PRESENTED TO THE MAINE TURNPIKE AUTHORITY

OPERATION AND MAINTENANCE ANNUAL REPORT

2017

Prepared By:

HNTB

HNTB Corporation
Engineers Architects Planners

340 County Road, Suite 6-C
Westbrook, ME 04092

Telephone (207) 774-5155
Facsimile (207) 228-0909
www.hntb.com

HNTB

October 1, 2017

Maine Turnpike Authority
2360 Congress Street
Portland, ME 04102

Ladies and Gentlemen,

We are pleased to submit our 2017 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 March and June 2017; several additional visual inspections of turnpike facilities made during the year; and, on a careful evaluation of turnpike operation and maintenance procedures. We have periodically reported to the Executive Director, Chief Operations Officer, or Director of Engineering, on other items which warranted prompt attention.

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

Best regards,

Roland A. Lavallee

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

HNTB

Maine Turnpike

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Doug D. Davidson, Chief Financial Officer, and Authority Board Treasurer

Peter S. Merfeld, P.E., Chief Operations Officer

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Thomas J. Zuke, CPA, Member

Karen S. Doyle, Member, Ex-Officio

Maine Turnpike Authority
2360 Congress Street
Portland, Maine 04102

207.871.7771
www.maineturnpike.com

1 INTRODUCTION

This 2017 Operation and Maintenance Annual Report is based on the findings of a visual inspection of Maine Turnpike (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 facilities. Additionally, this report includes recommendations for the amount of funding required for the proper maintenance, repair, and operation of the turnpike to be deposited into the Capital Improvement fund, Reserve Maintenance fund, and the Operation and Maintenance budget. Finally, recommendations regarding insurance coverage are also 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. The turnpike also includes a three mile spur from the turnpike mainline to Route 1 and Interstate 295 in Falmouth. In 2016, the Authority purchased from the Maine Department of Transportation (MaineDOT) approximately 1,800 feet of I-295 roadway in Scarborough northeast of the existing Exit 44 Toll Plaza. The acquisition was in preparation for toll plaza upgrades in 2017 and includes the addition of several regulatory and warning roadside signs, an overhead sign bridge structure with signage, a cantilevered sign structure with signage, cable guardrail and two high mast lights. In early-2015, the Authority purchased from the MaineDOT 1.9 miles of the Interstate in Kittery. This purchase establishes the limits of the turnpike from approximately 75 feet north of the high level bridge over the Piscataqua River to Augusta. Almost two-thirds of the 111 mile turnpike is a four-lane divided highway; the other one-third is a six-lane divided highway. Turnpike facilities include 201 structures (183 bridges and 18 minor spans), 22 interchanges, 19 toll plazas, an administration building, including the E-ZPass Customer Service Center and the State Police offices, five service areas, and nine maintenance facilities.

The turnpike, designated as I-95, is one of the major north-south highways in the state, extending from Kittery to Augusta, Maine and is part of the National Highway System (NHS). The NHS is comprised of the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility. The NHS was developed by the United States Department of Transportation (DOT) in cooperation with the states, local officials, and Metropolitan Planning Organizations (MPOs). The Maine 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**). The turnpike is a safe and efficient highway that accommodated over 69 million trips with 83.2 million transactions in 2016.

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, a high weight limit (100,000 lb. trucks allowed), and the demands of the harsh northern New England climate. To ensure the sound condition and effective operation of the turnpike, the Authority funds and implements aggressive Operation and Maintenance, Reserve Maintenance, and Capital Improvement programs. The vigilance of the Authority through these programs has resulted in a well maintained and efficiently operated turnpike. The Authority looks to continue initiatives such as pavement rehabilitation, bridge rehabilitations and replacements, and system modernization to assure that turnpike facilities meet current safety standards as well as projected demands.

Turnpike Mainline

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 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 March and June of 2017. The opinions, statements and recommendations made herein are based solely on conditions revealed by visual inspection. No representation or warranty is made that all defects have been discovered or that defects will not appear later. Inspections of specific turnpike facilities are conducted whenever special attention is warranted.

A detailed Annual Inspection Report was submitted to the Authority in July of 2017, to be used in conjunction with this 2017 Operation and Maintenance Annual Report.

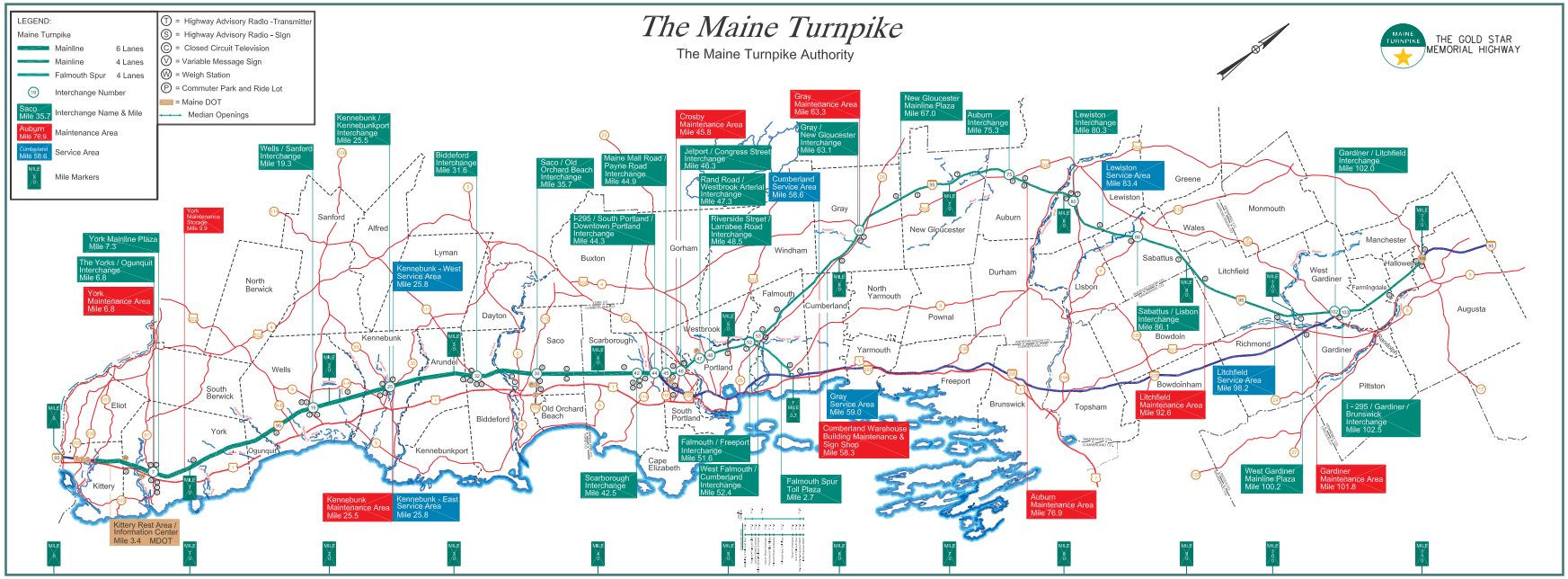

The Maine Turnpike
The Maine Turnpike Authority
THE GOLD STAR MEMORIAL HIGHWAY
LEGEND:
Maine Turnpike
Mainline 6 Lanes
Mainline 4 Lanes
Falmouth Spur 4 Lanes
Interchange Number
Saco Mile 35.7 Interchange Name & Mile
Auburn Mile 76.9 Maintenance Area
Cumberland Mile 59.6 Service Area
Mile Markers
= Highway Advisory Radio -Transmitter
= Highway Advisory Radio - Sign
= Closed Circuit Television
= Variable Message Sign
= Weigh Station
= Commuter Park and Ride Lot
= Maine DOT
Median Openings
York Mainline Plaza Mile 7.3
The Yorks / Ogunquit Interchange Mile 6.8
York Maintenance Area Mile 6.0
York Maintenance Storage Mile 6.0
Wells / Sanford Interchange Mile 19.3
Kennebunk / Kennebunkport Interchange Mile 25.5
Biddeford Interchange Mile 31.6
Kennebunk - West Service Area Mile 25.8
Kennebunk Maintenance Area Mile 25.5
Kennebunk - East Service Area Mile 25.8
Kittery Rest Area / Information Center Mile 3.4 MDOT
Saco / Old Orchard Beach Interchange Mile 35.7
Maine Mall Road / Payne Road Interchange Mile 44.9
I-295 / South Portland / Downtown Portland Interchange Mile 44.3
Scarborough Interchange Mile 42.5
Crosby Maintenance Area Mile 45.8
Jetport / Congress Street Interchange Mile 46.3
Rand Road / Westbrook Arterial Interchange Mile 47.3
Riverside Street / Larrabee Road Interchange Mile 48.5
Falmouth / Freeport Interchange Mile 51.6
West Falmouth / Cumberland Interchange Mile 52.4
Gray Maintenance Area Mile 63.3
Gray / New Gloucester Interchange Mile 63.1
Cumberland Service Area Mile 59.6
Gray Service Area Mile 59.0
Cumberland Warehouse Building Maintenance & Sign Shop Mile 58.3
Falmouth Spur Toll Plaza Mile 2.7
New Gloucester Mainline Plaza Mile 67.0
Auburn Interchange Mile 75.3
Auburn Maintenance Area Mile 76.9
Lewiston Interchange Mile 80.3
Lewiston Service Area Mile 83.4
Sabattus / Lisbon Interchange Mile 86.1
Litchfield Service Area Mile 98.2
Litchfield Maintenance Area Mile 92.6
West Gardiner Mainline Plaza Mile 100.2
Gardiner Maintenance Area Mile 101.8
Gardiner / Litchfield Interchange Mile 102.0
I - 295 / Gardiner / Brunswick Interchange Mile 102.5
Wells
Sanford
Alfred
Lyman
North Berwick
Kennebunk
Dayton
Arundel
Biddeford
Kennebunkport
Saco
Scarborough
Old Orchard Beach
Cape Elizabeth
Buxton
Gorham
Westbrook
Portland
South Portland
Falmouth
Cumberland
North Yamouth
Yarmouth
Windham
Gray
New Gloucester
Pownal
Freeport
Brunswick
Topsham
Durham
Auburn
Lisbon
Bowdoin
Bowdoinham
Richmond
Greene
Lewiston
Wales
Sabattus
Monmouth
Litchfield
West Gardiner
Gardiner
Farmingdale
Manchester
Hallowell
Augusta
Pittston
South Berwick
Eliot
York
Ogunquit
Kittery

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 2017 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 although the vegetative cover is in poor condition. The width of the median makes maintenance of the vegetation impracticable. The typically gentle slopes of the median allow the sand buildup to be stable and replace the vegetation. Most side slopes are stable with good vegetative cover. Slope locations requiring minor corrective action are detailed in the Annual Inspection Report. Corrective actions are warranted due to loss of berm drop-off (gravel shoulder directly adjacent to the paved shoulder) and minor gullying which may lead to an erosion issue if not mitigated. In most instances, the Authority's Maintenance forces can accomplish this work, or this work should be completed by Contract. In 2017, berm drop-off corrections were completed as part of Contract 2017.01 (pavement rehabilitation work from Mile 80.7 to Mile 88.6) and Contract 2017.02 (pavement rehabilitation work from Mile 64.4 to Mile 68.5). These contracts are currently ongoing.

HNTB RECOMMENDATION

We recommend that berm drop-off corrections be completed by Authority Maintenance forces, or included as part of the pavement rehabilitation projects as warranted. A program to eliminate vegetation from the median, such as paving the median, should be considered. This would simplify maintenance and eliminate the need to mow such a narrow area so close to traffic.

