

# MAINE STATE LEGISLATURE

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THE MAINE TURNPIKE

Its Design, Construction, Financing  
and Experience as a Revenue  
Producing Facility

Address before

ASSOCIATION OF HIGHWAY OFFICIALS  
OF NORTH ATLANTIC STATES

Hotel Statler  
Boston, Massachusetts

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by

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Maine Turnpike Authority

THE MAINE TURNPIKE

Its Design, Construction, Financing and  
Experience as a Revenue Producing Facility.

A universal interest in highway transportation is the natural consequence of the increasing dependence of our life and economy upon an integrated system of highways. Engineers and laymen alike recognize our general highway system as the remnant product of a slow metamorphic growth, an accumulation of fragmentary construction, sometimes correlated under a long term plan, but more often conceived in temporal expedience, either economic or political.

Highway engineers and administrators have before them today, their greatest opportunity in history for genuine public service. The demand for better highways is emerging from its war-time dormancy and people are showing a volition to pay for better roads. The scientific methods of planning now crystallizing under the sponsorship of state, federal, and other agencies, supplies the engineer with the most efficacious medium for informing the public in the matter of rational highway design, location and financing. A well informed public makes few mistakes.

As traffic densities increase, the problem of maintaining a smooth flow of traffic with safety at reasonable speeds must be resolved in higher standards of highway design, access control, medial and grade separations, all of which entail higher costs per mile. The State of Maine has that problem but not the money. With a 25,000-mile system of highways distributed over an area of some 33,000 square miles, a population of 800,000,

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and motor vehicle registrations in the proximity of 200,000, Maine considers itself neither populous nor rich in highway funds.

By reason of its geographical position on the end of the New England limb, Maine has developed its U.S. route 1 between Kittery and Portland during the past twenty years as its principal artery for interstate traffic. Under a formula for equitable distribution of highway funds, comparatively small allotments were available for construction in any one year. As a consequence only relatively short projects were undertaken, from a fractional part of a mile up to a few miles in length, never deviating materially from the existing location, and passing through all the main streets in the towns and cities enroute. By the year 1940 hourly densities exceeding 1000 were common and 24-hour counts often exceeded 15,000. At the same time the more recent improvements were becoming obsolete even before other sections of the 50-mile total length had been widened beyond two lanes. An accelerated construction program was indicated.

Against this critical situation, the Maine Legislature of 1941 passed the enabling act creating the Maine Turnpike Authority, and authorizing the construction of a limited access highway from Kittery at the New Hampshire state line, to not only Portland, but to Fort Kent, 400 miles to the North at the Canadian boundary.

The Legislature provided that the undertaking must be strictly self-liquidating, financed through the sale of revenue bonds to be paid solely from tolls. The credit of the State

was withheld as a pledge for interest or retirement, since any substantial additional issue of general obligation highway bonds would over-run the limit of \$36 million dollars provided in the State Constitution.

The enabling legislation for the Maine Turnpike remained quiescent on the books during the war years, but at the conclusion of open warfare in 1945, the Authority employed outside consulting engineers for the purpose of making traffic surveys and construction cost estimates.

While the need for a super highway near the northerly Fort Kent terminus was not immediately apparent, there were strong indications that the section between Kittery and Portland possessed the necessary relationship between cost and potential toll revenue to warrant the venture.

On the basis of the preliminary engineering reports, the initial \$15 million in revenue bonds were sold in February 1946. Construction was commenced on May 13, 1946 and exactly 19 months later on December 13, 1947, the Maine Turnpike between Kittery and Portland was opened to public travel. Minor items of construction were completed during the early part of 1948 and the contract work was fully completed in July.

The final cost for the 47 miles was \$20,600,000 financed by the original issue of \$15 million in bonds at 2½% and \$5,600,000 at 2 3/4%, all maturing in the year 1976.

The geometric design of the Turnpike shows a cross section with two 24-foot asphaltic concrete pavements, 7-inches to 8-inches thick, separated by two 4-foot shoulders and an 18-foot

raised median strip. Outside shoulders 10-feet in width the entire length of the Turnpike provide a safe refuge for immobile or disabled vehicles.

Pavements are laid on a base of free draining granular sands and gravel conforming with the standard A-3 specification, and averages approximately 3-1/2 feet in depth.

Inside slopes to 4-foot ditches are 4 to 1, placing the ditch line 16 feet outside the edge of shoulders, thereby providing excellent drainage as well as ample storage space for snow removal.

Curvatures are one degree or less and are not superelevated. The dual pavements are parallel in both alignment and elevation throughout. Each pavement has a normal crown section of 2 inches, the interior drainage toward the median strip being provided through twin drop inlets, inter-connected, and draining through 12-inch concrete pipes beneath the pavement to the exterior ditch.

Most grades on the Maine Turnpike are 3 percent or less, two grades are fractionally over 5%.

The general design has followed the Design Standards for the National System of Interstate Highways adopted by the American Association of State Highway Officials August 1, 1945.

The Maine Turnpike is located about 75% through forested area with a minimum right of way width of 300 feet, affording ample protection against close cutting of roadside growth. The roadside is further protected by a 500-foot set back from the right of way line for out-door advertising which has discouraged to date the erection of a single panel facing the Turnpike.

