HNTB

2023 OPERATION AND MAINTENANCE ANNUAL REPORT

PRESENTED BY: HNTB CORPORATION
PRESENTED TO: MAINE TURNPIKE AUTHORITY

HNTB Corporation
Engineers Architects Planners
Infrastructure Solutions

82 Running Hill Road, Suite 201
South Portland, ME 04106

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

Maine Turnpike Authority
2360 Congress Street
Portland, ME 04102

October 19, 2023

Ladies and Gentlemen,

We are pleased to submit our 2023 Operation and Maintenance Annual Report for the Maine Turnpike. This report sets forth our findings as to the condition of the Maine Turnpike and our recommendations concerning maintenance, operation, insurance, and deposits to be made to the Capital Improvement and Reserve Maintenance funds and the Operation and Maintenance budget.

Our findings and recommendations are based on a visual inspection of the turnpike facilities performed between April and July, 2023; 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,

Tim Cote, P.E.
Vice President

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MAINE TURNPIKE

» Peter Mills, Executive Director

» John P. Sirois, Director of Finance, and Authority Board Treasurer

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

» Jonathan A. Arey, Esq., Authority Board Secretary, and Staff Attorney

AUTHORITY MEMBERS

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» Andrew McLean, Member

» Thomas J. Zuke, CPA, Member

» Jane L. Lincoln, Member

» Bruce Van Note, Member, Ex-Officio

» Bettyann Sheats, Member

ADDRESS

Maine Turnpike Authority
2360 Congress Street
Portland, Maine 04102

(207) 871-7771

www.maineturnpike.com

1. INTRODUCTION

This 2023 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 2015, the Authority acquired approximately 1.9 miles of I-95 beginning at a point 75 feet north of the northernmost joint of the Piscataqua River Bridge, extending the original limits of the Turnpike south. This acquisition provided the Authority with care and control of the roadway from the southern entry into the state to the Turnpike's northern terminus in Augusta.

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 the now complete Exit 44 open road tolling (ORT) toll plaza conversion project and included the addition of several regulatory and warning roadside signs, an overhead sign bridge structure with signage, a cantilevered sign structure with signage, and cable guardrail.

Almost two-thirds of the 111-mile Turnpike is a four-lane divided highway; the other third is a six-lane divided highway. Turnpike facilities include 198 structures (182 bridges and 16 minor spans), 22 interchanges, 20 toll plazas, an administration building, including the E-ZPass Customer Service Center and the State Police offices, five service areas, and nine maintenance facilities.

West Gardiner I-295 ORT Toll Plaza

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 (USDOT) in cooperation with the states, local officials, and Metropolitan Planning Organizations (MPOs). The Turnpike system, shown in **Figure 1**, is the only interstate highway from Kittery to Portland, making it one of the most critical elements of Maine's transportation network.

The Turnpike is a safe and efficient highway that accommodated approximately 85.6 million trips with 88.0 million transactions in 2022. The growing 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 routine pavement rehabilitation, bridge preservation, rehabilitations and replacements, and system modernization to assure that Turnpike facilities meet current safety standards and can satisfy projected demands.

Annual Inspection Program

In accordance with Section 806 of the Bond Resolution dated May 1, 1991, HNTB Corporation, as the Consulting Engineer, is required to inspect the Turnpike at least once a year and submit to the Authority a report setting forth the following:

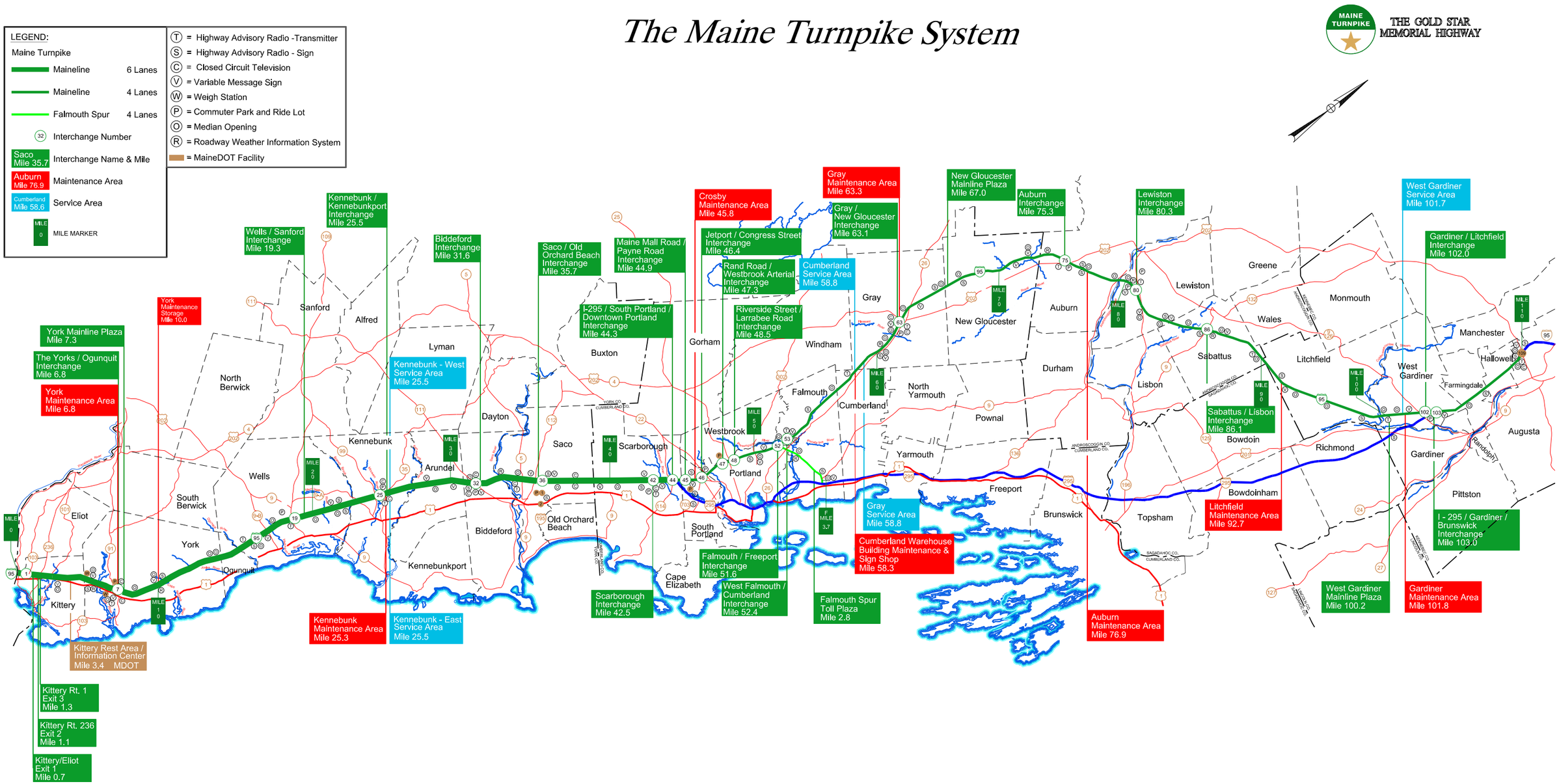
- An opinion as to whether the Turnpike has been maintained in good repair, working order and condition
- Advice and recommendations as to the proper maintenance, repair, and operation of the Turnpike during the ensuing fiscal year and an estimate of the amount of money necessary for such purposes
- Advice and recommendations as to the amounts and types of insurance to be carried
- 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 April and July of 2023. 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 2023, to be used in conjunction with this 2023 Operation and Maintenance Annual Report.

York River Bridges

FIGURE 1: TRANSPORTATION NETWORK



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2. INSPECTION FINDINGS AND CORRECTIVE MEASURES

The Turnpike has been maintained in generally good condition and presents a favorable appearance. Traffic volumes and the age of the facility necessitate continued focused 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 2023 Annual Inspection of the Turnpike by HNTB Corporation (HNTB).

Pavement

Each year MaineDOT collects pavement condition data throughout the State using Automatic Road Analyzer, or ARAN, truck technology. This data is provided to the Authority and provides insight into the overall condition of the pavement on the Turnpike system. The most recent data available is for calendar year 2022. Data from the past five years, shown in **Table 1**, indicates 99.9% of the mainline pavement on the Turnpike is in good to fair condition.

TABLE 1: PAVEMENT CONDITIONS 2018 - 2022

	2018	2019	2020	2021	2022
Good	25.1%	36.1%	22.9%	24.3%	24.5%
Fair	74.6%	63.6%	76.9%	75.7%	75.4%
Poor	0.4%	0.2%	0.2%	0.0%	0.1%

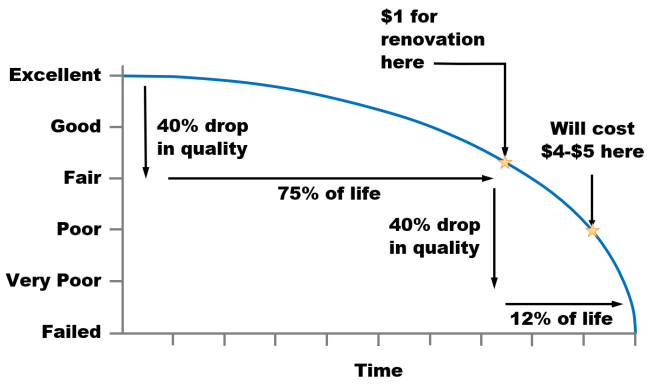
In accordance with the Federal Highway Administration's (FHWA) published Federal Register (82 FR 5886) final rule established in May of 2017, the performance measures for pavement on the National Highway System include categorizing pavement into "Good", "Fair", and "Poor" conditions. The above reporting and classifications are consistent with current FHWA guidelines.

To maintain pavement quality and roadway safety, the Authority has a planned program of pavement rehabilitation. The Authority generally rehabilitates mainline pavement on a 12-year cycle. **Table 2** (on the following 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, averaging approximately ten centerline miles each year, 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 2023. The areas using this additive should continue to be monitored for performance and benefit.

The monitoring of developments in paving technology should continue with the purpose of identifying

TABLE 2: PAVEMENT CONTRACTS

Year	Begin and End Location (Mile Marker)		Roadway	Centerline Miles Paved
2023	88.6	98	NB/SB	9.4
2022	102.6	109.1	NB/SB	6.5
	Int. 25 & 36			
2021	0.2	1.3	NB/SB	1.1
	30.0	35.5	NB/SB	5.5
2020	35.3	42.0	NB/SB	6.7
	102.2	102.6	NB/SB	0.4
2019	42.0	44.3	NB/SB	2.3
	49.3	51.2	NB/SB	1.9
2018	44.0	49.3	NB/SB	5.3
	74.9	80.7	NB/SB	5.8
	98.0	102.2	NB/SB	4.2
	Int. 32 & 47			
2017	64.4	68.5	NB/SB	4.1
	80.7	88.6	NB/SB	7.9
	Int. 86			
2016	54.5	57	NB/SB	2.5
	59.5	64.4	NB	4.9
	57	64.4	SB	7.4
	Int. 63			
2015	51	54.5	NB/SB	3.5
	68.5	74.9	NB/SB	6.4
	FS0.5	FS3.8	EB/WB	3.3
	Int. 46			
2014	23.3	30.3	NB/SB	7
	102.6	109.1	NB/SB	6.5
	57.0	59.5	NB	2.5
2013	7.4	13.5	NB/SB	6.1
	88.0	92.0	NB/SB	4.0
	Int. 7 & 44			
2012	30.0	35.0	NB/SB	5.0
	92.0	98.0	NB/SB	6.0
	102.0	Plaza	NB/SB	
	Int. 42, 45 & 53			
2011	13.3	23.3	NB/SB	10.0
	Int. 19 & 48			
2010	2.2	7.0	NB/SB	4.8
	44.0	51.2	SB	7.2
	45.0	51.2	NB	6.2
2009	35.3	43.9	SB	8.6
	35.4	44.5	NB	9.1
2008	57.0	64.4	SB	7.4
	80.8	85.2	NB/SB	4.4
	Int. 102 & 103			

and evaluating opportunities to further refine and improve turnpike pavement specifications. Changes in the characteristics of the bitumen used in asphalt paving continue to occur. Monitoring is required to understand how these changes, including the use of polymers and plastic-based additives, may affect pavement durability. The use of aggregates sourced from different parts of our state also have and effect on pavement durability and should be considered in the development of pavement mix designs.

The 2023 paving rehabilitation and drainage improvement contract extends between Mile 88.6 and 98.0 and includes approximately 9.4 centerline miles of highway. The work is scheduled to be completed by Fall of 2023.

HNTB Recommendation

Roadway and shoulder pavement is in generally fair to good condition and the ride quality of the Turnpike continues to be acceptable. HNTB recommends that the Authority continue with the annual maintenance paving program of addressing approximately ten centerline miles per year with polymer modified asphalt surface pavement. Pavement rehabilitation projects should continue to generally consist of a minimum 1¾" milling, crack sealing, shimming, and repaving. Additionally, we recommend continued shoulder pavement assessments and completing shoulder pavement rehabilitation at a frequency not to exceed every other mainline paving cycle.

Mainline pavement rehabilitation for the 2024 construction season is recommended between Mile 1.3 and Mile 6.8 and between Mile 20.3 and Mile 23.3. Both sections will be milled and repaved as noted above. Additionally, a 1½" overlay will be com-

Paving at the Exit 45 Northbound Off Ramp

pleted between Mile 42 and Mile 49 and will serve as the final pavement surfacing related to the Portland Area widening project.

