

# MAINE STATE LEGISLATURE

The following document is provided by the  
**LAW AND LEGISLATIVE DIGITAL LIBRARY**  
at the Maine State Law and Legislative Reference Library  
<http://legislature.maine.gov/lawlib>



Reproduced from scanned originals with text recognition applied  
(searchable text may contain some errors and/or omissions)

PUBLIC DOCUMENTS OF MAINE :

1907

BEING THE

ANNUAL REPORTS

OF THE VARIOUS

Departments and Institutions

FOR THE YEAR 1906.

---

VOLUME II.

---

AUGUSTA  
KENNEBEC JOURNAL PRINT  
1907



MAINE FARMER PRESS, AUGUSTA

State Road, St. George, Knox County, built 1906  
Built from quarry refuse; 18 feet wide, cost 50c per lineal foot. See description in last part of Report

SECOND ANNUAL REPORT

OF THE

COMMISSIONER OF HIGHWAYS

FOR THE

STATE OF MAINE

FOR THE YEAR

1906.

---

AUGUSTA  
KENNEBEC JOURNAL PRINT  
1907



STATE OF MAINE.

---

OFFICE OF COMMISSIONER OF HIGHWAYS,

AUGUSTA, January 1, 1907.

*To His Excellency, William T. Cobb, Governor, and the Honorable Council:*

I have the honor to present the second annual report of the Commissioner of Highways.

Very respectfully,

PAUL D. SARGENT,



## INTRODUCTION.

---

The law establishing the office of Commissioner of Highways provides that it shall be the duty of the commissioner to make an annual report to the governor and council of his doings, and the expenditures of his office, together with such statements bearing upon the construction and maintenance of ways, and suggestions and recommendations, concerning the same, as he deems appropriate, including recommendations for any legislation which to him seems expedient and necessary.

One year ago a report was issued which dealt almost entirely with suggestions as to construction and maintenance of ways, at the same time pointing out some of the glaring defects in the system of road administration as practised in a majority of the towns in the state.

While we realize that neither of these topics was treated exhaustively by any means, we feel that the fundamental principles underlying the proper construction of any road have not changed during the year; neither have our views on road administration; and that a discussion of either topic at the present time would of necessity be more or less of a repetition of last year's discussion.

On the other hand nothing was said in our former report on the subject of legislation. During the present year we have been studying as best we could the several state road laws in operation in other states with the object in view of recommending such legislation as would meet conditions in this state and at the same time put the work of state road building and maintenance under state supervision. This report deals principally with this matter.



## ACKNOWLEDGMENTS.

---

The thanks of the people of the State of Maine are hereby extended through their commissioner of highways to the highway departments of the several states which have so kindly furnished this office with information on all matters pertaining to the operation and administration of their state road, or state aid laws now in force.

Especially are we indebted to Hon. W. E. McClintock, chairman of the Massachusetts Highway Commission, and to Hon. A. W. Dean, State Engineer of New Hampshire, for valuable suggestions which have been incorporated in the bill to be found in this report.

The commissioner is personally indebted to the several boards of county commissioners within the state for courtesies extended to him during the past nineteen months and especially to Hon. Frank S. Adams of Sagadahoc, Col. A. B. Nealley of Androscoggin, Hon. H. H. Adams of Kennebec, Hon. Charles R. Hall of Franklin, Hon. W. R. Clark of Penobscot and Hon. M. L. Merrill of Somerset for counsel and advice offered during the drafting of the bill above referred to.

To the state board of assessors who have furnished us with their new valuations for use in our financial table; to any and all others who have aided and encouraged the commissioner, including the press of the state, which has as a unit sought to further the work of the office and to create a favorable public sentiment for road improvement; and to the officers and members of the Maine State Board of Trade, which has always stood for whatever would further the general welfare and prosperity of the State, we acknowledge our indebtedness.

## REPORT.

---

The work of the office during 1906 has been conducted along the same general lines that it was in 1905. Early in the year the commissioner was called upon to make examination and inspection of the completed bridge over the Sebasticook river at Benton. Later on, similar service was performed at the Bingham-Concord bridge. In both places first class jobs have been completed. The first was built under the direction of the Kennebec County Commissioners who employed, as their special representative and inspector on the work, Mr. Charles E. Warren of Winslow. The second was built under the direction of the Somerset County Commissioners with E. E. Greenwood, C. E., of Skowhegan, as engineer and inspector. It is almost needless to say that with such efficient and thorough inspection as was had on these jobs the state commissioner found all provisions of the contracts and specifications thoroughly executed and all details of construction properly done. Elsewhere will be found a detailed statement of the cost of each of these jobs.

During the early part of the year arrangements were perfected through each board of county commissioners for holding the county road meetings. These meetings were held at such places in each county as the commissioners thought most convenient to accommodate the largest number of towns in the county. The meetings were all held in the month of April in order that commissioners might attend without interfering with road work and with the thought that helpful suggestions brought out would be fresh in the minds of the commissioners when the season's work should be undertaken. As appears below, seventeen meetings were held with a total attendance of about six hundred. Considering that these meetings were an entirely new feature and that many were held on stormy days and at a season when traveling was the worst in years, the

attendance was very gratifying to the commissioner. A good degree of interest was manifest and at the close of nearly every meeting a number of commissioners expressed themselves as well satisfied with the day's proceedings.

We remember in particular one commissioner about sixty years old who just before the meeting adjourned remarked openly that while he had been identified with road work for thirty years, he wanted to say that he had picked up some good ideas to-day. If other commissioners would feel as this man did that "we are never too old to learn," road building in Maine would look up. We remember though that commissioners are changed in office so often that most of them do not have time to put into practice what they have learned by experience.

The meetings were opened with an explanation and discussion of the new specifications for state road work, illustrated by a half size section of a road finished according to the specification.

The proper construction for all classes of earth roads also received consideration and discussion.

The meetings were made as informal as possible and one of the principal benefits of them came through the commissioners getting acquainted with one another and in small groups exchanging ideas on methods of doing different kinds of road work.

I believe the meetings have had a beneficial influence on road work this year and that they should be continued.

Meetings were held as follows and attended by representatives from towns shown:

Androscoggin County; Court House, Auburn; April 11, 1906; towns represented 9; not represented 5; attendance 24.

Towns represented: Auburn, Durham, Greene, Lewiston, Lisbon, Mechanic Falls, Poland, Wales, Webster.

Aroostook County; Court House, Houlton; April 25, 1906; towns represented 9; attendance 30.

Towns represented: Caribou, Castle Hill, Frenchville, Limestone, Mapleton, Perham, Presque Isle, Washburn, Woodland.

Aroostook County; Court House, Houlton; April 25, 1906. towns represented 13; plantations represented 5; attendance 31.

Towns represented: Amity, Ashland, Blaine, Dyer Brook, Hodgdon, Houlton, Linneus, Littleton, Ludlow, Masardis, Monticello, Oakfield, Sherman, Garfield Pl., Hammond Pl., Reed Pl., St. Francis Pl.

Total attendance for county 61; towns represented 22; plantations represented 5; towns not represented 22.

Cumberland County; City Council Rooms, Portland; April 3, 1906; towns represented 18; not represented 8; attendance 62.

Towns represented: Baldwin, Bridgton, Cape Elizabeth, Cumberland, Falmouth, Freeport, Gorham, Gray, Harrison, North Yarmouth, Portland, Pownal, Scarborough, South Portland, Standish, Westbrook, Windham, Yarmouth.

Franklin County; Court House, Farmington; April 10, 1906; towns represented 8; plantations represented 1; towns not represented 10; attendance 24.

Towns represented: Farmington, Jay, Kingfield, New Vineyard, Phillips, Rangeley, Strong, Temple, Dallas Pl.

Hancock County; Court House, Ellsworth; April 19, 1906; towns represented 18; not represented 17; attendance 45.

Towns represented: Bluehill, Brooksville, Bucksport, Cranberry Isles, Dedham, Eden, Ellsworth, Franklin, Hancock, Lamoine, Mount Desert, Penobscot, Southwest Harbor, Surry, Tremont, Trenton, Winter Harbor.

Kennebec County; Court House, Augusta; May 1, 1906; towns represented 9; not represented 21; attendance 19.

Towns represented: Augusta, Chelsea, Hallowell, Manchester, Readfield, Vassalboro, Windsor, Winslow, Winthrop.

Knox County; Court House, Rockland; April 12, 1906; towns represented 9; not represented 7; attendance 22.

Towns represented: Hope, North Haven, Rockport, South Thomaston, St. George, Thomaston, Union, Vinalhaven, Warren.

Lincoln County; Lincoln Hall, Damariscotta; April 6, 1906; towns represented 11; not represented 7; attendance 37.

Towns represented: Alna, Boothbay, Boothbay Harbor, Bremen, Bristol, Damariscotta, Edgcomb, Newcastle, Nobleboro, Waldoboro, Wiscasset.

Oxford County; Court House, Paris; April 5, 1906; towns represented 13; not represented 21; plantations represented 1; attendance 30.

Towns represented: Andover, Bethel, Buckfield, Fryeburg, Gilead, Lovell, Norway, Oxford, Paris, Roxbury, Stoneham, Waterford, Woodstock, Andover North Surplus Township.

Penobscot County; Court House, Bangor; April 18, 1906; towns represented 29; towns not represented 29; plantations represented 1; attendance 50.

Towns represented: Alton, Bangor, Bradley, Charleston, Corinth, Dexter, Eddington, Garland, Glenburn, Greenfield, Hampden, Hermon, Holden, Kenduskeag, Kingman, Lagrange, Lincoln, Lowell, Millinocket, Newburg, Newport, Old Town, Orono, Orrington, Passadumkeag, Patten, Plymouth, Springfield, Drew Pl.

Piscataquis County; Court House, Dover; April 26, 1906; towns represented 14; towns not represented 5; attendance 32.

Towns represented: Abbot, Blanchard, Brownville, Dover, Foxcroft, Guilford, Medford, Milo, Monson, Sangerville, Sebec, Shirley, Williamsburg.

Sagadahoc County; Court House, Bath; April 13, 1906; towns represented 7; towns not represented 4; attendance 16.

Towns represented: Arrowsic, Bath, Bowdoin, Bowdoinham, Phippsburg, Richmond, West Bath.

Somerset County; Court House, Skowhegan; April 27, 1906; towns represented 12; towns not represented 13; plantations represented 7; attendance 33.

Towns represented: Anson, Athens, Embden, Fairfield, Madison, New Portland, Norridgewock, Palmyra, Ripley, St. Albans, Skowhegan, Solon, Dead River Pl., Highland Pl., Jackman Pl., Lexington Pl., Mayfield Pl., Pleasant Ridge Pl., West Forks Pl.

Waldo County; Court House, Belfast; April 16, 1906; towns represented 12; towns not represented 14; attendance 32.

Towns represented: Belfast, Belmont, Frankfort, Freedom, Islesboro, Monroe, Morrill, Northport, Prospect, Searsmont, Swanville, Winterport.

Washington County; Court House, Machias; April 20, 1906; towns represented 18; towns not represented 29; plantations represented 1; attendance 24.

Towns represented: Addison, Baileyville, Baring, Brookton, Charlotte, Columbia, Columbia Falls, East Machias, Eastport, Harrington, Lubec, Machias, Marion, Meddybemps, Perry, Roque Bluffs, Vanceboro, Whiting, Number 14 Pl.

York County; Court House, Alfred; April 4, 1906; towns represented 17; towns not represented 10; attendance 41.

Towns represented: Alfred, Berwick, Biddeford, Buxton, Dayton, Eliot, Hollis, Kennebunkport, Kennebunk, Lebanon, Newfield, North Berwick, Saco, Sanford, South Berwick, Wells, York.

All through the year we have attended to calls for advice as they have been received from the towns. In some instances second calls have been received and visits made when the work proposed on the first visit has been under construction. We have also had calls this year from towns in which work was done last year according to our suggestions. In a few cases special plans have been prepared, but in a majority of cases we have found that the instructions contained in our specifications for state road work drawn up a year ago and printed in our former report have proved sufficient after looking over the location in detail and making special provision for the drainage problem.

We cannot refrain from referring once more to the importance of securing thorough drainage. No road will long remain good no matter how thorough the other features of construction are where this all important fundamental principle is overlooked. The kind of drainage we have tried to secure wherever we have looked over work is that which takes water away from the road as far as possible, as quickly as possible and as often as possible; and for a road on a hillside the kind of drainage which keeps water from washing over into the road.

We have always felt that the roads of Maine suffered more from lack of drainage than from any other one thing. We are more convinced now than ever before on this point. Indeed, we have recently been receiving reports from R. F. D. carriers in the State as to the condition of the roads over which their routes run and in reply to the question "locate worst piece of road and give reason," fully nine out of ten carriers give as reason for bad condition of roads "no side ditches—water runs in middle of roads."

We have kept as closely in touch with the highway departments of other states as was possible by correspondence and have been constantly studying and investigating their laws and the operation of the same, to learn the good and bad features of each law. The results of these investigations have been put into the form of a bill to be presented to the legislature, a copy of which will be found in this report.

We do not claim originality for this bill. As stated above, it has been worked out after a study of many state road laws already in operation and the aim has been to draw a bill applicable to the needs of the work in this State by taking what has appeared to be the best features of the several laws consulted and combining them. A few explanations may not be amiss.

In the first place we have always thought that any state road law for Maine should be general in its scope, that is, so designed that every city, town, organized plantation and township might be benefited by it. This as opposed to a law granting authority to a state commission to expend state funds in improving only certain leading or trunk lines of highway within the State. We do however feel that the expenditure of state funds in each town should be applied to improving the main artery of through travel in that town in order that after a series of years something approaching continuous lines of improved road may be realized. In some states the expenditure is allowed first on one road and then on another year by year with the result that there are no through stretches of improved road. Furthermore there can be no system about improvements undertaken and carried on in this way and we feel that above all things state road work should set the example of systematic work—something that is sadly lacking in most towns.

Again we feel that the commissioners of each county, from their knowledge of the general business of the county, its highway system as a whole, together with their knowledge of the special business of each community, must be in possession of the facts necessary to enable any board or commission to make state road designations impartially for the best interests of all concerned.

The above three points are all found in our present state road law. They are all found in the bill for a new law but with the following additions.

While our present law is applicable to "cities, towns and plantations," no provision is made for unincorporated townships to have state roads. One of the largest industries of the State—lumbering—has its primary operations in the unincorporated townships. Thousands of tons of supplies are annually hauled over the roads in these townships. From personal knowledge and observation we know the expense of transportation of these

supplies could be reduced one-half by simply reducing excessive grades. This work might be undertaken by the county commissioners acting for the township under the impetus of state aid. How many of our isolated farmers too, who travel these roads in going to market, would be benefited by this work.

Again, each year finds an increasing number of business and professional men from our cities seeking the absolute rest from care and worry which can only be found in hunting, fishing or driving as far away from civilization as it is possible to get. It seems to us that state money expended on these roads would not only benefit every class of people within the State but would also tend to attract the ever increasing army of tourists and sportsmen from without the State.

The new bill also provides for succeeding lines of state road to be laid out upon completion of the lines under construction. This appears to us to be the only systematic way of accomplishing results. If we were building a new barn or repairing a leaky one and had only enough shingles to cover one quarter of the roof we are inclined to think we would thoroughly shingle the most important section of the roof and make that good and then complete other sections as we had shingles, rather than to lay our first lot of shingles over the whole roof and still have no part of it finished. We believe this to be the right principle to follow in the construction of state roads. We may be long years in working out a reconstruction of our roads, but if we persevere we shall surely win.

The good roads systems of European countries which are held up as examples are the products of several generations of systematic road improvement.

We also provide in the new bill for an appeal from the county commissioners' designation of state road, and a review and hearing on the matter. Certain towns in our State have refused to expend their state road funds claiming that the road as designated by the county commissioners was not the main traveled thoroughfare. It would seem as though provision should be made for cases of this kind to be reopened and reviewed. We have provided a board of review which ought to be able after hearing all parties interested to make an impartial decision on locations and this at a small expense.

The financial part of this bill is quite a departure from our present law. It is modeled after the law in operation in New



Hampshire. Most state aid laws provide that the state shall pay some fixed proportion of cost of improvements—one-third, one-half, two-thirds or three-quarters to all towns alike. This feature which is in our present law has always seemed to us objectionable because it does not take into consideration the relative burden to the different towns of maintaining existing highways and of their consequent ability or inability to make extra appropriations in order to secure state aid. We have given this matter considerable thought and study, but have not been able to devise any scheme for equalizing highway taxation except the idea of a general highway tax on all property of the State which might be reapportioned to the several towns according to their needs—said needs to be determined by a state commission and said funds to be expended under their direction. This idea is in line exactly with the scheme of administration of the maintenance of way departments on all railroads. However, the idea is so far removed from our principle of representative government that we have not attempted to work it out. What we have tried to find, however, was some method of helping financially weak towns with a larger proportion of state aid than should be allowed to financially strong towns.

The New Hampshire scheme is the best we have ever seen to accomplish this end and we have therefore incorporated the idea in our new bill.

Section four of the bill makes it incumbent on towns to expend a certain amount of their regular highway money in doing permanent work, the amount to be so expended depending on the valuation of the town and varying from \$1.00 per thousand of valuation in the poorer towns to \$.25 per thousand of valuation in the wealthier cities. It should be remembered that this provision calls for no extra taxation; the money is to be taken from the regular highway appropriation made in each town. To be sure it will reduce the amount of money available for maintenance work but by only a small percentage in some towns, and by only about 20 per cent on the average all through the State. We suggested last year that it would seem reasonable to use at least 25 per cent of the regular highway appropriation in each town in doing permanent work. This suggestion was followed by several towns and we have not heard that the roads of those towns have suffered in consequence. The comment is

prevalent all over the State that highway money is wasted year after year in doing temporary work. Here is a chance to stop one leak. This money forms a part of the state road fund if state aid is desired; otherwise it may be expended on any highway in the town which the municipal officers shall select, but under advice of the state highway department.

Section five declares that towns desiring state aid shall make special appropriation equal to one-half the amount set aside under the provisions of section four.

Section six shows the amounts which the State will apportion to each town applying for state aid. These amounts run as follows:

To towns under \$100,000 of valuation the State will apportion \$2.00 for each \$1.00 set aside and appropriated under the two preceding sections.

To towns of \$100,000 and less than \$250,000 valuation, \$1.50.

To towns of \$250,000 and less than \$500,000 valuation, \$1.25.

To towns of \$500,000 and less than \$1,000,000 valuation, \$1.00.

To towns of \$1,000,000 and less than \$3,000,000 valuation, \$0.75.

To towns of \$3,000,000 valuation and upward, \$0.50.

Or expressed as multiples of the special appropriation to be made by each town, the amounts are as follows:

To towns under \$100,000 of valuation the State will apportion \$6.00 for every \$1.00 of special appropriation.

To towns of \$100,000 and less than \$250,000 valuation, \$4.50.

To towns of \$250,000 and less than \$500,000 valuation, \$3.75.

To towns of \$500,000 and less than \$1,000,000 valuation, \$3.00.

To towns of \$1,000,000 and less than \$3,000,000 valuation, \$2.25.

To towns of \$3,000,000 valuation and upwards, \$1.50.

It certainly seems as though this scheme is liberal enough to induce every town in the State to take advantage of the law, more especially the poor towns, many of which have felt that the present offer of state aid was not sufficient to induce them to make special appropriations in order to secure aid.

It is interesting to note the number of towns in each of the above classes.

Under \$100,000 of valuation there are 92 towns and 70 plantations and townships, or a total of . . . . .	162
Between \$100,000 and \$250,000 valuation, 130 towns and 28 plantations and townships, or a total of . . . . .	158
Between \$250,000 and \$500,000, 133 towns and 1 plantation . . . . .	134
Between \$500,000 and \$1,000,000, 56 towns. . . . .	56
Between \$1,000,000 and \$3,000,000, 44 towns. . . . .	44
Over \$3,000,000 valuation, 19 towns. . . . .	19
	<hr/>
Total . . . . .	573

Our next section provides that the several sums set aside, appropriated and apportioned under sections four, five and six shall constitute a joint fund for the permanent improvement of the state road in each town which accepts the provisions of the bill and applies for state aid.

Perhaps at this point a few illustrations of the working of this bill would be interesting.

Take for example a town with a valuation of \$99,000.

Under section four, town must set aside. . . . .	\$99.00
Under section five town must appropriate, if state aid desired . . . . .	49.50
	<hr/>
	\$148.50

Under section six state apportions \$2.00 for each \$1.00 by town. . . . .	297.00
	<hr/>

Making joint fund of. . . . .	\$445.50
-------------------------------	----------

• Take a town with valuation of \$249,000.	
Under section four town must set aside. . . . .	\$249.00
Under section five town must appropriate to get state aid . . . . .	124.50
	<hr/>

	\$473.50
Under section six state apportions \$1.50 for each \$1.00 by town. . . . .	710.25
	<hr/>

Making joint fund of. . . . .	\$1,183.75
-------------------------------	------------

Town with valuation of \$499,000.	
Under section four town must set aside. . . . .	\$499.00
Under section five town must appropriate. . . . .	249.50
	<hr/>
	\$748.50
Under section six state apportionments \$1.25 for each \$1.00 by town. . . . .	935.62
	<hr/>
Making joint fund of. . . . .	\$1,684.12
Take town of \$999,000 valuation.	
Under section four town must set aside. . . . .	\$999.00
Under section five town must appropriate. . . . .	499.50
	<hr/>
	\$1,498.50
Under section six state apportionments \$1.00 for \$1.00 . . . . .	1,498.50
	<hr/>
Making joint fund of . . . . .	\$2,997.00
Take town of \$2,999,000 valuation.	
Under section four town must set aside. . . . .	\$2,249.25
Under section five town must appropriate. . . . .	1,124.62
	<hr/>
	\$3,373.87
Under section six state apportionments. . . . .	2,530.70
	<hr/>
Making joint fund of . . . . .	\$5,904.57
Take town of \$4,999,000 valuation.	
Under section four town must set aside. . . . .	\$2,499.50
Under section five town must appropriate. . . . .	1,249.75
	<hr/>
	\$3,749.25
Under section six state apportionments. . . . .	1,874.62
	<hr/>
Making joint fund of. . . . .	\$5,623.87

Take town of \$14,999,000 valuation.	
Under section four town must set aside. . . .	\$4,999.67
Under section five town must appropriate. . . .	2,499.83
	<hr/>
	\$7,499.50
Under section six state apportionments. . . . .	3,749.25
	<hr/>
Making joint fund of. . . . .	\$11,249.25

These figures seem to us to spell road improvement in no uncertain terms, provided only that proper safeguards are furnished for the expenditure of these funds.

For handling the business in connection with the apportionment and expending of state road money the bill asks for the establishment of a State Highway Department to be provided with suitable offices and equipment. The head of the department shall be known as the State Commissioner of Highways, who shall personally superintend the work of the department. He may appoint if the work of the department requires it an assistant or deputy commissioner, one chief clerk, and one stenographer. The bill further provides that the commissioner may, subject to the approval of the governor and council, employ such other help as may be necessary for the proper execution of the work of the department. This "other help" clause makes it possible; if the organization provided for proves insufficient to properly handle the work of the office, to employ more help. It also gives authority to employ engineers and inspectors to look after work performed by contract—for as will be seen by section eight, the bill provides that each job of state road work costing over \$1000 must be performed by contract. Section seven also provides that the department may furnish free of expense to any city not employing a city engineer, town or plantation, the services of an engineer to make surveys or give advice concerning the construction, improvement or repair of its highways. The present commissioner of highways, should this bill become a law, and should he be placed in charge of the work, plans to take care of the surveying and inspection work by employing local engineers, employing in each case that engineer located nearest to the work in question. In this way it is thought administrative expenses may be kept at the lowest possible point, as engineers will

be on pay only when employed and traveling expenses will be reduced to a minimum.

Our idea as to employing inspectors on contract work is not to keep a man constantly on one job, but to place as many contiguous jobs under his charge as he would be able to attend to and see each job once every four or five days. This matter of inspection during construction we consider of the greatest importance. The lack of it is one of the weakest points in our present law—not that we think towns try to slight any part of the construction—on the contrary we believe that town officials have in the past, with few exceptions, taken pride in doing the best work they were capable of—but many town officials have failed to properly interpret instructions.

A few concrete examples of this sort of failure may serve to illustrate this point.

We have seen on completed state road split stone culverts, first class in every respect but paving or flagging—and this was entirely wanting.

We have in mind another first class job of culvert work as far as side walls and cover are concerned, but the bottom consists of sapling pine and fir poles. This construction might do for a location where the bottom would be covered with water at all seasons of the year, but when we inspected this culvert about October 1st, this year, the flooring was perfectly dry and probably had been ever since the spring rains except after heavy showers. This culvert is some sixty-five or seventy feet long and about three and one-half feet square. It has been built probably three years and in a few years more will be in need of reconstruction, unless steps are soon taken to remove the wooden floor in small sections and substitute a concrete or stone paving. We believe a few dollars expended for an engineer's advice on this job with an occasional inspection during construction to see that his specifications were properly understood and carried out would have saved a considerable outlay in the future to say nothing of the inconvenience of having the road torn up again.

Again, we have seen several reports of stone underdrains laid in sand roads. This is simply a complete waste of money.

We have also seen numerous instances of complete failure to provide for the removal of surface water from the road. A culvert built, or side gutters constructed, and the water allowed to

stand in them, when offtake ditches should have been provided to make the drainage effectual.

A common practice seems to be to get clay into the surface of a gravel road out of all proportion to its need, as a binder; and instances have come to our notice of the same practice when crushed stone was used for surfacing.

Furthermore, a uniform grade of gravel has not always been used for surfacing when it might have been obtained with a little care. In other words, sand and loam which are found in nearly every pit have been hauled to the road and mixed promiscuously with good gravel. All these matters were fully discussed in a general specification for state road work prepared by this office one year ago. We are glad to report that the work in a number of towns this year has been done in close conformity to these specifications and not less than six boards of county commissioners have sent unsolicited reports to this office stating that the work this year is fully fifty per cent better in quality than that of any previous year. We have heard no comment in regard to this year's work from the other boards. With a fair amount of inspection during construction, for the purpose—not of finding fault, but of giving instruction, we believe still better, and if possible, more lasting work of a more uniform type would have been the unanimous report of all county commissioners. On contract work of course inspection is quite necessary.

As to contract work. In providing that certain work must be done by contract we are only following the lead of practically every state road law in existence. This however is not our reason for this recommendation. In a majority of towns in Maine the road commissioner has difficulty now in performing his regular highway work, and especially in doing the work in its proper season. In a considerable number of towns each year the state road money has been unexpended on account of the inability of the commissioner to secure labor.

We believe that the proposed bill provides for a larger expenditure of state road funds in every town than has been the case before. If this is so towns will experience more difficulty than before in getting labor; consequently, a more perfect organization and more systematic methods must be sought through which to make these expenditures. The contractor with his organized force, trained foremen and improved machinery offers a solution to the problem.

Furthermore, road building is as much a trade or profession as is any other line of construction work and if we are going to progress in this line of work—and we believe the people of the State have decided on progress in this matter—let us go about it in a business fashion. Let us follow the example set by railroads and other business corporations of doing construction work by contract. Our bill provides that towns may bid on work located within their limits. Thus towns are granted the same privilege which they now enjoy of doing their own state road work, provided only that they will agree to do the work at as low a price as will some contractor. If towns cannot meet the prices named by a contractor they must acknowledge that they will get more for their money under the contract system than under the system of doing work themselves. No matter which way the work is done the most of the money expended for the work will be left in the town. If a contractor comes in from outside, his men and teams must be boarded and he will need more or less supplies. He will generally need all the help he can hire, too.

Another feature of the contract system is that it tends to develop, all over the State, road builders who will make a study of the business and equip themselves for the work. There may be a scarcity of contractors at first but after a few years we should find a number of concerns in the State thoroughly equipped and able to perform any class of highway work.

We desire to call attention to the method of making payments of state aid to towns, called for by this bill. We have never liked the present system of compelling towns to carry the State's share of the cost of the work until January 1st next after the work was performed. It seems as though this work should be paid for like any other transaction—on completion. Section nine of the bill so provides.

