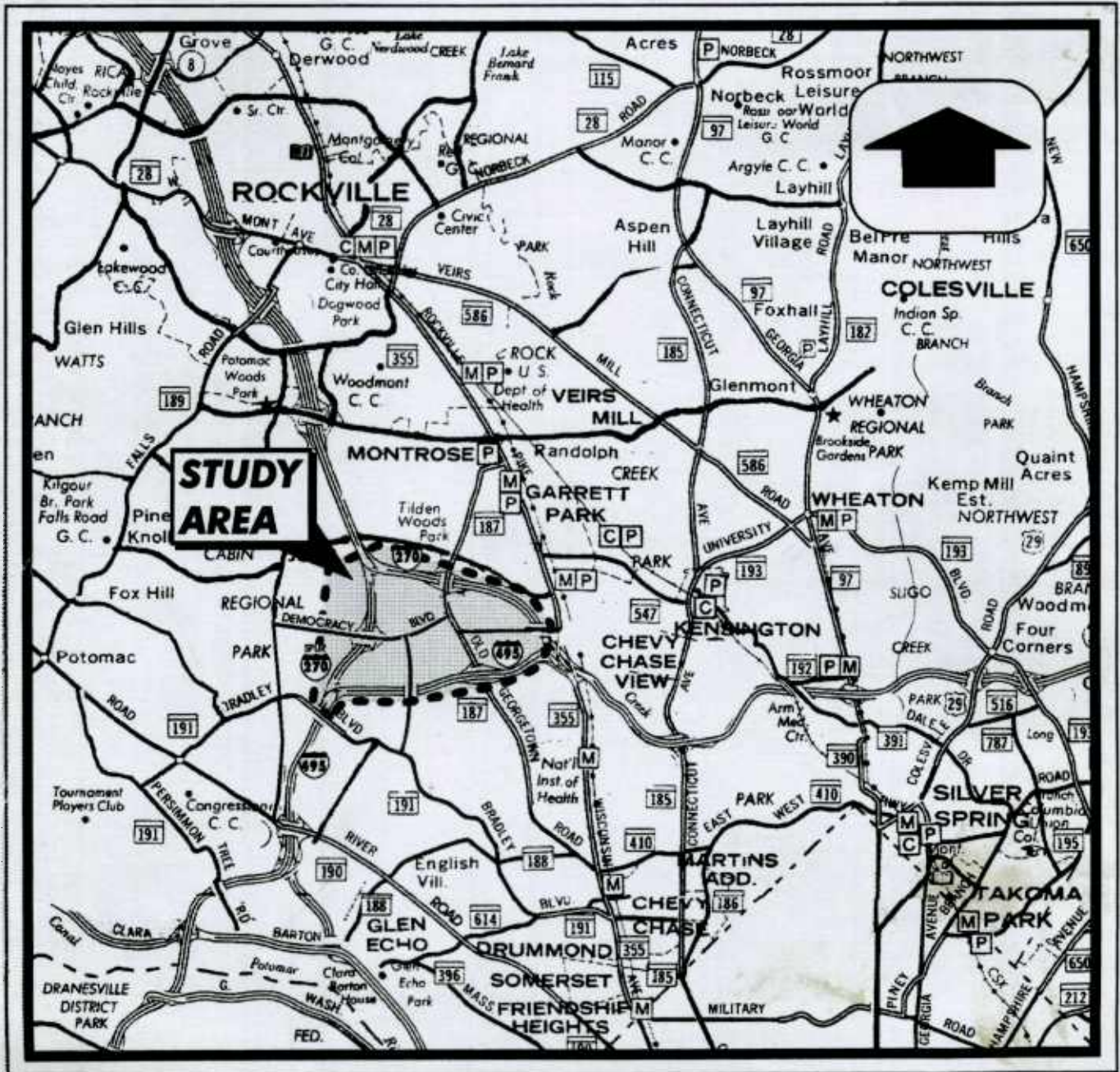


Environmental Assessment

FOR CONTRACT NO. M 401-156-372

I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD

Montgomery County, Maryland



prepared by:

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

REPORT NUMBER: FHWA-MD-EA-95-02-D

FEDERAL HIGHWAY ADMINISTRATION
REGION III

I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BOULEVARD

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); 49 U.S.C. 303
23 U.S.C. 128(a) and CEQ REGULATIONS (40 CFR 1500 et seq)

HAL KASSOFF
ADMINISTRATOR

10/26/95
Date

Neil J. Pedersen/cso
NEIL J. PEDERSEN, DIRECTOR
OFFICE OF PLANNING AND
PRELIMINARY ENGINEERING

11/9/95
Date

Susan J. Binder
FEDERAL HIGHWAY
ADMINISTRATION
DIVISION ADMINISTRATOR

SUMMARY

SUMMARY

1. Administrative Action

- Environmental Impact Statement
- Environmental Assessment
- Finding of No Significant Impact
- Section 4(f) Evaluation

2. Additional Information Concerning This Project May Be Obtained By Contacting:

Mr. Louis H. Ege, Jr.
 Deputy Director
 Office of Planning and Preliminary
 Engineering
 State Highway Administration
 707 N. Calvert Street
 Baltimore, Maryland 21202
 Hours: 8:00 a.m. to 4:30 p.m.
 Phone: (410) 545-8500

Ms. Mary Huie
 Planning Research and
 Environmental Engineer
 Federal Highway Administration
 The Rotunda - Suite 711
 W. 40th Street
 Baltimore, Maryland 21211
 Hours: 7:30 a.m. to 4:30 p.m.
 Phone: (410) 962-4342 ext. 148

3. Description of Action

The proposed improvements would increase traffic capacity and improve safety at the I-270 interchange with MD 187 (Old Georgetown Road) and the I-270 Spur interchange with Democracy Boulevard. These two interchanges provide access between I-270 and Rock Spring Office Park, Montgomery Mall and surrounding residential and commercial developments. The objective of the proposed action is to alleviate existing and projected traffic congestion and safely accommodate planned growth in the study area, as well as provide support for other modes of transportation.

Alternatives under consideration include the no-build (Alternative 1); improvements to the existing I-270/MD 187 interchange (Alternatives 2C, 2D and 2E); new Rockledge Drive connections to I-270, combined with the existing I-270/MD 187 interchange (Alternatives 3E, 3F and 3G); a median ramp connection to Rockledge Drive from I-270 for High Occupancy Vehicle (HOV) use (Alternative 3H); improvements to the existing I-270

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Spur/Democracy Boulevard interchange (Alternatives 4A, 4B, 4C and 4D); a new connection between Fernwood Road and the I-270 Spur to the north, with either general use ramps (Alternative 5B) or a reversible median ramp for HOV use (Alternative 5C); and a new ramp off of the northbound I-270 Spur, that would run parallel to I-270 and connect with Rockledge Drive (Alternative 6B).

Section 4 below provides additional information on the alternatives and includes descriptions of sub-options that are also under consideration, as well as combinations of alternatives that are possible. Figure S-1 indicates the general location of each of the proposed build alternatives.

4. Alternatives Description

The alternatives associated with this study for improving the I-270 and I-270 Spur interchanges fall into the following six categories:

- 1) The no-build alternative
- 2) Improvements to the existing I-270/MD 187 interchange
- 3) New I-270 connection to Rockledge Drive, maintaining use of the existing I-270/MD 187 interchange
- 4) Improvements to the existing I-270 Spur/Democracy Boulevard interchange
- 5) New I-270 Spur connection at Fernwood Road
- 6) New northbound I-270 Spur connection with Rockledge Drive

Alternative 1 (No-Build)

The no-build alternative is under consideration at each of the existing and proposed interchange locations under evaluation in this study. Assumed to be in place as part of the no-build are several projects that are currently under construction in the project area, including: the I-270 HOV ramps at the Y-Split, the I-270 Spur Widening, the I-270 Spur/I-495 interchange reconstruction and the Fernwood Road Bridge. Otherwise, the no-build alternative assumes that no major improvements to increase capacity would be undertaken at the existing interchanges within the study limits. Normal highway maintenance and safety improvements would still occur. As traffic volumes continue to grow, traffic delays and the length of the peak hours will expand. Detailed traffic analysis reveals that the I-270/MD 187 and I-270 Spur/Democracy Boulevard interchanges currently operate at unacceptable levels-

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of-service (LOS) in the peak hours that will worsen by the design year 2020 under the no-build alternative. These interchanges also include several high accident locations. It can be expected that as the magnitude of the congestion increases over time, the rate of accidents will also increase.

Alternatives 2C, 2D and 2E (Improvements to the Existing I-270/MD 187 Interchange)

Alternative 2C is a minor upgrade of the existing I-270/MD 187 interchange. The left turn approaches for the northbound I-270 to southbound MD 187 and southbound I-270 to MD 187 movements would be widened from one to two lanes. **Alternative 2D** proposes a more extensive improvement of the existing interchange, with all left turn movements associated with the diamond interchange widened to two lanes. The existing MD 187 bridge would need to be widened approximately 38 feet to accommodate double turn lane storage for the entire distance between the wings of the diamond. MD 187 would be widened and shifted slightly west to avoid impacts to St. Mark Church. **Alternative 2E** is similar to 2D in the extent of improvement that would be provided to the existing interchange; however, Alternative 2E replaces the signalized left turn from northbound I-270 to southbound 187 with a loop ramp in the northwest quadrant.

Alternatives 3E, 3F, 3G and 3H (New I-270 Connection to Rockledge Drive, Maintaining Use of the Existing I-270/MD 187 Interchange)

Alternatives 3E, 3F and 3G are the Rockledge Drive Connector alternatives, providing an access point off of I-270, northbound and southbound, directly into the Rock Spring Office Park via Rockledge Drive. **Alternative 3E** resembles a "split-diamond" configuration, where traffic on southbound I-270 exiting onto MD 187 would first need to travel through a signalized intersection at the south end of the Rockledge Drive Connector bridge. Similarly, vehicles traveling from MD 187 onto northbound I-270 would need to go through an intersection at the north end of the Rockledge Drive Connector bridge before entering I-270. **Alternative 3F** is similar to Alternative 3E, except that it eliminates the at-grade intersection for the ramp connection from southbound I-270 to MD 187. This traffic would instead travel under the proposed Rockledge Drive Connector bridge towards MD 187 and weave with traffic heading from Rockledge Drive onto southbound I-270. To maximize the length available for this weave section, traffic exiting Rock Spring Park on the

**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BLVD
BUILD ALTERNATIVES
KEY MAP**
NOT TO SCALE

**ALT. 6B:
I-270 SPUR /
I-270 EAST SEGMENT**

**ALTS. 5B, 5C:
I-270 SPUR/
FERNWOOD RD.**

PROPOSED HOV RAMP
CONSTRUCTION UNDER
SEPARATE PROJECT *

RECENTLY CONSTRUCTED
FERNWOOD ROAD BRIDGE

**ALTS. 3E, 3F, 3G, 3H
I-270 EAST SEGMENT /
ROCKLEDGE DRIVE**

APPROX LOCATION OF PLANNED
TRANSITWAY BY MONTGOMERY CO.

* PROJECTS CURRENTLY
UNDER CONSTRUCTION

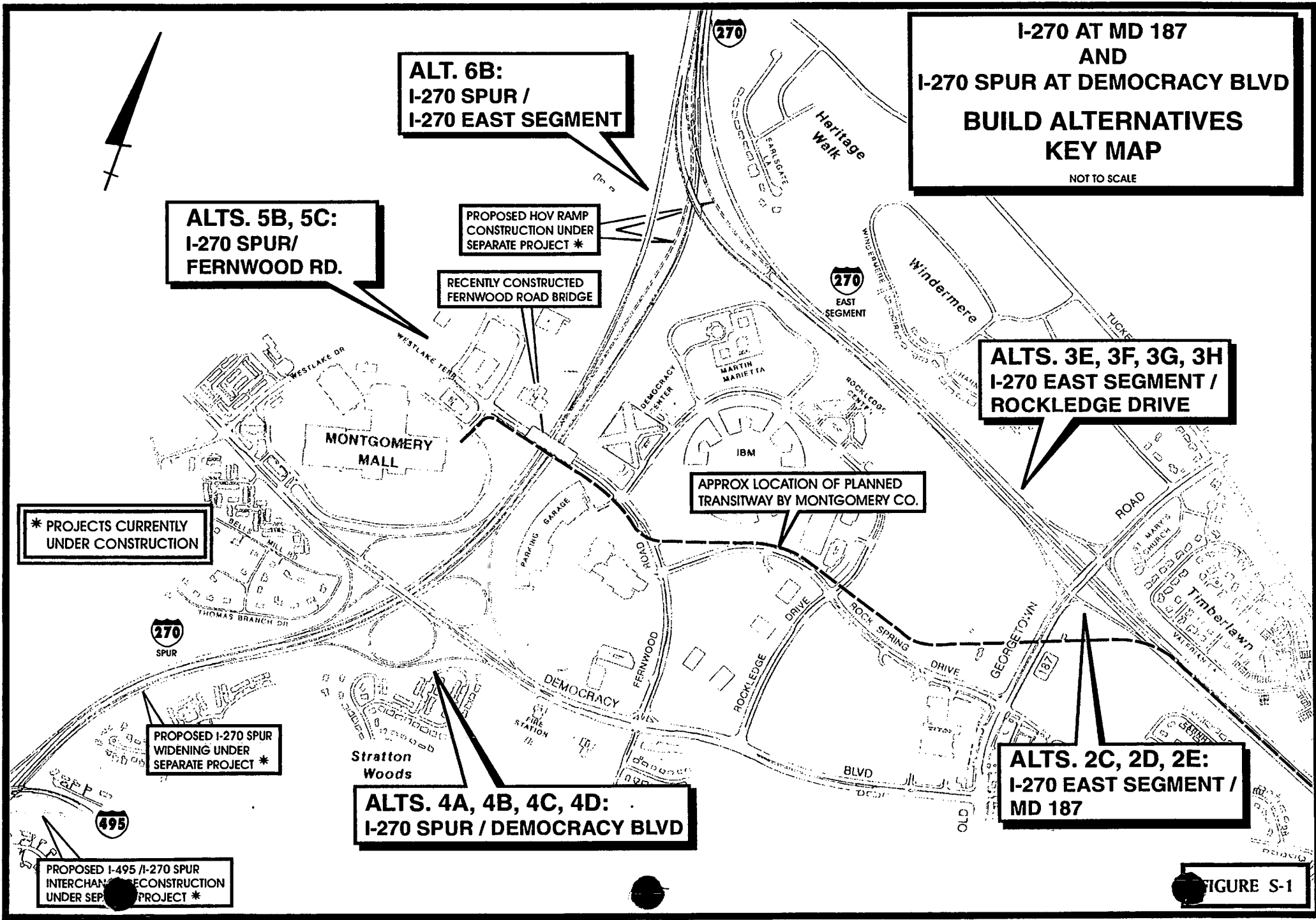
PROPOSED I-270 SPUR
WIDENING UNDER
SEPARATE PROJECT *

**ALTS. 4A, 4B, 4C, 4D:
I-270 SPUR / DEMOCRACY BLVD**

**ALTS. 2C, 2D, 2E:
I-270 EAST SEGMENT /
MD 187**

PROPOSED I-495 / I-270 SPUR
INTERCHANGE RECONSTRUCTION
UNDER SEPARATE PROJECT *

FIGURE S-1



Rockledge Drive Connector would turn left onto a loop ramp to enter the weave section heading towards southbound I-270 and MD 187. **Alternative 3G** is similar to Alternative 3F, but would avoid the use of a left turn and loop ramp to accommodate the traffic entering southbound I-270 from the Rockledge Drive Connector by providing a right hand ramp from the Rockledge Drive Connector onto the weave section heading towards southbound I-270 and MD 187. The resulting weave section would be approximately 100 feet shorter than with Alternative 3F.

Alternative 3H proposes a one-lane reversible median ramp between I-270 and a proposed bridge over southbound I-270, connecting to Rockledge Drive. It is anticipated that this ramp would be used for southbound I-270 HOV's in the morning peak and northbound I-270 HOV's in the evening peak. The southbound roadway of I-270 would need to be shifted as much as 26 feet to accommodate the median ramp. Retaining walls in the median of I-270 would be needed to support the ramp.

Alternatives 4A, 4B, 4C and 4D (Improvements to the Existing I-270 Spur/Democracy Boulevard Interchange)

Alternatives 4A and 4B propose modifications to the northbound side of the I-270 Spur/Democracy Boulevard interchange. **Alternative 4A** proposes to eliminate the short weaving distance between the loop in the southeast quadrant and the loop in the northeast quadrant by removing the northeast loop. The northbound-to-westbound loop would be replaced with a signal-controlled, double left turn from the northbound off-ramp onto westbound Democracy Boulevard. **Alternative 4B** proposes to correct the high accident location at the end of the northbound-to-westbound loop ramp via provision of an acceleration lane extending from the end of the ramp. **Alternative 4B** addresses the short weaving distance between the loop ramps by implementing a northbound Collector-Distributor (C-D) road to accommodate the weave. With either Alternative 4A or 4B, improvements are proposed on Democracy Boulevard, east of I-270 Spur, to improve the merge at the end of the ramp connecting northbound I-270 Spur to eastbound Democracy Boulevard.

Alternatives 4C and 4D propose modifications to the southbound side of the I-270 Spur/Democracy Boulevard interchange. **Alternative 4C** addresses the problem in the northwest quadrant of the short distance between the westbound ramp terminal and the

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entrance to Montgomery Mall by relocating the ramp terminal eastward to increase this distance. The southbound to eastbound left turn is also to be widened from one to two lanes. The left turn bay for the westbound to southbound movement is proposed to be widened from one to two lanes, requiring widening of the Democracy Boulevard bridge. **Alternative 4D** is similar to 4C except that it would replace the proposed westbound to southbound double left movement with a single lane loop in the northwest quadrant. The Democracy Boulevard bridge would require widening to accommodate the deceleration lane for westbound Democracy Boulevard.

Alternatives 5B and 5C (New I-270 Spur Connection at Fernwood Road)

Alternatives 5B and 5C consist of ramps connecting the I-270 Spur to the north side of the Fernwood Road overpass which is currently under construction and nearing completion by Montgomery County. **Alternative 5B** proposes a half-diamond interchange between the I-270 Spur and Fernwood Road, with ramps oriented just to and from the north. Ramps would intersect Westlake Terrace and Fernwood Road to the outside of the I-270 Spur roadways. The Fernwood Road Bridge would be widened to provide a left turn bay to access the northbound ramp. **Alternative 5C** proposes a one-lane reversible ramp connection between Fernwood Road and the northbound and southbound I-270 Spur median HOV lanes. This ramp would intersect the north side of the Fernwood Road overpass near the center of its span over the I-270 Spur. This connection would serve HOV's during the peak hours.

Alternative 6B (New Northbound I-270 Spur Connection with Rockledge Drive)

Alternative 6B would provide a route, in addition to Democracy Boulevard, for northbound I-270 Spur traffic to access the Rock Spring Park. This alternative proposes a ramp off of the northbound I-270 Spur, north of Fernwood Road, that runs parallel to I-270, behind Lockheed Martin, and intersects Rockledge Drive, adjacent to one of the Rockledge Drive Connector alignments (3E, 3F, or 3G). This alternative could only be constructed with Alternative 3E, 3F, or 3G, requiring traffic using the Alternative 6B ramp to turn right onto westbound Rockledge Drive.

Alternatives Combinations

The improvement alternatives being considered with this study are not mutually exclusive; in fact, a wide range of alternatives could be constructed together. As described in subsequent sections, a combination of alternatives would be required to meet all of the needs identified at the two subject interchange locations.

Generally, within a category of Alternatives (e.g., 2's, 3's, etc.), alternatives cannot be combined. The exceptions are 2C, which could be a first stage of the ultimate construction of 2D or 2E, and the 4's, where an alternative to improve one side of the interchange (e.g., 4A or 4B) could be combined with either of the alternatives on the other side of the interchange.

Other combinations of alternatives that cannot be made include: 2E with 3E, 3F or 3G; 4B with 5B or 6B; and 5B with 6B. Alternative 6B can only be built with one of the 3's.

5. Summary of Impacts

A summary comparison of impacts associated with the alternatives under consideration is presented in Table S-1, on the following page, and briefly described below:

**TABLE S-1
COMPARISON OF ALTERNATIVES**

Analysis Item	ALT 1 (NO BUILD)	ALT 2C	ALT 2D	ALT 2E	ALT 3E	ALT 3F	ALT 3G	ALT 3H
Socioeconomic								
1. Relocation (Total Takes)								
a. Residence	0	0	0	0	0	0	0	0
b. Business	0	0	0	0	0	0	0	0
c. Church/School	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
2. Number of Properties Affected								
a. Residential	0	0	0	0	0	0	0	0
b. Business	0	0	3	5	4	4	4	1
c. Church/School	0	0	1	1	0	0	0	0
d. Parkland or Recreation Area	0	0	0	0	0	0	0	0
e. Historic/Archeological Sites	0	0	0	0	0	0	0	0
Total	0	0	4	6	4	4	4	1
3. Right-of-Way Required - hectares (acres)								
a. Residential	0	0	0	0	0	0	0	0
b. Business	0	0	0.5 (1.3)	5.6 (13.8)	3.0 (7.4)	3.4 (8.3)	2.5 (6.1)	1.1 (2.8)
c. Church/School	0	0	0.04 (0.1)	0.04 (0.1)	0	0	0	0
Total	0	0	0.54 (1.4)	5.7 (13.9)	3.0 (7.4)	3.4 (8.3)	2.5 (6.1)	1.1 (2.8)
4. Consistent with area land use plans	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Natural Environment								
1. Number of stream reloc. - meters (Linear Ft. - LF)	0	0	0	1 - 106.7 (350)	1 - 88.4 (290)	1 - 243.8 (800)	1 - 121.9 (400)	0
2. Number of stream crossings	0	0	0	3	3	3	3	3
3. Affected threatened or endangered species	0	0	0	0	0	0	0	0
4. Area of prime farmland affected	0	0	0	0	0	0	0	0
5. 100-year Floodplain impacted - hectares (acres)	0	0	0	0	0.04 (0.1)	0.04 (0.1)	0.04 (0.1)	0
6. Wetlands affected - hectares (acres)	0	0	0	0.6 (1.5)	0.3 (0.8)	0.3 (0.8)	0.3 (0.8)	0.2 (0.5)
7. Waters of the U.S. affected - meters (Linear Ft.) ¹	0	0	0	0	10.7 m (35 LF)	10.7 m (35 LF)	10.7 m (35 LF)	10.7 m (35 LF)
8. Woodlands impacted - hectares (acres)	0	0	0	3.2 (7.8)	4.8 (11.9)	5.8 (14.3)	4.7 (11.7)	1.7 (4.3)
Noise								
Number NSA's exceeding abatement criteria or increasing 10 dBA or more over ambient	8 of 9	8 of 9	8 of 9	8 of 9	8 of 9	8 of 9	8 of 9	8 of 9
Air Quality								
CO violations of 1-hr or 8-hr standards	0	0	0	0	0	0	0	0
Cost (Millions)								
TOTAL	0	\$2.1	\$6.8	\$22.4	\$27.1	\$26.7	\$27.9	\$12.7

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(CONTINUED)

¹ Length of Waters of the U.S. affected is included in length of stream relocations.

**TABLE S-1 (CONT.)
COMPARISON OF ALTERNATIVES**

Analysis Item	ALT 4A	ALT 4B	ALT 4C	ALT 4D	ALT 5B	ALT 5C	ALT 6B
Socioeconomic							
1. Relocation (Total Takes)							
a. Residence	0	0	0	0	0	0	0
b. Business	0	0	0	0	0	0	0
c. Church/School	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
2. Number of Properties Affected							
a. Residential	0	0	0	0	0	0	0
b. Business	2	3	0	0	1	1	4
c. Church/School	0	0	0	0	0	0	0
d. Parkland or Recreation Area	0	0	0	0	0	0	0
e. Historic/Archeological Sites	0	0	0	0	0	0	0
Total	2	3	0	0	1	1	4
3. Right-of-Way Required - hectares (acres)							
a. Residential	0	0	0	0	0	0	0
b. Business	0.2 (0.5)	0.3 (0.7)	0	0	0.3 (0.7)	0.1 (0.3)	1.2 (2.9)
c. Church/School	0	0	0	0	0	0	0
Total	0.2 (0.5)	0.3 (0.7)	0	0	0.3 (0.7)	0.1 (0.3)	1.2 (2.9)
4. Consistent with area land use plans	No	Yes	Yes	Yes	Yes	Yes	Yes
Natural Environment							
1. Number of stream relocations - meters (Linear Feet)	1 - 182.9 (600LF)	2 - 289.6 (950LF)	1 - 83.8 (275LF)	1 - 83.8 (275LF)	0	0	1 - 22.9 (75LF)
2. Number of stream crossings	2	2	2	3	0	0	3
3. Affected threatened or endangered species	0	0	0	0	0	0	0
4. Area of prime farmland affected	0	0	0	0	0	0	0
5. 100-year Floodplain impacted - hectares (acres)	0.0	0.1 (0.2)	0.2 (0.4)	0.2 (0.5)	0	0	0.0
6. Wetlands affected - hectares (acres)	0.04 (0.1)	0.1 (0.2)	0.0	0.0	0.0	0.0	0.0
7. Waters of the U.S. affected - meters (Linear Feet)¹	182.9 m (600 LF)	289.6 (950 LF)	83.8 (275 LF)	83.8 (275 LF)	0	0	0
8. Woodlands impacted - hectares (acres)	1.1 (2.6)	2.4 (6.0)	0.8 (2.1)	1.0 (2.4)	1.7 (4.2)	0	1.5 (3.6)
Noise							
Number NSA's exceeding abatement criteria or increasing 10 dBA or more over ambient	8 of 9	8 of 9	8 of 9	8 of 9	8 of 9	8 of 9	8 of 9 ²
Air Quality							
CO violations of 1-hr or 8-hr standards	0	0	0	0	0	0	0 ²
Cost (Millions)							
TOTAL	\$9.2	\$15.8	\$8.1	\$8.8	\$10.5	\$9.4	\$11.2

¹ Length of Waters of the U.S. affected is included in length of stream relocations.

² Alt. 6B air and noise analyses were made assuming combination with Alt. 3E.

Socioeconomic

The social and economic environment would generally be improved with the build alternatives as a result of increased capacity and safer roadway and pedestrian conditions. Access to adjacent residential communities, commercial establishments and office complexes would be improved. There would be no residential or business displacements under any of the alternatives. The amount of right-of-way needed ranges from 0.0 hectares (0.0 acre) to 7.2 hectares (17.9 acres), depending upon the build alternative or combination of build alternatives selected.

No property from any publicly-owned public parklands would be required with any of the build alternatives. Several of the alternatives propose the widening of Democracy Boulevard along Stratton Park; however, no park property would be required and access to the park would not change.

The State Historic Preservation Officer has determined that there are no sites in the project area that are on or eligible for the National Register of Historic Places. A Phase I archeological survey completed for the project identified one archeological site. It was determined that this archeological site was previously disturbed and is not considered National Register eligible.

The project is consistent with the transportation elements of the Montgomery County Master Plans governing this project area: specifically, the North Bethesda - Garrett Park Master Plan, dated December, 1992; and the Potomac Sub-Region Master Plan, dated May, 1980. Table S-2, on the following page, summarizes the effects of the build alternatives on the socioeconomic environment.

Noise

The projected noise levels for the design year 2020 indicate that the Federal Highway Administration (FHWA) Noise Abatement Criteria (67 dBA) is approached or exceeded under both the no-build and build conditions at 8 of the 9 noise sensitive areas. However, the widening or other modifications proposed with any of the build alternatives result in less than a 5 dBA increase in noise levels in build conditions as compared to the no-build condition in the design year.

Air Quality

The State and National Ambient Air Quality Standards will not be exceeded under the no-build alternative or the build alternatives.

TABLE S-2

**SUMMARY OF EFFECTS OF BUILD ALTERNATIVES
ON THE SOCIAL AND ECONOMIC ENVIRONMENT**

ALTERNATIVE	NO. OF PROPERTIES AFFECTED ¹	RIGHT-OF-WAY AREA REQUIRED	EFFECTS ON SOCIAL AND ECONOMIC ENVIRONMENT
2C	0	0	No Effects - minor ramp widening
2D	4	0.6 ha (1.4 Ac)	Acceleration lane on northbound MD 187 would require minor right-of-way taking from St. Mark Church.
2E	6	5.6 ha (13.9 Ac)	Acceleration lane on northbound MD 187 would require minor right-of-way taking from St. Mark Church. The new ramps in the northwest quadrant of the I-270/MD 187 interchange would reduce the buffer between the Windermere Community homes and the ramps from 228.6 meters (750 feet) to 91.4 meters (300 feet).
3E	4	3.0 ha (7.4 Ac)	Retaining walls as high as 7.3 m (24 feet) would be required along the I-270 side of the Windermere Community. Access to the Rock Spring Office Park from I-270 and MD 187 would be substantially improved allowing its expansion in accordance with current zoning. No residential property would be required, only commercial.
3F	4	3.4 ha (8.3 Ac)	Retaining walls as high as 7.3 m (24 feet) would be required along the I-270 side of the Windermere Community. Access to the Rock Spring Office Park from I-270 and MD 187 would be substantially improved allowing its expansion in accordance with current zoning. No residential property would be required, only commercial.
3G	4	2.5 ha (6.1 Ac)	Retaining walls as high as 7.9 m (26 feet) would be required along the I-270 side of the Windermere Community. Access to the Rock Spring Office Park from I-270 and MD 187 would be substantially improved allowing its expansion in accordance with current zoning. No residential property would be required, only commercial.

¹ Right-of-way acquisition required.

Additional detail regarding these effects is contained in Sections IV.A. and IV.B.

NOTE: All proposed retaining walls would be within or just outside the existing interstate right-of-way (where there is currently fencing), and therefore, would not affect pedestrian access to I-270 or community buildings.

TABLE S-2 (Cont'd)

**SUMMARY OF EFFECTS OF BUILD ALTERNATIVES
ON THE SOCIAL AND ECONOMIC ENVIRONMENT**

ALTERNATIVE	NO. OF PROPERTIES AFFECTED ¹	RIGHT-OF-WAY AREA REQUIRED	EFFECTS ON SOCIAL AND ECONOMIC ENVIRONMENT
3H	1	1.1 ha (2.8 Ac)	Residential community effects would be negligible, as all widening and retaining wall construction would take place within or west of the existing I-270 median, north of MD 187.
4A	2	0.2 ha (0.5 Ac)	Retaining walls as high as 3.0 meters (10 feet) would be required along the I-270 side of the Stratton Commons Community. Democracy Boulevard widening east of I-270 would require minor right-of-way taking from A.D. Camalier and Marriott Corporation Properties.
4B	3	0.3 ha (0.7 Ac)	Retaining walls as high as 3.0 meters (10 feet) would be required along the I-270 side of the Stratton Commons Community. Democracy Boulevard widening east of I-270 would require minor right-of-way taking from A.D. Camalier and Marriott Corporation. Horizontal ramp realignment in the northeast quadrant would also require minor right-of-way taking from the Marbeth Partnership Property.
4C	0	0	Retaining walls as high as 1.5 meters (5 feet) would be required along the I-270 Spur side of the Wildwood Hills Community to minimize impacts to Thomas Branch.
4D	0	0	The new ramp carrying westbound Democracy Boulevard traffic onto southbound I-270 Spur would reduce the buffer between the Wildwood Hills Community homes and the ramp from 57.9 meters (190 feet) to 54.9 meters (180 feet).

¹ Right-of-way acquisition required.

Additional detail regarding these effects is contained in Sections IV.A. and IV.B.

NOTE: All proposed retaining walls would be within or just outside the existing interstate right-of-way (where there is currently fencing), and therefore, would not affect pedestrian access to I-270 or community buildings.

TABLE S-2 (Cont'd)

SUMMARY OF EFFECTS OF BUILD ALTERNATIVES
ON THE SOCIAL AND ECONOMIC ENVIRONMENT

ALTERNATIVE	NO. OF PROPERTIES AFFECTED ¹	RIGHT-OF-WAY AREA REQUIRED	EFFECTS ON SOCIAL AND ECONOMIC ENVIRONMENT
5B	1	0.3 ha (0.7 Ac)	Retaining walls as high as 4.9 meters (16 feet) would be required along the I-270 side of the Democracy Associates Property and as high as 4.9 meters (16 feet) would be required along the I-270 side of the Ourisman Car Dealership Property. The proposed ramp from Fernwood Road to northbound I-270 Spur would require right-of-way taking from the Democracy Associates Property.
5C	1	0.1 ha (0.3 Ac)	Fernwood Road widening would require minor right-of-way taking from the Democracy Associates Property.
6B	4	1.2 ha (2.9 Ac)	Retaining walls as high as 4.6 meters (15 feet) would be required along the I-270 side of the Rock Spring Office Park. As this alternative would be, by design, combined with one of the Alternative 3's, access to the Rock Spring Office Park from northbound I-270 Spur and I-270 would be improved.

¹ Right-of-way acquisition required.

Additional detail regarding these effects is contained in Sections IV.A. and IV.B.

NOTE: All proposed retaining walls would be within or just outside the existing interstate right-of-way (where there is currently fencing), and therefore, would not affect pedestrian access to I-270 or community buildings.

Natural Resources

Construction would partially occur within the 100-year floodplains of Thomas Branch, Old Farm Creek and several of their tributaries. This construction would be in the form of retaining walls along the stream channel banks, extensions to existing culverts and parallel relocations of stream channels. There may be temporary stream impacts during the construction of the retaining walls. Depending upon the combination of build alternatives selected, encroachment on 100-year floodplains ranges from 0.0 hectares (0.0) to 0.32 hectares (0.8 acres). Additional hydrologic and hydraulic analyses will be undertaken to determine structural designs to minimize impacts to the floodplain and water quality.

No prime farmland soils or soils of statewide importance have been identified in the project area.

The build alternatives would impact from 0.0 hectares (0.0) to 0.65 hectares (1.6 acres) of nontidal wetlands and from 0.0 hectares (0.0) to 324.6 meters (1,065 L.F.) of Waters of the U.S., depending on the alternative or combination of alternatives selected. Wetland replacement, time of year construction restrictions, sediment and erosion control measures, and storm water management practices, approved by the Maryland Department of the Environment, will be strictly enforced during construction to minimize impacts to water quality and wetlands.

No known federal or state listed threatened or endangered species exist within the project area. Any disturbed habitat would not be densely populated due to its proximity to the existing highway.

Construction impacts will include noise, dust sedimentation, access and minor commercial establishment disruption. Mitigation through careful construction timing, revegetation, erosion and sediment control, placement of construction staging areas, and implementation of effective maintenance of traffic plans will minimize both short-term and long-term impacts of this transportation improvement project.

No land use was identified with the potential for hazardous waste contamination.

**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BOULEVARD**

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 1500.2 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 with the project area or would not be impacted by the proposed action.

I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BOULEVARD

ENVIRONMENTAL ASSESSMENT FORM

		YES	NO	COMMENTS
A. Land Use Considerations				
1.	Will the action be within the 100 year floodplain?	<u>X</u>	_____	<u>See Section IV.E., page IV-12</u>
2.	Will the action require a permit for construction or alteration within the 50 year floodplain?	_____	<u>X</u>	
3.	Will the action require a permit for dredging, filling, draining or alteration of a wetland?	<u>X</u>	_____	<u>See Section IV.E., page IV-15</u>
4.	Will the action require a permit for the construction or operation of facilities for solid waste disposal including dredge and excavation spoil?	_____	<u>X</u>	
5.	Will the action occur on slopes exceeding 15%?	<u>X</u>	_____	<u>See Section III, Figures III-2A, III-2B and III-2C</u>
6.	Will the action require a grading plan or a sediment control permit?	<u>X</u>	_____	<u>See Section IV.E., page IV-11</u>
7.	Will the action require a mining permit for deep or surface mining?	_____	<u>X</u>	

ENVIRONMENTAL ASSESSMENT FORM (Continued)

		YES	NO	COMMENTS
8.	Will the action require a permit for drilling a gas or oil well?	<u> </u>	<u> X </u>	
9.	Will the action require a permit airport construction?	<u> </u>	<u> X </u>	
10.	Will the action require a permit for the crossing of the Potomac River by conduits, cables or other like devices?	<u> </u>	<u> X </u>	
11.	Will the action affect the use of a public recreation area, park forest, wildlife management area, scenic river or wildland?	<u> </u>	<u> X </u>	<u>See Section IV.A., page IV-2</u>
12.	Will the action affect the use of any natural or manmade features that are unique to the county, state, or nation?	<u> </u>	<u> X </u>	
13.	Will the action affect the use of an archaeological or historical site or structure?	<u> </u>	<u> X </u>	<u>See Section IV.D., page IV-6</u>

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?	<u> X </u>	<u> </u>	<u>See Section IV.E., page IV-8</u>
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ENVIRONMENTAL ASSESSMENT FORM (Continued)

		YES	NO	COMMENTS
15.	Will the action require the construction, alteration, or removal of a dam, reservoir, or waterway obstruction?	<u>X</u>	___	<u>See Section IV.E., page IV-24</u>
16.	Will the action change the overland flow of storm water or reduce the absorption capacity of the ground?	<u>X</u>	___	<u>See Section IV.E., page IV-8</u>
17.	Will the action require a permit for the drilling of a well?	___	<u>X</u>	
18.	Will the action require a permit for water appropriation?	___	<u>X</u>	
19.	Will the action require a permit for the construction and operation of facilities for treatment or distribution of water?	___	<u>X</u>	
20.	Will the project require a permit for the construction and operation of facilities for treatment and/or land disposal of liquid waste derivatives?	___	<u>X</u>	
21.	Will the action result in any discharge into surface or sub-surface water?	___	<u>X</u>	

ENVIRONMENTAL ASSESSMENT FORM (Continued)

		YES	NO	COMMENTS
22.	If so, will the discharge affect ambient water quality parameters and/or require a discharge permit?	<u> </u>	<u> X </u>	

C. Air Use Considerations

23.	Will the action result in any discharge into the air?	<u> X </u>	<u> </u>	<u>See Section IV.G., page IV-41</u>
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24.	If so, will the discharge affect ambient air quality parameters or produce a disagreeable odor?	<u> </u>	<u> X </u>	
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25.	Will the action generate additional noise which differs in character or level from present conditions?	<u> X </u>	<u> </u>	<u>See Section IV.F., page IV-31</u>
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26.	Will the action preclude future use of related air space?	<u> </u>	<u> X </u>	
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27.	Will the action generate any radiological, electrical, magnetic, or light influences?	<u> </u>	<u> X </u>	
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D. Plants and Animals

28.	Will the action cause the disturbance, reduction or loss of any rare, unique or valuable plant or animal?	<u> </u>	<u> X </u>	<u>See Section IV.E., page IV-31</u>
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ENVIRONMENTAL ASSESSMENT FORM (Continued)

		YES	NO	COMMENTS
29.	Will the action result in the significant reduction or loss of any fish or wildlife habitats?	<u> </u>	<u> X </u>	
30.	Will the action require a permit for the use of pesticides, herbicides or other biological, chemical or radiological control agents?	<u> </u>	<u> X </u>	
E. Socioeconomic				
31.	Will the action result in a pre-emption or division of properties or impair their economic use?	<u> </u>	<u> X </u>	
32.	Will the action cause relocation of activities, structures, or result in a change in the population density or distribution?	<u> </u>	<u> X </u>	<u>See Sections IV.A. and IV.B., pages IV-1 and IV-3</u>
33.	Will the action alter land values?	<u> X </u>	<u> </u>	<u>See Section IV.B., page IV-5</u>
34.	Will the action affect traffic flow and volume?	<u> X </u>	<u> </u>	<u>See Section II.D., page IV-12</u>
35.	Will the action affect the production, extraction, harvest or potential use of a scarce or economically important resource?	<u> </u>	<u> X </u>	

ENVIRONMENTAL ASSESSMENT FORM (Continued)

	YES	NO	COMMENTS
36. Will the action require a license to construct a sawmill or other plant for the manufacture of forest products?	<u> </u>	<u> X </u>	
37. Is the action in accord with federal, state, regional and local comprehensive or functional plans--including zoning?	<u> X </u>	<u> </u>	<u>See Section IV.C., page IV-5</u>
38. Will the action affect the employment opportunities for persons in the area?	<u> X </u>	<u> </u>	<u>See Section IV.B., page IV-3</u>
39. Will the action affect the ability of the area to attract new sources of tax revenue?	<u> X </u>	<u> </u>	<u>See Section IV.B., page IV-5</u>
40. Will the action discourage present sources of tax revenue from remaining in the area to attract new sources of tax revenue?	<u> </u>	<u> X </u>	
41. Will the action affect the ability of the area to attract tourism?	<u> </u>	<u> X </u>	

F. Other Considerations

42. Could the action endanger the public health, safety or welfare?	<u> </u>	<u> X </u>	
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ENVIRONMENTAL ASSESSMENT FORM (Continued)

		YES	NO	COMMENTS
43.	Could the action be eliminated without deleterious affects to the public health, safety, welfare or the natural environment?	<u> </u>	<u> X </u>	<u>See Section II.D. & II.E., pages II-8 and II-13</u>
44.	Will the action be of statewide significance?	<u> </u>	<u> X </u>	
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?	<u> </u>	<u> X </u>	
46.	Will the action require additional power generation or transmission capacity?	<u> </u>	<u> X </u>	
47.	This agency will develop a complete environmental effects report on the proposed action.	<u> </u>	<u> X* </u>	

* In accordance with the Natural Environmental Policy Act, and 23 CFR 771, this Environmental Assessment has been prepared. This document satisfies the requirements of the Maryland Environmental Policy Act and the National Environmental Policy Act.

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I. DESCRIPTION OF PROPOSED ACTION

I. DESCRIPTION OF PROPOSED ACTION

A. Project Location

The I-270 interchange at MD 187 (Old Georgetown Road) and the I-270 Spur interchange at Democracy Boulevard are located in Montgomery County, Maryland, northwest of Washington, D.C. (Figure I-1). I-270, within the study limits, is occasionally referred to as the I-270 East Segment, as it links mainline I-270, from Rockville, to I-495, east of MD 355. MD 187 is the only interchange on I-270 within this 3.89 kilometer (2.42 mile) stretch of interstate highway. The I-270 Spur, occasionally referred to as the I-270 West Spur, connects mainline I-270 from Rockville to I-495, west of MD 187. Democracy Boulevard is the only interchange within this 2.59 kilometer (1.61 mile) stretch of interstate highway. These two interchanges provide access between I-270 and Rock Spring Office Park, Montgomery Mall, and surrounding residential and commercial developments.

B. Project Description

This project planning study was initiated based on the severity of traffic congestion and the high accident rate within and in the immediate vicinity of the I-270 interchanges at MD 187 and Democracy Boulevard and the planned growth in population, employment and office/retail space in the area served by the interchanges. Interchange characteristics that contribute to operational problems include insufficient weave length, insufficient turn lane storage length, lack of merge area, insufficient acceleration/deceleration lane length and substandard interchange ramp geometrics. This study includes an evaluation of existing conditions and alternative methods to improve capacity and safety, considering how efficiently each method provides for planned growth and accommodates other modes of transportation that are proposed in the study area (Figure I-2).

C. Description of Existing Environment

1. Social Environment

a. Population and Housing

According to the 1990 U.S. Census, the population of Montgomery County grew by nearly 31 percent, from 579,053 to 757,027 people, during the period 1980-1990, becoming the State's most populous jurisdiction. By the design year 2020, the County's population is expected to reach 1,000,000 people, an increase of 32 percent over 1990.

The study area, situated south of Rockville and northwest of Washington, D.C. in Montgomery County, is bounded by Tuckerman Lane to the north, I-495 to the south, the junction of I-270 (East Segment) and I-495 to the east, and Westlake Drive to the west. The area contains a substantial amount of residential development, as well as commercial/retail and office development. There was a rapid rate of urban growth in this region in the 1980's.

