Maine Turnpike Authority

MAINE TURNPIKE 2004-2013

10 Year Planning Report

DRAFT

October, 2003

MAINE TURNPIKE AUTHORITY

10 YEAR PLANNING REPORT

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I. EXECUTIVE SUMMARY

This 10 Year Planning Report is prepared in response to the rule adopted for the Sensible Transportation Policy Act (STPA), 23 M.S.R.A. § 73. This planning report is intended to establish the transportation and safety related goals of the Turnpike for the next 10 year period. A draft report will be presented to the public on October 7, 2003. After receipt of public comment, a final report will be published.

The Maine Turnpike is the most heavily traveled corridor in the state and provides for commuter, commercial, and recreational travel. The Maine Turnpike is considered the "Gateway" to Maine given that it is the only interstate highway in southern Maine from just north of the New Hampshire border to South Portland, approximately 42 miles. Travel demand on the Turnpike has been forecasted to increase 3.0% per year over the next 10 years. This forecast was developed considering four factors: historical growth, downward trend, revenue projections and projections from previous reports.

The condition of the Maine Turnpike is generally good; however, there are portions of the Turnpike which are reaching the end of their useful lives, thus requiring an increased amount of maintenance and rehabilitation. The functional standards now employed by the Turnpike are principally the same as those used by the Maine Department of Transportation (MDOT). Based on these functional standards, the Turnpike presently exhibits deficiencies in two specific areas, operational standards and safety and design standards. Over time, design standards have changed, while at the same time the condition of the existing Turnpike system continues to age. Both the safety and design deficiencies will continue to worsen if left un-addressed.

The recommended improvements contained in this Planning Report are 1) seek to preserve the quality and improve the safety of the entire existing system; 2) improve traffic flow throughout the Turnpike; 3) complete the safety improvements and modernization of the most heavily traveled portion of the Turnpike from Mile 14 to Mile 44; 4) provide improved access; and 5) enhance existing facilities. Within these five groups the recommended improvements include:

Preservation:

The Authority will rehabilitate the existing roadway, bridges and drainage system by resurfacing the roadway, repairing, painting and redecking bridges, and repairing culverts and slopes to mitigate erosion and sedimentation. The Authority will also construct safety improvements by protecting or eliminating hazards within the roadway clear zone and reviewing median guardrail opening locations in accordance with the American Association of State Highway Transportation Officials (AASHTO) requirements.

Traffic Improvements:

The traffic improvements referred to in this program take the form of Travel Demand Management (TDM) and Transportation System Management (TSM) initiatives. The Authority has already implemented several TDM and TSM measures. These include park and ride lots, the Go Maine Program (formerly RideShare), partially funding ZOOM, an express bus service in southern Maine, electronic toll collection (ETC), toll system conversion, highway advisory radio (HAR), and variable message signs (VMS). The Authority also assisted in the permitting, design and construction of the Wells Intermodal Transportation Center. The Authority will continue to look for

ways to improve its existing systems and for new feasible management systems to implement.

Modernization and Widening - Mile 14 to Mile 44:

The widening of the Turnpike is being accomplished by the addition of a new 12-foot travel lane in each direction, extending the existing six-lane section of the Turnpike in York to South Portland. Safety improvements involve widening of the existing outside shoulder from eight feet to 12 feet; increasing the roadside clear zone to 30 feet with more gradual side slopes; and removing rock outcrops and other obstacles from within the clear zone.

The Modernization and Widening Program included the reconstruction of 17 underpass bridges. Bridge abutments were set back to allow for the additional travel lanes, shoulder widening, and clear zones. Arch culverts over the Ogunquit, Merriland, and Nonesuch Rivers were laterally extended to accommodate the additional lane and wider shoulders. Guardrail rather than clear zones were proposed at these locations in order to minimize impact to these natural resources.

Interchange 4 in Biddeford is being modified to increase the radius of curvature on existing ramps to meet current interstate design standards. Modifications will also be made to acceleration and deceleration lanes to improve traffic movements and enhance safety.

The Modernization and Widening Program is being completed over a five year period. Construction started in March 2000 and is approximately 80% complete. The Modernization and Widening program is scheduled to be complete by fall of 2004.

Interchange Access Road Program:

Under the Interchange Access Road Program, the Authority will continue to study, and if determined to be feasible, construct new and improved access to the Turnpike. This Program not only addresses traffic issues within the Communities along the Turnpike corridor, but also provides for increased economic development. This program, in order to be successful, requires cooperation between the Authority, MDOT, and the local municipalities.

Facility Enhancement:

Under facility enhancement, the Turnpike will: expand maintenance facilities, renovate service area restaurant buildings, rehabilitate other existing buildings when feasible, and reduce maintenance and improve aesthetics through the use of landscaping.

Conclusion:

In accordance with the rule adopted for the STPA, the Maine Turnpike Authority has developed this Draft 10 Year Planning Report 2004 – 2013. The draft report will be presented to the public on October 7, 2003. The Authority will have a comment period until November 7, 2003 where they will receive comments on the draft report. Comments may be sent to MAINE TURNPIKE AUTHORITY, 430 Riverside Street, Portland, ME 04103, ATTN: Conrad Welzel, Government Relations Manager.

II. INTRODUCTION

A. GENERAL

In 1991, the Sensible Transportation Policy Act (STPA) 23 M.R.S.A. § 73 was passed by referendum, essentially to require early public involvement in statewide transportation planning. The STPA required the Maine Department of Transportation (MDOT), in coordination with the Maine Turnpike Authority (MTA) and other pertinent state agencies, to establish a rule to implement the policy.

In 1992, MDOT adopted the Rule for the Sensible Transportation Policy Act. According to this rule, "MDOT is charged with the overall responsibility for balanced transportation planning and policy....In connection with the development and adoption of the Statewide Transportation Plan by MDOT, MTA shall develop and submit an MTA Planning Report".

The MTA has a long-standing relationship with the MDOT. These agencies, though separate and distinct, have always collaborated on mutual goals and projects. This MTA Planning Report was prepared following the format established in Subchapter II, Section 1 of the aforementioned rule and is submitted to MDOT for consideration in the Statewide Transportation Plan.

This report not only identifies deficiencies and recommends improvements of the Turnpike system, but also reviews the "Mission Statement" of the Authority. Within this "Statement" the Authority recognizes and professes that its primary responsibility is that of operating and maintaining Maine's primary transportation facility, but it also acknowledges a desire and responsibility to the citizens of the State and communities that it serves. The Authority accomplishes this through its two mission goals:

- "To manage a top quality highway serving Maine (Intrastate involvement) and providing the link between the Maine Department of Transportation and the rest of the United States and Eastern Canada."

- "To use tolls, fees and the Maine Turnpike Authority's unique revenue bonding capability to build partnerships that will benefit Maine Transportation."

A copy of the complete "Mission Statement" is included as **Appendix A**.

B. PUBLIC PARTICIPATION

1. Historical Involvement

The Maine Turnpike Authority has an established policy of obtaining public input on potential projects or changes in operations that may affect local communities, adjacent counties, or even the state as a whole. Beginning with the first 10 Year Planning Report prepared in 1994 and continuing through today, the Authority has sponsored numerous public meetings and has made reports on various proposed changes to the Turnpike and its operations available to the public. The Turnpike Authority has held annual public meetings in various municipalities on the Turnpike Corridor and has also recently held two per year of their monthly

Authority Board meetings in these municipalities.

Over the past several years, the focus of public involvement has centered on 1.) the need to address current and future capacity and safety related issues on the Turnpike; 2.) the conversion of the Turnpike's Toll Collection System; and 3.) the interstate re-designation and interchange numbers. The status of the ongoing Turnpike Widening and Modernization Project has been the most frequent topic of discussion.

2. Current Process

In an effort to continue this success, the Authority is committed to seeking public input in the preparation of this planning report. To solicit input on this plan, the Authority sponsored a public meeting held at Verrillo's Convention Center in Portland on October 7, 2003.

To "get the word out" regarding the meeting, a "Dear Friend" letter was sent to all Legislators, Town Managers of towns on the Turnpike corridor, Regional Transportation Advisory Committee (RTAC) members, Metropolitan Planning Organization (MPO) members, MDOT, MDEP, the Governor's office, and all other interested parties.

After the public meeting, copies of the DRAFT 10 Year Plan will be sent to the Public Library in the towns on the Turnpike corridor.

The Maine Turnpike Authority will have a comment-period until November 7, 2003, where they will receive comments on the draft report. Comments maybe sent to:

MAINE TURNPIKE AUTHORITY
430 Riverside Street
Portland, ME 04103

ATTN: Conrad Welzel
Government Relations Manager

3. Future Activities

The Maine Turnpike Authority will continue to seek public input throughout the ten year period covered by this plan. A series of communication initiatives designed to involve the public in on-going management considerations will continue. The Authority will continue to hold its annual public meetings along the corridor. Turnpike staff will continue to meet annually with city and town managers/officials in municipalities along the roadway. Service clubs (Rotary, Lions, etc.) throughout southern Maine have been notified that the Turnpike Authority staff is available to make presentations. The Authority staff will continue to work with and participate in transportation planning with MPOs, and the appropriate RTACs. In addition, the staff will meet and update other elected and appointed officials, interests groups, and patrons. The Turnpike Authority will continue to communicate with its patrons though regular newsletters and its website. The press has been and will continue to be kept informed of Turnpike

action plans through annual meetings with editorial boards and transportation writers.

III. BACKGROUND

The Maine Turnpike Authority (Authority or MTA) was created by an act of the Legislature in 1941 as an independent state agency and given the authority to construct and operate 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 to the Authority and precluded any financial commitment by the State for Turnpike construction and maintenance.

The Maine Turnpike was initially constructed as a 45-mile, four-lane, divided highway between Kittery and Portland (Section I) and was financed by a $20.6 million bond issue. It was opened to traffic on December 13, 1947. Shortly afterward, planning began for a 66-mile extension from Portland to Augusta (Section II), including a 4-mile spur to U.S. Route 1 in Falmouth. On December 13, 1955 this new extension opened to traffic. The cost was $78.6 million, including the refunding of approximately $20 million of the original bond issue. These costs were incurred through a funding mechanism that was unique to the Maine Turnpike. This mechanism is called "Revenue Bonding". This mechanism allows the Authority to stand alone in its indebtedness. This means that the only collateral pledged to back the debt is the revenue (tolls) produced by the Turnpike and its assets. In this manner, the Turnpike is different from most state agencies that must pledge the faith and assets of the state (tax funds) to borrow money. Turnpike projects and operations receive no state or federal tax funds. The Turnpike is operated and maintained using only the tolls and fees it collects.

The creation of the national system of Interstate Highways precluded the need for further extensions of the Turnpike. Over the years, the Maine Legislature has evaluated the need for continued tolls, alternative toll collections systems, additional access, and the need for widening the southern end of the Turnpike. It has found that the State depends upon the safety, efficiency and modern functional condition of the Turnpike.

Today, the Maine Turnpike extends from its southern terminus in Kittery to its northern terminus in Augusta. There are 17 internal interchanges, one of which provides only partial service. Exit 6A in Scarborough, I-295 serves traffic to and from the south only.

The Maine Turnpike, from its southern terminus in Kittery to the Falmouth - Route 1 Interchange (Exit 9), has been incorporated into the Interstate Highway System as Interstate Route 95 (I-95). The I-95 designation is also carried on the section between the Gardiner Interchange (Exit 14) and the northern terminal point in Augusta. Between Interchanges 9 and 14, the Turnpike is designated I-495.

In 2000, the MTA, in coordination with MDOT, presented to the Transportation Committee of the Maine State Legislature, a plan to simplify the Maine Interstate Highway numbering system. This plan included designating the Turnpike as Interstate I-95 from Kittery to Augusta. MDOT submitted an official request to the American Association of State Highway and Transportation Officials (AASHTO) for this re-designation early in 2003 and has received approval. Implementation is scheduled for January 2004.

