HNTB

2024 OPERATION AND MAINTENANCE ANNUAL REPORT

PRESENTED BY: HNTB CORPORATION
PRESENTED TO: MAINE TURNPIKE AUTHORITY

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HNTB

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Ladies and Gentlemen,

We are pleased to submit our 2024 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, 2024; 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 Interim 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,

Timothy R. Cote, P.E.
Vice President

TABLE OF CONTENTS

1. INTRODUCTION 1
Annual Inspection Program 2

2. INSPECTION FINDINGS AND CORRECTIVE MEASURES 5
Pavement 5
Drainage 7
Guardrail and Safety Improvements 9
Emergency Vehicle Ramps 10
Roadway Side Slopes 11
Lighting 11
Signage 12
Roadway Markings 12
Vegetative Cover 13
Stormwater Best Management Practices 14
Toll Plazas 14
Service Areas and MTA Administration Building 17
Maintenance Facilities 19
Building Needs Assessment 19
Standby Generator Assessment 20
Bridges and Minor Spans 20
Ancillary Structures 27

3. TOLL COLLECTION SYSTEM 28
Electronic Toll Collection 28
All-Electronic Toll Collection 28
E-ZPass Group 29
Toll Schedule 29

4. TRAFFIC MANAGEMENT AND TECHNOLOGY 31
Intelligent Transportation System Master Plan 32
Reduced Speed Limit Signs 32
Traffic Count Stations 32
Roadway Sensors 32
Variable Message Signs (VMS) 32
Highway Advisory Radio 33
Closed Circuit Television (CCTV) System 34
Overheight Vehicle Detection System 34
GO MAINE Program 34
Park & Ride Lot Program 35
Turnpike Safety and Law Enforcement 36
Turnpike Safety Patrol 37

5. MAINE TURNPIKE AUTHORITY/ MAINEDOT JOINT INITIATIVES 38
Operations and Maintenance 38
Park & Ride Lot Coordination 39
Project Development 39

6. PLANNING STUDIES 40
Exit 32 Feasibility Study 40
Exit 36 Feasibility Study 41
Exit 45 Feasibility Study 41
Gorham Corridor Study and Alternatives Analysis 41
Safety and Capacity Study 42
Portland Area Mainline Needs Assessment 42
Study of the Future Needs of the Piscataqua River Bridge 43

7. FUNDING 44
Capital Improvement and General Reserve Fund 44
Reserve Maintenance Fund 44
Operation and Maintenance Fund 44
Insurance 44

APPENDIX 45
Appendix A - Historic Paving Contract Limits 45
Appendix B - Maintenance Area Building Counts 46
Appendix C - Schedule of Insurance 47

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1. INTRODUCTION

This 2024 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 (HNTB). 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 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 or MTA) 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 MTA 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.

Slightly more than half of the 111 miles of roadway maintained and operated by the MTA is a four-lane divided highway with the portion extending from mile 0.2 to mile 49 consisting of 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.

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, carrying approximately 89.1 million trips and processing 91.3 million transactions in 2023 – marking a new record for both. The growing demands placed on Turnpike facilities are enormous, as 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 maintain 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:

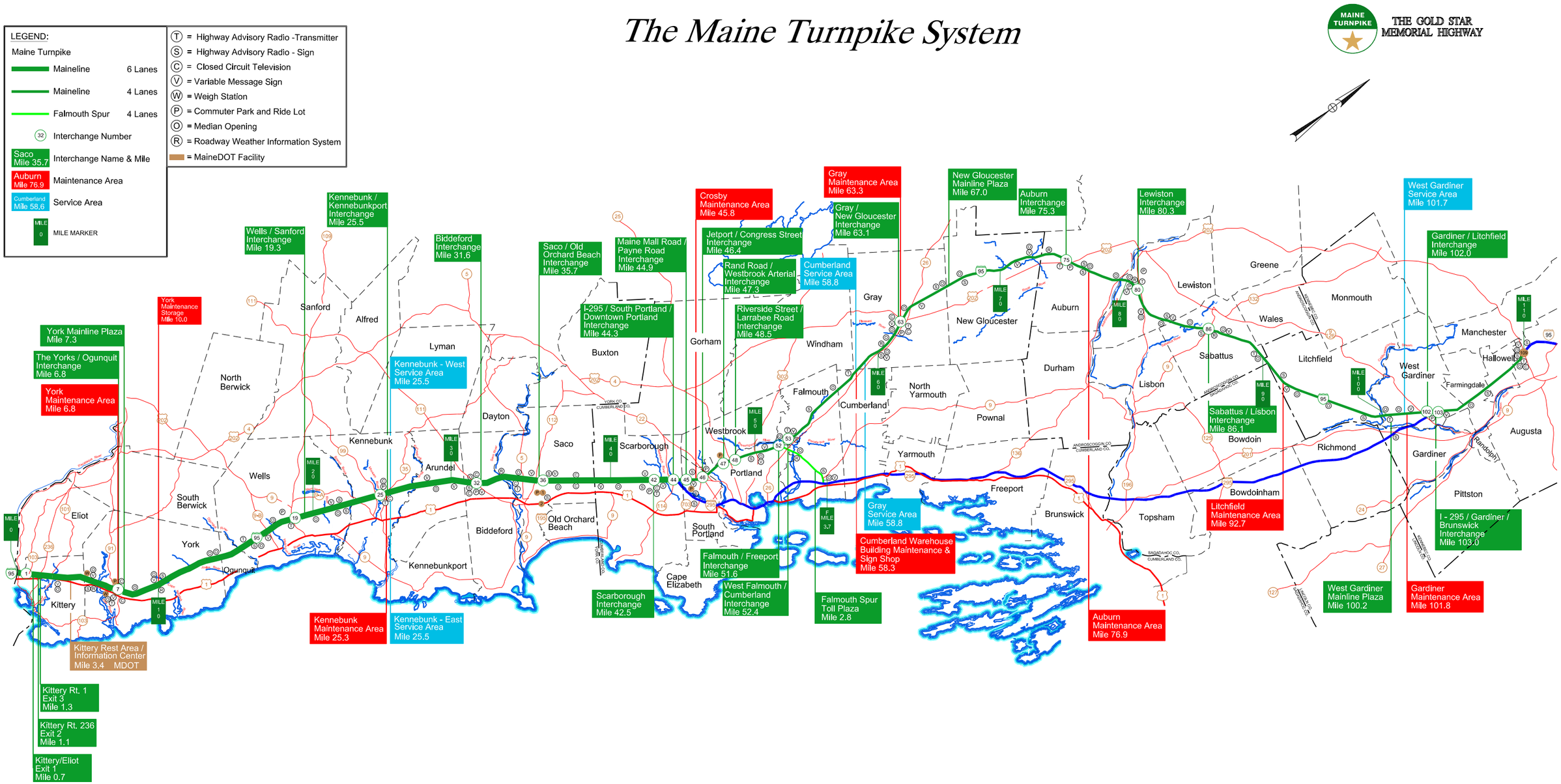
- An opinion as to whether the Turnpike has been maintained in good repair, working order and condition
- Advice and recommendations as to the proper maintenance, repair, and operation of the Turnpike during the ensuing fiscal year and an estimate of the amount of money necessary for such purposes
- 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, ancillary structures (i.e., signs), pavement markings, toll plazas, utility buildings, service areas, maintenance areas, stormwater treatment devices (commonly referred to as Stormwater Best Management Practices, or BMPs), and other facilities. This report is based on observations made during the inspection conducted between April and July of 2024. 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 when special attention is warranted.

A detailed Annual Inspection Report was submitted to the Authority in August of 2024 for use in conjunction with this 2024 Operation and Maintenance Annual Report.

PHOTO 1: PRESUMPSCOT RIVER FALMOUTH SPUR BRIDGE INSPECTION

FIGURE 1: THE MAINE TURNPIKE SYSTEM



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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 and capital investment. Routine upkeep is managed by the MTA's maintenance forces, while larger projects, such as pavement resurfacing, bridge repairs, and new construction are executed by private contractors through publicly bid contracts.

FIGURE 2: MTA ANNUAL INSPECTION DASHBOARD

During the 2024 Annual Inspection the HNTB team placed additional emphasis on the identification and early communication of deficiencies that were not significant enough to warrant standalone contracts, but that could be addressed by maintenance crews. These findings were reported to MTA staff as the annual inspection fieldwork was completed, enabling the MTA to address these deficiencies promptly, without waiting for the annual report to be submitted.

Furthermore, the results of the annual inspection are incorporated into an Annual Inspection Dashboard. This dashboard, utilizing a Geographic Information Systems (GIS) interface linked to a SharePoint content management system, allows for visual mapping and warehousing of inspection data and findings. In addition to current and historical inspection data and photos, the SharePoint site includes important information such as as-built construction drawings and bridge load capacity information. The Annual Inspection Dashboard reflects the Authority's continued focus on enhanced transparency and data accessibility to further promote data-driven decision-making.

The following sections summarize HNTB's 2024 inspection findings.

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 MTA and provides insight into the overall condition of the pavement on the Turnpike system. The most recent data available is for calendar year 2023 and is presented in **Figure 3** graphically.

Additionally, ARAN data from the past five years, shown in **Table 1**, indicates 99.9-percent of the mainline pavement on the Turnpike is in good to fair condition. While a larger percentage of pavement in 2023 was classified as "Fair" condition compared to prior years, the proposed paving programs for 2024 and 2025 are significant and include approximately 82 lane miles and 64 lane miles of paving, respectively.

TABLE 1: ARAN CONDITION RESULTS

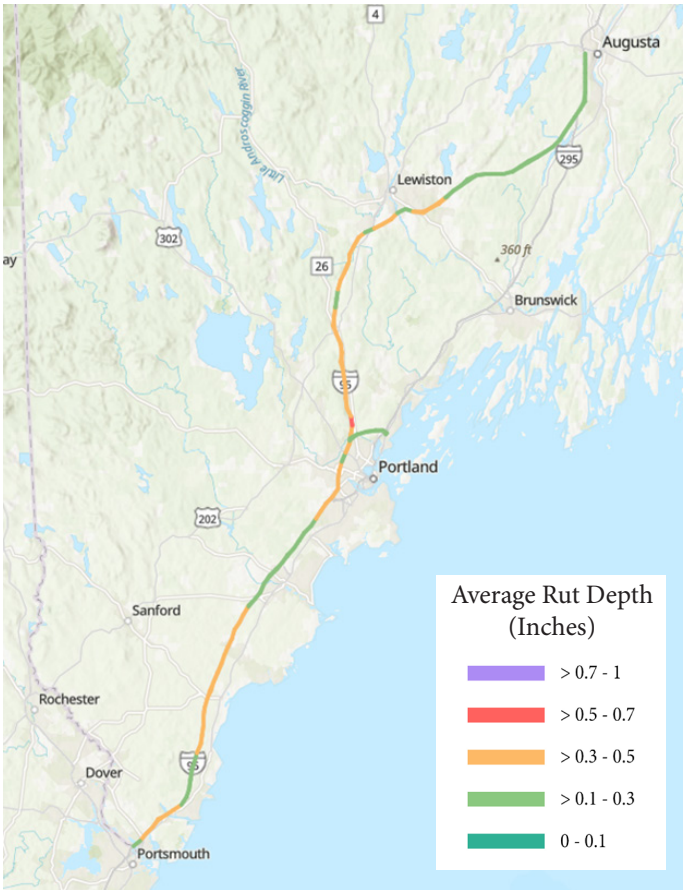
	2019	2020	2021	2022	2023
Good	36.1%	22.9%	24.3%	24.5%	17.9%
Fair	63.6%	76.9%	75.7%	75.4%	82.0%
Poor	0.2%	0.2%	0.0%	0.1%	0.1%

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 NHS 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 MTA has a planned program of pavement rehabilitation. The MTA generally rehabilitates mainline pavement on a 12-year cycle. **Appendix A** provides a history of Paving Contracts completed over the past 15 years.

