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A.S. Engineers Co.

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NATIONAL ROAD FROM THE AQUEDUCT BRIDGE
TO MOUNT VERNON, VA.

174

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE CHIEF OF ENGINEERS.

A REPORT OF A SURVEY FOR A NATIONAL ROAD FROM THE
AQUEDUCT BRIDGE TO MOUNT VERNON, VA.

WASHINGTON:

GOVERNMENT PRINTING OFFICE.

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NATIONAL ROAD FROM THE AQUEDUCT BRIDGE TO MOUNT
VERNON, VA.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

With a letter from the Chief of Engineers a report of a survey for a national road from the Aqueduct Bridge to Mount Vernon, Va.

JANUARY 14, 1890.—Referred to the Committee on Appropriations and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 9, 1890.

The Secretary of War has the honor to transmit to Congress, in compliance with the act approved February 23, 1889, a letter from the Chief of Engineers, dated the 8th instant, together with a copy of the report, maps, and estimates, submitted by Lieut. Col. Peter C. Hains, Corps of Engineers, the officer detailed to "make the necessary surveys for a national road from a point in Alexandria County, Virginia, at or near the Virginia end of the Aqueduct Bridge, and thence through the counties of Alexandria and Fairfax, in said State, to Mount Vernon."

REDFIELD PROCTOR.

Secretary of War.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 8, 1890.

SIR: The act of Congress approved February 23, 1889, provides as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of War be, and he is hereby, authorized and directed to detail one or more Engineer Officers of the Army to make the necessary surveys for a national road from a point in Alexandria County, Virginia, at or near the Virginia end of the Aqueduct Bridge, and thence through the counties of Alexandria and Fairfax, in said State, to Mount Vernon, who shall report the same, together with the estimated cost of building such road, to the Secretary of War, who shall transmit the same to Congress.

SEC. 2. That the sum of ten thousand dollars, or so much thereof as may be necessary, to be expended under the direction of the Secretary of War, be, and the same is hereby, appropriated, out of any money in the Treasury not otherwise appropriated, to defray the expenses of the United States in carrying out the provisions of this act: *Provided*, That nothing herein shall be construed to bind the Government of the United States to pay for any portion of the right of way for the avenue contemplated by this act.

Approved February 23, 1889.

In accordance with this act, and with your approval, the charge of this survey was assigned to Lieut. Col. P. C. Hains, Corps of Engineers, on the 13th of March, 1889. The field-work was begun May 10, 1889, and completed September 17, 1889. The final report, accompanied by drawings, sections, and estimates was finished January 4, 1890.

In accordance with the act, this report, with maps and estimates, is respectfully submitted.

Very respectfully, your obedient servant,

THOS. LINCOLN CASEY,
Brig. Gen., Chief of Engineers.

Hon. REDFIELD PROCTOR,
Secretary of War.

UNITED STATES ENGINEER OFFICE,
Washington, D. C., January 4, 1890.

GENERAL: The act of Congress approved February 23, 1889, is as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of War be, and he is hereby, authorized and directed to detail one or more engineer officers of the Army to make the necessary surveys for a national road from a point in Alexandria County, Virginia, at or near the Virginia end of the Aqueduct Bridge, and thence through the counties of Alexandria and Fairfax, in said State, to Mount Vernon, who shall report the same, together with the estimated cost of building such road, to the Secretary of War, who shall transmit the same to Congress.

SEC. 2. That the sum of \$10,000, or so much thereof as may be necessary, to be expended under the direction of the Secretary of War, be, and the same is hereby, appropriated out of any money in the Treasury not otherwise appropriated, to defray the expenses of the United States in carrying out the provisions of this act. *Provided*, That nothing herein shall be construed to bind the Government of the United States to pay for any portion of the right of way for the avenue contemplated by this act.

Approved, February 23, 1889.

By order of the Chief of Engineers, United States Army, the work was assigned to my charge March 13, 1889.

The field work was begun May 10, 1889, and finished September 17, 1889, the party being under the immediate charge of Mr. B. F. Mackall, civil engineer, whose report is appended hereto.

The survey was started from the south end of the Aqueduct Bridge, and covers all that section of country between Mount Vernon and Washington and the Potomac River, and a line nearly parallel to and distant from it about 3 miles. In making the map of the region surveyed, advantage was taken of the work heretofore done by the Coast and Geodetic Survey, but the profiles were constructed from actual surveys and measurements on the ground.

The estimates are made from the profiles constructed on a horizontal scale of 1 inch to 200 feet and a vertical scale of 1 inch to 30 feet.

Three principal routes were surveyed, the first designated as the *eastern* or river route, the second the *middle*, and the third the *western*. A number of points on each route were connected with points on the

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adjacent ones, and the profiles of the connecting lines plotted, so that, besides the three principal routes, others can be made by combining parts of one with parts of another. The survey of the three main routes, with their intermediate connections, furnishes, it is believed, all the information needed to base an estimate of the cost of constructing a "national road" to Mount Vernon. It is to be understood, however, that the several routes are laid down approximately. In many places the alignment could be somewhat changed to advantage, and the grades might in the same way be modified. Both can be done, within reasonable limits, without materially affecting the cost.

The country lying between the city of Washington and the Mount Vernon estate is generally of an undulating character. There are high points from which fine views are obtained, and, while they may not be termed grand, some of them are certainly beautiful. There are two valleys, the surfaces of which rise but little above tide-water. These are the valleys of Big Hunting Creek (sometimes called Cameron Run) and Four-Mile Run. The valley of Little Hunting Creek, a third depression, is not so low. The general course of these valleys is perpendicular to the general line of direction of a road to Mount Vernon, consequently they all have to be crossed, no matter what route be taken. The topography of the country admits of good grades, while it is sufficiently undulating to afford good drainage.

There are points of interest along all of the routes. Fort Myer and the National Cemetery at Arlington are near by. The old town of Alexandria, near which any route must pass, abounds in objects that were associated with the Father of his Country, while many of the hills are even yet occupied by the remains of old earthen forts built during the war for the Union.

In order to determine the kind of roadway that is called for in the act, the question occurs, What is its object? It is not for commerce. It has no military value. It does not partake of the nature of an ordinary work of internal improvement. It is true, it would be of great value to the section of country through which it would pass, but to the nation it has practically no pecuniary value. What, then, is the object? It is to commemorate the virtues of the grandest character in American history. It is to satisfy the cravings of a patriotic sentiment that fills the hearts of the American people to honor the name of Washington.

Whatever tends to keep alive the memory of his character and virtues will tend to make us all better citizens of the Republic. A road, therefore, built from the capital of the nation to the tomb of its founder, would not be such as is built for ordinary traffic. It should have the character of a monumental structure, such as would comport with the dignity of this great nation in such an undertaking, and the grandeur of character of the man to whom it is dedicated. The question of cost would be one of secondary consideration.

Such a national highway would be for all time. It would be always in a process of development. With the increase of population would come increased demands, for which provision must be made at the start, as far as human foresight can do so. A good road, 24 feet wide, would to-day meet the existing demands of travel, for there is not a fairly good road in existence between Mount Vernon and the capital, though the distance is only about 14 miles; but a great nation like ours would hardly undertake to construct a country road to Mount Vernon as a memorial to Washington. If undertaken at all, something far better is called for. It should be wide enough to give it character, and still have

room for future adornment and expansion. The grades should be light, the alignment in graceful curves, and it should pass over some of the high grounds from which the beautiful scenery along the route could be enjoyed, and possibly near the places that Washington himself frequented—places that now have a historical interest because associated with him. Parking, either on each side or in the center, or both, should form an essential feature. The roadway should be well paved and well kept. In fine, it should be such a work as no American need feel ashamed of. The crossings of all streams, as well as of the tracks of the several railroads that run into Alexandria and Washington, should be on permanent constructions of stone masonry, the designs of which should be in harmony with the monumental character of the work. Iron trussed bridges, while they might be used in the early stages, would be neither permanent nor in keeping with the general design of a work of this character. If used at all, they should be only as temporary expedients.

The act making the appropriation calls for "surveys of a national road from a point in Alexandria County, Virginia, at or near the Virginia end of the Aqueduct Bridge." As before stated, the survey was started from the south end of that bridge, but it would be far more in keeping with its character as a "national road" to have it start from some point on the Arlington estate, at the terminus of a handsome bridge spanning the Potomac. The question of constructing a memorial bridge across the Potomac at or near the foot of New York avenue, connecting Arlington Cemetery with the capital, has already been the subject of Congressional consideration, and doubtless a bridge of some kind will be constructed there at no distant day. The Virginia end of such a bridge would seem to be the most suitable point of starting for a "national road" to Mount Vernon. Not only is the point of starting more in keeping with the general design, but the distance from the capital to Mount Vernon would be materially shortened.

The initial steps in such a work need not be extravagantly costly. Much of it would at first be of a temporary character, to be replaced by more permanent structures later on. It is necessary, however, to provide ample width. A right of way 250 feet wide has been provided for in the estimates. Perhaps the greater part of it would be donated by people along the route; but \$100 per acre has been assumed in the estimates as a safe valuation. Over this strip from Arlington to Mount Vernon it is assumed that the State of Virginia would readily cede its jurisdiction to the United States for such an undertaking. The cost of such right of way is so insignificant an item, that it is better to provide for all possible future contingencies at the beginning.