Another very important matter which our present law says nothing about is the maintenance of state roads. From the fact that our law refers to the improvement of these roads as "permanent improvements," many people have, without giving the matter particular thought, decided at once that there would be no necessity of further work upon them after they were improved. This idea is entirely wrong. Maintenance or proper care is what keeps anything good, whether it be roads, buildings, tools



and machinery or clothing or furniture. State roads are no exception to this general rule; but granting that they are properly constructed in the first place their proper maintenance should be a matter of comparatively slight expense if attended to at regular intervals. We know that road commissioners in some towns have been severely criticised for resurfacing and otherwise repairing state roads. We do not believe any commissioner has made unnecessary repairs on state roads. On the other hand we do believe that many sections of state road are in need of slight repairs which if made will save many times their cost and at the same time keep the roads continually good. With this provision in the law, commissioners would have no hesitation about making repairs. From our point of view it is poor policy not to take care of what we have already constructed.

Few highways are constructed with the thoroughness and painstaking care that is exercised in the construction of railroads; consequently we should hardly expect highways to be as permanent as are railroads; yet how carefully are our railroads maintained and cared for from the very day of their completion and in comparison, how poorly our highways.

We venture to say the traveling public would be much alarmed should the news go abroad that daily maintenance of roadbed had ceased and in its stead had been inaugurated a system of annual repairs supplemented by repairs after washouts or wrecks (caused by lack of proper care). So accustomed have we become to the system of daily maintenance on our railroads that we fail to realize that this system is nothing but one feature of the general and ever present policy of economical management practiced on every railroad and proved by years of experience to be right. We hope the day is not far distant when towns will realize the value of careful and systematic maintenance of highways. We are convinced that for the amount of money now expended on maintenance work under the system of annual repairs, much more satisfactory results would be obtained if a certain percentage of the money raised each year was used in thoroughly reconstructing some section of road and the balance used in maintaining that same section of road together with all other roads in the town by a system of daily, weekly or monthly maintenance. We see we have

digressed a bit from the topic of maintaining state roads but we feel that so much depends on a proper understanding of the importance of maintenance work in general that we will be pardoned for touching on the matter at this point.

As will be seen by referring to the financial statement accompanying this bill, the sum of \$354,135 is necessary to meet the payment of state aid under its provisions, if all cities, towns, plantations and townships should see fit to apply for state aid in any one year. As an increasing number of towns have taken advantage of the present law each year it is not unreasonable to suppose that with the added impetus of more liberal treatment of the towns by the State the number of towns taking advantage of the law will steadily increase until at no distant date all towns will make appropriations and apply for state aid.

For providing funds to enable the State to meet its payments under the bill a tax of 1 mill is called for. This idea of a mill tax has been suggested to your commissioner by men better versed than himself in the financial affairs of the State and with a knowledge of its ability to assume a larger proportion of the general highway expenditures than it does at present. We do not know what the new state valuation will be, but have been advised that a mill tax would probably yield \$40,000 more than the amount named at the beginning of this paragraph as necessary to pay state aid.

It should be borne in mind that our bill provides that all expenses of administration are to be paid out of the appropriation and furthermore that any unexpended balance of the fund, after paying these expenses and state aid, may be expended by the state commissioner in building connecting lines of highway between state roads as designated by the county commissioners. The amount so expended must be apportioned among the counties in the proportion which their total road mileage bears to the total road mileage in the State. It is believed under this provision, in connection with the provision that each town must first reconstruct its main thoroughfare, that eventually a complete system of improved roads will be realized in the State.

To return once more to the appropriation asked for. We have an idea that a majority of the voters in the State of Maine are in favor of a larger state road fund; the main point of difference in their minds being the proper amount of the fund. It

may be worth while to spend a few minutes in seeing what some of our neighbors are doing along this line.

New Hampshire passed a state aid law in 1905. The area of the State is 9,305 square miles; its assessed valuation \$225,000,000; population, 411,588; it has 15,116 miles of highway or 1.62 miles of highway per square mile of area; an assessed valuation per mile of highway of \$14,890; and 27.23 inhabitants per mile of highway. The legislature appropriated for state road purposes \$125,000 per year for a term of five years, or a state tax of \$.000555. And there is a strong probability that increased funds will be provided for the work this winter.

Vermont passed a state aid law in 1892. The area of the state is 9,135 square miles; its assessed valuation \$188,000,000; population 343,641; it has 14,964 miles of highway or 1.63 miles of highway per square mile of area; an assessed value per mile of highway of \$12,558; and 22.96 inhabitants per mile of highway. It has had a state highway fund of upwards of \$90,000 annually since 1892. This fund was established by assessing a tax of .0005 on all property in the State. Since the local option license law has been in operation the net income from licenses has been added to the state fund. The net income from automobile licenses also is added to the fund. These two sources of revenue furnish about \$40,000 per annum. In November, 1906, the legislature made appropriation of \$50,000 to be added to the state highway fund so that next year the fund should be very near \$200,000 or a little rising 1 mill on the valuation of the State.

Massachusetts has been building state roads since 1894. With an area only one-fourth as great as Maine, a valuation about nine times that of Maine and only four-fifths of the highway mileage of Maine, we feel that comparisons would be hardly fair, but the statement may not be amiss that the State is spending about \$600,000 per year on state highways and that total appropriations amounting to \$6,335,000 have been made by their legislature for this work.

Comparisons of the same kind with Rhode Island and Connecticut on account of their small areas and high valuations are not fair. Both states are making liberal appropriations for state road work and have been doing so—Rhode Island since 1903 and Connecticut since 1895.

We find Minnesota, Virginia and Washington showing up in this comparison about like Maine, New Hampshire and Vermont; but our people are probably not interested to know what the western and southern states mentioned are doing. We must then compare Maine with New Hampshire and Vermont.

And what does the comparison show? We have had a state road law since 1901. Our area exclusive of water is 29,895 square miles; valuation, 1904, was \$366,514,014; population 694,466; we have 25,530 miles of highway or 0.854 miles of highway per square mile of area; an assessed valuation per mile of highway of \$14,356; and 27.2 inhabitants per mile of highway.

Our appropriation for state roads for 1906 was \$50,000 or a state tax of \$.00013—less than one-fourth of New Hampshire's, about one-fourth of Vermont's for the last 14 years and about one-eighth of Vermont's since their new law passed in November.

If we were doing as much for state highways as New Hampshire is, we should have a state appropriation of at least \$215,000 based on our probable new valuation; if we are to do as much for state highways as Vermont will do next year we should have an appropriation of approximately \$400,000 or a tax of 1 mill on each dollar of valuation of the State.

The remaining sections of the bill, from section fifteen to the end, impose upon the state commissioner of highways in connection with his duty of supervising the state road work all the duties now imposed upon the office, including the holding of annual county road meetings.

As will be seen by reading the bill it asks for the appointment of a state commissioner of highways.

The idea has been to have enacted a state highway law combining the good features of our present state road law, the law under which the commissioner of highways is working, and such additions and supplements to the two laws as would give to the State a complete and up-to-date law which might be found without referring to several volumes of acts.

On our state emblem appears the motto "Dirigo"—I direct. For years the State of Maine through its senators and representatives in Congress has had a large measure of the responsibility of directing the affairs of our common country. But in

this matter of state aid for highways, one of the greatest movements ever inaugurated for bettering the condition of every resident within any state, and a movement which has taken firm root in each of the other New England states along with no less than a dozen states outside of New England it can hardly be said that the State of Maine has directed.

If the present legislature shall see fit to enact into law the bill herewith proposed or one equally as good or better, we feel that Maine will then take her rightful position with the other progressive states of the Union on this question of highway improvement and that each and every inhabitant of our grand old State may hereafter in referring to state highway work in Maine exclaim, "Dirigo!"

## PROPOSED BILL.

---

### STATE OF MAINE.

IN THE YEAR OF OUR LORD, ONE THOUSAND NINE HUNDRED  
AND SEVEN.

AN ACT to provide for State Aid, and for the Expenditures of  
Other Public Moneys, in the Permanent Improvement of  
Main Highways or State Roads.

*Be it enacted by the Senate and House of Representatives in  
Legislature assembled, as follows:*

Section 1. The objects of this act are to obtain a more uniform system for the permanent improvement of main highways throughout the state, to secure the co-operation of the municipalities and the state in providing means therefor, and to provide for more efficient and economical expenditure of moneys appropriated for highway construction and repair.

Section 2. The following described roads shall be considered main highways or state roads within the meaning of this act: In towns which have already availed themselves of the provisions of sections 99 to 105 of Chapter 23, R. S. 1903 and acts amendatory thereof and additional thereto, such roads as have heretofore been designated state roads by the county commissioners; in towns which have not heretofore availed themselves of the provisions of sections 99 to 105 of chapter 23, R. S. 1903 and acts amendatory thereof and additional thereto, but which vote to accept the provisions of this act, such roads as may hereafter be designated as state roads, under the provisions of this act. When notified by the state commissioner of highways that any town has voted to accept the provisions of this act, it shall be the duty of the county commissioners of the county in which such town is located, on or before May tenth of the year of such notification, to make such designation, and the clerk of each

board of county commissioners shall return forthwith to the state commissioner of highways a record of their proceedings in each town and a description of each road designated as state road.

Provided, however, that upon petition of a majority of the legal voters in any town presented to the state commissioner of highways stating that in the judgment of the petitioners the road as designated by the county commissioners is not the main traveled thoroughfare in that town and that public convenience would be better served by the designation of some other road as the state road, which other road must be described in the petition, it shall be the duty of the state commissioner of highways after such notice as he may order to give a public hearing upon said petition at some convenient place where all parties interested may be heard. The state commissioner of highways, the member of the governor's council from the councilor district in which the town is located and any county commissioner from an adjoining county whom the state commissioner of highways shall select, shall hear said parties interested and designate the state road, which designation shall be final. Members of the governor's council and county commissioners when hearing said petitions shall receive five dollars per day and expenses to be paid together with advertising and incidental expenses from the treasury of the county in which the town is located. In case the decision is against the petitioners, said board shall order in their decision that the petitioners repay to the county within a fixed time all said cost in connection with the hearing of the petition. In case such payment shall not be made within the time so fixed, then the treasurer of the county within which the petition was heard shall commence an action of debt against said petitioners, or any of them, in the name of the county, for the recovery of said costs and expenses.

Provided further that when the state road in any town has been reconstructed in a permanent manner within the meaning of this act it shall be the duty of the county commissioners to designate the next important main thoroughfare as state road. Municipal officers may notify the state commissioner of highways when in their opinion the state road is entirely reconstructed as above, but such notification must be made immediately upon the completion of the road. It shall then be

the duty of the state commissioner of highways, together with the county commissioners of the county in which the road is located, to make an inspection of the road and to determine whether or not it is complete. If they find the road to be not complete they shall specify to the municipal officers in what particulars, and the municipal officers shall in their next proposal for expenditure of joint funds specify that it is desired to use said joint fund in completing said road according to said specifications returned by the state commissioner of highways and the county commissioners. If the road is complete the county commissioners shall designate another state road as provided in this section.

Section 3. To carry out the provisions of this act there is hereby created and established a state highway department whose chief officer shall be called the state commissioner of highways. Said commissioner shall be a civil engineer and shall be appointed by the governor with the advice and consent of the council, within ten days after the approval of this act. The term of office of said commissioner shall be for \* years and until his successor is appointed and qualified. He shall receive an annual salary of two thousand five hundred dollars, and in addition thereto such actual expenses, not exceeding fifteen hundred dollars annually, as he may personally incur in the execution of the duties of his office, the same to be approved by the governor and council. Said commissioner shall be furnished with suitable offices in the city of Augusta, properly provided with all necessary furniture, equipment and stationary, and he shall personally superintend the work of the department. Said commissioner may appoint, if the work of the department requires it, subject to the approval of the governor and council, one assistant commissioner who shall be a civil engineer and experienced in road building. Said assistant commissioner shall receive an annual salary of \* dollars and actual expenses incurred when on official business within the state, the same to be approved by the governor and council. He may also appoint one clerk and bookkeeper at a salary of \* dollars; and one stenographer at such salary as may be determined upon and approved by the governor and council.

---

\* To be supplied by committee.



He may also employ such other help as the execution of this act shall make necessary upon terms to be approved by the governor and council.

All salaries and expenses called for in this section shall be charged against administration except as hereinafter provided, and shall be paid out of any moneys appropriated under this act.

Section 4. Each town shall, of the amount of money annually raised and appropriated for the repair of its highways, set apart the following amounts to be used for the permanent improvement of its main highways, such improvements to be under the advice of the state commissioner of highways.

Towns having a valuation of less than \$2,000,000, \$1.00 on each \$1,000 of their valuation. Towns of \$2,000,000, and less than \$3,000,000 valuation, \$0.75 on each \$1,000;

Towns of \$3,000,000 and less than \$5,000,000, \$0.50 on each \$1,000;

Towns of \$5,000,000 and less than \$15,000,000, \$0.33 1-3 on each \$1,000;

And towns of \$15,000,000 and upwards, \$0.25 on each \$1,000.

And the commissioners of each county within which are located unincorporated townships shall set apart of the money raised and appropriated for the repair of highways in such unincorporated townships, \$1.00 on each \$1,000 of the valuation of each unincorporated township in which there are highways, to be expended for permanent improvements of said highways as indicated in the first paragraph of this section.

Section 5. If any city or town or organized plantation or the county commissioners for any unincorporated township desire state aid, as contemplated by this act, for the permanent improvement of the main highways within such city, town, organized plantation or unincorporated township, in addition to the improvements provided for by the amount set apart, as required by section four of this act, such city or town or organized plantation and the commissioners of the county for such unincorporated township shall raise, appropriate, and set apart an additional sum equal to fifty per cent of the amount required to be set apart for permanent improvements under section four of this act, and all money set apart by any city, town or organized plantation or the county commissioners for any unincorporated township under this section, meaning the

additional sum equal to fifty per cent of the amount required to be set apart under section four of this act, shall be raised, appropriated, and set apart in addition to the amount regularly raised for the maintenance of highways. Application for such state aid in any year, and notice of the raising, appropriation, and setting apart of such additional sum by any city or town, or organized plantation, or by the commissioners of any county entitled to state aid, shall, on or before April fifteenth of such year, be made and given to the state commissioner of highways by the clerks of such towns, cities, plantations or boards of county commissioners. Otherwise they shall not be entitled to such aid for such year.

And it shall be lawful for any city to make appropriation in order to secure state aid as contemplated by this section at any meeting of the city government held between January first and April fifteenth of the year for which the appropriation is made.

It shall be the duty of the selectmen of each town to insert in the warrant for each annual town meeting an article calling upon the voters to vote "yes" or "no" on the adoption of the provisions of this act relating to the appropriation of money necessary to entitle the town to state aid for highways, for the year in which such meeting is to be held.

Section 6. The state commissioner of highways shall apportion from the amount appropriated under the provisions of this act, to each city, town, organized plantation and unincorporated township which has applied for state aid and has raised, appropriated, and set apart the additional amount provided for in section five, entitling it to state aid, for the permanent improvement of its highways, for each dollar so set apart by such city, town, or organized plantation, or for such unincorporated township, under sections four and five, the following amounts:

Towns, organized plantations and unincorporated townships, having a valuation of less than \$100,000, \$2.00 for each \$1.00 set apart under sections four and five;

Towns, organized plantations and unincorporated townships, having a valuation of \$100,000, and less than \$250,000, \$1.50;

Towns, organized plantations and unincorporated townships, having a valuation of \$250,000, and less than \$500,000, \$1.25;

Towns having a valuation of \$500,000, and less than \$1,000,000, \$1.00;

Cities and towns having a valuation of \$1,000,000, and less than \$3,000,000, \$0.75;

And cities and towns having a valuation of \$3,000,000 and upwards, \$0.50.

Section 7. The amount of money set apart by such city, town, organized plantation, or for such unincorporated township as applies for state aid, as provided for in sections four and five, with the amount apportioned by the state commissioner of highways, as provided for in section six, shall constitute a joint fund for the permanent improvement of the state road in each of said cities, towns, organized plantations or unincorporated townships. Provided, however, that no part of said joint fund shall be expended on any highway within the compact portion of any city or village, such compact portion to be determined by the state commissioner of highways, except in towns of less than two thousand population. And on or before May fifteenth of each year it shall be the duty of the officers having jurisdiction over highways in said cities, towns, organized plantations and unincorporated townships to file with the state commissioner of highways a proposal setting forth the location on the state road and nature of the permanent improvements desired to be made. The state commissioner of highways shall, upon receipt of this proposal, notify the said officers whether or not the proposed location and the proposed work meets with his approval, and if not, his reasons therefor.

Such cities, towns, organized plantations and unincorporated townships as do not apply for state aid under section five of this act may expend the money set apart under section four for permanent improvements upon such highways as the officers having jurisdiction over highways in such cities, towns, organized plantations or unincorporated townships may designate. And on or before June first of each year it shall be the duty of the said officers having jurisdiction over highways in said cities, towns, organized plantations and unincorporated townships to file with the state commissioner of highways a proposal setting forth the location and nature of the permanent improvements desired to be made. The state commissioner of highways shall upon receipt of this proposal notify the said officers whether or not the proposed work meets with his approval, and if not, his reasons therefor. He

may also, upon the request of the said officers of any city not employing a city engineer, or town or organized plantation or unincorporated township, furnish to such city, town, organized plantation or unincorporated township, free of charge, the services of any engineer in the employ of the state under this act for the purpose of consultation and advice concerning the construction, improvement and repair of the highways in such city, town, organized plantation or unincorporated township. And any special expenses incurred in providing such engineers shall be charged against administration and shall be paid for out of the general appropriation made under this act. But towns may, if they see fit, pay for such services out of any moneys appropriated for highway repairs. The officers having jurisdiction over highways in such cities, towns, organized plantations or unincorporated townships as shall make improvements under section four of this act, and do not take advantage of state aid, shall file with the state commissioner of highways on or before November first a statement that said improvements have been made according to the proposal filed by them on the first day of June and accepted by him, together with a detailed statement of the cost of the same.

Any part of said joint fund, not expended during the year for which it is set apart and apportioned, may be expended during the succeeding year. If, in the opinion of the state commissioner of highways, said joint fund or any part thereof, for any year cannot be advantageously expended, the same may be expended the succeeding year.

Section 8. As soon as the location and general character of the proposed work has been determined upon in towns where \$1,000 or more of joint fund is to be expended under the provisions of this act, it shall be the duty of the state commissioner of highways to make surveys, plans, estimates, and specifications for the proposed improvement. These plans and specifications shall conform substantially to the proposal filed May fifteenth and agreed upon between the state commissioner of highways and the selectmen or other officers having jurisdiction over highways. Changes of grade and alignment may be made when the road will be benefited thereby and authority is hereby given to make such changes. Said plans and specifications shall upon completion be forwarded to the select-

men or other officers having jurisdiction over highways in the said town in which the particular work is located, whose duty it shall be to immediately advertise for bids for doing said work according to said plans and specifications in two or more news papers printed or circulated in the county, for three weeks successively, at least once in each week. This advertisement shall state the place where bidders may examine said plans and specifications, and the time and place where the bids for said work will be received by the board of selectmen or other local officers having jurisdiction. Each bidder must accompany his bid with a certified check payable to the treasurer of the city, town, plantation or county as the case may be, for ten per cent of the amount of his bid as a guarantee that if the work is awarded to him, he will enter into a contract with said board for the same. All bids so submitted shall be immediately and publicly read at the time for opening the same, as stated in said advertisement, and referred to the state commissioner of highways for his approval. The selectmen or other local officers having jurisdiction and the state commissioner of highways shall have the right to reject any or all bids, if in their opinion good cause exists therefor, but otherwise they shall award the contract to the lowest responsible bidder. The successful bidder shall give satisfactory evidence of his ability to perform the contract, and shall within fifteen days from the awarding of the contract also furnish bond in the penal sum of at least the amount of the contract with two or more sureties, owners of real estate in the county, or a surety or trust company authorized to transact business within the state, to be approved by both the board receiving the bids and by the state commissioner of highways, conditioned for the faithful performance of said work in strict conformity with the contract, plans and specifications for the same. The contract, plans and specifications shall be executed in triplicate, one copy going to the contractor, one to the local board of officers having jurisdiction and one to the state commissioner of highways. Whenever the mayor and city council or such other board as has jurisdiction over highways in a city or the selectmen of any town, or the assessors of any organized plantation or the county commissioners for unincorporated townships, shall desire in behalf of such city, town, plantation or unincorporated township, to bid upon work located within said

city, town, plantation or unincorporated township, they shall submit their bids to the state commissioner of highways at least one day prior to the time specified for the opening of the other bids as stated in the advertisement for bids, and all bids submitted in behalf of towns shall be subject to the requirements made and provided for in this section, except that no certified check or bond shall be required of any town or city making bids or accepting contract for construction.

No bids in behalf of towns shall be opened by the state commissioner of highways until after the other bids for the same work shall have been publicly opened and read by the board receiving them, as required by this section, and forwarded to the state commissioner of highways. If the state commissioner of highways shall find from the bids so submitted that the bid in behalf of the town is the lowest, the state commissioner of highways shall thereupon award the contract to such town, whereupon the board of local officers having jurisdiction over highways in such town shall forthwith execute a contract in behalf of such town with the state commissioner of highways in behalf of the state, to fulfill all the requirements and terms of the specifications and plans for said work, under which their bid was submitted. The state commissioner of highways, on all work executed by contract, shall make such inspection from time to time as he may deem necessary and all material furnished and labor performed shall be to his satisfaction.

The state commissioner of highways may appoint inspectors if he deems it necessary to supervise the construction of all roads built by contract under the provisions of this act. He shall prescribe their salaries which shall be satisfactory to the governor and council; said salaries, however, and any special expense incurred in making surveys, plans and layouts for contract work shall be charged against the joint fund for the particular work in question.

The inspector shall require all provisions of the contract and specifications to be strictly adhered to by the contractors and immediately after the completion of each contract and before final payment is made the inspector shall make oath that all work has been completed according to contract, plans and specifications.

In towns where less than \$1,000 of joint fund is to be expended the state commissioner of highways may, upon application of the

selectmen or other officers having jurisdiction, or when in his opinion more economical results will be obtained by so doing, make surveys, plans, estimates and layouts and furnish such superintendence as may be necessary for the proper prosecution and completion of state road work. Any expense incurred in doing such work shall be a proper charge against the joint fund for that particular work. A certificate of the cost of every road constructed under the provisions of this act not upon a contract shall be filed with the state commissioner of highways by the selectmen or authorized authority over the work of the town in which such road shall have been constructed on or before November first. Survey notes, copies of all plans and contracts, together with all other records pertaining to the expenditure of any state moneys under this act or any subsequent act for the improvement of highways, shall be filed and remain of record in the office of the state commissioner of highways.

Section 9. Payment of the state's share of the joint fund for any town shall be made as follows: When the selectmen of said town shall certify under oath to the state commissioner of highways, that said town has paid out on account of the state road construction the full amount of its share of the joint fund, the state commissioner of highways shall notify the governor and council of that fact and they shall draw a warrant upon the state treasurer in favor of the town for one half the state's share of said joint fund, for said town. And upon the completion of work in said town the state commissioner of highways shall notify the governor and council of the amount due said town and they shall draw a warrant upon the state treasurer in favor of the town for said amount. Provided, however, that the state's payment, may, in the discretion of the state commissioner of highways, be made in one sum after completion of the work. Work performed by individuals or corporations, not towns, under contract shall be paid for as follows: At or near the end of each calendar month during the progress of the work the state commissioner of highways shall certify to the selectmen of each town in which such contract work is being performed, the amount and value of the work done on such contract during the month, together with a statement of eighty-five per centum of the value of such work, which shall be the amount due the contractor and payable to him by the town treasurer not later than the fifteenth of the month succeeding the month in which

the work was done; provided, however, that thirty days after the state commissioner of highways shall certify to the selectmen that all work in connection with any such contract has been completed, inspected and accepted, the full unpaid balance of said contract as shown in said certificate shall be payable to the contractor by the town and not before.

Section 10. Any highway within any city or town improved by the expenditure of said joint fund shall thereafter be maintained, as are other highways, within the city, town, plantation or township within which it is located, and to the satisfaction of the state commissioner of highways.

Any town which neglects or refuses to make repairs on its state road within sixty days after being notified by the state commissioner of highways what repairs are necessary to be made, shall be not eligible to state aid the succeeding year—nor shall said town again be eligible to state aid until all repairs required by the state commissioner have been made in a manner satisfactory to him.

Section 11. The state shall not be liable to any person or corporation for damages arising from the construction, rebuilding, improvement or maintenance of any highway under this act. In case any person or persons or corporation shall sustain damage by any change in grade or by taking of land to alter the location of any highway which may be improved under this act, the person or persons or corporation injured thereby shall be entitled to compensation to be assessed by the officers having jurisdiction where the road lies, said damage to be assessed and paid according to provisions of statute.

In case the award of damages is not satisfactory, parties aggrieved shall have the same right of appeal as is provided by law in the case of damages for altering highways.

Section 12. To provide funds for the purposes of this act, there shall be assessed annually on all property in the state a tax of one mill on each dollar of valuation and the money derived from said tax shall be for the exclusive uses and purposes set forth in this act. Any unexpended balance at the end of any year shall be added to the fund for the next year. From this fund shall be paid all expenses of administration and all state aid for road improvement as provided for under this act.

Section 13. After providing for the expenses of administration and for the payment of state aid applied for, the balance of



the fund or any part of it may be expended by the state commissioner of highways in building connecting roads between state roads as designated by the county commissioners with the object of establishing as far as possible a complete system of continuous main highways throughout the state. Provided, however, that no expenditure shall be made under this section in any town which shall fail to accept the provisions of this act as to application for state aid and expenditure of joint funds. Any expenditures made under authority of this section shall be apportioned among the several counties of the state each year on the basis of total road mileage in the county to total road mileage in the state, and the location of roads to be improved under this section shall be determined for each county by the state commissioner of highways and the county commissioners of the county. The same general provisions made for the construction and maintenance of other state roads under this act shall apply to roads constructed under authority of this section; except that the whole cost of construction may be paid by the state.

Provided further that the state commissioner of highways may, subject to the approval of the governor and council, apportion in any one year, in addition to the amounts apportioned under section six, not exceeding twenty-five per cent of said unexpended balance of the appropriation hereunder, after providing for the payment of administrative expenses and state aid applied for, to towns in which the joint fund is insufficient to properly complete the work proposed or undertaken and necessary to be done as one job.

Section 14. The fiscal year for the purposes of this act shall end December thirty-first. Wherever the word valuation is used in this act it shall mean the valuation last made by the board of state assessors. Wherever the word city, town or organized plantation or unincorporated township is used singly in this act and the phrase or clause in which it is used could as well apply to all four classes of political subdivisions or to any other one class it shall be understood to so apply.

Section 15. In connection with the foregoing duties the state commissioner of highways, having first regard for the performance of those duties, shall also compile statistics relating to the public ways in the cities and towns of the state, and make such investigation relating thereto as he shall deem expedient, in order

to secure better and more improved highways in the state. He shall also by means of maps, charts, cuts, drawings, prints, publications, printed or written articles, lectures, or otherwise, disseminate knowledge throughout the state concerning the best known economical methods for the building and maintaining of highways, including bridges, in the cities and towns of the state, and particularly to impart such information, in manner as aforesaid, to the county commissioners of counties, the street commissioners of cities, the selectmen of towns and other municipal officers whose duties it may be to have the care and management of the expenditure of money and the building and keeping in repair of the highways in the state. Said commissioner shall hold each year, under the auspices of the county commissioners, a meeting in each county for the open discussion of questions relating to the building and maintaining of public ways, of which due notice shall be given to the towns and cities in each county by the said county commissioners.

Section 16. The state commissioner of highways shall make an annual report to the governor and council of the operations of the state highway department. This report shall show the number of miles, cost and character of the roads built under its direction, together with a statement of expenses of the department and such other information concerning the condition of public roads of the state and the progress of their improvement as may be proper. He shall also make recommendations for any legislation which to him seems expedient and necessary.