In addition, pavement rehabilitation at interchanges 1, 2, 3 and 75, together with the resurfacing of the park and ride lots at Exit 25 and Exit 32, is recommended.

Drainage

The turnpike's surface drainage system, consisting of side slopes, drainage ditches, and catch basins, is an important aspect of the turnpike facility. The system is responsible for collecting and diverting storm water away from the roadway surface and into adjacent ditches where runoff can be safely conveyed into nearby waterbodies. The annual inspection of these components found them to be in generally fair to good condition. In some areas the presence of winter sand buildup, primarily found under guardrails, impedes the sheet flow of water from the roadway and increases the potential for standing water in the roadway shoulders. The buildup also results in channelized flow that is more likely to create areas of erosion. Routine berm, ditch, and side slope maintenance and repairs are required for proper upkeep of the highway.

Cross pipes and box culverts are also an integral component of the turnpikes drainage system. In addition to carrying the numerous rivers and streams that pass under the Turnpike they also convey the collected surface runoff away from the roadway surface. Box culverts and culvert pipes are inspected on a predetermined schedule depending on size.

All box culverts and pipes 60" in diameter or greater, totaling 34 crossings, are inspected annually.

Culverts ranging from 36" to 54" in diameter are inspected once every five years and were last inspected in 2023. The next inspection of these structures is scheduled for 2028.

Cross culverts 30" and smaller are inspected on a rotating five-year cycle. In 2023 the culverts between mile 63.3 to 85.2 were inspected. **Table 3** provides a summary of the current inspection cycle for all 30" and smaller pipes.

HNTB inspects the inside of all larger culverts by walking through them when conditions allow. Culverts that cannot be accessed safely are inspected visually from each end. In cases where a reasonable visual inspection cannot be completed from each culvert end, the structure is flagged for periodic special inspections using robotic cameras. The last special inspection was completed in 2018 and included 18 culverts 60" or greater in diameter

TABLE 3: CULVERT INSPECTIONS

Mile Marker Range (Culverts 30" and Smaller)	Inspection Year
Mile 0.3 to Mile 25	2020
Mile 25 to Mile 49	2024
Mile 49 to Mile 63.3 & Falmouth Spur	2021
Mile 63.3 to Mile 85.2	2023
Mile 85.2 to Mile 109.1	2022

The results of the 2023 annual inspection, and the last special inspection completed in 2018, determined culverts 60" or greater in diameter were in generally satisfactory condition. In some locations culvert ends are deteriorating and separating from adjacent sections.

The 2023 annual inspection found culverts ranging from 36" to 54" in diameter were in fair to satisfactory condition. Culverts measuring 30-inch in diameter or less ranged from good to poor condition.

Annual Inspection Culvert Condition Assessment

Many smaller cross-culverts are reinforced concrete directly under the core roadway but change to corrugated metal or high-density polyethylene under the side slopes. While the concrete portion of the culverts are in generally fair to good condition, the remaining metal pipe ends are in poor condition. Common issues observed at the metal pipe ends are rusted flow

lines, disconnected joints, and disconnected metal flared end sections. Common issues observed in the reinforced concrete and polyethylene 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.

The Turnpike routinely replaces the corrugated metal culvert ends with reinforced concrete or high-density polyethylene as resources and funds allow. Over 90 smaller culvert ends were replaced by maintenance between 2021 and August of 2023. Approximately 50 culvert ends are planned for replacement by maintenance forces in 2024. Once complete, the Turnpike's multi-year program developed to replace all aging metal culvert ends will be nearly complete.

HNTB RECOMMENDATION

Routine berm, ditch, and side slope maintenance and repairs, as well as routine catch basin and cross pipe repair are required to maintain proper roadway drainage. The turnpike's recent practice has been to complete this work as part of pavement rehabilitation projects. We recommend the continuation of this practice.

We recommend the continued repair of culvert end locations rated in poor condition, as detailed in the Annual Inspection Report, with a goal of completing this effort by 2026. Once complete, these repairs will reduce the potential for more significant and costly improvements in the future, such as slope failures and sinkholes. Eight circular culvert end locations remain in poor condition. The number of poor condition culverts has improved significantly since 2021 with the total number of poor condition culverts reduced by more than two thirds.

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. In recent years this work has been either included in standalone projects focused on drainage improvements or included in adjacent pavement rehabilitation contracts. We recommend that this practice continue as needed.

Based on inspection findings from 2022 and 2023, we recommend design development of a culvert rehabilitation project by slip lining of the 240 foot, 78" Reinforced Concrete Pipe at mile mark 40.3 which passes the Dunstan River under the turnpike. The existing culvert has deflections up to 1" and concrete delamination near the midpoint and has approximately 30' of fill covering it with challenging site access.

Culvert locations that can reasonably be repaired by the Authority's Maintenance forces should be prioritized and addressed as resources become available. These repairs typically include replacing deteriorated metal pipe ends with high density polyethylene or reinforced concrete pipe, together with associated slope and drainage channel stabilization work.

Kennebunk Service Plaza Utility Tunnel

An approximately 8' wide by 8' tall reinforced concrete utility tunnel passes beneath the Turnpike Mainline between the Kennebunk NB and SB service plazas at Mile Marker 25.52. The tunnel carries both sewer and natural gas lines beneath the highway. A structural inspection and condition assessment of the tunnel is completed on a 5-year cycle. The most recent inspection occurred as part of the 2023 annual inspection. That inspection determined that the tunnel is in fair condition. Unitil, owner of the gas line, reviewed the gas line during the 2023 inspection and did not report any findings of concern. The next inspection of the facility is scheduled for 2028.

Kennebunk Service Plaza Utility tunnel

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.

WRONG-WAY DRIVERS

In response to the increased focus and rise of wrong-way driver crashes nationwide, the turnpike is reviewing incidences of wrong way drivers and exploring potential counter measures, particularly on interstate ramps, service plazas, and median openings. Near-term solutions include refining standard practices for signage on ramps and adding reflective red tape on the back face of signposts. Both measures provide a stronger visual warning for wrong-way drivers. The turnpike also continues to close median openings that are not critical for authorized vehicles, including two such median opening closures in 2023. The construction of new emergency vehicle ramps at selected locations has allowed for the closure of numerous median openings. Long-term solutions include reviewing interchange ramps for geometric improvements as well as providing additional signage, striping, and lighting.

GUARDRAIL

Through an American Association of State Highway and Transportation Officials (AASHTO) and FHWA partnership, an agreement was executed in 2015 to define actions needed across the country to fully implement the Manual for Assessing Safety Hardware (MASH) over the course of several years. The MASH guidelines replace its predecessor's guidelines defined in the National Cooperative Highway Research Program (NCHRP Report 350), published in 1993. MASH guidance includes four important parts:

1. Agencies are urged to establish a process to replace existing highway safety hardware that has not been successfully tested to NCHRP Report 350 or later criteria.

2. Agencies are encouraged to upgrade existing highway safety hardware to comply with the 2016 edition of MASH either when it becomes damaged beyond repair, or when an individual agency's policies require an upgrade to the safety hardware.

3. For contracts on the National Highway System with a letting date after December 31, 2019, only highway safety hardware evaluated using the 2016 edition of MASH criteria will be allowed for new permanent installations and full replacements.

4. Temporary work zone devices, including portable barriers, manufactured after December 31, 2019, must have been successfully tested to the 2016 edition of MASH. Such devices manufactured on or before this date, and successfully tested to NCHRP Report 350, or the 2009 edition of MASH, may continue to be used throughout their normal service life.

The Turnpike's highway safety hardware is compliant with the above guidance. All new highway safety hardware installed on the Turnpike is MASH compliant.

Guardrail Improvements

A program to upgrade and modernize Turnpike guardrail on an as-needed basis has been in place since the mid-1990s and remains active. This program includes the following:

- Installation of three beam guardrail or median concrete barrier at select locations,
- Closing median openings that are not critical for authorized vehicles,
- Installing Emergency Vehicle Ramps to eliminate the use of median openings, or where new openings cannot be constructed,
- 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, and
- Constructing new terminal end – anchored end sections.

In 2022, upgrades to guardrail between Mile 30.0 and 35.5 were completed as part of a median and pavement rehabilitation improvement project. In 2023 median upgrades, including regrading and re-establishing basins, were completed between Mile 102.6 and 109.1 as part of the mainline paving project; however, no guardrail adjustments were deemed necessary within the limits of the project.

The practice of including guardrail and safety improvements within the yearly paving contracts, or within new Toll projects, has been successful and should continue as the need arises.

HNTB RECOMMENDATION

HNTB recommends that guardrail continue to be repaired and upgraded as needed. Upgrades, such as adjusting guardrail height, are still needed as a regular activity and should be reviewed yearly for possible inclusion in adjacent paving rehabilitation contracts. We also recommend increased use of truck mounted attenuators, radar speed and messaging trailers, and other work zone safety devices to enhance safety for motorists and workers.

HNTB also recommends the Authority continue with its program for improving temporary Traffic Control Plans to be used by the Turnpike forces and contractors, as well as enhanced work zone safety training provided to Authority Maintenance forces.

Work Zone Safety

In 2017, a tragic work zone crash resulted in the loss of a turnpike employee. The crash was a call to action leading the MTA to amplify their emphasis on safety.

The MTA implemented a robust public outreach campaign to raise public awareness. The program utilized print, digital and radio advertising to emphasize motorist and work zone safety. Additionally, the MTA focused on improving work zone safety procedures, adding safety devices and enhancing work zone training programs.

Lane closure installation and removal procedures were also modified to include two truck-mounted impact attenuators, greatly increasing worker protection. Enhanced training was completed, and now continues annually, to encourage feedback from turnpike maintenance crews with the goal of continually refining and improving practices.

These efforts result in fewer work zone crashes systemwide and improved safety for workers and motorists alike.

HNTB RECOMMENDATION

The Authority's emphasis on work zone safety and training has led to a safer roadway. A continued focus on work zone safety and training is recommended.

Emergency Vehicle Ramps

Emergency Vehicle Ramps allow for emergency vehicles to enter and exit the Turnpike mainline 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 2023, the Authority issued construction contracts for the installation of new Emergency Vehicle Ramps at High Street at Mile 103.6. These ramps are expected to be complete and in operation by Summer 2024. In 2022 the MTA started the process of upgrading and modernizing existing access gates at existing Emergency Vehicle Ramp locations to provide authorized vehicles with efficient access to and from the mainline, and to prohibit access by unauthorized users. A total of eight locations are scheduled to be upgraded in 2023.

HNTB RECOMMENDATION

The Authority should continue to study the feasibility of constructing other Emergency Vehicle Ramps where new installations are critical to the safe and efficient operation of the Turnpike. Additionally, the maintenance or replacement of the gate systems installed at existing ramp locations should continue as required to provide safe and efficient access for authorized users, and to preclude unauthorized use.

Roadway Side Slopes

A program to clear vegetation near the roadway and to push tree lines back closer to the right of way commenced in 2012. This clearing improves safety by removing vegetation near the roadway and reduces roadway icing in the winter by minimizing shading of the roadway. **Table 4** illustrates contracts issued specifically to address side slope clearing since 2012

The Authority actively evaluates maintenance clearing into its capital program to minimize vegetation intrusion into the clear zone. When practical, Turnpike maintenance crews clear brush and small trees within and along the tree line to maintain the current tree line and to remove fallen and damaged trees. In 2021, side slope clearing was completed for areas in the vicinity of the Saco River Bridge at Mile 33.0, and near Exit 32 as part of a planned project to improve the southbound off-ramp.

HNTB RECOMMENDATION

The continued maintenance clearing of vegetation near the roadway is recommended. This activity provides for safe recovery on runout zones for errant vehicles, reduces shading of highway, which can contribute to roadway icing, and permits for improved roadway mowing operations.

TABLE 4: SIDE SLOPE CLEARING

Year	Locations
2023	N/A[1]
2022	N/A[1]
2021	Exit 32 and Mile 33
2020	Exit 45
2019	N/A[1]
2018	Mile 42.0 to Mile 45.0
	Mile 85.0 to Mile 85.8 (S.B.)
	Mile 93.0 to Mile 100.8
	Exit 103
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

[1] No contracts issued

Lighting

The roadway lighting system is in generally good condition. During the annual inspection, HNTB noted most interchanges and service plazas had a few lights that were not operating. Authority Maintenance forces routinely replace or repair lights as required to maintain acceptable lighting levels.

In 2022 the MTA completed a system-wide program to update its exterior lighting to LED fixtures, reducing both operation and maintenance costs.

In 2020 and 2021, HNTB completed hands-on inspections of 30 weathering steel high mast light poles. The inspection identified a single high mast light near Exit 36 that was in poor structural condition which has been removed from service. This light is scheduled for replacement as part of the Saco Interchange Exit 35 Project which will be completed in Fall 2025.

A 2022 inspection found several ramp light poles have breakaway couplings in poor condition. A subsequent special inspection these breakaway devices was completed in 2023 concluded many older style breakaway devices exhibit varying degrees of deterioration. Based on these findings the turnpike has started a prioritized replacement of all older style light pole breakaways.

HNTB RECOMMENDATION

The Authority should continue to inspect and maintain its' roadway lighting system on a regular basis to minimize the number of outages.

High mast lights should continue to receive annual routine inspections with hands-on inspections matching the frequency used for overhead sign structures. Debris, including road sand and excessive vegetation, should be removed from on and around the bases and foundations of light poles to minimize the potential for corrosion.

