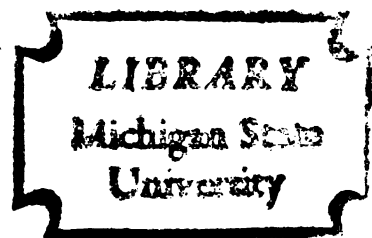
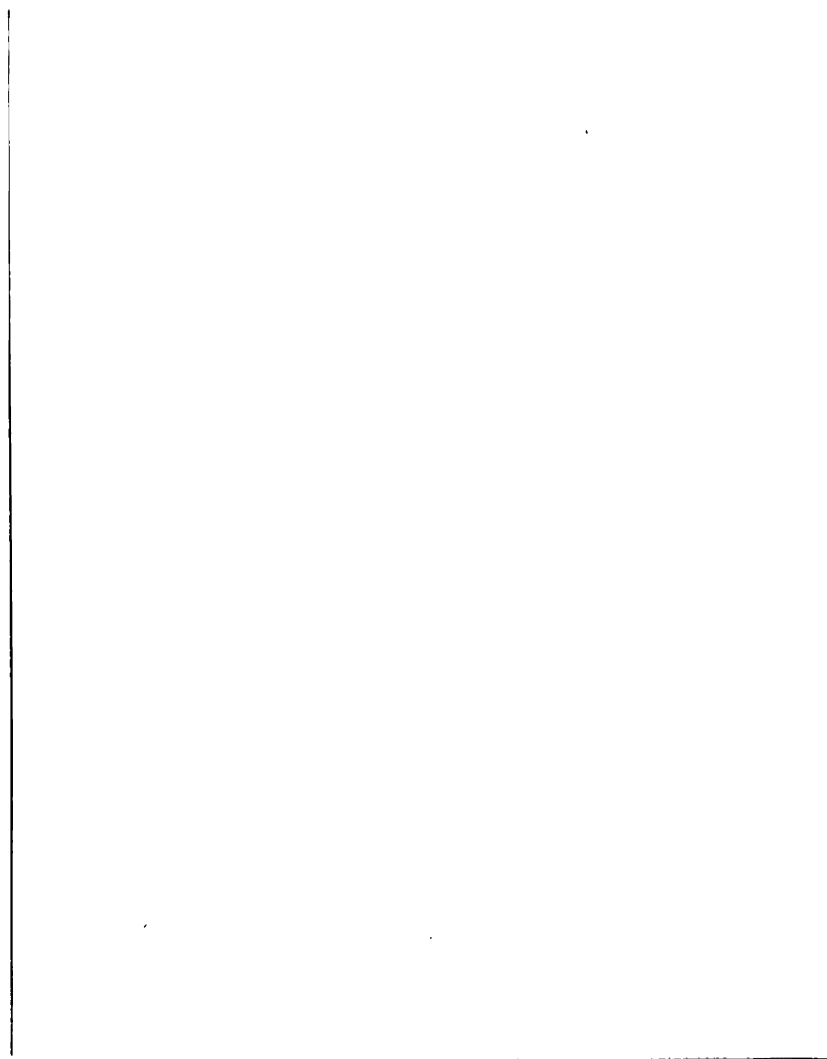




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THE FLINT - CORUNNA INTERURBAN R. R.

A Thesis Submitted to

The Faculty of

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THESIS

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INTRODUCTION

The subject dealt with in the discussion that follows was selected because it promised to provide the necessary elements of a successful thesis. As a primary consideration, the authors were particularly interested in problems of railroad location; also, for its proper development, the subject chosen required the application of measuring instruments and engineering methods which supplied a significant fund of practical experience. Again, the route selected will probably be a certainty as evidenced by the remarks of many residents along the route followed.

This thesis is intended to cover the preliminary survey of the line with the exception of about one mile of cross sections.

Part 1

Selection of Route.

In running any line whether R.R., canals, telegraph, etc. the first thing to be decided upon is the route to be taken to connect the terminals. This then was our first consideration.

There were two distinct routes which we could take with many possibilities as to precise location on these two routes. We will first describe the two main routes and then the variations to be made on the one we selected as being the more desirable.

The first route, is the Southern one leaving Flint on West Court Street and following directly west on the Corunna Road to Corunna, Mich. This route includes the two villages of Otterburn and Swartz Creek with a combined population approximately three hundred and fifty (census 1910).

The other route which we will call the Flushing Route leaves Flint at the North end of the city on Detroit Street then running in a Northwesterly direction to Flushing, Mich. and from there in a West and Southwesterly direction to Corunna, Mich. This route touches Flushing, Mich. of one thousand inhabitants with possibilities of reaching the towns of New Lothrop, four hundred and fifty and Juddsville fifty of about five hundred inhabitants.

This latter route is the one we decided upon for the following reasons:- In the first place a line through this territory would serve a larger number of people who have at present no connection to Flint or Owosso other than highways whereas those on the Southern route may easily reach either Flint and Owosso by Grand Trunk R.R. Our second reason is that this route,

being more circuitous, and following in a general direction the course of the Flint River, provides many more problems than the straight and level course followed by the Southern Route. Another reason is that a much larger and richer farming district would be open to a quick market and also allow factory hands in the Automobile factories at Flint a quick method of reaching a town of many desirable features in which they might reside. Our fourth and last, but not least reason was that a line to Corunna thru Flushing has often been proposed and talked of not as a dream, but as a possibility.