PAVEMENT

TABLE 1
PAVEMENT CONTRACTS 2001 - 2016

Year	From MM	To MM	Roadway
2017	64.4	68.5	NB/SB
	80.7	88.6	NB/SB
	Int. 86		
2016	54.5	57	NB/SB
	59.5	64.4	NB
	57	64.4	SB
	Int. 63		
2015	51	54.5	NB/SB
	68.5	74.9	NB/SB
	FS0.5	FS3.8	EB/WB
	Int. 46		
2014	23.3	30.3	NB/SB
	102.6	109.1	NB/SB
	57.0	59.5	NB
2013	7.4	13.5	NB/SB
	88.0	92.0	NB/SB
	Int. 7 & 44		
2012	30.0	35.0	NB/SB
	92.0	98.0	NB/SB
	102.0	Plaza	NB/SB
	Int. 42, 45 & 53		
2011	13.3	23.3	NB/SB
	Int. 19 & 48		
2010	2.2	7.0	NB/SB
	44.0	51.2	SB
	45.0	51.2	NB
2009	35.3	43.9	SB
	35.4	44.5	NB
2008	57.0	64.4	SB
	80.8	85.2	NB/SB
	Int. 102 & 103		
2007	64.4	68.5	NB/SB
	25.0	Plaza	NB/SB
	58.0	Plaza	SB
	59.0	Plaza	NB
	Int. 36		
2006	45.3	45.8	SB
	74.9	80.8	NB/SB
	Int. 80		
2005	59.4	64.8	NB
	85.2	88.6	NB/SB
2004	98.0	102.6	NB/SB
	102.6	109.1	NB/SB
	Int. 86		
2003	56.6	58.3	NB
	68.4	74.9	NB/SB

Roadway and shoulder pavement is in generally good condition and the riding quality of the turnpike continues to be acceptable.

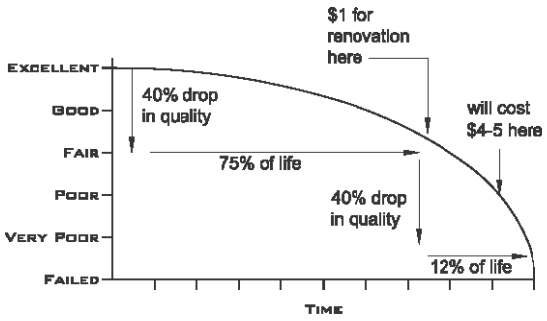
In 2017, approximately 19.9% of the turnpike pavement (based on centerline miles) is rated in good or new condition, 52.2% is rated in generally good condition, 27.4% is rated in fair to generally fair condition, and 0.4% is rated in marginal condition. This is down from 2016 when 42.9% of the centerline miles was reported in good or new condition. It should be noted that as part of the FHWA published Federal Register (82 FR 5886) final rule established in May of 2017 the performance measures for pavement on the National Highway System have been updated to include only "Good" and "Poor" conditions. The Authority, HNTB, and the MaineDOT will work together over the next year to ensure that next year's reporting is consistent with the new rules.

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

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 ten 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



Starting in 2014, pavement rehabilitation contracts specified polymer modified asphalt to alter several characteristics of the asphalt, each of which is intended to improve pavement durability, weatherability and performance. This practice has continued into 2017. The areas using this additive will be evaluated to determine if its use is providing adequate benefit. Due to poor condition of the pavement between Mile 80.7 and Mile 88.6, pavement rehabilitation was performed under Contract 2017.01. The rehabilitation work from Mile 86.0 to Mile 88.6 consists of milling and filling the 12-foot wide lanes and the median shoulder. Additional crack repairs were performed before paving back in the milled area. The rehabilitation work from Mile 80.7 to Mile 86.0 included crack repair, shim and full width overlay. Pavement rehabilitation between Mile 64.4 and Mile 68.5 was also performed under Contract 2017.02. This rehabilitation included shimming and overlaying the two 12-foot wide lanes and shoulders. These contracts are currently ongoing.

PAVEMENT REHABILITATION

The Federal Highway Administration (FHWA) is currently developing performance

measures for condition of pavement which will likely be implemented by the MaineDOT. The Authority is coordinating with the MaineDOT on these measures.

HNTB RECOMMENDATION

Due to generally fair conditions of the pavement between Mile 75 and Mile 80 and between Mile 98 and Mile 103, and to maintain pavement quality and roadway safety, HNTB recommends the rehabilitation of the northbound and southbound roadway in that area. The rehabilitation should consider removing 2" of existing travel lane pavement, crack sealing and/or repair, shimming, and paving a new surface. These projects should also include repairs to the drainage system such as catch basin repair and repairing pipe outlets.

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

BRIDGES AND MINOR SPANS

The Authority is responsible for the operation and maintenance of 183 bridges, defined as spans measuring more than 20 feet in length, and 18 minor spans measuring between 10 and 20 feet in length. The Authority's Operation and Maintenance Program for these structures involves multiple aspects including developing and maintaining a detailed inventory of Authority-owned structures, scheduling and completing condition and safety inspections, compiling repair and replacement recommendations, and the development and execution of contracts for repair or replacement. The goals of this program are to accurately forecast bridge and minor span repair needs, identify critical deficiencies, repair and upgrade structures on a timely basis, and to maintain the safe condition of Authority-owned bridges and minor spans.

This report quantifies and discusses bridges and minor spans separately. The FHWA National Bridge Inspection Standards requires that bridges are inspected on a predetermined schedule and that the inspection data is reported in the National Bridge Inventory. No federal inspection or reporting requirements exist for minor spans. However, the MaineDOT collects and monitors condition data for minor spans for internal use. Since 2013, the inspection of Authority-owned minor spans has been completed and reported using bridge inspection procedures. This process provides inspection consistency between the Authority and MaineDOT and provides documentation of the condition of the Authority's minor spans.

INSPECTION PROGRAM

Inspections of Authority-owned bridges and minor spans are completed by qualified inspectors in accordance with the National Bridge Inspection Standards established by FHWA. There are several different types of inspections that occur based on structure type, information needed, and federal regulations. The different inspection types are discussed in more depth in the following sections. Once these inspections are complete, the condition ratings for each structure are compiled and transmitted to the MaineDOT for inclusion in the National Bridge Inventory. The inspection data also becomes part of the Authority's records which are used to develop the rehabilitation and repair program.

In March 2013, FHWA issued a memorandum regarding new legislation established under the Moving Ahead for Progress in the 21st Century Act (MAP-21). This new legislation modifies existing inspection standards for bridges located on the National Highway System, and requires the collection of element level data for those structures beginning October 1, 2014. In 2013, AASHTO released

an updated Manual for Bridge Element Inspection that incorporated the new FHWA element level data collection standards, followed by interim revisions in 2014 providing additional guidance on element level coding. Element level data was recorded for the first time in 2016 as part of the bridge inspections and was reported to the MaineDOT and FHWA in the spring of 2017.

The MaineDOT decided to move from PONTIS as their main inspection recording platform to InspectTech. The Authority has been actively coordinating with the MaineDOT on the software change and the MaineDOT has given the Authority access to the online InspectTech database and software to facilitate consistency for all bridge data in the state.

The following is a discussion of the bridge inspection program components:

Routine Inspections

All Authority-owned bridges and minor spans undergo routine inspections on an annual basis. The purpose of these inspections is to identify potential safety concerns, document areas of deterioration and to record condition ratings for key bridge components. The 2017 routine inspection by HNTB identified that the bridges and minor spans along the turnpike range from fair to very good condition. Structures that have been rehabilitated or reconstructed during the past 20 years were found to be in fair to very good condition, while those that have never been rehabilitated were generally noted to be in fair condition.

Underwater Inspection

The FHWA requires an inspection of underwater bridge elements every five years. Accordingly, an underwater inspection was performed in September 2016 for 26 bridges and culverts that carry the turnpike over rivers and water bodies where certain elements of the substructures or culverts cannot be inspected as part of the routine inspection. No serious structural deficiencies were noted during the 2016 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.

The next underwater inspection should be completed in 2021.

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.

ANDROSCOGGIN RIVER BRIDGE

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 almost 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 in spring 2017. No significant concerns were identified other than necessary substructure and bearing repairs which are being addressed in a 2018 repair contract. The next fracture critical inspection of this structure should be scheduled for 2019.

Pin-and-Link Assembly at the York River Bridge

At the York River Bridges, the girder framing system includes pin-and-link assemblies. Because routine inspection procedures are insufficient to identify defects in the pins, ultrasonic testing of these elements is necessary. A detailed inspection and ultrasonic testing of the pin-and-link systems at the York River Bridges was completed in December 2011. No serious structural deficiencies were noted during the inspection. The next detailed inspection of the pin-and-link assemblies was scheduled for 2016, however, a 2015 rehabilitation contract involved disassembling, reassembling, and painting the pin-and-links. This was justified as an acceptable detailed inspection procedure and ultrasonic testing was not performed. The next detailed inspection including ultrasonic testing should be scheduled for summer 2020.

Special Damage Inspections

Special damage inspections are conducted as a result of collisions or when a condition requiring a more detailed inspection is noted. When this occurs, HNTB conducts an immediate field investigation to determine the extent of the damage and whether it is safe for traffic to continue using the structure. In some cases, emergency repairs or lane restrictions are required to maintain traffic on the structure.

The Dennett Road Northbound Overpass at Mile 0.6 southern expansion joint was identified to have an adjacent pothole exposing the backwall. HNTB assessed the condition based on provided field visit photos and made recommendations to the Authority for repairs.

The York River Southbound Overpass at Mile 5.2 concrete wearing surface was identified to be in poor condition during routine inspections and by the Authority's maintenance group. HNTB conducted a special inspection and made recommendations to the Authority for wearing surface repairs. The most severe location has since been repaired by the Authority's maintenance group. Prior to repairs being performed, the Authority requested that some investigative testing be performed to understand the nature of the wearing surface issues and the overall extent. Those investigations are currently underway.

The Dutton Hill Road Underpass at Mile 59.9 was struck by an overheight vehicle on October 5, 2016. HNTB conducted a special inspection and concluded that the damage was minor and did not present any load capacity concerns. HNTB made the recommendation to the Authority that the gouges on the bottom flange, due to the collision damage, be removed by grinding.

Hackett Road Underpass, Mile 76.9

The Hackett Road Underpass at Mile 76.9 was struck by an overheight vehicle on an unknown date following the 2016 annual

TABLE 2 - BRIDGE AND MINOR SPAN TABULATION

Bridges						
Year	Group V	Group IV	Group III	Group II	Group I	Total
2017	8	68	107	0	0	183
2016	9	67	108	0	0	184
2015	8	72	104	0	0	184
2014	5	67	105	0	0	177
2013	6	73	98	0	0	177

Minor Spans						
Year	Group V	Group IV	Group III	Group II	Group I	Total
2017	1	6	11	0	0	18
2016	1	6	11	0	0	18
2015	1	4	13	0	0	18
2014	1	6	11	0	0	18
2013	1	7	10	0	0	18

bridge inspection completed on June 14, 2016. On April 19, 2017, HNTB conducted a special inspection and made a recommendation to the Authority for the replacement of the damaged north fascia girder and repair the gouges on bottom flange of the south fascia girder. Part of the recommendation included temporarily restricting traffic with drums to avoid overstressing the damaged girder.