During the course of expanding the highway system in Maine, tripartite agreements were entered into, between the Federal Highway Administration (FHWA), Maine Department of Transportation (MDOT) and the Maine Turnpike Authority (MTA), for use of federal money on connections between the Turnpike and the Interstate Highway System. These monies totaled approximately $8.6 million.

Subsequently, the MDOT and MTA sought and received Congressional approval to repay the initial federal contributions and to retain the Turnpike as an operating toll road after debt retirement. In 1982, the Maine Legislature enacted 23 M.R.S.A. § 1961 et seq (Chapter 595, Public Laws of the State of Maine, 1982) pursuant to the continued operation of the Maine Turnpike by the Authority.

On June 15, 1982, the Authority issued $7.5 million in Turnpike Revenue Bonds. The proceeds received by the Authority, from the sale of the 1982 bonds, excluding accrued interest, was to be used, together with other funds of the Authority, to pay the federal government certain amounts owed by Maine pursuant to the Federal-Aid Highway Act. On July 1, 1982, the Authority redeemed all principal amounts in its initial bond issues leaving only the 1982 Bonds outstanding.

Also mandated under this legislation was the establishment of a fund, the purpose of which would be to construct and/or improve new or existing interchanges and access roads. The intent of this facet of the legislation was to utilize excess funds generated by the Turnpike to spur potential industrial growth through improved access. Under this program, the Maine Department of Transportation initially identified nine potential locations for new facilities to be studied and evaluated. Of these, access roads have been constructed in Auburn, Biddeford and Scarborough and interchanges have been constructed in Scarborough (Exit 6), Portland (Exit 7A) and Westbrook (Exit 7B). In addition, modification of the Lewiston interchange was completed. In Sabattus, the State Route 9 Interchange is presently under construction with completion scheduled for 2004 and studies continue in the Lewiston/Auburn and Gray areas.

In 1991, the passage by referendum of the Sensible Transportation Policy Act (STPA) eliminated the laws which allowed for the widening of the Turnpike and the establishment of these funds. The STPA requires that all surplus funds not used for operation and maintenance of the Turnpike be turned over to the MDOT.

In 1995, a law, 23 M.R.S.A. § 1965 (D), was enacted which allowed the Turnpike Authority to widen the Turnpike to three lanes in each direction from Mile 13.8 to Mile 44.0. This enactment also required the Authority to prepare an alternative analysis. In 1997, the Authority completed the review process required by the STPA. As a result of this analysis, the Authority concluded that widening the Turnpike was necessary along with the continued implementation of Transportation Demand Management (TDM) and Transportation System Management (TSM) measures.

In 1997, at the request of the Maine Turnpike Authority, the Maine Legislature sponsored a referendum question relative to the widening of the southern end of the Turnpike. With the passing of this referendum, the voters of the State of Maine endorsed the Authority's plans to modernize and widen 30 miles of the Turnpike.

The Modernization and Widening program consists of adding a 12 foot travel lane in each direction between York and South Portland increasing the capacity and safety of the roadway. Safety improvements involve widening the existing outside shoulder from eight feet to 12 feet; increasing the roadside clear zone to 30 feet, with more gradual side slopes; and removing rock outcrops and other obstacles from within the clear zone.

The Modernization and Widening Program also includes reconstruction of 17 underpass bridges. Bridge abutments are set back to allow for the additional travel lanes, shoulder widening, and clear zones. Vertical clearances are raised to a minimum of 16.5 feet, consistent with interstate highway standards. Where necessary, bridge approaches on local roads are reconstructed to meet new vertical and horizontal alignments.

In March 2000, construction began on the first Modernization and Widening Contract. By the end of 2003, 24 miles of highway will have been completed and opened to traffic and all of the 17 bridges will have been reconstructed.

IV. INVENTORY OF MAINE TURNPIKE AUTHORITY TRANSPORTATION FACILITIES

A. SYSTEM USAGE

The Maine Turnpike is presently used for a variety of purposes. As Maine's Gateway from the south, the Turnpike is the most heavily traveled corridor in the state, and it serves a wide variety of travel needs:

- it is used by a large number of commuters on their way to and from work;
- it is a major truck route serving both intrastate and interstate commerce;
- it is the state's primary artery for tourism; and
- finally, the Turnpike provides a fast and efficient means for handling the everyday travel needs of an increasingly mobile society.

The Average Annual Daily Traffic (AADT) on the Turnpike varies by segment. The most heavily-traveled portion of the Turnpike lies between Exit 5 (Saco) and Exit 6 (Scarborough), where an average of 66,246 vehicles per day traveled in 2002. At the other extreme, the most lightly-traveled portion of the Turnpike lies between Lewiston and Gardiner, where 9,225 vehicles per day traveled in 2002.

This AADT can be further subdivided into commuters, commercial vehicles, and passenger cars. **Figure 1** illustrates the proportions of each of these vehicle types. ("Commuters" refers only to those patrons who participate in the MTA's Commuter Discount Program.)

FIGURE 1 - Composition of Maine Turnpike Traffic, 2002

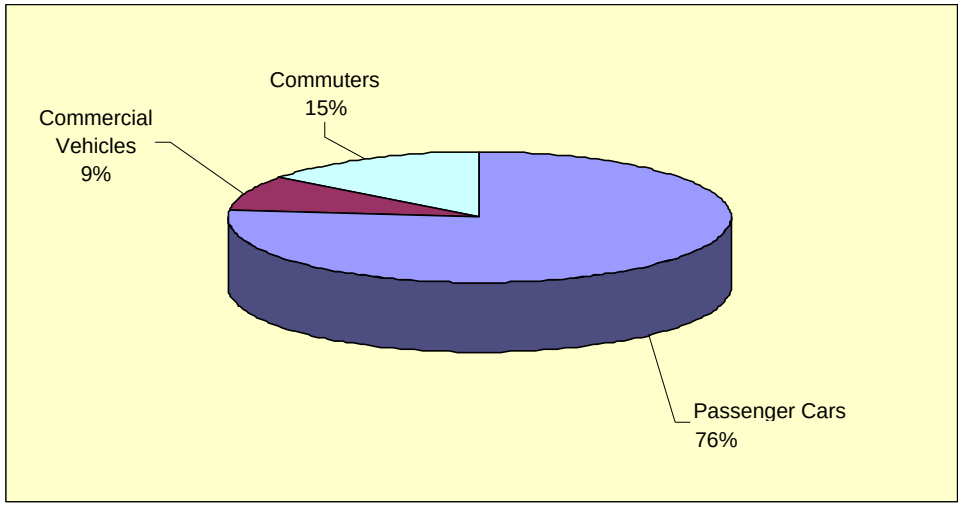
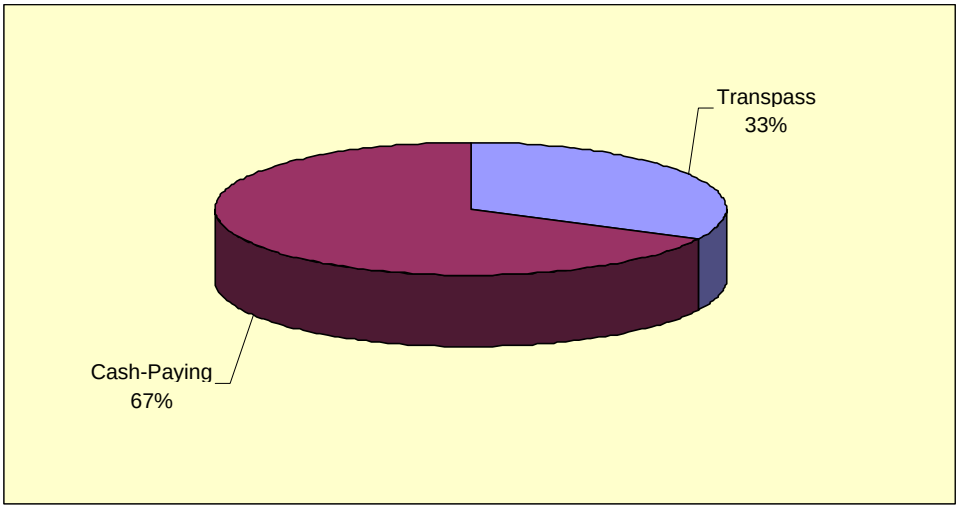


Figure 1 illustrates that the vast majority of Maine Turnpike traffic is composed of passenger cars. However, nearly one in four trips is either a commuter or a commercial vehicle. The percentage of commercial vehicles using the Turnpike has remained at around 9% to 10% for the past decade.

Another way of breaking down Turnpike traffic is to compare TransPass users versus cash-paying patrons. In 2002, TransPass users comprised 32.6% of the total traffic, up from 30.8% in 2000. This breakdown is depicted in **Figure 2**.

FIGURE 2 - TransPass vs. Cash-Paying Patrons on Maine Turnpike, 2002



B. SYSTEM CHARACTERISTICS

The Maine Turnpike consists of 109 miles of limited access highway from Kittery to Augusta, with a total of 174 bridges and major box culvert structures, 17 interchanges, 19 toll plazas, an administration building, an Electronic Toll Collection (ETC) retail space, a State Police Headquarters, six service areas and nine maintenance facilities with associated structures. The map in **Figure 3** depicts the Turnpike corridor.

Approximately two-thirds of the Turnpike is a four-lane divided highway. The northbound and southbound roadways are separated by guardrail placed within an 18 foot depressed grass median. Each roadway consists of a four foot paved median shoulder, two 12 foot travel lanes and an eight foot outside shoulder. Currently, from the beginning of the Turnpike in Kittery to Mile 25.5 in Kennebunk and from Mile 31.3 in Biddeford to Mile 44 in Scarborough, the Turnpike consists of three 12 foot lanes with the same median shoulder, grass median and a 12 foot outside shoulder. These roadway cross sections are depicted in **Figure 4**.

FIGURE 3 - Turnpike Map

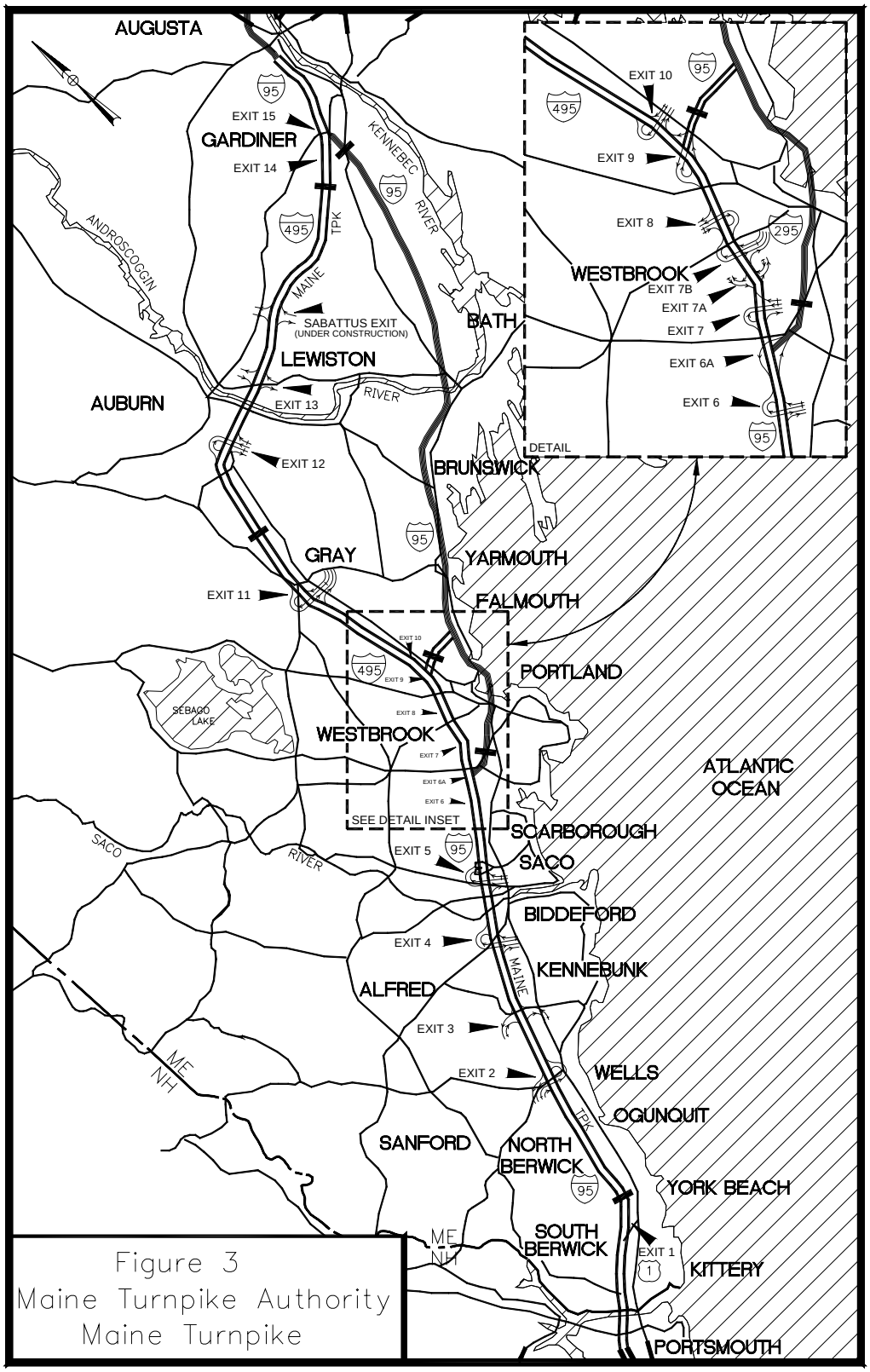


FIGURE 4 - Roadway Cross Sections

Figure 4 is a very large graphic image. If you would like to view figure 4, click here to open it. After viewing the image you can click your browser's "Back" button to return to this PDF.

