

Staff Report to NVTC Commissioners

THE POTENTIAL OF THE
WASHINGTON & OLD DOMINION RAILROAD

FOR USE AS A

RAIL RAPID TRANSIT FACILITY

PROPERTY OF NORTHERN VIRGINIA
TRANSPORTATION COMMISSION

Northern Virginia Transportation Commission

Arlington, Virginia

3 March 1965

By Acts of the General Assembly, 1964, the Commonwealth of Virginia found that "the development of a transportation system, composed of transit facilities, public highways, and other modes of transport, is necessary for the orderly growth and development of [Northern Virginia] and of the Commonwealth of Virginia;" and created the Northern Virginia Transportation District, "in which shall function as a public instrumentality" the Northern Virginia Transportation Commission, as "the most advisable means of planning and developing a transportation system...for the safety, comfort and convenience of its citizens and for the economical utilization of public funds."

SUMMARY

The abandonment of the Washington & Old Dominion (W&OD) Railroad would deal a severe blow to rapid transit development in Northern Virginia. Loss of the right-of-way or its interruption by highway projects will increase the cost of providing rapid transit facilities to the extent that rapid transit might never reach Falls Church or penetrate into Fairfax County. Although Arlington County would not be directly deprived of rapid transit service, it would suffer most from the inability of Falls Church and Fairfax commuters to reach rapid transit lines. Increasing automobile traffic to and through Arlington will necessitate additional radial freeways and Potomac River bridges.

Annihilation of the railroad will accrue a remarkable savings for the Virginia Department of Highways, but will increase the cost of rapid transit tremendously -- perhaps to the extent of making it infeasible. Too, the high cost of the additional freeways that will be required if rapid transit is not developed will overshadow the short-range saving that is currently an objective for removing the railroad.

Furthermore, depriving Fairfax and Loudoun Counties of freight service may defer the planned-community development that will add to these counties' prosperity (and place more passengers on rapid transit) because of the fact that these communities are clustered around industrial sites that are at least partially dependent upon railroad service.

This staff report explores the problems and potentials involved and introduces discussion of alternative solutions. The NVTC staff has had neither the time nor resources necessary to adequately study the situation. However, sufficient data has been assimilated to encourage a recommendation to delay any action on abandonment of the railroad and/or sale of its lands to the Department of Highways until a full study can be accomplished.

THE PROBLEM

Background:

The Chesapeake & Ohio (C&O) Railroad, owner of the Washington & Old Dominion, applied for permission to abandon the W&OD in order to sell the right-of-way to the Virginia Highway Department. The State Corporation Commission has scheduled hearings on this application for 11th March 1965.

The railroad also applied, on 4 February 1965, to the Interstate Commerce Commission for permission to abandon¹. To date, hearings have not been scheduled.

On the 10th of February, the Fairfax County Board of Supervisors voted

to ask the State Corporation Commission to hold the application in abeyance until a study could be accomplished and recommendations made. Simultaneously, it requested the Northern Virginia Transportation Commission to study the problem.

Frederick A. Babson, Chairman of the Northern Virginia Transportation Commission, instructed the Commission staff to study the situation and to report to the full Commission at its 4 March 1965 meeting; giving special attention to the possible use of the strategically-located line for rail rapid transit to existing and planned high-population-density communities such as Falls Church, Vienna, Reston, Sterling Park, and Ashburn Manor.

The Railroad's Position:

The Virginia General Assembly authorized the Highway Commissioner to acquire by purchase the lands of the W&OD². The railroad's position is simply that if this purchase --by negotiated price-- is not consummated, the Highway Commissioner can condemn the line. A further threat is that if Virginia fails to acquire the line, the Bureau of Public Roads will invoke Section 109 (a) of the Federal Aid Highway Act of 1956 which empowers the Secretary of Commerce to condemn railroads for highway use³. It is logical to assume that the railroad will gain less money through condemnation than through purchase negotiation, and that the costs of litigation will be much less for the latter course. A sale contract was negotiated during October 1964-January 1965.

The Department of Highway's position:

The Department of Highways recognizes that it is legally bound to accommodate any official mass transportation plan in its highway designs and construction. However, like all of us, it has become impatient with waiting for this area's official transit plan. Thus, when the President transmitted the National Capital Transportation Agency's (NCTA's) transit development program to Congress, the Department of Highways seized upon the opportunity to recognize the plan as official and to get its delayed highway construction back into motion. NCTA's plan includes a short rapid transit line into Virginia (to Pentagon City). Inasmuch as the NCTA plan does not make use of the W&OD, the Department of Highways feels (and legally this is so) it has no obligation to accommodate the railroad in its designs for Interstate Routes 66 and 95. If the railroad did not exist, the Department could save up to \$5-million.

Details of the abandonment and sale are given in Appendix I.

DESCRIPTION AND CONDITION OF THE RAILROAD

Line:

The W&OD Railroad comprises 47.89 miles of line as a "main line"

from Alexandria to Purcellville about (244, 931 feet) and a branch from Bluemont Junction to Lacy (intersection with Washington Boulevard (about 7, 780 feet). Single or first Main track is 47.89 miles in length; way or switching tracks are 7.79 miles in length; totalling 55.68 miles of track^{4, 5}.

Right-of-way:

The railroad owns a 100-foot right-of-way throughout its entire length except for a 500-foot length near Paeonian Springs which is only 80 feet wide, and 2,102 feet of the Lacy Branch (remainder of the Former Rosslyn Branch) which also narrows to 80 feet in width. The right-of-way totals more than 580 acres⁵.

Grades and curvature:

Maximum gradient is 1.5%, being on the long climb from Difficult Run (at Hunter) up to Pinecrest. Alignment is generally good, probably because of the railroad's early goal as a mainline to the Ohio Valley.

Tracks:

Average weight of rail is 70 lbs. per yard; C & O has been relaying track with 75 to 90 lb. rail. About 75% of the wood ties are treated; ties are apportioned 3200 to the mile⁴. As would be expected, the lightest rail (as light as 50 lbs. per yard) and fewest treated ties occur at the "outer" (Loudoun County) portion of the line.

Clearances:

Throughout, the railroad maintains a 10'6" horizontal clearance and 20'6" vertical clearance which is comparable with main-line railroads and sufficient for electrification (after all, it once was an electric railway).

Capacity:

Track and structures can accommodate a maximum of 20,000 lbs (including car and lading) per car. C & O replaced or rebuilt bridges between Potomac Yard and Sterling in order to accommodate heavy loads during construction of Dulles International Airport.