In the estimates 80 feet of road-bed has been assumed as the minimum that should be constructed, as it is important that all embankments should have ample time to settle and become compacted. A road-bed of 80 feet would admit of a driveway of 50 or 60 feet, and 15 or 10 feet of parking on each side of it. It is believed, however, that it would be preferable to make the road-bed 120 feet, with 60 feet for a drive and 30 feet of parking on each side, and estimates have been made for this also. The parking could be utilized in many ways over a part of the route. Within a short time it might be necessary to provide a traffic roadway to accommodate heavy teams.

The masonry bridges should be about 60 feet wide, as they will be permanent constructions not susceptible of increase in width.

The road covering should not be injurious to a horse's feet. At the same time it should give a smooth surface. Such a surface is furnished by what is known as the Telford covering. It consists of a paving of rough

stones about 8 inches deep. This is covered by about 6 inches of small broken stone, and this by about 4 inches of gravel, the latter put on in layers, screened and well rolled. The road should be well drained and provided with paved gutters on each side to convey surface water to the openings into drain pipes and culverts. Such a road, for pleasure driving, is perhaps the best that can be made. A gravel covering to the road-bed, carefully laid, about 15 inches deep, without the Telford paving, will make a good road for driving, and the cost can be very much reduced.

The estimates provide for either a Telford paving or one of gravel only. There is an abundance of good gravel throughout this entire section and no lack of other material to make good roads. The brick-yards along the river between Washington and Alexandria are of easy access, and can supply material for culverts and other constructions at reasonable rates. The surface of the country abounds in cobble-stones, which will supply good material for side gutters and can be broken up for road covering if needed.

By an arbitrary increase or diminution of grade the cost of construction on any route can be increased or diminished. In order, therefore, to make the estimates of cost on the various routes comparable one with another, a maximum grade had to be assumed. This maximum was fixed at 4.5 feet per 100. No steeper grade is provided for, and wherever it can be done without undue enhancement of the cost, the endeavor has been to keep the grade down to about 3 feet in 100. There are but few places on any route where the grade reaches the maximum. Where the land is level a grade of .50 foot in 100 has been given to secure drainage.

The alignments on the different routes were run to secure overhead crossings to all railroads where practicable. The valleys of Big Hunting Creek and Four-Mile Run, which have to be crossed, are occupied by the railroad tracks of the Washington and Ohio, Richmond and Danville, and Alexandria and Fredericksburg railroads. To cross these roads at grade would materially decrease the cost of construction, but grade crossings over railroads ought to be avoided, and overhead crossings have been provided for in all cases where it was practicable to do so.

The following is a description of the three main routes that were surveyed, together with eight others made up of parts of these three principal ones, with their connections. They make eleven in all, though some differ but little from each other:

(1) *The east or river route.*—Beginning at the south end of the Aqueduct Bridge it follows the bed of the abandoned Alexandria and Georgetown Canal to Alexandria; thence along Washington street to Big Hunting Creek, crossing the latter stream near the Alexandria brick-yards; thence along the low grounds east of the Accotink Pike to a point near Old Red House; thence bearing westward, it crosses Little Hunting Creek about a mile east of Gum Spring, and thence bears southward to Mount Vernon. From the Aqueduct Bridge to Prospect Hill, $2\frac{1}{2}$ miles south of Alexandria, the route passes over a comparatively level country, and the grades are the minimum. From Prospect Hill to Mount Vernon the grades are easy, and in no case exceed 3 feet per 100. The alignment along the canal is somewhat tortuous, as the latter follows the natural contour as far as practicable. This route is low as far as Prospect Hill, and consequently has few fine views of the surrounding country. Two of the railroad crossings are on grade, which can not be avoided. It is the

line of minimum grades, passes through Alexandria, and is conveniently reached from the Long Bridge crossing of the Potomac.

The estimated cost over this route is as follows :

For a road-bed 80 feet wide, 60 feet Telford covering and 10 feet of parking on each side	\$1, 555, 506
For the same road-bed and parking, but with 15 inches gravel covering ..	1, 107, 481
For a road-bed 120 feet wide, 60 feet Telford covering, and 30 feet of parking on each side	1, 819, 869
For same road-bed and parking, but with 15 inches gravel covering	1, 371, 844

These estimates do not include work within corporation limits of Alexandria, Va.

(2) The middle route begins at the south end of the Aqueduct Bridge, follows the general direction of the Georgetown and Alexandria road, east of the National Cemetery, crosses the Columbia pike at Johnson's store, and reaches a commanding point at old Fort Albany; thence the line passes along the crest of a narrow ridge, descending into the valley of Four-Mile Run by the route of the old Alexandria road, now abandoned. After crossing Four-Mile Run it ascends the ridge, crossing the Washington and Ohio Railroad overhead, and passes directly in front of Frank Hume's residence; thence across the Leesburgh pike, back of Shuter's Hill, where it descends into the valley of Hunting Creek, crossing the Richmond and Danville, and Alexandria and Fredericksburg railroads overhead; thence, bearing to eastward, the line crosses the gravel road to the Accotink pike, the general direction of which it follows to Gum Spring; thence it follows the ridge east of the public road, and nearly parallel to it, to Mount Vernon.

The grades from the Aqueduct Bridge to Fort Albany are light, in no case exceeding 3.6 feet per 100. To descend the valley of Four-Mile Run and to ascend the ridge south of that stream the maximum grade has been used; from there the grades are reasonably good, except at the deep ravine north of Shuter's Hill, at which place and at the crossing of the railroads the maximum gradient has been used. From Hunting Creek to Mount Vernon the grades are generally light, not exceeding 3 feet in 100. The alignment is fairly good, except on that portion lying between Four-Mile Run and Hunting Creek, where deep gullies indent the ridge and necessitate a more tortuous route.

The middle line, occupying for the most part the ridge adjacent to the river, affords an almost unbroken view of the latter from the Aqueduct Bridge to Prospect Hill. From there on, the scenery is of a rural character. By an increase in the maximum grade and proportional increase of cost this line could be carried over Shuter's Hill, from which one of the finest views of the river and surrounding country can be obtained. The railroads are all crossed overhead.

The estimated cost over this route is as follows :

For a road bed 80 feet wide, 60 feet Telford covering and 10 feet of parking on each side	\$1, 468, 490
For the same road-bed and parking, but with 15 inches gravel covering ..	977, 160
For a road-bed 120 feet wide, 60 feet Telford covering and 30 feet of parking on each side	1, 736, 199
For the same road-bed and parking, but with 15 inches gravel covering ..	1, 244, 869

(3) The west route, beginning at the Aqueduct Bridge, follows the extension of Chadwick avenue, Rosslyn, for about 2,000 feet; thence up the valley of a small stream north of the National Cemetery, passing in front of the military post of Fort Myer, reaching an elevation of 235 feet above tide level; thence over a level plateau to the Columbia pike, after crossing which the line follows the general direction of the Fairfax Seminary road, descending the valley of Four-Mile Run and

crossing the Washington and Ohio Railroad overhead; thence it ascends the ridge south of the Run, in the valley of a small stream, and after reaching the summit passes over a wide plateau, crossing the Leesburgh pike near its junction with the Braddock road; thence it passes about 1,400 feet east of the Theological Seminary, and descends into the valley of Hunting Creek, crossing the tracks of the Richmond and Danville and Alexandria and Fredericksburgh railroads overhead. The line then bears to southeastward till it reaches the valley of a small tributary of Hunting Creek; it then follows this valley, crossing the Gravel and the Mount Vernon roads just north of Spring Bank farm; it then follows the general direction of the Mount Vernon road southward, descending into the valley of Little Hunting Creek near the residence of Mr. Collard. From this point the line is nearly straight to Gum Spring, near which it unites with the middle route, and from thence to Mount Vernon the two are identical.

From the Aqueduct Bridge to Fort Myer the grades do not exceed 3 feet per 100. In the descent into the valley of Four-Mile Run and the ascent on the opposite side the grade is generally 3 feet per 100, but for a short part of the distance it is 4 feet per 100. Crossing the plateau east of the seminary the country is level and the minimum grade obtains. Descending the valley of Hunting Creek the grade is 4.5 feet per 100. South of that stream, as far as James Kirby's, the grades are light, not exceeding 2.7 feet per 100. In the descent into the valley of Little Hunting Creek the grade is 4.5 feet per 100 for a distance of 3,000 feet. From thence the grades are light.

The estimated cost over this route is as follows:

For a road-bed 80 feet wide, 60 feet Telford covering and 10 feet of parking on each side.....	\$1, 390, 898
For the same road-bed and parking, but with 15 inches gravel covering..	930, 824
For a road-bed 120 feet wide, 60 feet Telford covering and 30 feet of parking on each side.....	1, 661, 047
For the same road-bed and parking, but with 15 inches gravel covering...	1, 200, 973

The following is a summary of the estimates on the three principal routes, and eight others made up of parts of the three principal routes and intermediate connections. For a description of routes Nos. 1 to 8, inclusive, see report of Mr. Mackall, hereto appended.