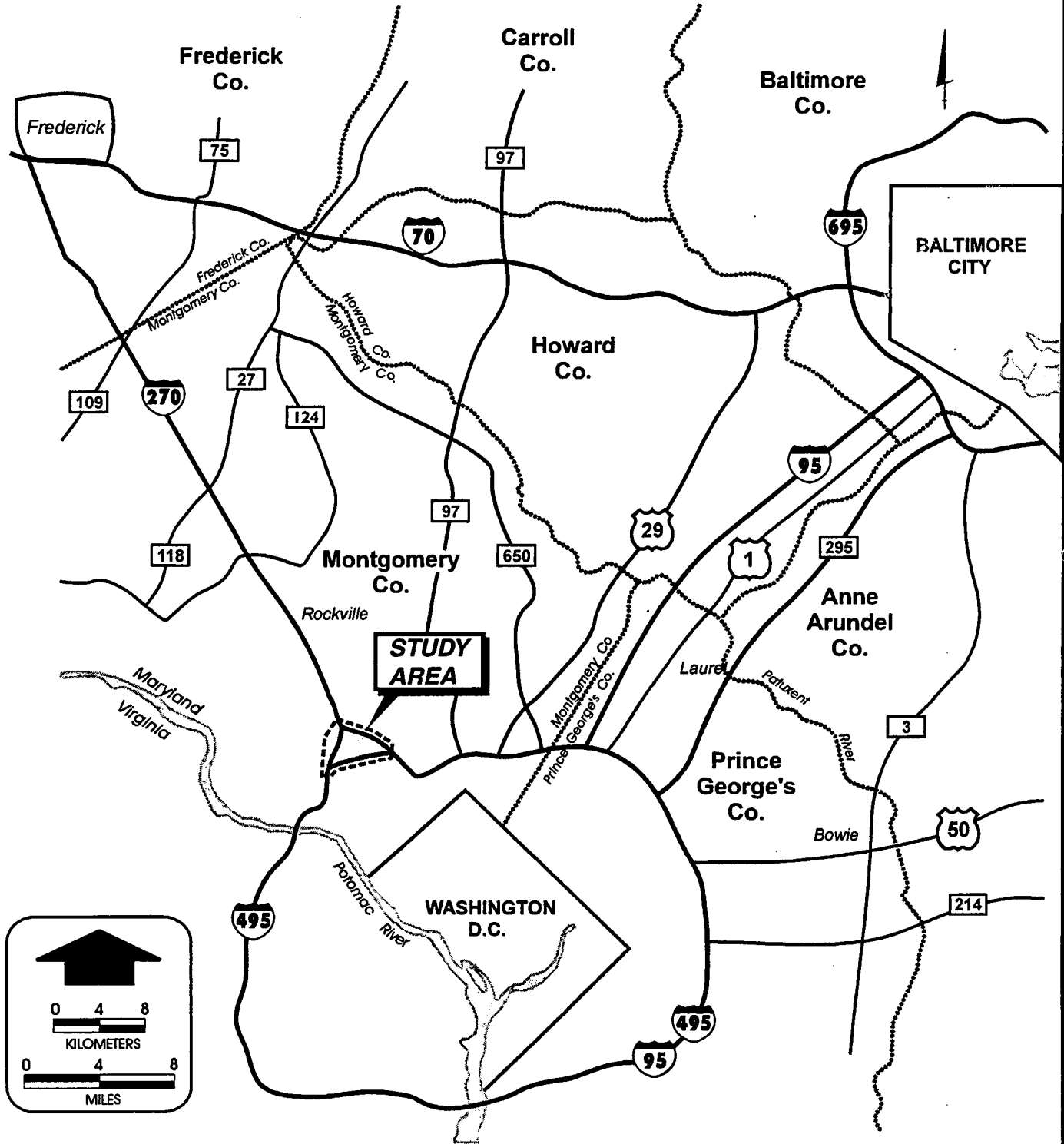
The study area consists of Census Tract 7045.01 and portions of Census Tracts 7012.03, 7012.05, 7044.01, and 7060.04, as shown in Figure I-3. Since census information for portions of census tracts is not available, the data available for the census tracts as a whole will be used for the purpose of discussing the socioeconomic aspects of the study area. During the period 1980-1990, the total population in the area defined by these census tracts increased by nearly 29 percent, from 21,917 to 28,223 people. Census Tracts 7012.05 and 7045.01 experienced net declines in population while the other census tracts experienced a growth in population. The population in Census Tract 7012.03 increased by nearly 130 percent. In 1990, the largest portion (36.9 percent) of the total population in the study area census tracts resided in Census Tract 7012.03, and the smallest percentage (9.5 percent) in Census Tract 7044.01. Table I-1 shows population data for the study area for 1980 and 1990.

TABLE I-1

POPULATION AND GROWTH IN THE STUDY AREA

Area	1980	1990	% Change
Montgomery County	579,053	757,027	+30.7
<u>Census Tracts</u>			
7012.03	4,532	10,409	+129.7
7012.05	5,981	5,740	-4.0
7044.01	2,657	2,669	+0.5
7045.01	3,912	3,623	-7.4
7060.04	4,835	5,782	+19.6
Total Census Tracts	21,917	28,223	+28.8

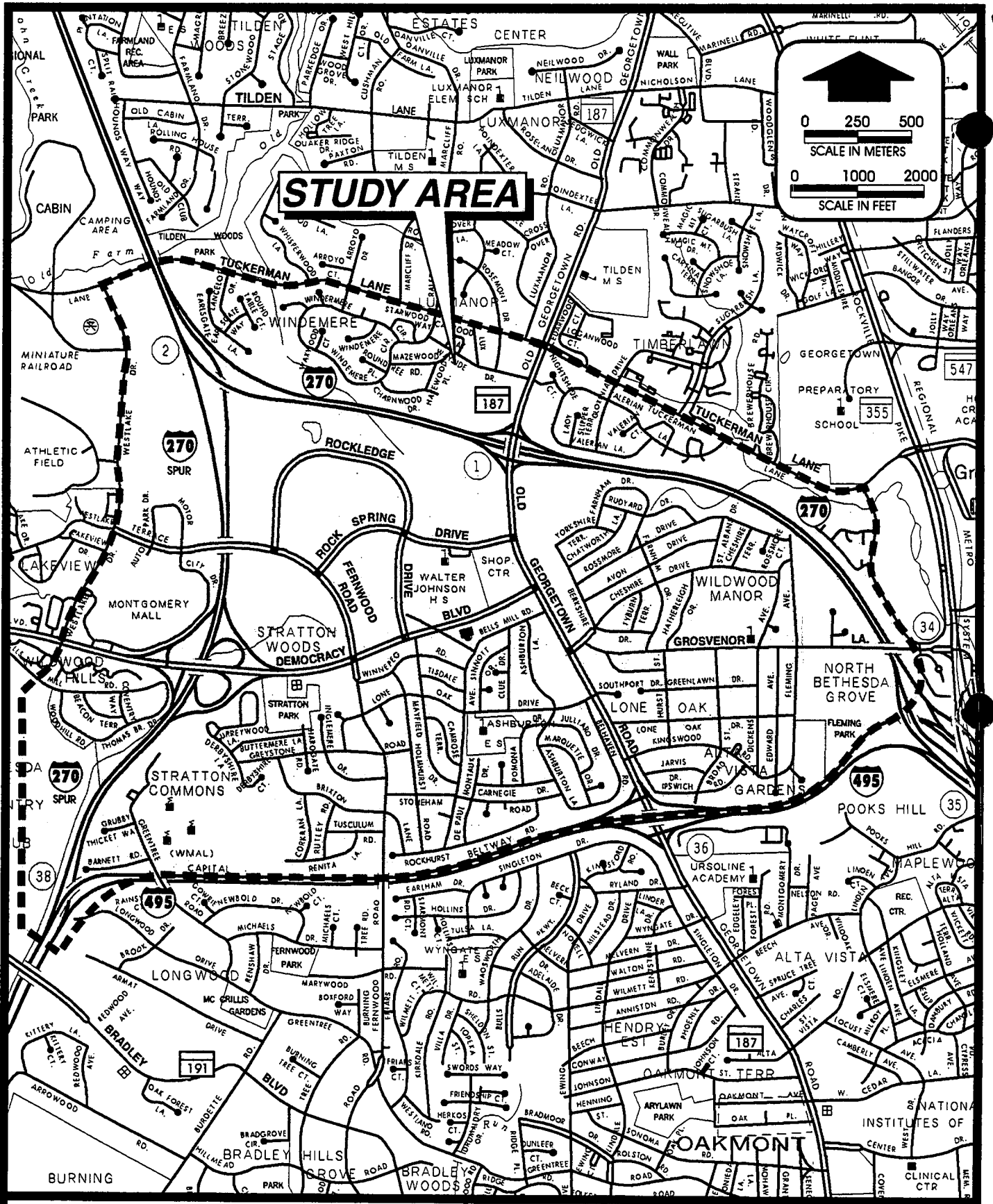
Source: U.S. Bureau of the Census



**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BLVD**

**PROJECT LOCATION
MAP**

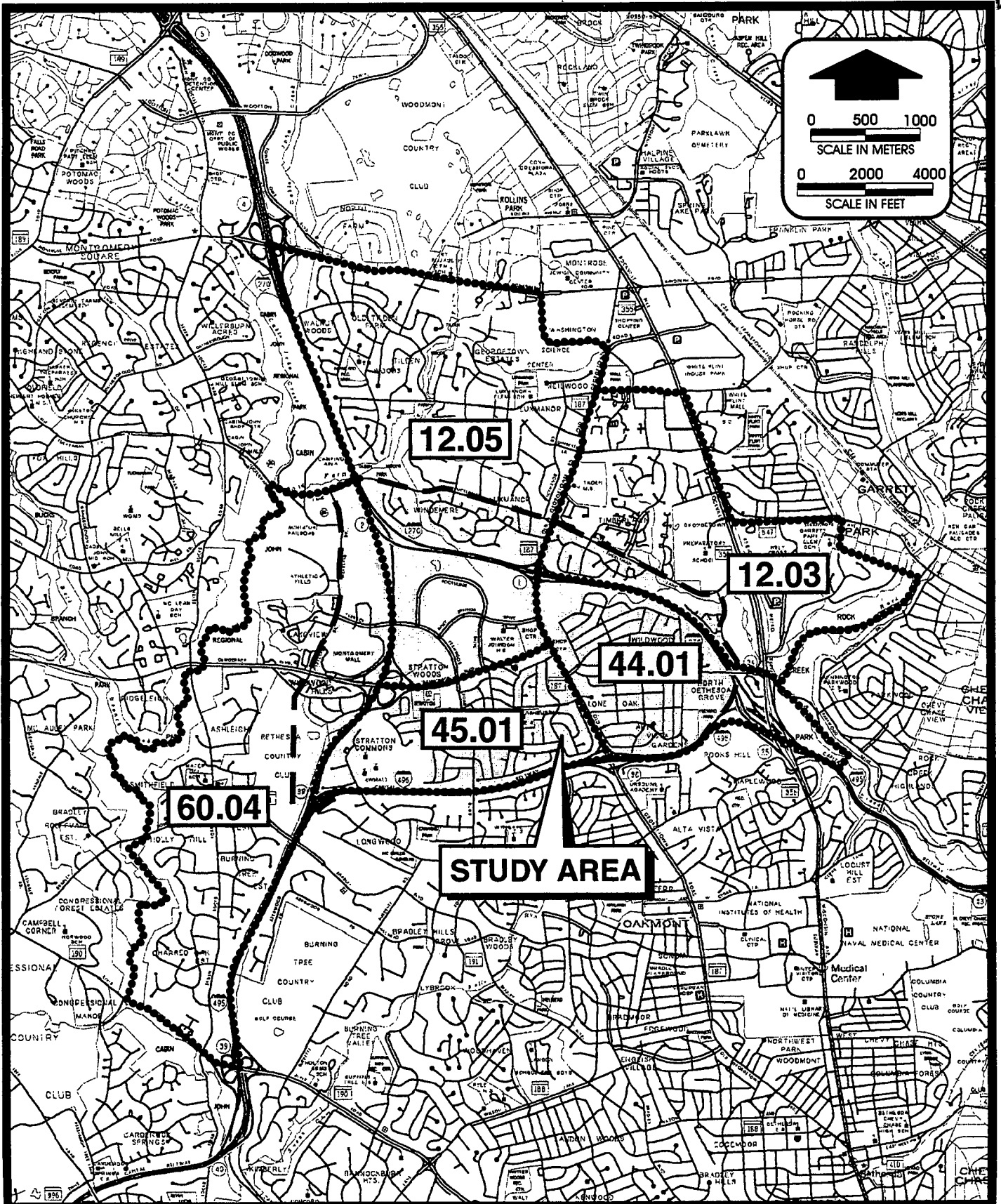
FIGURE I - 1



**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BLVD**

STUDY AREA MAP

FIGURE 1-2



**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BLVD**

CENSUS TRACTS

FIGURE I - 3

An analysis of 1990 census data indicates that 70.6 percent of the total population in the study area census tracts were persons 16 through 64 years old, and 13.7 percent were persons 65 years and older. The largest percentage of the age group 65 years and older (35.2 percent) appears in Census Tract 7012.03. However, Census Tract 7060.04 has the highest ratio of persons 65 years and older to total number of persons residing in the census tract (17.5 percent). County-wide data from the Maryland Office of Planning indicate that there were 282,228 households in 1990 in Montgomery County, and the average household size was 2.65 persons. By the year 2020, the number of households in Montgomery County is projected to increase by 41.7% to 400,000, with an average household size of 2.47 persons. The total number of housing units in Montgomery County in 1990 was 295,723 units including 13,495 vacant units. By housing type, single family detached units were the most numerous with 153,872 units, or approximately 52% of the total number of housing units in Montgomery County in 1990. Within the study area, residential communities have generally reached the built-out level and the overall number of housing units is not expected to increase significantly.

The 1990 U.S. Census indicates that 21.1 percent of the total population in the study area census tracts were foreign born, with the largest percentage of this group (37.8 percent) residing in Census Tract 7012.03. Census Tract 7045.01 has the highest ratio of foreign born persons to total number of persons residing in the census tract (27.8 percent).

According to the Maryland Office of Planning, in 1990, 76.7% of the total population of Montgomery County were White, 12.2% were African-American, 8.2% were Asian or Pacific Islander, 0.2% were American Indian, Eskimo, or Aleut, and 2.7% were of other races. Persons of Hispanic origin, any race, totalled 7.4% of the County's population.

b. Communities Within the Study Area

The study area is comprised of a number of existing residential communities, mostly single-family homes, as shown on Figure I-4. The northern portion of the study area contains Heritage Walk, Windermere, Luxmanor, and Timberlawn. Stratton Commons, Stratton Woods, Fernwood, and Alta Vista Gardens are located in the southern portion of the study area. The eastern section of the study area contains Wildwood Manor, Grosvenor Woods and North Bethesda Grove. Wildwood Hills is located in the western portion of the study area. Rock Spring Office Park, a corporate office center included in the study area that provides over 492,000 square meters (5.3 million square feet) of office space in 21 buildings, and Georgetown Village are located in the central portion of the study area.

c. Community Facilities (Figure I-4)

The following services and facilities are contained in the study area:

- Schools
 - Ashburton Elementary School
 - Walter Johnson High School
 - Grosvenor Center

- Churches
 - Bethesda United Church of Christ
 - St. Luke's Episcopal
 - North Bethesda United Methodist
 - St. Mark Church
 - Wildwood Baptist

- Libraries
 - Montgomery County Public Library, Davis Branch
 - Davis Information Center for People with Special Needs

- Fire and Ambulance Services
 - Bethesda Fire Department, Company 26

- Health Facilities
 - Wildwood Medical Center

- Public Transportation
 - Washington Metropolitan Area Transit Authority (regional bus service)
 - Montgomery County Department of Transportation Ride - On Service

Public Water and Sewer Service

Additional services and facilities that are available to local residents but are located outside the study area are listed below:

- Schools
 - Georgetown Preparatory
 - Tilden Middle School, Woodward Center
 - Wyngate Elementary
 - The Woods Academy

- 46
- Fernwood
 - Wyngate Woods

Stratton Park, located along the south side of Democracy Boulevard, just east of I-270 Spur, is the only publicly-owned public park which borders any of the study area roadways that are the focus of this project. Stratton Park was purchased with Maryland Program Open Space and HUD Open Space Land Program funds and is maintained by M-NCPPC. Recreational facilities within this site include a softball field, a football/soccer field, basketball courts, tennis courts, playground equipment and a picnic shelter. Stratton Park is considered essential to the recreational needs of the surrounding community, and there are no plans for future changes to the park.

2. Economic Environment

a. Countywide Employment Characteristics

In 1990, there were 512,700 jobs in Montgomery County. By the year 2020, employment in Montgomery County is expected to reach 697,100, an increase of 36% over 1990 figures. Of the total number of jobs in the County in 1990, approximately 39% were service oriented, while approximately 17% were government jobs. Service and government type jobs were the two largest categories of jobs in Montgomery County in 1990. It is projected that approximately 48% of the jobs in the County in 2020 will be service type jobs and approximately 14% will be government jobs. Countywide, the median household income in 1990 was \$54,089, increasing in 1993 to \$58,700, an increase of 8.5% over the three year period.

b. Study Area Employment Characteristics

Within the study area census tracts in 1990, there was a total of 17,329 persons of age 16 and over who were employed. An analysis of 1990 census data reveals that the majority of this working population in the study area census tracts were employed in public administration, professional services, retail trade, health services, education, business and repair services, finance, insurance and real estate.

Much of the study area contains residential development; however, the area also includes commercial/retail, office park, and business park development. Located within the study area are offices of major corporations, shopping centers, and a regional retail facility, Montgomery Mall. Most of the employment in the study area can be attributed to these establishments. Rock

Spring Office Park, a corporate office center centrally located in the study area, contains over 492,000 square meters (5.3 million square feet) of office space. The Montgomery Mall, located in the western extremity of the study area, contains approximately 102,000 square meters (1.1 million square feet) of retail space. Within the study area, there is the potential for further growth in commercial and office development. Rock Spring Office Park could potentially experience an increase in gross floor area of 288,000 square meters (3.1 million square feet), approximately 60% more than exists today. This translates into a substantial increase in employment opportunities in the future.

3. Land Use

a. Existing Land Use in the Study Area

The Maryland-National Capital Park and Planning Commission (M-NCPPC) is a bi-County (Montgomery and Prince George's) agency whose responsibilities include all local plans, recommendations on zoning amendments, administration of subdivision regulations and general administration of parks. To carry out these responsibilities, M-NCPPC has divided the counties into planning areas, two of which contain the study area for this project.

Most of the study area is located in the North Bethesda-Garrett Park Planning Area (Planning Area 30), with a small portion west of the I-270 Spur being located in the Potomac - Cabin John Planning Area. For the purpose of describing and analyzing demographics, socioeconomics, land use and transportation issues related to this project planning study, study area limits are defined as indicated on Figures I-2 to I-5.

As shown in Figure I-5, the existing land use in the study area consists of the following categories:

- Residential, One-family, 20,000 S.F. lots (R-200)
- Residential, One-family, 9,000 S.F. lots (R-90)
- Residential, One-family, 6,000 S.F. lots (R-60)
- Residential, Townhouse
- Local Commercial/Retail
- Commercial, Office Park
- Technology and Business Park
- Vacant Land
- Institutional (Church, School, etc.)
- Parkland

As seen on Figure I-5, a substantial portion of the study area is being used for residential purposes, mostly single-family homes, in communities such as Windermere, Luxmanor, and Timberlawn to the north; Stratton Woods to the south; Wildwood Manor to the east; and Wildwood Hills to the west.

The sector centrally located in the study area that is bounded by I-270 (East Segment), I-270 Spur, MD 187, and Democracy Boulevard encompasses 100 hectares (247 acres), and is made up almost entirely of the Rock Spring Office Park, which is a corporate office center containing over 492,000 square meters (5.3 million square feet) of office space in 21 buildings. About 40 percent of the Park's total office square footage is occupied by Lockheed Martin, Marriott, and IBM, while high technology professional and service firms occupy the remaining office space. Also included in this sector is Walter Johnson High School and Georgetown Square Shopping Center.

Located in the northwest quadrant of the I-270 Spur interchange at Democracy Boulevard, the western extremity of the study area, is the Montgomery Mall, which contains approximately 102,000 square meters (1.1 million square feet) of retail space and serves as a regional retail facility for the area. Retail land uses are also found in the form of smaller shopping centers and individual stores along MD 187 (Old Georgetown Road).

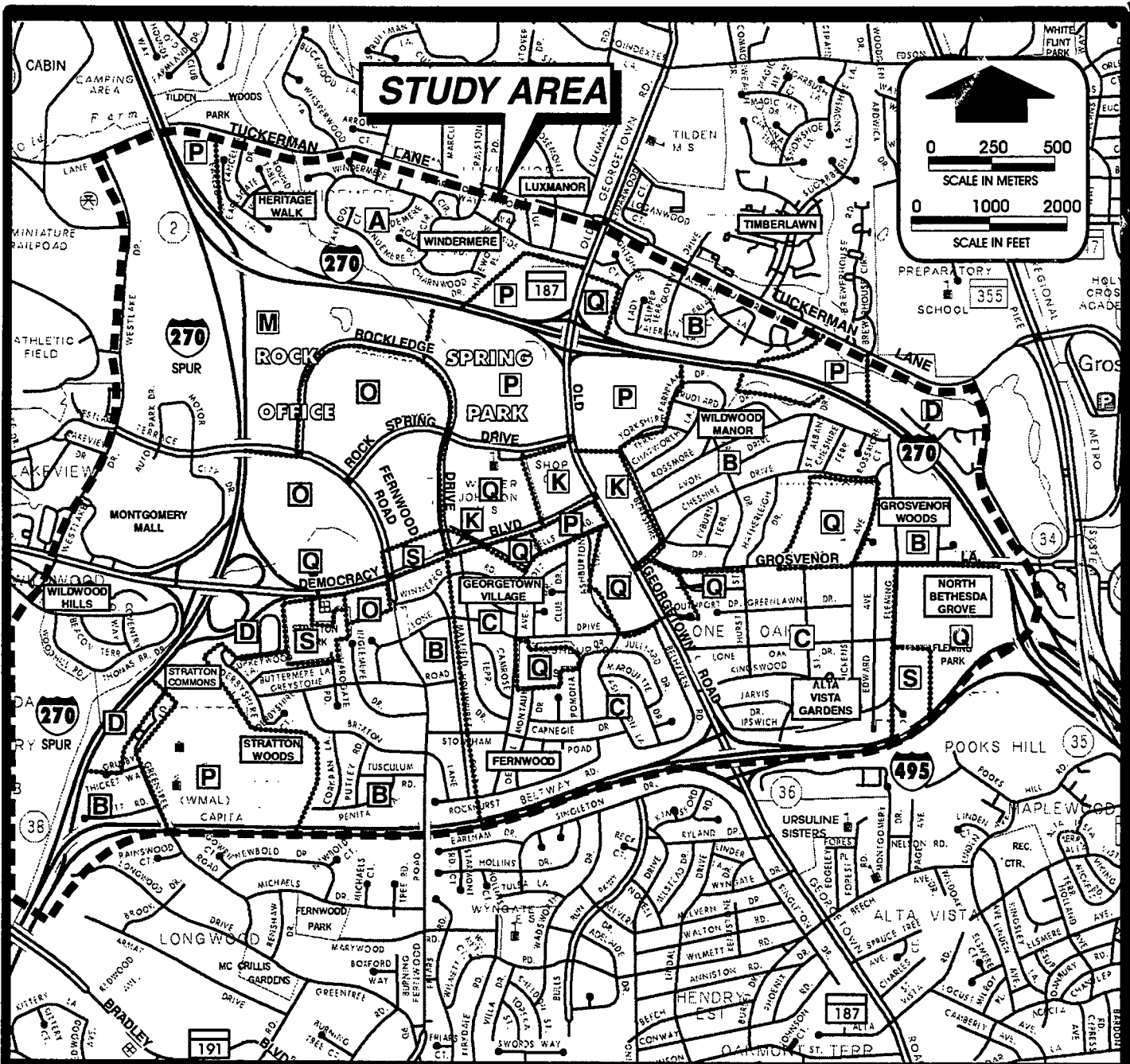
b. Hazardous Materials/Waste Sites

A field survey and land use examination of the project area did not identify any land use likely to have potential for hazardous waste contamination. In addition, the U.S. Environmental Protection Agency (EPA) listing of Superfund sites (CERCLIS) did not identify any sites within the project area.

c. Future Land Use in the Study Area

The North Bethesda-Garrett Park Master Plan, Interim Reference Edition was approved and adopted in December, 1992. This Master Plan sets forth recommendations as to where the existing zoning should be maintained and the locations where zoning should be changed.

The existing zoning in the study area, shown in Figure I-6, consists of the following categories:



EXISTING LAND USE

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> A. Residential, One-Family
20,000 sq. ft. B. Residential, One-Family
9,000 sq. ft. C. Residential, One-Family
6,000 sq. ft. D. Residential, Townhouse E. Multiple-Family, Low Density
Residential F. Multiple-Family, Medium Density,
Residential | <ul style="list-style-type: none"> G. Multiple-Family, High Density
Residential H. Planned Residential Development I. Transit Station, Residential J. Transit Station, Mixed K. Local Commercial / Retail L. General Commercial Office / Retail M. Commercial, Office Park N. Light Industrial / Mixed Use O. Technology & Business Park. P. Vacant Land | <ul style="list-style-type: none"> Q. Institutional
(Church, School, Etc.) R. Parking Lot S. Parkland |
|--|--|--|

Note:
This is a complete listing of existing land uses as stated in the Master Plan. Not all existing land uses are contained in the study area.

Reference:
North Bethesda-Garrett Park Master Plan, Dec., 1992
Interim Reference Edition

**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BLVD**

EXISTING LAND USE

FIGURE 1-5

R-200	Residential, One-Family
R-90	Residential, One-Family
R-60	Residential, One-Family
R-30	Multiple-Family Low Density Residential
R-H	Multiple-Family High Rise Planned Residential
O-M	Office Building Moderate Intensity
C-P	Commercial Park
C-1	Local Commercial
I-3	Technology and Business Park

There are several parcels in the study area which have the potential to undergo further development in accordance with their current zoning or through modifications to current zoning recommended by the Master Plan. These properties are identified on Figure I-7 as key vacant or redevelopable parcels and are discussed below:

1) Davis-Lux Lane

This property is currently undeveloped with an existing zoning of R-200. It is approximately 7.69 ha (19 acres) in size and is located in the northwest quadrant of the I-270/MD 187 interchange adjacent to the Luxmanor community. The Master Plan recommends that the existing R-200 zoning be kept.

2) Aubinoe

This undeveloped property is located in the southeast quadrant of the I-270/MD 187 interchange next to the Wildwood Manor subdivision. The approximately 10.1 hectare (25 acre) site has an existing zoning of R-90, and preliminary plan approval has been obtained for 44 single family detached units under the existing zoning. In order to preserve much of the existing woodland, which covers nearly all of the site, the Master Plan recommended R-90/TDR-7 zoning with a maximum of 160 dwelling units, none of which would be single family detached, including 52 TDR's (Transferable Development Rights). TDR's permit development of an area to a specified density greater than the base zoning density. With this change and the clustering of more intensive development in the western portion of the site, 50 percent of the existing woods could be preserved.

3) Davis-Democracy

This undeveloped 1.38 hectare (3.42 acre) site is located in the southwest quadrant of the MD 187/Democracy Boulevard intersection. The existing zoning is R-60. Although the property is generally considered unsuitable for single family detached homes for reasons inherent to the site, including access concerns, the Master Plan recommended development under the R-60 (Cluster) option. Site plan approval has been obtained for 17 townhomes.

4) American Foresters/Natural Resources Foundation

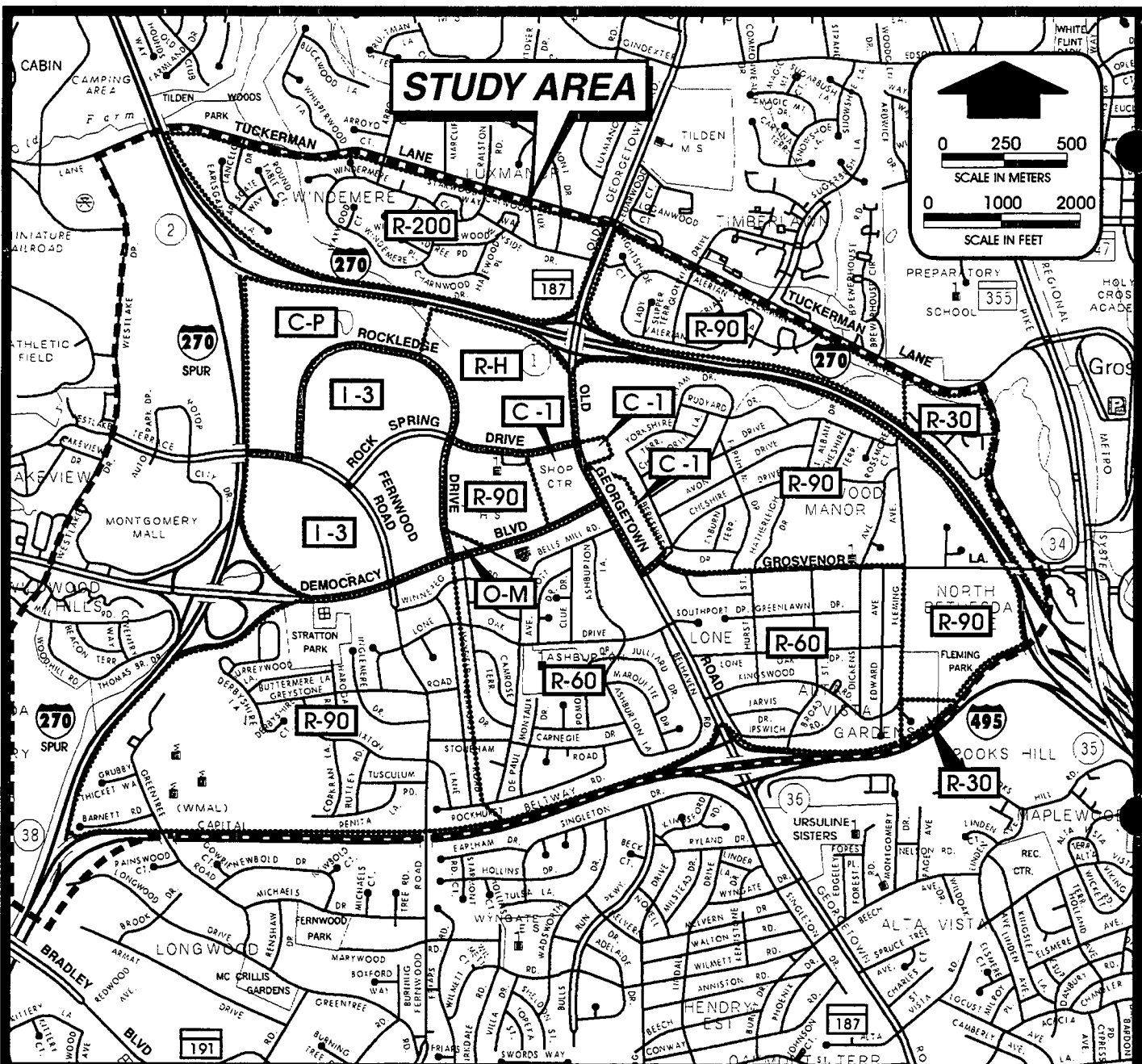
This 14.3 hectare (35.4 acre) property has an existing zoning of R-90. The site is located south of Grosvenor Lane, between I-495 and I-270, and is currently used to operate a scientific society headquarters as a special exception land use in the R-90 zone. The Foundation plans to increase the size of its facility. The approved comprehensive site plan ultimately provides for the overall development of 27,900 square meters (300,000 square feet) of office space in seven buildings, whereas the present site provides 4,100 square meters (44,000 square feet) of space in three buildings. The Master Plan supports this planned expansion as a special exception in the existing R-90 zone.

5) WMAL, Inc.

This site is located northeast of the I-495/I-270 Spur interchange. The existing zoning of this 30.37 hectare (75.04 acre) property, the largest in North Bethesda, is R-90. There are no buildings presently located on the site, only four radio transmission towers, and this is the intended use of the property for the foreseeable future. Should the present land use be discontinued, the Master Plan recommends that the property be used for single family residential development with R-90 zoning.

6) Davis-Camalier

This 21.9 hectare (54 acre) tract is located in the Rock Spring Office Park, in the southwest quadrant of the I-270/MD 187 interchange. Commonly referred to as the "Davis Parcel", it is currently vacant, and the existing zoning is R-H, for multiple family, high rise residential use. The Master Plan recommends retaining R-H as the base zone and assigns a floating zone of MXPDP (Mixed Use Planned Development). Under the



EXISTING ZONING

- R - 200 Residential, One Family
- R - 90 Residential, One Family
- R - 60 Residential, One Family
- RT-10 Residential, Townhouse
- RT-12.5 Residential, Townhouse
- R - 30 Multiple - Family
Low Density Residential
- R - 20 Multiple - Family
Medium Density Residential
- R - 10 Multiple - Family
High Density Residential

- R - H Multiple - Family High Rise
Planned Residential
- PD - 9 Planned Development
- PD - 11 Planned Development
- TS - R Transit Station, Residential
- TS - M Transit Station, Mixed
- O - M Office Building
Moderate Density
- C - O Commercial Office Building
- C - T Commercial Transition Zone
- C - P Commercial Park

- C - 1 Local Commercial
- C - 2 General Commercial
- I - 1 Light Industrial
- I - 3 Technology & Business Park

Notes:

1. This is a complete listing of the existing zoning as stated in the Master Plan. Not all existing zoning categories are contained in the study area.
2. The Master Plan Interim Reference Edition also contains recommended changes to existing zoning - See Fig. I-7.

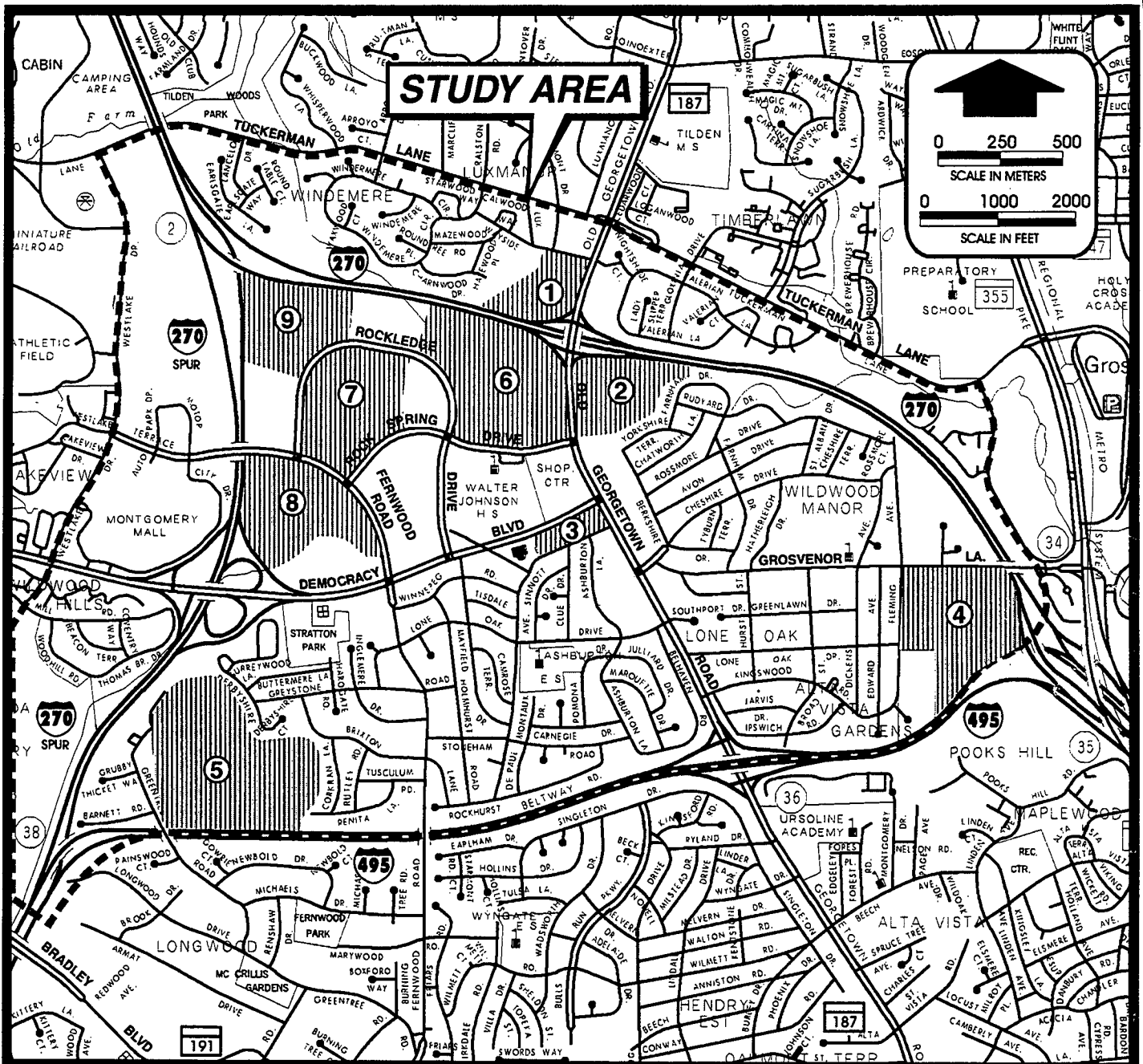
Reference:

North Bethesda-Garrett Park Master Plan, Dec., 1992
Interim Reference Edition

**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BLVD**

EXISTING ZONING

FIGURE I - 6



KEY VACANT OR REDEVELOPABLE PARCELS

- 1. DAVIS - LUX LANE: Keep existing R-200
- 2. AUBINOE: Change to R-90 / TDR-7
- 3. DAVIS - DEMOCRACY: Keep existing R-60
- 4. AMERICAN FORESTERS / NRF: Keep existing R-90 (Special Exception)
- 5. WMAL, INC.: Keep existing R-90
- 6. DAVIS CAMALIER: Keep existing R-H (base zone) with MXPd (floating zone)
- 7. IBM: Keep existing I-3
- 8. MARRIOTT HEADQUARTERS: Keep existing I-3
- 9. LOCKHEED MARTIN: Keep existing C-P

Note:
The Zoning listed is the Master Plan recommended Zoning.

Reference:
North Bethesda - Garrett Park
Master Plan, Dec. 1992
Interim Reference Edition

**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BLVD**

**KEY
VACANT OR REDEVELOPABLE
PARCELS**

FIGURE I - 7

MXPB zoning option, the Master Plan envisions the "Davis Parcel" becoming the urban village center for this area of North Bethesda and sets guidelines to achieve this. The guidelines include several specific items regarding types, sizes and locations of buildings to be placed on the site, as well as the following transportation recommendations:

- Direct access ramp(s) from I-270 near Old Georgetown Road and roadway connection from the ramp to Rockledge Drive
- The North Bethesda Transitway - a high quality transit connection from Montgomery Mall to Grosvenor Metro Station via Rock Spring Office Park

7) **IBM**

This property, located in Rock Spring Office Park, includes five office buildings, a central park and a retail structure with rooftop parking. The approved site plan provides for a total of 149,000 square meters (1.6 million square feet) of floor area. Much of this has been built, with 72,570 square meters (781,165 square feet) remaining. This parcel is a "loophole" property, which is a term used to refer to properties that received subdivision approval prior to 1982, in which case, approval was obtained with a less stringent, or without any, Adequate Public Facilities (APF) transportation test. For the most part, non-residential "loophole" properties must pass Local Area Transportation Review prior to building permit, but are exempt from Policy Area Transportation Review until July, 2001, provided they were registered with the Planning Board before July 1, 1990. In this sense, there is a time limit on the development of "loophole" properties to develop without having to meet the APF requirements, which could interfere with their completion.

8) **Marriott Headquarters**

This parcel, located in Rock Spring Office Park, is a "loophole" property and has an existing zoning of I-3. The site is approximately 13.8 hectares (34 acres) in size and currently provides 75,108 square meters (808,482 square feet) of floor area. There is the potential to increase the floor area on the site by 40,948 square meters (440,775 square feet). The Master Plan recommends that the existing I-3 zoning be retained.

9) **Lockheed Martin**

This Rock Spring Office Park property is currently zoned C-P. The site is a "loophole" property and currently provides 22,395 square meters (241,071 square feet) of floor area. There is the potential to expand by adding up to 84,883 square meters (913,704 square feet) of floor area. The Master Plan recommends retaining the existing C-P zone.

In summary, there are many opportunities within the study area for planned growth in office, residential and commercial development in accordance with current zoning or through modifications to zoning recommended in the Master Plan. Most significantly, the Rock Spring Office Park could potentially experience an increase in gross floor area of 288,000 square meters (3.1 million square feet), approximately 60% more than exists today. Since severe traffic congestion already occurs under existing conditions at the I-270 interchanges at MD 187 and Democracy Boulevard, the growth potential in the study area could lead to an intensification of the current operational problems resulting from capacity and safety deficiencies within the existing interchanges.

4. **Historic and Archeological Resources**

a. **Standing Historic Structures**

No sites on or eligible for listing on the National Register of Historic Places were identified within the study area.

b. **Archaeological Sites**

A Phase I archeological survey was performed by the State Highway Administration. One prehistoric site (18 MO63) is in the project vicinity. However, the survey indicates that the site was disturbed by construction of the Rockledge Center.

5. **Natural Environment**

a. **Physiography/Topography, and Geology**

The terrain in the study area varies from flat to moderately sloping with elevations varying between 76.2 meters and 121.9 meters (250 and 400 feet) above mean sea level. The study area lies within the Piedmont Physiographic Province. Bedrock in the eastern portion of the Piedmont Province is composed of hard, crystalline igneous and metamorphic rocks, including schist, gneiss, and gabbro.

b. Soils

According to the Soil Survey of Montgomery County, published by the U.S. Department of Agriculture, Soil Conservation Service, soils in the study area belong to the Glenelg-Manor-Chester Association and are well-drained micaceous soils.

The Manor Channery series consists of silt loams with slopes of 15-25 percent. The moderately eroded soils of this group provide the best (most problem-free) sites for urban development. Slopes are favorable, thus requiring only minimal cutting, filling and grading.

The Wehadkee series consists of silt loams with slopes of 0-3 percent. These soils generally occur in areas that are occasionally flooded, and have several limitations for use as sites for commercial and residential development.

The study area does not contain any Prime or Unique Farmland or Farmland of Statewide Importance as classified by the U.S. Department of Agriculture.

c. Water Resources

Surface Water

The study area lies within the Washington Metropolitan Area Watershed. Rock Creek, Old Farm Creek, and Thomas Branch are streams located in the study area (Figure I-4).

The Maryland Department of the Environment has classified all surface waters of the State into four categories according to their desired uses. These categories are:

- Use I - Water contact recreation, aquatic life, and water supply.
- Use II - Shellfish harvesting.
- Use III - Natural trout waters.
- Use IV - Recreational trout waters.

All waters of the State are Use I with additional protection provided by higher classifications. All streams in the study area are classified as Use I.

Lengthening or reconstructing the existing ramps in the project area and constructing new collector-distributor roads and ramps would necessitate the extension of existing culverts carrying the streams under I-270 and I-270 Spur and relocation of portions of streams.

Groundwater

The crystalline rocks of the eastern Piedmont Province have very low primary porosity, restricting the movement of groundwater. The Wissahickon Formation, composed of schists and quartzites of Hydrologic Units II and III, provides small to moderate supplies of groundwater available throughout this region. The yields of wells in the study area range from less than 4 to 1,200 liters per minute (1 to 320 gallons per minute).

d. Floodplains

The 100 year floodplains associated with Rock Creek, Old Farm Creek, and Thomas Branch are shown on Figure I-4. The average width of the 100 year floodplains is 4.6 meters (15 feet), 3.0 meters (10 feet) and 6.1 meters (20 feet), approximately, for Rock Creek, Old Farm Creek and Thomas Branch, respectively.

6. Ecological Conditions

a. Wetlands

Methodology

Wetland delineations were made in accordance with the U.S. Army Corps of Engineer's (COE) Wetlands Delineation Manual (Department of the Army, 1987). Soils, vegetative communities, and hydrologic indicators were analyzed to delineate and classify wetlands. Hydric soils maps and National Wetlands Inventory maps were used to support and confirm the conclusions reached in the field.

Wetlands were classified according to the Cowardin System, as described in Classification of Wetlands and Deepwater Habitats of the United States (1979). This system classifies wetlands based on hydrological, geomorphological, chemical and biological factors.

Hydric soils are soils that are saturated or inundated during the growing season for sufficient time to develop anaerobic conditions that favor the growth of hydrophytic vegetation. Many soil cores were taken to determine whether or not wetland soils are present. Soil

characteristics such as composition, texture, color, chroma, value, odor, and moisture regime were analyzed. Soil color, chroma, and value were verified using Munsell Soil Color Charts. The National Hydric Soils List, USDA Soil Conservation Service, was used as a reference in the soils studies.