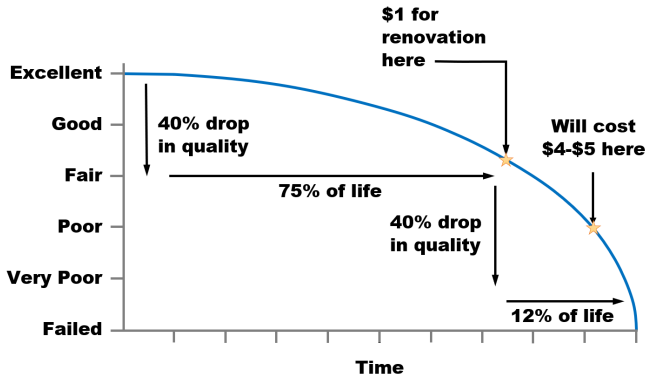
FIGURE 3: ARAN RUTTING DATA (2023)



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 MTA'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 4 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.Since 2014, pavement rehabilitation contracts have included the use of polymer-modified asphalt to enhance various properties of the asphalt. Polymer-modified asphalt improves durability, weather resistance, and overall performance. This practice has continued through 2024, with the use of polymer-modified pavement showing reductions in rutting and pavement deterioration, thereby enhancing the durability and longevity of the pavement.

FIGURE 4: PAVEMENT LIFE CYCLE



The monitoring of developments in paving technology should continue with the purpose of identifying 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 influence pavement durability and should continue to be considered in the development of pavement mix designs.

In the fall of 2023, a supplemental inspection of shoulder pavement was conducted to assess conditions and inform future paving projects. This inspection evaluated the necessity for shoulder rehabilitation across all paving projects planned for the next four years. The findings indicate a strong need to prioritize inclusion of shoulder rehabilitation in these upcoming projects, ensuring that future projects are effectively aligned with the current state of the infrastructure.

For calendar year 2024, several mainline pavement rehabilitation and drainage improvement projects are underway, including sections from mile markers 1.3 to 6.8, 20.0 to 23.3, and 42.0 to 49.3 Southbound. Interchange paving at Exits 1, 2, 3, and 75 is also underway. Additionally, Park and Ride pavement repairs are being performed at Biddeford and Kennebunk. All projects are expected to be completed by the end of 2024.

PHOTO 1: PAVEMENT REHABILITATION

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 MTA 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.

For the 2025 construction season, we recommend mainline pavement rehabilitation between mile markers 15.3 to 20.3, 42.0 to 49.3 Northbound, and 51.2-54.5. These sections should be milled and repaved as described.

Drainage

The surface drainage system, consisting of side slopes, drainage ditches, and catch basins, is an important aspect of the Turnpike. 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.

As part of the annual inspection, notable findings identified by the inspection team were reported to the MTA before the inspection report was delivered. This proactive approach enabled maintenance crews to address slope and drainage issues organically throughout the summer and increase their ability to complete repairs before fall. Additionally, it allowed the MTA to implement a 'Slope and Drain' repair contract between mile markers 11.4 and 51.9 to tackle larger scale repairs that were judged to be beyond the capabilities or availability of MTA maintenance forces.

Cross pipes and box culverts are also an integral component of the Turnpike's 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.

PHOTO 2: CULVERT INSPECTION

All box culverts and pipes with spans or diameters between 60 inches and ten feet, totaling 34 crossings, are inspected annually. Culverts between 36" and 54" in diameter are inspected every five years, with the last inspection in 2023 and the next scheduled for 2028. Cross culverts 30" and smaller are inspected on a rotating five-year cycle, with inspections between mile

markers 25 and 49 completed in 2024. Additionally, culverts rated in poor condition from previous years received supplemental inspections in 2024 as part of a new initiative intended to enhance field inspections, track conditions, and reduce the potential for culvert failures and costly slope repairs. **Table 2** summarizes the current inspection cycle for all 30" and smaller pipes.

TABLE 2: INSPECTION CYCLE FOR CULVERTS 30" AND SMALLER

Mile Marker Range (Culverts 30" and Smaller)	Inspection Year
Mile 0.3 to Mile 25	2025
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

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, or where conditions warrant, 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. The results of the 2024 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. These locations have been flagged for repair.

The 2023 annual inspection found culverts ranging from 36” to 54” in diameter were in fair to satisfactory condition. The 2024 inspection concluded culverts measuring 30-inch in diameter or less ranged from good to poor condition.

Many smaller cross-culverts have RCP sections directly under the core roadway but switch to corrugated metal or high-density polyethylene under the side slopes. While the concrete sections are generally in fair to good condition, the metal pipe ends are often in poor condition, showing issues such as rusted flow lines, disconnected joints, and detached metal flared end sections. The reinforced concrete and polyethylene pipe ends frequently have inlets and outlets obstructed by heavy vegetation, debris, or outwash from areas of slope erosion. These conditions can cause erosion on the side slopes, potentially impacting the roadway over time.

The MTA routinely replaces the corrugated metal culvert ends with reinforced concrete or high-density polyethylene as resources and funds allow. Over 95 smaller culvert ends were replaced by maintenance between 2021 and August of 2024. Approximately 45 culvert ends are planned for replacement by maintenance forces in 2025. Once complete, the MTA's multi-year program developed to replace all aging metal culvert ends will be nearly complete.

In March 2024, a special inspection was conducted on a significant area of slope erosion at Mile 72.2, caused by a culvert failure beneath the 40-foot-tall highway embankment. The inspection revealed that joint separation in the end sections of a 30-inch reinforced concrete pipe (RCP) led to substantial soil loss and erosion. In response, a contractor completed short-term repairs in April and May to stabilize the culvert and the eroded slope. A subsequent repair contract was awarded in June for permanent repairs, which involve replacing sections of the pipe and reconstructing the side slope. Construction is scheduled for completion in the fall of 2024.

HNTB RECOMMENDATION

Routine maintenance and repairs of berms, ditches, side slopes, catch basins, and cross pipes are essential for maintaining proper roadway drainage. Recently, the MTA has included this work within pavement rehabilitation projects. We recommend continuing this approach.

We recommend the continued repair of culvert end locations rated in poor condition, as detailed in the Annual Inspection Report and identified through notable finding recommendations, 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. 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 MTA issues contracts to address drainage issues that cannot be repaired by the MTA’s Maintenance forces due to their size, location, or the equipment required. This work has recently been included either in standalone drainage improvement projects or within adjacent pavement rehabilitation

contracts. We recommend continuing this approach as needed. For culverts that can be reasonably repaired by the MTA's Maintenance forces, these should be prioritized and addressed as resources permit. Such repairs typically involve replacing deteriorated metal pipe ends with high-density polyethylene or reinforced concrete pipe, along with stabilizing the associated slopes and drainage channels.

Guardrail and Safety Improvements

The MTA has remained dedicated to its goal of improving safety by upgrading its infrastructure on a regular basis.

WRONG-WAY DRIVERS

In response to the rise in wrong-way driver crashes in Maine and across the nation, the MTA is evaluating incidents and exploring countermeasures, focusing on interstate ramps, service plazas, and median openings. Immediate actions have included reviewing and improving signage on ramps, the isolated usage of "Wrong Way" and "Do Not Enter" signage with flashing LED sign borders, and adding reflective red tape to signposts to enhance visibility for wrong-way drivers. Additionally, the MTA continues to close non-essential median openings, with two closures completed in 2023. The construction of new emergency vehicle ramps has facilitated these additional median opening closures.

Further review of wrong way driving countermeasures in 2024 resulted in the development of a new 5-year program intended to enhance signage at all ramp and service plaza locations. At these locations existing "Wrong Way" and "Do Not Enter" signage will be replaced with backlit signs and signs with flashing LED sign borders. Five locations are currently scheduled for improvements in 2024 with all remaining locations completed over the next five years. Longer-term strategies will involve reviewing interchange ramps for potential geometric improvements and further upgrades in 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.

PHOTO 3: GUARDRAIL MAINTENANCE

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 NHS 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.

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 thrie-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 2024, upgrades to guardrail between Mile 1.3 to 6.8, 20.0 to 23.3, and 42.0 to 43.0 Southbound, were underway as part of pavement rehabilitation improvement 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.

Work Zone Safety

In 2017, a tragic work zone crash resulted in the loss of an MTA employee. The crash was a call to action, leading the MTA to amplify their emphasis on safety by implementing 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 have been updated to include two truck-mounted impact attenuators, significantly improving worker protection. Enhanced training has been implemented and will continue annually, promoting feedback from MTA maintenance crews to refine and improve practices. Additionally, work zone traffic control details and procedures are routinely reevaluated and assessed with the intent of enhancing safety. Collectively, these efforts result in fewer work zone crashes systemwide and improve safety for workers and motorists alike.

HNTB RECOMMENDATION

HNTB recommends ongoing evaluation of wrong-way driving incidents and the implementation of countermeasures as deemed necessary.

We also recommend the continued repair and upgrade of guardrail 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.

The increased use of truck mounted attenuators, radar speed and messaging trailers, and other work zone safety devices should continue as they enhance safety for motorists and workers alike.

HNTB also recommends the MTA continue its focus on improving traffic control details and practices, including enhanced work zone safety training, to improve safety for both motorists and workers.

Emergency Vehicle Ramps

Emergency vehicle ramps (EVR) 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 MTA issued construction contracts for the installation of new EVRs at High Street at Mile 103.6 which were completed in the Summer of 2024. In 2022, the MTA started the process of upgrading

PHOTO 4: HIGH STREET EVR

and modernizing existing access gates at existing EVR locations to provide authorized vehicles with efficient access to and from the mainline, and to prohibit access by unauthorized users. A total of eight access gate locations were upgraded in 2023 and six in 2024.

HNTB RECOMMENDATION

The MTA should continue to study the feasibility of constructing other EVRs 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. Potential locations for future EVRs include Captain Thomas Road in Ogunquit and Route 26 in Gray. These locations should be assess based on need and, if appropriate, included in the MTA's capital program.

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 3** illustrates contracts issued specifically to address side slope clearing since 2012.

The MTA actively evaluates maintenance clearing into its capital program to minimize vegetation intrusion into the clear zone. When practical, MTA 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 2024, side slope clearing was completed for between Mile 25.8 to Mile 32.

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 3: CLEARING CONTRACTS

Year	Locations
2024	Mile 25.8 to Mile 32.0
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

[1]No contracts issued this year.

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. MTA 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 of these breakaway devices was completed in 2023 and concluded many older style breakaway devices exhibit varying degrees of deterioration. Based on these findings MTA maintenance crews removed or replaced all of the locations identified by HNTB with deterioration. In the fall of 2024, maintenance crews are scheduled to remove or replace the remaining locations that were identified to have older style breakaway devices to avoid issues with future deterioration.

As part of the 2024 annual inspection, seven light poles at various locations along the Turnpike were observed to have collision damage that warranted replacement. The replacement poles have been ordered and pole replacement will be performed in late 2024 or early 2025 when the pole fabrication is complete.

HNTB RECOMMENDATION

The MTA 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 MTA maintains its signs in generally good condition. The MTA'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 completed in 2024. The completion of the Portland Area and Safety improvement project signing finalizes the MTA's program to upgrade and replace existing guide signs.

