should include replacement of the superstructure (steel girders, concrete deck and joints), and repairs to the bridge substructure. Raising the bridge superstructure is also recommended to minimize the potential for impacts by over height vehicles.

## BRIDGE REPAIR

Several structures such as the Nonesuch River and Potters Brook culverts and several overpass and underpass structures warrant minor concrete and joint repair. HNTB recommends that a contract be issued for bridge repair to address these issues. Mitigating these issues now should minimize the potential of more costly repairs in the future.

## BRIDGE PAINTING

HNTB does not recommend the issuance of any bridge painting contracts in 2013. However, we do recommend that the Authority fund a bridge painting program in the near future. The largest bridges on the turnpike, the Saco River bridges and the Androscoggin River bridges, warrant replacement of their paint systems in the near future.

## BRIDGE FILE UPDATE

In addition to completing bridge inspections and implementing a bridge repair program, the Authority also 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 2012, the following initiatives were undertaken to update the Authority's bridge files:

## LOAD RATING OF IN-SERVICE BRIDGES

The Maine Turnpike is continuing 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. Additionally, load ratings are used to evaluate overweight permit load requests and to prioritize bridge repair projects. These uses

require that bridge load ratings are reliable, uniformly consistent, and current. This load rating initiative, which began in late-2010, is scheduled for completion in December 2013. The results of these load ratings are reported to FHWA and are saved in the Authority's bridge files.

### SCOUR EVALUATIONS

Bridge scour, the erosion of soil material from around foundations caused by flowing water, is the number one cause of bridge failure in the United States. Minimizing bridge damage and ensuring public safety during flood events requires assessing every bridge crossing a water body as to its vulnerability to scour. Where necessary, appropriate scour countermeasures should be installed and effective scour monitoring programs should be initiated. Realizing this need, the Federal Highway Administration has made the completion of scour evaluations a national priority. To that end, the Maine Turnpike Authority completed scour evaluations for all turnpike-owned bridges crossing water bodies. These scour evaluations were completed in March 2012. The results of these scour evaluations are reported to FHWA and are saved in the Authority's bridge files.

### DRAINAGE

The roadway 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. All ditches will continue to be evaluated and recommendations for reconstruction will be made as required.

Numerous rivers and streams pass under the

turnpike through box culverts and culvert pipes. All box culverts and pipes 60 inches in diameter or greater are inspected every year. Pipes 36 to 54 inches in diameter are inspected on a five year cycle and were last inspected in 2008. All box culverts and pipes 60 inches in diameter and larger were inspected in 2012 (a total of 89 individual culvert ends), and were found to be in satisfactory condition.



TWIN 8' X 8' CONCRETE BOX CULVERTS CARRY THACHER BROOK BENEATH THE MAINLINE IN KENNEBUNK

The Maine Turnpike periodically issues contracts to address erosion or drainage issues that are not able to be addressed by the Authority's Maintenance forces due to their location or the type of equipment required to cost effectively complete the repair.

### HNTB RECOMMENDATION

HNTB has not identified any large areas of erosion that warrant repair by contract. However, we recommend the smaller areas noted in the detailed Annual Inspection Report be repaired or monitored by the Authority.

### GUARDRAIL AND CLEAR ZONE

The traversable unobstructed area provided beyond the edge of the through traveled way for the recovery of errant vehicles is defined as the clear zone. In many areas where an adequate clear zone does not exist, guardrail has been installed. Guardrail is located adjacent to the turnpike median and along the outside shoulder at various locations to minimize the potential of run-off-the-road collisions. The Authority has continued its program of upgrading large sections of their

clear zones each year.

On the outside shoulders, the leading end sections are removed and replaced with crash attenuating end treatments and the length of guardrail in many locations is increased. Median guardrail modifications include improving the safety of the median openings, which are the paved areas in the turnpike median without guardrail. The median guardrail modifications include closing some median openings that are not critical for authorized vehicles, and constructing new median openings at areas with adequate sight distance. The guardrail terminal end sections of the existing median openings, that remain, are replaced with impact attenuating units.

To date, the median and outside shoulder guardrail from Mile 2.2 to Mile 6.8, Mile 13.4 to Mile 43.2, Mile 62.6 to Mile 85.0, and Mile 92.8 to Mile 109.0 have been upgraded. Over the past several years, the guardrail improvement program has been included with the pavement rehabilitation contracts. Combining the guardrail and pavement work reduces the overall cost of the work by improving the efficiency of the construction.



[THE GUARDRAIL IMPROVEMENT PROGRAM HAS BEEN COMBINED WITH THE PAVEMENT REHABILITATION CONTRACTS](#)

The MTA has requested that HNTB conduct a study of their clear zones between Miles 52 and 63 and Miles 103 and 109. This study will involve identifying clear zone deficiencies such as steep slopes, ledge cuts, and fixed objects within the clear zone and will include an estimate of construction costs to mitigate them.

