1/20/82

ENVIRONMENTAL ASSESSMENT

STATE CONTRACT NO. M-512-185-372
FAP NO. I-495-2(188)10
I-495 (CAPITAL BELTWAY)
WEST OF I-270 TO WEST OF MD. 97

prepared by
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

and
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

REPORT NUMBER: FHWA-MD-82-01-(D)

FEDERAL HIGHWAY ADMINISTRATION
REGION III

Interstate Route 495
Interstate Route 270 to
Maryland Route 97
Montgomery County, Maryland

ADMINISTRATIVE ACTION

ENVIRONMENTAL ASSESSMENT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

AND

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

SUBMITTED PURSUANT TO 42 U.S.C. 4332 (2)(C) and 23 U.S.C. 128(a),
CEQ REGULATIONS (40 CFR 1500 et seg)

M. S. Caltrider
State Highway Administrator

1/13/82
Date

by: Hal Kassoff

Hal Kassoff, Director
Office of Planning and
Preliminary Engineering

11/20/82
Date

by: Emil Elinsky

Federal Highway Administration
Division Federal Highway
Administrator

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SUMMARY

- SUMMARY -

CAPITAL BELTWAY
From West of Interstate 270
to
West of Maryland Route 97

1. ADMINISTRATIVE ACTION:

(x) Environmental Assessment
( ) Draft Section 4(f) Evaluation
( ) Final Section 4(f) Evaluation

2. ADDITIONAL INFORMATION:

Additional information concerning this action may be obtained by contacting:

Mr. William F. Schneider Jr.
Chief, Bureau of Project Planning
State Highway Administration
707 North Calvert Street
Baltimore, Maryland 21202
Telephone: (301)659-1130
Hours: 8:15 AM - 4:15 PM

Mr. Roy D. Gingrich
District Engineer
Federal Highway Administration
The Rotunda - Suite 220
711 West 40th Street
Baltimore, Maryland 21211
Telephone: (301)962-4011
Hours: 7:45 AM - 4:15 PM

3. DESCRIPTION OF PROPOSED ACTION:

The project study area includes the 3.5 mile, six-lane portion of the Capital Beltway (Interstate Route 495) from just west of the interchange with I-270 (Pook's Hill Interchange) to the existing eight-lane portion of the Beltway at Seminary Road, west of the interchange with Maryland Route 97 (Georgia Avenue) in Montgomery County, Maryland (see Fig. S-1). The State Highway Administration of the Maryland Department of Transportation and the Federal Highway Administration propose to provide an additional through-traffic lane in each direction, and incorporate other safety and capacity improvements, as possible within existing highway rights-of-way, along these 3.5 miles of Interstate Route 495.

The two additional through-traffic lanes and continuous concrete median barrier are proposed to be constructed typically within the existing roadway median. Traffic lanes to the right of existing roadway pavements are proposed only where necessary to provide adequate deceleration, acceleration, and weaving distances for interchange ramp connections. In the vicinity of Cedar Lane, where the existing median is too narrow for both lanes, a full additional lane, approximately 3000' long, is proposed along the north side of the existing roadway.

The reconstruction of one bridge in the Pook's Hill Interchange, and the widening of other existing bridges along this six-lane portion of I-495 to allow construction of the additional traffic lanes and improved shoulders, are proposed. Retaining walls are proposed both in median and right shoulder locations, where required, to contain the necessary improvements within existing highway rights-of-way.

Noise barrier walls are proposed where it is feasible to attenuate Capital Beltway traffic noise in adjacent residential and park areas. Noise barriers are proposed to be constructed on, or integrally with, retaining walls in some locations, and as separate structures in others.

The Proposed Action is described in Section III-B of this document.

4. ALTERNATIVES CONSIDERED:

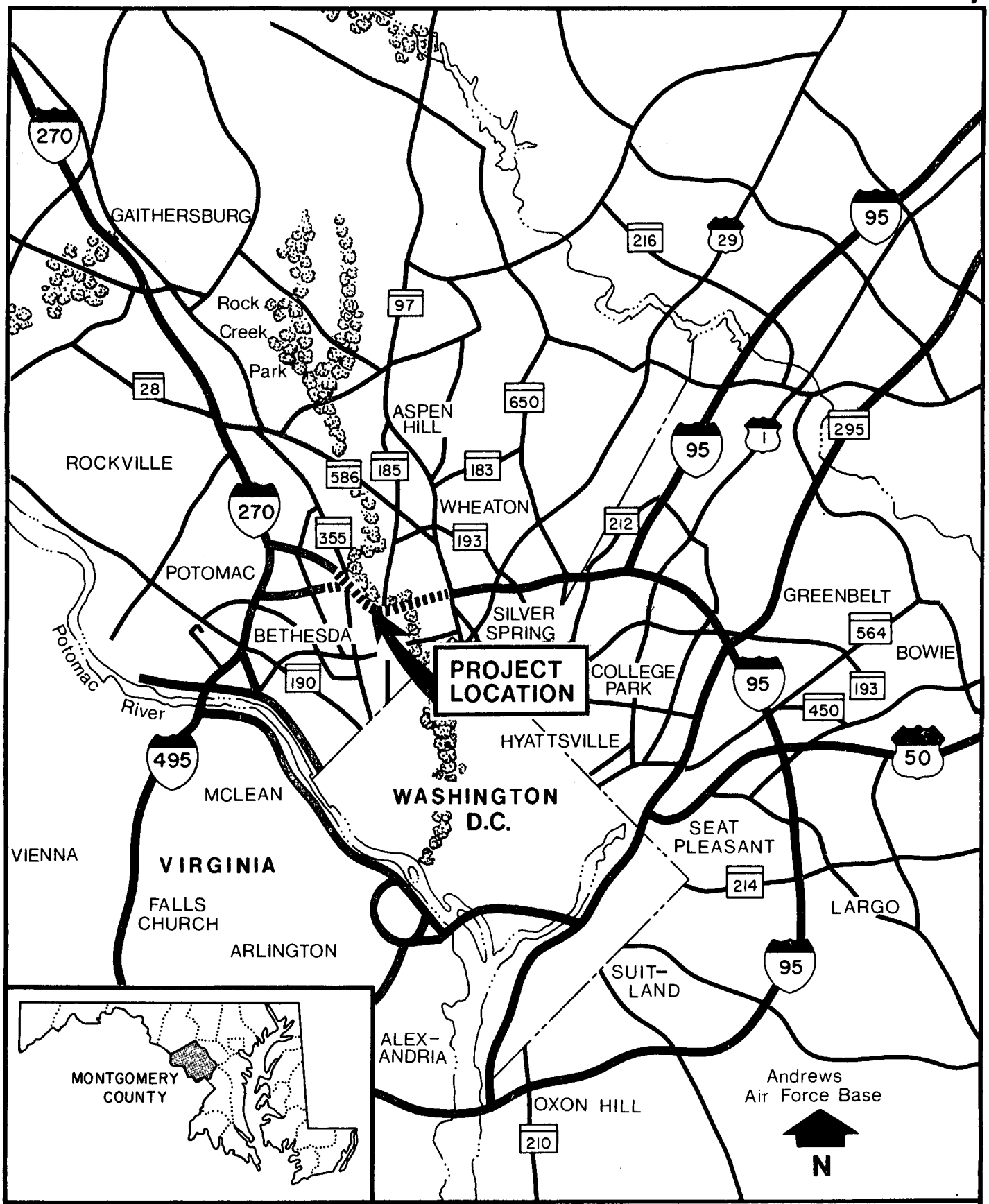
This Environmental Assessment has evolved from previous environmental and engineering studies initiated in 1973. As discussed in detail in Section III-A of this document, approximately 30 improvement alternatives have been developed and evaluated. All of these previous alternatives have been deleted and only the following two alternatives are presented in this document - see Section III-B for description, plans, typical sections and profiles.

- Alternative A - (6 lanes)

A "No-Build" alternative which envisions continued use of the existing six-lane facility with only normal maintenance of roadway pavement, bridge structure, guard rails, etc., and nominal improvements to existing roadway signing, marking and lighting.

- Alternative B - (8 lanes)

A "Build" alternative which envisions upgrading the existing six-lane roadway to an eight-lane roadway, and the incorporation of other safety and capacity improvements which are possible within the existing roadway right-of-way. See Figures S-2 and S-3 for a plan and cross-section of Alternative B.



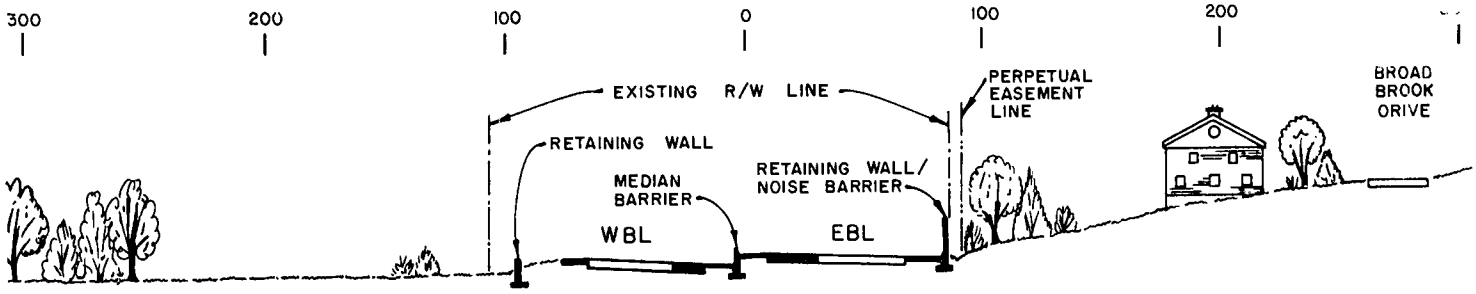
CAPITAL BELTWAY (I-495) STUDY
FROM WEST OF I-270
TO
WEST OF MD. 97
STATE PROJECT NO. M-512-185-372

PROJECT VICINITY MAP

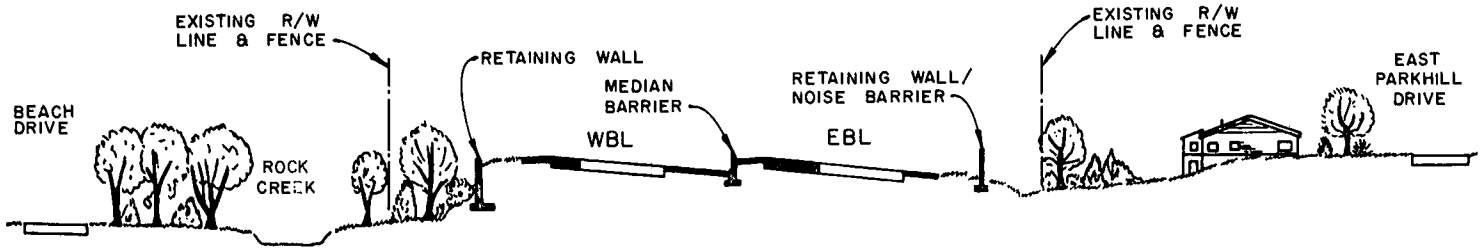
FIGURE S-1

ALTERNATIVE B

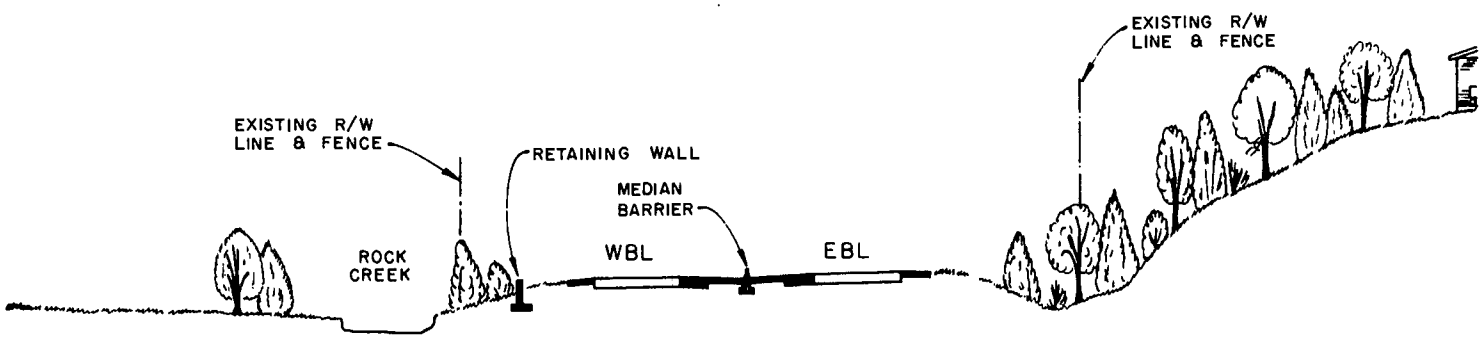
CROSS SECTION



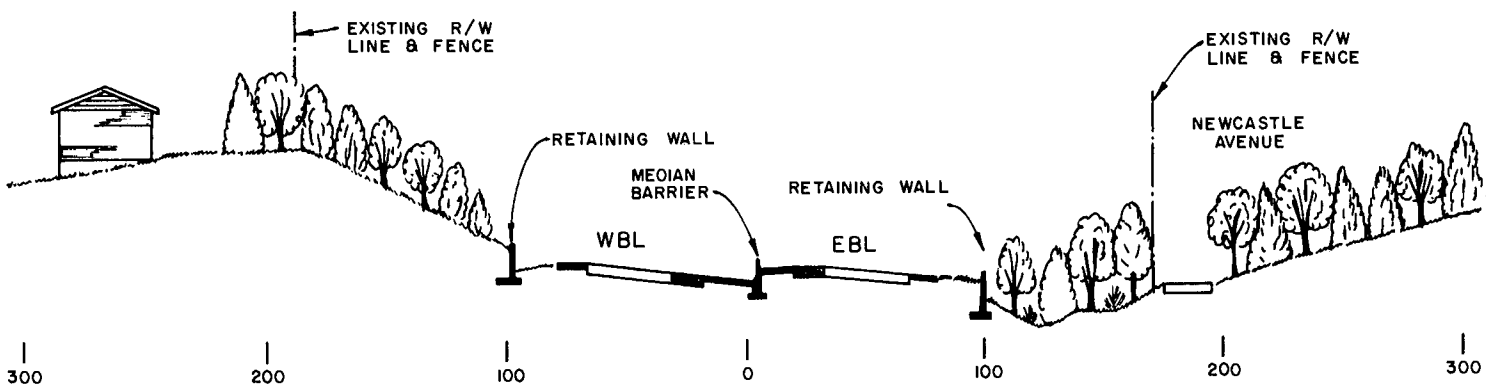
SECTION 1



SECTION 2



SECTION 3



SECTION 4

EXISTING PAVEMENT & SHOULO
NEW PAVEMENT & SHOULOER

SCALE
HORZ.: 1" = 80'
VERT.: 1" = 80'

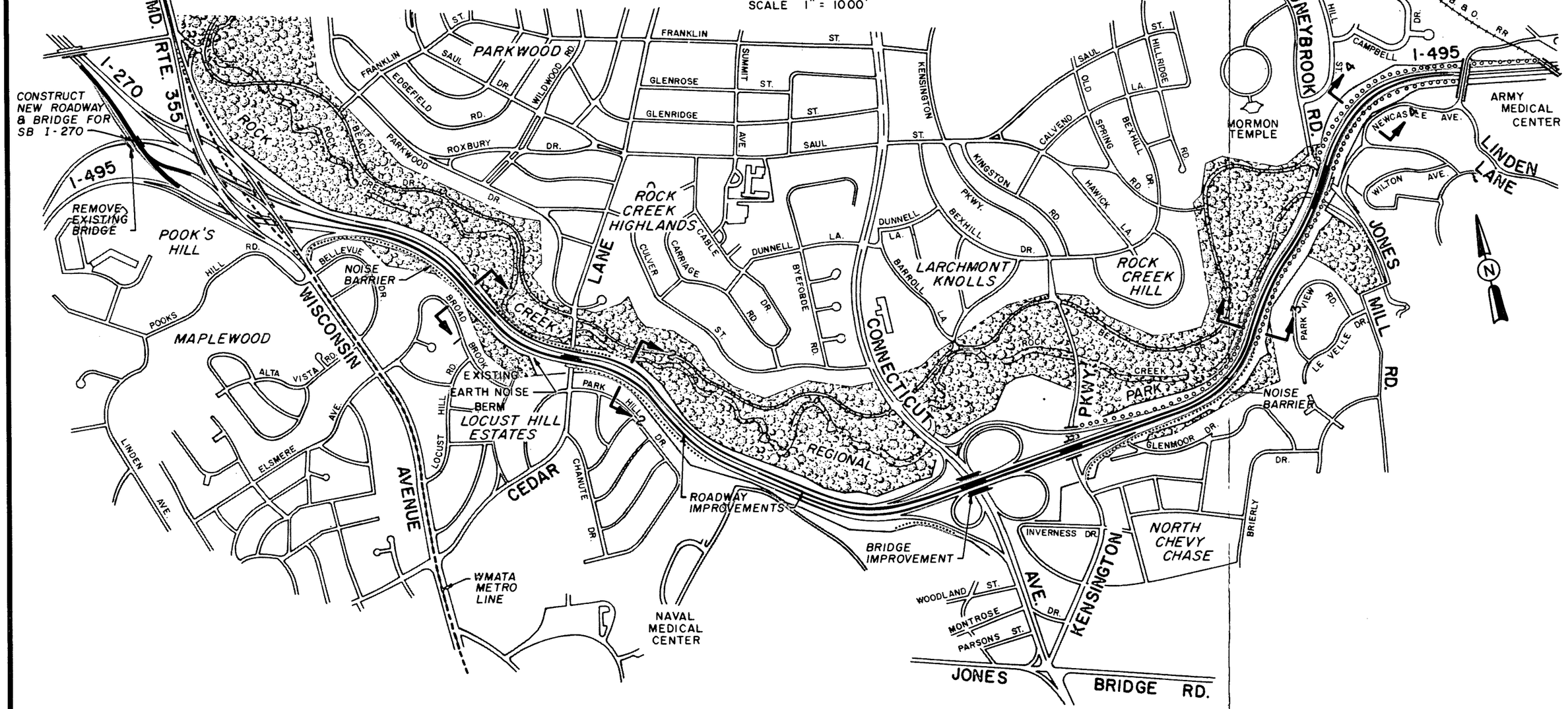
FIGURE S-2

CAPITAL BELTWAY I-495

FROM WEST OF I-270 TO WEST OF MD. ROUTE 97

ALTERNATIVE B

WIDEN EXISTING 6 LANE ROADWAY TO 8 LANES,
WITHIN EXISTING RIGHT-OF-WAY
SCALE 1" = 1000'



LOCATION OF CROSS SECTIONS SEE FIGURE S-2

.... LOCATIONS WHERE NOISE BARRIERS ARE RECOMMENDED WITH ALTERNATIVE B

.... LOCATIONS WHERE NOISE BARRIER FEASIBILITY WILL BE DEFINED DURING FINAL DESIGN

FIGURE S-3

Although not presented separately in this document, one additional alternative considered during the development of this Environmental Assessment was a modification of previous Alternative A-1. Developed in 1975, this alternative consisted of "Traffic Engineering Measures", such as improved signing and marking, to improve traffic flow. While the majority of the recommendations contained in Alternative A-1 have been implemented, other measures short of the addition of a full travel lane are available which would improve the safety (but not capacity) of this section of the Capital Beltway through Rock Creek Park. Identified as a Transportation Systems Management Alternative (TSM), the following measures were investigated:

- repaving and widening of all roadway shoulders (except across structures);
- placement of guardrail along the full length of the project to the right of each roadway;
- relocation of all light standards and signs to behind the guardrail;
- addition of double-faced concrete median barrier in the median along the full length of the project (except across structures).

These TSM measures are estimated to cost approximately ten percent of the total cost estimated for Alternative B, the Build. While the TSM measures will marginally increase safety conditions along this section of Rock Creek Park (primarily reducing accident severity and eliminating head-on accidents), this alternative has not been considered in detail in this document for the following reasons:

: it does not provide any increase in roadway capacity, and would, therefore, not relieve the seriously congested local street network;

: it does not provide continuity in the number of through traffic lanes which exist along the Beltway east of this project;

: it does not provide improved recovery areas adjacent to the travel lanes;

: it does not include lengthened acceleration/deceleration lanes;

: it does not inlcude provisions for noise attenuation, a serious residential and park problem.

5. PROJECT HISTORY:

Prior studies performed in 1968 and 1973,[1] investigated alternative methods, including realignment of the roadway, to improve the safety and capacity of this portion of the Capital Beltway (I-495). Public and agency reactions to these studies, however, led to the conclusion that adverse impacts which would result from any significant construction outside of the existing highway rights-of-way would be intolerable.

These reactions led to the decision that it is not in the community interest to realign this roadway to relieve excessively sharp curvature, or to accomplish major improvements in the interchanges. All previously considered "Build Alternatives", which considered such improvements, have been dropped from further consideration.

In view of these decisions, all construction proposed by this action will be contained within the rights-of-way of the existing highway. This Environmental Assessment records the determination that implementing Alternative B will have a significant benefit to traffic capacity and safety and will not have a significant adverse effect upon the quality of the human environment.

6. PROJECT CONSISTENCY WITH NATIONAL URBAN POLICY:

The proposed improvements being considered for the Capital Beltway (I-495), from west of Interstate 270 to west of Maryland Route 97, are consistent with National Urban Policy and energy conservation goals. The consistency of this project with the five U. S. Department of Transportation policy objectives, developed in response to these issues, is discussed as follows:

a. Urban Impact

This proposed action will have no adverse impact on Washington, D. C. or any other urban area.

b. Energy Conservation

Completion of the proposed improvements will increase the capacity of this portion of the Capital Beltway, drawing a significant number of trips from local roadways onto the Beltway. Although the overall level of service on the Beltway will remain generally the same, the proposed improvements will result in a net

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1 Brief descriptions of preliminary alternatives considered in these prior studies are given in Section III-A of this document.

decrease in fuel consumed per vehicle over the No-Build by attracting vehicles from local streets onto the Beltway, where traffic movement will be more efficient.

c. Neighborhood or Minority Effects

The proposed improvements will result in reduced traffic volumes on local streets and lessened traffic impact on adjacent communities. Implementation of this undertaking will also increase the safety of the Capital Beltway, benefiting local commuters who use this roadway.

d. Use of Existing Facilities

This action proposes the addition of new travel lanes and other capacity and safety improvements within the existing highway rights-of-way, maximizing the use of existing facilities.

e. Consideration of Alternatives

A Cost Effectiveness Analysis of the alternatives under consideration is presented in the following part of this section (Table S-1). More detailed discussion of these impacts is provided in the sections of this document that are cited in the Table.

ANALYSIS ITEM	ALT. A NO-BUILD 6 LANES	ALT. B BUILD 8 LANES
ENGINEERING CONSIDERATIONS AND ESTIMATED CONSTRUCTION COSTS:		
1. Project Length	3.5 miles	3.5 miles
2. Number of Through-Traffic Lanes	6	8
3. Extent of Concrete Median Barrier	None	Full Length
4. Construction Costs (Millions 1981 $):		
: Contractor's Mobilization, Maintenance of Traffic, etc.		$ 4.32
: Earthwork		0.65
: Closed Drainage System		1.59
: New/Widened Bridges		7.83
: Retaining Walls		11.69
: Noise Barriers		3.23
: Roadway & Shoulder Pavement		3.73
: Landscaping		1.47
Sub-Total		$ 34.51
: Design and Construction Engineering, Administration/Overhead		$ 8.97
TOTAL ESTIMATED CONSTRUCTION COST	None	$ 43.48

CAPITAL BELTWAY (I-495) STUDY
FROM WEST OF I-270
TO
WEST OF MD. 97
STATE PROJECT NO. M-512-185-372

COST EFFECTIVENESS ANALYSIS

TABLE S-1 SHEET 1 OF 8

ANALYSIS ITEM	ALT. A NO-BUILD 6 LANES	ALT. B BUILD 8 LANES
SOCIAL IMPACT (IV-B) *		
1. Effect on the diversion of local and commuter traffic from the presently congested Capital Beltway to the local street system.	Adverse	Beneficial
2. Residences displaced	None	None
3. Persons relocated	None	None
4. Private property required	None	None
5. Need for last resort housing	None	None
ECONOMIC IMPACT (IV-C) *		
1. Enhancement of existing and planned development.	None	Beneficial
2. Businesses displaced	None	None
3. Potential for sales loss due to customer inconvenience caused by construction activities	None	None
4. Long-term effect on business	None	Beneficial
5. Yearly reduction in tax revenue due to conversion of taxable land to right-of-way (1981 $)	None	None

* All improvements will be completed within the existing highway rights-of-way.

CAPITAL BELTWAY (I-495) STUDY
FROM WEST OF I-270
TO
WEST OF MD. 97
STATE PROJECT NO. M-512-185-372

COST EFFECTIVENESS ANALYSIS

TABLE S-1 SHEET 2 OF 8

ANALYSIS ITEM	ALT. A NO-BUILD 6 LANES		ALT. B BUILD 8 LANES	
TRAFFIC OPERATIONS (II-D & IV-D)				
1. Ability to accommodate development planned in accordance with local and regional land use plans.	Inadequate		Adequate	
2. Anticipated PM Peak Hour Volume and Level of Service[1] in the year 2010 for:	EB/NB	WB/SB	EB/NB	WB/SB
a. I-495 between I-270 and Connecticut Avenue	6,260 F	6,020 E	7,660 E	7,270 E
b. I-495 between Connecticut Avenue and Georgia Avenue	6,070 F	5,630 E	6,840 E	6,820 E
c. I-495 west of I-270 *	3,150 D	2,790 D	3,720 D	3,330 D
d. I-270 north of I-495 *	3,170 D	2,410 C	3,830 E	3,150 D
e. Connecticut Avenue north of I-495 *	2,560 D	1,930 D	2,640 D	2,000 D
f. Connecticut Avenue south of I-495 *	2,940 D	2,110 D	3,100 D	2,230 D
g. Wisconsin Avenue north of I-495 *	2,730 D	2,570 D	2,930 D	2,770 D
h. Wisconsin Avenue south of I-495 *	2,980 D	2,180 D	3,020 D	2,290 D
3. Average Travel Speed (MPH) along this section of Capital Beltway:				
a. Year 1990	26	31	35	38
b. Year 2010	26	31	31	36

1 Levels of Service range from "A" (Best) to "E" (Capacity). "F" is Forced Flow. See Glossary for further definitions.

* Highway improvements are not planned as a part of this study of the Capital Beltway

CAPITAL BELTWAY (I-495) STUDY
FROM WEST OF I-270
TO
WEST OF MD. 97
STATE PROJECT NO. M-512-185-372

COST EFFECTIVENESS ANALYSIS

TABLE S-1 SHEET 3 OF 8

ANALYSIS ITEM	ALT. A NO-BUILD 6 LANES	ALT. B BUILD 8 LANES
SAFETY OPERATIONS (II-E & IV-E)		
1. Between 1972 and the first six months of 1980, over 2,000 accidents were reported, including eight fatal accidents involving ten deaths along this section of the Capital Beltway.		
2. Approximately 30% of the accidents that occurred between 1972 and 1980 resulted in a personal injury or fatality.		
3. Accident data for this section of the Capital Beltway:		
a. Million Vehicle-Miles Traveled (1979)	158.4	-
b. Accident Rate - Accidents per 100 Million Vehicle Miles Traveled (1977-6 months of 1980)	179	-
c. Total Number of Accidents (1979)	308	-
4. Anticipated degree of roadway safety provided to the motorist.	Undesirable	Improved
5. Estimated year 2010 data for this section of the Capital Beltway:		
a. Million Vehicle-Miles Traveled	196	224
b. Accident Rate - Accidents per 100 Million Vehicle Miles Traveled	179	134
c. Total Number of Accidents	340-360	290-310
6. Although detailed accident data on the local street system is not available, the accident rates on the local streets (Viers Mills, Randolph, Beach, East-West Highway etc.) are about twice the rate presently existing on this portion of the Capital Beltway. Diversion of traffic from the local street system to the Beltway will result in all overall "system level" reduction in the total number of accidents.		

ANALYSIS ITEM	ALT. A NO-BUILD 6 LANES	ALT. B BUILD 8 LANES
AIR QUALITY (IV-F)		
1. Consistent with State Implementation Plan for Air Quality?	Yes	Yes
2. Number of predicted violations of National and State one hour CO standard in:		
a. Year 1990	None	None
b. Year 2010	None	None
3. Range of one-hour CO concentrations (ppm) predicted at receptor sites in:		
a. Year 1990	5.2 to 7.0	5.2 to 6.5
b. Year 2010	5.1 to 6.3	5.1 to 6.1
The maximum allowable concentration is 35 ppm.		
4. Number of predicted violations of National and State eight-hour CO standard in:		
a. Year 1990	None	None
b. Year 2010	None	None
5. Range of eight-hour CO concentrations (ppm) predicted at receptor sites in:		
a. Year 1990	2.6 to 3.6	2.6 to 3.6
b. Year 2010	2.6 to 3.3	2.6 to 3.3
(The maximum allowable concentration is 9 ppm.)		

ANALYSIS ITEM	ALT. A NO-BUILD 6 LANES	ALT. B BUILD 8 LANES
NOISE LEVELS (IV-G)		
1. Range of L_{10} Noise Levels Predicted in the year 2010.	64 to 77 dBA	62 to 76 dBA
2. Of the 23 receptors analyzed, the number of receptors predicted to exceed Federal Design Noise Level in the year 2010.	10	3
3. Number of wall-type noise barrier segments recommended	N/A	5
4. Estimated total linear feet of wall-type noise barriers recommended	N/A	8,340'
5. Estimated cost of barriers in 1981 $	N/A	$3,226,000.
6. Approximate number of residences protected by wall-type noise barriers	N/A	185
		The Build Alternative, with the inclusion of recommended noise barriers will provide a better overall noise environment than that of the No-Build.