HNTB RECOMMENDATION

HNTB recommends the MTA 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 MTA's Maintenance forces have historically re-striped the Turnpike mainline 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 MTA 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 MTA continue its current roadway marking practices of re-striping twice per year.

PHOTO 5: ROADWAY MARKINGS MILE 88

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 fixed nearly a mile of median areas prone to washouts at the southern end of the Turnpike by replacing median material with pavement millings. This inexpensive solution has successfully repaired and mitigated future washouts at susceptible locations. Based on this successful outcome, similar conversions are expected to be implemented in future years.

Median grading is routinely included in adjacent paving projects to improve drainage, remove built-up sediment, and reestablish vegetative cover. In some cases, the vegetative cover is replaced with pavement millings.

The Authority's capital program includes plans for installing median barriers and paving the median as future capacity improvement projects are completed. In the interim, sections of vegetated median are being evaluated to replace existing grassed areas with pavement millings as part of pavement projects to minimize maintenance and reduce worker exposure.

To date, median safety and modernization improvements, including replacing vegetative cover with pavement and installing concrete barriers, have been completed between Mile 0.3-1.3, Mile 7.0-7.6, Mile 8.1-9.6, and Mile 43-49.

Most roadway side slopes are stable and well-vegetated, but some areas have minimal vegetation, leading to erosion. The Annual Inspection Report details locations needing minor corrective action, including winter sand buildup, localized sloughing (especially around structures), and erosion from roadway runoff. Corrective measures are also needed where gravel shoulders are too low compared to paved shoulders and for minor erosion that could worsen over time. The MTA's Maintenance forces should continue to handle these repairs as required, with larger-scale repairs integrated into adjacent paving contracts or bid as separate projects.

PHOTO 6: MOWING OPERATIONS

HNTB RECOMMENDATION

The MTA should continue completing berm drop-off corrections with maintenance forces, or by incorporating them into pavement rehabilitation projects. Additionally, where feasible and funding allows, efforts toward completing additional median safety and modernization improvements should continue. The work includes removing vegetation from medians by paving them and replacing guardrails with concrete barriers. These changes simplify maintenance, enhance safety, and eliminate the need to mow narrow areas adjacent to traffic. Unvegetated side slopes should also be considered for revegetation to prevent future erosion.

Stormwater Best Management Practices

The MTA's staff inspects and maintains system-wide stormwater control devices, commonly referred to as Stormwater Best Management Practices (BMPs). Beginning in 2024, HNTB was asked to complete the annual inspection of these devices. Currently, there are 59 operational BMPs, with an additional 5 under construction and expected to be operational by year-end. The BMP infrastructure includes underdrained soil filters, meadow and forest buffers, wet ponds, tree box filters, and gravel treatment wetlands. The majority of the devices are underdrained soil filters.

Annual inspections help the MTA stay compliant with Maine Department of Environmental Protection permitting requirements by ensuring the BMPs are well-maintained. Maintenance is typically managed by the MTA's maintenance team. Internal training has be implemented to minimize inadvertent damage frequently caused to BMPs by mowers and heavy machinery.

The 2024 inspection concluded that the MTA's BMPs are generally in good condition.

HNTB RECOMMENDATION

HNTB recommends that the MTA continue addressing corrective actions noted in the BMP inspection reports as appropriate to maintain the BMPs' effectiveness.

PHOTO 7: STORMWATER BMP

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 MTA 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.

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

- 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 MTA's transition to the Infinity 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 comprise open-road toll lanes, space frames, tollbooths, canopies, gantries, utility buildings and other structures. The MTA'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)

MAINLINE TOLL PLAZAS

The six mainline plazas generated nearly $122 million in toll revenue in 2023, nearly three-fourths of all toll revenue collected by the MTA. The remaining toll revenue was generated by side toll plazas. **Table 4** illustrates a tabulation of traffic, revenue, and E-ZPass usage.

Items of note include:

- The biggest contributors to Turnpike toll revenue are as follows:
  - The York Toll Plaza is the greatest single contributor, historically accounting for more than 40-percent of all Turnpike toll revenue.
  - The mainline plaza at New Gloucester is the next highest contributor, historically accounting for approximately 12-percent of all toll revenue.
  - Combined, the side toll plazas account for about 25-percent 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-percent of all transactions at barrier plazas. At the two plazas north of New Gloucester, E-ZPass usage is closer to 79-percent.

TABLE 4: TOLL REVENUE SUMMARY

2023 Traffic Characteristic	York	Exit 44	Exit 52	New Gloucester	West Gardiner I-95	West Gardiner I-295	Side Toll Plazas
Annual Tolled Traffic (millions)*	15.5	7.9	3.5	6.0	4.1	8.5	42.0
Annual Revenue ($millions)**	$73.8	$9.7	$3.9	$18.4	$8.1	$7.4	$38.9
Share of Total Turnpike Revenue	46.1%	6.1%	2.4%	11.5%	5.0%	4.6%	24.3%
Truck% (MTA Classes 3-6)	11.2%	5.3%	5.1%	13.3%	11.1%	7.3%	4.4%
Overall E-ZPass%	86.8%	84.5%	83.2%	81.8%	81.5%	78.4%	90.6%
Truck E-ZPass%	98.0%	97.0%	96.1%	98.6%	97.4%	96.4%	98.0%

* 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.

- Historically, trucks have accounted for slightly more than 10 percent of all traffic at the plazas located on the I-95 mainline (i.e., York, New Gloucester, and West Gardiner I-95). In 2021, this percentage increased to at least 12 percent at each location. By 2023, truck traffic represented just under 12 percent of all traffic at these locations. The increase in truck percentages during Covid was due to a surge in deliveries. Although traffic is trending back toward the historical paradigm, truck traffic remains elevated.
- E-ZPass usage among trucks is high. Trucks equipped with E-ZPass now account for more than 95-percent of all truck transactions on the Turnpike system. In general, E-ZPass usage is up by approximately 6-percent since 2020.

YORK TOLL PLAZA

The York Toll Plaza is an open road toll (ORT) plaza at Mile 8.8, approximately one mile north of Turnpike Exit 7. The facility features three ORT lanes in each direction as well as five southbound and four northbound cash lanes. It was completed in 2022 and is in new condition.

PHOTO 8: YORK TOLL PLAZA

NEW GLOUCESTER TOLL PLAZA

In April 2013, the MTA 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. The tunnel beneath the Turnpike, primarily used for utility infrastructure and foot traffic by toll booth attendants, exhibits moderate moisture and water ponding due to failed drainage systems. Routine maintenance and repairs to address these issues are programmed, and repair solutions are currently under investigation.

PHOTO 9: SPACE-FRAME TOLL SYSTEM

WEST GARDINER I-95 TOLL PLAZA

In November 2016, the MTA 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. Similar to New Gloucester Toll Plaza, tunnel drainage system repair solutions are currently under investigation

WEST GARDINER I-295 TOLL PLAZA

Construction of the new West Gardiner I-295 Mainline Toll Plaza and removal of the existing plaza were 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.

EXIT 44 TOLL PLAZA

In May 2019, the MTA opened a new ORT toll plaza at Exit 44 in Scarborough, consisting 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 MTA 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 integral to 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 MTA 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 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 recently repaired or rehabilitated. The Exit 45 side toll plazas are in new condition. Improvements at Exit 86 and Exit 75 were completed in 2017 and 2019, respectively. These improvements allowed for automatic vehicle classification and other system upgrades.

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.

In February 2024, a special damage inspection was conducted following a crash at Exit 45 Southbound. A pickup truck collided with the concrete island bumper, causing minor concrete spalling and damage to the yellow warning light. While no toll equipment was damaged, the warning light was replaced, and the sealing of minor concrete scrapes was recommended.

PHOTO 10: EXIT 45 TOLL PLAZA CRASH DAMAGE

In June 2024, a trash truck impacted the Exit 46 Northbound Toll Canopy. An inspection revealed that the crash damaged the canopy ceiling panels, bracketry, and hardware supporting toll equipment. MTA maintenance successfully repaired and reinstalled the bracketry and damaged antenna.

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 MTA coordinate with their toll vendor to replace the failing epoxy overlay where required to maintain the functionality of critical components of the tolling system.

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

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 Cum-

berland fuel system received maintenance repairs and was satisfactorily tested in the Spring of 2020. Replacement of the Cumberland fuel system is under contract and is scheduled for replacement by Summer 2025.

In 2023, a contract was issued to repair the exterior gutter systems, replace corroded entryway door systems and flooring, and perform other related repairs at the service plazas. These repairs have been completed. In 2024, a contract was issued for exterior masonry repairs at Kennebunk Northbound and Southbound, as well as West Gardiner. This work is currently underway.

HMSHost Company managed food concessions at each of the service plazas 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.

An 8' by 8' reinforced concrete utility tunnel beneath the Turnpike Mainline at the Kennebunk Service Plaza, located between the northbound and southbound plazas at Mile Marker 25.52, carries sewer and natural gas lines. Structural inspections are conducted every 5 years, with the most recent inspection in 2023 confirming the tunnel is in fair condition. The next inspection is scheduled for 2028.

PHOTO 11: CUMBERLAND SERVICE AREA

Starting in 2024, drone photography was collected to document the condition of maintenance and service plaza building roofs, as well as pavement conditions. This innovative approach provides a more comprehensive view of Turnpike assets, enhancing the team's ability to assess overall conditions, track changes over time, and plan and schedule repairs.

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 E-ZPass Customer Service Center. The State Police troop serving the Turnpike also operates out of the Headquarters building. In September 2021, the MTA 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.

Construction of additional improvements to the MTA Administration Building began in the summer of 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 audiovisual 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 We recommend continued coordination with Applegreen Limited to understand the scope, cost, and timing of any requested changes at Service Areas to support the MTA's ongoing capital planning efforts. We also recommend continued routine maintenance of service plazas to keep the facilities in good repair until the scope of changes at these locations, if any, is better understood.

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 MTA'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)

PHOTO 12: YORK MAINTENANCE

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 B**.

Eight vehicle storage garages originally built in the 1960s were expanded and upgraded in 2020. The work, located at five separate maintenance facilities, allows the garages to better accommodate modern plow truck configurations and provides improved storage conditions, enhanced maintenance access, and upgraded electrical and HVAC systems.

In 2024, an additional 8-bay garage was constructed at the Crosby maintenance facility. This new garage will house Turnpike equipment and the additional plow trucks needed to complete winter maintenance on the additional lanes under construction as part of the Portland Area Widening.

Construction of a new 8-bay garage at Litchfield Maintenance Yard was completed in 2024. This garage replaces the structure that was destroyed by a fire in 2021. Restroom renovations at the crew building were also completed in 2024.

The construction of a new vehicle storage garage at York Maintenance (Chasses Pond Road) started in 2024 and is scheduled for completion in the fall of 2025. Once complete, this garage will house additional equipment necessary to maintain Turnpike infrastructure.

The inspection determined that all maintenance areas were generally in fair to good condition.

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 MTA's maintenance personnel actively address the maintenance items reported to the degree practical.

Building Needs Assessment

At the request of the MTA, 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.

Standby Generator Assessment

In May 2022, an evaluation of the MTA's 43 standby generators was completed. The evaluation identified three units needing 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.

A special damage inspection of the York Maintenance Generator Building was completed following a fire on March 31, 2023. The inspection concluded that the building, generator, and the facility's primary electrical feed were damaged beyond repair. MTA maintenance forces installed a 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, is planned for completion by the end 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.