C. SYSTEM CONDITION

The Turnpike Authority, as part of its contract with the bondholders called the "General Turnpike Revenue Bond Resolution", must employ a general consulting engineer to perform certain duties. This is required to assure the bondholders that their investment is secure. The general consultant must be competent and of national repute. Among the duties of this consultant is the performance of a visual inspection of the entire Maine Turnpike each year, typically during the period of May through July. This inspection covers all portions of the Turnpike including:

- pavement;
- cut sections and embankments;
- bridges;
- roadway lighting;
- drainage structures and ditches;
- signs and pavement markings;
- interchanges (including toll plazas, utility buildings, ramps and equipment);
- service areas;
- maintenance areas; and
- other roadway appurtenances.

The inspection is performed by two-person teams who are familiar with the type of facilities that they are inspecting. The teams are comprised of structural and highway engineers and, if needed, specialists are enlisted for other types of appurtenances such as lighting, heating, electrical systems and underwater inspection. A summary of the detailed findings of the inspection, as well as an Annual Report, is submitted to the Authority's Executive Director and reviewed for acceptance by the Authority. The results of this inspection are the basis for the formulation of the ensuing year's Reserve Maintenance and Capital Improvement Program as recommended by the general consulting engineer. The rating system used to rate the condition of the Turnpike facilities is generally consistent with rating criteria established by the Federal Highway Administration for its roadways and bridges. In general, ratings run from a high score of 10 to a low score of 1. Each rating score corresponds to the general description of conditions, which are found at the time of inspection. These ratings are shown in **Table 1**.

TABLE 1

COMPILED RATING DESCRIPTIONS

Rating	Condition	General Comments:
0	New	Excellent condition.
9	Very Good	No repairs needed.
8	Generally Good	Minor problems. Some maintenance required.
7	Fair/Satisfactory	Structural elements show minor deterioration.
6	Generally Fair	Candidate for rehabilitation. May have section loss, cracking, spalling concrete.
5	Marginal/Poor	Major rehabilitation necessary. Advanced deterioration, spalling concrete, etc.
4	Poor/Serious	Rehabilitation required immediately. Deterioration serious.
3	Critical	Need for reconstruction urgent. Facility should be monitored.
2	Critical/Imminent Failure	Facility closed until rehabilitation.
1	Critical/Failed	Facility closed and is beyond repair.

The 2003 inspection of Turnpike facilities indicates that the Maine Turnpike continues to operate in an efficient and effective manner and has been maintained in generally good repair, working order and condition. The inspection found that the Turnpike presents a good appearance through the continued efforts of the Authority's maintenance forces. As noted in the Annual Report, however, a number of the Turnpike's bridge decks, sections of the roadway riding surface, and several support facilities are approaching the end of their useful lives, thereby requiring an increased amount of maintenance and rehabilitation.

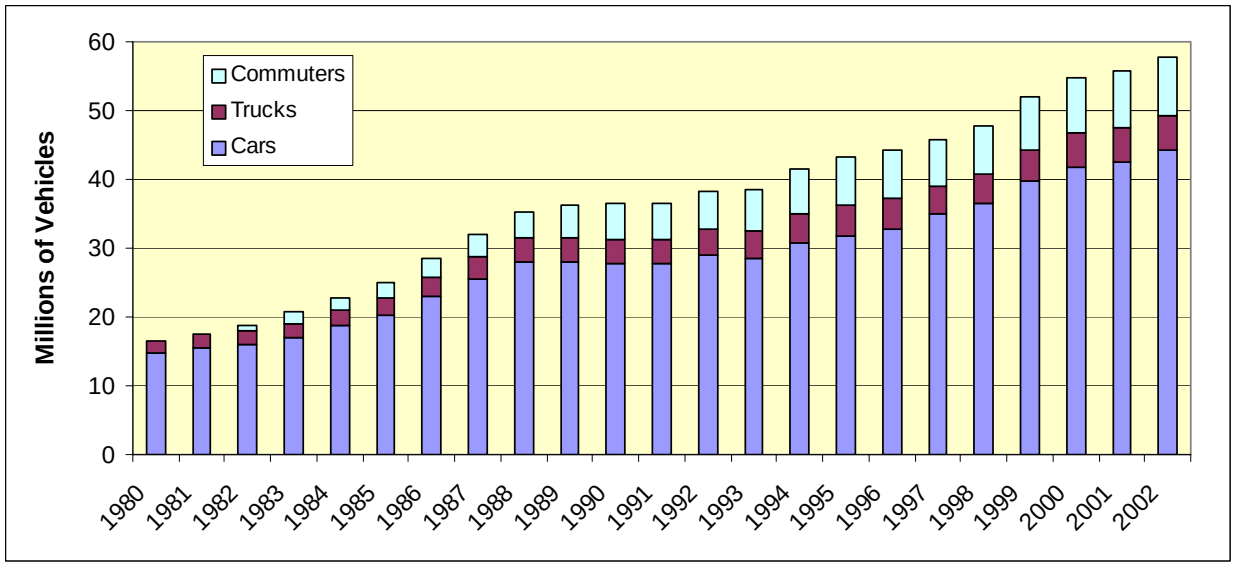
V. TRAVEL DEMAND FORECAST

Travel demand and patterns are a function of the location and extent of human activities. More specifically, travel demands are affected by the location and density of housing, employment, shopping opportunities, schools, services, recreational opportunities, and the like. Travel demands are also affected by economical factors such as income, car ownership, number of jobs per household, etc. Growth in travel demand is generally correlated to changes in population, employment, land uses, and economic factors.

Turnpike Growth Trends

Historically, Maine Turnpike traffic has grown at a much faster rate than Maine's local and state roads. This growth rate is revealed in **Figure 5**, which illustrates how the number of trips taken on the Turnpike has increased from 1980 to 2002.

FIGURE 5 – Maine Turnpike Yearly Traffic, 1980-2002



In order to discern a reasonable growth rate for Turnpike traffic, four factors were considered. These factors are discussed below:

1. **Historical Growth:** In 1964, the Turnpike served just over 5 million trips. In 2002, the Turnpike served nearly 58 million trips—an eleven fold increase in less than 4 decades. This equates to an average growth rate of about 6.5% per year.

2. **Downward Trend:** Although traffic growth on the Turnpike has been robust, there is evidence that the growth rate is slowing. For example, consider the following data:

   a. Growth rate: 1964-1983 – 7.6% per year
   b. Growth rate: 1984-1993 – 6.8% per year
   c. Growth rate: 1994-2002 – 5.2% per year
   d. From this survey of nearly 40 years of traffic data, two things are evident: traffic is growing, but the rate of growth is declining.

3. **Revenue Projections:** The Maine Turnpike Authority has projected that revenue will grow at an average rate of 3.4% per year over the next decade. Since traffic growth and revenue growth are closely related, any estimate for traffic growth should be consistent with the revenue projections.

4. **Projections from Previous Reports:** The 1995 Planning Report projected an annual growth rate of 3.5%, while the 1999 Planning Report projected 2.75%. In both cases, the actual growth rate exceeded the projections (traffic has actually grown at an annual rate of 4.9% since 1995).

Considering these four factors, the conservative traffic growth rate of 3.0% per year over the next decade is projected. This is higher than the projected growth rate used in the previous Planning Report, but consistent with the observed downward trend in the Turnpike's traffic growth rate. It is also consistent with the Turnpike's revenue projections for the next 10 years.

Traffic Volume and Level of Service Projections

Table 2 takes the 3.0% growth factor noted earlier and projects future traffic volumes by interchange segment. It also provides the current and projected level of service (LOS) for each segment. The LOS represents operations during the 30th highest hour (see Section VI Functional Standards for a discussion of the analysis standard).

TABLE 2 - Current and Projected Turnpike Volumes and Level of Service

Mainline North of Interchange	2002		2013	
	2-Way Volume	LOS	2-Way Volume	LOS
York Toll to Exit 2 - Wells	44,836	**C**	62,063	**C**
Exit 2 - Wells to Exit 3 - Kennebunk	46,495	F	64,360	**C**
Exit 3 - Kennebunk to Exit 4 - Biddeford	48,879	F	67,661	**C**
Exit 4 - Biddeford to Exit 5 - Saco	58,854	F	81,468	**C**
Exit 5 - Saco to Exit 6 - Scarborough	66,246	**C**	91,700	**C**
Exit 6 - Scarborough to Exit 6A - (I-295)	64,942	**C**	89,896	**C**
Exit 6A - (I-295) to Exit 7 - South Portland	44,661	C	61,821	E
Exit 7 - So. Portland to Exit 7A - Jetport	42,500	C	58,831	E
Exit 7A - Jetport to Exit 7B - Rand Road	46,623	D	64,537	F
Exit 7B - Rand Rd. to Exit 8 - Westbrook	46,623	D	64,537	F
Exit 8 - Westbrook to Exit 9 - Falmouth	40,635	C	56,248	F
Exit 9 - Falmouth to Exit 10 - West Falmouth	30,577	C	42,325	C
Exit 10 - W. Falmouth to Exit 11 - Gray	27,313	B	37,808	C
Exit 11 - Gray to Exit 12 - Auburn	19,853	B	27,481	B
Exit 12 - Auburn to Exit 13 - Lewiston	17,066	A	23,624	B
Exit 13 - Lewiston to Gardiner	9,225	A	12,770	A
Gardiner to Augusta	28,516	B	39,473	C

In the future year (2013), there will be two distinct segment of the Turnpike. The first segment will be between York and Exit 6A, which will consist of 6 travel lanes (3 in each direction). The second segment will be between Exit 6A and Gardiner, which will consist of 4 travel lanes (2 in each direction). For a given volume of traffic, a segment with 3 lanes will be able to provide a better LOS than a segment with two lanes. That is why, in 2013, the segment north of Wells (a 6-lane section at 64,360 vpd) is projected to operate at LOS C, while the segment north of Exit 7A (a 4-lane section at 64,537 vpd) is projected to operate at LOS F. The sections of the table that are highlighted denote the 3-lane segments.

In 2002, the three shaded segments in the southern end (Exit 1 to 2, Exit 5 to 6, and Exit 6 to 6A) already operated as 6-lane sections. That is why, in 2002, the segment north of Exit 5 had more traffic than the segment north of Exit 4 (66,246 vpd vs. 58,854), yet operated at a better level of service (C vs. F).