CAPITAL BELTWAY (I-495) STUDY
FROM WEST OF I-270
TO
WEST OF MD. 97
STATE PROJECT NO. M-512-185-372

COST EFFECTIVENESS ANALYSIS

ANALYSIS ITEM	ALT. A NO-BUILD 6 LANES	ALT. B BUILD 8 LANES ★
EFFECT ON PUBLIC PARKLAND (IV-H)	None	None
IMPACTS TO ROCK CREEK (IV-I)		
1. Stream modification	None	None
2. Quantity of stormwater runoff: 10-year storm flow in cubic feet per second (cfs)	70 cfs	185 cfs Not significant in comparison to 3,630 cfs for upstream watershed
3. Pollutant load of runoff	Pollutant loads in roadway runoff will increase with traffic volumes	Increase in pollutant load will be slightly greater than the No-Build
WETLAND IMPACTS (IV-J)	None	None
FLOODPLAIN IMPACTS (IC-K)	None	Minor Loss of Storage Area No significant Impact
EFFECT ON TERERESTRIAL & AQUATIC ECOLOGY (IV-L)	None	None
EFFECT ON ENDANGERED SPECIES (IV-M)	None	None
EFFECT ON FARMLAND (IV-N)		
Farms displaced	None	None
Acres of "Prime" or "Unique" farmland soils required	None	None

CAPITAL BELTWAY (I-495) STUDY
FROM WEST OF I-270
TO
WEST OF MD. 97
STATE PROJECT NO. M-512-185-372

COST EFFECTIVENESS ANALYSIS

TABLE S-1 SHEET 7 OF 8

ANALYSIS ITEM	ALT. A NO-BUILD 6 LANES	ALT. B BUILD 8 LANES
EFFECT ON HISTORICAL & ARCHEOLOGICAL SITES (IV-O)		
1. Affect on historic sites	None	None
2. Affect on archeological sites	None	None
CONSTRUCTION IMPACTS (IV-P)	None	Minor
1. Temporary traffic congestion and increased travel times will result due to construction activities.		
2. Noise levels in adjacent areas will temporarily increase above levels normally experienced near roadway as a result of certain construction activities and equipment.		
3. Sprinkling and other approved methods will be used to control dust.		
4. Solid waste, hazardous, and toxic materials will not be disposed of on-site. Defoliants will not be used.		
CONSISTENT WITH LAND USE & DEVELOPMENT PLANS (IV-Q)	Yes	Yes

7. ENVIRONMENTAL ASSESSMENT FORM:

The following Environmental Assessment Form is a requirement of the Maryland Environmental Policy Act and Maryland Department of Transportation Order 11.01.06.02. Its use is in keeping with the provisions of 1500.4(k) and 1506.2 and .6 of the Council of Environmental Quality Regulations, effective July 31, 1979, which recommend that duplication of Federal, State, and Local procedures be integrated into a single process.

The checklist identifies specific areas of the natural and social-economic environment which have been considered while preparing this Environmental Assessment. The reviewer can refer to the appropriate sections of the document, as indicated in the "Comment" column of the form, for a description of specific characteristics of the natural or social-economic environment within the proposed project area. It will also highlight any potential impacts, beneficial or adverse, that the action may incur. The "No" column indicates that during the scoping and early coordination processes, that specific area of the environment was not identified to be within the project area or would not be impacted by the proposed action.

	YES	NO	COMMENTS
A. Land Use Considerations			
1. Will the action be within the 100 year floodplain?	X	_	IV-K
2. Will the action require a permit for construction or alteration within the 50-year floodplain?	___	X	IV-K
3. Will the action require a permit for dredging, filling, draining or alteration of a wetland?	___	X	IV-J
4. Will the action require a permit for the construction or operation of facilities for solid waste disposal including dredge and excavation spoil?	___	X	_____
5. Will the action occur on slopes exceeding 15%?	X	_	_____
6. Will the action require a grading plan or a sediment control permit?	X	_	_____

	YES	NO	COMMENTS
7. Will the action require a mining permit for deep or surface mining?	___	X	_____
8. Will the action require a permit for drilling a gas or oil well?	___	X	_____
9. Will the action require a permit for airport construction?	___	X	_____
10. Will the action require a permit for the crossing of the Potomac River by conduits, cables or other like devices?	___	X	_____
11. Will the action affect the use of a public recreation area, park, forest, wildlife, management area, scenic river or wildland?	___	X	IV-H
12. Will the action affect the use of natural or man-made features that are unique to the county, state or nation?	___	X	_____
13. Will the action affect the use of an archeological or historical site or structure?	___	X	IV-O
B. Water Use Considerations			
14. Will the action require a permit for the change of the course, current, or cross-section of a stream or other body of water?	___	X	IV-I
15. Will the action require the construction, alteration, or removal of a dam, reservoir, or waterway obstruction?	___	X	_____
16. Will the action change the overland flow of stormwater or reduce the absorption capacity of the ground?	X	_	Insignificant changes IV-H, I
17. Will the action require a permit for the drilling of a water well?	___	X	_____
18. Will the action require a permit for water appropriation:	___	X	_____

	YES	NO	COMMENTS
19. Will the action require a permit for the construction and operation of facilities for treatment or distribution of water?	___	X	_____
20. Will the project require a permit for the construction and operation of facilities for sewage treatment and/or land disposal of liquid waste derivatives?	___	X	_____
21. Will the action result in any discharge into surface or subsurface water?	X	_	Insignificant changes IV-I
22. If so, will the discharge affect ambient water quality parameters and/or require a discharge permit?	___	X	IV-I
C. Air Use Considerations			
23. Will the action result in any discharge into the air?	X	_	IV-F
24. If so, will the discharge affect ambient air quality parameters or produce a disagreeable odor?	___	X	IV-F
25. Will the action generate additional noise which differs in character or level from present conditions?	X	_	IV-G
26. Will the action preclude future use of related air space?	___	X	_____
27. Will the action generate any radiological, electrical, magnetic, or light influences?	___	X	_____
D. Plants and Animals			
28. Will the action cause the disturbance, reduction or loss of any rare, unique or valuable plant or animal?	___	X	IV-L&M
29. Will the action result in the significant reduction or loss of any fish or wildlife habitats?	___	X	IV-I&M

	YES	NO	COMMENTS
30. Will the action require a permit for the use of pesticides, herbicides or other biological, chemical or radiological control agents?	___	X	_____

E. Socio-Econimic

31. Will the action result in a preemption or division of properties or impair their economic use?	___	X	Table S-1
32. Will the action cause relocation of activities, structures, or result in a change in the population density or distribution?	___	X	Table S-1
33. Will the action alter land values?	___	X	Table S-1
34. Will the action affect traffic flow and volume?	X	_	Beneficial Change IV-D
35. Will the action affect the production, extraction, harvest or potential use of a scarce or economically important resource?	___	X	_____
36. Will the action require a license to construct a sawmill or other plant for the manufacture of forest products?	___	X	_____
37. Is the action in accord with federal, state, regional and local comprehensive or functional plans - including zoning?	X	_	IV-Q
38. Will the action affect the employment opportunities for persons in the area?	___	X	_____
39. Will the action affect the ability of the area to attract new sources of tax revenue?	___	X	_____
40. Will the action discourage present sources of tax revenue from remaining in the area, or affirmatively encourage them to relocate elsewhere?	___	X	_____

	YES	NO	COMMENTS
41. Will the action affect the ability of the area to attract tourism?	___	X	_____

F. Other Considerations

42. Could the action endanger the public health, safety or welfare?	___	X	_____
43. Could the action be eliminated without deleterious affects to the public health, safety, welfare or the natural environment?	___	X	Existing roads are unsafe, II-E
44. Will the action be of statewide significance?	___	X	_____
45. Are there any other plans or actions (federal, state, county or private) that, in conjunction with the subject action could result in a cumulative or synergistic impact on the public health, safety, welfare or environment?	___	X	_____
46. Will the action require additional power generation or transmission capacity?	___	X	_____
47. This agency will develop a complete environmental effects report on the proposed action.	___	X	See Introduction

I
DESCRIPTION OF PROPOSED ACTION

I. DESCRIPTION OF PROPOSED ACTION:

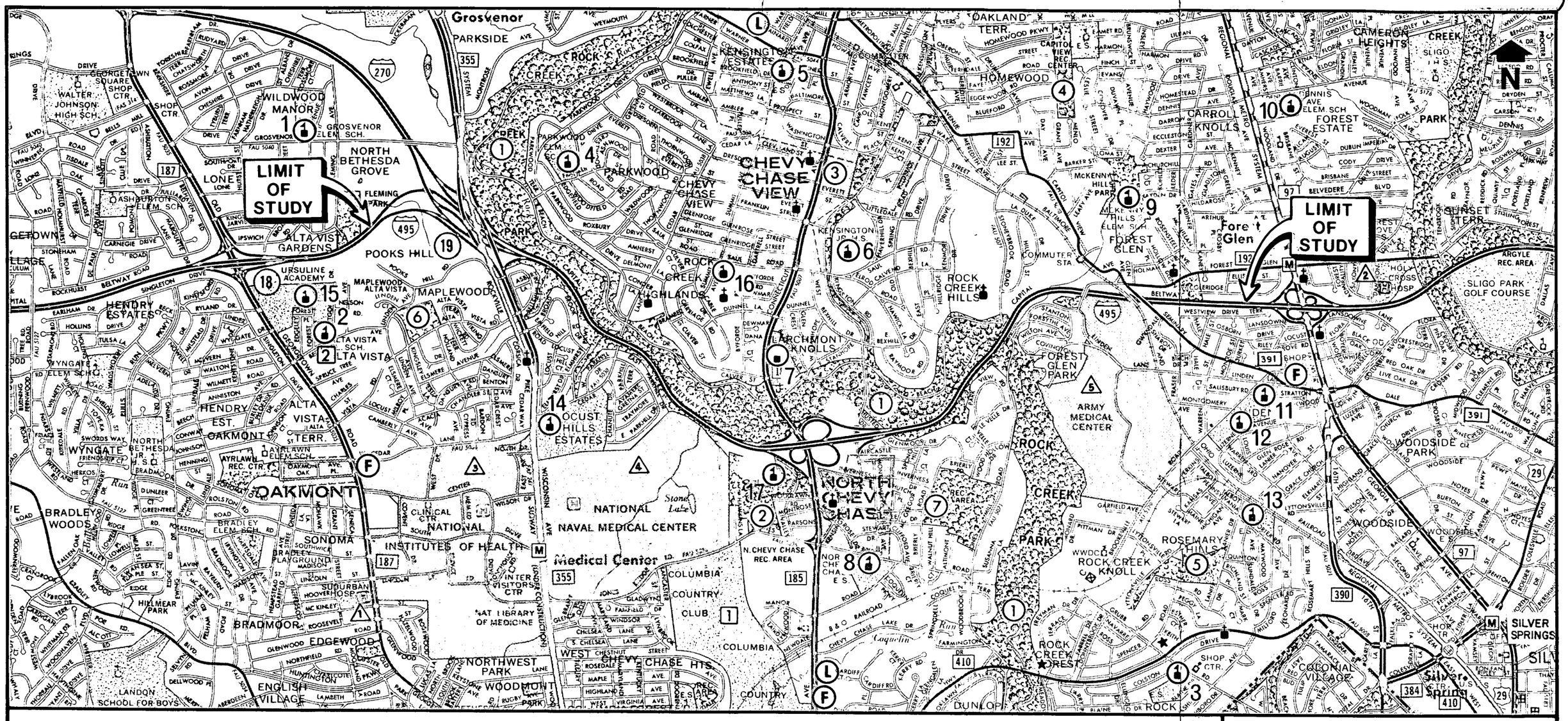
A. PROJECT LOCATION

The project study area includes the 3.5 mile, six-lane portion of the Capital Beltway (Interstate Route 495) from just west of the interchange with I-270 (Pook's Hill Interchange) to the existing 8-lane portion of the Beltway at Seminary Road, west of the interchange with Maryland Route 97 (Georgia Avenue) in Montgomery County, Maryland (see Fig. S-1). The majority of this portion of the Beltway is within the limits of Rock Creek Regional Park, which is part of a regional network of parks in and adjacent to Washington, D. C.

The Capital Beltway (I-495 and I-95) is the single, most important highway in the Washington Metropolitan Area. Classified as an Urban Interstate Highway, it encircles Washington, D. C. at an average distance of about eight miles from the center of the City. The western portion of the Beltway, which is designated as I-495, consists of six and eight-lane sections. The eastern portion is designated as I-95 and provides 8-lane continuity for this major north-south Interstate Route, as it bypasses Washington, D. C. The Capital Beltway has 25 exits in Maryland and 14 exits in Virginia.

B. PROJECT DESCRIPTION

Improvements to I-495 in this project area would begin just west of the large and complex directional interchange (Pook's Hill Interchange) which connects I-495 to I-270 and Maryland Route 355 to the north, and to Wisconsin Avenue to the south (see Fig. I-1). I-495 is adjacent to the southern boundary of Rock Creek Regional Park in this area. It skirts the residential areas south of the Park and passes on dual bridges over Cedar Lane. From Cedar Lane, and still following the southern boundary of Rock Creek Park, it proceeds in an easterly direction to pass north of the Naval Medical Center; then across dual bridges over Connecticut Avenue and Kensington Parkway. A partial cloverleaf interchange at Connecticut Avenue with an additional ramp connection at Kensington Parkway provides all movements to connect I-495 to the local street system at this split interchange. Still proceeding generally in an easterly direction and parallel to the southern Park boundary, I-495 passes just north of the residential area west of Jones Mill Road. It leaves Rock Creek Park on twin viaduct structures over Rock Creek and Jones Mill Road just south of the Morman Temple. It then passes between residential neighborhoods both north and south of the roadway and under a bridge carrying Linden Lane just northwest of the Walter Reed Hospital Annex. Major construction improvement would end with a connection to the existing eight-lane roadway of I-495 at this point. Improvements in traffic control features, such as signing and marking, would, however, extend to just west of the interchange at Maryland Route 97 (Georgia Ave.).



LEGEND

- (F) FIRE STATIONS
- (P) POLICE STATIONS
- (L) LIBRARIES
- RELIGIOUS FACILITIES
- [M] WASHINGTON METROPOLITAN AREA TRANSIT STATION

(1) PUBLIC SCHOOLS

1. GROSVENOR ELEMENTARY SCHOOL
2. ALTA VISTA ELEMENTARY SCHOOL
3. ROCK CREEK FOREST ELEMENTARY SCHOOL
4. PARKWOOD ELEMENTARY SCHOOL
5. KENSINGTON ELEMENTARY SCHOOL
6. KENSINGTON JUNIOR HIGH SCHOOL
7. LARCHMONT ELEMENTARY SCHOOL
8. NORTH CHEVY CHASE ELEMENTARY SCHOOL
9. McKENNEY HILLS ELEMENTARY SCHOOL
10. OENNIS AVENUE ELEMENTARY SCHOOL
11. MONTGOMERY HILLS JUNIOR HIGH SCHOOL
12. WOODLIN ELEMENTARY SCHOOL
13. ROSEMARY HILLS ELEMENTARY SCHOOL

(1) PRIVATE/PAROCHIAL SCHOOLS

14. COUNTY DAY SCHOOL OF SCARED HEART
15. URSALINE ACADEMY
16. HOLY REDEEMER SCHOOL
17. NURSERY SCHOOL

(1) HOSPITAL

1. SUBURBAN HOSPITAL
2. HOLY CROSS HOSPITAL
3. NATIONAL INSTITUTES OF HEALTH
4. NATIONAL NAVAL MEDICAL CENTER
5. ARMY MEDICAL CENTER

(3) PUBLIC RECREATION

1. ROCK CREEK PARK
2. NORTH CHEVY CHASE RECREATION CENTER
3. KENSINGTON PARKWAY RECREATION CENTER
4. CAPITAL VIEW - HOMEWOOD RECREATION CENTER
5. ROSEMARY HILLS RECREATION CENTER
6. MAPLEWOOD - ALTA VISTA RECREATION CENTER
7. PARKCREST RECREATION AREA

[2] PRIVATE RECREATION

1. COLUMBIA COUNTRY CLUB
2. YMCA

SCALE 1" = 2000'

EXISTING ENVIRONMENTAL FEATURES

FIGURE I-1

C. DESCRIPTION OF EXISTING ENVIRONMENT[1]

1. Human Environment

a. General Description

As Figure I-1 shows, the project area includes extensive residential development and numerous distinct communities. Many of these communities began as separate centers of development that subsequently coalesced as additional growth occurred. Land use in these areas ranges from low density residential with abundant green space, to heavily urbanized commercial centers.

The project area is divided into halves by the Capital Beltway and adjacent Rock Creek Regional Park. These two halves are similar in terms of land use and development, except that large portions of the southern half are dedicated to institutional uses (National Institutes of Health, National Naval Medical Center and Army Medical Center). An intricate system of local streets, primary, arterial and major highways serves this region, and seven separate roadways pass under or over the Capital Beltway within the project area, providing good public access.

b. Characteristics of the Population

Concise characterization of the population of the project area is difficult because the project area includes portions of four County planning areas and twelve census tracts. Generally, the project area is located along one edge of each tract or planning area, and comprises such a small portion of each that no single unit can be reliably considered to be "typical".

The total population of these twelve census tracts, as determined by the 1980 Census of Population and Housing, was 43,882; about 7.6% of the total Montgomery County population of 579,053. Individuals belonging to minority races made up about 11.6% of the population of these twelve census tracts. This number is lower than the total County-wide minority percentage of 14.4%. The Montgomery County Planning Board[2] predicts that the population of the County, these census tracts included, will increase at a rate averaging 9,000 people a year, through the year 2000.

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1 Portions of the following descriptions have been taken from a report entitled Final Draft of I-495 Environmental Assessment, prepared by Wallace, McHarg, Roberts & Todd. The complete report is available for review at the Bureau of Project Planning, State Highway Administration, 707 North Calvert Street, Baltimore, Maryland.

2 Long Range Forecast; People, Jobs and Housing, Montgomery County Planning Board, The Maryland-National Capital Park & Planning Commission, August, 1979.

According to information provided by the Montgomery County Planning Board, the number of housing units in these twelve census tracts increased 9% from 17,326 units (1970) to 19,047 units (1980). Since the overall population of this area decreased 8.4% during this same period, the trend has been toward smaller household size.

Montgomery County is a center for research and development activities, both private and governmental, and "over 40 percent of the County's major private employers are in the advanced electronics technology, telecommunications, medical sciences and high technology fields. The County is also the home of an impressive cross-section of world, national and regional corporate headquarters." In December of 1979, the median family income for the County was $27,315, significantly higher than the state-wide median of $19,179. Fifty-six percent of County households earned an Effective Buying Income of over $25,000, and eleven percent earned $50,000 or more.[1]

c. Community Facilities

The project area includes numerous public and parochial schools, hospitals and public recreation areas. These community facilities are identified on Figure I-1. Figure I-1 also shows the location of fire stations, public libraries and religious facilities, as well as three major government medical/research institutions (National Institutes of Health, National Naval Medical Center and the Army Medical Center). Only the Rock Creek Regional Park, described in more detail in Part 2 of this Section, could be affected by the proposed action.

d. Transportation System

1) Highway System

The primary highway system in the Washington, D. C. region is composed of both radial and circumferential routes. The radial routes (i.e., Wisconsin and Connecticut Avenues) connect the outlying developed areas of the region with central Washington, D. C., and are the major transportation corridors into the City. The Capital Beltway (Interstate Routes 495 and 95) is the major circumferential route which connects the radial routes and accommodates travel demand between the radial transportation corridors. As such, its ability to safely accommodate present and projected travel demands at a satisfactory level of service is essential. The significance of

1 Information in this paragraph is taken from Montgomery County, Maryland - Brief Industrial Facts, Maryland Department of economic & Community development, January, 1981.

this route is further enhanced as a result of the predicted increase in dispersed development in areas outside the Beltway, which would result in an increased dependence on automobiles. Future traffic volumes predicted as a result of this increase in development are discussed in Section IV-D.

2) Public Transportation System

The public transportation system for the Washington, D. C. region is under the guidance of the Washington Metropolitan Area Transit Authority (WMATA). The service area includes Montgomery and Prince George's Counties, Maryland; the District of Columbia; and portions of northern Virginia. The system consists of a surface (bus) transportation system and a rapid rail transit system (Metro). Both the bus and rapid rail transit systems are radial in design and serve primarily radial and core-oriented travel.[1] In recent years, as the rapid rail transit system expanded, increased emphasis has been placed on bus-rail coordination (primarily rerouting the bus system to feed Metro stations). The automobile will remain the primary mode for circumferential travel, and will become the primary mode feeding Metro stations.

The Red Line of the Metro (currently under construction), is located in the median of Wisconsin Avenue from central Washington, D. C. to Rockville and crosses the Capital Beltway at the Pook's Hill Interchange. The facility is being constructed as a tunnel from Washington, D. C. to just south of the Capital Beltway, where it ascends to an elevated structure. Through extensive planning, the multiple use of land for highway and rapid transit purposes has been achieved; several piers for the elevated Metro rail are located in the Capital Beltway right-of-way. These piers will not be affected by either of the Capital Beltway alternatives under consideration.

Three Metro stations are located in the vicinity of this Capital Beltway project; the Medical Center Station, located on the National Institute of Health property (south of the Beltway); and the Grosvenor Station, located on Wisconsin Avenue, (approximately 0.9 mile north of the Beltway); and the White Flint Station, also located on Wisconsin Avenue (approximately 2.1 miles north of the Beltway). Street improvements, parking lots, and pedestrian/bike paths, as well as major expansions of the National Institute of Health and National Naval Medical Center, are planned concurrently with the construction of the Metro stations.

1 Metro bus number C-7 operates along I-495 between Georgia Avenue and Rockville Pike only during the rush hours. Ridership is reported to be light.

3) Bicycle Paths

The Rock Creek Bikeway, a paved Class I Trail (i.e., located on its own right-of-way, separated from adjacent roadways) follows Beach Drive in Rock Creek Regional Park through the project area for 5.8 miles. The proposed Navy Medical Center Trail will run from the vicinity of the Medical Center on the south side of the Capital Beltway, cross under the Beltway along Cedar Lane, and join the Rock Creek Bikeway at the intersection of Cedar Lane and Beach Drive.[1]

e. Archeological & Historical Resources

1) Archeological Resources

No prehistoric or historic archeological remains are present within the project area. This determination is based on a thorough archeological survey of the entire area by trained professionals recommended by the State Archeologist. The complete report of their survey (dated May 6, 1975) is reproduced in Section V.

2) Historical Resources

The Maryland-National Capital Park & Planning Commission (M-NCP&PC) has identified numerous sites of historic importance in the vicinity of the project area. None of these sites, however, are located in any area where construction is proposed, and the State Historic Preservation Officer has determined that no known historic properties will be affected by the proposed improvements (see letter dated December 12, 1977 in Section V). Reviewers who are interested in the names and locations of these sites are referred to the Location Atlas & Index of Historic Sites in Montgomery County, Maryland, published by the M-NCP&PC in October, 1976.

f. Land-Use Planning

The project area includes portions of four County Planning areas. Within these planning areas are a number of subregions that are the subject of individual Master Plans or Sector Plans. The following brief discussion is extracted from these plans, and interested reviewers who would like more detailed information are referred to the following planning documents, which are available from the Maryland-National Capital Park & Planning Commission.

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1 Master Plan for Bikeways, Montgomery County Planning Board of the Maryland-National Capital Park & Planning Commission, 1980.

Approved and Adopted Master Plan, Bethesda-Chevy Chase Planning Area; October, 1970

Approved and Adopted Master Plan, North Bethesda-Garrett Park Planning Area; December, 1970

Zoning Plan for the Kensington-Wheaton Planning Area VII, Montgomery County, Maryland; as amended January 8, 1975

North Silver Spring Sector Plan, July 1978

Approved and Adopted Sector Plan for the Town of Kensington and Vicinity, Montgomery County, Maryland; May, 1978

Approved and Adopted Functional Master Plan for Conservation and Management in the Rock Creek Basin, Montgomery County, Maryland, August, 1980

The Kensington-Wheaton, Silver Spring and Bethesda areas are already largely developed (see Fig. I-1). Areas of single-family dwelling use have been zoned, in most cases, to require development surrounding them at similar densities, or as public facilities, churches or schools. North Bethesda-Garrett Park still has large tracts of undeveloped land, and plans for that area include intensive development near transit stations and points of freeway access.

Centers of concentrated development in the vicinity of the project area are Kensington, Wheaton, Bethesda, the White Flint Metro station, and the southern fringe of Rockville. These are the primary locations of zoned commercial and office space, as well as high-density multi-family residential development.

Multi-family residential development outside of community cores is planned for areas with access to Metro stations and major highways. The largest area in the vicinity that is zoned for multi-family housing surrounds the Pook's Hill Interchange and the Grosvenor Metro station. Smaller areas of high-density multi-family housing are located: near the intesection of I-270 and Old Georgetown Road, near the intersection of Connecticut Avenue and Veirs Mill Road; on University Avenue, north of Kensington; and on Georgia Avenue near I-495.

2. Natural Environment

a. Existing Natural Areas

The major natural features of the project area are Rock Creek and the strip of deciduous woodland that has been preserved along its banks. Rock Creek is a major tributary of the Potomac River, draining over 77 square miles of Montgomery County. From its headwaters near Laytonsville, it extends for about 22 miles to join the Potomac in Washington, D. C.

A narrow ribbon of green space along the main stream of Rock Creek, from near its headwaters to its confluence with the Potomac River, has been retained as Rock Creek Regional Park. This Park is a major recreational and open space resource, particularly in the lower portion of the watershed where adjacent land use is more urban. Within the project area, the Park lies along the northern edge of the Capital Beltway (see Fig. I-1) from the Pook's Hill Interchange to the vicinity of Stoneybrook Road, where it crosses under the Beltway and continues south along Rock Creek. In this area, recreational facilities are limited to playground equipment and the Rock Creek Bikeway, which is also used for jogging.

This portion of Rock Creek Regional Park was established as a result of the Capper-Cramton Act[1], prior to construction of the Capital Beltway. When the Beltway was constructed, less than desirable design features were incorporated in an effort to minimize impact to the Park. These features are largely responsible for the traffic and safety problems that occur on this portion of the roadway today (see Sections II-D and II-E). An Inter-Agency Agreement was executed in 1963 by the State Highway Administration (then State Roads Commission), the Maryland-National Capital Park & Planning Commission and the National Capital Planning Commission, detailing existing and future design and right-of-way provisions for this section of Capital Beltway.

In addition to Rock Creek Regional Park, numerous small woodlots are scattered throughout the adjacent residential areas. These patches of deciduous woodland impart a rural atmosphere to the entire area.

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1 The Capper-Cramton Act is an Act of Congress that provided for acquisition of lands in the District of Columbia, Maryland and Virginia to provide a "park, parkway, and playground system" for the Nation's Capitol.

b. Terrestrial & Aquatic Ecology

1) Terrestrial Ecology

Although small woodlots are scattered all through the project area, the major natural terrestrial feature is the extensive tract of woodland along Rock Creek that has been preserved as Rock Creek Regional Park. This linear park provides a continuous ribbon of green space through an otherwise developed region, providing habitat for a relatively diversified natural community, passive outdoor recreational opportunities for area residents, and a vital buffer for Rock Creek.

This tract of deciduous woodland is typically composed of such bottomland species as Sycamore, Green Ash, Maple and River Birch, with some variation toward a more upland woods dominated by various Oaks and Tulip Poplar on adjacent slopes. These woodlands are, in places, relatively mature, with limited undergrowth and good sized trees. This area is inhabited by a wide variety of wildlife, including numerous species of birds and small mammals. A more detailed analysis of the animal life and vegetation of this portion of Rock Creek Regional Park is given in a report[1] prepared for this study and available for review at the Bureau of Project Planning, State Highway Administration, 707 North Calvert Street, Baltimore, Maryland.

2) Aquatic Ecology

Aquatic habitat in the project area is provided by Rock Creek and several of its minor tributaries. One unnamed tributary, located between the south bank of the Creek and the north side of the Capital Beltway in the vicinity of the Pook's Hill Interchange, has been dammed to create a small pond. This pond is shallow, but permanent, and contains a lush growth of emergent and submergent aquatic vegetation (Potamogeton crispus, Callitriche sp., Ludwigia palustris).

The portion of Rock Creek adjacent to the Capital Beltway (see Fig. I-1) is far from pristine, and shows the effects of domestic raw sewage overflows, polluted stormwater and agricultural runoff. Although the stream generally runs clear, an over abundance of silt and algae is present and the existing fish fauna is largely composed of pollution tolerant species.[2] Reduced water quality in this portion of the Creek is also indicated in the following excerpt by the Montgomery County Department of Environmental Protection in their publication entitled Water Quality of Streams in Montgomery County, Maryland, January-December, 1979.

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1 Final Draft of I-495 Environmental Assessment, Wallace, McHarg, Roberts & Todd (undated).

2 A Provisional Inventory of the Fishes of Rock Creek Little Falls Branch, Cabin John Creek, and Rock Run, Montgomery County, Maryland, Montgomery County Planning Board, M-NCP&PC, June 1975.

> "The WQI for Lower Rock Creek remained permissible; however, both coliform densities and BOD increased during 1979 over the previous year. There was a large difference between the coliform densities in Lower and Middle Rock Creeks in 1979 as in previous years. Apparently, pollution of human or animal origin is entering Lower Rock Creek in significant quantity. Most of the pollution occurs between Stations 40050 and 40040 according to B-43, Figures 44 and 45. Cross connection between sanitary building sewers and storm drains is the suspected cause, and the most likely."[1]

The Maryland Department of Natural Resources has investigated the occurrence of anadromous[2] fishes in this portion of the Potomac River Drainage (James Mower, Anadromous Fish Survey Team, Personal Communication, September, 1981). They found that anadromous species do enter the mouth of Rock Creek and move upstream at least as far as Pennsylvania Avenue in Washington, D. C. These species do not reach the project area, however, because Rock Creek is blocked by the concrete weir at a USGS stream gaging station located below Massachusetts Avenue.

c. Threatened or Endangered Species

Both the Maryland Department of Natural Resources and the U. S. Fish & Wildlife Service have determined that no known population of threatened or endangered species occupies the project area. These determinations are documented in Section V, letters dated August 11, 1981 and September 17, 1981.

d. Floodplains & Wetlands

1) Floodplains

The 100-year floodplain in the project area has been mapped by the Maryland-National Capital Park & Planning Commission. Copies of these maps are available for review at the Office of Project Planning, State Highway Administration, 707 North Calvert Street, Baltimore, Maryland. According to these maps, Rock Creek, in the project area, has a well-developed floodplain, ranging from about 300 feet to over 1300 feet in width.

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1 WQI = Water Quality Index. The two monitoring stations mentioned are both upstream of the project area.

2 Anadromous fishes are ocean dwelling species that ascend freshwater streams and rivers to spawn. Many of these species (shad, herring, striped bass) are of great commercial and ecological importance.