### 2013 RECOMMENDATION

In 2013, HNTB recommends the Authority include guardrail improvements from Mile 6.8 to Mile 13.5 be completed in conjunction with the Mile 7.4 to Mile 13.5 Pavement Rehabilitation Contract. Mile 85 to Mile 92.8 guardrail improvements should also be completed in conjunction with the 2013 Mile 88.6 to Mile 92.6 Pavement Rehabilitation Contract. As part of this work, HNTB recommends the review of median guardrail openings in this corridor to determine if they are in accordance with current turnpike practice. Median openings that are not in conformance with current turnpike practice should be closed.

### 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. Authorized vehicles are able to reverse direction without having to cross mainline traffic. These EVR's improve safety by minimizing the need for median openings. 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**

### 2013 RECOMMENDATION

HNTB recommends the Authority study the feasibility of constructing Emergency Vehicle Ramps at the Captain Thomas Road and Hackett Road locations. The feasibility study

should address safety, cost, environmental and property impacts.

## **LIGHTING**

The roadway lighting system is generally in good condition. During our inspection, we noted that most interchanges and service plazas had a few lights that were not in operation. 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 canopy, Exit 45 canopy, Crosby Maintenance, and Kennebunk Park & Ride. While LED lights are more costly to purchase, they have a much 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 projects to extend the acceleration lanes. This program continued in 2012 with the installation of LED luminaires at Interchange 45, Interchange 53, and Interchange 75 as part of the acceleration lane lengthening projects.

### **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 evaluating the cost effectiveness of the LED lighting.

## **SIGNAGE**

The MTA maintains its signs in generally good condition. Each year, the MTA routinely replaces signs that are damaged, faded, or otherwise in poor condition. A sticker with the month and year is affixed to each sign to allow MTA Maintenance staff to readily assess the sign's age.

The MTA Sign Shop fabricates the majority

of the regulatory, route marker, warning, and specialty signs on the Maine Turnpike. The Authority has also procured signs from the Maine Department of Transportation (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 annually 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.

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

### **HNTB RECOMMENDATION**

HNTB recommends that the MTA continue their current practice.

## **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 fair condition. Repairs to these components at various locations have been completed over the past several years both by MTA Maintenance forces and through separate toll plaza repair contracts.

More comprehensive additional repairs to

the concrete slabs, bumpers and tunnels are likely to be warranted in the near future to maintain these facilities in fair condition.

The following sections specifically address the MTA's mainline toll plazas.

### YORK TOLL PLAZA

In 2011, nearly 16 million vehicles passed through the York Toll Plaza. Approximately \$34 million in revenue was collected at York in 2011, accounting for about one-third of the total Maine Turnpike Authority toll revenue. Truck traffic (MTA Classes 3 through 6) accounted for 11.5% of the toll plaza transactions at York. About 63% of all traffic through York Toll Plaza (including nearly 84% of all trucks) utilized E-ZPass in 2011.

The existing York Toll Plaza was constructed in 1969 and is challenged by both operational and safety issues. Due to these issues, the Authority is in the process of developing a more comprehensive plan for this facility.



THE EXISTING YORK TOLL PLAZA HAS NUMEROUS DEFICIENCIES AND SAFETY CONCERNS

The Authority has studied the feasibility of an open road toll plaza and is in the process of understanding the feasibility of an all-electronic toll collection plaza to replace the current York Toll Plaza. This feasibility study is scheduled to be complete in the spring of 2013. At the completion of this study, the Authority will need to make a definitive

decision 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 can be developed.

### NEW GLOUCESTER TOLL PLAZA

In 2011, about 7.1 million vehicles passed through the New Gloucester Toll Plaza. The plaza collected approximately \$12.3 million in revenue, accounting for just over 12% of the total Maine Turnpike Authority revenue. Truck traffic (MTA Classes 3 through 6) accounted for 12.1% of the toll plaza transactions at New Gloucester. Overall, E-ZPass usage at New Gloucester in 2011 was about 60%. However, among commercial vehicles at this plaza, E-ZPass usage exceeded 88% for the year.

The MTA has scheduled the opening date of mid-2013 for the conversion of the New Gloucester Toll Plaza to Open Road Tolling. This conversion will allow E-ZPass patrons to safely proceed through the toll plaza at highway speeds without slowing or stopping. Additionally, cash toll collection equipment will be upgraded and necessary plaza pavement rehabilitation will be performed. The project will provide a cost effective next generation toll technology, create additional maintenance efficiencies for the future, and enhance audit functions for toll operations monitoring.

### WEST GARDINER AND GARDINER I-295 TOLL PLAZAS

HNTB was retained by the Authority to study the feasibility of converting the existing West Gardiner mainline toll plaza and the Gardiner I-295 toll plaza to ORT and to study the feasibility of replacements of these toll facilities. A report was submitted to the Authority in September.