VI. FUNCTIONAL STANDARDS

The functional standards employed for the Turnpike are principally the same as those used by MDOT on their interstate facilities. These standards include the horizontal and vertical geometry of the roadway and interchange ramps as well as their cross section. The Turnpike uses the American Association of State Highway and Transportation Officials (AASHTO) criteria as the basis for design of new facilities as well as for the rehabilitation of its existing facilities.

The operational standard for interstate highways as defined by AASHTO is level of service "C" for the mainline roadways at the 30th highest hour. The term “level of service” is defined as a qualitative measure of the operational characteristics of a roadway and the amount of traffic which it can accommodate. The level of service characteristic of a roadway constitutes a means of evaluating existing and proposed operating conditions (i.e. speed and travel time, traffic interruptions, freedom to maneuver, safety, and driving comfort and convenience) presented to a motorist. The level of service ratings range from LOS A to LOS F, with LOS A representing ideal driving conditions and LOS F describing the poorest, forced flow operations. Level of Service D will be considered the threshold of acceptable conditions for the existing mainline. Traffic operations at toll plazas are somewhat more judgmental but are set to operate at or above the level of the roadway.

In previous reports, the 50th highest hour had been used as the standard for analysis, as opposed to the more traditional 30th highest hour. The justification had been that the 50th highest hour would essentially filter out the sporadic tourist-related surges and yield a more reasonable traffic volume. However, it appears that this justification is not as relevant today. Three factors have combined to make the Turnpike a much more commuter-oriented road in the five years since the previous planning report:

- New interchanges at the Jetport and Rand Road have made the Turnpike more attractive in terms of the access that it offers to new destinations;
- The transition to a closed barrier system has reduced the price of travel for many trips between Wells and Gray; and
- Increasing congestion on local roads has made the Turnpike more attractive as a high-speed alternative route.

In short, the Turnpike is being used more frequently for commuter, business, and even shopping trips. The Turnpike is no longer simply busy on weekends; rather, heavy traffic may be experienced any day of the week. Consider the following statistics:

- Between Exit 6A and 7 SB, 13 of the 50 busiest hours occurred on weekdays (Monday through Thursday, excluding holidays);
- Between Exits 6A and 7 NB, 19 of the 50 busiest hour occurred on weekdays;
- Between Exits 5 and 6 SB, 22 of the 50 busiest hours occurred on weekdays; and
- Between Exits 5 and 6 NB, 46 of the 50 busiest hours occurred on weekdays.

Because of more frequent weekday usage, the difference between the 30th highest hour and the 50th highest hour is becoming minimal. This is illustrated in more detail in **Table 3**:

TABLE 3 - Difference Between 30th and 50th High Hour, Selected Links

Link	Direction	30th high volume	50th high volume	Volume Difference	Percent Difference
Through York Toll Plaza	NB	3,366	3,287	79	2.3%
	SB	3,323	3,255	68	2.0%
Between Exits 5 and 6	NB	3,539	3,473	66	1.9%
	SB	3,787	3,726	61	1.6%
Between Exits 6A and 7	NB	2,511	2,481	30	1.2%
	SB	2,445	2,383	62	2.5%

Thus, because of recent changes in Turnpike usage characteristics, the more traditional 30th high hour was used as the standard of analysis.

The AASHTO safety and design standards used on the Turnpike are the same as are used by MDOT and FHWA. It must be noted that the various sections of this facility are either over 40 or 50 years old and as such contain many elements that may be considered substandard at this time. The standards reflected herein are those used for new construction or total rehabilitation. The AASHTO standards for a facility such as the Turnpike include 12 foot wide outer shoulders on the mainline; clear zones of 30 feet from the traveled way; safety slopes, where practical; and proper guardrail set backs and terminal sections just to mention a few.

VII. SYSTEM DEFICIENCIES

A. CURRENT DEFICIENCIES

The current deficiencies of the Turnpike system may be categorized by two specific areas: 1) operational standards; and 2) safety and design standards. While the Turnpike may appear to be in excellent condition, deficiencies do exist. If left unchecked, these deficiencies will result in a condition that will adversely affect the Turnpike and the State.

There are currently four specific operational deficiencies associated with the Turnpike. 1) The successful interchange access road program continues to add vehicles to the Turnpike in the Portland area resulting in levels of service below the standard level of "C". One of the purposes of the program was to help relieve congestion on the major arterials in Portland and Westbrook. The Authority will continue to monitor the traffic growth in the Portland area between Exits 6A and 10; 2) Some interchange off-ramps experience traffic backups on to the mainline during peak hours. The reasons for the backups may vary, but this situation is not desirable at any location. The Authority will investigate on a case-by-case basis; 3) The section of roadway referred to as Morrison Hill in Cumberland has a 3% grade for longer than a mile. This gradient in combination with the length results in trucks operating at reduced speeds. This section of roadway meets MDOT's criteria for a possible truck climbing lane; and 4) The barrier toll plaza in York needs to be replaced due to its age, size and location.

The safety and design deficiencies are related to the age of the facility. At the time of design and construction, the Turnpike was a State-of-the-Art facility. As time has passed, the Authority has implemented many modifications in an attempt to stay current with safety standards. Such items as depressing the median, installing new guardrail and replacing guide signs has done much to assure the safety of the motorist. Certain significant physical elements, however, still remain to be corrected. Among these are ledge outcrops in the clear zone, bridge piers too near the roadway, marginal to substandard breakdown lanes and improper guardrail end treatments. Among the most significant conditions is the deterioration of the Turnpike's bridge structures.

Of the MTA's 166 bridge structures, 134 have been redecked or replaced to date, which means there 32 bridges that are 43 years old. In addition, there are 15 bridges that were redecked 30 years ago and are approaching the end of their useful life. These bridges are in significant need of repair and represent the Turnpike's highest priority. While these bridges are in no danger of collapse, they require significant amounts of maintenance to keep them

operational. This not only represents a drain on manpower and finances, but also adversely affects the operational standards of the road. It is important to realize that these bridges were constructed within an eight year span and, as a result, many will reach the end of their useful life at approximately the same time. **Table 4** presents a list of the bridges and culverts and the year in which they were rehabilitated.

TABLE 4 - Bridges and Culverts

TABLE 4
BRIDGE DECK REPLACEMENT CONTRACTS

STRUCTURE NAME	NEW MM	OLD MM	STRUCTURE TYPE	STRUCTURE BUILT	SECTION	DESCRIPTION Replaced - Redecked - Widened	YEAR
CUTTS ROAD	**3.10**	1.63	U	1947	I	Replaced	1973
BEECH RIDGE ROAD		3.29	U	1947	I	Replaced	1973
YORK RIVER BRIDGE NB	**5.20**	3.65	O	1947	I	Redecked & Widened	1973
YORK RIVER BRIDGE SB	**5.20**	3.65	O	1947	I	Redecked & Widened	1973
CIDER HILL ROAD	**6.20**	4.77	U	1947	I	Replaced	1973
CHASE POND ROAD	**6.80**	5.34	U	1947	I	Replaced	1973
CAPE NEDDICK RIVER		7.95	B	1947	I		
MOUNTAIN ROAD	**10.60**	9.00	U	1947	I	Replaced	1972
JOSIAS RIVER		10.19	B	1947	I		
AGAMENTICUS ROAD	**11.90**	10.32	U	1947	I	Replaced	1972
NORTH BERWICK ROAD	**13.80**	12.18	U	1947	I	Replaced	1994
CAPTAIN THOMAS ROAD	**14.80**	13.20	U	1947	I	Redecked/Replaced	1993/2000
OGUNQUIT RIVER	**15.20**	13.46	B	1947	I	Widened	2000
TATNIC ROAD	**15.20**	13.80	U	1947	I	Replaced	1996
LITTLEFIELD ROAD	**17.30**	15.63	U	1947	I	Replaced	1995
WEBHANNET RIVER	**17.70**	16.04	B	1947	I	Widened	2000
B&M RAILROAD NB	**19.00**	17.26	O	1947	I	Redecked/Widened	1993/2000
B&M RAILROAD SB	**19.00**	17.26	O	1947	I	Redecked & Widened	1993
WELLS-SANFORD ROAD NB	**19.10**	17.41	O	1947	I	Redecked/Widened	1993/200
WELLS INTERCHANGE SB	**19.30**	17.57	O	1947	I	Redecked & Widened	1993
WELLS INTERCHANGE NB	**19.30**	17.57	O	1947	I	Redecked/Widened	1993/2000
WELLS INTERCHANGE SB	**19.30**	17.57	O	1947	I	Redecked & Widened	1993
BURNT MILL ROAD	**19.90**	18.24	U	1947	I	Replaced	1997
MERRILAND RIVER	**21.40**	19.67	B	1947	I	Widened	2001
COLES HILL ROAD	**21.70**	20.00	U	1947	I	Replaced	2002
BRANCH BROOK		21.42	B	1947	I	Widened	2002
HIGH STREET (McGuire Road)	**23.60**	21.77	U	1947	I	Redecked/Replaced	1994/2002
CAT MOUSAM ROAD	**24.70**	22.91	U	1947	I	Replaced	2002
MOUSAM RIVER NB	**24.90**	23.15	O	1947	I	Redecked & Widened	2002
MOUSAM RIVER SB	**24.90**	23.15	O	1947	I	Widened	1990
WEST KENNEBUNK ROAD	**25.30**	23.48	U	1947	I	Replaced	2001
KENNEBUNK RIVER NB	**27.20**	25.42	O	1947	I	Redecked/Widened	1994/2003
KENNEBUNK RIVER SB	**27.20**	25.42	O	1947	I	Redecked/Widened	1994/2003
LIMERICK ROAD	**28.30**	26.44	U	1947	I	Replaced	1995
OLD ALFRED ROAD	**30.30**	28.51	U	1947	I	Replaced	2003
BIDDEFORD-ALFRED ROAD	**31.30**	29.43	U	1947	I	Replaced	1995
BIDDEFORD INTERCHANGE	**31.60**	29.71	U	1947	I	Redecked/Replaced	1982/2003
SOUTH STREET (River Road)	**32.80**	30.91	U	1947	I	Redecked	1994
SACO RIVER NB	**33.00**	31.06	O	1947	I	Redecked & Widened	1989
SACO RIVER SB	**33.00**	31.06	O	1947	I	Redecked & Widened	1989