His report shall be transmitted to the secretary of state as soon after the first Wednesday of January of each year as possible.

Section 17. County commissioners and city and town officers having the care of and authority over public ways and bridges throughout the state shall, on request, furnish said commissioner any information which they may possess and required by him, concerning ways and bridges within their jurisdiction.

Section 18. Sections 99 to 105 inclusive of chapter 23, R. S. 1903, and acts amendatory thereof, and chapter 146 of the Public Laws of 1905, are hereby repealed.

Section 19. This act shall take effect ten days after its approval.

## FINANCIAL ANALYSIS TO ACCOMPANY PROPOSED BILL.

Through the courtesy of the Board of State Assessors we are enabled to show in the following table just how the foregoing bill will affect each city, town and organized plantation, and each unincorporated township in which the county commissioners assess and direct the expenditure of road taxes, on the basis of the 1906 valuation.

As these valuations were taken from early figures made up by the assessors they may not correspond in every case with the figures published in their report, but they are sufficiently approximate to illustrate the financial bearing of the bill with respect to each municipality and to the state as a whole.

The total valuation for each county as shown on each county table and on the recapitulation table will not correspond with figures representing the same to be found in the state assessors' report from the fact that valuations were not complete in the several counties when the figures were furnished to this office, and the valuations of only such towns or townships as have roads are here shown. Likewise there will be a corresponding change in the mill tax against each county.

ANDROSCOGGIN COUNTY.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Auburn.....	\$7,282,434	†\$20,400	\$2,427	\$1,213	\$3,640	\$1,820	\$5,460	\$7,282
Durham.....	363,328	2,000	363	181	544	680	1,224	363
East Livermore....	1,315,222	4,000	1,315	657	1,972	1,479	3,451	1,315
Greene.....	306,621	2,125	306	153	459	573	1,032	306
Leeds.....	333,159	2,500	333	166	499	623	1,122	333
Lewiston.....	14,596,279	†47,643	4,865	2,432	7,297	3,648	10,945	14,596
Lisbon.....	2,312,717	6,175	1,734	867	2,601	1,950	4,551	2,312
Livermore.....	454,614	1,800	454	227	681	851	1,532	454
Mechanic Falls....	861,089	2,300	861	430	1,291	1,291	2,582	861
Minot.....	346,748	1,700	346	173	519	648	1,167	346
Poland.....	898,081	2,500	898	449	1,347	1,347	2,694	898
Turner.....	893,062	3,500	893	446	1,339	1,339	2,678	893
Wales.....	212,026	600	212	106	318	477	795	212
Webster.....	545,962	†3,975	545	272	817	817	1,634	545
	\$30,721,332	\$101,218	\$15,552	\$7,772	\$23,324	\$17,543	\$40,867	*\$30,716

\* Difference between amount of total mill tax and the thousands of total valuations in this and succeeding county tables is caused by figuring mill tax only against the thousands of valuation of each town, and disregarding the figures in the hundreds column.

† No report received for 1906. Average for the previous five years used.

## AROOSTOOK COUNTY.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-6.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Amity .....	\$121,471	*\$335	\$121	\$60	\$181	\$271	\$452	\$121
Ashland .....	477,815	2,400	477	238	715	893	1,608	477
Bancroft .....	56,347	800	56	28	84	168	252	56
Benedicta .....	66,041	500	66	33	99	198	297	66
Blaine .....	209,426	1,400	209	104	313	469	782	209
Bridgewater .....	373,552	1,200	373	186	559	698	1,257	373
Caribou .....	1,846,177	7,000	1,846	923	2,769	2,076	4,345	1,846
Castle Hill .....	109,181	*400	109	54	163	244	407	109
Crystal .....	118,971	1,000	118	59	177	265	442	118
Dyer Brook .....	101,671	650	101	50	151	226	377	101
Easton .....	406,007	2,250	406	203	609	761	1,370	406
Fort Fairfield .....	2,013,506	8,000	1,509	754	2,263	1,697	3,960	2,013
Fort Kent .....	469,131	2,500	469	234	703	878	1,581	469
Frenchville .....	127,974	220	127	63	190	285	475	127
Grand Isle .....	122,711	800	122	61	183	274	457	122
Haynesville .....	70,743	400	70	35	105	210	315	70
Hersey .....	65,258	800	65	32	97	194	291	65
Hodgdon .....	303,421	1,800	303	151	454	567	1,021	303
Houlton .....	3,064,751	9,000	1,532	766	2,298	1,149	3,447	3,064
Island Falls .....	340,524	600	340	170	510	637	1,147	340
Limestone .....	424,489	1,850	424	212	636	795	1,431	424
Linneus .....	263,551	1,500	263	131	394	492	886	263
Littleton .....	363,331	2,000	363	181	544	690	1,224	363
Ludlow .....	110,941	1,900	110	55	165	247	412	110
Madawaska .....	195,526	*1,600	195	97	292	433	730	195
Mapleton .....	270,748	1,000	270	135	405	506	911	270
Mars Hill .....	373,208	2,300	373	189	567	708	1,275	373
Masardis .....	134,009	500	134	67	201	301	502	134
Monticello .....	386,618	2,000	386	193	579	723	1,302	386
New Limerick .....	162,096	800	162	81	243	364	607	162
New Sweden .....	181,916	*1,636	181	90	271	406	677	181
Oakfield .....	104,060	800	104	52	156	234	390	104
Orient .....	71,465	600	71	35	106	212	318	71
Perham .....	158,746	1,000	158	79	237	355	592	158
Presque Isle .....	1,980,818	*4,700	1,980	990	2,970	2,227	5,197	1,980
Saint Agatha .....	117,717	1,000	117	58	175	262	437	117

\* Averaged for 5 years—1906 not returned.

AROOSTOOK COUNTY—Continued.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Sherman .....	\$230,806	\$2,500	\$230	\$115	\$345	\$517	\$862	\$230
Smyrna .....	122,850	1,000	122	61	183	274	457	122
Van Buren .....	583,842	2,500	583	291	874	874	1,748	583
Washburn .....	283,867	1,075	283	141	424	530	954	283
Westfield .....	151,511	†800	151	75	226	339	565	151
Weston .....	65,110	800	65	32	97	194	291	65
Woodland .....	237,133	1,500	237	118	355	532	887	237
Allagash Pl .....	183,913	†1,227	183	91	274	411	685	183
Cary Pl .....	36,315	800	36	18	54	108	162	36
Caswell Pl .....	54,417	635	54	27	81	162	243	54
Chapman Pl .....	75,401	500	75	37	112	224	336	75
Connor Pl .....	64,846	800	64	32	96	182	278	64
Cyr Pl .....	57,811	750	57	28	85	170	255	57
Eagle Lake Pl .....	141,931	600	141	70	211	316	527	141
Garfield Pl .....	96,948	†210	96	48	144	288	432	96
Glenwood Pl .....	55,000	†491	55	27	82	164	246	55
Hamlin Pl .....	89,173	400	89	44	133	266	399	89
Hammond Pl .....	115,710	†230	115	57	172	258	430	115
Hill Pl .....	88,320	†254	88	44	132	264	396	88
Macwaboc Pl .....	50,427	195	50	25	75	150	225	50
Merrill Pl .....	86,182	600	86	43	129	258	387	86
Moro Pl .....	55,964	500	55	27	82	164	246	55
Nashville Pl .....	99,180	†341	99	49	148	296	444	99
New Canada Pl .....	49,579	*470	49	24	73	146	219	49
Oxbow Pl .....	70,000	1303	70	35	105	210	315	70
Portage Lake Pl .....	132,706	*291	132	66	198	297	495	132
Reed Pl .....	131,555	800	131	65	196	294	490	131
St. Francis Pl .....	92,978	800	92	46	138	276	414	92
St. John Pl .....	57,220	400	57	28	85	170	255	57
Silver Ridge Pl .....	36,332	400	36	18	54	108	162	36
Stockholm Pl .....	143,234	†687	143	71	214	321	535	143
Wade Pl .....	81,133	600	81	40	121	242	363	81
Wallagrass Pl .....	66,684	800	66	33	99	198	297	66
Westmanland Pl .....	99,180	†319	99	49	148	296	444	99
E Pl .....	63,610	1168	63	31	94	188	282	63
Forkstown, No. 3, R 2	107,105	†254	107	53	160	240	400	107

† Westfield also appropriated \$2,100 for new road.

‡ Assessed and expended by county commissioners.

\* Averaged for 5 years—1906.

## AROOSTOOK COUNTY—Concluded.

Townships.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Letter A, R. 2 .....	*\$2,373 45,488 *4,250	‡\$243	\$47	\$23	\$70	\$140	\$210	\$47
No. 1, R. 4 .....	110,811 *2,500	‡363	115	57	172	258	430	115
No. 11, R. 4 .....	71,630	‡208	74	37	111	222	333	74
No. 16, R. 4 .....	*4,000 99,180 *1,875	‡204	103	51	154	231	385	130
No. 17, R. 4 .....	44,710	‡132	46	23	69	138	207	46
Molunkus, A. R. 5..	86,252	‡374	86	43	129	258	387	86
No. 1, R. 5 .....	*3,360 91,949 *3,840	‡247	95	47	142	284	426	95
No. 7, R. 5 .....	106,368 *4,000	‡222	110	55	165	247	412	110
No. 8, R. 5 .....	92,813	‡227	96	48	144	288	432	96
No. 9, R. 5 .....	*2,500 69,636 *1,500	‡158	72	36	108	216	324	72
No. 17, R. 5 .....	54,788	‡250	56	28	84	168	252	56
No. 14, R. 6 .....	*3,360 88,920 *3,500	‡264	91	45	136	272	408	91
No. 15, R. 6 .....	88,160	‡198	91	45	136	272	408	91
	\$21,014,653	\$96,501	\$18,937	\$9,446	\$28,333	\$33,931	\$62,414	\$20,973

\* Valuation of timber and grass on public lots.

‡ Assessed and expended by county commissioners.

CUMBERLAND COUNTY.

Towns.	Valuation.	Town's appropriation for highways - 1906.	Set aside under Section 4	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Baldwin .....	\$358,540	\$1,200	\$358	\$179	\$537	\$671	\$1,208	\$358
Bridgton .....	1,437,183	4,500	1,437	718	2,155	1,616	3,771	1,437
Brunswick .....	3,796,988	*9,000	1,898	949	2,847	1,423	4,270	3,796
Cape Elizabeth ....	884,892	1,500	884	442	1,326	1,326	2,652	884
Casco .....	283,115	1,500	283	141	424	530	954	283
Cumberland .....	999,043	1,500	999	499	1,498	1,498	2,996	999
Falmouth .....	1,307,950	3,800	1,307	653	1,960	1,470	3,430	1,307
Freeport .....	1,339,581	3,000	1,339	669	2,008	1,506	3,514	1,339
Gorham .....	1,517,492	4,800	1,517	758	2,275	1,706	3,981	1,517
Gray .....	554,340	1,500	554	277	831	831	1,662	554
Harpwell .....	825,191	2,000	825	412	1,237	1,237	2,474	825
Harrison .....	437,290	1,200	437	218	655	818	1,473	437
Naples .....	274,597	1,250	274	137	411	513	924	274
New Gloucester ...	1,270,951	†2,530	1,270	635	1,905	1,428	3,333	1,270
North Yarmouth ..	327,489	800	327	163	490	612	1,102	327
Otisfield .....	245,417	†1,850	245	122	367	550	917	245
Portland .....	54,798,286	190,586	13,699	6,849	20,548	10,274	30,822	54,798
Pownal .....	264,674	850	264	132	396	495	891	264
Raymond .....	246,783	1,000	246	123	369	553	922	246
Scarborough .....	1,130,243	3,000	1,130	565	1,695	1,271	2,966	1,130
Sebago .....	173,599	1,000	173	86	259	388	647	173
South Portland ....	3,051,249	†6,399	1,525	762	2,287	1,143	3,430	3,051
Standish .....	739,922	1,650	739	369	1,108	1,108	2,216	739
Westbrook .....	4,550,649	†8,700	2,275	1,137	3,412	1,706	5,118	4,550
Windham .....	1,098,155	2,000	1,098	549	1,647	1,235	2,882	1,098
Yarmouth .....	1,486,238	1,500	1,486	743	2,229	1,671	3,900	1,486
	\$83,399,837	\$258,314	\$36,589	\$18,287	\$54,876	\$37,579	\$92,455	\$83,387

\* Brunswick made special appropriations amounting to \$6,000.

† No report received for 1906. Average for the previous five years used.



## FRANKLIN COUNTY.

Towns.	Valuation.	Town's appropriation for highways—1900.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-6.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Avon .....	\$166,646	\$1,200	\$166	\$83	\$249	\$373	\$622	\$166
Carthage .....	156,794	2,250	156	78	234	351	585	156
Chesterville .....	253,736	1,900	253	126	379	473	852	253
Eustis .....	207,271	400	207	103	310	465	775	207
Farmington .....	1,893,617	4,500	1,893	946	2,839	2,129	4,968	1,893
Freeman .....	101,161	1,000	101	50	151	226	377	101
Industry .....	110,090	1,200	110	55	165	247	412	110
Jay .....	1,738,942	5,350	1,738	869	2,607	1,955	4,562	1,738
Kingfield .....	372,599	950	372	186	558	697	1,255	372
Madrid .....	88,859	700	88	44	132	264	396	88
New Sharon .....	391,540	3,000	391	195	586	732	1,318	391
New Vineyard .....	181,232	1,600	181	90	271	406	677	181
Phillips .....	609,365	2,750	609	304	913	913	1,826	609
Rangeley .....	665,660	1,450	665	332	997	997	1,994	665
Salem .....	62,779	300	62	31	93	186	279	62
Strong .....	282,225	1,450	282	141	423	528	951	282
Temple .....	138,010	800	138	69	207	310	517	138
Weld .....	244,098	1,100	244	122	366	549	915	244
Wilton .....	950,212	4,000	950	475	1,425	1,425	2,850	950
Coplin Pl. ....	132,240	†434	132	66	198	297	495	132
Dallas Pl. ....	121,220	†779	121	60	181	271	452	121
Lang Pl. ....	88,160	†256	88	44	132	264	396	88
Perkins Pl. ....	24,027	†346	24	12	36	72	108	24
Rangeley Pl. ....	306,600	†368	306	153	459	573	1,032	306
Sandy River Pl. ....	92,160	†652	92	46	138	276	414	92
Wyman .....	*2,400	†255	59	29	88	176	264	59
Crocker Town .....	56,980	†255	59	29	88	176	264	59
	*3,840							
	90,180	†412	94	47	141	282	423	94
Jerusalem .....	*2,880							
Washington .....	99,810	†915	102	51	153	229	382	102
	5,292	†130	5	2	7	14	21	5
	*1,440							
No. 6 No. of Weld ..	91,765	†500	93	46	139	278	417	93
	\$9,733,830	\$40,947	\$9,722	\$4,855	\$14,577	\$15,958	\$30,841	\$9,722

\* Valuation of timber and grass on public lots.

† Assessed and expended by the County Commissioners.

HANCOCK COUNTY.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Amherst .....	\$80,828	\$300	\$80	\$40	\$120	\$240	\$360	\$80
Aurora .....	46,193	250	46	23	69	138	207	46
Bluehill .....	595,714	2,300	595	297	892	892	1,784	595
Brooklin .....	202,207	900	202	101	303	454	757	202
Brooksville .....	277,698	1,000	277	138	415	518	833	277
Bucksport .....	946,155	2,500	946	473	1,419	1,419	2,838	946
Castine .....	551,721	1,400	551	275	826	826	1,652	551
Cranberry Isles.....	206,754	†286	206	103	309	463	772	206
Deer Isle .....	402,986	1,200	402	201	603	753	1,356	402
Dedham .....	101,289	700	101	50	151	221	372	101
Eastbrook .....	52,290	450	52	26	78	156	234	52
Eden.....	6,381,675	*23,200	2,127	1,063	3,190	1,595	4,785	6,381
Ellsworth .....	2,015,498	7,100	1,511	755	2,266	1,699	3,965	2,015
Franklin .....	345,982	†1,337	345	172	517	646	1,163	345
Gouldsboro .....	332,871	2,500	332	166	498	622	1,120	332
Hancock .....	310,299	1,325	310	155	465	581	1,046	310
Isle au Haut.....	79,841	500	79	39	118	236	354	79
Lamoine .....	185,927	600	185	92	277	415	692	185
Mariaville.....	51,202	400	51	25	76	152	228	51
Mount Desert .....	1,875,243	6,450	1,875	937	2,812	2,109	4,921	1,875
Oriand .....	274,465	1,100	274	137	411	513	924	274
Otis.....	36,812	†200	36	18	54	108	162	36
Penobscot.....	266,907	1,050	266	133	399	498	897	266
Sedgwick .....	219,456	1,000	219	109	328	492	820	219
Sorrento.....	273,941	1,100	273	136	409	511	920	273
Southwest Harbor.	406,306	1,300	406	203	609	761	1,370	406
Stonington .....	389,937	2,500	389	194	583	728	1,311	389
Sullivan .....	337,867	1,150	337	168	505	631	1,136	337
Surry .....	191,351	1,000	191	95	286	429	715	191
Swan's Island.....	132,570	580	132	66	198	297	495	132
Tremont .....	253,666	1,450	253	126	379	473	852	253
Trenton .....	134,745	500	134	67	201	301	502	134
Verona .....	68,167	375	68	34	102	204	306	68

\* Eden special appropriation, \$2,000.

† No report received for 1906. Average for the previous five years used.

## HANCOCK COUNTY—Concluded.

Towns.	Valuation.	Town's appropriation for highways - 1905.	Set aside under Section 4.	Appropriated under section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Waltham .....	\$78,250	\$600	\$78	\$39	\$117	\$234	\$351	\$78
Winter Harbor .....	499,238	2,500	499	249	748	935	1,683	499
Long Island Pl .....	26,270	50	26	13	39	78	1,117	26
No. 8 Pl .....	24,000	178	24	12	36	72	108	24
No. 21 Pl .....	38,570	†134	38	19	57	114	171	38
No. 33 Pl .....	55,160	†89	55	27	82	164	246	55
No. 7 Mid Div .....	*261							
No. 9 Mid Div .....	51,285	†50	51	25	76	152	228	51
No. 10 Mid Div .....	11,520	†57	11	5	16	32	48	11
No. 10 Mid Div .....	*645							
No. 10 Mid Div .....	58,255	†171	58	29	87	174	261	58
No. 22 North Div ...	*1,445							
No. 22 North Div ...	44,080	†178	45	22	67	134	201	45
No. 23 North Div ...	*2,880							
No. 23 North Div ...	77,696	†66	80	40	120	240	360	80
	\$18,998,058	\$71,977	\$14,216	\$7,097	\$21,313	\$22,410	\$43,723	\$18,974

\* Valuation of timber and grass on public lots.

† Assessed and expended by county commissioners.

KENNEBEC COUNTY.

Towns.	Valuation.	Town's appropriation for highways - 1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Albion .....	\$378,909	\$1,000	\$378	\$189	\$567	\$708	\$1,275	\$378
Augusta .....	7,518,992	†*27,779	2,506	1,253	3,759	1,879	5,638	7,518
Belgrade .....	466,158	1,400	466	233	699	873	1,572	466
Benton .....	499,549	1,500	499	249	748	935	1,683	499
Cbelsea .....	231,868	1,300	231	115	346	519	865	231
China .....	541,611	2,500	541	270	811	811	1,622	541
Clinton .....	533,172	2,300	533	291	874	874	1,748	533
Farmingdale .....	546,049	1,300	546	273	819	819	1,638	546
Fayette .....	225,320	1,000	225	112	337	505	842	225
Gardiner .....	3,665,913	10,462	1,832	916	2,748	1,374	4,122	3,655
Hallowell .....	1,490,298	†4,295	1,490	745	2,235	1,676	3,911	1,490
Litchfield .....	358,630	1,000	358	179	537	671	1,208	358
Manchester .....	290,683	800	290	145	435	543	978	290
Monmouth .....	652,170	†2,866	652	326	978	978	1,956	652
Mount Vernon .....	335,079	1,200	335	167	502	627	1,129	335
Oakland .....	992,858	3,500	992	496	1,488	1,488	2,976	992
Pittston .....	467,750	2,000	467	233	700	875	1,575	467
Randolph .....	299,755	900	299	149	448	560	1,008	299
Readfield .....	499,290	2,000	499	249	748	935	1,683	499
Rome .....	104,510	700	104	52	156	234	390	104
Sidney .....	416,906	1,000	416	208	624	780	1,404	416
Vassalboro .....	1,042,198	3,200	1,042	521	1,563	1,172	2,735	1,042
Vienna .....	127,562	500	127	63	190	285	475	127
Waterville .....	6,278,494	†15,150	2,092	1,046	3,138	1,569	4,707	6,278
Wayne .....	234,111	1,500	234	117	351	526	877	234
West Gardiner .....	307,723	800	307	153	460	578	1,036	307
Windsor .....	251,441	800	251	125	376	470	846	251
Winslow .....	2,304,504	4,900	1,728	864	2,592	1,944	4,556	2,304
Wintrop .....	1,293,511	4,650	1,293	646	1,939	1,454	3,393	1,293
Unity Pl. ....	15,767	125	15	7	22	44	66	15
	\$32,420,561	\$162,430	\$20,798	\$10,392	\$31,190	\$26,704	\$57,894	\$32,395

\* Augusta raised by bond issue \$40,000 for improvement of country roads.

† No report received for 1906. Average for the previous five years used.

## KNOX COUNTY.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Appleton .....	\$249,731	\$1,500	\$249	\$124	\$373	\$559	\$932	\$249
Camden .....	2,390,706	5,000	1,792	896	2,688	2,016	4,704	2,390
Cushing .....	128,548	650	128	64	192	288	480	128
Friendship .....	231,293	875	231	115	346	519	865	231
Hope .....	203,350	1,000	203	101	304	456	760	203
Hurricane Isle.....	58,135	75	58	29	87	174	261	58
North Haven .....	260,468	500	260	130	390	487	877	260
Rockland .....	5,679,038	*10,400	1,893	946	2,839	1,419	4,258	5,679
Rockport .....	1,383,069	3,500	1,383	691	2,074	1,555	3,629	1,383
So. Thomaston .....	376,931	2,000	376	188	564	705	1,269	376
St. George .....	400,713	1,675	400	200	600	750	1,350	400
Thomaston .....	1,265,441	4,700	1,265	632	1,897	1,422	3,319	1,265
Union .....	509,581	2,500	509	254	763	763	1,526	509
Vinalhaven .....	701,318	2,000	701	350	1,051	1,051	2,102	701
Warren .....	839,256	3,300	839	419	1,258	1,258	2,516	839
Washington .....	271,606	1,000	271	135	406	507	913	271
Criehaven Pl.....	20,255	†	20	10	30	60	90	20
Matinecus Isle Pl..	38,712	†	38	19	57	114	171	38
	\$15,008,091	\$40,675	\$10,616	\$5,303	\$15,919	\$14,103	\$30,022	\$15,000

\* Averaged for 5 years.

† No appropriation.

Note. Muscle Ridge Plantation assessed for first time, valuation, \$35,000.

LINCOLN COUNTY.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Alna .....	\$165,917	\$1,000	\$165	\$82	\$247	\$370	\$617	\$165
Boothbay .....	602,683	2,800	602	301	903	903	1,806	602
Boothbay Harbor..	933,955	1,800	933	466	1,399	1,399	2,798	933
Bremen .....	137,598	800	137	68	205	307	512	137
Bristol .....	876,925	*3,400	876	438	1,314	1,314	2,628	876
Damariscotta .....	482,942	1,200	482	241	723	903	1,626	482
Dresden .....	347,901	1,500	347	173	520	650	1,170	347
Edgecomb .....	186,362	950	186	93	279	418	697	186
Jefferson .....	427,960	1,550	427	213	640	800	1,440	427
Newcastle .....	681,740	2,800	681	340	1,021	1,021	2,042	681
Nobleboro .....	241,786	1,200	241	120	361	541	902	241
Somerville .....	59,460	*812	59	29	88	176	264	59
Southport .....	382,350	720	382	191	573	716	1,289	382
Waldoboro .....	1,096,992	†4,250	1,096	548	1,644	1,233	2,877	1,096
Westport .....	91,159	350	91	45	136	272	408	91
Whitefield .....	415,983	2,000	415	207	622	777	1,399	415
Wiscasset .....	480,972	2,500	480	240	720	900	1,620	480
Monhegan Pl.....	38,475	100	38	19	57	114	171	38
	\$7,651,160	\$29,732	\$7,638	\$3,814	\$11,452	\$12,814	\$24,266	\$7,638

\* Averaged for 5 years.

† Waldoboro special appropriation for bridges, \$800.

## OXFORD COUNTY.

Towns.	Valuation.	Town's ap propriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-b.	State aid under Section 6.	Joint fund, Sections 4-b-6.	1 Mill tax.
Albany .....	\$156,573	\$1,500	\$156	\$78	\$234	\$351	\$585	\$156
Andover.....	263,233	1,000	263	131	394	591	985	263
Bethel.....	949,408	4,650	949	474	1,423	1,423	2,846	949
Brownfield .....	313,715	700	313	156	469	586	1,055	313
Buckfield .....	421,624	1,300	421	210	631	788	1,419	421
Byron.....	96,562	1,000	96	48	144	288	482	96
Canton.....	327,610	1,200	327	163	490	612	1,102	327
Denmark .....	333,442	1,500	333	166	499	623	1,122	333
Dixfield .....	393,312	2,500	393	196	589	736	1,325	393
Fryeburg .....	797,726	2,000	797	398	1,195	1,195	2,390	797
Gilead .....	127,743	400	127	63	190	285	475	127
Grafton .....	98,217	200	98	49	147	294	441	98
Greenwood .....	183,030	1,350	183	91	274	411	685	183
Hanover .....	81,007	200	81	40	121	242	363	81
Hartford .....	290,297	1,500	290	145	435	543	978	290
Hebron .....	225,434	1,500	225	112	337	505	842	225
Hiram .....	375,558	1,600	375	187	562	702	1,264	375
Lovell .....	393,530	1,500	393	196	589	736	1,325	393
Mason .....	52,792	250	52	26	78	156	234	52
Mexico .....	592,373	2,000	592	296	888	888	1,776	592
Newry .....	133,621	700	133	66	199	298	497	133
Norway .....	1,313,026	3,000	1,313	656	1,969	1,475	3,444	1,313
Oxford.....	480,546	1,800	480	240	720	900	1,620	480
Paris.....	1,421,674	3,000	1,421	710	2,131	1,598	3,729	1,421
Peru .....	253,641	*2,000	253	126	379	473	852	253
Porter .....	236,787	800	236	118	354	531	885	236
Roxbury.....	111,143	1,200	111	55	166	249	415	111
Rumford .....	3,240,149	†8,000	1,620	810	2,430	1,215	3,645	3,240
Stoneham .....	109,904	500	109	54	163	244	407	109
Stow .....	137,826	400	137	68	205	307	512	137
Sumner .....	279,644	1,800	279	139	418	522	940	279
Sweden .....	167,742	400	167	83	250	375	625	167
Upton.....	119,922	750	119	59	178	267	445	119
Waterford .....	307,012	1,500	307	153	460	575	1,035	307
Woodstock .....	271,014	2,100	271	135	406	507	913	271
Lincoln Pl.....	140,171	300	140	70	210	315	525	140

\* Peru special appropriation of \$650 for steel bridge.

† Rumford special appropriation of \$800 for building one street.

OXFORD COUNTY—Concluded.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Magalloway Pl. . . . .	\$199,745	\$75	\$199	\$99	\$298	\$447	\$745	\$199
Milton Pl. . . . .	65,713	500	65	32	97	194	291	65
Andover W. Surplus . . . . .	28,782	†77	28	14	42	84	126	28
Andover N. Surplus	*1,926	†411	71	35	106	212	318	71
Letter C . . . . .	69,943							
	168,592	†410	168	84	252	378	630	68
Fryeburg Academy Grant . . . . .	22,440	†77	22	11	33	66	99	22
	*3,840							
Riley . . . . .	142,016	†104	145	72	217	325	542	145
	\$15,900,029	\$57,754	\$14,258	\$7,114	\$21,372	\$23,512	\$44,884	\$15,778

PENOBSCOT COUNTY.

