THE PLANK ROAD VISIT TO TORONTO

Revised: January 24, 2014

In many of the books on the history of Onondaga County, the Cicero plank road is usually described as being inspired by a trip to Canada by George Geddes. In actual fact, George Geddes and Thomas G. Alvord were sent to Canada, Toronto specifically, by the Salina and Central Square Plank Road Company. Their task was to observe the plank road construction process, materials, costs and performance. They were then to report back to the Directors of the company. Below is Mr. Alvord's report. At the end of this report, there is an article from American Magazine that contains excerpts from a letter from Mr. Geddes. These articles offer some interesting insights into the details of the construction and operation of a plank road.

"Salina and Central Square Plank Road"
Onondaga Standard, Syracuse, NY, Wednesday, November 19, 1845

To the President and Directors of the Salina and Central Square Plank Road:

Gent. – In pursuance of a request and resolution of your board, Mr. Geo. Geddes and myself (Thomas G. Alvord) went to Toronto in Canada West for the purpose of examining the structure, wear, and feasibility of plank roads. We arrived at Toronto on the 4th day of November instant and devoted the whole of the following day to the investigation of the subject of our journey. In the first instance, having procured a conveyance, we went on to the line of the Toronto and Kingston road: one mile from Toronto, just after crossing the river Dawn, we came to the eight feet track which was laid down last year on the McAdam road, which extended the first four miles out of the city. It had been found by actual experiment, that the fall and spring weather so affected the McAdam road as to make entirely useless, unless kept in repair at an expense of four hundred dollars per mile per year. To obviate the difficulty and expense, in July of the past year, 1844, the experiment of laying down an eight feet track on the right side of the McAdam road going into the city, was tried. This track was laid on three sleepers 4 by 6 inches, and the plank, three inches thick, were pinned to them; the ground lying on the left was graded so that the center of the road, or that portion of it nearest the plank was, and remains somewhat higher than the edge of the plank; wherever necessary for the purpose of draining, a ditch on the side of the road was made. The result of that experiment has been highly satisfactory. In my opinion, which is made up from both observation and information, nineteen-twentieths of the entire travel for the last year has been upon this plank track. The plank in no instance has given way, but remains solid and firm. The track has been covered with sand or earth to the depth of about one inch, which has been of great benefit; it preserves the edges of the planks by making them as it were a continuous mass without breaks. In travelling between the first and second gate of the road, a distance of twenty rods less than three miles, we met fifty teams; they of course kept the plank track, compelling us to turn out. I measured by my eye, the distance used up by our turning out, and in no case would it exceed two rods, so that we were of the plank track almost one rod in ten. The side or dirt road was hardly marked by the turning out of teams, because as we found by observation, not once probably in an hundred times, would the wheels of the wagon turning out follow exactly in the trace made by any of its predecessors. After passing through the second gate, we came to the plank road proper, which

was laid down seven years ago last spring; the plank being 16 feet long, 3 inches thick, and laid upon four sleepers 4 by 6 inches. This track was already taken up in patches, and 8 feet of plank laid down on two of the old sleepers in its stead. The contractor and the commissioner both assured us, that for all practical purposes the 8 feet track was far preferable to the 16 feet track. We ourselves were completely convinced by handling and viewing the old plank, which were lying by the side of the road, and some of which were taken up in our presence, that while the center of about 8 feet in width was entirely worn out, so that in all instances the plank which had been down the whole length of time when lifted from the track would break in two in the middle, the ends from 3 ½ to 4 feet in length, where not affected by dry rot, held the thickness that they had when first laid. I ought to mention here, that whenever we found a plank which was rotten, we invariably found the place rotten had not touched, but lay up clear of the earth. We also found that the 16 feet track did not lay as solid and well as the 8 feet track, for the travel being altogether in the center, that was depressed and the ends were so thrown up, that the air and weather has free access in many instances to both the bottom and top sides, causing the plank thus exposed to be more or less affected with the dry rot.

We travelled some seven miles from Toronto and came upon the contractor, who was engaged in the work of laying down 8 feet track. We found him laying them on the right side of the center on the old stringers, and doing so without any new preparation of the road bed. The stringers were not equidistant from the ends, the outside one was about 6 inches from the end, and the inside one some 14 inches. He used, to fasten the plank, the old six inch spike taken from the old plank. In answer to our enquiry, if that was sufficient fastening, he said it was an abundance; the plank once becoming embedded by the dirt thrown on the track and banked at the ends, never stirred. We asked him whether spike were the best fastening to use? He answered no, the wet affected them so that the plank rotted around them and they soon became loose. We also ourselves observed in many instances, that around the spike head in the old plank, the wood had been eaten away an inch in diameter and to some depth satisfying us that the fastening should be something beside iron.