Crossings:

The railroad crosses 94 roads and one railroad. Of these, 82 are grade crossings; however many of the grade crossings are private or unimproved roads representing little or no traffic. There are 43 crossings with arterial roads and highways. The 12 grade-separated crossings are: the R. F. & P. Railroad, Jefferson-Davis Highway (U. S. Rte. 1), Common-

wealth Avenue, Russell Road, Arlington Boulevard (U.S. Rte. 50), Roosevelt Street, Capital Beltway (I. Rte. 495), Airport Access Freeway, Va. Rte. 7 (west of Leesburg) and a private farm road near Trap Rock on the Main Line; and North Buchanan Street and Fairfax Drive on the Lacy Branch. Shirley Highway is protected by train-activated lights, but this is in violation of standards for interstate freeways and is hazardous because motorists are prone to ignore the signals. Train crews must flag all grade crossings to assure safe passage.

Signalling:

The railroad has no signals.

Value:

See Appendix II.

Rehabilitation:

The C & O estimates that an investment of \$2,200,000 will be required to place the railroad in a minimum state of repair if it is to continue to operate as a freight carrier.

SUCCESS NEVER REACHED THE W. & O. D.

Originally projected to compete with the C & O and the Baltimore & Ohio Railroad to connect tidewater with the Ohio River, the railroad has long suffered from failure to reach its goal.

It can be appreciated from Appendix III that the W&OD was at the opposite extreme from the adage "too little, too late," for its passenger service was too much too soon. Ironically, the line surrendered its electrification just before World War II would have made it worthwhile; and gave up passenger service altogether just as the Virginia suburbs and auto traffic congestion were beginning to grow.

Now the same is about to occur with freight service. The C & O has attempted to revive the line, but after five unsuccessful years, it is ready to abandon service when the railroad is on the verge (albeit five or more years away) of a freight potential resulting from planned industrial developments along its way. Zoning and planned land use favor retention of the railroad for expanded freight use.

The railroad never earned a profit and has depended upon income from other sources to keep in minimum repair.

PREVIOUS PROPOSALS FOR USE OF W & OD

1938, 1941, 1955, 1959, 1964; Waldo L. Schmitt, Ph. D⁶:

Dr. Schmitt proposes use of all metropolitan Washington's railroads for electric commuter-train service in conjunction with a downtown subway.

1951; E. John Long⁷:

This was a general proposal to utilize all railroads in the Washington area for rapid transit.

1953, 1954; Gordon J. Thompson⁸:

This proposal called for rapid transit over the W&OD from Rosslyn through Falls Church to Antrim with feeder bus service.

1954; Ernst & Ernst⁹:

These consultants made a study for a U.S. Senate Special Subcommittee Investigating Public Transportation Serving the District of Columbia. Among their recommendations was extension of Capital Transit Company's #80 streetcar line from Rosslyn (its terminal at that time) to Ballston, Bon Air, and Falls Church over the W&OD.

1954, 1955; Robert L. Banks¹⁰:

Mr. Banks, nationally-known transportation consultant, proposed rail-diesel-car commuter trains on all metropolitan-area railroads. Mr. Banks describes the W&OD as "perfectly located to serve heavily-populated Arlington County and Falls Church, Virginia."

1954; Carter Rapid Transit Co.¹¹:

Charles Carroll Carter proposed rail-diesel-car commuter-train service past the Pentagon and to and beyond Falls Church by joining the Pennsylvania Railroad's Rosslyn Connecting Railroad to the W&OD at Rosslyn.

1955; Edson L. Tennyson¹²:

In conjunction with his plan for a subway from Union Station to Georgetown, Mr. Tennyson (then Traction Commissioner of Youngstown, Ohio; now Transit Engineer of the City of Philadelphia, Pennsylvania) recommended using the W&OD to Falls Church. The project was designed to pay for itself without tax help through savings in the streetcar and bus operations.

1955; Metropolitan Planning Associates¹³:

As part of a metropolitan-wide rapid transit network, service was proposed on the W&OD as far as Vienna. From Vienna to Purcellville, a less frequent commuter train service was proposed, using diesel-electric rail buses.

1958; Mass Transportation Survey¹⁴:

In considering various alternative systems, the MTS traffic consultants planned all-rail transit systems "A" "B" and "C" which differed in many respects but had in common a rail line along the W&OD to Vienna.

1960, 1961; Citizens Transit Improvement Association¹⁵:

CTIA hired consultants to determine the feasibility of rail rapid transit in the Interstate Route 66 freeway corridor inasmuch as the 1959 Mass Transportation Survey recommended only express buses. The resulting recommendations include rapid transit service on the W&OD as far as Vienna.

1961; Year 2000 Plan¹⁶:

This plan specifies six radial "corridors" from Washington, each of which would be served by rail "rapid transit". One of these corridors, as a branch of the Route 66 corridor, extends approximately from Falls Church to the Fairfax-Loudoun County line at Herndon--the general alignment of the W&OD.

1963, 1964; E. V. Hailman¹⁷:

Mr. Hailman proposes using the W&OD, with some realignment to ease curves, for nearly its entire length: from Potomac Yards to Reston as part of a high-speed electric railroad from Dulles to Friendship airports via National Airport and downtown Washington; from Reston on to Purcellville for electric commuter train service and as a test track for a national railway research institute.

WHY NCTA PLANS DO NOT INCLUDE W & OD ROUTE

From route alignment point of view:

As mentioned earlier in this report, the traffic-engineering consultants for the Mass Transportation Survey (MTS) considered three alternative rapid transit networks, all of which included service along the W&OD to Vienna. The consultants also tested traffic data against several alternative "express" bus networks based upon proposed freeways. The highway-oriented MTS did not select a rail line in this direction for its final rail-and-bus network. The express bus route was proposed to Fairfax City because that is

the direction the freeway goes; no freeway was projected toward Vienna.

Later, NCTA merely turned the bus route in Route 66 into a rail line. Their planners were attracted by the availability of the freeway median strip¹⁸. Because of the location of new Dulles International Airport and a freeway leading to it, NCTA proposed a bus route in the Airport Access Freeway. However, this freeway bypasses Vienna to its north and Herndon to its south, and does not reach Sterling Park or Ashburn Manor.