Alton . . . . .	\$76,206	\$300	\$76	\$38	\$114	\$228	\$342	\$76
Argyle . . . . .	58,698	250	58	29	87	174	261	58
Bangor . . . . .	19,061,521	60,000	4,765	2,382	7,147	3,573	10,720	19,061
Bradford . . . . .	262,489	1,600	262	131	393	491	884	262
Bradley . . . . .	182,722	375	182	91	273	409	682	182
Brewer . . . . .	1,996,033	†4,500	1,996	998	2,994	2,245	5,239	1,996
Burlington . . . . .	148,581	600	148	74	222	333	555	148
Carmel . . . . .	296,713	900	296	148	444	565	999	296
Carroll . . . . .	119,997	†600	119	59	178	267	445	119
Charleston . . . . .	308,720	1,700	303	151	454	567	1,021	303
Chester . . . . .	72,798	500	72	36	108	216	324	72
Clifton . . . . .	61,405	500	61	30	91	182	273	61
Corinna . . . . .	451,088	1,700	451	225	676	845	1,521	451
Corinth . . . . .	438,939	1,500	438	219	657	821	1,478	438
Dexter . . . . .	1,284,222	6,500	1,284	642	1,926	1,444	3,370	1,284
Dixmont . . . . .	247,565	1,200	247	123	370	555	925	247
Edlington . . . . .	168,434	800	168	84	252	378	630	168
Edinburg . . . . .	22,103	†160	22	11	33	66	99	22
Enfield . . . . .	244,648	1,300	244	122	366	488	854	244
Etna . . . . .	131,373	1,000	131	65	196	294	490	131
Exeter . . . . .	304,420	1,200	304	152	456	570	1,026	304

\* Valuation of timber and grass on public lots.

† Assessed and expended by county commissioners.

‡ No report received for 1906. Average for the previous five years used.



## PENOBSCOT COUNTY—Continued.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Garland .....	\$298,656	\$1,500	\$298	\$149	\$447	558	\$1,005	\$298
Glenburn .....	129,908	400	129	64	193	289	482	129
Greenbush .....	83,251	600	83	41	124	248	372	83
Greenfield .....	43,803	430	43	21	64	128	192	43
Hampden .....	764,828	2,500	764	382	1,146	1,146	2,292	764
Hermon .....	381,407	2,000	381	190	571	713	1,284	381
Holden .....	157,384	800	157	78	235	352	557	157
Howland .....	275,812	1,450	275	137	412	515	927	275
Hudson .....	110,339	1,200	110	55	165	247	412	110
Kenduskeag .....	174,461	550	174	87	261	391	652	174
Kingman .....	158,861	300	158	79	237	355	592	158
Lagrange .....	223,355	1,100	223	111	334	501	835	223
Lee .....	128,385	515	128	64	192	288	480	128
Levant .....	243,634	1,500	243	121	364	546	910	243
Lincoln .....	594,125	1,500	594	297	891	891	1,782	594
Lowell .....	72,614	200	72	36	108	216	324	72
Mattamiscontis .....	18,250	§	18	9	27	54	81	18
Mattawamkeag .....	140,352	550	140	70	210	315	525	140
Maxfield .....	31,730	200	31	15	46	92	138	31
Medway .....	60,407	300	60	30	90	180	270	60
Milford .....	464,095	2,000	464	232	696	870	1,566	464
Millinocket .....	864,643	\$2,000	864	432	1,296	1,296	2,592	864
Mount Chase .....	68,156	600	68	34	102	204	306	68
Newburg .....	266,817	1,000	266	133	399	498	897	266
Newport .....	709,638	1,800	709	354	1,063	1,063	2,126	709
Old Town .....	2,061,885	†7,120	1,545	772	2,317	1,737	4,054	2,061
Orono .....	1,087,804	2,000	1,087	543	1,630	1,222	2,852	1,087
Orrington .....	416,305	1,300	416	208	624	780	1,404	416
Passadumkeag .....	95,531	1575	95	47	142	284	426	95
Patten .....	598,215	1,400	598	299	897	897	1,794	598
Plymouth .....	178,672	1,200	178	89	267	400	667	178
Prentiss .....	98,061	800	98	49	147	294	441	98
Springfield .....	117,358	500	117	58	175	262	437	117
Stetson .....	214,894	800	214	107	321	481	802	214
Veazie .....	284,054	300	284	142	426	532	958	284
Winn .....	164,102	500	164	82	246	369	615	164

† No report received for 1906. Average for the previous five years used.

§ Millinocket special appropriation \$500 new road.

|| Mattamiscontis lost its organization in 1905, no returns.

PENOBSCOT COUNTY—Concluded.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Woodville .....	\$58,211	\$400	\$58	\$29	\$87	\$174	\$261	\$58
Drew Pl .....	120,235	400	120	60	180	270	450	120
Lakeville Pl.....	132,750	†240	138	69	207	310	517	138
Grand Falls Pl.....	66,120	†239	66	33	99	198	297	66
Seboeis Pl .....	82,650	†103	82	41	123	246	369	82
Stacyville Pl .....	105,000	1,300	105	52	157	235	392	105
Webster Pl .....	52,500	†148	52	26	78	156	234	52
No. 2, R. 6 W. E. L. S.	*5,500							
	154,524	†92	160	80	240	360	600	160
A, R. 7 W. E. L. S.....	*4,855							
No. 1, R. 7 W. E. L. S.	56,159	†176	61	30	91	182	273	61
Grindstone .....	*4,500							
	107,780	†94	112	56	168	252	420	112
No. 2, R. 7 W. E. L. S.	*4,320							
Soldiertown.....	116,110	†88	120	60	180	270	450	120
No. 1, N. D. B. P. P.								
Summit.....	60,610	†176	60	30	90	180	270	60
	\$38,853,291	\$132,131	\$24,009	\$11,993	\$36,002	\$36,748	\$72,750	\$38,821

\* Valuation of timber and grass on public lots.

† No report received for 1906. Average for the previous five years used.

‡ Assessed and expended by county commissioners.

## PISCATAQUIS COUNTY.

Townships.	Valuation.	Town's appropriation for highways—1966.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Abbot .....	\$172,648	\$1,200	\$172	\$86	\$258	\$387	\$945	\$172
Atkinson .....	154,673	900	154	77	231	346	577	154
Blanchard .....	80,231	500	80	40	120	240	360	80
Brownville .....	530,844	1,500	530	265	795	795	1,590	530
Dover .....	1,002,574	3,750	1,002	501	1,503	1,127	2,630	1,002
Foxcroft .....	810,706	3,000	810	405	1,215	1,215	2,430	810
Greenville .....	488,966	1,200	488	244	732	915	1,647	488
Guilford .....	679,208	2,200	679	339	1,018	1,018	2,036	679
Medford .....	92,459	400	92	46	138	276	414	92
Milo .....	990,639	3,700	990	495	1,485	1,485	2,970	990
Monson .....	256,748	2,400	256	128	384	480	864	256
Orneville .....	108,365	300	108	54	162	243	405	108
Parkman .....	232,882	1,600	232	116	348	522	870	232
Sangerville .....	539,083	3,000	539	269	808	808	1,616	539
Sebec .....	174,903	1,200	174	87	261	391	652	174
Shirley .....	87,148	600	87	43	130	260	390	87
Wellington .....	125,358	1,200	125	62	187	280	467	125
Williamsburg .....	51,655	250	51	25	76	152	228	51
Willimantic .....	81,833	400	81	40	121	242	363	81
Bowerbank Pl .....	145,260	1175	143	71	214	321	535	143
Elliotsville Pl .....	118,687	1280	118	59	177	265	442	118
Kingsbury Pl .....	96,000	1360	96	48	144	288	432	96
Lake View Pl .....	157,620	140	157	78	235	352	587	157
Barnard Pl .....	43,752	1175	43	21	64	128	192	43
Lily Bay .....	*7,500							
	145,312	1250	152	76	228	342	570	152
	\$7,373,054	\$30,580	\$7,359	\$3,675	\$11,034	\$12,878	\$23,912	\$7,359

\* Valuation of timber and grass on public lots.

† Assessed and expended by county commissioners.

SAGADAHOC COUNTY.

Towns.	Valuation.	Town's appropriation for highways -1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Arrowsic .....	\$64,673	\$225	\$64	\$32	\$96	\$192	\$288	\$64
Bath .....	7,341,468	*18,000	2,447	1,223	3,670	1,835	5,505	7,341
Bowdoin .....	306,742	1,200	306	153	459	573	1,032	306
Bowdoinham .....	548,334	1,600	548	274	822	822	1,644	548
Georgetown .....	266,532	1,000	266	133	399	498	897	266
Perkins .....	41,427	75	41	20	61	122	183	41
Phippsburg .....	419,203	1,800	419	209	628	785	1,413	419
Richmond .....	996,938	3,300	996	498	1,494	1,494	2,988	996
Topsham .....	1,198,347	3,900	1,198	599	1,797	1,347	3,141	1,198
West Bath .....	163,571	600	163	81	244	366	610	163
Woolwich .....	341,994	1,200	341	170	511	638	1,149	341
	\$11,689,229	\$32,900	\$6,789	\$3,392	\$10,181	\$8,672	\$18,853	\$11,688

\* No report received for 1906. Average for the previous five years used.

## SOMERSET COUNTY.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4,5.	State aid under Section 6.	Joint fund, Sections 4,5-6.	1 Mill tax.
Anson .....	\$745,907	\$4,500	\$745	\$372	\$1,117	\$1,117	\$2,234	\$745
Athens .....	308,265	1,800	308	154	462	577	1,039	308
Bingham .....	285,875	1,900	285	142	427	533	960	285
Cambridge .....	128,619	800	128	64	192	288	480	128
Canaan .....	300,697	1,300	300	150	450	562	1,012	300
Concord .....	82,301	875	82	41	123	246	369	82
Cornville .....	319,637	2,000	319	159	478	597	1,075	319
Detroit .....	157,074	875	157	78	235	352	587	157
Embden .....	265,403	2,500	265	132	397	496	893	265
Fairfield .....	1,659,533	4,500	1,659	829	2,488	1,866	4,354	1,659
Harmony .....	232,693	1,500	232	116	348	522	870	232
Hartland .....	481,155	1,750	481	240	721	901	1,622	481
Madison .....	1,828,593	4,500	1,828	914	2,742	2,056	4,798	1,828
Mercer .....	169,496	1,498	169	84	253	379	632	169
Moscow .....	126,839	800	126	63	189	283	472	126
New Portland .....	271,662	1,800	271	135	406	507	913	271
Norridgewock .....	583,954	2,300	583	291	874	874	1,748	583
Palmyra .....	346,528	2,000	346	173	519	648	1,167	346
Pittsfield .....	1,513,488	\$4,568	1,513	756	2,269	1,701	3,970	1,513
Ripley .....	142,816	1,200	142	71	213	319	532	142
St. Albans .....	406,703	1,700	406	203	609	761	1,370	406
Skowhegan .....	3,727,369	10,000	1,863	931	2,794	1,397	4,191	3,727
Smithfield .....	153,172	1,150	153	76	229	343	572	153
Solon .....	381,007	1,500	381	190	571	713	1,284	381
Starks .....	233,395	1,500	233	116	349	523	872	233
Bigelow Pl .....	72,436	†585	72	36	108	216	324	72
Brighton Pl .....	71,643	\$2,500	71	35	106	212	318	71
Caratunk Pl .....	97,291	†797	97	48	145	290	435	97
Carrying Place Pl..	35,532	†162	35	17	52	104	156	35
Dead River Pl .....	82,650	†436	82	41	123	146	269	82
Dennistown Pl....	110,200	†241	110	55	165	247	412	110
Flagstaff Pl .....	85,000	†236	85	42	127	254	381	85
Highland Pl .....	71,630	†338	71	35	106	212	318	71
Jackman Pl .....	154,280	†616	154	77	231	346	577	154
Lexington Pl .....	82,650	†113	82	41	123	246	369	82
Mayfield Pl .....	99,750	†589	99	49	148	296	444	99

† Assessed and expended by county commissioners.

§ Pittsfield and Brighton Plantation made no report, average for last 5 year used.

† Caratunk Plantation last year's figures used.

SOMERSET COUNTY—Concluded.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-6.	State aid under Section 6.	Joint fund, Sections 4-6-6.	1 Mill tax.
Pleasant Ridge Pl.	\$60,462	‡3386	\$60	\$30	\$90	\$180	\$270	\$60
The Forks Pl.....	88,160	‡579	88	44	132	264	396	88
West Forks Pl.....	97,337	‡735	97	48	145	290	435	97
Bald Mountain, No. 2, R. 3 B. K. P. E. K. R.	*3,366	‡75	153	76	229	343	572	153
Johnson Mt., No. 2, R. 6 B. K. P. W. K. R.	*3,840	‡402	68	34	102	204	306	68
Sandy Bay, No. 5, R. 3 N. B. K. P. ...	*4,320	‡339	89	44	133	266	399	89
Parlin Pond, No. 3, R. 7 B. K. P. W. K. R.	*4,320	‡250	99	49	148	296	444	99
	\$16,472,263	\$68,896	\$14,587	\$7,281	\$21,868	\$22,973	\$44,841	\$16,451

\* Valuation of timber and grass on public lots.

‡ Assessed and expended by county commissioners.

## WALDO COUNTY.

Towns.	Valuation.	Town's appropriation for highways—1866.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Belfast .....	\$2,787,233	\$12,000	\$2,090	\$1,045	\$3,135	\$2,351	\$5,486	\$2,787
Belmont .....	102,338	1,000	102	51	153	229	382	102
Brooks .....	270,919	1,100	270	135	405	506	911	270
Burnham .....	231,514	1,500	231	115	346	519	865	231
Frankfort .....	297,194	2,000	297	148	445	556	1,001	297
Freedom .....	165,352	800	165	82	247	370	617	165
Isleboro .....	913,079	*2,570	913	456	1,369	1,369	2,738	913
Jackson .....	143,367	1,000	143	71	214	321	535	143
Knox .....	190,570	1,100	190	95	285	427	712	190
Liberty .....	204,730	1,440	204	102	306	459	765	204
Lincolnville .....	308,007	1,800	308	154	462	577	1,039	308
Monroe .....	285,163	2,500	285	142	427	533	960	285
Montville .....	305,865	1,500	305	152	457	571	1,028	305
Morrill .....	123,006	800	123	61	184	276	460	123
Northport .....	331,501	1,500	331	115	446	557	1,003	331
Palermo .....	210,375	1,500	210	105	315	472	787	210
Prospect .....	172,937	1,200	172	86	258	387	645	172
Searsport .....	696,578	2,900	696	348	1,044	1,044	2,088	696
Searsmont .....	329,434	2,200	329	164	493	616	1,109	329
Stockton Springs ..	477,396	2,250	477	238	715	894	1,609	477
Swanville .....	151,878	1,000	151	75	226	339	565	151
Thorndike .....	214,038	1,000	214	107	321	481	802	214
Troy .....	271,164	1,500	271	135	406	507	913	271
Unity .....	335,804	2,000	335	167	502	627	1,129	335
Waldo .....	144,506	800	144	72	216	324	540	144
Winterport .....	564,219	3,000	564	282	846	846	1,692	564
	\$10,228,165	\$51,960	\$9,520	\$4,703	\$14,223	\$16,158	\$30,381	\$10,217

\* No report received. Average appropriation for last five years used.

WASHINGTON COUNTY.

Towns.	Valuation.	Town's appropriation for highways - 1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-6.	State aid under Section 6.	Joint fund, Sections 4-6-6.	1 Mill tax.
Addison .....	\$192,862	\$1,270	\$192	\$96	\$285	\$432	\$720	\$192
Alexander .....	58,898	800	58	29	87	174	261	58
Baileyville .....	233,051	2,000	233	116	349	523	872	233
Baring .....	104,932	400	104	52	156	234	390	104
Beddington .....	30,995	335	30	15	45	90	135	30
Brookton .....	63,919	250	63	31	94	188	282	63
Calais .....	2,631,039	18,563	1,973	986	2,959	2,219	5,178	2,631
Centerville, .....	53,531	*207	53	26	79	158	237	53
Charlotte .....	80,733	300	80	40	120	240	360	80
Cherryfield .....	460,824	2,000	460	230	690	862	1,552	460
Columbia .....	105,930	650	105	52	157	235	392	105
Columbia Falls .....	137,725	700	137	68	205	307	512	137
Cooper .....	53,862	400	53	26	79	158	237	53
Crawford .....	37,286	300	37	18	55	110	165	37
Cutler .....	88,161	500	88	44	132	264	396	88
Danforth .....	240,938	1,000	240	120	360	540	900	240
Deblois .....	21,718	150	21	10	31	62	93	21
Dennysville .....	145,442	400	149	74	223	334	557	149
East Machias .....	415,050	1,400	415	207	622	933	1,555	415
Eastport .....	1,658,238	14,630	1,658	829	2,487	1,865	4,352	1,658
Edmunds .....	93,017	500	93	46	139	278	417	93
Forest City .....	12,319	175	12	6	18	36	54	12
Harrington .....	234,183	1,000	234	117	351	526	877	234
Jonesboro .....	107,314	800	107	53	160	240	400	107
Jonesport .....	488,429	1,700	488	244	732	915	1,647	488
Lubec .....	886,559	12,905	886	443	1,329	1,329	2,658	886
Machias .....	847,833	2,500	847	423	1,270	1,270	2,540	847
Machiasport .....	182,629	1,000	182	91	273	409	682	182
Marion .....	36,918	300	36	18	54	108	162	36
Marshfield .....	61,308	500	61	30	91	182	273	61
Meddybemps .....	29,773	100	29	14	43	86	129	29
Milbridge .....	441,145	2,525	441	220	661	826	1,487	441
Northfield .....	43,985	200	43	21	64	128	192	43
Pembroke .....	340,674	800	340	170	510	687	1,147	340
Perry .....	182,518	1,000	182	91	273	409	682	182
Princeton .....	258,235	800	258	129	387	484	871	258

† No report received. Average appropriation for last five years used.



## WASHINGTON COUNTY—Concluded.

Towns.	Valuation.	Town's appropriation for highways - 1905.	Set aside under Section 4.	Appropriated under section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Robbinston .....	\$148,697	\$700	\$148	\$74	\$222	\$333	\$555	\$148
Roque Bluffs .....	30,939	250	30	15	45	90	135	30
Steuben .....	179,995	1,075	179	89	268	402	670	179
Talmage .....	59,072	200	59	29	88	176	264	59
Topsfield .....	95,849	600	95	47	142	284	426	95
TreScott .....	59,360	600	59	28	88	176	264	59
Vanceboro .....	161,087	100	161	80	241	361	602	161
Waite .....	24,773	300	24	12	36	72	108	24
Wesley .....	46,309	350	46	23	69	138	207	46
Whiting .....	100,847	600	100	50	150	225	375	100
Whitneyville.....	55,093	525	55	27	82	164	246	55
Codyville Planta- tion, No. 9, R. 2...	60,550	†210	60	30	90	180	270	60
Grand Lake Stream Pl. No. 3, R. 1 .....	104,195	†302	104	52	156	234	390	104
No. 7, R. 2, Kossuth	86,280	†216	86	43	129	258	387	86
No. 1, R. 3, Lambert Lake.....	81,277	†200	81	40	121	242	363	81
No. 14 Pl .....	55,200	†269	55	27	82	164	246	55
No. 21, Pl .....	55,200	150	55	27	82	164	246	55
	*850							
No. 18 East Div .....	38,570	†220	39	19	58	116	174	39
No. 19 East Div.....	*1,680 49,590	†220	51	25	76	152	228	51
	*2,400							
No. 26 East Div .....	65,280	†45	67	33	100	200	300	67
	*1,440							
No. 24 Mid. Div .....	44,080	†165	45	22	67	134	201	45
No. 29 Mid. Div .....	*2,160 60,610	†220	62	31	93	186	279	62
	*2,160							
No. 30 Mid. Div .....	60,610	†55	62	31	93	186	279	62
	*2,640							
No. 31 Mid. Div .....	72,972	†220	75	37	112	224	336	75
No. 10, R. 3 N. B. P. P. Forest .....	*1,680 56,108	†220	57	28	85	170	255	57
	*3,120							
No. 8, R. 3 N. B. P. P.	80,265	†220	83	41	124	248	372	83
	*1,920							
No. 8, R. 4 N. B. P. P.	36,667	†246	38	19	57	114	171	38
	\$13,054,656	\$51,578	\$12,364	\$6,165	\$18,529	\$23,184	\$41,713	\$13,022

\* Valuation of timber and grass on public lots.

† Assessed and expended by county commissioners.

YORK COUNTY.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Acton .....	\$268,814	\$800	\$268	\$134	\$402	\$502	\$904	\$268
Alfred .....	332,583	1,000	332	166	498	622	1,120	332
Berwick .....	990,031	2,500	990	495	1,485	1,485	2,970	990
Biddeford .....	8,036,572	†22,937	2,679	1,339	4,018	2,009	6,027	8,036
Buxton .....	774,752	2,700	774	387	1,161	1,161	2,322	774
Cornish .....	368,085	†1,455	368	184	552	690	1,242	368
Dayton .....	217,842	1,000	217	108	325	487	812	217
Eliot .....	554,460	1,000	554	277	831	831	1,662	554
Hollis .....	427,798	1,700	427	213	640	800	1,440	427
Kittery .....	860,522	4,200	860	430	1,290	1,290	2,580	860
Kennebunk .....	2,273,060	7,000	1,704	852	2,556	1,917	4,473	2,273
Kennebunkport .....	1,493,618	3,000	1,493	746	2,239	1,679	3,918	1,493
Lebanon .....	396,224	3,000	396	198	594	742	1,336	396
Limington .....	331,075	2,000	331	165	496	620	1,116	331
Limerick .....	453,771	1,150	453	226	679	848	1,527	453
Lyman .....	349,664	1,000	349	174	523	653	1,176	349
Newfield .....	222,290	900	222	111	333	499	832	222
North Berwick .....	744,709	700	744	372	1,116	1,116	2,232	744
Old Orchard .....	1,085,105	2,800	1,085	542	1,627	1,220	2,847	1,085
Parsonsfield .....	449,706	1,500	449	224	673	841	1,514	449
Saco .....	4,033,657	†12,400	2,016	1,008	3,024	1,512	4,536	4,033
Sanford .....	3,385,234	5,400	1,697	848	2,545	1,272	3,817	3,385
Shapleigh .....	242,586	1,200	242	121	363	544	907	246
South Berwick .....	1,256,242	3,000	1,256	628	1,884	1,413	3,297	1,256
Waterboro .....	365,383	1,500	365	182	547	684	1,231	365
Wells .....	950,499	3,000	950	475	1,425	1,425	2,850	950
York .....	2,497,337	9,050	1,872	936	2,808	2,106	4,914	2,497
	\$33,362,379	\$97,292	\$23,093	\$11,541	\$34,634	\$28,968	\$63,602	\$33,349

† No report received. Average appropriation for last 5 years used.

## RECAPITULATION BY COUNTIES.

Towns.	Valuation.	Town's appropriation for highways—1906.	Set aside under Section 4.	Appropriated under Section 5.	Town's part of joint fund, Sections 4-5.	State aid under Section 6.	Joint fund, Sections 4-5-6.	1 Mill tax.
Androscoggin..	\$30,721,332	\$101,218	\$15,552	\$7,772	\$23,324	\$17,543	\$40,867	\$30,721
Aroostook.....	21,014,653	96,501	18,937	9,446	28,383	33,931	62,414	21,014
Cumberland.....	83,399,857	258,314	36,589	18,287	54,876	37,579	92,455	83,399
Franklin .....	9,733,830	40,947	9,722	4,855	14,577	15,958	30,535	9,733
Hancock.....	18,998,058	71,977	14,216	7,097	21,313	22,410	43,723	18,998
Kennebec. ....	32,420,561	102,430	20,798	10,392	31,190	26,704	57,894	32,420
Knox .....	15,008,091	40,675	10,616	5,303	15,919	14,103	30,022	15,008
Lincoln .....	7,651,160	29,732	7,638	3,814	11,452	12,814	24,266	7,651
Oxford .....	15,900,029	57,754	14,258	7,114	21,372	23,512	44,884	15,900
Penobscot .. .	38,853,201	132,131	24,009	11,993	36,002	36,748	72,750	38,853
Piscataquis ...	7,373,054	30,580	7,359	3,675	11,034	12,878	23,912	7,373
Sagadahoc .....	11,689,229	32,900	6,789	3,392	10,181	8,672	18,853	11,698
Somerset .....	16,472,263	68,895	14,587	7,281	21,868	22,973	44,841	16,472
Waldo .....	10,228,165	51,960	9,520	4,703	14,223	16,158	30,381	10,228
Washington.....	13,654,656	51,578	12,364	6,165	18,529	23,184	41,713	13,054
York .....	33,362,379	97,892	23,093	11,541	34,634	28,968	63,602	33,362
	\$365,880,608	\$1,265,481	\$246,047	\$122,830	\$368,877	\$354,135	\$723,112	\$365,880

REPORT OF STATE ROAD WORK FOR 1905.

---

The following compilation has been made from returns by the county commissioners to the governor and council supplemented by information secured by this office directly from several of the towns. The descriptions have been abbreviated in some cases but we have tried to indicate the general style of construction used in each case, except in a few instances where no description has been obtained. We believe this statement is in more convenient form for reference and comparison than that published one year ago of the work performed in 1904. During the present year we have found several commissioners who have studied the 1904 statement to learn how their work measured up with that performed in other towns at the same total cost. This was our purpose in publishing the statement and we trust the one herewith will be found more valuable than the former one.

In working out the costs per foot and per mile of road the reports of purely bridge and culvert work and their costs have been dropped out of the totals as in those cases no length of road improved has been reported.

Special attention is called to the wide range in average cost per mile of road among the different counties. This variation in cost naturally brings to mind the question: Has all work done been of a permanent and thorough type? We leave those interested to answer the question for themselves after consulting the report herewith; calling attention only to the fact that we find in one case a report of 10,560 feet of road improved, including "V" draining, culvert work, widening and surfacing at a cost of \$400; and in another case 300 feet of road widened and graveled at a cost of \$200.

## STATE ROAD WORK FOR 1905.

Compiled from County Commissioners' returns to Governor  
and Council.

