

City of Cambridge.

OFFICE OF THE CITY ENGINEER,

Sept. 13th 1889

Hon. Henry H. Gilmore
Mayor

Dear Sir

I have made some examinations of the condition of Front Street extension in reference to the filling and grading, I find that the surface of the street at present, is at no point less slightly below the grade and at most of the points tried it was considerably above grade. This would indicate that but little settlements had taken place.

I have computed the amount of material for various kinds of pavements for the area included between the curb lines and exempting the area occupied by the Horse Railroad Co 15' outside the tracks from Lafayette Sq. to the Wey rail of the Boston and Albany Branch R.R.

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If the street as it is, be stripped to a line 10" below the grade and the pavement made of cracked stone and gravel in the usual way the following will be the quantities

Material removed to sub-grade	At. 2500. Cu yds
Cracked Stone 6" thick	1500. " "
Gravel 4" "	1000. " "

It seems to me that this will not be a satisfactory nor even an economical treatment of the matter the amount of material so applied has not "body" enough to last and keep in condition for any length of time, nor has it depth enough to serve as a foundation for any future improvement in the pavement when required, as I believe would be the case a very short time -

I would suggest that some such plan as that called the "Belford Macadam" - perhaps with slight modifications, - might be applied here - The idea is shown and discussed in detail in the sketch accompanying and in the Magazine article, (which although it may flavor of an "Ad" for the Road Roller, really gives the best practice in regard to that pavement) on page 221 of "Engineering News".

The refuse stone from the City ledge would answer admirably for the bottom or foundation course and would answer equally well to be covered with cracked stone of the ordinary kind, and when that is worn out; should it be wanted, - Flint stone pavements could be placed on it giving a firm, solid base for either kind, and in case the ~~street~~ settled there would simply be less of the ~~top~~ to remove when the change was made from one kind of pavement to the other.

The large amount of filling displaced would be immediately available for filling the extension of Windsor Street and would have a ready cash value now, while if the work was done at some future time it might be a dead loss, or involve expense for removal.

The sketch presented shows the bottom course of Meads or City ledge stone, in large blocks and about 8" in thickness, covered if the Macadam is used; with 6" good sized cracked ledge stone and that with 4" of smaller sized selected, ^{cracked} field stone and a small quantity of gravel, - thoroughly wet and rolled - When the granite blocks are to be placed, the cracked stone can be removed and

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used elsewhere - 2" of gravel or sand put in, and the blocks bedded in that -

The following are the quantities -

Material removed to put grade abt.	3900. Cu yds
Block stone for foundation	2000. " "
Cracked Stone	2200. " "

If to the above amt of material removed there be added the amt displaced by the Horse Railroad tracks and paving - (1500. Cu yds) - nearly enough filling will be got to do the filling of Winder St extension - 4400. as against 4900. Cu yds required

The length of the street from Lafayette Sq. to the Railroad is 1582. feet - The amount of paving required, including the Square, and excluding the Railroad paving is 8220. sq. yards

The following is an approximate estimate of the costs - The material removed in either case would be worth its cost as filling so no account is made of that -

1500 Cu yds cracked stone @ 1.65	\$2475.
2100. tons freight transfer @ .50	1050.
1000. Cu yds gravel @ 1.00	1000.
8220 sq. yds paving {Cutting {Spreading {Rolling &c @ .25	2055.
	6580. - \$ 6160.00

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To this should be added the cost of removing
2500. cu yds material @ .35 \$875.00 and at
least that amount credited to the Windsor St. Extension

In the "Telford Macadam" pavement I estimate
the cost as follows

2000. cu yds Block stone for found.	@ 1.25	2500.00
2200 " " cracked stone	@ 1.65	3630.00
5880 Tons freight transfer	@ .50	2940.00
8220. sq yds paving, labor &c	@ .50	4110.00
		<u>\$13,180.00</u>

To this may be added the cost of removing
4200. cu yds of material @ .35 \$1470.00
and credited to Windsor St. filling

Respectfully Yours
L. M. Hastings
City Engineer

Communication 14
from the City Engineer to
Mayor Gilman

Sept 13. 1889

Subject: cost of grading

Front street.