Bridges and Minor Spans

The MTA is responsible for operating and maintaining 182 bridges, defined as spans measuring more than 20 feet in length and 16 minor spans measuring between 10 and 20 feet in length. These total inventory numbers remain the same as in 2023; however, they reflect the removal of the Gardiner-Litchfield Interchange Underpass in 2023 and the transfer of ownership of the Maxwell Brook crossing to the Turnpike, also in 2023.

The MTA's Operations and Maintenance Program for these structures involves multiple aspects, including developing and maintaining a detailed inventory of MTA-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 maintain the safe condition of MTA-owned bridges and minor spans.

This report quantifies and discusses bridges and minor spans separately. The National Bridge Inspection Standards (NBIS) 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 MTA-owned minor spans has been completed and reported using FHWA's bridge inspection procedures. This process provides inspection consistency between the MTA and MaineDOT and provides documentation of the condition of the MTA's minor spans.

INSPECTION PROGRAM

Qualified inspectors conduct inspections of MTA-owned bridges and minor spans in accordance with the NBIS. Several types of inspections occur based on structure type, information needed, and federal regulations. These 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 NBI. The inspection data also becomes part of the MTA's records, which are used to develop the MTA's rehabilitation and repair program.

MaineDOT uses AssetWise software by Bentley Systems to manage bridge information. The MTA reports inspection data to MaineDOT directly through AssetWise to maintain consistency and streamline the reporting of bridge condition data. MaineDOT has granted the MTA access to the online AssetWise data-

PHOTO 13: MAXWELL BROOK CULVERT (OWNERSHIP TRANSFERRED TO AUTHORITY IN 2023)

base and software to ensure consistency for all bridge data in the state.

In response to recent rule making and regulations surrounding the NBIS, the MTA is collaborating with MaineDOT to ensure that new inspection protocols and reporting procedures are adopted within the required regulatory timeframes. To provide historical context, the original NBIS were published in 1971 and have been periodically revised, most recently in 2022. A major goal of the revisions was to address several components of the Moving Ahead for Progress in the 21st Century Act (MAP-21). As part of the 2022 revision, the Specification for the National Bridge Inventory (SNBI) was incorporated by reference in the NBIS Final Rules and replaces the NBIS Coding Guide. These changes largely focus on procedural and data collecting and reporting requirements. The changes aim to ensure consistency and accuracy in how bridge condition data is gathered, reported, and utilized across different jurisdictions. During 2024 and 2025, HNTB will work with the MTA and MaineDOT regarding AssetWise changes to transition their bridge inventory data and approach to meet the new regulations. March 2026 is the first required FHWA submission, where inventory data must be transitioned to meet SNBI.

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

ROUTINE INSPECTIONS

All MTA-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 record condition ratings for key bridge components. The 2024 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. It 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 water 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 and is programmed for rehabilitation in the MTA's capital plan.

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.

PHOTO 14: ANDROSCOGGIN RIVER BRIDGES

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. Several existing and new deficiencies were noted during the inspection, 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.

PHOTO 16: YORK RIVER BRIDGES PIN-AND-LINK CONNECTION

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 judgment 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

Special damage inspections are conducted in response to collisions or when a condition requiring a more detailed inspection is noted. When this occurs, HNTB conducts an immediate field investigation to determine the extent of the damage and whether it is safe

PHOTO 15: YORK RIVER BRIDGES

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

Two special damage bridge inspections have been completed since the issuance of the 2023 Operations and Maintenance Report. The findings of these inspections resulted in repair contracts for the southbound Stroudwater River Overpass at Mile 46.7 and at the Stevenstown Road Underpass at Mile 96.5. Additional details regarding the required repairs are included in this report's 2024 Emergency and Unanticipated Bridge Repair section.

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 need repair, but their structural safety 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 programmed 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-percent 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-percent 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 Authority 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 MTA's bridge program focused on the rehabilitation or replacement of poor condition (previously referred to by FHWA as "structurally deficient") bridges. The 2009 inspection noted 24 poor condition bridges equaling 13.6-percent of all MTA-owned bridges. The MTA'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 in the Maine Turnpike's bridge inventory. A tabulation of MTA-owned bridges in "Good," "Fair," and "Poor" condition, based on total deck area by year, is provided in **Table 5**. By comparison, 5-percent of the nation's bridges, and 10-percent of Maine's bridges were in Poor Condition in 2023, according to the FHWA's National Bridge Inventory database.

TABLE 5: BRIDGE CONDITION SUMMARY

Year	All Authority Owned Bridges			NHS Authority Owned Bridges		
	"Good"	"Fair	"Poor"	"Good"	"Fair"	"Poor"
2024	27.4%	72.6%	0.0%	15.2%	84.8%	0.0%
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%

TABLE 6: POOR CONDITION BRIDGE HISTORICAL SUMMARY

Year	Structure Name	Structure Type	Mile Marker	Status
2024	N/A[1]	N/A	N/A	N/A
2023	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	I-295 S.B. Underpass	Bridge	102.50	Rehabilitation completed in 2018

[1] No bridges are Poor Condition between 2019 and 2024.

Table 6, Poor Condition Structure Summary, provides a listing of all MTA owned structures classified in poor condition since 2018. The table also identifies programmed repair and rehabilitation dates for these bridges. The MTA'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, such as joint header retrofits, wearing surface replacements, and haunch removals. The program's goal is to maintain current bridge conditions and, to the extent practical, complete repairs before structural elements reach Poor Condition status.

2024 BRIDGE REHABILITATION, REPAIR AND PRESERVATION PROJECTS

Two bridge repair and preservation contracts were issued for construction in 2024. These contracts include work such as concrete rehabilitation, bridge joint repairs, pavement resurfacing, and other miscellaneous repairs.

Following is a summary of bridge contracts issued for construction in 2024:

BRIDGE REPAIRS AND PRESERVATION – VARIOUS LOCATIONS

Bridge preservation work is underway at multiple locations as part of two separate contracts. The work includes concrete repairs, expansion joint repairs, and replacing bridge wearing surfaces and/or repairing joint headers to protect existing bridge joints from damage caused by traffic and plowing operations. The following locations are programmed for repair:

- York Interchange Underpass (Mile 6.80)
- Fletcher Street / Route 35 Underpass (Mile 25.30)
- Saint Lawrence And Atlantic Railroad Overpass (Mile 74.50)
- Blackstrap Road Overpass (Mile FS 0.40)
- Maine Central Railroad Overpass (Mile FS 0.50)
- Gray Road (Route 26 & 100) Underpass (Mile FS 0.70)

PHOTO 17: SACO INTERCHANGE BRIDGE MODIFICATIONS

2024 PAINT CONTRACTS

The following bridges were contracted for painting in 2024, with the completion of work scheduled for 2025:

- Shaker Road 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 them 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.

2024 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. MTA Maintenance forces complete minor repairs; however, significant repairs warranting heavy equipment or specialty services, such as heat straightening, are completed through construction contracts. The MTA's program of increasing the vertical clearance of underpasses during rehabilitation projects, combined with the installation of overheight 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.

STROUDWATER RIVER OVERPASS – SOUTHBOUND (MILE 46.71)

On March 11, 2024, a portion of the northern armored bridge joint armor fractured at the field splice and became unattached from the concrete backwall. The lane with the section of failed joint was immediately closed, and a temporary steel plate was installed so the lane could be reopened to traffic.

PHOTO 18: STROUDWATER RIVER SOUTHBOUND

Subsequently, a repair contract was developed, and permanent repairs were substantially completed in April 2024.

STEVENSTOWN ROAD UNDERPASS (MILE 96.5)

In August 2024, the north fascia girder of the Stevenstown Road Underpass at Mile 96.5 was struck by an unknown overheight vehicle traveling southbound. The special damage inspection concluded that, while no immediate travel restrictions on the bridge are necessary, the damaged girders should be heat-straightened to restore their original geometry and load capacity. The completion of repairs is expected by mid-2025.

HNTB RECOMMENDATION (2025 BRIDGE REHABILITATION AND REPAIR PROJECTS)

Based on the findings of the 2024 Bridge Inspection Program, HNTB recommends the following bridge repair and rehabilitations for 2025:

BRIDGE WEARING SURFACE AND JOINT HEADER REPAIRS – VARIOUS LOCATIONS

Bridge preservation work is programmed at multiple locations, including wearing surface replacement and/or joint repairs. The following locations are programmed for repair:

- Beech Ridge Road Underpass (Mile 4.80)
- New County Road Underpass (Mile 34.40)
- Route 9 Underpass (Mile FS3.70)

WIDENED CONCRETE HAUNCH REMOVALS – VARIOUS LOCATIONS

On many Turnpike bridges built before the mid-2000s, the deck steps downward outside the edges of each bridge girder, a detail that bridge owners commonly used throughout the region. Agencies have since determined that these unreinforced concrete deck sections, 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. MTA-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

ANDROSCOGGIN RIVER OVERPASS – NORTHBOUND AND SOUTHBOUND (MILE 78.9)

The work includes joint replacement, parapet repairs, and partial pavement rehabilitation.

HNTB RECOMMENDATIONS (2025 BRIDGE PAINTING PROJECTS)

The MTA has implemented an effective painting program intended to maintain bridge girder paint conditions. The program reduces the potential for costly future repairs necessary to correct steel corrosion. Since 1990, over 53 MTA-owned bridges have been repainted, with the most recent painting project issued for construction in 2024. Because the current bridge painting project will continue through 2025, additional bridge painting contracts are not planned for 2025.

HNTB RECOMMENDATIONS (BRIDGE OPERATIONS AND MAINTENANCE PROGRAM)

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

- **DECKS** Sweep (power broom) bridge decks and flush bridge deck drains and joints with ordinary water. Patch potholes in wearing surfaces and repair leaking expansion joints when practical. At the deck underside, remove areas of concrete delamination and loose concrete haunches over lanes of traffic.
- **PARAPETS** Power rinse. Reapply concrete sealer at an interval consistent with manufacturer recommendations.
- **SUPERSTRUCTURE** Periodically power rinse the girder ends and bearings, particularly at expansion joint locations. Remove debris collected around the base of rocker bearings.
- **SUBSTRUCTURE** Power rinse and/or clean debris from bridge seats. Reapply concrete sealer at an interval consistent with manufacturer recommendations. Clean drainage downspouts and repair leaks when it's practical to do so.

The MTA should continue to maintain bridge files as part of its Bridge Operation and Maintenance Program, in accordance with FHWA requirements. These files should include 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 MTA 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 MTA'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 MTA 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 MTA, HNTB, and the MaineDOT have been working together to develop rating computations that meet the FHWA requirements and deadlines. Emergency Vehicle, as well as "Routine Permit Vehicle" load rating updates are being 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 usage by these overweight vehicles. Completion of this effort is expected in 2024.

SCOUR EVALUATIONS

In 2012, the MTA 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 MTA owned bridges or culverts were scour critical.

BRIDGE GEOMETRICS

The MTA'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 MTA should consider including improvements such as bridge raising and shoulder widening in its Capital Improvement Program to address substandard bridge geometrics.

Ancillary Structures

The MTA is responsible for 147 ancillary structures, including 56 overhead sign bridges, 15 overhead cantilever sign structures, 1 light bridge, 10 AVI mast arms, 12 space frames, 15 variable message signs on posts or butterfly supports, 5 communication towers, 4 over height vehicle detectors, 8 weather stations, 2 sets of high mast lights (HML), 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 2024 inspection.

Further coordination with MaineDOT is necessary to finalize the ancillary structure inventory; some structures around interchanges will likely be transferred to MTA ownership. The final inventory list is anticipated for the start of 2025 annual inspections.