From our conversation with the contractor, and from our own experience, derived from close and careful observation, we came to the entire conclusion at this point, that our road, whether double or single, should not be made of over 8 feet width of plank in one track, that two stringers 4 by 4 inches were an abundance, and that in fastening we should use wooden pins an inch in diameter. Mr. Geddes enquired of the contractor whether it would enhance the expense of making the road, for the man who drove the pins, to put into each hole before inserting the pin, a quantity of salt from a graduated measure? He answered no. Mr. Geddes was of the opinion, in which I entirely concur, that by using salt we should so saturate our sleepers, as to do away with the probability of their rotting, and thus we should without doubt make them serviceable a length of time at least equal to more than two coverings of plank.

In reference to the kind of timber made use of, we found the pine was almost entirely used, but on enquiry by Mr. Geddes we learned from the contractor, that we should find on the next hill beyond him, on our return, some of the old 16 feet track laid down with hemlock. We found that spot: - there was some two rods laid with it. We examined it critically, and, I believe, both came to the conclusion that it was at least equal, if not superior to pine. The matter of rot, where the plank fairly touched the ground, being out of the question, we thought we could discover that there was a hardness and durability about the

hemlock that the pine lacked, and in no way could we decide that pine should have the preference.

It might be well to remark at this point, that we met in going out, a highly intelligent farmer going into Toronto with a load. We engaged him in conversation. To our inquires, he answered that he found no difficulty in spring or fall, with a load, in turning out or getting back on to the 8 feet track. To be sure, he said, it would be more pleasant to have it all plank, but the wagon turning out so seldom striking an old turn out, the wheels were not embedded in the earth so as to create any difficulty in getting back, and for practical purposes an 8 feet track going into Toronto was all that was necessary. He said he used the whole 16 miles of road and paid going each way 47 ½ cents toll – that is 23 cents going and returning. He said he would rather use the 8 feet track and pay that toll, than be compelled to use the road as it was before the plank were laid. He remarked that there was a complaint as to the amount of toll, from some few persons, who, living some 4 or 5 miles off from the plank road, were compelled from the nature of their side roads to strike upon it, drawing very light loads; but all who lived upon its line, or where they could approach it with fair loads, were perfectly satisfied. It should be understood that the natural soil of this road way is almost exactly similar to that of our contemplated line of road, alternating between sand and clay, and in some instances, low and mucky land.

Returning to Toronto we called upon the Hon. Mr. Hallowell, one of the Commissioners of the Toronto and Kingston road; we found both him and his brother ready and anxious to give us all the information in their power, on the subject of our enquiry. Mr. Hallowell remarked that he was entirely indebted to the remark of Mr. Geddes, made to him the year before, that in no instance was it profitable to lay more than 8 feet of plank in any one track; he was, by actual experiment, convinced that the suggestion was the right and true policy. He was sanguine in the belief, however, that the interests of the traveling public did not require any more than a single 8 feet track, and he gave the reasons which have been heretofore in this communication detailed at length. Mr. Hallowell and his brother both surprised us by an assertion, as they said, founded on actual experience, that no sleepers or stringers were necessary, but the ground being properly prepared, the plank could be laid on it without difficulty, and that such a road would answer all purposes, as a smooth and permanent road way. In order to show as the truth of his position, he insisted upon our accompanying him to a road where the experiment was undergoing the test of trial. We went with him to a private road, built from Parliament street across the River Dawn, so as to strike the same public road which went from the same point some three miles distant from said street. This road has been built by Mr. Hallowell and his brother, in conjunction with other gentlemen, across their own private lands and is held by them in a joint stock concern; they have erected upon it a toll gate, at which using the road, including the proprietors themselves, pay toll. And we may as well mention here, that although they charge some 4 cents per mile toll, and the public road going to the same point is free, yet they informed us that received almost the entire travel on their line. This road is an 8 feet track of plank, laid down without a sleeper under it or a pin or nail about it. In approaching and departing from the River Dawn, it ascends and descends hills far steeper than any on the line of our contemplated road. This road has been in existence some 14 months, and still has the appearance of a good substantial and permanent road, except in some spots we discovered a very slight depression of some plank below the general surface and at other points where the ends of the plank from the shape of the ground, could not be secured, we perceived that the

plank lay somewhat loose. The road was kept constantly covered with sand, so that at no time should there be less than one half inch of sand upon it. We are not prepared to say that this experiment may not prove entirely successful, but we have come to the conclusion that our opinion formed when examining the road first mentioned, was not only strengthened but made an axiom, that in no event was it necessary to throw away timber under our road, but that two 4 by 4 stringers would be all we should find either serviceable or profitable to use. Mr. Hallowell contended that if he were to build any amount of road, he would not use any sleepers, because he had become convinced, as he said, of their entire inutility; we are of opinion however that the frosts of the winter (although it has gone through one winter) will finally so affect the road as to render its repair necessary sooner than if it was joined into one solid made by the interposition of a slight stringer.