MTA maintenance should continue to replace older style breakaway devices prioritizing those with the greatest section loss and corrosion.

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 Turnpike. Signs that are damaged, faded, or otherwise in poor condition are replaced on a routine basis.

In 2016, the Authority initiated a four-year plan to evaluate, upgrade and replace its existing guide signs. The first contract was awarded in 2016 for upgrades from Exit 75 to Exit 109. The second contract was awarded in 2017 for upgrades from Exit 25 to Exit 63. The third contract was awarded in 2018 for upgrades for Exits 32, 36, 42, 44, and 45. The fourth contract was awarded in 2019 for upgrades from Exit 1 to Exit 19.

Near the southern terminus of the Turnpike, sign upgrades were made as part of the York Toll Plaza replacement project and the Piscataqua River Bridge improvement project. These projects were completed in 2021 and 2022 respectively.

Additional guide sign upgrades between Mile 45 and Mile 48 were completed as part of the Portland Area Widening and Safety Improvement project scheduled for final completion in 2023. The completion of the Portland Area and Safety improvement project signing completes the Authority's program to upgrade and replace existing guide signs.

HNTB RECOMMENDATION

HNTB recommends the Authority continue to monitor, maintain, and replace the regulatory, route marker, warning, and specialty signs as needed. Nighttime retroreflectivity is of specific concern and should continue to be assessed periodically. Signs that are found to have inadequate retroreflectivity should be replaced.

Roadway Markings

The Authority's Maintenance forces have historically re-striped the Turnpike once a year to maintain roadway markings in good condition. Beginning in 2020, the roadway was re-striped twice, once in the spring and once in the fall, to improve the visibility of pavement markings in the mid to late winter months.

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 within interchanges, and newly paved areas, are typically painted twice a year. This frequency has been adequate to maintain roadway striping.

HNTB RECOMMENDATION

HNTB recommends the Authority continue its current roadway marking practices.

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 in some locations. The width of the median makes maintenance of the vegetation impracticable. The typically gentle slopes of the median allow the sand placed during winter maintenance activities to accumulate and replace the vegetation.

Maintenance crews have fixed nearly a mile of median areas prone to washouts at the southern end of the Turnpike by replacing median material with millings. This inexpensive solution has successfully repaired and mitigated future washouts at susceptible locations.

In 2023, maintenance crews rebuilt the median on Fisher Hill from Mile Marker 87.7 to Mile 88.7 to address areas of erosion and winter sand buildup.

The Authority plans to replace the vegetated median with a more practical and maintainable paved surface as capacity projects are undertaken. Where capacity improvements are not planned, median grading has been completed as part of adjacent paving projects to improve drainage, remove built up sediment, and re-establish vegetative cover.

The majority of the roadway side slopes are stable with good vegetative cover. Slope locations requiring minor corrective action are detailed in the Annual Inspection Report. The most common observations include an excessive buildup of winter sand, localized sloughing (most typically around structures) and some localized erosion due to roadway runoff. Corrective actions are warranted at edge-of-pavement drop-off locations where the gravel shoulder directly adjacent to the paved shoulder is too low. Additionally, areas of minor erosion along the roadway should be repaired before they become more significant issues over time. In most instances, the Authority's Maintenance forces can accomplish this work. The remainder should be completed by combining this type of repair into larger local contracts, such as adjacent paving contracts, such that cost efficiencies are achieved.

The construction of median safety improvements, including replacing vegetative cover with pavement and installing concrete barrier between Mile 43 and Mile 49 is being completed as part of the Portland Area mainline widening project scheduled for completion in 2023. Similar improvements between Mile 0.3 and Mile 1.3 were completed in 2022 as part of the Piscataqua River Bridge improvements project. The Authorities capital program includes plans for installation of median barrier as future capacity improvement projects are completed.

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 including paving the median and replacing guardrail with concrete barrier, is also recommended where practical and as funds allow. This will simplify maintenance, increase safety, and eliminate the need to mow a narrow area immediately adjacent to traffic.

Toll Plazas

TOLL COLLECTION EQUIPMENT

A May 2013 Toll System Assessment Report outlined that the legacy cash toll collection system installed in 2004 provided acceptable levels of performance, reliability and system uptime based on the originally intended functionality. However, the system was reaching the end of its anticipated life. In response, the Authority implemented a program to convert its legacy cash toll collection system at all toll plazas to a new toll collection system called the "Infinity System." The Infinity System has specific infrastructure requirements such as vehicle detection loops installed in a concrete roadway slab with non-metal reinforcement. The slabs are required to meet specific dimensional requirements to accommodate the way the loops are embedded in the concrete slab to sense vehicles and interact with other toll collection equipment.

The conversion to the Infinity System also included a system-wide upgrade of the AVI reader system to include multi-protocol readers. The upgraded AVI reader system was installed in preparation for the use of 6C protocol sicker tags on the turnpike system, and to provide nationwide interoperability of the toll system.

Open Road Toll Lane

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

» Improved accuracy allowing for maximized revenue collection.

» Programmed system enhancements for violation enforcement in staffed lanes, video audit, and reduced maintenance costs.

» The use of loops embedded in concrete slabs for vehicle classification, eliminating the use of maintenance-intensive treadles.

» Supports the addition of multi-protocol AVI Readers to the system.

Progress toward the Authority's transition to the Infinity Toll System with multi-protocol AVI Readers was completed following the opening of new toll plazas at the Exit 45 interchange in the fall of 2023.

TOLL PLAZAS

The Turnpike's 20 toll plazas are comprised of open-road toll lanes, space frames, tollbooths, canopies, gantries, utility buildings and other structures. The Authority's 20 toll plazas are located in the following 16 locations:

Mainline Toll Plazas

» York

» Scarborough (Exit 44)

» Falmouth (Exit 52)

» New Gloucester

» West Gardiner (I-95)

» West Gardiner (I-295)

Side Toll Plazas

» Wells (Exit 19)

» Kennebunk NB & SB (Exit 25)

» Biddeford (Exit 32)

» Saco (Exit 36)

» Scarborough (Exit 42)

» South Portland NB & SB (Exit 45)

» Jetport NB & SB (Exit 46)

» Westbrook/Rand Road (Exit 47)

» Portland/Westbrook (Exit 48)

» Gray NB & SB (Exit 63)

Toll Plaza at West Gardiner I-295 Barrier

TABLE 5: TABULATION OF TRAFFIC, REVENUE AND E-ZPASS USAGE

2022 Traffic Characteristic	York	Exit 44	Exit 52	New Gloucester	West Gardiner I-95	West Gardiner I-295	Side Toll Plazas
Annual Tolled Traffic (millions)*	15.0	7.3	3.3	5.7	3.9	8.3	40.6
Annual Revenue ($millions)**	$76.0	$9 .7	$3.8	$18.3	$7.9	$7.5	$37.1
Share of Total Turnpike Revenue	47.4%	6.0%	2.4%	11.4%	5.0%	4.7%	23.1%
Truck% (MTA Classes 3-6)	11.8%	5.5%	5.6%	14.1%	11.6%	8.0%	4.8%
Overall E-ZPass%	85.6%	82.7%	81.7%	80.1%	80.2%	76.8%	89.2%
Truck E-ZPass%	97.1%	96.4%	95.8%	98.3%	97.0%	95.6%	96.7%

* This table only includes vehicles that paid tolls; it excludes violators and non-revenue vehicles.

**Annual revenue totals are after business and personal discounts for Maine-based E-ZPass accounts are applied.

MAINLINE TOLL PLAZAS

The six mainline plazas generated over $124 million in toll revenue in 2022. This accounted for over three-fourths of all toll revenue collected by the Authority. The remaining toll revenue was generated by side toll plazas. A Tabulation of Traffic, Revenue and E-ZPass Usage is illustrated in **Table 5** (on the previous page).

Items of note include:

» The biggest contributors to Turnpike toll revenue are as follows:

- The York Toll Plaza is the greatest single contributor, and historically has accounted for more than 40% of all Turnpike toll revenue.
- The mainline plaza at New Gloucester is the next highest contributor, historically accounting for approximately 12% of all toll revenue.
- Combined, the side toll plazas account for about 25% of all toll revenue.

» The percentage of motorists with an E-Zpass continues to grow across the Turnpike system.

» From the plaza at New Gloucester and south, E-Zpass users account for more than 83% of all transactions. At the two plazas north of New Gloucester, E-Zpass usage is closer to 75%.

» At the plazas located on the I-95 mainline (i.e., York, New Gloucester, and West Gardiner I-95), trucks have historically accounted for slightly greater than 10% of all traffic. In 2021 this percentage increased to at least 12% at each location. Similarly, the percentage of trucks at other locations also increased. Truck volumes represented nearly 10% of the total traffic volume at West Gardiner I-295, and more than 6% at Exit 44 / I-295 and at Exit 52 / Falmouth Spur.

» E-ZPass usage among trucks is extremely high. Trucks equipped with E-ZPass now account for more than 95% of all truck transactions on the Turnpike system.

YORK TOLL PLAZA

The original York Toll Plaza, which consisted of eight cash lanes northbound and nine southbound, was constructed in 1969, was in poor condition, and was challenged by both operational and safety issues. Additionally, the existing toll system had reached the end of its useful life. Replacement of the original plaza with a new facility began in the fall of 2018 and was completed in September 2021. Removal of the old toll plaza was substantially completed by the fall of 2022.

York Toll Plaza

The York Toll Plaza is an Open Road Toll (ORT) Plaza at Mile 8.8, approximately 1-mile north of the original plaza and turnpike Exit 7. The facility features three ORT lanes in each direction as well as five southbound and four northbound cash lanes. This plaza is in new condition.

NEW GLOUCESTER TOLL PLAZA

In April 2013, the Authority opened the reconstructed New Gloucester Toll Plaza featuring three cash lanes and one ORT lane in each direction. The cash booths, slabs and toll collection equipment were also replaced or rehabilitated. As a result of the recent expansion and improvements, this plaza is rated in good condition. The plaza received additional improvements in 2020 including equipment upgrades related to the Infinity System and rehabilitation of the concrete roadway slabs serving the ORT lanes.

WEST GARDINER I-95 TOLL PLAZA

In November 2016, the Authority opened the reconstructed West Gardiner I-95 Toll Plaza. The reconstructed plaza consists of one ORT lane and two cash lanes in each direction. The cash booths, slabs and toll collection equipment were also replaced or rehabilitated. As a result of the recent expansion and improvements, this plaza is rated in good condition. The plaza received additional improvements in 2020 including equipment upgrades related to the Infinity System and rehabilitation of the concrete roadway slabs serving the ORT lanes.

WEST GARDINER I-295 TOLL PLAZA

Construction of the new West Gardiner I-295 Mainline Toll Plaza, and removal of the existing plaza, was completed in November 2021. The new facility consists of two ORT lanes and three cash lanes in each direction and operates using the new Infinity Toll System. This plaza is in new condition.

West Gardiner Barrier Toll Plaza ORT Lane

EXIT 44 TOLL PLAZA

In May 2019, the Authority opened a new ORT toll plaza at Exit 44 in Scarborough which consists of two ORT lanes and two cash lanes in each direction. Exit 44 connects the Turnpike to I-295 south of Portland making it vitally important to the interstate transportation network. This plaza is in good to very good condition.

EXIT 52 FALMOUTH SPUR TOLL PLAZA

In December 2017, the Authority opened the ORT lanes at the Falmouth Spur Toll Plaza, consisting of a single ORT lane and two cash lanes in each direction. All toll collection equipment was replaced with the Infinity System during the project. Exit 52 connects the Turnpike to Interstate I-295 north of Portland and is an integral part of the transportation network. Several elements were replaced or rehabilitated as a part of this work including new westbound toll booths, new slabs, and a new access tunnel. This plaza is in generally good condition.

SIDE TOLL PLAZAS

In the fall of 2022, the Authority completed a program to replace and upgrade its toll system at all side toll plaza locations. The upgrades transitioned the plazas to the Infinity System with multi-protocol AVI readers and also included repairs, modifications, and the addition of lanes to meet current needs.

The Turnpike's side toll plazas are in fair to good condition with many of the facilities being recently repaired or rehabilitated. The Exit 45 side toll plazas are in new condition.

Improvements at Exit 86 and Exit 75 were competed in 2017 and 2019 respectively. These improvements allowed for automatic vehicle classification and other system upgrades.

HNTB RECOMMENDATION

At several locations the epoxy overlays placed over the toll sensor loops are degrading due to normal wear and tear associated with traffic loadings and weather. These overlays protect the sensor loops embedded in the toll plaza slabs. HNTB recommends the Authority coordinate with their toll vender to replace the failing epoxy overlay where required to maintain functionality of critical components to the tolling system.

SPECIAL DAMAGE INSPECTIONS

Special damage inspections of toll plazas are conducted when collisions occur or a condition requiring a more detailed inspection is observed. When this occurs, HNTB conducts an immediate field investigation to determine the extent of the damage. In some cases, emergency repairs or lane restrictions are required to maintain safe operations.

One special damage inspection was completed as a result of a toll plaza crash since the issuance of the 2022 Operations and Maintenance Report. The crash occurred at the York Toll Plaza at Mile 8.80 on November 27, 2022, and involved a tractor trailer traveling southbound through cash lanes of the plaza. The truck impacted the nosing west of lane 3 as well as the toll booth and traffic control pedestal. HNTB completed a field visit and recommended repairs to the concrete booth surround, toll booth, traffic control pedestal, and guardrail damaged in the collision. The required repairs have been completed.