Line.	For a road-bed 80 feet wide, 10 feet of parking on each side.			For a road-bed 120 feet wide, 30 feet of parking on each side.		
	Length.	Gravel road-way 60 feet.	Telford road-way 60 feet.	Length.	Gravel road-way 60 feet.	Telford road-way 60 feet.
	<i>Miles.</i>			<i>Miles.</i>		
East*	15. 06	\$1, 107, 481	\$1, 555, 706	15. 08	\$1, 371, 844	\$1, 819, 869
Middle.....	15. 09	977, 160	1, 468, 490	15. 09	1, 244, 869	1, 736, 199
West.....	14. 13	930, 824	1, 390, 898	14. 13	1, 200, 973	1, 661, 047
No. 1*.....	15. 37	984, 447	1, 441, 915	15. 37	1, 217, 902	1, 675, 370
No. 2*.....	14. 63	959, 405	1, 386, 453	14. 63	1, 059, 682	1, 514, 730
No. 3.....	13. 77	1, 037, 556	1, 485, 907	13. 77	1, 308, 278	1, 755, 629
No. 4.....	14. 68	1, 063, 513	1, 541, 493	14. 68	1, 296, 221	1, 774, 202
No. 5*.....	15. 30	1, 066, 257	1, 532, 210	15. 30	1, 341, 041	1, 808, 995
No. 6.....	15. 28	1, 072, 129	1, 569, 646	15. 28	1, 319, 236	1, 818, 753
No. 7.....	15. 59	1, 012, 314	1, 519, 925	15. 59	1, 294, 022	1, 801, 632
No. 8.....	16. 20	1, 074, 239	1, 601, 711	16. 20	1, 366, 972	1, 894, 444

* Estimate includes no work within the corporation limits of Alexandria, Va.

It will be noticed that there is comparatively little difference in the estimated cost of construction over any of the routes enumerated, so that practically this question is one of minor consideration. I have en-

deavored to supply such information in regard to all as will enable Congress to decide as to which is the most desirable.

Attention is invited to the fact that the eastern route passes through the city of Alexandria, along the line of Washington street. In the estimates nothing has been provided to be done within the corporate limits of that city, as it is not known what the authorities of the city would do in regard to the portion of the route within its jurisdiction. The survey was carried through the city in compliance with the earnest wish of the members of the Mount Vernon Avenue Association, and in order to supply estimates covering all practicable routes. The legal and other questions involved in locating a route through Alexandria have not been considered.

The State of Virginia has already taken preliminary steps looking to the construction of a road from Washington City to Mount Vernon by granting a charter to a corporation known as the Mount Vernon Avenue Association. This association has power to acquire the right of way for an avenue 200 feet wide by condemnation, donation, or purchase, and to conduct and keep in repair a public avenue or highway thereon and to adorn and beautify the same. The State of Virginia has also transferred to the said association a claim against the General Government for \$120,000—money said to have been advanced by the State in 1790 toward the completion of certain public buildings in Washington, D. C. A copy of the charter referred to and the act of the State of Virginia transferring its claim for the \$120,000 is appended hereto.

I transmit herewith a copy of the report (appended) of Mr. Mackall, together with maps and drawings as follows:

1. Map of a portion of Alexandria and Fairfax Counties, Va., showing routes surveyed.
2. Profile of west route.
3. Profile of middle route.
4. Profile of east route.
5. Four profiles of auxiliary connecting lines.
6. Cross-section of proposed roadway, 80 feet wide.
7. Cross-section of proposed roadway, 120 feet wide.
8. Sketch of proposed bridge over Washington and Ohio Railroad, west route.
9. Sketch of proposed bridge over the Alexandria and Fredericksburgh and Richmond and Danville Railroads.
10. Sketch of proposed bridge over Hunting Creek, west route.
11. Sketch of proposed bridge over Hunting Creek, east route.

Very respectfully, your obedient servant,

PETER C. HAINS,
Lieutenant-Colonel, Corps of Engineers.

The CHIEF OF ENGINEERS, U. S. ARMY,
Washington, D. C.

REPORT OF MR. B. F. MACKALL.

WASHINGTON, D. C., *December 18, 1889.*

COLONEL: I have the honor to make the following report of the surveys made under your supervision for a national roadway from Washington City to Mount Vernon.

The field-work was begun on May 10, the party going into camp on the 17th of that month. The work was pushed forward as rapidly as possible, but, owing to the unprecedented rain fall during the spring and summer, was not completed until the 17th of September, 1889.

Starting at the south end of the Aqueduct Bridge, three principal

lines were surveyed to Mount Vernon, namely: The east or river route, the middle, and the west, the distance between the outer lines being about 3 miles. The topography of the country and increase of distance made a more western survey unnecessary. In addition to the above, numerous short surveys were made connecting the principal lines at various points and forming with them continuous lines to Mount Vernon. Upon several of the more important of these combined lines estimates have been made. The topography of the country was accurately taken in the vicinity of the lines, the principal streams, highways, railroad crossings, and other important features carefully located. The names of property owners and, as far as could be ascertained, the boundaries of their lands were taken, the contours and other details being obtained from the U. S. Coast Survey map and checked wherever possible. The instruments used in the field-work were a transit and "Y" level, the measurement being made with a 100-foot chain, and steel tape when greater accuracy was required. The transit lines were accurately and carefully run, with the view of obtaining close preliminary lines on which to base the estimated cost of construction. Mean low water of the bench-mark near Easby's Point was taken as the reference of all elevations. Elevations were taken over all the lines, and bench-marks established at intervals of 1,000 feet, so that accurate profiles could be obtained, the total error in elevation of the sun-dial at Mount Vernon, as established by the various lines of levels, being .07 of a foot. Where the country was rough and broken elevations were taken at right angles to the lines, and upon these cross sections the estimates for the 80-foot road-bed are based. In estimating for the 120 foot road-bed it was found that an average cross-section, supposing the ground level or having a uniform slope, would require an increase of about 40 per cent., but owing to the fact that in many instances the ground was very rough it has been thought safer to use 50 per cent.

The country covered by the surveys is generally rough and broken. The long ridge, rising about 200 feet above tide, which skirts the west bank of the river, is indented by deep ravines and broad valleys. The lowlands between this ridge and the river, extending from the Aqueduct Bridge to Prospect Hill, $2\frac{1}{2}$ miles south of Alexandria, offer substantially a level surface for the proposed avenue. The geological formation is principally coarse gravel mixed with clay or sand, overlying a strata of compact clay; beneath this clay, at a great depth, there is a coarse, perishable sandstone, outcropping just north of Mount Vernon. From the nature of the formation, in seasons of continued rain the upper strata of porous sand and gravel will have a tendency to slide upon the underlying clay. South of Hunting Creek, along the river, there are unmistakable evidences of such slides having taken place. Just north of the Mount Vernon mansion a slide took place last spring and summer, and, from actual observations, moved at the rate of 10 feet per month, glacier-like, carrying everything before it. Inland from the river there appears no evidence of slides having taken place in recent years.

As the basis for the estimated cost a maximum gradient of 4.5 feet per 100 and a minimum of .50 foot per 100 have been adopted. The preliminary lines have been run with the view of crossing the several railroads above or below grade wherever possible, believing that the increase of traffic of the railroads and the avenue, if constructed, would render crossings at grade out of the question, however inexpensive.

Two estimates have been made of each of the several lines, viz: For an 80-foot road-bed—60 feet of Telford roadway with 10 feet of parking

on each side. (2) A 120-foot road-bed—60 feet of Telford roadway and 30 feet of parking on each side. From the formation of the country and the absence of all indications of rock, but two classes of material have been estimated upon, viz: Earth and stiff clay, the former at 30 cents per cubic yard and the latter at 50 cents, the cost of moving to include an average haul of 500 feet, the limit of free haul being taken at 200 feet. On account of a probable restricted right of way, borrowed material has been estimated at 40 cents per cubic yard, as material other than earth may have to be used. The prices for masonry, brick or stone, include the cost of cement, sand, and construction. The prices for excavation, embankment, the cost of construction of masonry, etc., are based on the cost of work of like character on the several railroads of the country, and it is believed that any of the lines can be constructed within the estimates at the present cost of labor and material.

In order to avoid repetition as far as possible only a general description of the three principal lines is given, and of the combined lines wherever they differ materially from those already described.

The various lines of survey for the Mount Vernon avenue have been designated in the field-notes by certain letters of the alphabet, and this nomenclature has been used for the profiles of the same. Thus A, or the middle, line extends from the Aqueduct Bridge to Mount Vernon. C line from station 10 plus 80 A line, by Fort Myer to station 131 plus 54 A line. E line from station 225 A line to station 93 N line. F line from station 233 A line, through Alexandria, to station 453 A line. H line from station 68 plus 80 C line to station 716 A line. I line from station 178 plus 30 H line to station 323 A line. K line from station 78 plus 60 H line to station 146 plus 97 H line. N line from station 26 plus 30 F line to station 211 plus 65 F line. O line from station 465 A line to station 552 A line. P line from station 211 plus 65 F line to station 435 plus 60 H line. R line from station 415 A line to station 335 H line. S line from station 300 A line to station 397 A line. T line from station 465 plus 60 H line to station 499 H line. V line from station 540 A line to station 777 A line. X line from station 453 A line to station 84 V line. Y line from station 235 V line to station 815 plus 50 A line.