The Cobbosseecontee Stream Overpasses at Mile 99.2 bridge decks and asphalt wearing surfaces were identified to be in poor condition during routine inspections and by the Authority's maintenance group. HNTB conducted a special inspection and made recommendations to the Authority for localized pavement and deck repairs. These overpass bridges are scheduled to be replaced in the next few years and therefore the recommended repairs were simply to provide a short term solution until the structures are replaced.

INSPECTION FINDINGS

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

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

TABLE 2, Bridge and Minor Span Tabulation, illustrates the number of structures in each group category based

TABLE 3 - TABULATION OF STRUCTURALLY DEFICIENT DECK AREA

Structurally Deficient Bridges				
Year	All Authority Owned Bridges		NHS Authority Owned Bridges	
	Deficient Area (SF)	Percentage	Deficient Area (SF)	Percentage
2017	39,361	2.29%	17,680	1.94%
2016	11,771	0.68%	0	0.00%
2015	19,682	1.14%	0	0.00%
2014	58,209	3.37%	24,121	2.65%
2013	55,311	3.20%	24,121	2.65%
2012	27,445	1.59%	6,975	0.77%
2011	149,014	8.62%	98,216	10.80%
2010	163,052	9.43%	106,811	11.75%
2009	235,112	13.60%	129,484	14.24%

on the 2017 Annual Bridge inspection. Data from previous years has also been provided for reference. The grouped structures are then further prioritized for repair or replacement considering factors such as safety, bridge age, importance, rate of deterioration, scour susceptibility, load capacity, and traffic volumes.

Higher priorities are typically assigned to bridges and minor spans that are classified as "structurally deficient". A structure classified as structurally deficient is not necessarily unsafe; however, these structures require repair and maintenance in the near future to ensure their continued safe operation. There are several key structural components that are considered by FHWA in reaching this classification. These components primarily include: Deck, Substructure, Superstructure, and Culvert. If any one of these components have a condition rating of 4 or less (indicating that an element is in "poor" condition), the bridge is considered structurally deficient.

MAP-21 was passed into law in July 2012 and establishes performance standards for State Agencies. MAP-21 requires that no more than 10% of the total deck area of National Highway System (NHS) bridges may be classified as structurally deficient for three consecutive years. If this requirement is not met, FHWA will require that a greater portion of the State Agency's Federal Funding be reapportioned to bridges on the NHS. Maine Turnpike bridges located on the NHS network are included in the State of Maine's NHS bridge inventory.

Since 2009, a primary focus of the Authority's bridge program has been to repair or rehabilitate structurally deficient bridges, and good progress has been made. The 2009 inspection noted 24 structurally deficient bridges equaling 13.60% of all Authority-owned bridges and 14.24% of Authority-owned bridges on the NHS. With the rehabilitation of seven structurally deficient bridges completed in 2014 and 2015, the percentage of structurally deficient deck area was reduced to 0.68% of all Authority-owned bridges and 0.00% of Authority-owned bridges on the NHS. In 2017, the percentage of structurally deficient deck area increased slightly to 2.29% of all Authority-owned bridges and 1.94% of Authority-owned bridges on the NHS. Three of the four structures identified as structurally deficient are already programmed for repair or rehabilitation. The current percentages place the Authority well below the National and State of Maine structurally deficient bridge averages of 6.7% and 8.8% respectively. A Tabulation of Structurally Deficient Deck Area by year is provided in **TABLE 3**. It should be noted that as part of the FHWA published Federal Register (82 FR 5886) final rule established in May of 2017 the performance measures for

TABLE 4 - STRUCTURALLY DEFICIENT STRUCTURE SUMMARY

Structure Name	Structure Type	Mile Marker	Status
Crediford Brook	Minor Span	18.75	Programmed for rehabilitation in 2018.
Mousam River (Northbound)	Bridge	25.00	To be repaired in 2017.
Cobbosseecontee Stream (Northbound)	Bridge	99.20	Programmed for rehabilitation in 2019. Emergency deck repairs completed by MTA maintenance scheduled for 2017.
Cobbosseecontee Stream (Southbound)	Bridge	99.21	Programmed for rehabilitation in 2019. Emergency deck repairs completed by MTA maintenance scheduled for 2017.

bridges on the National Highway System have been updated to include only percent area of deck for "Good" and "Poor" condition bridges. The Authority, HNTB, and the MaineDOT will work together over the next year to ensure that next year's reporting is consistent with the new rules.

During the 2017 bridge inspection, three structurally deficient bridges and one minor span were identified. **TABLE 4**, Structurally Deficient Structure Summary, provides a listing of Maine Turnpike structures currently classified as "structurally deficient". The table also identifies programmed repair or rehabilitation dates for these bridges. The Authority's planned bridge and minor span rehabilitation program is reviewed and adjusted after each year's inspection program. We recommend that the repair or replacement of structurally deficient bridges continue to be prioritized.

2017 BRIDGE REHABILITATION AND REPLACEMENT PROJECTS

Several rehabilitation and repair contracts are ongoing in 2017. These contracts include deck replacement, repairing concrete deterioration, replacing substandard bridge elements such as joints, railings and end posts, increasing bridge under clearance, improving load capacity, and other miscellaneous repairs.

The following is a brief summary of the 2017 bridge work:

MILE 1.25 ROUTE 236 UNDERPASS

The work includes joint repairs and strip patch repairs of the bituminous wearing surface.

MILE 1.60 RAMP H UNDERPASS

The work includes replacement of bridge-mounted sign supports and signs.

MILE 4.8 BEECH RIDGE ROAD UNDERPASS

The work includes substructure and concrete wearing surface repairs.

MILE 6.2 CIDER HILL ROAD UNDERPASS

The work includes substructure repairs, deck repairs, and removal and replacement of the bituminous overlay and waterproof membrane.

MILE 6.8 YORK INTERCHANGE UNDERPASS

The work includes substructure and joint repairs.

MILE 35.7 SACO INTERCHANGE OVERPASS (WB & EB)

The work includes replacement of all abutment bearings.

MILE 63.1 GRAY INTERCHANGE UNDERPASS

The bridge was removed.

MILE 63.3 WEST GRAY ROAD/RTE. 202 UNDERPASS

The work includes substructure, deck,

and joint repairs along with removal and replacement of the bituminous overlay and waterproof membrane.

Mile 75.3 Exit 75 Overpass (NB & SB)

The work includes substructure repairs, deck repairs, and removal and replacement of the bituminous overlay and waterproof membrane.

Mile 76.9 Hackett Road Underpass

The work includes substructure, deck and joint repairs, along with the removal and replacement of the bituminous overlay and waterproof membrane.

Mile 79.4 River Road Overpass (NB & SB)

The work includes substructure, deck and joint repairs, along with the removal and replacement of the bituminous overlay and waterproof membrane.

Mile 79.6 Goddard Road Overpass (NB & SB)

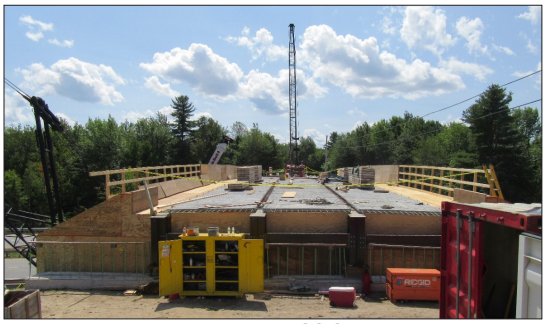
The work includes substructure, deck and joint repairs, along with the removal and replacement of the bituminous overlay and waterproof membrane.

Mile 80.8 Ferry Road Overpass (NB & SB)

The work includes substructure repairs, deck repairs, and removal and replacement of the bituminous overlay and waterproof membrane.

Mile 90.0 Maxwell Road Underpass

The work includes demolition of the existing one lane bridge and the construction of a new two lane bridge with increased vertical clearance.



Maxwell Road Underpass, Mile 90.0

Mile 103.6 High Street Underpass

The work includes substructure repairs, deck repairs, and removal and replacement of the bituminous overlay and waterproof membrane.

Miles 108.3 Winthrop Road Underpass

The work includes the removal and replacement of the bridge superstructure (steel beams and concrete deck), and substructure repairs. In addition, the work includes raising the bridge to increase the vertical clearance to minimize the potential for damage from an overheight vehicle.

Bridge Painting - Multiple Locations:

- Mile 33.4 - Boom Road Underpass
- Mile 42.0 - Two Rod Road Underpass
- Mile 52.7 - Leighton Road Underpass
- Miles F0.60 - Auburn Street Underpass
- F1.60 - Falmouth Road Underpass

Bridge Painting

Snow Fence Installation - Multiple Locations:

- Mile 1.25 - Route 236 Underpass
- Mile 4.8 - Beech Ridge Road Underpass
- Mile 6.2 - Cider Hill Road Underpass
- Mile 6.8 - York Interchange Underpass
- Miles 76.9 - Hackett Road Underpass

Utility Support Repairs - Multiple Locations:

- Mile 15.21 - Tatnic Road Underpass
- Mile 35.30 - North Street/Rte. 122 Underpass
- Mile 42.00 - Two Rod Road Underpass

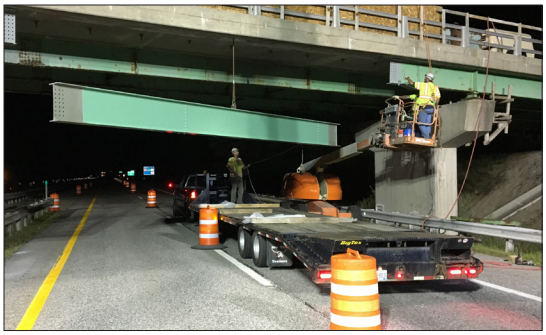
2017 EMERGENCY BRIDGE REPAIRS

Emergency bridge repairs are periodically required and are usually related to a collision. Minor repairs are completed by Authority Maintenance forces; however, significant repairs warranting heavy equipment or specialty services such as heat straightening are completed through construction contracts. The Authority's program of increasing the vertical clearance of underpasses during rehabilitation projects has resulted in a decrease in the number of yearly overheight vehicle impacts. However, a number of structures remain with substandard vertical clearance and these structures continue to be struck by overheight vehicles.

The Dennett Road Northbound Overpass at Mile 0.6 southern expansion joint was identified to have an adjacent pothole exposing the backwall. HNTB assessed the condition based on provided field visit photos and made recommendations to the Authority for repairs. The repair work will be performed in 2017.

The York River Southbound Overpass at Mile 5.2 concrete wearing surface was identified to be in poor condition during routine inspections and by the Authority's maintenance group. HNTB conducted a special inspection and made recommendations to the Authority for wearing surface repairs. The repair work will be performed in late 2017.

The Hackett Road Underpass at Mile 76.9 was struck by an overheight vehicle on an unknown date following the 2016 annual bridge inspection completed on June 14, 2016. On April 19, 2017, HNTB conducted a special inspection and made a recommendation to the Authority for the replacement of the damaged north fascia girder and the gouges on bottom flange of the south fascia girder be removed by grinding. The repair work is under contract.



HACKETT ROAD UNDERPASS GIRDER REPAIR, MILE 76.9

The Cobbosseecontee Stream Overpasses at Mile 99.2 bridge decks and asphalt wearing surfaces were identified to be in poor condition during routine inspections and by the Authority's maintenance group. HNTB conducted a special inspection and made recommendations to the Authority for localized pavement and deck repairs. The repair work is under contract.

HNTB RECOMMENDATION (2018 BRIDGE REHABILITATION PROJECTS)

Based on the findings of the 2017 Bridge Inspection Program, HNTB recommends the following bridge repair and rehabilitations:

MILE 0.6 DENNETT ROAD UNDERPASS

The work includes substructure and joint repairs along with the installation of a snow fence.