The southern boundary of the 100-year floodplain is generally the embankment on which the Capital Beltway is constructed. All local roads (Jones Mill Road, Stoneybrook Road, Beach Drive, Kensington Parkway, Connecticut Avenue, Cedar Lane) along the north side of the Beltway in the project area would be inundated by a 100-year flood. In addition, approximately a half-mile of the Capital Beltway, between Cedar Lane and the Pook's Hill Interchange, would be flooded or made impassible. A 100-year flood would also inundate about 450 feet of the westbound lane and median of the Capital Beltway at a point midway between Stoneybrook Road and Kensington Parkway.

2) Wetlands

As noted previously, a pond in Rock Creek Regional Park, adjacent to the Pook's Hill Interchange, contains submergent vascular aquatic bed wetland and a small amount of fringing emergent wetland. None of this non-tidal wetland would be affected by the proposed action.

II
NEED FOR THE PROJECT

II. NEED FOR THE PROJECT:

A. PURPOSE OF STUDY

The purpose of these studies, which began in 1973, has been to evaluate and compare alternatives which will provide maximum feasible safety and capacity improvements to this 3.5 mile portion of the Capital Beltway, without significant adverse social, environmental and economic effects. These studies were conducted to recommend effective measures which will provide traffic capacity and roadway safety at least comparable to that of the Capital Beltway east of the study area.

B. RELATIONSHIP TO OTHER ONGOING HIGHWAY PROJECTS

The Maryland State Highway Administration is currently conducting two related highway planning studies which interact with this study of improvements to the Rock Creek section of the Capital Beltway between I-270 and Maryland Route 97. The status of these two related projects, and their relationship to the Capital Beltway study, are discussed as follows:

- Intercounty Connector -

Transportation and land use plans developed for Montgomery and Prince George's Counties have historically shown a major circumferential highway beyond the Capital Beltway, originally part of a proposed Outer Beltway. This facility has been reduced in scope, and renamed the Intercounty Connector (ICC). The current Master Plan alignment of the ICC extends from west of I-270 near Gaithersburg easterly to the Baltimore-Washington Parkway near Beltsville.

As of late 1981, the environmental studies for the Intercounty Connector/Rockville Facility (ICC/RF) were approximately 50% complete. (The Rockville Facility is part of the Intercounty Connector Study and follows the old Master Plan alignment for the proposed Rockville Freeway from west of I-270 near Rockville to the proposed Intercounty Connector.) Of the original 12 alternates presented at the five Interim Alternates Public Workshops in August, 1980, nine alternates have been dropped. The remaining three alternates have been incorporated into the seven alternates now being considered. The most significant point of these studies is that the alternates have been scaled down, with the maximum proposed improvement being a controlled major arterial. This alternate would include construction of I-370, connecting to a new four lane divided highway with a reduced median along the ICC Master Plan alignment. Also included would be compact interchanges at all major crossings with the possibility of initial at-grade

intersections at certain locations. No Rockville facility would be provided under this alternate. Additional Public Informational Meetings are scheduled for the fall of 1982, with circulation of the Draft Environmental Document anticipated for the winter of 1982 and the Location Public Hearing in the first quarter of 1983.

Traffic projections presented as a part of this study of I-495 for Alternatives A (the No-Build) and B (the Build) assume no Intercounty Connector by the design year 2010 (see Section IV-D). Because traffic analyses conducted for I-495, assuming construction of the ICC, indicate that projected volumes for the Build would be reduced by only 3% to 5%, all indications are that construction of the ICC would not relieve traffic congestion on I-495 through Rock Creek Park.

- I-270 Study -

I-270 extends as a 6 lane freeway from the Capital Beltway to I-70 in Frederick. In addition to providing the I-70 connection to Washington, D. C., I-270 is the backbone of the major commercial, institutional and residential development extending northwest from the Capital Beltway in Rockville and Gaithersburg (see Figure S-1).

Currently, the State Highway Administration is conducting a Project Planning Study of I-270 from the "Y split" in the south (south of Rockville) to Maryland Route 121 in the north (north of Gaithersburg). The purpose of the study is to develop and evaluate alternates for the reconstruction and widening (to 8 lanes) of I-270 along with improvement and upgrading of selected interchanges along this route. The improvements are expected to increase capacity, providing a more efficient highway facility to better serve the existing traffic and projected traffic anticipated by area population and commercial growth.

C. DESIGN DEFICIENCIES OF THE EXISTING FACILITY

Table II-1 provides an inventory of existing roadway design features along I-495 through Rock Creek Park, and compares them with desirable design standards. Detailed information listed in the Table identifies major roadway design deficiencies as follows:

- The existing six-lane roadway provides insufficient traffic carrying capacity as a connector between the six-lane Beltway and four-lane I-270 to the west, and the eight-lane Beltway to the east of this area.

- The horizontal alignment is less than desirable, as indicated by the curves listed. Horizontal curvature is a controlling parameter in the "design speed" of a highway. The eight-lane portions of the Beltway provide a 70 MPH design speed by controlling horizontal curvature to a maximum of three degrees. The six-degree curves in this portion of the Beltway (requiring a steeper than a desirable rate of superelevation, see note 2) results in a design speed of about 55 MPH. Since operating speeds on this portion of the Beltway are close to this design speed, the safety factor for driver error is significantly less in this area than on the remaining portions of I-495.

- As indicated in the Table, grades slightly in excess of desirable exist throughout this portion of the Beltway.

- Roadway Design Features, listed under "Left Shoulder", indicate that there is insufficient space to park disabled vehicles to the left of the roadway without affecting traffic in the adjacent high-speed lane. In addition to obstructions which can wreck an out-of-control vehicle in the median, there are generally no barriers to prevent out-of-control vehicles from entering the opposite-direction traffic lanes.

- Features listed under "Right Shoulders" indicate that barely adequate shoulders for parking disabled vehicles now exists to the right of each roadway. Recovery Areas adjacent to the roadway, sufficient in width to minimize damage to out-of-control vehicles, are not provided.

- Table II-1 highlights existing conditions at auxiliary lane connections to this roadway. Although length is an important factor in judging the adequacy of "acceleration", "deceleration" and "weaving" lanes, their acceptable function, safety and adequacy must be judged in combination with other factors, such as distance to adjacent entrances, exits, etc.

When considered in combination with the type of traffic and high volumes which this roadway must accommodate, the roadway Design Deficiencies outlined in Table II-1 summarize the general engineering concerns of choosing the no-build alternative for this project. The combination of these undesirable conditions on this major Interstate Facility certainly produces a more adverse total effect than these same design deficiencies might produce in less critical locations. Of major concern is that these less than desirable conditions are concentrated here in a 3.5 mile long section of Interstate Route 495, with miles of highway connecting to both ends of this section which are designed to much higher standards. This lack of design consistency must be recognized as a major factor in the high-accident rates and poor-operating conditions experienced on this section of the Capital Beltway.

SECTION		ROADWAY DESIGN FEATURES											
		CURVES		GRADES	LEFT SHOULDERS			RIGHT SHOULDERS			INTERCHANGE RAMP CONNECTIONS			
FROM	TO	NUMBER OF CURVES BY DEGREE (OF CURVE) BY DIRECTION E.B.	NUMBER OF CURVES BY DEGREE (OF CURVE) BY DIRECTION W.B.	NUMBER OF GRADES & %	TOTAL GRADED WIDTH (USABLE SHOULDER)	SHOULDER PAVEMENT WIDTH	NUMBER & DISTANCE TO MAJOR STRUCTURES 2/	TOTAL GRADED WIDTH (RECOVERY AREA)	SHOULDER PAVEMENT WIDTH	NUMBER & DISTANCE TO MAJOR STRUCTURES 2/	LEFT SIDE RAMP ENTRANCES NUMBER & LENGTH OF ACCELERATION LANE	RIGHT SIDE RAMP ENTRANCES NUMBER & LENGTH OF ACCELERATION LANE	LEFT SIDE RAMP EXITS NUMBER & LENGTH OF DECELERATION LANE	WEAVING SECTIONS NUMBER & LENGTH OF LANE
WEST OF POOK'S HILL STA. 260±	EAST OF CEDAR LANE STA. 330±	1 @ 2°-30' 1 - 4° 1 - 5°-15' 2 - 6°	1 - 1°-15' 1 - 4° 3 - 6°	1 - 2% 1 - 4.24% 1 - 0.48% 1 - 0.85% 1 - 1.7%	8'	4'	1 - 1' 3 - 3' 2 - 4' 1 - 5'	18'	10'	1 - 4' 1 @ 6' 2 - 7' 1 - 8' 2 - 13'	1 - 1300' 2 - FULL LANE	1 - 1300'	1 - 700' 1 - 900' 1 - FULL LANE	NONE
EAST OF CEDAR LANE STA. 330±	EAST OF KENSINGTON PKWY. STA. 405	1 - 5° 2 - 8°	1 - 4° 2 - 6°	1 - 1.8% 1 - 2.49% 1 - 0.85% 1 - 2.56% 1 - 3.5%	8'	4'	4 - 3'	18'	10'	2 - 3' 2 - 12'	NONE	1 - 1000' 2 - 1200'	1 - 600' 1 - 900'	1 - 750'
EAST OF KENSINGTON PKWY STA. 405±	LINDEN LANE STA 440±	1 - 3° 1 - 4° 1 - 5°-30'	1 - 3° 1 - 4° 1 - 5°-30'	1 - 0.86% 1 - 3.4% 1 - 3.5% 1 - 3.0%	8'	4'	2 - 3'	18'	10'	2 - 12'	NONE	NONE	NONE	NONE
3/ DESIRABLE STANDARDS		3° MAX.		3% MAX.	14' MIN	10' MIN.	14' MIN.	30' MIN.	12' MIN.	14' MIN.	NOT DESIRABLE	1300' MIN.	880' MIN.	VARIES

TABLE II-1

OTHER DESIGN FEATURES

1. The West-Bound Transition From 4-Lanes To 3-Lanes West Of Georgia Avenue Is An Area Of High Accidents With Serious Merging Problems During Periods Of Capacity Operation The Corresponding East-Bound Transition From 3 To 4 Lanes Is Also An Area Of High Accidents.
2. A Superelevation Rate (SE: Pavement Cross-Slope Or Banking On Curves) Of 10%. To Permit Higher Operating Speeds On Sharp Curves; Is Employed. A Maximum Of 6% Is Usually Recommended To Provide Better Vehicle Control During Roadway Icing Conditions.
3. A Difference In Cross Slope Between Roadway Pavement And Adjacent Shoulder Pavement Of 12% Is Used (In Conjunction With 10% S.E.) To Drain Shoulders And Minimize Icing During Snow Removal Conditions. A Maximum Difference Of 7% Is Usually Recommended For Safe And Comfortable Vehicle Operation.

NOTES

1/ See Figures III-2 thru III-4 For Plan Location.

2/ Horizontal Clearance From Edge Of Travelled Lane To Bridge Piers, Parapets, Retaining Walls, Etc

3/ American Association Of State Highway And Transportation Officials

D. EXISTING TRAFFIC PROBLEMS

The Capital Beltway is the single, most important highway in the Washington, D. C. area; in 1980 more than 10% of the total regional vehicle miles of travel within the Maryland portion of the Metropolitan Area occurred on the Capital Beltway. Because the Capital Beltway traverses and connects all geographic sectors of the Washington Metropolitan Area, bringing within easy access suburban communities which were formerly remote, and because it links many intercity highways and arterials, its influence on travel and land development extends over an extensive geographic area.[1] Traffic volumes along the Capital Beltway, between I-270 and Maryland Route 97 (Georgia Ave.), have increased continually since the early 1970's. The recent increases in traffic volumes are primarily due to development along the I-270/Maryland Route 355 corridor.

Average daily traffic (ADT) volumes for 1980, as well as PM peak design hourly volumes and Levels of Service, along the Capital Beltway (I-495), I-270, Wisconsin Avenue and Connecticut Avenue within the study area are shown on Figure II-1. A comparison of these ADT volumes with other ADT's on the Maryland section of the Capital Beltway indicates that the Rock Creek Park section is among those containing the highest traffic volumes. It should be noted, however, that of the sections which have traffic volumes in excess of 100,000 ADT, the Rock Creek Park section is the only portion of the Capital Beltway that is not an eight-lane roadway. Since the capacity of this section of the Beltway is significantly lower than adjacent eight-lane sections, long periods of congestion and poor levels of service occur.

Figure II-1 also shows that the Rock Creek Park section of the Beltway operates at Levels of Service E to F during the PM peak period[2], indicating "capacity" to "forced-flow" conditions. These congested operating conditions are also compounded by less than desirable design features, including sharp curves and short acceleration/deceleration lanes.

Locations and general causes of poor operating conditions are identified below:

1. **Pook's Hill Interchange** -

   - EB I-495 through the interchange along with the I-270 and Maryland 355 on-ramps, due to moderate-heavy traffic volumes, left-hand merging and short acceleration/deceleration lanes.

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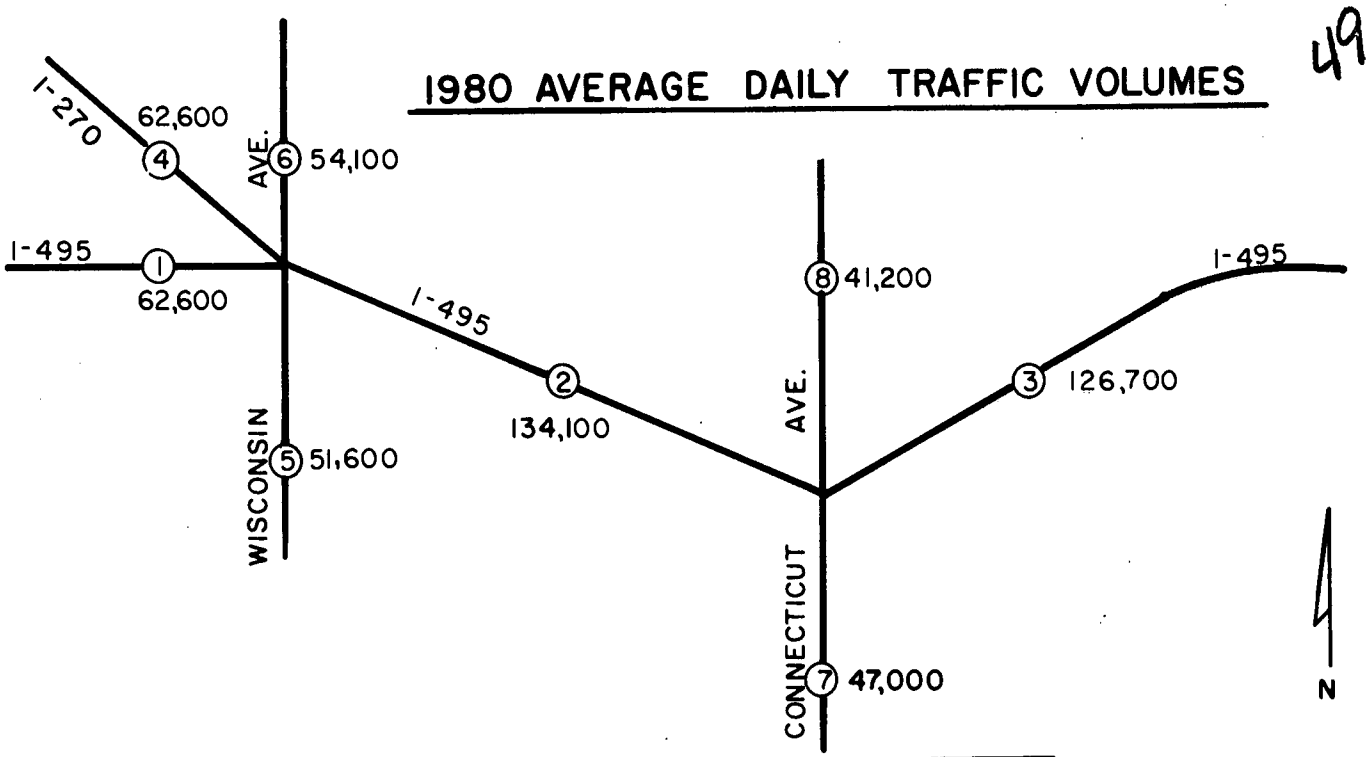
1 Maryland Capital Beltway Impact Study -Final Report, June, 1968.
2 The highest traffic volumes occur between the hours of 5 and 7 PM.

1980 AVERAGE DAILY TRAFFIC VOLUMES



LOCATION	1980 TRAFFIC DATA			
	PM PEAK TRAFFIC VOLUMES (Veh/hr)		PM PEAK LEVELS OF SERVICE	
	EBR or NBR	WBR or SBR	EBR or NBR	WBR or SBR
1	3450	2790	D	D
2	6160	5850	F	E
3	6050	5360	F	E
4	2900	1870	D	B
5	2320	1700	D	D
6	2240	2300	D	D
7	2580	1430	D	C
8	2070	1300	D	C

PM PEAK PERIOD IS GENERALLY WORSE THAN PEAK AM PERIOD

CAPITAL BELTWAY(I-495) STUDY
FROM WEST OF I-270
TO
WEST OF MD. 97
STATE PROJECT NO. M-512-185-372

SUMMARY OF 1980 TRAFFIC DATA

FIGURE II-1

- WB I-495 through the interchange along with the I-270 and Maryland 355 off-ramps, due to moderate-heavy traffic volumes, congested diverging movements, and short acceleration/deceleration lanes.

- EB I-495, just east of the Maryland 355 on-ramp, due to moderate-heavy traffic volumes, heavy merging volumes and through lane drop.

2. **Capital Beltway Mainline - Pook's Hill Interchange to Connecticut Avenue Interchange** -

   - EB and WB I-495, due to moderate-heavy traffic volumes and curving horizontal alignment.

3. **Connecticut Avenue Interchange** -

   - EB and WB I-495 through the interchange, due to moderate-heavy traffic volumes, merging and diverging, short acceleration/deceleration lanes (with the exception of the WB Beltway to SB Connecticut Avenue deceleration lanes).

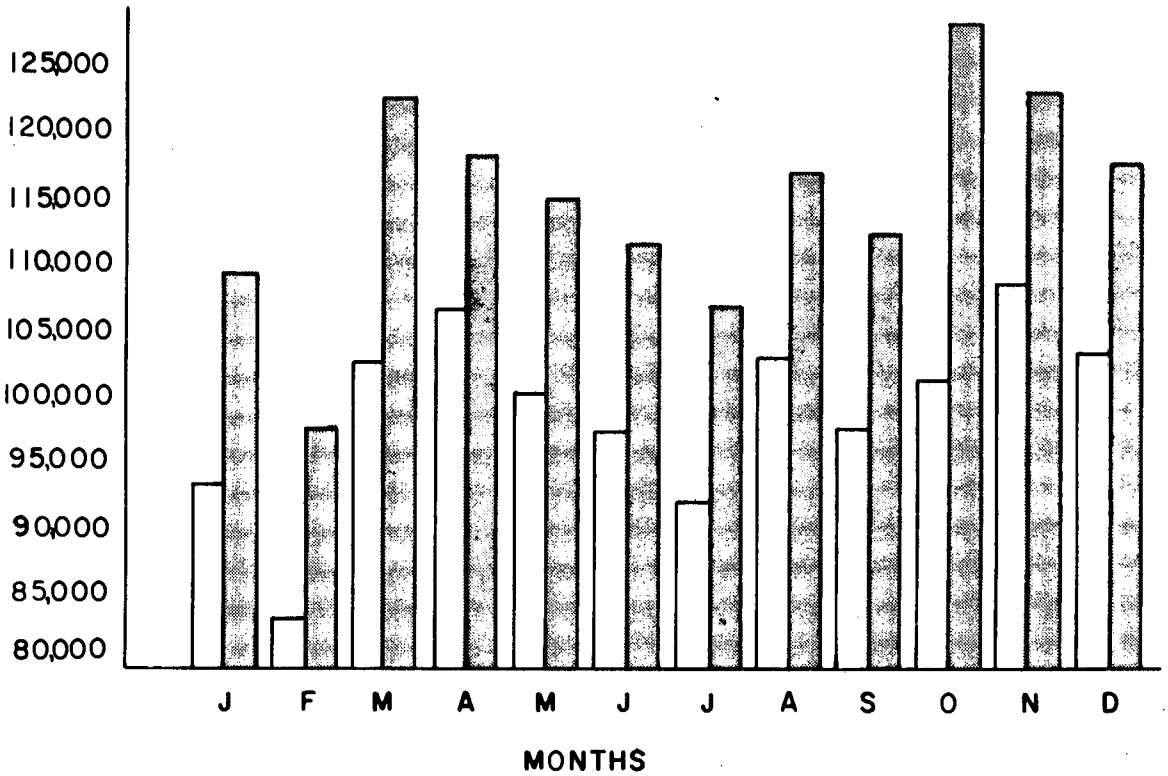
4. **Capital Beltway Mainline - Connecticut Avenue Interchange to Linden Lane** -

   - EB I-495, due to moderate-heavy traffic volumes and poor vertical alignment.

   - WB I-495, due to moderate-heavy traffic volumes, poor vertical alignment and through-lane drop.

The State Highway Administration operates two permanent traffic recorder stations on the Capital Beltway adjacent to the study area (Station 40 located just south of River Road, and Station 41 located between University Boulevard and New Hampshire Avenue). Using data from these stations, one is able to ascertain some indication of the travel characteristics of the Capital Beltway between I-270 and Georgia Avenue. The average daily traffic volumes (ADT's) by month for the year 1979 at each of two permanent recorder stations are compared in the following Figure:

MONTHLY COMPARISON OF AVERAGE DAILY TRAFFIC VOLUMES
DURING 1979



This Figure indicates that a significant reduction in traffic volumes occurs between these two traffic recorder stations. Traffic volumes recorded at Station 41, located east of the project area, average 15.7% greater than traffic volumes recorded at Station 40, located west of the project area. This is primarily due to commuter traffic using the Beltway to reach areas of extensive commercial and residential development north of the Capital Beltway along the I-270/Maryland 355 corridor. This Figure also shows that the highest volumes of traffic using this section of the Capital Beltway occurred during the spring and fall months.

Traffic conditions on the Capital Beltway also affect operating conditions on the surrounding local and arterial street system. Backups and delays on I-270, Maryland Route 355, Connecticut Avenue and Kensington Parkway near the Capital Beltway ramps are common. To avoid this congestion, many motorists bypass the Rock Creek Park section of the Beltway by diverting to local east-west streets, including Viers Mill Road, Randolph Road, University Boulevard, Strathmore Avenue, Beach Drive, Jones Bridge Road and East-West Highway, with resulting adverse traffic congestion, air and noise effects to adjacent communities.

The Capital Beltway, originally designed to provide a Washington, D. C. bypass, presently handles substantial volumes of through traffic. Subsequent development in areas adjacent to the Beltway has also generated numerous local trips, which require frequent maneuvering at freeway interchanges. These include work trips from Silver Spring, Chevy Chase and Bethesda to employment centers north of the Beltway. In addition, local trips are made on the Rock Creek Park section of the Capital Beltway from Gaithersburg, Rockville, Wheaton and Kensington to employment centers south of the Beltway, including Washington, D. C. This combination of through and local trips, coupled with the high volumes of trucks (8% of the ADT) and the less than desirable design features previously mentioned, have created intensely congested operating conditions during peak-travel periods.

As growth in this region progresses, traffic volumes using area roadways will increase. Traffic conditions for this portion of the Capital Beltway, projected for 1990 and 2010, are described in Section IV-D of this report. These projections emphasize the need to increase the capacity of this section of the Capital Beltway.

E. EXISTING SAFETY PROBLEMS

Since construction of the Capital Beltway in 1964, the Rock Creek Park section has been considered a hazardous roadway. As a result of constraints imposed by the 1963 Inter-Agency Agreement, this section of the Beltway includes sharp horizontal curves with short curve transitions. These design criteria are inconsistent with those of the remaining portions of the Capital Beltway and do not meet current Interstate Standards. Other existing design deficiencies include short acceleration and deceleration lanes, lane drops, inadequate vehicle recovery areas, and no median barrier (see Table II-1). The high accident rate experienced on this section of the Beltway can be, in part, attributed to these existing design deficiencies. Other accident factors include driver, vehicle, and natural element factors. Because most accidents are caused by some combination of the above accident factors, a simple clear solution to the accident problem is nearly impossible.

An analysis of traffic accidents has been performed for this section of the Capital Beltway between I-270 and Maryland Route 97 (Georgia Avenue), using data collected by the Montgomery County and Maryland State Police Departments for the years 1972 thru the first six months of 1980. During this eight and one-half year period, approximately 2040 accidents occurred, including eight fatal accidents involving ten deaths.[1] Table II-2 summarizes these accidents by year for this section of the Capital Beltway. Also shown on this Table are the number of resulting fatalities and personal injuries.

One parameter that is closely related to the number of accidents is the accident rate, which permits an evaluation of how "bad" an accident problem exists. This statistic is the number of accidents per 100 million vehicle miles traveled (100 MVM). In other words, the total number of accidents (fatal, injury and property damage) occurring in one year on one roadway segment divided by the product of the total yearly volume of traffic on that segment times the length of that segment (in miles). This resulting rate is unique to each roadway segment and accounts for traffic exposure.

Table II-2 indicates that the Rock Creek Park section of the Capital Beltway has experienced a significantly higher accident rate than the entire Maryland portion of the Beltway for all years analyzed. This Table also shows that accident rates in 1974, 1975 and 1976 are significantly lower than those of the other years studied. This is primarily due to the fuel shortage that occurred just prior to 1974. Due to this fuel shortage, there was a

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1 In mid-1979, Montgomery County adopted a policy of only reporting accidents involving personal injuiry or "serious" property damage. For this reason, the number of 1979 and 1980 reported property damage accidents was statistically increased.

decrease in total vehicle miles of travel, resulting in a significant decrease in total accidents. Since this period, however, the accident rates have increased nearly every year.

Accident types for this section of the Capital Beltway are summarized in the following table for the years 1976 thru the first six months of 1980:

ACCIDENT TYPES (1976-1980)

Accident Type	1976	1977	1978	1979	1980[1] (6-mons.)	1976 - 1979 Total	%
Rear end	88	125	143	131	(55)	487	47.0
Opposite Direction	1	0	0	2	(0)	3	.3
Hit Fixed Object	41	43	39	46	(48)	169	16.3
Sideswipe	43	47	39	63	(38)	192	18.6
Left Roadway	2	0	0	0	(0)	2	.2
Other	20	46	51	66	(10)	183	17.6
Total	195	261	272	308	(151)	1036	100.0

This table shows that the two most prominent accident types occurring along the Rock Creek Park section of the Beltway are rear-end accidents (47.0%) and sideswipe accidents (18.6%). These two accident types are mainly congested-related and can be attributed to the large volumes of traffic that utilize this section of the Beltway during AM and PM peak hours (7-10 AM and 4-6PM). Hit fixed object and opposite direction accidents are more likely to occur during off-peak hours when higher travel speeds are attainable.

1 This table will be revised when complete 1980 data is available.

ANALYSIS OF TRAFFIC ACCIDENTS
ALONG THE CAPITAL BELTWAY (I-495) BETWEEN
I-270 AND MD. ROUTE 97
1972 THRU 1980

YEAR	FATAL ACCIDENTS	FATALITIES	PERSONAL INJURY ACCIDENTS	PERSONS INJURED	PROPERTY DAMAGE ONLY ACCIDENTS	TOTAL ACCIDENTS	(1) ACCIDENT RATE (I-270 to MD 97)	(1) MD. PORTION BELTWAY ACC. RATE
1972	1	1	72	103	175	248	174.17	130.61
1973	1	1	76	121	187	264	180.25	138.70
1974	1	1	53	72	114	168	119.56	96.95
1975	0	0	53	68	123	176	120.51	85.09
1976	0	0	58	87	137	195	127.58	90.08
1977	1	1	78	117	182	261	168.42	123.46
1978	1	3	78	116	193	272	172.37	131.07
1979	2	2	83	134	225	308	194.49	109.58
1980 (6 MONTHS)	1	1	42	70	108	151	181.55	NOT AVAILABLE
TOTAL	8	10	593	888	1444	2043	164.99	—

1) ANNUAL AVERAGE ACCIDENT RATE = NUMBER OF ACCIDENTS PER 100 MILLION VEHICLE MILES TRAVELED

TABLE II-2

There were eight fatal accidents between 1972 and and the first six months of 1980, resulting in ten deaths. These eight fatal accidents are summarized in Table II-3. Included in this Table, as documented by the investigating officer at the time of the accident, is the location of each accident, the accident type, weather and illumination condition, roadway surface condition and accident description. The majority of these fatal accidents involved head-on collisions in which one vehicle left the roadway, traveled across the median and struck a vehicle or vehicles traveling in the opposite direction. Why these vehicles initially left the roadway has not been determined, but the undesirable geometric alignment of this section of the Capital Beltway is a major contributing factor. These undesirable roadway geometrics may also have contributed to the accidents that involved collisions with fixed objects, since drivers can lose control of their vehicles along this section of the Capital Beltway because they do not anticipate the sudden change in alignment and design speed.

None of the apparent causes of these eight fatal accidents, according to the Motor Vehicles Administration's accident reports, were attributed to the weather condition, illumination condition or the roadway surface condition. In each case, except for the accident that involved a pedestrian, the driver of the vehicle initiating the accident was killed.[1]

Future increases in accident rates are expected to be primarily congestion-related, with a high incidence of rear-end and sideswipe accidents. Accident severity is expected to be greater during off-peak periods and less during peak periods. Because the margin of safety along the Rock Creek portion of the Capital Beltway is less than desirable, this portion of the Beltway will continue to experience accident statistics in excess of the adjacent "normal" portions of the Beltway. It is imperative, therefore, that measures be taken which will reduce the severity and, where possible, the frequency of traffic accidents.

1 On August 5, 1978, two additional people, other than the driver of the initial vehicle, were killed. They were both located in the back seat of the second vehicle involved.