Each site was analyzed according to plant community composition. Plant species observed in the field were identified and the indicator status for each species was determined following the National List of Plant Species That Occur in Wetlands: Northeast (Region 1) (May, 1988). The indicator status designates the probability of occurrence (expressed as a percentage) of a given plant species in wetlands of the northeast region of the United States. The following is an explanation of the indicator status designations:

- OBL = Obligate Wetland (greater than 99% probability of occurrence)
- FACW = Facultative Wetland (greater than 66% - less than 99% probability of occurrence)
- FAC = Facultative (33% - 66% probability of occurrence)
- FACU = Facultative Upland (1% - less than 33% probability of occurrence)
- UPL = Obligate Upland (less than 1% probability of occurrence)

According to the COE manual, 50% or more of the vegetative community that exists or is expected to exist on a site must be hydrophytic - i.e., OBL, FACW, and/or FAC - in order to satisfy the vegetative community criterion for wetlands. Open water and riverine systems do not require 50% or more hydrophytic vegetation.

Hydrologic indicators of wetlands include soil erosion, sediment deposits, visual inundation, black leaves, drift lines, buttressing and hummocking. Evidence of these indicators is present even during dry periods and, therefore, are useful indentifiers of a wetland. Hydrologic indicators observed on the site were used to determine wetland status and classification.

Wetland Descriptions

A total of 12 sites were identified as wetlands and delineated in the field. Classifications include: palustrine forested broad leaved deciduous (PF01A) - 5 sites; palustrine emergent (PEM1A) - 2 sites - and (PEM1J) - 1 site; palustrine open water (POWZh) - 1 site; riverine

emergent (R2EM2C) - 1 site; and riverine intermittent (R4SB1C) - 1 site; and 1 site was a combination of PF01A, PEMIA and POWZh.

The wetlands range from low quality to high quality based on functional assessment.

Descriptions of each wetland site, including location, classifications, value, dominant vegetation and indicator status follow and are summarized in Table I-2. In addition, relative wetland quality based on functional assessment is included. See Figures I-8A and I-8B for locations of wetlands and Waters of the United States.

Wetland W-1, of medium value, is located on the north and south sides of I-270 approximately 670.6 meter (2200 feet) west of MD 187. The area consists of a stream channel and associated forested floodplain. The two segments are connected by a 88.4 meter (290 linear feet) 1,524 millimeter (60-inch) diameter pipe. This wetland is classified as palustrine forested broad leafed deciduous, with a temporarily flooded water regime (PF01A). It is dominated by red maples, black willows, sycamores, spicebush, virburnum, green ash, elderberries, sedges, Joe-Pye-weed, and sensitive fern. These soils had a hue of 2.5 YR, value of 4, and chroma of 2. Low chroma and mottles indicate hydric soils. Hydrologic indicators include visual soil saturation, drift lines, erosion, blackened leaves, scouring around roots, absence of leaf litter, and association with a stream. The functions of wetland W-1 are passive recreation, uniqueness and natural heritage value, sediment trapping/stabilization (short-term), food chain support (nutrient export), and nutrient retention/removal (long-term).

Wetland W-2, of medium value, is located adjacent to previously identified area W-1, south of and adjacent to I-270 west of Old Georgetown Road. This wetland is an intermittent stream/ditch and associated topographic depression. It is classified as palustrine forested broad leafed deciduous, with a temporarily flooded water regime (PF01A). This wetland is dominated by red maples, black willows, sycamores, spicebush, sedges, sweet gum, and sensitive fern. Soils were mainly alluvial silty sands with a hue of 10 YR, a value of 5, and a chroma of 6. This is a recently disturbed site. Hydrologic indicators include visual soil saturation, sediment deposits, blackened leaves, and association with a stream. The functions of wetland W-2 are sediment trapping/stabilization (short-term and long-term), flood desynchronization, food chain support (nutrient export) and nutrient retention/removal (long-term).

Wetland W-3, of medium value, is located on the north side of I-270, approximately 213.4 meter (700 feet) west of MD 187. This wetland is a drainage channel classified as palustrine

emergent persistent, with a temporarily flooded water regime (PEM1A). It is dominated by black willows, elderberries, cattails, and soft rush. These soils had a hue of 2.5 YR, value of 4, and chroma of 2. Low chroma and mottles indicate hydric soils. Hydrologic indicators include visual soil inundation and saturation, predominance of obligate plants, and association with a drainage channel. The functions of wetland W-3 are passive recreation, uniqueness and natural heritage value, sediment trapping/stabilization (short-term), and nutrient retention/removal (long-term).

Wetland W-4, of high value, is located northwest of the I-270/MD 187 interchange. This wetland consists of a diked lowland fresh meadow, classified as palustrine emergent persistent, with a temporary water regime (PEM1A). This part of the wetland is dominated by sedges and rushes. In addition, the site contains a fresh water pond classified as palustrine open water impoundment (POWZh). The pond and fresh meadow drain into a palustrine forested broad leafed deciduous wetland, with a temporarily flooded water regime (PF01A). This part of the wetland is dominated by red maples, black willows, sycamores, spicebush, sedges, sweet gum, and sensitive fern. Soils had a hue of 7.5 YR, value of 5, and chroma of 2. Bright orange mottles were present. Low chroma and mottles indicate hydric soils. Hydrologic indicators include visual soil inundation and saturation, drift lines, erosion, scouring around roots, absence of leaf litter, and association with a stream. The functions of wetland W-4 are passive recreation, uniqueness and natural heritage value, habitat for wildlife or fisheries, sediment trapping/stabilization (short-term), flood desynchronization, food chain support (nutrient export), dissipation of-erosion forces, active recreation, and nutrient retention/removal (long-term).

Wetland W-5, of high value, is located southeast of the intersection of I-270 and Old Georgetown Road. This wetland is a lowland adjacent to and encompassing two intermittent stream channels. It is classified as palustrine forested broad leafed deciduous, with a temporarily flooded water regime (PF01A). The site is dominated by tulip poplars, red maples, and spicebush. Soils were dark gray-brown with dark brown mottles. These soils had a hue of 10 YR, a value of 6, and chroma of 2. Low chroma and mottles indicate hydric soils. Hydrologic indicators include visual soil saturation, sediment deposits, and association with a stream. The functions of wetland W-5 are passive recreation, uniqueness and natural heritage value, habitat for wildlife or fisheries, sediment trapping/stabilization (short-term and long-term), flood desynchronization, food chain support (nutrient export), and nutrient retention/removal (long-term).

Wetland W-6, of high value, is located on the south side of I-270, approximately 1,341.1 meter (4,400 feet) south of MD 187, at Fleming Avenue. This wetland is a stream channel with associated depression. It is classified as palustrine emergent persistent, with a temporarily

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flooded water regime (PEM1A). It is dominated by box elders, red maples, tulip poplars, sycamores, speckled alders, black willows, spicebush, and elderberries. These soils had a hue of 2.5 YR, value of 4, and chroma of 2. Low chroma and mottles indicate hydric soils. Hydrologic indicators include visual soil inundation and saturation, drift lines, erosion, scouring around roots, absence of leaf litter, predominance of obligate plants, and association with a stream and is at the outfall of the closed system draining the I-270/MD 187 interchange area. The functions of wetland W-6 are passive recreation, uniqueness and natural heritage value, habitat for wildlife or fisheries, food chain support (nutrient export), and groundwater discharge/groundwater recharge.

Wetland W-7, of high value, is located within the forested area in the I-270 Spur median, near the Y-split. It consists of a series of drainage channels classified as riverine intermittent streambed, cobble/gravel, with a seasonally flooded water regime (R4SB1C). It is dominated by skunk cabbage, and spotted touch-me-nots. Soils were gray-brown with dark yellow-brown mottles. These soils had a hue of 10 YR, value of 5, and chroma of 2. Low chroma and mottles indicate hydric soils. Hydrologic indicators include visual soil inundation and saturation, sediment deposits, and association with a stream. The functions of wetland W-7 are passive recreation, uniqueness and natural heritage value, habitat for wildlife or fisheries, sediment trapping/stabilization (short-term), food chain support (nutrient export), dissipation of erosion forces, and nutrient retention/removal (long-term).

Wetland W-8, of low value, is located within the I-270 Spur median, approximately 762 meters (2500 feet) north of Democracy Boulevard. It consists of a drainage channel and narrow swale. It is classified as riverine, lower perennial, emergent non-persistent, with a seasonally flooded water regime (R2EM2C). It is dominated by soft rushes, cattails, and green bulrushes. Soils had a hue of 10 YR, value of 5, and chroma of 2. Low chroma and mottles indicate hydric soils. Hydrologic indicators include visual soil inundation and saturation, sediment deposits, and association with a stream. The functions of wetland W-8 are sediment trapping/stabilization (short-term), flood desynchronization and dissipation of erosion forces.

Wetland W-9, of medium value, is located east of I-270 Spur at Democracy Boulevard. This is a stream and associated storm water management pond. It is classified as palustrine open water impoundment (POWZh). The site is dominated by black willows, cattails, common reeds, and sedges. Soils were dark gray-brown with dark yellow-brown mottles. These soils had a hue of 2.5 YR, value of 4, and chroma of 2. Low chroma and mottles indicate hydric soils. Hydrologic indicators include visual soil inundation and saturation, sediment deposits, and

TABLE I-2

WETLANDS SUMMARY

WETLAND SYSTEM	LOCATION	SITE DESCRIPTION	COWARDIN CLASSIFICATION	VALUE	DOMINANT VEGETATION
W-1	North and South Sides of I-270, 670.6 meters (2200 feet) ± West of MD 187	Stream Channel on South Side of I-270; Stream Channel and Adjacent Low Area on North Side of I-270	Palustrine, forested broadleaved deciduous with a temporary water regime (PF01A)	Medium	Black Willows, Elderberries, Red Maples, Sycamores, Spicebush, Viburnum, Green Ash, Sedges, Joe-Pye Weed, Sensitive Fern
W-2	South Side of I-270 West of Old Georgetown Road	Intermittent Stream/Drainage Ditch and Associated Topographical Depression	Palustrine forested broadleaved deciduous, (PF01A)	Medium	Red Maples, Black Willows, Sycamores, Spicebush, Sedges, Sweet Gum Sensitive Fern
W-3	North Side of I-270, 213.4 meters (700 feet) ± West of MD 187	Drainage Channel	Palustrine, emergent, persistent vegetation, temporary water regime (PEM1A)	Medium	Black Willows, Elderberries, Cattails, Soft Rush
W-4	Northwest of the I-270/ MD 187 Interchange	Diked lowland fresh meadow, fresh water pond	Palustrine emergent persistent (PEM1A), Palustrine open water impoundment (POWZh), Palustrine Forested Broad Leaved	High	Sedges, Rushes, Willows, Sycamores, Spicebush, Sweet Gum, Sensitive Fern
W-5	Southeast of I-270 at Old Georgetown Road	Intermittent streams and associated wooded floodplains	Palustrine forested broadleaved deciduous, (PF01A)	High	Tulip Poplars, Red Maples, Spicebush
W-6	South Side of I-270 at Fleming Avenue	Stream Channel	Palustrine emergent, persistent, temporarily flooded (PEM1A)	High	Box Elders, Red Maples, Tulip Poplars, Sycamores, Specked Alders, Black Willows, Spicebush, Elderberries

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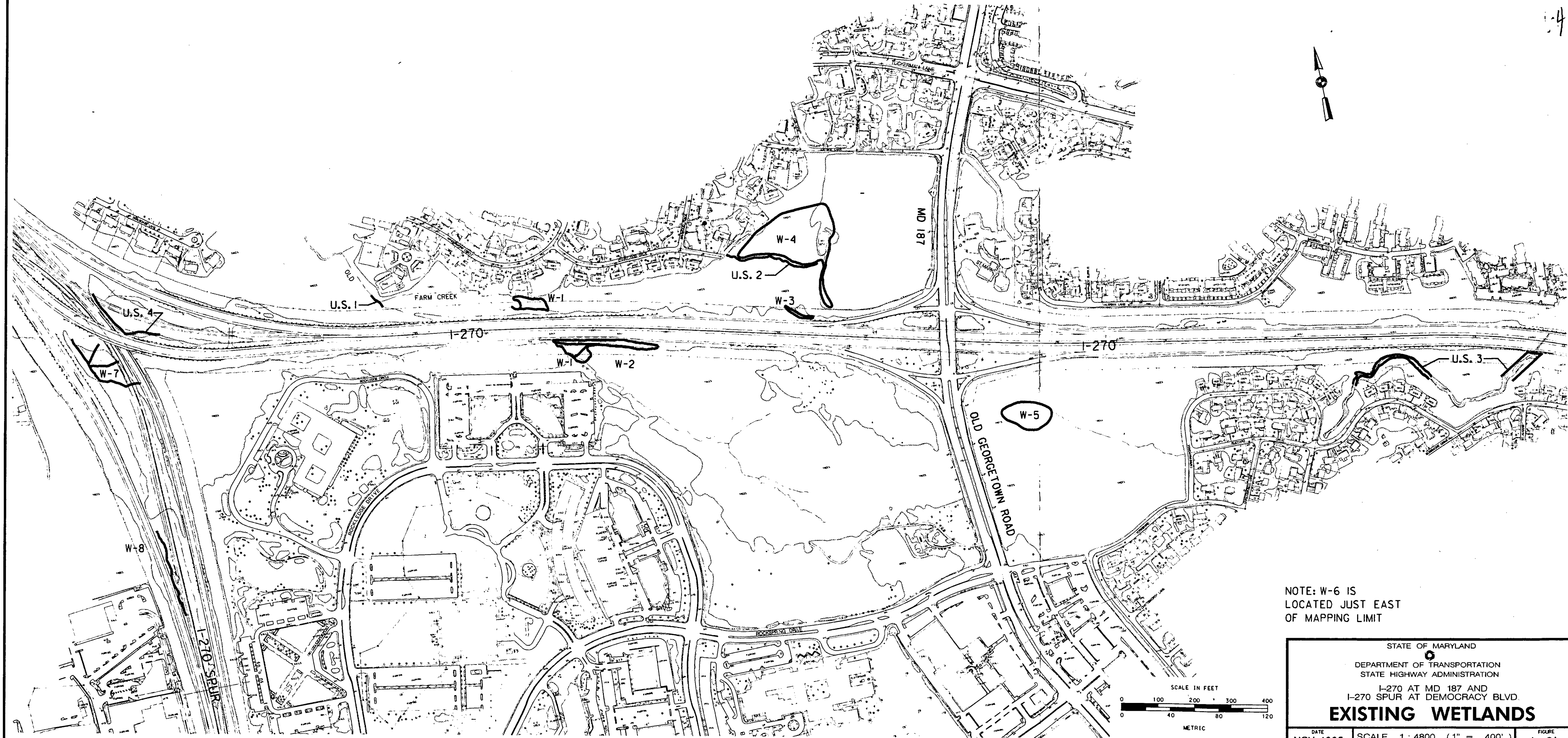
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TABLE I-2 (Cont'd)

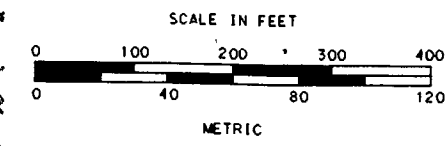
WETLANDS SUMMARY

WETLAND SYSTEM	LOCATION	SITE DESCRIPTION	COWARDIN CLASSIFICATION	VALUE	DOMINANT VEGETATION
W-7	Just West of the Y-Split Bridge Along the Southbound I-270 Spur Ramp	Unnamed Drainage Channels	Rivcrine, intermittent, streambed, cobble/gravel with a seasonally flooded regime (R4SB1C)	High	Skunk Cabbage, Touch-Me-Nots
W-8	In the I-270 Spur Median, 304.8 meters (1000 feet) ± South of the Y-Split	Unnamed Drainage Channel	Riverine, lower perennial, emergent non-persistent with a seasonally flooded regime (R2EM2C)	Low	Soft Rushes, Cattails, Green Bulrushes
W-9	East of I-270 Spur at Democracy Boulevard	Stream and Storm water Management Pond	Palustrine Open Water Impoundment (POWZh)	Medium	Black Willows, Cattails, Common Reeds, Sedges
W-10	East of Fernwood Road	Stream and Associated Wooded Floodplain	Palustrine forested broadleaved deciduous, (PF01A)	Medium	Sycamores, Black Willows, Red Maples, Silver Maples
W-11	West of Fire Station on Democracy Boulevard	Intermittent Stream/Ditch and Associated Lowland	Palustrine forested broadleaved deciduous (PF01A)	Low	Black Willows, Red Maples, Tulip Poplars
W-12	In the Southeast Quadrant of the I-270 Spur/Democracy Boulevard Interchange	Drainage Channel Along Northbound I-270 Spur	Palustrine emergent, persistent vegetation, temporary water regime (PEM1A)	Medium	Black Willows, Cattails, Soft Rush, Sedges

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NOTE: W-6 IS
LOCATED JUST EAST
OF MAPPING LIMIT



STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 I-270 AT MD 187 AND
 I-270 SPUR AT DEMOCRACY BLVD
EXISTING WETLANDS
 DATE NOV. 1995 SCALE 1:4800 (1" = 400') FIGURE I-8A



NOTE: WETLAND W-13 IS LOCATED SOUTH OF BRADLEY BLVD. (OUTSIDE STUDY AREA)

STATE OF MARYLAND		
DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION		
I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD.		
EXISTING WETLANDS		
DATE NOV., 1995	SCALE 1 : 4800 (1" = 400')	FIGURE 1 - 8B

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association with a stream. The functions of wetland W-9 are passive recreation, uniqueness and natural heritage value, habitat for wildlife or fisheries, sediment trapping/stabilization (short-term and long-term), flood desynchronization, and nutrient retention/removal (long-term).

Wetland W-10, of medium value, is located east of the intersection of Fernwood Road and Democracy Boulevard. This wetland is a stream and associated wooded floodplain. It is classified as palustrine forested broad leafed deciduous, with a temporarily flooded water regime (PF01A). The site is dominated by sycamores, black willows, red maples, and silver maples. Soils in the forested floodplain were dark gray-brown with dark yellow-brown mottles. These soils had a hue of 2.5 YR, value of 4, and chroma of 2. The combination of low chroma with mottles indicates hydric soils. Hydrologic indicators include visual soil saturation, drift lines, sediment deposits on vegetation and other objects, blackened leaves, and association with a stream. The functions of wetland W-10 are passive recreation, uniqueness and natural heritage value, sediment trapping/stabilization (short-term and long-term), flood desynchronization, food chain support (nutrient export), and nutrient retention/removal (long-term).

Wetland W-11, of low value, is located west of the Fire Station on Democracy Boulevard. This is an intermittent stream/ditch and associated topographic depression. It is classified as palustrine forested broad leafed deciduous, with a temporarily flooded water regime (PF01A). The site is dominated by black willows, red maples, and tulip poplars. Soils were dark gray-brown with dark yellow-brown mottles. These soils had a hue of 2.5 YR, value of 4, and chroma of 2. Low chroma and mottles indicate hydric soils. Hydrologic indicators include visual soil saturation, sediment deposits, blackened leaves, and association with a stream. The functions of wetland W-11 are sediment trapping/stabilization (short-term and long-term), flood desynchronization and nutrient retention/removal (long-term).

Wetland W-12, of medium value, is located in the southeast quadrant of the I-270 Spur/Democracy Boulevard interchange. This wetland is a drainage channel classified as palustrine emergent persistent, with a temporarily flooded water regime (PEM1A). It is dominated by black willows, cattails, soft rushes, and sedges. Soils were gray-dominated with dark brown mottles. The soils had a hue of 2.5 YR, value of 4, and chroma of 2. Low chroma and mottles indicate hydric soils. Hydrologic indicators include visual saturation, sediment deposits, and association with a drainage ditch. The functions of wetland W-12 are sediment trapping/stabilization (short-term and long-term), flood desynchronization and nutrient retention/removal (long-term).

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Waters of the United States

Seven sites were classified as Waters of the United States. Recent interpretations by the COE regarding hydric soils and hydrophytic vegetative community requirements of jurisdictions wetlands require that these sites, identified under previous criteria as wetlands, be listed as "Waters of the United States."

The sites labelled U.S. 1, U.S. 2 and U.S. 3 are unnamed, non-tidal upper perennial tributaries with unconsolidated sand and gravel bottoms. Hydric soils and a predominance of hydrophytic vegetation do not occur at these sites.

The site labelled U.S. 4 consists of two drainageways that flow through forest stand on deep, well drained soils. Hydric soils and a predominance of hydrophytic vegetation do not occur at this site.

The sites labelled U.S. 6 and U.S. 7 are unnamed, non-tidal intermittent tributaries with unconsolidated sand and gravel bottoms. The site labelled U.S. 5 is Thomas Branch, an upper perennial stream with an unconsolidated sand and gravel bottom. Hydric soils and a predominance of hydrophytic vegetation do not occur at these sites.

b. Forest Areas

Some woodlands still remain in the study area, mostly on the periphery of I-270 East Segment and I-270 Spur, ranging in size from 0.2 hectares (0.5 acres) to 14.2 hectares (35 acres), approximately. These woodlands have been identified as the Tulip-Poplar Association. Characterized by the presence of tulip poplar, common associated species include: red maple, flowering dogwood, Virginia creeper, black gum, white oak, sassafras, black cherry, black locust, mockernut hickory, grape, southern arrowwood, Virginia pine, American sycamore, smooth sumac, black walnut, red cedar, pin oak, black willow, green ash, eastern white pine, Japanese honeysuckle, spicebush, skunk cabbage, bull thistle, spotted Joe-pye-weed, Queen Anne's lace, common mullein, poison ivy, and Christmas fern.

c. Wildlife, Terrestrial and Aquatic Habitat

The terrestrial habitat found in the study area supports a varied fauna of urban wildlife species. Insects found in the area include: butterflies, grasshoppers, beetles, bees, and wasps.

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Bird species inhabiting the area are: common crow, mourning dove, common grackle, mockingbird, field sparrow, and red-tailed hawk. Mammals found include: eastern cottontail, eastern mole, house mouse, opossum, woodchuck, and eastern gray squirrel.

The aquatic life known to inhabit Rock Creek and Old Farm Creek includes typical finfish species, such as: American eel, blacknose dace, creek chub, spotfin shiner, white sucker, channel catfish and green sunfish. Thomas Branch in the study area supports a limited finfish community of mostly Cyprinidae fish such as the blacknose dace.

d. Threatened and Endangered Species

Coordination with the U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources indicates that no federally listed threatened or endangered species are known to inhabit the study area.

7. Existing Noise Conditions

a. Description of Noise Sensitive Areas

The study of noise abatement measures considers the size of the impacted area, the number and distribution of structures within that area, the predominant activities being performed, their vulnerability to noise disturbances, the visual impact and the economic feasibility of the control methods.

Twenty-nine (29) receptor sites were located within nine (9) noise sensitive areas (NSA's) and were characterized by noise levels at specific locations within each NSA, as shown in Table I-3 and indicated on Figures I-9 and Figures III-4 through III-17. All nine NSA's are residential environments, although community facilities such as swimming pools, tennis courts, and churches are also present. The impacted residences generally abut I-270 or I-270 ramps and are of more recent construction than the roadway.

b. Ambient Noise Level Measurements

A detailed technical analysis has been performed to determine the impact of the project on noise. The results are summarized in Section IV.F. A copy of the technical analysis report is available at the Maryland State Highway Administration, 707 North Calvert Street, Baltimore, Maryland 21202.

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A field measurements program to establish ambient noise levels was conducted in March, 1995 thru May, 1995 utilizing the latest method of environmental noise analysis. The noise descriptor used in this study was the Equivalent Noise Level (Leq), which conforms to the noise abatement criteria established by the Federal Highway Administration (FHWA). In an acoustical analysis, measurement of ambient noise levels is intended to establish the basis for impact analysis and to calibrate the computer model. The ambient noise levels as recorded represent a generalized view of present noise levels. Ambient noise levels ranged from 58 dBA to 72 dBA.

Monitoring sessions were performed in accordance with the procedures outlined in Fundamentals and Abatement of Highway Traffic Noise by Bolt, Beranek and Newman, Inc., using an ANSI Type 2 integrating sound level meter model DB308 manufactured by Metrosonics, Inc.

Variations through time of total traffic volumes, truck traffic volume, speeds, etc., may cause fluctuations in ambient noise levels of several decibels; however, these fluctuations are not sufficient to substantially affect the impact assessment. For the analysis, 15-minute measurements were taken between 10 A.M. and 3:30 P.M. on weekdays.

c. Results of Noise Monitoring

A description of the NSA's, the results of the ambient monitoring program and the names of previous studies containing ambient measurements are included in Table I-3.

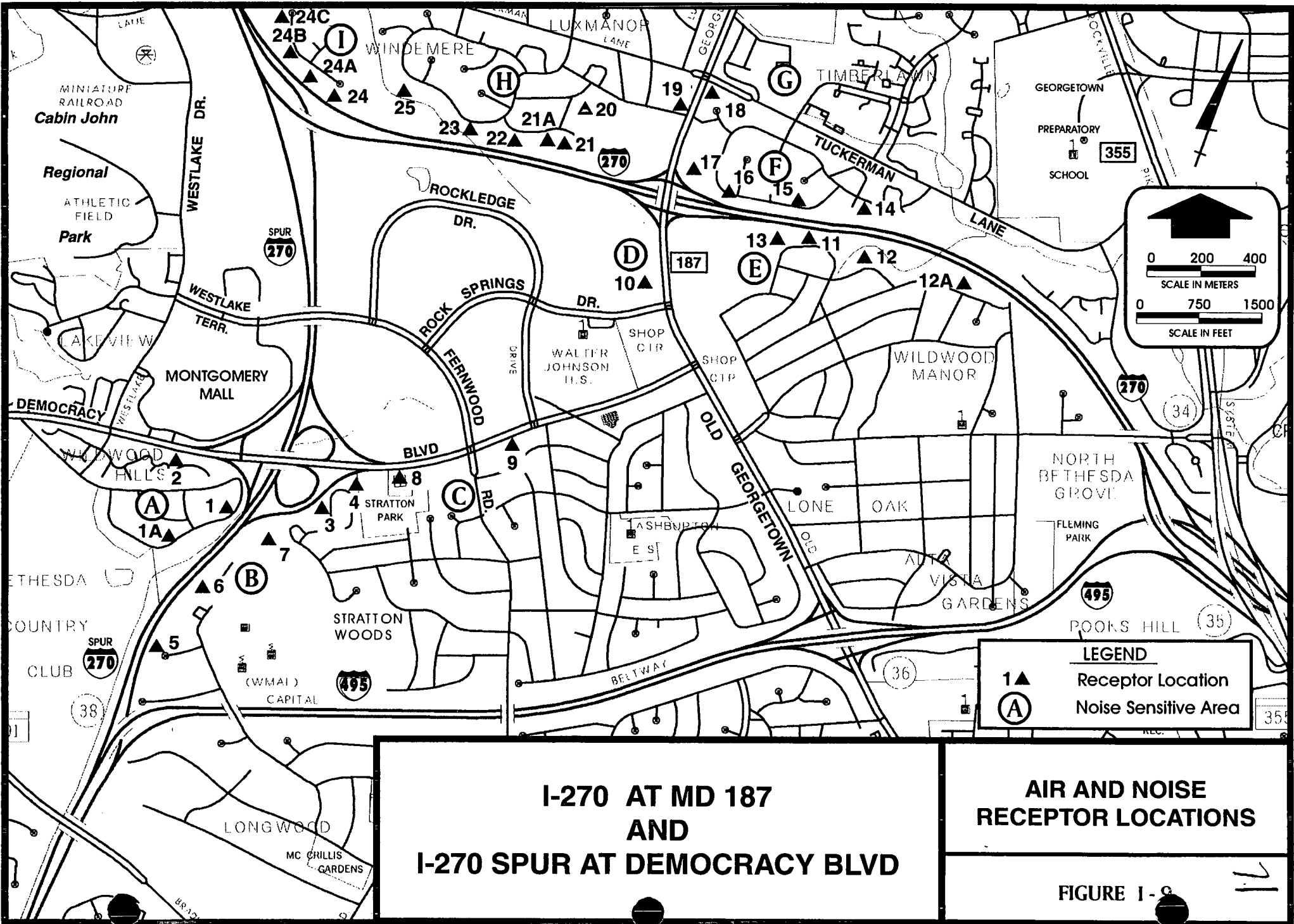
8. Existing Air Quality

The project area is located in the National Capital Intrastate Air Quality Control Region and is an air quality non-attainment area. The region does not meet the primary standards for carbon monoxide (CO) and ozone (O₃) and is subject to transportation control measures such as the Vehicle Emissions Inspections Program.

A detailed microscale air quality analysis has been performed to determine the CO impact of the proposed project. The results are summarized in Section IV.6. A copy of the technical analysis report is available at the State Highway Administration, 707 North Calvert Street, Baltimore, Maryland 21202.

**TABLE I-3
NSA'S AND AMBIENT NOISE LEVELS**

NSA	RECEPTOR	LOCATION	DESCRIPTION	DEVELOPMENT	Leq dBA	PREVIOUS STUDIES
A	R1	7107 Thomas Branch Dr.	Frame Residence	Wildwood Hills	67	1986 EA, 1989 FONSI, 1991 STUDY
	R1A	7207 Thomas Branch Dr.	Frame Residence	Wildwood Hills	64	
	R2	7131 Swansong Way	Brick Townhouse	Wildwood Hills	57	
B	R3	6724 Surreywood La.	Brick Townhouse	Stratton Commons	58	1986 EA, 1989 FONSI
	R4	6734 Surreywood La.	Brick Residence	Stratton Commons	61	
	R5	7225 Grubby Thicket Way	Brick Residence	Bradley Manor	72	
	R6	7314 Greentree Way	Brick Townhouse	Bradley Manor	66	
	R7	9928 Derbyshire Ct.	Frame Residence	Stratton Commons	63	
	R8	Stratton Park	Park	---	59	
	R9	6518 Democracy Blvd.	Brick Residence	Georgetown Village	67	
D	R10	10500 Old Georgetown Rd.	Frame Residence	---	58	1986 EA
E	R11	10525 Famham Dr.	Brick Residence	Wildwood Manor	66	
	R12	5913 Rudyard Dr.	Brick Residence	Wildwood Manor	67	
	R12A	5711 Rossmore Dr.	Brick Residence	Wildwood Manor	64	
	R13	10541 Famham Dr.	Brick Townhouse	Wildwood Manor	64	
F	R14	10710 Pinehaven Terr.	Brick Townhouse	Timberlawn	70	1986 EA
	R15	10723 Valerian Ct.	Brick Residence	Timberlawn	65	
	R16	10701 Lady Slipper Terr.	Brick Residence	Timberlawn	63	
	R17	St. Mark's Church	Church	---	64	
	R18	6120 Nighshade Ct.	Brick Residence	Timberlawn	63	
G	R19	6001 Lux Lane	Frame Residence	---	68	1986 EA
	R20	6104 Wayside La.	Brick Residence	Windermere	56	
H	R21	6120 Charnwood Dr.	Brick Residence	Windermere	56	1986 EA
	R21A	6200 Charnwood Dr.	Brick Residence	Windermere	59	
	R22	6216 Charnwood Dr.	Brick Residence	Windermere	63	
	R23	6332 Windermere Cir.	Brick Residence	Windermere	65	
	R25	Windermere Comm. Pool/TC	Pool/Tennis Ct.	Windermere	62	
	R24	10904 Earlsate La.	Brick Residence	Windermere	64	
I	R24A	10908 Earlsate La.	Brick Residence	Windermere	64	1986 EA
	R24B	11012 Earlsate La.	Brick Residence	Windermere	63	
	R24C	11028 Earlsate La.	Brick Residence	Windermere	63	



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II. PURPOSE AND NEED

II. PURPOSE AND NEED

A. Purpose

The purpose of this project is to provide adequate roadway capacity within the I-270 interchanges at MD 187 and Democracy Boulevard to accommodate, safely and efficiently, existing traffic and traffic expected to be generated by planned development. Under existing conditions, frequent and severe traffic congestion occurs at these interchanges, and continued planned growth is expected in the study area in accordance with current zoning and Master Plan recommendations. Traffic congestion will intensify in the future since traffic volumes in the study area are projected to increase for the no-build condition. Current unsafe conditions result in a high accident rate. The alternates under consideration will provide improvements intended to alleviate the adverse conditions caused by inadequate capacity and safety deficiencies at the I-270 interchanges at MD 187 and Democracy Boulevard.

B. Background and Need

This project planning study was reactivated in January, 1994, after having been placed on hold in 1988 based on funding constraints and to allow time for the project need to become more clearly defined based on master plan updates and transportation studies being performed by The Maryland-National Capital Park and Planning Commission. Prior to being placed on hold, the study had progressed to an Alternates Public Meeting, held in March, 1988. After the study was reactivated, a Supplemental Alternates Public Meeting was held in June, 1994, to present the changes that were made to the various alternatives since the 1988 public meeting.

The need for improved connections between I-495 and I-270 was addressed in two previous project planning studies which obtained Location/Design Approval in 1989 from the Federal Highway Administration to provide an additional lane and accommodate High Occupancy Vehicles (HOV) in each direction on I-270 (East Segment) and I-270 Spur. These improvements will accommodate projected through traffic growth on this portion of mainline I-270; however, the capacity needs of the existing interchanges in these segments would still remain. It was determined, as a part of the two aforementioned studies, that more efficient access was needed between I-270 (East Segment)/I-270 Spur and the adjacent land uses.

This project planning study has been included in the Maryland Department of Transportation's Consolidated Transportation Program (CTP) since 1988, and is included in the

Development and Evaluation Program of the CTP for 1995-2000. Funding is programmed for project planning, but not for design, right-of-way acquisition, or construction.

The four routes which form the primary focus for this study are I-270 (East Segment), I-270 Spur, MD 187, and Democracy Boulevard. The existing transportation network is discussed in Section II.C.

Within the study area, there are several projects in various stages of design or construction which will improve accessibility to and within the region, placing even more importance on the function of the I-270 interchanges at MD 187 and Democracy Boulevard. The projects are referenced below and are discussed in greater detail in Section II.C.

- I-270 HOV Ramps at the Y-Split
- I-270 Spur Widening and Reconstruction of the Interchange with I-495
- Fernwood Road Bridge, Westlake Terrace to Rockledge Drive (Completed)
- I-270 (East Segment) Widening and HOV Lanes from the Y-Split to I-495 (Completed)
- North Bethesda Transitway

Although these projects will improve accessibility in the study area, the I-270 interchanges at MD 187 and Democracy Boulevard are still expected to experience increases in the severity and duration of traffic congestion as population, housing, and employment growth continues in the study area and surrounding region.

Since the study area is so strategically located at the southern gateway to the I-270 corridor and the junction of I-270 and I-495, a hindrance to the free movement of traffic has an effect on two interstate systems, extending into both suburban Maryland and Virginia. The demographics of several surrounding regions impact the subject interchanges. In the past ten years, there has been a rapid rate of growth in population, households and employment in the region surrounding the study area, Montgomery County and the other counties associated with the Washington, D.C. metropolitan area. This trend is expected to continue through the year 2020. Based on the Metropolitan Washington Council of Governments (MWCOC) Round 5.1 forecasts, the number

of households within the Montgomery County portion of the I-270 corridor¹ is expected to increase by 44% over 1993 levels, from 87,100 to 125,400 by the year 2020. Employment within this same region is expected to increase 62% between 1993 and 2020.

In Montgomery County, the population grew from 579,000 in 1980 to 757,000 in 1990, an increase of 31%. By the year 2020, the County's population is expected to reach 1,000,000 people, an increase of 32% over 1990. Employment in the County is expected to reach 697,000 by 2020, an increase of 36% over 1990 values. Based on 1990 data, of the 429,700 county workers, 16 years and over, 68% drove alone to work and 13% rode in carpools, with an overall mean travel time to work of 29.5 minutes.

The I-270 East Segment and I-270 Spur are also impacted by traffic outside of Montgomery County, in areas that are also experiencing sustained and significant growth. Frederick County, which feeds the northern end of the I-270 corridor, is projected to experience a population growth from 150,200 to 267,100, or 78%, between 1990 and 2020. Similarly, Frederick County employment is expected to grow from 71,800 to 114,900, or 60% between 1990 and 2020. The Fairfax/Arlington/Alexandria county region in Virginia is projected to experience a growth in households of 185,300 units, or 43%, between 1990 and 2020. Employment in the Fairfax/Arlington/Alexandria county region is expected to grow to 1,143,200 by the year 2020, a 59% increase over 1990 employment figures.

Along with this continued growth in population, housing, and employment, traffic volumes in the study area are projected to increase, thereby pointing to the need to improve capacity and safety at the I-270 interchanges at MD 187 and Democracy Boulevard. Traffic data are provided in Section II.D.

C. Existing and Planned Transportation Network

1. Roadways

The I-270 (East Segment) and the interchange at MD 187 were both opened to traffic in 1959 as part of the construction of the mainline of I-270 to the north. The I-270 Spur and the interchange at Democracy Boulevard were constructed in 1963.

¹ Includes the following Planning Areas: North Bethesda, Rockville, R&D Village, Derwood/Needwood/Wash. Grove, Gaithersburg, Montgomery Village/Airpark, Germantown East and Germantown West.

Both the I-270 (East Segment) and I-270 Spur provide a connection from I-270 to I-495, as is evident on the study area map (Figure I-2). The I-270 (East Segment) also provides for through traffic from Maryland suburbs to the east, and I-270 Spur serves traffic primarily to and from Virginia. The importance of these connections has grown over the years as I-270 and I-495 have been expanded and traffic volumes thereon have increased.

The I-270 interchanges at MD 187 and Democracy Boulevard are integral to the regional transportation network. In particular, these interchanges serve the rapidly developing North Bethesda region of which the Rock Spring Office Park is a major component. The Rock Spring Office Park, located as shown in Figure I-2 and discussed in detail in previous sections, is a campus-style high rise office complex, accommodating several major corporations' headquarters and comprising a significant portion of the study area.

Within the study area, there are several projects that have been recently completed, or are in various stages of design or construction. A brief description of each of the projects follows:

I-270 HOV Ramps at the Y-Split

Construction of this project began in Spring, 1995. It will provide High Occupancy Vehicles (HOV) median ramp connections for all four movements between I-270 north of the Y-Split and the East Segment and Spur.

I-270 Spur Widening and Reconstruction of the Interchange with I-495

Construction of this project began in Spring, 1995. It will provide an additional median lane for HOV's in each direction and reconstruct the Spur interchange with I-495 to improve the alignment and accommodate HOVs. This project will also include an additional lane at the gore associated with the westbound I-495/northbound I-270 interchange.

Fernwood Road Bridge, Westlake Terrace to Rockledge Drive

This project was completed in May, 1995 by Montgomery County and provides a bridge over the I-270 Spur at Fernwood Road. The bridge and roadway are four lanes wide with a median.

I-270 (East Segment) Widening and HOV Lanes from the Y-Split to I-495

Construction of this project was completed in 1994. Inside widening of this portion of I-270 was provided with improvements of the auxiliary lanes at the MD 187 and I-495 interchanges.

2. Master Plan Recommendations

The North Bethesda-Garrett Park Master Plan, December 1992, Interim Reference Edition sets forth a transportation plan that addresses the traffic problems in the study area. In addition, the Staging Amendment to the 1992 Master Plan was adopted July 26, 1994. The Staging Amendment prioritizes into three stages the sequence of development and the recommendations contained in the Master Plan for improving transportation in the area by linking the level of development in each stage to transportation projects and programs. The level of development that can be attained is based on the recommended staging ceiling contained in the Annual Growth Policy (AGP), the staging ceiling being the total amount of development that can be handled by the transportation network without exceeding standards for roadway congestion. Therefore, each stage of development is associated with a set of transportation improvements which represent a minimum level of service that is needed before development can be increased to the next stage. It is stated in the Montgomery County FY 95 Annual Growth Policy that North Bethesda is a high priority area for development and additional transportation facilities will be required to support that development.

In general terms, the Master Plan recommends that additional roadway capacity be provided, along with transit and transportation demand management policies that emphasize pedestrian and bicycle use. The Plan recognizes that the need for transportation system improvements will not be eliminated even if development would be restricted in the area. Furthermore, the Master Plan states that although increased use of non-auto-driver modes is desirable, additional roadway capacity will still be needed to accompany these other forms of transportation.

The Staging Amendment's recommended transportation facilities and policies for Stage I (Short-Term) that are related to the study area include the following:

- Establish a Transportation Management Organization (TMO) to support the use of non-auto-driver modes by enacting various programs with area employers.

- AD
- Decrease the Single Occupant Vehicle (SOV) mode share for employees by four percentage points to 74 percent.
 - Institute a parking policy that eliminates free parking and places constraints on long-term parking.
 - Provide improved pedestrian and bicycle crossings at the intersections of Old Georgetown Road with Democracy Boulevard, Rock Spring Drive, and Tuckerman Lane.
 - Provide intersection improvements at Old Georgetown Road and Tuckerman Lane by adding a northbound left turn lane.
 - Re-establish an express bus service along the future High Occupancy Vehicle (HOV) lane to and from Rock Spring Office Park.

The Stage II (Mid-Term) recommended improvements begin, for the most part, when the policies and programs contained in Stage I are implemented, when the transportation level of service is within the AGP standard, and new increased staging ceilings have been approved. The Stage II recommendations applicable to the study area include the following:

- Provide one or more direct access ramps from I-270/I-270 Spur to Rock Spring Office Park. (The Master Plan also recommends a direct access HOV ramp from I-270 Spur to Rock Spring Office Park.)
- Provide bikeways from Montgomery Mall to Old Georgetown Road and from Democracy Boulevard to Lux Lane.
- Expand HOV usage on I-270.
- Provide high capacity transit service between Grosvenor Metrorail Station, Rock Spring Office Park and Montgomery Mall (North Bethesda Transitway).

The Stage III (Long-Term) recommended transportation facilities will be defined in the future after a new comprehensive transportation analysis is prepared as part of the North Bethesda Master Plan Amendment, which will be prepared in 10 to 15 years.

The Staging Amendment does not address specifics on transportation system improvements that are to be provided by IBM as a result of their planned expansion. The proposed IBM improvements are located on Old Georgetown Road between Cheshire Drive and I-270 and include the intersections with Democracy Boulevard and Rock Spring Drive.

The Staging Amendment recommends establishing Transportation Management Districts (TMD's) to implement policies that promote the use of alternative forms of transportation to reduce the SOV mode share. The Transportation Action Partnership, Inc. (TAP) is a group of area employers whose work has already been successful in increasing the vehicle occupancy rate in Rock Spring Office Park.

The improvements proposed in this project planning study are compatible with the North Bethesda-Garrett Park Master Plan.

3. Transit Services

A full range of public transportation is available to residents and commuters in the study area and surrounding region. The Washington Metropolitan Area Transit Authority offers both the Metrorail and regional bus service. Commuter rail service is provided at the Garrett Park station of the Maryland Rail Commuter (MARC) Service. The Montgomery County Department of Transportation offers Ride-On service. Also, the North Bethesda Transitway project is being studied by Montgomery County. It involves provisions for a high capacity transit connection between the Grosvenor Metrorail Station and Montgomery Mall, with stops along Rock Spring Drive and Fernwood Road.

4. Pedestrian/Bicycle Facilities

In conjunction with the North Bethesda-Garrett Park Master Plan, pedestrian and bike facilities exist or are planned in the study area. The Master Plan sets forth the following recommendations:

- Designate a new right-of-way linking Democracy Boulevard and Rock Spring Office Park with the residential area north of I-270 as far as Tuckerman Lane. An overpass spanning I-270 will be required to link these areas. This connection, which might be integrated into the design of the proposed interchange at Rock Spring Office Park, will enhance non-auto access to employment, Walter Johnson

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High School, and the future transitway envisaged between Grosvenor and Montgomery Mall.

- Include right-of-way for a bikeway in the easement for the North Bethesda Transitway, along Rock Spring Office Park Drive and Fernwood Road from Old Georgetown Road to Montgomery Mall. This bikeway will ultimately connect housing, shopping centers, offices, a high school, community center, and the proposed park on the Davis parcel at Rock Spring Office Park.

D. Traffic Statistics

The existing I-270 interchange at MD 187 is a diamond-type interchange. The high traffic volumes at this interchange result in substantial delays during peak hours, with queuing on the southbound I-270 ramp onto southbound MD 187 occasionally extending as far back as the I-270 (East Segment) mainline. Operational problems are also experienced on the MD 187 bridge over I-270 due to the limited amount of left-turning vehicle storage capacity. Lack of merge areas on MD 187 north and south of the interchange also contributes to traffic congestion by restricting the free flow of traffic exiting I-270.

The existing I-270 Spur interchange at Democracy Boulevard is a partial cloverleaf interchange. Extensive delays are also experienced at this interchange during the peak hours, with queues extending onto the northbound I-270 Spur. Operational problems occur at the interchange due to lack of merge areas on Democracy Boulevard, and as a result of the short distance available for vehicles entering I-270 Spur northbound to weave across the flow of traffic exiting I-270 Spur.

Traffic counts conducted in 1993 and 1994 were used to derive the Average Daily Traffic (ADT) volumes shown in Figure II-1. This figure shows a 1994 existing conditions volume of 185,500 vehicles per day on I-270 mainline north of the Y-Split at the northern extremity of the study area with volumes south of the Y-Split of 85,600 vehicles per day and 99,900 vehicles per day on I-270 (East Segment) and I-270 Spur, respectively.