The Authority should develop a long-term plan for the disposition of these toll facilities.

Once this plan is finalized, a comprehensive maintenance and operations plan should be developed for these toll facilities.

### SERVICE AREAS

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

In 2007, the new buildings were completed, and parking was improved for cars and trucks at the Kennebunk northbound and Kennebunk southbound service plazas. Each location has a service station, food services, and a convenience store.

The new service plaza buildings at Cumberland southbound and Gray northbound opened in early 2007. Each location has a Service Station, food services, and a convenience store.

A new service plaza located at the confluence of the turnpike (I-95) and I-295 in West Gardiner opened in November 2008. This plaza also has a service station, food services, and a convenience store.

These service plazas are in good condition.

### MAINTENANCE FACILITIES

Nine maintenance facilities are located along the turnpike. Each maintenance area has a unique combination of buildings ranging from maintenance garages to offices. A listing of buildings at the maintenance areas is shown in **APPENDIX A**. These areas are in fair-to-good condition.

Due to the increasing age of the turnpike, traffic, safety, driver expectations, and environmental requirements, substantially more maintenance efforts are necessary, which require more materials and equipment resulting in the need for additional covered operations and storage spaces. Covering de-icing material stockpiles is essential to minimizing environmental impacts and maximizing the effectiveness of the material. The existing equipment maintenance facility,

body shop and material storage buildings at the Gray Maintenance Area are undersized and outdated. To mitigate these issues, the MTA issued a construction contract and plans to demolish the existing body shop and salt storage building, construct a new equipment maintenance facility, convert the old equipment maintenance facility into the body shop, and build a new material storage building starting in 2012. This renovated facility will be fully operational in 2013.

All Maine Turnpike maintenance facilities have material sheds capable of storing an average winters worth of salt.

## 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.

### 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 24 toll agencies that operate over 46 toll roads, bridges and tunnels in 14 states from Maine to Virginia 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 22 million E-ZPass toll tags currently in circulation.



Membership in the E-ZPass Group allows the Authority 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 13.5 million active accounts.

### ONGOING ACTIVITIES

Lessons have been learned in the years since the deployment of E-ZPass, and strategic goals have been set to improve the services available to E-ZPass account holders, the Maine Turnpike Authority's E-ZPass Customer Service Center (CSC), and various departments within the organization in the future. Some specific initiatives being explored or implemented by the Authority relative to E-ZPass include:

- Deployment of Open Road Tolling (ORT) at the New Gloucester toll barrier.
- Investigating the possibility of allowing patrons to open new accounts via the Maine Turnpike E-ZPass website.

Tasks accomplished to date include:

- Immediately providing active E-ZPass tags at the retail counter for both new accounts and existing accounts.
- Implementing new cash lane technology in New Gloucester as a prototype for the entire highway as a means of reducing costs and improving efficiency.
- Providing electronic statements on the Authority's E-ZPass website for personal account.

### TOLL SCHEDULE

Toll rates will remain steady throughout most of 2012. For cash-paying passenger vehicles, the toll is currently \$2.00 at the York Toll Plaza; \$1.75 at the New Gloucester Toll Plaza; \$1.25 at the W. Gardiner/I-95 Toll Plaza; and \$1.00 at all other locations. E-ZPass rates, for the most part, are structured as distance-based fares, with fares assessed on a per-mile basis.

However, the Maine Turnpike Authority Board voted on August 16, 2012 to adjust toll rates beginning November 1, 2012. New toll rates for cash-paying passenger vehicles will be: \$3.00 at the York Toll Plaza; \$2.25 at the New Gloucester Toll Plaza; \$1.75 at the West Gardiner Toll Plaza; and \$1.00 at all other locations. E-ZPass fares will increase by 15% on November 1, 2012, 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 always equal to or less than the cash rate for a particular movement.



TOLL RATE ADJUSTMENTS ARE SCHEDULED FOR NOVEMBER 1, 2012

A passenger car traveling the full length of the turnpike pays \$5.00 in tolls - this equates to a per-mile rate of 4.7 cents. A five-axle tractor-trailer traveling the full length of the turnpike now pays \$20.00, or 18.7 cents per mile. These rates will increase to \$7.00 (6.6 cents per mile) for passenger cars and \$28.00 (26.4 cents per mile) for five-axle tractor trailers respectively. 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:

\* **COMMUTER**

The Commuter program is oriented toward patrons who use the turnpike on a daily basis. Patrons pay a quarterly fee for unlimited turnpike usage between the two interchanges of their choice. In 2010, commuter quarterly passes contributed a total of \$5.2 million in

revenue to the Authority. If these commuters had paid the full cash fare for their trips, they would have generated approximately \$12.7 million in revenue. Therefore, commuters effectively received a 59% discount (compared to the cash rate) for their trips.