SUMMARY OF FATAL ACCIDENTS
ALONG THE CAPITAL BELTWAY (I-495) BETWEEN
I-270 AND MD. ROUTE 97
1972 THRU 1980

DATE & TIME	DIRECTION	LOCATION	NUMBER OF FATALITIES	ACCIDENT TYPE	WEATHER CONDITION	ILLUMINATION CONDITION	ROADWAY SURFACE	ACCIDENT DESCRIPTION 1)
7/19/72 12:45 PM	WB	200' FROM WISCONSIN AVE.	1	PEDESTRIAN	CLEAR	DAYLIGHT	DRY	PEDESTRIAN JUMPED FROM GUARD RAIL INTO PATH OF VEHICLE (POSSIBLE SUICIDE)
1/11/73 6:24 AM	EB	300' FROM RAMP ONTO CONNECTICUT AVE.	1	HIT FIXED OBJECT	CLEAR	DARKNESS 2)	DRY	DRIVER LOST CONTROL OF VEHICLE AND STRUCK GUARD RAIL, THEN HILLSIDE
5/23/74 7:00 AM	EB	1/2 MILE FROM CONNECTICUT AVE.	1	HIT FIXED OBJECT	RAINING	DAYLIGHT	WET	VEHICLE RAN OFF RIGHT SIDE OF ROADWAY AND STRUCK A TREE
3/31/77 3:00 PM	EB/WB	2/10 MILE FROM CEDAR LANE	1	HEAD ON	CLEAR	DAYLIGHT	DRY	EB VEHICLE WAS FORCED ACROSS MEDIAN AND STRUCK VEHICLE GOING WB HEAD ON
8/5/78 11:55 PM	EB/WB	1/2 MILE FROM CONNECTICUT AVE.	3	HEAD ON	CLEAR	DARKNESS 2)	DRY	EB VEHICLE TRAVELED ACROSS MEDIAN AND STRUCK VEHICLE GOING WB HEAD ON
8/31/79 1:11 PM	WB/EB	150' FROM CONNECTICUT AVE.	1	HEAD ON	CLEAR	DARKNESS 2)	DRY	WB VEHICLE CROSSED MEDIAN AT A HIGH RATE OF SPEED AND STRUCK VEHICLE GOING EB
11/25/79 2:20 PM	WB/EB	2/10 MILE FROM CEDAR LANE	1	SIDESWIPE HEAD ON	CLOUDY	DARKNESS 2)	DRY	VEHICLE 1 STRUCK VEHICLE 2 WHILE PASSING, VEHICLE 2 CROSSED MEDIAN AND STRUCK EB VEHICLE
1/4/80 3:00 AM	EB	KENSINGTON PARKWAY OVERPASS	1	HIT FIXED OBJECT	CLOUDY	DARKNESS 2)	DRY	VEHICLE LEFT ROADWAY AND STRUCK BRIDGE WALL THEN FLIPPED OVER

1) APPARENT CAUSE - AS WAS DOCUMENTED BY THE INVESTIGATING OFFICER AT THE TIME OF THE ACCIDENT

2) STREET LIGHTS ON

WB - WEST BOUND
EB - EAST BOUND

TABLE II-3

III
ALTERNATIVES CONSIDERED

III. ALTERNATIVES CONSIDERED:

A. PROJECT HISTORY & SELECTION OF ALTERNATIVES

1. Introduction

As evidenced by the length of the following Project History section, planning for safety and capacity improvements to I-495 through Rock Creek Regional Park has been an almost continuous activity since the mid-1960's. This current Environmental Assessment has evolved from previous environmental and engineering studies initiated in 1973. A brief summary of how this Assessment developed from the previous work follows:

- Engineering studies undertaken in 1974 resulted in 15 preliminary alternatives, the majority of which were rejected by citizens and elected officials during the February 19, 1975 Project Initiation Meeting.

- Engineering and environmental studies were undertaken in 1975 on a reduced set of the preliminary alternatives (Alternatives A, A-1, B, C and D). Although environmental studies (including air quality and noise analyses) indicated no major problems, public and agency responses at the March 5, 1976 Alternates Public Meeting indicated no support for any improvement requiring new right-of-way. All work on the Draft Environmental Impact Statement was halted. In response to public comments during this meeting several special construction projects were completed along this portion of the Capital Beltway to imporve traffic operation and safety.

- A Negative Declaration was completed in 1978 for the No-Build and Build (widen to eight lanes in existing location) Alternatives. Because of air quality violations predicted for the Build Alternative, using State-of-the-Art air quality computer models, this document was not published.

- Coordination was undertaken in 1978 and 1979 with US Environmental Protection Agency to develop engineering alternatives which would result in alignments with better air quality. Termed "Mitigation Alternatives", these alignments were not presented to the public because of their severe residential/park impacts and high construction costs.

- Advances in air quality measurement and prediction in late 1980 resulted in projected acceptable air quality levels for the No-Build and Build (widen to eight lanes in existing location) alternatives. As a result, detailed work was resumed in 1981, producing this Environmental Assessment, which compares the No-Build (six lanes) and Build (eight lanes) Alternatives.

2. Construction of Interstate Route 495

Many of the safety and capacity deficiencies of Interstate Route 495, between Interstate Route 270 and Maryland Route 97, stem from constraints imposed during its planning and construction. By 1963, the design of the entire Maryland portion of the Capital Beltway had been approved, with the exception of this section through Rock Creek Regional Park. The best engineering alignment was a straight east-west route, located north of Rock Creek Park. This alignment was rejected, however, due to its serious impacts on the Kensington Community.

A parkway located between Wisconsin and Connecticut Avenues along the southern boundary of Rock Creek Park provided a solution to this location problem. Known as the Inter-County Belt Parkway, this dual highway had been included in the Park's 1954 General Development Plan. Through extensive coordination, the Maryland State Roads Commission (presently the State Highway Administration), Maryland-National Capital Park and Planning Commission, and the National Capital Planning Commission developed a Capital Beltway alignment generally in the Parkway's right-of-way. While this alignment contained less than desirable design features, it was accepted by all agencies as a compromise which permitted Beltway construction with minimum damage to Rock Creek Park. An Inter-Agency Agreement was executed in 1963 by the State Roads Commission, Maryland-National Capital Park & Planning Commission and the National Capital Planning Commission, detailing the design and right-of-way provisions for this section of the Capital Beltway. This document has been a major influence on all subsequent planning for improvements to the roadway. The existing Capital Beltway was constructed along this approved alignment in 1963-1964.

3. 1968 Safety & Capacity Study

Since its construction, Interstate Route 495 within the project limits has experienced significantly higher accident rates than other similar highways in Maryland. In 1968, the State Highway Administration initiated a study to determine the causes of, and solutions to, these safety problems. This analysis indicated that many of the accidents resulted from skids on curves during

wet weather. Since major corrective action would require significant roadway reconstruction, damage to Rock Creek Park and renegotiation of the Inter-Agency Agreement, the State Highway Administration deleted all major construction options and resurfaced the Capital Beltway roadways in 1971 with skid-resistant pavement.

With increasing traffic volumes, which changed the nature of accidents occurring on this facility from wet-weather skids to congestion-related accidents, the improved roadway surface was much less effective in reducing accidents. Furthermore, the heavy traffic volumes were deteriorating the new pavement, reducing its effectiveness.

4. 1973 Safety & Capacity Study

As safety and capacity problems continued to mount, the State Highway Administration (SHA) initiated a second study on this portion of Interstate Route 495 in 1973. Central to the second study was a decision by the Maryland-National Capital Park & Planning Commission and National Capital Planning Commission to re-evaluate the Inter-Agency Agreement and revise it as they consider necessary after the completion of an Environmental Document/Section 4(f) Statement and a Public Hearing by SHA.

Fifteen preliminary improvement alternatives were developed for Interstate Route 495. These alternatives included, to varying degrees, measures to improve the safety and traffic operations of the Capital Beltway in order to permit their evaluation on cost, environmental and socio-economic bases, as well as the benefits provided. The fifteen preliminary alternatives may be aggregated into five general alternatives described below:

Preliminary Alternative A, A-1

- o No-Build
- o Possible incorporation of traffic engineering measures

Preliminary Alternative B (Schemes 1, 2, 3)

- o Construct two additional traffic lanes
- o Redesign Connecticut Avenue Interchange
- o Minor improvements to Pook's Hill Interchange
- o Construct outside 30' obstacle-free vehicle recovery areas

Preliminary Alternative C (Schemes 1, 2, 3)

- Improve horizontal alignment
- Redesign Connecticut Avenue and Pook's Hill Interchange
- Construct outside 30' obstacle-free vehicle recovery areas

Preliminary Alternative D (Schemes 1 thru 6)

- Construct two additional traffic lanes
- Improve horizontal alignment
- Redesign Connecticut Avenue and Pook's Hill Interchange
- Construct outside 30' obstacle-free vehicle recovery areas

Preliminary Alternative E

- Construct eight-lane Beltway north of Rock Creek Park
  (This alternative was considered to support the determination of no "prudent and feasible" alternative to the use of parkland, required for the Section 4(f) Statement.)

On February 19, 1975, a Project Initiation Meeting was held to inform the public of these alternatives and define their expected impacts. This meeting, held at the G. A. Woodward High School, was attended by approximately 1,100 persons. The major opinion expressed at this meeting was overwhelming opposition to Preliminary Alternative E, because of its extensive impact to the Kensington Community. In response, the State Highway Administrator stated, in a letter dated February 19, 1975:

> "Because of the obvious social, economic and environmental impacts of highway construction along any alignment represented by Alternative E would impose upon the Kensington community, I have directed that this alternate be removed from further consideration in the Safety and Capacity Study of Interstate Route 495 as unreasonable".

Subsequent meetings were held with the North Chevy Chase Community Association (April 28, 1975), the Locust Hill Community Association (June 8, 1975) and the Parkwood Residents' Association (June 26, 1975). As a result of the preliminary engineering and environmental analyses and public comments, the fifteen preliminary alternatives were narrowed down to four Location/Design Alternatives to be evaluated in detail and presented in a draft Environmental Impact/Section 4(f) Statement. The four Location/Design Alternatives selected were:

Alternative A, A-1 - Preliminary Alternative A, A-1

Alternative B - Preliminary Alternative B-3

Alternative C - Preliminary Alternative C-3

Alternative D - Preliminary Alternative D-6

These alternatives subsequently underwent detailed study of their engineering, traffic, safety, environmental and socio-economic feasibility, and preparation of the Draft Environmental Impact/Section 4(f) Statement was begun. The following reports were prepared during this phase of the study, which are available for inspection at the State Highway Administration, 707 North Calvert Street, Baltimore, Maryland:

Interstate 495 - An Environmental Assessment by Wallace, McHarg, Roberts & Todd, Philadelphia, Pa.

Noise Pollution Impact Assessment of the Capital Beltway in Rock Creek Park, Maryland by Environmental Research & Technology, Inc., Lexington, Massachusetts (1976)

Air Quality Impact Assessment of the Capital Beltway in Rock Creek Park, Maryland, by Environmental Research & Technology, Inc., Lexington, Massachusetts (1976)

On March 5, 1976, an Alternatives Public Meeting was held at the Albert Einstein High School, attended by approximately 550 persons. Table III-1 summarizes these alternatives as they appeared in the Alternates Public Meeting Brochure. The location/design alternatives were presented with their engineering and environmental feasibility, and public comments were requested.

A major public comment at this meeting was that Alternative A-1 (no-build with traffic engineering measures) should be implemented immediately. All of the "build" alternatives (Alternative B, C and D) were opposed, as the public did not believe that their traffic and safety benefits outweighed their community and park impact disadvantages. Specific points of opposition included:

- Residental relocations
- Insufficient relief of traffic congestion on local and arterial streets
- Expected noise levels
- Construction impacts

After the meeting, it became evident that major improvements to this section of the Capital Beltway would not receive public or agency support. In response, the State Highway Administration, Maryland National Capital Park & Planning Commission and National Capital Planning Commission conducted a legal review of the 1963 Inter-Agency Agreement to determine what improvements (if any) could be made to this section of the Capital Beltway without its renegotiation. Their findings are summarized in the following excerpt from a letter written by the Assistant Attorney General for the Maryland Department of Transportation on August 10, 1976 (see Section V for a copy of this letter):

> "We have reviewed the September 12, 1963 Agreement and have consulted with legal counsel for both M-NCP&PC and NCPC, Messrs. Sanford E. Woll and Daniel H. Shear, respectively. It is our opinion that construction of additional lanes would be permissible and not contrary to the September 12, 1963 agreement, so long as the following restrictions are adhered to:
>
> "1) The existing vertical and horizontal alignments of the right-of-way would not be disturbed, but the new lanes (one additional lane in each direction) would be located using the same alignment and within the existing median strip.
>
> "2) Separation of the highway lanes in opposite directions would be maintained through construction of a safety median barrier conforming to latest State Highway Administration requirements.

COMPARISON OF ALTERNATIVES

IMPROVEMENTS	ALTERNATIVE	TRAFFIC: 1975 Average Daily Traffic / 1975 Level of Service (2)	TRAFFIC: 1995 Average Daily Traffic / 1995 Level of Service	ACCIDENTS: 1973 Accident Rate (3) / 1973 Accident Cost (4)	ACCIDENTS: 1980-1995 Average Accident Rate / 1980-1995 Average Accident Cost (Projected)	DESIGN: Conforms to Current Interstate Geometric Design Standards	NOISE: Meets Federal Noise Regulations - 1975 / Meets Federal Noise Regulations - 1995	AIR: Air Quality - (5) 1975 - 1-Hr. CO Level / 1980 - 1-Hr. CO Level / 1995 - 1-Hr. CO Level / Federal Standard	AIR: Air Quality - (6) 1975 - 8-Hr. CO Level / 1980 - 8-Hr. CO Level / 1995 - 8-Hr. CO Level / Federal Standard	PARK & COMMUNITY IMPACTS: Right-of-way Required from Park / Right-of-way Returned to Park - (Acres)	PARK & COMMUNITY IMPACTS: Rock Creek Relocated (Linear Feet) / Pond Removed	PARK & COMMUNITY IMPACTS: Vegetation Disturbed Or Removed (Acres)	PARK & COMMUNITY IMPACTS: Residences Displaced / Businesses Displaced	COSTS: Est. Right of Way Cost / Est. Construction Cost / Est. Total Cost
No Build: Continue to use existing 6-lane roadway and interchanges	A	96,500 / E	126,900 / F	2.029 / $0.85	3,532 / $1.04	NO	NO / NO	25.2 / 14.6 / 6.9 / 40.0	18.8 / 11.0 / 5.3 / 10.0	NONE / NONE	NONE / NO	NONE	NONE / NONE	NONE / NONE / NONE
Traffic Engineering Measures Only: (1) Improve Signing and Marking	A-1	-- / -	126,900 / F	- / -	3,455 / $1.02	NO	— / NO	— / 14.6 / 6.9 / 40.0	— / 11.0 / 5.3 / 10.0	NONE / NONE	NONE / NO	NONE	NONE / NONE	NONE / $1,000,000 / $1,000,000
8-Lane Highway with Existing Alignment: (1) Improve Signing and Marking (2) Redesign Connecticut Ave. Interchange - Eliminate Kensington Parkway Ramps (3) Minimal Improvements to Pooks Hill Interchange (4) Widen Roadway from 6 to 8 Lanes	B	- / -	132,000 / E	- / -	2,951 / $0.87	NO	— / NO	— / 18.4 / 8.1 / 40.0	— / 12.8 / 6.0 / 10.0	7.0 / 10.1	1,200 / NO	28.5	11 / 1	— / $22,235,500 / —
6-Lane Highway with Improved Alignment: (1) Improve Signing and Marking (2) Redesign Connecticut Avenue Interchange - Eliminate Kensington Parkway Ramps (3) Redesign Pooks Hill Interchange (4) Improve Alignment to Reduce Curvature	C	- / -	132,000 / F	- / -	2,995 / $0.80	YES	— / NO	— / 20.3 / 9.5 / 40.0	— / 13.5 / 6.3 / 10.0	44.7 / 44.8	4,000 / YES	56.1	11 / 1	— / $71,828,600 / —
8-Lane Highway with Improved Alignment: (1) Improve Signing and Marking (2) Redesign Connecticut Ave. Interchange - Eliminate Kensington Parkway Ramps (3) Redesign Pooks Hill Interchange (4) Widen Roadway from 6 to 8 Lanes (5) Improve Alignment to Reduce Curvature	D	- / -	140,000 / 0	- / -	2,845 / $0.78	YES	— / NO	— / 19.4 / 8.4 / 40.0	— / 13.4 / 6.1 / 10.0	37.3 / 31.8	3,460 / YES	56.5	29 / 1	— / $69,826,600 / —

- Not Applicable

Notes:

(1) Average Daily Traffic is calculated for the Beltway, between Connecticut and Wisconsin Avenues.

(2) The Level of Service is an indicetor of operating conditions on a roadway. The Levels vary from A to F, with D providing the minimum satisfactory service. Level of Service E indicates congestion and slow speeds during peak travel periods, and Level of Service F denotes traffic jams.

(3) Accident Rate is the number of accidents occurring on the Beltway segment per million vehicle miles traveled.

(4) Accident Cost is the total cost of accidents occurring on the Beltway segment per vehicle mile traveled.

(5) 1-hr. CO Level denotes the maximum carbon monoxide concentration in the peak travel hour of the day (4:00 P.M. to 5:00 P.M.), recorded in milligrams per cubic meter. Calculated at the edge of roadway, east of Cedar Lane.

(8) 8-hr. CO Level denotes the average carbon monoxide concentration between 10:00 A.M. and 6:00 P.M., recorded in milligrams per cubic meter, calculated at the edge of roadway, east of Cedar Lane.

"DRAFT EIS"
ALTERNATIVES
1976
FROM ALTERNATES
MEETING BROCHURE
MARCH 15, 1976
TABLE III-1

"3) All drainage alterations, modifications or improvements would conform to M-NCP&PC requirements.

"4) Any future State Highway Administration work, either in connection with existing structures or in connection with structures changed or added in the process of building the two new lanes, would be confined to the area included in the easements granted to the State Roads Commission by the September 12, 1963 Agreement."

The State Highway Administration worked within these guidelines to develop a Capital Beltway improvement alternative which would provide additional safety and capacity while not causing significant adverse community or park impacts, nor requiring renegotiation of the Inter-Agency Agreement. The resulting alternative (B), described in Section III-B of this Document, generally contains the following improvements:

- Construction of two additional traffic lanes.

- Redesigned median.

- Construction of outside obstacle-free vehicle recovery areas.

- Minor improvements to Connecticut Avenue and Pook's Hill Interchanges.

Because of this alternative's basic similarity to the Location/Design Alternative B (contains all of its features except major improvements to the Connecticut Avenue Interchange), the Alternative B designation was retained. Because all highway construction for this reduced alternative would be accomplished entirely within existing SHA rights-of-way, work on the then-in-progress Draft Environmental Impact Statement was halted, and preparation of a Negative Declaration Document was begun.

5. Special Construction Projects[1]

In response to the then well-documented need for immediate traffic and safety improvements, and with the support of public comments as expressed at the March, 1976 Alternate Meeting, the State Highway Administration undertook the design of special construction projects for this portion of Rock Creek Park. Because these projects had no adverse impacts (termed a "non-major" project), they could be implemented without detailed environmental studies. The following list summarizes the special construction projects which have implemented along the Rock Creek portion of the Capital Beltway:

- To correct the deteriorated roadway pavement surface (resurfaced in 1971), this entire portion of the Capital Beltway was resurfaced in 1977. In addition, the pavement markings were reconfigured to shift the eastbound lane drops at the Pook's Hill Interchange from the left side of the roadway to the right. This repaving and restripping resulted in improved traffic operations and safety.

- To reduce the severity of accidents resulting when out-of-control vehicles enter the median, the raised drainage inlets were replaced in 1977 with flush mounted grates.

- To reduce through traffic volumes on the portion of Kensington Parkway in North Chevy Chase, the loop ramp from westbound I-495 to southbound Connecticut Avenue (via Kensington Parkway) was replaced in 1981 by a direct ramp connection to Connecticut Avenue.

- To improve roadway signing, the diagrammatic overhead signs were reconditioned in 1981.

1 These projects are in addition to normal highway maintenance activities.

6. Negative Declaration (1977, 1978)

The Negative Declaration (unpublished) compared two alternative courses of action:

Alternative A - (6 lanes)

A "No-Build" alternative which envisioned continued use of the existing facility with only normal maintenance of roadway pavement, bridge structure, guard rails, etc. and nominal improvements to existing roadway signing, marking and lighting.

Alternative B - (8 lanes)

A "Build" alternative which envisioned upgrading the existing six-lane roadway to an eight-lane roadway and the incorporation of other safety and capacity improvements which are possible within the existing highway rights-of-way.

The two major environmental concerns which remained with the choice of the modified Alternative B for presentation in a Negative Declaration Statement were air and noise impacts. Results of the detailed noise analysis indicated that although residential and park area noise levels would still increase as a result of greater traffic volumes, sufficient mitigation could be achieved with the installation of wall-type noise barriers. These noise barriers would provide a significant improvement in the noise environment with Alternative B over the No-Build. Because the entire roadway network is nearly saturated and any improvement in the Beltway will divert traffic from the exiting local street network to the Beltway, the air quality analysis indicated a slight worsening for the Build Alternative.

As a result, a coordination meeting was held with the Environmental Protection Agency and representatives of Federal Highway Administration, Maryland Department of Transportation and State Highway Administration on October 10, 1978 to discuss air quality. During this meeting, the EPA representative stated that the Environmental Protection Agency could not approve this project as long as the Federal Air Quality Standards were exceeded. Although a memorandum of understanding could be developed, such a memorandum depended on State Highway Administration's agreement to satisfactorily mitigate the air quality impacts in this project area to an acceptable level.

7. Air Quality Mitigation Alternatives (1978, 1979)

The results of the detailed air quality analysis performed for the Negative Declaration alternatives indicated a slight worsening of air quality for the Build. As a result of the October, 1978 coordination meeting with representatives of Environmental Protection Agency, conceptual alternatives were developed to mitigate the air quality impacts of the project. These mitigation alternatives included 70 MPH design speed alignments and Transportation Systems Management (TSM) concepts.

- 70 MPH Design Speed Alignments -

Using elements of Draft EIS Alternatives C and D (modified to reduce their negative overall environmental impacts, while retaining their desirable higher peak-period speeds) two concepts were developed for the 70 MPH alignment. The eight-lane Tunnel-Viaduct concept began just east of the Pook's Hill Interchange with a tunnel in new location north of the Beltway and south of Beach Drive, under Rock Creek Park. The tunnel, 3,300' in length, would be constructed using "cut and cover" techniques. Retaining walls at both portals would be necessary to hold back 100 year floodwaters. Ventilation requirements necessitated two buildings, located near these portals, also in the park. After passing under Cedar Lane, the roadway would emerge from the tunnel section onto a 650' long viaduct to connect with the Beltway just west of Connecticut Avenue. The existing six-lane Beltway would be widened in the median to eight lanes through the Connecticut Avenue/Kensington Parkway interchange. East of Kensington Parkway, the roadway would be on a viaduct in new location in the park, between the Beltway and Beach Drive. This viaduct, 3,250' in length, would end just west of Linden Lane. The abandoned portions of the Beltway could be rehabilitated and returned for use as parkland.

An eight-lane Viaduct-Viaduct concept was also developed identical to the Tunnel-Viaduct concept from west of Connecticut Avenue to Linden Lane, as described above. Between the Pook's Hill Interchange and Connecticut Avenue, a 4,150' long viaduct would replace the tunnel mentioned previously.

Transportation Systems Management (TSM) measures consisted of locating high-occupancy vehicle (HOV) lanes either in the median (a 3-2-3 lane configuration) or converting the left-hand lane to HOV use (a 3-1-1-3 lane configuration). The reversible median lane (3-2-3) appeared sufficiently warranted because of the directional distribution (which in 1975 approximated a 55-45 split), and the physical separation would facilitate easier enforcement. Access control at the termini; heavy weaving volumes between these termini and the Pook's Hill and Georgia Avenue Interchanges; denial of access at Connecticut Avenue/Kensington Parkway; and discontinuity with remaining portions of the Beltway, however, negated some of the expected benefits of higher travel times and induced carpool/vanpool formation. The 3-1-1-3 lane configuration was deleted because of the difficulty of enforcing the HOV lane designation and the increased accident frequency between the higher speed HOV lane and the adjacent Beltway lanes.

Other TSM measures investigated included two-lane elevated viaducts for HOV use, generally following the 70 MPH alignment. Both two-way and one-way (reversible) concepts were studied. These concepts proved unworkable because of the extensive structures required to support this elevated viaduct above the existing Beltway.

TSM measures not investigated included ramp metering and truck restrictions. Because the Capital Beltway is the only complete circumferential freeway for Washington, D. C., the necessary alternative routes do not exist. Implementation of these measures could be expected to produce delays and longer trip times, reducing their overall benefits.

- **60 MPH Design Speed Alignments** -

The 60 MPH design speed alignment developed for the Negative Declaration (Alternative B) was used to investigate TSM measures along the existing Beltway alignment. These TSM measures consisted of locating high-occupancy vehicle (HOV) lanes either in the median (a 3-2-3 lane configuration) or converting the left-hand lane to HOV use (a 3-1-1-3 lane configuration). The previous discussion of these TSM measures for the 70 MPH would also apply for the 60 MPH alignment. One additional disadvantage of the 3-2-3 configuration with a 60 MPH alignment was the need for adequate horizontal sight distance (for the 6° curves). This configuration doubled the median sight-distance requirements over the 3-1-1-3 configuration and required additional mainline Beltway construction north of the Beltway (in the park) to provide for these lanes.

Although preliminary air quality analyses for these alternatives indicated an improvement in air quality relative to the No-Build, and no air quality violations, progress was stopped on these alternatives because of their severe park and community impacts and high construction costs.

8. Environmental Assessment

Using all new or updated engineering and environmental data, this Environmental Assessment comparing the No-Build (6-lanes) and Build (8-lanes) Alternatives was prepared. The two alternatives under consideration are described in the following section.

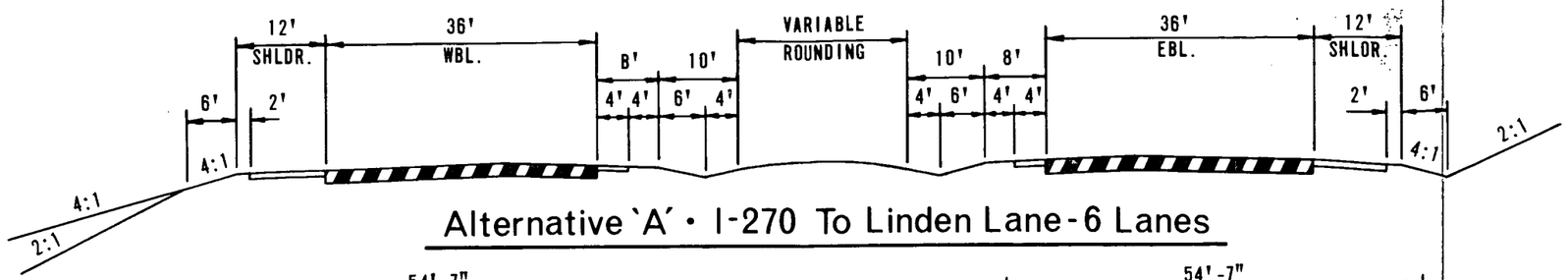
B. DESCRIPTION OF ALTERNATIVES UNDER CONSIDERATION

1. Alternative A: No-Build (6 lanes)

Plan, scale 1" = 2000'	Figure I-1
Typical Roadway and Bridge Structure Sections	Figure III-1
Comparison Table	Table S-1

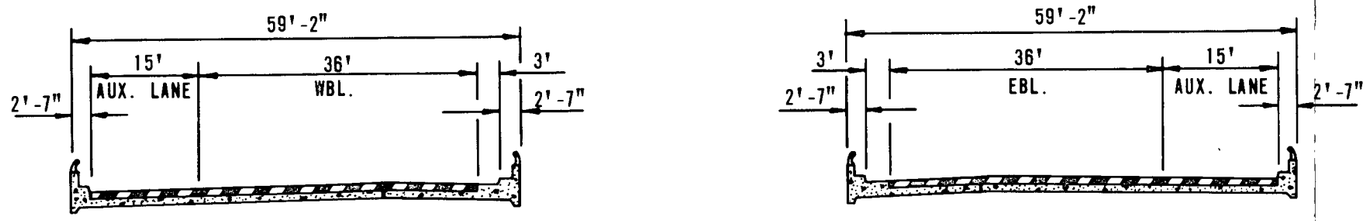
The No-Build Alternative would require use of the existing six-lane roadway for the indefinite future. Normal roadway maintenance operations would continue to keep pavements and bridge and other structures in their presently usable condition. The choice of this alternative would also allow the incorporation of improvements in roadway signing, marking and lighting and other traffic control techniques.

All existing roadway design deficiencies (see Section II-C) would remain, however, and under steadily increasing traffic demands, operating and safety conditions can be expected to further deteriorate.

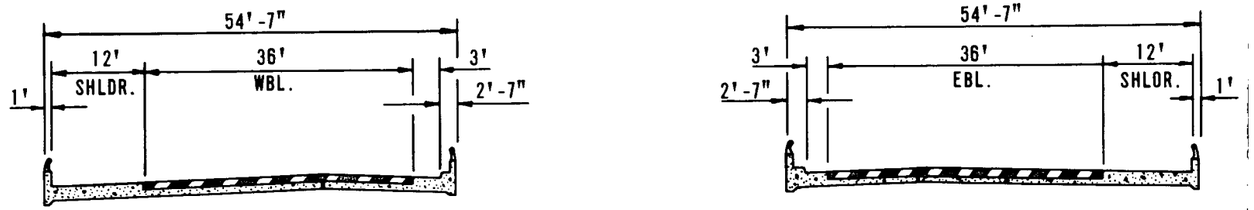


Alternative 'A' • I-270 To Linden Lane-6 Lanes

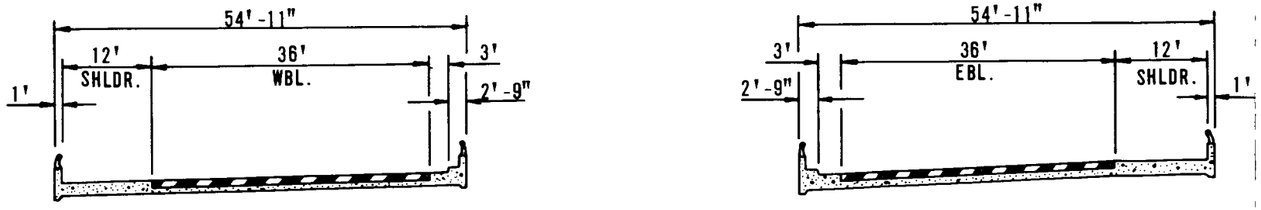
Alternative 'A' • Existing Structures Cedar Lane



Alternative 'A' • Existing Structures Connecticut Avenue



Alternative 'A' • Existing Structures Kensington Parkway



Alternative 'A' • Existing Structures Jones Mill Road

LEGEND

EXISTING I-495 ROADWAY

EXISTING BRIDGE STRUCTURE

ALTERNATIVE A

THE NO BUILD

TYPICAL ROADWAY & BRIDGE STRUCTURE SECTIONS

FIGURE III-1

2. **Alternative B:** Build (8 lanes)

Plan, scale 1" = 500'	Figures III-2,3,4
Profile	Figure III-5
Typical Roadway Sections	Figure III-6
Typical Bridge Structure Sections	Figure III-7
Comparison Table	Table S-1

a. Overview

The Build Alternative proposes upgrading the existing six-lane portion of the Capital Beltway through Rock Creek Park to an eight-lane highway, and the incorporation of other capacity and safety improvements which can reasonably be accomplished within the existing roadway right-of-way.