Traffic projections made for the design year 2020 are shown for the no-build condition in Figure II-2. Table II-1 shows a comparison between the 1994 and 2020 ADT's, listing the compounded annual growth rate in traffic volume at various locations throughout the study area.

TABLE II-1

1994-2020 AVERAGE DAILY TRAFFIC VOLUME COMPARISON

Location	1994 Existing Conditions ADT	2020 No Build ADT	Compounded Annual Growth
I-270 N. of Y-Split	185,500	302,000	1.89%
I-270 (E. Segment) W. of MD 187	85,600	125,000	1.47%
I-270 (E. Segment) E. of MD 187	83,000	117,000	1.33%
I-270 Spur N. of Democracy Blvd.	99,900	177,000	2.22%
I-270 Spur S. of Democracy Blvd.	99,000	180,000	2.33%
MD 187 N. of I-270 (E. Segment)	66,800	73,000	0.34%
MD 187 S. of I-270 (E. Segment)	66,200	87,000	1.06%
Democracy Blvd. W. of I-270 Spur	51,950	62,000	0.68%
Democracy Blvd. E. of I-270 Spur	57,850	71,000	0.79%
Rock Spring Dr. W. of MD 187	23,200	55,000	3.38%

Level of Service - Signalized Intersections

Level-of-service (LOS) for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average stopped delay per vehicle for a 15-minute analysis period.

LOS A describes operations with very low delay, i.e., less than 5.0 sec. per vehicle.

LOS B describes operations with delay in the range of 5.1 to 15.0 sec. per vehicle.

LOS C describes operations with delay in the range of 15.1 to 25.0 sec. per vehicle.

LOS D describes operations with delay in the range of 25.1 to 40.0 sec. per vehicle. At the level D, the influence of congestion becomes more noticeable.

LOS E describes operations with delay in the range of 40.1 to 60.0 sec. per vehicle. This is considered to be the limit of acceptable delay.

LOS F describes operations with delay in excess of 60.0 sec. per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection.

Level-of-Service - Ramps and Merge Areas

Level-of-service for ramps and merge areas is defined in terms of driving turbulence.

LOS A represents unrestricted operations. Merging and diverging maneuvers are carried out without disruption to through vehicles. There is no noticeable turbulence in the ramp influence area.

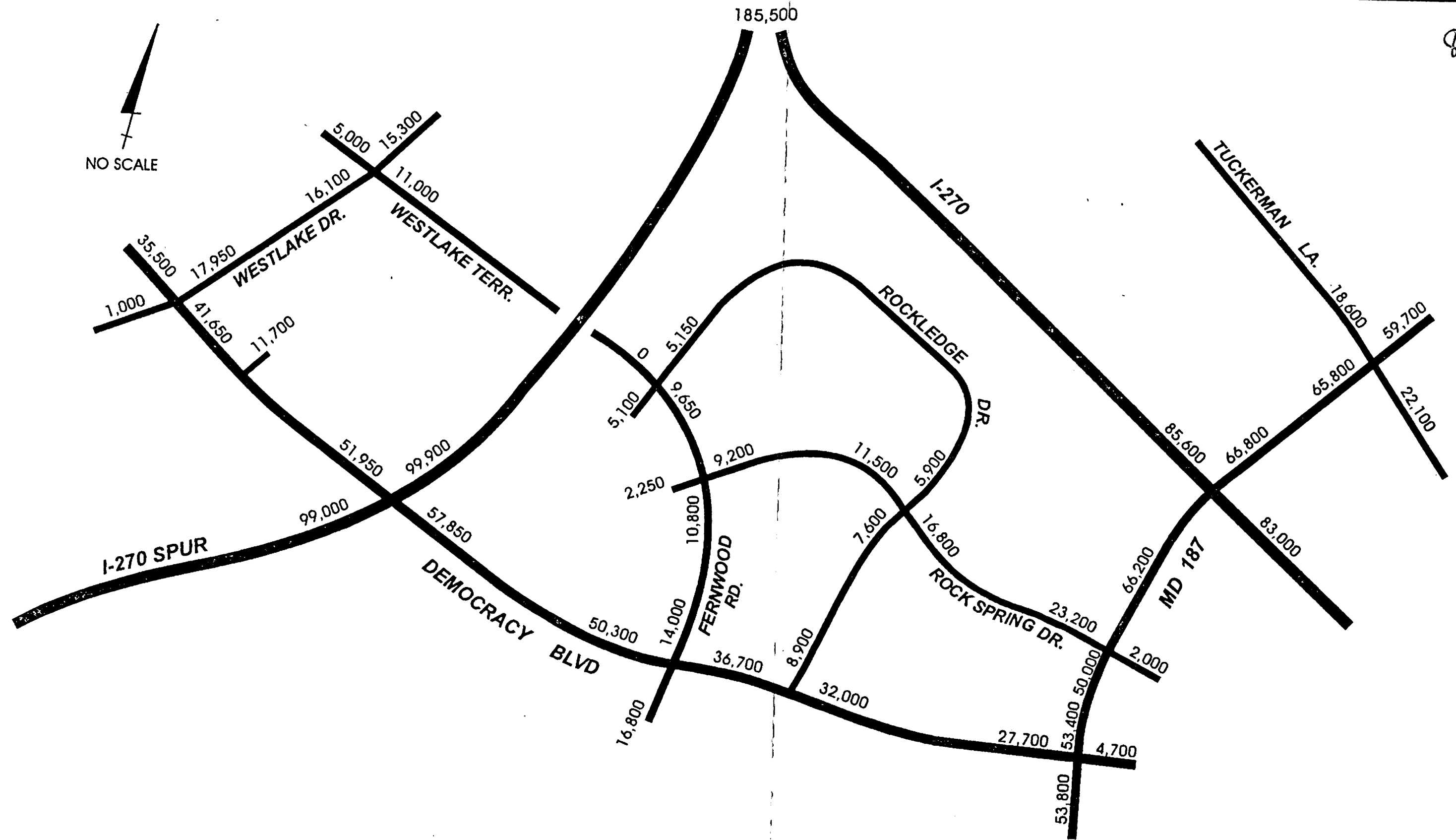
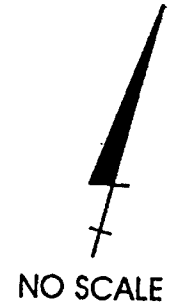
At LOS B, minimal levels of turbulence exist. Merging and diverging maneuvers become noticeable to through drivers as speeds must be adjusted by merging and diverging drivers to smoothly fill available gaps and make lane changes within the ramp influence area. Speeds of vehicles in the influence area begin to decline slightly.

At LOS C, the level of merging or diverging turbulence becomes noticeable and the average speed within the ramp influence area begins to decline. Driving conditions are still relatively comfortable at this level.

At LOS D, virtually all vehicles slow to accommodate merging or diverging maneuvers as turbulence levels become intrusive. Some ramp queues may form, but freeway operation remains stable.

At LOS E, speeds reduce to $65 \pm$ kilometers per hour (low 40's miles per hour) as the turbulence of merging and diverging maneuvers becomes intrusive to all drivers in the influence area. Both ramp and freeway queues begin forming as flow levels approach capacity limits.

LOS F represents breakdown, or unstable, operation. Queues have visibly formed on the freeway and on-ramps as approaching demand flows exceed the discharge capacity of the downstream freeway.

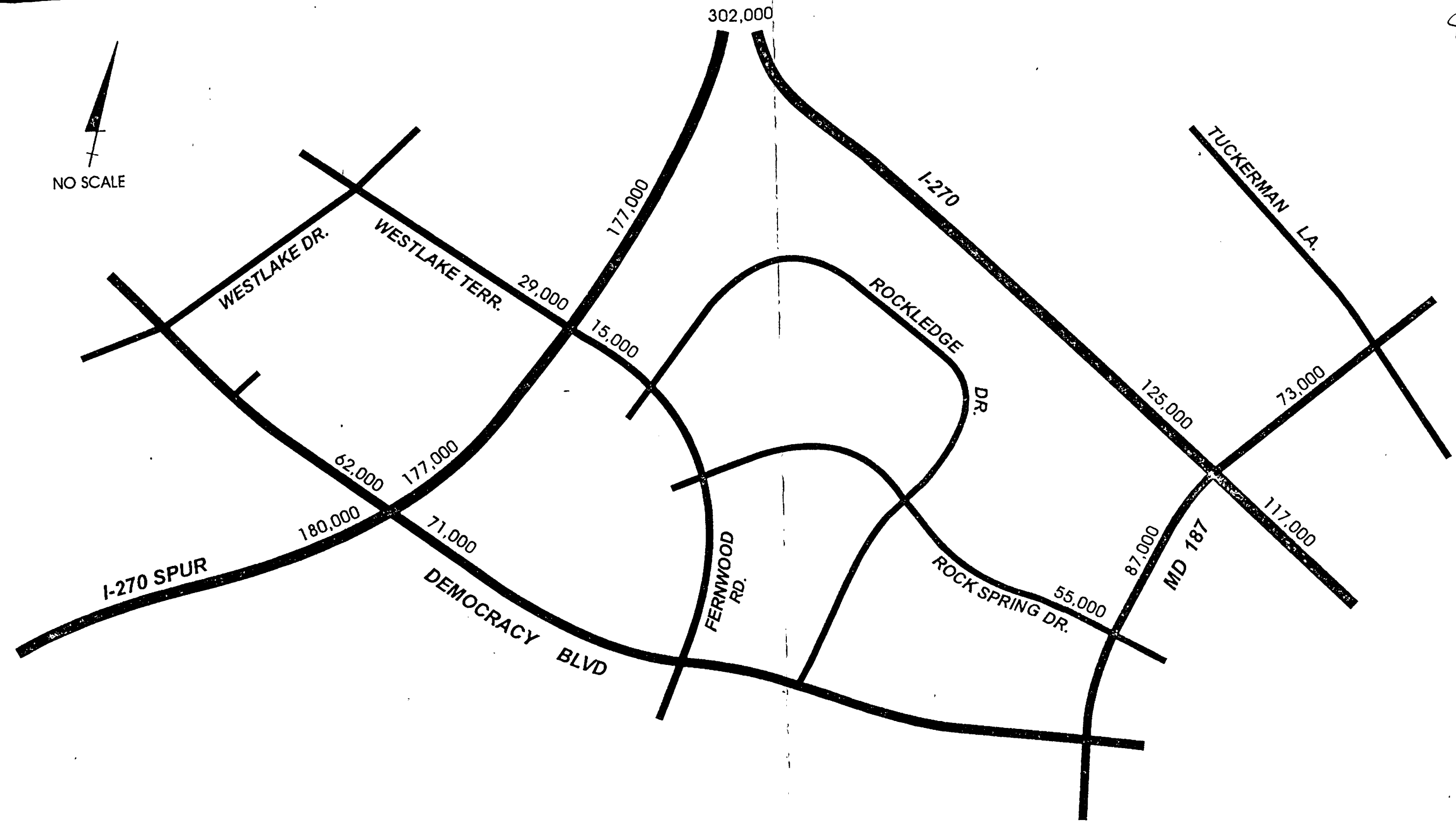
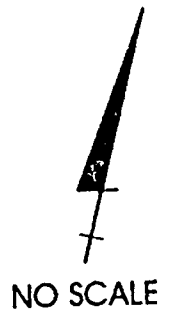


NOTE: ADT Data furnished by SHA Travel Forecasting Section

**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BLVD**

**1994 EXISTING CONDITIONS
AVERAGE DAILY TRAFFIC**

FIGURE II - 1

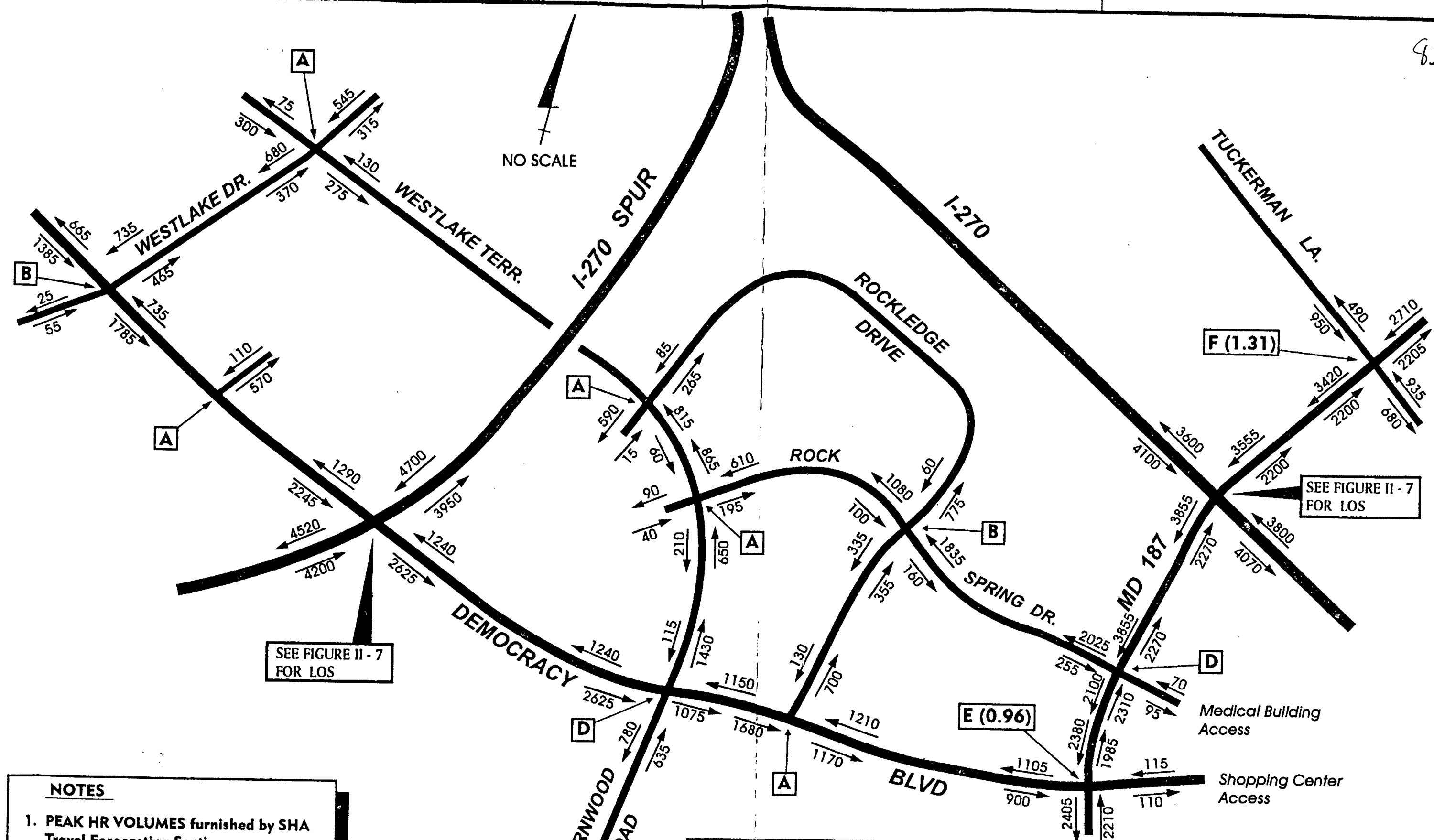


NOTE: Source of ADT Data = LOS Summary by BMI, Oct. 10, 1994.

I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD

2020 NO-BUILD AVERAGE DAILY TRAFFIC

FIGURE II - 2



SEE FIGURE II - 7 FOR LOS

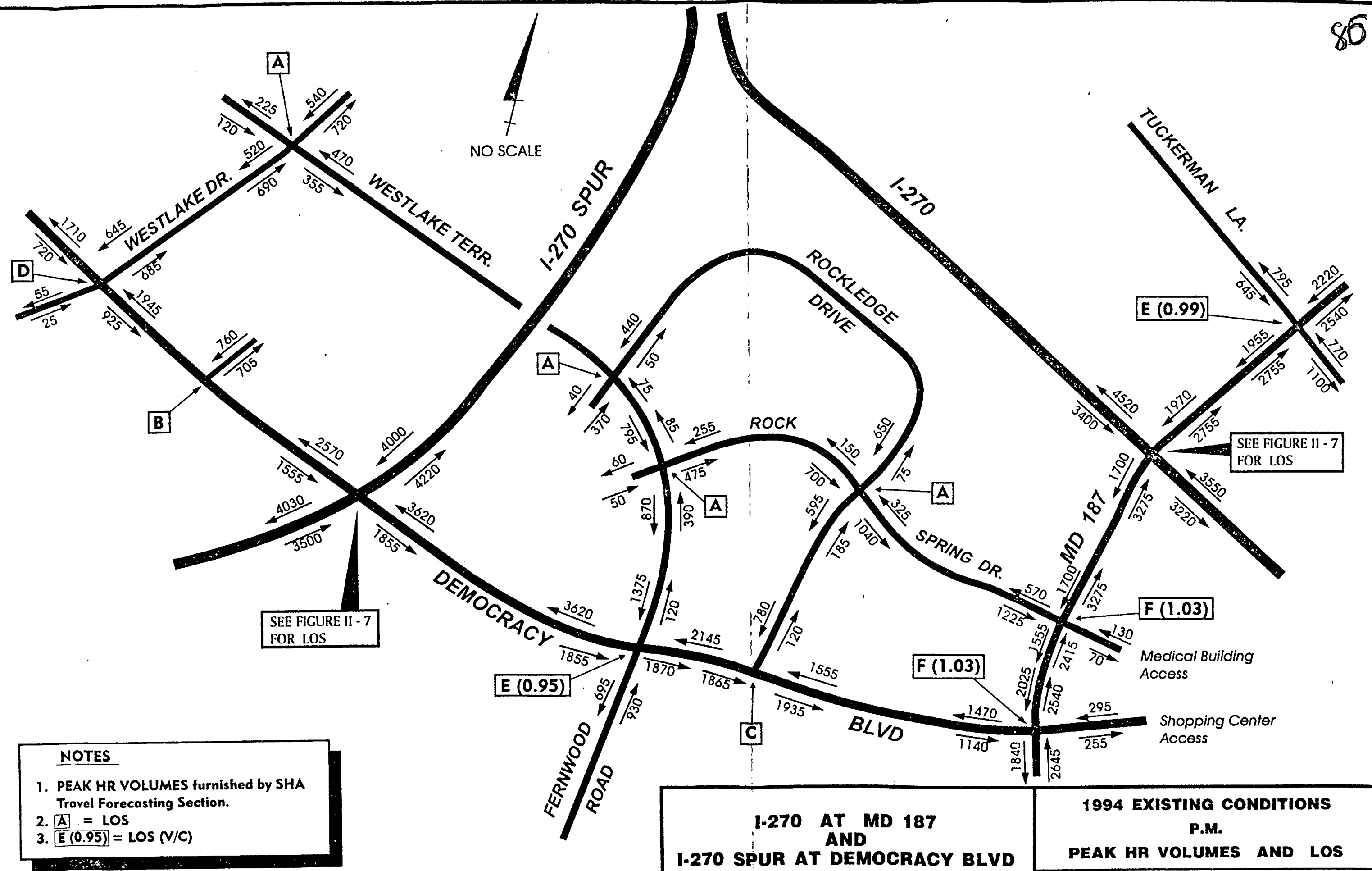
SEE FIGURE II - 7 FOR LOS

- NOTES**
1. PEAK HR VOLUMES furnished by SHA Travel Forecasting Section.
 2. [A] = LOS
 3. [E (0.96)] = LOS (V/C)

I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD

1994 EXISTING CONDITIONS A.M. PEAK HR VOLUMES AND LOS

FIGURE II - 3



SEE FIGURE II - 7 FOR LOS

SEE FIGURE II - 7 FOR LOS

F (1.03)

Medical Building Access

Shopping Center Access

- NOTES**
1. PEAK HR VOLUMES furnished by SHA Travel Forecasting Section.
 2. [A] = LOS
 3. [E (0.95)] = LOS (V/C)

I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD

1994 EXISTING CONDITIONS P.M. PEAK HR VOLUMES AND LOS

FIGURE II - 4



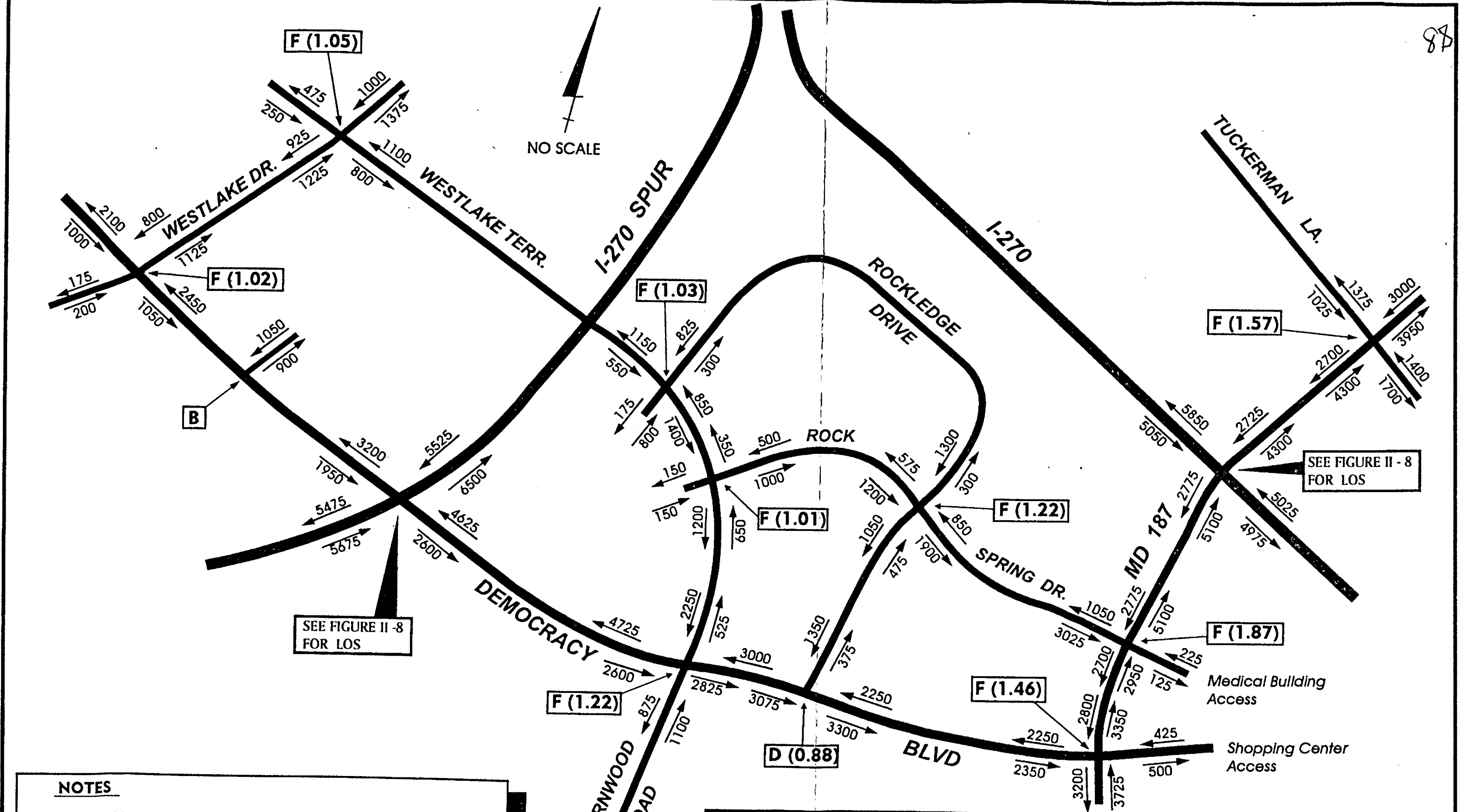
NOTES

1. Source of PEAK HR VOLUMES and LOS = 2020 Traffic Projections and LOS Summary by BMI, Oct. 10, 1994.
2. [B] = LOS
3. [D (0.87)] = LOS (V/C)

I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD

2020 NO-BUILD A.M. PEAK HR VOLUMES AND LOS

FIGURE II-5



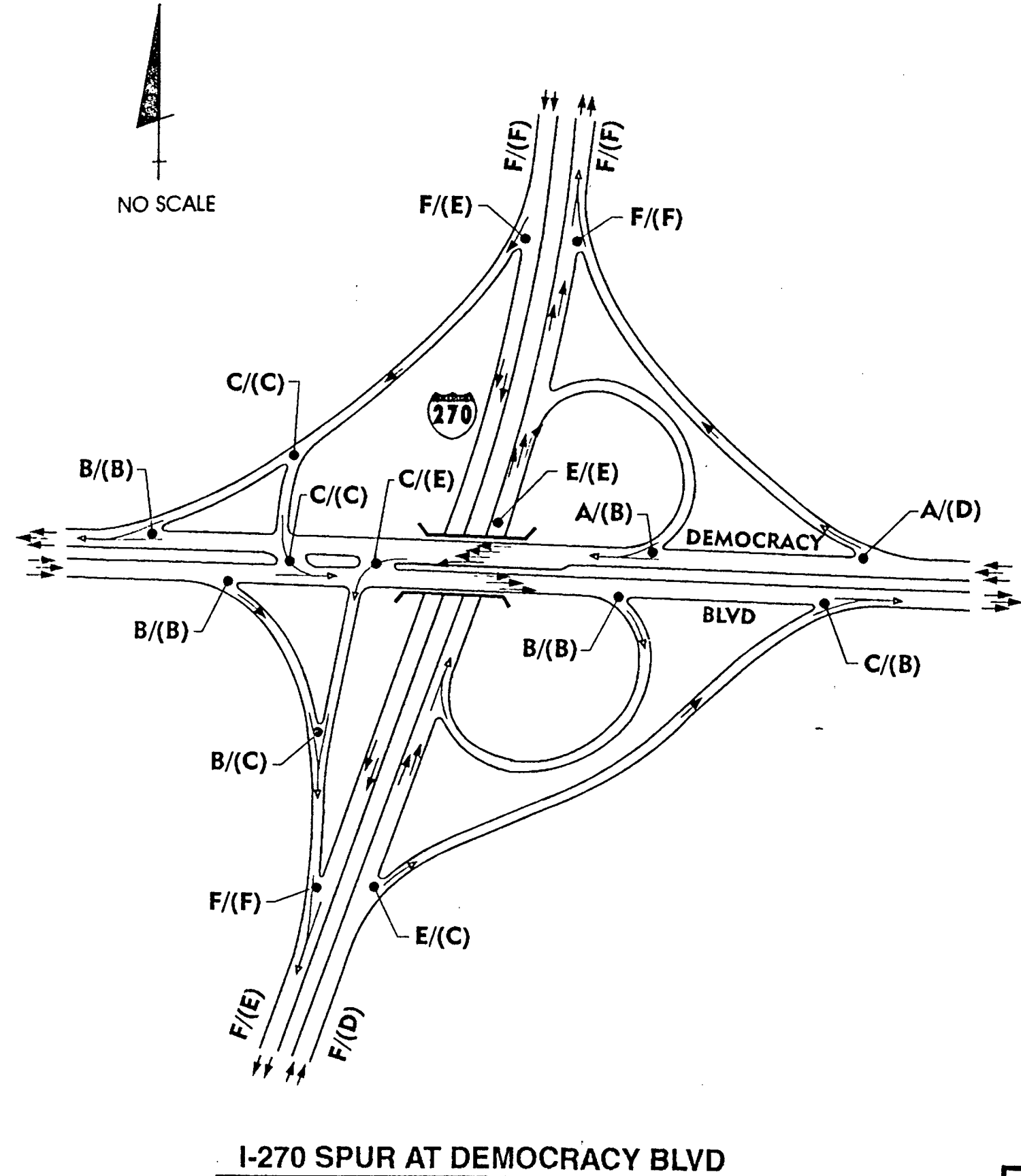
NOTES

1. Source of PEAK HR VOLUMES and LOS = 2020 Traffic Projections and LOS Summary by BMI, Oct. 10, 1994.
2. [B] = LOS
3. [D(0.87)] = LOS (V/C)

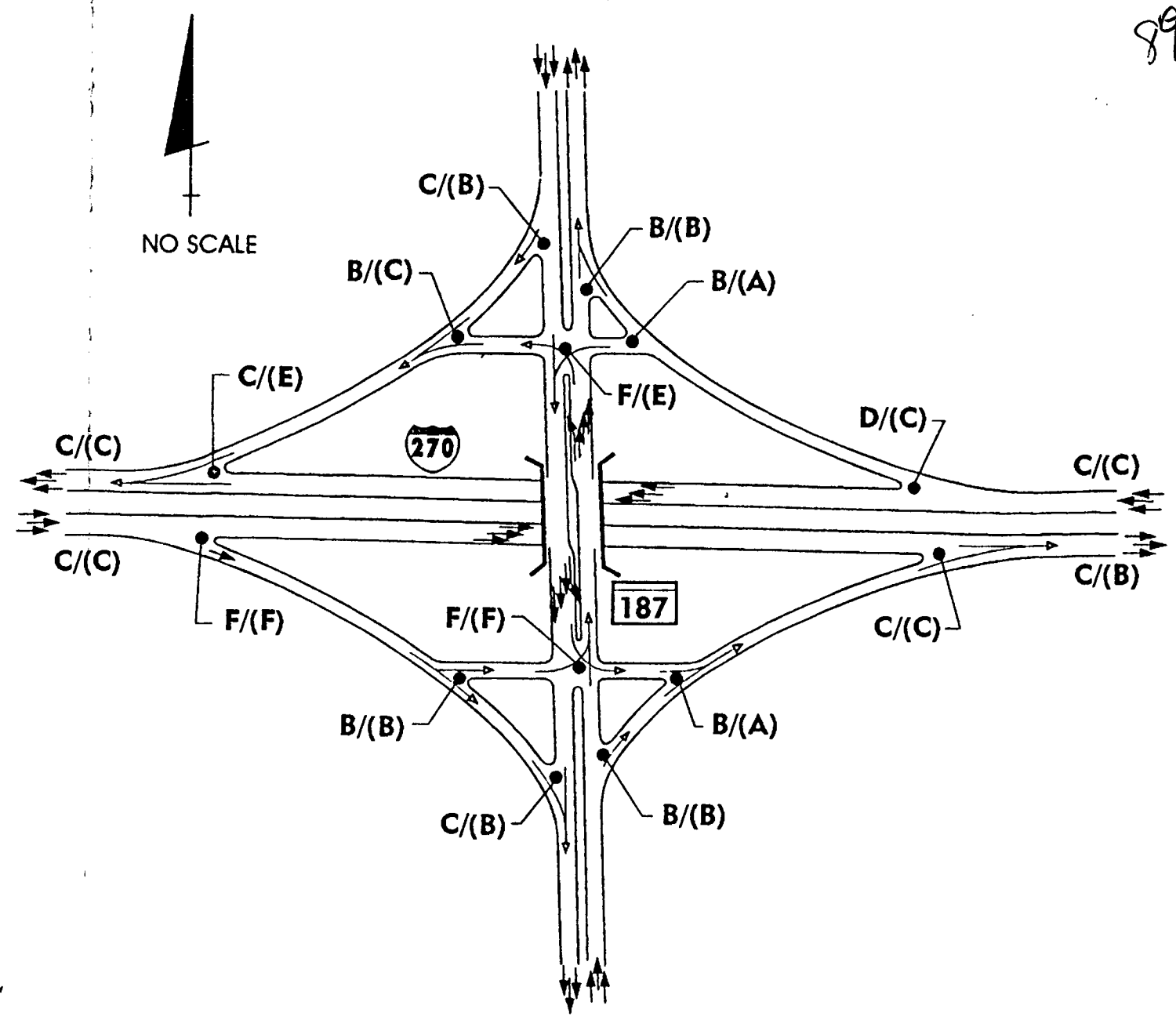
**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BLVD**

**2020 NO-BUILD
P.M.
PEAK HR VOLUMES AND LOS**

FIGURE II - 6

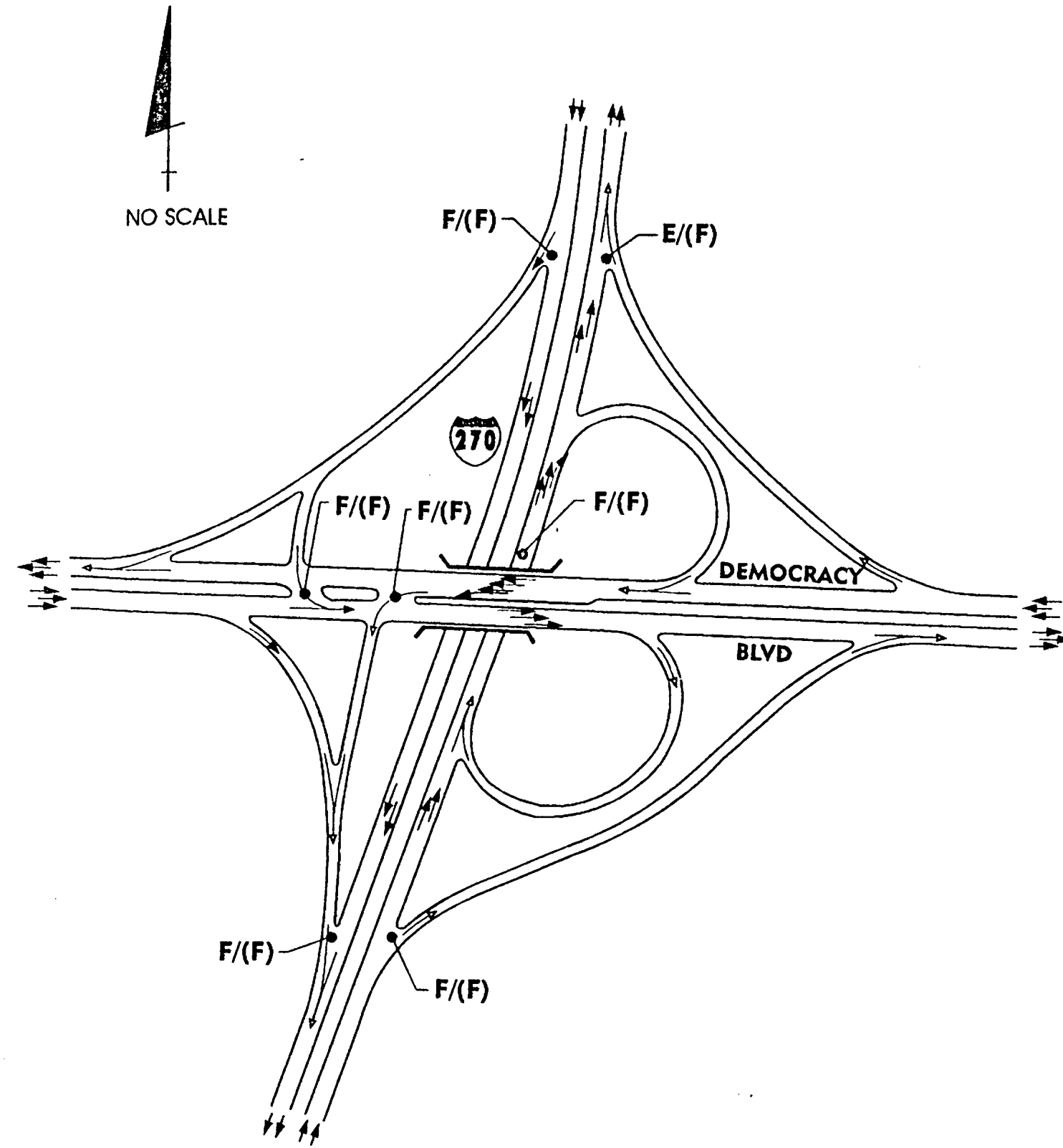


I-270 SPUR AT DEMOCRACY BLVD

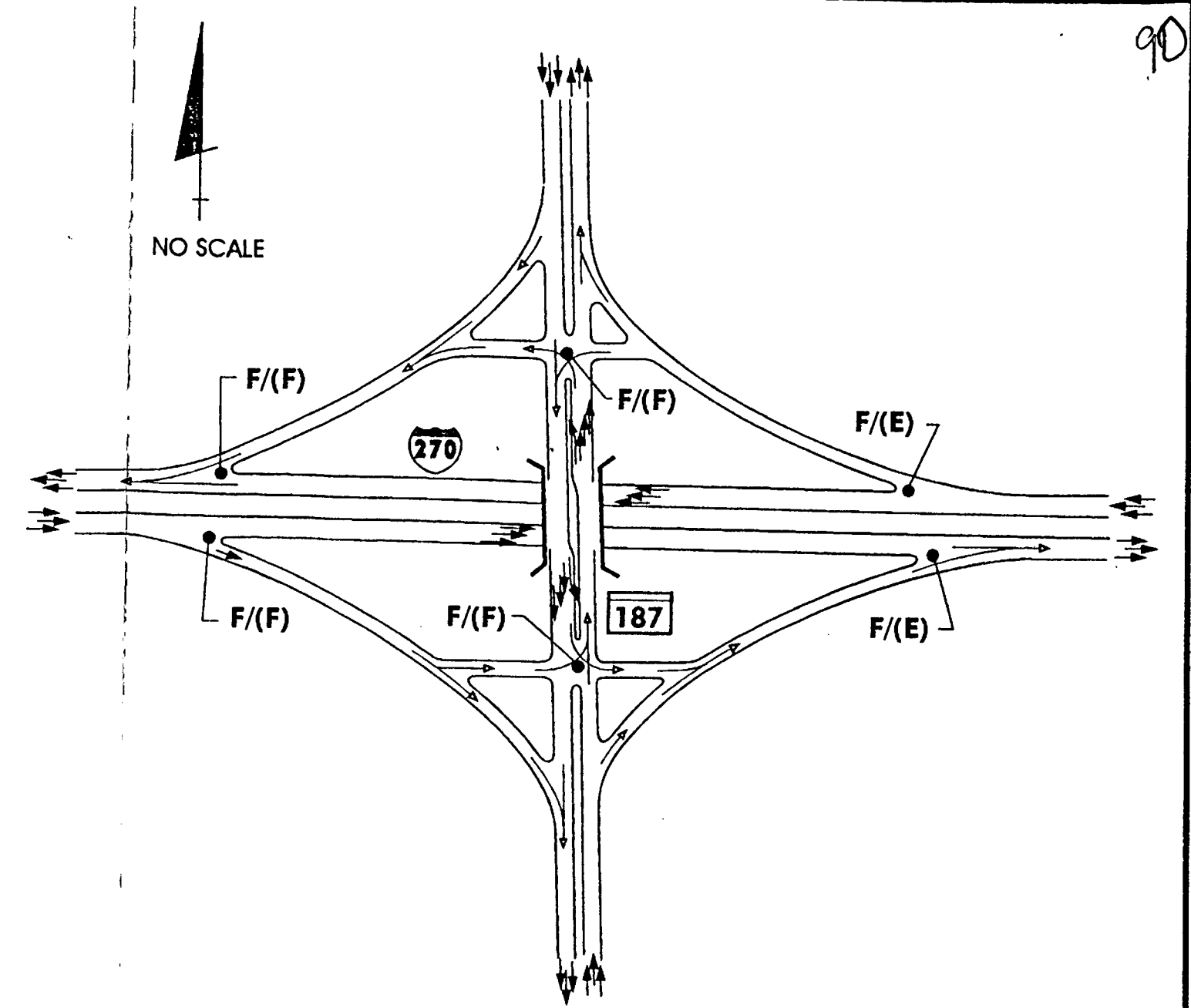


I-270 AT MD 187

I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD	1994 EXISTING INTERCHANGE LOS AM / (PM)
	FIGURE II - 7



I-270 SPUR AT DEMOCRACY BLVD



I-270 AT MD 187

<p>I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD</p>	<p>2020 NO-BUILD INTERCHANGE LOS AM / (PM)</p>
<p>FIGURE II - 8</p>	

A.M. and P.M. peak hour levels of service at the various intersections based on analyses using traffic volumes for 1994 existing conditions and the projected 2020 no-build conditions are shown in Figures II-3 through II-6. The A.M. and P.M. peak hours are from 8:00 to 9:00 A.M. and 4:00 to 5:00 P.M., respectively. Also shown are peak hour volumes, A.M. and P.M., for both 1994 existing conditions and 2020 no-build conditions. Shown along with the LOS, for ratings of D through F, is the volume to capacity ratio (V/C), which is the ratio of the actual volume to the theoretical capacity at a given point. It is noteworthy to observe that three of the eleven intersections have LOS F under P.M. 1994 existing conditions, and it is projected that nine of the eleven intersections will have LOS F under P.M. 2020 no-build conditions.

Levels of service at the I-270 interchanges at MD 187 and Democracy Boulevard, A.M. and P.M. peak hours, for 1994 existing and 2020 no-build conditions are shown in Figures II-7 and II-8, respectively. Under the 2020 no-build conditions, levels of service at all analyzed locations at the I-270/MD 187 interchange are projected to be at LOS E or F. Similarly, at the I-270 Spur/Democracy Boulevard interchange, all analyzed locations are projected to be at LOS F, except for the ramp from Democracy Boulevard westbound onto I-270 Spur northbound (LOS E - A.M.).

Under existing conditions, frequent and severe traffic congestion occurs at the I-270 interchanges at MD 187 and Democracy Boulevard. Continued planned growth is expected in the study area in accordance with current zoning and Master Plan recommendations. As is evident from the above traffic discussion, traffic volumes are projected to increase in the study area, and levels of service at the various locations within the subject interchanges are projected to deteriorate. The Master Plan recognizes the need for transportation improvements and recommends that additional roadway capacity be provided. In order to efficiently handle the projected traffic growth, improvements are needed in the form of additional lanes at the I-270 interchanges at MD 187 and Democracy Boulevard and additional direct interchange connections between I-270 and Rockledge Drive and between I-270 Spur and Fernwood Road.

Alternative 1 (no-build) would provide no major improvements to the interchanges. As traffic volumes continue to grow, traffic delays and the length of the peak congestion will increase. It can be expected that as the magnitude and duration of congestion increase over time, the rate of accidents will also increase.

Descriptions of build alternatives are contained in Section III.C.

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The traffic volumes, traffic operations and levels of service that would result from the build alternatives have been determined assuming each of the following conditions:

- a. Each build alternative would be constructed individually (i.e., with a given alternative at one location, the no-build condition would exist at all other locations).
- b. A combination of build alternatives would be implemented (including the possibility of the no-build alternative at certain locations).

The levels of service that are projected for the Year 2020 for the individual build alternatives and reasonable combinations of build alternatives are presented in Tables II-2 through II-4 on the following sheets. The levels of service that would result in the year 2020 with the no-build alternative are also listed for reference.

As previously stated, analysis results for the year 2020 no-build alternative indicate congested flow and unsatisfactory LOS for most traffic movements at the I-270 interchange at MD 187 and Democracy Boulevard. The 2-series and 3-series build alternatives focus on improvements to the I-270/MD 187 interchange and the 4-series build alternatives incorporate improvements to the I-270 Spur/Democracy Boulevard interchange. Build Alternatives 5B and 6B focus on providing additional access to the Rockspring area via connecting ramps. Build Alternative 5B is a half-diamond interchange at Fernwood Road and Build Alternative 6B is a one-direction ramp from the northbound I-270 Spur into the Rockspring area. Build Alternative 6B is designed as a roadway enhancement to compliment one of the 3-series build alternatives. The Build Alternatives were evaluated for changes in LOS conditions at both interchanges and at selected at-grade intersections throughout the study area.

At the I-270/MD 187 interchange, LOS results for the 2-series build alternatives do not indicate substantial improvements to traffic operations. The 3-series build alternatives show some improvement over the no-build results, primarily during the A.M. peak hour. At the I-270 Spur/Democracy Boulevard interchange, analysis results for the 4-series build alternatives indicate mixed LOS improvements, with all designs except 4D indicating an LOS F in at least one peak hour (A.M. or P.M.). Build Alternatives 4C and 4D show slightly better LOS results than 4A and 4B. Analysis of the HOV improvements for the Fernwood Road and MD 187 interchanges did not show significant improvements in LOS results at these locations. Analysis

of build alternative 5B indicated a LOS F at one of the proposed ramps intersections during the A.M. peak hour.

The LOS analysis suggests that a combination of the build alternatives may be required to improve the LOS results. A series of combinations of these alternatives are currently being evaluated.