From a traffic-prediction point of view:

The Mass Transportation Survey traffic projections are based upon traffic surveys accomplished in 1948 and 1955, prior to selection of the site for Dulles Airport. Furthermore, the survey zones extended only to the west edge of Falls Church in 1948, to Pimmit Hills in 1955, and to Difficult Run in 1959 (for 1965 and 1980 predictions), so the airport and planned communities (Reston, Sterling Park, and Ashburn Manor) lie outside the survey areas.

For its 1962 plan, NCTA extended the detailed survey area limit to the Loudoun-Fairfax boundary and took the existence of Dulles Airport into consideration. NCTA's traffic projections are based upon population projections. For the area beyond Falls Church served by the W&OD, NCTA predicted the following 1980 populations: Vienna 15,000-17,260; Herndon 4,850-12,500; and the Reston area 25,500-36,380¹⁹. By contrast, Vienna's population is already 17,000; Reston alone anticipates 75,000 persons by 1980; and the Northern Virginia Regional Planning and Economic Development Commission estimates populations for the Year 2000 of 31,000 for Vienna, and 157,000 for Herndon and Reston²⁰.

NCTA treated Loudoun County generally, predicting a 1980 population of 70,000-80,000 persons¹⁹. By contrast, NVRP & EDC now estimates a population totalling 154,000 for only Sterling Park, Ashburn Manor, and Leesburg by the Year 2000²⁰.

Further evidence that NCTA did not consider the planned communities along the W&OD corridor is seen in the fact that NCTA estimated the "Zonal Income Factor" for the area of Reston as 0.85, or 15% lower than the metropolitan area median income²².

Therefore, both MTS and NCTA traffic data for the W&OD corridor are severely out of date due to very recent and planned development.

SALVAGING THE NCTA 1962 PLAN

Loss of the W&OD right-of-way will render even the 1962 plan of NCTA obsolete. This 1962 plan called for a rail rapid transit line in the median strip of Interstate Route 66 from Rosslyn to Fairfax City. Since the plan was pub-

lished, NCTA , in cooperation with Arlington County planners, altered the plan to place the line in a subway between Rosslyn and Glebe Road where the rail line was to enter Route 66's median. For Part One of the Transit Development Program, Congress authorized NCTA to acquire a wider median in Route 66 between Route 7 and East Falls Church to accommodate the rapid transit²³. However, NCTA did not make the purchase and the funds are now "frozen" because of the doubt raised by Congress' failure to approve NCTA's transit development program in December 1963. The Department of Highways could not wait any longer, so proceeded with designs excluding rapid transit. The Arlington County Board attempted to negotiate with the Department to gain the broader median beyond Glebe Road. However, it is illegal to utilize Federal-Aid Highway funds for rapid transit space so the Department was powerless to acquire the necessary land for a median wide enough for transit use. Consequently, the freeway was designed with a narrow (about 24 feet) median and property acquisition has commenced. Beyond the Capital Beltway, Route 66 is built to rural standards, so contains a broad median usable by rail transit. The failure to provide a median between Glebe Road and the Beltway was no great loss because of the superior alignment of the nearby W&OD. However, now with the prospective loss of the W&OD there will be a missing link between the end of the proposed subway at Glebe Road and the available median outside the Capital Beltway.

So, unless the W&OD right-of-way can be preserved, it is not likely that rapid transit can be extended to Falls Church and into Fairfax County.

POSSIBLE USES OF W & OD FOR RAIL TRANSIT

1. If the NCTA 1962 plan is to be carried out, the W&OD provides the missing link between Glebe Road and the Capital Beltway.
2. Because more than half of NCTA's proposed Fairfax City line trains would turn back at Great Falls Road station (near West Falls Church), a line to or beyond Vienna could be added without increasing the number of trains operated; alternate trains would continue along the W&OD instead of terminating at West Falls Church.
3. The service mentioned in possibility 2 could be rendered by a feeder rail service with vehicles especially designed for suburban service instead of running through to Washington.
4. E. V. Hailman's plan for Airport high-speed trains could be implemented, making use of the W&OD right-of-way from Shirley Highway westward.
5. A commuter-train service could be provided by building a connecting track from the W&OD to the RF & P near Potomac Yards; trains could run to stations in the southwest redevelopment and Union Station in Washington. A transfer connection to the Wilson Boulevard subway trains could be provided in

the vicinity of Bluemont Junction.

Under any plan, frequent service to the Airport and peak-hour service as far as Leesburg would be warranted immediately.

Service could be started with self-propelled rail-diesel-cars or FCD rail buses and later electrified as light-volume rapid transit, heavy-volume rapid transit, or electric commuter railroad.

In any case, the railroad will have to be entirely rebuilt, double tracked in the portion closest to Washington, have its grade crossings separated one by one, and ultimately be electrified. All-new stations and parking lots must be provided.

Similar uses of railroads for rapid transit are cited in Appendix IV.

THE NEED FOR RIGHTS-OF-WAY

National Capital Regional Planning Council's Year 2000 Policies Plan, in advancing the corridor-growth concept envisions a rail line in each radial corridor (Falls Church to Herndon is envisioned as one of these corridors):

"The continued growth of Metro-Center will require a system of rapid transit, since highways alone cannot handle the eventual volumes of rush-hour traffic in and out of the center.

"... Rail rapid transit extended to the center of each new community as it is developed could well reach out twenty miles or more from Metro-Center by the Year 2000. In the new suburbs, with their moderate densities, the distance between transit stops would probably average about two miles. Since the new suburban business districts would generally be spaced about four to six miles apart, transit stations would frequently alternate between those serving business districts and high-density industrial development and large parking lots for those who must drive to the stations from surrounding single-family residences. Transit lines would normally use the median strips of freeways. Occasionally, however, these lines would swing off the freeways to provide direct service to the centers of parking areas or to the suburban business districts.

"... On some of the radial lines three or four tracks or lanes may be needed to handle the combined traffic to Metro-Center from [the] inner areas and from the new suburban communities. On these lines, special tracks or lanes should be designated for express service to and from the suburbs."

"... Plans should be made for high-grade mass transportation along each of the corridors, closely integrated with freeway construction and with plans for the new cities.... The [National Capital Transportation] Agency

should cooperate with the local agencies in planning to bring into each urban center the high speed transit that serves that corridor²⁵."

From the River to the Capital Beltway, no provision is being made in the corridor freeways for future rail service. Beyond the Beltway, the situation is favorable on Route 66, however. But there are problems in the corridor of concern in this report. The Airport Access Freeway, while it does contain a broad median strip, does not tap the suburban centers, so the rapid transit would have to seek another right-of-way to fulfill NCRPC's goals. The W&OD provides the best "detour" for tapping these centers.