MILE 18.75 CREDIFORD BROOK CULVERT

The work includes concrete repairs including underwater repairs.

MILE 31.3 ROUTE 111 UNDERPASS

The work includes substructure repairs, deck repairs, and removal and replacement of the bituminous overlay and waterproof membrane.

MILE 31.6 BIDDEFORD INTERCHANGE UNDERPASS

The work includes wingwall settlement repair, deck and parapet repair, along with the removal and replacement of the bituminous overlay and waterproof membrane.

Mile 45.4 Running Hill Road Underpass
The work includes substructure repairs, deck repairs, and removal and replacement of the bituminous overlay and waterproof membrane.

Mile 58.3 Blackstrap Road Underpass
The work includes substructure repairs, deck repairs, and removal and replacement of the bituminous overlay and waterproof membrane.

Mile 59.9 Dutton Hill Road Underpass
The work includes substructure repairs, deck replacement, and raising the bridge.

Mile 66.2 Weymouth Road Underpass
The work includes substructure repairs, deck repairs, raising the bridge, and removal and replacement of the bituminous overlay and waterproof membrane.

Mile 75.8 Danville Corner Underpass
The work includes substructure repairs, deck repairs, and removal and replacement of the bituminous overlay and waterproof membrane.

Mile 78.90 Androscoggin River Overpass (NB)
The work includes substructure repairs.

Mile 78.91 Androscoggin River Overpass (SB)
The work includes substructure repairs.

Mile 87.5 Fisher Road Underpass
The work includes substructure repairs, deck repairs, and removal and replacement of the bituminous overlay and waterproof membrane.

Mile 91.9 Center Street Underpass
The work includes substructure repairs, deck repairs, and removal and replacement of the bituminous overlay and waterproof membrane.

Mile 99.20 Cobbosseecontee Stream Overpass (NB)
The work includes widening the bridge by adding a girder line, deck replacement, substructure widening, and raising the structure to improve freeboard and roadway profile.

Mile 99.21 Cobbosseecontee Stream Overpass (SB)
The work includes widening the bridge by adding a girder line, deck replacement, substructure widening, and raising the structure to improve freeboard and roadway profile.

Mile 102.5 I-295 Southbound Underpass
The work includes widening substructure and replacement of concrete deck.

HNTB Recommendation (2018 Bridge Painting Projects)

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, over 50 Authority-owned bridges have been repainted, with the most recent being Eagles Nest Overpass and Hunts Hill Road Overpass in addition to multiple underpasses such as Boom Road, Two Rod Road, Leighton Road, Auburn Street, and Falmouth Road.

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

HNTB recommends the following structures be painted in 2018:

- **MILE 6.2 CIDER HILL ROAD UNDERPASS**
- **MILE 14.8 CAPTAIN THOMAS ROAD UNDERPASS**
- **MILE 101.7 ROUTE 126 UNDERPASS**
- **MILE 103.6 HIGH STREET UNDERPASS**

BRIDGE OPERATIONS AND MAINTENANCE PROGRAM

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

- **DECKS**
  Sweep (power broom) and flush with ordinary water (preferably power rinse) particularly the gutter areas. Patch obvious delaminations and potholes, and scaling. Remove loose spalls over lanes of traffic.
- **PARAPETS**
  Power rinse.
- **SUPERSTRUCTURE**
  Pressure rinse the beams/girders and bearings particular at the joint locations.

The Authority maintains detailed bridge files as part of their bridge Operation 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.

LOAD RATING OF IN-SERVICE BRIDGES

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

In 2017, the Authority began the process of rating all their applicable bridges for the new "Emergency Vehicle" requirements laid out in the FHWA Memorandum on "Load Rating for the FAST Act's Emergency Vehicles" dated November 3, 2016. The rating computations are in progress and will be completed to meet the FHWA deadlines.

SCOUR EVALUATIONS

In 2012, the Authority had HNTB complete scour evaluations for 24 river crossings (14 bridges and 10 culverts). The evaluations were completed to ensure compliance with the FHWA National Bridge Inspection Standards, Title 23, CFR 650, Subpart C. Individual reports for each structure were created, and in summary, the evaluations concluded that no Authority owned bridges or culverts were scour critical.

FUNCTIONALLY OBSOLETE

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

SIGN STRUCTURES

The Authority is responsible for 85 sign structures, with structure types that include overhead sign bridges, mast-arms, space frames, VMS on butterfly supports, and

bridge-mounted signs. These structures carry regulatory, route marker, warning, and specialty signage. Routine or ground inspection of the Authority's sign structures is conducted yearly as part of the routine bridge inspection and no significant issues have been observed.

OVERHEAD SIGN BRIDGE MAINLINE SB, MILE 7.8

In addition to the routine inspections, a hands-on inspection of the Authority's 42 overhead sign structures and two space frames was conducted by HNTB in early-2015. A concern noted during these inspections was missing and broken sign clips on multiple sign structures. The sign clips were then incrementally replaced over the 2015 construction schedule. These hands-on inspections included one aluminum sign structure at Mile 8.3 southbound which is required to be inspected every two years per the FHWA guidance. In 2017, a hands-on inspection was performed on the same sign structure to follow FHWA guidance. The structure is in good condition and no significant findings were noted.

HNTB RECOMMENDATION

We recommend the continuation of the routine inspection practice in 2018. Additionally, we recommend a hands-on inspection of the one aluminum sign structure at Mile 8.3 southbound in early-2019, and the inspection of all overhead sign structures in 2021. This recommendation is consistent with the FHWA guidance that a typical two tower, two or four post sign bridge with a steel superstructure, be hands-on inspected every six years while aluminum structures should be hands-on inspected every two years.

DRAINAGE

The roadway's surface drainage system (consisting of side slopes, drainage ditches, catch basins, and cross culverts) was inspected and found to be in fair to good condition. An important component of roadway drainage is allowing for storm water to sheet flow from the pavement down the side slope. The presence of winter sand buildup under guardrail prevents the sheet flow resulting in a channelized flow which may lead to an erosion issue.

Routine berm, ditch, and side slope maintenance and repairs are required for proper upkeep of the highway. Minor drainage, slope repairs, and maintenance are completed by the Authority while larger repairs are completed by contractors. Catch basin repair, pipe repair, winter sand removal, and slope repairs are completed as part of the pavement rehabilitation projects, while isolated areas requiring significant repair are typically bid as a Contract and completed separately. We recommend the continuation of this practice.

Numerous rivers and streams pass under the turnpike through box culverts and culvert pipes. All box culverts and pipes 60" in diameter or greater are inspected annually (a total of 76 individual culvert ends). In addition to inspecting the culvert ends, HNTB also inspected the inside of these culverts that could be accessed safely. These culverts were found to be in satisfactory condition.

Culvert pipes 36" to 54" are inspected every five years and were last inspected in 2013. They are assumed to be in satisfactory condition. These pipes should be inspected again in 2018.

Prior to 2013, cross-culverts 30" and smaller were not inspected as part of the Annual Inspection. The Authority requested the inspection of these culverts over the five year period starting in 2013 and ending in 2017. **TABLE 5**, on the following page, provides a summary of when these Pipe Inspections were

completed; the final grouping was inspected this year.

TABLE 5 - PIPE INSPECTIONS

Year Inspected	Locations Culverts 30" and Smaller
2017	Mile 25 to Mile 50
2016	Mile 0.3 to Mile 25
2015	Mile 60 to Mile 68
	Mile 75 to Mile 90
2014	Mile 50 to Mile 60
	Mile 68 to Mile 75
	Falmouth Spur
2013	Mile 90 to Mile 109

These pipes were found to be in good to poor condition. Many of the cross-culverts are reinforced concrete under the core roadway but change to metal under the side slopes. While the concrete portion of the culverts are generally in fair to good condition, many of the metal pipe ends are in poor condition. Common issues observed in the metal pipe ends are rusted flow lines, disconnected joints, and disconnected metal flared end sections. Common issues observed in the reinforced concrete pipe ends are inlets and outlets that are either partially or completely obstructed by heavy vegetation or debris and buried inlets and outlets. These conditions lead to erosion issues on the side slope which may eventually impact the roadway.

Periodically the Authority issues contracts to repair drainage issues that the Authority's Maintenance forces cannot repair due to their location or the type of equipment required to cost effectively complete the repair.

HNTB RECOMMENDATION

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

GUARDRAIL AND SAFETY IMPROVEMENTS

The Authority has continued its program of improving safety by upgrading large sections of the roadway side slopes each year. These improvements include removal of vegetation and guardrail upgrades.

GUARDRAIL

The FHWA has a September 29, 1994 policy, and subsequent memorandums in 2005, 2010, 2014, and 2016, that all roadside hardware (guardrail) installed on the National Highway System comply with the crash testing and evaluation criteria contained in the Manual for Assessing Safety Hardware (MASH) or its predecessor the National Cooperative Highway Research Program (NCHRP Report 350 - published in 1993). FHWA further suggested that the non-crashworthy hardware be removed or replaced with crashworthy roadside hardware at the earliest possible opportunity in concert with the maintenance of the roadway.

A program to upgrade Maine Turnpike guardrail by construction contract was initiated in 1996. This program includes the following:

- Installation of thrie beam guardrail at select locations;
- Closing median openings that are not critical for authorized vehicles;
- Constructing new median openings at areas with adequate sight distance;
- Replacing non-crash attenuating guardrail terminal end sections with impact attenuating units;
- Adjusting guardrail heights;
- Improving strength of guardrail at locations where the guardrail was in close proximity to bridge piers;
- Adding guardrail; and,
- Constructing new terminal end sections.

This work continued in 2017 with upgrades to the guardrail from Mile 64.4 to 68.5 and from Mile 80.7 to 88.6 as part of pavement rehabilitation and clear zone improvement contracts.

Emergency Vehicle Ramps

Emergency vehicle ramps allow for emergency vehicles to enter and exit the mainline turnpike at gated locations. In addition, these ramps allow maintenance vehicles to change direction without crossing the mainline. These ramps allow for improved safety by improving emergency vehicle response time and improved winter maintenance operations. In 2017, a contract for the construction of a new emergency ramp at Hackett Road at Mile 76.9 off the southbound mainline was awarded. Additionally, the Authority is in the process of developing four emergency ramps at Dutton Hill Road at Mile 59.9, Weymouth Road at Mile 66.2, Bennett Road at Mile 68.6, and Blackstrap Road at Mile Falmouth Spur 0.30.

Roadway Side Slopes

A program to clear vegetation in close proximity to the roadway commenced in 2012. This clearing improves safety by removing vegetation in close proximity to the roadway facilitating winter maintenance by minimizing shading of the roadway. **TABLE 6** illustrates the Side Slope Clearing completed to date. Additionally, the Authority plans to perform side slope clearing in the near future between Mile 92.6 and Mile 100.8 which was previously cleared in 2012, but due to standard of practices changing, more clearing is required. Future clearing will also be performed between Mile 85.0 and Mile 85.6 and between Mile 42.0 and Mile 47.7.

Table 6 - Side Slope Clearing

Year	Locations
2017	Mile 44.7 to Mile 61.8
	Falmouth Spur
2016	Mile 75 to Mile 83
	Mile 99 to Mile 109
2015	Mile 63 to Mile 75
2014	Mile 51 to Mile 63
2013	Mile 82.9 to Mile 93.0
2012	Mile 92.8 to Mile 100.3

Roadway Side Slope Clearing Falmouth Spur (Before)

Roadway Side Slope Clearing Falmouth Spur (After)

HNTB RECOMMENDATION

HNTB recommends that guardrail continue to be monitored and repaired as needed. Upgrades such as adjusting guardrail height are still needed as a regular activity and should be reviewed yearly for possible inclusion in the paving rehabilitation contracts. We also recommend that any entity installing or maintaining roadside safety hardware, including Authority Maintenance forces and contractors, are trained for completing this work in accordance with the manufacturer's instructions.