The commuter program will likely be eliminated on November 1, 2012 and replaced with a Class 1 (Passenger Car) volume discount program. This program will provide a tiered discount to all Class 1 Maine E-ZPass travelers.

\* **PERSONAL**

Personal accounts are designed for occasional turnpike travelers. Trips are charged based on the lesser of the current cash fare or the rate per mile fare. In 2010, personal accounts contributed a total of \$12.3 million in revenue to the Authority. If all personal trips had been charged the full cash fare, they would have generated approximately \$17.2 million in revenue. Therefore, personal accounts effectively received a discount of nearly 29% over the cash fare.

\* **BUSINESS**

The Business program is 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. The average discount received by five-axle vehicles in this program is 21%. 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 additional discounts based

on their usage. By combining the average in-state E-ZPass discount of 21% with the “volume discount”, the average in-state commercial vehicle with a post-paid E-ZPass account saves an average of 33% over the cash rate.

This discount follows the below schedule:

<b>MONTHLY E-ZPASS CHARGES</b>	<b>DISCOUNT</b>
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

## 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 average trips per day (also known as Average Annual Daily Traffic, or AADT). In 2011, the Maine Turnpike logged 1.22 billion vehicle-miles traveled, while serving an average of about 166,000 trips per day.

**FIGURE 3** illustrates the trends of both of these measures over the past 12 years. It is interesting to note that neither trips nor VMT has experienced growth since 2004. In fact, traffic levels in 2011 were nearly identical (both in terms of trips and VMT) as the levels observed in 2003. In 2011, the number of annual trips declined by 1.1% compared to 2010, while total VMT declined by 0.7%. The sustained impact of high fuel prices and a sluggish economy

continue to limit traffic growth. Since the high-water mark of 2004, annual trips have declined by 3.2% while annual VMT has declined by 7.1%.

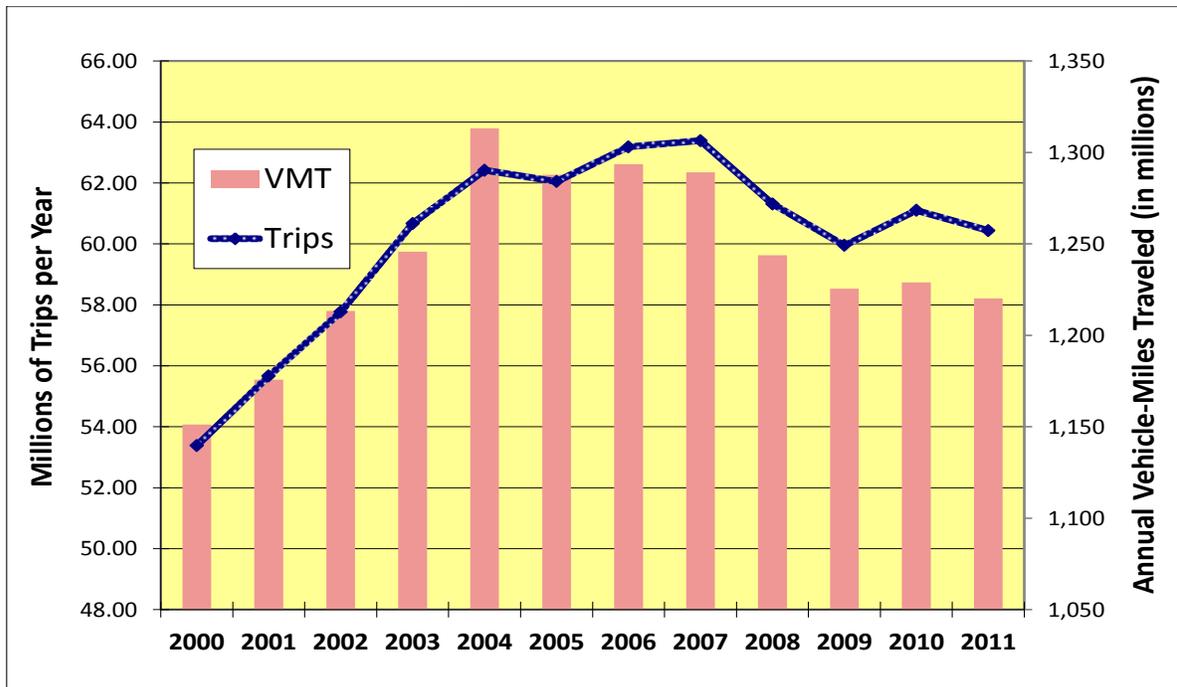
The average trip length on the Maine Turnpike was 20.2 miles in 2011. This is down about 6.4% since 2000, when the average trip was 21.6 miles. Much of this reduction in trip length is attributed to the growth in shorter trips in the Greater Portland area.