As shown on the Typical Roadway Section, Figure III-6, (compare to existing roadway section shown on Figure III-1), the Build Alternative typically proposes the addition of a fourth traffic lane in each direction constructed in the median of the existing roadway. Proposed additional improvements include a continuous concrete median barrier and a shoulder for emergency use and to provide adequate horizontal sight distance to the left of each four-lane roadway. A 30' wide recovery area, consisting of a 12' wide paved shoulder and an additional unobstructed area 18' in width, is proposed to the right of each improved four-lane roadway where existing right-of-way and bridge structures permit. Slope-face barrier at structures with less than a 12' plus 2' offset to the parapet will taper at a minimum of 100:1.

In areas of restricted rights-of-way, retaining walls are proposed to allow construction of the full 30' recovery area without encroaching on adjacent property. Where existing right-of-way is not sufficient for this treatment, the 30' recovery area will be reduced as required by available space. These recovery areas, shoulders, retaining walls and concrete barriers are proposed to transition for proper connections to the widened bridge structures (see Fig. III-7).

In order to attenuate the existing and expected future highway noise levels which exceed recommended maximum levels in adjacent residential and Rock Creek Park areas, noise barriers are proposed. The general location of these proposed walls are indicated on Figures III-2, 3 and 4 (see Section IV-G for further details).

New overhead directional signing and lighting is proposed to typically replace existing signs. New supports mounted in the median and on top of retaining walls are proposed, so as to not encroach on the recovery areas.

b. Detailed Description

From West of I-270 to East of Cedar Lane: (See Fig. III-2)

Through-Lane Additions -

Eastbound (EB) Lane - from Sta. 290 to Sta. 330 in existing median

Westbound (WB) Lane - from Sta. 282 to Sta. 314 in existing median

- from Sta. 310 to Sta. 330 to the north of the existing roadway

Lengthened Auxiliary Lanes -

Existing left entrance ramps from SB Wisconsin Avenue to EB Beltway, acceleration lane, from Sta. 290 to Sta. 338. Lane drop to be shifted from left side to right side, just east of Cedar Lane.

Existing acceleration lane for ramp entrance from NB Wisconsin to WB Beltway Sta. 208 to Sta. 280, using existing pavement.

Existing deceleration lane for ramp exit from WB Beltway to NB Wisconsin Sta. 297 to Sta. 302.

Bridge Alterations - (See Fig. III-7)

SB I-270 over WB Beltway (Sta. 276) construct new three-lane bridge east of existing bridge, then remove existing bridge.

EB & WB Beltway over Cedar Lane (Sta. 325) deck over (enclose) median area between roadways, and widen 12' on north side.

Retaining Walls -

Five new retaining walls in Pook's Hill area.

EB & WB - retaining walls from Sta. 297 to Sta. 330.

Median Barrier - Sta. 294 to Sta. 330

Noise Barrier - EB Beltway - Sta. 293 to Sta. 314
Sta. 325 to Sta. 330

WB Beltway - Sta. 314 to Sta. 328

LEGEND

- NEW PAVEMENT AND BRIDGE WIDENING
- EXISTING HIGHWAY RIGHT OF WAY
- ROCK CREEK PARK BOUNDARY
- RETAINING WALL
- NOISE BARRIER
- NOISE BARRIER ON RETAINING WALL

I-270

MD. 355

Existing Bridge & Pavement To Be Removed.

ROCK CREEK

PARKWOOD ELEM. SCHOOL

BEACH DRIVE

WMATA METRO LINE

POOK'S HILL COMPLEX

WISCONSIN AVE.

I-495

PARK

NOISE BARRIER B-5 15' HIGH

NOISE BARRIER B-4 25' HIGH

BROAD BROOK DR.

CEDAR LANE

EXISTING EARTH BERM

This Topography Is ON LOAN Return To: M.N.C.P.&P.C.

0 500 1000
SCALE IN FEET

CAPITAL BELTWAY
From West of I-270
To
East Of Cedar Lane

ALTERNATIVE B
THE BUILD

FIGURE III-2

From East of Cedar Lane to East of Kensington Parkway:
(See Fig. III-4)

Through-Lane Additions -

Eastbound (EB) Lane	-	from Sta. 330 to Sta. 405 in existing median
Westbound (WB) Lane	-	from Sta. 330 to Sta. 360 to the north of the existing roadway
	-	from Sta. 348 to Sta. 405 in existing median

Lengthened Auxiliary Lanes -

Existing decleration lane for ramp exit from EB Beltway to SB Connecticut Avenue, Sta. 353 to Sta. 358.

Existing acceleration lane for ramp entrance from NB Kensington Parkway to EB Beltway, Sta. 391 to Sta. 398.

Existing acceleration lane for ramp entrance from SB Connecticut Avenue to WB Beltway, vicinity of Sta. 360.

Bridge Alterations - (see Fig. III-7)

EB & WB Beltway over Connecticut Avenue (Sta. 371) deck over (enclose) median area between roadways, and widen 12' on north and south sides.

EB & WB Beltway over Kensington Parkway (Sta. 381) deck over (enclose) median area between roadways.

Retaining Walls -

Eastbound	-	Sta. 330 to 348
	-	Sta. 361 to 363
	-	Sta. 388 to 399
Westbound	-	Sta. 330 to 360
	-	Sta. 388 to 405

Median Barrier - Sta. 330 to Sta. 405

Noise Barrier - Eastbound - Sta. 330 to Sta. 342
- Sta. 362 to Sta. 368
- Sta. 381 to Sta. 404

LEGEND

- NEW PAVEMENT AND BRIDGE WIDENING
- EXISTING HIGHWAY RIGHT OF WAY
- ROCK CREEK PARK BOUNDARY
- RETAINING WALL
- NOISE BARRIER
- NOISE BARRIER ON RETAINING WALL

CEDAR LANE

March Line

CONNECTICUT AVE.

LARCHMONT SCHOOL

NOISE BARRIER B-2 18' HIGH

330

340

ROCK CREEK PARK

DRIVE

BEACH DRIVE

March Line

I-495

350

360

370

380

390

400

NOISE BARRIER B-4 15' HIGH

NOTE: M-NCP & PC PARK

Topography Shown Does Not Reflect Recent Park Addition

NAVAL MEDICAL CENTER

NOISE BARRIER B-3 12' HIGH

This Topography Is ON LOAN Return To: M.N.C.P.&P.C.

KENSINGTON PKWY.

JONES BRIDGE RD.

.0000 LOCATION WHERE NOISE BARRIER FEASIBILITY WILL BE DEFINED DURING FINAL DESIGN

380 390

0 500 1000

SCALE IN FEET

CAPITAL BELTWAY
From East Of Cedar Lane
To
East Of Kensington Parkway

ALTERNATIVE B
THE BUILD

FIGURE III-3

From East of Kensington Parkway to West of Maryland Route 97:
(See Fig. III-4)

Through-Lane Additions -

Eastbound & Westbound Lanes	-	from Sta. 405 to Sta. 442 in existing median

Lengthened Auxiliary Lanes - None

Bridge Alterations - (see Fig. III-7)

EB & WB Beltway over Rock Creek and Jones Mill Road (Sta. 421) deck over (enclose) median area between roadways.

Retaining Walls -

Eastbound	-	Sta. 407 to Sta. 442
Westbound	-	Sta. 405 to Sta. 442

Median Barrier -

Sta. 405 to Sta. 442

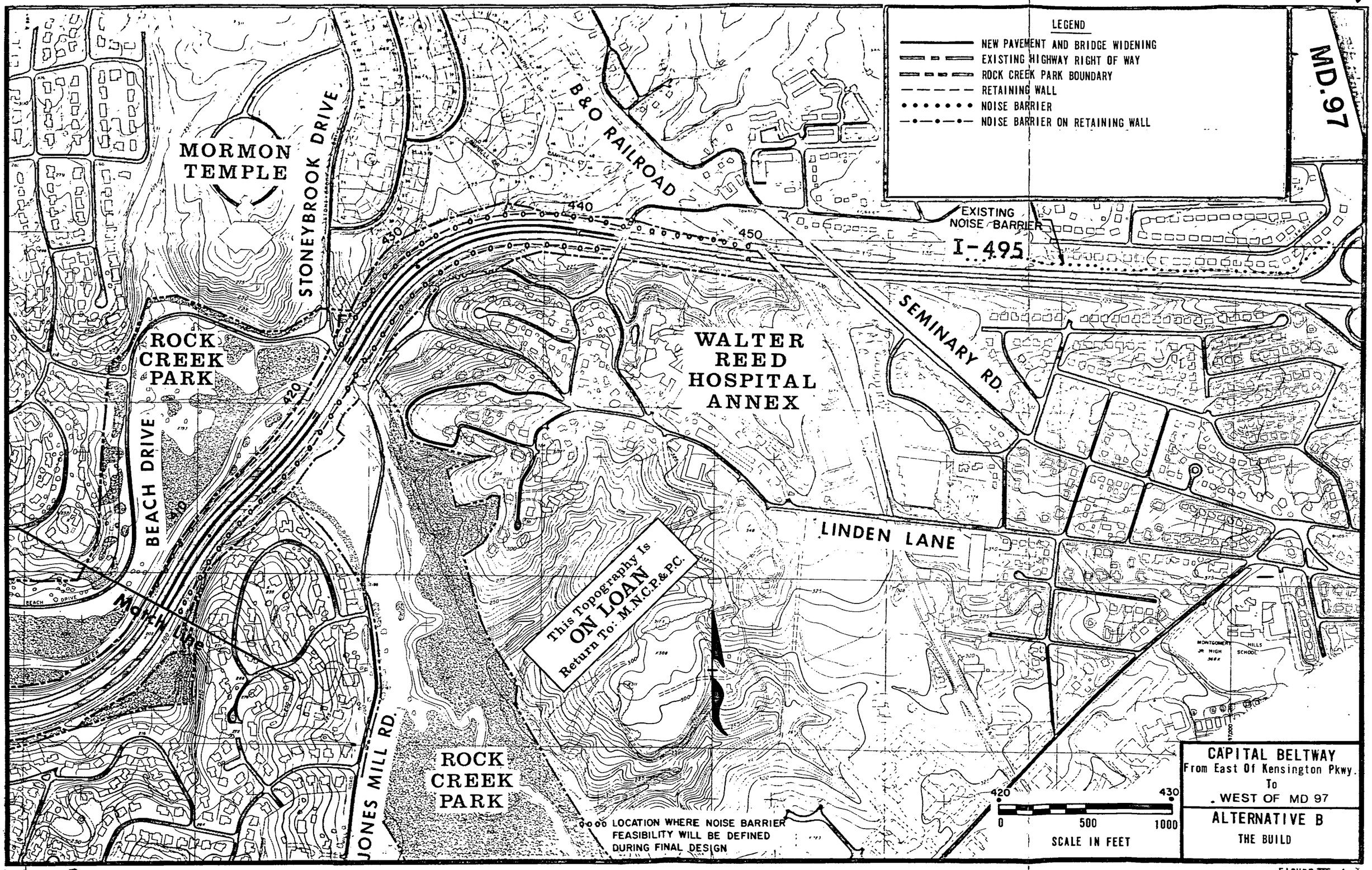
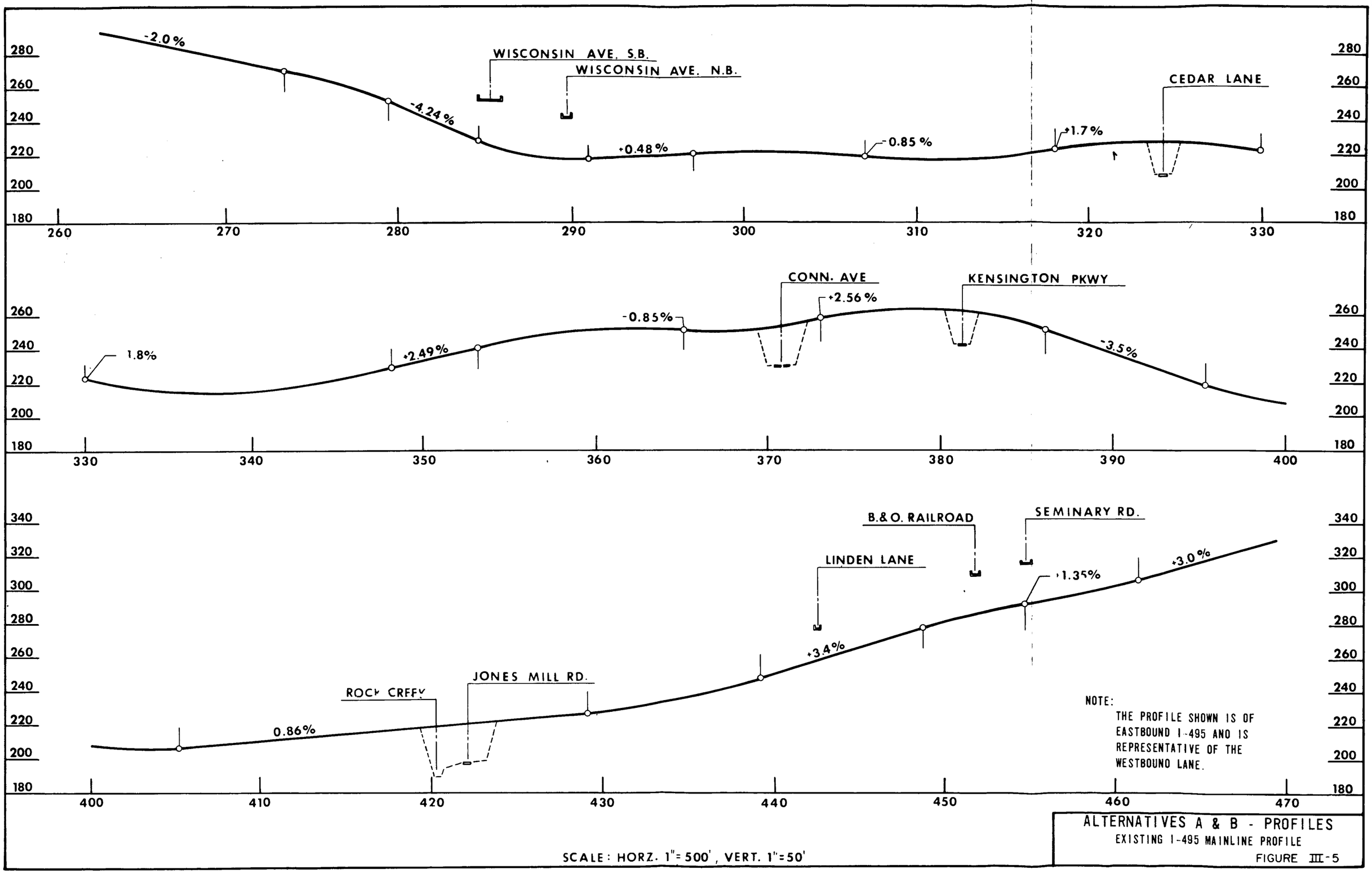

LEGEND
NEW PAVEMENT AND BRIDGE WIDENING
EXISTING HIGHWAY RIGHT OF WAY
ROCK CREEK PARK BOUNDARY
RETAINING WALL
NOISE BARRIER
NOISE BARRIER ON RETAINING WALL
MD. 97
MORMON TEMPLE
STONEYBROOK DRIVE
B&O RAILROAD
440
430
450
EXISTING NOISE BARRIER
I-495
SEMINARY RD.
ROCK CREEK PARK
420
WALTER REED HOSPITAL ANNEX
BEACH DRIVE
410
400
390
LINDEN LANE
JONES MILL RD.
ROCK CREEK PARK
This Topography Is ON LOAN Return To: M.N.C.P.&P.C.
LOCATION WHERE NOISE BARRIER FEASIBILITY WILL BE DEFINED DURING FINAL DESIGN
420
430
0
500
1000
SCALE IN FEET
CAPITAL BELTWAY
From East Of Kensington Pkwy.
To
WEST OF MD 97
ALTERNATIVE B
THE BUILD

FIGURE III-4

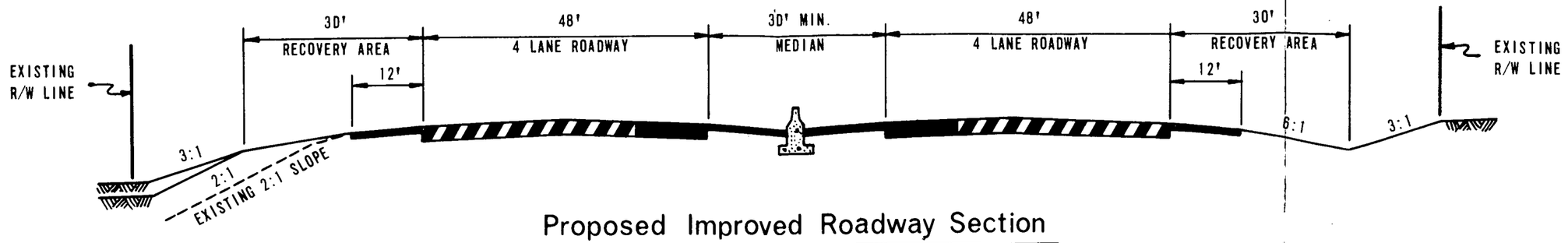


SCALE: HORZ. 1"= 500', VERT. 1"=50'

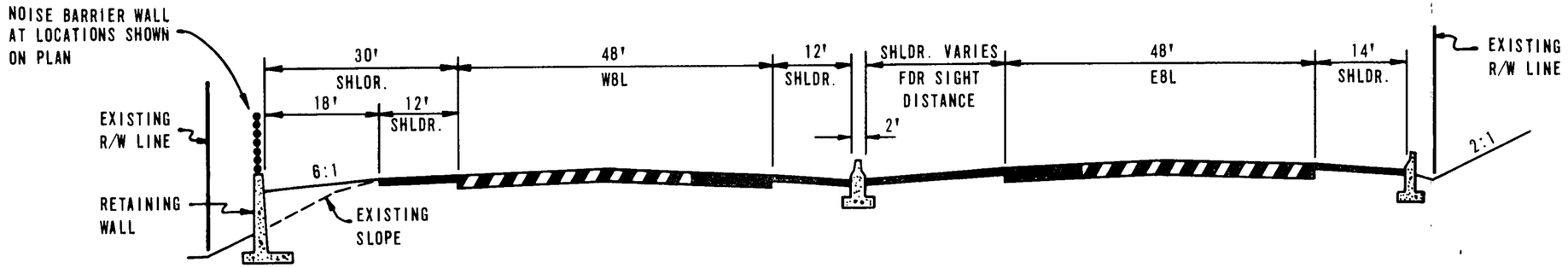
ALTERNATIVES A & B - PROFILES

EXISTING I-495 MAINLINE PROFILE

FIGURE III-5



Proposed Improved Roadway Section



Proposed Improved Roadway Section
(In Restricted Areas)

LEGEND

EXISTING ROADWAY PAVEMENT

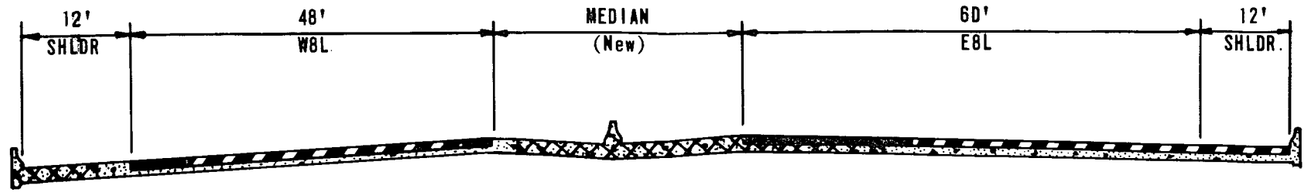
PROPOSED ROADWAY, SHOULDER AND MEDIAN PAVEMENT

The dimensions shown are for the purpose of determining cost estimates and environmental impacts, and are subject to change during the final design phase.

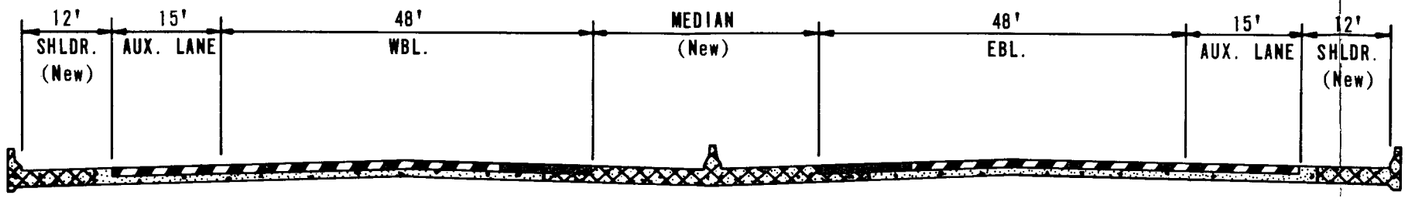
ALTERNATIVE B

TYPICAL ROADWAY SECTIONS

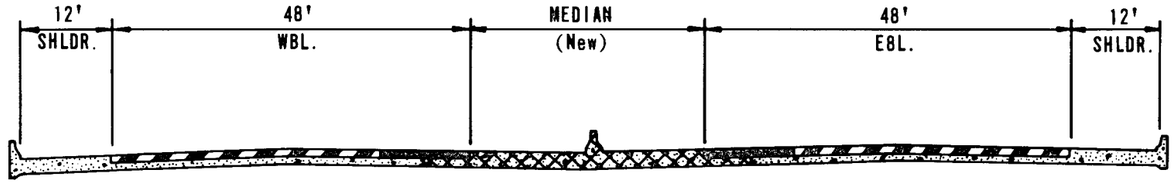
FIGURE III-6



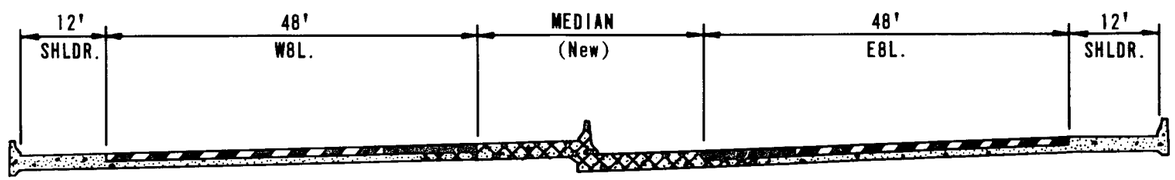
Bridge At Cedar Lane



Bridge At Connecticut Avenue



Bridge At Kensington Parkway



Viaducts At Jones Mill Road

NOTE: RECONSTRUCTION OF BRIDGE CARRYING I-270 S8L OVER I-495 W8L IN POOKS HILL INTERCHANGE NOT SHOWN.

The dimensions shown are for the purpose of determining cost estimates and environmental impacts, and are subject to change during the final design phase.

LEGEND

- EXISTING I-495 ROADWAY
- ADDITIONAL I-495 ROADWAY
- EXISTING BRIDGE STRUCTURE
- ADDITIONAL BRIDGE STRUCTURE

ALTERNATIVE 8
TYPICAL BRIDGE STRUCTURE SECTIONS

FIGURE III-7

c. Construction Techniques

- Maintenance of Traffic -

Due to the high traffic volumes which use this section of the Capital Beltway, sequencing of construction to maintain safe and efficient traffic service is important. A general four-stage construction sequence has been developed for Alternative B, which should minimize construction-zone accident and delay problems.

Stages I and and II construction will occur to the right of each roadway, to provide both permanent and temporary improvements necessary to maintain traffic service during median-related construction. During Stage I/II construction, Capital Beltway traffic will use the existing six-lane roadway, ramps, etc. Pertinent components of this construction are:

: All outside bridge widenings.

: Retaining walls/noise barriers and associated drainage structures.

: A 12' temporary traffic lane, generally in the existing shoulder area.

: A temporary 10' shoulder, or a 2' paved offset to a single-faced type barrier adjacent to the temporary traffic lanes.

: Temporary acceleration/deceleration lanes.

: Safety grading as necessary.

Stage III construction will generally consist of improvements in the median; i.e., construction of two additional traffic lanes, inside shoulders, median barrier and associated drainage structures. The existing median and inside traffic lane of each roadway will be used for construction. During Stage III construction, Capital Beltway traffic will be provided with three through-traffic lanes in each direction, consisting of the two existing outside lanes and the temporary traffic lane. Temporary acceleration/deceleration lanes will be provided at all interchange ramps.

Stage IV construction will consist of removing temporary pavement and shoulders, and completing the construction of all permanent improvements. During this stage, traffic will use both the existing and new traffic lanes.

In order to provide the highest degree of safety during the four-stage construction period, the following measures will be utilized:

: A 10' temporary shoulder will be provided adjacent to the temporary traffic lane for most of the project's length.

: Temporary slope-faced concrete barriers will be provided throughout the construction area.

: Through superelevated sections, the temporary traffic lanes will be superelevated and transitioned in conformance with AASHTO Standards.

: Slope-face traffic barriers will be constructed on several bridge parapets.

: Temporary acceleration/deceleration lanes will provide a high degree of safety in merging areas.

: All signing, marking, barrier placement and channelization will be in accordance with the Manual on Uniform Traffic Control Devices (1978), including latest revisions.

- Staging Areas -

During the construction period, staging areas where equipment and materials can be parked and stored, will be required. In order to minimize impacts to the park and adjacent communities, tentative staging areas have been located close to the Beltway. The tentative staging areas for Alternative B are listed below; all are within the existing highway rights-of-way. Subsequent to construction, these areas will be graded and landscaped as necessary:

: Pook's Hill Interchange, between NB and SB roadways of I-270, just north of WB I-495

: Area adjacent to EB I-495, approximately 100' west of Cedar Lane

: Area adjacent to I-495, approximately 2000' west of Connecticut Avenue

8le

: Connecticut Avenue Interchange (location of loop ramp to Kensington Parkway recently removed)

- Construction Permits & Controls -

All solid materials that cannot be used in project construction will be removed from the site by the Contractor. In accordance with the provisions and requirements of Chapter 245 of the Acts of 1970 for the State of Maryland, it will be necessary for the Contractor to obtain permits and/or approvals from the appropriate agency for any off-site work, including off-site borrow pits, waste areas, etc. This agency will refer the plan for such activities to the U.S. Soil Conservation Service for review and approval of its erosion and sediment control provisions. A copy of the permits and/or approvals must be furnished to the Engineer prior to initiating any off-site work.

A Sediment Control Permit and a Waterway Construction Permit will be required from the Maryland Department of Natural Resources; a Section 404 Permit will be required from the U. S. Army Corps of Engineers.

IV
COMPARISON OF ALTERNATIVES

IV. COMPARISON OF ALTERNATIVES

A. INTRODUCTION

This chapter discusses the potential environmental impacts associated with the two alternatives under consideration. As was noted previously in this document, minimization of impacts has been a primary goal in the development of the Build alternative. Because the Build Alternative requires no right-of-way from adjacent properties, adverse impacts are not expected as a result of implementation of this project. A summary comparison of the impacts of Alternatives A and B is given in Table S-1; these impacts are further discussed in the following portions of this chapter.

B. SOCIAL IMPACTS[1]

Social impacts associated with this project would be beneficial. As discussed in Section II-D, the Capital Beltway is being used by commuting residents of the project area and adjacent regions. The improvements provided by the Build Alternate will increase the safety of this portion of the Beltway, significantly reducing the accident rate (see part E of this Section for additional discussion). In addition, the increased capacity will attract nearly 17,000 vehicles in the year 2010 from local streets to the Beltway, reducing traffic congestion and related impacts (noise, air quality, and safety) in the adjacent residential communities.

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1 It is the policy of the Maryland State Highway Administration to ensure compliance with the provisions of Title VI of the Civil Rights Act of 1964 and related civil rights laws and regulations which prohibit discrimination on the grounds of race, color, national origin, sex, age, religion, or physical or mental handicap in all State Highway program projects funded in whole or in part by the Federal Highway Administration. The State Highway Administration will not discriminate in highway planning, highway design, highway construction, the acquisition of right-of-way, or the provision of relocation advisory assistance. This policy has been incorporated into all levels of the highway planning process in order that proper consideration may be given to the social, economic, and environmental effects of all highway projects. Alleged discriminatory actions should be addressed to the Equal Opportunity Section of the Maryland State Highway Administration for investigation.

C. ECONOMIC IMPACTS

Construction of the Build Alternative, which will accommodate greater volumes of traffic along the Beltway than the No-Build, will produce beneficial economic impacts to existing and planned development throughout the region. Of special value to the rapidly growing I-270 corridor will be safer travel and less vehicle delay.

No adverse economic impacts would result from implementation of the Build Alternative. Since these improvements will provide a safer roadway, reducing the high accident rate presently experienced on this portion of the Capital Beltway, reduced medical and property damage costs are anticipated.

D. TRAFFIC IMPACTS

Traffic projections for the No-Build and Build Alternatives in the design year 2010 have been developed from approved land use plans and committed transportation network. The committed transportation network includes only those facilities that are expected to be fully operational in the analysis year. For purposes of this project, the Inter-County Connector and Rockville Facility (and its effect on traffic volumes along the Capital Beltway and local street system) have not been included in the committed network.

Projected year 2010 Average Daily Traffic volumes (ADT's), PM Peak Design Hourly volumes, and corresponding Levels of Service for the Capital Beltway (I-495), I-270, Wisconsin Avenue and Connecticut Avenue for the No-Build and Build Alternatives are shown on Figure IV-1.

Future traffic volumes along this section of the Capital Beltway, between I-270 and Georgia Avenue, as well as the major radial routes providing access to Washington, D. C. will continue to increase regardless of the alternative selected. Figure IV-1 shows that projected year 2010 average daily traffic volumes along the Capital Beltway will be significantly greater with the Build Alternative than with the No-Build. This is due to capacity increases resulting from the construction of two additional travel lanes (one in each direction). Although traffic volumes along the major radial routes such as Wisconsin Avenue and Connecticut Avenue are also predicted, in most cases, to be greater with the Build Alternative, arterial streets such as Viers Mill Road, Randolph Road, University Boulevard, Strathmore Avenue, Beach Drive, Jones Bridge Road and East-West Highway are predicted to experience a reduction in traffic volumes.