Service Areas and MTA Administration Building

SERVICE AREAS

The Turnpike system includes five service plazas and one transportation center at the following locations:

» Wells Transportation Center
» Kennebunk NB
» Kennebunk SB
» Cumberland SB
» Gray NB
» West Gardiner

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 fuel service station and food services. At the three larger plazas (Kennebunk NB and SB, and West Gardiner) 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. In 2023 the Starbucks stores were converted to Dunkin stores at Kennebunk NB and SB, and West Gardiner.

Replacement of the fuel system at the Gray service plaza was completed in the Spring of 2021. The Cumberland SB fuel system received maintenance repairs and was satisfactorily tested in the Spring of 2020. This work allows the existing fuel system to remain in operation through 2025. After 2025, annual testing will be required unless the system is replaced.

A contract to complete repairs to the exterior gutter systems, replace corroded entryway door systems, flooring, and other related repairs was completed in 2023.

Food concessions at each of the service plazas was managed by HMSHost Company until the summer of 2021 when Applegreen Limited acquired HMSHost Company's U.S. motorway business. With their acquisition of HMSHost now complete, Applegreen Limited continues to assess the current offerings and operations at MTA service plazas. Applegreen Limited has indicated they may request capital improvements at these facilities to support changes to current restaurant offerings and concepts, and to align the general operations of the buildings with the needs of the new concessions operator.

MTA ADMINISTRATION BUILDING

The MTA Headquarters building, located near the Jetport Exit at Mile 46, was constructed in 2009. The headquarters building includes office space for MTA staff and serves as the MTA's EZPass Customer Service Center. The State Police troop serving the Turnpike also operates out of the Headquarters building. In September 2021, the Authority finished improvements to its parking area. The work included the addition of seven parking spaces and the installation of additional lighting fixtures to ensure Turnpike patrons and employees have a safe and well-lit pathway to their vehicles.

Additional improvements to the MTA Administration Building are planned for construction in 2024. The improvements generally include routine and preventative maintenance, an LED efficiency upgrade of the lighting system, enhancements to the E-ZPass customer service center, replacing obsolete audio-visual equipment, and replacing various HVAC-related building systems that are at end of life. These investments are intended to maintain the Administration Building in a state of good repair, support operational efficiency, and meet the evolving needs of the MTA's operations.

HNTB RECOMMENDATION

Continued coordination with Applegreen Limited is recommended to understand the scope, cost, and timing of any requested changes at Service Areas to support the MTA's ongoing capital planning efforts. We recommend continued routine maintenance of service plazas to maintain the facilities in a state of good repair until the scope of changes at these locations, if any, are better understood.

At the Wells Transportation Center, the existing sewer pump station and sewer line experienced force main clogging and pump performance issues in 2021. The force main was cleared, and the pump was repaired. We recommend continued monitoring of the system and, if conditions warrant, completing additional repairs or replacements as needed to maintain reliable service.

As a supplement to the Annual Inspection Report, which captures the most pressing needs for improvement, separate Maintenance Reports for the service areas are also created and submitted as part of each annual inspection cycle. We recommend the Authority's maintenance personnel actively address the maintenance items reported to the degree practical.

Maintenance Facilities

Nine maintenance facilities are located along the Turnpike at the following locations:

» York (Chases Pond Road)
» York Mile 10 (Storage Building)
» Kennebunk (NB)
» Crosby (SB)
» Sign Shop (NB)
» Gray (SB)
» Auburn (NB)
» Litchfield (NB)
» West Gardiner (NB)

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**.

In 2020, the expansion and upgrade of eight vehicle storage garages originally built in the 1960s was completed. The work, located at five separate maintenance facilities, allow the garages to better accommodate modern plow truck configurations and provided improved storage conditions, enhanced access for maintenance, and upgraded electrical and HVAC systems.

The construction of an additional 8-bay garage at the Crosby maintenance facility is underway with completion scheduled in 2023. Once complete, this garage will house Turnpike equipment and the additional plow trucks needed to complete winter maintenance on the additional lanes that are under construction as part of the Portland Area Widening.

The 8-bay garage at the Litchfield Maintenance Yard was destroyed by fire on the evening of December 2, 2021. Following the fire, the design for a replacement garage was completed on a heavily accelerated schedule and a contract for the construction of a new 8-bay garage was awarded in March 2022. Construction of the new garage is underway and is expected to be complete in Fall of 2023.

All maintenance areas were found to be in generally fair to good condition.

Litchfield Maintenance Reconstructed 8-Bay Garage

SPECIAL DAMAGE INSPECTIONS

A special damage inspection of the York Maintenance Generator Building was completed following a fire that occurred on March 31, 2023. The inspection concluded the building, generator, and the primary electrical feed for the facility was damaged beyond repair. Turnpike maintenance forces installed temporary generator and completed necessary repairs to temporarily restore electrical service to the maintenance facility. The construction of permanent repairs, including the installation of a new generator, are planned for completion by the end of 2024.

HNTB RECOMMENDATION

As a supplement to the Annual Inspection Report, which captures the most pressing needs for improvement, separate Maintenance Reports for the maintenance areas are also created and submitted as part of each annual inspection cycle. We recommend the Authority's maintenance personnel actively address the maintenance items reported to the degree practical.

Bridges and Minor Spans

The Authority is responsible for the operation and maintenance of 182 bridges, defined as spans measuring more than 20 feet in length, and 16 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 National Bridge Inspection Standards established by FHWA require the inspection of bridges on a predetermined schedule and that the inspection data be reported in the National Bridge Inventory (NBI). 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 FHWA's 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 Turnpike's rehabilitation and repair program.

The MaineDOT uses AssetWise as their recording platform. The Authority, to maintain consistency and streamline the reporting of bridge condition data, reports inspection data to MaineDOT directly through AssetWise. The MaineDOT has given the Authority access to the online AssetWise 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 2023 routine inspection by HNTB identified that bridges along the Turnpike range from fair to very good condition. Minor spans range from poor to good condition. Structures that have been rehabilitated or reconstructed during the past 20 years were found to be in generally better condition than those that have not been recently rehabilitated.

UNDERWATER INSPECTION

The FHWA requires an inspection of underwater bridge elements every five years. The most recent underwater inspection was performed in the Summer of 2021 and included 18 bridges that carry the Turnpike over rivers and water bodies where certain elements of the substructures cannot be inspected as part of the routine inspection. The underwater inspection also included 10 minor spans and culverts where wa-

Hands-On Bridge Inspection

ter depths are typically too deep to allow for the use of routine inspection methods. No serious structural deficiencies were noted on the bridges during the 2021 underwater inspection. The overall condition of the visible portions of the underwater substructures ranged from fair to good condition. Most deficiencies observed were attributed to freeze-thaw deterioration and abrasion from ice and debris. One box culvert, Northern Hart Brook at Mile 79.9, was identified as being in poor condition.

The next underwater inspections should be completed in 2026.

DETAILED INSPECTIONS

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

The Androscoggin River Bridges, each measuring 850 feet long, consist of roadway surfaces supported on stringer and floor beam framing systems. The loads from these roadway framing systems are carried 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 National Bridge Inspection Standards. To achieve compliance with these inspection standards, the Androscoggin River Bridges receive a fracture critical inspection completed once every 24 months.

A fracture critical inspection was completed in May 2023. During the inspection several existing and new deficiencies were noted including numerous cracked welds. The cracks were not located on the primary girders and are not judged to pose a significant safety risk. Continued monitoring will be completed in future inspections and, if crack sizes increase over time, the issuance of a repair contract will be recommended. The next fracture critical inspection of these structures is scheduled for 2025.

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 five-year inspection frequency for ultrasonic testing is suggested. This frequency is based on engineering judgement since the FHWA does not have a required frequency for these components.

The most recent inspection using ultrasonic testing was completed in the fall of 2020. The ultrasonic testing concluded the pin-and-link assemblies remain in good condition. No serious deficiencies were found. The next detailed inspection is scheduled for 2025.

SPECIAL DAMAGE INSPECTIONS

The Androscoggin River Bridges, each measuring 850 feet long, consist of roadway surfaces supported on stringer and floor beam framing systems. The loads from these roadway framing systems are carried 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 National Bridge Inspection Standards. To achieve compliance with these inspection standards, the Androscoggin River Bridges receive a fracture critical inspection completed once every 24 months.

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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 five-year inspection frequency for ultrasonic testing is suggested. This frequency is based on engineering judgement since the FHWA does not have a required frequency for these components.

The most recent inspection using ultrasonic testing was completed in the fall of 2020. The ultrasonic testing concluded the pin-and-link assemblies remain in good condition. No serious deficiencies were found. The next detailed inspection is scheduled for 2025.

INSPECTION FINDINGS

During the Annual Inspection, major structure components such as the concrete deck, superstructure, and substructure are assigned condition ratings. When applicable, ratings area also applied to culvert and river channel elements. These components are assessed on a rating scale ranging from 0 ("Failed" condition) to 9 ("New" condition). The resulting condition ratings are then used to classify bridges into three general condition categories established by FHWA. These categories and their criteria are detailed below:

» **GOOD CONDITION** – The lowest condition rating of the above-noted components is 7 (good condition) or better. These bridges generally only require conventional bridge preservation measures, a majority of which can be addressed through routine maintenance.

» **FAIR CONDITION** – The lowest condition rating of the above-noted components is either 5 (fair condition) or 6 (satisfactory condition). These bridges are in need of repair but the structural safety of the bridge is not in jeopardy at the time of inspection.

» **POOR CONDITION** – The lowest condition rating of the above-noted components is 4 (poor condition) or worse. These bridges are also commonly referred to as "structurally deficient" and should be programed for repair as soon as practical. A structure in poor condition is not necessarily unsafe; however, these structures require repairs in the near future to ensure continued safe operations.

Current FHWA regulations require that no more than 10% of the total deck area of National Highway System (NHS) bridges be classified as structurally deficient, or in Poor Condition, for three consecutive years. If 10% or more of the deck area is in poor condition, FHWA requires that a larger portion of the State Agency's Federal Funding be reapportioned to bridges on the NHS. Although the Turnpike does not receive federal funding, Turnpike bridges located on the NHS network are included in the State of Maine's NHS bridge inventory.

Beginning in 2009 the Authority's bridge program focused on the rehabilitation or replacement of poor condition (i.e., structurally deficient) bridges. The 2009 inspection noted 24 poor condition bridges equaling 13.6% of all Authority owned bridges. The Authority's focus on the repair or replacement of Poor Condition bridges has been successful and, since 2019, the annual inspection has not identified any Poor Condition bridges on the Maine Turnpike. A tabulation of Authority owned bridges in "Good," "Fair," and "Poor" condition, based on total deck area by year, is provided in **Table 6.** By comparison, 5.0% of the nation's bridges, and 10.3% of Maine's bridges, were in Poor Condition in 2022 according to the FHWA's National Bridge Inventory database.

TABLE 6: TABULATION OF "GOOD," "FAIR" AND "POOR" CONDITION DECK AREAS

Year	All Authority Owned Bridges			NHS Authority Owned Bridges		
	"Good"	"Fair	"Poor"	"Good"	"Fair"	"Poor"
2023	26.8%	73.2%	0.0%	15.6%	84.4%	0.0%
2022	28.0%	72.0%	0.0%	18.3%	81.7%	0.0%
2021	29.0%	71.0%	0.0%	23.1%	76.9%	0.0%
2020	30.3%	69.7%	0.0%	25.0%	75.0%	0.0%
2019	34.3%	65.7%	0.0%	29.2%	70.8%	0.0%
2018	34.8%	63.8%	1.4%	28.7%	68.4%	2.9%

TABLE 7: STRUCTURALLY DEFICIENT ("POOR" CONDITION) STRUCTURE SUMMARY

Year	Structure Name	Structure Type	Mile Marker	Status
2022	N/A[1]	N/A	N/A	N/A
2022	N/A[1]	N/A	N/A	N/A
2021	N/A[1]	N/A	N/A	N/A
2020	N/A[1]	N/A	N/A	N/A
2019	N/A[1]	N/A	N/A	N/A
2018	Crediford Brook	Minor Span	18.75	Rehabilitation completed in 2018
	I-295 S.B. Underpass	Bridge	102.50	Rehabilitation completed in 2018

[1] No bridges or minor spans are structurally deficient in 2019, 2020, 2021, 2022 or 2023.

Table 7 (on the previous page), Poor Condition Structure Summary, provides a listing of all Authority owned structures classified in poor condition since 2018. The table also identifies programmed repair and 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. Whereas there are no Poor Condition bridges in the turnpike's inventory, the capital improvement program now reflects an increased focus on bridge repair and preservation. The goal of the program is to maintain current bridge conditions and, to the extent practical, complete repairs before structural elements reach poor condition status.

2023 BRIDGE REHABILITATION AND REPLACEMENT PROJECTS

Several rehabilitation and repair contracts were issued for construction in 2023. Rehabilitation and repair contracts include work such as deck replacement, concrete rehabilitation, replacing substandard bridge elements such as joints, railings, and end posts, increasing bridge under clearance, improving load capacity, and other miscellaneous repairs.

Following is a summary of bridge rehabilitation and repair work issued for construction in 2023:

EAGLES NEST ROAD SOUTHBOUND OVERPASS (MILE 60.81)

The work includes superstructure repairs, including the installation of a new diaphragm adjacent to an area of collision damage.

