MINUTES OF ADJOURNED REGULAR MEETING OF CITY COUNCIL AND REPRESENTATIVES OF RATEPAYERS, HELD IN THE CITY HALL, ON WEDNESDAY THE 6th DAY OF JULY, 1910 AT 8 O'CLOCK, P.M.

Present: His Worship Mayor May presiding:
Alderman Irwin, Fowler, McNeish, MacRae, Smith & Schultz
Representation of Ratepayers: C.Y. Jackson, A.J. Henderson, W.J. Dick, A.W. Sargent, W.L. Boult and Jas. W. Hay.
Mr. Donald Cameron, C.E. and City Engineer Hanes were also present.

Mr. Cameron, on being called upon to express his views on the grade question, gave in the following report:

"His Worship the Mayor and Members of the Grades Committee, North Vancouver:

Gentlemen:

In response to your invitation conveyed in the City Clerk's letter of the 22nd ult, to confer with you in the question of Street Grades, I accepted it, conditionally on my being supplied with data and the documents bearing on the subject.

The City Engineer on the 27th ult. supplied me with

(a) The 1907 report
(b) The 1910 reports, and copy affidavit of G.F. James, Seattle.
(c) Profile giving permanent grade of B.C. Electric Railway Track dated 1908 for Lonsdale Avenue
(d) Tracing of profile of Lonsdale Avenue with proposed bench grading, dated 1907.

As a preliminary, I should like to make a few remarks on the general engineering aspect of the question.

In what has already transpired, you have had before you two methods of Street Grading, Straight and Bench Grading. There is still another method which, however, would have required to have been applied at an earlier stage of this City's history.

On level ground, no difficulty is met with in designing streets intersecting at right angles, but on very steep ground with one road ascending and the other at right angles skirting the slope, the difficulty can only be overcome by bench grading. Between the level and steep extremes, there is a range of declivities, where in the judgement of the Engineer or impelled by other conditions, either straight or bench grading may be adopted.

Where are no hard and fast rules, unless enforced by a Bylaw, nor need it be called good or bad engineering practice to use either system.

One of the attractive features of bench grading of streets are brought to the same or nearly the same level. But unless this form of grading is rigorously carried out, this feature at intersections no longer counts. If the grade at the intersection is even one percent, the regular appearance of bench grading is lost, and if it is made 3 percent, unless on very wide streets, the object or effect, namely that of keeping buildings on each side at the same level, is entirely missed.

From the point of view of an engineer, whose only object is to obtain a general method of road making easy of application so all cases, bench grading has every attraction, requiring as it does, no particular skill in its application; but once adopted as the road making policy, departure from it appears to be impossible, whatever protests are subsequently raised, or whatever the cost may be.

On the other hand, straight or modified straight grading greatly increases the engineer's work and requires skill to properly develop or warp the intersecting road surfaces, every case requiring separate treatment according to it particular condition.

From the aesthetic view point, when the work is properly done, there seems nothing to choose, except that straight grading is free from the series of abrupt bumps of the benches.

Not only the conformation given to a roadway, but the paving material employed, and the manner in which it is laid have a great effect, not altogether on its appearance, but on its usefulness and safety, and in this connection in the several reports submitted to you, the reporters are agreed that the grading problems only become pressing, when the streets intersecting come to be paved. With road giving the foothold of a macadam road surface, no difficulty arises. This argument would presuppose the selection of a paving material which is or is likely to become slippery. Such a pavement would from its very nature, be unsuitable for the general run of a north and south street, would be equally s suitable for the intersection.

In more particularly dealing with the subject, I propose to take Lonsdale Avenue as being a typical North and South street and the one which has practically raised the whole question.

At present Lonsdale has three gradients between the wharf and the south side of Victoria Park.

From end of car line to south side of Esplanade 6.5 percent
From that point to the North side of First Street 7.5 percent

And from there to Victoria Park 8.68 percent
These are the grades of the carline.

At First Street the grade on the crossing car line is 5.21 percent.

Forming this length of the avenue by straight grading would not much alter these gradients, except at intersections, where car lines may be expected to cross Lonsdale and where, for the width of the car tracks, it would be slightly flattened or benched.

Should the east and west traffic come to a car center on Lonsdale, as at present, even this benching would not be required.

The scheme for forming the Avenue shown on the 1907 profile provides for a grade of 7.93 percent from wharf to south side of Esplanade, of 3.3 percent, at intersection, of 8.65 percent. So south side of First Street, of 5.21 percent, across First Street, and from that point to the south side of Victoria Park 2.94 percent, at intersections, and 10.22 percent between benches.

The Bench grading shown on the 1907 profile would make Lonsdale steeper than it is at present by 15 percent, at the lower end and 17.7 percent in the upper parts.

The proposal of the 1910 report, with which the City Engineer agrees if for a 1 percent grade on principal intersection and 2 percent in secondary.