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 MTA-owned assets meeting this criterion. The inspection concluded that these assets are in generally good condition. No significant deficiencies were observed.

PHOTO 19: HML INSPECTION

In 2024, a contract was issued to replace the walkway and message board located at mile 30.35. Additionally, the contract includes adding a walkway at the variable message sign located at mile 47.7 to improve accessability.

HNTB RECOMMENDATION

The continuation of annual routine inspections of ancillary structures is recommended. Additionally, the next hands-on inspection cycle for all overhead sign structures is recommended in 2026, consistent with FHWA guidance.

PHOTO 20: OVERHEAD SIGN BRIDGE INSPECTION

3. TOLL COLLECTION SYSTEM

Electronic Toll Collection

The MTA operates its Electronic Toll Collection (ETC) system as a closed-barrier toll system from the York Toll Plaza north to the New Gloucester Toll Plaza, and as an open-barrier toll system from the New Gloucester Toll Plaza north to the Turnpike terminus in Augusta. The open-barrier toll system allows free travel between interchanges within the limits of the mainline barrier toll plazas on the northern section of the Turnpike.

All trips on the Turnpike between the I-95 Piscataqua River Bridge and Exit 7 are toll-free. In 2023, these trips accounted for about 16-percent of all trips taken on the Turnpike. Additionally, all trips between Exit 75 in Auburn and Exit 86 in Sabattus are toll-free. In 2023, these trips accounted for roughly 6-percent of the trips on the Turnpike that occur north of Exit 7.

PHOTO 21: YORK TOLL PLAZA

All-Electronic Toll Collection

Electronic toll collection currently accounts for 87-percent of the toll revenue collected on the Turnpike. Recognizing the continuing increase in EZPass usage along the Turnpike, the MTA commissioned a study to evaluate a possible system-wide transition to all-electronic tolling (AET) in early 2024. This study is evaluating the feasibility, financial implications, and required system and operational changes associated with a possible transition to AET, and will include potential next steps if implementation is desired. The results of the study will be delivered to the MTA in the spring of 2025.

E-ZPass Group

On February 1, 2005, the MTA 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 MTA 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 $15.6B in tolls in 19 states from more than 59 million collection devices in circulation.

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 MTA has increased electronic revenue collections, reduced toll plaza footprints, and maximized collections while increasing efficiency and maintaining customer satisfaction.

The E-ZPass Group has recently adopted the North American Toll Interoperability initiative and, as of January of 2024, has accepted three communication protocols that will be accepted within the E-ZPass Group to help achieve the National Interoperability goals. The MTA completed their conversion from the legacy ARCS toll system to the New Infinity toll system in September of 2023. This initiative included updating all lane side AVI readers to a Tri-Protocol reader, thus meeting the E-ZPass Groups goal for utilizing the accepted three communication protocols.

Toll Schedule

Toll revenue totaling $164.2 million was collected during 2023, up from $160.2 million in 2022. This is an increase of approximately $4 million, or 2.4-percent, over 2022 values. Calendar year 2024 revenue is on pace to exceed 2023 revenue.

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 MTA, 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 prepaid 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. Vehicles with a Maine-based E-ZPass account save an average of 18-percent compared to the cash rate, before the application of Volume Based Discounts.

PERSONAL VOLUME BASED DISCOUNT

The MTA 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-percent if more than 30 one-way trips occur in a month, and a 40-percent discount if 40 or more one-way trips occur in a month.

BUSINESS VOLUME BASED DISCOUNT

Business Accounts are intended for commercial vehicles. As with passenger cars, commercial vehicles having an E-ZPass tag from the MTA 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 7** summarizes the Post-Paid Plan Volume Discount program. In essence, all tolls in excess of $50 for the month are discounted between 10-percent and 20-percent. On a system-wide basis, post-paid E-ZPass business accounts receive an average volume discount of over 17-percent. 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-percent 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-percent for commercial vehicles.

TABLE 7: 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

PHOTO 22: NEW GLOUCESTER 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 2023, the Turnpike logged a record 1.62 billion VMT and approximately 89.1 million trips. For historical comparison purposes, 75.1 million of those trips occurred north of Exit 7. **Figure 5** illustrates the trends of both measures. The MTA acquired an additional section of highway south of Exit 7 in 2016 and, therefore, data for the "full Turnpike" is available beginning in that year.

In 2023, the average trip length on the Turnpike was approximately 21.5 miles. **Figure 6** plots the number of annual trips together with the total VMT on the Turnpike. The data show that the average trip length remains less than pre-covid levels.

FIGURE 5: VEHICLE MILES TRAVELED

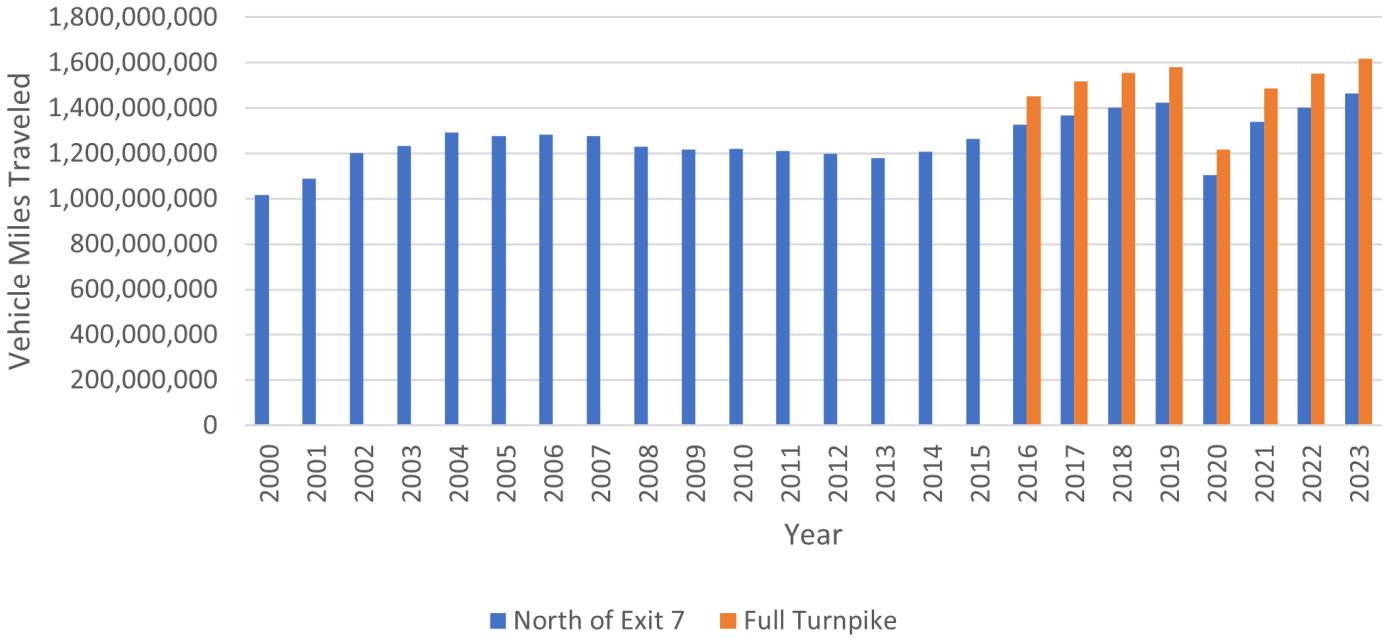
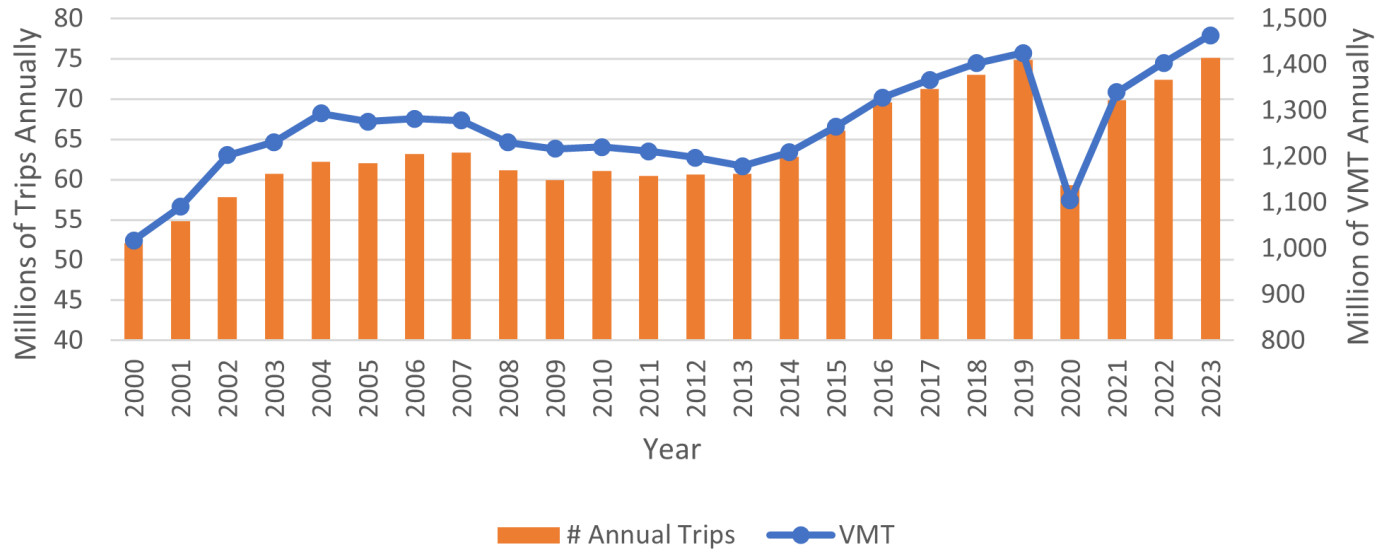


FIGURE 6: GROWTH IN ANNUAL TRIPS (2000-2023)



Intelligent Transportation System Master Plan

The MTA is in process of developing an Intelligent Transportation System (ITS) master plan. This plan, scheduled for completion in Fall 2024, will outline strategies for updating and modernizing the Turnpike's ITS infrastructure and equipment. The plan will be used to support the prioritization of system upgrades as well as ongoing capital planning.

Reduced Speed Limit Signs

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

Traffic Count Stations

In 1996, the MTA began installing traffic count stations at interchanges to gather accurate and timely traffic data. The controllers currently utilize side-fired radar technology to record traffic volume and speed data continuously, enabling the MTA 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 MTA initiated a modernization of its existing traffic count stations. Throughout 2024, it has continued to replace existing stations and add new ones along the entire Turnpike. Accuracy verification testing is now underway, and the program's completion is anticipated by the end of 2024.

Roadway Sensors

Eight roadway weather information systems (RWIS) were installed on the Turnpike 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), York Maintenance (Mile 10), the Saco River Bridge (Mile 33.5), the Falmouth Spur Presumpscot River Bridge (Mile FS1.1), the Eagles Nest Road Bridge (Mile 60.8), the Poland Spring Road Bridge (Mile 74.5), the Androscoggin River Bridge (Mile 78.7), and at the Sabattus Interchange (Mile 86.1).

Variable Message Signs (VMS)

The MTA currently maintains a network of variable message signs (VMS) to provide motorists with critical real-time traffic information. There are 24 VMS and 27 portable changeable message signs (PCMS) 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 TMCC at the MTA Headquarters. The 27 PCMS have been deployed long-term throughout portions of the Turnpike for incident management purposes. They, too, can be controlled from the TMCC in the same manner as the fixed VMS.