THE EAST LINE.

Beginning at the south end of the Aqueduct Bridge it follows the bed of the old Alexandria and Georgetown Canal to Washington street, Alexandria (station 106 plus 40 F line of the field-notes); thence with that street produced to station 3 (X line of the field-notes); thence along the lowlands, between the river and Accotink pike to station 157 plus 93; thence bearing west it crosses Little Hunting Creek about 1 mile below Gum Spring, uniting with the middle line at station 777; thence by the middle line to Mount Vernon. From the Aqueduct Bridge to Prospect Hill, $2\frac{1}{2}$ miles south of Hunting Creek, the country is comparatively level, and the grades correspondingly light. From thence to Mount Vernon in no instance will they exceed 3 feet per 100, and are generally far below that gradient. Excepting certain portions of the canal, which is more or less winding, the alignment is excellent. Portner's switch and the Baltimore and Ohio track in Alexandria are crossed at grade.

NATIONAL ROAD TO MOUNT VERNON.

ESTIMATE FOR EAST LINE. LENGTH 15.08 MILES.

[For a road-bed 80 feet wide, 60 feet of Telford roadway with 10 feet of parking on each side.]

454,000 cubic yards of earth excavation, at 30 cents.....	\$136,200
80,000 cubic yards of stiff clay excavation, at 50 cents.....	40,000
400,000 cubic yards borrowed excavation, at 40 cents.....	160,000
2,180 cubic yards brick masonry, at \$12.....	26,160
2,100 cubic yards stone masonry, at \$12.....	25,200
260 cubic yards paving (1 foot deep, for culverts), at \$4.....	1,040
30 cubic yards ring stone (masonry), at \$20.....	600
Arch bridge over Washington and Alexandria Railroad (masonry).....	40,000
Arch bridge over Hunting Creek (masonry).....	136,600
Arch bridge over Little Hunting Creek (masonry).....	58,200
40,000 cubic yards of riprap, at \$1.....	40,000
16,000 square yards slope paving, at \$2.....	32,000
49,000 square yards mattresses, at 45 cents.....	22,050
89,900 cubic yards Telford base, at \$2.50.....	224,750
66,400 cubic yards broken stone, at \$1.75.....	116,200
44,900 cubic yards gravel, at \$1.....	44,900
38,600 cubic yards sand or gravel, at 80 cents.....	30,880
145,550 linear feet curbing, at 90 cents.....	130,995
80,850 square yards paving (gutters), at 50 cents.....	40,425
71,500 cubic yards top soil (parking), at 20 cents.....	14,300
13.76 miles drainage, at \$3,700.....	50,912
4,840 trees, at \$1.....	4,840
378.45 acres land, at \$100.....	37,845

1,414,097

Engineering and supervision, 10 per cent..... 141,409

Total..... 1,555,506

The same with 60-foot gravel roadway..... 1,107,481

This estimate does not include 7,000 feet through the corporation limits of the city of Alexandria.

[For a road-bed 120 feet wide, 60 feet of Telford roadway with 30 feet of parking on each side.]

680,000 cubic yards earth excavation, at 30 cents.....	\$204,000
120,000 cubic yards stiff clay excavation, at 50 cents.....	60,000
600,000 cubic yards borrowed excavation, at 40 cents.....	240,000
3,052 cubic yards brick masonry, at \$12.....	36,624
2,940 cubic yards stone masonry, at \$12.....	35,280
364 cubic yards of paving (1 foot deep, for culverts), at \$4.....	1,456
30 cubic yards ring stone (masonry), at \$20.....	600
Arch bridge over Washington and Alexandria Railroad.....	40,000
Arch bridge over Hunting Creek.....	136,600
Arch bridge over Little Hunting Creek.....	58,200
40,000 cubic yards riprap, at \$1.....	40,000
16,000 square yards slope paving, at \$2.....	32,000
60,000 square yards mattresses, at 45 cents.....	27,000
89,900 cubic yards Telford base, at \$2.50.....	224,750
66,400 cubic yards broken stone, at \$1.75.....	116,200
44,900 cubic yards gravel, at \$1.....	44,900
38,600 cubic yards sand or gravel, at 80 cents.....	30,880
145,550 linear feet curbing, at 90 cents.....	130,995
80,850 square yards paving (gutters), at 50 cents.....	40,425
143,000 cubic yards top soil (parking), at 20 cents.....	28,600
27,700 cubic yards gravel (sidewalks), at \$1.....	27,700
13.76 miles of drainage, at \$3,700.....	50,912
9,460 trees, at \$1.....	9,460
378.45 acres land, at \$100.....	37,845

1,654,427

Engineering and supervision, 10 per cent..... 165,442

Total..... 1,819,869

The same with 60 foot gravel roadway..... 1,371,844

This estimate does not include 7,000 feet through the corporation limits of the city of Alexandria.

THE MIDDLE LINE.

Begins at the Aqueduct Bridge and follows the general direction of the public road east of the National Cemetery to station 131, Fort Albany. Thence along the narrow ridge between the river and north branch, descending by the old military road to the valley of Four Mile Run to station 233, from which point branch lines pass through and back of Alexandria. From station 233 the line ascends the ridge passing in front of Mr. Hume's residence. Thence across the Leesburgh pike, west of Shuter's Hill, it descends to the valley of Hunting Creek, crossing the Little River pike and the tracks of the Richmond and Danville, and Alexandria and Fredericksburg railroads near the Episcopal Chapel. Thence bearing eastward, crossing the gravel road near Oliver Pullman's to station 453 on the Accotink pike. Thence with the general direction of said pike to Gum Spring. From Gum Spring the line takes the ridge just east of the public road and parallel with it to station 796, the north boundary of the Mount Vernon Association's property. From this point the line was extended to the Mansion House, the estimates being made out only to station 796, the aforesaid boundary. From station 465 to station 552, two lines were surveyed up Prospect Hill. The one on which the estimates are based, to the west of the pike, is 300 feet longer, but has the advantage in grade. From the Aqueduct Bridge to station 180, the grades are generally good, for a short distance 3.6 feet per 100 being used to ascend the ridge to Fort Albany. The descent into the valley of Four Mile Run, and the ascent south, the maximum grade of 4.5 feet per 100 has been used. Thence to Hunting Creek the grades are reasonably good, with the exception of the maximum grade at the crossing of the several railroad tracks and the deep ravine back of Shuter's Hill. From Hunting Creek to Mount Vernon the grades are light and need not exceed 3 per cent., about that gradient being required to ascend and descend the ridge at Prospect Hill and the ridge south of Gum Spring. The alignment is generally good, except from Four Mile Run to the Little River pike, where, owing to improved property, the cemetery back of Shuter's Hill, and other obstacles, the preliminary line is more or less tortuous. All railroads are crossed overhead.

ESTIMATE FOR MIDDLE LINE. LENGTH, 15.09 MILES.

[For a road-bed 80 feet wide, 60 feet Telford roadway, with 10 feet of parking on each side.]

500,000 cubic yards earth excavation, at 30 cents.....	\$150,000
128,000 cubic yards stiff clay excavation, at 50 cents.....	64,000
223,000 cubic yards borrowed excavation, at 40 cents.....	89,200
3,300 cubic yards brick masonry, at \$12.....	39,600
4,940 cubic yards stone masonry, at \$12.....	59,280
730 cubic yards paving (1 foot deep, for culverts), at \$4.....	2,920
60 cubic yards ring stone (masonry), at \$20.....	1,200
Arch bridge over Four-Mile Run (masonry).....	41,000
Arch bridge over Washington and Ohio Railroad (masonry).....	30,000
Arch bridge over Richmond and Danville and Alexandria and Fredericksburg railroads (masonry).....	43,000
Arch bridge over Hunting Creek (masonry).....	50,000
98,400 cubic yards Telford base, at \$2.50.....	246,000
73,800 cubic yards broken stone, at \$1.75.....	129,150
49,200 cubic yards gravel, at \$1.....	49,200
42,252 cubic yards sand or gravel, at 80 cents.....	33,802
159,400 linear feet curbing, at 90 cents.....	143,460
88,600 square yards paving (gutters), at 50 cents.....	44,300
78,700 cubic yards top-soil (for parking), at 20 cents.....	15,740

15.09 miles of drainage, at \$3,700.....	\$55,833
5,310 trees, at \$1.....	5,310
419.96 acres land, at \$100.....	41,996
	1,334,991
Engineering and supervision, 10 per cent.....	133,499
	1,468,490
Total.....	1,458,490
The same with 60 feet gravel roadway.....	977,160

[For a road-bed 120 feet wide, 60 feet of Telford roadway, with 30 feet of parking on each side.]