In addition, HNTB recommends that the Authority continue to study the feasibility of constructing other emergency vehicle ramps at select locations. We also recommend that the Authority continue the clearing of vegetation in close proximity to the roadway. Clearing was completed from Mile 48.0 to 53.0 and F0.0 to F3.4 in 2017.

LIGHTING

The roadway lighting system is generally in good condition. During the inspection, HNTB noted that most interchanges and service plazas had a few lights that were out. Authority Maintenance forces replace these lights as required to maintain acceptable lighting levels.

In 2010, the Authority implemented a pilot study by installing Light-Emitting Diode (LED) lighting at the Cumberland Service Area, Exit 46 Area, the Exit 45 canopies, Crosby Maintenance, and the Kennebunk Park & Ride lot. While LED lights are more costly to purchase, they have longer service life and use substantially less electricity to operate. In 2011, LED light fixtures were installed at Interchange 48 as part of a construction project to extend the acceleration lanes. This program continued in 2012 with the installation of LED luminaires at Interchanges 45, 53 and 75 as part of the acceleration lane lengthening projects; and in 2014 with the installation of LED highway lighting installed at the newly reconstructed Lewiston Interchange ramps; and with the replacement of the existing high mast 1,000 watt light fixtures at Saco and West Gardiner with LED fixtures. In 2015, LED lights were installed at Exit 46. As a result of these changes, light fixture maintenance and power consumption has been reduced. In 2016, the Authority issued a construction contract to replace existing light fixtures with LED fixture from Mile 44.9 to Mile 103.4. MTA continued the lighting upgrades with Contract 2017.12 which will replace existing light fixtures from Mile 6.8 to 44.9, and including spot improvements north to Mile 100.2.

In 2015, HNTB inspected 30 weathering steel high mast light poles and determined they were all in generally good condition. HNTB prepared a May 20, 2015 Summary Report which recommended repairs of some minor deficiencies such as loose anchor bolts, damaged grout pads, and loose access panels. Additionally, during the 2017 annual inspection two high mast light poles at Mile 0.5 were found to have large pockets of 100% section loss. Due to the section loss the poles were removed from service in May of 2017.

HNTB RECOMMENDATION

The Authority should continue to maintain their roadway lighting system on a regular basis to minimize the number of outages and replace all remaining non-LED lighting fixtures with LED lighting fixtures.

We recommend the high mast lights be inspected on a two year interval. The next inspection of high mast lights should be completed in 2019.

SIGNAGE

The Authority maintains its signs in generally good condition. The Authority's Sign Shop fabricates the majority of the regulatory, route marker, warning, and specialty signs on the Maine Turnpike and routinely replaces signs that are damaged, faded, or otherwise in poor condition. In 2012, the Authority contracted with 3M to capture sign attributes,

locations, and photographs for all signs within the turnpike right-of-way. Included in 3M's deliverables were sign photos and a GIS sign database. The Authority has been enhancing the database with nighttime retro-reflectivity inspection results, sign updates, and other pertinent data. This database is used to assist with the scheduling of sign replacements.

In 2016, the Authority initiated a four-year plan to upgrade and replace their existing guide signs. The second contract for this work was awarded in early-2017 and this work is ongoing.

HNTB Recommendation

The guide signs replacement program from 2016 through 2019 should be continued. HNTB also recommends the Authority continue to monitor, maintain, and replace the regulatory, route marker, warning, and specialty signs as needed and initiate the process of replacing all existing guide signs since they are close to the end of their expected life.

Roadway Markings

The Authority's Maintenance forces re-stripe the turnpike once a year to maintain roadway markings in good condition.

The Authority is also utilizing reflectorized pavement marking tape installed in grooves at interchange ramps and to supplement the white skip lines on the mainline. The tape improves visibility of the pavement markings in wet conditions and at night.

Double yellow lines in two-way traffic areas in the interchanges are typically painted twice a year. Newly paved areas are also painted twice per year. The paint lines are adequately maintained.

HNTB Recommendation

HNTB recommends the Authority continue their current roadway marking practices.

Toll Plazas

Toll Collection Equipment

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

The Infinity Toll System offers the following advantages to the Authority:

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

The Infinity Toll System has been installed at both the New Gloucester and West Gardiner mainline tolls and its implementation is complete at Exits 19, 25, 42, 46, 47, 48 and nearing completion at Exits 32, 36 and 53.

NEW GLOUCESTER TOLL PLAZA ORT, MILE 67.0

Construction of the new system is substantially complete at Exit 52 (the Falmouth Spur) as part of the conversion of this toll plaza to Open Road Tolling (ORT). The new toll system is functioning as intended and is scheduled for installation at the remaining toll plazas.

TOLL PLAZAS

The 19 toll plazas comprised of tollbooths, canopies, utility buildings and other structures are in various stages of repairs and upgrades as part of the system-wide upgrade to the Infinity Toll System discussed in the previous section. The tollbooths and canopies are rated in fair to good condition while some other components, such as concrete slabs, bumpers and tunnels, are rated in poor to good condition.

MAINLINE TOLL PLAZA

The six mainline plazas shown in Table 7 generated over $105 million in toll revenue in 2016. This accounted for over 70% of all toll revenue collected by the Authority. The remaining toll revenue was generated by the 11 side toll plazas. A Tabulation of Traffic, Revenue and E-ZPass Usage is illustrated in **TABLE 7**.

Some items of note:

- York Toll Plaza accounts for almost half of all Maine Turnpike revenue.
- In general, E-ZPass usage appears to decline the farther north you go on the system.
- E-ZPass usage among trucks is extremely high - in the vicinity of 90% at most mainline plazas.

YORK TOLL PLAZA

The existing York Toll Plaza was constructed in 1969 and is challenged by both operational and safety issues and the existing toll system has reached the end of its useful life. The plaza is rated in fair to poor condition.

EXISTING YORK TOLL PLAZA - CONSTRUCTED IN 1969

Considering the condition of the York Toll Plaza, decisions relating to the replacement of the toll system should consider the practicality

TABLE 7 - TABULATION OF TRAFFIC, REVENUE AND E-ZPASS USAGE

Traffic Characteristic	York	Exit 44	Exit 52	New Gloucester	W. Gardiner I-95	Gardiner I-295
Annual Traffic (millions)	15.1	7.1	3.3	5.2	3.6	8.7
Annual Revenue ($millions)	$59.5	$9.4	$3.8	$16.8	$7.3	$8.5
Share of Total Turnpike Revenue	40.7%	6.4%	2.6%	11.5%	5.0%	5.8%
Truck% (MTA Classes 3-6)	10.9%	6.0%	4.9%	13.1%	10.0%	8.0%
E-ZPass Usage (overall)	71.0%	65.9%	66.3%	65.6%	64.7%	62.0%

of installing the toll system in the deficient infrastructure, or whether the infrastructure should be upgraded at the existing location, or an alternate location selected for a new plaza.

The Authority is in the process of developing a comprehensive plan and implementation schedule for this facility. A study of All Electronic Tolling (AET) at York has been completed and concluded AET was not practical. The Authority conducted another study to determine the best location to construct an ORT Plaza to replace the existing York Toll Plaza. ORT lanes allow E-ZPass patrons to safely proceed through the toll plaza at highway speeds without slowing or stopping. This study included examining the existing location as well as other locations and determined that the best location would be at approximately Mile 8.8. The project is currently in the permitting and design phase.

New Gloucester Toll Plaza

On April 1, 2013, the Authority opened the ORT lanes at New Gloucester and all the cash toll collection equipment was replaced. A number of elements were replaced or rehabilitated as a part of this work including the slabs. As a result, this plaza is rated in good condition.

West Gardiner I-95 Toll Plaza

On November 22, 2016, the Authority opened the ORT lanes at West Gardiner I-95 Toll Plaza and all the cash toll collection equipment was replaced. A number of elements were replaced or rehabilitated as a part of this work including the slabs. As a result, this plaza is rated in good condition.

West Gardiner I-295 Toll Plaza

The existing West Gardner I-295 Mainline Toll Plaza is rated in fair to poor condition and is functionally obsolete. The age of the toll plaza, the outmoded conditions of the existing tollbooths, canopy and tunnel, and location under an existing bridge, make upgrade and expansion of the existing facility problematic.

Exit 44 I-295 Toll Plaza

Exit 44 connects the Maine Turnpike to I-295 south of Portland. This plaza is vitally important to the interstate transportation network and is rated in fair to good condition, although the plaza is becoming functionally obsolete. Construction to convert the Exit 44 toll plaza to ORT began in 2017 and is scheduled for completion in 2019.

Exit 52 Falmouth Spur Toll Plaza

Exit 52 connects the Maine Turnpike to Interstate I-295 north of Portland and is an integral part of the transportation network. As with Exit 44, this plaza is also becoming functionally obsolete. The conversion of the Exit 52 Toll Plaza to ORT is currently under construction. This construction will also include upgrades to the existing facility.

Side Toll Plazas

The Authority has programmed the replacement of all the cash toll collection equipment at all toll plazas along with an infrastructure repair and upgrade. This program is currently ongoing and its implementation is complete or substantially complete at Exits 19, 25, 32, 36, 42, 46, 47, 48, 53, and 63. Construction ranging from toll system upgrades to toll plaza replacements are ongoing at Exits 32, 36, 46 NB, 53, and 63. This construction is scheduled to be complete in 2017. Tollbooths, canopies, concrete slabs, bumpers, and tunnels at these locations are rated in good condition.

The schedule for the upgrade at the Exit 45 toll plaza had been dependent on the outcome of the Gorham East West Corridor Study. The tollbooths and canopy at this location are rated in fair to good condition while other components, such as concrete slabs, bumpers and tunnels, are rated in poor to

fair condition. This dependency has changed as replacement parts for the toll equipment are becoming more difficult to attain. The Authority is undertaking a study regarding the options for replacement of the interchange to serve the current need and the possibility of a Gorham Connector.

Construction for toll system upgrades to include automatic vehicle classification at Exit 86 will be complete in 2017. Similar toll system upgrades are programmed for 2018 at Exit 75.

SERVICE AREAS

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

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

Each location has a service station and food services. At the three larger plazas there is also a convenience store. Cumberland and Gray service plazas were converted from Starbucks/convenience stores into Burger Kings with drive-throughs in 2016. The Authority is currently studying the possibility of improving the Kennebunk Service Area to understand the short-term and long-term needs at the location. The service plazas are in good condition, however, HNTB noted several areas where repairs are warranted at the service plaza buildings. These areas should be repaired as part of ongoing maintenance activities.

MAINTENANCE FACILITIES

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

HNTB RECOMMENDATION

In 2016, maintenance reports for the maintenance areas were created and then subsequently updated as part of the 2017 Annual Inspection. HNTB recommends the Authority's Maintenance forces actively address the maintenance items reported. In addition, the Authority plans to extend several wooden 8-bay garages built circa 1960's by 15 feet to allow for the storage of modern plow trucks. Gray and Kennebunk are being programmed for 2018.

3 TOLL COLLECTION SYSTEM

ELECTRONIC TOLL COLLECTION

The Authority 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%-4% of all trips on the Maine Turnpike.