The ultimate need for four tracks will be difficult to fulfill because the rail transit starting in this direction will be in a costly subway most of the way across Arlington County. The cost of providing four tracks would be prohibitive. But, by running the short-haul and long-haul services over different routes, the four-track capacity can be achieved as well as more diversified routing of passengers. The Arlington subway would provide the two-track short-haul route and the W&OD right-of-way, with a connection to the RF&P can provide the two-track long-haul route through crowded Arlington County.

SUITABILITY OF W & OD ALIGNMENT

It taps otherwise unserved corridors:

The Department of Highways has not provided space in the design of rebuilt Shirley Highway for rapid transit. Consequently, a heavily populated corridor will be without a high-volume transit facility.

Rapid transit will be difficult to provide along the densely built up Columbia Pike axis because a right-of-way is not available.

From Potomac Yards to Falls Church, the W&OD main line intercepts Shirley Highway, Columbia Pike, and all other traffic arteries that traverse Arlington County except Old Dominion Drive. Therefore, passenger rail service on this route with parking lots at the major thoroughfares, would have the capability of greatly reducing the demand for additional highway lanes across Arlington.

It provides a missing link:

The designs of the Department of Highways do not include space for rapid transit in the median strip of Route 66 between Glebe Road, Arlington, and the Capital Beltway. To provide such space would require a broader right-of-way gained at great additional damage to Arlington County residential districts.

The W&OD's Lacy Branch and part of its main line provide a means for extending rapid transit to the Fairfax County and Falls Church boundaries of Arlington with minimum impact upon the area traversed.

GENERAL FEASIBILITY OF PASSENGER SERVICE ON THE W & OD

The great number of previous proposals (listed earlier in this report) suggests a potential recognized by other transportation planners. Examination of traffic, population, and land-use data of various studies reveals a patronage potential:

Mass Transportation Survey:

Despite the fact that Dulles Airport and the planned communities were not included, examination of the MTS traffic data shows downtown travel that could be oriented to a W&OD alignment to be nearly equal to that of the then-proposed Fairfax City transit route¹⁴.

National Capital Transportation Agency (1962 plan):

Despite the fact that it bypasses populous Vienna and did not have its traffic based upon the planned communities, the bus route proposed in 1962 by NCTA on the Airport Access Freeway was expected to carry 2,500 passengers during the peak hour, about two-thirds of the volume on the proposed rail line to Fairfax City. Certainly, routing through Vienna and adding of Reston's commuters would cause this line's patronage to exceed the Fairfax City line's¹⁸. Both lines (i.e., to Fairfax City and to Vienna) are needed.

According to Tennyson's formula, rapid transit service on an abandoned railroad right-of-way is more economical than bus service when the peak-hour patronage exceeds 860 passengers²⁶. Thus, rail service on the W&OD would be more economical to operate than NCTA's proposed bus upon the Airport Access Freeway.

Northern Virginia Regional Plan, Year 2000:

Of the four general corridors envisioned in NVRP & EDC's projections for the year 2000, the W&OD corridor rates highest in population²⁰:

<u>rank</u>	<u>corridor</u>	<u>population</u>
1	State Route 7 - W & OD RR	342,000
2	Interstate Rte. 95 - RF & P RR	259,000
3	Interstate Rte. 66	215,000
4	Monticello Freeway - Southern Ry.	182,000

Dulles Airport Access Freeway Study:

The NVRP & EDC estimates that by 1980 there will be a deficit of 400 vehicles per hour during the peak hour even after State Route 7 is rebuilt to a 4-lane, divided, limited-access highway and the 4 additional local traffic lanes are added to the Airport Access Freeway²⁷. The study was limited to the area west of Difficult Run as far as Belmont Park (so excluded Vienna, Tysons Corners, Leesburg, etc.) Furthermore, the traffic projections were based upon population predictions that do not include Reston, Sterling Park, and Ashburn Manor. (By comparison, the study estimated a population of only 25,927 for Reston which is designed for 75,000 persons by 1980, and only 9,500 for Sterling Park which is to have about 23,000 persons.)

GSA Study:

General Services Administration polled Federal Employees in June 1961 to determine if more persons could be attracted to transit use²⁸. In the survey zones tapped by the W&OD main line, GSA found that 610 persons would use transit in the rush hour. The survey zones extended no farther than Vienna, and included no other commuters than Federal employees. In selecting the potential transit riders, we have considered only those directly served by a potential train; many more would be served by suburban feeder buses and parking lots at stations and by distribution bus routes in Washington. Since the survey was conducted, several new office buildings adjacent to the railroad in the Southwest Redevelopment area have been occupied.

ALTERNATIVES TO THE HIGHWAY WORKS:

Shirley Highway crossing (as rebuilt for Interstate Route 95):

The plans of the Department of Highways, prepared as a basis for right-of-way acquisition²⁹, include a bridge spanning Four Mile Run and the W&OD right-of-way. Despite news releases to the contrary, these plans do not show any excessive property-taking in the Shirlington Shopping Center. The Department hopes to save the cost of this structure by eliminating the railroad as an obstacle to be crossed. Only part of the cost can be saved because it will still be necessary to bridge the stream. The saving will accumulate in not having to build as long spans on four roadways (the Washington-bound lanes, the reversible lanes, the Richmond-bound lanes, and an access ramp connecting Glebe Road and the Shirlington rotary), and in not having to build the embankment approaches.

Examination of the Department's drawings and on-the-site inspection show that a less costly solution is possible while retaining the railroad. The bridging required by the Department's plan involves one span each for ten lanes of highway; and considerable fill. If the highway were left on its

approximate present vertical alignment, and the railroad instead carried over the highway, the equivalent of only four spans would be required. The railroad could be raised on embankment to over pass the freeway. The gradient of the railroad would be no more severe than at present, and the sidings in the vicinity can be accommodated by a connecting track running along the base of the embankment (but not crossing the highway).