750,000 cubic yards earth excavation, at 30 cents.....	\$225,000
192,000 cubic yards stiff clay excavation, at 50 cents.....	96,000
334,000 cubic yards borrowed excavation, at 40 cents.....	133,600
4,620 cubic yards brick masonry, at \$12.....	55,440
6,916 cubic yards stone masonry, at \$12.....	82,992
1,020 cubic yards paving (1 foot deep, for culverts), at \$4.....	4,080
60 cubic yards ring stone (masonry), at \$20.....	1,200
Arch bridge over Four Mile Run (masonry).....	41,000
Arch bridge over Washington and Ohio Railroad (masonry).....	30,000
Arch bridge over Alexandria and Fredericksburg and Richmond and Danville railroads (masonry).....	43,000
Arch bridge over Hunting Creek (masonry).....	50,000
96,400 cubic yards Telford base, at \$2.50.....	246,000
73,800 cubic yards broken stone, at \$1.75.....	129,150
49,200 cubic yards gravel at \$1.....	49,200
42,252 cubic yards sand or gravel, at 80 cents.....	33,802
159,400 linear feet curbing, at 90 cents.....	143,460
88,600 square yards paving (for gutters), at 50 cents.....	44,300
157,400 cubic yards top-soil (for parking), at 20 cents.....	31,480
30,200 cubic yards gravel (for sidewalks), at \$1.....	30,200
15.09 miles of drainage, at \$3,700.....	55,833
10,630 trees, at \$1.....	10,630
419.96 acres of land, at \$100.....	41,996
	1,578,363
Engineering and supervision, 10 per cent.....	157,836
	1,736,199
Total.....	1,736,199
The same with 60 feet gravel roadway.....	1,244,869

THE WEST LINE.

Beginning at the Aqueduct Bridge the west line follows Chadwick Avenue (Rosslyn) produced, thence up the valley of a small stream north of the National Cemetery to Fort Myer, reaching an elevation of 235 feet at station 71 (H line of the field-notes). From Fort Myer the line is perfectly straight to station 78 plus 60, south of the Columbia pike. To descend into the valley of Four Mile Run two lines were surveyed, uniting at station 146 plus 97. The first, straight down the bluff, was more direct by 350 feet, but requiring a steeper grade by 1 foot per 100. The second, upon which the estimates are based, follows the general direction of the Fairfax Seminary road. Ascending the ridge south of Four Mile Run the line crosses the Leesburgh pike near its junction with the Braddock road, and, passing east of the seminary, it descends to the valley of Hunting Creek. Thence from Hunting Creek, bearing eastward, the line ascends the valley of a small stream near Peter Pullman's, crossing the gravel and Mount Vernon roads near Spring Bank farm. Thence with the general direction of the Mount Vernon road, on the east side, it descends the ridge near Collard's to the valley of Little Hunting Creek. Thence to Gum Spring the line is practically straight, uniting with the middle line at station 716, just south of that stream. Thence with the middle line to Mount Vernon as before described.

From the Aqueduct Bridge to Fort Myer the grades do not exceed 3 feet per 100. Thence as far as the Seminary road the minimum grade is generally used. The descent into the valley of Four Mile Run, and the ascent south, 3 feet per 100 can be obtained. For a short distance 4 feet per 100 has been used. Across the plateau east of the seminary the grades are very easy. The descent to the valley of Hunting Creek the maximum grade is used. Thence as far as the ridge at Collard's the grades do not exceed 2.7 feet per 100. The ridge breaking off suddenly to the eastward the descent into the valley of Little Hunting Creek is abrupt, and the maximum grade has been used for nearly 3,000 feet. To obviate this a preliminary line was surveyed around the hill, increasing the distance but giving a lower gradient. Across the valley of Little Hunting Creek to Mount Vernon the grades are excellent. The alignment throughout is fairly good. All railroads are crossed overhead

ESTIMATE FOR WEST LINE. LENGTH 14.13 MILES.

[For a road-bed 80 feet wide, 60 feet Telford roadway, with 10 feet of parking on each side.]

504,000 cubic yards earth excavation, at 30 cents	\$151,200
134,000 cubic yards stiff clay excavation, at 50 cents	67,000
156,000 cubic yards borrowed excavation, at 40 cents	62,400
4,350 cubic yards brick masonry, at \$12	52,200
7,300 cubic yards stone masonry, at \$12	87,600
800 cubic yards paving (1 foot deep, for culverts), at \$4	3,200
70 cubic yards ring stone (masonry), at \$20	1,400
Arch bridge over Washington and Ohio Railroad (masonry)	39,000
Arch bridge over Alexandria and Fredericksburg and Richmond and Danville railroads (masonry)	42,900
Arch bridge over Hunting Creek (masonry)	41,000
92,200 cubic yards Telford base, at \$2.50	230,500
69,100 cubic yards broken stone, at \$1.75	120,925
46,100 cubic yards gravel, at \$1	46,100
39,570 cubic yards sand or gravel, at 80 cents	31,656
149,300 linear feet curbing, at 90 cents	134,370
82,900 square yards paving (for gutters), at 50 cents	41,450
73,800 cubic yards top soil (for parking), at 20 cents	14,760
14.13 miles of drainage, at \$3,700	52,281
5,000 trees, at \$1	5,000
395.11 acres of land, at \$100	39,511
	1,264,453
Engineering and supervision, 10 per cent.	126,445
Total	1,390,898
The same with 60 feet gravel roadway	330,824

[For a road-bed 120 feet wide, 60 feet of Telford roadway, with 30 feet of parking on each side.]

756,000 cubic yards earth excavation, at 30 cents	\$226,800
201,000 cubic yards stiff clay excavation, at 50 cents	100,500
234,000 cubic yards borrowed excavation, at 40 cents	93,600
6,090 cubic yards brick masonry, at \$12	73,080
10,220 cubic yards stone masonry, at \$12	122,640
1,120 cubic yards paving (1 foot deep for culverts), at \$4	4,480
70 cubic yards ring stone (masonry), at \$20	1,400
Arch bridge over Washington and Ohio Railroad (masonry)	39,000
Arch bridge over Alexandria and Fredericksburg and Richmond and Danville railroads (masonry)	42,900
Arch bridge over Hunting Creek (masonry)	41,000
92,200 cubic yards Telford base, at \$2.50	230,500
69,100 cubic yards broken stone, at \$1.75	120,925
46,100 cubic yards gravel, at \$1	46,100
39,571 cubic yards sand or gravel, at 80 cents	31,656
149,300 linear feet curbing, at 90 cents	134,370
82,900 square yards paving (for gutters), at 50 cents	41,450

148,000 cubic yards top-soil (for parking), at 20 cents.....	\$29,600
28,300 cubic yards gravel, (for side-walks), at \$1.....	28,300
14.13 miles of drainage, at \$3,700.....	52,281
9,950 trees, at \$1.....	9,950
395.11 acres of land, at \$100.....	39,511
	<hr/>
Engineering and supervision, 10 per cent.	1,510,043
	151,004
	<hr/>
Total.....	1,661,047
The same with 60 feet gravel roadway.....	1,200,973

LINE NO. 1.

Begins at the Aqueduct Bridge and follows the east line through Washington street, Alexandria, to station 456 of the middle line south of Hunting Creek, thence by the middle line to Mount Vernon. The maximum grade is about 3 per cent., and the alignment fairly good. The Baltimore and Ohio Railroad and Portner's Switch are crossed at grade.

ESTIMATES.

For 80 feet of road-bed, with 60 feet Telford paving.....	\$1,441,915
For 120 feet of road-bed, with 60 feet Telford paving.....	1,675,370
For 80 feet of road-bed, with 60 feet gravel.....	984,447
For 120 feet of road-bed, with 60 feet gravel.....	1,217,902

LINE NO. 2.

Beginning at the Aqueduct Bridge, follows the east line to Jefferson Street, crossing Hunting Creek near the site of the present bridge, thence up Spring Bank Run, east of the gravel road, to station 435 plus 60 of the west line; thence with the west line to Mount Vernon. The grades and alignment are those of the east and west lines as before described. The valley of Spring Bank Run is of very easy ascent, not requiring over 3 feet per 100. The Baltimore and Ohio Railroad and Portner's Switch are crossed at grade.

ESTIMATES.

For 80 feet of road-bed, with 60 feet Telford paving.....	\$1,386,453
For 120 feet of road bed, with 60 feet Telford paving.....	1,514,730
For 80 feet of road-bed, with 60 feet gravel.....	953,405
For 120 feet of road-bed, with 60 feet gravel.....	1,059,682

LINE NO. 3.

Begins at the Aqueduct Bridge, thence with the middle line to station 233, thence back of Alexandria, near the National Cemetery, to station 7 plus 50 (P line of the field notes), thence up the valley of Spring Bank Run, east of the gravel road to station 435 plus 60 of the west line, thence with the west line to Mount Vernon. All railroads are crossed under or above grade. The grades and alignment are those of the middle and west lines. From station 233 of the middle line to station 7 plus 50, P line, the country is comparatively level.

ESTIMATES.