Highway Advisory Radio

The MTA installed its first highway advisory radio (HAR) transmitter in Saco in 1997 and has expanded the system to cover nearly the full length of the Turnpike since then. Transmitters along the Turnpike are strategically located to provide information at critical decision points along the highway, typically at or near interchanges.

In 2007, the MTA upgraded 11 transmitter sites and the software platform located in the Turnpike TMCC. This upgrade synchronized all the HAR transmitters, improving coverage on the mainline.

The Highway Advisory Radio Transmitter Locations are listed in **Table 8** 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 TMCC has the ability to control and quickly update messages.

Over time, the HAR system has become less effective due to patrons' declining use of AM Radio. In some cases, new vehicles do not include AM radio capabilities because their electric motors can cause interference with the AM radio frequency band. Recognizing this, the ITS master plan will likely recommend decommissioning the HAR system and the capabilities of the system with additional VMS.

TABLE 8: HIGHWAY ADVISORY RADIO TRANSMITTER LOCATIONS

Town/City	General Location	Mile Marker
York	I-95 NB at Cider Hill Underpass	6.2
Wells	I-95 SB at Tatnic Road Underpass	15.4
Wells	I-95 SB at SB On-Ramp	19.1
Kennebunk	I-95 NB at Kennebunk Maintenance	25.3
Saco	I-95 NB at Boom Road Underpass	33.4
Scarborough	I-95 NB at Holmes Road Underpass	43.0
Falmouth	Exit 53 On-Ramp	53.0
Cumberland	I-95 NB at Sign Shop	58.3
Gray	I-95 SB at Gray Maintenance	63.3
Auburn	Exit 75 NB On-Ramp	75.3
Lewiston	Exit 80 NB Off-Ramp	80.3
Sabattus	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, North of Winthrop Street Underpass	108.7

Closed Circuit Television (CCTV) System

There are currently 18 CCTV cameras transmitting streaming video 24 hours a day, seven days a week, to monitors located in the TMCC at the MTA Headquarters. Still images from 13 of these cameras are also viewable on the MTA website.

The CCTV cameras are located at the following locations:

- Kittery Weigh Station SB
- York Toll Plaza NB & SB
- Exit 19 (Tatnic Road) SB Only
- Exit 25 (Route 35) NB & SB
- Exit 32 (Route 111) NB & SB & WB
- Between Exits 32 & 36 (Boom Road) NB Only
- Between Exits 36 & 42 (Flag Pond Road) NB & SB
- Exit 42 (Holmes Road) NB Only
- Exit 46 (Jetport Road) NB Only
- Exit 47 (MCRR) SB Only
- Exit 63 (Gray) NB & SB
- Mile 108.8 SB Only

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

Four additional trailer-mounted CCTVs were purchased after 2010 for temporary work zone monitoring and incident management. Eight Additional CCTVs were installed with the RWIS at various location, and two additional cameras were installed at the Gray and Lewiston Park and Ride Lots. All cameras are accessible by the TMCC.

Overheight Vehicle Detection System

Many of Turnpike bridges have been struck and damaged by overheight loads. This issue has been mitigated by the MTA'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 MTA has addressed this concern by installing overheight vehicle detection (OVD) 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 TMCC 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.

GO MAINE Program

GO MAINE is Maine's statewide commuter program. It matches up carpoolers and provides information regarding vanpooling, transit, active transportation, and working from home. GO MAINE rewards commuters who use any form of green transportation to get to and from work. The program also offers an Emergency Ride Home Benefit, providing a ride home (with a taxi or Uber) from work in case of a workday emergency.

GO MAINE runs the Way 2 GO MAINE challenge twice a year. This friendly competition between employers across the state encourages Mainers to walk, bike, carpool, vanpool, take the bus, or work from home.

In 2021, a third-party vendor, AECOM, was hired to run the program under MaineDOT and MTA. MaineDOT funds the program 75-percent, with MTA contributing 25-percent. AECOM manages the program's day-to-day operations, including outreach and education, coordination with the ride-matching software provider Agile Mile, marketing and communications, and reporting.

In the second year of their oversight, 2 million fewer trips were taken in the State of Maine. GO MAINE had almost 10,500 members from over a thousand Maine employers. Those commuters saved 100,500 gallons of gas in 2023.

Park & Ride Lot Program

Currently, the MTA owns a network of eight Park & Ride lots and is responsible for maintaining 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 MTA strongly encourages motorists to utilize these Park & Ride lots to reduce congestion on the Turnpike through ridesharing. Lot usage is monitored annually to confirm that sufficient capacity is available. **Figure 7** summarizes overall Park & Ride Lot Usage from 2001 through 2024. 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. The 2024 survey found 38-percent of available spaces were in use on average, down from the peak utilization of 59-percent in 2019. **Table 9** summarizes Park & Ride Lot Usage per location on the day it was surveyed as part of the 2024 Annual Inspection of the Turnpike.

FIGURE 7: PARK & RIDE LOT USAGE - 2001 THROUGH 2024

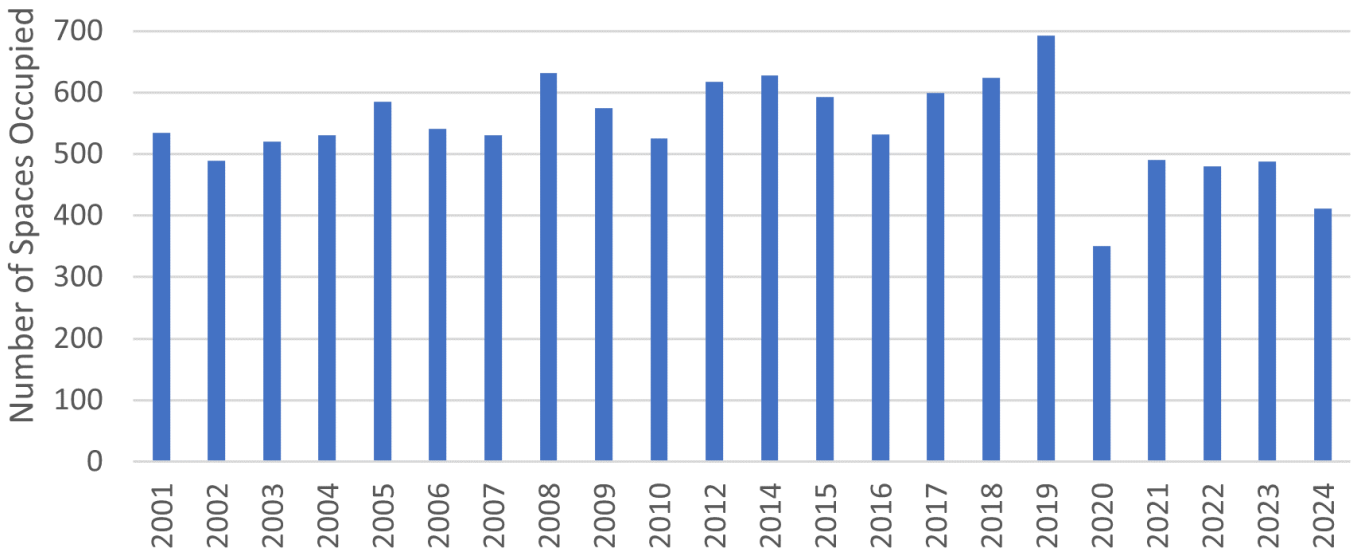


TABLE 9: 2024 PARK & RIDE LOT USAGE PER LOCATION

Town	Location	Owner	Spaces	2024 Volume	% Capacity	Day/ Date of Week (Data Collection)
York	Chases Pond Road, US-1 Connector	MaineDOT	26	20	77%	Mon 7/10
Wells	Maine Tpk Exit 19, adj. to Wells Trans Ctr.	MTA	100	55	55%	Mon 7/10
Kennebunk	Maine Tpk Exit 25 SB, on Rt. 35	MTA	52	33	63%	Mon 7/10
Biddeford	Maine Tpk Exit 32, on Rt. 111	MTA	155	75	48%	Mon 7/10
Saco	I-195 Exit 1, on Industrial Park Rd.	MaineDOT	-	Rebuilding	-	Mon 7/10
Scarborough	Maine Tpk Exit 42, shared w/ Cabela's Parking Lot	MTA	66	24	36%	Mon 7/10
S. Portland	Maine Tpk Exit 45, on Rt. 703	MaineDOT	111	13	12%	Mon 7/10
Portland	Maine Tpk Exit 46, adj. to toll plaza	MTA	68	29	43%	Mon 7/10
Westbrook	Larrabee Road, near Maine Tpk Exit 47	MaineDOT	91	45	49%	Thur 8/1
W. Falmouth	North side of Hannaford behind the Irving	MTA	9	4	44%	Mon 7/10
Gray	Maine Tpk Exit 63, on US-26	MTA	127	39	31%	Mon 7/10
Auburn	Maine Tpk Exit 75, on US-202	MaineDOT	137	60	44%	Mon 7/10
Lewiston	Maine Tpk Exit 80 - Route 196	MaineDOT	93	44	47%	Mon 7/10
W. Gardiner	Maine Tpk Exit 102, near Rt. 126	MTA	54	16	30%	Mon 7/10
		Overall	1,089	412		

Turnpike Safety and Law Enforcement

According to data compiled by the National Highway Transportation Safety Association and State of Maine Crash data, the Turnpike has a crash rate that is approximately one third the national average for interstates and one half the state of Maine interstate average, as illustrated in **Figure 8**.

In 2023, injury rates on the Turnpike reached their lowest in over five years at 0.74 per Hundred Million Vehicle Miles (HMVM). However, fatalities increased with 7 crashes resulting in 9 fatalities, increasing the fatality rate from 0.2 to 0.6 per HMVM. Despite this, the fatality rate remains low compared to similar facilities, and there are no discernable patterns that suggest areas of targeted improvement.