The construction of the Turnpike involved moving approximately 6-1/2 million yards of earth materials, 1/3 million yards of ledge, the construction of 43 bridges and the laying of 520,000 tons of asphaltic concrete.

An analysis of the final construction cost shows the following approximate distribution:

Right of Way	φ 697,000
Grading	6,414,000
Pavement	4,689,000
Bridges	4,880,000
Toll Houses	262,000
Engineering & Borings	987,000
Financing (including interest during construction and first year of operation)	2,000,000
Administration (including unexpended balances)	176,000
Maintenance Equipment, Buildings, Traffic Controls	<u>495,000</u>
	φ20,600,000

Maine is quite proud of its Turnpike and the top-speed accomplishment of its construction. Real teamwork was evidenced by the four prime contractors, the engineers, the financiers, and the Authority itself. Troubles arose as in most projects of its size. Increased construction costs required additional financing, simultaneous activities of contractors in overlapping locations required complete cooperation, and the usual right of way problems were encountered, but all these factors were ex-

peditionously resolved by the complete teamwork of the participants.

On the basis of the original estimated cost of ₪15 million, a tentative toll schedule of 50 cents was set up as the basic fare for passenger cars over the full 45 miles, with fares through the four intermediate interchanges proportioned to the distance travelled on the Turnpike. When it became evident that the construction costs would exceed the original estimates by a substantial amount, it appeared logical to adopt a higher basic tariff, but in the expectation of possible traffic volumes exceeding original estimates and in view of a well pre-publicized 50 cent basic toll, it was adopted on a trial basis.

During the calendar year 1948 there were 1,510,171 revenue vehicles that travelled over some portion of the Turnpike paying a total fare revenue of ₪654,839.88 which with other miscellaneous income yielded a gross revenue of ₪669,795.78. Operating and maintenance expenses for the same period were ₪220,498.40, leaving an excess of income over operating expense of about ₪449,000. Since interest charges for one year amount to about ₪520,000, the year-end figures at face value and taken alone did not add up to a going concern, and established at once the sagacity of foresight in assuming interest payments during the first year of operation as a part of the construction cost.

While the volume of traffic during the initial year of operation exceeded the original estimates, the yield per vehicle was 44 cents against an estimated 53 cents, due to two principal factors, viz: a larger proportion of partial trips and a smaller percentage of the higher revenue commercial classes than anti-



cipated.

Sixty percent of all vehicles using the Turnpike during the past year were through fares, and the pattern was constant throughout the twelve months within a tolerance of about 3%. The volume of the higher revenue commercial classes, however, after seasonal adjustments, have shown a steady increase.

The first two months of 1949 has presented our first opportunity to make comparisons with the same months of a year ago, which we are observing with considerable interest. The trends are most gratifying. Gross revenues in January this year were 70% greater than January 1948, while the general traffic in the area increased but 25%. February revenues this year will exceed a year ago by 40%.

On May first this year the basic full length fare for passenger cars will be raised to 60 cents, the equivalent of 20% increase for this class of vehicle, and is expected to yield about 12% more revenue. Fares for heavy trucks and busses will remain unchanged.

The traffic pattern apparent during the last four months of 1948, the increased trends in volume for 1949, together with the modified toll schedule is expected to place the Maine Turnpike in a sound financial position.

To those who have been closely associated with the Maine Turnpike since its inception its success financially and as a public service is a foregone conclusion. As the solution of a special traffic problem it is the only practical procedure available to the state. There are several cardinal points ex-

emplified in the project which justify its existence.

1. The Maine Turnpike does not replace any part of the general highway system but relieves and supplements it.

2. It is an optional route and used only by motorists who voluntarily elect to pay an additional tax to drive safer, faster, and in greater comfort.

3. The toll is a completely equitable tax since only those who patronize the facility contribute to its cost, and the entire tax is expended for the cost of constructing, maintaining and operating the facility.

4. By financing on a self-liquidating basis, the state's borrowing power is preserved for the financing of non-self-supporting services.

Many outstanding public works have been financed by toll revenue bonds, facilities that probably could not have been otherwise constructed. Among such projects we find the Holland Tunnel, Lincoln Tunnel, George Washington Bridge, and many other projects built by the Port of New York Authority, the San Francisco-Oakland Bay Bridge, Philadelphia-Camden Bridge, Overseas Road and Toll Bridge in Florida, Pennsylvania Turnpike, Maine-New Hampshire Interstate Bridge, and other numerous projects located in practically every State in the Union.

The State of New Hampshire is currently engaged in the construction of a 15 mile turnpike extending end-on from the Maine Turnpike via the Maine-New Hampshire Interstate Bridge southerly to the Massachusetts state line. Connecticut's splendid parkway system is rapidly approaching Massachusetts from the South. Is it within the realm of imagination that New England may soon have an express highway from Portland, Maine to New York City?

Obviously most highway facilities cannot and should not be financed through the medium of toll revenue bonds. It's a special device for a special problem. If it meets the tests of public necessity and convenience, if it cannot be financed as a "free" facility, then it may be worthy of study as an economically feasible toll revenue project.