## ANDROSCOGGIN COUNTY.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Durham,	840	Turnpiking; graveling.	\$209.76	\$0.25
Lewiston,	400	Stone filling, 27 inches thick; clay covering; graveling.	400.00	1.00
Lisbon,	1,171	Grading; graveling, 6 to 12 inches deep, 32 feet wide.	400.00	.34
Mechanic Falls,	528	"V" draining; turnpiking; graveling.	327.36	.62
Poland,	589	"V" draining, 12 feet wide, 2 feet deep.	200.00	.34
Wales,	809	Clearing bushes; stone center draining, with cross drains; graveling.	403.62	.50
Webster,	690	Cutting down hill; under draining; graveling, 12 inches thick.	400.00	.58
Total,	5,027 feet.	Total cost,	\$2,340.74	\$0.47
"	.95 miles.	Average cost per mile,		\$2,462.88

## AROOSTOOK COUNTY.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Ashland,	1,400	Widening; turnpiking; ditching; graveling.	\$252.87	\$0.17
Bancroft,	1,320	Filling with rock; graveling.	200.00	.15
Benedicta,	495	Filling with stone; graveling, 15 inches deep.	225.00	.46
Bridgewater,	660	Widening with rocks and gravel.	400.00	.60
Caribou,	1,320	Filling with rocks and gravel; ditching.	400.00	.31
Crystal,	1,155	Turnpiking; grading; filling.	401.00	.35
Dyer Brook,	3,500	Widening; rock filling; graveling.	200.00	.06
Easton,	690	Rock filling; graveling.	400.00	.60
Fort Fairfield,	5,280	Turnpiking; ditching; putting in iron culvert.	400.00	.07
Hamlin Pl. Bridge work		Raising approaches at both ends of bridge 2 1-2 to 3 feet; new planking; new guard rails.	209.80	

AROOSTOOK COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Haynesville,	442	Raising bridge approach above over- flow.	\$156.00	\$0.35
Hodgdon,	900	Rock filling; graveling; putting in two stone culverts.	300.00	.33
Houlton,	500	Graveling, heavy coat through swamp.	954.34	1.91
Island Falls,	660	Turnpiking; ditching; widening.	400.00	.61
Limestone,	2,640	Grading; widening; ditching; turn- piking.	200.00	.07
Linneus,	990	Rock filling; graveling.	415.00	.42
Ludlow,	1,128	Rock filling; graveling.	400.00	.35
Macwahoc Pl.,	900	Graveling.	150.00	.16
Mapleton,	462	Rock filling; graveling.	408.01	.87
Mars Hill,	1,760	Ditching; turnpiking; graveling.	440.24	.23
Masardis,	300	Widening; grading with gravel.	200.00	.66
Merrill Pl.,	2,110	Ditching; draining; turnpiking. Drain pipe used for culverts.	200.00	.09
Monticello,	2,610	Widening; ditching; turnpiking; graveling.	400.00	.15
Moro Pl.,	Bridge work	Building bridge; raising and gravel- ing approaches to same.	205.00	
New Canada Pl.,	5,082	Widening; ditching; turnpiking.	400.00	.08
New Sweden,	3,500	Rock filling; ditching; turnpiking.	237.22	.07
Oakfield,	1,200	Putting in stone culverts; widening; turnpiking; removing rocks.	475.00	.40
Orient,	224	Putting in rock foundation; gravel surfacing.	210.75	.94
Perham,	1,242	Ditching; rock filling; graveling.	396.99	.32
Presque Isle,	855	Ditching; rock filling; turnpiking; graveling.	418.86	.48
St. Francis Pl.,	2,195	Graveling.	300.00	.14
Sherman,	1,631	Rock filling; widening; covering with 3 grades of crushed rock, finest on top.	600.00	.36
Smyrna,	1,300	Rock filling; widening; graveling; putting in rock culvert covered with plank.	400.00	.30
Van Buren,	1,650	Graveling, 10 to 12 inches thick, 19 feet wide.	416.36	.25
Wade Pl.,	379	Rock filling; graveling.	100.00	.27
Washburn,	495	Rock filling; graveling on swamp.	200.00	.40
Weston,	1,000	Putting in stone culverts; widening road; ditching; turnpiking.	225.00	.22
Woodland,	5,940	Rock filling; graveling; turnpiking; ditching.	408.50	.07
Total,	57,255 feet.	Total cost,	\$12,700.94	\$0.22
"	10.85 miles.	Average cost per mile,		\$1,163.00

## CUMBERLAND COUNTY.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Bridgton,	2,343	"V" draining, 3 1-2 feet deep, 6 feet wide, 429 feet long; earth filling, 12 inches deep, 30 feet wide, 150 feet long; building stone culverts and water courses. Finished roadway 26 feet wide.	\$408.23	\$0.17
Casco,	2,112	Excavating 200 yards stone and 200 yards earth; crowning; graveling 300 loads; width 25 feet.	200.01	.09
Cumberland,	430	Blasting, 3 to 5 feet deep, 33 feet long; filling with earth, 8 to 14 inches deep, 22 feet wide, 430 feet long. Width of finished roadway, 26 feet.	300.93	.70
Freeport,	800	Draining by digging five wells, 6 feet deep, stoned and connected by 800 feet of 4-inch land tile, 2 outlets consisting of 200 feet of 5-inch tile, all tile laid 4 feet deep; crowning; graveling. One water course. Finished roadway 24 feet wide.	232.72	.29
Gorham,	2,475	Cutting 3 feet from top of two hills and filling at bottom; graveling, width 25 feet.	804.91	.33
Gray,	660	Filling with earth and stone for part of distance, 18 inches deep, 12 feet wide; graveling 15 inches deep, 12 feet wide. Finished roadway 24 feet wide.	200.00	.33
Harrison,	792	Filling with stone, 18 inches deep, 24 feet wide, covering with earth; building one water course.	276.05	.35
Naples,	612	Excavating 7 yards of stone and 417 yards of earth in cutting down hill; covering with gravel, 4 to 6 inches deep, 26 feet wide. Finished roadway 28 feet wide.	200.00	.32
Otisfield,	825	Raising grade of road to prevent overflowing. Two-inch iron pipe used for guard rail on side next to pond.	618.00	.57
South Portland,	750	Building 300 feet retaining wall, average height 4 feet; earth filling 18 inches deep, 25 feet wide, 350 feet in length; covering with ledge rock and crushed stone, 14 inches deep, 15 feet wide; graveling, 4 inches deep, 20 feet wide, 750 feet in length.	824.00	1.09

CUMBERLAND COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Windham,	2,788	Filling with stone 12 inches deep, 8 feet wide, 412 1-2 feet in length; graveling 12 inches deep, 10 feet wide, 2,788 feet in length. One water course rebuilt. Finished roadway 21 feet wide.	\$451.59	\$0.17
Total,	14,587 feet.	Total cost,	\$4,516.49	\$0.31
"	2.76 miles.	Average cost per mile,		\$1,636.80

FRANKLIN COUNTY.

Avon,	350	Building stone culverts, \$193.35; grading, \$103.00.	\$296.35	\$0.85
Carthage,	660	Building stone culverts; graveling.	277.65	.42
Eustis,	874	Graveling, 22 feet in width.	200.00	.23
Jay,	545	Excavating; filling with stone.	400.60	.74
New Vineyard,	654	Stone filling, 10 feet wide, 330 feet in length; graveling, 8 inches deep, 15 feet wide, 330 feet in length; building 2 iron crossways.	205.00	.31
Phillips,	2,475	Building stone culverts; removing stone; widening roadbed; graveling.	474.75	.19
Rangeley,	1,500	Cutting down hills; filling.	200.00	.13
Strong,	Culvert work	Building stone culvert.	200.00	
Temple,	396	Excavating; filling with rock; stone culvert.	200.00	.50
Weld,	Culvert work	Eight iron culverts; four split stone culverts.	400.00	
Wilton,	412	Building split stone culverts; grading with crushed stone.	617.90	1.50
Total,	7,866 feet.	Total cost,	\$3,472.25	\$0.365
"	1.49 miles.	Average cost per mile,		\$1,927.20



## HANCOCK COUNTY.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Amherst,	875	Building underdrain, 3 feet by 31-2 feet, 746 feet in length; turnpiking; graveling; building rock road, 3 feet deep, 8 feet wide, 215 feet in length, covered with dirt and gravelled. Finished roadway, 24 feet wide.	\$298.85	\$0.34
Bluehill,	600	Building Oaks bridge, granite top and retaining wall; building 3 granite culverts on Tenney hill, 50, 33, and 31 feet in length; covering roadway with clay, surfaced with gravel.	399.15	.67
Brooklin,	2,095	Center draining, 31-2 feet deep, 3 feet wide, 2,095 feet in length, open drain at bottom covered with eel grass and surfaced with gravel.	600.00	.28
Brooksville,	577	Building rock road; covering with dirt; covering again with stone chips; building 3 stone culverts.	235.00	.40
Bucksport,	403	Underdraining, one section stone drained, bottom cemented, balance laid with 12-inch tile drain; depth of drain, 4 feet.	487.39	1.21
Castine,	1,300	Underdraining, tile drain laid below frost in center of way, formerly springy and full of mire pots.	301.00	.23
Dedham,	528	Underdraining; building three stone culverts.	108.00	.20
Eden,	2,300	Building crushed rock road, 3 sizes, Nos. 1-2-3, each grade rolled separately and thoroughly compacted by steam road roller.	2,200.00	.96
Ellsworth,	2,640	Building macadam road; building 80 feet stone drain.	973.78	.37
Franklin,	330	Blasting ditches; straightening; walling side of road; making road one-third wider.	195.49	.59
Hancock,	Bridge work	Erecting stone piers at carrying place, 24 feet at bottom, 22 feet at top, 9 feet high, 4 feet wide at bottom, 2 feet at top. laid in Portland cement, down river end bolted to ledge. Steel bridge, 30-foot span. Filling approaches, 700 cubic yards of rock filling; covering with 12 inches of clay, 4 inches gravel.	1,040	
Lamoine,	3,448	Straightening; turnpiking; graveling; laying 10 culverts of 6-inch sewer pipe.	300.29	.09

HANCOCK COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Orland,	500	Laying 386 feet of tile drain pipe, at the depth of 4 feet; covering 150 feet of same with clay and gravel at the foot of hill; raising the roadway about 2 feet.	\$224.10	\$0.45
Otis,	652	Building center drain 3 feet deep, 3 feet wide, open drain at bottom, filled with stone, covered with dirt and gravel; building one culvert of split stone.	203.03	.31
Sedgwick,	1,089	Underdraining Thurston's hill, drain 31-2 feet deep by 31-2 feet wide and 330 feet in length, covered with gravel. Covering 759 feet of village street with flats mud covered with clam shells.	258.22	.23
Stonington,	413	Widening; filling with rock at bottom of hill, reducing grade; railing with wire rope.	291.50	.70
Sullivan,	500	Turnpiking; graveling; building one large stone culvert; blasting out ditches on top of hill. Finished roadway 24 feet from ditch to ditch.	298.06	.60
Surry,	2,090	Building one stone bridge; graveling two sections of said way.	201.85	.10
Trenton,	446	Building rock road, 6 feet wide, covered with dirt; building one stone culvert.	200.00	.46
Waltham,	726	Rock draining on a springy hill; graveled.	202.48	.28
Winter Harbor,	450	Building rock road; building on north side covered drain of cut stone, 150 feet in length; building on south side open drain walled with stone.	600.54	1.33
Total,	21,872 feet.	Total cost,	\$9,618.78	\$0.39
..	4.14 miles.	Average cost per mile,		\$2,059.29

## KENNEBEC COUNTY.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Albion,	3,300	Graveling.	\$403.60	\$0.12
Augusta,	1,700	Macadamizing.	608.32	.36
Belgrade,	1,155	Removing stone; widening; ditching; graveling.	400.23	.34
China,	2,227	"V" draining; graveling; building two stone culverts.	410.70	.18
Clinton,	396	Raising grade; filling with stone; graveling. Finished roadway 29 feet wide.	400.00	1.00
Farmingdale,	750	Removing middle of road; filling with coarse gravel; covering with fine gravel; covering whole with hard pan.	399.98	.53
Litchfield,	1,353	Covering sand with clay; graveling same.	615.19	.45
Manchester,	545	"V" draining, width 10 feet, depth 21-2 feet, filled with field stone, covered with dirt.	262.48	.48
Mount Vernon,	594	"V" draining.	215.00	.36
Oakland,	325	"V" draining.	350.51	.42
Randolph,	1,000	Crowning; graveling with coarse then fine gravel 8 inches deep in center. Finished roadway 20 feet wide.	400.45	.04
Readfield,	792	"V" draining, width 16 feet, depth 1 to 3 feet, filled with rocks, covered with dirt; graveling 8 inches deep.	574.42	.73
Vassalboro,	1,980	Graveling wet piece of road, 800 loads gravel.	420.00	.21
Vienna,	1,320	Building stone culverts; graveling.	209.38	.16
Wayne,	450	Widening; underdraining, 7 feet wide, 3 1-2 feet deep.	299.73	.67
West Gardiner,	400	Filling with rock, 12 to 15 inches in depth, 20 feet wide; graveling; building one stone culvert, laid in cement.	200.00	.50
Windsor,	400	"V" drained; graveling; building side culverts at intersection of town road to take care of water, without crossing state road.	200.00	.50
Winslow,	1,238	Raising roadbed in low marsh land; building iron water course; cutting down top of hill.	444.08	.36
Winthrop,	1,200	Laying tile for waterways; graveling, over 900 two-horse loads used.	600.00	.50
Total,	21,625 feet.	Total cost,	\$7,414.07	\$0.34
"	4.09 miles.	Average cost per mile,		\$1,795.20

KNOX COUNTY.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Appleton,	825	Opening road, depth of 18 inches, filled with stone, graded sizes; surfacing with gravel; clearing ditches; building culverts; removing stone walls.	\$300.00	\$0.36
Camden.	1,072	Draining; covering roadbed with crushed rock or chips, 8 inches deep; graveling, 2 inches deep.	906.25	.54
Cushing,	1,020	Shaping and smoothing road surface with road machine; covering with layer of rock; graveling 8 inches in depth; graveling again when road had been well traveled, 2 inches in depth.	301.27	.30
Hope,	1,300	Raising roadbed by covering with coarse rocks; covering with finer rocks; surfacing with gravel.	300.00	.23
North Haven,	350	Blasting for distance of 50 feet; opening remaining distance to the depth of 24 inches; filling with stone; covering with dirt or gravel.	245.39	.70
Rockport,	100	Lowering grade 5 feet by blasting, 50 feet in length; surfacing with stone and gravel. Rock removed to be used for filling next year.	616.50	6.16
South Thomaston,	300	Excavating road, 12 inches in depth; filling with two sizes of stone; covering with coarse hay; surfacing with gravel.	322.43	1.07
St. George,	1,250	Raising roadbed several feet with stone; covering with granite chips and dust; 1,360 tons of stone used.	636.15	.50
Thomaston,	625	Excavating roadbed; filling with coarse stone; covering with stone chips; surfacing with gravel.	746.33	1.23
Union,	740	Excavating roadbed 4 feet in depth, 6 feet in width; underdraining; filling with rock; surfacing with gravel.	477.21	.64
Washington,	2,673	Covering sand having perfect drainage with layer of clay; surfacing with gravel 10 inches deep. Finished roadway 25 feet wide.	400.00	.15
Total,	10,255 feet.	Total cost,	\$5,251.56	\$0.51
„	1.94 miles,	Average cost per mile,		\$2,692.80

## LINCOLN COUNTY.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Alna,	1,760		\$320.00	\$0.18
Boothbay,	1,760	"V" draining, 7 feet wide, 2 1-2 deep, 150 feet in length; filled with stone; blasting out ledges in ditches; grading.	304.47	.18
Boothbay Harbor,	450	Widening; raising the grade; digging out the ditches.	333.00	.18
Bremen,	325		200.00	.24
Bristol,	500		300.00	.60
Dresden,	1,205		406.19	.34
Jefferson,	1,320	Ditching and filling with stone; building one large and three small culverts of split stone; blasting ledge on top and filling at bottom of hill; grading; graveling. Finished roadway 25 feet wide.	583.56	.44
Southport,	1,320	Blasting for purpose of widening and draining. Steam drill used.	199.71	.15
Waldoboro,	500	"V" draining, 7 feet wide, 3 to 4 feet deep, filled with rubble stone, covered with dirt; covering whole with granite chips; surfacing with clay and gravel.	288.14	.57
Whitefield,	1,024		395.00	.35
Wiscasset,	605	Blasting, 205 feet long, 6 to 14 feet in width and dropping in depth to 3 feet. "V" draining another place, depth 4 feet, filled with stone taken from blasting mentioned above; covering with dirt for distance of 400 feet. Finished roadway 20 feet wide.	417.55	.69
Total,	11,269 feet.	Total cost,	\$3,711.62	\$0.33
"	2.13 miles.	Average cost per mile,		\$1,762.40

OXFORD COUNTY.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Albany,	363	Stone filling, 22 feet wide, 12 inches deep; earth covering, 22 feet wide, 12 inches deep; gravel surfacing, 22 feet wide; building two water courses. Finished roadway 22 feet wide.	\$263.93	\$0.72
Andover,	1,815	Excavating, 720 yards; stone and gravel filling 440 yards, average width 51-2 yards, average depth 1-2 yard; building two stone culverts. Finished roadway 20 feet from ditch to ditch.	280.00	.15
Bethel,	1,000	Excavating 755 cubic yards; stone filling 715 cubic yards, 20 feet wide, 30 inches deep; gravel surfacing 755 cubic yards; building one water course, one stone culvert. Finished roadway 25 feet wide.	411.00	.41
Buckfield,	990	Clay filling, 22 feet wide, 10 to 18 inches deep; sand filling, 18 feet wide, 4 inches deep; building two water courses, one culvert hard pine timbers, 12 by 12 inches for sides with split stone covering. Finished roadway 22 feet wide.	214.00	.22
Canton,	250	Stone filling, 20 feet wide, 6 inches deep; gravel surfacing, 20 feet wide, 12 inches deep; laying one iron culvert. Finished roadway 20 feet wide.	200.00	.80
Dixfield,	792	Gravel surfacing, 33 feet wide, 9 inches deep. Finished roadway 33 feet wide.	400.00	.50
Fryeburg,	495	Excavating 300 cubic yards; stone filling on sandy location, 16 feet wide, 6 inches deep; gravel surfacing on sandy location, 17 feet wide, 21 inches deep. Finished roadway 20 feet wide from ditch to ditch.	403.88	.81
Greenwood,	556	Stone filling 256 yards, 96 feet long, 6 feet wide, 12 feet deep; earth filling 230 yards, 460 feet long, 18 feet wide, 9 inches deep. Finished roadway 18 feet wide from ditch to ditch.	300.27	.54
Hanover,	388	Gravel surfacing, 20 feet wide, 10 inches deep. Finished roadway 20 feet wide from ditch to ditch.	100.43	.26

## OXFORD COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Lovell,	462	Excavating 12 feet wide, 18 inches deep; stone filling, 12 feet wide, 12 inches deep; gravel surfacing, 12 feet wide, 18 inches deep. Finished roadbed 12 feet wide.	\$204.35	\$0.40
Mexico,	165	Excavating, 40 yards of ledge; earth filling, 16 feet wide, 12 inches deep; gravel surfacing, 16 feet wide, 24 inches deep.	450.00	2.30
Norway,	825	Excavating, 60 square yards sand, 45 square yards ledge; earth filling, small amount; gravel surfacing, full distance, 22 feet wide, 12 inches deep. Finished roadway 26 feet from ditch to ditch.	425.93	.52
Paris,	990	Gravel surfacing, 22 feet wide, 12 inches deep. Finished roadway 24 feet from ditch to ditch.	310.00	.31
Peru,	260	Earth filling, 20 feet wide, 12 inches deep; gravel surfacing, 20 feet wide, 6 inches deep; building several water courses, one built of split stone.	230.00	.90
Rumford,	3,960	Excavating 2,000 yards. Earth filling 1,320 feet in length, 24 feet wide, 4 to 6 feet deep; macadamizing entire distance, 24 feet wide; building four water courses, 2 stone culverts. Finished roadway 24 to 30 feet, ditch to ditch.	4,000.00	1.24
Stoneham,	445	Stone filling, 25 feet wide, 24 inches deep; gravel surfacing, 30 feet wide, 18 inches deep; building one stone water course. Finished roadway 27 to 35 feet wide from ditch to ditch.	308.00	.69
Stow,	1,485	Excavating entire distance, 15 inches deep; earth filling, 18 feet wide, 12 inches deep; gravel surfacing, 18 feet wide, 12 inches deep; building two stone culverts.	215.00	.15
Sumner,	1,188	Excavating 350 cubic yards, including 70 cubic yards of ledge; stone filling, 460 cubic yards, 18 feet wide, 18 inches deep; earth filling, 320 cubic yards, 26 feet wide, 18 inches deep; gravel surfacing, 1,000 cubic yards, 18 feet wide, 6 inches deep; building three stone culverts. Finished roadway 20 feet wide from ditch to ditch.	400.00	.34

OXFORD COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Waterford,	1,815	Gravel surfacing, 18 feet wide, 8 to 12 inches deep; two split stone culverts. Finished roadway 18 to 20 feet from ditch to ditch.	\$400.00	\$0.22
Woodstock,	900	Excavating 58,500 cubic feet; stone filling, 12 feet wide, 18 to 24 inches deep; earth filling, 26 feet wide, 12 to 18 inches deep; building one stone culvert; laying one tile culvert. Finished roadway 26 feet from ditch to ditch.	406.84	.44
<b>Total,</b>	<u>19,144 feet.</u> 3.63 miles.	Total cost, Average cost per mile,	<u>\$10,823.63</u>	<u>\$0.56</u> \$2,956.80

PENOBSCOT COUNTY.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Alton,	130	Raising bridge approach to prevent overflowing; stone filling, 5 feet deep, 24 feet wide; covering with 12 inches of earth and 12 inches of gravel.	\$300.00	\$2.30
Bradford,	792	Excavating 792 feet; stone filling, 2 feet deep, 8 feet wide; earth covering, 24 inches deep; gravel surfacing, 6 inches deep; building four drains from the rock filling; building one split stone culvert with cedar top, 6 feet wide, 2 feet high. Finished roadway 32 feet wide.	407.00	.51
Bradley,	300	Excavating 35 cubic yards of ledge; stone filling, 8 inches deep, 20 feet wide on each side to reduce grade; graveling; building water course; laying 8-inch pipe for culvert. Finished roadway 21 feet wide.	174.84	.58
Brewer,	480	Excavating 6 inches; stone filling, 24 inches deep, 24 feet wide; earth filling, 12 inches deep, 24 feet wide; gravel surfacing, 4 inches deep; building one stone culvert.	332.00	.69
Carmel,	1,485	Excavating 1,320 feet; stone filling, 24 inches deep, 6 feet wide; earth covering, 18 inches deep; building one water course, 40 feet long; one culvert, stone sides, plank cover. Finished roadway 24 feet wide.	206.25	.14



## PENOBSCOT COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Carroll,	308	Stone filling, 2 1-2 feet deep, 30 feet wide; earth filling, 2 1-2 feet deep, 30 feet wide, to reduce grade.	\$200.00	\$0.66
Charleston,	495	Excavating; stone foundation, 2 feet deep, 9 feet wide; earth covering, 12 inches deep; gravel surfacing, 6 inches deep.	198.37	.40
Clifton,	924	Excavating, 8 1-2 feet wide, 3 1-2 feet deep; stone filling, 8 1-2 feet wide, 2 1-2 feet deep; earth covering, 12 inches deep; gravel surfacing, 8 inches deep. Finished roadway 25 feet wide.	264.84	.27
Corinna,	289	Excavating; stone filling, 30 inches deep, 36 feet wide; earth covering, 15 inches deep, 40 feet wide; building two stone subdrains. Finished roadway 40 feet wide.	400.00	.14
Corinth,	1,815	Stone filling, 1,056 feet long, 8 feet wide, 36 inches deep; earth covering, 8 feet wide, 12 inches deep; gravel surfacing, 20 feet wide, 5 inches deep; building one stone culvert.	405.99	.22
Dixmont,	759	Excavating 531 cubic yards; stone filling, 8 feet wide, 24 inches deep; earth covering, 18 feet wide, 12 inches deep; gravel surfacing, 12 feet wide, 8 inches deep; building three water courses; 1 stone culvert. Finished roadway 24 feet wide.	408.90	.52
Eddington,	1,386	Excavating; stone filling, 9 feet wide, 24 inches deep, 1,201 feet long; earth covering, 8 inches deep; crushed rock, 4 inches deep; building one water course. Finished roadway 24 feet wide.	350.13	.25
Garland,	825	Stone filling, 24 feet wide, 24 inches deep; graveling, 12 inches deep; building one stone culvert with cedar top. Fill railed.	421.75	.51
Greenbush,	1,419	Shaping; grading; gravel surfacing, 6 to 12 inches deep; laying two pipe culverts. Finished roadway 26 feet wide.	300.00	.21

PENOBSCOT COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Hampden,	1,320	Excavating; stone filling, 8 feet wide, 24 inches deep; earth covering, 12 inches deep; gravel surfacing, 6 inches; building four water courses, four culverts, two stone, two iron. Finished roadway 36 feet, ditch to ditch.	\$667.50	\$0.50
Hermon,	2,145	Excavating wet road; rock filling, 6 to 7 feet wide, 18 to 24 inches deep; earth covering, 20 inches deep; building two water courses, two stone culverts. Finished roadway 25 feet wide.	305.50	.14
Holden,	399	Stone filling on low place, 20 feet wide, 18 inches deep; gravel surfacing, 24 feet wide, 10 inches deep; building one stone culvert. Finished roadway 28 feet wide from ditch to ditch.	200.00	.50
Howland,	2,050	Straightening; grading; turnpiking; covering with coal clinkers and gravel one-third of the distance; building three culverts, cedar bed pieces, 5-inch pine covering. Finished roadway 24 feet wide.	239.71	.12
Kingman,	924	Excavating 15,000 cubic feet; stone filling, 4 by 4-2 feet; earth covering, 12 feet wide, 12 inches deep; graveling 22 feet wide, 1 to 10 inches deep; building one stone culvert. Finished roadway 29 feet wide from ditch to ditch.	600.00	.65
Lee,	3,960	Excavating 200 yards; stone filling, 80 yards, 2 by 24; earth filling, 200 yards, 4 by 24. Finished roadway 24 feet from ditch to ditch.	300.00	.08
Levant,	1,000	Excavating 780 feet; stone filling, 12 feet wide, 14 inches deep; also stone filling, 220 feet long, 18 feet wide, 30 inches deep; earth covering, 12 inches deep; building one stone culvert. Finished roadway 34 feet from ditch to ditch.	224.07	.22
Lincoln,	1,000	Gravel surfacing, 60 feet wide, 24 inches deep; building one split stone water course.	600.00	.60
Mattawamkeag,	3,300	Improving road, 23 feet wide; building three stone culverts.	401.65	.60
Maxfield,	4,538	Stone filling, 24 feet wide, 24 inches deep, 100 feet long; building one split stone culvert. Finished roadway 25 feet wide.	210.34	.05

## PENOBSCOT COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Newburgh,	875	Excavating; stone filling, 7 feet wide, 30 inches deep; earth covering, 35 feet wide, 24 inches deep; building one stone culvert.	\$370.22	\$0.47
Newport,	660	Stone filling, 4 feet wide; gravel surfacing, 12 inches deep; building one stone culvert. Finished roadway 33 feet wide.	612.98	.97
Old Town,	950	Covering crushed rock, 6 to 10 inches deep; building one stone culvert; laying two pipe culverts. Finished roadway 28 feet wide.	790.86	.83
Orono,	700	Excavating 415 cubic yards; stone filling, 415 cubic yards; earth filling, 415 cubic yards; gravel surfacing, 100 cubic yards; building one stone and one iron culvert. Finished roadway 23 feet from ditch to ditch.	300.00	.42
Orrington,	2,624	Excavating 842 feet; stone filling, 842 feet long, 8 feet wide, 24 inches deep; earth filling, 842 feet long, 12 feet wide, 10 inches deep; gravel surfacing, 2,624 feet long, 12 feet wide, 8 inches deep.	440.00	.17
Passadumkeag,	495	Stone filling, 13 feet wide, 24 inches deep; gravel, 24 feet wide, 16 inches deep. Finished roadway 24 feet wide.	365.88	.74
Patten,	2,492	Stone filling, 98 feet long, 22 feet wide, 4 feet deep; earth covering, 22 feet wide, 10 inches deep; gravel surfacing, 15 feet wide, 8 inches deep; constructing two wooden culverts, two outlets for stone fill.	620.84	.25
Plymouth,	660	Excavating; stone filling, 660 feet long, 12 feet wide, 20 inches deep; earth covering, 8 inches deep; building one split stone culvert. Finished roadway 27 feet wide.	200.00	.30
Prentiss,	660	Stone filling, 132 feet long, 24 feet wide, 3 1-2 feet deep; earth covering, 12 inches deep; gravel surfacing, 6 inches deep; building one stone culvert. Finished roadway 30 feet wide.	275.00	.42
Springfield,	9,900	Blasting in ditches; straightening; shaping; rock filling, 4 feet wide, 13 inches deep, 2,062 feet long, on low land; building one split stone culvert. Finished roadway 23 feet wide.	400.00	.04

PENOBSCOT COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Stacyville Pl.,	1,617	Crushed stone filling, 20 to 25 feet wide; building one stone culvert.	\$428.82	\$0.26
Stetson,	462	Stone filling, 24 feet wide, 12 to 36 inches deep; earth filling, 24 inches deep; gravel surfacing, 6 inches deep. Finished roadway 28 feet wide.	304.74	.66
Winn,	5,446	Improving road, 24 feet wide; building three stone culverts.	200.00	.04
Total,	59,583 feet.	Total cost,	\$13,452.28	\$0.23
"	11.28 miles.	Average cost per mile,		\$1,214.40

PISCATAQUIS COUNTY.