STRUCTURE NAME	NEW MM	OLD MM	STRUCTURE TYPE	STRUCTURE BUILT	SECTION	DESCRIPTION Replaced - Redecked - Widened	YEAR
BOOM ROAD	**33.40**	31.51	U	1947	I	Replaced	1995
NEW COUNTY ROAD	**34.40**	32.52	U	1947	I	Redecked/Replaced	1979/2000
OLD SACO INTERCHANGE	**35.00**	33.06	U	1947	I	Removed	2002
NORTH STREET (Buxton Road)	**35.30**	33.34	U	1947	I	Redecked/Replaced	1993/2002
SACO INTERCHANGE EB	**35.70**	33.78	U	1982	I		
SACO INTERCHANGE EB	**35.70**	33.78	U	1982	I		
SACO SPUR OVER RR		33.83	O	1982	I		
FLAG POND ROAD	**38.10**	36.09	U	1947	I	Replaced	2002
BROAD TURN ROAD	**39.90**	37.88	U	1947	I	Redecked/Replaced	1978/1999
BEECH RIDGE ROAD	**41.40**	39.36	U	1947	I	Redecked/Replaced	1980/2000
TWO ROD ROAD	**42.00**	40.03	U	1947	I	Replaced	1998
SCARBOROUGH INTERCHANGE	**42.50**	40.48	U	1992	I		
HOLMES ROAD	**43.00**	40.95	U	1947	I	Redecked/Replaced	1977/2000
NONESUCH RIVER	**43.40**	41.43	B	1947	I	Widened	2000
GORHAM ROAD	**44.00**	41.96	U	1947	I	Replaced	1972
GORHAM ROAD OVER RAMP	**44.00**	41.97	U	1972	I		
I-295 SOUTHBOUND	**44.30**	42.26	U	1972	I		
SPRING STREET	**44.60**	42.55	U	1954	II	Redecked	1990
SOUTH PORTLAND INT.	**44.90**	42.85	U	1954	II	Redecked	1995
I-295 over PAYNE ROAD NB	**45.00**	42.95	O	1972	II		
I-295 over PAYNE ROAD SB	**45.00**	42.95	O	1972	II		
RUNNING HILL ROAD	**45.40**	43.36	U	1954	II	Replaced	1987
JETPORT INTERCHANGE	**46.30**	44.25	O	1998	II		
CONGRESS STREET	**46.40**	44.34	U	1954	II		
STROUDWATER RIVER NB	**46.70**	44.61	O	1954	II	Redecked & Widened	1992
STROUDWATER RIVER SB	**46.70**	44.61	O	1954	II	Redecked & Widened	1992
WESTBROOK STREET	**47.10**	45.02	U	1954	II		
RAND ROAD INT. MAIN RAMP	**47.30**	45.25	O	2001	II		
RAND ROAD INT. CONNECTOR ROAD	**47.70**	45.49	O	2001	II		
MAINE CENTRAL RAILROAD NB	**47.90**	45.77	O	1954	II	Redecked & Widened	1992
MAINE CENTRAL RAILROAD SB	**47.90**	45.77	O	1954	II	Redecked & Widened	1992
BRIGHTON AVENUE	**48.30**	46.14	U	1954	II		
PORTLAND-WESTBROOK INT.	**48.50**	46.43	U	1954	II		
WARREN AVENUE NB	**49.00**	46.88	O	1954	II	Redecked & Widened	1992
WARREN AVENUE SB	**49.00**	46.88	O	1954	II	Redecked & Widened	1992
FOREST AVENUE NB	**50.00**	47.84	O	1954	II	Redecked & Widened	1997
FOREST AVENUE SB	**50.00**	47.84	O	1954	II	Redecked & Widened	1997
RIVERSIDE STREET NB	**51.20**	49.06	O	1954	II	Redecked & Widened	1997
RIVERSIDE STREET SB	**51.20**	49.06	O	1954	II	Redecked & Widened	1997
FALMOUTH SPUR INT.	**51.60**	49.47	U	1954	II		
PRESUMPSCOTT RIVER NB	**51.80**	49.63	O	1954	II	Redecked	1980
PRESUMPSCOTT RIVER SB	**51.80**	49.63	O	1954	II	Redecked	1980
LAMBERT STREET (F.S.)		49.66	U	1954	II		
MAINE CENTRAL RR EB (F.S.)		49.77	O	1954	II		
MAINE CENTRAL RR WB (F.S.)		49.77	O	1954	II		
BLACKSTRAP ROAD (Lambert Street)	**52.00**	49.79	U	1954	II		
AUBURN STREET (F.S.)		50.01	U	1954	II	Redecked	1978
PORTLAND NORTH INT.	**52.40**	50.21	U	1954	II		
LEIGHTON ROAD	**52.60**	50.38	U	1954	II	Redecked	1979
PRESUMPSCOTT RIVER EB (F.S.)		50.46	O	1954	II	Redecked	1990
PRESUMPSCOTT RIVER WB (F.S.)		51.46	O	1954	II	Redecked	1990
FALMOUTH ROAD (F.S.)		50.96	U	1954	II	Redecked	1997

STRUCTURE NAME	NEW MM	OLD MM	STRUCTURE TYPE	STRUCTURE BUILT	SECTION	DESCRIPTION Replaced - Redecked - Widened	YEAR
MOUNTAIN ROAD	**53.40**	51.22	U	1954	II	Redecked	1991
ROUTE 9 (F.S.)		52.95	U	1954	II	Redecked	1995
PISCATAQUA RIVER - Str. # 28	**55.50**	53.21	O	1954	II		
HURRICANE RD OVER PISCAT.	**56.60**	54.34	O	1954	II	Redecked	1991
HURRICANE ROAD	**56.60**	54.34	U	1954	II	Redecked	1991
PISCATAQUA RIVER - Str. 31	**56.60**	54.40	O	1954	II		
BLACKSTRAP ROAD	**58.30**	55.99	U	1954	II	Redecked	1996
DUTTON HILL ROAD	**59.90**	57.61	U	1954	II		
EAGLE NEST ROAD NB	**60.80**	58.48	O	1954	II	Redecked	1987
EAGLE NEST ROAD SB	**60.80**	58.48	O	1954	II	Redecked	1987
HUNTS HILL ROAD NB	**61.60**	59.31	O	1954	II	Redecked	1999
HUNTS HILL ROAD SB	**61.60**	59.31	O	1954	II	Redecked	1999
PLEASANT RIVER	**62.30**	60.00	B	1954	II		
CENTER STREET (Old Portland Road)	**62.90**	60.57	U	1954	II	Redecked	2001
GRAY INTERCHANGE	**63.10**	60.74	U	1954	II	Redecked	1980
SHAKER ROAD (Route 202 & 4)	**63.30**	60.94	U	1954	II	Redecked	1995
ROUTE 26	**64.30**	61.96	U	1954	II	Redecked	1994
WEYMOUTH ROAD	**66.20**	63.80	U	1954	II	Redecked	1993
MAYALL ROAD	**67.50**	65.08	U	1954	II		
BENNETT ROAD	**68.60**	66.20	U	1954	II	Redecked & Widened	1986
CHANDLER MILL ROAD	**70.20**	67.73	U	1954	II		
SNOW HILL ROAD	**70.80**	68.35	U	1954	II		
ROYAL RIVER NB	**71.10**	68.68	O	1954	II	Redecked & Widened	1994
ROYAL RIVER SB	**71.10**	68.68	O	1954	II	Redecked & Widened	1994
BALD HILL ROAD NB	**71.60**	69.19	O	1954	II		
BALD HILL ROAD SB	**71.60**	69.19	O	1954	II	Redecked	1985
POLAND SPRING ROAD (Route 122)	**74.00**	71.52	U	1954	II	Redecked	1980
SAINT LAWRENCE & ATLANTIC RAILROAD NB	**74.50**	71.96	O	1954	II	Redecked	1980
SAINT LAWRENCE & ATLANTIC RAILROAD SB	**74.50**	71.96	O	1954	II	Redecked	1980
KITTY HAWK AVE.	**75.00**	72.50	U	1980	II		
AUBURN INTERCHANGE NB	**75.30**	72.76	O	1954	II	Redecked	1995
AUBURN INTERCHANGE SB	**75.30**	72.76	O	1954	II	Redecked	1995
WASHINGTON ST. & MCRR NB	**75.60**	73.03	O	1954	II		
WASHINGTON ST. & MCRR SB	**75.60**	73.03	O	1954	II	Redecked	1979
DANVILLE CORNER ROAD	**75.80**	73.31	U	1954	II	Redecked	1996
HACKETT ROAD	**76.90**	74.37	U	1954	II	Redecked	1993
SOUTH MAIN STREET	**77.60**	75.07	U	1954	II		
ANDROSCOGGIN RIVER NB	**78.90**	76.29	O	1954	II	Redecked & Widened	1995
ANDROSCOGGIN RIVER SB	**78.90**	76.29	O	1954	II	Redecked & Widened	1995
RIVER ROAD NB	**79.40**	76.88	O	1954	II	Redecked & Widened	1994
RIVER ROAD SB	**79.40**	76.88	O	1954	II	Redecked & Widened	1994
GODDARD ROAD NB	**79.60**	77.07	O	1954	II	Redecked & Widened	1997
GODDARD ROAD SB	**79.60**	77.07	O	1954	II	Redecked & Widened	1997
LEWISTON INTERCHANGE NB	**80.30**	77.70	O	1954	II	Redecked	1987
LEWISTON INTERCHANGE SB	**80.30**	77.70	O	1954	II	Redecked	1992
LEWISTON SPUR OVER MCRR		77.71	O	1954	II	Redecked	1996
LEWISTON SPUR OVER RT 196		77.72	O	1954	II	Redecked	1996
FERRY ROAD	**80.80**	78.27	O	1954	II	Redecked	1995
FERRY ROAD	**80.80**	78.27	O	1954	II	Redecked	1995
ROUTE 196 & MCRR NB	**81.40**	78.80	O	1954	II	Redecked	1985

STRUCTURE NAME	NEW MM	OLD MM	STRUCTURE TYPE	STRUCTURE BUILT	SECTION	DESCRIPTION Replaced - Redecked - Widened	YEAR
ROUTE 196 & MCRR SB	**81.40**	78.80	O	1954	II	Redecked	1985
OLD LISBON ROAD	**81.80**	79.24	U	1954	II		
WEBSTER ROAD	**82.70**	80.10	U	1954	II	Redecked	1994
GROVE ROAD	**83.70**	81.09	U	1954	II	Redecked	1995
LISBON ROAD	**84.30**	81.67	U	1954	II	Redecked	1996
SABATTUS RIVER NB	**85.20**	82.53	O	1954	II		
SABATTUS RIVER SB	**85.20**	82.53	O	1954	II	Redecked	1982
MIDDLE ROAD (Route 9)	**86.10**	83.47	U	1954	II	Redecked	2002
FURBUSH ROAD	**86.70**	84.11	U	1954	II		
FISHER ROAD	**87.50**	84.87	U	1954	II	Redecked	1994
BOWDOIN ROAD	**89.10**	86.44	U	1954	II	Replaced	1996
MAXWELL SCHOOL ROAD	**90.00**	87.24	U	1954	II		
FERRIN ROAD	**91.00**	88.23	U	1954	II		
HUNTINGTON HILL ROAD	**91.90**	89.19	U	1954	II	Redecked	1997
HALLOWELL ROAD	**92.60**	89.88	U	1954	II		
ROUTE 197	**93.30**	90.54	U	1954	II		
SMALL ROAD	**95.10**	92.31	U	1954	II		
PLAINS ROAD	**95.60**	92.85	U	1954	II	Redecked	1994
STEVENSTOWN ROAD	**96.50**	93.68	U	1954	II	Redecked	2000
LUNTS HILL ROAD	**99.00**	96.20	U	1954	II		
COBBOSSEECONTEE STREAM NB	**99.20**	96.34	O	1954	II	Redecked	1983
COBBOSSEECONTEE STREAM SB	**99.20**	96.34	O	1954	II	Redecked	1983
ROUTE 126	**101.70**	98.82	U	1954	II	Redecked	1994
RAMP E SOUTHBOUND	**102.00**	98.82	U	1954	II	Redecked	1982
RAMP E INTERCHANGE		99.07	U	1972	II		
I-95 SOUTHBOUND	**103.00**	99.60	U	1972	II		
HIGH STREET	**103.60**	100.69	U	1954	II	Redecked	1997
NORTHERN AVENUE	**104.60**	101.70	O	1954	II		
MAPLE STREET	**106.00**	103.00	U	1954	II		
LITCHFIELD ROAD	**106.90**	103.89	U	1954	II		
CENTRAL STREET NB	**107.70**	104.74	O	1954	II	Redecked	1983
CENTRAL STREET SB	**107.70**	104.74	O	1954	II	Redecked	1983
WINTHROP ROAD	**108.30**	105.31	U	1954	II		

LEGEND FOR TYPE:

O = TURNPIKE OVER SIDE ROAD, RAILROAD OR RIVER
U = TURNPIKE UNDER SIDE ROAD
B = TURNPIKE OVER BOX CULVERT

BUILT = YEAR BUILT

B. FUTURE DEFICIENCIES

The Maine Turnpike is nearing completion of a significant modernization and safety improvement project from Mile 14 to 44. This project involves rehabilitation and upgrading 30 miles of the existing Turnpike system to current standards. However, the aging of the Maine Turnpike system remains the greatest future deficiency the Authority is expected to encounter.

Higher than normal traffic growth is currently being experienced between Exit 6A in Scarborough and Exit 10 in West Falmouth. Traffic between these interchanges is anticipated to continue to grow at higher than normal rates due to the increase of convenient access points to the Turnpike in the Greater Portland area. As a result, traffic operating conditions have begun to worsen. Recent traffic forecasts for this section of the Maine Turnpike show that, if current traffic growth trends condition, operating conditions will degrade to below acceptable levels by 2011. This section of Turnpike is also anticipated to require rehabilitation and/or upgrades to current standards in order to not adversely impact system operation and safety.