E. Accident Statistics

During the period from January 1, 1990 to December 31, 1992, 233 accidents occurred within the I-270/MD 187 Interchange. Of these accidents, 159 occurred on MD 187, 64 occurred on I-270, and 10 occurred on the ramps. For the 0.87 kilometer (0.54 mile) segment of MD 187 included in the accident study, the accident rate was 513.1 accidents per one hundred million vehicle miles (ACC/100 MVM), which is significantly higher than the statewide average of 269.9 ACC/100 MVM for similar State maintained highways. There was one fatal accident, which occurred in 1992, and 95 injury accidents along this stretch of MD 187 during the study period. The accident rates along this segment of MD 187 for accidents resulting from angle, rear end, and left-turn collisions which occurred during the study period are significantly higher than the statewide average rates for similar State maintained highways.

For the 0.56 kilometer (0.35 mile) segment of I-270 included in the accident study of the MD 187 interchange, the accident rate was 210.0 ACC/100 MVM, which is significantly higher than the statewide average rate of 54.7 ACC/100 MVM for similar State maintained highways. During the study period, there were no fatal accidents, but there were 36 injury accidents along this segment of I-270. Accident rates during the study period for rear end, fixed object, parked vehicle, and other collisions along this segment of I-270 are significantly higher than the statewide average rates for similar State maintained highways.

There were no High Accident Locations designated along the mainline sections of the I-270/MD 187 Interchange. High Accident Locations are those intersections and sections of road deemed to be most hazardous locations as stratified by number of accidents and ADT. Ramps 2 and 6, located in the northeast and southwest quadrants of the interchange, respectively, were designated as High Accident Ramps. A High Accident Ramp is a ramp where three or more accidents occur within a one year period or five or more accidents occur on the ramp within a three year period.

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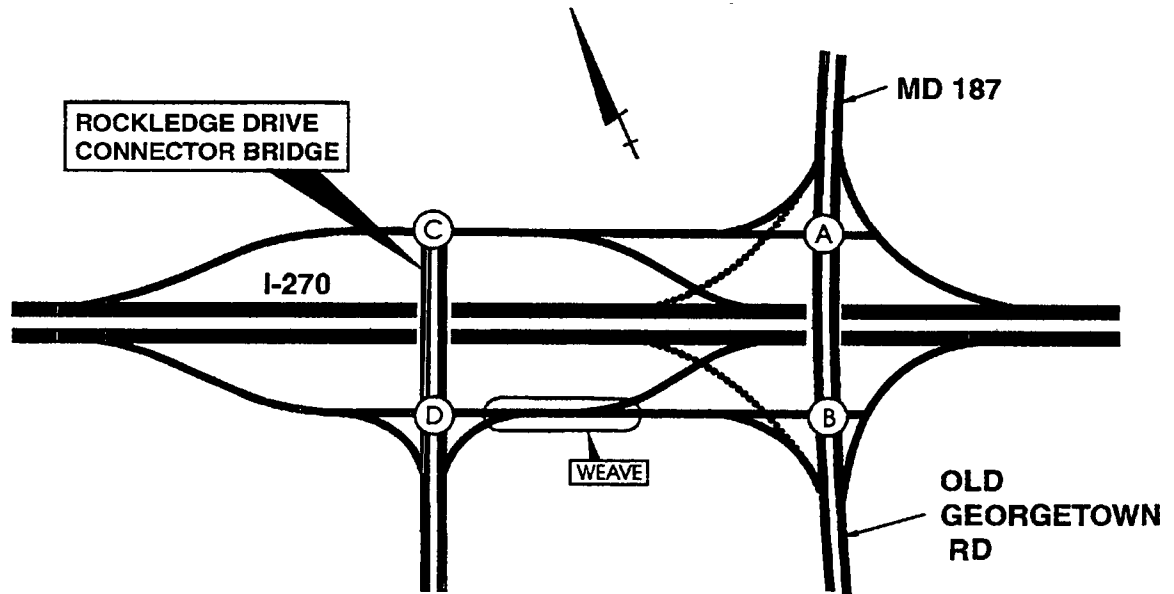


TABLE II-2

**2020 LEVEL OF SERVICE ANALYSIS
I-270/MD 187/ROCKLEDGE DRIVE CONNECTOR**

ALTERNATIVE	INTERSECTION ANALYSIS LOCATION			
	A	B	C	D
NO BUILD	F(1.62)/F(1.54)	F(1.08)/F(1.70)	-	-
2C	F(1.45)/F(1.43)	F(1.03)/F(1.59)	-	-
2D	F(1.33)/F(1.14)	F(1.03)/F(1.48)	-	-
2E	F(1.08)/E(0.99)	C/F(1.49)	-	-
3E	E(0.97)/F(1.11)	D/F(1.35)	F(1.46)/E(0.92)	F(1.30)/E(0.98)
3F	E(0.97)/F(1.11)	D/F(1.35)	F(1.46)/E(0.92)	-
3G	E(0.97)/F(1.11)	D/F(1.35)	F(1.46)/E(0.92)	-
3H			-	-
4A, 4B, 4C, 4D	F(1.62)/F(1.54)	F(1.08)/F(1.70)	-	-
5B	F(1.50)/F(1.25)	F(1.08)/F(1.57)	-	-
5C	F(1.62)/F(1.51)	F(1.08)/F(1.68)	-	-
6B w/3A or 3B	D(0.87)/F(1.11)	C(0.78)/F(1.23)	E(0.94)/B(0.66)*	
SELECTED ALTERNATIVES COMBINATIONS				
3F w/ 2D	D(0.87)/F(1.11)	C(0.78)/F(1.23)	E(0.94)/E(0.92)	

Legend: E(0.97)/F(1.11) = AMLOS (V/C) / PMLOS (V/C)

* Applicable to 3A only.

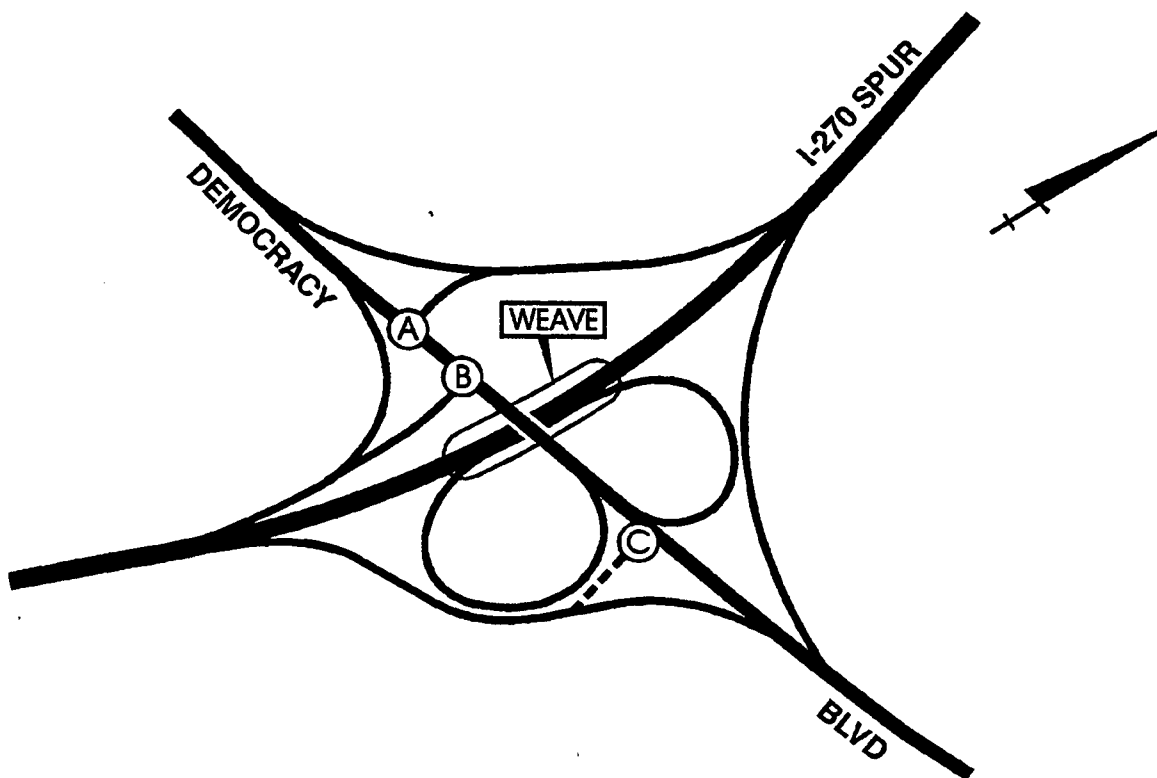


TABLE II-3

**2020 LEVEL OF SERVICE ANALYSIS
I-270 SPUR/DEMOCRACY BOULEVARD**

ALTERNATIVE	INTERSECTION ANALYSIS LOCATION		
	A	B	C
NO BUILD	F(1.23)/F(1.08)	F(1.19)/F(1.20)	-
2C, 2D, 2E	F(1.23)/F(1.08)	F(1.19)/F(1.20)	-
3E, 3F, 3G	F(1.04)/E(0.92)	F(1.12)/F(1.14)	-
3H	F(1.23)/F(1.08)	F(1.19)/F(1.20)	-
4A	F(1.23)/F(1.08)	F(1.19)/F(1.20)	D/E(0.95)
4B	F(1.23)/F(1.08)	F(1.19)/F(1.20)	-
4C	E(0.96)/D	F(1.04)/E(0.95)	-
4D	E(0.96)/D	-	-
5B	D/E(0.95)	F(1.02)/F(1.10)	-
5C	F(1.08)/F(1.08)	F(1.13)/F(1.18)	-
6B	F(1.04)/E(0.92)	F(1.12)/F(1.14)	-

Legend: E(0.97)/F(1.11) = AMLOS (V/C) / PMLOS (V/C)

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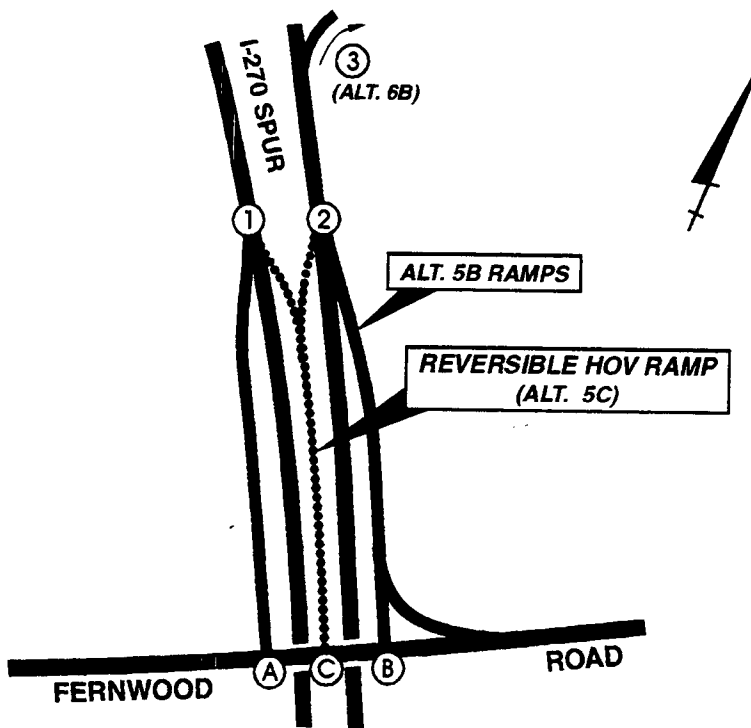


TABLE II-4

**2020 LEVEL OF SERVICE ANALYSIS
I-270 SPUR/FERNWOOD ROAD AND I-270 SPUR/I-270**

ALTERNATIVE	INTERSECTION ANALYSIS LOCATION		
	A	B	C
NO BUILD	-	-	-
5B	F(1.04)/B	-	A/A
5C	-	A/A	-

Legend: E(0.97)/F(1.11) = AM LOS (V/C) / PM LOS (V/C)

ALTERNATIVE	MERGE/DIVERGE ANALYSIS LOCATION					
	1		2		3	
	DIVERGE	FREEWAY	DIVERGE	FREEWAY	DIVERGE	FREEWAY
NO BUILD	-	-	-	-	-	-
5B	F/D	F/E	F/F	F/F	-	-
5C	D/-	F/-	-/E	-/F	-	-
6B	-	-	-	-	E/C	E/F

- Note:
- Alternative 5C consists of a single, reversible ramp with traffic flowing from I-270 to Fernwood Road in the AM and from Fernwood Road to I-270 in the PM. Thus, there is no diverge analysis for the PM and no merge analysis for the AM.
 - Alternatives 5B and 6B cannot be built together.

Within the I-270 Spur/Democracy Boulevard Interchange, there were 199 accidents from January 1, 1990 to December 31, 1992. One hundred thirty-six accidents occurred on Democracy Boulevard, 29 accidents on I-270 Spur, and 34 accidents on the ramps.

For the 1.34 kilometer (0.83 mile) portion of Democracy Boulevard included in the accident study, the accident rate was 300.9 ACC/100 MVM. Since Democracy Boulevard is a County-maintained road, the statewide average rate for similar State maintained highways is considered not applicable for comparison and is not listed. There were no fatal accidents along this portion of Democracy Boulevard during the study period, but there were 88 injury accidents.

For the 0.63 kilometer (0.39 mile) segment of I-270 Spur included in the accident study of the Democracy Boulevard interchange, the accident rate was 69.0 ACC/100 MVM, as compared to the statewide average rate of 54.7 ACC/100 MVM for similar State maintained highways. There was one fatal accident, which occurred in 1991, and 16 injury accidents along this portion of the I-270 Spur during the study period. Accident rates along this segment of I-270 Spur for angle, rear end, and opposite direction collisions that occurred during the study period are significantly higher than the statewide average rates for similar State maintained highways.

There were no High Accident Locations designated along the mainline sections of the I-270 Spur/Democracy Boulevard Interchange. Ramps 1 and 4, located in the northeast and southeast quadrants of the interchange, respectively, were designated as High Accident Ramps.

Specifically, factors contributing to the high accident rates at these locations include:

- High traffic volumes
- Lack of merge areas
- Inadequate acceleration and deceleration lane lengths

Table II-5 summarizes pertinent information from the Maryland State Highway Administration accident study.

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TABLE II-5
REPORTED ACCIDENTS AT I-270/MD 187
AND I-270 SPUR/DEMOCRACY BOULEVARD – JAN. 1, 1990 - DEC. 31, 1992

Severity	I-270/MD 187'			I-270 Spur/Democracy Blvd.'		
	No.	Rate ACC/100 MVM	Statewide Rate ACC/ 100 MVM	No.	Rate ACC/100 MVM	Statewide Rate*** ACC/ 100 MVM
Fatal Accidents	1	1.6	1.3	1	1.1	----
Injury Accidents	131	213.1**	116.2	104	119.2	----
Property Damage Accidents	91	148.0**	106.4	60	68.8	----
Total Accidents	223	362.8**	223.9	165	189.1	----

- * Interchange mainlines only, does not include accidents on ramps
- ** Significantly higher than statewide average rate
- *** Not applicable for County roads (Democracy Boulevard)

To summarize, the importance of the I-270 interchanges at MD 187 and Democracy Boulevard in the context of the regional transportation network has been established. Improvements to alleviate the safety deficiencies within the existing interchanges are needed to reduce the high incidence of accidents. The severe traffic congestion currently occurring at the interchanges, the growth in employment and office/retail space that is expected in the study area, the increase in traffic volumes that is projected in the area, as well as the unsafe conditions that cause a high accident rate, all point to the need for improvements of the I-270 interchanges at MD 187 and Democracy Boulevard.

The most significant safety improvement that could be made at either interchange location would be to provide acceleration and deceleration lanes at the ramp terminals. Capacity improvements, such as additional lanes on the ramps and existing interchange reconfiguration, are needed to keep traffic from queuing onto the interstate mainlines and causing a hazardous condition.

III. ALTERNATIVES CONSIDERED

III. ALTERNATIVES CONSIDERED

Section III.A. describes the preliminary alternatives developed in Stage I of the Project Planning Study. Section III.B. describes the alternatives that were dropped from further consideration subsequent to the Supplemental Alternates Public Meeting held on June 8, 1994. Section III.C. describes the alternatives that have been carried forward for detailed comparative study in Stage II of this Project Planning Study. These Stage II alternatives are the subject of this Environmental Assessment.

Design Criteria Common to All Alternatives

The proposed typical sections have been developed using the SHA's Highway Development Manual. Geometric parameters developed in accordance with the design speeds and functional classifications were obtained from the American Association of State Highway and Transportation Officials' (AASHTO) 1990 Geometric Design of Highways and Streets.

Utility reconnaissance through SHA District 3 offices has been completed to determine specific engineering constraints and assess impacts of improvement alternatives. Washington Suburban Sanitary Commission (WSSC) underground water lines, Potomac Electric Power Company (PEPCO) high voltage underground conduit are included among the utilities present within the limits of possible improvements.

Related Projects

Planned and programmed transportation improvements, several of which are already under construction, are common to all alternatives under consideration. These improvements are described in Section II.C., Existing and Planned Transportation Network.

One roadway improvement project which has particular relevance to this study, and is under construction by the State Highway Administration, is the I-270 Spur Widening, HOV ramp construction and I-495 over I-270 Spur bridge reconstruction project. This project is split into two construction contracts and includes the following elements:

- The addition of one lane in each direction in the median of I-270 Spur between the Y-Split and I-495. These lanes will be for HOV use during the peak hour.

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- The construction of HOV ramps for the northbound I-270 (East Segment) movement onto northbound I-270 and the southbound movement from I-270, north of the Y-Split, to I-270 Spur, south of the Y-Split.
- The reconstruction of the westbound I-495 bridge over northbound I-270 Spur to improve geometrics and to span the I-270 Spur northbound roadway.

Another project closely related to this Project Planning Study is the Fernwood Road overpass of I-270 Spur, completed by Montgomery County Department of Transportation in May, 1995.

All traffic projections and level of service analyses for the no-build and build alternatives in the design year 2020 assume these projects to be in place. The final contract documents for these projects were closely referenced in the development of this study's build alternatives.

A. Preliminary Alternatives Developed

Upon reactivation of this Project Planning Study in January, 1994, the preliminary alternatives that were selected for development were identical to those selected for detailed study when the project was placed on hold in 1990. Figures III-1A through III-1G provide a history of the alternatives. The preliminary alternatives that were developed and presented at the Supplemental Alternates Public Meeting, described in the form in which they were presented, are as follows:

1. Alternative 1 (No-Build)

The No-Build Alternative is under consideration at each of the proposed interchange locations. This alternative would include maintenance and minor construction projects at the existing interchanges. The analysis of traffic operations associated with the no-build alternative assumes that the following recently constructed or planned highway improvements are in place:

- I-270 (East Segment) Widening and HOV lanes from the Y-Split to I-495
- I-270 HOV Ramps at the Y-Split
- I-270 Spur Widening and reconstruction of the interchange with I-495
- Fernwood Road Bridge, Westlake Terrace to Rockledge Drive

- North Bethesda Transitway
- Southbound I-270 Interim Ramp Improvement at southbound MD 187

2. Alternatives 2A and 2B (I-270 East Segment/MD 187)

Alternatives 2A and 2B would consist of reconstruction of the I-270 interchange at MD 187. Either alternative would increase the capacity of the interchange, but would not substantially relieve congestion along MD 187. Either alternative would result in additional lanes along MD 187 through the interchange area between Tuckerman Lane and Rock Spring Drive.

With these alternatives, all traffic accessing the Rock Spring Office Park from I-270 would need to use MD 187. Substantial changes to the MD 187/Rock Spring Drive intersection would be necessary to obtain adequate levels of service.

Alternative 2A (Figure III-1A) proposes the construction of an interchange referred to as an urban diamond. The design of an urban diamond interchange allows six major intersection movements to occur at one central point, controlled by one traffic signal. This alternative provides greater traffic capacity than the diamond interchange which currently exists and does not require a large amount of additional right of way.

Alternative 2B (Figure III-1A) is a partial cloverleaf interchange with loop ramps proposed in the undeveloped land at the northwest and southeast quadrants of the interchange. These ramps would allow free flow of the movements from northbound I-270 to southbound MD 187 and from southbound I-270 to northbound MD 187. A cul-de-sac would be constructed on Lux Lane, just west of MD 187, due to Lux Lane's proximity to the ramp from southbound MD 187 onto northbound I-270.

3. Alternatives 3A and 3B (I-270 East Segment/Rockledge Drive Connector/MD 187)

Alternatives 3A and 3B are similar in that they each propose construction of a direct connection between I-270 and the Rock Spring Office Park via Rockledge Drive. The existing interchange at MD 187 would also be improved.

Each alternative includes construction of a bridge crossing I-270 approximately 1200 feet-1400 feet west of MD 187. Access ramps to this bridge would be braided with the ramps to and from MD 187.

The existing structure carrying MD 187 over I-270 would be reconstructed with each of these alternatives in order to accommodate double left turns at the ramps and additional left turn storage length, and to accommodate the proposed ramps on I-270 under MD 187. MD 187 would be widened north and south of the I-270 overpass to extend ramp acceleration and deceleration lanes. Construction of any of these alternatives would necessitate a cul-de-sac on Lux Lane, just west of MD 187 due to the close proximity of Lux Lane to the northbound I-270 ramp intersection with MD 187.

Alternatives 3A and 3B differ only in the manner in which traffic exits and enters northbound I-270 from MD 187 and the Rockledge Drive connector. These differences are summarized as follows:

Alternative 3A (Figure III-1B) would resemble a diamond interchange at the proposed location of the Rockledge Drive Connector bridge over I-270. Access to northbound I-270 from Rock Spring Office Park would be provided by means of a stop-controlled or signal-controlled intersection at the north end of the Rockledge Drive bridge.

Alternative 3B (Figure III-1B) would resemble a "trumpet" interchange at the proposed I-270/Rockledge Drive Connector. It would differ from Alternative 3A by providing a loop ramp rather than a stop or signal-controlled left turn for traffic from Rock Spring Office Park onto northbound I-270.

Note: An Alternative 3C was developed and dropped prior to the Supplemental Alternates Public Meeting. Alternative 3C (Figure III-1B) resembled a partial cloverleaf at MD 187 combined with a "trumpet" interchange, similar to Alternative 3B, at the proposed I-270/Rockledge Drive Connector.

4. Alternatives 4A, 4B, 4C and 4D (I-270 Spur/Democracy Boulevard)

Alternatives 4A, 4B, 4C and 4D propose the reconstruction of the I-270 Spur interchange at Democracy Boulevard. Various combinations of these alternatives could be combined to provide a composite interchange.

Alternative 4A (Figure III-1D) would replace the northbound I-270 Spur loop ramp connection to westbound Democracy Boulevard with double left turn lanes. The removal of this ramp would eliminate the weave on the northbound I-270 Spur and eliminate the merge on westbound Democracy Boulevard which is a high accident location. The existing ramp connecting northbound I-270 Spur with eastbound Democracy Boulevard would be widened away from the Stratton Woods Community to accommodate the additional westbound vehicles. Democracy Boulevard would be widened on both sides between the I-270 Spur and Fernwood Road to provide auxiliary lanes thereby addressing a high accident merge location on eastbound Democracy Boulevard.

The objectives of Alternative 4B (Figure III-1D) are similar to 4A in addressing the high accident locations where I-270 Spur ramps merge with Democracy Boulevard. To improve the northbound-to-westbound merge, Alternative 4B proposes widening the Democracy Boulevard bridge 3.7 meters (12 feet) to provide an acceleration lane. East of the I-270 Spur, eastbound Democracy Boulevard would be widened 3.7 meters (12 feet) to provide an acceleration lane for the northbound-to-eastbound movement. Alternative 4B addresses the limited weaving distance between the loop ramp entrance in the southeast quadrant and the loop ramp exit in the northeast quadrant by proposing the construction of a collector-distributor (C-D) road outside the northbound I-270 Spur roadway. This solution would place the weave on the C-D road, separated from the I-270 Spur mainline, but it requires the reconstruction and lengthening of the easternmost span of the Democracy Boulevard bridge.

Alternative 4C (Figure III-1D) proposes the reconstruction of the ramp off of southbound I-270 Spur at Democracy Boulevard. The exit ramp would be shifted to the east to increase the distance between the ramp terminal along westbound Democracy Boulevard and the entrance to Montgomery Mall. This relocated ramp would provide a double left turn lane for the southbound-to-eastbound movement. The westbound-to-southbound movement would be widened from a single left turn to a double left turn. This alternative would also address the high accident location where the northbound I-270 Spur loop ramp merges onto westbound Democracy Boulevard with the addition of an acceleration lane. Alternative 4C would require widening the Democracy Boulevard bridge approximately 3.7 meters (12 feet) on both sides.

The objectives of Alternative 4D (Figure III-1D) are similar to Alternative 4C in addressing the ramp movements in the western half of the interchange. Alternative 4D would provide a loop ramp for the westbound-to-southbound movement instead of left turn lanes. This would eliminate a signal-controlled intersection. Construction of this loop would require the

widening of the Democracy Boulevard bridge and the modifications of its end span. The bridge widening would provide an acceleration-deceleration lane along westbound Democracy Boulevard and the end span modification would allow the loop ramp to pass between the western bridge pier and abutment. The southbound I-270 Spur ramp at Democracy Boulevard would be reconstructed to increase the distance between the merge point and the Montgomery Mall entrance and to provide a double left turn onto eastbound Democracy Boulevard.

5. Alternatives 5A, 5B and 5C (I-270 Spur/Fernwood Road)

Alternatives 5A, 5B and 5C would consist of ramps connecting Fernwood Road to the I-270 Spur north of Fernwood Road. As discussed in the Related Projects section, Montgomery County has completed construction of the I-270 Spur overpass which will connect Westlake Terrace and Fernwood Road. This bridge has been constructed to a width that accommodates a four lane divided roadway. It has been designed to be adaptable to widening for left turn lanes if recommended from this study. The span length is compatible with any of the Democracy Boulevard Alternatives (Alts. 4A-4D) being considered in this study.

Alternative 5A (Figure III-1E) would consist of a full diamond interchange at Fernwood Road braided with ramps to and from Democracy Boulevard.

Alternative 5B (Figure III-1E) would consist of a half-diamond interchange between the I-270 Spur and Fernwood Road, with ramps oriented to and from the north. Ramps would intersect Westlake Terrace and Fernwood Road to the outside of the I-270 Spur roadways. The Fernwood Road Bridge would be widened to provide a double left turn bay to access the northbound ramp. This alternative would be compatible with all Democracy Boulevard alternatives with the exception of Alternative 4B.

Alternative 5C (Figure III-1E) would consist of a ramp connection between Fernwood Road and the northbound and southbound I-270 Spur median HOV lanes (See Related Transportation Projects). This ramp would intersect the north side Fernwood Road overpass near the center of its span over the I-270 Spur. This connection would operate as HOV-only at least during the peak hours.

6. Alternatives 6A and 6B (I-270 Spur/I-270 East Segment - the Y-Split)

Alternatives 6A and 6B would provide a route in addition to Democracy Boulevard for northbound I-270 Spur traffic accessing the Rock Spring Office Park via a ramp off of the northbound I-270 Spur roadway at the Y-Split.

Alternative 6A (Figure III-1F) pertains to the condition in which neither of the Rockledge Drive Connector alternatives (Alts. 3A and 3B) would be in place. A ramp would exit from the northbound I-270 Spur roadway, north of Fernwood Road, and merge with the right hand auxiliary lane on the I-270 East Segment bound for the exit onto MD 187. To simplify traffic operations, it is anticipated that only traffic destined for Rock Spring Drive would be permitted to use this ramp.

Alternative 6B (Figure III-1F) is similar to Alternative 6A, except that it is compatible with the Rockledge Drive Connector Alternatives (Alts. 3A and 3B). The ramp exiting from the northbound I-270 Spur would run parallel to, but not immediately merge with, the I-270 East Segment ramp onto the Rockledge Connector. The Alternative 6B ramp and the Rockledge Drive connector ramp would merge together immediately after reaching westbound Rockledge Drive.

B. Alternatives Dropped From Further Study

1. Alternatives Presented at the Original and Supplemental Alternates Public Meeting That Were Subsequently Dropped

Alternative 2A (Urban Diamond) was dropped based on findings that it would have a significantly higher cost than alternatives providing comparable levels of service. Urban Diamonds operate most effectively when left-turning volumes from all approaches are nearly balanced, which is not the case at the I-270/MD 187 Interchange.

Alternative 2B was dropped primarily because the loop ramp in the southeast quadrant, carrying traffic from southbound I-270 to northbound MD 187, would significantly impact the Aubinoe parcel, in which an approved residential subdivision is nearing construction. This loop ramp is not projected to carry heavy volumes of traffic and was therefore eliminated to form Alternative 2E (See Section III.C.).

Alternatives 3A, 3B and 3C were dropped based on findings that they would have significantly higher costs than other Rockledge Drive Connector alternatives providing comparable levels of service.

Alternative 5A was dropped based on the determination that the two interchanges were too closely spaced to accommodate an adequate alignment for the braided ramps.

Alternative 6A was dropped because it was projected that unsatisfactory traffic operations would result as traffic from the northbound I-270 Spur ramp combines with southbound I-270 traffic exiting onto MD 187. This alternative would channel additional traffic into the already overloaded southbound I-270 to southbound MD 187 movement.

2. Alternatives Developed Subsequent to the Supplemental Alternates Public Meeting and Dropped

Alternative 3D (Figure III-1B) was a direct connection , to and from the north only, between I-270 and Rockledge Drive. This alternative was dropped because it would not provide needed capacity for Rock Spring Office Park traffic to and from I-270 south of MD 187 or MD 187 traffic itself.

Several alternatives for High Occupancy Vehicle (HOV) ramps off of I-270 were developed to various levels of detail subsequent to the Supplemental Alternates Public Meeting. Four alternatives -- HOV-1, HOV-2, HOV-3 and HOV-4 were considered to provide an HOV median connection with the proposed Rockledge Drive Connector bridge over I-270. HOV-1 (Figure III-1G) was a one-lane reversible ramp to/from northbound and southbound I-270, both north and south of the Rockledge Drive Connector. HOV-1 was modified, eliminating the connection south of the Rockledge Drive Connector, renamed 3H (Figure III-1C), because of low projected demand to and from the south, to arrive at its current configuration (See Section III.C.). HOV-2 (Figure III-1G) was identical to HOV-1, except that a 2-lane ramp would be provided, 1-lane in each direction. HOV-2 was dropped based on the determination that the lower cost 1-lane reversible configuration could adequately handle projected volumes.

HOV-3 and HOV-4 (Figure III-1G) were 1-lane reversible and 2-lane median ramps, respectively, combined with general-use ramps onto the Rockledge Drive Connector, as with Alternatives 3A and 3B. These alternatives were dropped based on cost and the determination that it would be difficult to provide adequate traffic operations with the closely spaced intersections that would result from a combined general-use/HOV interchange.

HOV-5 (Figure III-1G) was considered briefly and dropped because of cost. It would have provided a median ramp connection between I-270 and the north side of the Grosvenor Lane bridge over I-270. Mainline widening and bridge reconstruction would have been required. This was considered as a possible route for a busway that may have been able to be implemented in lieu of the North Bethesda Transitway.

Alternative 5C Option 2 (Figure III-1E) consisted of a 2-lane, 2-way median ramp connecting the north side of the Fernwood Road Bridge with northbound and southbound I-270 Spur. This alternative was dropped because of cost (mainline widening would have been required), as the 1-lane reversible version of this alternative would provide comparable levels of service at a much lower cost (See Section III.C. - Alternative 5C).

A second option to Alternative 4C (Figure III-1D) at the I-270 Spur/Democracy Boulevard Interchange was developed that would have created a four-way intersection where ramps to and from southbound I-270 Spur intersect Democracy Boulevard. It would have required reconstruction of the southbound I-270 ramp and eliminated the offset intersection condition that currently exists. This alternative was dropped because of its impacts on a stormwater management pond within the interchange, without substantial operational improvements.

C. Alternatives Retained for Detailed Study

Following a careful review of the comments received from the public and concerned agencies, as well as the preliminary engineering and environmental data developed in Stage I of the project, it was determined that the following alternatives should be carried forward for detailed study in Stage II of the project:

- | | |
|--------------------------|----------------|
| Alternative 1 (No-Build) | Alternative 4A |
| Alternative 2C | Alternative 4B |
| Alternative 2D | Alternative 4C |
| Alternative 2E | Alternative 4D |
| Alternative 3E | Alternative 5B |
| Alternative 3F | Alternative 5C |
| Alternative 3G | Alternative 6B |
| Alternative 3H | |

A detailed description of these alternatives, options that are being considered, and possible combinations of alternatives follows. A set of representative typical sections is provided in Figures III-2A through III-2C, and plans of the alternatives are provided in Figures III-4 through III-17B.

1. Alternative 1 (no-build)

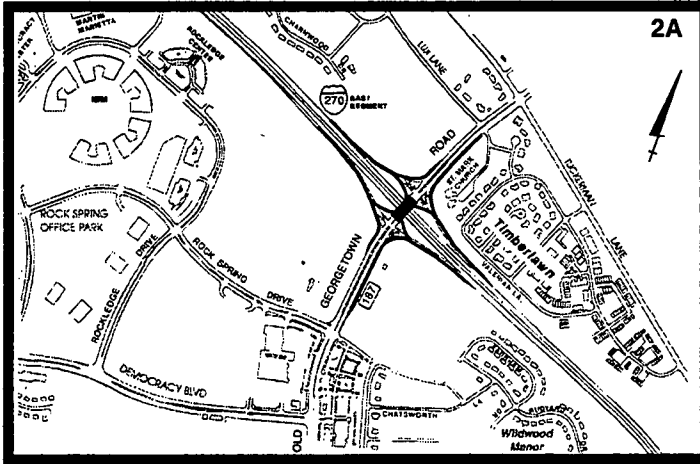
The **No-Build Alternative** is the same as described in III.A.1.

2. Alternatives 2C, 2D and 2E - Improvements to the Existing I-270/MD 187 Interchange

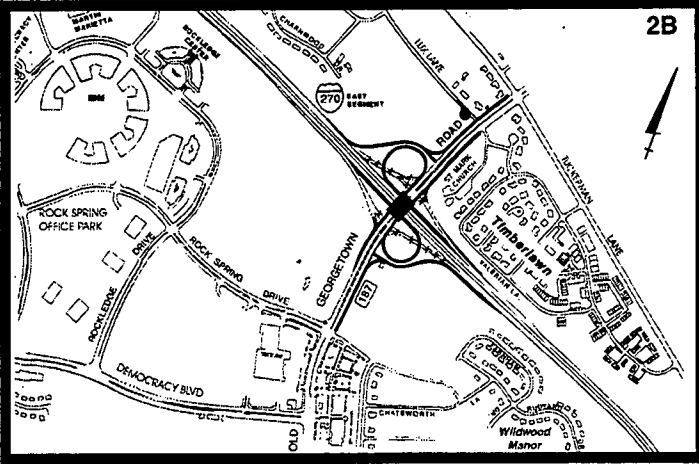
Alternative 2C proposes widening the ramp approach for the northbound I-270 left-turn movement onto southbound MD 187 (See Figure III-4) and the ramp approach to the southbound I-270 left-turn movement onto northbound MD 187 from one to two lanes. The length of the widening would be approximately 91.4 meters (300 feet) for each ramp.

Alternative 2D proposes improvement of the existing interchange to provide a double left-turn for all four left-turning interchange movements (See Figures III-5A and III-5B). The ramp approaches to MD 187 from I-270 would be widened as with Alt. 2C. In addition, MD 187 would be shifted west, up to 6.1 meters (20 feet) ± for a distance of 457.2 meters (1500 feet) ± to allow widening of MD 187 without impacting the St. Mark Church, except for a small amount of right-of-way (0.04 hectares) [0.1 acres], which would be required from the church property to provide the acceleration lane. The MD 187 bridge over I-270 would be widened 11.6 meters (38 feet) to provide the double left-turns for the full length available between the diamond ramps. An additional through lane would be provided upstream of the diamond intersections to provide additional storage for traffic queuing to enter the left-turn bays. A deceleration lane is also proposed on northbound MD 187 for right turning traffic onto southbound I-270.

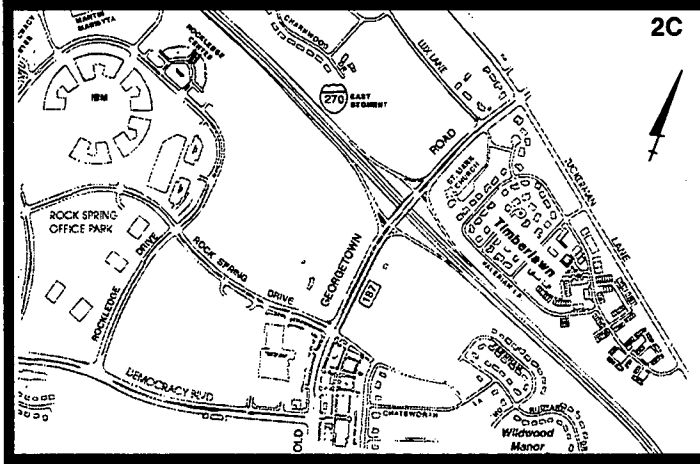
Alternative 2E differs from Alternative 2D in that it replaces the signalized northbound I-270 to southbound MD 187 left-turn movement with a loop ramp in the northwest interchange quadrant (See Figures III-6A through III-6C). Also, the location of the left-turn from northbound MD 187 onto northbound I-270 would be shifted north, allowing more length for left-turning vehicle storage as compared to existing conditions or Alternative 2D.



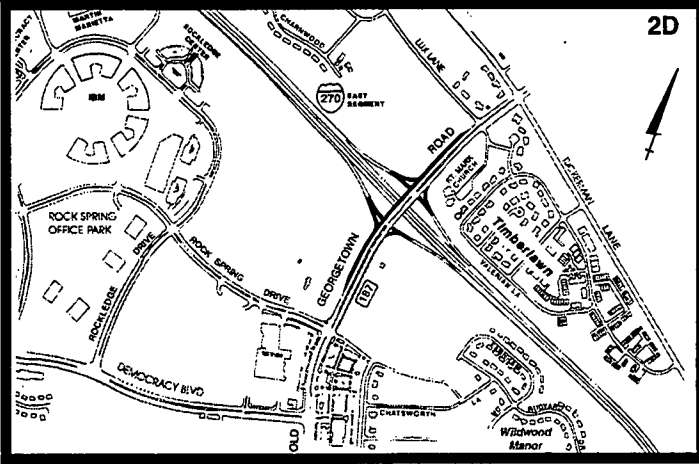
ALTERNATIVE 2A
 Developed prior to the 3/88 Meeting.
 Dropped subsequent to the 6/94 Meeting.



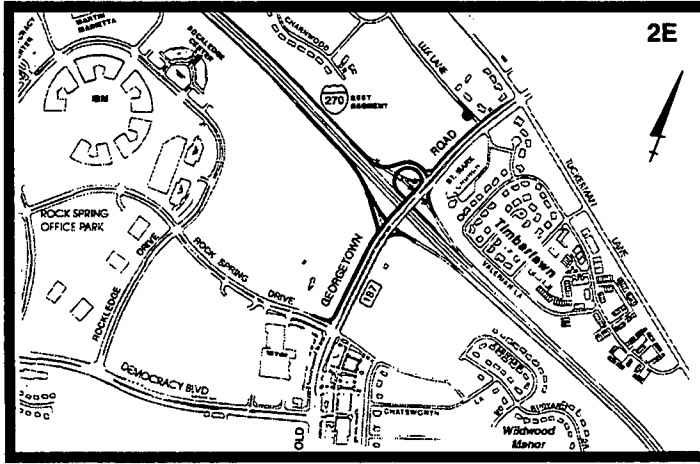
ALTERNATIVE 2B
 Developed prior to the 3/88 Meeting.
 Dropped subsequent to the 6/94 Meeting.



ALTERNATIVE 2C
 Developed subsequent to the 6/94 Meeting and Retained



ALTERNATIVE 2D
 Developed subsequent to the 6/94 Meeting and Retained



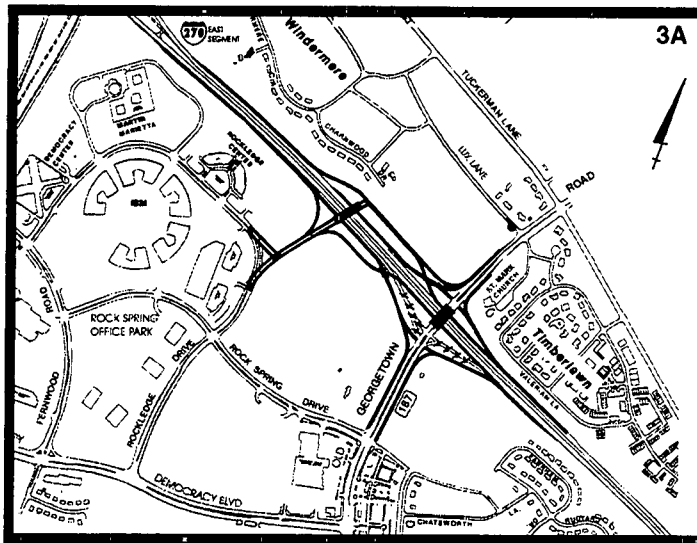
ALTERNATIVE 2E
 Developed subsequent to the 6/94 Meeting and Retained

An Alternates Public Meeting was held on March 3, 1988.
 A Supplemental Alternates Public Meeting was held on June 8, 1994.

**I-270 AT MD 187
 AND
 I-270 SPUR AT DEMOCRACY BLVD**

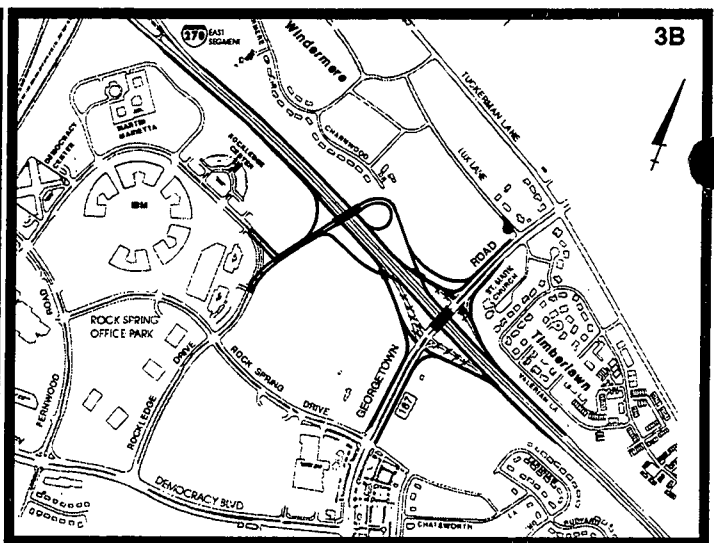
**HISTORY OF ALTERNATIVES
 (2A, 2B, 2C, 2D, 2E)**

FIGURE III -1A



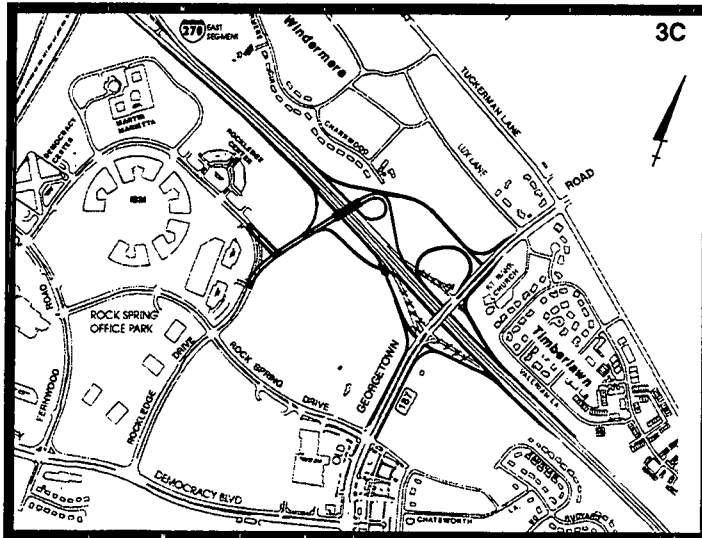
ALTERNATIVE 3A

Developed prior to the 3/88 Meeting.
Dropped subsequent to the 6/94 Meeting.



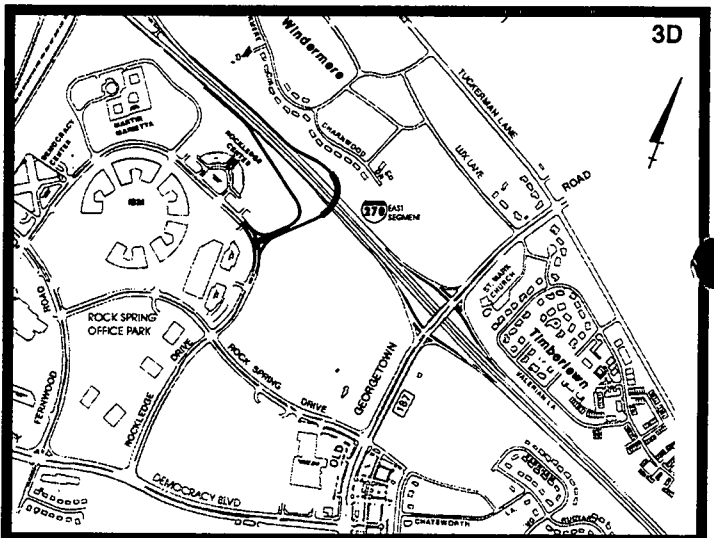
ALTERNATIVE 3B

Developed prior to the 3/88 Meeting.
Dropped subsequent to the 6/94 Meeting.