ROUTE 122 UNDERPASS (MILE 74.0)

The work includes superstructure replacement and raising and will provide a wider bridge with increased vertical clearance over the Turnpike. Substructure repairs, replacement of the steel girders and bridge deck, and modification and raising of the bridge approaches on Route 122 are included.

Replacement of the Route 197 Bridge was Completed in 2023

EXIT 102 INTERCHANGE (MILE 102.0)

This bridge and associated interchange ramps are being removed. A new interchange ramp is being constructed near the adjacent Route 126 bridge. This change maintains existing interchange connectivity while eliminating a bridge and associated interchange from the turnpike's inventory.

BRIDGE JOINT HEADER REPAIRS –VARIOUS LOCATIONS

The work includes replacing existing deteriorated or rutted asphalt pavement along armored bridge expansion joints with elastomeric concrete headers. Once complete, the concrete headers will protect the steel bridge joints from plow damage and reduce the need for more extensive and costly repairs in the future.

WIDENED CONCRETE HAUNCH REMOVALS – VARIOUS LOCATIONS

On many turnpike bridges built before the mid-2000s, the deck steps downward along the edges of each bridge girder, a detail that was commonly used by bridge owners throughout the region. Agencies have since determined these unreinforced sections of the concrete deck, referred to as "widened concrete haunches," are prone to premature cracking and deterioration. In some instances, portions of the concrete haunch have fallen onto the roadway below. Turnpike-owned bridges with this detail have been identified and prioritized for periodic inspection by maintenance crews, and for removal of the widened haunches by contract as resources allow. Where removals are contemplated, the work is generally included as part of other programmed bridge work in the area.

2023 EMERGENCY AND UNANTICIPATED BRIDGE REPAIRS

Emergency and unanticipated bridge repairs are periodically required and are usually related to collisions caused by vehicles hauling loads exceeding legal limits. 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, combined with the installation of over-

height vehicle detection systems at selected locations, has resulted in a significant decrease in the number of yearly overheight vehicle impacts. However, several structures with substandard vertical clearance remain. These structures have an increased risk of being struck by an overheight vehicle.

Following a major rainfall event in early May 2023, the Town of Sabattus Public Works Department reported a sinkhole within the approach roadway to the Furbush Road Bridge over the Maine Turnpike. An inspection by HNTB concluded one of the three 72" diameter corrugated metal culverts beneath the approach had failed, leading to the erosion of roadway embankment material. The damage necessitated closure of the roadway. Replacement of all three culverts, which are collectively long enough to meet FHWA's definition of a bridge, was recommended. Discussions with the Town and research completed by Maine Turnpike staff concluded ownership of the structure was unclear. Whereas the structure was immediately adjacent to the Turnpike mainline, and the proper functioning of this crossing was critical to MTA operations, the Authority voted to assume responsibility for this structure. Repair plans were developed and replacement of the three culverts was completed in August of 2023.

Maxwell Brook Culvert Replacement

No significant emergency and unanticipated bridge repair projects have been completed since the issuance of the 2022 Operation and Maintenance Annual Report.

HNTB RECOMMENDATIONS (2024 BRIDGE REHABILITATION PROJECTS)

Based on the findings of the 2023 Bridge Inspection Program, HNTB recommends the following bridge repair and rehabilitations for 2024:

BRIDGE WEARING SURFACE AND JOINT REPAIRS – VARIOUS LOCATIONS

Bridge preservation work is programed at multiple locations and includes wearing surface replacement and joint repairs. The following locations are programmed for repair:

- » Spruce Creek Overpass (Mile 2.20)
- » Exit 7 Interchange Underpass (Mile 6.80)
- » West Kennebunk/Alfred Road Underpass (Mile 25.30)
- » Saint Lawrence And Atlantic Railroad Overpass (Mile 74.50)
- » Lambert/Blackstrap Overpass (Mile Fs 0.30) (Joint Header Repairs Only)
- » Auburn Street Underpass (Mile Fs 0.60) (Joint Header Repairs Only)
- » Maine Central Railroad EB And WB Underpasses (Mile FS 0.40 And 0.41)

SACO INTERCHANGE IMPROVEMENTS – OPENING OF EXIT 35 (MILE 35.70)

The work, which is being completed as part of the planned opening of a new Exit 35, includes bridge work at the Exit 36 Saco Interchange Bridge and the North Street / Route 112 Bridge. The work at both bridges includes wearing surface replacement and joint repairs. At the Exit 36 Bridge, concrete slope protection modifications will be completed to accommodate the construction of a new collector-distributor road under the bridge. This project was issued for construction in 2022 and is scheduled for completion in 2025.

HNTB RECOMMENDATION (2024 BRIDGE PAINTING PROJECTS)

The Authority has implemented an effective painting program intended to address deteriorating paint conditions. The program reduces the potential for costly future repairs that are necessary to correct steel corrosion. Since 1990, over 50 Authority owned bridges have been repainted, with the most recent painting projects occurring in 2018. The following bridges are scheduled for painting in 2024:

- » Route 26 Underpass (Mile 64.3)
- » Weymouth Road Underpass (Mile 66.2)
- » Bennett Road Underpass (Mile 68.6)

The cost of repainting existing steel girders versus replacing the steel girders is considered for all bridge rehabilitation projects and is evaluated as part of the Maine Turnpike's typical project development process. The analysis should consider cost, the load capacity of the existing girders, and the condition of the existing paint system.

BRIDGE OPERATIONS AND MAINTENANCE PROGRAM

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

- **DECKS** Sweep (power broom) and flush with ordinary water (preferably power rinse) particularly the gutter areas. Patch areas of obvious concrete delamination and potholes. At the deck underside remove areas of concrete delamination over lanes of traffic.
- **PARAPETS** Power rinse. Periodically apply concrete sealer.
- **SUPERSTRUCTURE** Power rinse the beams, girders, and bearings, particularly at expansion joint locations.
- **SUBSTRUCTURE** Power rinse and/or clean debris from bridge seats, periodically apply concrete sealer.

The Authority maintains detailed bridge files as part of its 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 its 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 aid in the prioritization of bridge repair projects. These uses require that bridge load ratings are 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 each time the condition rating of a key element drops below established thresholds set by FHWA.

The Authority has begun the process of rating all its applicable bridges for the new "Emergency Vehicle" requirements laid out in the FHWA Memorandum on "Load Rating for the FAST Act's Emergency Vehicles" with 2018 Revisions dated March 16, 2018. Since 2019, the Authority, HNTB, and the MaineDOT have been working together to develop rating computations that meet the FHWA requirements and deadlines. Emergency Vehicle updates have been performed on structures with State Legal Load ratings below 1.0, as well as structures considered to be the most likely to require posting as a result of overweight Emergency Vehicles.

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.

BRIDGE GEOMETRICS

The Authority's bridge inventory includes structures that are not compliant with current geometric design guidelines. These structures have narrow lanes or shoulder widths, substandard clearances, or the inability to handle current traffic volumes. When practical, the Authority should consider including improvements such as bridge raising and shoulder widening in its Capital Improvement Program to address substandard bridge geometrics.

Ancillary Structures

The Authority is responsible for 145 ancillary structures including 59 overhead sign bridges, 15 overhead cantilever sign structures, 1 light bridge, 10 AVI mast-arms, 10 space frames, 15 variable message signs on posts or butterfly supports, 4 communication towers, 4 overheight vehicle detectors, 8 weather stations,

2 sets of high mast lights, and 17 bridge-mounted signs. These structures carry regulatory, route marker, warning, and specialty signage or equipment. Routine ground-level inspections of these ancillary structures are conducted yearly as part of the annual inspection. No significant deficiencies were observed during the 2023 inspection.

Sign structures, high mast light poles, mast arms and other ancillary structures located over, or immediately adjacent to, roadways require hands-on inspections every six years per FHWA guidance. In 2020, hands-on inspections were performed for the 81 Authority owned assets meeting this criterion. The inspection concluded these assets are in generally good condition. No significant deficiencies were observed.

HNTB RECOMMENDATION

The continuation of annual routine inspections is recommended. Additionally, we recommend the next hands-on inspection cycle for all overhead sign structures occur in 2026. 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 at least once every six years.

Ancillary Structure Inspection

Building Needs Assessment

At the request of the Authority, HNTB completed a building needs assessment of the 95 buildings owned and maintained by the MTA. The buildings have a total floor space of over 460,000 square feet. The resulting June 2023 report concluded MTA buildings are in generally fair to very good condition. Recommendations were provided for the scope and timing of capital improvements and maintenance activities needed to maintain MTA buildings in a state of good repair, to support efficient operations, and to meet the evolving needs of the Turnpike and the traveling public. Many of the recommendations included in the Building Needs Assessment Report have been incorporated into the MTA's Capital Plan.

HNTB RECOMMENDATION

We recommend completing the capital improvement and maintenance activities outlined in the June 2023 Building Needs Assessment Report.

Emergency Generator Assessment

In May 2022 an evaluation was completed of the MTA's 43 emergency standby generators. The evaluation identified three units in need of replacement due to either poor condition or a lack of manufacturer support. The Biddeford Toll generator was recommended for replacement as soon as practical, the Central Inventory Generator was recommended for replacement within the next five years, and the West Gardiner Maintenance generator was recommended for replacement in the next five to ten years. Replacement generators for all three locations were ordered in October 2022 with delivery and installation expected in the first half of 2024.

HNTB RECOMMENDATION

The MTA should retain the services of a qualified firm to complete periodic testing and routine maintenance of the MTA's generator inventory.

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 on the Turnpike between the I-95 Piscataqua River Bridge and Exit 7 are toll-free. Historically, these trips account for about 17% of all trips taken on the Turnpike. Additionally, all trips between Exit 75 in Auburn and Exit 86 in Sabattus are toll-free. Historically, these trips account for roughly 2%-3% of the trips on the Turnpike that occur north of Exit 7.

E-ZPass Group

On February 1, 2005, the Authority implemented its current electronic toll collection (ETC) system, E-ZPass, thereby gaining admission into the E-ZPass Group. Formerly known as the Inter Agency Group (IAG), membership provides the Authority with a voice in one of the largest and most successful toll collection systems in the world. Originally founded in 1990, members of the E-ZPass Group have collected over $14.5B in tolls in 19 states from more than 53 million collection tags.

The primary mission of the E-ZPass Group is to enable E-ZPass members to provide the public with a seamless, accurate, interoperable electronic method for paying tolls and fees as well as the ability to collaborate with other agencies regarding new technologies and services. Since becoming a member of the E-ZPass Group, the Authority has increased electronic revenue collections, reduced toll plaza footprints, and maximized collections while increasing efficiency and maintaining customer satisfaction.

Toll Schedule

Events related to the COVID-19 pandemic had a significant impact on Turnpike traffic and revenue beginning in 2020. However, traffic volumes have largely recovered. For calendar year 2022 total transactions were 87,963,242, up 4.1% compared to 2021 and down 2.6% compared to 2019. Toll revenue for 2022 was $160,229,824, an increase of $21.5 million, or 15.5%, over 2021 values. Calendar year 2022 revenue exceeded the pre-pandemic record set in 2019 thanks, in part, to the turnpike's 2021 toll adjustment.

The toll schedule was most recently adjusted in 2021. Cash rates for Class I Vehicles are:

» $4.00 York Toll Plaza

» $2.25 New Gloucester Toll Plaza

» $1.75 West Gardiner I-95 Toll Plaza

» $1.50 Wells NB-On and Gray SB-On Toll Plazas

» $1.00 All remaining locations

A passenger car traveling the full length of the turnpike pays $8.00 (7.2 cents per mile), while five axle tractor trailers pay $32.00 (28.8 cents per mile). E-ZPass patrons who have an E-ZPass tag from other toll authorities are charged the cash fare.

Maine E-ZPass fares are 8.0 cents per mile. The E-ZPass fares are structured in such a way that they are equal to, or less than, the cash rate for a given movement. For those who acquire their E-ZPass tag from the Authority, the following discount programs are available:

DISCOUNT PROGRAMS

Patrons who drive a motorcycle, passenger car, van, or pickup with four tires or less can establish a Personal Account. The advantages of a personal account include having tolls automatically deducted from their pre-paid balance when traveling on the 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. Passenger cars with a Maine-based E-ZPass account save an average of 19% compared to the cash rate, before the application of Volume Based Discounts.

PERSONAL VOLUME BASED DISCOUNT

The Authority offers the personal 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 20% if more than 30 one-way trips occur in a month, and a 40% discount if 40 or more one-way trips occur in a month.

TABLE 8: 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

BUSINESS VOLUME BASED DISCOUNT

Business Accounts are intended for commercial vehicles. As with passenger cars, commercial vehicles having an E-ZPass tag from the 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 a pre-paid or a post-paid account, or a combination of the two.

POST-PAID PLAN VOLUME DISCOUNT

Commercial vehicles with a post-paid Maine Turnpike E-ZPass account (with the required $5,000 surety bond) receive an additional "volume discount" based on the amount of their monthly tolls. **Table 8** summarizes the Post-Paid Plan Volume Discount program. In essence, all tolls in excess of $50 for the month are discounted between 10% and 20%. On a system-wide basis, post-paid E-ZPass business accounts receive an average volume discount of over 17%. 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 produces an average savings of roughly 45% compared to the cash fare.

Pre-paid commercial accounts do not require a surety bond, but they do not provide their account holders with a volume discount. However, the accounts do receive the normal E-ZPass discount compared to the cash fare. This discount averages about 33% for commercial vehicles.