This system improvement is currently identified in the Portland Area Comprehensive Transportation Committees (PACTS) 20 year-plan, titled Destination Tomorrow. PACTS, the Greater Portland Metropolitan Planning Organization (MPO), recommends the Maine Turnpike Authority conduct the necessary studies to enable the Authority to widen the Turnpike to six lanes between Exits 6A and 9.

VIII. IMPROVEMENT RECOMMENDATIONS

As in any planning program with limited financial resources, priorities for the implementation of that program must be established. The Maine Turnpike Authority has the responsibility of operating and maintaining the main transportation arterial of the State. This arterial links Maine with the remainder of New England and the Country. In establishing its priorities regarding this valuable infrastructure, the Authority must consider the people who use and depend upon it today, as well as the role it will serve in the future. In the previous section, the system deficiencies were identified and discussed. In this section, the methods to deal with those deficiencies are discussed. Due to the importance of this facility and its age, the prioritizing of improvements is almost dictated. The priority sequence used herein consists of: 1) preserving the existing facility through rehabilitation and safety improvements; 2) improving the traffic operations; 3) Modernization and Widening; 4) providing improved interchange access; and finally, 5) facility enhancement. The annual Reserve Maintenance and Capital Improvement Program will establish the actual projects to be undertaken utilizing these priorities.

A. PRESERVATION

1. Safety Improvement Projects

a. Relocation of the York Toll Plaza

The existing York Toll Plaza continues to function adequately but the need for reconstruction or replacement of the plaza has increased due to its age, size and location. The horizontal and vertical geometry approaching the

plaza is undesirable. The southbound approach is on a horizontal curve to the right, which results in more traffic using the lanes on the left than on the right. This causes congestion in the left lanes and under utilization of the right lanes and results in an inefficient toll plaza. The plaza is also located near the end of a 2500' long section of roadway with a 5% down grade. This condition is undesirable due to the potential for runaway trucks. The proximity of the Chases Pond Road Interchange just south of the toll plaza also impacts the operation of the toll plaza. The ramps for this interchange are located within the plaza merge area and create additional weaving, which is undesirable. This interchange, as well as the adjacent wetlands, will negatively impact the feasibility of expanding the toll plaza in the future if additional capacity is needed.

The plaza itself should be reconstructed due to the deteriorating condition of the concrete bumpers. Due to poor subsurface soil conditions, the bumpers, which provide protection for the toll collectors, are settling into the ground and may not function as originally designed. Due to the various substandard conditions and for maximum safety and functionality, the plaza should be relocated or reconstructed.

Proposed Action:

The relocation of the York Toll Plaza is presently scheduled as part of this program. The new plaza will be designed to improve safety. The proposed location will have better vertical and horizontal sight distance and will be situated away from a steep downgrade and interchanges. The concrete bumpers will be lengthened to provide better protection for the toll collectors and the booth size will be increased to improve working conditions. The number of permanent booths will be evaluated based on the impacts of the Authority's ETC system. The relocation of the York Toll Plaza includes widening of the Turnpike approaches and construction of a new utility building, tunnel, booths, bumpers, and canopy.

b. Clear Zone Improvements

The clear zone is that area which extends from the edge of the travel way to the nearest obstruction. Presently, the Maine Turnpike between Mile 25.5 and Mile 31.3 and north of Mile 44 has a clear zone distance from the edge of travel lane to various objects of less than 30 feet. A clear zone adjacent to the highway provides an unencumbered roadside recovery area that is as wide as practical so that a motorist leaving the traveled way has the chance to recover without hitting any obstructions such as sign supports, ledge outcrops, culverts, trees, and any other design features of the roadway. According to the AASHTO Roadside Design Guide, "Studies indicate that on high speed highways, a width of 30 feet or more from the edge of travel way permits about 80% of the vehicles leaving the roadway out of control to recover".[1]

[1] AASHTO 2002 Roadside Design Guide

AASHTO has clarified the earlier clear zone concepts by introducing clear zone distances based on design speed, average daily traffic (ADT) and roadside geometry. These clear zone concepts suggest that with a design speed of more than 60 MPH, an ADT of over 6,000 vehicles per day, and a 6:1 sideslope, a clear zone of 30 feet is sufficient. The Turnpike falls into this category. Therefore, the Turnpike improvement program will be designed to incorporate the 30 foot clear zone.

(i) Sideslope Flattening and Clearing

Adjacent to the existing eight foot paved shoulder is a grass sideslope with a slope of four horizontal to one vertical (4:1). This slope is within the clear zone and according to the AASHTO Roadside Design Guide "A slope of 6:1 or flatter on embankments can be negotiated by a vehicle with a good chance of recovery and should, therefore, be provided where feasible".[1] The Roadside Design Guide also states, "Cross slopes of 6:1 or flatter are suggested for high speed roadways, particularly for that section of the embankment that is located immediately adjacent to traffic".[1]

Proposed Action:

This work includes the initiation of a program to identify non-guardrail areas outside of the Modernization and Widening area that presently have 4:1 sideslopes and to begin reconstructing them with 6:1 sideslopes. If wetlands are located adjacent to the roadway, the slope will be further reviewed.

(ii) Ditch Modifications

The existing roadside drainage consists predominately of deep trapezoidal open ditches, which can be a hazard to motorists and are difficult to maintain. The combination of a 4:1 sideslope with a deep trapezoidal ditch may result in a rollover of a vehicle leaving the roadway. The trapezoidal ditch is efficient in conveying roadway runoff, but is not as safe and environmentally beneficial as a grass lined parabolic ditch. In addition, the trapezoidal ditch requires a higher degree of maintenance to maintain its flow characteristics.

Proposed Action:

The work includes the initiation of a program to identify areas outside of the Modernization and Widening area that are candidates for replacement of the existing trapezoidal ditch with a parabolic ditch. The program also includes funds to begin the work in conjunction with the slope flattening work.

[1] AASHTO 2002 Roadside Design Guide

(iii) Rock Removal

Rock/ledge outcrops exist at several locations adjacent to the edge of pavement. These outcrops are located within the clear zone and are a hazard to the motorist.

Proposed Action:

This work includes the removal of rock/ledge outcrops outside of the Modernization and Widening area. Rock/ledge outcrops located within the clear zone will be removed where economically feasible. The rock will be replaced with a 6:1 grass side slope and a grass lined parabolic ditch. The vertical rock face may still exist but will be located outside of the clear zone.

(iv) Guardrail

Many existing guardrail end treatments consist of a ramped section of guardrail, sometimes called a twisted end section, or turned down guardrail terminal. According to the AASHTO Roadside Design Guide, this type of guardrail terminal has shown, "a tendency to vault and sometimes roll impacting vehicles".[1] The Roadside Design Guide goes on to state, "Another aspect of this terminal's performance that should be considered by the designer is the possibility that the turned down rail will capture an impacting vehicle and channel it along the line of the guardrail into the area of the hazard".[1]

The existing guardrail attachments to some of the Turnpike's bridge structures are substandard. The post spacing, type of guardrail, rail thickness, and type of attachment to the bridge need to be upgraded.

In addition, some locations on the Turnpike may require additional guardrail due to an inadequate clear zone. These locations are areas where a hazard, which cannot be removed exists. Typical hazards consist of side slopes steeper than 4:1, rock/ledge outcrops, drainage structures, and bridge piers and abutments.

To date, the existing guardrail has been upgraded from approximately Mile 48 to approximately Mile 74. In addition, the guardrail on the outside shoulders within the Modernization and Widening project limits have been or are being upgraded in conjunction with the roadway widening.

[1] AASHTO 2002 Roadside Design Guide

Proposed Action:

A Federal Highway FHWA approved crashworthy end treatment will be constructed at the guardrail approach end. The current approved terminals are designed to either redirect or absorb the energy of an errant vehicle upon impact, resulting in a safer guardrail end section. The end treatments are designed to minimize the spearing, vaulting, and rollover potential of earlier terminal designs, while developing the full tensile strength of the rail for downstream impacts.

New guardrail will be installed at locations where the required clear zone can not be established. The existing guardrail will be modified and strengthened at various locations such as bridge attachments to meet current standards.

c. Fences

The replacement of segments of existing fence along the Turnpike right-of-way has been performed at various times in the past; however, due to the age, condition, and lack of effectiveness of the existing fence in many areas, the fence replacement program needs to be continued.

Proposed Action:

The program includes the replacement of existing deteriorated fence along the Turnpike location lines with new woven wire fence. It also includes the replacement of existing fence with new chain link fence at local road bridge crossings and residential areas adjacent to the Turnpike right-of-way where pedestrian usage is or has the potential to be high.

d. Median Guardrail Openings

Median guardrail openings are legally used by authorized vehicles to reverse direction. Authorized vehicles include Maine Turnpike vehicles such as snow plows as well as State Police, Fire, and Rescue vehicles.

The AASHTO Roadside Design Guide states "Maintenance or emergency crossovers generally should not be located closer than 1,500 feet to the end of a speed change taper of a ramp or to any structure". [1] AASHTO also mentions that median guardrail openings should be located in areas with appropriate sight distance.

Proposed Action:

Median guardrail openings with substandard horizontal or vertical sight distance should be studied for possible closure. To improve safety at median openings that are to remain, the construction of jug handles should

[1] AASHTO 2002 Roadside Design Guide

be considered. The feasibility of constructing ramps for authorized vehicles to allow access from the Turnpike to local roads should also be studied.

e. Interchange Reconstruction

Most of the interchanges on the Turnpike were built as part of the original construction. This makes them over 40 or 50 years old, depending on which section of the Turnpike they are located. A few of these original interchanges are substandard when compared to current AASHTO standards. Specifically, Interchanges 4, 7, 9, 11, 12, and 13 have a history of accidents or tractor trailer rollovers due to the existing ramp curvature combined with excessive speed.

Proposed Action:

As part of the Modernization and Widening program, Interchange 4 in Biddeford is currently being reconstructed. The interchange was redesigned so the acceleration and deceleration lanes and curve radii meet current AASHTO standards. The ramp bridge over the Turnpike at the Biddeford Interchange is also being reconstructed as part of this program. Other interchanges will be evaluated for reconstruction on a case-by-base basis.

f. Median Barrier Installation - Ramps

The original interchange design for the Turnpike included two way undivided ramps. Upon exiting the Turnpike, some vehicles fail to decelerate to a proper speed thus greatly increasing the possibility of crossing the median paint line and entering into the path of an oncoming vehicle. In addition, inclement weather greatly increases the possibility of an accident occurring at these locations.

Proposed Action:

To lessen the possibility of head on collisions on the two way undivided ramps, the installation of a median barrier is included in this program. Each interchange location will be evaluated on a case-by-case basis.

2. Rehabilitation

Rehabilitation includes repair and reconstruction to extend and/or provide new life to a facility. This work is completed under the Reserve Maintenance Fund or Capital Improvement Fund.

The anticipated rehabilitation work has been divided into four (4) general categories: roadways; bridges; food and fuel service areas; and system-wide items. Following is a more specific breakdown of each of these categories:

a. Roadways

The roadway category includes the principal items of pavement repair and resurfacing. However, there are several other items of work which are included under this heading and they will be described further in this section.

(i) Pavement Repair and Resurfacing

The average life of bituminous concrete in Maine varies considerably, mainly because of such factors as amount and type of traffic; level of groundwater; quality of the bituminous concrete mix; temperature fluctuations; type and depth of pavement substructures; terrain; etc.. Studies show that pavement maintained in good condition costs substantially less to maintain than pavement that is allowed to deteriorate into poor condition.

Since 1960, there has been an ongoing program of pavement rehabilitation on the Turnpike roadway. Pavement rehabilitation includes removal of the top layer of pavement, establishment of a cross slope to improve drainage, repair of existing pavement, reconstruction of drainage structures, repair of the berm drop-off and overlaying the road with new bituminous concrete pavement. To extend the useful life of the bituminous concrete pavement, the Authority initiated a pavement crack sealing program in 1987. The sealing of the cracks prevents water infiltration into the subbase resulting in a longer useful life for the pavement.