In 2010, a total of 14.5 billion vehicle-miles traveled were recorded in the State of Maine. Approximately 8.4% of all miles driven within Maine are driven on the Maine Turnpike.

### 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

**FIGURE 3 - VMT & ANNUAL TRIPS**



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 Maine Turnpike Authority is upgrading the count stations to side-fired radar technology to replace the loops. Upgrades to the count stations are expected to be complete by the end of 2012.

### 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.



A RWIS WAS INSTALLED ADJACENT TO THE SACO RIVER BRIDGE OVERPASS

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.

### 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.

Eleven 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.

Today, 11 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



HIGHWAY ADVISORY RADIO

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 update messages. The

**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

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 locations of these transmitters are summarized in **TABLE 5** above.

**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 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.

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

**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. 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. The MTA also provides designated bus pickup and drop-off areas in the Exit 32 and Exit 36 Park & Ride lots.

Traditionally, ZOOM buses serve about 125 travelers per weekday. Ridership on the ZOOM Turnpike Express for fiscal year 2011 was 33,900. This ridership level is below the record set in fiscal year 2009, but ridership levels remain stable and are above the pre-fiscal year 2008 average.

As a commuter service, ZOOM was affected by economic factors such as gas prices, unemployment, and the recent deep recession. ZOOM bus ridership has hovered between 25,000 travelers per year from fiscal year 2000 - 2007. Since fiscal year 2008, yearly ridership has been above 33,000.

Biddeford-Saco and Old Orchard Beach transit (operator of ZOOM) and Maine Department of Transportation have acquired two new buses with coach style seating to replace aging buses. In 2012, ZOOM acquired a 2008 40-passenger commuter bus on federal transfer from New York State.

MaineDOT was instrumental in acquiring this bus to further serve ZOOM passengers. The Maine Turnpike Authority also provided \$60,000 in matching funds to the Maine Department of Transportation for the purchase of the prior two buses. In 2012, the Maine Turnpike Authority agreed to install free Wi-Fi on the commuter service for the passengers and fully fund the Wi-Fi operation.

### **GO MAINE PROGRAM**

The GO MAINE Commuter Connections program, administered by GPCOG and funded by MaineDOT and the MTA, provides healthy, economical, and eco-friendly ways for Maine citizens from Kittery to Fort Kent to get to and from work. Major services for commuters and employers include: carpool and vanpool ride matching via the interactive website at [www.gomaine.org](http://www.gomaine.org); an express commuter vanpool program; promotion of

and partnership with transit, bicycling and pedestrian entities; and, the Emergency Ride Home Guarantee.

GO MAINE added nearly 750 commuters to the statewide network in the last year. More than 6,300 searched for rides of all types were recorded by the online, interactive ridematching system during that period. While gas prices have climbed to nearly \$4 per gallon, unlike in 2008, commuter demand has not followed suit. The impact of GO MAINE commuters remains significant, resulting in an aggregate 1,809,000 vehicle miles not traveled.

In September 2011, as part of an overall program review, MaineDOT and MTA undertook a comprehensive evaluation of the GO MAINE Commuter Connections Program including cost benefit analysis. Regarding the vanpool program, it became clear that funding for replacement and new vans has been inconsistent; limiting program expansion and making it difficult to place vans where they have been needed. It was determined that a private vanpool company(s) could offer vanpoolers consistent service and newer vans. MaineDOT and MTA decided to end the state-owned vanpool program and to retain and support the core GO MAINE program of ride matching services for carpools/vanpools and outreach to employers/employees statewide as the only option.

GO MAINE is assisting current van riders with the transition to private vanpools. The vanpool portion of GO MAINE will end in September of 2012.

### **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 usage from 2001 through 2012.

The following observations may be drawn from Table 6:

- Total Park & Ride lot usage has ranged 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 toward very gradual growth. A regression analysis suggests that average growth has been about 1.3% per year.
- In 2012, total usage was just over 700 vehicles. Given that a total of 1,229 spaces are available, the overall system is operating at just under 60% of its capacity.
- Two relative spikes in usage have been noted over the past decade:

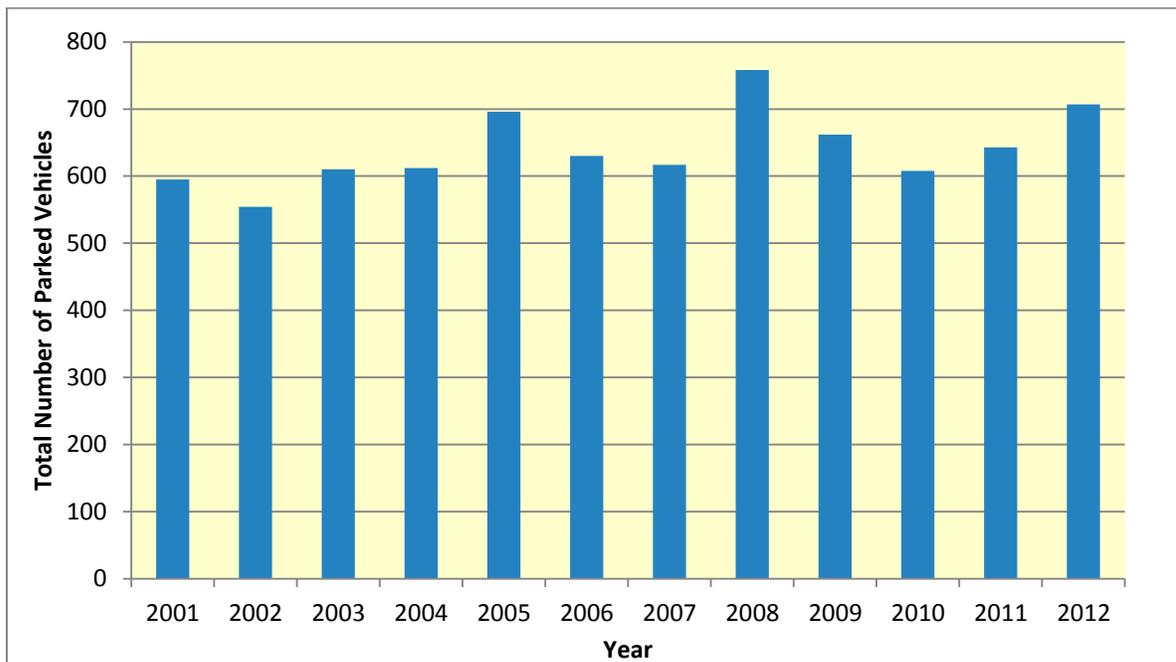
- The first was in the fall of 2005, when fuel prices rose rapidly in the wake of Hurricane Katrina.
- The second was in the spring of 2008, when fuel prices hit record highs.

**TABLE 7**, on the following page, summarizes Park & Ride lot usage at each location, as recorded during the 2012 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.

As Table 7 indicates, the Saco (Exit 36), Biddeford (Exit 32), and Auburn (Exit 75) lots are the busiest lots on the turnpike. Each serves in excess of 80 vehicles. In fact, heavy usage at the Saco lot on Industrial Park Road has triggered the recent (2011) creation of a new lot on the west side of Route 112, just across from Lund Road.

Five lots - York, Saco, Gray, and two in Lewiston - are currently operating at over 80% capacity. The capacity issue at the Saco

**TABLE 6 - PARK & RIDE LOT USAGE - 2001 THROUGH 2012**



**TABLE 7 - PARK & RIDE USAGE PER LOCATION - 2012**

Town	Location	Spaces	2012	% Capacity
York	Chases Pond Road, US-1 Connector	26	26	100%
Wells	Maine Turnpike Exit 19, adj. to Wells Trans Ctr.	100	34	34%
Kennebunk	Maine Turnpike Exit 25 SB, on Rt. 35	52	31	60%
Biddeford	Maine Turnpike Exit 32, on Rt. 111	155	90	58%
Saco	I-195 Exit 1, on Industrial Park Road	135	123	91%
Saco	I-195 Exit 1, overflow lot off Rte. 112	52	2	4%
Scarborough	Maine Turnpike Exit 42, adj. to toll plaza	66	26	39%
South Portland	Maine Turnpike Exit 45, on Rt. 703	111	37	33%
Portland	Maine Turnpike Exit 46, adj. to toll plaza	68	21	31%
Westbrook	Larrabee Road, near Maine Turnpike Exit 47	91	48	53%
W. Falmouth	Maine Turnpike Exit 53, adj. to toll plaza	19	8	42%
Gray	Maine Turnpike Exit 63, on US-202	74	64	86%
Auburn	Maine Turnpike Exit 75, on US-202	137	82	60%
Lewiston-1	Maine Turnpike Exit 80 NB on Plourde Pkwy	62	60	97%
Lewiston-2	Maine Turnpike Exit 80 SB on Plourde Pkwy	27	25	93%
W. Gardiner	Maine Turnpike Exit 102, near Rt. 126	54	30	56%
<b>Total</b>		<b>1229</b>	<b>707</b>	<b>58%</b>

lot has been alleviated by the addition of an overflow lot. However, the other lots have no such adjacent area to provide relief. These locations should be a priority in terms of identifying ways to increase capacity.

**TURNPIKE SAFETY AND LAW ENFORCEMENT**

In 2011, approximately 767 crashes were reported on the Maine Turnpike and its ramps. This is a 1% decrease from 2010 (773 crashes) as reported by the Maine Turnpike Authority. The majority of crashes are in the northbound direction (344 vs. 334), with the remaining 89 of the crashes occurring on the Maine Turnpike ramps.