In conclusion we think it is demonstrated beyond a doubt that an 8 feet track of plank road makes a more substantial, solid and permanent road bed than any other greater width can make; that two stringers about enough to hold a pin of size sufficient to keep the plank in their place is all that is necessary; that great care and precaution should be **????** in so preparing the earth, that the plank should at all points bear equally upon the stringers and earth; that the road sides should be so graded as to be elevated slightly at all times above the ends of the plank; that the plank should be kept covered with some material of earth (sand in all instances if it can be procured) to the permanent depth of at least one half of an inch; that no **????** of over a inch should be permitted; that what is termed a shaky plank can be used, provided the shake or crack approaches a perpendicular split; and that a plank 4 inches in thickness are preferable to ales thickness. It may be necessary here to give reasons for these last opinions. A four inch plank, of course, is stiffer than one of less thickness. In getting to its place, no matter how well you prepare the ground, there will be more or less length and width way strain on the plank, which must affect a three inch plank to such an extent as to hasten its wear; not so or at least not to so great an extent, will a four inch plank be affected; so when you have worn off the first inch of your four inch plank, the remaining three inches having found a solid and firm bed, will, in our opinion, do longer service by far than if it had originally been laid three inches thick. We are also of the opinion that, for reasons which we deem perfectly obvious, no plank should be laid more than 12 or less than 6 inches wide.

Mr. Geddes, having taken memoranda at the time, in reference to the expense of the different items of grading, &c., together with the rates of toll and the yield of the gates on the roads visited by us, I would rather trust to his figures that to any recollection, and therefore forbear to touch on these points.

It may not be amiss here to say that to the Hon. Mr. Hallowell and to Mr. James Gibson, the contractor, we are greatly indebted for their polite and kind attention to us.

Finally, gentlemen, you are aware that although not practically acquainted with the operation of plank roads, yet I have always been convinced by reflection of their feasibility. I have now visited them, been carried over them in all their stages, from the new plank just laid down, to the old worn ones, and at the risk of being considered insane upon the subject, by those who have had on practical experience. I unhesitatingly pronounce them by far, the best road in every point of view, that I ever travelled. Superior in smoothness, equal in solidity, preferable and easier in traction than the best McAdam I ever saw. So far as expense of building and maintaining are concerned, a plank road is cheaper than any other. I believe,

gentlemen, that by pushing forward to completion the enterprise we have begun, we shall not only obtain a fair and abundant remuneration for our interested capital, but we will have done our country a great service, for we will have successfully tried the first experiment in building a species of road which is destined, from our example, to introduce into this state (wherever the timber can be procured at a reasonable rate) a new order of things in road making, which will enhance not only the pleasure of locomotion, but will also greatly increase the value of land now comparatively worthless, from no other cause than that the nature of its soil will not give to it good and permanent roadways.

Thomas G. Alvord

Salina, Nov. 11, 1845

George Geddes' Letter

Dwight's American Magazine, and Family Newspaper, Edited by Theodore Dwight, Volume III, pp. 532-3, No. 112 Broadway, New York, 1847. The article features excerpts from a letter by George Geddes, who had accompanied Thomas G. Alvord to Toronto for the purpose of investigating the plank roads in that city. The lead in mistakenly refers to his company as the Salina and Central Railroad. The actual company had nothing to do with railroads and was called the Salina and Central Square Plank Road Company

Plank Roads

Among the great variety of improvements which have been produced within the last few years for the purpose of facilitating travel and transportation, plank roads seem to have been very successful wherever they have been tried; and will probably be extensively adopted, especially in the newer and more remote regions of country.

The following interesting and valuable information in regard to the construction of these roads is derived from a letter written by George Geddes, a distinguished practical engineer of the State of New York, who had charge of the Salina and Central Railroad, of which he speaks; and who has carefully examined similar roads in Canada, constructed at the expense of the public authorities.