Patrick Henry Drive to Sycamore Street, Arlington:

The plans of the Department of Highways show only moderate encroachment onto the railroad right-of-way for the originally-proposed 8-lane freeway. New proposals for which drawings are not available call for increasing the number of lanes to 10. Because the plans already show a minimum median in this area, there is no way to accommodate the additional lanes without gaining additional right-of-way amounting to at least 24 feet. The railroad right-of-way in this vicinity is 100 feet wide. The single track is offset from center of the right-of-way to the south (away from the freeway); the centerline being 56 feet from the north edge of the right-of-way. With moderate changes to the railroad embankment (to harmonize more with the freeway profile), the freeway can be widened as proposed without disturbing either the present track or the railroad's capability to be later double-tracked. The Department of Highways has insisted that if it cannot secure the W&OD, it must condemn another row of homes along the north side of the highway. This needn't be done if only a portion of the railroad right-of-way is purchased.

Route 66 Crossing:

Route 66 is shown in the present plans of the Department of Highways as overpassing the railroad on a pair of bridges (one for the lanes in each direction). The structures are very small and involve no special problems such as inherent in the Shirley Highway crossing.

Savings:

The Department of Highways estimates that it can save a net of \$5-million in construction costs by not having to accommodate a railroad in these three locations. Inasmuch as these projects are being financed under Federal-Aid programs, (90% Federal and 10% State for Route 66; and 95% Federal and 5% State for Shirley Highway), the actual saving to the Virginia Department of Highways will amount to only \$250,000 to \$500,000.

Later Losses:

When the time comes to extend rail rapid transit into Northern Virginia, the loss of the railroad will add considerably to the cost of construction. In the extreme instance, if the right-of-way of the abandoned railroad is decimated and built upon with normal private development so that no continuous,

salvageable right-of-way remains, the relatively low cost of building upon the W&OD right-of-way (\$2,640,000 per mile)³⁰ will be replaced by a subway construction cost of nearly \$79-million (at \$13,992,000 per mile) just to provide the missing link between a Wilson Boulevard subway and the available median strip of Route 66 toward Fairfax City. Obviously, this would deteriorate the economic feasibility of such a rail line to the extent that it could not be built. On the other hand, the best probable situation might be that the highways are built as the Department of Highways now intends, but no more of the right-of-way is lost. In this case, to provide rapid transit service, it will be necessary to tunnel beneath cross streets such as Patrick Henry Drive where they will be on embankments to cross over the freeway, to carve a new grade from the side of the freeway embankment for about 1.3 miles to burrow under Route 66 near Dunn Loring, and to erect a viaduct over Route 95--at a cost substantially higher than if the highway structures are built to accommodate the railroad.

Thus, in order to save less than \$500,000 in highway dollars, it will be necessary to spend as much as \$84-million³¹ additional in rapid transit dollars, with a net waste of \$68,500,000 in Virginian's transportation dollars. In addition, there would be disruption to the already-opened highways during construction of the rapid transit structures.

Obligation to accommodate railroad:

If the W&OD is not granted permission to abandon, the Department of Highways must build the necessary grade-separation structures and accomplish any required relocation of the tracks. Section III of the Federal Highway Act of 1956³ provides that Federal funds will be used on a matching basis for the relocation of utilities as long as there is no State law prohibiting this and no contract between the state and the utility would be violated. Virginia passed a law which makes it mandatory to reimburse all utilities for relocation resulting from construction of Interstate and Defense Highways. The Bureau of Public Roads specifies that railroads will be covered under provisions for utilities³².

The structures built to accommodate the freight railroad can be used directly by the rapid transit.

THE COMMISSION'S RESPONSIBILITY:

The Northern Virginia Transportation Commission's role in the ultimate and imminent Washington Metropolitan Area Transportation Authority is, as described by the Honorable William L. Winston, Delegate to the General Assembly, "a conduit for funds" from the local governments. Article 4, Section (d) of Chapter 631 of the Acts of Assembly, 1964, charge this Commission with the duty of apportioning the costs of the rapid transit system among the participating governments. Therefore, it is important that this

Commission do all within its power to keep down the cost of providing rapid transit. The cost of facilities is critical in two ways. The economic feasibility is closely dependent upon the initial cost of constructing the facilities; the level of initial cost could be more than we can afford, no matter how much needed a facility might be.

The transportation dollar is limited. We do not have 90% of our costs promised from the Federal government. We do not have access to the Virginia gasoline tax. The major financial support must come from the local governments who also have costly responsibilities in education, streets and utilities, police and fire protection, and other municipal services. The transportation program must be carried out without depriving these other programs of funds. Therefore, we must be extremely frugal.

No matter how the problem is viewed, it behooves the Northern Virginia Transportation Commission to preserve rights-of-way for transit use, so that when the time comes to pay the interstate compact authority to provide the facilities, we will be able to afford them. If the Commission fails to protect these rights-of-way, the result may be that the area will not be able to obtain the public transportation facilities that are needed, and the only other alternative must be exercised--i.e., to construct many more radial freeways and Potomac River bridges.

This Commission's responsibility differs from other transportation agencies'. In carrying out Virginia's share of the Interstate and Defense Highway System, the State Department of Highways must satisfy traffic volumes projected to 1975. In continuing the goals of the Mass Transportation Survey, the National Capital Transportation Agency is attempting to care for the transit needs of 1980. By contrast, the Northern Virginia Transportation Commission has no such "top limit" and must be concerned with provision of adequate transport facilities even beyond 1975 and 1980.

RECOMMENDATIONS

The Commission Staff is convinced that the Washington and Old Dominion Railroad is necessary for a complete rail transit system for the Northern Virginia Transportation District. However, the line cannot be studied individually; it must be studied as a part of a full network.

A complete study will require six months, but will have advanced sufficiently within three months to make final decisions on the use of the W&OD. It is the Commission's adopted policy to not conduct such studies until the NCTA subway legislation is passed by Congress. Informed observers predict this may occur by mid-April. Therefore, the Commission would not be able to determine the need for the W&OD until mid-July at the soonest.

So, any action that would interfere with preservation of the W&OD must

be delayed until July, or the Commission must amend its adopted role in order to allow its staff to commence the planning activities.

It is recommended that:-

1. A message be dispatched to the Highway Commissioner via his designee to this Commission to urge him to cooperate by delaying action until a study is completed or by deciding to go ahead with highway construction without interrupting the railroad.

2. An urgent letter be dispatched to Governor Harrison seeking his intervention in the abandonment proceedings and in the purchase by the Department of Highways.

3. A Commission member testify before the State Corporation Commission against abandonment of the railroad.

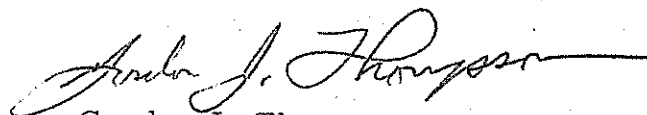
4. A Commission member testify before the Interstate Commerce Commission against abandonment of the railroad.