NEW GLOUCESTER TOLL PLAZA

E-ZPASS GROUP

On February 1, 2005, the Maine Turnpike Authority implemented its current ETC system, E-ZPass. One of the greatest benefits to the Authority for converting to E-ZPass was admittance into the E-ZPass Group, formerly known as the Inter Agency Group (IAG). The E-ZPass Group includes 37 toll agencies that operate toll roads, bridges and tunnels in 16 states from Maine to North Carolina to Illinois. The E-ZPass Group's primary mission is to enable E-ZPass members and affiliated toll operators to provide the public with a seamless, accurate, interoperable electronic method of paying tolls and fees while preserving and enhancing the E-ZPass program. The backbone of the E-ZPass Group's system is a network of customer service centers and computer systems used to support the 32.7 million E-ZPass toll tags currently in circulation. As a result, many travelers from other states pay their toll to the Maine Turnpike in a cashless mode through the transponder. This reduces congestion and the need for larger toll plazas.

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 20.1 million active accounts that accounted for nearly 3.0 billion transactions in 2016.

TOLL SCHEDULE

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

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

A passenger car traveling the full length of the turnpike pays $7.00 (6.6 cents per mile), while five-axle tractor trailers pay $28.00 (26.4 cents per mile). 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 Authority, the following discount programs are available:

VOLUME BASED DISCOUNT PROGRAM

The Authority offers the Volume Based Discount Program to all Maine E-ZPass account holders. Under this system, the total fare for travelers of the turnpike is discounted by 25% if more than 30 one-way trips occur in a month, and a 50% discount if 40 or more one-way trips occur in a month.

The Volume Based Discount Program replaces the previous Commuter Discount Program that began in 1982 through 2012. The new discount program will be applied as shown in the **TABLE 8** below.

PERSONAL

Patrons who drive a motorcycle, passenger car, van, or pickup with four tires or less can establish a Personal Account. Advantages of a personal account include having tolls automatically deducted from your pre-paid balance when traveling on the Maine Turnpike or other E-ZPass compatible facilities, no-stop payment of tolls and often paying less than but never more than the cash fare. Trips are charged based on the lesser of the current cash fare or the E-ZPass rate per mile fare.

TABLE 8
VOLUME BASED DISCOUNT PROGRAM

Number of Trips (per month)	Volume Based Discount Program (personal accounts only)
30 - 39	25% discount applied to monthly account trips
40 +	50% discount applied to monthly account trips

Passenger cars with a Maine-based E-ZPass account save an average of 33% compared to the cash rate.

BUSINESS

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

POST-PAID PLAN VOLUME DISCOUNT

Commercial vehicles having a post-paid E-ZPass account with the Maine Turnpike Authority receive an additional "volume discount" based on the amount of their monthly tolls. **TABLE 9** describes how the Post-Paid Plan Volume Discount program works. In essence, all tolls in excess of $50 for the month are discounted by up to 20%. On a system-wide basis, post-paid E-ZPass business accounts receive an average volume discount of nearly 18%. This discount program is in addition to the already-discounted E-ZPass fares described earlier. For post-paid commercial vehicles the combined effect of the E-ZPass discount and the volume discount is to produce an average savings of nearly 40% compared to the cash fare.

TABLE 9
POST-PAID PLAN VOLUME DISCOUNT

E-ZPass Charges (per month)	Post-Paid Plan Volume Discount (business accounts only)
Between $0 and $50	No discount
Between $50 and $100	10% discount off everything over $50
Between $100 and $300	$5 discount plus 15% off everything over $100
Over $300	$35 discount plus 20% off everything over $300

4 TRAFFIC MANAGEMENT AND TECHNOLOGY

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

Two common measures of turnpike traffic are annual Vehicle-Miles Traveled (VMT) and annual number of trips. In 2016, the Maine Turnpike logged 1.34 billion VMT while serving nearly 70 million trips.

FIGURE 3 illustrates the trends of both measures over the past 17 years. VMT and Annual Trips both experienced rapid growth in the early-2000's, but following this period of growth, both measures became relatively stagnant for about a decade with increases in the last few years. VMT in 2016 was higher than it was in the high-water mark of 2004 by about 2%.

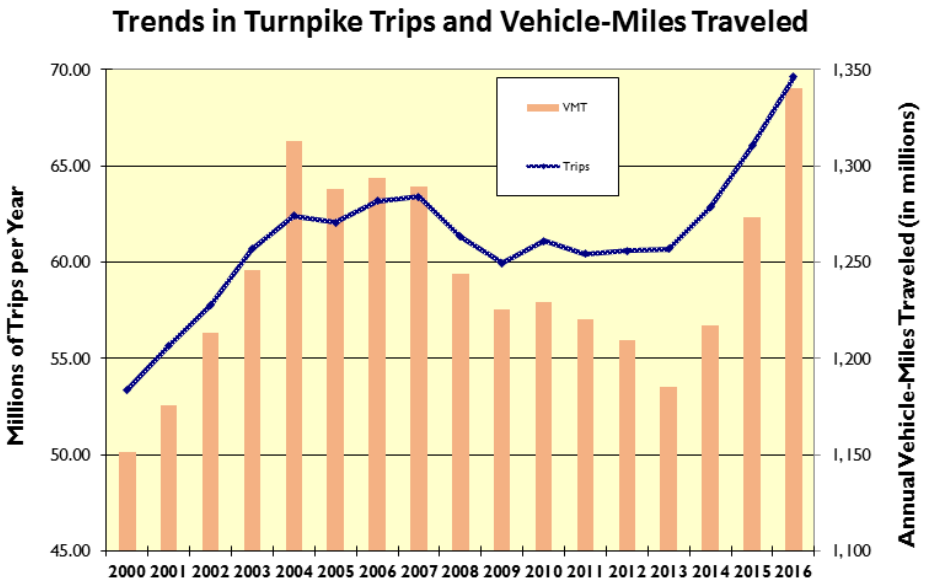
In 2016, the annual number of trips rose by 5.1% compared to 2015; this was the most rapid trip-related growth that the turnpike has experienced since 2003. In fact, the total number of trips served in 2016, 69.6 million, was the highest annual trip total in Maine Turnpike history. Similarly, VMT in 2016 registered an increase of 5.0% compared to 2015; this was the most rapid growth in VMT since 2004. In short, traffic experienced robust growth in 2016.

The average trip length on the Maine Turnpike was 19.3 miles in 2016, identical to the trip length observed in 2015. This suggests that trip patterns changed very little from 2015 to 2016. The overall trip length is down by over 10% since 2000, when the average trip was 21.6 miles. Some of this reduction in trip length may be attributed to the growth in shorter trips in the Greater Portland area. Another factor appears to be that travelers making the long-distance trip between Greater Portland and Augusta are tending to use I-295 as opposed to the turnpike.

COMMUNICATION

The Authority is reviewing its needs for fiber optic line in the Portland area. Conduit was installed under the Stroudwater River Bridge at Mile 46.7 in 2014, under the MCRR bridges

FIGURE 3 - VMT AND ANNUAL TRIPS



at Mile 47.9, and Falmouth Spur at Mile 0.4 in 2015 to facilitate the future installation of fiber optic lines. This fiber optic line will be used to improve turnpike communication.

Reduced Speed Limit Signs

As part of an overall effort to reduce vehicle speeds and crashes during poor travel conditions, Authority Maintenance forces added eight new flashing "45 MPH Reduced Speed Limit" signs that are controlled remotely from the Turnpike Communication Center. These new signs supplement the existing 10 manually operated reduced speed limit signs. In 2017, new signs were included southbound at Gray interchange and Northbound at Exit 53 interchange to replace older signs at sign shop. The next phase is a conversion to allow the existing signs to be controlled remotely by the Turnpike Communication Center. In addition, as new ORT lanes are opened they will include variable speed limit signs.

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 currently utilizes side-fired radar technology to continuously record traffic volume and speed data. The system enables the Authority to collect the data automatically. Seven count stations covering Exits 1, 2, and 3 (ramps plus mainline) were installed in February 2016. One count station at Exit 2 southbound is scheduled for installation in the near future.

Roadway Sensors

Roadway Weather Information Systems (RWIS) were installed in the fall of 2008 at the Saco River Bridge Overpass in Saco and at the Eagles Nest Bridge Overpass in Gray. The RWIS measures the surface temperature of the road, road state, and roadway friction. These RWIS units provide information that can help maintenance supervisors make cost effective decisions regarding chemical applications regarding the potential for inclement weather. The pavement sensors are used to understand road conditions. Road conditions can be reported as dry, damp, wet, frost or ice. The Authority has programmed funds to install more RWIS units on the turnpike. During the winter of 2016/2017 the Authority engaged a vendor to produce a heat map of the Maine Turnpike in order to facilitate the proper locations to install the remaining systems in 2017. The Authority will be installing two forecasting stations in 2017 and four monitoring stations in 2018.

Variable Message Signs (VMS)

The Authority currently maintains a network of Variable Message Signs (VMS) to provide motorists with critical real-time traffic information. There are 14 VMS installed at 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 communication center at the Maine Turnpike Authority Headquarters. The 14 VMS were recently upgraded with new controllers and power supplies, which has extended the useful life of the VMS. The VMS located east of Exit 36 was relocated to Mile 28 southbound to provide information to more patrons. In 2017 the Authority will install two additional VMS at strategic high traffic locations.

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

Highway Advisory Radio

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

Transmitters along the turnpike are located

TABLE 10 - 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
Falmouth	Exit 53 On-Ramp	53
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

in strategic locations to provide information at critical decision points along the highway, typically at or near interchanges. The radios are supplemented by signs advising motorists to tune their radios to 1610 AM to receive real-time turnpike information.

Prerecorded messages are continually broadcast to provide information about traffic conditions, weather, and construction zones. The Turnpike Communication Center has the ability to control and quickly update messages. The HAR system is a significant resource for providing information to motorists. In 2007, the Authority upgraded 11 transmitter sites and the software platform located in the Turnpike Communication Center. This upgrade synchronized all the HAR transmitters improving coverage on the mainline.

An additional HAR transmitter was installed in 2011 in the vicinity of the Kennebunk Service Plazas to better cover the gap in reception between the two adjacent transmitters. The Highway Advisory Radio Transmitter Locations are listed in **TABLE 10** 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 communication center at the Maine Turnpike Authority 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 ROAD) - NB ONLY**
- **BETWEEN EXITS 36 & 42 (FLAG POND ROAD) - NB & SB**
- **EXIT 42 (HOLMES ROAD) - NB ONLY**
- **EXIT 63 (GRAY) - NB & SB**

These cameras allow the Turnpike Communication Center to view traffic in the vicinity of these heavily traveled interchanges. In 2016, HNTB recommended an additional CCTV in the Kittery area to monitor the high crash location around Exit 1 area in this highly congested corridor.

Two additional CCTV cameras are located

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

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

Overheight Vehicle Detection System

Many of the turnpike bridges have been struck and damaged by overheight loads. This issue has been mitigated by the Authority's policy of increasing the underclearance as part of bridge rehabilitation projects and by constructing new bridges with a minimum of 16.5' of underclearance. However, a number of bridges still have minimal underclearance and have a potential for damage if struck by an overheight vehicle. The Authority is addressing this concern by the implementation of an Overheight Vehicle Detection System at select locations. These systems detect overheight vehicles and send a signal to a flashing sign that notifies the driver of an overheight 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; Auburn Interchange in 2013; and on the mainline in West Gardiner in 2014.