ALTERNATIVE 3C

Developed and Dropped prior to the 6/94 Meeting
(was not presented to the public)



ALTERNATIVE 3D

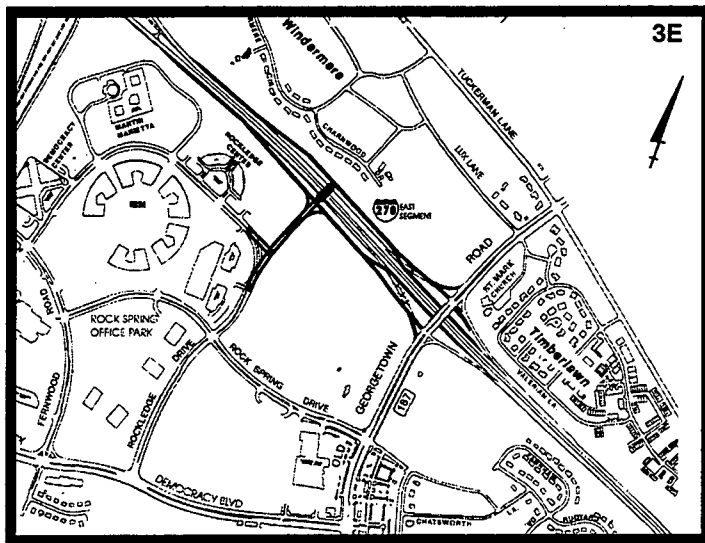
Developed and Dropped subsequent to the 6/94 Meeting

An Alternates Public Meeting was held on March 3, 1988.
A Supplemental Alternates Public Meeting was held on June 8, 1994.

**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BLVD**

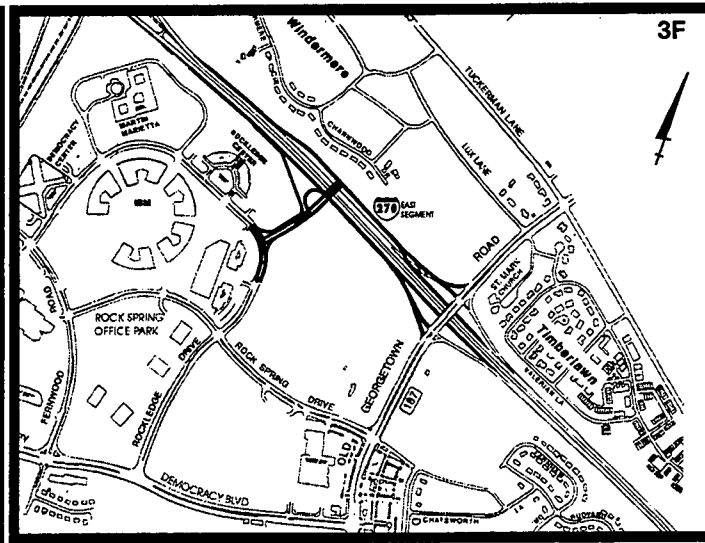
**HISTORY OF ALTERNATIVES
(3A, 3B, 3C, 3D)**

FIGURE III -1B



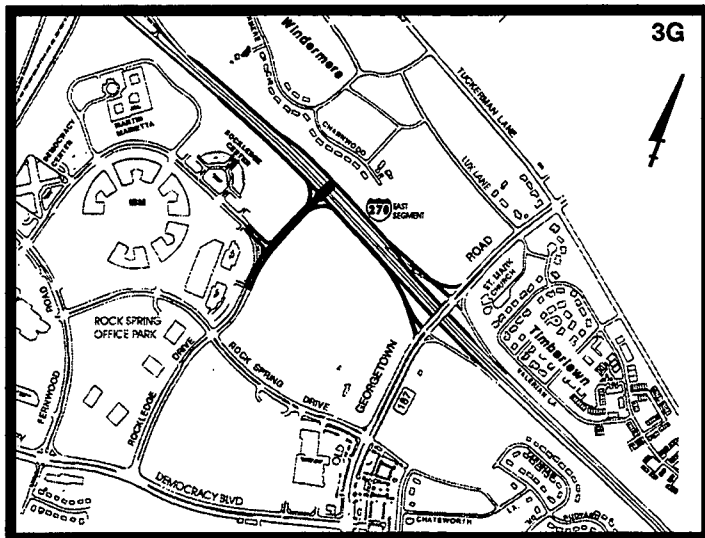
ALTERNATIVE 3E

Developed subsequent to the 6/94 Meeting and Retained



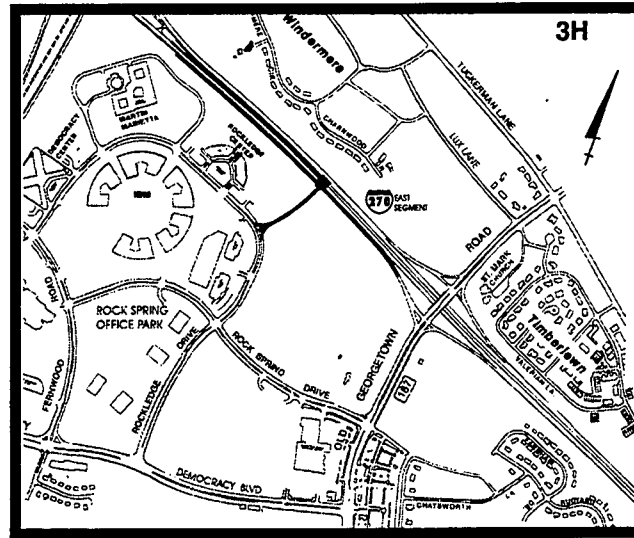
ALTERNATIVE 3F

Developed subsequent to the 6/94 Meeting and Retained



ALTERNATIVE 3G

Developed subsequent to the 6/94 Meeting and Retained



ALTERNATIVE 3H

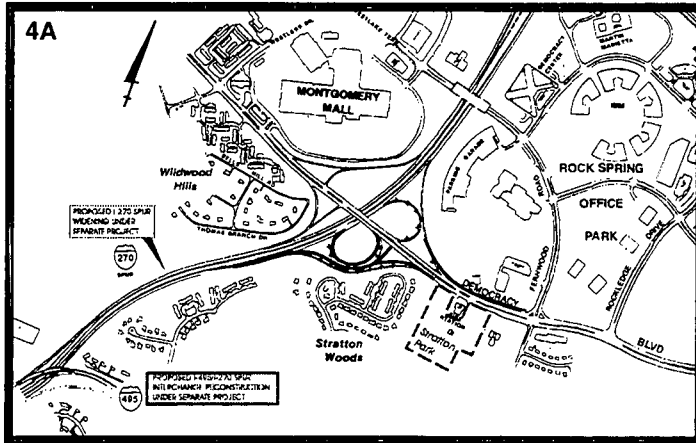
Retained - See Alternative HOV-1

An Alternates Public Meeting was held on March 3, 1988.
 A Supplemental Alternates Public Meeting was held on June 8, 1994.

**I-270 AT MD 187
 AND
 I-270 SPUR AT DEMOCRACY BLVD**

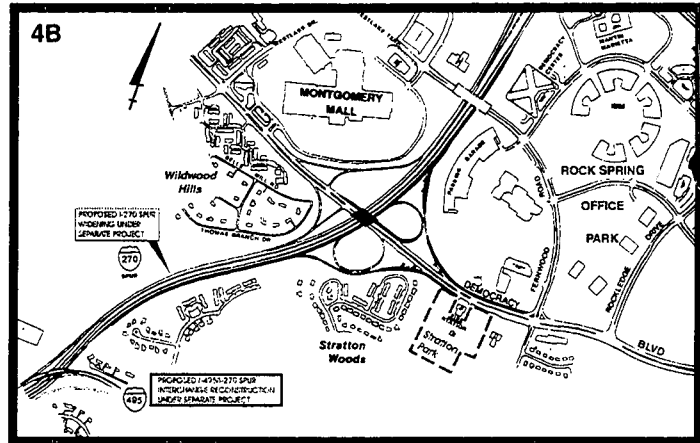
**HISTORY OF ALTERNATIVES
 (3E, 3F, 3G, 3H)**

FIGURE III -1C



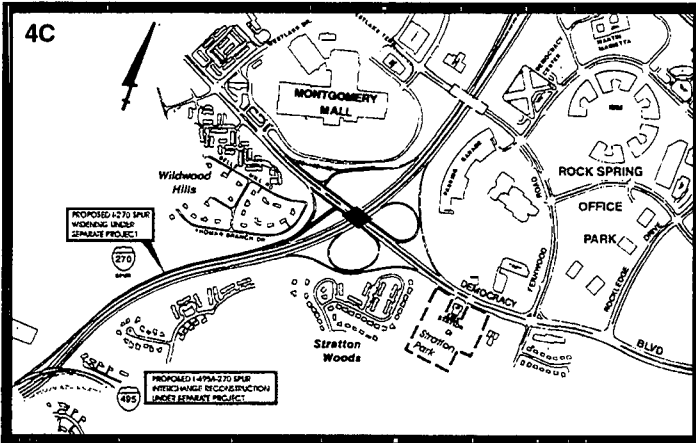
ALTERNATIVE 4A

Developed prior to the 3/88 Meeting and Retained



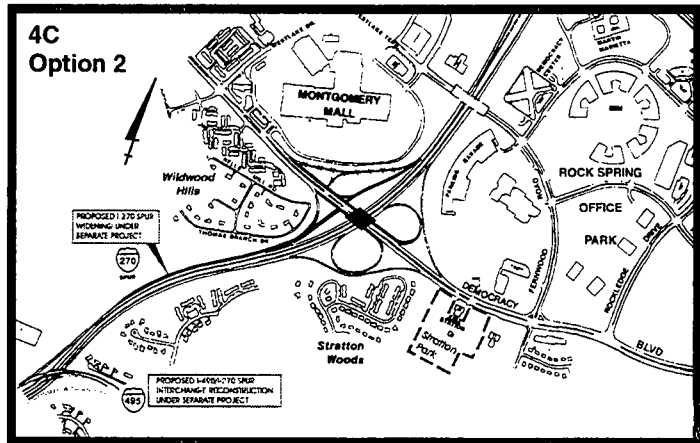
ALTERNATIVE 4B

Developed prior to the 3/88 Meeting and Retained



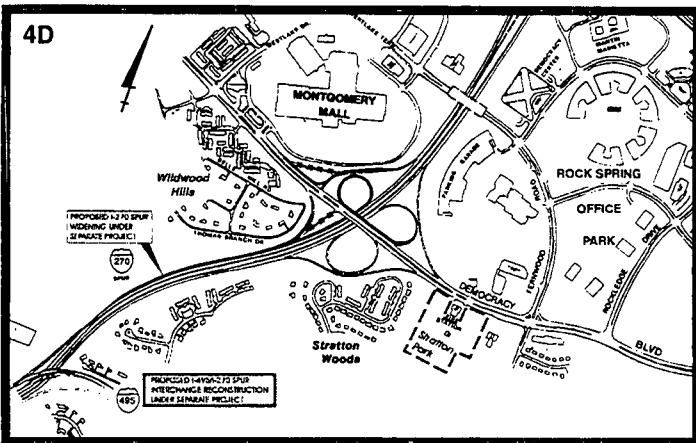
ALTERNATIVE 4C

Developed prior to the 3/88 Meeting and Retained



ALTERNATIVE 4C Option 2

Developed subsequent to the 6/94 Meeting and Dropped



ALTERNATIVE 4D

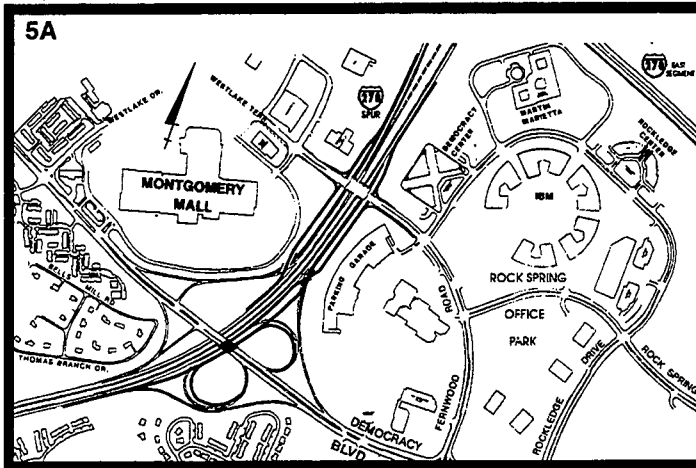
Developed prior to the 3/88 Meeting and Retained

An Alternates Public Meeting was held on March 3, 1988.
 A Supplemental Alternates Public Meeting was held on June 8, 1994.

I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD

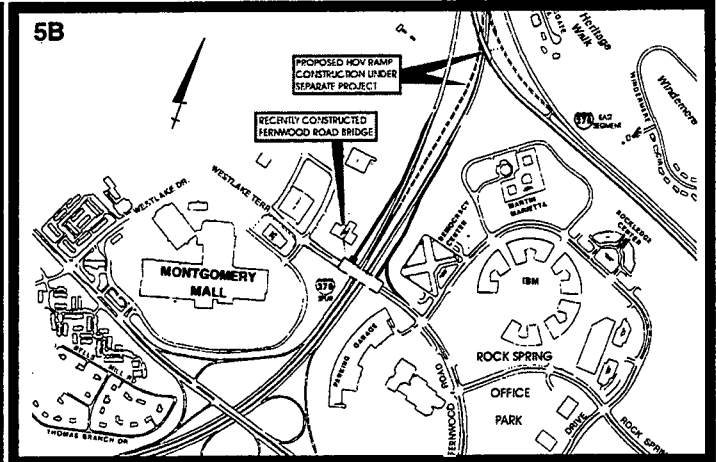
HISTORY OF ALTERNATIVES (4A, 4B, 4C, 4C Option 2, 4D)

FIGURE III -1D



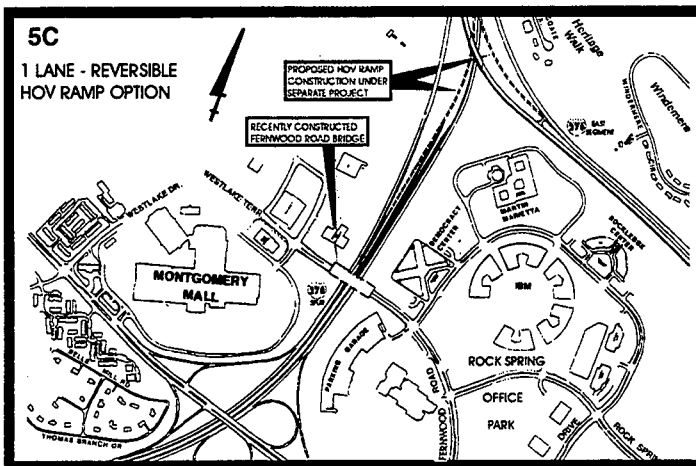
ALTERNATIVE 5A

Developed prior to the 3/88 Meeting and Dropped subsequent to the Meeting.



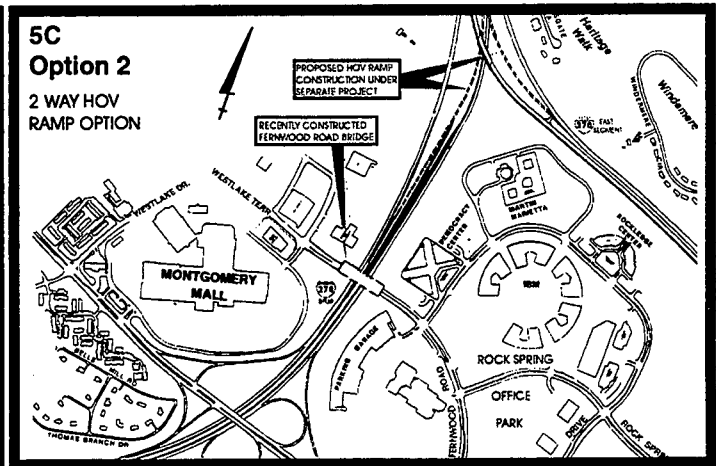
ALTERNATIVE 5B

Developed prior to the 3/88 Meeting and Retained



ALTERNATIVE 5C

Developed subsequent to the 3/88 Meeting and Retained



ALTERNATIVE 5C Option 2

Developed subsequent to the 3/88 Meeting and Dropped

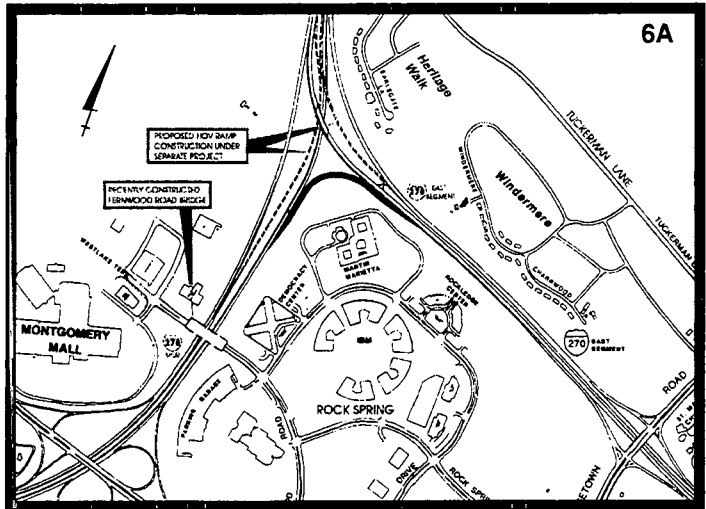
An Alternates Public Meeting was held on March 3, 1988.
 A Supplemental Alternates Public Meeting was held on June 8, 1994.

**I-270 AT MD 187
 AND
 I-270 SPUR AT DEMOCRACY BLVD**

**HISTORY OF ALTERNATIVES
 (5A, 5B, 5C, 5C Option 2)**

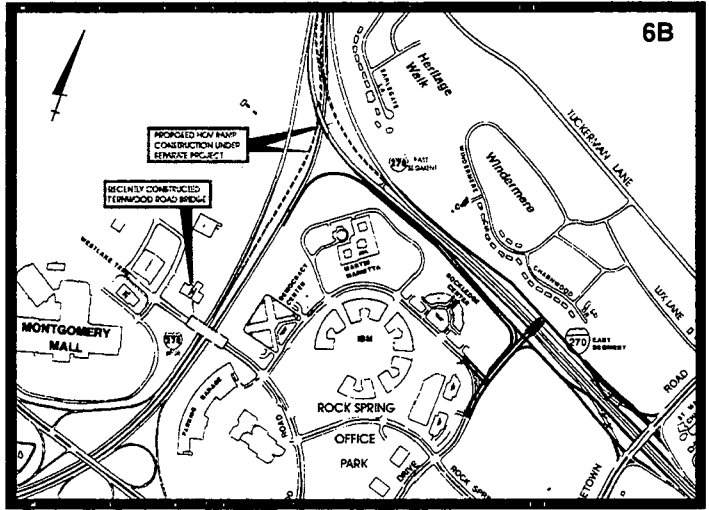
FIGURE III -1E

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ALTERNATIVE 6A

Developed subsequent to the 3/88 Meeting and Dropped



ALTERNATIVE 6B

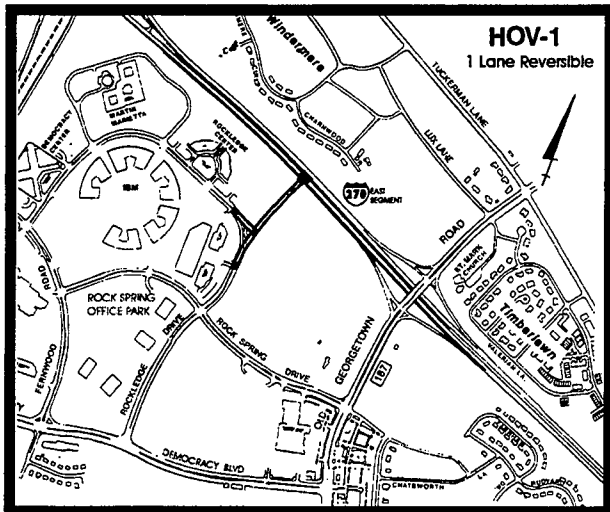
Developed subsequent to the 3/88 Meeting and Retained

An Alternates Public Meeting was held on March 3, 1988.
A Supplemental Alternates Public Meeting was held on June 8, 1994.

**I-270 AT MD 187
AND
I-270 SPUR AT DEMOCRACY BLVD**

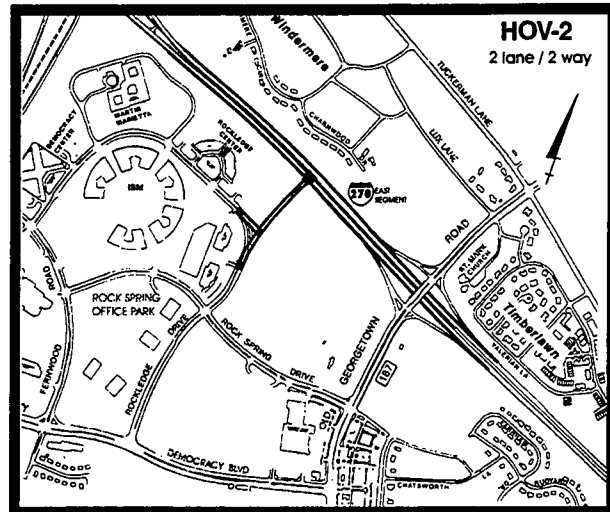
**HISTORY OF ALTERNATIVES
(6A, 6B)**

FIGURE III -1F



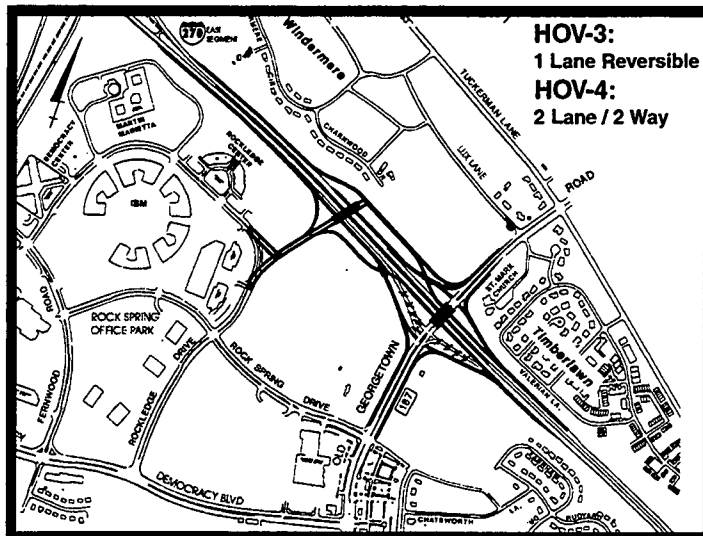
ALTERNATIVE HOV-1 (Original)

Developed subsequent to the 6/94 Meeting and Retained (with modifications) and Renamed Alt. 3H



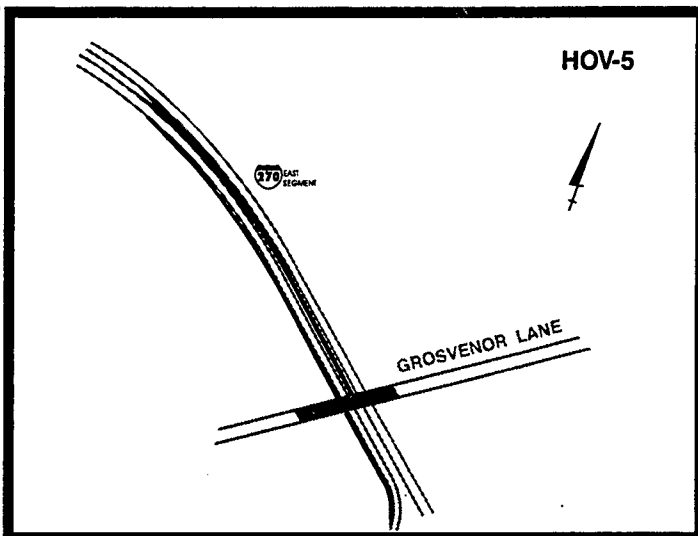
ALTERNATIVE HOV-2

Developed subsequent to the 6/94 Meeting and Dropped



ALTERNATIVES HOV-3 & HOV-4

Developed subsequent to the 6/94 Meeting and Dropped



ALTERNATIVE HOV-5

Developed subsequent to the 6/94 Meeting and Dropped

An Alternates Public Meeting was held on March 3, 1988.
A Supplemental Alternates Public Meeting was held on June 8, 1994.

I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD

HISTORY OF ALTERNATIVES (HOV-1, HOV-2, HOV-3, HOV-4, HOV-5)

FIGURE III -1G

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3. Alternatives 3E, 3F, 3G and 3H - I-270 Interchanges with the Proposed Rockledge Drive Connector, Maintaining the Existing Connection with MD 187

Alternatives 3E, 3F, and 3G propose a direct connection between I-270 and Rock Spring Office Park using a reconstructed and extended Rockledge Drive. Each alternative would include a new bridge over I-270, approximately 762 meters (1500 feet) north of the existing MD 187 bridge.

Alternative 3E (See Figures III-7A and III-7B) resembles a split-diamond interchange configuration. Interchange ramps from I-270 would intersect the north and south ends of the Rockledge Drive Connector bridge forming a diamond interchange at this location. In addition, 2-lane roadways, one in each direction, would run parallel to I-270 between the Rockledge Drive Connector and MD 187. Traffic on southbound I-270 exiting onto MD 187 would first need to travel through a signalized intersection at the south end of the Rockledge Drive Connector bridge before continuing on to MD 187. Similarly, vehicles traveling from MD 187 onto northbound I-270 would be required to go through a T-intersection at the north end of the Rockledge Drive Connector bridge. The interchange ramps for the I-270 connections south of MD 187 would remain unchanged.

Alternative 3F (See Figures III-8A through III-8C) is similar to Alternative 3E, particularly on the northbound side of I-270, where it is nearly identical. Alternate 3F differs from 3E in its accommodation of Rockledge Drive Connector traffic leaving Rock Spring Office Park onto southbound I-270. This traffic would make a left-turn from the Rockledge Drive Connector onto a grade-separated C-D roadway under the Rockledge Drive Connector bridge. This grade-separated C-D roadway eliminates the need for a signal at the south end of the bridge; however, traffic from Rock Spring Office Park going onto southbound I-270 would need to weave across traffic exiting southbound I-270 onto MD 187. The above described left-turn onto the C-D roadway maximizes the available distance for the weave.

Alternative 3G (See Figures III-9A through III-9C) is similar to Alternative 3F (again, nearly identical to Alt. 3E on the northbound side), except that the Rockledge Drive Connector bridge is shifted further north to allow the Rockledge Drive Connector traffic destined for southbound I-270 to turn right onto the C-D road where, as with Alt. 3F, this traffic would weave across traffic exiting southbound I-270 for MD 187. The Alternative 3G location of the Rockledge Connector bridge would necessitate shifting the beginning of the tapers for the southbound I-270 exit ramps to just south of the Y-Split bridge.

Alternative 3H (See Figures III-10A and III-10B) proposes a one-lane reversible median ramp connecting the north side of a partial Rockledge Drive Connector bridge (over southbound I-270 only) with I-270. This ramp would connect with both northbound and southbound I-270 and be gate controlled to allow southbound I-270 HOV traffic to reach Rockledge Drive during the morning peak and allow traffic leaving Rock Spring Office Park during the evening peak to access northbound I-270. The southbound I-270 mainline roadway would need to be shifted as much as 7.6 meters (25 feet) ±, between the Y-Split and MD 187, to accommodate the median ramp which would be supported by retaining walls.

4. Alternatives 4A, 4B, 4C and 4D - Improvements to the Existing I-270 Spur/Democracy Boulevard Interchange

Alternative 4A (See Figures III-11A and III-11B) is the same as described in III.A.4. An option is being considered to provide a two-lane ramp and signal control to accommodate the heavy volume of traffic from northbound I-270 Spur onto eastbound Democracy Boulevard, which subsequently weaves into the left-turn lanes at Fernwood Road (Figure III-11C).

Alternative 4B (See Figures III-12A through III-12C) is the same as described in III.A.4. As with Alternative 4A, a signalized northbound I-270 spur to eastbound Democracy Boulevard ramp option is being considered (Figure III-12D).

Alternative 4C (See Figures III-13A and III-13B) is the same as described in III.A.4.

Alternative 4D (See Figures III-14A and III-14B) is the same as described in III.A.4.

5. Alternatives 5B and 5C - New Interchange Connecting I-270 Spur and Fernwood Road

Alternative 5B (See Figure III-15) is the same as described in III.A.5.

Alternative 5C (See Figure III-16) is the same as described in III.A.5.

6. Alternative 6B - New Ramp Connecting Northbound I-270 Spur with Rockledge Drive

Alternative 6B (See Figures III-17A and III-17B) is the same as described in III.A.6.

D. Combinations of Build Alternatives

The improvement alternatives being considered with this study are not mutually exclusive; in fact, a wide range of alternatives could be constructed together. As described in Section II.D., a combination of at least two alternatives would be required to obtain adequate levels of service.

Generally, within a category of Alternatives (e.g., 2's, 3's, etc.), alternatives cannot be combined. The exceptions are 2C, which could be a first stage to 2D or 2E, and the 4's, where an alternative to improve one side of the interchange (e.g., 4A or 4B) could be combined with either of the alternatives on the other side of the interchange.

Other combinations of alternatives that cannot be made include: 2E with 3E, 3F or 3G; 4B with 5B or 6B; and 5B with 6B. Alternative 6B can only be built with one of the 3's.

The levels of service and aggregate environmental impacts associated with the possible combinations of build alternatives are contained in Section II.D. and Section IV., respectively.

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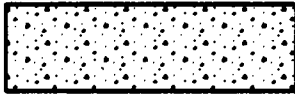
PROPOSED ROADWAY IMPROVEMENT



PROPOSED BRIDGE REDECKING



PROPOSED BRIDGE WIDENING



PROPOSED NEW STRUCTURE



PAVEMENT TO BE REMOVED



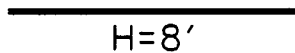
PROPOSED CULVERT EXTENSION



PROPOSED SIDEWALK



PROPOSED CURB & GUTTER



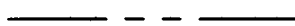
PROPOSED RETAINING WALL



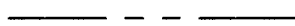
PROPOSED CONCRETE BARRIER



PROPOSED LANE CONFIGURATION



PROPOSED RIGHT OF WAY



EXISTING RIGHT OF WAY



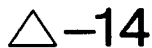
SLOPE LIMITS



PROPERTY LINE



WETLAND BOUNDARY



AIR & NOISE RECEPTOR LOCATION

STATE OF MARYLAND

DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.

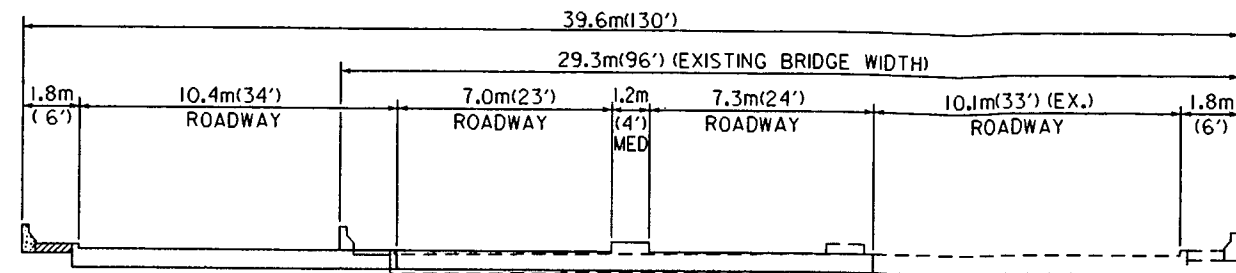
LEGEND - PLAN SHEETS

DATE

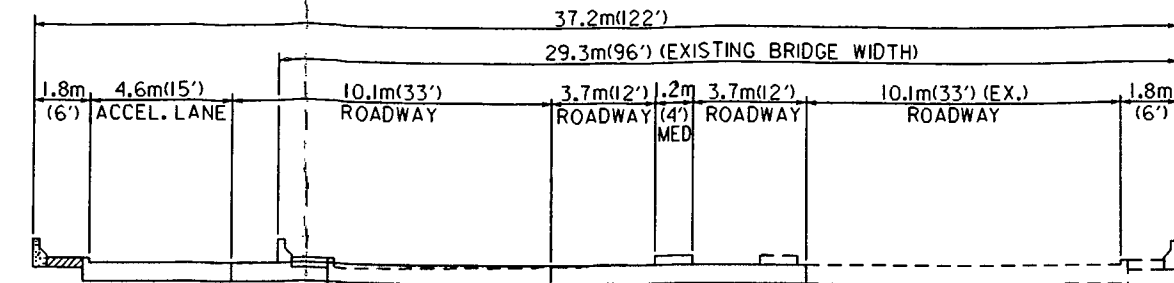
NOT TO SCALE

FIGURE
III-3

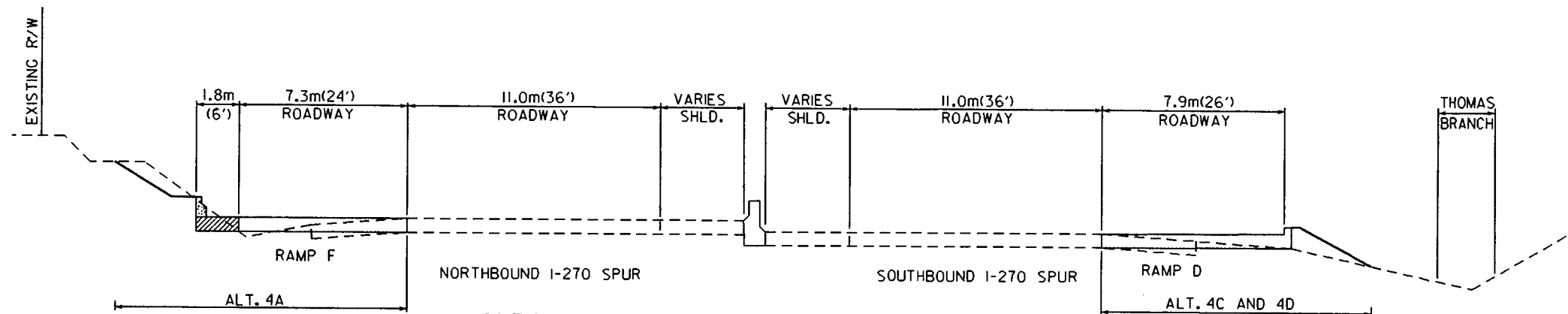
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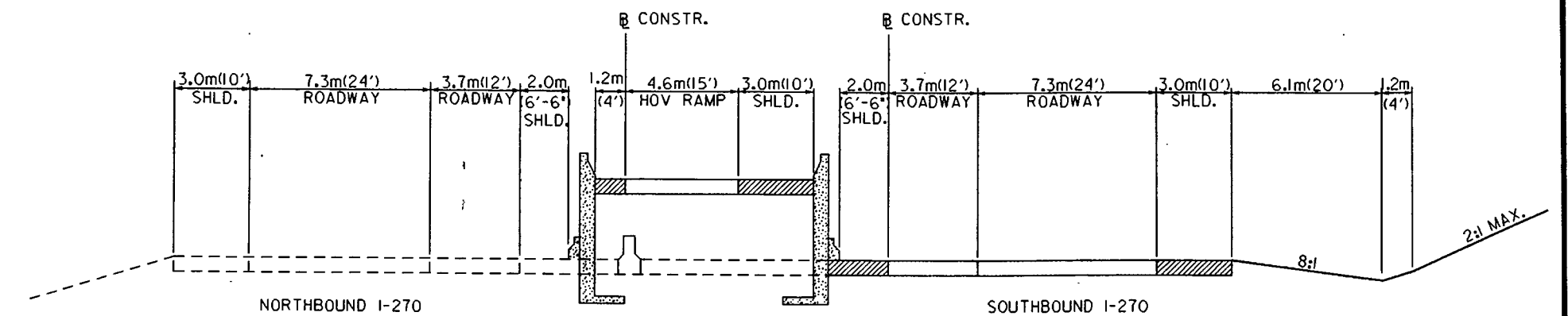
ALTERNATIVE 2D
MD 187 BRIDGE OVER I-270 EAST SEGMENT
(LOOKING NORTH)



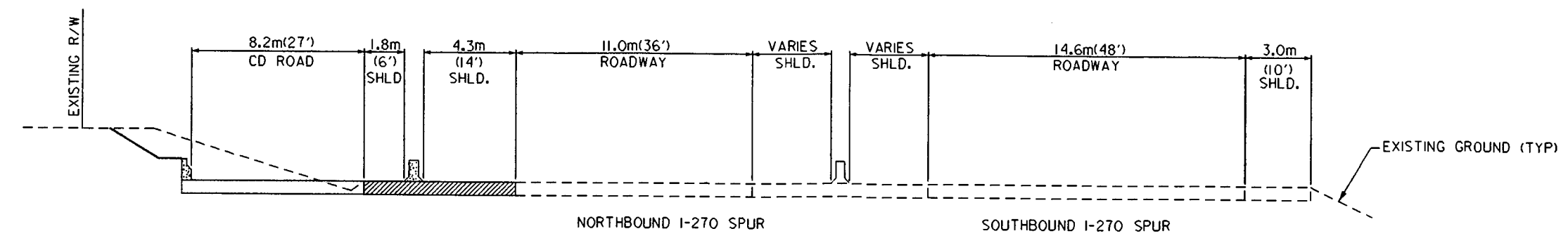
ALTERNATIVE 2E
MD 187 BRIDGE OVER I-270 EAST SEGMENT
(LOOKING NORTH)



ALTERNATIVES 4A, 4C AND 4D
(LOOKING SOUTH)



ALTERNATIVE 3H
1 LANE REVERSIBLE RAMP
(LOOKING SOUTH)



ALTERNATIVE 4B
(LOOKING SOUTH)

LEGEND

- PROPOSED SHOULDER
- PROPOSED ROADWAY
- PROPOSED BARRIER/RETAINING WALL
- EXISTING ROADWAY/SOULDER

STATE OF MARYLAND
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STATE HIGHWAY ADMINISTRATION

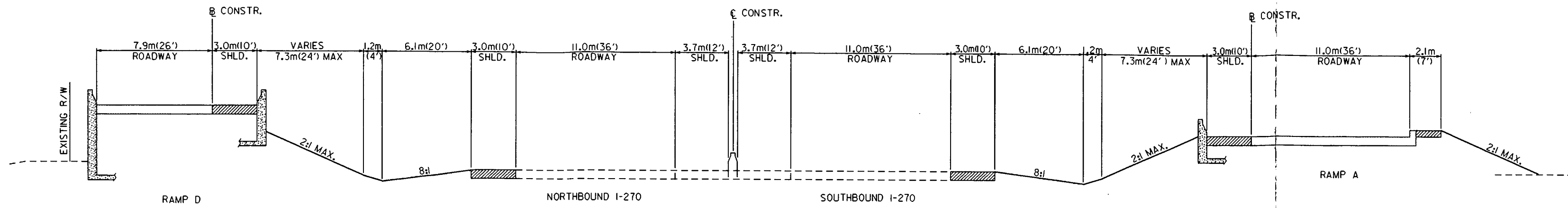
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.

TYPICAL SECTIONS - BUILD ALTERNATIVES

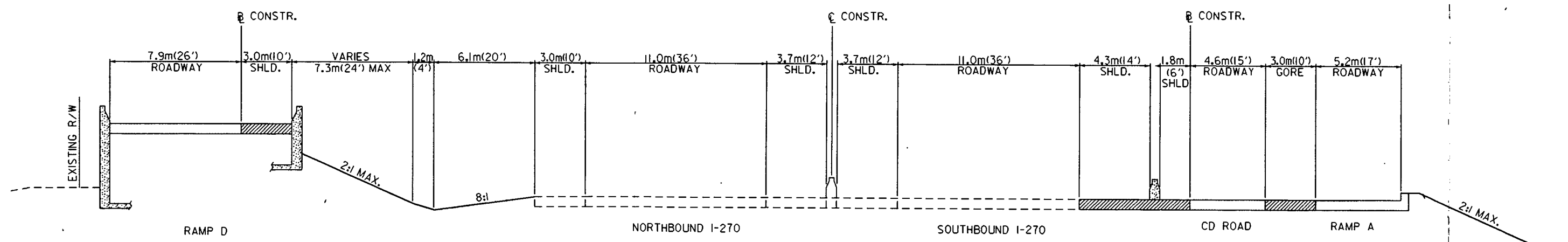
DATE NOV., 1995	NOT TO SCALE	FIGURE III-2A
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THE DIMENSIONS SHOWN ARE FOR THE PURPOSE OF DETERMINING COST ESTIMATES AND ENVIRONMENTAL IMPACTS, AND ARE SUBJECT TO CHANGE DURING THE FINAL DESIGN PHASE.

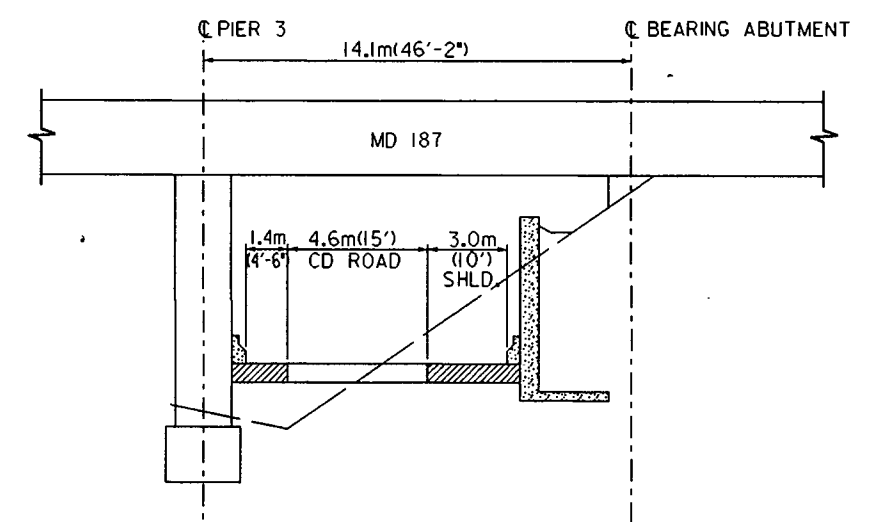
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08-08-95 SM



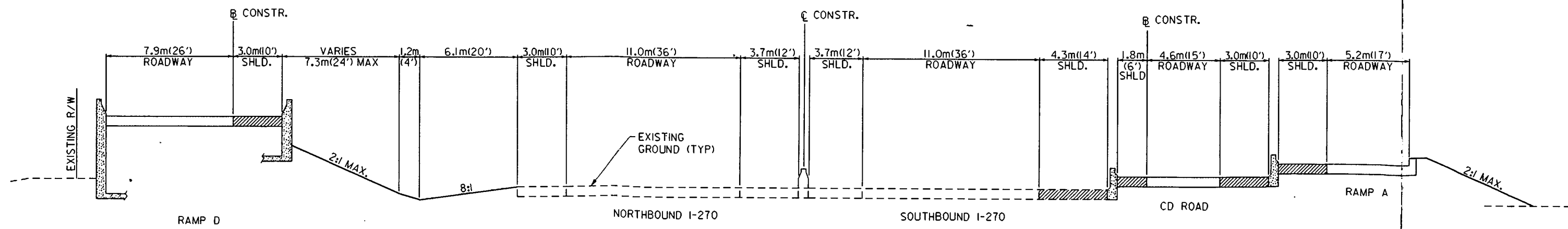
ALTERNATIVE 3E
(LOOKING SOUTH)



ALTERNATIVE 3F
(LOOKING SOUTH)



ALTERNATIVE 3F & 3G
(LOOKING SOUTH)

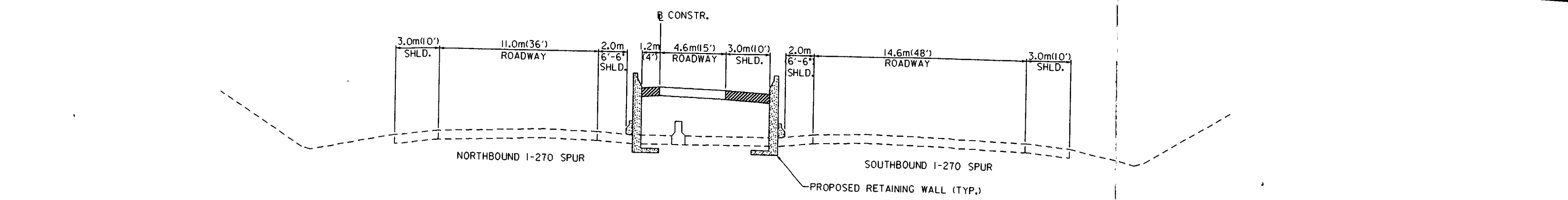


ALTERNATIVE 3G
(LOOKING SOUTH)

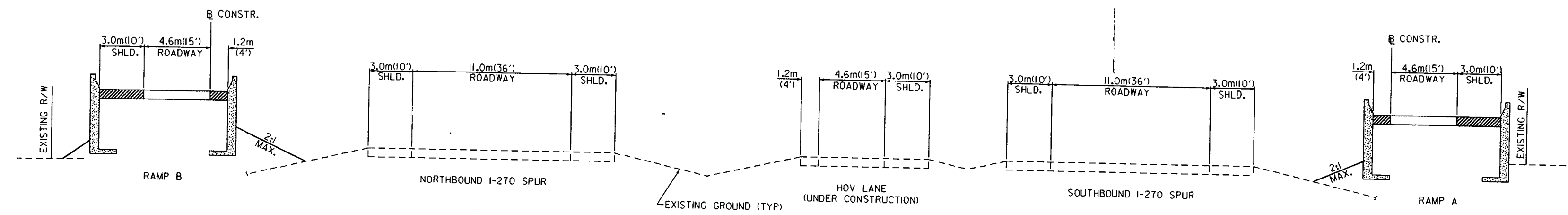
LEGEND		
	- PROPOSED SHOULDER	
	- PROPOSED ROADWAY	
	- PROPOSED BARRIER/RETAINING WALL	
	- EXISTING ROADWAY/SOULDER	
STATE OF MARYLAND		
DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION		
I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD.		
TYPICAL SECTIONS - BUILD ALTERNATIVES		
DATE NOV. 1995	NOT TO SCALE	FIGURE III-2B

THE DIMENSIONS SHOWN ARE FOR THE PURPOSE OF DETERMINING COST ESTIMATES AND ENVIRONMENTAL IMPACTS, AND ARE SUBJECT TO CHANGE DURING THE FINAL DESIGN PHASE.