Figure IV-1 also shows that traffic volumes during PM peak hours, along the Capital Beltway (between I-270 and Connecticut Avenue) will be approximately 21% greater with the Build than with the No-Build. Although traffic volumes will be greater with the Build Alternative, the addition of two travel lanes and other improvements will result in less congestion and delay, and a slight increase in travel speed.

Because the Capital Beltway is the only circumferential route bypassing Washington, D. C., it will continue to be the preferred route for truck traffic. Truck percentages for the design year (2010) are as follows:

	% Trucks (Light,Medium,Heavy)
Average Daily Traffic	
Gasoline Powered	2.39
Diesel Powered	5.61
Total	8.00
Peak Hour Volume	
Gasoline Powered	1.68
Diesel Powered	2.32
Total	4.00

The directional distribution of traffic on this portion of the Capital Beltway is approximately 50% in each direction during the PM peak hour (5 to 6 PM).[1] The peak hour factors, which represents the percentage of the total daily traffic occuring during the peak rush hour, for the No-Build and Build Alternatives for the design year (2010) are approximately 8.2% and 8.7% respectively. Because of severe congestion, the peak hour for the No-Build is less than the Build, representing a "spreading" or lengthening of the peak rush hours for the No-Build.

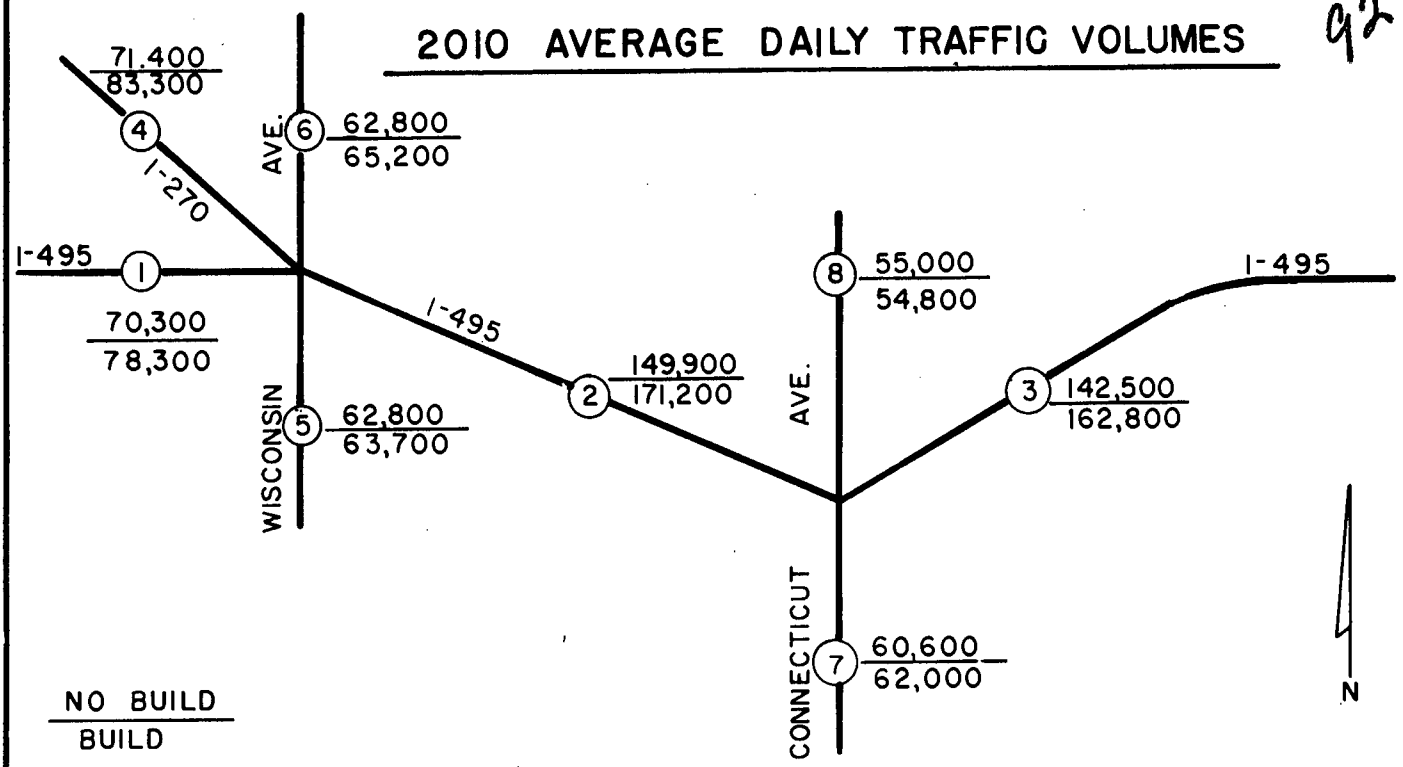
If the No-Build Alternative is selected, predicted 2010 traffic volumes during the PM peak hours will surpass the capacity of this six-lane section of the Capital Beltway, resulting in long periods of congestion and delay. Level of Service "F" (breakdown) will be experienced. Locations of expected traffic operation problems during peak travel periods, under the No-Build Alternative are discussed below:

Pook's Hill Interchange

EB I-495 through interchange - backups on I-270 and Maryland Route 355 on-ramps will occur due to heavy traffic volumes, inadequate number of through lanes, left-hand merge maneuvers, and short acceleration/deceleration lanes.

1 Since traffic volumes are predicted to be greatest during the PM peak hour, this period represents the worst case condition.

2010 AVERAGE DAILY TRAFFIC VOLUMES



PM PEAK PERIOD IS GENERALLY WORSE THAN PEAK AM PERIOD

LOCATION	NO-BUILD ALTERNATIVE (6-LANES)				BUILD ALTERNATIVE (8-LANES)			
	PM PEAK TRAFFIC VOLUMES (Veh/hr)		PM PEAK LEVELS OF SERVICE		PM PEAK TRAFFIC VOLUMES (Veh/hr)		PM PEAK LEVELS OF SERVICE	
	EBR or NBR	WBR or SBR	EBR or NBR	WBR or SBR	EBR or NBR	WBR or SBR	EBR or NBR	WBR or SBR
1	3150	2790	D	D	3720	3330	D	D
2	6260	6020	F	E	7660	7270	E	E
3	6070	5630	F	E	6840	6820	E	E
4	3170	2410	D	C	3830	3150	E	D
5	2980	2180	D	D	3020	2290	D	D
6	2730	2570	D	D	2930	2770	D	D
7	2940	2110	D	D	3100	2230	D	D
8	2560	1930	D	D	2640	2000	D	D

CAPITAL BELTWAY (I-495) STUDY
FROM WEST OF I-270
TO
WEST OF MD.97
STATE PROJECT NO.M-512-185-372

SUMMARY OF 2010 TRAFFIC DATA

FIGURE IV-1

WB I-495 through interchange - backups on I-270 and Maryland Route 355 off-ramps will occur due to heavy traffic volumes, inadequate number of through lanes, congested diverge maneuvers, and short acceleration/deceleration lanes.

EB I-495 - congestion will occur east of Maryland Route 355 due to heavy traffic volumes, heavy merging volumes and the through lane drop in the vicinity of an acceleration lane drop.

Capital Beltway Mainline
Pook's Hill Interchange to Connecticut Avenue Interchange

EB and WB I-495 - severe congestion will occur due to heavy traffic volumes, undesirable horizontal alignment, and inadequate number of through lanes.

Connecticut Avenue Interchange

EB and WB I-495 - backups on ramps will occur due to heavy traffic volumes, merging and diverging maneuvers, short acceleration/deceleration lanes and an inadequate number of traffic lanes.

Capital Beltway Mainline
Connecticut Avenue Interchange to Linden Lane

EB I-495 - severe congestion will occur due to heavy traffic volumes, sustained grades and inadequate number of traffic lanes.

WB I-495 - severe congestion will occur due to heavy traffic volumes, sustained grades and the four to three lane transition near Linden Lane.

To avoid these extremely congested conditions, drivers today divert to the local street system. In the design year with the No-Build, it is anticipated that more motorists will do the same. Such diversion, while not expected to relieve congested conditions on the Capital Beltway, will increase adverse air quality, noise, safety and aesthetic impacts to communities along these streets.

With the Build Alternative traffic operation during PM peak hours along this section of the Capital Beltway will improve to Level of Service "E" (capacity). Expected locations and causes of traffic operation problems during the peak travel periods, under the Build Alternative are discussed below.

Pook's Hill Interchange

EB I-495 through interchange - congestion will occur due to heavy traffic volumes and left-hand merge maneuvers.

WB I-495 through interchange - congestion will occur along the I-270 and Maryland Route 355 off-ramps, due to heavy traffic volumes and congested diverge conditions.

Capital Beltway Mainline
Pook's Hill Interchange to Connecticut Avenue Interchange

EB and WB I-495 - congestion will occur due to heavy traffic volumes and sharp horizontal alignment.

Connecticut Avenue Interchange

EB and WB I-495 through interchange - congestion will occur due to heavy traffic volumes, and merging-diverging maneuvers.

Capital Beltway Mainline
Connecticut Avenue Interchange to Linden Lane

EB and WB I-495 - congestion will occur due to heavy traffic volumes and sustained grades.

Operational improvements to the Capital Beltway, resulting from the Build Alternative, will divert significant numbers of vehicles from the local street system. Traffic volumes expected to occur with the Build Alternative on the Capital Beltway in the project area are predicted to be 21,300 vehicles per day greater than would be expected with the No-Build Alternative. The majority of this increase will result from the diversion of traffic from the local roadway network to the Capital Beltway, attracted by the increased capacity along the Beltway.

Traffic diversion in the design year has been estimated by comparing the average daily traffic volumes on the major east-west local arterial streets for the No-Build and Build Alternatives. These projections are given in the following table.

PREDICTED TRAFFIC DIVERSION FROM LOCAL ARTERIAL STREET SYSTEM TO THE CAPITAL BELTWAY (I-495) IN YEAR 2010

Major East-West Arterial Streets Between Wisconsin and Connecticut Ave's.	Average Daily Traffic Volumes		
	No-Build	Build	Diversion To Beltway
Viers Mill Road	46,850	44,900	1,950
Randolph Road	47,300	46,400	900
Strathmore Road	16,400	13,800	2,600
Beach Drive	8,000	5,400	2,600
Cedar Lane	18,400	16,800	1,600
Jones Bridge Road	30,000	28,700	1,300
East-West Highway	54,600	48,800	5,800
TOTAL DIVERSION TO CAPITAL BELTWAY			16,750

This table indicates that approximately 17,000 vehicles per day will be diverted from the east-west arterial street system to the Capital Beltway as a result of the proposed improvements associated with the Build Alternative. Concurrent with these ADT reductions will be improvements in noise, air quality, aesthetics and safety in the communities and parkland along these arterial roadways.

E. SAFETY IMPACTS

An accident analysis has been completed for the Capital Beltway (I-495), between I-270 and Maryland Route 97 (Georgia Avenue). Based on this analysis, the safety effects of the No-Build and Build Alternatives were predicted for the design year 2010. The following features resulting from the Build Alternative are expected to significantly improve safety on the Rock Creek segment of the Capital Beltway:

1. Reduce Congestion - This will be accomplished by adding two roadway lanes, improving acceleration and deceleration lanes, and improved signing and marking. A reduction in the number and severity of rear-end, sideswipe (same direction) and hitting outside guardrail/barrier accidents is expected to occur; however, reductions in these types of accidents realized may be offset somewhat by the extremely high travel demand projected in the project vicinity.

2. Elimination of Lane Transitions - A reduction in the number and severity of all types of accidents is expected to occur with the improvement or elimination of lane drops in the project vicinity. Specific accident types expected to be significantly reduced or eliminated at lane drops include sideswipe (same direction) and rear-end accidents.

3. Vehicle Recovery Areas - A significant reduction in both the number and severity of the following accident types is expected to occur with the addition of obstacle-free recovery area:

    - hit outside guardrail
    - hit embankment
    - hit light pole
    - hit a sign support
    - left the road and overturned

4. Median Barrier - Complete elimination of head-on collision and opposite direction sideswipe accidents will occur with the construction of a median barrier; however, potential crossed median and hit object accidents will become hit median barrier accidents.

5. Pavement Marking - Improved pavement markings are expected to result in a reduction in the number of accidents.

6. Lengthen Acceleration/Deceleration Lanes - A reduction in the number of severity of rear-end and sideswipe (same direction) accidents is expected to occur with the improvement of acceleration and deceleration lanes.

As previously mentioned (see Section IV-D), travel demand on this portion of the Capital Beltway will significantly increase by the design year, regardless of the alternative selected. As a result, the annual vehicle miles traveled and the accident rate (number of accidents/100 million vehicle miles traveled) will also increase. The following table compares the annual vehicle miles traveled, accident rate and the predicted number of accidents associated with each alternative in the design year. Also shown on this table are these same statistics for existing conditions during 1979.

CAPITAL BELTWAY (I-495) ACCIDENT NUMBERS & RATES

Year & Alternative	Vehicle Miles of Travel (Million)	Accident Rate (Acc/100 MVM)	Total Number of Accidents
1979	158.4	194.5	308
2010 - No Build	196	179	340-360
2010 - Build	224	134	290-310

F. AIR QUALITY IMPACTS

1. Summary

A detailed microscale air quality analysis of the No-Build and Build Alternatives has been completed and is summarized in this section of the Environmental Assessment. This analysis compared carbon monoxide (CO) concentrations predicted as a result of traffic volumes for the No-Build and Build Alternatives with State and National Ambient Air Quality Standards (S/NAAQS). Based on this analysis, violations of the National (NAAQS) and State (SAAQS) Standards for CO are not predicted in the year of completion (1990) or the design year (2010).[1]

A microscale CO pollutant diffusion simulation analysis, based on free-flow traffic conditions, was conducted. This analysis consisted of calculating one and eight-hour CO concentrations resulting from automobile emissions at 14 selected receptor sites. All calculations were performed for 1990 (estimated year of completion) and 2010 (year of design). EPA low-altitude regional emission factors were derived using the Mobile Source Emission Factors algorithms stored in the MOBILE 1 Computer Program, which is based on the latest version of Supplement 5 of the EPA document Compilation of Air Pollution Emission Factors (AP-42). Line source CO dispersion estimates were calculated using the EPA-approved California Transportation System's Program CALINE 3, a Gaussian dispersion-statistics model.

Copies of the technical air quality report have been reviewed and approved by the Maryland Department of Health and Mental Hygiene (letter dated December 24, 1981) and the US EPA (letter dated January 4, 1982). See Section V for copies of these letters.

2. Previous Air Quality Analyses

The air quality analysis conducted in 1981 for Alternatives A and B, and summarized in this Section of the Environmental Assessment, is the fourth air quality analysis conducted for the Rock Creek Park section of the Capital Beltway. The previous three air quality analyses may be briefly summarized as follows:

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1 The technical analysis ("Air Quality Analysis Interstate Route 495: From I-270 to Georgia Avenue, 1981, REOTEC, INC.) is available for review at the Bureau of Project Planning, State Highway Administration, 707 North Calvert Street, Baltimore, Maryland 21202.

Air Quality Impact Assessment of the Capital Beltway in Rock Creek Park, Maryland,
by Environmental Research & Technology, Inc.,
Lexington, Massachusetts (1976)

This analysis, completed for use in the Draft Environmental Impact Statement (unpublished) on Alternatives A, B, C and D (see Section III-A for a description of these alternatives), indicated no violations of one-hour CO standards for 1980 and 1995. Violations were predicted, however, for eight-hour CO concentrations in 1980, but not 1995.

Air Quality Analysis of I-495,
by Maryland State Highway Administration,
Baltimore, Maryland, 1978.

This analysis, completed for use in the Negative Declaration (unpublished) on Alternatives A and B (see Section III-A), indicated violations of the eight-hour CO Standards in 1990 for both Alternatives. In addition, air quality was predicted to worsen with construction of the Build Alternative.

Air Quality Analysis: I-495
by Maryland State Highway Administration,
Baltimore, Maryland, June 6, 1979.

This analysis, completed as part of the special study of "Air Quality Mitigation Alternatives" (see Section III-A) developed in response to coordination with U. S. EPA, indicated no violations of the 1-hour CO standards in 1987 for any of the Alternatives. Except for the eight-lane 70-MPH alignment in new location (i.e., through the park), violations of the eight-hour standard were predicted for all alternatives.

3. Methodology

a. Receptor Sites

Fourteen receptor sites within the study area were selected for the air quality analysis (see Figure IV-2).

b. Traffic Data

Traffic projections were made for both the No-Build and Build Alternatives for 1990 and 2010. Base travel data were supplied by the Washington Council of Governments (COG) (see Section IV-D of this Assessment). Non-peak and peak hourly volumes were computed using diurnal curve data and ADT's. Peak hourly flow intervals were assumed to have the following constant properties, relative to non-peak hourly flow intervals:

: Reduced running speeds;

: Higher light-duty vehicle (LDV) components in the truck mixes, and;

: A symmetric directional distribution.

None of the 1990 or 2010 LDV traffic was presumed to be diesel-powered; this is a conservative assumption since diesel-powered automobiles generate much less CO than their gasoline-driven counterparts.

c. Emission Factors

EPA low-altitude regional emission factors were derived using the MOBILE Source Emission Factors algorithms stored in the MOBILE 1 Computer Program. The appropriate traffic data were used with the assumption of an I/M (Inspection/Maintenenace of emission controls) program in effect during both years of analysis. Mechanic training and a 30% stringency level were also assumed under the conditions of I/M. The stringency parameter reflects how vigorously the inspection program is carried out (a higher stringency factor results in lower rates of emissions).

The emission factors were computed on the basis of the following input:

: 100% hot-stabilized operating mode for vehicles on I-495.

: FTP (Federal Test Procedure) driving cycle for analysis of side roads.

: 20^{o} F ambient temperature for peak hour.

: 35^{o} F ambient temperature for 8-hours

: Montgomery County vehicle-age distribution for light-duty vehicles assumed not to change after 1981

: National vehicle-age distribution for heavy duty vehicles, as well as truck mix and diurnal traffic curve, also assumed to remain constant over the time period covered by this analysis.

: Wind directions that maximized receptor CO concentrations were selected.

: Daylight pre-5 PM hours: Pasquill-Gifford Stability Class D (neutral conditions) and 2 m/s (4.5 MPH) wind speed.

: Non-daylight and/or post-5 PM hours: Pasquill-Gifford Stability Class F (stable conditions) and 1 m/s (2.2 MPH) wind speed.

: Mixing height of 350 meters.

d. Background Levels

Study area specific background CO concentrations were obtained from the recently issued Council of Governments CO-Hotspot Committee memorandum on this subject, dated June 4, 1981. The background concentrations, while generated for 1981 Montgomery County conditions, were not rolled back to project 1990 or later conditions due to uncertainties on current EPA policy regarding CO controls on new automobiles; this reservation is believed to be conservative.

- Background CO, ppm[3] -

Year	One-Hour	Eight-Hour
1990	5.0	2.6
2010	5.0	2.6

e. Free Flow Mode Procedure

Free-flow vehicle traffic sources were modeled using the California Transportation System Program, CALINE 3. For peak-hour CO concentration modeling runs, only one execution of CALINE 3 was necessary, using 20° F emission factors. For eight-hour simulations involving different stability classes, truck mixes, and vehicle running speeds at different slices of the eight-hour time frame, up to three runs of CALINE 3 were needed per receptor, simulation year, and alternative. These three runs were for the conditions of pre-5 PM meteorology and peak hour running speeds, post-5 PM meteorology and peak-hour running speeds, and post-5 PM meteorology and off peak-hour running speeds. Wind directions were rotated to maximize receptor concentrations of CO.

4. Results of the Dispersion Simulations

All of the receptors were modeled using free-flow traffic data. The results were added to the appropriate project background CO levels and are given in Table IV-1. Examination of this Table reveals that no violations of either the one-hour or the eight-hour S/NAAQS standard are predicted to occur in 1990 or 2010 with either the No-Build or Build Alternatives.

5. Air Quality Conformity Statement

The subject project is located within the National Capital Interstate Air Quality Control Region. This project is in an air quality non-attainment area which has transportation control measures in the State Implementation Plan (SIP). This project conforms with the SIP since it originates from a conforming transportation improvement program.

a. Microscale Carbon Monoxide Levels

The project Air Quality Analysis assessed the microscale carbon monoxide impact of the facility. This analysis determined that no violations of the one or eight-hour carbon monoxide standard would occur with either the No-Build or Build Alternative.

b. Construction Impacts

The construction phase of the proposed project has the potential of impacting the ambient air quality through such means as fugitive dust from grading operations and materials handling. The State Highway Administration has addressed this possibility by establishing Specifications for Materials, Highways, Bridges and Incidental Structures which specifies procedures to be followed by contractors involved in State work.

CAPITAL BELTWAY I-495
FROM WEST OF I-270 TO WEST OF MD. ROUTE 97
LOCATION OF AIR QUALITY RECEPTOR SITES

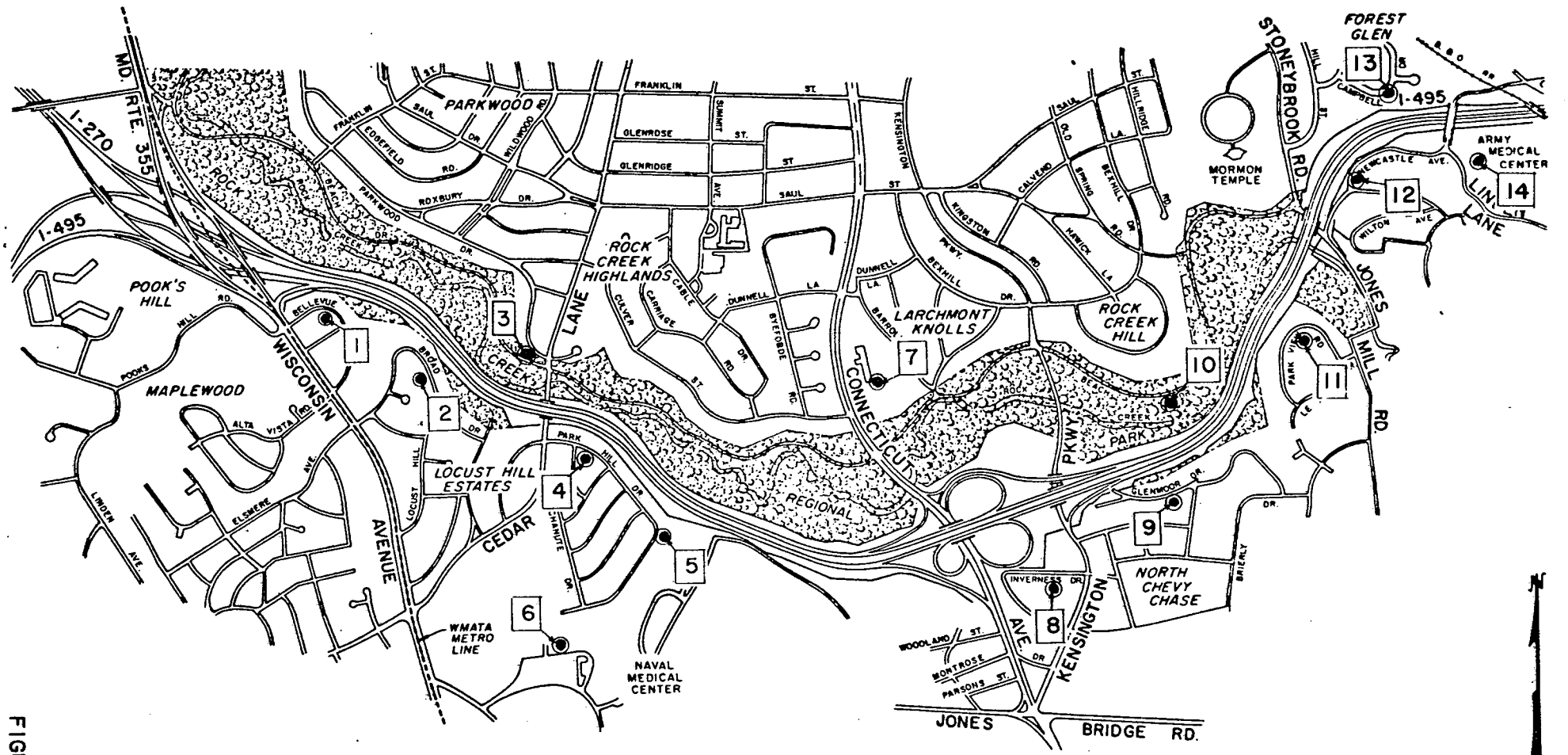

FIGURE IV-2

PREDICTED CARBON MONOXIDE (CO) CONCENTRATIONS (ppm) [1]
AT RECEPTOR SITES ALONG THE CAPITAL BELTWAY (I-495)

	DESCRIPTION [2]	1990				2010			
		PEAK ONE-HOUR		MAX. EIGHT-HOUR		PEAK ONE-HOUR		MAX. EIGHT HOUR	
		NO-BUILD	BUILD	NO-BUILD	BUILD	NO-BUILD	BUILD	NO-BUILD	BUILD
1	RESIDENCE ON 8ELLEVUE DR.	5.3	5.4	2.9	2.8	5.2	5.3	2.8	2.9
2	RESIDENCE ON BRDAD8ROOK DR.	7.0	6.3	3.6	3.5	6.3	5.9	3.3	3.3
3	ROCK CREEK REGIONAL PARK	6.8	6.2	3.5	3.4	6.2	5.8	3.3	3.3
4	RESIDENCE ON EAST PARKHILL OR.	6.0	5.8	3.1	3.1	5.6	5.6	3.0	3.1
5	RESIDENCE ON EAST PARKHILL DR.	6.5	6.1	3.4	3.3	6.0	5.8	3.2	3.3
6	RESIDENCE ON VAN REYPEM RD.	5.6	5.5	2.9	2.9	5.4	5.3	2.8	2.9
7	LARCHMONT SCHODL	5.2	5.2	2.6	2.6	5.1	5.1	2.6	2.6
8	RESIDENCE DN INVERNESS DR.	5.7	5.6	3.0	3.0	5.5	5.4	2.9	3.0
9	RESIOENCE ON SPRINGHILL LN.	6.1	5.9	3.2	3.2	5.7	5.6	3.1	3.1
10	ROCK CREEK REGIONAL PARK	6.5	6.4	3.4	3.6	6.0	6.0	3.3	3.3
11	RESIOENCE ON PARKVIEW DR.	6.0	6.0	3.1	3.3	5.7	5.7	3.0	3.2
12	RESIOENCE ON STANTON AVE.	6.5	6.3	3.4	3.5	6.0	5.9	3.2	3.3
13	RESIOENCE ON CAMPBELL DR.	5.7	5.7	3.0	2.9	5.4	5.5	2.9	3.0
14	WALTER REED ARMY MEDICAL CENTER	6.2	6.5	3.3	3.4	5.7	6.1	3.2	3.3

TABLE IV-1

1 INCLUDING BACKGROUND LEVELS

2 SEE FIGURE IV-2 FOR LOCATION

THE STATE/NATIONAL AMBIENT AIR QUANITY STANDARDS (S/NAAQS) FOR CO ARE:

ONE HOUR MAXIMUM = 35 ppm

EIGHT HOUR MAXIMUM = 9 ppm

The Maryland Bureau of Air Quality Control was consulted to determine the adequacy of the Specifications in terms of satisfying the requirements of the Regulations Governing the Control of Air Pollution in the State of Maryland. The Maryland Bureau of Air Quality Control found that the specifications are consistent with the requirements of these regulations. Therefore, during the construction period, all appropriate measures will be taken to minimize the impact on the air quality of the area.

c. Coordination with the Agencies

Copies of the technical air quality report have been reviewed by the Maryland Department of Health and Mental Hygiene and U.S. EPA. As a result of the Maryland Department of Health and Mental Hygiene's review of this report, they "...found that it is not inconsistent with the Administration's plans and objectives" (see letter dated December 24, 1981 in Section V). Based upon U.S. EPA's review of the air quality report, they "... have no objection to further development of the project (as described) from an air quality standpoint" (see letter dated January 4, 1982 in Section V).

G. NOISE IMPACTS

1. Introduction

This section summarizes the results of a noise analysis conducted for the No-Build and Build Alternatives in the Capital Beltway (I-495) Study Area.[1] The Federal Highway Administration LEVEL 2 Traffic Noise Prediction Model was used to predict noise conditions for the No-Build and Build Alternatives. These predictions were based on full-field noise propagation, and provide a general description of the expected noise environment and the potential for traffic generated noise control.

The standards which stipulate specific noise levels applicable to this roadway and adjacent area are contained in the Federal Highway Administration's Federal-Aid Highway Program Manual (FHPM 7-7-3). This document defines maximum noise levels for various types of land uses. The existing land in the areas adjacent to the Rock Creek portion of the Capital Beltway consists of high density, residential development and the undeveloped Rock Creek Regional Park. The applicable FHPM 7-7-3 category for these land uses is "B", for which the maximum (L_{10}) exterior noise level is 70 dBA.[2]

Highway noise impacts occur when predicted L_{10} noise levels generated by the highway improvement are significantly higher than ambient noise levels and/or exceed Federal Design Noise Levels. When it is determined that a noise impact will occur by exceeding the 70 dBA design noise level, an evaluation of possible noise attenuation measures is conducted. If the evaluation of these measures shows that feasible noise attenuation measures are not expected to reduce the predicted L_{10} noise levels to desirable levels, an exception to Federal Design Noise Levels must be obtained from the Federal Highway Administration.

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1 The technical analysis ("Noise Impact Analysis for the Capital Beltway (I-495) from West of Interstate 270 to West of Maryland Route 97", September, 1981) is available for review at the Bureau of Project Planning, State Highway Administration, 707 North Calvert Street, Baltimore, Maryland 21202. Subsequent to the preparation of this technical report, a further analysis was undertaken for the purpose of refining barrier size and location. This section includes the results of the subsequent noise analysis.

2 L_{10} - the sound level that is exceeded only 10% of the time.

2. Ambient Noise Levels

The ambient noise in any area is the background noise consisting of all natural and man-made noises within a given area. The purpose of ambient noise measurements is to establish the present noise environment for existing activities and developed land uses in the study area. The ambient noise levels, as recorded, represent a generalized view of present noise levels. Variations in time, traffic (especially truck) volumes, speeds, etc., can cause a several decibels fluctuation in the ambient noise levels. L_{10} noise levels are, however, a good overall approximation of perceived existing noise levels.