West Gardiner I-295 Barrier ORT Toll Plaza

4. TRAFFIC MANAGEMENT AND TECHNOLOGY

Since opening in 1947, the Turnpike has served as a vital transportation link for the state. Two common transportation measures are used to compare historical volumes on the Turnpike: annual Vehicle-Miles Traveled (VMT) – the estimated number of miles traveled on the Turnpike throughout the entire year, and annual number of trips – the estimated total number of trips along the Turnpike. In 2022, the Turnpike logged a record 1.57 billion VMT and approximately 85.6 million trips. For historical comparison purposes, 72.5 million of those trips occurred north of Exit 7. **Figure 3** illustrates the trends of both measures over the past 20 years.

The average length of turnpike trips decreased from an average of 23.6 miles in 2002 to a low of 21.0 miles in 2020. **Figure 4** illustrates that average trip length increased slightly to 21.5 miles in 2022, but remains well below historical averages. The data indicate more motorists are using the Turnpike for short, local trips, now than in the past.

FIGURE 3: VEHICLE MILES TRAVELED AND ANNUAL TRIPS

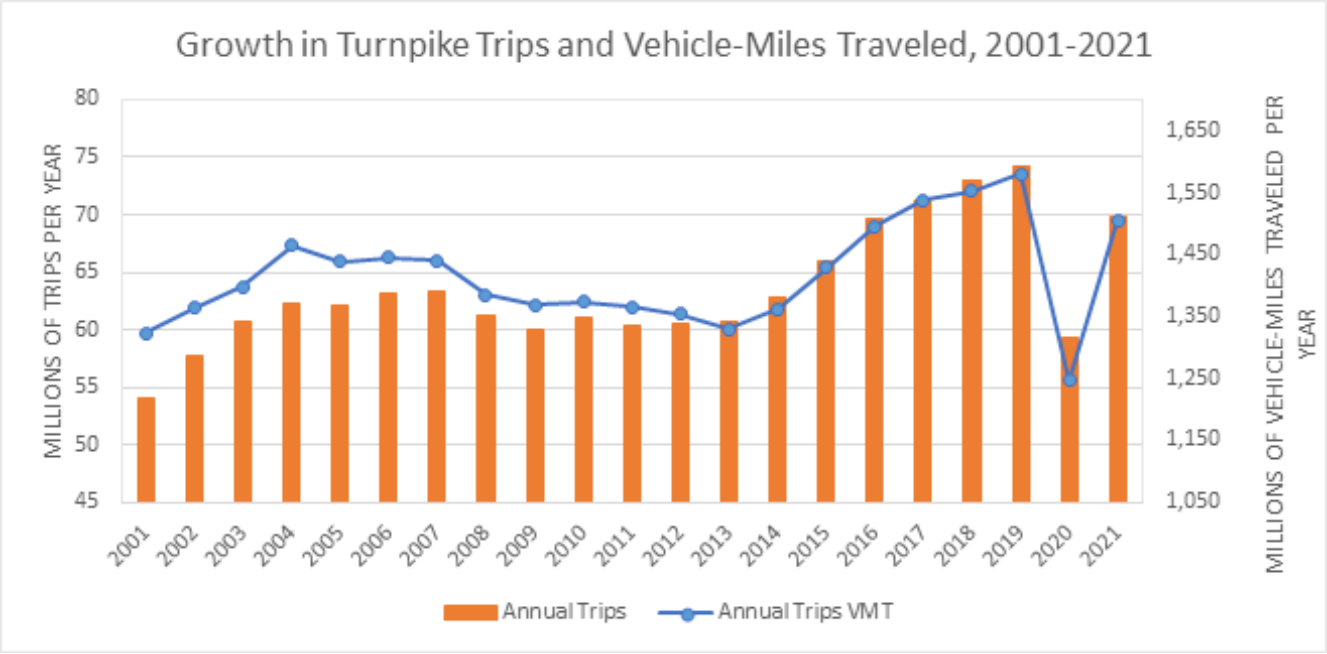
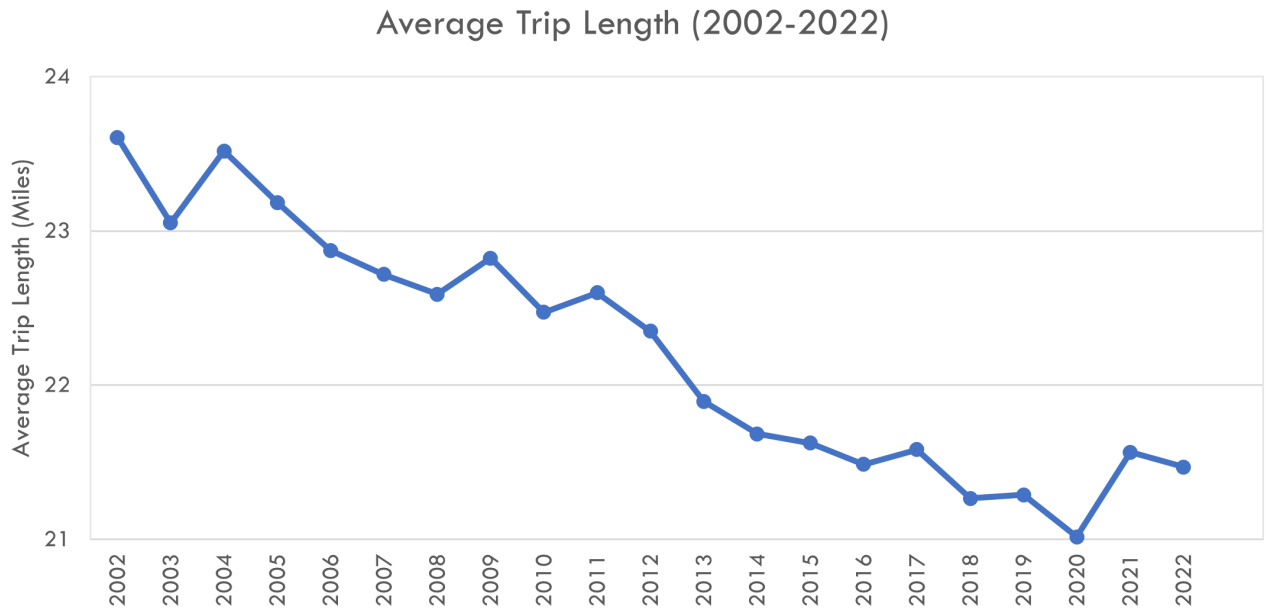


FIGURE 4: AVERAGE TRIP LENGTH (2002-2022)



Reduced Speed Limit Signs

As part of an overall effort to reduce vehicle speeds and crashes during poor travel conditions, the Authority maintains eighteen "45 MPH Reduced Speed Limit" signs that are controlled remotely from the Turnpike Communication Center. In addition, all new ORT lanes are specified to include variable speed limit sign.

Traffic Count Stations

To gather accurate and timely traffic data, the Authority began installing traffic count stations at interchanges in 1996. The controllers currently utilize side-fired radar technology to continuously record traffic volume and speed data. The system enables the Authority to collect the data automatically. The existing count stations cover each ramp and the mainline section from the Maine state line through Mile 103 in West Gardiner.

In 2022, the Authority started the process of evaluating and modernizing their existing traffic count stations, with plans to replace existing and add new count stations through 2024 along the entirety of the Turnpike.

Roadway Sensors

There are eight Roadway Weather Information Systems (RWIS) located on the Turnpike – installed between 2008 and today. Each location measures the surface temperature of the road, road state (dry, damp, wet, frost or ice), and other factors. This information helps maintenance supervisors make cost-effective decisions regarding the application of de-icing materials during winter storm events and provides detailed information regarding changes in weather conditions along the length of the Turnpike. RWIS are currently installed at the York River Bridge (Mile 5,2), York Maintenance (Mile 10), the Saco River Bridge (Mile 33.0), the Falmouth Spur Presumpscot River Bridge (Mile FS1.1), the Eagles Nest Road Bridge (Mile 60.8), the Poland Spring Road Bridge (Mile 74.2), the Androscoggin River Bridge (Mile 78.9), and at the Sabattus Interchange (Mile 86.1).

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 15 VMS and 28 portable changeable message signs installed 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, and delays. Message displays are controlled by Turnpike dispatchers from the communication center at the Authority Headquarters.

In 2017, the Authority installed two additional VMS at the southbound Kittery weight station at Mile 4.3 and on I-195 Westbound, just east of the Saco Exit 36 Toll Plaza. In 2019 the Authority installed one additional VMS at Mile 32.5 northbound and one each northbound and southbound near Bald Hill Road at Mile 71.6.

Variable Message Sign

Twenty-eight 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 and, since that time, has expanded the system to cover nearly the full length of the Turnpike. Transmitters along the Turnpike are located in strategic locations to provide information at critical decision points along the highway, typically at or near interchanges.

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.

In 2011 an additional HAR transmitter was installed in the vicinity of the Kennebunk Service Plazas to better cover a gap in reception between adjacent transmitters. In 2019 the HAR transmitter near the existing York Toll Plaza was relocated south to Mile Marker 6.2 and two new transmitters were constructed at Mile Markers 15.4 in Wells and 58.3 in Cumberland to further reduce gaps in reception. An additional HAR transmitter was installed in the vicinity of Brighton Avenue at Mile 48.3 in 2022. The Highway Advisory Radio Transmitter Locations are listed in **Table 9** below. Each transmitter location is 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.

TABLE 9: HIGHWAY ADVISORY RADIO TRANSMITTER LOCATIONS

Town/City	General Location	Mile Marker
York	I-95 SB at Cider Hill Underpass	6.2
Wells	I-95 SB at Tatnic Road Underpass	15.4
Wells	I-95 SB at Sanford Road Overpass	19.1
Kennebunk	I-95 SB at Fletcher Street Overpass	25.3
Saco	I-95 NB at Boom Road Underpass	33.4
Scarborough	I-95 NB at Holmes Road Underpass	43.0
Portland	I-95 NB at Brighton Avenue Underpass	48.3
Falmouth	Exit 53 On-Ramp	53.0
Cumberland	I-95 NB at Sign Shop	58.3
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

Closed Circuit Television (CCTV) System

There are currently 13 CCTV cameras transmitting streaming video 24-hours a day, seven days a week, to monitors located in the communication center at the Authority Headquarters. Still images from these cameras are also viewable on the 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
» Mile 108.8 – SB Only

These cameras allow the Turnpike Communication Center to view traffic in the vicinity of these heavily traveled interchanges.

Two additional CCTV cameras are located with the Road Weather Information Systems (RWIS) that were installed in the fall of 2008 at the Saco River Bridge in Saco and Eagles Nest Overpass in Gray. Presently, these cameras are providing still images viewable through the RWIS website, but the cameras do have the capability to provide streaming video.

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

One additional CCTV was installed in 2018 and is collocated with the newly installed VMS at the Southbound Kittery weight station. Six Additional CCTVs were installed in 2019 and are located with the RWIS at York River north median, Mile 10.00 southbound, Mile 74.20 southbound, Androscoggin River southwest end post, Mile 86.15 northbound, and Presumpscot River east median.

Overheight Vehicle Detection System

Many of Turnpike bridges have been struck and damaged by overheight loads. This issue has been mitigated by the Authority's policy of increasing bridge underclearance as part of bridge rehabilitation projects and by constructing new bridges with a minimum of 16.5 feet of underclearance. However, several bridges still have minimal underclearance and have a potential for damage if struck by an overheight vehicle. The Authority has addressed this concern by installing Overheight Vehicle Detection Systems 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 or exit the highway. The Turnpike's Communication Center is also notified of the occurrence and receives video of the incident. A system was installed on Auburn Interchange in 2013 and on the mainline in West Gardiner in 2014. A system currently in place on the Warren Avenue Bridge was removed in 2021 following replacement of the old bridge.

Go Maine Program

Between April 2013 and October 2021, the Authority administered the GO MAINE Program. GO MAINE is a statewide commuter program designed to help commuters find information on alternatives to commuting alone. GO MAINE helps match up carpoolers online and rewards people for using a "green commute." Beginning in October 2021, administration of the GO MAINE program was transferred to MaineDOT to support a further expansion of the program across the State. The Turnpike continues to play a supporting role in the program.

Park & Ride Lot Program

Currently, the Authority owns a network of eight Park & Ride lots and is responsible for the maintenance of one additional MaineDOT Park & Ride lot. The MTA maintained lots, combined with four additional MaineDOT maintained lots, provide Park & Ride facilities at or near most Turnpike interchanges. The Authority strongly encourages motorists to utilize these Park & Ride lots to reduce congestion on the Turnpike through ridesharing. Lot usage is monitored annually to confirm sufficient capacity is available.

Figure 5 summarizes overall Park & Ride Lot Usage from 2002 through 2023. The data is reflective of the number of vehicles observed on the day of the survey. The survey is completed annually on weekdays between 9 a.m. and 5 p.m. to capture lot usage during commuting hours.

Park and Ride lot usage remains lower than Pre-COVID utilization levels. The 2023 survey found 41% of available spaces were in use on average, down from the peak utilization of 59% in 2019.