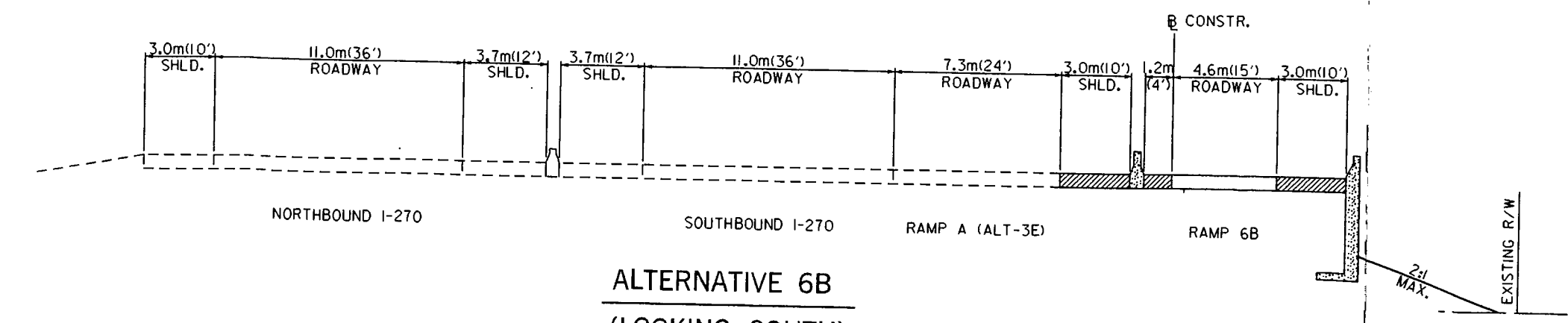
120



ALTERNATIVE 5C
(LOOKING SOUTH)



ALTERNATIVE 5B
(LOOKING SOUTH)



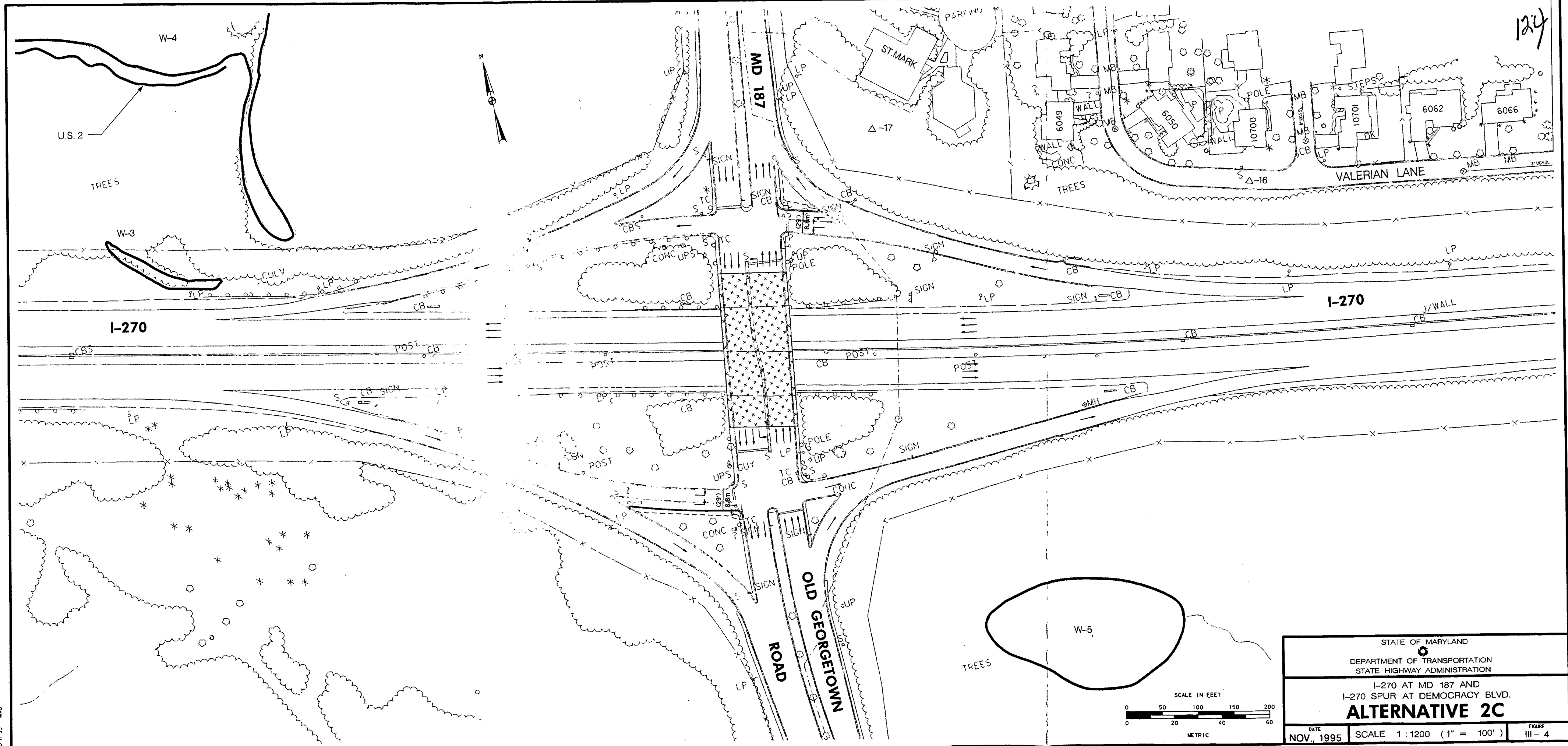
ALTERNATIVE 6B
(LOOKING SOUTH)

LEGEND		
	-	PROPOSED SHOULDER
	-	PROPOSED ROADWAY
	-	PROPOSED BARRIER/RETAINING WALL
	-	EXISTING ROADWAY/SOULDER
STATE OF MARYLAND		
DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION		
I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD.		
TYPICAL SECTIONS - BUILD ALTERNATIVES		
DATE NOV., 1995	NOT TO SCALE	FIGURE III-2C

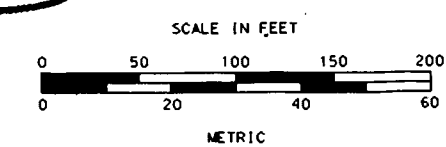
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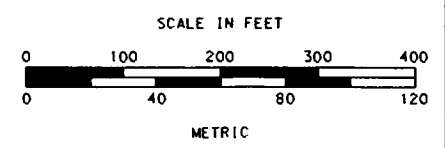
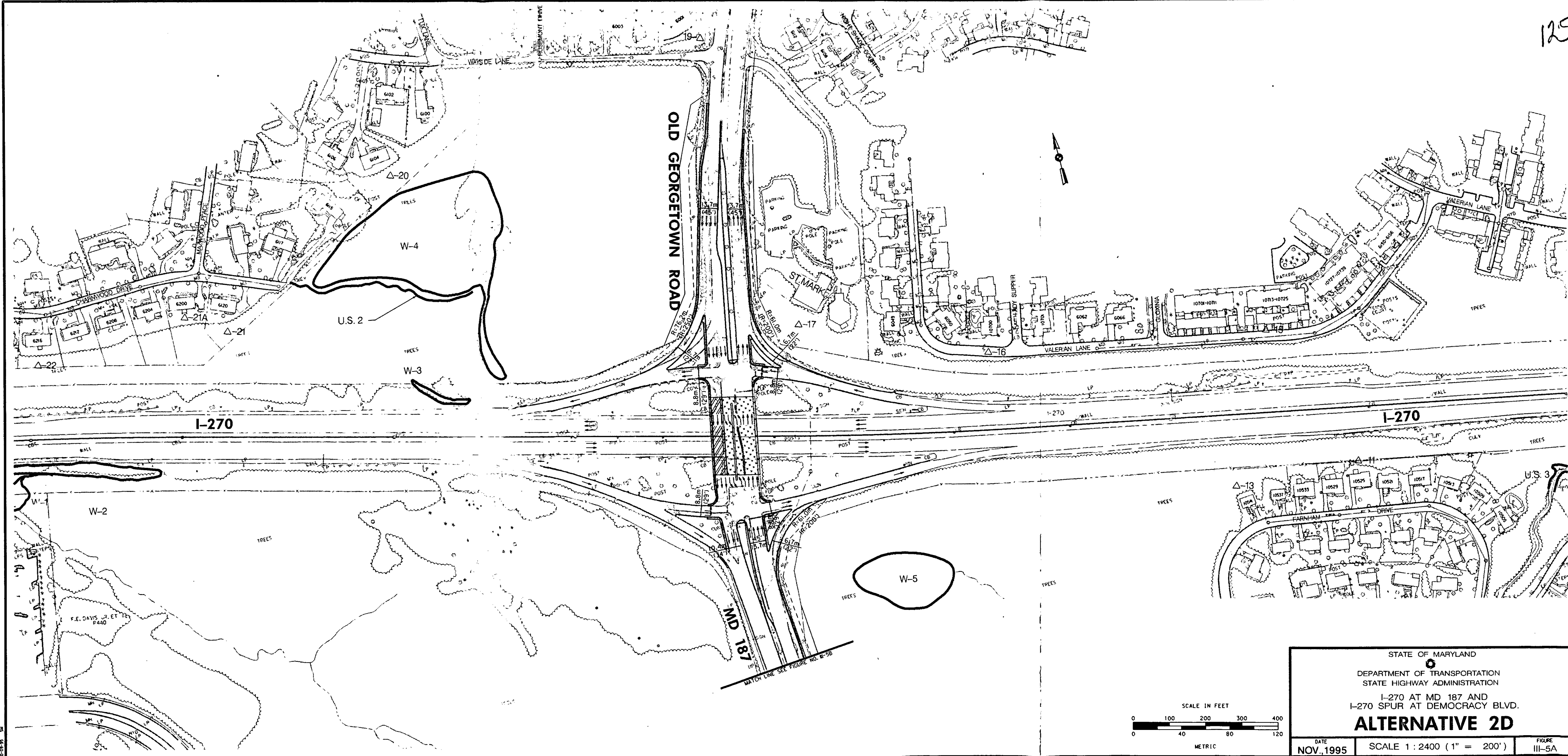
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10-11-95
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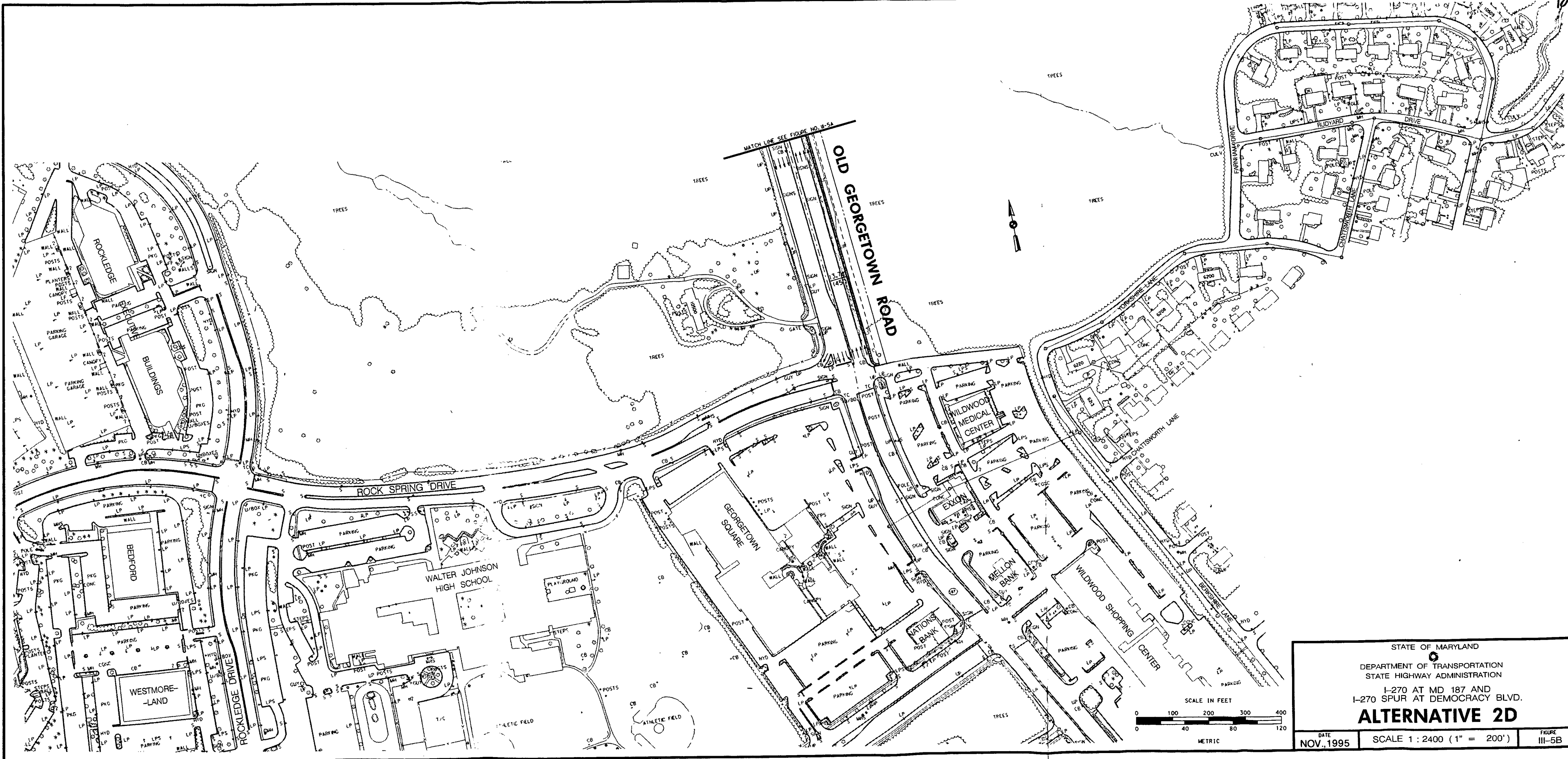


STATE OF MARYLAND		
DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION		
I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD.		
ALTERNATIVE 2C		
DATE NOV., 1995	SCALE 1:1200 (1" = 100')	FIGURE III-4



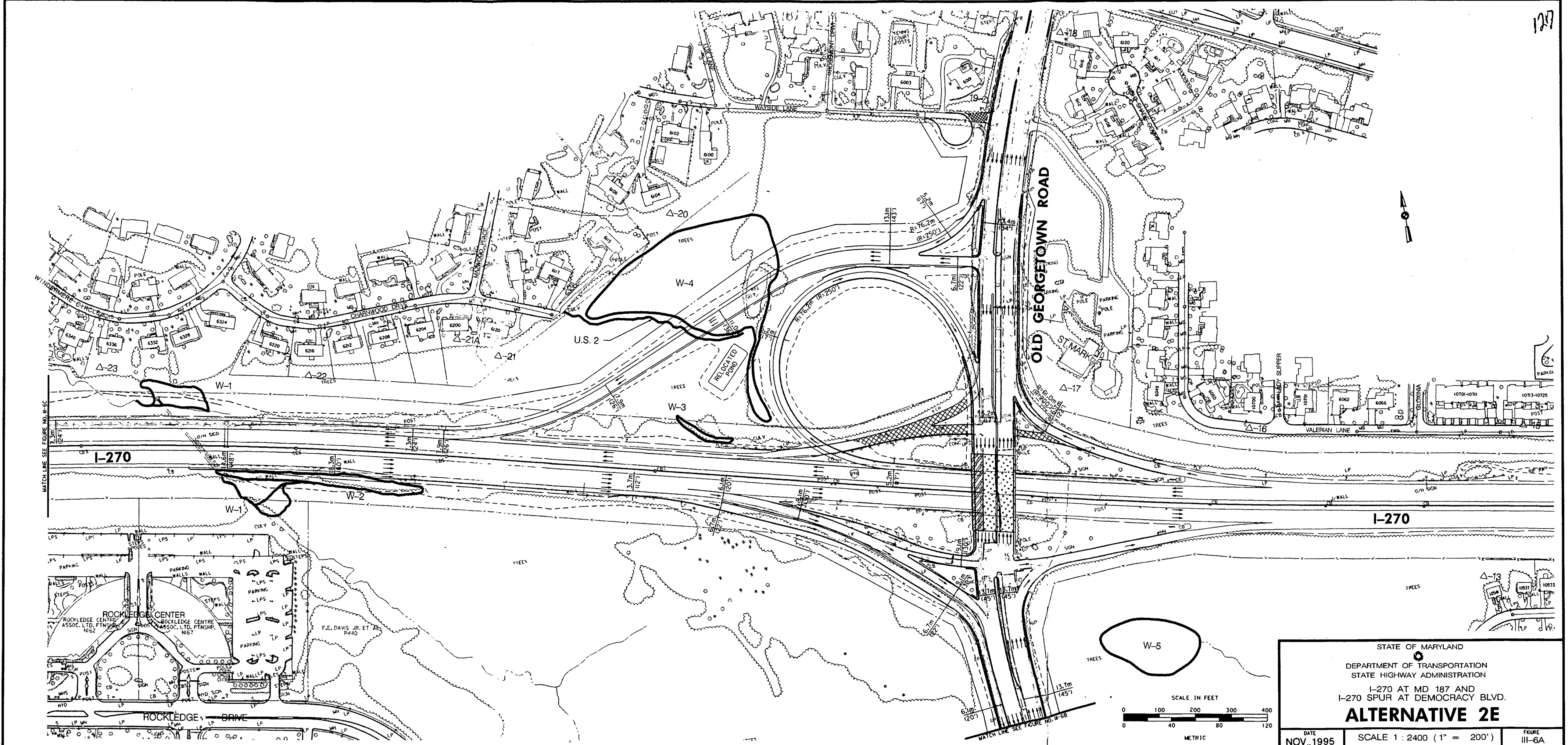
STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 I-270 AT MD 187 AND
 I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 2D
 DATE NOV., 1995
 SCALE 1 : 2400 (1" = 200')
 FIGURE III-5A

PROVISIONAL
10-09-95



FILE NO. PS43270.DGN
 08-11-95 SM

1210



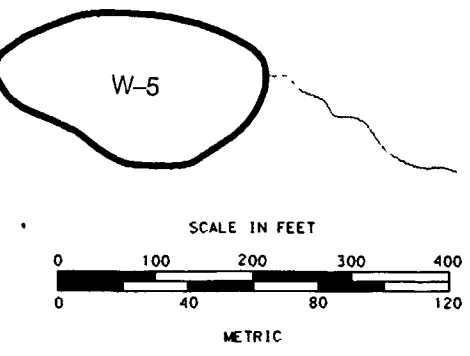
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08-08-95 SM

STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION

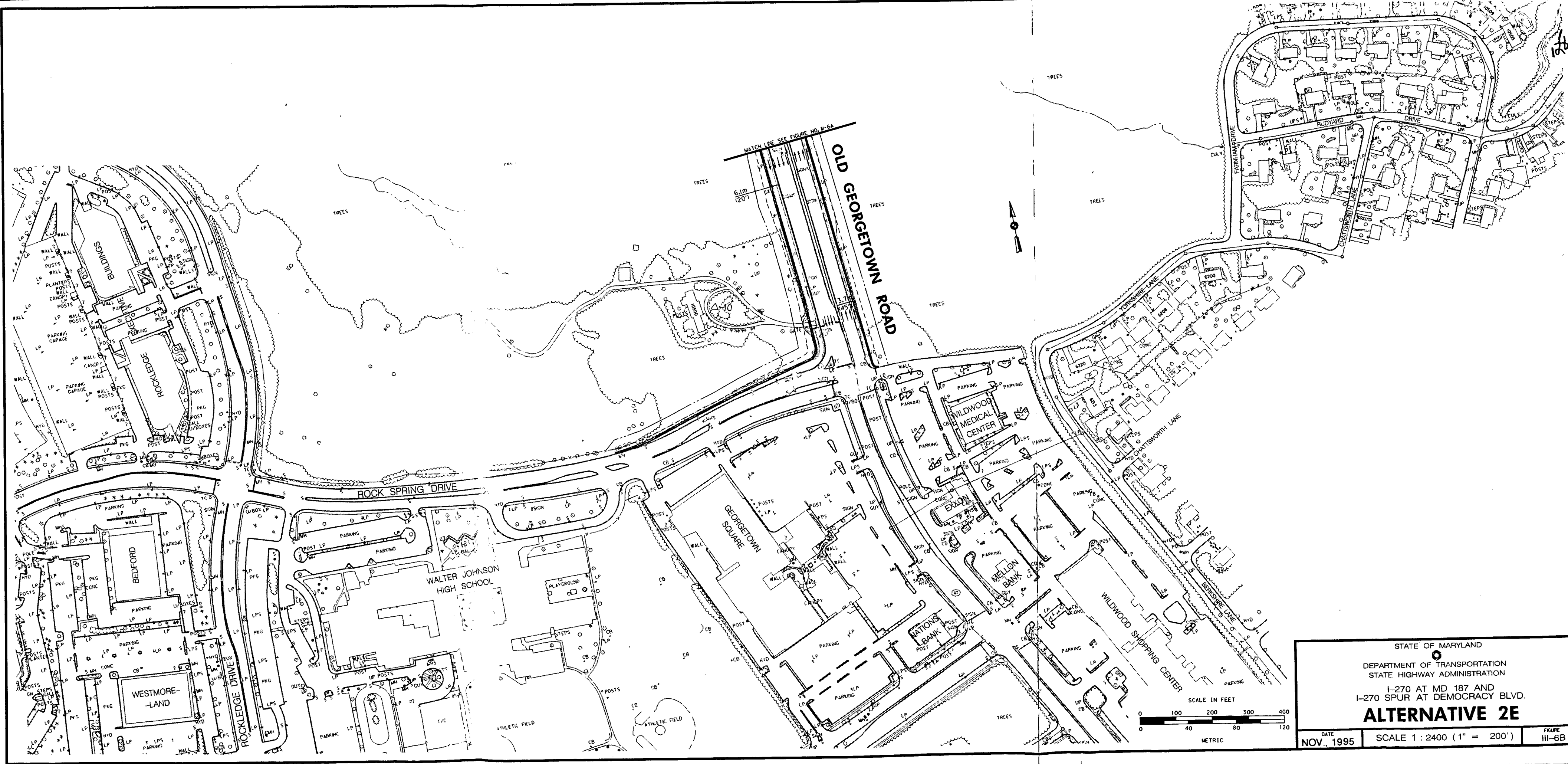
I-270 AT MD 187 AND
 I-270 SPUR AT DEMOCRACY BLVD.

ALTERNATIVE 2E

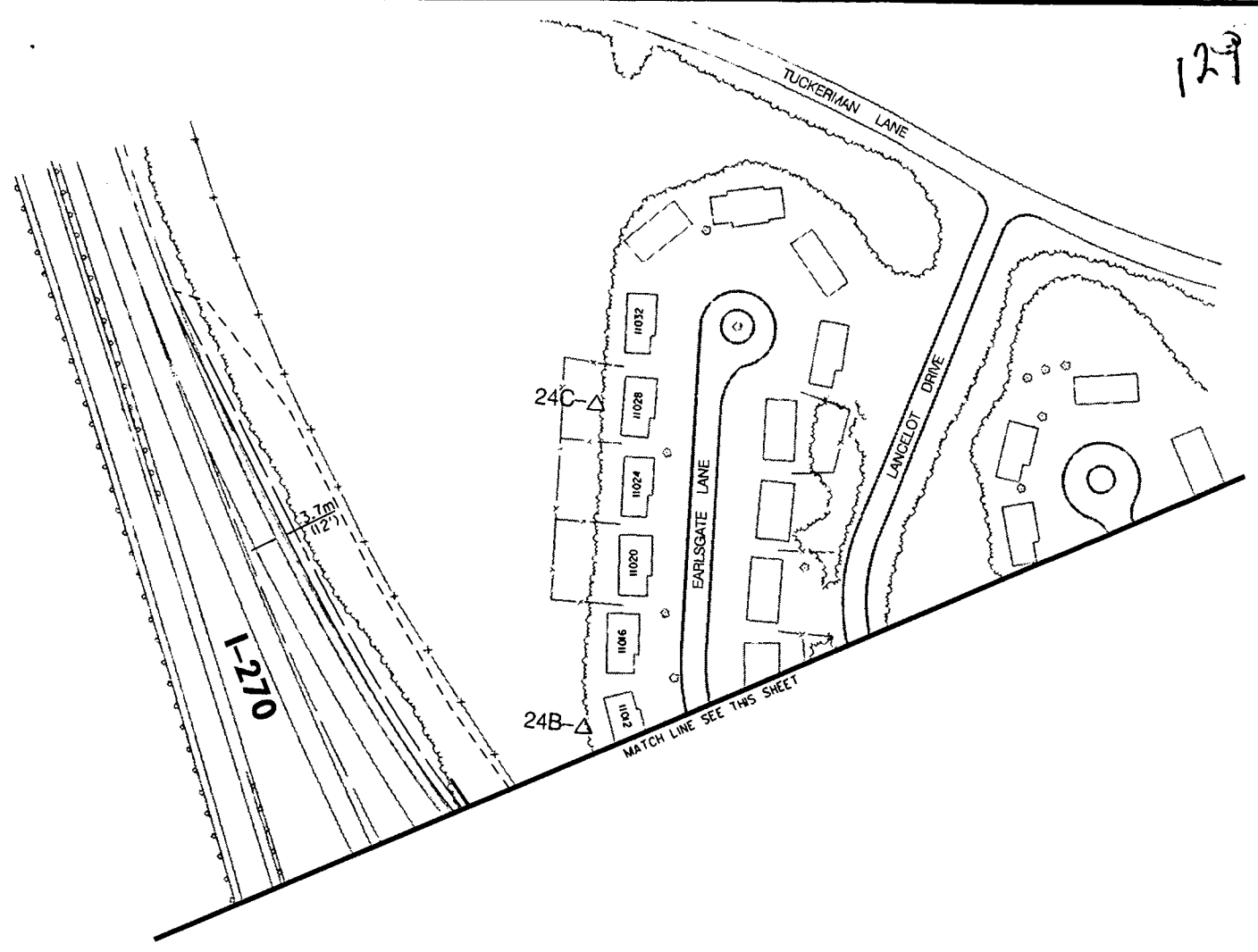
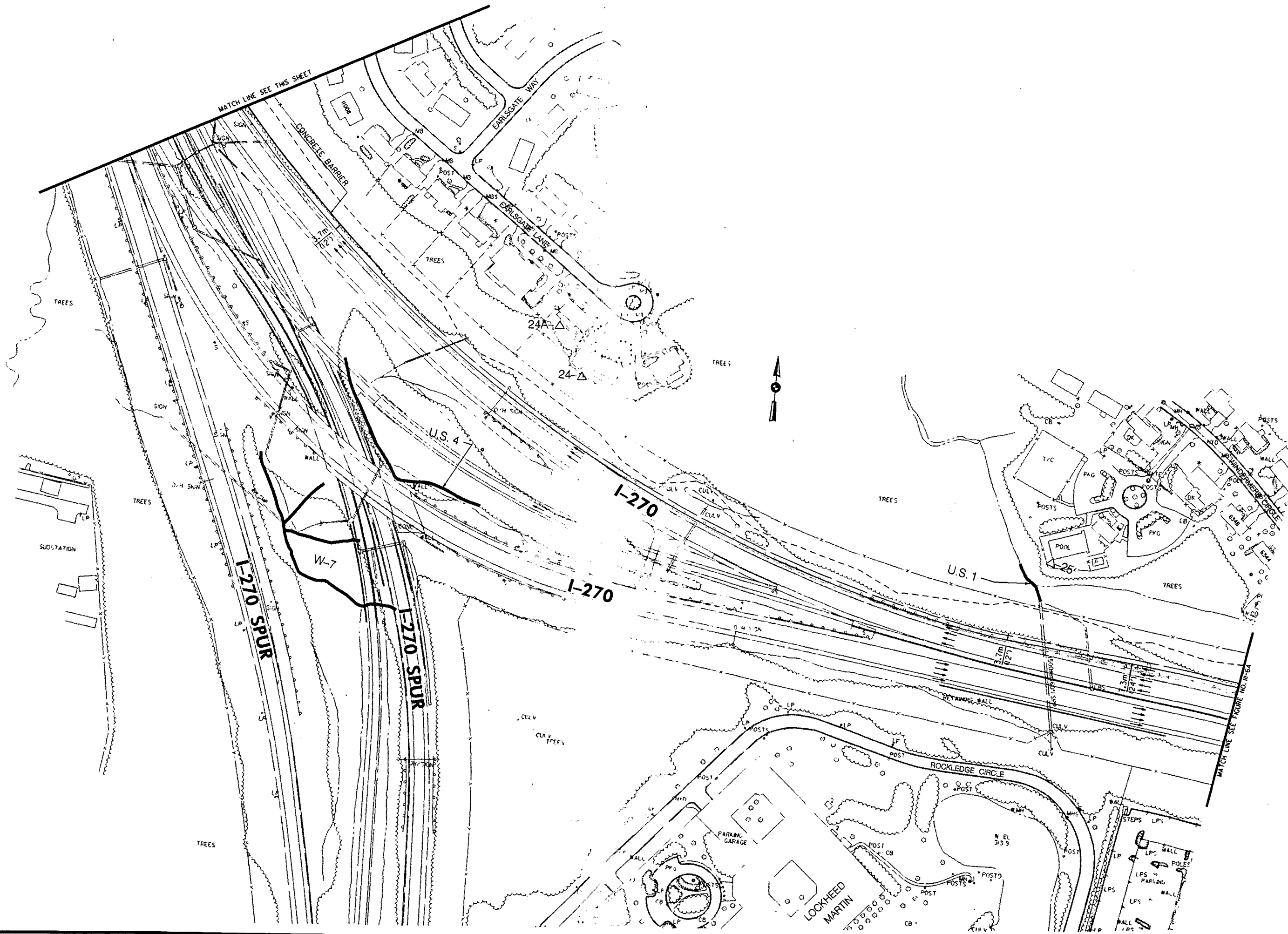
DATE NOV. 1995	SCALE 1 : 2400 (1" = 200')	FIGURE III-6A
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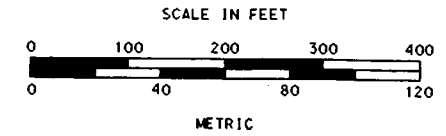
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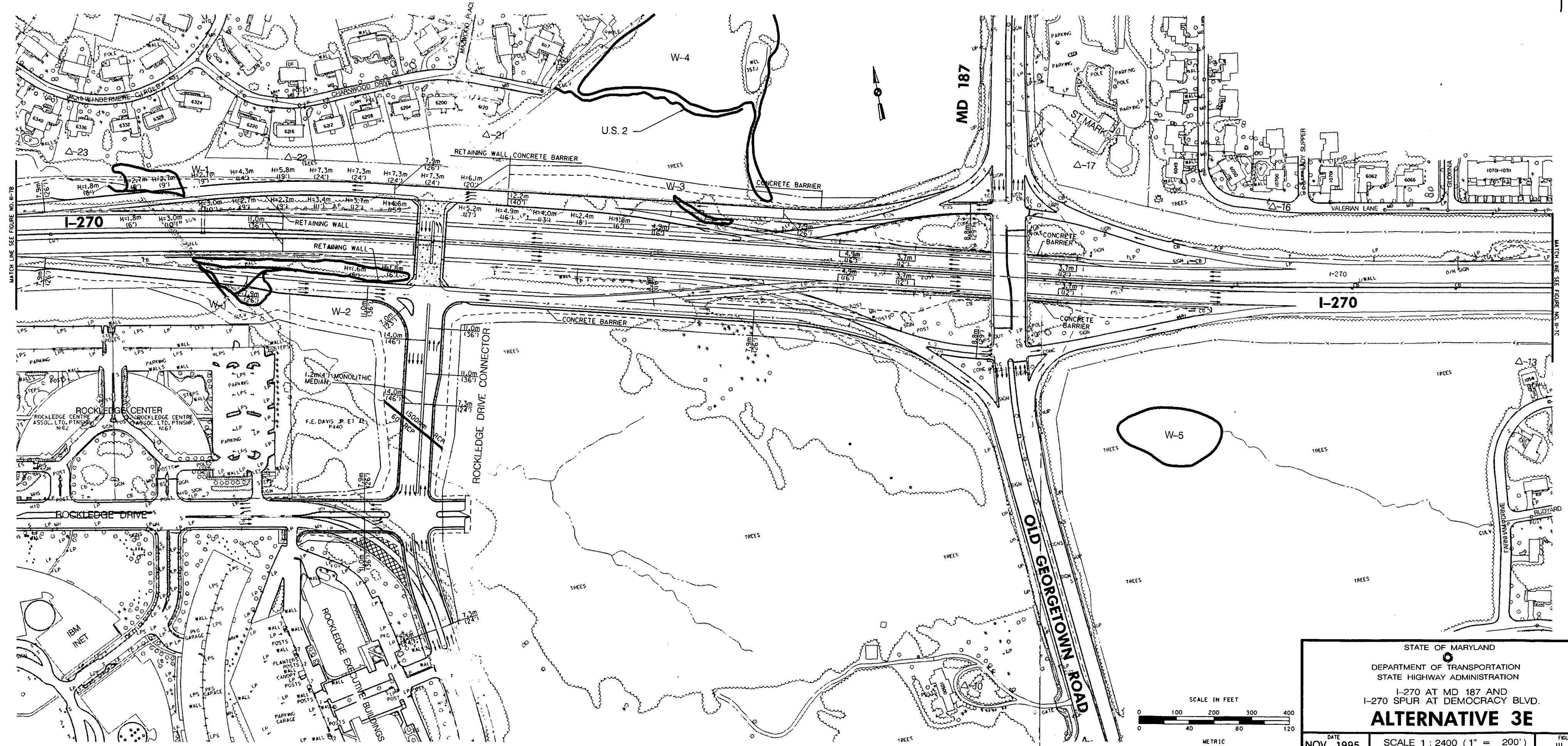
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 2E
DATE: NOV., 1995
SCALE 1 : 2400 (1" = 200')
FIGURE III-6B



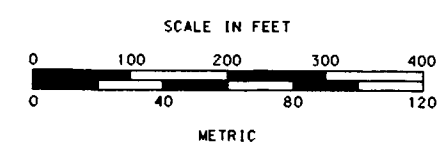
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10-11-95 SM



STATE OF MARYLAND
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STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 2E
DATE NOV., 1995 SCALE 1 : 2400 (1" = 200') FIGURE III-6C



FILE NO. PSD1702.DGN
05-08-95 3M

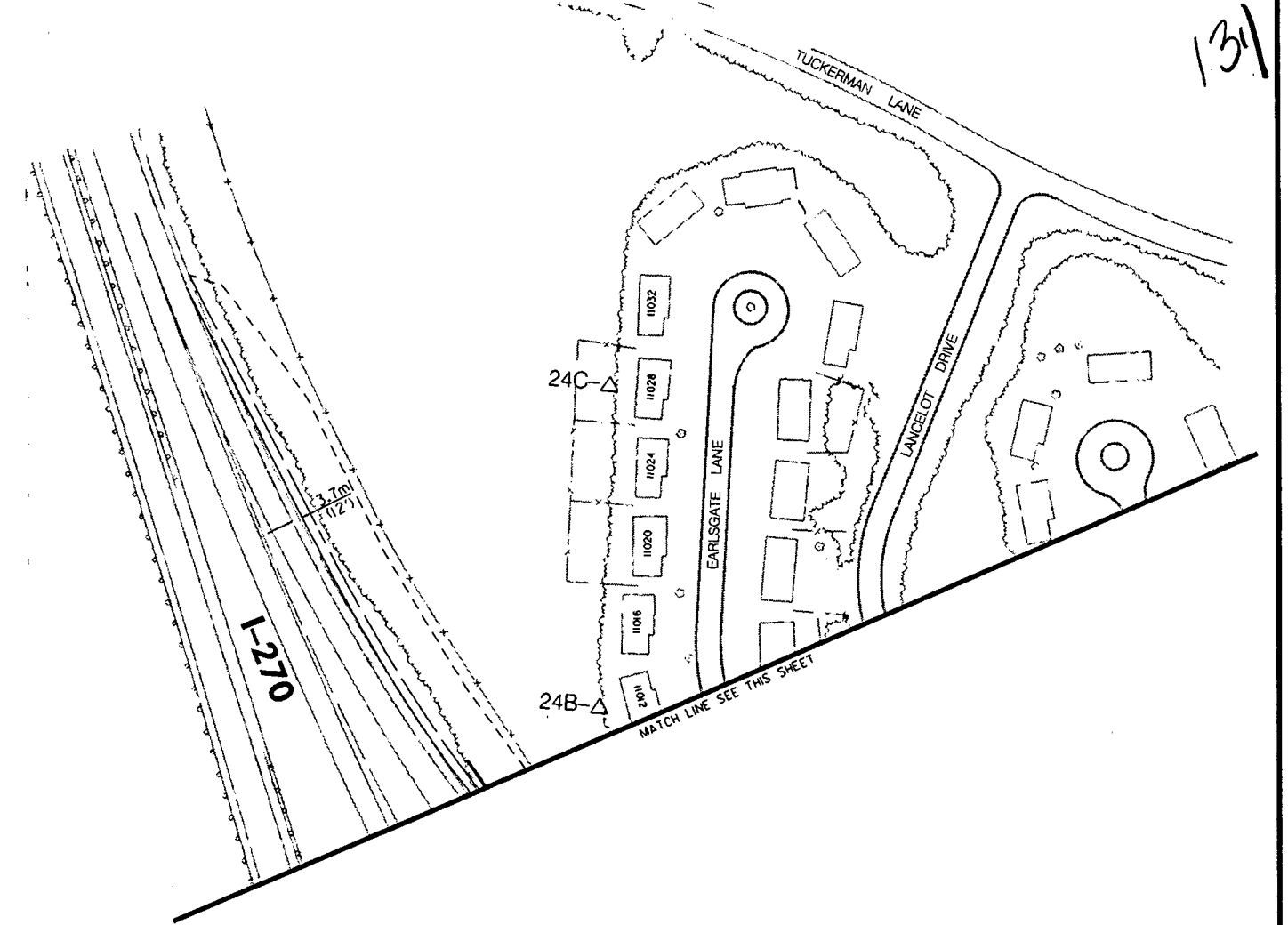
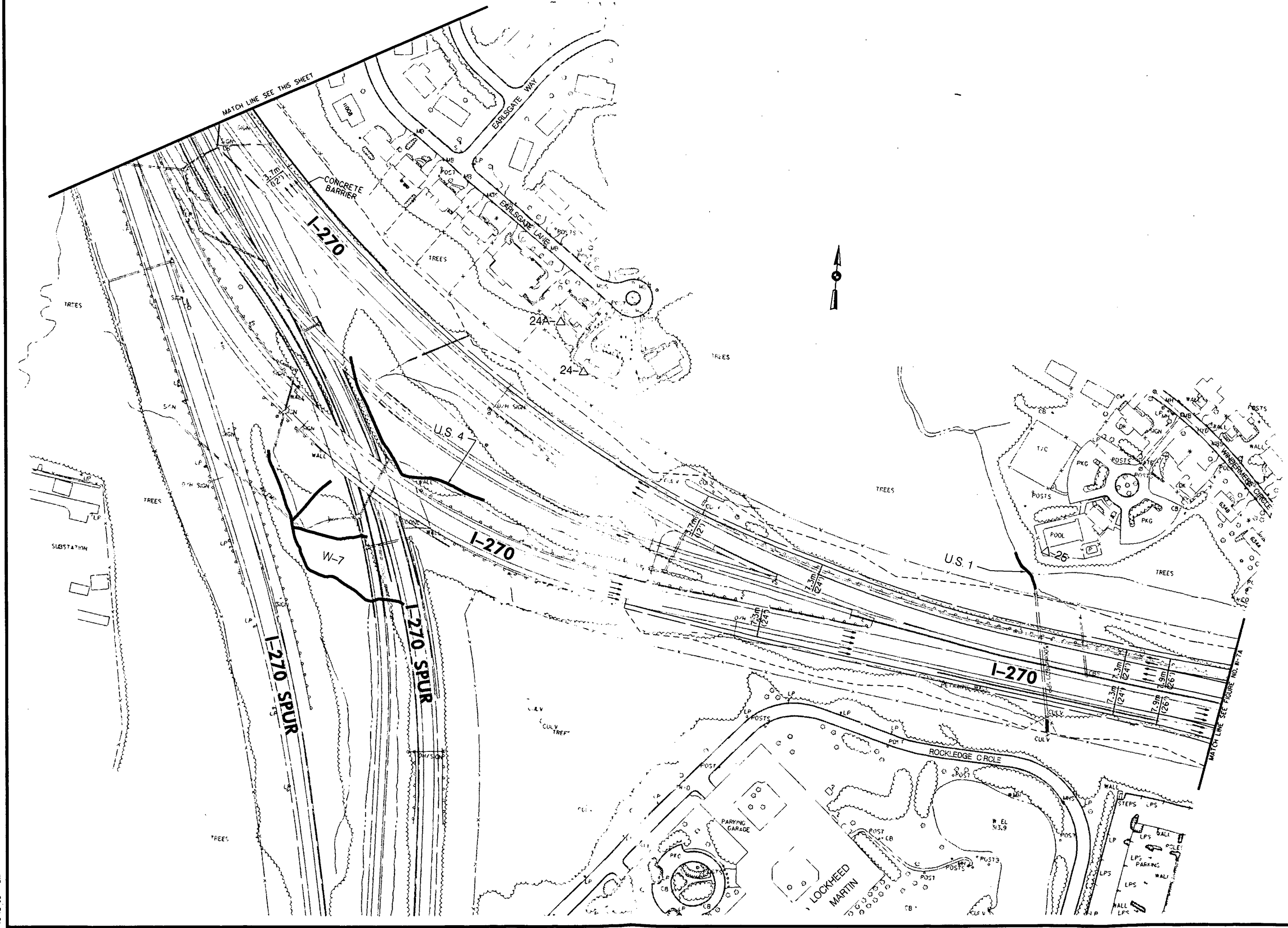


STATE OF MARYLAND
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STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 3E

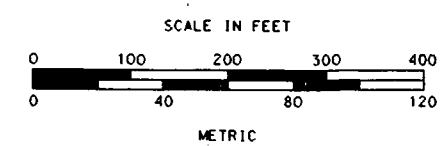
DATE
NOV., 1995

SCALE 1:2400 (1" = 200')