5. Steps be taken to purchase the railroad through the local governments (apportionment of the cost and sources of other-than-local funds are discussed in Appendix V):

a. Attempt to gain release of NCTA's Route 66 right-of-way acquisition funds from Congress.

b. Commence negotiation with HHFA for an emergency grant.

Respectfully submitted,



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Executive Secretary

Northern Virginia Transportation Commission
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A P P E N D I X I

DETAILS OF ABANDONMENT AND SALE

The abandonment of the W & OD would halt freight service on all except switching trackage in the vicinity of Potomac Yards which would presumably remain in C & O ownership and be operated by the Richmond, Fredericksburg & Potomac Railroad as part of its routine yard switching.

The sale of the line to the Department of Highways is conditional in several ways. First, the line must first gain permission of the State Corporation Commission and the Interstate Commerce Commission to abandon. Second, the entire line is not involved in the sale; excepted are:

1. about one mile from Alexandria to Oakville.
2. 300 feet adjacent to the property on which the W & OD headquarters are located (owned by Pocohantas Corp., a C & O subsidiary).
3. about 4 miles from Dunn Loring to Vienna, and about 12 miles from Herndon to Pleasant View (just beyond Goose Creek) which are subject to an option. A VEPCO power-transmission line occupies the right-of-way, and VEPCO holds an option to purchase the property.

Furthermore, the Virginia law authorizing the purchase requires the Department of Highways to promptly sell the land which is not needed for the Interstate Highways.

Both the railroad and the Department of Highways absolutely refuse to disclose the negotiated sale price.

APPENDIX II

STATEMENT OF ASSESSED VALUE as of 1 January 1964, made by the State Corporation Commission of Virginia, Richmond.

	Class 1 Sched. 1	Class 1 Sched. 2	Class 4	Class 6 Sched. 2	Class 7	Totals of all tangible prop.
Arlington Co.	\$ 16,990	\$259,651	\$ 400	\$ 465	\$1,040	\$278,546
Alexandria	5,390	190,285			4,867	200,542
Falls Church	3,040	84,800		5	133	87,978
Fairfax Co.	29,690	85,163	400	140	1,349	116,742
Loudoun Co.	48,460	22,345	200	210	2,197	73,412
totals	\$103,570	\$642,244	\$1,000	\$ 820	\$9,586	\$757,220

Class 1, Schedule 1 is value of roadway and track, exclusive of land
 Class 1, Schedule 2 is land value, exclusive of communication lines,
 machinery, equipment, etc.

Class 4 is power, telephone, and pipe lines.

Class 6, Schedule 2 is machinery and equipment.

Class 7 is stores, fuel, and materials.

The totals of all tangible property exclude rolling stock.

The number of miles of track (55.68 miles) is comprised of the following:

<u>county or city</u>	<u>main track</u>	<u>side track</u>
Arlington Co.	7.36	2.27
Alexandria	2.38	.63
Falls Church	1.38	.28
Fairfax Co.	13.99	1.71
Loudoun Co.	<u>22.78</u>	<u>2.90</u>
totals	47.89	7.79

A P P E N D I X I I I

CHRONOLOGY OF PASSENGER SERVICE³³

- 1859 (August) - Service from Alexandria to Vienna started.
- 1860 (16 Jan) - Service extended to Farmville (now Ashburn).
- 1860 (17 May) - Service extended to Leesburg.
- 1862 - Service cut back to Vienna by war authorities.
- 1868 - Service extended to Hamilton.
- 1873 - Service extended to Purcellville.
- 1900 - Service extended to Snickersville (now Bluemont).
- 1907 - Trains began operating from Washington's new Union Station.
- 1912 - Service from Union Station ceased because of change of ownership and operation from Southern Railway to independent company.
- 1912 - Electric passenger service commenced with trains running from Georgetown to Bluemont and to Alexandria.
- 1923 - Service retreated from Georgetown to Rosslyn.
- 1932 - Alexandria to Bluemont Junction service dropped (dwindling patronage).
- 1939 - Service cut back from Bluemont to Purcellville.
- 1939 - Service retreated short distance from Rosslyn terminal at Key Bridge to car barn alongside Lee Highway.
- 1941 (23 Apr) - Last electric train; end of passenger service (wires removed subsequently during 1942-44).
- 1943 (March) - Rosslyn-to-Leesburg passenger service restored with gas-electric streamliner; later, passengers were allowed to ride on mail run to Purcellville.
- 1949 - Leesburg commuter service stopped; mail-passenger trains still running to Purcellville.
- 1951 (31 May) - With the end of the mail contract, all passenger service ended.

A P P E N D I X I V

COMPARABLE SITUATIONS ELSEWHERE

Little-used or abandoned steam railroads have been placed into use or proposed for rail rapid transit in other metropolitan areas; among them:--

- Boston: Dorchester end of Cambridge-Dorchester Line
 (former N.Y., New Haven & Hartford)
 Ashmont - Matapan High-Speed Line (former
 N.Y. N.H. & H)
 East Boston - Revere Line (former Boston, Revere
 Beach & Lynn)
 Highland Branch (former Boston & Albany (N.Y. Central)
 several additional such lines actively proposed.
- Cleveland: proposed Maple Heights Line (Northern Ohio Interurban)
- Chicago: highly successful "Skokie Swift" Line (Chicago, North
 Shore & Milwaukee)
- Los Angeles: proposed "backbone" line to El Monte (Pacific Electric Ry)
- New York: Rockaways Line (Long Island Rail Road)

In some instances, the railroad continues to use the rapid transit tracks for freight or mainline passenger services. For example, the

Port Authority Trans-Hudson Corporation's fast rapid transit trains from Manhattan to Newark share tracks with Pennsylvania Railroad trains. When Boston's Highland Branch was designed, it was anticipated that freight operation would be continued; however, abandonment by the steam railroad left shippers with little alternative; by the time rapid transit service started, they had adjusted to trucking or closed business. For the new proposed rapid transit extensions, effort will be made to continue railroad service during development of the rapid transit.