For 80 feet of road-bed, with 60 feet Telford paving.....	\$1,485,907
For 120 feet of road-bed, with 60 feet Telford paving.....	1,756,629
For 80 feet of road-bed, with 60 feet gravel.....	1,037,556
For 120 feet of road-bed, with 60 feet gravel.....	1,308,278

LINE NO. 4.

Begins at the Aqueduct Bridge, thence with the middle line to station 233, thence back of Alexandria, near the National Cemetery, to station 453 of the middle line, thence by the middle line to Mount Vernon. All railroads are crossed under or above grade. The grades and alignment are those of the middle line, excepting from station 233 to station 453, over a comparatively level country, and need not exceed 3 feet per 100.

ESTIMATES.

For 80 feet of road-bed, with 60 feet Telford paving.....	\$1,541,493
For 120 feet of road-bed, with 60 feet Telford paving.....	1,774,202
For 80 feet of road-bed, with 60 feet gravel.....	1,063,513
For 120 feet of road-bed, with 60 feet gravel.....	1,296,221

LINE NO. 5.

Begins at the Aqueduct Bridge, follows the middle line to station 233, thence by St. Asaph's Junction, through Washington Street, Alexandria, to Station 453 of the middle line, thence by the middle line to Mount Vernon. The railroads at St. Asaph's Junction, Portner's Switch, and the Baltimore and Ohio tracks are all crossed at grade. The grades and alignment do not differ materially from line No. 4.

ESTIMATES.

For 80 feet of road-bed, with 60 feet Telford paving.....	\$1,532,210
For 120 feet of road-bed, with 60 feet Telford paving.....	1,806,995
For 80 feet of road-bed, with 60 feet gravel.....	1,066,257
For 120 feet of road-bed, with 60 feet gravel.....	1,341,041

LINE NO. 6.

Beginning at the Aqueduct Bridge, follows the middle line to station 540, Prospect Hill, thence along the ridge between the river and the Accotink pike to station 158 of the east line, thence with the east line to Mount Vernon. The grades and alignment differ but little from the middle line. All railroads are crossed overhead.

ESTIMATES.

For 80 feet of road-bed, with 60 feet Telford paving.....	\$1,569,646
For 120 feet of road-bed, with 60 feet Telford paving.....	1,816,753
For 80 feet of road-bed, with 60 feet gravel.....	1,072,129
For 120 feet of road-bed, with 60 feet gravel.....	1,319,236

LINE NO. 7.

Beginning at the Aqueduct Bridge follows the west line to Fort Myer, thence along the ridge west of the National Cemetery to Fort Albany, station 131, of the middle line, thence with that line to Mount Vernon. The only difference between this line and the middle line is that the former passes by Fort Myer. All railroads are crossed overhead.

ESTIMATES.

For 80 feet of road-bed, with 60 feet Telford paving.....	\$1,519,925
For 120 feet of road-bed, with 60 feet Telford paving.....	1,801,632
For 80 feet of road-bed, with 60 feet gravel.....	1,012,314
For 120 feet of road-bed, with 60 feet gravel.....	1,294,022

LINE NO. 8.

Beginning at the Aqueduct Bridge follows the west line to station 335, south of Hunting Creek, thence along south side of said stream to station 415 of the middle line, thence with the middle line to station 540, Prospect Hill, thence along the ridge between the river and Accotink pike to station 158 of the east line, thence with that line to Mount Vernon. The grades and alignment are those of the various lines of which it is composed, heretofore described. All railroads are crossed overhead.

ESTIMATES.

For 80 feet of road-bed, with 60 feet Telford paving.....	\$1,601,711.
For 120 feet of road-bed, with 60 feet Telford paving.....	1,894,444
For 80 feet of road-bed, with 60 feet gravel	1,074,239
For 120 feet of road-bed, with 60 feet gravel	1,366,972

Very respectfully, your obedient servant,

B. F. MACKALL.

Lieut. Col. PETER C. HAINS,
Corps of Engineers, U. S. Army.

CHARTER OF THE MOUNT VERNON AVENUE ASSOCIATION.

AN ACT to incorporate the Mount Vernon Avenue Association.

1. *Be it enacted by the general assembly of the State of Virginia*, That John B. Smoot, E. W. Fox, Jefferson Chandler, M. B. Harlow, E. F. Beale, Jackson E. Sickles, Frank A. Reed, N. W. Pearson, Stacy Snowden, J. T. Beckham, W. E. Clarke, F. R. Windsor, Park Agnew, Frank Hume, George Johnston, Warrington Gillingham, H. A. Willard, W. M. Galt, Doctor G. Wythe Cooke, D. A. Windsor, Harrison Hatch, R. Portner, Walter Walton, Rozier Dulaney, H. H. Wells, L. L. Blake, R. L. Lacy, Captain Lawton, Francis Hufty, C. E. Stewart, J. Norman Gibbs, James M. Love, and James W. Roberts are hereby made and constituted a corporation and body politic, with power to increase the same, under the name and style of the Mount Vernon Avenue Association, by which name this corporation shall be known, and under which it may sue and be sued, contract and be contracted with, within the scope of its power as a corporation, and shall have perpetual succession.

2. Said corporation shall have the power to acquire right of way by condemnation, donation, or purchase for a public avenue and highway, not exceeding two hundred feet in width, from a point south of the Aqueduct Bridge or the northern boundary of the Government park, reservation, or cemetery, known as Arlington, on the Potomac River; thence through the county and city of Alexandria, passing through Washington Street of the said city of Alexandria, and through the county of Fairfax to the grounds inclosing the tomb of Washington, known as Mount Vernon, over the most practicable route to be selected by the trustees of said corporation, and to conduct and keep in repair a public avenue and highway thereon, and to adorn and beautify the same.

3. Said corporation shall be governed by the trustees herein named, a majority of whom shall constitute a quorum, and their successors in office. The said trustees, or quorum thereof, shall have power to fill all vacancies happening in their number by death, resignation, or otherwise.

4. Said association shall have power to receive subscriptions or contributions from the United States, the State of Virginia, or any State or Territory of the United States, or any county, corporation, person, or municipality thereof, to promote the accomplishment of the objects of this association.

5. Whatever is received by the association, from any source shall, without compensation to the trustees herein provided for, be expended to open, construct, build, keep in repair, and beautify the said avenue, and for such other charges as the said trustees may approve and determine.

6. The city of Alexandria is hereby authorized to aid the construction of said avenue in the city of Alexandria to the amount of twenty-five thousand dollars, to be paid either in cash or in the bonds of said city, as the city of Alexandria shall elect.

7. The counties of Alexandria and Fairfax are hereby, and each of them is, au-

thorized to aid in the construction of said avenue, by issuing their respective bonds not exceeding two thousand dollars for each county per mile of said avenue, or by contributing the same amount in cash.

8. The said corporation shall have power to condemn land, as the power to condemn for public use is now defined and exercised for public purposes under and by virtue of the general laws of the State of Virginia, and in exercising said power in condemning lands for said avenue and highway, advantages and benefits accruing to the owner of adjoining lands whose land is condemned for said avenue and highway, by virtue of the increase in value of said adjoining lands, shall be considered and deducted from any damage which said party may sustain by virtue of the condemnation proceedings herein contemplated for the purpose of establishing said avenue or highway.

9. Said trustees are hereby authorized to permit, under restrictive, regulations, conditions, and terms as said trustees, or a quorum thereof, deem advisable, such means of carrying passengers over said avenue as will not disturb the enjoyment of said avenue by ordinary private vehicles and carriages and means of travel; provided steam shall not be used as a motive power for carrying passengers.

10. This association shall have jurisdiction and authority to keep the peace on and over the said avenue, and power to appoint special policemen with the advice and consent of the judge of the county or corporation courts in whose jurisdiction they shall be employed, and said policemen shall have and exercise the same powers now or hereafter conferred upon constables and municipal police officers conferred by the laws of the Commonwealth of Virginia.

11. Said trustees shall make to the government of Virginia a detailed annual report of the receipts and expenditures of this association.

12. The principal office of this association shall be in the city of Alexandria, and its annual meetings shall be held in said city on the last Tuesday in the month of May in each year.

13. All taxes, dues, or demands due the State, or to become due by this company to the State of Virginia, shall be paid in lawful currency of the United States, and not in coupons.

14. This act shall be in force from its passage.

Approved February 18, 1888.

JOINT RESOLUTION transferring a certain claim of the State of Virginia against the Government of the United States to the Mount Vernon Avenue Association, chartered by this State.