ZOOM Turnpike Express

The Maine Turnpike Authority provides partial funding for the ZOOM Turnpike Express, a commuter bus service operating between Biddeford, Saco, and Portland. In August 2016, the Maine Turnpike Authority approved a new 2-year MOA with the operator of ZOOM to provide funding until 2018. The MTA provides a designated bus pick-up and drop-off area at the Exit 36 Park & Ride lot; and the MaineDOT has parking at the Exit 32 Park & Ride lot in Saco.

The commuter bus provides an alternative to driving on the most heavily traveled commuter route in the state. Typically, ZOOM buses serve about 125 travelers per weekday. The heaviest months of use are September and October.

A regular one-way fare on ZOOM costs $5.00, with a 10 ride ticket costing $40.00. There are also monthly commuter cards available for $120 and a quarterly pass for $300. ZOOM riders are eligible to transfer for free to any connecting Shuttle bus, Metro, or South Portland bus route.

Figure 4 - Total NuRiders (June 2016 - July 2017)

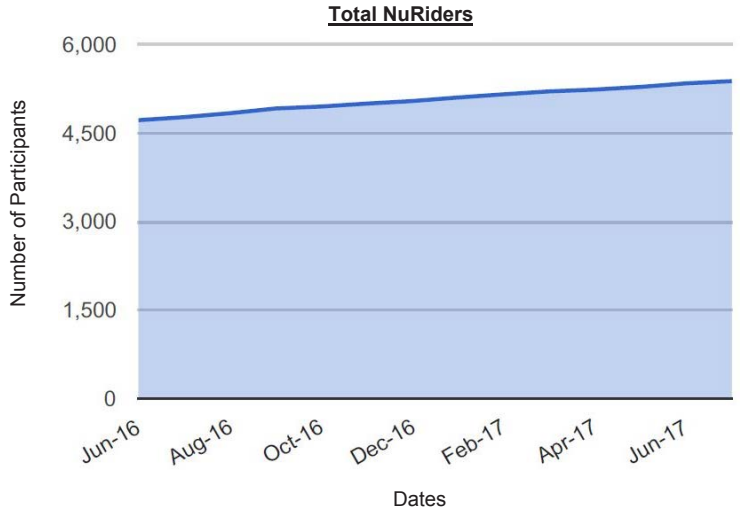
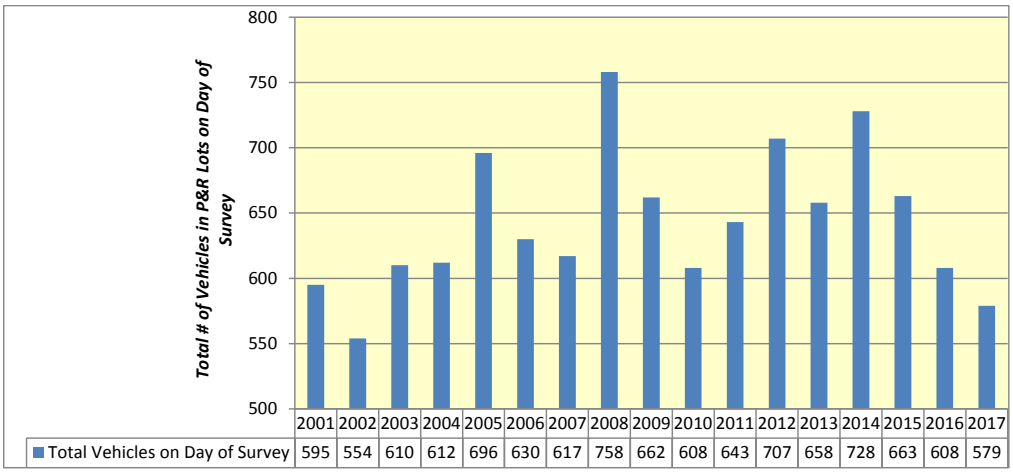


FIGURE 5 - PARK & RIDE LOT USAGE - 2001 THROUGH 2017



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Vehicles on Day of Survey	595	554	610	612	696	630	617	758	662	608	643	707	658	728	663	608	579

GO MAINE PROGRAM

Since April 2013, the Maine Turnpike Authority has administered the GO MAINE Program. This is a statewide program that helps commuters find information on commuting options.

In October of 2015, GO MAINE switched ridematching software providers to NuRide.

When commuters sign up with NuRide they can match with other commuters who are doing similar trips. While it is mostly used for carpools matches, it can be made for vanpools, transit and even biking. An exciting component to NuRide is that commuters can earn rewards for the "green" trips that they take. Rewards are discounts and coupons to online, national, and local companies with more be added all the time.

New users are being added to the program daily and outreach continues through social media, direct mail and events. GO Maine is planning an event for October 2017. The event is a business-to-business commuter challenge named Way 2 Go Maine. **FIGURE 4**, on the previous page, summaries NuRider totals from June 2016 to July 2017.

PARK & RIDE LOT PROGRAM

Currently, the Authority maintains a network of 14 Park & Ride lots located at or near most interchanges. The Authority recently updated the Park & Ride policy to be more consistent with the policy of the MaineDOT. One of the major changes is that vehicles can now park more than 24-hours in the Park and Ride lots during non-winter months.

The Authority strongly encourages motorists to utilize its Park & Ride lots to reduce congestion on the turnpike through ridesharing. The Authority monitors the use of these lots to assure that adequate capacity is available.

FIGURE 5 summarizes overall Park & Ride Lot Usage from 2001 through 2017 (on the day of the survey).

The following observations may be drawn from the figure above:

- Over the past 15 years, total Park & Ride lot usage has stayed in a fairly narrow range from about 550 vehicles (recorded in 2002) to just over 750 vehicles (recorded in 2008).

- In 2017, total usage on the day of the survey was 579 vehicles. Given that a total of 1,217 spaces were available, the overall system operated at just over 47% of its capacity.

TABLE 11 - PARK & RIDE LOT USAGE PER LOCATION - 2017

Town	Location	Owner	Spaces	2017 Volume	% Capacity
York	Chases Pond Road, US-1 Connector	MaineDOT	26	21	80.8%
Wells	Maine Tpk Exit 19, adj. to Wells Trans Ctr.	MTA	100	40	40.0%
Kennebunk	Maine Tpk Exit 25 SB, on Rt. 35	MTA	52	36	69.2%
Biddeford	Maine Tpk Exit 32, on Rt. 111	MTA	155	80	51.6%
Saco	I-195 Exit 1, on Industrial Park Road	MaineDOT	135	96	71.1%
Scarborough	Maine Tpk Exit 42, shared w/ Cabela's Parking Lot	MTA	66	23	34.8%
S. Portland	Maine Tpk Exit 45, on Rt. 703	MaineDOT	111	42	37.8%
Portland	Maine Tpk Exit 46, adj. to toll plaza	MTA	68	16	23.5%
Westbrook	Larrabee Road, near Maine Tpk Exit 47	MaineDOT	91	34	37.4%
Gray	Maine Tpk Exit 63, on US-202	MTA	129	55	n/a
Auburn	Maine Tpk Exit 75, on US-202	MTA	137	61	44.5%
Lewiston	Maine Tpk Exit 80 - Route 196	MTA	93	39	41.9%
Sabattus	Intersection of Rt. 9 & Rt. 126	MaineDOT	29	20	69.0%
W. Gardiner	Maine Tpk Exit 102, near Rt. 126	MTA	54	36	66.7%
		Overall =	1246	599	48.1%

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

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

Overall, it appears that Park & Ride lot usage has been generally declining over the past three years. This may be related to the fact that gasoline prices have also been generally declining over the past three years. Whether Park & Ride lot usage either continues to fall or stabilizes remains to be seen.

TABLE 11 summarizes Park & Ride Lot Usage per Location, on the day it was surveyed, as part of the 2017 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 this table indicates, the three busiest lots on the turnpike are Saco (Exit 36; Owned by MaineDOT), Biddeford (Exit 32), and Auburn (Exit 75; transferred to MaineDOT in 2016). These three lots combined serve about 40% of the Authority's Park & Ride customers. The Exit 63 Park & Ride Lot was relocated and doubled in size in 2015 due to interchange construction. The Exit 75 Park & Ride Lot was transferred to MaineDOT to accommodate a proposed bus station that was built in June 2017. The Exit 53 Park and Ride lot was closed in 2016.

TURNPIKE SAFETY AND LAW ENFORCEMENT

In 2016, approximately reportable 782 crashes were reported on the Maine Turnpike mainline. The majority of reportable crashes are in the southbound direction (412 vs. 370).

From 2014 - 2016, there were eight High Crash Locations (HCL) on the Maine Turnpike, which includes the mainline, toll plazas, and interchange ramps. This is an increase of two over the number of HCLs from 2013 - 2015. Three additional HCL's are documented at

TABLE 12 - SUMMARY OF HCL AND CRF LOCATIONS (2014 - 2016)

Town/City	Location Description	Crashes	CRF
York	Intersection of Exit 7 SB Off Ramp and Spur Road	11	7.02
Wells	Exit 19 On-Ramps East of the Toll Plaza	8	1.79
Biddeford	Intersection – Exit 32 Ramps with Route 111	62	1.16
Biddeford	Biddeford Toll Plaza	13	2.2
Biddeford	Exit 32 SB Ramps West of the Toll Plaza	9	1.32
Saco	Exit 36 SB Off-Ramp	9	1.18
Portland	Exit 48 Toll Plaza	9	2.66
Portland	Intersection – Exit 48 Ramps with Riverside Street	77	2.01
New Gloucester	Mayall Road to the Gray Town Line SB	12	1.12
Auburn	Exit 75 SB off-ramp	16	1.23
Sabattus	Maxwell Road to Litchfield Town Line NB	20	1.03

intersections adjacent to the turnpike ramps. A High Crash Location is defined as a roadway node or segment that has more than eight crashes in a three-year period, and a Critical Rate Factor (CRF) greater than 1.0. The Critical Rate Factor relates the crash rate at a particular link or node to the statewide crash rate average for a similar type of facility. A Summary of HCLs and their corresponding CRF Locations (2014 - 2016) are shown in **TABLE 12**.

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

Troop G consists of a Lieutenant, four Sergeants, three Corporals and twenty-five 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.

5 MAINE TURNPIKE AUTHORITY/MAINEDOT JOINT INITIATIVES

OPERATIONS & MAINTENANCE

As part of 2013 LD 1538 (the MTA Omnibus Bill), the Authority is providing transportation dollars or credit to the MaineDOT for projects and initiatives that will provide a benefit to the Authority. 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 the MaineDOT.

The Authority and the MaineDOT 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 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 coordinates with the MaineDOT when developing pavement rehabilitation projects. This relationship has provided some consistency for Interstate paving specifications between the two agencies however, both agencies still have differing standards.

The Authority and MaineDOT also work together regarding storm-water issues. Permitting processes through Maine Department of Environmental Protection (MaineDEP) are reviewed jointly by both agencies and three party agreements are signed so that MaineDOT and Authority are treated the same for transportation purposes. This working relationship also involves the planning and construction of projects. Both agencies worked together on the Maine Turnpike West Gardiner Service Plaza project, the Central York County and Gorham East-West Corridor Studies, and the paving of a two mile section of MaineDOT owned I-95 in Kittery where MaineDOT reimbursed the Authority the cost.

PARK & RIDE LOT COORDINATION

The Authority and MaineDOT continue to coordinate on the use, condition, and improvements to Park & Ride lots. The Authority, in coordination with MaineDOT, performed an updated inventory of all Park & Ride lots throughout the State of Maine in the spring of 2013. This involved an inventory of available parking spaces, an assessment of signing and amenities, and a count of the number of vehicles served by each lot.