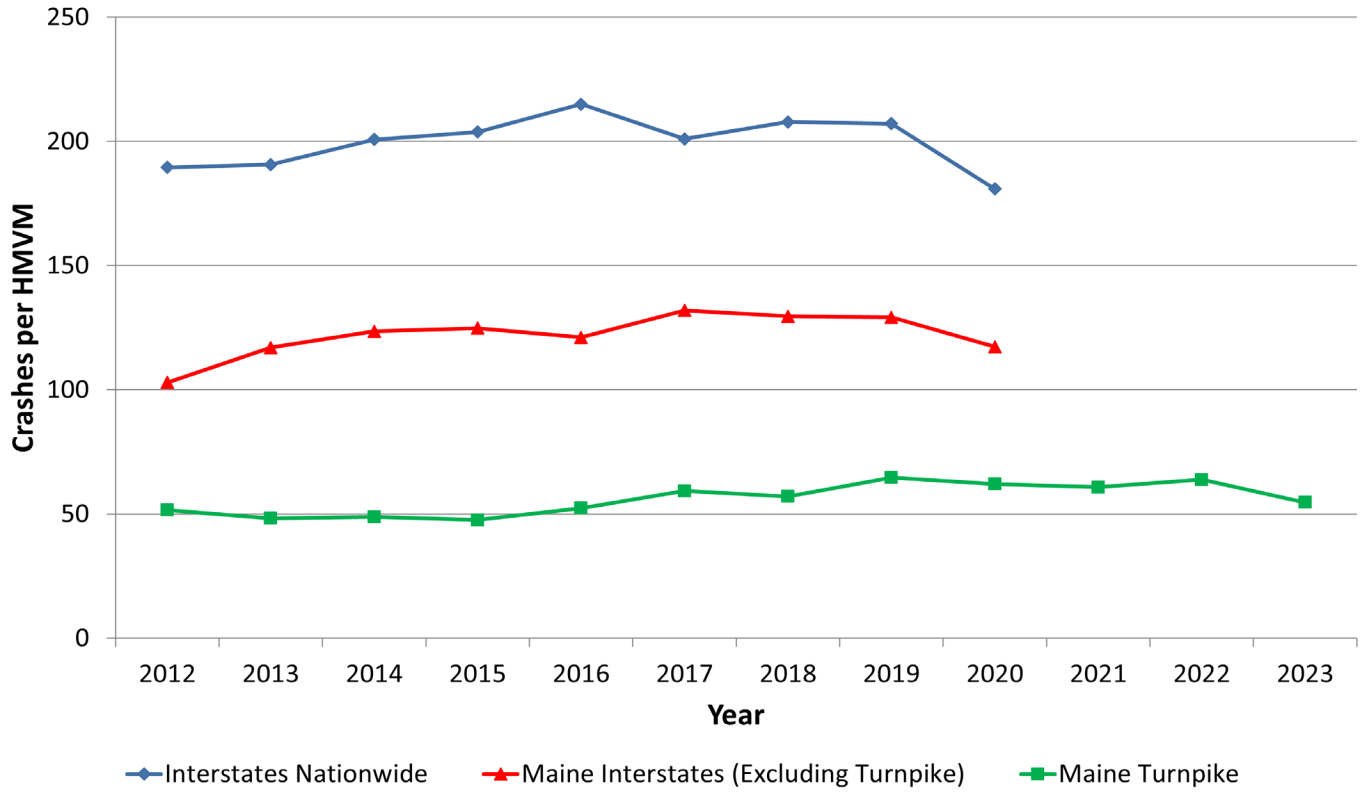
The overall number of crashes continued a recent downward trend, totaling 884, which translates to a crash rate of 54.6 per 100 HMVM.

While still low in volume, there was an observed increase in the number of wrong-way crashes. In an effort to reduce wrong-way crashes, the MTA and MaineDOT are collaborating to develop a consistent approach for the installation of enhanced signage at interchange ramps and service plazas. The MTA is also evaluating the closure of additional median openings as described in the Wrong-Way Drivers section.

The monitoring of high crash locations (HCLs) is an important metric used to monitor and measure the safety of the Turnpike system through the identification of hot spots that may have opportunities for mitigation. 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 2023, there were 21 HCLs on the Turnpike system which includes the mainline, toll plazas, and interchange ramps. The 21 HCLs identified in 2023 represent a continued decrease from the 23 HCLs in 2022 and the 26 HCLs identified in 2021 and 2020. These will be evaluated to understand any potential mitigation opportunities.

Law enforcement services on the Turnpike are provided by Troop G of the Maine State Police are essential to the continued safety of the Turnpike. 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 main-

FIGURE 8: CRASHES PER HUNDRED MILLION VEHICLE MILES (HMVM)



line, 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.

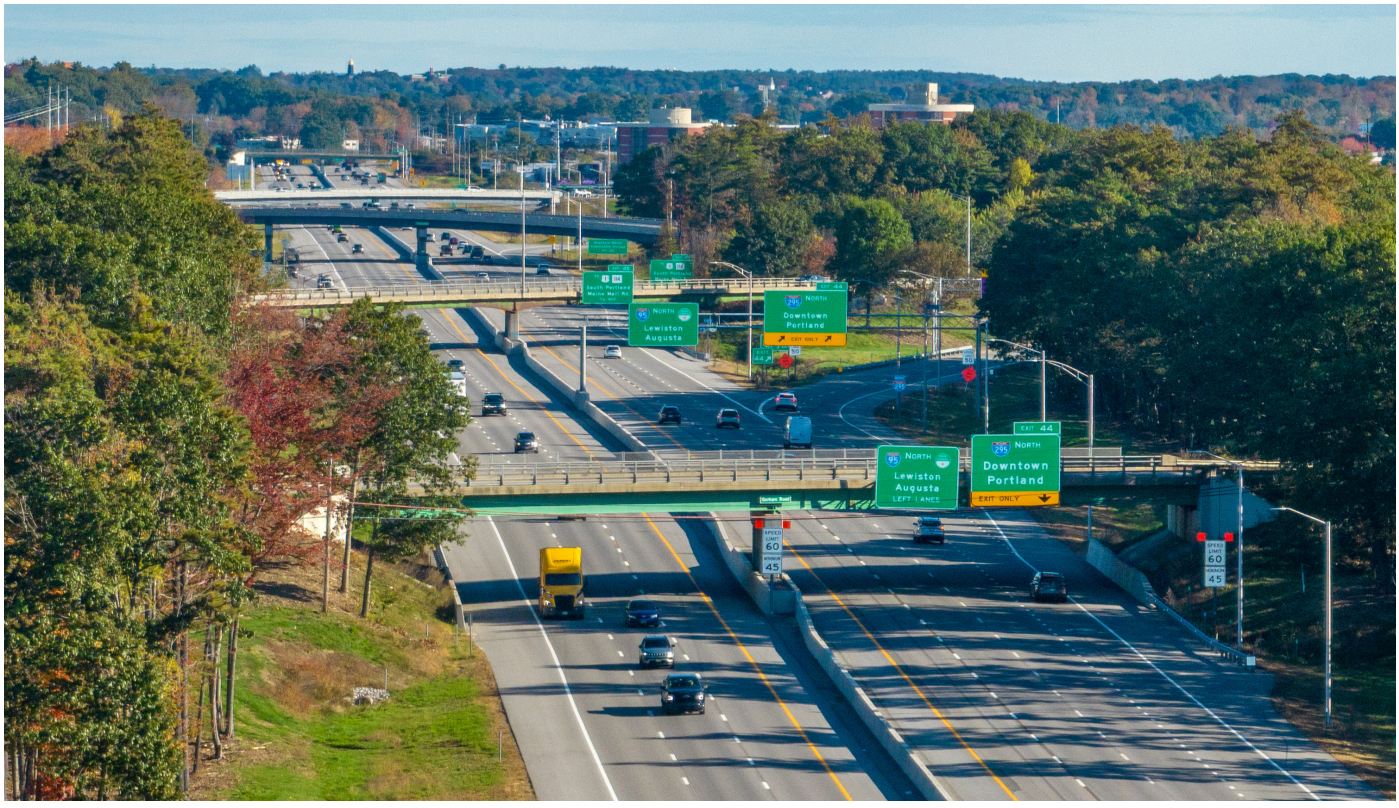
Troop G consists of a Lieutenant, Sergeants, Corporals and Troopers assigned to the Turnpike. In recent years, the staff size of Troop G has ranged between 20 and 25. These troopers are responsible for patrolling the entire Turnpike, 24 hours a day, 365 days per year. The troopers are dedicated to making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

Turnpike Safety Patrol

In October 2016, the MTA 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, adding 1,000 hours of patrol time. 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.

PHOTO 23: MTA SAFETY PATROL

PHOTO 24: TURNPIKE - EXIT 44



5. MAINE TURNPIKE AUTHORITY/MAINEDOT JOINT INITIATIVES

Operations and Maintenance

The MTA and the MaineDOT have a long history of working together to provide an efficient transportation system. Beginning in 1995, the MTA 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.

PHOTO 25: WINTER MAINTENANCE

In 2014, the two agencies entered into an agreement that reimburses the MTA 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 2016, the MTA purchased this two-mile section and is no longer reimbursed for the related maintenance work. However, winter maintenance of the Piscataqua River Bridge is still reimbursed.

In 2018, the MaineDOT called and needed help painting pavement markings on I-295 in Portland. The MTA 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 an overheight vehicle struck it.

Additionally, the MTA 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.

In 2024, the two agencies, in collaboration with the New Hampshire Department of Transportation, initiated the development of a transportation management plan for both short- and long-term closures of the Piscataqua River Bridge. This bridge, which spans the Piscataqua River, is a critical link carrying I-95 between Maine and New Hampshire. On peak travel days, over 130,000 vehicles traverse the bridge. Given its role as a major route for vehicular traffic entering and leaving Maine and its position at the southern terminus of the Maine Turnpike, any closure or restriction can significantly impact Maine Turnpike Operations. Therefore, establishing effective contingency plans is essential. The study aims to create comprehensive plans that guide traffic incident management and public outreach, minimizing disruptions to traffic flow to the extent practical.

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 MTA. This includes MaineDOT projects that physically connect to the Turnpike or are consistent with the overall Maine Turnpike Authority mission. Alternative programs, such as the ones identified below, are included in these transportation dollars provided to the MaineDOT.

The MTA and MaineDOT also collaborate regarding stormwater issues. Both agencies jointly review permitting processes through the Maine Department of Environmental Protection (MaineDEP), and three-party agreements are signed so that MaineDOT and the MTA are treated the same for transportation purposes.

Park & Ride Lot Coordination

The MTA and MaineDOT continue to coordinate on the use, condition, and improvements to Park & Ride lots. In coordination with MaineDOT, the MTA 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 MTA and MaineDOT agree to continue to work to identify future Park & Ride lot needs through the continued inventory and evaluation of these lots, which are described in detail in Section 4, "Traffic Management and Technology".

Project Development

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

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

The MaineDOT and the MTA also 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 project planning and construction. Both agencies worked together on the Turnpike West Gardiner Service Plaza project and the Central York County and Gorham East-West Corridor Studies. Additionally, MaineDOT and the MTA recently partnered to complete bridge preservation work and capacity enhancements at the Piscataqua River Bridge linking Maine and New Hampshire. This MaineDOT-led project was completed in early 2024.

PHOTO 26: WELL TRANSPORTATION CENTER PARK & RIDE

6. PLANNING STUDIES

The evaluation of potential new transportation projects requires the completion of planning studies by the MTA to evaluate project viability and identify the best available alternatives. The following paragraphs describe recent or ongoing planning studies.

Exit 32 Feasibility Study

In 2020, the MTA 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 growing traffic queues on the Exit 32 southbound off-ramp, improve capacity at the Exit 32 and Route 111 intersection, and 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 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 reconfiguring the existing interchange and converting 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. Additionally, 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.

In December 2022 MaineDOT, the Maine Turnpike and the City of Biddeford completed a joint feasibility study 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. At the same time, the Maine Turnpike completed a study of potential alignments for a proposed southbound off-ramp connection with Route 111 that would work regardless of whether the connector road between Route 111 an South Street were built. The Maine Turnpike Study concluded in 2023 and presented a series of conceptual alignments for consideration with environmental regulatory agencies. Based on these studies, the MTA's capital improvement plan includes further improvements to the Exit 32 interchange.

In 2023, the Maine Turnpike completed a feasibility assessment for extending the Exit 32 southbound off-ramp to Route 111. This extension would divert a portion of the southbound exiting traffic to Route 111, about a mile west of the congested intersection at Exit 32. The project would also serve as the first phase of reconfiguring the interchange to improve mobility and traffic flow. The evaluation concluded that an off-ramp extension was feasible and recommended a series of conceptual alignments for further evaluation, public input, and coordination with environmental regulatory agencies. The MTA's study built upon and integrated findings from a December 2022 joint feasibility study by MaineDOT, the Maine Turnpike, and the City of Biddeford, which assessed constructing a connector road between Route 111 and South Street near Exit 32 to improve mobility and reduce traffic congestion. Construction of the Exit 32 southbound on-ramp extension is currently included in the Turnpikes capital improvement plan for the early 2030s.