Table 5 shows the locations of pavement rehabilitation accomplished since 1999.

TABLE 5 – Pavement Rehabilitation Locations

PAVING			
FROM:	**TO:**	**YEAR**	**COMMENTS**
Mile 23.2	Mile 25	2003	
Mile 27	Mile 29	2001	
Mile 48	Mile 52	1999	
Mile 56.6	Mile 59.5	2003	
Mile 68.4	Mile 74.9	2003	
Mile 88	Mile 92	2000	
Mile 102	Mile 108	2002	Travel Lane Only

Proposed Action:

To maintain Turnpike pavement in a safe condition and reduce the amount of repair required, a resurfacing schedule has been proposed based on a 15-year life cycle. Recommendations are made each year and are based on the findings of the Annual Inspection.

(ii) Culvert Repair

The box culverts and pipe culverts along the Turnpike show varying degrees of deterioration. Many of the culverts, although functioning adequately, are in need of structural repair, headwall replacement and cleaning. Most of the culverts were installed as part of the original Turnpike construction and their condition is evidence of their age. The box and pipe culverts in Section I were extended during the Modernization and Widening Program. When necessary, additional repairs were made to the box culverts while they were dewatered. Typically the last four to eight feet of pipe culverts were removed before they were extended.

Proposed Action:

All additional box and pipe culverts in need of repair are included in the Program. Culvert repair includes repair and replacement of box culvert headwalls, replacement of pipe culvert headwalls and pipe sections, if required, and cleaning of culverts of silt and debris as necessary. If culverts are to be extended or their elevation modified, a smooth transition to assure proper flow and fish passage will be considered.

(iii) Slope Repair

The need for slope repairs has increased substantially over the years for various areas along the Turnpike. The majority of current slope problems encountered relate to poor cover, gullying, and erosion. The Authority's maintenance forces have made efforts to repair some of these areas over the years, however, the extent of some of the repairs required justify the need for slope repair by contract. A number of contracts to repair high priority locations have been completed in the past.

Proposed Action:

Slope repairs are included in the program and will address additional areas on a priority basis. Slope repairs will include reshaping both foreslopes and backslopes, benching, placing crushed stone or loam and seed, and any drainage modifications

or improvements necessary to properly correct the problems. These measures will ensure slope stability, mitigate erosion and sedimentation, and improve water quality.

b. Bridges

The bridges category includes bridge deck replacements, bridge repairs and bridge painting.

(i) Bridge Deck Replacement

Maintaining the Turnpike bridges is a major priority. Since 1972, 134 of 166 Turnpike bridge decks have been replaced. All of the bridge decks from the original Turnpike construction (Section I) have been replaced, but there are 32 bridge decks in Section II that have never been redecked and are approaching 43 years of age. There are also 15 bridges that were redecked 30 years ago. In addition to age, the dynamic loading of cars and trucks, repeated freezing and thawing cycles, and the use of deicing chemicals for snow and ice control have continued to contribute to the deterioration of the concrete bridge decks along the Turnpike. Over the years, various methods of repair have been used to maintain the original bridge decks, however, as the decks continue to deteriorate, repairs become ineffective and complete deck replacements are required.

Proposed Action:

Bridges included in the program were selected on a priority basis using the Maine Turnpike Authority's 2003 Annual Inspection which uses the rating system depicted in Table 1. The selection process also includes the coordination of the bridge program with other Turnpike construction projects as well as state and local projects. Bridge deck reconstruction includes the complete removal and replacement of the existing reinforced concrete bridge deck, necessary repairs to the substructure, bridge joint replacement, modifications to drainage if required, and reconstruction of the bridge approaches. Certain mainline bridges are designated to be widened during reconstruction to provide additional shoulder width for added safety. Bridges replaced as part of the Modernization and Widening Program were reconstructed to provide for the additional northbound and southbound travel lanes and a widened shoulder. Due to the critical function of the bridges along the Turnpike, the bridge deck replacement schedule over the next five years may need to change with the addition of more bridges. This is largely due to unforeseen deterioration, which may arise during the Annual Inspection Program. Within the next 10 years many of the bridges, which have not been previously redecked, will be done. Additionally, a review of the structures and their total life

expectancy will be considered with regards to total replacement.

Public comment has suggested that in some instances bridges should be constructed, rehabilitated, or when replaced, made to accommodate bicycle and/or pedestrian use. This will be evaluated on a case-by-case basis considering use and or established programs relating to these uses.

(ii) Bridge Repair

Many of the Turnpike bridges have experienced significant amounts of concrete deterioration to the bridge decks, bridge seats, backwalls, wingwalls, and piers and damage to their steel expansion joints. The Authority has periodically awarded contracts for the repair of bridge concrete and joint steel. Timely repair of the deteriorated and damaged areas, utilizing the yearly inspection reports, has prolonged the useful life of the bridges.

Proposed Action:

Funding for bridge repairs is included in the program. The funds will be used for various repair contracts, which will include bridges selected on a priority basis utilizing the yearly inspection reports.

(iii) Bridge Painting

The structural steel of many Turnpike bridges is in need of painting. The Authority has periodically awarded contracts for the cleaning and painting of bridges in order to protect the structural steel and to maintain a good appearance. However, the majority of Turnpike bridges have not been painted in over 23 years. Neglecting to clean and paint structural steel often can lead to costly future repairs due to corrosion. Since 1994, the Authority has cleaned and painted 23 bridges.

Proposed Action:

Bridges which have not been painted in the last 23 years are included in the program. Bridge painting includes cleaning and preparing the existing structural steel, properly disposing of the lead contaminated residue and applying an approved three-coat painting system to all exposed steel surfaces of the bridge. This new system is lead free and is believed to provide a longer life.

(iv) Underwater Bridge Inspection & Repairs

The Turnpike has a policy of inspecting the underwater portions of their river bridges every five years. The most recent inspection was completed in 2001 and identified only minor structural

deficiencies.

Proposed Action:

The Program includes the re-inspection of these river bridges every five years, and has assumed a minimal level of repair as a result of these inspections.

c. Food & Fuel Service Areas

Due to increased use and age, the condition of the pavement at the Service Areas has continued to deteriorate despite ongoing repair efforts by Turnpike Maintenance crews. Rehabilitation and resurfacing of these areas are needed.

Proposed Action:

Resurfacing of Turnpike Service Areas is included in the Program. Resurfacing includes repair and sealing of cracks in the existing pavement, alterations to drainage structures if needed, resetting curbing and edging, replacing damaged or deteriorated curbing or edging, replacing damaged guardrail and overlaying the entire area with two inches of bituminous concrete pavement.

d. System Wide Items

There are several items of work that may effect the entire Turnpike. These items have been designated as system-wide items. These include the replacement of boilers and an asbestos inventory.

(i) Fuel Systems and Boiler Replacement

Several years ago, the Authority initiated a program to remove underground fuel storage tanks and to convert many of the heating and emergency generator systems to propane. The program was substantially completed in 1997 and all fuel storage tanks are in compliance with Maine Department of Environmental Protection regulations.

Proposed Action:

The program includes the replacement of boilers in Authority Buildings on an as needed basis as identified during future inspections. Boiler replacement includes the removal & proper disposal of the existing boiler, installation of a new boiler, controls and associated piping. In addition, alternate fuels will be considered, such as propane and natural gas.

(ii) Asbestos Inventory

At the time of the original Turnpike construction, asbestos was used extensively in construction as an insulation material and for fire protection. The use of asbestos has been virtually eliminated because of the health hazards. Beginning in 1998, certified firms have conducted three separate asbestos inventories on all of the Authority's buildings. The inventories included the investigation and documentation of specific locations and quantities of the hazardous material.

Proposed Action:

Based on the inventory, the Authority understands in which Turnpike buildings asbestos exists. When work is proposed at a building that contains asbestos, removal, containment, and proper disposal of the material will occur as part of the contract.

B. TRAFFIC IMPROVEMENTS

The Traffic Improvement Program includes a wide range of measures designed to make the most efficient use of the Turnpike's capacity and to maximize its capacity with non-construction alternatives. These methods generally fall into two categories: Travel Demand Management (TDM) and Transportation Systems Management (TSM). TDM techniques focus on altering attitudes and patterns of the traveler. These techniques suggest such means as flex work hours to promote off-peak travel, congestion pricing, bus and rail service, and ride sharing. TSM techniques focus on using the existing facility to its greatest capacity. These techniques utilize Electronic Toll Collection (ETC), Variable Message Signing, highway advisory radio, and incident management to increase capacity.

The Authority has already implemented several Traffic Management Systems. These include park and ride lots, ETC, toll system conversion, traffic count stations, the Go Maine Program (formerly RideShare), Highway Advisory Radio (HAR), closed circuit television (CCTV) and Variable Message Signs (VMS). The Authority's Intelligent Transportation System (ITS) which includes HAR, CCTV, VMS, and traffic count stations, provides complete coverage of the Turnpike, from Kittery to Augusta. This system is used to provide patrons with general traffic information as well as specific information on construction and major accidents. The Express Bus Service, ZOOM, began operations in July 1998. The Authority, MDOT, and the Biddeford - Saco - Old Orchard Beach Transit Committee jointly support this Service. The Authority has also assisted in the permitting, design and construction of the Wells Intermodal Transportation Center. The Authority will continue to look for ways to improve its existing systems and for new feasible management systems to implement.

In addition, the Maine Turnpike Authority operates a closed-barrier toll system from York north to the New Gloucester toll plaza and an open-barrier toll system from New Gloucester Toll Plaza north to the West Gardiner Toll Plaza. The open-barrier toll system allows free travel between mainline barrier toll plazas on the northern section of the Maine Turnpike. The combination of implementing ETC together with converting from the ticket system to

an Entry Only Toll Barrier System means of toll collection has all but eliminated congestion at the toll plazas.

Proposed Action:

1. E-Z Pass Conversion

   In 2001, the Authority decided to move to an electronic toll collection system that uses Mark IV IVHS Automatic Vehicle Identification technology. The new system is called E-ZPass and will bring toll collection on the Turnpike into conformance with systems used by the Inter Agency Group (IAG). Essentially, travelers will be able to move between West Virginia and Maine on one electronic toll collection system. Design of this new system is ongoing and is scheduled to be fully implemented by the end of 2004.

2. Park and Ride Lot Study

   The Authority, in conjunction with MDOT and the Regional Planning Agencies of southern and central Maine, is currently conducting a park and ride lot study. The study consists of inventorying the park and ride facilities in the State, including identifying the number of parking spaces at each lot, noting the number of spaces being utilized on any given day and if the facility has lighting, restroom facilities and/or bus capabilities. The purpose of the study is to 1) provide an inventory of the park and ride lots and their associated facilities in Maine; and 2) provide a long term planning tool by understanding the utilization of existing lots and the need for improvements or expansion.

3. Traffic Count Stations

   To provide accurate and timely traffic data, the Authority began constructing traffic count stations at all interchanges in 1996. By 2002, all interchanges were equipped with traffic count stations including loop detectors in both mainline and ramp pavement with the exception of the Jetport Interchange (Exit 7A). The Jetport Interchange has loop detectors in the ramps, but not in the mainline because there are mainline loops directly north and directly south of this interchange.

   These traffic count stations continuously record traffic volume and speed data. The system, via software and dial-up telephone connections, enable the Authority to collect the data automatically at predetermined intervals. The data is then transferred to an appropriate database for analysis. These stations provide valuable traffic information that will be used for future planning purposes. This program continues to expand as new interchanges are added to the Turnpike. The latest count station will be installed as part of the Sabattus Interchange project.

4. Origin-Destination Surveys

   The Maine Turnpike Authority has historically conducted origin-destination surveys along the entire Turnpike corridor at routine intervals. The most recent survey was conducted in the summer of 1998 with a supplemental survey completed in the summer of 1999. Traditionally, these surveys have been used to

gather valuable information from motorists regarding travel patterns, vehicle occupancy, patron attitudes towards alternate modes, and opinions on congestion and tolling scenarios. The Authority plans to conduct an origin-destination survey in 2004. Information gathered from this survey will be valuable and will be used for future planning and design efforts.