The Authority and MaineDOT agree to continue to work to identify future Park & Ride lot needs through the continued inventory and evaluation of these lots. These are described in Section 4.

ALTERNATIVES PROGRAM COORDINATION

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

PROJECT DEVELOPMENT

The Authority coordinates with the MaineDOT on projects that are located near the Maine Turnpike.

In Auburn, the Authority provided land to the MaineDOT for a bus terminal and parking area. This project is under construction.

In Kittery, MaineDOT and the Authority are coordinating regarding bridge preservation work at the Piscataqua River Bridge linking Maine and New Hampshire.

Additionally, the MaineDOT and the Authority are working together on the I-295 corridor study to understand the implications to the Maine Turnpike traffic flow and surrounding areas.

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.

GORHAM EAST-WEST CORRIDOR STUDY

In response to growing pressures to improve east-west connections in York and Cumberland Counties, the 123rd Maine State Legislature directed the MaineDOT and Authority 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 Authority 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 Authority's 10 Year Plan.

The Central York County Study was completed in fall of 2012. The final study can be found at www.connectingyorkcounty.org. As a result of one of the study recommendations, the Authority increased capacity at Exit 19 in Wells by adding a second left turn lane.

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 Maine Turnpike Spur that will connect to the new Gorham By-pass. 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 Authority and MaineDOT officials believe that integrating all modes of transportation (transit, bike, pedestrian) is an integral part of the study.

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

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

A Final Study Report was completed in the fall of 2012. A copy of the Report can be found at www.gorhamcorridor.org. The Authority is currently coordinating with the United States

Army Corps of Engineers to finalize a project purpose statement and next steps moving forward.

In 2017, a bill was introduced to the Maine State Legislature that would allow the Maine Turnpike Authority to borrow up to $150 million to plan, design and build a spur from Route 114 in South Gorham to the Maine Turnpike in the area of Exit 45 (Maine Mall Road/Payne Road) in Scarborough. This bill, LD 905, was voted into law in May of 2017. The Maine Turnpike Authority is continuing to work with the Army Corps of Engineers (ACOE) on developing a project purpose statement that will guide the permitting process.

Safety and Capacity Study

Periodically, the Authority 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.

Based on the data collected and results of the analyses performed for this study, a series of recommendations are presented. These recommendations include possible future improvements (such as roadway or interchange ramp widening, addition of toll plaza capacity, and safety improvements), an approximate timetable of when the improvements become necessary, and an estimate of the forecasted construction costs. This document is used by the Authority as a long-range planning tool. HNTB most recently prepared a 2015 System-wide Traffic Operation and Safety Study that is currently used for capital planning and budgeting purposes. Projects currently being advanced from the 2015 Study are improvements to the Exit 44 SB on-ramp and evaluation of widening in the greater Portland region.

Portland Area Mainline Needs Assessment

The Authority is currently undertaking a Portland Area Mainline Needs Assessment which is looking at growing safety and capacity issues on the Maine Turnpike between Exits 44 in Scarborough and Exit 53 in West Falmouth. The purpose of the Needs Assessment is to evaluate a full range of reasonable alternatives to address the identified issues. Existing and future conditions will be evaluated, and likely alternatives to be evaluated will include Transportation Demand Management (TDM), Transportation System Management (TSM), various tolling strategies, enhanced/expanded transit alternatives, and widening/capacity expansion alternatives.

The Authority has assembled a Public Advisory Committee (PAC) to provide input to the Needs Assessment process and information. This PAC consists of transportation, land use, commercial, and safety individuals who are anticipated to provide a broad-range of knowledge and experience to the process. This Needs Assessment is anticipated to be completed in mid-2018.

Study of Traffic Impacts From AET In York

A study produced by CDM Smith in April 2014 estimated that 3,400 to 5,500 vehicles per day would divert away from the York Toll Plaza if the plaza was converted to All Electronic Tolling (AET). HNTB prepared a study that analyzed the traffic impacts of the expected traffic diversion to non-interstate highways if the York Toll Plaza is converted to AET. Data from the CDM Smith study was utilized to assess the impacts of this estimated diversion on US Route 1, State Route 236, and other area roadways.

Study of The Future Needs of The Piscataqua River Bridge

As a result of summer peak hour traffic congestion on the southern end of the turnpike near the Piscataqua River Bridge, the Authority is evaluating and prioritizing potential transportation alternatives to improve traffic flow across the Piscataqua River Bridge that carries I-95 between New Hampshire and Maine. The study area will initially consist of the stretch of I-95 from Exit 3 in New Hampshire to Exit 2 in Maine. The exits and the roadway on either side of the bridge in this area experience high peak hour volumes on those ramps that are heading to, or coming from, the bridge. Working with MaineDOT on coordination of our Dennett Road bridge repair, and how to get additional capacity out of area such as using a hard running shoulder over bridge.

Additional MTA Planning Efforts

The Authority is also working with MaineDOT and other municipal partners to evaluate and identify possible improvements to roadways that connect to the Maine Turnpike. Ongoing and future planning efforts within the Maine Turnpike corridor include:

- Study of Exit 36 area to evaluate possible improvements for along Industrial Park Road and Route 112 with MaineDOT and City of Saco.
- Future study of a new connection from Exit 32 in Biddeford to Route 111 to improve peak period traffic operations.
- Future study of Route 109 in Wells near Exit 19 of the Maine Turnpike.

7 FUNDING

Recommendations will include possible future improvements (such as roadway or interchange ramp widening, and safety improvements), and an estimate of the forecasted construction costs.

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 2018. 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 2017, we estimate this fund will have a balance of $43,170,809. Including carryover projects from 2017, we estimate $79,628,297 in Capital Improvement expenditures in 2018.

We recommend $36,500,000 be deposited in the Capital Improvement Fund for 2018 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 2018 is $38,000,000.

OPERATION AND MAINTENANCE FUND

Operation and Maintenance work is usually carried out by Authority personnel and includes activities such as administration, toll collection, snow plowing, minor repair work, sign replacements and other activities. We estimate that the cost of Operation and Maintenance during 2018, exclusive of Reserve Maintenance and Capital Improvement expenditures, will be in the amount of $44,994,471. This estimate is based on

careful examination of 2017 expenditures and an evaluation of factors expected to influence these costs during 2018.

INSURANCE

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

APPENDIX A - MAINTENANCE AREA BUILDINGS

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

APPENDIX B - SCHEDULE OF INSURANCE

Schedule of Insurance
2017-2018

Comprehensive Package Policy Including Turnpike Property

Underwritten by the Acadia Insurance Company — Agent: Cross Insurance

Commercial Property

Policy No.: CPA1000627-35 — **Term: October 1, 2017 to October 1, 2018**

Risk	Coverage	Limit	Remarks
Fire and Related Blanket	Buildings	$78,581,000	Agreed Amount and
	Contents	$30,419,393	Replacement Cost
	Extra Expense & Loss of Rents	$3,611,500	
	Boiler and Machinery	$112,611,893	
	(excludes bridges, overpasses & underpasses)		
	Earthquake Excluding Bridges	$10,000,000	
	Flood	$10,000,000	
	Scheduled Property:		
	Miscellaneous Unscheduled		
	Locations*	$500,000	
	Bridges, Overpasses, and Underpasses	$280,263,000	
	Ordinance of Law Coverage	$10,000,000	
	Fine Arts*	$200,000	
	Property In Transit*	$100,000	
Inland Marine			
a. Direct Physical loss or damage	Scheduled Maintenance Equipment*	$10,049,005	
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*	$444,674	

***Included in the Contents Limit on Policy**

Business Auto

Policy No.: CAA1000628-35 — **Term: October 1, 2017 to October 1, 2018**

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		
	Comprehensive and Collision	$3,000	
	Deductible Applies to light, medium and heavy trucks and trailers		
	Hired Physical Damage	$200,000	
	Garagekeepers	$100,000	

Comprehensive General Liability Policy

Underwritten by Acadia Insurance Co. Agent: Cross Insurance

General Liability

Policy No.: CPA 1000627-35 **Term: October 1, 2017 to October 1, 2018**

Comprehensive General Liability	
Each Occurrence Limit	$1,000,000
Personal & Advetising Injury	$1,000,000
General Aggregate Limit	$2,000,000
Products-Completed Ops Aggregate	$2,000,000
Fire Legal Liability	$300,000
Premises Medical Payments	$5,000
Employee Benefits Liability	$1,000,000

**A $25,000 deductible applies.

Comprehensive Crime

Underwritten by Travelers Agent: Cross Insurance

Policy No.: 106807620 **Term: October 1, 2017 to October 1, 2018**

Crime	Coverage	Limits	Deductible
	Employee Theft	$2,000,000	$10,000
	Forgery or Alteration	$2,000,000	$10,000
	On Premises	$2,000,000	$10,000
	In Transit	$2,000,000	$10,000
	Money Orders/Counterfeit Money	$2,000,000	$10,000
	Computer Fraud	$2,000,000	$10,000
	Computer Restoration Expense	$1,000,000	$10,000
	Funds Transfer Fraud	$2,000,000	$10,000
	Claim Expenses	$10,000	$0

Worker's Compensation Self-Insurance Excess Policy

Underwritten by Arch Insurance Company — Agent: USI Insurance Services

Policy No.: WCX 0059427 01 — **Term: February 1, 2017 to February 1, 2018**

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)
   - Statutory — Each Accident
   - Statutory — Aggregate - Disease
2. As respects Coverage B
   - $1,000,000 — Each Accident
   - $1,000,000 — Aggregate - Disease

$23,534,755 — Total Estimated Annual Remuneration - February 2017-2018

Claim Service: — Cannon, Cochran Management Service, Inc.

Public Officials and Employees Liability

Underwritten by ACE American Insurance Company — Agent: Cross Insurance

Policy No.: EON M00608592 005 — **Term: October 1, 2017 to October 1, 2018**

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

Fidelity Bond-Public Officials

Underwritten by Travelers Insurance Company — Agent: TD Insurance, Inc.

Member of Authority	Term	Amount of Bond	Remarks
Peter S. Mills Executive Director Policy No. 105619973	May 24, 2017-2018	$500,000	Insures faithful performance of duties by the individual
Douglas D. Davidson Treasurer Policy No. 105220484	January 1, 2017-2018	$500,000	
Jonathan A. Arey Secretary Policy No. 105220456	January 2, 2017-2018	$50,000	

Fiduciary Responsibility

Underwritten by ACE Insurance Company — Agent: Cross Insurance

Policy No. G25749522 006 — **Term: October 1, 2017 to October 1, 2018**

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	Aetna	Full semi-private room allowance

Self-Insured Workers Compensation Bond

Underwritten by Travelers Insurance Company

Policy No.: 103464379 — **Term: December 2017**

Obligee: Maine Bureau of Insurance

Privacy & Network Liability Insurance

Underwritten by Travelers — Agent: Cross Insurance

Policy No.: 106807615 — **Term: October 1, 2017 to October 1, 2018**

Limit of Liability for Insuring Agreements

		Each Claim	Retention
A.	Network and Information Security	$10,000,000	$100,000
B.	Communications and Media	$10,000,000	$100,000
C.	Regulatory Defense Expense	$10,000,000	$100,000
	Policy Aggregate Limit	$10,000,000	

Excess Cyber Liability

Underwritten by Philadelphia Insurance Company — Agent: USI Insurance

Policy No.: PHSD1176870 — **Term: October 1, 2017 to October 1, 2018**

	Each Claim	Aggregate
Limits of Liability	$ 2,000,000	$ 2,000,000

HNTB