Whereas, by an act of the general assembly of this State, passed December twenty-seventh, seventeen hundred and ninety, there was loaned by this State to the United States the sum of one hundred and twenty thousand dollars, to be applied towards the erection of the public buildings at the permanent seat of the Government of the United States, which said money so loaned by this State was paid in person to the then President of the United States, General George Washington, and disbursed under his supervision for the purpose for which it was loaned; and

Whereas, by resolution number five, adopted by this assembly March fifteenth, eighteen hundred and fifty (acts of assembly of Virginia, eighteen hundred and forty nine-fifty, page two hundred and thirty-five), the claim of this State against the United States for the return of said loan was transferred to the Orange and Alexandria Railroad Company under certain conditions and with power to said company to demand and receive the same and the interest thereon; and

Whereas, the said claim having remained in the hands of said railroad company for nearly twenty-eight years without an appropriation by the Congress of the United States to pay the same, and the said company having become insolvent, this assembly, by its joint resolution approved February twentieth, eighteen hundred and seventy-eight (acts of assembly of Virginia, eighteen hundred and seventy-seven-seventy-eight, chapter sixty-nine, page sixty), repealed the said resolution adopted March fifteenth, eighteen hundred and fifty, transferring said claim to said railroad company, and requested, by said resolution of February twentieth, eighteen hundred and seventy-eight, the Senators and Representatives of this State in the United States Congress to exert their best efforts to recover the amount of the claim aforesaid; and

Whereas, this State, by its act of assembly passed during its present session, has lately granted a charter to the Mount Vernon Avenue Association, the object of which is to make an avenue or road to the tomb of General George Washington, as specified in the said charter; and

Whereas, the said claim, now nearly one hundred years old, never having been paid, and this assembly deeming the objects of the charter to said Mount Vernon Avenue Association worthy of patriotic approval, and considering that the said one hundred and twenty thousand dollars was paid to, handled, and disbursed under the

provision of General George Washington, to whose tomb said avenue will lead: before be it

Resolved by the general assembly, That the said claim of one hundred and twenty thousand dollars of this State against the United States, growing out of the loan aforesaid, under the act of this assembly passed December twenty-seventh, seven hundred and ninety, be, and the same is hereby, transferred to the said Mount Vernon Avenue Association, chartered as aforesaid by this State, and that said Mount Vernon Avenue Association be, and is hereby, empowered to demand, collect, and receive the said claim, and the interest thereon, from the Government of the United States; and when recovered or received from the United States the said Association shall pay, from the gross amount so recovered or received by it, to the special agent of this State, appointed by the governor thereof, under and in pursuance of the said act of this assembly, approved March third, eighteen hundred and eighty, the amount of the compensation of said special agent as agreed upon in contract dated April twenty-eighth, eighteen hundred and eighty.

That the net balance of the recovery of said claim, left after the payment to the lawfully appointed agent of the State of Virginia now in charge of said claim of a commission as he is entitled to receive, shall be retained by said Mount Vernon Avenue Association and used by it for all the expenses incident to carrying out the objects and purposes of its charter, now granted, or as the said charter may hereafter be changed, modified, or amended by this assembly.

In consideration of the transfer of said claim hereby made, and upon its recovery, the avenue or road to be made by said association shall, upon its completion, forever hereafter be free from all charge of toll to the public, but under the control and supervision of said Mount Vernon Avenue Association.

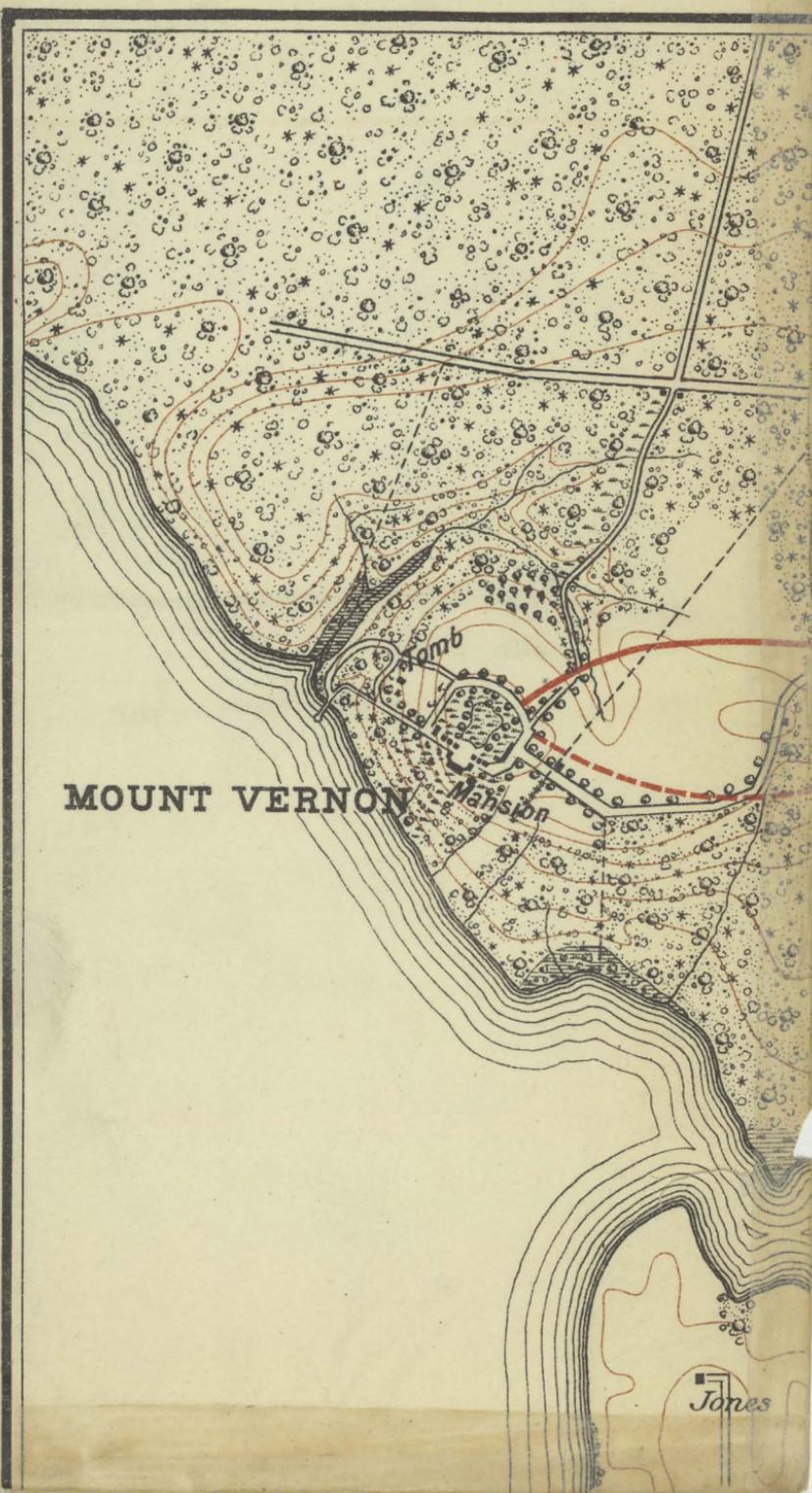
This resolution shall be in force from its passage.
Approved March fifth, eighteen hundred and eighty-eight.