FIGURE 5: PARK AND RIDE LOT USAGE - 2001 THROUGH 2022

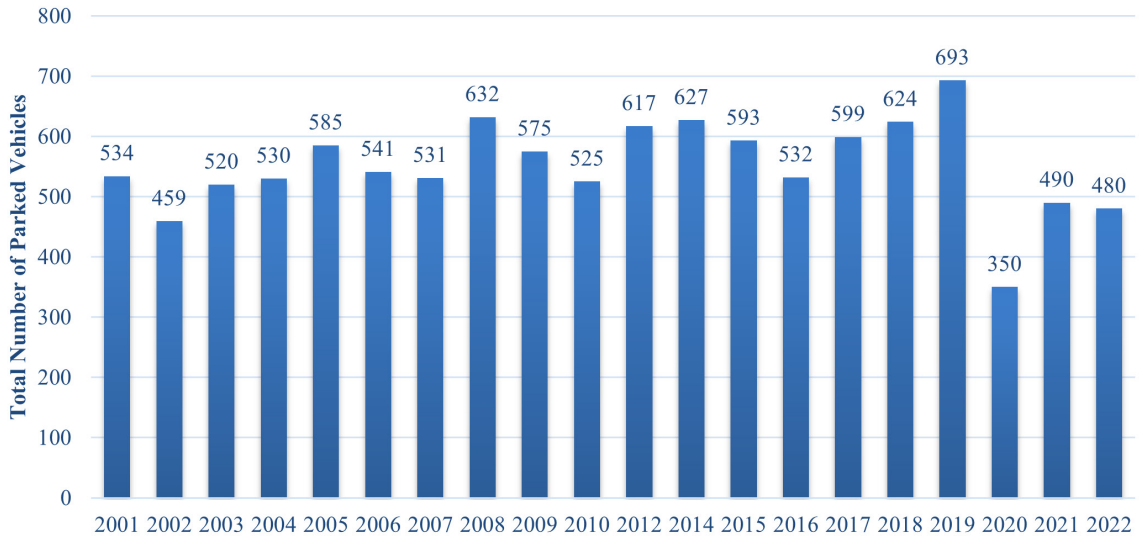


TABLE 10: 2023 PARK AND RIDE LOT USAGE PER LOCATION

Town	Location	Owner	Maintained By	Spaces	2023 Spaces in Use	% Capacity
York	Chases Pond Road, US-1 Connector	MaineDOT	MTA	26	13	50%
Wells	Maine Tpk Exit 19, adj. to Wells Trans Ctr.	MTA	MTA	96	37	39%
Kennebunk	Maine Tpk Exit 25 SB, on Rt. 35	MTA	MTA	53	30	57%
Biddeford	Maine Tpk Exit 32, on Rt. 111	MTA	MTA	155	85	55%
Saco	I-195 Exit 1, on Industrial Park Road	MaineDOT	MaineDOT	146	75	51%
Scarborough	Maine Tpk Exit 42, shared w/ Cabela's Parking Lot	MTA	MTA	64	22	34%
S. Portland	Maine Tpk Exit 45, on Rt. 703	MaineDOT	MaineDOT	111	13	12%
S. Portland	Maine Tpk Exit 46, adj. to toll plaza	MTA	MTA	59	42	71%
Westbrook	Larrabee Road, near Maine Tpk Exit 47	City	City	90	39	43%
W. Falmouth	North side of Hannaford behind the Irving	Town	Town	9	7	78%
Gray	Maine Tpk Exit 63, on US-26	MTA	MTA	129	37	29%
Auburn	Maine Tpk Exit 75, on US-202	MaineDOT	MaineDOT	137	34	25%
Lewiston	Maine Tpk Exit 80 - Route 196	MTA	MTA	92	40	43%
W. Gardiner	Maine Tpk Exit 102, near Rt. 126	MTA	MTA	54	14	26%
			Overall	1,221	488	40%

Table 10 (on the previous page) summarizes Park & Ride Lot Usage per location, on the day it was surveyed, as part of the 2023 Annual Inspection of the Turnpike. The table also records the number of spaces available at each lot, as well as each lot's operational capacity. The 2022 Park & Ride Lot usage survey was completed in July of 2023.

Turnpike Safety and Law Enforcement

The Maine Turnpike has a crash rate that is approximately one third the national average and one half the State of Maine average, as illustrated in **Figure 6**. In 2022, a total of 1,002 crashes were reported with approximately 20% resulting in personal injury. The three most common types of crashes on the turnpike include vehicles going off the road, rear-end/ sideswipe crashes, and collisions with animals. Driving too fast for the conditions and following too closely are the two most common contributing factors to turnpike crashes.

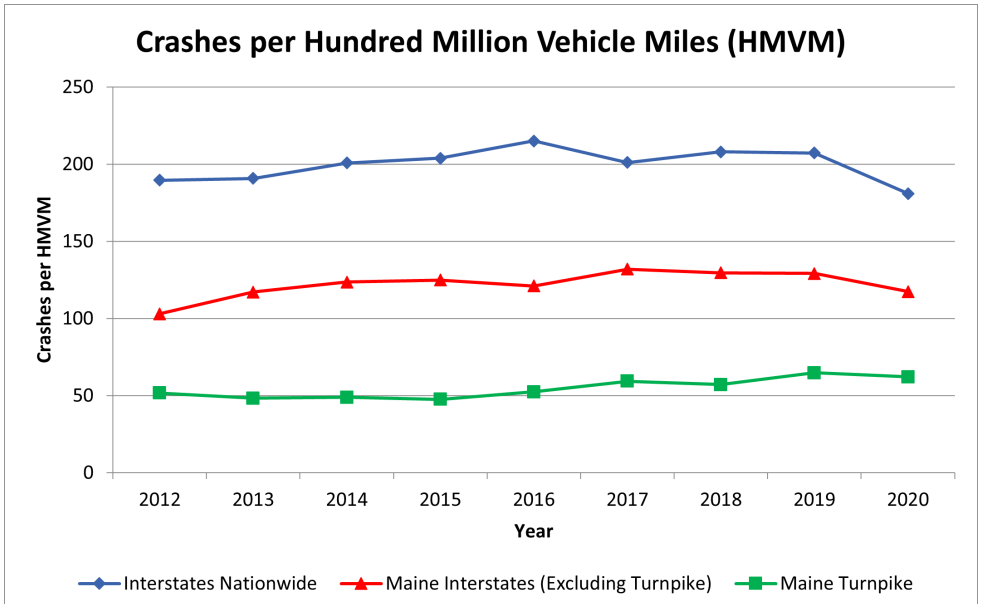
The monitoring of High Crash Locations (HCLs) is an important metric used to monitor and measure the safety of the turnpike system. An HCL is defined as a location with more than eight crashes in a three-year period, and a Critical Rate Factor (CRF) greater than 1.0. The CRF relates the crash rate at a location to the statewide crash rate average for a similar type of facility. For the most recent 3-year period ending in 2022, there were 23 HCLs on the turnpike system which includes the mainline, toll plazas, and interchange ramps. **Table 11** (on the next page) outlines current HCL locations based on crash data and analysis developed by MaineDOT.

The 23 HCLs identified in 2022 represent a decrease from the 26 HCLs identified in 2021 and 2020.

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 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, Sergeants, Corporals and Troopers assigned to the Turnpike. In recent years, the staff size of Troop G has ranged between 20 and 25. These troopers are responsible for patrolling the entire Turnpike, 24-hours a day, 365 days per year. The 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.

FIGURE 6: CRASHES PER HUNDRED MILLION VEHICLE MILES (HMVM)



Turnpike Safety Patrol

In October 2016 the Authority started a safety patrol program to cover PM peak hours in the Portland area year-round, and in the Kittery area during the summer season. In October 2018 this successful service was expanded to provide additional hours of coverage. In October of 2021, GEICO became the new program sponsor and an additional 1,000 hours of patrol time were added. The most frequent calls are for disabled vehicles, fuel, tire changes, and welfare checks for vehicles that are stopped but not disabled. Vehicles on the side of the road can cause congestion and can lead to safety hazards. Clearing them quickly and efficiently is crucial to maintaining mainline operations.

Maine Turnpike Safety Patrol Vehicle

TABLE 11: HIGH CRASH LOCATIONS

Mile Marker	Location	No. Years as an HCL (2015-2021)	Most Recent Critical Rate Factor	Most Recent % Injury	Most Recent Total Crashes
0-1	NB Mainline	1	1.08	30.8	26
2	Merge	3	2.2	11.1	9
2-3	SB Mainline	1	1.22	31.8	22
3	Diverge to C-D	1	1.22	31.8	22
7	Toll Plaza	3	3.94	13	46
25-32	NB Mainline	2	1.44	38.5	13
32	Toll Plaza	7	2.05	0	13
32	Intersection Adjacent to Ramp	7	1.71	32.9	85
36-42	NB Mainline	2	1.06	31	71
42	Intersection Adjacent to Ramp	5	1.13	16.7	30
42-44	NB Mainline	3	1.12	27.3	11
42-44	SB Mainline	2	1.16	20.5	39
44	Diverge	1	1.04	33.3	9
45	Toll Plaza	5	1.43	33.3	9
46-47	NB Mainline	3	1.39	20.6	34
48	Toll Plaza	4	3.38	8.3	12
48-52	SB Mainline	2	1.25	33.3	15
63	Intersection Adjacent to Ramp	4	1.07	14.3	35
63-75	NB Mainline	4	1.32	38.5	19
67	Toll Plaza	7	1.01	38.5	13
75	Intersection Adjacent to Ramp	6	7.88	57.1	27
75-80	NB Mainline	2	1.17	10	20
86-102	NB Mainline	3	1.74	16.7	18

5. MAINE TURNPIKE AUTHORITY/MAINEDOT JOINT INITIATIVES

Operations and Maintenance

The Authority and the MaineDOT have a long history of working together to provide an efficient transportation system. Beginning in 1995, the Authority provided winter maintenance and litter patrol for a fee on a two mile stretch of I-95 (from Kittery to York) that, at the time, was owned and maintained by the MaineDOT. The agreement also included cooperation with NHDOT for the winter maintenance of the Piscataqua River Bridge. In 2016 the Authority purchased this two-mile section and is no longer reimbursed for the related maintenance work. Winter maintenance of the Piscataqua River Bridge, however, is still reimbursed.

In 2014, the two agencies entered into an agreement that reimburses the Turnpike for the maintenance of various roadways and visitor centers connecting to the Turnpike roadway. Additional discussions occur annually to confirm that all overlap points are being covered in the most efficient manner.

In 2018, the MaineDOT called and needed help painting pavement markings on I 295 in Portland. The Authority forces worked the night shift during a week in August to paint pavement markings.

In the summer of 2021, MaineDOT made a portable temporary signal system available for the Turnpike's use at the Route 197 Bridge after it was struck by an overheight vehicle.

Additionally, the Authority coordinates with MaineDOT when developing pavement rehabilitation projects. Although the two agencies use differing standards, this working relationship has resulted in improved consistency for paving projects.

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 Turnpike or are consistent with the overall Turnpike Authority mission. Alternative programs, such as the ones identified below, are included in these transportation dollars provided to the MaineDOT.

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.

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.)

Project Development

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

In Auburn, the Authority provided land to the MaineDOT for a bus terminal and parking area. This project was completed in 2019.

Additionally, the MaineDOT and the Authority worked together on the I-295 corridor study to understand the implications to the Turnpike traffic flow and surrounding areas. This effort led to the installation of travel distance and time signage along the Turnpike in 2019 to encourage motorists to travel I-95, thereby relieving congestion on I-295.

This working relationship also involves the planning and construction of projects. Both agencies worked together on the Turnpike West Gardiner Service Plaza project, and on the Central York County and Gorham East-West Corridor Studies. Currently, MaineDOT and the Authority are coordinating regarding ongoing bridge preservation work and capacity enhancements at the Piscataqua River Bridge linking Maine and New Hampshire. This MaineDOT-led project is scheduled for completion in the fall of 2023.

6. PLANNING STUDIES

The evaluation of potential new transportation projects requires the completion of planning studies by the Authority to evaluate project viability and to identify the best available alternatives. Recent or ongoing planning studies are described in the following paragraphs.

Exit 32 Feasibility Study

In 2020 the Authority completed a study evaluating safety and capacity concerns related to the Exit 32 interchange and Route 111 in Biddeford. Specifically, the purpose of the study was to evaluate short- and long-term solutions to address building queues on the Exit 32 southbound off ramp, improve capacity at the Exit 32 and Route 111 intersection, and to improve accessibility between local communities and the Turnpike. The alternatives evaluated were designed to increase capacity near the existing interchange and to remove vehicles from congested areas by providing new connections. The alternatives include additional off-ramp lanes, signal modifications, new connections to Route 111 and South Street, and new interchange configurations.

The final feasibility report recommended short, medium, and long-term solutions that add capacity over time. Short-term recommendations included queue detection on the southbound approach to the intersection of Exit 32 and Route 111 as well as an increased deceleration length for the southbound off-ramp. Mid-term recommendations include constructing a new one-way southbound off-ramp connection from the Turnpike to Route 111 together with geometric and signal improvements at the intersection of Exit 32 and Route 111. The recommended long-term improvement involved a reconfiguration of the existing interchange together with a conversion of the southbound off-ramp extension to Route 111 into a two-way spur roadway. A connection between the future spur road and South Street, proposed to be completed by others, would further reduce vehicles from the congested intersection of Exit 32 and Route 111.

The proposed short-term improvements have been implemented. A portion of the mid-term solutions, including geometric updates to the intersection of Exit 32 and Route 111 to improve signal operations, were completed in 2023. A more detailed review of potential alignments for the proposed southbound off-ramp connection with Route 111 is currently underway. In

addition, the Turnpike, MaineDOT and the City of Biddeford began a joint feasibility study in August of 2021. The study is evaluating options for the addition of a connector road between Route 111 and South Street in the vicinity of Exit 32 with the purpose of improving mobility and relieving traffic congestion.