From 2009 to 2011, there were thirteen (13) high crash locations (HCL) on the Maine Turnpike, which includes the mainline, toll plazas, and interchange ramps. This is an increase of five over the number of HCL's from 2008-2010. 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 locations is shown in **TABLE 8** on the following page. HNTB recommends that the crash data be reviewed as part of the ongoing Safety and Capacity Study 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.

In 2011, Troop G had an average of 27 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  
HCLs (2009 - 2011)**

	<i>Town/City</i>	<i>Location Description</i>	<i>Crashes</i>	<i>CRF</i>
<b>Northbound Mainline</b>	York	Mile Post 7.13, York Barrier Toll Plaza	11	3.73
	Wells	Exit 19 NB merge area to Burnt Mill Road	10	1.04
	New Gloucester	0.5 from New Gloucester Barrier to Mayall Road	10	1.29
<b>Southbound Mainline</b>	York	York Barrier	10	3.36
	West Gardiner	0.78 from High Street to W. Gardiner/Farmingdale TL	17	1.24
	Gray	0.84 miles from Shaker Road to Bald Hill Road	11	1.03
	New Gloucester	1.14 miles from Mayall Road to Bennett Road	17	1.25
	New Gloucester	0.48 miles from NG Barrier to Mayall Road	13	1.86
<b>Ramps</b>	Wells	0.27 miles, Exit 19 Southbound Off Ramp	8	3.71
	Kennebunk	0.51 miles, Exit 25 Southbound Off Ramp	9	2.57
	Biddeford	0.13 miles from local street, Exit 32 On Ramp	8	1.62
	West Falmouth	0.17 miles from local street, Exit 53 On Ramp	8	2.00
	Westbrook	0.07 miles from local street, Exit 48 Off Ramp	8	2.92

## 5 MAINE TURNPIKE AUTHORITY/MAINEDOT JOINT INITIATIVES

### OPERATIONS & MAINTENANCE

As part of LD 1538 (the MTA Omnibus Bill), the MTA will provide transportation dollars 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 MaineDOT Gray Bypass project, Maine Turnpike Gardiner Service Plaza project, and the paving of a two mile section of MaineDOT owned I-95 in Kittery where MaineDOT reimbursed the MTA the cost of the work included in their Mainline Pavement and Rehabilitation Project.

### 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 State of Maine in the spring of 2010. 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. This was followed by a report prepared by HNTB that focused on the usage characteristics of the lots that were surveyed. Information and findings from this report were 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, ZOOM, and MOVE! (formerly Kids in Transportation).

## **PROJECT DEVELOPMENT**

The Maine Turnpike Authority is currently coordinating with the MaineDOT on the development of two projects. In Lewiston, the Authority is planning to reconstruct the interchange ramps and replace the existing overpass structure. As part of this project, the MaineDOT is planning to implement improvements to the Plourde Parkway in the vicinity of the Maine Turnpike ramps. In Auburn, the MaineDOT is planning to upgrade the Exit 75/ Washington Street intersection.

## 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. Each study is noted in detail below:

- **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 Maine Turnpike Authority and Maine Department of Transportation 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 is being performed 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 will be presented to the Maine Turnpike Authority Board and MaineDOT to determine next steps.

A Final Study Report is anticipated to be completed in the fall of 2012. A copy of the draft Study Report can be found at [www.gorhamcorridor.org](http://www.gorhamcorridor.org).

- **CENTRAL YORK COUNTY STUDY**

The Central York County Study began in September of 2010 and will focus on connections between Central York County and the Maine Turnpike, with Route 1 forming a southeastern border of the analysis area. Traffic considerations along Route 1 itself will be a subject of the study to assess whether proposed improvements elsewhere have the potential to increase or decrease traffic levels on Route 1. This study will seek to integrate transportation and land use decision-making that will result in more effective connections between Central York County communities and the larger transportation network.

Current study findings indicate that Maine DOT upgrades to Route 111, a connector road in the vicinity of the Biddeford Interchange in conjunction with modifications to the interchange and improvements to Exit 19 in Wells, will primarily address mobility and safety needs identified as part of this Study.

The Study is anticipated to be completed in the fall of 2012. Current Study information can be found at [www.connectingyorkcounty.org](http://www.connectingyorkcounty.org).

### **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 is currently conducting this study for the MTA and completion is scheduled for late-fall 2012.