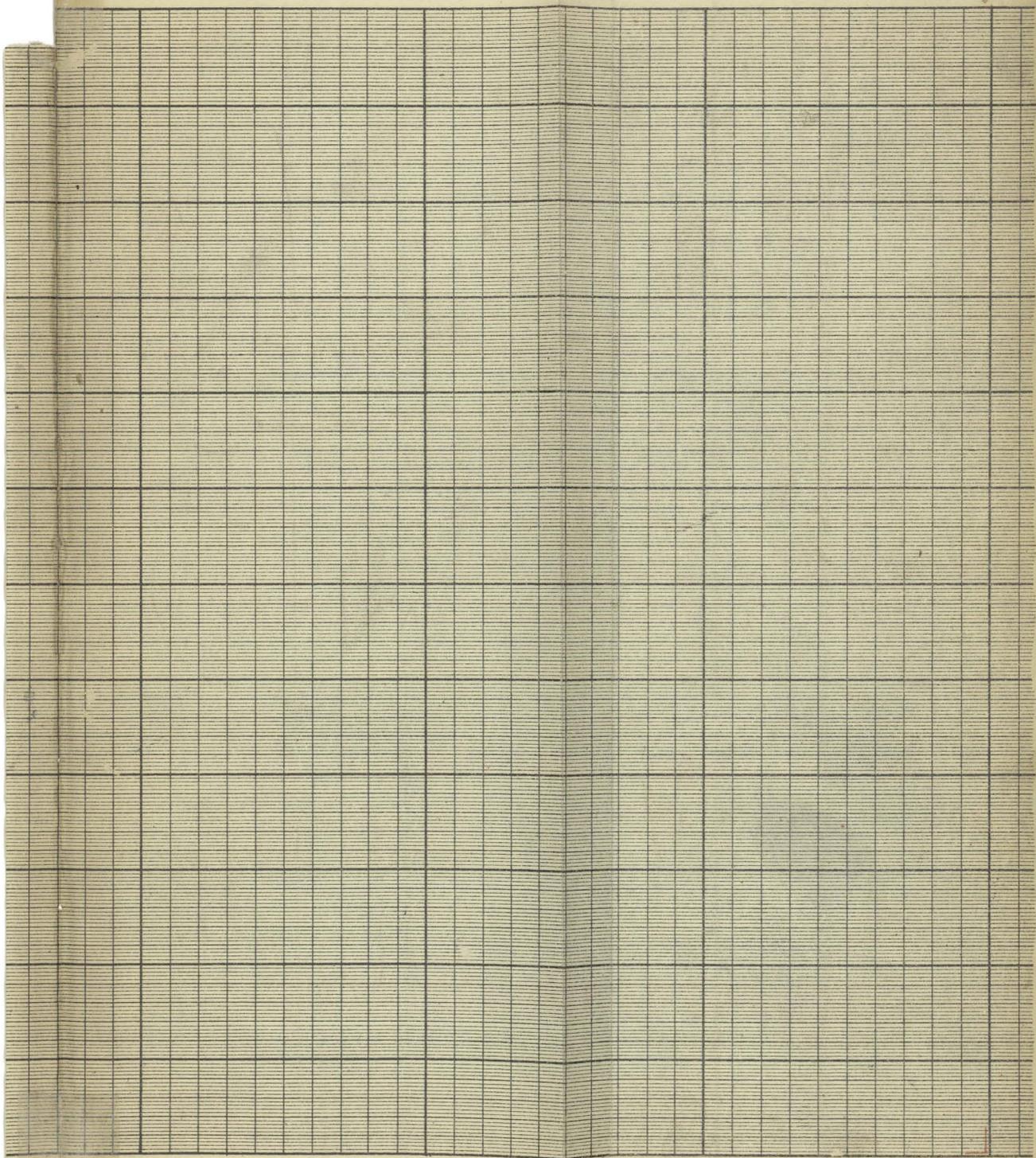
MOUNT VERNON

Comb

Mansion

Jones





SURVEY OF NATIONAL ROAD
TO
MOUNT VERNON
PROFILE OF WEST ROUTE

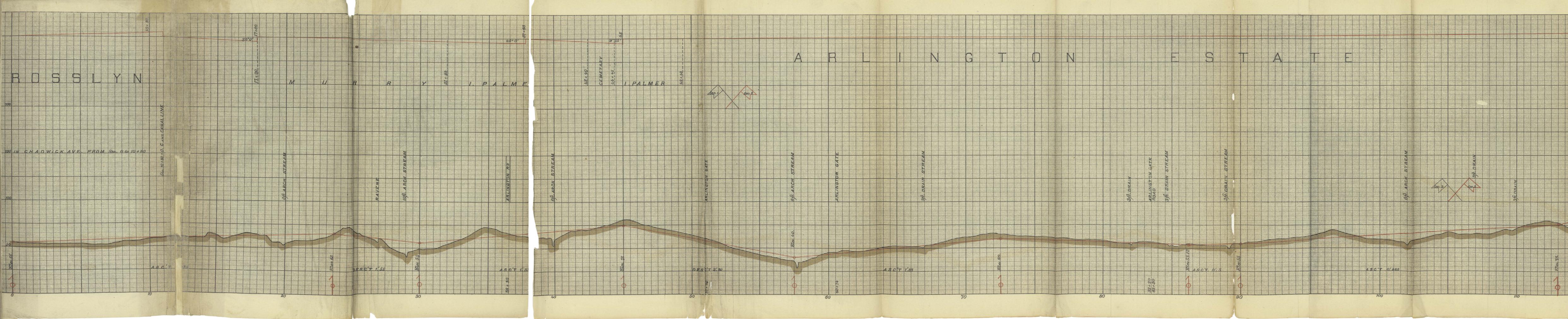
HOR. SCALE, $\frac{3}{4}$ IN. = 200 FT.
VERT. " , $\frac{3}{4}$ IN. = 30 FT.

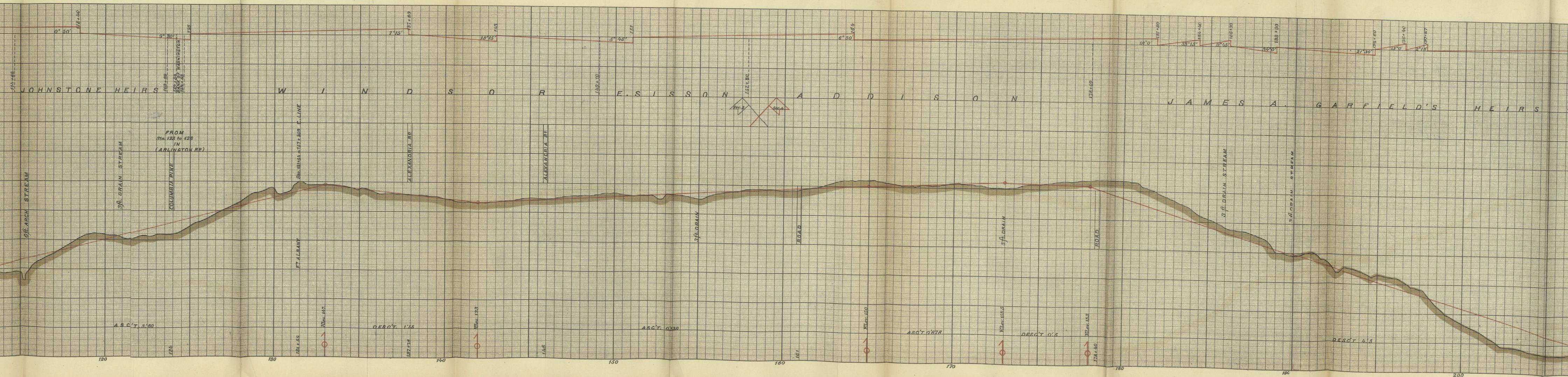
ROSSLYN

MURRY I. PALMER

ARLINGTON ESTATE

180 IN CHADWICK AVE. FROM Sta. 0 to 10+00
Sta. 10+80 to 10+00 CANAL LINE





JOHNSTONE HEIRS

WINDSOR F. S. I. S. S. O. N

JAMES A. GARFIELD'S HEIRS

COLUMBIA PIKE

FROM
Sta. 123 to 128
IN
(ARLINGTON RR)

ALEXANDRIA RR

ALEXANDRIA RR

3 ft. DRAIN

ROAD

3 ft. DRAIN

ROAD

3 ft. DRAIN STREAM

3 ft. DRAIN STREAM

FT ALBANY

COLUMBIA PIKE

Elev. 147

DESC'T. 1'55

Elev. 153

ASC'T. 0'30

Elev. 150

ASC'T. 0'67

Elev. 155

DESC'T. 0'5

Elev. 153

DESC'T. 4'3

0° 50'

0° 30'

7° 15'

18° 15'

5° 45'

0° 30'

10° 0'

35° 10'

0° 55'

35° 0'

27° 30'

13° 0'

2° 15'

120

130

140

150

160

170

180

190

200

124

125

126

127

128

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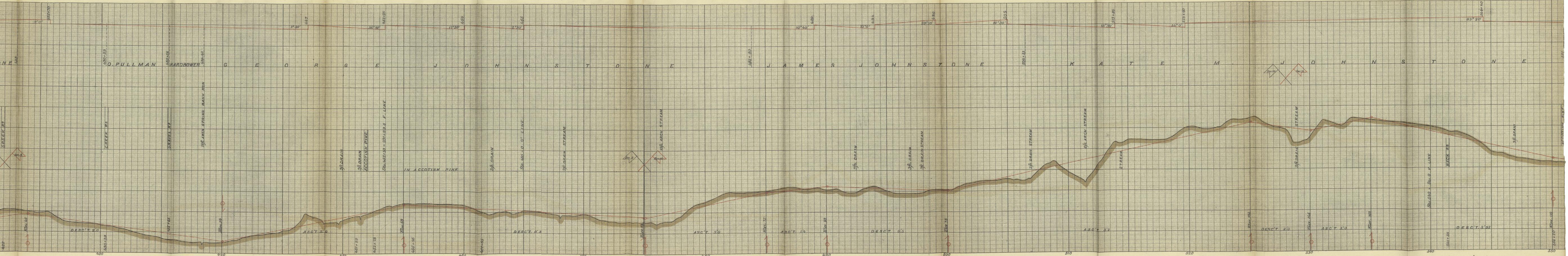
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O. PULLMAN HARDBOWER G. E. O. R. G. E. J. O. H. N. S. T. O. N. E. J. A. M. E. S. J. O. H. N. S. T. O. N. E. K. A. T. E. M. J. O. H. N. S. T. O. N. E.

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IN ACOTINK PIKE

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DESC'T. 2.0 437+29 438+33 440 441+29 442+73 443+53 445+05 447+05 449 450 451+29 452+30 453+30 455+05 457+05 459 460 461+29 462+30 463+30 465+05 467+05 469 470 471+29 472+30 473+30 475+05 477+05 479 480 481+29 482+30 483+30 485+05 487+05 489 490 491+29 492+30 493+30 495+05 497+05 499 500 501+29 502+30 503+30 505+05 507+05 509 510 511+29 512+30 513+30 515+05 517+05 519 520 521+29 522+30 523+30 525+05 527+05 529 530 531+29 532+30 533+30 535+05 537+05 539 540 541+29 542+30 543+30 545+05 547+05 549 550 551+29 552+30 553+30 555+05 557+05 559