Measurements of ambient noise levels were made at 23 sensitive receptor locations within the study area. These locations were selected to be representative of various noise sensitive locations and include residential developments, recreation areas, churches and schools. Table IV-2 identifies these sites and lists the ambient L_{10} noise level recorded at each. The locations of these sensitive receptor locations are shown on Figures IV-3 thru IV-5.

3. Predicted Noise Levels

Predicted noise levels were developed using the FHWA LEVEL 2 Traffic Noise Prediction Model. Exterior L_{10} noise levels were predicted at each of the 23 sensitive receptor locations in the year 2010 for both the No-Build and Build Alternatives. Traffic volumes used to predict the 2010 L_{10} noise levels were "worst case" volume-speed combinations in terms of noise generation.

Noise level contours of L_{10} = 70 dBA have been developed for the No-Build and Build Alternatives for the design year. These contours, shown on Figures IV-3 thru IV-5, assume that the recommended noise barriers are in place and predict noise conditions at ear level (five-feet above existing ground). The Federal Design Noise Level Criteria for Category "B" locations will be exceeded in the area between the roadway and these contours.

The year 2010 predicted L_{10} noise levels for the No-Build and Build alternatives are given in Table IV-2. It is important to note that these year 2010 noise level predictions were produced using a computer model (FHWA Level 2 Traffic Noise Prediction Model). The noise levels predicted for the No-Build and Build may be compared to each other and to the Federal Design Noise Level of L_{10} = 70 dBA. They should not, however, be compared to the 1981 ambient noise levels, which were obtained using on-site recorders. In addition to the problems inherent in comparing computer output with actual recorded measurements, differences in traffic exposure, pavement surface, terrain, landscaping and other natural barriers invalidate a comparison between the year 2010 predicted noise levels and the 1981 ambient measurements.

NOISE SENSITIVE AREAS			1981 L_{10} dBA AMBIENT NOISE LEVEL	FEDERAL DESIGN NOISE CRITERIA L_{10} dBA	DESIGN YEAR 2010			
					PREDICTED L_{10} NOISE LEVELS			NOISE BARRIER RECOMMENDATION FOR ALT. B(8 - LANES) AND BARRIER HEIGHT(WHERE APPROPRIATE)
SITE NO.	DESCRIPTION (SEE FIGURE IV-3,-4,-5 FOR LOCATION)	DIST. TO NEAR EDGE OF I-495 (FT)			ALT. A 6 - LANE NO BUILD	ALTERNATE B 8 - LANES		
						WITHOUT NOISE BARRIERS	WITH NOISE BARRIERS	
1	RESIDENCE ON BELLEVUE DRIVE	100	74	70	77	77	68	YES (20')
2	RESIDENCE ON PARKWOOD DRIVE	640	59	70	64	64	-	NO
3	RESIDENCE ON BROAD BROOK DRIVE	75	73	70	74	75	65	YES (20')
4	PLAYGROUND IN ROCK CREEK PARK	310	65	70	72	72	66	YES (15')
5	CEDAR LANE UNITARIAN CHURCH	675	65	70	68	69	*	NO
6	RESIDENCE ON WEST PARKHILL DRIVE	240	61	70	66	67	67	NO, MEASUREMENTS INCLUDE EXISTING EARTH BERM
7	RESIDENCE ON EAST PARKHILL DRIVE	110	73	70	76	76	66	YES (18')
8	RESIDENCE ON CULVER STREET	650	59	70	64	64	-	NO
9	RESIDENCE ON EAST PARKHILL DRIVE	260	59	70	71	71	63	YES (18')
10	NATIONAL MEDICAL CENTER GOLF COURSE	300	69	70	68	68	-	NO
11	CHILDREN'S DAY CARE CENTER	200	65	70	71	72	66	YES (12')
12	POOL/TENNIS CLUB	425	64	70	65	66	66	YES (12')

NOTES: - PREDICTED L_{10} NOISE LEVELS INDICATE THAT AN INSUFFICIENT REDUCTION IN NOISE LEVELS WOULD RESULT IF BARRIERS WERE INSTALLED. THEREFORE, NOISE BARRIERS ARE NOT RECOMMENDED AT THESE LOCATIONS.

* WHILE A NOISE BARRIER IS NOT RECOMMENDED FOR THIS SITE, SOME NOISE REDUCTION (APPROX. 2 dBA) CAN BE EXPECTED AS A RESULT OF THE BARRIER RECOMMENDED AT SITE 4.

CAPITAL BELTWAY (I-495) STUDY
FROM WEST OF I-270
TO
WEST OF MD. 97
STATE PROJECT NO. M-512-185-372

NOISE IMPACT
ASSESSMENT

TABLE IV-2

NOISE SENSITIVE AREAS			1981 L_{10} dBA AMBIENT NOISE LEVEL	FEDERAL DESIGN NOISE CRITERIA L_{10} dBA	DESIGN YEAR 2010			
					PREDICTED L_{10} NOISE LEVELS			NOISE BARRIER RECOMMENDATION FOR ALT. B(8 - LANES) AND BARRIER HEIGHT(WHERE APPROPRIATE)
					ALT. A 6 - LANE NO BUILD	ALTERNATE B 8 - LANES		
SITE NO.	DESCRIPTION (SEE FIGURE IV-3,-4,-5 FOR LOCATION)	DIST. TO NEAR EDGE OF I-495 (FT)				WITHOUT NOISE BARRIERS	WITH NOISE BARRIERS	
13	RESIDENCE ON GLENMORE DRIVE @ BASE OF FILL	130	60	70	68	68	-	NO
14	RESIDENCE ON GLENMORE DRIVE	350	60	70	67	67	-	NO
15	RESIDENCE ON FAIR CASTLE DRIVE	140	66	70	70	71	68	YES (15')
16	RESIDENCE ON GLENMORE DR. SOUTH OF I-495	240	66	70	71	71	62	YES (15')
17	RESIDENCE ON RAYMOOR DRIVE	550	58	70	68	66	-	NO
18	PICNIC AREA IN ROCK CREEK PARK	240	67	70	74	75	-	NO
19	RESIDENCE ON PARK VIEW ROAD	140	72	70	75	76	-	NO
20	RESIDENCE ON HILL STREET	180	66	70	65	65	-	NO
21	RESIDENCE ON NEWCASTE AVE.	190	69	70	74	74	-	NO
22	RESIDENCE ON CAMPBELL DRIVE	340	59	70	70	70	-	NO
23	WALTER REED HOSPITAL ANNEX	285	67	70	70	70	-	NO

NOTES: - PREDICTED L_{10} NOISE LEVELS INDICATE THAT AN INSUFFICIENT REDUCTION IN NOISE LEVELS WOULD RESULT IF BARRIERS WERE INSTALLED. THEREFORE, NOISE BARRIERS ARE NOT RECOMMENDED AT THESE LOCATIONS.

CAPITAL BELTWAY (I-495) STUDY
FROM WEST OF I-270
TO
WEST OF MD. 97
STATE PROJECT NO. M-512-185-372

NOISE IMPACT ASSESSMENT

TABLE IV-2

4. Noise Impact Assessment

For both the No-Build and Build Alternatives, evaluations were made to determine noise impacts at the 23 sensitive receptor locations. The existence of numerous sensitive receptors on both sides of the Capital Beltway (I-495) within the 70 dBA influence area (see Figures IV-3 thru IV-5) warrants the use where possible of noise abatement measures to meet Federal Design Noise Levels. Wall-type noise barriers, where required to reduce noise levels below 70 dBA, were evaluated for the Build Alternative, but not for the No-Build Alternative. As the data on Table IV-2 shows, the Build Alternative will result in a generally improved noise environment over that provided by the No-Build Alternative.

5. Noise Abatement Measures

In addition to wall type noise barriers within the existing highway rights-of-way, the following noise abatement measures, as outlined in FHPM 7-7-3, were investigated for the Build Alternative:

: Traffic control devices for prohibition of certain vehicle types or time use restrictions for certain vehicle types.

: Alterations of horizontal and vertical alignment.

: Acquisition of property rights for installation or construction of noise abatement barriers beyond existing right-of-way.

: Acquisition of real property or interest (predominantly unimproved property) to serve as buffer zones.

Wall type noise barriers were determined to be the most effective and feasible means of noise abatement along the Capital Beltway (I-495) and have been analyzed at all locations where the Federal design noise level of L_{10} = 70 dBA is predicted to be exceeded in the design year (2010). As a result of this analysis, five locations adjacent to the Capital Beltway (four along the eastbound lanes and one along the westbound lanes) are recommended to include wall type noise barriers as a part of the Build Alternative. Three other areas have been classified as locations where noise barrier feasibility will be defined during subsequent final design phases.

Refinement of the noise analyses and the final decision on barrier installation will be made during the design phases following additional community and agency comments on the proposed barriers. The location, size, and degree of effectiveness of the recommended noise barriers are subject to change during the design phases. These changes would result from more detailed topographical input, more detailed coding of roadway geometry, and/or updated auto and truck traffic volumes. Predicted noise levels and barrier effectiveness have been determined as a part of this study for purposes of potential environmental impact.

These eight locations and the existing earth berm are described below and their locations shown on Fiures IV-3 thru IV-5.

LOCATIONS WHERE NOISE BARRIERS ARE RECOMMENDED WITH ALTERNATIVE B

Five wall-type noise barriers, approximately 8,340 feet in length and costing approximately $3,226,000 ($2,581,000 for the barriers plus $645,000 for landscaping) are recommended with the Build Alternative. These noise barriers were evaluated using the FHWA Level 2 Noise Prediction Model, and are expected to effectively reduce noise levels at most adjacent sensitive areas below the 70 dBA noise level, with typical reductions of 3 to 10 dBA.

Barrier #B-1: see Figure IV-3

Dimensions:

- 2335 linear feet (LF) of 20' high barrier (constructed completely on retaining wall)

1981 Construction Cost: $1,015,000.

This barrier would be constructed along the eastbound lanes of the Capital Beltway (I-495) between Wisconsin Avenue and Cedar Lane. It would provide protection for approximately 55 residences located just south of the Beltway. The dense tree line and shrubbery that currently exists between the Beltway and the residential area could be used to screen the barrier from view.

EXISTING EARTH BERM: see Figure IV-3

An existing earth berm is located along the eastbound lanes of the Capital Beltway (I-495), just west of Cedar Lane. It is approximately 800 feet long and provides noise atenuation for those residents located along Broad Brook Drive and West Parkhill Drive.

Barrier #B-2: see Figure IV-4

Dimensions:

- 1655 linear feet (LF) of 18' high barrier (900 LF constructed on retaining wall)

1981 Construction Cost: $ 565,000.

This barrier would be constructed along the eastbound lanes of the Capital Beltway (I-495) just east of Cedar Lane. It would provide protection for approximately 60 residences located just south of the Beltway. A thin line of trees and shrubbery exist between the Beltway and this residential area. These trees would help screen the barrier from view.

Barrier #B-3: see Figure IV-4

Dimensions:

- 610 LF of 12' high barrier

under study

1981 Construction Cost: $ 98,000.

This barrier would be constructed along the ramp from eastbound I-495 to southbound Connecticut Avenue. It would provide protection for a children's day care center and pool/tennis club located just southwest of the interchange between the Capital Beltway and Connecticut Avenue.

Barrier #B-4: see Figure IV-4

Dimensions:

- 2300 LF of 15' high barrier (1150 LF constructed on retaining wall)

1981 Construction Cost: $ 555,000.

This barrier would be constructed along the eastbound lanes of the Capital Beltway (I-495) just east of Kensington Parkway. It would provide protection for approximately 70 residences located east of the Beltway. A thin line of trees and shrubbery between the Beltway and this adjacent residential area would be used to screen the barrier.

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Barrier #B-5: see Figure IV-3

under study

Dimensions:

- 1440 LF of 15' high barrier (constructed completed on retaining wall)

1981 Construction Cost: $ 348,000.

This barrier would be constructed along the westbound lanes of the Capital Beltway (I-495), just east and west of Cedar Lane. It would provide protection for a small section of Rock Creek Regional Park which is primarily used for recreation and picnicking. The dense trees and shrubbery that currently exists within the Park would be used to screen the barrier.

Barriers

- Locations Where Noise Barrier Feasibility Will Be Defined During Final Design Phases

- o along the eastbound lanes of the Capital Beltway (I-495) from east of Kensington Parkway to Linden Lane (see Figures IV-4, -5).
- o along the westbound lanes of the Capital Beltway (I-495) from Seminary Road to Stoneybrook Road (see Figure IV-5).
- o along the westbound lanes of the Capital Beltway (I-495) east of Kensington Parkway (see Figure IV-4).

6. Exceptions to Design Noise Levels

Exceptions to the design noise levels must be considered for those residences, public buildings and businesses within the 70 dBA contours, where reasonable and effective noise abatement measures will not be provided. Installation of wall-type noise barriers, as previously described, would reduce predicted noise levels below the Federal design noise level (FDNL) of 70 dBA at eight of the sensitive receptor locations.

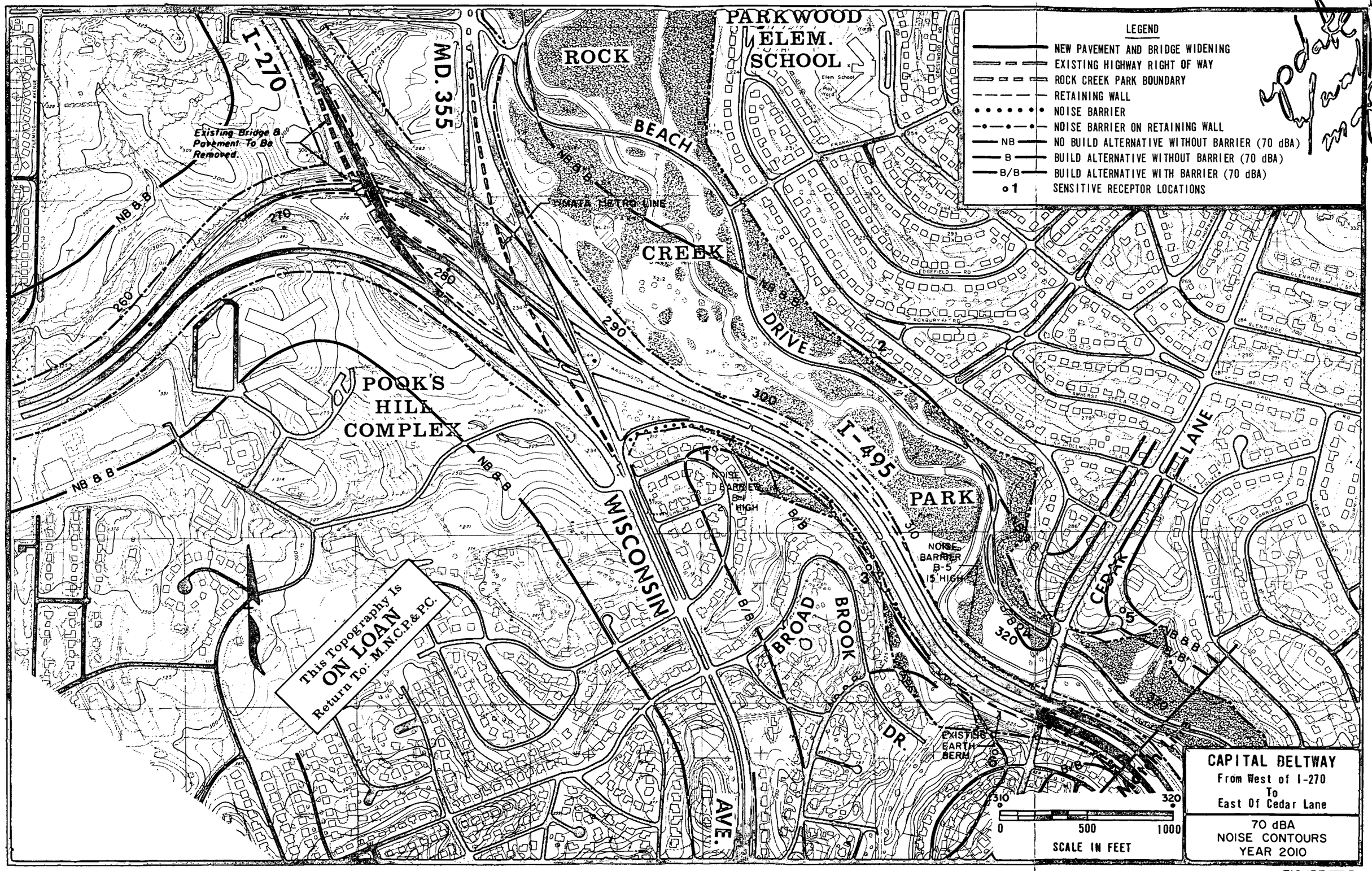
LEGEND
NEW PAVEMENT AND BRIDGE WIDENING
EXISTING HIGHWAY RIGHT OF WAY
ROCK CREEK PARK BOUNDARY
RETAINING WALL
NOISE BARRIER
NOISE BARRIER ON RETAINING WALL
NB NO BUILD ALTERNATIVE WITHOUT BARRIER (70 dBA)
B BUILD ALTERNATIVE WITHOUT BARRIER (70 dBA)
B/B BUILD ALTERNATIVE WITH BARRIER (70 dBA)
o1 SENSITIVE RECEPTOR LOCATIONS
Update Land Use
I-270
MD. 355
ROCK CREEK
PARKWOOD ELEM. SCHOOL
BEACH DRIVE
Existing Bridge & Pavement To Be Removed.
NB B/B
B/B
METRO LINE
POOK'S HILL COMPLEX
WISCONSIN AVE.
I-495
PARK
NOISE BARRIER B-1 8' HIGH
NOISE BARRIER B-5 15' HIGH
EXISTING EARTH BERM
BROAD BROOK DR.
CEDAR LANE
EDGEFIELD RD
ROXBURY RD
GLENROSE ST
GLENRIDGE RD
This Topography Is ON LOAN Return To: M.N.C.P.&P.C.
310
320
0
500
1000
SCALE IN FEET
CAPITAL BELTWAY
From West of I-270
To
East Of Cedar Lane
70 dBA
NOISE CONTOURS
YEAR 2010

FIGURE IV-3

LEGEND

- NEW PAVEMENT AND BRIDGE WIDENING
- EXISTING HIGHWAY RIGHT OF WAY
- ROCK CREEK PARK BOUNDARY
- RETAINING WALL
- NOISE BARRIER
- NOISE BARRIER ON RETAINING WALL
- NB — NO BUILD ALTERNATIVE WITHOUT BARRIER (7D dBA)
- B — BUILD ALTERNATIVE WITHOUT BARRIER (7D dBA)
- B/B — BUILD ALTERNATIVE WITH BARRIER (70 dBA)
- ○1 SENSITIVE RECEPTOR LOCATIONS

LARCHMONT SCHOOL

CONNECTICUT AVE.

CEDAR LANE

MacArthur Blvd

DRIVE

ROCK CREEK PARK

BEACH

I-495

NAVAL MEDICAL CENTER

JONES BRIDGE RD.

KENSINGTON PKWY.

NOISE BARRIER B-2
18' HIGH

NOISE BARRIER B-3
12' HIGH

NOISE BARRIER B-4
15' HIGH

NB & B

B/B

B

340 350 360 380 390 400

10° 11° 12° 13° 14° 15° 16° 17°

NOTE:
M-NCP & PC PARK
Topography Shown Does Not Reflect Recent Park Addition

This Topography Is ON LOAN Return To: M.N.C.P.&P.C.

○○○○ LOCATION WHERE NOISE BARRIER FEASIBILITY WILL BE DEFINED DURING FINAL DESIGN

0 500 1000
SCALE IN FEET

CAPITAL BELTWAY
From East Of Cedar Lane
To
East Of Kensington Parkway

70 dBA
NOISE CONTOURS
YEAR 2010

FIGURE IV-4

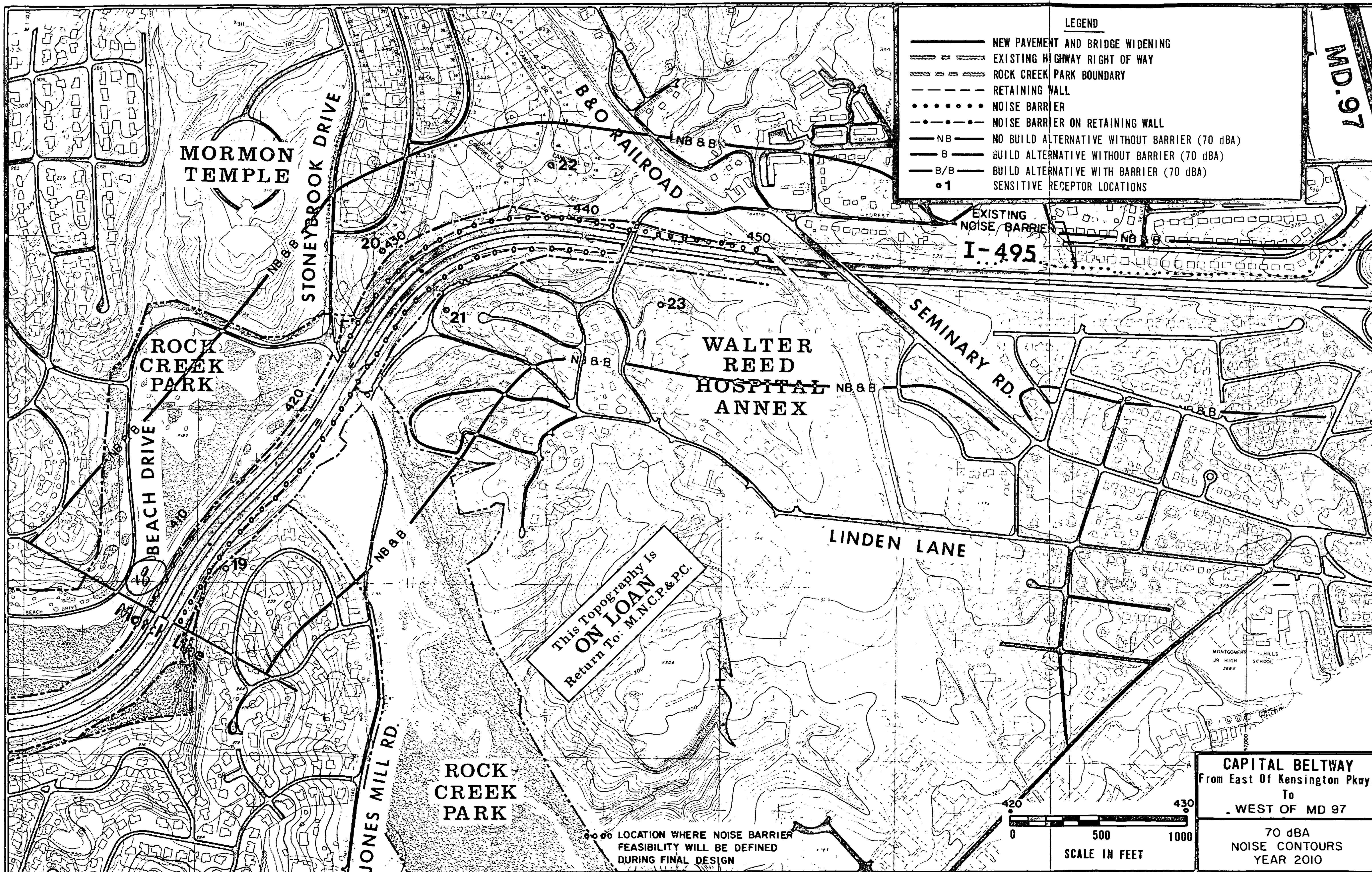
LEGEND
NEW PAVEMENT AND BRIDGE WIDENING
EXISTING HIGHWAY RIGHT OF WAY
ROCK CREEK PARK BOUNDARY
RETAINING WALL
NOISE BARRIER
NOISE BARRIER ON RETAINING WALL
NB NO BUILD ALTERNATIVE WITHOUT BARRIER (70 dBA)
B BUILD ALTERNATIVE WITHOUT BARRIER (70 dBA)
B/B BUILD ALTERNATIVE WITH BARRIER (70 dBA)
1 SENSITIVE RECEPTOR LOCATIONS
MD. 97
MORMON TEMPLE
STONEYBROOK DRIVE
B&O RAILROAD
EXISTING NOISE BARRIER
I-495
SEMINARY RD.
WALTER REED HOSPITAL ANNEX
ROCK CREEK PARK
BEACH DRIVE
LINDEN LANE
JONES MILL RD.
ROCK CREEK PARK
This Topography Is ON LOAN Return To: M.N.C.P.&P.C.
LOCATION WHERE NOISE BARRIER FEASIBILITY WILL BE DEFINED DURING FINAL DESIGN
MONTGOMERY HILLS JR HIGH SCHOOL
SCALE IN FEET
0 500 1000
CAPITAL BELTWAY
From East Of Kensington Pkwy.
To
WEST OF MD 97
70 dBA
NOISE CONTOURS
YEAR 2010

FIGURE IV-5

Exceptions to Federal design noise levels and/or impacts over the ambient noise levels would be required for Sensitive Receptors 18, 19, and 21. Partial abatement through the use of landscaping or other measures will be considered before exceptions are requested. The property owners' desires will be considered in the determination of the cost effectiveness of noise barriers or other noise attenuation. Any exception requested would be considered by the Federal Highway Administration on an individual basis.

7. Construction Noise

During construction phases of this project, noise generated by construction equipment will affect the noise sensitive areas previously discussed. These noise levels will vary, depending on age and maintenance of this equipment. There will be unavoidable periods of annoyance during the construction of this project. Early construction of the recommended noise barriers will reduce construction related noise in adjacent residential areas.

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H. EFFECT ON PUBLIC PARKLAND

Although roadway improvements are being proposed adjacent to Rock Creek Regional Park, all improvements would be constructed within the existing highway rights-of-way and no parkland will be taken or physically impacted by this project. In 1963, an Inter-Agency Agreement was signed among the State Highway Administration (then State Roads Commission), the Maryland-National Capital Park and Planning Commission (M-NCP&PC) and the National Capital Planning Commission (NCPC). This Agreement established the current alignment and number of lanes for this section of the Capital Beltway and stipulated that "Wherever possible, existing roadways in the park shall not be relocated and additional lanes shall be constructed in the median". After review of the 1963 Agreement, and consultation with legal counsel for both the M-NCP&PC and the NCPC, the State Attorney General's office has determined that the construction of Alternative B would be consistent with the September 12, 1963 Inter-Agency Agreement. This determination is documented in Section V (letter dated August 10, 1976).

In past correspondence (see Section V), the Maryland-National Capital Park and Planning Commission, which bears responsibility for the portion of Rock Creek Regional Park in the project area, voiced concern over adverse impact to the park from changes in air quality, increases in noise levels, and volume of stormwater runoff reaching Rock Creek. These are individually discussed in other parts of this section (Parts F, G, and I, respectively).

I. EFFECT ON ROCK CREEK

1. Stream Modification

The proposed action will not require the relocation of any portion of Rock Creek. Due to the limited right-of-way available between the Creek and existing lanes of the Capital Beltway, however, proposed roadway improvements will require placing fill behind retaining walls directly adjacent to the Creek along the north side of the Capital Beltway, immediately west of Cedar Lane (Stations 312 through 323, See Figure III-2).

To prevent excessive sedimentation in Rock Creek resulting from construction of the proposed improvements, a sediment control plan will be developed and rigorously applied throughout the project area. At the previously identified location, where retaining wall construction will be required adjacent to the Creek, placement of the retaining wall foundations will be "performed in the dry or within cofferdams", as suggested by the U. S. Fish & Wildlife Service (see Section V, letter dated September 21, 1981). Although some minor temporary disturbance to Rock Creek will be unavoidable, no permanent impairment of the Creek or damage to existing aquatic community is anticipated.

2. Stormwater Runoff - Quantity

A detailed stormwater analysis has been conducted for each of the existing eighteen pipes which presently carry stormwater runoff from the six-lane Beltway to Rock Creek. The additional runoff contributed by the two new roadway lanes and paved shoulders has also been calculated for each of these 18 pipes. These pipe-by-pipe increases, while individually small, are predicted to result in an overall increase in the quantity of stormwater runoff reaching Rock Creek. The TOTAL flows for both the No-Build and Build Alternatives are shown below for the 2-year, 10-year, and 100-year storms. Note also the discharges for the entire upstream watershed (2,200 acres).

ROCK CREEK
STORMWATER FLOWS IN CUBIC FEET PER SECOND (cfs)

	2-YEAR STORM	10-YEAR STORM	100-YEAR STORM
No-Build (6-lanes)	50 cfs	70 cfs	105 cfs
Build (8-lanes)	130 cfs	185 cfs	270 cfs
Upstream Watershed[1] (2,200 acres)	2,240 cfs	3,630 cfs	5,610 cfs

1 Runoff in the upstream watershed was calculated assuming future land use, in accordance with area Master Plans.

As evident, although the increased runoff from the Build is nearly 3 times the runoff for the No-Build, the percent contribution to the entire watershed increases by only 3 percent - a relatively insignificant increase. For this reason, the Build Alternative is not expected to significantly affect stormwater runoff in Rock Creek.[1]

3. Stormwater Runoff - Pollutant Load

Roadway surfaces accumulate considerable loads of a wide variety of pollutants. Most of these pollutant substances are deposited by vehicles or generated as a direct result of their use. Some, however, including orthophosphate, bacteria and cadmium are introduced in other ways (washed or blown from surrounding areas, animal waste, litter, etc.). Those that are vehicle-related included components of leaked fluids (fuel, lubricants, coolants, etc.), exhaust emissions, dirt, rust, glass, plastic, rubber, metals and particles worn from tires, clutch, brake linings, and the pavement surface.

While roadway pollutants are deposited at a constant rate (pounds per axle-mile of travel), their accumulation tends to level off substantially after several days (EPA, 1975). This leveling off is due, at least in part, to displacement to adjacent areas by passing traffic. All of this deposited material, however, is available for transport to receiving waters during storms, and deposition rates are considered to be valid estimates of pollutant contribution to stormwater runoff.

Since deposition of these substances onto the roadway surface is a function of axle-miles traveled, completion of the Build Alternative will result in deposition of greater pollutant volumes because additional vehicles will be diverted from residential streets. The increase in axle-miles traveled for the Build and No-Build Alternatives in 1980 and projected for 2010 is given in the following Table. These figures are based on the traffic volumes previously discussed in Section IV-D of this document.