Abbot,	10,560	Widening; excavating and stone filling through wet portion; turnpiking; dirt covering; building stone culverts.	\$400.00	\$0.04
Atkinson,	600	Widening; stone filling; earth covering; building stone culverts.	228.00	.38
Blanchard,	825	Widening; building gravel roadway; laying two cast iron culverts.	197.09	.24
Brownville,	2,640	Widening; gravel surfacing; building stone culverts laid in cement.	421.50	.16
Dover,	1,300	Widening; stone filling, 500 feet; gravel surfacing, 800 feet; putting in stone culverts.	400.00	.31
Foxcroft,	1,221	Underdraining center of road; rock filling, 14 feet wide, 24 inches deep; gravel surfacing; building stone culverts.	406.87	.33
Greenville,	1,000	Building stone culverts; blasting; widening; stone filling; graveling.	600.00	.06
Guilford,	2,640	Widening; rock filling in wet portion; gravel surfacing; laying tile culverts.	450.99	.17
Medford,	5,280	Widening; blasting and removing rocks; turnpiking; putting in culverts.	200.00	.04
Milo,	2,640	Widening; raising grade; building culverts.	619.32	.24
Monson,	3,966	Widening; blasting; building stone culverts; making fills; removing rock; cutting down hills.	412.42	.10
Parkman,	5,940	Widening; turnpiking; rock filling; building culverts.	473.60	.18
Sebec,	2,640	Widening; turnpiking; side draining; plowing and scraping.	215.00	.08
Shirley,	7,000	Blasting and removing rocks; widening; turnpiking; making fill.	365.55	.05
Wellington,	4,620	Blasting and removing stones; widening; reducing grade on two hills; putting in culverts.	314.33	.07

## PISCATAQUIS COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Williamsburg,	2,640	Blasting and removing rocks; widening; turnpiking.	\$177.60	\$0.07
Willimantic,	825	Blasting and removing rocks; widening; turnpiking; building stone culverts.	130.00	.16
Total,	56,951 feet.	Total cost,	\$6,012.30	\$0.105
„	10.79 miles.	Average cost per mile,		\$554.40

## SAGADAHOC COUNTY.

Bowdoin,	1,100	Gravel filling.	\$508.65	\$0.54
Bowdoinham,	743	Stone filling, 12 to 14 inches deep; loam and gravel covering, 5 inches deep.	480.10	.64
Georgetown,	1,650	Blasting ledge and grading.	600.00	.36
Phippsburg,	957	Blasting; covering with crushed stone and clay; gravel surfacing.	399.94	.60
Richmond,	1,025	Stone filling in middle of road, 10 to 18 inches deep, 14 to 20 feet wide; gravel surfacing; building stone culvert, 3 by 21-2 feet opening.	608.04	.59
Topsham,	1,100	Levelling with road machine; carefully packing refuse rock from quarry, rolling with heavy roller; topping with fine rocks.	454.27	.41
Woolwich,	2,204	Blasting; grading.	545.49	.25
Total,	8,779 feet.	Total cost,	\$3,686.49	\$0.42
„	1.66 miles.	Average cost per mile,		\$2,217.60

SOMERSET COUNTY.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Athens,	1,320	Excavating 400 cubic yards; stone filling, 6 feet wide, 7 feet deep; graveling, 500 cubic yards. Finished roadway 30 feet from ditch to ditch.	\$600.00	\$0.45
Bingham,	1,237	Gravel filling, 20 feet wide, 14 inches deep. Finished roadway 40 feet wide from ditch to ditch.	413.69	.34
Canaan,	429	Removing ledge, 75 feet long, 4 feet wide, 30 inches deep; gravel filling, 20 feet wide, 4 inches deep; building two stone culverts.	236.00	.55
Cornville,	743	Excavating; stone filling.	181.25	.25
Fairfield,	825	Grade filling, 20 feet wide, 12 inches deep at middle of road.	400.00	.48
Harmony,	400	Excavating; stone filling, 24 inches deep, 30 feet wide; earth filling, 12 inches deep, 30 feet wide; gravel surfacing; building two split granite culverts.	223.43	.56
Hartland,	743	Excavating, 12 feet wide, 15 inches deep; stone filling, 15 inches deep; earth and gravel filling, 24 inches deep; building two stone culverts. Finished roadway 24 feet wide from ditch to ditch.	428.10	.58
Madison,	792	Excavating, 18 inches deep; stone filling, 18 inches deep; earth filling, 6 inches deep. Finished roadway 30 feet wide from ditch to ditch.	400.41	.51
Mercer,	314	Excavating, 24 inches deep; stone filling, 24 inches deep; earth and gravel filling, 8 to 9 inches deep; building one stone culvert. Finished roadway 24 feet wide from ditch to ditch.	200.95	.64
New Portland,	1,221	Excavating; stone filling; building two culverts, stone and tiling.	557.44	.46
Norridgewock,	726	Excavating; stone filling, 18 inches deep; earth filling, 2 inches deep; gravel surfacing, 4 inches deep; building one stone culvert.	400.00	.55
Palmyra,	1,320	Excavating, 3 1-2 feet deep; stone filling, 2 1-2 feet deep; earth filling, 1 foot deep; building one split stone culvert. Finished roadway 28 feet from ditch to ditch.	400.00	.30
Pittsfield,	1,535	Excavating; stone filling; earth filling.	384.35	.25

## SOMERSET COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Ripley,	272	Stone filling, 20 feet wide, 12 to 24 inches deep; earth filling, 12 to 18 inches deep; building one split granite culvert.	\$200.00	\$0.70
Skowhegan,	577	Stone filling, 37 1-2 feet wide, 8 inches deep; earth and gravel filling, 3,000 cubic feet.	600.00	1.05
Smithfield,	314	Excavating, 7 feet wide, 31-2 feet deep; stone filling, 3 feet deep; earth filling, 11-2 feet deep; gravel surfacing, 3 inches deep.	201.20	.83
Solon,	990	Excavating, 20 feet wide, 18 inches deep; stone filling, 15 inches deep; earth filling, 12 inches deep; building one split stone culvert.	310.00	.31
St. Albans,	825	Excavating; stone filling; earth covering; building one stone culvert.	461.72	.55
Brighton Pl.,	1,789	Gravel filling; constructing 6 stone culverts.	200.00	.15
Total,	16,372 feet.	Total cost,	\$6,798.54	\$0.42
"	3.11 miles.	Average cost per mile,		\$2,217.60

## WALDO COUNTY.

Belfast,	600	Center draining, 6 feet wide, 5 feet deep; rock filling, 21-2 feet deep; covering of hay; dirt covering; gravel surfacing. Finished roadway 34 feet wide, 14-inch crown.	\$400.00	\$0.67
Belmont,	1,155	Stone filling, 58 rods long, 6 to 8 feet wide, 2 to 3 feet deep; building three culverts.	239.47	.22
Brooks,	1,800	Turnpiking; graveling; reducing grade on Stimpson hill; making fill on low land at bottom; opening section of road; putting in stone drain.	400.00	.22
Burnham,	330	Raising bridge and approaches 24 inches to prevent overflowing.	400.00	.12
Frankfort,	2,640	Grading; graveling; building culverts.	400.00	.15
Freedom,	1,073	Laying stone on 305 feet of road, 18 feet wide, 15 inches deep; turnpiking; graveling whole distance 15 inches deep.	200.00	.18
Islesboro,	1,100	"V" draining; turnpiking; graveling.	406.96	.37
Jackson,	775	Raising roadbed 24 inches; graveling; building culvert; blasting out ditch.	251.37	.32

WALDO COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Knox,	2,640	Widening; straightening; opening wet portion; "V" draining; building one stone bridge and two causeways.	\$236.99	\$0.09
Liberty,	1,056	Filling, 1,056 feet; grading and filling, 412 feet.	327.00	.31
Lincolntown,	500	Blasting; reducing grade on Snow hill.	198.77	.40
Monroe,	1,263	Widening; pulling trees; blasting; building culvert; grading; graveling.	412.65	.33
Morrill,	4,373	Blasting; removing stone; cutting down hill 2 feet; improving grade at other points; widening road; ditching; making new and relaying seven water courses; graveling 2,887 feet, with 425 two-horse loads of gravel.	475.00	.11
Palermo,	1,485	Cutting bushes and trees; stone and gravel filling; blasting; widening.	410.00	.27
Searsmont,	1,218	Grading; underdraining; building stone culverts.	523.40	.43
Searsport,	462	Trenching, 4 feet wide, 4 feet deep; laying double drain; covering with flat rocks; filling with small rocks; surfacing with dirt and gravel.	210.00	.45
Thorndike,	3,200	Stone filling, 330 feet long, 20 feet wide; earth covering; widening; turnpiking.	210.89	.64
Unity,	1,300	Ditching; draining; grading.	400.00	.30
Waldo,	660	Ditching, 3 1/2 to 4 feet deep, 5 to 6 1/2 feet wide; stone filling; grading; building stone culvert, 24 feet wide, 3 feet square.	204.74	.31
Winterport,	2,640	Turnpiking; graveling; rebuilding culverts; building new culverts.	301.00	.11
Total,	30,370 feet. 5.75 miles.	Total cost. Average cost per mile,	\$6,633.43	\$0.22 \$1,161.61



## WASHINGTON COUNTY.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Addison,	1,320	Repairing dyke; grading; graveling.	\$250.00	\$0.11
Alexander,	462	Grading; graveling.	200.00	.44
Calais,	2,640	Macadamizing.	967.00	.37
Danforth,	2,640	Grading; graveling; building one culvert.	297.50	.11
East Machias,	1,760	Grading; graveling.	280.12	.16
Lubec,	1,760	Grading; graveling.	600.00	.34
Machias,	1,760	Grading; graveling; building two stone culverts.	295.26	.17
Perry,	1,760	Grading; graveling.	200.00	.11
Princeton,	660	Improving.	400.00	.66
Robbinston,	5,280	Turnpiking; graveling; building one stone culvert.	200.00	.04
Vanceboro,	3,960	Improving.	201.47	.05
Total,	24,002 feet.	Total cost,	\$3,891.35	\$0.16
„	4.55 miles.	Average cost per mile,		\$844.80

## YORK COUNTY.

Berwick,	450	Filling of rotten and broken stone, 12 to 16 inches deep; coating crushed stone, nut size, 23 to 55 feet wide.	\$450.00	\$1.00
Buxton,	550	Width, ditch to ditch, 30 feet; rock bed 14 feet wide, 12 inches thick; clay covering, 12 inches; gravel surfacing, 12 inches thick.	300.00	.22
Dayton,	1,336	Bedding road with base 30 feet wide between ditches; crowning; sur- facing with gravel, 12 inches deep at center; ditching; rolling. Fin- ished roadway 22 feet wide.	400.00	.30
Elliot,	475	Excavating, 10 feet wide, 12 inches deep; rock filling; graveling, 18 inches deep; rolling. Finished roadway 30 feet from ditch to ditch. Traveled roadbed 22 feet wide.	250.00	.52
Kennebunkport,	400	Bottoming road, 12 inches solid rock; gravel surfacing, 12 inches deep; rolling; ditching. Finished roadbed at least 19 feet wide, both sides tapering off to shed surface water.	400.00	1.00

YORK COUNTY—Continued.

Town.	Length in feet.	Description.	Cost.	Cost per foot.
Kittery,	800	Excavating, 12 feet wide, 12 inches deep; stone filling; raising portion of grade 20 inches with large stones. A portion of the roadbed was not disturbed, as it was well bedded with rocks; graveling, 12 inches; rolled; graveling again with 6 inches; rolling. Finished roadbed 28 feet wide.	\$670.13	\$0.84
Newfield,	940	Grading and leveling hill, 22 feet wide for 240 feet; continuing leveling 150 feet; rock filling, 8 to 24 inches deep; graveling, 225 feet; lowering grade of hill, 3 feet; filling with rocks, 325 feet long, 8 to 42 inches deep. Finished roadway 22 feet wide; graveling over stone filling, 18 inches deep in center; crowning, 18 inches; building one split stone water course, 2 feet by 3 feet.	400.00	.43
North Berwick,	380	Building bottom of road of solid large rocks and stones; topping with several grades of crushed rock from Salem, Massachusetts; rolling. Finished roadway 30 feet wide, made entirely of stone.	675.00	1.78
Wells,	550	Excavating original roadbed 12 to 14 inches deep, 12 feet wide; stone filling of three grades, largest size on bottom; graveling, 8 inches deep, 24 feet wide; rolling; graveling again, 8 inches deep; rolling. Finished roadway 24 feet wide, with 14-inch crown.	580.00	1.05
York,	2,310	Stone filling, 11 feet wide; gravel filling and surfacing, two large layers each 8 inches deep; wetting and rolling each layer with four-ton roller. Finished roadway 30 feet wide, including ditches, with crown of 18 inches.	2,150.00	.93
Total,	8,191 feet.	Total cost.	\$6,275.13	\$0.77
"	1.55 miles.	Average cost per mile,		\$4.065.61

## RECAPITULATION BY COUNTIES.

Counties.	Length in feet.	Length in miles.	Cost.	Average cost per foot.	Cost per mile at same rate.
Androscoggin .....	5,027	.95	\$3,340.74	\$0.47	\$3,462.88
Aroostook .....	57,255	10.85	12,700.94	.22	1,161.60
Cumberland .....	14,587	2.76	4,516.49	.31	1,636.80
Franklin .....	7,866	1.49	3,472.25	.365	1,927.20
Hancock .....	21,872	4.14	9,618.78	.39	2,050.20
Kennebec .....	21,625	4.09	7,414.07	.34	1,795.20
Knox .....	10,255	1.94	5,251.56	.51	2,692.80
Lincoln .....	11,269	2.13	3,711.62	.33	1,762.40
Oxford .....	19,144	3.63	10,823.63	.56	2,956.80
Penobscot .....	59,583	11.28	13,452.28	.23	1,214.40
Piscataquis .....	56,951	10.79	6,012.30	.105	554.40
Sagadahoc .....	8,779	1.66	3,686.49	.42	2,217.60
Somerset .....	16,372	3.11	6,798.54	.42	2,217.60
Waldo .....	30,370	5.75	6,633.43	.22	1,161.60
Washington .....	26,002	4.55	3,891.35	.16	844.80
York .....	8,191	1.55	6,275.13	.77	4,065.60
Totals and averages....	373,148	70.67	\$106,499.60	\$0.277	\$1,462.56

NOTE. The lengths in feet used in this table are taken from the returns of the county commissioners and for this reason they do not agree with the complete state road table published elsewhere in this report, as the lengths in the latter compilations are taken mainly from the returns of the municipal officers.

## MILEAGE AND COST OF STATE ROADS BUILT SINCE 1901.

The following table has been compiled from data gathered from reports of state road work filed by the county commissioners with the governor and council and supplemented by information furnished by municipal officers. Tables have been prepared for each county showing length of road rebuilt in each town each year, cost of same, aid paid by State, and cost of road per mile at same rate. The table herewith is a recapitulation of the totals as shown on the several county tables, together with the totals for six years' work.

It is interesting to look at the totals at the bottom of this table. We find first that the number of towns building state roads by years runs as follows: 12, 99, 206, 244, 270, 322; and that 374 individual towns have received state aid.

We find next the total number of miles built by years is as follows: 2.56, 28.14, 53.06, 51.67, 65.48, 83.17; and that a total of 284 miles of road have been reconstructed.

We next find the amount of expenditure each year for state road work. It is as follows: \$3,025.30, \$21,670.26, \$69,880.09, \$85,370.88, \$106,599.62, \$154,577.07; or a total for the six years of \$441,123.22.

We find the State has paid aid as follows: \$1,175, \$9,507.36, \$28,722.65, \$33,585.49, \$48,012.81, \$68,027.66 (recommended for work done in 1906); or a total for six years of \$189,030.97.

This leaves a net expenditure by the towns during the same time of \$252,092.25.

We find the average cost per mile of all work done in the State by years to have been as follows: \$1,182, \$770, \$1,317, \$1,652, \$1,628, \$1,858; or the average cost for the six years to have been \$1,553 per mile.

The increased cost per mile per year we construe as indicating that a better class of work has been done with succeeding years. This would also indicate that county commissioners have come to recognize the value of permanent work and have been gradually demanding a better grade of work.

It is also interesting to study the totals by years for each county. These for the most part indicate a gradual improvement in the work. The last column in the table, showing aver-

age cost per mile for all work done in each county, shows quite a variation but we believe it is a fair indication of the general grade of work done in each county. It will be noticed that in York county the work has averaged \$3,443 per mile, the highest average cost in that county being \$4,075; while in Piscataquis the average cost has been \$547, the highest average cost in that county being \$1,056.

### Mileage and Cost of State Roads Built Since 1901.

Counties.	1901.				1902.				1903.				1904.							
	No. of towns building.	No. of miles built.	Cost.	Aid.	Cost per mile at same rate.	No. of towns building.	No. of miles built.	Cost.	Aid.	Cost per mile at same rate.	No. of towns building.	No. of miles built.	Cost.	Aid.	Cost per mile at same rate.	No. of towns building.	No. of miles built.	Cost.	Aid.	Cost per mile at same rate.
Androscoggin.....						2	.37	\$400 00	\$200 00	\$1,081	6	1.03	\$1,445 74	\$600 00	\$1,403	6	1.15	\$1,505 78	\$751 35	\$1,309
Aroostook.....	1	.19	\$200 00	\$100 00	\$1,052	15	3.63	2,978 52	1,489 26	813	26	6.54	7,360 37	3,575 00	1,125	23	7.36	9,593 43	4,100 00	1,303
Cumberland.....						4	1.24	800 00	400 00	645	8	1.40	2,307 76	1,352 00	1,648	12	1.87	5,646 20	1,599 40	3,019
Franklin.....	3	.33	600 60	300 00	1,080	5	.45	1,000 00	500 00	1,304	9	1.45	2,305 97	1,142 00	1,285	8	1.29	2,526 26	1,140 00	1,803
Hancock.....						4	.19	701 23	350 00	3,691	10	.90	2,730 24	1,347 14	3,034	12	2.10	4,758 02	2,029 28	2,266
Kennebec.....						5	1.05	1,000 00	500 00	953	14	2.52	5,215 98	2,250 00	2,070	12	2.80	5,983 77	2,594 03	2,137
Knox.....	1	.69	208 24	100 00	2,313	5	.63	1,280 92	399 98	2,033	9	1.33	2,801 19	1,204 00	2,106	14	1.70	5,907 46	1,875 00	3,475
Lincoln.....						3	.48	1,128 86	200 00	2,352	7	2.01	2,525 35	650 00	1,256	7	1.66	2,114 62	857 50	1,274
Oxford.....	1	.10	200 00	100 00	200	3	1.66	600 00	300 00	361	8	1.33	2,582 14	1,209 32	1,941	17	3.32	8,394 17	2,597 07	2,528
Penobscot.....	2	.08	917 06	200 00	11,463	16	4.31	4,433 73	1,547 12	1,030	33	10.53	17,457 60	4,824 26	1,658	36	9.07	11,280 93	4,464 67	1,244
Piscataquis.....	1	1.25	200 00	100 00	160	6	7.18	1,200 00	600 00	167	13	8.81	3,120 30	1,548 00	354	14	6.51	4,578 02	1,893 55	708
Sagadahoc.....	1	.06	200 00	100 00	3,333	2	.19	400 00	200 00	2,105	7	.94	2,620 77	1,230 00	2,788	7	.72	3,518 82	1,400 00	4,887
Somerset.....	1	.25	200 00	100 00	800	2	2.15	1,600 00	800 00	744	14	2.32	3,793 20	1,821 95	1,635	15	2.62	4,810 08	2,260 99	1,836
Waldo.....	1	.21	300 00	75 00	1,429	2	2.13	1,542 00	721 00	723	19	7.17	6,440 82	2,993 98	895	21	5.07	6,349 66	2,800 00	1,252
Washington.....						8	1.96	1,400 00	700 00	714	14	3.76	3,725 16	1,600 00	991	11	2.82	4,183 32	1,505 00	1,483
York.....						6	.49	1,200 00	600 00	2,449	9	1.02	3,447 60	1,375 00	3,380	11	1.61	4,220 14	1,717 65	2,621
<b>Totals.....</b>	<b>12</b>	<b>2.56</b>	<b>\$3,025 30</b>	<b>\$1,175 00</b>	<b>\$1,182</b>	<b>99</b>	<b>28.14</b>	<b>\$21,670 26</b>	<b>\$9,507 36</b>	<b>\$770</b>	<b>206</b>	<b>53.06</b>	<b>\$69,880 09</b>	<b>\$28,722 65</b>	<b>\$1,317</b>	<b>244</b>	<b>51.67</b>	<b>\$35,370 88</b>	<b>\$33,585 49</b>	<b>\$1,652</b>
Number of miles built.....		2.56					28.14					53.06				51.67				
Cost per mile.....					\$1,182					\$770					\$1,317					\$1,652

COMMISSIONER OF HIGHWAYS.

## Mileage and Cost of State Roads Built Since 1901.

92

Counties.	1905.				1906.				Totals for 6 Years.						
	Number of towns building.	Number of miles built.	Cost.	Aid.	Cost per mile at same rate.	Number of towns building.	Number of miles built.	Cost.	Aid.	Cost per mile at same rate.	Number of towns building.	Number of miles built.	Cost.	Aid.	Cost per mile at same rate.
Androscoggin .....	7	.95	\$2,340 71	\$1,170 36	\$2,462	8	1.46	\$3,775 21	\$1,740 35	\$2,585	9	4.96	\$9,467 47	\$4,462 06	\$1,908
Aroostook .....	38	10.77	12,700 94	6,173 29	1,179	43	13.01	18,268 50	8,464 48	1,404	50	41.54	51,101 76	23,902 03	1,230
Cumberland .....	11	2.78	4,516 49	2,034 77	1,636	21	5.34	12,027 66	4,392 13	2,252	21	12.61	25,298 11	9,577 92	2,005
Franklin .....	11	1.56	3,472 25	1,727 17	2,098	15	3.46	5,982 53	2,807 77	1,613	15	8.55	15,887 21	7,616 94	1,858
Hancock .....	21	4	9,618 80	3,602 21	2,405	26	6.05	13,251 54	5,304 22	2,190	29	13.24	31,059 83	12,632 85	2,346
Kennebec .....	19	4.09	7,414 07	3,695 27	1,813	19	5.33	9,276 80	4,432 73	1,744	25	15.80	28,890 62	13,472 03	1,823
Knox .....	11	1.92	5,251 56	2,323 13	2,735	14	4.20	8,078 14	3,428 05	1,923	15	9.88	23,527 51	9,330 16	2,361
Lincoln .....	11	2.20	3,711 62	1,855 94	1,687	10	2.86	4,218 47	2,071 99	1,475	14	9.21	13,698 92	5,635 43	1,457
Oxford .....	20	3.31	10,823 63	3,261 79	3,269	23	4.88	14,278 20	4,963 10	2,926	26	14.60	36,878 14	12,431 28	2,526
Penobscot .....	37	8.41	13,452 28	6,565 01	1,560	45	9.86	19,884 59	9,202 56	2,017	49	42.26	67,431 19	26,803 62	1,596
Piscataquis .....	17	9.95	6,012 30	2,996 47	604	16	6.56	6,928 87	3,418 33	1,056	19	40.26	22,039 49	10,556 35	547
Sagadahoc .....	7	1.66	3,686 49	1,839 21	2,221	7	1.87	5,115 46	2,264 38	2,736	9	5.44	15,541 54	7,033 59	2,857
Somerset .....	19	3.13	6,798 54	3,399 30	2,172	21	3.75	8,673 39	4,092 67	2,313	23	14.22	25,875 21	12,474 91	1,820
Waldo .....	20	5.93	6,633 43	3,316 72	1,119	22	7.32	8,851 65	4,372 35	1,209	25	27.83	30,117 56	14,279 05	1,082
Washington .....	11	3.30	3,891 35	1,762 17	1,179	21	5.30	8,422 46	4,056 96	1,589	27	17.14	21,622 29	9,624 13	1,261
York .....	10	1.54	6,275 13	2,290 00	4,075	11	1.92	7,543 60	3,015 56	3,929	18	6.59	22,686 37	8,998 24	3,443
<b>Totals .....</b>	<b>270</b>	<b>65.48</b>	<b>\$106,599 62</b>	<b>\$48,012 81</b>	<b>\$1,628</b>	<b>322</b>	<b>83.17</b>	<b>\$154,577 07</b>	<b>\$68,027 66</b>	<b>\$1,858</b>	<b>374</b>	<b>284</b>	<b>\$441,123 22</b>	<b>\$189,030 97</b>	<b>\$1,553</b>
Number of miles built .....	65.48					83.17					284				\$1,553
Cost per mile .....					\$1,628					\$1,858					\$1,553

NOTE—The discrepancy between figures for 1905 in this table and in the preceding table arises from the fact that this table is compiled almost entirely from returns by municipal officers while the other table was made from returns by county commissioners.

COMMISSIONER OF HIGHWAYS.







MAINE FARMER PRESS, AUGUSTA

State Road, Lubec, Washington Co., built 1906

Gravel surface 22 feet wide, 10 inches deep at center; underdrained with "V" stone drain, 12 feet wide, 24 inches deep at center and 10 inches deep at sides. Cost of road 50c per lineal foot

*Practical Road Construction*

*By*

*Maine Road Builders.*



## PRACTICAL ROAD CONSTRUCTION.

BY MAINE ROAD BUILDERS.

The latter part of August we addressed a letter to the officers of each city and of a considerable number of towns in the State asking for short reports of any special highway work which had been completed during this or the preceding few years. From the replies received to this letter we have selected a few which indicate that the work described was carefully planned, well managed and thoroughly done. We hope these short descriptions will prove to be interesting and instructive to all in the State who have the care of highways. The work here described can be duplicated in most any town in the State where conditions similar to those described are found. We have arranged the letters according to the type of construction they describe as follows:

### *Macadam.*

Brunswick, from S. Litchfield, Engineer.

St. George, from Robert McKenzie.

Houlton, from F. A. Peabody, for Municipal Officers.

Sherman Mills, from Frank Allingham, Chairman of Selectmen and Frank Burnham, Road Commissioner.

### *Gravel with stone foundation.*

Lubec, from John Anderson, Road Commissioner.

Rockport, from C. A. Carleton, Road Commissioner and Geo. H. M. Bennett, Chairman of Selectmen.

Belfast, from J. F. Wilson, Street Commissioner.

Hampden, from E. F. Littlefield, Selectman in charge of roads.

### *Sand hardened with clay.*

Farmington, from H. W. Gilman, Selectman in charge of roads.

### *Earth roads.*

Standish, from F. P. Sanborn. Describes reconstruction and maintenance of earth roads by use of King Split Log Drag.

*Any kind of road.*

Rockport, from Geo. H. M. Bennett, Chairman of Selectmen.

The maintenance of any kind of road by the use of wide tires; and the scheme originated by the Selectmen of Rockport, which resulted in the adoption of wide tires.

## MACADAM CONSTRUCTION.

*Letter from Brunswick.*

BRUNSWICK, MAINE, October 15, '06.

*Mr. Paul D. Sargent, Commissioner of Highways, State of Maine:*

DEAR SIR:—Following is a report of work done in improving Main street, Brunswick, Maine, which I have been requested to make to you.

The section of Main street, beginning near the Maine Central railway crossing and extending northerly into the village has been the worst section of road in town, and a continuous source of trouble and expense. Being the principal street there is a great amount of light travel as well as the continuous passage of heavy teams (loaded both ways) between the freight station and the mills at the northerly end of the town and Topsham.