The State of New York has provided, in her new Constitution, for a general law, incorporating Plank Road Companies. Speaking of the mode of constructing a Plank Road, the letter proceeds:

In case it is expected that a 'very great amount of travel' is to pass over the road, two tracks, each eight feet wide, will be required: but it is not probable that many roads will require more than one track, at any rate for more than a few miles out of some large town. It is difficult to persuade a man who has not seen the thing tried, that one track is sufficient, except in cases of 'extraordinary amount' of travel; but it is so; and the road out of Salina has but one track, except over places where proper earth could not be obtained with which to make a road alongside of the plank.

Over the light sand plains, where in dry weather a wagon would cut into the sand, we laid two tracks, but over clay or common earth we laid but one; and during the very rainy autumn just past our road has constantly been in good order for teams to turn out.

In case there is so much travel that common earth cannot be kept in good order for turning out, then the tolls paid by the travel will compensate for the cost of the second track; so that the interests of the public and the owners meet, and the thing will regulate itself. If the second track is required, then its cost will be a good investment.

There is another particular in which the public interests, and the interests of the owners go together: the tolls. The charter of the Salina road allows the Directors to regulate the tolls within certain limits; in summer we exact three-fourths, and in winter one-half, the sum allowed us from vehicles drawn by two animals. It is our interest to encourage such an amount of travel as to insure the wearing out, rather than the rotting out of our timber; and, by taxing the travel lightly, we increase the amount.

The track is laid on one side of the road, so that teams coming into town keep it, and teams going out yield it in passing. The tonnage being chiefly in one direction, it is generally the unloaded teams that have to do all the turning out.

The planks are of hemlock, eight feet long and four inches thick, laid crosswise of the road, on sills four inches square. The earth is broken up and made fine; the sills are bedded into it, and the surface graded smooth; the plank are then laid on the sills, care being taken that the earth is laid up to and touching the plank at every point.

This is important; for if any space be left for air under the plank, or alongside the sills, dry rot follows.

I saw in Canada a road that had been worn out, and was re-building. The sills were good, and the plank were sound on the under side, save where air had supplied the place of earth, and there they were destroyed by rot.

The plank having been laid, the next thing is to grade a road some ten or twelve feet wide on one side, and two or three on the other, by taking earth from the ditches on each side, and bringing it by a ditch-scraper just up to and even with the upper side of the plank, so that, if a wheel runs off the track, it passes upon a smooth surface of earth.

The ends of the plank should not be laid even, but a part should project from two to four inches by the general line, to prevent a rut being cut just along the ends of the plank. If the ends of the plank are even, and a small rut is made, the wheel of a loaded wagon will scrape along the ends for some distance before it rises up to the top of the plank, unless the wagon moves in a direction nearly across the road: but if the wheel cannot move two feet forward without coming square against the edge of a projecting plank, the difficulty of getting on the road is avoided. It is not necessary to pin or spike the plank to the sills.

Perfect drainage must be secured; and to that end the ditches must be deep and wide, and good sluices wherever water crosses the road. This is the important point—drain perfectly.

As to the cost of such a road, I will answer you by giving you a copy of my estimate for the Salina road, which very considerably exceeded the actual cost. It is proper to inform you that this road was made upon the bed of an old road, filled in many places with stone and logs. The right of way cost us nothing. The estimate was for plank three or four inches thick. Where we laid two tracks, we laid one of them with three inch plank, but the main track was four inches thick. It is economy to use thick plank if the travel is sufficient to wear out the road; but if it is to rot before it is worn out, then of course thin plank should be used. The Canada roads are generally three inches thick, and are made of pine, and last about eight years.

ESTIMATE OF THE COST OF A SINGLE TRACK PLANK ROAD EIGHT FEET WIDE, FOR ONE MILE:

Sills 4 in. by 4 in.	14,080 ft. b'd m'e.	
8 ft. width plank 3 in. [thick,	126,720	
	140,800	
At $5 a thousand,		$704 00
Laying and grading, $1 a rod,		320 00
		$1,024 00
Engineering, Superintendence, &c., 10 per ct.,		102 00
Gate Houses, say,		100 00
		$1,226 00
For a 4 in. road, add 42,240 ft. at $5 per M.		211 00
Sluices, bridges, and contingencies,		63 05
		$2,500 00

Mr. Geddes also remarks in another letter: "The more level the road, of course the better: but a plank road may be made upon an even grade. Horses will hold with their feet where the planks are laid across the road nearly as well as they can hold upon earth. If the elevation be not more than one foot to the rod, you can carry very large loads. As to the value of plank roads to the public, and to the owners, I can best answer you by saying that I have seen a McAdam road taken up eight feet in width for a plank track; and also by informing you, that persons who have travelled over the best constructed roads in England, say they much prefer the Salina plank road."