---

1 Concern was expressed by the Maryland-National Capital Park and Planning Commission that Rock Creek could be adversely affected by the increased volumes of stormwater runoff resulting from the additional area of water impervious roadway. At a meeting with M-NCP&C on July 12, 1977, this problem was discussed and it was agreed that the relative increase in stormwater runoff for the Build in comparison to the entire watershed is insignificant. Adverse impacts to Rock Creek could be avoided by providing an improved drainage system without stormwater retention features. The necessary drainage system to accomplish this will be incorporated into the proposed improvements during final design, and will be coordinated with M-NCP&PC.

CAPITAL BELTWAY (I-495)
Yearly Axle-Miles Traveled

Vehicle Type	1980	Year 2010 No-Build	Year 2010 Build
Autos	880,620	987,710	1,128,180
Light Trucks	6,220	6,960	7,950
Medium Trucks	46,660	52,330	59,800
Heavy Trucks	98,110	110,030	125,690
Total/Day	1,031,610	1,157,030	1,321,620
Total/Year	3.77×10^8	4.11×10^8	4.82×10^8

Based on these traffic projections, the yearly pollution load that would be deposited on the 3.7 miles of the Capital Beltway can be estimated. The following tabulation provides estimated deposition of selected pollutants in the years 1980 and 2010:

Parameter	Deposition[1] (lbs/axle mile)	Pounds of Roadway Pollutants Deposited Within Project Area: 1980	Year 2010 No-Build	Year 2010 Build
Total Phosphate	1.44×10^{-6}	543	608	694
Ortho Phosphate	4.31×10^{-8}	16	18	21
Nitrate -N	1.89×10^{-7}	71	79	91
Petroleum	8.52×10^{-6}	3212	3595	4107
Rubber	1.24×10^{-5}	4675	5233	5977
Lead	2.79×10^{-7}	10518	11774	13448
Chromium	1.85×10^{-7}	70	78	89
Nickel	4.40×10^{-7}	166	186	212
Cadmium	3.11×10^{-8}	12	13	15

Another source of roadway-related pollutants is de-icing compounds containing chlorides and other chemicals that are spread on roadway surfaces to prevent ice formation and melt snow. These chemicals are applied to travel lanes during cold periods, as needed, in relatively uniform quantities per lane mile. Since the proposed improvements will result in the addition of seven miles of new travel lanes to the existing 21-lane miles along this portion of the Capital Beltway, a greater amount of de-icing agents will be applied during periods of snowfall.

1 From Contributions of Urban Roadway Usage to Water Pollution, EPA, 1975.

Clearly, the proposed improvements will result in greater pollutant loads being deposited on the Capital Beltway within the project area. Consequently, there will be a proportional increase in the pollutant volumes carried into Rock Creek by storm and meltwater runoff. It is not possible to predict what effect this increase will have on the Creek, which is already pollution stressed, and its biota. It is not anticipated, however, that any species presently inhabiting this stream will be extirpated, or that other significant impacts will result.

J. EFFECT ON WETLANDS

The proposed improvements will have no effect on any wetland area.

K. EFFECT ON FLOODPLAINS

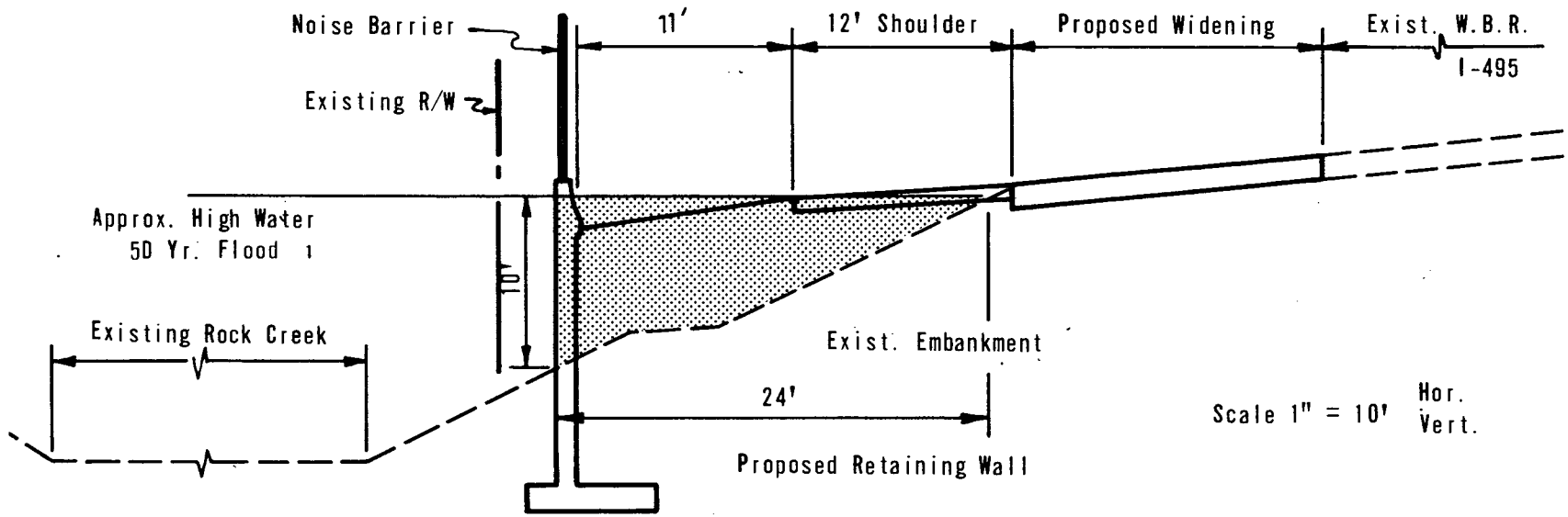
As described in Section I-C2d, the southern limit of the 100-year floodplain associated with Rock Creek is the embankment on which the existing Capital Beltway was constructed.

Preliminary studies indicate that in one location near Cedar Lane, retaining wall construction will encroach slightly on the existing floodplain. Figure IV-6 is a cross-section illustrating the greatest encroachment anticipated to result from construction of the proposed improvements. This shows that west of Cedar Lane (Station 318+) total maximum loss from the 50-year floodplain cross-section is a triangular area approximately 24' on its base and 10' in greater depth. This loss of approximately 120 square feet in a floodplain of approximately 4800 square feet will be insignificant. Since the floodplain is narrowest at this point, this would be the point of greatest loss in storage area. Any increase in upstream floodwater elevation resulting from this minor loss of storage area would effect only undeveloped parkland.

L. EFFECT ON TERRESTRIAL AND AQUATIC ECOLOGY

Although construction of the proposed improvements will require removal of some existing brush and woodland growing along the north side of the Capital Beltway, no significant adverse effect on terrestrial ecology will result. Since construction will be required along the edge of Rock Creek, there is the potential for impact to the existing aquatic community within and downstream of the project area during the construction phase of this project. Care will be taken, however, to avoid disturbance and control erosion-sedimentation during construction so no significant impact is anticipated.

CAPITAL BELTWAY (I-495) STUDY
FROM WEST OF I-270
TO
WEST OF MD. 97
STATE PROJECT NO. M-512-185-372



ALTERNATIVE B - THE BUILD

EXPECTED LOSS IN 50 YR. FLOODPLAIN STORAGE AT STA. 318± WBR
(West of Cedar Lane)

1 Approximate Elevation of 50 Yr. Floodplain is 214±, Data Taken From Maps Supplied By M-NCP & PC, 1977
One Hundred Year Floodplain Approximately 1' Higher In Elevation In The Project Area.

EXPECTED LOSS IN 50 YR.
FLOOD PLAIN STORAGE AT STA. 318± WBR
(WEST OF CEDAR LANE)

FIGURE IV-6

M. EFFECT ON THREATENED OR ENDANGERED SPECIES

The proposed improvements will have no effect on any known threatened or endangered species (the U. S. Fish & Wildlife Service and the Maryland Department of Natural Resources have determined that none inhabit the project area). These determinations are documented in Section V of this Environmental Assessment (see letters dated September 17, 1981 and August 11, 1981).

N. EFFECT ON PRIME OR UNIQUE FARMLAND

The proposed improvements will have no effect on any prime or unique farmland. All new construction will occur within existing SHA right-of-way, which generally consists of an embankment placed during the construction of the existing Capital Beltway in 1963.

O. EFFECT ON HISTORICAL AND ARCHEOLOGICAL SITES

The State Historic Preservation Officer has determined that the proposed improvements will have no effect on any historic site. This determination is documented in his letter dated December 12, 1977, which is reproduced in Section V of this document.

A thorough archeological reconnaissance of the project area has been completed. This reconnaissance located no archeological sites in this vicinity (see Section V, report dated May 6, 1975).

P. CONSTRUCTION IMPACTS

Construction activities required to implement the proposed improvements have the potential to produce temporary impacts that will cease when construction is completed. These potential temporary impacts were discussed previously in this Document under the headings identified below:

Construction Techniques	Section III-B
Traffic	Section IV-D
Safety	Section IV-E
Noise	Section IV-G
Erosion-Sedimentation	Section IV-I & IV-L

Q. LAND USE & SECONDARY IMPACTS

The proposed improvements are not inconsistent with any Local, County, State or regional plan for this area, nor will they generate or encourage any unplanned growth. Consequently, implementation of the Build Alternative will not be contrary to existing or proposed land use and will not result in adverse secondary impacts.

V
COMMENTS AND COORDINATION

12LR

V. COMMENTS & COORDINATION:

Introduction

The following lists reference pertinent coordination with Federal, State and Local agencies during the development of this Study.

As an aid to the reviewer, this coordination is listed chronologically by categories, including:

A. Public Meetings

B. Natural Environment

C. Archeological & Historic

Important letters resulting from this coordination are reproduced at the end of this section, arranged in chronological order. These letters are marked with an asterisk (*) in the following listings. All remaining letters and memoranda are available for public inspection at the Maryland State Highway Administration, Bureau of Project Planning, 707 North Calvert Street, Baltimore, Maryland.

A. PUBLIC MEETINGS (Refer to Section III-A)

February 19, 1975	Public Information Meeting (Project Initiation Meeting) C. W.Woodward School 11211 Old Georgetown Road Rockville, Maryland
March 15, 1976	Alternates Public Meeting Albert Einstein High School 11135 Newport Mill Road Kensington, Maryland
December 7, 1981	Public Informational Meeting Albert Einstein High School 11135 Newport Mill Road Kensington, Maryland

B. NATURAL ENVIRONMENT

January 5, 1976	Meeting with U. S. Fish & Wildlife Service to discuss possible impact to Rock Creek as required by Fish & Wildlife Coordination Act.
January 14, 1976	On-site visit with U. S. Fish & Wildlife Service to evaluate Rock Creek in Project area.
February 18, 1976	Comments from U. S. Fish & Wildlife Service concerning January 5, 1976 meeting and January 14, 1976 on-site visit to project area.
July 12, 1977	Meeting with Maryland-National Capital Park & Planning Commission to discuss necessary measures to reduce the impact of stormwater runoff from the Capital Beltway on Rock Creek.
July 25, 1977	Comments from U. S. Fish & Wildlife Service resulting from review of plans submitted for review on June 24, 1977.
August 2, 1977	Meeting with U. S. Soil Conservation Service, Montgomery County District, to discuss measures to control increase in stormwater runoff from the roadway and reduce stormwater impact on Rock Creek.
January 30, 1978	Meeting with U. S. Fish & Wildlife Service to discuss roadway drainage system for proposed roadway improvements.
February 8, 1978	*Letter from U. S. Fish & Wildlife Service discussing January 30 meeting and making recommendations for inclusion in Build Alternative.
August 11, 1981	*Letter from Maryland Department of Natural Resources with determination that no known populations of threatened or endangered species occur in the project area.
September 17, 1981	*Letter from U. S. Fish & Wildlife Service with determination that "... no Federally listed or proposed endangered or threatened species are known to exist in the project impact area. Therefore, no Biological Assessment or further Section 7 Consultation is required with the Fish and Wildlife Service (FWS)".

September 21, 1981	*Letter from U.S. Fish and Wildlife Service updating coordination.
November 29, 1981	Meeting with M-NCP&PC staff to discuss Alternative B. With special emphasis on air quality, noise, park, traffic, safety and stormwater runoff impacts.
December 24, 1981	*Letter from Maryland Department of Health and Mental Hygiene providing comments on Draft Air Quality analysis. They "...found that is it not inconsistent with the Administration's plans and objectives".
January 4, 1982	*Letter from US EPA providing comments on the Draft Air Quality analysis. They "... have no objection to further development of the project (as described) from an air quality standpoint".

C. ARCHEOLOGICAL & HISTORICAL

May 6, 1975	*Final completed report of Archeological Survey of Project Area completed. This survey found no prehistoric or historic arecheologically significant sites in the project area and resulted in determination that "... construction in the survey area will not alter archeological resources."
December 12, 1977	*Letter from State Historic Preservation Officer transmitting determination that "No known historic properties will be affected by the proposed improvements ...".

THE CATHOLIC
UNIVERSITY
OF AMERICA
WASHINGTON D.C. 20064

May 6, 1975

AN ARCHEOLOGICAL SURVEY OF A PORTION OF ROCK CREEK PARK, MARYLAND

Introduction

The purpose of this transcript is to report on an archeological site survey of a portion of Rock Creek Park, Montgomery County, Maryland. This survey was undertaken by Dr. William M. Gardner and his associates at the behest of Mr. Mukhand Lokhande of Wallace McHarg Roberts and Todd, project director for an environmental impact assessment of the Rock Creek Park section of the Capitol Beltway (Interstate 495). Original correspondence concerning the contract was made between Mr. Lokhande and Mr. Tyler Bastian, Maryland State Archeologist, who recommended Dr. Gardner as being prepared to undertake the archeological assessment. In a letter dated March 27, 1975, Mr. Lokhande inquired as to Dr. Gardner's availability to conduct such a study. A verbal contract was agreed upon via a telephone conversation on April 17, 1975, and Dr. Gardner forwarded a written proposal and budget to Mr. Lokhande on that same date. Terms of the proposal and budget called for four days of field reconnaissance with one additional day for analysis and report preparation and a total expenditure of $700.00. Further correspondence of May 5, 1975, advised Mr. Lokhande of the completion of the survey and of the failure to locate any archeological sites within the project boundaries. This report is a follow-up of that letter and represents the final completed report.

Methodology

A large scale map outlining the survey boundaries of the Rock Creek project was forwarded by Mr. Lokhande to the contractor. In addition to this map, a U. S. Geological Survey 7.5 minute series topographic map of the Kensignton, Maryland, quadrangle served to further delineate the survey area. This map, used in conjunction with the large scale map, aided in inference as to the possible location of archeological sites within the area to be surveyed. Known sites in the immediate proximity of the area were plotted and special attention was given such portions of the project area adjacent to or near those sites.

The basic methodology employed was a thorough foot reconnaissance performed by William P. Boyer, Jr., and Joseph McNamara. All exposed surfaces were completely examined. Such examination included inspection of bare areas around the trunks of trees and of the faces of slopes within the wooded areas of the survey. The bare, vertical banks of Rock Creek and all tributary cuts were also completely examined for signs of possible archeological remains.

Ninety-five soil auger samples were taken in an effort to locate buried deposits. Augering also served as a supplement to predictive inference based on archeological experience and ecological aspects in those areas where exposed surfaces were min[illegible]. Heavy disturbance resulting from storm sewer installation, highway, road, and pat construction, channelization and stabilization of Rock Creek, and random dumping negated the possibility of locating sites in a large portion of the survey area. Such prior disturbance also severely limited the probability of the presently proposed improvement of Interstate 495 doing any damage to archeological remains. Throughout the survey notations were made in a field notebook and on the maps concerning the general nature of sub-areas, their ecological setting and their archeological potential. Notations were also made concerning the relative nature and ages of soils encountered during soil augering as a guide for further predictive inferences.

Evaluation of Cultural Resources

Detailed topographic map study, complete foot reconnaissance of the entire area concerned, and analysis of the ninety-five soil auger samples failed to yeild any information aiding in the location of prehistoric or historic archeological remains. Although, as noted by Mr. Bastian in his initial correspondence to Mr. Lokhande, significant areheological resources are known to be present in Rock Creek Valley, no prehistoric or historic archeologically significant sites were located during the course of this survey. Based on these negative results and on archeological experience and inference, it can be predicted with a high degree of reliability that construction in the survey area will not alter archeological resources.

Respectfully submitted,

William M. Gardner

William M. Gardner

William P. Boyer, Jr.

William P. Boyer, Jr.

Joseph McNamara

Joseph McNamara by WMG.

J. MICHAEL MCWILLIAMS
ASSISTANT ATTORNEY GENERAL
COUNSEL TO THE
DEPARTMENT OF TRANSPORTATION
NOLAN H. BOWIE
SPECIAL ASSISTANT
ATTORNEY GENERAL

THE ATTORNEY GENERAL
Department of Transportation
State Highway Administration
300 West Preston Street
BALTIMORE, MARYLAND 21201
301-383-4350

August 10, 1976

Mr. M. Slade Caltrider
District Engineer
9300 Kenilworth Avenue
Greenbelt, Maryland 20770

Dear Mr. Caltrider:

In making your determination whether to recommend that the State Highway Administration engage in a full-scale study of the feasibility of adding two additional lanes within the median strip of the existing Capital Beltway, you have asked for our opinion as to whether construction of such additional lanes would be permissible under the agreement under which the Beltway was originally constructed through Rock Creek Stream Valley Park, Units Nos. 2 and 3 in Montgomery County. That agreement is dated September 12, 1963 and was executed by three parties, the State Roads Commission (predecessor of the State Highway Administration), the Maryland-National Capital Park and Planning Commission (M-NCPPC) and the National Capital Planning Commission (NCPC). The agreement relates to that segment of the Beltway between Maryland Route 97 and Interstate Route I-270.

We have reviewed the September 12, 1963 agreement and have consulted with legal counsel for both M-NCPPC and NCPC, Messrs. Sanford E. Wool and Daniel H. Shear, respectively. It is our opinion that construction of additional lanes would be permissible and not contrary to the September 12, 1963 agreement, so long as the following restrictions are adhered to: 1.) The existing vertical and horizontal alignments of the right-of-way would not be disturbed, but the new lanes (one additional lane in each direction) would be located using the same alignment and within the existing median strip. 2.) Separation of the highway lanes in opposite directions would be maintained through construction of a safety median barrier conforming to latest State Highway Administration and Federal Highway Administration requirements. 3.) All drainage alterations, modifications or improvements would conform to M-NCPPC requirements. 4.) Any future State Highway Administration work, either in connection with existing structures or in

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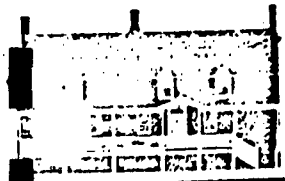
connection with structures changed or added in the process of building the two new lanes, would be confined to the area included in the easements granted to the State Roads Commission by the September 12, 1963 agreement. We have reached this conclusion primarily on the basis of Provision Number 3 of the agreement, which states: "Wherever possible, existing roadways in the park shall not be relocated and additional lanes shall be constructed in the median." (emphasis added) The emphasized clause indicates to us that the intention of the parties to the September 12, 1963 agreement was to permit the addition of new lanes in the median, as is now being considered.

In conclusion, we believe that the September 12, 1963 agreement should present no serious obstacle to any project for the addition of new lanes to the Capital Beltway, if the limitations heretofore enumerated are incorporated in the project.

Very truly yours,

Nolan H. Rogers
Assistant Attorney General

NHR/djw



Maryland Historical Trust

December 12, 1977

Mr. Eugene T. Camponeschi, Chief
Bureau of Project Planning
Maryland Department of Transportation
P. O. Box 717
300 West Preston Street
Baltimore, Maryland 21203

RE: Contract No. M512-185-372
I-495
West of I-270 to west of
Md. Rt. 97

Dear Mr. Camponeschi:

No known historic properties will be affected by the proposed improvements for the project listed above.

Sincerely yours,

John N. Pearce

John N. Pearce
State Historic
Preservation Officer

JNP:GJA:mms

cc: Ms. Ardith Cade
Ms. Eileen McGuckian
Mrs. Delores Stowell

Shaw House, 21 State Circle, Annapolis, Maryland 21401 (301) 269-2212, 269-2438

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UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
1825B Virginia Street
Annapolis, MD 21401

February 8, 1978

Mr. Eugene T. Camponeschi, Chief
Bureau of Project Planning
State Highway Administration
Maryland Department of Transportation
Post Office Box 717
Baltimore, MD 21203

Dear Mr. Camponeschi:

This is in reference to the January 30 meeting on the proposed plans for Capital Beltway (Route 495) improvement from west of I-270 to west of Maryland Route 97, and our previous letter of July 25, 1977.

The proposed alternative B within the existing right-of-way is likely to have less environmental impact than other alternatives. The drainage pattern proposed for the roadway was devised to avoid adding to peak flows and to not require structural improvements that would be in the existing flood plain.

We suggest that instead of draining the roadway toward Rock Creek, that surface water be drained to the opposite side of the road to allow for mixing with adjacent surface flows, thus diluting roadway contaminants and salt runoff following icy conditions.

In addition, the bank facing Rock Creek should be revegetated if possible following barrier installation to deter erosion. If riprap is required it should not be grouted and the smallest size stone practicable should be used.

We appreciate the opportunity to provide our input to your planning process. Please contact us if we can be of further assistance.

Sincerely yours,

Glenn Kinser
Supervisor
Annapolis Field Office

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MARYLAND DEPARTMENT OF NATURAL RESOURCES
WILDLIFE ADMINISTRATION

BERNARD F. HALLA
DIRECTOR

TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401
(301) 269-3195

August 11, 1981

Mr. Arnold W. Norden
Rummel, Klepper & Kahl
1035 N. Calvert Street
Baltimore, Maryland 21202

Dear Mr. Norden:

There are no known populations of threatened or endangered species within the ara of project study for proposed widening of the Capital Beltway, I-495 to I-270 to MD Route 97, as described to me in your letter of August 6, 1981.

Sincerely,

Gary J. Taylor
Nongame & Endangered
Species Program Manager

GJT:bw
cc: Carlo Brunori

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
DELMARVA AREA OFFICE
1825 VIRGINIA STREET
ANNAPOLIS, MD 21401

SEP 17 1981

Mr. Arnold W. Norden
Rummel, Klepper and Kahl
1035 N. Calvert Street
Baltimore, MD 21202

Dear Mr. Norden:

This responds to your August 6, 1981, request for information on the presence of Federally listed or proposed endangered or threatened species within the area affected by the widening of Interstate 495 between Interstate 270 and Highway 97, in Montgomery County, Maryland.

Except for occasional transient individuals, no Federally listed or proposed endangered or threatened species are known to exist in the project impact area. Therefore, no Biological Assessment or further Section 7 Consultation is required with the Fish and Wildlife Service (FWS). Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered. If project implementation is to occur more than 90 days in the future, we recommend that you verify the absence of endangered species with this office prior to finalization of your project plans.

This response relates only to endangered species under our jurisdiction. It does not address other FWS concerns under the Fish and Wildlife Coordination Act or other legislation.

Thank you for your interest in endangered species. If you have any questions or need further assistance, please contact Martha Carlisle of our Endangered Species staff at (301) 269-6324.

Sincerely yours,

John D. Green

John D. Green
Area Manager

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

DIVISION OF ECOLOGICAL SERVICES
1825B Virginia Street
Annapolis, Maryland 21401

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September 21, 1981

Mr. Arnold Norden
Rummel, Klepper and Kahl
1035 N. Calvert St
Baltimore, MD 21202

Dear Mr. Norden,

Pursuant to your request for comments updating previous coordination for the Capital Beltway, I-495/Rock Creek Park project, we offer the following. You indicated that plans consist basically of Alternative B, formerly proposed in 1975. This Alternative would widen I-495 within the existing median. Plans have evolved to the point where you believe a vertical retaining wall along a segment of Rock Creek would be required.

We would not expect to have objections to the project as proposed. We would suggest that all work for placement of the retaining wall foundation be performed in the dry or within cofferdams. Although the exact location is unknown, deflectors or ripraping along the toe may be appropriate.

Our comments of February 8, 1978, to Mr. Camponeschi, regarding runoff remain germane. We would be glad to further coordinate this project once specific plans are developed. If we can be of further assistance, please contact us.

Sincerely yours,

Glenn Kinser
Supervisor
Annapolis Field Office

State of Maryland

OFFICE OF ENVIRONMENTAL PROGRAMS

DEPARTMENT OF HEALTH AND MENTAL HYGIENE

201 WEST PRESTON STREET • BALTIMORE, MARYLAND 21201 • Area Code 301 • 383-3245

Harry Hughes, Governor

Charles R. Buck, Jr., Sc.D., Secretary

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December 24, 1981

Mr. Louis H. Ege, Jr., Acting Chief
Environmental Management
Bureau of Project Planning (Room 310)
State Highway Administration
707 North Calvert Street
Baltimore, Maryland 21202

Dear Mr. Ege:

RE: Contract No. M 512-185-372
F.A.P. No. I 495-2 (188)
Capital Beltway (I-495)
From West of I-270 to
West of Maryland Route 97

We have reviewed the Draft Air Quality Analysis for the above subject project and have found that it is not inconsistent with the Administration's plans and objectives.

Thank you for the opportunity to review this analysis.

Sincerely yours,

Edward Carter

Edward L. Carter, Chief
Air Quality Planning and
Data Systems
Air Management Administration

ELC:mmm

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
6TH AND WALNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

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JAN 4 1982

Wm. F. Schneider, Jr., Chief
Bureau of Project Planning
Maryland State Highway Administration
P.O. Box 717/707 North Calvert Street
Baltimore, Maryland 21203

Re: Air Analysis, Capital Beltway (I-495) from West of I-270 to West of MD Rte. 97, Montgomery County, MD

Dear Mr. Schneider:

We reviewed the above referenced document. Based upon this review, we have no objection to further development of the project (as described) from an air quality standpoint.

We hope that this letter assists you in meeting your responsibilities under NEPA. If you have any questions, or if we can be of further assistance, please contact Mr. William J. Hoffman of my staff at 215-597-2650.

Sincerely yours,

John R. Pomponio, Chief
EIS & Wetlands Review Section

APPENDIX

- GLOSSARY OF TERMS -

(These terms may appear in this Assessment or noted on the figures)

Arterial Highway : A highway primarily for thru-traffic, usually on a continuous route.

Auxiliary Lane : The portion of roadway adjoining the traveled way for parking, speed change, or for other purposes supplementary to the thru-traffic movement.

Average Daily Traffic (ADT) : The total volume of auto and truck traffic passing a given point in both directions during a given time period (greater than one day and less than one year) in whole days, divided by the number of days in that time period.

Control of Access : Full - Complete restriction of access on a thru facility except at interchanges. Grade separations for all crossings.

Design Hour Volume (DHV) : The percent of average daily traffic (ADT) generally accepted as the criterion used in the geometric design of rural and urban highways. Ideally the 30th highest hourly volume during a year, the DHV is commonly found to vary from 8% to 12% of the ADT.

Design Speed : A speed selected for purposes of design and correlation of those geometric features of a highway, such as curvature and sight distance, upon which safe vehicle operation is dependent. It is the maximum safe speed that can be maintained over a specified section of highway when conditions are so favorable that the design features of the highway govern. Geometric elements such as horizontal and vertical alignment and sight distance vary appreciably with design speed. Superelevation, although a function of the radius of curvature, is also influenced by the design speed. Other

features such as pavement and shoulder widths and roadside clearances are influenced by design speed, but to a lesser degree. Every effort should be made to provide above-minimum design values.

Freeway : An expressway with full control of access, grade separations at all roadway crossings. Access is permitted only at interchanges.

Grade Separation : Bridge structure such as an underpass or overpass that vertically separates two or more intersecting roadways, thus permitting traffic to cross without interference.

Housing of Last Resort: A Maryland SHA Program to rehouse people who are displaced by right-of-way acquisition for highway projects when the cost to do so exceeds the limits of the Uniform Relocation Act.

Levels of Service : Levels of Service are a measure of the conditions under which a roadway operates as it accommodates various traffic volumes. Influencing factors include speed, travel time, traffic interruptions, maneuvering freedom, safety, driving comfort, economy and, of course, the volume of traffic.

Levels of Service on expressways and freeways with uninterrupted flow conditions are ranked from A to F (best to worst) as follows:

Level A - free traffic flow, low volumes; high speeds.

Level B - stable traffic flow; some speed restrictions.

Level C - stable flow; increasing traffic volumes.

Level D - approaching unstable flow; heavy traffic volumes, decreasing speeds.

Level E - low speeds; high traffic volumes approaching roadway capacity; temporary delays.

Level F - forced traffic flow at low speeds; low volumes and high densities; frequent delays.

Median : That portion of a divided highway separating the travelled ways for traffic in opposite directions.

Operating Speed : Operating speed is the highest overall speed at which a driver can travel on a given highway under favorable weather conditions and under prevailing traffic conditions without exceeding the safe speed as determined by the design speed on a section-by-section basis used for design.

Outer Separation : A separator between a frontage road or ramp and the roadway (or ramp) of a controlled-access highway.

R/W, R.O.W. : Right-of-Way (Line)
The outer limits inside which the State owns and maintains for a highway facility.

Section 4(f) : Section 4(f) of the Department of Transportation Act requires that publicly-owned land from a park, recreation area, wildlife and/or waterfowl refuge, or historic site of national, state or local significance can be used for Federal-Aid Highway projects only if there is no feasible and prudent alternative to its use, and if the project includes all possible planning to minimize harm to "4(f) lands".

Section 6(f) : The Land and Water Conservation Fund Act provides grant-in-aid assistance to states for the acquisition of oudoor recreation or open space land. Section 6(f) of this Act requires that no property purchased or developed with these funds can be converted to other than public outdoor recreation uses without approval from the Secretary, Department of the Interior.

Shoulder : That portion of a highway adjacent and parallel to the travelled roadway for the accommodations of stopped vehicles for emergency use and for lateral support. May or may not be fully paved.

Side Slopes : The slope of earth permissible in given locations, as a ratio of horizontal to vertical measurement. (2:1, 4:1, 6:1).

Vehicle Recovery Area : That portion of ground adjacent to the traveled way that is clear of any fixed obstructions. For safety operation, generally no less than 30 feet measured from the edge of the traveled lane.

Wetlands : The term "wetlands" refers to those areas that are inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances, does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.