APPENDIX V

APPORTIONMENT OF COSTS

Assuming that the railroad can be purchased for \$1, 893, 050 (2.5 times its assessed value), the following table shows alternative apportioning of the cost to the concerned governments:

	by value of land	by value of tangible property	by mileage	by 1960 pop- ulation	by 1964 pop- ulation
Alexandria	28%	26.44%	4.97%	16.6%	15.51%
	\$ 530,054.00	\$ 500,522.42	\$ 94,084.59	\$314,246.30	\$ 293,612.06
Arlington	39	36.79	15.37	29.5	27.73
	738,289.50	696,453.10	290,961.78	558,449.75	524,942.76
Fairfax	13	15.42	29.21	47.5	50.98
	246,096.50	291,908.31	552,959.91	899,198.75	965,076.89
Falls Choh.	13	11.66	2.88	1.9	1.61
	246,096.50	220,729.63	54,519.84	35,967.95	30,478.11
Loudoun	7	9.69	47.57	4.5	4.17
	132,513.50	183,436.54	900,523.88	85,187.25	78,940.18
totals	100%	100%	100%	100%	100%
	1,893,050.00	1,893,050.00	1,893,050.00	1,893,050.00	1,893,050.00

OTHER SOURCES OF FUNDS

National Capital Transportation Agency has \$1, 306, 000 in unobligated funds, appropriated by Congress in Fiscal Years 1962 and 1963 for the purpose of purchasing additional land for wider median strips in Interstate Routes 66 (in Virginia) and 95 (in Maryland). These funds cannot be used without permission of the Congressional Appropriations Committees.

Housing and Home Finance Agency is authorized to make emergency grants of up to one-half the cost of preservation of facilities needed for mass transportation³⁴.

FOOTNOTES AND REFERENCES

1. Finance Docket No. 23492, "Before the Interstate Commerce Commission in the Matter of the Application of Washington and Old Dominion Railroad under Section 1, paragraphs (18) to (20), Inclusive, of the Interstate Commerce Act, as Amended, for a Certificate that the Present and Future Public Convenience and Necessity Permit Abandonment of its Entire Line of Railroad ..."etc., 4 February 1965, Cuyahoga County, Ohio.
2. Virginia, General Assembly, Chapter 338, Acts of Assembly, 1960, Richmond, Virginia.
3. U.S., Congress, Public Law 627, Chapter 462, 84th Congress, 2d Session, "Federal-Aid Highway Act of 1956," 29 June 1956.
4. Annual Report of Washington and Old Dominion Railroad to the Interstate Commerce Commission for the Year Ended December 31, 1963, W. &O.D. RR., 5740 8th Road North, Arlington, Virginia 22205.
5. Right-of-Way and Track Map, Washington and Old Dominion Rwy., 1"= 200', Office of the Chief Engineer, Washington, D. C., 1 July 1916.
6. "Wake Up Railroads, Solution to Washington's Traffic Problems, or the Answer to the Commuter's Prayers," The Washington Daily News, 28 February 1938; "What Do You Think of This, Mr. Motorist?," The Washington Daily News, 7 November 1941; Walter Wingo, "20-Year Comeback: Schmitt Plan Gets Back on the Rail," The Washington Daily News, 24 July 1955; and U.S., Congress, Joint Committee on Washington Metropolitan Problems; Hearings, Transportation Plan for the National Capital Region: Report of the Washington Mass Transportation Survey, 86th Congress, 1st Session, 9-14 November 1959, pp. 964-978 (Library of Congress Catalog No. HE 4491. W32.1960); and Waldo L. Schmitt, Washington's Transit and Traffic Problems, Takoma Park, Maryland, 1964.
7. E. John Long, "Little Lines Around Washington: The Nation's Capital Has in Its Known and Little-Known Railroads a Possible Solution to Its Critical Transit Jam," Trains, August 1951, Vol II, No.10, Kalmbach Publishing Co., Milwaukee, Wis., pp. 18-21.
8. "Fourth of a Series: A Practical Transit Scheme for Metropolitan Washington," pp 6-7 The Buzzard, Vol 21, No. 39, 29 September 1953, U.S. Coast and Geodetic Survey, Washington, D.C.; and "Rapid Transit into the Old Dominion: The 'Old Dominion' and 'Arlington Boulevard' Lines," pp 8-9, The Buzzard, Vol 22, No.13, 30 March 1954. These two articles proposed rapid transit through Falls Church to Antrim on the W. &O.D., with feeder bus service.
9. Senate Report No. 1274, "Public Transportation Serving the District of Columbia," 83d Congress, 2d Session, May 1954.
10. Robert L. Banks, "The Metropolitan Future, Part I: Only Roads - Or Railroads, Too?," pp. 4-11, Railway Progress, October 1954, Federation for Railway Progress, Washington, D. C.; Robert L. Banks, "The Metropolitan Future, Part II: Mass Transportation or Traffic Congestion?," pp 30-38, Railway Progress, November 1954; and Robert L. Banks, "The Metropolitan Future," Better Transit--On the Way!, Box 587, Washington 4, D.C., August 1955.

11. Wes Barthelmes, "D.C. Brothers, Dentist Seek Commuter Train Service for Capital;" The Washington Post and Times Herald, 24 November 1954.
12. E. L. Tennyson, "Public Transportation for Downtown," Urban Land Institute Technical Bulletin No. 26, Crowded Streets: A Symposium on Public Transportation, Washington, June 1955, pp. 45-51.; E. L. Tennyson, "Public Transportation for Downtown," Better Transit--On the Way! Better Transit, Box 587, Washington 4, D. C., August 1955; and Francis P. Douglas, "Fast Transit Plan Keyed to Downtown Subway," The Sunday Star (Washington), 25 September 1955.
13. A Joseph Wraight et al, 1955 Public Transit Master Plan for Metropolitan Washington, D. C., Metropolitan Planning Associates, Washington, August 1955 (compiled during 1952-55), (Library of Congress Catalog No. HE 4491, W4477).
14. Wilbur Smith and Associates, Mass Transportation Survey National Capital Region: 1958: Traffic Engineering Study, New Haven, Connecticut, 5 January 1959.
15. Metropolitan Planning Associates (MPA), A Mass Transport Integral: Rapid Transit in the Route 66 Corridor, Citizens Transit Improvement Association (CTIA), Washington, D. C., November 1960 (assembled and published March 1961); and MPA, A Mass Transport Integral: Arlington Subway and Related Projects, CTIA, Washington, D. C., July 1961 (assembled and published in November 1961).
16. National Capital Planning Commission and National Capital Regional Planning Council, A Policies Plan for the Year 2000: The Nation's Capital, Washington, 8 May 1961.
17. U.S., Congress, Subcommittee No. 6 of the Committee on the District of Columbia, House of Representatives, Hearings, Transit Program for the National Capital Region, 88th Congress, 1st Session, 9-31 July 1963, pp. 440-445; "Fast Train Service to Dulles Airport Proposed," Transit Improvement Digest (TID), Washington, D. C., March 1964, Vol. III, No. 9, pp. 1-3; and "The Sleeping Giant--Washington's Railroads," TID, April 1964, Vol. III, No. 10, pp.2-3.
18. NCTA's 1962 plan has this to say about the W. & O.D.:

"The median strip of I-66 is an attractive location for a rapid transit route in the westerly part of Arlington within this sector of Fairfax County (sic). An alternative in a part of Fairfax is the Washington & Old Dominion Railroad through Falls Church toward Vienna. This railroad has many grade crossings that would require widening and extensive rebuilding, a process that would be complicated by the requirement for maintaining freight service. The use of the W & O.D. is closely associated with the question of service to Dulles Airport. As in the case of I-66 a wide median strip is being provided in the Airport Access Freeway, and this would have sufficient space for a rapid transit line. If an airport rail route were to be developed, there would be a choice between using the W.& O.D. right-of-way or the freeway..

"The Route 66 line was chosen because it fits into the probable pattern of land development. By going to Fairfax City initially, it would permit

extension of rail rapid transit service eventually to Centerville. Bus service feeding the rapid transit route is proposed tentatively for the Airport highway." From Appendix to November 1, 1962 Report to the President, Volume V: "System Planning," undated, pp. 106-107.

"The Airport Access Road express bus line will deliver 2,500 passengers to the Route 66-Rosslyn /rail/ line at a point immediately outside Arlington County. At the Arlington line, the Route 66-Rosslyn route will be carrying 6,250 passengers destined to and through downtown," from op. cit., p. 27.

Therefore, the Fairfax City rail line would be carrying 3,750--or 1,250 more than the Dulles bus.

19. To develop its traffic predictions, NCTA made two sets of population predictions: "A" for continuation of urban sprawl and "B" for corridor-type development. The Agency then chose a set of traffic demand data representing a pattern midway between the sprawl and corridor concepts. Predicted population figures for 1980 are:

<u>Community</u>	<u>Survey Zones</u>	<u>"A"</u>	<u>"B"</u>
Vienna	538	6,000	6,720
	539	9,000	10,540
	Total	15,000	17,260
Herndon:	550	7,700	2,425
	551	4,800	2,425
	Total	12,500	4,850
Reston Area:	541	6,500	7,800
	548	7,750	9,600
	549	11,250	18,980
Total	Total	25,500	36,380
Loudoun County:	Total	80,000	70,000

Source: See footnote #21

20. Northern Virginia Regional Planning and Economic Development Commission, Northern Virginia Regional Plan: Year 2000, issued 25 February 1965.

21. Appendix to November 1, 1962 Report to the President, Volume III: "Traffic Forecasting," National Capital Transportation Agency (NCTA) 9 January 1963, pp. 10-17, 115-116.

22. Op. Cit., p. 146.

23. U. S. Congress, Public Law 87-355, 87th Congress, "An Act authorizing the National Capital Transportation Agency to carry out part 1 of its transit development program and to further the objectives of the Act approved July 14, 1960 (74 Stat. 537)," 4 October 1961.

24. National Capital Planning Commission: A Policies Plan for the Year 2000: The National Capital, Washington, 8 May 1961, p. 60, Part V, "NCR Policies Plan."
25. Op. Cit., p. 111, Part VI, "Next Steps."
26. Rapid transit is more economical than buses when one-way peak hour traffic exceeds 860 passengers on an abandoned railroad right-of-way, 1,720 on an expressway, 3,450 on an elevated, 6,200 depressed, and 8,600 in a subway. If the speed of rapid transit will attract more people than this, rapid transit will provide the most economical form of transit service. Source: E. L. Tennyson, "When Is Rapid Transit Economically Justified," Public Utilities Fortnightly, 11th May 1961.
27. Northern Virginia Regional Planning and Economic Development Commission, Traffic Needs in the Dulles Airport Highway Corridor: 1970-1980, Arlington, Virginia, May 1964.
28. Federal Employee Parking and Transportation Survey: Washington Metropolitan Area, Volume I - "Improvements in Public Transportation," General Services Administration, Washington, D. C., 23 February 1962.
29. Virginia Department of Highways, Plan and Profile of Proposed State Highway, Arlington County, From: N.C.L. of Alexandria (Rte. 7, King St.), To: 14th St. Bridge at Va.-D.C. Line, I-95-2(62)183, 0095-000-101, R/W-201; I-95-2(71)183, 0095-000-101, PE-101, plans revised to 10-6-64, approved for right-of-way acquisition - 2/6/64 - H. B. Fugate, vertical datum is U.S.C. & G.S. mean sea level.
30. Cost source: Mass Transportation Survey: National Capital Region: Civil Engineering Report, DeLew, Cather & Co., Chicago, Illinois, January 1959, p. 83, Appendix B.
31. Roughly estimated as:
- | | |
|------|--|
| | \$79 - million for 2 Glebe Road - Capital Beltway subway |
| | <u>\$ 5 - million for the structures the Department of Highways did not build.</u> |
| | \$84 - million total |
| less | <u>\$15 - million cost of rapid transit on W&OD instead</u> |
| | \$69 - million "extra" |
32. U. S., Bureau of Public Roads, "Payment Procedures: Reimbursement for Railroad Work," Policy and Procedure Memorandum 30-3, Washington, 15 August 1955.
33. Source: Herbert H. Harwood, Jr., Rails to the Blue Ridge: The Washington & Old Dominion Railroad 1847-1963,
34. U. S., Congress, Public Law 88-365, "Urban Mass Transportation Act of 1964," 88th Congress, 9 July 1964, Section 6 provides that "Federal financial assistance may be provided... where (1) the program for the development of a unified or officially coordinated urban transportation system... is under active preparation although not yet completed, (2) the facilities and equipment for which the assistance is sought can reasonably be expected to be required for such a system, and (3) there is an urgent need for their preservation or provision.

The Federal grant for such a project shall not exceed one-half of the net project cost: Provided, that where a Federal grant is made on such a one-half basis, and the planning requirements specified... are fully met within a three-year period after execution of the grant agreement, an additional grant may then be made... equal to one-sixth of the net project cost. The remainder of the net project cost shall be provided, in cash, from sources other than Federal funds. . ."