5. TDM & TSM Studies and Pilot Programs

In addition to the improvements cited above, the Authority is committed to reviewing all options available to increase the effectiveness of the system. This commitment has led the Authority to participate in several studies, as well as facilitate the implementation of TDM & TSM techniques. Among the ongoing studies are: Lewiston/Auburn Interchange Study and the Gorham-Portland connector study. The Authority also continues its involvement in the Go Maine Program, Kids and Transportation of York County, and is partially funding ZOOM, the Turnpike express bus service from Biddeford/Saco to Portland to help promote car and van pools and provide alternate modes of transportation. Additionally, the Authority is planning to facilitate bicycle and pedestrian trails, on local roads or facilities crossing the Turnpike, when established programs exist and when it is deemed feasible and safe.

The Authority is optimistic that these TDM and TSM efforts will help supplement and maintain the additional capacity being provided by the Modernization and Widening Project.

C. MODERNIZATION AND WIDENING - MILE 14 TO MILE 44

When the Turnpike was built in the 1940s, it was designed to meet then-current standards for highway construction. More than a half century later, it was clear that large-scale investment in the Turnpike's infrastructure would be required to keep pace with accelerated rates of deterioration and increasing levels of traffic. In 1997, the voters of the State of Maine endorsed the Authority's plans to modernize and widen 30 miles of the Turnpike.

Travel demand along the Turnpike has more than tripled in the last 20 years, largely due to the economic growth experienced in the 1980s and early 1990s. Currently, the Turnpike is experiencing increasing periods of commuter and seasonal/recreational congestion. At some locations, commuter and seasonal/recreational peak periods coincide, resulting in traffic backups that can be several miles long.

The Turnpike occupies a strategic position in Maine's transportation system. Development in the project corridor is expected to continue as a result of economic growth throughout the State of Maine and the other New England states. The Modernization and Widening Program is intended to provide adequate highway capacity for anticipated increases in traffic volumes well into the future.

The Modernization and Widening Program consists of upgrading a 30-mile section of the Turnpike from York to South Portland to meet current safety and capacity standards. It includes construction of an additional travel lane in each direction as well as roadway shoulder widening, sideslope and drainage ditch improvements, and modifications to Turnpike bridges and interchanges.

1. Mainline Turnpike

The widening of the Turnpike is being accomplished by the addition of a new 12-foot travel lane in each direction, extending the existing six-lane section of the Turnpike in York to South Portland. This additional lane will eliminate traffic bottlenecks that exist in the area due to the existing four-lane section. Safety improvements involve widening of the existing outside shoulder from 8 feet to 12 feet; increasing the roadside clear zone to 30 feet with more gradual side slopes; and removing rock outcrops and other obstacles from within the clear zone.

2. Bridge Modifications

The Modernization and Widening Program included the reconstruction of 17 underpass bridges. Bridge abutments were set back to allow for the additional travel lanes, shoulder widening, and clear zones. Vertical clearances were raised to a minimum of 16.5 feet, consistent with interstate highway standards. Where necessary, bridge approaches on local roads were reconstructed to meet new vertical and horizontal alignments.

Arch culverts over the Ogunquit, Merriland, and Nonesuch Rivers were laterally extended to accommodate the additional lane and wider shoulders. Clear zones were not proposed at these locations in order to minimize impact to these natural resources. Rather, in these areas, steeper sideslopes with guardrail were constructed.

3. Biddeford Interchange

Interchange 4 in Biddeford is being modified to increase the radius of curvature on existing ramps to meet current interstate design standards. Modifications will also be made to acceleration and deceleration lanes to improve traffic movements and enhance safety. Additionally, a median barrier will be installed on the two-way undivided ramps. This project also includes the replacement of the existing interchange bridge.

4. Schedule

The Modernization and Widening Program is being completed over a five year period. Construction started in March 2000, and the third lanes from York to Wells and from Scarborough to South Portland, approximately eight miles of roadway, were opened for traffic in January 2001. Since then, approximately 12 more miles of roadway have been widened and opened to traffic. The complete Modernization and Widening program is scheduled to be complete by fall of 2004.

Proposed Action:

The program is 80% complete and should be completed.

D. INTERCHANGE ACCESS ROAD PROGRAM

In the past 15 years, the Maine Turnpike Authority has funded studies and/or construction costs for interchanges and/or access roads in Auburn, Lewiston, Sabattus, Scarborough, Biddeford, Portland/Westbrook/Falmouth, Gray/New Gloucester and Ogunquit/Wells. This program, established under the legislative act in 1982, is unique in that it is sponsored by the MDOT but administered and partially funded by the Authority. In 1990, the Authority entered into a seven-year, preconstruction agreement with the MDOT to provide management services to the MDOT for this program. This was done by mutual agreement to help facilitate and expedite this program. In 1997, this agreement was modified to include construction management of acceptable interchanges and the agreement was extended to the year 2007. The 1997 agreement lists studies and construction, if feasible, of the following seven projects:

- Portland, outer Congress Street
- Portland, Westbrook Arterial
- Ogunquit-Wells, U.S. Route 1
- Auburn, South Main Street/State Route 136
- Lewiston, Crowley Rd./Grove Street
- Sabattus, State Route 9
- Gray, U.S. Route 202/State Route 26

Within the past five years, the Congress Street/Jetport Interchange was constructed and opened in 1999 and the Westbrook/Rand Road Interchange was constructed and opened in 2002. Construction on a third interchange, the Route 9 Interchange in Sabattus, began in the summer of 2002 with an earthwork and bridge contract and completion is anticipated in 2004 with a final grading and paving contract.

The Authority, MDOT, and the Androscoggin Transportation Research Center (ATRC), the designated Metropolitan Planning Organization for the urbanized area of Lewiston-Auburn, have been working on a feasibility study for a new interchange to connect to the downtowns of Lewiston and Auburn. The study has included public meetings and a public advisory committee and should conclude with recommendations by the end of 2003.

The planning process for a new interchange or bypass road in the Gray/New Gloucester area was initiated in 1995. In 1998, the Project Advisory Committee selected its preferred alternative, known as the Westerly Bypass with Southern Connector 2, which lies completely within the Town of Gray. The Gray Town Council has endorsed this alternative. Review and acceptance of this alternative by the MDOT and the Authority has occurred for a portion of this alternative, known as the Westerly Bypass. This project is now under the jurisdiction of MDOT with the exception of widening the Route 202 bridge over the Turnpike which falls under the MTA's jurisdiction.

Proposed Action:

If the findings by ATRC are favorable, the next step for the proposed Lewiston and Auburn interchange is to study an interchange that would serve the downtown areas of both communities as well as movements to the east.

In Gray, as mentioned above, the project is now under the jurisdiction of MDOT, who is advancing this project through approvals under the National Environmental Policy Act (NEPA). A NEPA Environmental Assessment was prepared by the Federal Highway Administration (FHWA) and MDOT. This project has received a Finding of No Significant Impact (FONSI) from FHWA. Final design and permitting efforts are ongoing.

The Authority in conjunction with MDOT is developing a policy for initiating new interchange and access road studies that may be requested from time to time by communities within the Turnpike corridor. This policy will provide a consistent and systematic approach for communities to follow in order to have new interchanges or access road studies added to the Program.

E. FACILITY ENHANCEMENTS

1. New Central Inventory Building

The construction of a central inventory building at the sign shop in Cumberland was recently completed. The central inventory building offers a centralized location on the Turnpike to consolidate parts and materials.

2. Additional Buildings at Maintenance Areas

Due to the increased age and usage of the Turnpike, substantially more maintenance and repair efforts have been required over the years by the Turnpike's maintenance crews. The increased effort requires more materials and equipment so there is a need for additional covered storage and garage space. Covering this equipment reduces the repair costs for and extends the life of this equipment. In addition, to facilitate the supervision and management of these increased maintenance activities; there is a need for additional office space.

Proposed Action:

The addition of buildings at maintenance areas is included in the program and will consist of providing additional garage, office and storage space at existing facilities. The existing Kennebunk maintenance facility is being expanded by the construction of a ten bay maintenance garage, a ten bay mechanics garage/office, and a salt shed. New salt sheds are planned for Gray, Auburn, Litchfield and Gardiner maintenance facilities. A new body shop is also planned for the Gray maintenance facility.

Currently, MTA employees work at either the headquarters building on Riverside Street or one of two satellite offices. The Authority is reviewing the future spacing needs of the Turnpike staff, possibly in conjunction with a State Police Headquarters that is accessible by the public to replace the exiting headquarters at the Crosby Maintenance Facility.

3. Rehabilitation of Service Area Restaurants

Some of the service area restaurants are reaching an age where complete

replacement is more cost effective than the major maintenance and upkeep of the facilities that have long outlived their useful lives.

Proposed Action:

MTA is in the process of negotiating new lease agreements with the vendors at certain service areas. As part of the new agreement, the vendors will agree to finance the cost of replacing the service area building.

This program includes the complete replacement of restaurants at four service areas. Two new restaurants will be constructed at the Kennebunk Service Areas, Mile 25 northbound and southbound. The new restaurants will be constructed behind the existing restaurants so that food and restroom services will be maintained during construction. Once the new buildings are functional, the old buildings will be demolished. Truck parking and circulation through the service areas will also be improved.

There are two options for the location of the other two service area restaurants. MTA and MDOT are studying the possibility of a proposed service area/truck stop in Gardiner. If a service area is constructed in Gardiner, then the Authority will replace the restaurants at the Turnpike service areas at Mile 56 and Mile 81. If a service area is not constructed in Gardiner, then the Authority will replace the restaurants at the Turnpike service areas at Mile 56 and Mile 95.

4. Landscape Improvements

The use of landscape along roadways to enhance their aesthetic quality has long been recognized. In more recent times, the benefit of landscaping to reduce maintenance has come to the forefront. Landscaping is not only used as a screen but may be used as a control. In some areas, plantings may be used in place of snow fence to prevent drifting in the roadway area. Plantings may also be used to control graffiti on bridge abutments and to reduce the area of mowing along the roadway.

Proposed Action:

The Turnpike will be reviewed for appropriate locations to landscape. These will be locations where the addition of landscape will help to reduce the amount of maintenance required on the Turnpike as well as provide a more aesthetic quality to the road. After review, a priority listing of areas will be prepared and planting schemes formulated. The program to be developed will include trees, shrubs and wild flowers.

APPENDIX A

MISSION STATEMENT

Appendix A - Mission Statement

Mission Statement

The Maine Turnpike Authority and its employees will continue to be national leaders in user fee highway travel and significant contributors to Maine's transportation system. The Authority's primary function is to operate and maintain a toll express highway through its short term and long term capital improvement plans.

Guiding Principles

To manage a top quality highway serving Maine (Intrastate involvement) providing the link between the Maine Department of Transportation and the rest of the United States and Eastern Canada.

- To seek innovative ways to **improve service**, building on our customer responsive tradition;
- To affect traffic movement that will **encourage commerce**, and **emphasize safety**;
- To provide **excellent maintenance** on a daily and long-term basis;
- To provide quality service at a **reasonable cost** to Turnpike patrons; and
- To involve the talents and experience of **our employees in meeting these challenges**.

To use tolls, fees and the Maine Turnpike Authority's unique revenue bonding capability to build partnerships that will benefit Maine transportation.

- To serve as **facilitator** for additional corridor needs;
- To assist in implementing **corridor improvements** that clearly demonstrates benefits relevant to the Maine Turnpike;
- To **cooperate** with local, regional, state and federal policies and initiatives; and
- To be willing to involve itself in non-Turnpike projects.*

* As defined by Bond Resolution and further elaborated on in a letter to Gov. King dated December 17, 1998, "The Maine Turnpike Authority has unique strengths and advantages that can and should be utilized to advance important statewide transportation projects... The Authority views these opportunities not as a redefinition of our mission, but simply as an expansion of our mission."

APPENDIX B

PUBLIC PARTICIPATION