Exit 36 Feasibility Study

The Authority completed an initial feasibility study in 2019 in the vicinity of Exit 36 and Route 112 with the goal of identifying long-term improvements and addressing regional transportation issues. Specifically, the study sought to evaluate the potential for managing and improving access to Route 112, making safety improvements at intersections, maintaining, and improving easy access to and from the Turnpike, and separating local and through traffic as much as practicable.

The study documented existing conditions and evaluated alternatives that address transportation congestion and safety deficiencies. Alternatives were evaluated based on transportation measures, environmental resources, land use, cost, funding, and property impacts. The study concluded with a recommendation to modify the existing Exit 36 interchange together with a reopening of the Exit 35 interchange.

Construction of the project started in 2023 and is expected to be complete in 2025.

Exit 45 Feasibility Study

In 2018, two feasibility studies were completed for the Authority that evaluated several interchange alternatives at Exit 45 (the Maine Mall Exit) in South Portland. The first, the Exit 45 Conceptual Assessment of Interchange Alternatives, evaluated the need to replace the obsolete toll system and infrastructure which could no longer be maintained, address safety and operational deficiencies of the existing interchanges, and improve the substandard vertical clearance and deteriorating condition of the Exit 45 underpass bridge. Seven interchange concepts were evaluated. Three were recommended for further evaluation: 1) a modified no-build, 2) interim diamond interchange, and 3) a full build diverging diamond interchange.

The second feasibility study, the Exit 45 Analysis of Recommended Alternatives, documented a detailed refinement, evaluation, and feasibility of the three recommended alternatives to address short and long-term needs. The interim diamond interchange, which can accommodate a future Gorham Connector, was the recommended alternative.

Based on this recommendation, Exit 45 is being reconstructed as a Diamond Interchange to accommodate growing traffic numbers with two new ramp toll plazas and wider bridge. The existing bridge over the Turnpike has now been replaced and raised to provide a 16.5-foot clearance over the Turnpike. The existing toll booth has now been replaced with two new ramp toll plazas with both cash and electronic toll collection on either side of the mainline of the Turnpike. The interchange is now fully open to traffic with final construction elements scheduled for completion by Fall 2023.

Gorham Corridor Study and Alternatives Analysis

The Gorham Corridor Study began in the spring of 2009 at the direction of the 123rd Maine State Legislature and was 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 was to evaluate all the options and find the right package of alternatives to protect homeowner's quality of life over the long-term, without adding excess transportation capacity.

The study began when the municipalities of Gorham, Westbrook, Scarborough, and South Portland signed a joint resolution in 2007 asking for such a study, specifically to assess the feasibility of a new Turnpike Spur that will connect to the terminus of the Gorham By-pass located approximately 4.5 miles northwest of Turnpike Exit 45. The resolution stated that existing ways to manage traffic congestion, such as widening roads and adding turning lanes, would have a negative effect on their downtowns, village centers and neighborhoods. Both the Authority and MaineDOT officials believed that integrating all modes of transportation (transit, bike, pedestrian) was an integral part of the study.

A final study report was completed in the fall of 2012. Since that time, the Authority has been coordinating with the United States Army Corps of Engineers (ACOE) to finalize a project purpose statement and determine next steps moving forward.

In 2017, a bill was introduced to the Maine State Legislature that would allow the Authority to borrow up to $150 million to plan, design and build a spur from the terminus of the Gorham Connector at Route 114 in South Gorham to the Turnpike in the area of Exit 45 in Scarborough. This bill, LD 905, was voted and signed into law in May of 2017.

In 2019, a traffic and revenue feasibility study was completed for the Authority and concluded a new Gorham Connector would be financially viable. Since 2020, work has continued on the Gorham Connector Alternatives Analysis. The analysis is evaluating a range of capacity adding roadway alternatives and includes ongoing coordination with the ACOE and MaineDEP. An updated traffic and revenue feasibility study, incorporating post-COVID traffic data, is also being developed.

Safety and Capacity Study

In 2022, the Authority requested an updated Systemwide Traffic Operation and Safety Study of the Turnpike to assess both current and future operating conditions of all interchanges, mainline sections, ramps, and toll plazas between Kittery and Augusta. Typically, the Safety and Capacity Study is prepared every five years.

The data collected and analyses performed resulted in a series of recommendations. These recommendations include potential future improvements such as roadway or interchange ramp widening, the addition of toll plaza capacity, and safety improvements. The recommendations in the report are accompanied by an approximate timetable of when the improvements will become necessary as well as an estimate of construction cost. The updated Safety and Capacity study serves as a key a long-range planning tool in the development of the Authority's capital improvement plan.

Portland Area Mainline Needs Assessment

The Authority completed a Portland Area Mainline Needs Assessment in 2018 which looked at growing safety and capacity issues on the Turnpike between Exits 44 in Scarborough and Exit 53 in West Falmouth. The purpose of the Portland Area Mainline Needs Assessment was to evaluate a full range of reasonable alternatives to address identified issues. Existing and future conditions were evaluated, and alternatives including Transportation Demand Management (TDM), Transportation System Management (TSM), various tolling strategies, enhanced/expanded transit alternatives, and widening/capacity expansion alternatives were considered.

The Authority assembled a Public Advisory Committee (PAC) to provide input to the Portland Area Mainline Needs Assessment process and information. This PAC consisted of transportation, land use, commercial, and safety individuals who provided a broad range of knowledge and experience to the process. The Portland Area Mainline Needs Assessment was completed in 2018 and concluded that widening and modernization of the Turnpike mainline through the Portland area was appropriate and prudent.

Construction of mainline improvements between Mile Marker 44 and 49 is nearing completion and includes the addition of a third lane in each direction,

together with associated drainage and median safety improvements. This work is scheduled for completion by Fall 2023 and addresses the most critical capacity need between Exit 44 and Exit 53. Additional lane widening and median improvements between Mile Marker 49 and Exit 53 are planned to begin in the early 2030's.

Study of the Future Needs of the Piscataqua River Bridge

Summer peak hour traffic volumes on the southern end of I-95, including the Piscataqua River Bridge, result in significant congestion and motorist delay, especially during peak travel hours. To address this concern, the Authority is working together with MaineDOT on this MaineDOT-led effort to evaluate, prioritize and implement potential transportation alternatives to improve traffic flow on I-95 between New Hampshire and Maine. The study area consists of the stretch of I-95 from Exit 3 in New Hampshire north to Exit 2 in Maine, including the Piscataqua River Bridge.

In recent years the Authority worked collaboratively with MaineDOT to complete improvements to the Dennett Road Bridge and to assess what enhancements can be made to improve highway throughput, such as part-time shoulder use on the I-95 Piscataqua River Bridge. A MaineDOT bridge rehabilitation project at the Piscataqua River Bridge was completed in 2022 and included bridge preservation activities as well as modifications to allow part-time shoulder use during periods of heavy traffic. The installation of median barrier at the bridge approaches was included in the project to improve safety. A separate contract to install supplemental signage and intelligent transportation systems (ITS) to support part-time shoulder use is underway and is scheduled for completion in by the end of 2023.

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 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 Portland Area Widening Project and 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 2024. In addition, a recommendation regarding insurance coverage is included.

Portland Area Widening and Safety Improvement Project

Capital Improvement and General Reserve Fund

As part of the Sensible Transportation Policy Act, the Authority identified projected deficiencies in Turnpike facilities that need to be addressed in the near- and long-term. From this planning effort, the Authority developed a Capital Improvement Program that detailed the need to significantly expand the extent of rehabilitation and maintenance work. The result of this effort made clear that routine maintenance programs could no longer stem the deterioration of Turnpike facilities or 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 2023, we estimate this fund will have a balance of $122,135,820. Including carryover projects from 2023, we estimate $100,718,141 in Capital Improvement expenditures in 2024.

Based on the estimated fund balances and Capital Improvement expenditures no additional deposit into the Capital Improvement and General Reserve Fund is required for 2024.

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 that 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 2024 is $40,000,000.

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 2024, exclusive of Reserve Maintenance and Capital Improvement expenditures, will be in the amount of $48,839,700. This estimate is based on careful examination of 2023 expenditures and an evaluation of factors expected to influence these costs during 2024.

Insurance

Based on the replacement values provided by HNTB, the current Turnpike insurance coverage appears to adequately protect the properties, interests, and operations of the Authority. Insurance is provided under several 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

Appendix A - Maintenance Area Buildings

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					1		**3**
Maintenance Garage, 4 Bay			1			1			1	**3**
Maintenance Garage, 5 Bay				1				1		**2**
Maintenance Garage, 8 Bay			2	2		1	1	1		**7**
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	1	1	1	**7**
Flammable Storage Building	1									**1**
Storage/Body Shop Building						1				**1**
Cold Storage Building	1	1	2	1	2		1		1	**9**
Central Inventory Building					1					**1**
Sign Shop					1					**1**
Disaster Recovery Building					1					**1**
Office Building				1						**1**
Office Building, 5 Bay Garage							1	1		**2**
Office Building, 6 Bay Garage						1				**1**
Office Building, 7 Bay Garage									1	**1**
Office Building, 10 Bay Garage			1							**1**
Office Building, 13 Bay Garage	1									**1**
Fuel Distribution System	1		1	1		1	1	1	1	**7**
Generator Building			1	1	1	1		1	1	**6**

Appendix B - Schedule of Insurance

THE MAINE TURNPIKE AUTHORITY
Schedule of Insurance
2023-2024
Comprehensive Package Policy Including Turnpike Property
Underwritten by the Acadia Insurance Company — Agent: Cross Insurance

			Premium Amt
Commercial Property	**Policy No. CPA1000627-41**	**Term: October 1, 2023 to October 1, 2024**	**$623,146.00**

Risk	Coverage	Limit	Remarks
Fire and Related Blanket	*Buildings	$149,381,629	Agreed Amount and
Contents		$42,428,500	Replacement Cost
	Extra Expense & Loss of Rents	$3,611,500	
	Boiler and Machinery	$199,247,182	
	(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	$385,332,920	
	Ordinance of Law Coverage	$10,000,000	
	Fine Arts	$200,000	
	Property In Transit	$100,000	
*134 Mclellan Rd., Gorham is not included in the blanket limit.		$1,087,957 (outside limit)	

Inland Marine

a. Direct Physical loss or damage	Scheduled Maintenance Equipment *	$7,437,053	
b. Direct Physical loss or damage	Valuable Papers	$500,000	
	EDP Includes E-Z Pass Equipment*		
	Radar Counters, Radios, camera equipment,		
	Signs and transmitting equipment		
	Message Boards*		
	*Included in the Contents Limit on Policy		

			Premium Amt
Business Auto	**Policy No. CAA1000628-41**	**Term: October 1, 2023 to October 1, 2024**	**$447,419.00**

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

			Premium Amt
General Liability	**Policy No. CPA1000627-41**	**Term: October 1, 2023 to October 1, 2024**	**$100,973**
	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	$10,000	
	Employee Benefits Liability	$1,000,000	

**$25,000 premises/operations BI/PD per claim deductible applies with a $175,000 aggregate

Comprehensive Crime

Underwritten by Travelers Agent Cross Insurance

		Premium Amt
Policy No. 106807620	**Term: October 1, 2023 to October 1, 2024**	**$5,923.00**

Coverage	*Limit*	*Ded*
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
Computer Fraud	2,000,000	10,000
Funds Transfer Fraud	2,000,000	10,000
Money Orders/Counterfeit Money	2,000,000	10,000
Electronic Data Restoration Costs	1,000,000	10,000
Claim Expenses	10,000	n/a

Worker's Compensation Self-Insurance Excess Policy

Underwritten by Midwest Employers Casualty Company; Agent: USI Insurance Services

		Premium Amt
Policy No. EWC009992	**Term: February1, 2023 to February 1, 2025**	**$138,121.00**

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

$28,176,445 Total Estimated Annual Remuneration - February 2022-2023
Claim Service: Cannon, Cochran Management Service, Inc.

Public Officials and Employees Liability

Underwritten by ACE American Insurance Company — Agent: Cross Insurance

				Premium Amt
Policy No. EON M00608592 011		**Term: October 1, 2023- October 1, 2024**		**$55,370.00**
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 USI Insurance , Inc

Member of Authority	**Term**	**Amount of Bond**	**Remarks**	Premium Amt
Peter S. Mills Executive Director Policy No. 105619973	May 24, 2023-2024	$500,000	Insures faithful performance of duties by the individual	**$1,750.00**
Jonathan Arey Secretary Policy No. 105220456	January 2, 2023-2024	$50,000		**$175.00**
John P. Sirois Treasurer Policy No. 107886102	July 12, 2023-2024	$50,000		**$158.00**

Fiduciary Responsibility

Underwritten by ACE Insurance Company — Agent: Cross Insurance

		Premium Amt
Policy No. G25749522 012	**Term: October 1, 2023-October 1, 2024**	**$8,157.00**

Limit $2,000,000
Retention $25,000
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

		Premium Amt
Policy No. 103464379	**Term: December 2023**	**$960.00**

Obligee: Maine Bureau of Insurance

Privacy & Network Liability Insurance

Underwritten by Travelers — Agent: Cross Insurance

		Premium Amt
Policy No. 106807615	**Term: October 1, 2023-October 1, 2024**	**$120,545.00**

A. 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 Houston Casualty Company — Agent: USI Insurance

		Premium Amt
Policy No. H22CSX20800-00	**Term: October 1, 2023-October 1, 2024**	**$39,618.00**

	Each Claim	Aggregate
Limits of Liability	$ 4,000,000	$ 4,000,000