At the last annual town meeting an appropriation was made with which to improve this section of road. A plan and profile was made of the street, also cross sections were taken at 50-foot intervals. A careful study was made as to subsoil and drainage; a grade was established conforming to the side walk grade on westerly side of street as nearly as possible.

The subsoil was found to be of a sandy nature, overlaid with gravelly loam. Crushed stone and gravelly loam had been used for surfacing material on the old road, with the gravelly material over the crushed rocks. The section of the road was flat, consequently after a rain storm and when the frost was coming out in the spring, there was six inches or more of soft mud on the surface.

The problem on this road was to provide a surface which would stand up under the heavy travel; to give the surface a proper section, and to make provisions for the surface water.





MAINE FARMER PRESS, AUGUSTA

Maine St., Brunswick, Me., before improvement

The tracks of the L. B. & B. street railway were raised to conform to the established grade. Catch basins were built where needed and connected with drainage system as previously established and additional pipe culverts were provided.

For surfacing the road, crushed trap rock from Salem, Massachusetts was used. After grading and shaping, the sub-grade was rolled by a steam roller weighing eighteen tons.

Foundation stone varying in size from 1¼ to 2½ inches were then spread to a depth of 4 inches in the center and 3 inches on sides after thorough rolling.

Surfacing stone varying in size from ½ inch to 1¼ inch were then spread to a depth of 3 inches in center and 2 inches on sides after rolling. The binder course consisted of trap dust.

On the westerly side of the road a gutter 3 feet in width was formed of granite blocks with longest dimensions lengthwise of road.

The drainage part of the work, laying pipe and building catch basins, was done by town labor. All other work was done by contract, unit system.

Mr. William E. McClintock, Chairman of the Massachusetts Highway Commission, was consulted in connection with this work.

Richard D. Shanahan of Portland was the contractor.

Quantity of work done and cost of same.

Excavation (earth), 621 cubic yards at \$.25 . . . . .	\$155 25
Borrow (furnished by town on cars), 420 cubic yards at \$.21 . . . . .	88 20
Cost of borrow to town, 420 cubic yards at \$.70 . . . . .	294 00
Shaping surface for broken stone, 6,504 square yards at \$.03 . . . . .	195 12
Broken stone, 2,329 tons at \$1.17 . . . . .	2,724 93
Freight on broken stone at \$1.00 . . . . .	2,329 00
Block paving (teaming and laying), 328 square yards at \$.27 . . . . .	88 56
Cost of granite blocks (furnished by town) . . . . .	385 25
Sidewalk curbing, reset, 896 lineal feet at \$.17 . . . . .	152 32
Extra work (contract) . . . . .	11 96



Catch basins (complete), 10; 18-inch vitrified clay pipe, 110 feet; 15-inch vitrified clay pipe, 14 feet; 12-inch vitrified clay pipe, 68 feet; 10-inch vitrified clay pipe, 198 feet.....	826 40
Incidental work done by town, engineering and preliminary work .....	795 00
	<hr/>
Total cost of job.....	\$8,045 99
Included in the above items are amounts which have been charged as follows:	
Maine Central Railroad (macadamizing between tracks) .....	\$44 50
L. B. & B. street railway portion.....	163 38
Village corporation, sewer connections, etc.,	72 61
	<hr/>
	280 49
	<hr/>
Net cost to town,	\$7,765 50

Average width of macadam, 52 feet.

Length of road macadamized, 1,200 feet.

Maximum grade 2.8%.

Yours very truly,

S. LITCHFIELD, *Engineer.*

*State road work in St. George.*

Note—The frontispiece in this report together with the following write up which appeared in the Rockland Opinion of June 22, 1906, was forwarded by Mr. Robert McKenzie of St. George, who was formerly a road builder in Scotland. The process of building a good road which is “cheaper than dirt,” as here described, can be repeated in any town in the State where stone can be obtained. Note that experience has shown that deep side ditches are a menace to the safety of the road and that shallow ditches—same as recommended in this year’s specification for state road work—are now being constructed.

Note also that culverts are built where a careful survey shows that they are needed. Also that side gutters are constructed on true grades so that all water runs off.

Note that foundation stones are fitted roughly together and chinked, and that stone hammers are used to break off projecting points and irregularities.



MAINE FARMER PRESS, AUGUSTA

Maine St., Brunswick, Me., after improvement with trap rock, macadam surface



Note also that each part of this work is carefully and thoroughly done.

Description from Rockland Opinion.

The construction of this road was begun four years ago, by the town of St. George, under the provisions of the law providing that when towns expend a certain sum on a designated piece of road for permanent improvements, the State will reimburse the town for one-half its expenditure on account of the work; the limit payable by the State at the present time being \$300. The first two years \$300 was appropriated by the town annually, and last year \$400; so that about \$1,500 has been expended. This year \$600 was appropriated by the town, which will allow an expenditure of \$900; and the work of extending the improved road is now in progress. The work has been in hand a sufficient time to enable one to form some judgment of the value of the system and methods pursued, and considerable has been said about it.

The Opinion has several times called the attention of students of road building to this piece of highway, where a plan was being worked out in a way that would demonstrate its value.

One has a fine opportunity to see how the method of road building employed works, as one section has been built three years, one two years, and one a single year, while workmen are busily engaged in constructing the fourth section, and thus the work may be seen in all its stages. You do not have to be informed where, in driving along the highway, you come to the St. George state road; you recognize it afar off—a white, smooth roadway, 18 feet wide, as smooth and hard as a slab of 8-cut granite, with not a rut or hubble, equal to any road in the world. And a drive over it gives a pleasure that can be enjoyed on few country roads in Maine. And, to those familiar with the roads of St. George, the change is made the more striking from the fact that this was one of the very worst pieces of road in town. Now it is one of the best in the county, so far as the work has progressed. The only thing to be regretted, is that, before the macadam was put on, the road had not been relocated and straightened out.

Where the men are at work on the new section, the manner of building may be seen in all its stages, at the present time. It

is perfectly simple, and in no respect new or original. Really, it is easier, and almost as cheap in the first instance, to build a good than a poor one. This is simply an ordinary macadam road, built entirely of granite grout. Little or no excavating has been done. The road is built up, right on top of the old one, 18 feet wide, overlapping the gutters. New gutters have been made by its side, and culverts built where, as found by a careful survey and observation of the natural water-shed, they are needed. The greatest care has been taken to construct the road and its surroundings so that no water shall get into it or under it. All the water runs off into the gutters, and these are so built that they carry away every drop of it, so that none gets into the road. All the material from which the road is built, is granite, taken from the grout-heaps at the quarries near by. The company charges nothing for the material—is glad to have it taken away. At the bottom are placed stones of considerable but varying size—what the men there call “one-man stones,” that a man can easily handle alone. These are fitted together roughly, but so they will bind. On top of them is spread smaller pieces, which fit together and into the interstices of the lower layer. And on top of this is spread crushed granite, which is leveled off to grade, and the men then go over it with long-handled hammers and break the larger pieces and reduce the whole to a common fineness. Then it is rolled. This is done with a common roller hauled by horses, but a heavy steam-roller would do it much better. The depth of each layer of granite depends on the character of the roadway as it is found, the grade desired, and other circumstances. When the first section of road was built, a sharp shoulder was formed at either margin, but this was found to be a mistake; now, the road is made with a crown gradually sloping down to the gutter, and this makes a safer and better road.

The entire cost of building this road, down to the present time, 18 feet in width, has been only 50 cents a running foot, which, it is no figure of speech to say, is “cheaper than dirt.” Of course, the material costing nothing, and being within easy hauling distance, it is not to be expected that a similar road can be built elsewhere at that figure; the cost will be somewhat more for the road built this year, as the haul is longer. But there is scarcely any place where some suitable material cannot be

obtained cheaply and an equally good road built at comparatively low cost.

The Long Cove road has been built by Mr. James Smith, under a special arrangement with the town authorities, who turn over to him the money appropriated by town and State and only stipulate that good results shall be obtained. It is scarcely necessary to state that they and the people of the town are well pleased with what has been accomplished, as shown by the increase of the appropriation this year. He pays the usual price for labor of both men and teams, and personally directs the operations. But he has the aid and advice of Mr. McKenzie, who has had long experience in road-building in Scotland, his native country—as it is that of Mr. Smith.

Aside from this piece of road, some very nice work has been done on the highways of St. George, under the direction of the able and efficient road commissioner of the town, Mr. John S. Smalley. An example of this is seen on the long, steep and crooked road on the hill between Wiley's Corner and Long Cove—at the foot of which is the watering-trough, to memory dear to pilgrims on that road. That is one of the best pieces of dirt road, with gravelled surface free of stones, that we have seen anywhere.

*Letter from Houlton.*

Houlton, Me., October 22, 1906.

*Mr. Paul D. Sargent, Commissioner of Highways, Augusta, Maine:*

DEAR SIR:—Herewith please find detailed report of permanent road work done in Houlton for the year 1906.

Grange street is 570 feet in length, and we cut it out for about 200 feet in length, through a small hill to a depth of 18 inches. This street is 30 feet wide. After having same cut out we filled the entire length with crushed rock, using 620 loads of said crushed rock at an average cost of \$1.50 per load. This was followed by a covering of gravel, after which it was thoroughly rolled by a new steam roller, and any defects found by rolling were further filled with gravel and rolled down until we had a good level surface.

Military street, 570 feet in length and 30 feet wide, was cut out the entire length for a depth of 15 inches, after which it was

filled. For this filling in one particular place we secured some old refuse iron ore near the foundry, and used 75 loads of this for a bottom at an average cost of \$0.50 per load; after which the whole thing was covered and filled with 660 loads of crushed rock at an average cost of \$1.50 per load. This was followed by the usual coating of gravel, after which the street was thoroughly wet down and rolled, and any defects filled in until we had a surface the desired level. We used to good advantage on this street our steam roller both for rolling and plowing. This street was one that had occasioned us much trouble in the past, the nature of the soil being clayey and sticky, and in the spring the wheels would cut down to the hubs.

We think now, however, that we have it well in hand both from a surface and drainage standpoint, and since being repaired it is one of the principal thoroughfares between the business portion of the town and the depot. We expect good results from our work here.

Spring street, in our residential section, was through a low, swampy place, and a hard place to build a road. The street is 840 feet in length and a little hill at one end was cut down for 100 feet in length to a depth of 15 inches, and the whole street graded 30 feet wide, clear across. We were fortunate in securing for this street some 250 loads of ledge rock for a bottom, which we got from our water-works excavations at an average cost of \$0.60 per load. This made an excellent bottom, on the top of which we spread 1,040 loads of crushed rock at an average cost of \$1.50 per load, which was followed by a good coating of gravel and by the steam roller. This street is today giving great satisfaction to the residents thereon and to the property owners, and as soon as we get proper sidewalks there, it will have few equals in town.

Our steam roller, purchased this spring from the Buffalo Pitts Roller Co., has proven of great satisfaction to us, and it is our firm belief that this town has not invested its money on any thing more practicable or serviceable for a long time. We have used it to good advantage in plowing, rolling and in all possible places. We think that a considerable of the good results noticeable on the streets finished this year are due to the steam roller.

As near as it is possible for us to estimate, the cost of the crushed stone at \$1.50 per load included everything pertaining







MAINE FARMER PRESS, AUGUSTA

Grange St., Houlton, Aroostook County, macadam surface, built 1906

thereto, such as spreading, watering and rolling incident to finishing of the road. The only thing that we omitted to state above was the cost of the excavating which for the case in hand cost us 25 cents a square yard. The width of the finished surface of this road is about 24 feet, the center being graded to a depth of about 18 inches, gradually sloping off to nothing.

We think that possibly you may be surprised at the low cost of our crushed stone, but we are fortunate in having our crusher located adjacent to our gravel pit, so that the cost of the raw material is very little, and the distance which we have to haul it being about one-half mile, makes our actual cost of crushing, hauling, spreading, and rolling the stone, as near as we can estimate it, at about \$1.50 per two-horse load.

Yours very respectfully,

FRANK A. PEABODY,

For municipal officers of Houlton, Maine.

Note—It appears to this office, and we so advised the municipal officers of Houlton upon receipt of the above letter that in our opinion the work as described above was really too well done. That is, if the stone was of good quality and thoroughly rolled as each course was spread, eight or ten inches at the center tapering to six or seven inches at the sides should have given a sufficiently strong pavement which would have proved satisfactory in every respect. On the other hand we realize the congested traffic on some of the streets of Houlton during the potato shipping season—for weeks running between 2,000 and 3,000 loaded teams per day and as it is better to err on the side of safety the above construction may not be too good. In every case a study of local conditions must decide these questions.

*Letter from Sherman.*

SHERMAN, September 9, 1906.

*Mr. Paul D. Sargent, Augusta, Maine:*

DEAR SIR:—We have received your circular requesting a short sketch regarding our "State road" work. The location of our work this year was through a swamp which had, when first built, been made passable by being covered with logs—corduroy in fact—afterwards covered with dirt. It was narrow and badly rutted spring and fall. Our commissioner first cut the bushes on each side of the road, took out the old logs, then widened the

road six feet, all on one side, with field stones, of which it took an immense amount, over a thousand two-horse loads. This made the road 24 feet wide. We made our surface 13 feet wide and 14 inches deep of crushed stone from our crusher. It is a good piece of road. It is nearly one-half mile in length and cost something over \$600.

Respectfully,

FRANK ALLINGHAM, *Selectman.*

FRANK BURNHAM, *Road Commissioner.*

GRAVEL WITH STONE FOUNDATION.

*Letter from Lubec.*

WEST LUBEC, ME., December 4, 1906.

*Mr. Paul D. Sargent, Augusta, Maine:*

DEAR SIR:—I am sending you under separate cover photograph of the completed state road, and I give you herewith a short description of the work I have done on the road and the cost of same.

You doubtless remember, from your trip here last spring when you went over the road and advised putting in the "V" drain foundation and gravel surface, the extremely bad and mirey condition of this section. It was the worst piece of road in town and it has been bad, spring and fall for years. We followed your advice as to construction.

The length of road rebuilt was seventy-seven rods or twelve hundred and seventy feet and six inches. The old road was narrow and had to be widened from three to six feet in order to get a twenty-two foot road which was what we finished.

The whole length of the road we put in a stone "V" drain just according to your specification; twelve feet wide, ten inches deep at shoulder and twenty four inches deep at center properly crowned. Over this we spread gravel ten to twelve inches deep at center and twelve feet wide.

The excavation for "V" drain was quite expensive as we had to pick about eight inches of gravel and clay off the surface before we could use a plough; this gravel and clay being used to make the shoulders of the road with. We also had to handle a lot of brush and rock which had been used to fill mires and have been accumulating the past fifty years. The excavation cost \$2.21 per rod, or \$170.

Stone for the "V" drain was hauled one mile. We were careful in selecting our stones and in laying them in the trench. We laid the largest stones about eight inches in diameter—in the bottom and graded from those up to fine on top. This work cost us \$3.17 per rod, or \$244.00.

Our gravel was hauled an average distance of one fourth of a mile and we used six hundred and twenty-five two-horse loads. The cost of gravel, hauling and grading was thirty cents per load. The gravel was spread and all grading done with the road machine which is ahead of the old fashioned way both as to cost and evenness. The cost of graveling and grading was \$2.41 per rod, or \$186.00.

Thus you will see the road cost \$600, or \$7.79 per rod, or 47.2 cents per foot.

The road has been built five months, is as good as new and is giving perfect satisfaction.

Owing to the dryness of the weather during construction the road was not rolled.

Yours very truly,

JOHN ANDERSON.

Road Commissioner of Lubec.

*Letter from Rockport.*

Rockport, Maine, Oct. 4, 1906,

*Mr. Paul D. Sargent, Augusta, Maine:*

DEAR SIR:—The state road work done in Rockport for the year 1906 consists of building a gravel road with a broken stone base 1,220 feet in length, at an expense of \$877.70.

The construction as shown by the accompanying illustrations consisted of laying broken stone of about 8-inch dimensions, 20 feet wide with a crown of 12 inches covered and chinked by a second course of finer lime stone chips spread to a width of 27 feet with a crown of 18 inches, well rolled with a four-horse roller. This was covered with a layer of pan clay three inches deep, well rolled, and the road was surfaced with a coat of gravel five inches thick, thoroughly rolled.

Cut number one shows foundation stone. Cut number two, the lime-rock chips before rolling. Cut number three, the finished road.

The work for 1905 consisted of lowering the grade of the road 5 feet at this point by excavating a ledge 50 feet long and the stone thus excavated was used for the foundation course of the road built this year.

Included in the above work is the construction of one split granite culvert 15 inches by 24 inches by 45 feet.

Yours truly,

C. A. CARLETON, *Road Commissioner.*

GEO. H. M. BENNETT, *Chairman of Selectmen.*

Note—Had we been building this road with above ingredients at hand, we should have omitted the binder of pan clay. The lime-stone chips after rolling should have afforded sufficient dust for binding purposes. Limestone screenings are often used for this very purpose in connection with hard stone of poor binding qualities.

*Letter from Belfast.*

Belfast, Maine, Sept. 24th, 1906.

*Mr. Paul D. Sargent:*

DEAR SIR:—We are building our state road this year in accordance to the “V” shape plan in this year’s specification for state road work.

We first break surface of road with road breaker, and plow and scrape out what we can, then we put up batter boards and draw line in center to get grade, then work out to grade by hand, making the trench 10 feet wide on top, 3 feet deep in center, 15 inches outside, building French drain in center and placing large rocks on bottom each side of drain, filling to surface with small rocks, putting rakings of streets on top, covering with meadow hay, then scraping in the dirt and finishing with a coat of bank gravel.

Respectfully,

J. F. WILSON, *Comr.*

Note—Note the care with which Mr. Wilson constructed the grade of his “V” drain; also that he used pebbles and small stones raked from the surface of the streets and roads with which to surface the same. We suggested one year ago that street rakings should be preserved and stored at convenient points for future drainage work and had this very use in mind.



MAINE FARMER PRESS, AUGUSTA

State Road, Rockport, Knox County, built 1906

Cut No. 1, showing foundation stone, blasted from ledge and broken so as to be eight inches and less in dimension. Spread 20 feet wide, 8 inches deep at sides and 20 inches deep at center



*Letter from Hampden.*

Hampden, Me., Sept. 22, 1906.

*Paul D. Sargent, Commissioner of Highways, Augusta, Maine.*

DEAR SIR:—As directed at our last annual town meeting the selectmen are in charge of the roads this year. The two other members of the board being busy, the work has fallen to my lot and I have spent most of my time during the summer in attending to this duty. During the season I built over two miles of rock road including the state road.

Herewith I give you the length and cost of each section built, with such detailed description as will indicate the style of construction used. I do this in hopes that others interested may be benefited by studying the same.

Section 1. Length, 660 feet. Cost \$121.00

Opened "V" shaped, 2 feet deep; width of rock, 8 feet; rock hauled  $\frac{1}{4}$  to  $\frac{1}{2}$  mile; earth covering; gravel surfacing 3 inches deep; gravel hauled  $\frac{1}{2}$  mile; width of road from ditch to ditch 30 feet.

Section 2. Length, 924 feet. Cost \$88.50

Rocks laid on top of old road, to raise grade; depth of rocks 18 inches in center; width 9 to 10 feet; rocks were taken from side of road; gravel surfacing 3 inches deep; gravel hauled  $1\frac{1}{4}$  miles; width from ditch to ditch 33 feet.

Section 3. Length 1,452 feet. Cost \$99.25

Opened "V" shaped,  $1\frac{1}{2}$  feet deep; width of rock, 8 to 9 feet, rocks taken from walls at sides of road; not graveled, as gravel pit was two miles from the work; width of road from ditch to ditch 30 feet.

Section 4. Length, 246 feet. Cost \$13.75

Same construction as used for section three. As an experiment I offered to open a piece of road needing underdrainage, near any lot upon which there were stone walls or rock piles which the owner desired to have removed and to take care of these rocks provided he would haul them to the road free of expense to the town. One farmer, Abraham Smith, took advantage of this offer so it will be noticed that this section was built at a cost of less than a dollar a rod. I expect to find other Smiths in the near future.

Section 5. Length, 528 feet. Cost \$43.75



Rocks hauled  $\frac{1}{2}$  mile and laid on top of old road; surfaced 3 inches deep with gravel hauled 1 mile; width of road from ditch to ditch 30 feet.

Section 6. Length,  $412\frac{1}{2}$  feet. Cost, \$76.25

Section was made by one horse and six men with picks and shovels. A ditch was cut 7 feet wide and three feet deep, in the middle of the road, the dirt being all thrown to one side. It was filled with rocks taken from a wall by the roadside, by the diggers, and one man and one horse were kept at work covering the stones as fast as they were laid, by scraping the shoulders back on the rocks. This was formerly a boggy place. It is a good job.

Section 7. Length, 1,980 feet. Cost \$125

Opened and filled as above for half the distance; for the balance, rocks were laid on the old road-bed. All rocks were taken from a wall by the roadside and were laid 8 to 10 feet wide and 1 to 2 feet deep. The road was surfaced with gravel 3 inches deep. Width of road from ditch to ditch 30 feet.

Section 8. Length 1,320 feet. Will cost about \$100

I am just building this section.

Total length of road built,  $7,522\frac{1}{2}$  feet. Cost \$667.50. Cost per foot \$0.09.

E. F. LITTLEFIELD,

Chairman of Selectmen.

Note—We would call the attention of selectmen and road commissioners to the above report of work done in the town of Hampden. This method of reporting work is in line with our suggestion of last year that commissioners should make a detailed report of work done, together with cost of each job, in order that taxpayers might know for what purpose their money had been expended; and for the further reason that with a record of each job it would be comparatively easy to tell after a few years what kinds of construction gave the best satisfaction.

Incidentally we think Mr. Littlefield accomplished a great deal for the amount of money expended. In our opinion not less than eight inches of gravel should have been used in surfacing these jobs and we would suggest that if possible a surface coat of six inches of gravel be spread the coming season, over the several sections of road.

SAND HARDENED WITH CLAY.

*Letter From Farmington.*

FARMINGTON, ME., November 27, 1906.

*Mr. Paul D. Sargent, State Road Commissioner, Augusta, Maine:*

DEAR SIR:—Yours received some time since. I was very busy at that time and it slipped my mind; hence the delay. Now in regard to the clay road: First I will tell you how I made it. I first take four horses and the road machine and commence in center of road by pushing the sand out each side the width I want the clay, which is usually sixteen feet. On the last piece of road I built, I put in an average depth of ten inches.

In scraping the sand out in some places I find the sand loose down some distance. In others I find the foundation quite hard. In such places do not use as much clay. Where I find it loose I sometimes use as much as fourteen inches. I then shape the clay with road machine and properly roll it. I then take the sand that we pushed out and spread it over the clay to a depth of three inches. Then roll it thoroughly. In that way I keep my grade and crown nearly perfect.

The first piece I built four years ago is as smooth to-day as when first built. All I do is to go over it fall and spring with road machine and put on a little more sand, that keeps the ditches clear and road in good shape. Over the first piece built I hauled six hundred big two-horse loads and no one could have told there had been more than single teams over it.

Now, Mr. Sargent, I suppose you want to know about the cost. The last piece I built is one hundred and thirty rods. The width of clay is sixteen feet. I did not keep an itemized bill as I did not think any one would care to know about it.

I paid for clay. ....	\$20.00
For teams and men and dynamite .....	\$249.26
<hr/>	
Total. ....	\$269.26

At a reasonable distance to draw the clay the average cost of finished road would be about \$2.00 per rod. The longest distance I had to draw clay was two hundred and fifty rods, the shortest fifty rods.

With my experience with sandy roads I think there is no way we can make them with anywhere near the same money as with clay. I could draw clay quite a distance at \$3.00 per rod.

To draw crushed rock the same distance for a sixteen-foot road it would cost \$20.00 per rod.

In regard to keeping a clay road in repair, I do not think it would cost as much in twenty years as it would a stone road. I am very much in favor of stone roads just the same. I had my first experience in building stone road this year and every one thinks it a fine road.

Why I speak in favor of clay roads is for the benefit of towns that have sandy roads and can get good clay. They can build a road that will please every one.

I shall be glad to hear from you at any time in regard to roads.

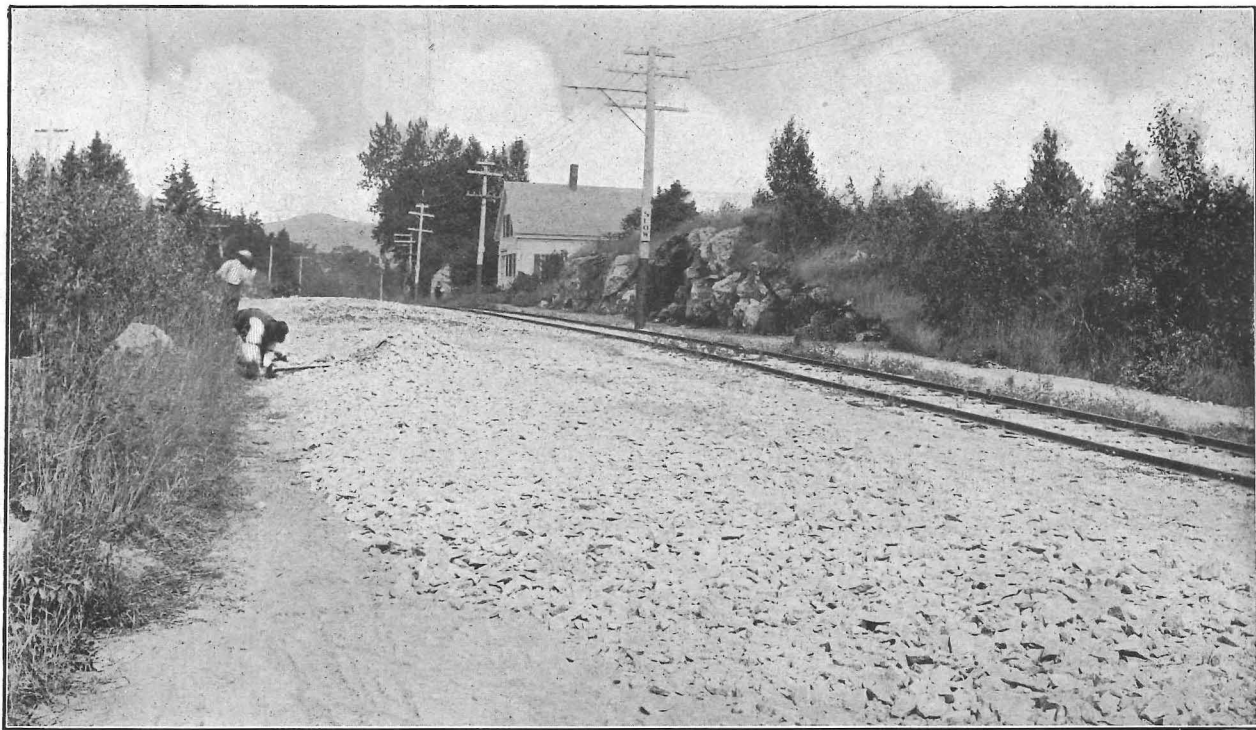
Yours respectfully,  
H. W. GILMAN,

Note:—The main point to be observed in building a clay roadway on a sand foundation is to get clay of a uniform grade or texture and to *thoroughly compact* it before putting on the sand. In other words, do not spread the clay in lumps so that the individual lumps will be loose and separated one from another by sand layers. It would then be very similar to so many stones buried in the sand. Also be careful to finish the clay with a true longitudinal grade and a true crown before covering with sand. As the sand wears away and works into the clay, be sure to add more sand. As long as a light coat of sand is kept over the clay the road will be dry and hard.

EARTH ROAD RECONSTRUCTED AND MAINTAINED BY KING SPLIT  
LOG DRAG.

We recommend a careful perusal of this letter and the following article by every road commissioner in Maine and advise each one to try the experiment and *follow directions carefully*.





MAINE FARMER PRESS, AUGUSTA

State Road, Rockport, Knox County, built 1906  
Cut No. 2, showing course of limestone chips over foundation; spread 27 feet wide, crown of 18 inches

*Letter From Standish.*

Standish, Me., Sept. 22, 1906.