Making, therefore, the Esplanade crossing and that of 1st, 2nd and 3rd Streets 1 percent and the rest 2 percent we have from the wharf to Esplanade 8.6 percent.

Esplanade to 1sT Street	9.8 percent
First Street to Second Street	11.3 percent
Second Street to Third Street	11.14 percent
Third Street to Fourth Street	10.95 percent
Fourth Street to Fifth Street	10.3 percent
Fifth Street to Sixth Street	10.47 percent

The greatest increase in grade is between First and Second Street, where the increased steepness would be 30 percent greater than it is at present.

The decrease that would have to be made in a load in passing from an 8.7 percent to a 10.5 percent grade would be at the rate of 10.7 percent, and to a grade of 11.3 percent, nearly 17 percent.

Taking the tactile force required to keep a load of 2,000 pounds moving on a good level road as 67 pounds.

On a grade of 8.5 percent, this would become 236 pounds, on a 10 ½ percent - 275 pounds, and on an 11 ½ percent grade - 295 pounds, and so on till the load would become stronger than the spurt of a team.

From these figures you may form an idea of the greater tactile power required to overcome the effect of an increase from grade to grade. On the proposed steepest part it is an increase of one quarter or 25 percent, on the present steepest gradient. They will also give you an idea of the greater braking power required by the increase of grade in descending.

For teams to be able at all to ascend on an 11.3 percent grade, with anything of a load, would require a special paving and a tramway.

In all this I am considering Lonsdale Avenue as it is at present the most important thoroughfare in the City, and as traversing the north and south directions of the City wilt probably always be so. Any change, therefore, that will affect transportation it, requires most careful consideration. WE have instances how cities develop or tend to do so in particular directions, mostly influenced by atmospheric conditions. Should the East and West lower parts of North Vancouver become the commercial parts, this will drive the residential part to the North. As freight and passenger traffic are now more than hitherto keep separate. The requirements of the passenger service will probably be as great to the north as to the East and West.

It is express throughout the reports, on this question that the east and west streets should not be sacrificed to those going north and south. I am quite unable to find any valid reason for sacrificing either, or why the one should have the preference, and it may be taken as an axiom that whatever is done that may harm one part of the City will surely harmfully reach on the other parts.

The first street car line crosses Lonsdale Avenue now on a 5.2 percent grade and there is no reason why on Third Street or on Fourth Street or on Sixth Street, similar or better conditions could not be given.

Should however, Lonsdale continue to be the tramway center of the City, such a provision for a direct east and west service would be even unnecessary.

There are some parts of the City where of necessity bench grading will have to be adopted, and understand that between the Esplanade and First Street, bench grading was formally adopted by the Council; at any rate, the level of the Keith Block is set for such a grade. This new grade is shown at 8.6 percent, being the same as the present ruling gradient of the Carline. Such being the case, and as a grade level has been given and built to, there is no great reason why, for this length of Lonsdale, the intention of 1908 should not be carried out. For the same reason, the Esplanade and down to the wharf might be similarly graded in view of the new car landing on the new wharf.

To bench grade Lonsdale north of First Street with a 3 percent grade at intersections, and at the same time maintain the present gradient of the car line, would necessitate a 20 foot cut at Sixth Street. At Third Street it would be 8 feet 6 inches.

Such a cut as this might be considered ad injuriously affecting the east and west Streets, acting on the principle already mentioned, this method of grading is not recommended, although many a heavier cut has been made for poorer results.

As such a proposal, that is to cut for bench grading, may not be entertained, the alternative is to find out the least cut that will give the present car line grade and at the same time enable facilities to be given the car lines to cross Lonsdale on any two of the east and west Streets, and also to help straight grading the Avenue from First Street to Eight Street.

A cut of less than 5 feet at Sixth Street, will enable this to be done and still keep to the established grade of thee car line.

If the work of developing or warping the intersection of the east and west streets is properly done, from an aesthetic or any point of view, you will have as good, if not a better, piece of work than any form of bench grading could give. At this point it should be noted that a modified bench grade, depending on the rate of grade, is also a modified straight grade.

I have roughly laid down in profile the manner in which such a grading may be carried out. While showing bench grading on the Esplanade and First Street, this is done for the reasons stated.

There are difficulties in bench grading, both the Esplanade and First Street, owing to the jog in each.

For the area included between Eight Street and water front and Forbes and St. David's the steep street lengths of avenues below First Street can be dealt with by benching, but at most other intersections, there is not much to be gained by making the four corners of the sidewalk at the same level at intersections. Every intersection should be graded according to the particular conditions there existing.

Review of the Several Reports

I should like now shortly to examine the reports that have been submitted to you.

The first feature common to the reports is that none of the Engineers appear to be a rigid bench grader. The second and this applies to the 1910 reports, is that the Engineers are entirely out of order, not only disregarding their instructions, but making it quite clear that they are so doing, and putting the 1907 report entirely on one side. Whatever faults may be found in that report, it is quite easy to gather the intention of the reports.