Exit 36 Feasibility Study

The MTA 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 and reopen the Exit 35 interchange.

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

Exit 45 Feasibility Study

In 2018, two feasibility studies were completed for the MTA 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) an 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 recommended alternative was the interim diamond interchange, which can accommodate a future Gorham Connector.

Following the recommendation, Exit 45 was reconstructed into a Diamond Interchange to handle increasing traffic. This project included the addition of two new ramp toll plazas and a wider bridge. The old bridge over the Turnpike was replaced and elevated to provide a 16.5-foot clearance. The original toll booth was also replaced with two new ramp toll plazas, offering cash and electronic toll collection on either side of the Turnpike. This multi-year project was completed in 2024.

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. It 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 MTA and MaineDOT officials believed that integrating all modes of transportation (transit, bike, pedestrian) was an integral part of the study.

The final study report was completed in the fall of 2012. Since then, the MTA has been coordinating with the United States Army Corps of Engineers (ACOE) to finalize a project purpose statement and determine the next steps.

In 2017, LD 905, a bill introduced to the Maine State Legislature, 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 was voted on and signed into law in May 2017.

In 2019, a traffic and revenue feasibility study was completed for the MTA and concluded that a new Gorham Connector would be financially viable. Since 2020, work has continued on the Gorham Connector Alternatives Analysis. The analysis evaluates 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. The public process for the project began in 2024 and is expected to continue into 2025.

Safety and Capacity Study

In 2022, the MTA requested an updated System-wide Traffic Operation and Safety Study of the Turnpike to assess 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 and an estimate of construction cost. The updated Safety and Capacity study serves as a key long-range planning tool in the development of the MTA's capital improvement plan.

Portland Area Mainline Needs Assessment

The MTA 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 Portland Area Mainline Needs Assessment aimed 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 MTA assembled a public advisory committee (PAC) to provide input and information for the Portland Area Mainline Needs Assessment process. This PAC consisted of individuals from transportation, land use, commercial and safety who contributed 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 modernizing the Turnpike mainline through the Portland area was appropriate and prudent.

Construction of mainline improvements between Mile Markers 44 and 49 includes the addition of a third lane in each direction, together with associated drainage and median safety improvements. This work was completed in 2024 and addresses the most critical capacity needs between Exits 44 and 53. Additional lane widening and median improvements between Mile Marker 49 and Exit 53 are planned to begin in the early 2030s.

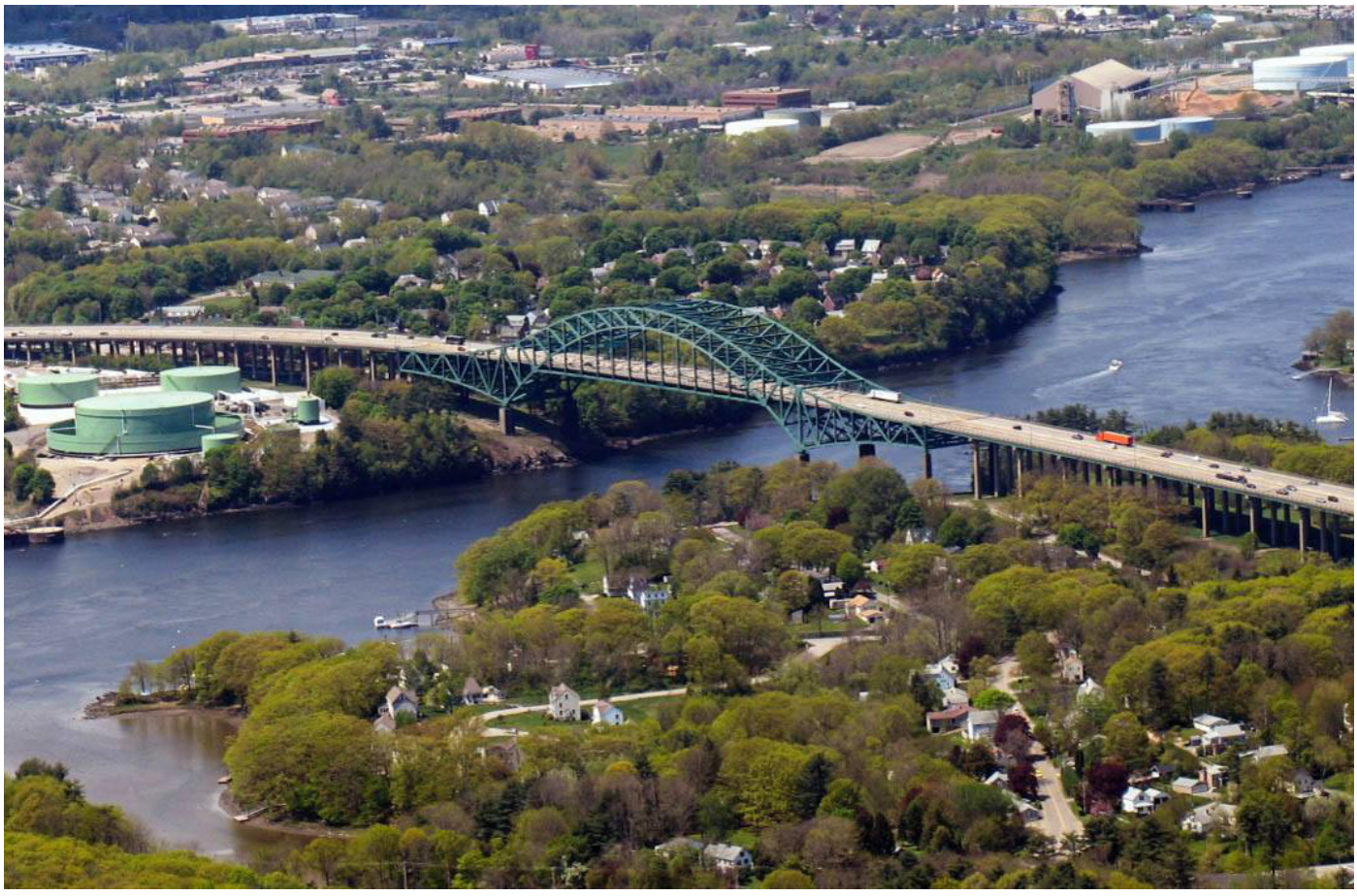
Study of the Future Needs of the Piscataqua River Bridge

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 MTA worked 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 consisted 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 MTA collaborated with MaineDOT to enhance the Dennett Road Bridge and explore ways 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, including preservation activities and modifications for part-time shoulder use during heavy traffic. The project also included installing median barriers at the bridge approaches to improve safety. In the spring of 2024, a final contract was completed to install supplemental signage and intelligent transportation systems (ITS) to support part-time shoulder use. With construction now complete, the agencies can display messaging on the roadway as needed, allowing vehicles to travel on the outside shoulders between Exit 3 in New Hampshire and Exit 2 in Maine. When activated, part-time shoulder use helps relieve congestion and improves mobility.

With construction now complete, the agencies can display messaging on the roadway on an as-needed basis, allowing vehicles to travel on the outside shoulders between Exit 3 in New Hampshire and Exit 2 in Maine. When activated, part-time shoulder use helps relieve congestion and improves mobility.

PHOTO 27: PISCATAQUA RIVER BRIDGE



7. FUNDING

Recommendations will include possible future improvements (such as a roadway or interchange ramp widening and safety improvements) and estimated 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 exceeding normal maintenance constraints, such as bridge reconstruction programs.
- **OPERATION AND MAINTENANCE FUND:** Includes routine operation and maintenance work carried out by MTA personnel, such as daily operations, repairs, and improvements.

Below are the details of each fund and the recommended deposits for fiscal year 2025. In addition, a recommendation regarding insurance coverage is included.

Capital Improvement and General Reserve Fund

As part of the Sensible Transportation Policy Act, the MTA identified projected deficiencies in Turnpike facilities that need to be addressed in the near and long term. From this planning effort, the MTA 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 2024, we estimate this fund will have a balance of $147,542,984. Including carryover projects from 2024, we estimate $86,152,376 in Capital Improvement expenditures in 2025.

Based on the estimated fund balances and Capital Improvement expenditures, no additional deposit into the Capital Improvement and General Reserve Fund is required for 2025.

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 2025 is $42,000,000.

Operation and Maintenance Fund

Operation and Maintenance work is usually carried out by MTA 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 2025, exclusive of reserve maintenance and capital improvement expenditures, will be $52,334,000. This estimate is based on careful examination of 2024 expenditures and an evaluation of factors expected to influence these costs during 2025.

Insurance

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

APPENDIX

Appendix A - Historic Paving Contract Limits

Year	From MM	To MM	Roadway	Centerline Miles Paved
2024	1.3	6.8	NB/SB	5.5
	20	23.3	NB/SB	3.3
	42	49	SB	7
	Int. 1,2,3, & 75			
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

Year	From MM	To MM	Roadway	Centerline Miles Paved
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			

Appendix B - Maintenance Area Building Counts

Description	York	Old York	Kennebunk	Crosby	Sign Shop	Gray	Auburn	Litchfield	Gardiner	TOTAL
	Mile	Mile	Mile	Mile	Mile	Mile	Mile	Mile	Mile	
	7	10	25	46	58	63	77	93	102	
Maintenance Garage, 3 Bay		1	1					1		**3**
Maintenance Garage, 4 Bay	Merge		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 Bulding						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	**5**

Appendix C - Schedule of Insurance

THE MAINE TURNPIKE AUTHORITY
Schedule of Insurance
2024-2025

Comprehensive Package Policy Including Turnpike Property

Underwritten by the Acadia Insurance Company — Agent: Cross Insurance

			Premium Amt
Commercial Property	**Policy No. CPA1000627-42**	**Term: October 1, 2024 to October 1, 2025**	**$810,377.00**

Risk	Coverage	Limit	Remarks
Fire and Related Blanket	*Buildings	$152,332,394	Agreed Amount and
Contents		$52,993,383	Replacement Cost
	Extra Expense & Loss of Rents	$3,611,500	
	Boiler and Machinery	$205,325,777	
	(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	$393,439,760	
	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 (total outside limit)	

Deductible - $50,000

Inland Marine

a. Direct Physical loss or damage	Scheduled Maintenance Equipment *	$8,656,327	
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. CAA1000628-42**	**Term: October 1, 2024 to October 1, 2025**		**$551,232.00**
Comprehensive	Bodily Injury Liability, CSL,	$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. CPA1000627-42**	**Term: October 1, 2024 to October 1, 2025**	**$110,438.00**

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, 2024 to October 1, 2025**	**$6,104.00**

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
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 012		**Term: October 1, 2024- October 1, 2025**		**$62,686.00**
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 Merfeld Interim Executive Director Policy No. 108109452	September 05, 2024-2025	$50,000		**$197.00**
				Premium Amt
Jonathan Arey Secretary Policy No. 105220456	January 2, 2024-2025	$50,000		**$175.00**
				Premium Amt
John P. Sirois Treasurer Policy No. 107886102	July 12, 2024-2025	$50,000		**$158.00**

Fiduciary Responsibility

Underwritten by ACE Insurance Company — Agent: Cross Insurance

		Premium Amt
Policy No. G25749522 013	**Term: October 1, 2024-October 1, 2025**	**$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 2024**	**$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, 2024-October 1, 2025**	**$114,374.00**

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 Trisura — Agent: USI Insurance

		Premium Amt
Policy No. Unknown	**Term: October 1, 2024-October 1, 2025**	**$34,500.00**

	Each Claim	Aggregate
Limits of Liability	$ 5,000,000	$ 5,000,000