Based on the data collected and results of the analyses performed for this study, a series of recommendations will be presented. These recommendations will 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 will 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 STUDY**

The Exit 63 Ramp bridge over the Maine Turnpike is in need of repair. A traffic study was conducted in early 2012 to determine if additional capacity constraints would be realized in the near future that may warrant evaluating the relocation of the south-bound ramps and Exit 63 toll plaza to the west side of the turnpike. Traffic conditions were analyzed for the current year (2011) and a future design year (2031) to determine if and when capacity improvements are needed at Exit 63 and the adjacent intersection of the Gray Bypass. The study concluded improvements will be needed by 2016 in order to prevent peak-hour traffic failure. Two scenarios were developed that would add traffic capacity to the Exit 63 study area, one of which would relocate the Exit 63 toll plaza to the west side of the Maine Turnpike.

The MTA will undertake a more detailed evaluation of these alternatives beginning in the fall of 2012 to determine the most appropriate solution at Exit 63.

## 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 2013. 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 2012, we estimate this fund will have a balance of \$48,126,254. Including carryover projects from 2012, we estimate \$29,206,708 in Capital Improvement expenditures in 2013. Since the available balance in the Capital Improvement funds exceeds the estimated 2013 Capital Fund expenditures, no additional deposit to the Capital Improvement Fund is required.

We recommend \$0.00 be deposited in the Capital Improvement Fund for 2013 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 2013 is \$31,000,000.

### **OPERATION AND MAINTENANCE FUND**

Operation and Maintenance work is usually carried out by Authority staff 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 2013, exclusive of Reserve Maintenance and Capital Improvement expenditures, will be in the amount of \$39,401,916. This estimate is based on careful examination of 2012 expenditures and an evaluation of factors expected to influence these costs during 2013.

## 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

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

\* Gray Maintenance not updated to reflect ongoing 2012 construction.

## APPENDIX B - SCHEDULE OF INSURANCE

### Comprehensive Package Policy Including Turnpike Property

Underwritten by the Acadia Insurance Company; Agent: Cross Insurance

<u>Commercial Package</u>		<b>Policy No. CNP1000627-30</b>	<b>Term: October 1, 2012 to October 1, 2013</b>	
<b>Risk</b>	<b>Coverage</b>	<b>Limit</b>	<b>Remarks</b>	
Fire and Related Blanket	Buildings	\$ 81,677,400	Agreed Amount and Replacement Cost	
	Contents	\$ 20,907,000		
	Extra Expense & Loss of Rents	\$ 3,611,500		
	Boiler and Machinery	Included		
	Scheduled Property:			
	Miscellaneous Unscheduled			
	Locations	\$ 500,000		
	Bridges, Overpasses, and Underpasses	\$249,949,000		
	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	\$ 4,799,199		
b. Direct Physical loss or damage	Valuable Papers*	\$ 500,000		
	EDP Includes E-Z Pass Equipment*	\$ 1,292,714		
	Radar Counters, Radios, camera equipment, Signs and transmitting equipment			
	Message Boards	\$ 311,184		
	Flood & Earthquake	\$ 10,000,000		

\*Included in the Contents Limit on Policy

<u>Business Auto</u>		<b>Policy No. CAA1000628-30</b>	<b>Term: October 1, 2012 to October 1, 2013</b>	
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. TBA**

**Term: October 1, 2012 to October 1, 2013**

Comprehensive General Liability	
Each Occurrence Limit	\$1,000,000
General Aggregate Limit	\$2,000,000
Fire Legal Liability	\$ 100,000
Premises Medical Payments	\$ 10,000
Employee Benefits Liability	\$1,000,000

**Comprehensive Crime and Fidelity**

Underwritten by Travelers Casualty & Surety Co. of America; Agent TD Insurance, Inc

**Policy No. 104834551**

**Expires: November 1, 2012**

Crime	Coverage includes forgery theft/disappearance, destruction	\$ 500,000
	Computer fraud, Funds transfer fraud and employee dishonesty	\$2,000,000

**Worker's Compensation Self-Insurance Excess Policy**

Underwritten by ACE USA: Cannon, Cochran Management Service, Inc.

**Policy No. WCL C46447327 Expires: February 1, 2012 to February 1, 2013**

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

\$24,203,000 Total Estimated Annual Remuneration - February 2011 - 2012

Claim Service: Cannon, Cochran Management Service, Inc.

**Public Officials and Employees Liability**

Underwritten by State National Insurance Co.

Agent: Cross Insurance

**Policy No. UDA1040406.11 Term: October 1, 2012 to October 1, 2013**

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
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**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, 2011 - 2012	\$500,000	Insures faithful performance of duties by the individual
Douglas D. Davidson Treasurer Policy No. 105220484	January 1, 2012 - 2013	\$500,000	
Jonathan Arey Secretary Policy No. 105220456	January 2, 2012 - 2013	\$ 50,000	

**Fiduciary Responsibility**

Underwritten by Fidelity & Deposit Company of Maryland; Agent Sargent Tyler & West Insurance Agency

**Policy No. FRP 0004004 05**

**Term: November 7, 2011 - 2012**

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**

**Term: December 2013**

Obligee: Maine Insurance Bureau



**HNTB**