*Mr. Paul D. Sargent, Commissioner of Highways, Augusta, Maine:*

DEAR SIR:—In line with a suggestion made at an earlier date, I hereby submit a brief report of my operations during the present season with the King road drag.

After attending the meeting held by you in the interest of road improvement at Portland in April last, I made a drag following the model you there exhibited. A spruce log about eight feet in length and eleven inches in diameter was sawn in half and then put together with two-inch red oak slats, the timbers being about thirty inches apart with the flat surfaces perpendicular and with one flat surface inward, the other outward. Hence, if the team is hitched to the timber having the flat surface outward, the drag is hauled over the road with the flat surface in advance; if the team is hitched to the timber having the round surface outward the drag is hauled with the round surfaces in advance, the one method scrapes, levels, and packs, the other smooths and packs.

The drag is hauled at an angle with the road, the outer end in advance.

On the slats may be placed a platform of boards upon which the driver can stand, or the drag may be weighted with rocks if needful. Each way from the writer's residence (one mile east of South Standish) is a section of highway of about three-fourths of a mile in extent which is one of the last pieces of road in Cumberland county to become dry and firm in the spring.

The first use of the drag was upon this section of road April 28, 1906. At commencement the mud was from two to eight inches or more in depth. Within three hours teams passed at a trot without sinking half the depth of a hoof or burying a wheel rim. Although the frost was not wholly out of the road at that time, and in spite of the repeated and heavy rains of June, there has not been a day nor even one hour when the preceding sentence would not be a correct description.

People passing over the road have pronounced it in the finest shape of any piece of earth road they ever saw. Many have expressed themselves by saying that to pass from the dragged to the undragged road is like changing from rubber to iron tires.

The writer has lived by this piece of road all his life and although we have had the extremes of weather this season, both wet and dry, not for forty years has the road in question been so free of mud and dust.

West of the writer's place a section of road of over a mile in length was worked with the road machine in the month of May. This became in such bad shape that parties who had seen the effect of dragging where I first worked, demanded that this section be dragged also. This I did by order of the commissioner, June 4 and 9, making a fine piece of road.

In all about five and one-half miles, contiguously, have been dragged. Although nearly four months have elapsed since the drag has been used it can readily be told where the dragged and undragged sections join.

Parties who have known the road all their lives are agreed that it never was in so good condition a season through.

The least expense per mile has been about \$1.50; the greatest a little rising \$6.00; the average expense per mile for the five and one-half miles, a little less than \$3.00. This would amount to \$275 for the entire highway mileage of the town.

In considering expense it should be kept in mind that much of our highway is in ill shape and condition from use of the road-machine and therefore the first use of the drag will be more expensive than its later use.

Injurious as are water, frost, and traffic to the road-bed all these combined have not wrought such damage to our highways as the unneedful, wasteful, and injudicious use of the road machine. The action of the road-machine is to loosen and to bring loose material into the road and thus make it easy prey to the elements. Every move with the drag smooths and solidifies and is therefore in line of preservation and permanency.

Our roads really need widening, smoothing, solidifying, leveling and a general righting up. Use of the drag has thoroughly convinced the writer that this can be accomplished without additional expenditure.

When once by a few seasons' use of the drag, our roads are re-established to a proper width, shape, and contour, we can thereafter have and maintain much better roads with less than our present outlay. Let it be remembered the proper use of the drag is to go on in the spring when the roads are soft, to give



MAINE FARMER PRESS, AUGUSTA

State Road, Rockport, Knox County, built 1906

Cut No.3, showing finished gravel surface





shape and contour, and thereafter, occasionally, through the season when the roads are just sufficiently wet to pack well.

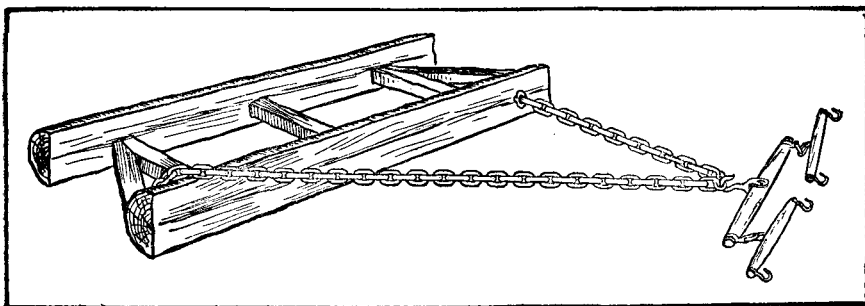
Much further detail might be added but brevity forbids. In general it can be said: Experience in the use of the King drag and careful and minute observations of the results of its use during the season have led to the following conclusions.

1. There is scarcely a rod of highway where the drag cannot be used to advantage.
2. Its action is always to smooth and solidify the road-bed thus rendering it less subject to injury by the elements and the wear of travel than any other method of repair.
3. Spring mud and summer dust are largely abated.
4. Excessively sandy places can be hardened by dragging when wet and will remain in a much improved condition the season through.
5. Wherever the drag is used the good effect is instant and continuous whatever weather conditions may follow.
6. The solidifying effect of the drag serves to fasten, preserve and give the work a permanent nature.
7. With the drag, our roads can be improved, widened, given proper shape and contour, and maintained in much better condition cheaper than they can be maintained in their present shape by the use of the road-machine or any other device, machine or method known to the writer.

Your truly,

F. P. SANBORN.

Note—We believe there is so much to be gained financially by the towns and in practical improvement to many miles of dirt road in Maine by using the King Split Log Drag that we reprint herewith, by courtesy of the R. F. D. News, directions for making and using the same.



## GOOD ROADS WITHOUT MONEY.

Directions for Making the Famous King Road Drag—Dirt Roads Can Be Made Usable all the Year at a Small Outlay of Time.

---

For the good of the cause and at the request of hundreds of carriers, we reprint the directions for making the road drag designed by D. Ward King of Maitland, Mo. Mr. King deserves the thanks and encomiums of all dwellers on the dirt roads of the country for his discovery and the generosity with which he places it without money and without price in the hands of any one who will take the trouble to use it.

*The Problem.*

The problem given is the soft or dirt road. It is "worked" occasionally by being ploughed on each side and the loose dirt thrown up toward the middle making a more or less symmetrical oval sloping to the ditch on either side. In good weather when the rains are not frequent or heavy the ruts will be cut down by the wagon traffic. In rainy weather and in the spring and fall the ruts are full of water and the mud holes are worn into the surface and made deeper by every new wagon track. The water that makes mudholes is held in by the bottom and sides of dryer earth or a frozen surface. If the water can run off it will do so. The problem then is to make a smooth surface so that the water will run off. Then of course there will be no mudhole.

*The Solution.*

The solution is the King drag herewith illustrated.

Any man or boy can make a drag in less than two hours.

Get a log, eight feet long and twelve inches in diameter. Split it in halves. Bore three two-inch holes in each half—one at each end, and one in the middle. Join the halves, split sides forward, with good strong braces, about three feet long; wedge them in securely.

If a log is not handy, use a twelve-inch plank. Reinforce the backs with a 2 x 6.

A loose plank, on which to ride, is placed across the braces.

Wrap one end of the chain around an end stake, carry it over the top of the slab, out to the double-trees, and then back to the other end of the slab where it should be fastened by poking an old bolt or spike through one of the links into a hole bored three or four inches from the end of the slab and about its center, up and down.

Hitch up and drag—at an angle of forty-five degrees—and you will be surprised at the results.

#### *How To Use The Drag.*

First make the drag, and have a four-horse evener ready for use the first time. Wait until your roads are very soft, the wetter and softer the better. Then attach four horses; straddle the right-hand rut, and begin to drag. Then turn and come back along the other rut. Don't hurry; drive slowly; the slower the better. The effect of this first dragging will be to fill up the ruts, and to make a moderately smooth surface on which it is possible to make three tracks—one on each side, and one where the old track used to be. This smooth surface will shed water partially at least, and will give free access to the sun and wind, causing it to dry off quicker than the rough surface on either side of the smoothed space. When it begins to dry off, take two horses and go over the same track again. This will still further puddle the clay and carry a little more into the middle of the road which every team will both puddle and compact still more.

If you wish to widen the road, wait until after another rain, and then when it has dried off sufficiently to plow readily plow one furrow along the outer mark of the drag, take the drag and spread this smoothly over the surface of the road. In this way the road will be widened by the width of the furrow and will gradually become oval; that is, higher in the middle, and each time the drag is used will become a little smoother and a little harder. If the road is still too narrow, plow another furrow, and so on, until the road has been widened as much as you wish.

#### *Don'ts.*

Don't drive too fast.

Don't walk; get on the drag and ride.

Don't wait for your neighbors to take hold; they may be waiting for you.

Don't wait for the big grader to come and shape up your road. All you can do first will help to make the work of the grader permanent.

Don't be particular about material. With an ax and a two-inch auger almost any kind of a log can be made into a drag. The one I used for several years is a box elder.

Don't try to drag with one piece; use two. One will scoop out the hollows in the road and deepen them. When two are used the one keeps the other up; and in a month or so the hollows will have filled and become level and hard like the balance of the road.

*Mr. King's Catechism.*

Would it not be better to plow the road before dragging?

No. Plowing gives a soft foundation. Plowing the middle of the road is a relic of the old dump scraper days.

What do you do where there are deep ruts in the road?

Drag them. If you drag when the surface is quite loose and soft you will be surprised how soon they will disappear.

How do you get the dirt to the middle of the road?

By hauling the drag slantwise with the end that is toward the center of the road a little to the rear of the other end.

But suppose the road is too narrow?

First drag the wheel tracks. After three or four rains or wet spells, plow a shallow furrow just outside the dragged part. Spread this over the road with the drag. Only plow one furrow. You may plow another furrow after the next rain. At each plowing, you widen the road-bed two feet.

How many horses do you use?

Two generally. Three if it is just as handy. Four when breaking colts. A good solid team in the center and a colt on each side. Two men on the drag, one to drive, the other to control the colts.

How do you drain the road?

If the earth is pushed to the middle of the road continually the road will drain itself.

Why not make the drag out of plank?

You can, and do good work. Mr. Chas. Hill of Mexico, Mo., (quoted elsewhere) uses one made of three hard wood two by

fours. But the split log is best. The plank drag is not so stiff and quivers and flounces.

Why not make the drag of heavy sawed timber, say 6 x 8 or 8 x 10?

Because they have a tendency to slip over the bumps. The log is better than the plank because it is more rigid and better than heavy timbers because its thin, tapering edge scrapes more surely.

Don't you grade up the road first?

No. The grading is done with the drag, gradually. By so doing, the road is solid all the time and is built on a solid foundation.

At what angle do you haul the drag?

A safe answer is forty-five degrees, or in common parlance, exactly quartering. But bear in mind that the proper angle of a drag like the proper tension of a sewing machine depends somewhat on circumstances. The angle of the drag will need to be varied as the soil is moist or dry and as the surface is more or less convex. These slight changes can be made by the driver walking in one direction or the other on the drag.

What does it cost to drag a mile of road a year?

The cost is variously estimated at from \$1.00 to \$3.00. I think much depends on a season and what degree of excellence satisfies the man who drags.

How do you keep the drag from dodging sidewise?

By not loading it too heavily. If it dodges it is overloaded. If it is overloaded it is because you are trying to do too much at once. The secret of road dragging is a little at a time and often.

Will it work?

All over the state of Missouri the drag has been used with satisfaction. The State Board of Agriculture recommends it and publishes a free booklet on the subject.

Mr. King has traveled extensively in Ohio, Illinois, Iowa and elsewhere and everywhere comes the word—it will do the business.

#### *Wide Tires.*

Section 74 of chapter 23, Revised Statutes, provides as follows: "A town at its annual meeting may authorize its assessors to abate not exceeding three dollars of the tax of any

person, upon proof that he has owned and used on the ways during that year cart wheels having felloes not less than six inches wide."

We are not aware that this statute has ever been of effect and we might add that from all information obtainable on the matter of wide tire legislation, results are no different in this State than elsewhere. The general comment is that notwithstanding the beneficial effect of wide tires on all classes of roads, for one reason or another it has been impossible to enforce such legislation. Consequently the following original and effective method of demonstrating the value of wide tires may offer a solution of the question "How shall we get wide tires adopted."

*Letter From Rockport.*

ROCKPORT, MAINE, August 23, 1906.

*Paul D. Sargent, Commissioner of Highways, Augusta, Maine:*

DEAR SIR:—I wrote you on July 31, 1905, that our board of selectmen had purchased four sets of wide tires, and I am sending you a report of the result of our experiment, which I think may be of interest to you.

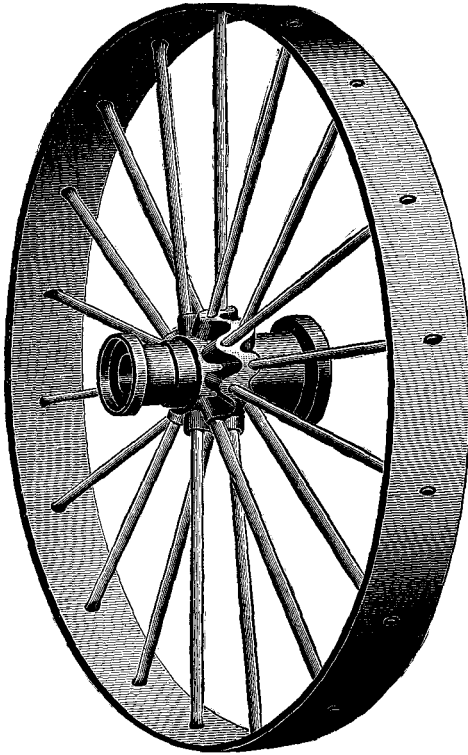
The wheels were purchased of the Electric Wheel Company of Quincy, Illinois, and are guaranteed to stand up under a load of 16,000 pounds or eight tons. They are made entirely of steel, built with spokes like a bicycle wheel. The rear wheels are 44 inches in diameter and the front ones 38 inches. The width of the tires is 6 inches. The cost delivered at Rockport was \$43.19 per set.

The heavy teaming in our town is confined mainly to the 3 miles of dirt road over which lime rock is hauled from the quarries to the kilns. This teaming has been done for years on 2½-inch tires with hind wheels 56 inches and front wheels 50 inches in diameter. The resulting repairs made necessary by the continual hauling of heavy loads on narrow tires have cost this town thousands of dollars. In order that this might be remedied we made an agreement with the lime rock haulers to furnish them with the wide tired wheels fitted to their wagon axles with the understanding that if upon fair trial the experiment should prove to be of mutual advantage the haulers should buy them of the town.

Upon consultation with the manufacturers we ordered the sizes given above. They arrived about the first of July, 1905,

and from that time until about the 21st of August, I used my best endeavors to get them adjusted to the wagons and used.

But the haulers claimed that the 44 inch wheels were so much lower than the old ones that the rocks and ruts would "trig" them; also that they would lower the body so much that the tongue would slat and break the horses' legs; and the question was raised, who would pay the damage?



WHEEL, DESCRIBED BY MR. BENNETT.

As a last resort we put the wheels on one of their wagons and hauled rocks for them for one day. Our teamster hauled the same loads and followed in the old tracks. The road was in a very dangerous condition at this time and badly rutted, so that even light driving wagons sank to their hubs in some places. The wide tires soon filled the ruts so that the wagons with the narrow tires actually hauled more rock on the last or fourth turn that day than they did in the morning.

After seeing the work of these wheels for one day, the owner of the wagon wanted the whole equipment immediately and



applications for the other three sets came in so fast that we were unable to shift the gearing fast enough. In fact one teamster drove his team for a week without brakes in order to have the wheels sooner. Since that time the wheels have been in constant use summer and winter.

At the time this is being written the same amount of rock per day is being hauled in three turns that was formerly hauled in four turns by the same teams, and the drivers claim the work is being done easier by the horses. The sand stretch which was the hardest place with the narrow tires is now crossed easily.

Two of the rock haulers have built wooden wheels with wide tires which have diameters of 56 and 50 inches. One set was made by bolting additional felloes on the old wheel to make up the 6 inches in width and then a 6 inch tire shrunk on. This seems to me to be poor economy as the cost of a pair of rear wheels made in this way is \$40 or within a few dollars of the cost of four of the steel wheels. I do not believe the wooden wheels will stand up under the load of eight tons which is now being hauled on the steel wheels. In fact I saw one set at the blacksmith shop for repair a short time ago.

After using the wheels for about a year, the owners of the wagons bought them and paid the first cost of the wheels \$30 per set and \$13.19 freight charges.

Our expenditures for repairs upon this road since the use of wide tires has become general has amounted to almost nothing. By their use the ruts are filled up and the road-bed is kept smooth and consequently dry.

The following by-law was adopted at the town meeting held March 26, 1906.

“That hereafter no loads exceeding 4,000 pounds shall be hauled over any portion of the state road, as located by the county commissioners, now built or hereafter to be built, or over the rock road from the lime kilns to the lime quarries at Simon-ton’s Corner, on wheels with tires less than six inches in width, under penalty of five dollars for each offense.”

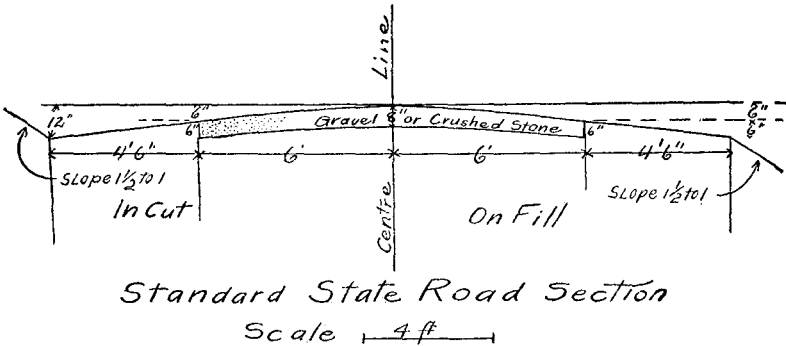
This by-law was printed in the form of a poster and was posted along the roads mentioned therein.

Trusting this may be of interest to you and the cause of good roads, we are,

Yours very truly,

GEO. H. M. BENNETT, *Chairman.*

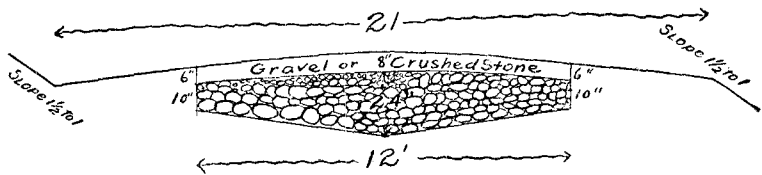
STATE ROAD STANDARDS FOR 1906 WORK.



The above cut represents the standard state road section as adopted by the county commissioners and by them recommended to towns doing state road work the present year. The main features of this section are that it calls for a road 21 feet wide with side gutters so shallow that a wagon may be driven to the bottom of the gutter without danger of being upset.

The gravel or crushed stone or other surfacing material occupies the central 12 feet of this road and is 8 inches deep at centre and 6 inches deep at sides, being supported at the sides by earth shoulders so made that they form a continuous crown with the gravel from the center to the side of the road, but at a little faster rate, that is, the crown on the gravel is at the rate of one inch per foot and on the shoulders it is at the rate of  $1\frac{3}{8}$  inches per foot making a total crown of 12 inches. It will also be noticed that the slopes of this road are at the rate of  $1\frac{1}{2}$  horizontal to 1 vertical.

It is preferable to screen the surfacing material into sizes about as follows:  $2\frac{1}{2}$  to  $1\frac{1}{4}$  inches in diameter;  $1\frac{1}{4}$  to  $\frac{1}{2}$  inch in diameter; and  $\frac{1}{2}$  inch and dust; than to spread the material in courses and to thoroughly roll each course. The last course  $\frac{1}{2}$  inch and dust should be thoroughly watered before rolling.



*V-drain for foundation in wet and heavy soils. Large stone at bottom. Fine and gravel at top. No stone over 10" in diameter to be used. Scale 4ft.*

The above cut represents method of treating the foundation when the road lies on springy or on wet soil or on clay and it is not desirable to raise the grade. This foundation has been extensively employed by the Massachusetts State Highway Commission and we believe was designed by them.

A modified form of this foundation has been used in this State on state road work the past few years and wherever the work has been done with any degree of care we hear only good reports. In fact we are led to believe that work of this nature constitutes about the only permanent work that has been performed with state road funds.

The proper construction of this foundation is as follows: Excavation should be as wide as traveled track requires for road—our standard calls for twelve feet. Excavation is made deeper at center than at sides, hence the name "V" drain. We call for 20 inches at center and 10 inches at sides—measured from a level surface. When filled with stone and given the necessary crown this gives 24 inches of stone at center and 10 inches at the sides—stones not exceeding ten inches in diameter (eight inches would be better) should be placed in the bottom of the trench so as to afford drainage. Over these should be placed stones gradually diminishing in size until at the top we should have small pebbles (street rakings are good).

Side outlets should be provided as often as opportunity offers or can be made so that there will be no danger of water remaining in this foundation and freezing. Good connection should be made with all culverts crossing the road.

The point should be constantly borne in mind that drainage is the fundamental requisite in all road work.

COST OF SEBASTICOOK RIVER BRIDGE AT BENTON.

Statement of expenditures in connection with the construction of the highway bridge across the Sebasticook river in the town of Benton.

Masonry,		
John E. Brown, amount of contract,	\$5,121 28	
Less value of old stone.....	300 00	
	<hr/>	\$4,821 28
Superstructure,		
New England Structural Co.....		10,540 00
Lumber for flooring,		
Procter & Bowie.....	\$7 40	
W. T. Reynolds.....	26 64	
Chalmers (and trucking).....	363 49	
	<hr/>	397 53
Engineering,		
W. B. Getchell, surveys, plans, etc..	\$63 00	
J. R. Worcester, consultation.....	18 00	
C. E. Warren, engineer and inspector ... ..	424 25	
C. E. Warren expenses and inci- dentals .....	65 84	
	<hr/>	571 09
Typewriting,		
G. V. Brown.....	\$10 00	
Edith Packard .....	3 62	
	<hr/>	13 62
Pipe rails, W. B. Arnold.....		125 10
Labor, Fred Crosby.....		1 50
		<hr/>
Total cash cost of structure.....	\$16,470 12	
Plus allowance by masonry contractor for stone in old abutments .....		300 00
		<hr/>
Total cost of structure .....	\$16,770 12	

Under chapter 39, Resolves of 1905, the State paid on account of the construction of this bridge \$6,000.

This bridge is a single span structure 254 feet and 4 inches long, supported on two abutments of granite masonry laid in cement.

## COST OF BINGHAM-CONCORD BRIDGE.

Statement of expenditures in connection with the construction of the highway bridge across the Kennebec river between the towns of Bingham and Concord.

## Advertising,

Portland Publishing Company....	\$4 00	
Lewiston Journal .....	2 25	
J. P. Bass & Co.....	3 00	
Engineering News .....	13 20	
J. O. Smith & Co.....	13 50	
Elba Curtis (signs).....	2 00	
		\$37 95

## Stenography and Typewriting,

L. M. Wyman.....		25 00
------------------	--	-------

## Masonry,

Thornton & Merrill.....	\$9,165 00	
Calvin R. Ellis (riprap).....	381 00	
		9,546 00

## Pipe railings,

Wallace Johnson (drilling).....	\$17 00	
Steward Heating & Plumbing Co..	153 00	
		170 00

## Superstructure,

American Bridge Co.....		21,873 38
-------------------------	--	-----------

## Engineering and inspection,

E. E. Greenwood, surveys, plans, inspection, and expenses .....	\$789 35	
Lewis G. Baker.....	62 50	
Hunt & Co. (shop inspection of bridge) .....	163 74	
		1,015 59

Legal advice—contracts, etc., Forrest Goodwin....		60 35
---	--	-------

County of Somerset, bills of county commissioners..		297 62
---	--	--------

Total cost of bridge.....	\$33,025 89
---------------------------	-------------

Under chapter 92, Resolves of 1905, the State paid 4-7 of the cost of this bridge or \$18,871.94.

This bridge consists of two steel spans—one of 177 feet, the other of 300 feet—supported on two abutments and one pier—all of granite masonry laid in cement.

EXPENDITURES OF OFFICE, 1906.

DR.		
To appropriation for 1906.....	\$5,000 00	
unexpended balance from 1905.....	253 68	
	<u>          </u>	\$5,253 68
CR.		
By salary of commissioner.....	\$2,500 00	
salary of clerk.....	1,000 00	
expended for postage.....	*690 38	
expended for office supplies, period- icals, etc .....	155 33	
expended for telephone and tele- graph .....	51 26	
railroad, steamer and electric fares..	326 46	
expended for livery.....	49 25	
expended for hotel bills.....	177 75	
expended for stenographer and extra clerk .....	89 35	
	<u>          </u>	5,039 78
unexpended balance .....		213 90
		<u>          </u>
		\$5,253 68

---

\* This item includes \$400 of postage for distributing 1905 report and \$250 of postage on hand for distributing this (1906) report.



## TABLE OF CONTENTS.

	PAGE
Letter of transmittal .....	3
Introduction .....	5
Acknowledgments .....	6
Report .....	7
County road meetings .....	7
Explanation of new state road bill.....	11
Financial part of bill.....	13
Number of towns in each financial class.....	15
Joint fund .....	16
Illustration of the working of bill.....	16
State Highway Department.....	18
Inspector on contract work.....	19
Shortcomings under present law.....	19
Contract work .....	20
Manner of payment of state aid to towns.....	21
Maintenance of state roads.....	21
Amount necessary to pay state aid.....	23
Appropriation to cover expenditure.....	23
Comparisons of appropriations for state road work in Maine with other states.....	24
Proposed bill .....	27
Section 1, general provisions.....	27
Section 2, describes what constitutes state roads and provisions for laying out same.....	27
Section 3, creates State Highway Department.....	29
Section 4, amount set apart from annual appropri- ation for permanent work.....	30
Section 5, amount necessary for towns to appropriate to obtain state aid.....	30
Section 6, apportionment by state commissioner of highways of state aid fund.....	31
Section 7, provides for the expenditure of the joint state and town fund.....	32
Section 8, further provisions for same—Contract work	33
Section 9, payment of state aid to towns.....	36
Section 10, maintenance of state roads.....	37
Section 11, liability in case of damage.....	37
Section 12, tax of one mill for providing state road fund .....	37
Section 13, unexpended balance to be used for con- necting links between state roads.....	37
and to complete contracts.....	38



	PAGE
Proposed bill— <i>Continued.</i>	
Section 14, fiscal year to end December 31st—definitions .....	38
Section 15, dissemination of knowledge and compilation of statistics .....	38
Section 16, annual report.....	39
Section 17, authority to call for highway data.....	39
Section 18, repeal of present state road and com. of highway laws .....	39
Section 19, act to take effect 10 days after approval..	39
Financial analysis to accompany bill.....	40
Table for same .....	41
Recapitulation for same .....	64
Report of state road work for 1905.....	65
Table of same .....	66
Recapitulation of same by counties.....	88
Mileage and cost of state roads built since 1901.....	89
Tables of same .....	91
Practical road construction by Maine builders.....	93
Macadam construction .....	96
Letter from Brunswick .....	96
Article from Rockland Opinion on St. George state road .....	99
Letter from Houlton .....	101
Letter from Sherman .....	103
Gravel with stone foundation.....	104
Letter from Lubec .....	104
Letter from Rockport .....	105
Letter from Belfast, "V" drain.....	106
Letter from Hampden, itemized cost.....	107
Sand hardened with clay.....	109
Letter from Farmington .....	109
Earth roads reconstructed and maintained by King split log drag .....	110
Letter from Standish, split log drag.....	111
Good roads without money.....	114
The problem .....	114
The solution .....	114
How to use the drag.....	115
Mr. King's don'ts .....	115
Mr. King's catechism .....	116
Wide tires .....	118
Letter from Rockport .....	118
State road standards for 1906 work.....	121
Cost of Seabasticook river bridge at Benton.....	123
Cost of Bingham-Concord bridge.....	124
Expenditure of office, 1906.....	125