As mentioned before this Flushing route presents several different ways of reaching the same end. We will first take the section from Flint to Flushing.

Flushing is situated in a bend of the Flint river about ten miles North West of Flint. As the village is on the north side of the river to reach it from the South side of the river two bridges must necessarily be built. For this reason we discarded all idea of having the route follow the South shore of the river.

We next turned our attention to the North side of the river. Here we found three possibilities namely:- The river road. The town line road and the Flushing road. The first we passed up as being too crooked and requiring too many grades, cuts and fills. Also possibilities of flooding and washouts. The Flushing road we also discarded as being too far North for a short and economical line as it would not serve more customers. This then leaves the town line road which is the road running east and west directly north of the Buick factories. This route is the most direct from the factory district, is

short, has but one bad hill, and has numerous gravel pits which we were assured could be used as borrow pits, if so desired.

Having reached Flushing we next had to decide on a route to Corunna. This was easy as we refused to consider New Lothrop as it is a considerable distance North of a direct route and would have required a great amount of extra work to be done.

The route we took was west along the Juddsville road proceeding thereon to two miles past the Genesee-S niawassee County line, turning to a Southwesterly direction, we proceeded in the general direct of the locally called Angle road to a point on the Grand Trunk spur to a Clay Bank (by a school house) along the Owosso road west about a half mile and then crossing over to the Corunna road (one-quarter mile south) and there to the Court house at Corunna.

Our chief reasons for selecting this route were that it was the shortest and most logical route to be taken between Flushing and Corunna.

Procedure and Results of Work.

Having selected our route we next have the work to do. Ours being a preliminary survey of a route from Flint to Corunna we had the following things to do:- a transit survey, a profile survey, topography, one mile of cross sections, and making of the maps as made possible by the data furnished.

We proceeded with the work in the order given above.

Transit Survey.

The line has already been described. Owing to the fact that we were limited to two men the transit survey went slowly. We, however, had at our disposal the use of an auto which we found essential to rapid work. The procedure was as follows. The transit man took the car ahead to a station. Setting up he would take a shot on the rear flag. Leaving the instrument standing, he would return for the rear flagman. When we reached the instrument the flagman would take the car and flag forward and when the transit man had taken a shot, the (forward) flagman returned for the transit man, etc. In this way we were able to cover much more ground than would have been possible by any other method, unless we had lined a rear flag man.

In running this survey it was our aim to take as long shots as possible without running out of the way. The line was run across fields whenever it shortened the line to any extent, or did away with rt. angle turns.

We measured the line after it had been surveyed, locating fences, bridges, etc. at this time.

Profile Survey:- This was by far the biggest part of the work, not because of the number of readings needed, but because of the number of turning points.

It was our aim, in this survey, to secure the elevations of the breaks in the profile of the ground only, which will explain why there were no readings occasionally for long stretches. Along the highways it often happened that the grade of the highway would not change in half a mile.

Bench marks were established at several points along the line where they would be accessible and probably permanent.

Note:- We did not get the exact elevation of the Flint River at Flushing, because a part of a dam located about five hundred feet upstream had just given way, causing the water to be exceedingly high. We did, however, secure what was supposed to be the normal elevation.

Cross Sections:-

Cross sections were taken from station 162+11.8 to station 235+22 for every one hundred feet. We took this particular place as it promised a chance of quite a little practice.

We used sixteen feet as a road bed width and assumed a $1\frac{1}{2}$ to 1 slope. The line for this piece of work runs along the left or South side of the highway, which will account for the ditch to be found entering into the notes and calculations.

Starting from station 162+11.8 the grades on this stretch are in order. .0118% - 0.00% - 1.75% - 0.00% - 3.5% - 0.00%. These grades were fixed with the intention of keeping the maximum grade as low as 4%, with the result that our maximum grade at this point was 3.5%.

At a point 220+90. There is a road which crosses the line. The elevation of this road is 112.50 feet. The grade elevation of the line is one hundred and twenty-five feet so by cutting the road down about three feet sufficient headroom will be se-

cured for any load to pass under our line.

Acreage to be bought 60 ft. right of way.

Position		Length in ft.	Sq.Ft.	Acres
1,016,0-	2,342,0	1,326,0	79,560,0	1,835
5,600,0-	6,974,8	1,374,0	62,480,0	1,895
25,782,0-	28,996,0	3,214,0	192,840,0	4,440
48,478,0-	50,678,0	2,200,0	132,000,0	3,380
66,480,0-	68,160,0	1,680,0	100,800,0	2,488
72,780,0-	77,980,0	5,200,0	312,000,0	7,175
82,577,0-	83,550,0	973,0	58,380,0	1,340
96,000,0-	103,200,0	7,200,0	432,000,0	9,950
115,215,5-	116,754,0	1,538,5	91,230,0	2,950
119,729,0-	121,797,0	2,068,0	124,080,0	<u>2,850</u>
		Total		38,303

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
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