Mr. Thompson's Report

In this report a comparison is drawn between the location of Seattle and North Vancouver. Probably, most of you know Seattle, and must know that while the sites may be somewhat similar, the comparison ends there, and the contrast begins.

The maximum grade at intersections that would be allowed by adopting this report would be 2 percent, one foot rise in fifty feet horizontal, or about the difference in level of one inch in the width of a wagon or streetcar. Anything over this grade being considered dangerous to horses.

In making this statement, it must have slipped Mr. Thompson's' memory that the camber or rounding of many important paved road ways ranged from 3 ½ percent to even 10 percent along such slopes horses travel in all weathers, and that in many cases, on the most slippery of all pavements, asphalt. Anyone of you can test for yourselves the credibility of this statement.

The danger on straight or on modified bench grades, apprehended, appears to be to teams crossing Lonsdale Avenue for it is only those going right across that would be affected, while the public in the street cards are left to the tender care of the B.C. Electric Rly Co.

In making the street so steep, between the benches, he proposes that the benches should be used as resting-places for the teams. He must have again forgotten that, on a busy street, the intersection is the last place on which they would be permitted to halt. One can fancy what it would be like in Hastings Street, Vancouver, were a team to rest at the foot of Homer or Richards Streets. I can find nothing in this report more than a special plea for the easy general method to be yoked into the City by a Bylaw.

Dr. Clement appears to have but slightly modified the opinion expressed in the 1907 report referring principally to improvements in car equipment, all of which were in operation at the date of that report.

Mr. Hanes' Report

Mr. Hanes simply concurs with the 1907 report as regards benching at points where car lines intersect, possibly to enable cars to cross North and South

Streets, without being inclined. He also expresses the opinion that the proposed increase on the grade of Lonsdale, by benching from 8.7 to 10.5 is not of material importance, basing this opinion apparently on the evidence in support of the Seattle Electric Co.'s application for permission to operate electric cars on a 14 percent grade. With regard to the opinion that the increase of grade is not of importance, it should be noted that it means an increase of steepness of 22 percent. And to the evidence given at the Seattle inquiry that it is apparently exparte, and in any case it would not relieve this Council in the event of an accident following on an increase of grade.

The bulk of the report is occupied in traversing the objections of the officials of the B.C. Electric Railway Co. against the increase of grades.

I should judge that some of the engineers reporting, have had sufficient experience in street railway engineering to fully realize the effect of their proposal. To increase the already steep grade of Lonsdale, is in no way justified by the fact that in other cities, steeper grades are, of necessity, worked over. The inevitable increase in the traffic can only make worse the already considerable difficulties in street car operation on Lonsdale, every effort should be directed to diminishing, rather than increasing, the risk attendant in operating on such a heavy grade".

I am, Your obedient servant,
Signed: Donald Cameron

After exhaustive debate, and inquiry into the merits of the report, Mr. Jackson, on behalf of the Ratepayers' Committee, suggested as a basis of settlement, that the north and south streets be graded with a maximum bench of 3 percent. At Street intersection from the waterfront to Sixth Street, be straight graded with 2 percent bench throughout the blocks on east and west streets.

Alderman Irwin inquired of the Aldermen if they would be agreeable to a 5 percent bench at intersections, and 2 percent between the blocks.

Alderman Smith stated that he would be agreeable to a grade of not more than 9 percent on Lonsdale Avenue.

Alderman McNeish said he would be guided by expert advice, and agrees to a bench grade of not more than 3 percent.

Alderman Fowler was in favour of a grade of 5 percent at Street intersections on Lonsdale Avenue.

Alderman Schultz stated that he could not agree to a steeper grade than 9 percent on Lonsdale Avenue.

Alderman Irwin preferred straight grades on north and south carline streets. He was opposed to 3 percent bench intersections.

Thereupon Alderman McNeish moved that the Council accept the suggestion of the representatives of the Ratepayers, viz:

"That the streets above Sixth Street be straight graded, and all streets below Sixth Street to the Waterfront, be benched for their full width, with a 3 percent grade at intersections."

The motion was seconded by Alderman McRae and on being put to the Meeting there voted:

Aye - Alderman McNeish and Alderman McRae	2
Nay - Alderman Irwin Alderman Schultz Alderman Smith and Alderman Fowler	4

The motion was declared defeated.

Alderman Irwin moved that this Council having heard arguments of the Committee, do now adjourn until Friday evening next, in order to formulate the Council's reasons for not accepting the recommendations of the representatives of the Ratepayers, in the matter of grades.

The motion was seconded by Alderman Smith and agreed to. Alderman McRae dissenting.

Alderman Fowler moved that a Bylaw be prepared to establish a grade on 11th Street with the view of the B.C. Telephone Co. being given a grade for their building in block 87.

The motion was seconded by Alderman Irwin and agreed to.