FIGURE
III-7A



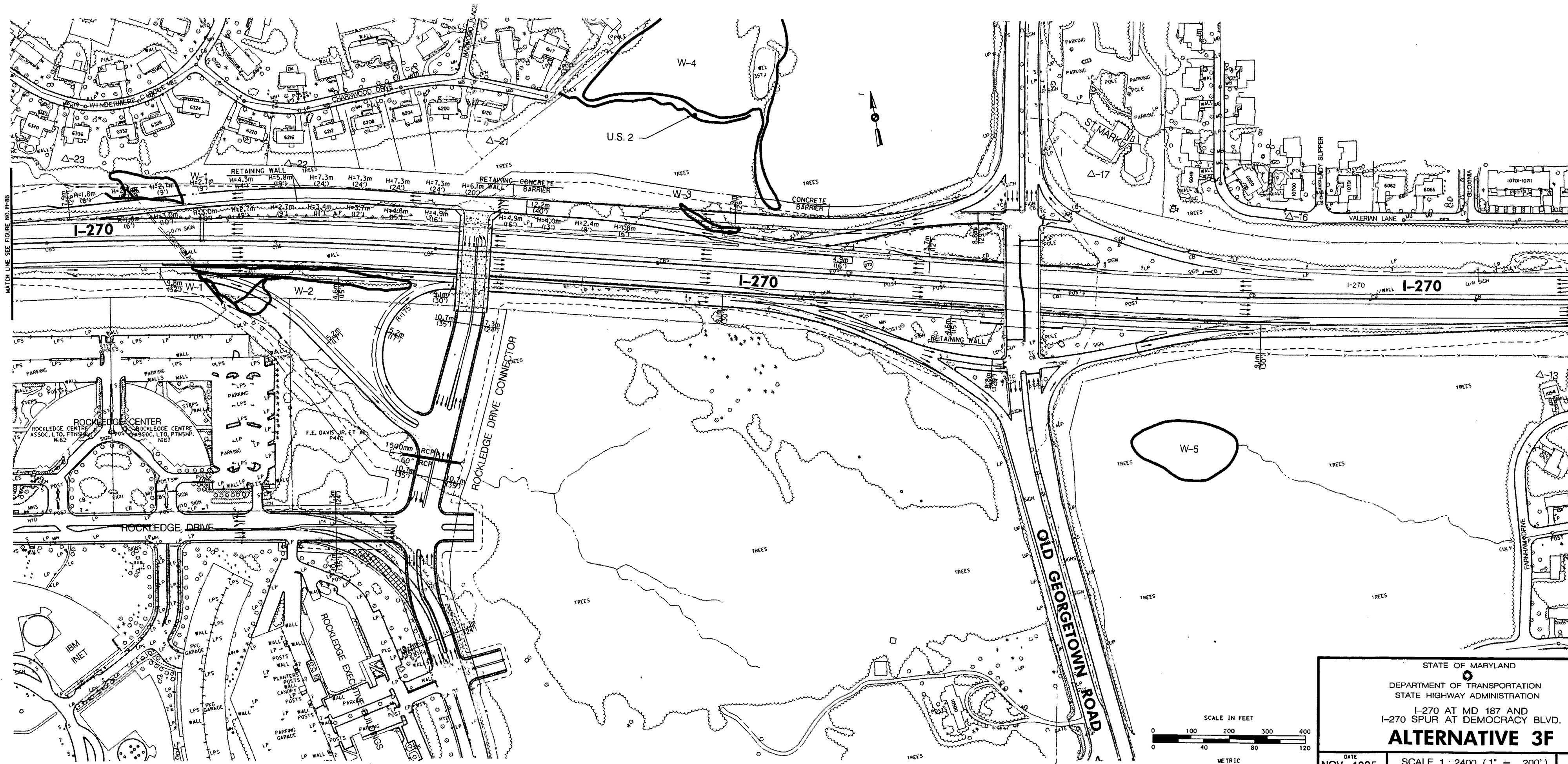
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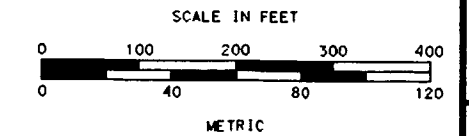
STATE OF MARYLAND
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STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 3E

DATE NOV., 1995 SCALE 1 : 2400 (1" = 200') FIGURE III-7B

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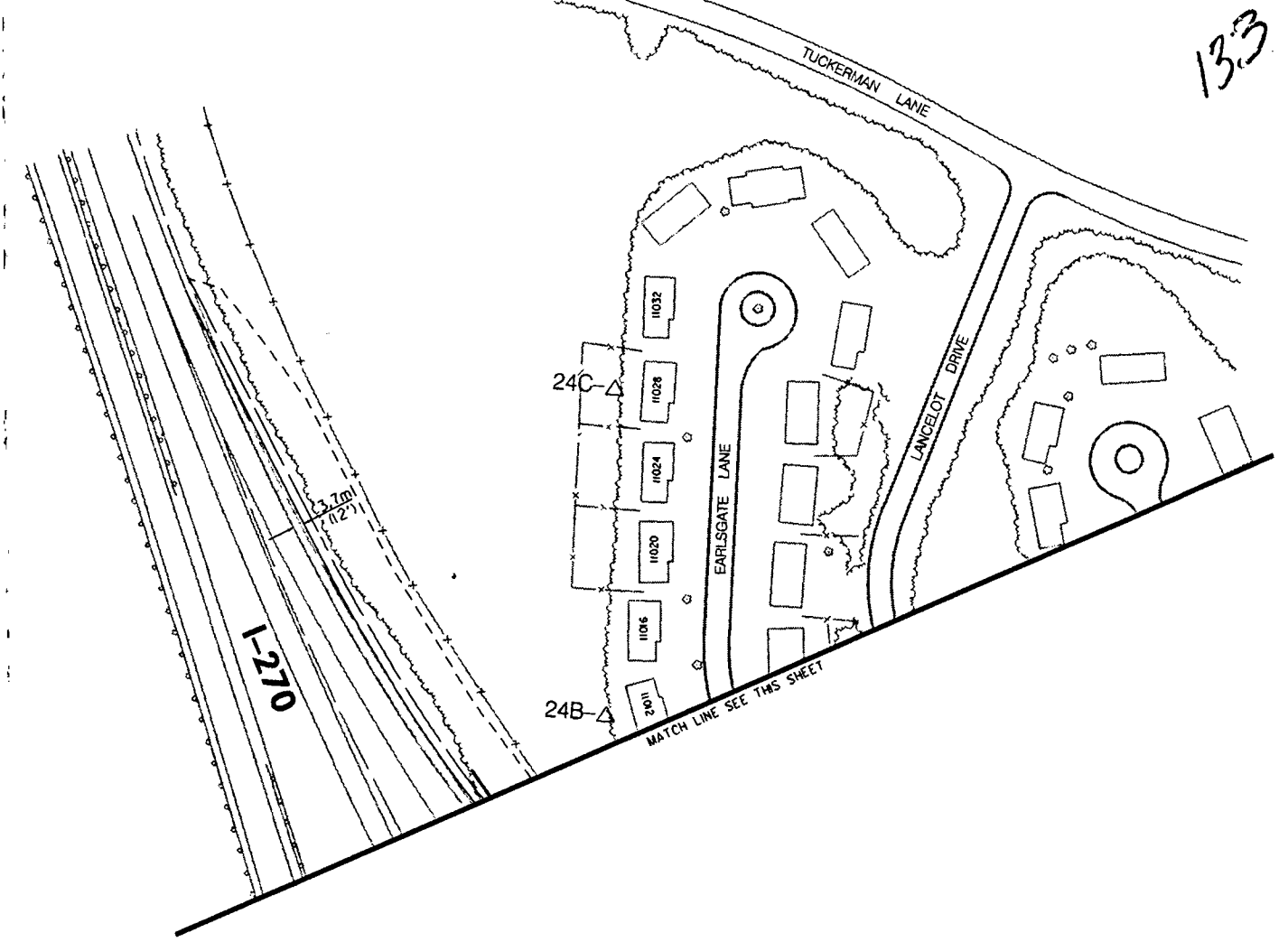
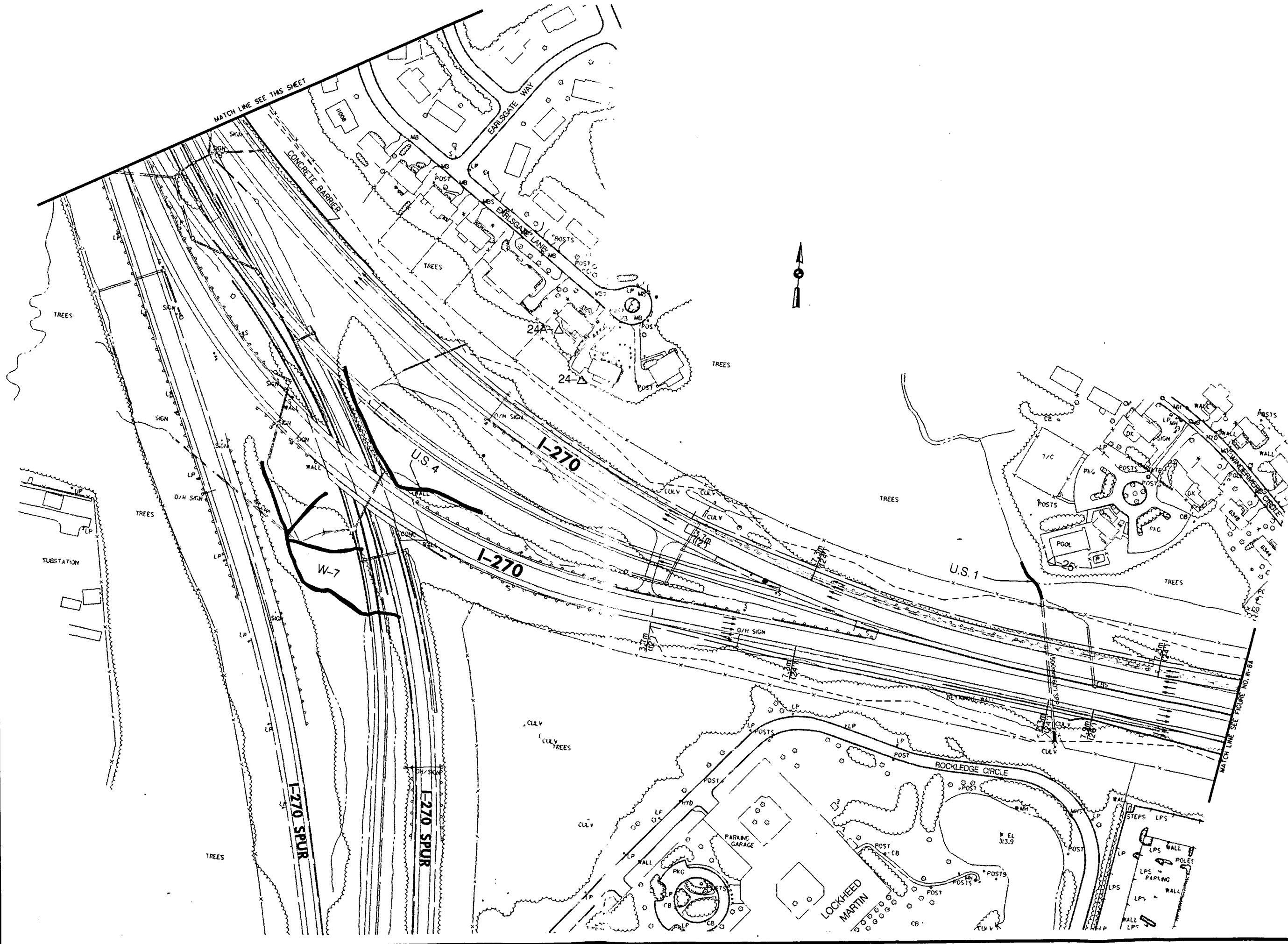
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08-08-95 SM



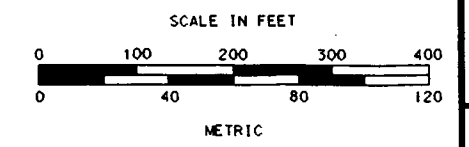
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 3F

DATE NOV., 1995	SCALE 1 : 2400 (1" = 200')	FIGURE III-8A
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133

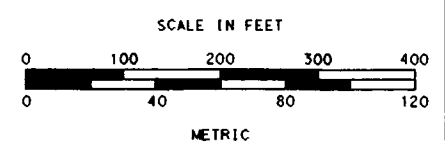
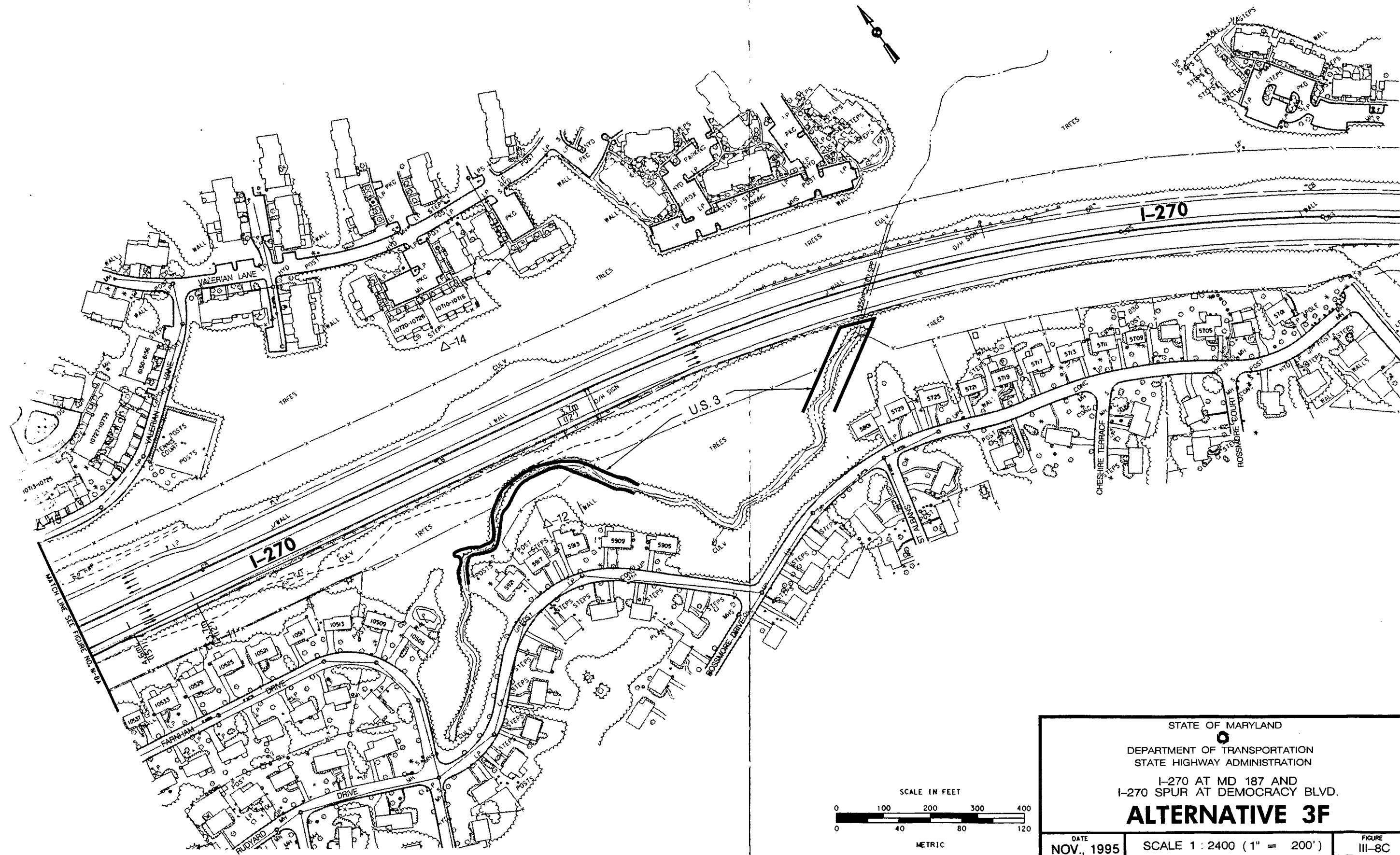


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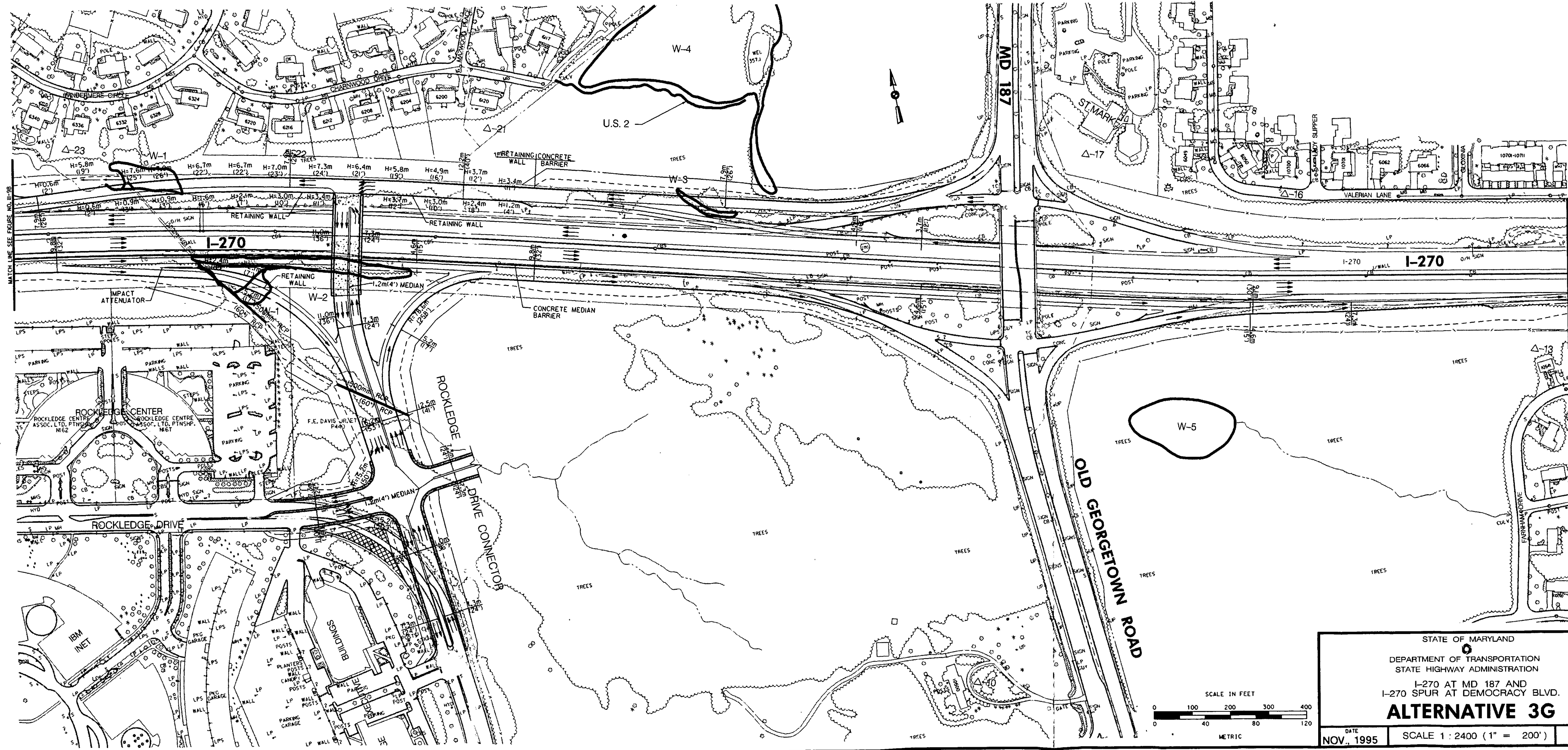
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 3F

DATE NOV., 1995	SCALE 1 : 2400 (1" = 200')	FIGURE III-8B
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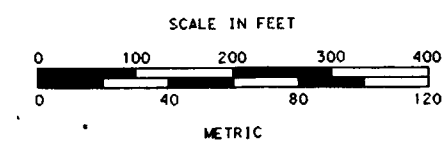


STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 3F

DATE NOV., 1995	SCALE 1 : 2400 (1" = 200')	FIGURE III-8C
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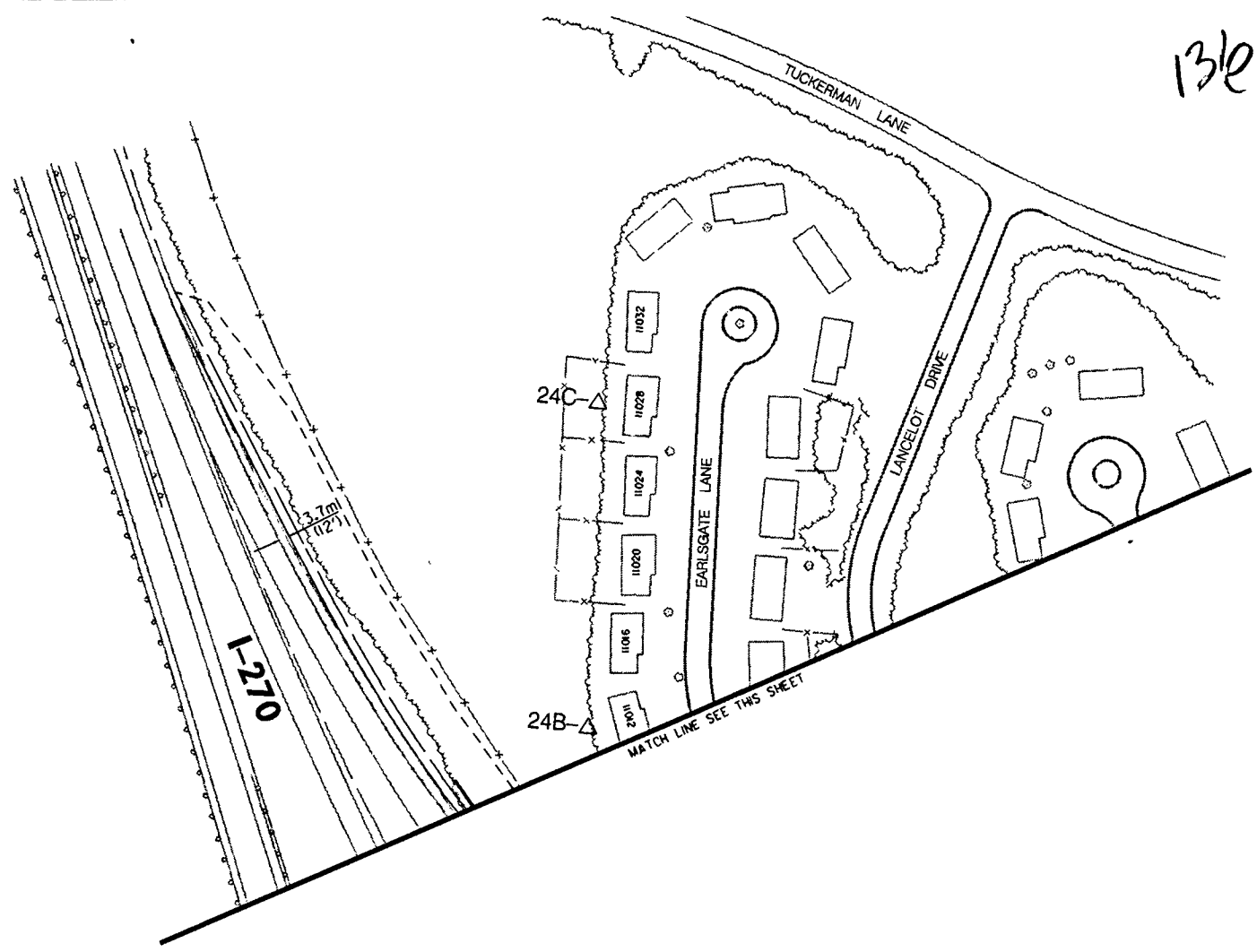
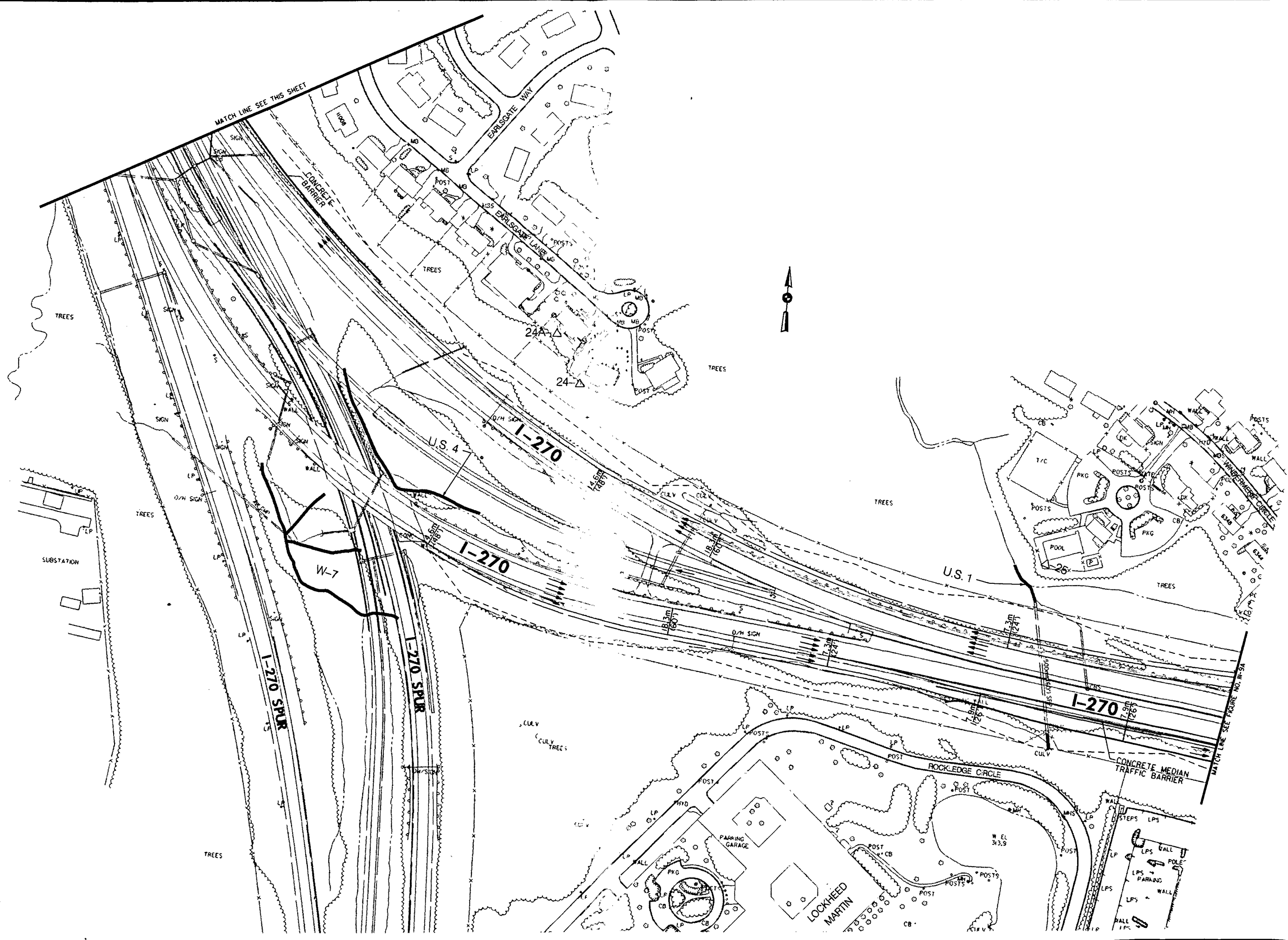
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08-09-95 5M



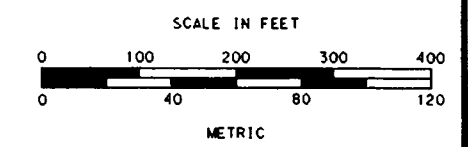
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 3G

DATE NOV., 1995	SCALE 1 : 2400 (1" = 200')	FIGURE III-9A
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131e

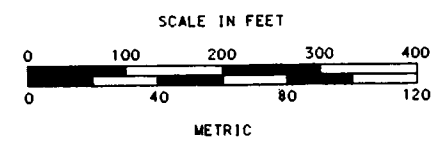
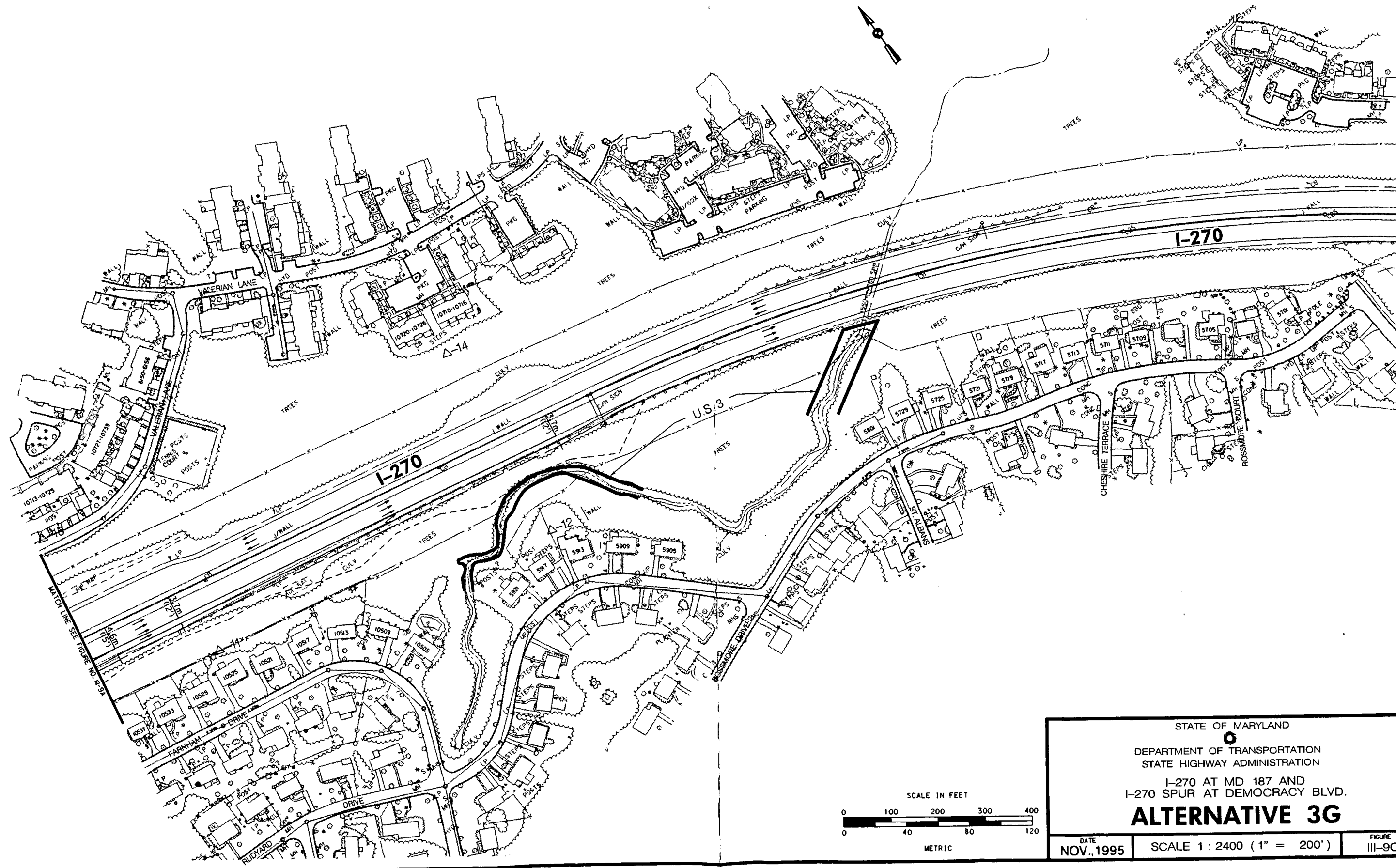


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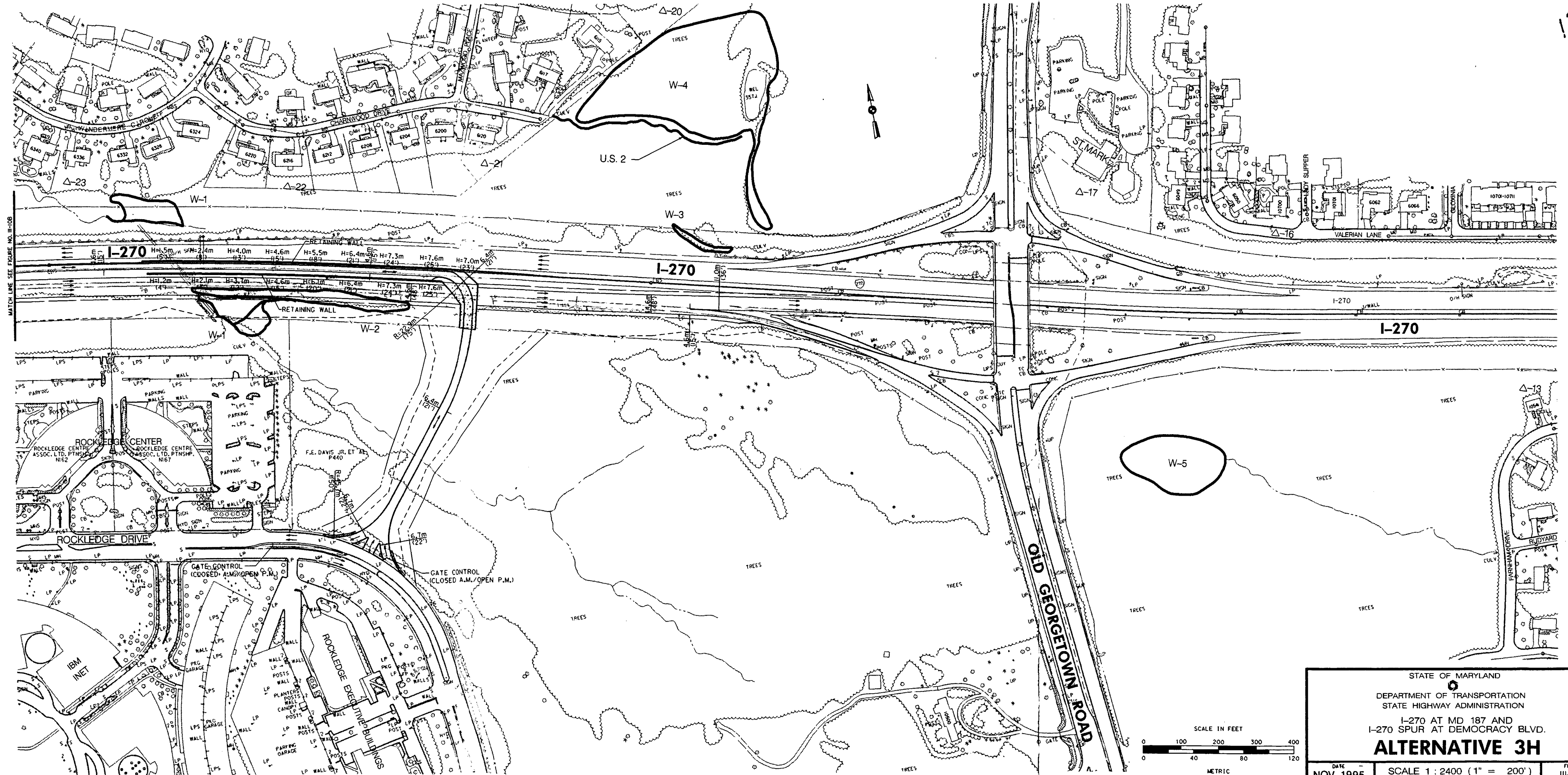
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 3G

DATE: NOV., 1995
SCALE: 1 : 2400 (1" = 200')
FIGURE: III-9B

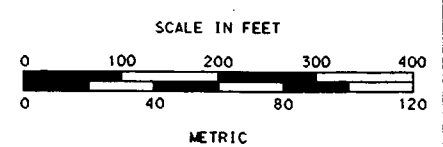


STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 I-270 AT MD 187 AND
 I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 3G

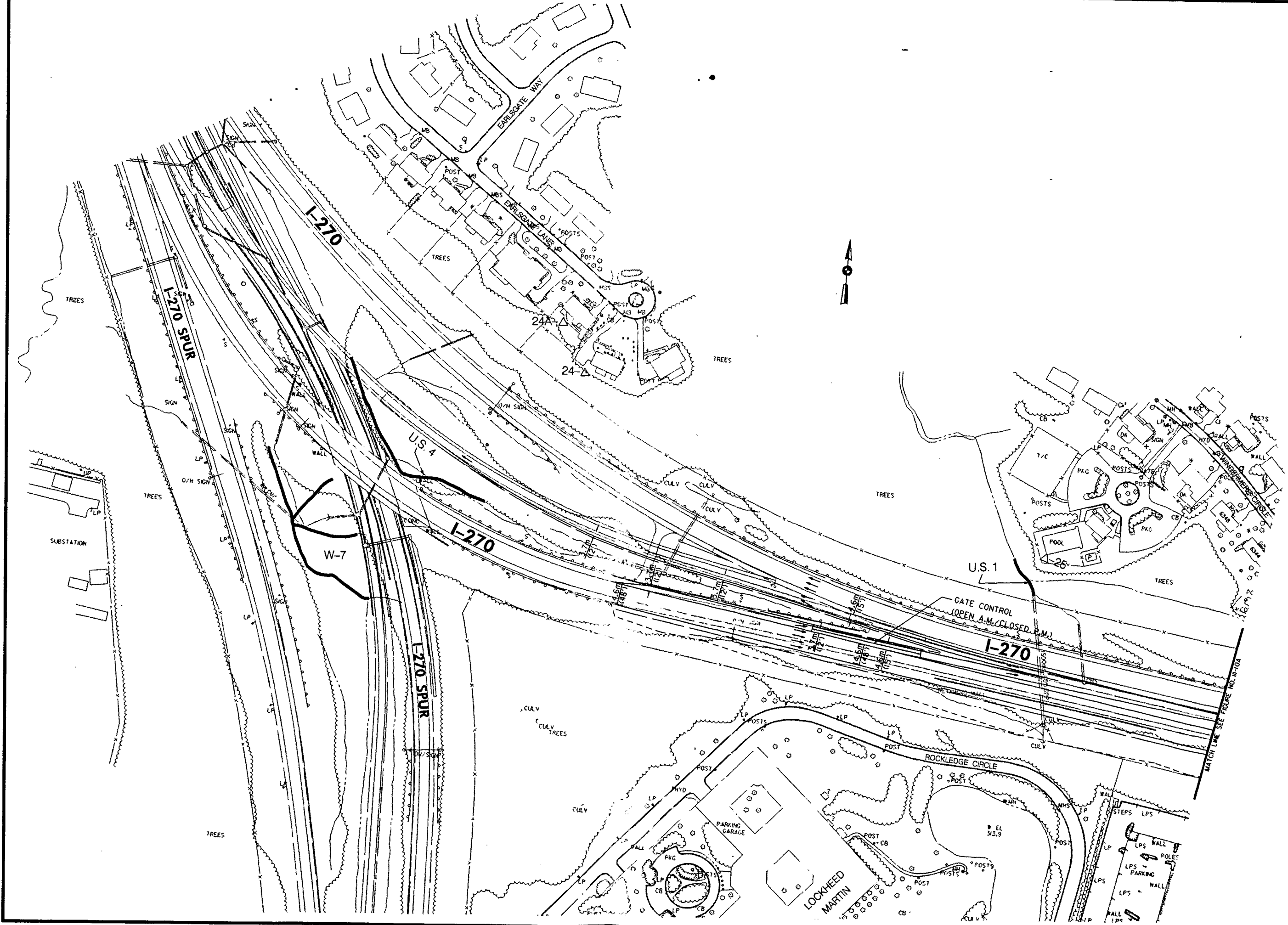
DATE NOV., 1995	SCALE 1 : 2400 (1" = 200')	FIGURE III-9C
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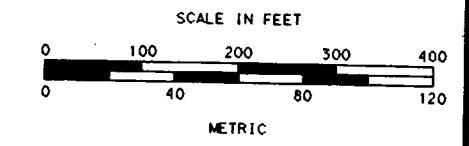
FILE NO. PS19270.DGN
10-11-95 SK



STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 3H
DATE NOV., 1995 SCALE 1 : 2400 (1" = 200') FIGURE III-10A

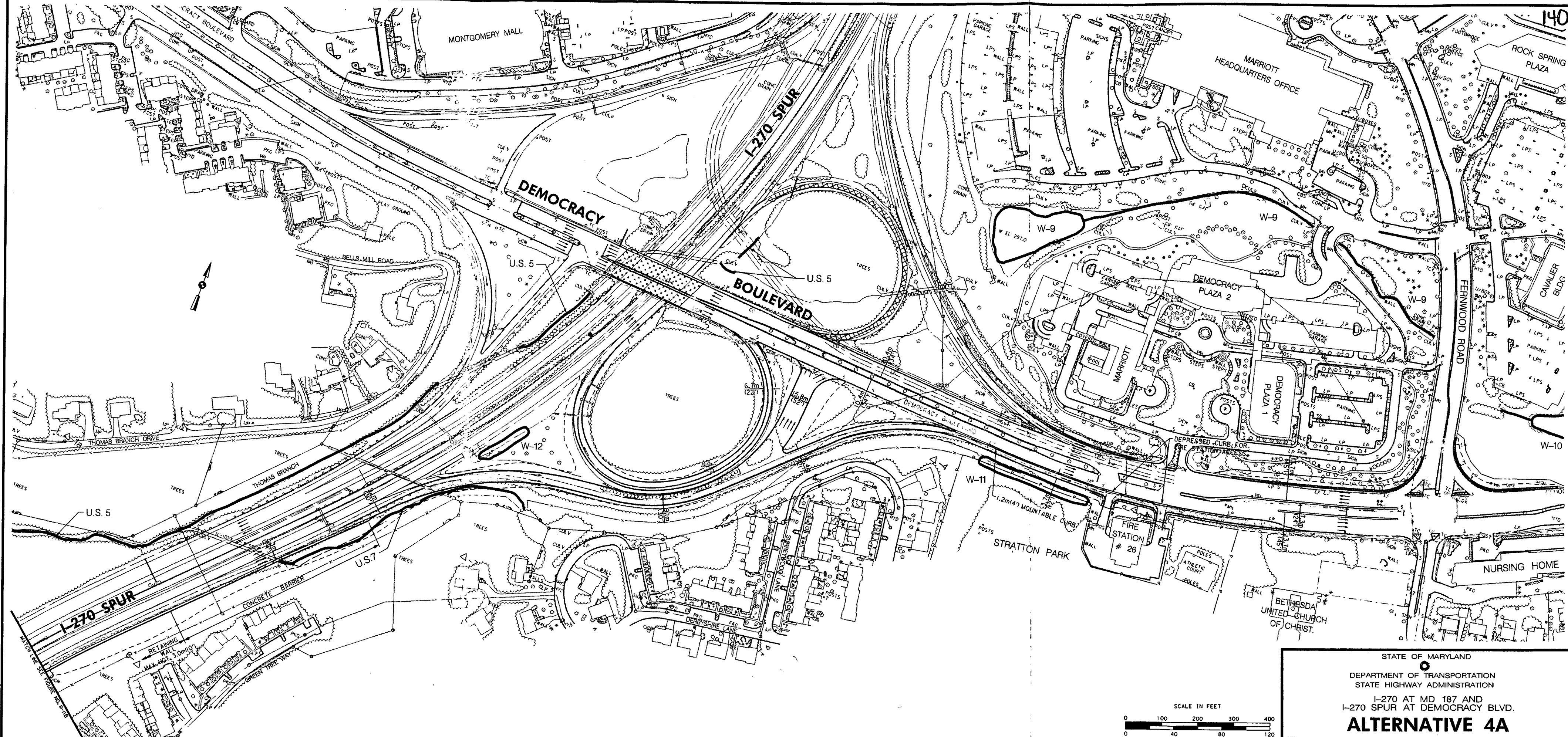


FILE NO. PS2020.DGN
10/11/95 SM

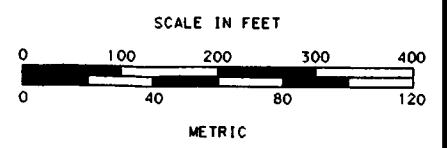


STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 I-270 AT MD 187 AND
 I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 3H

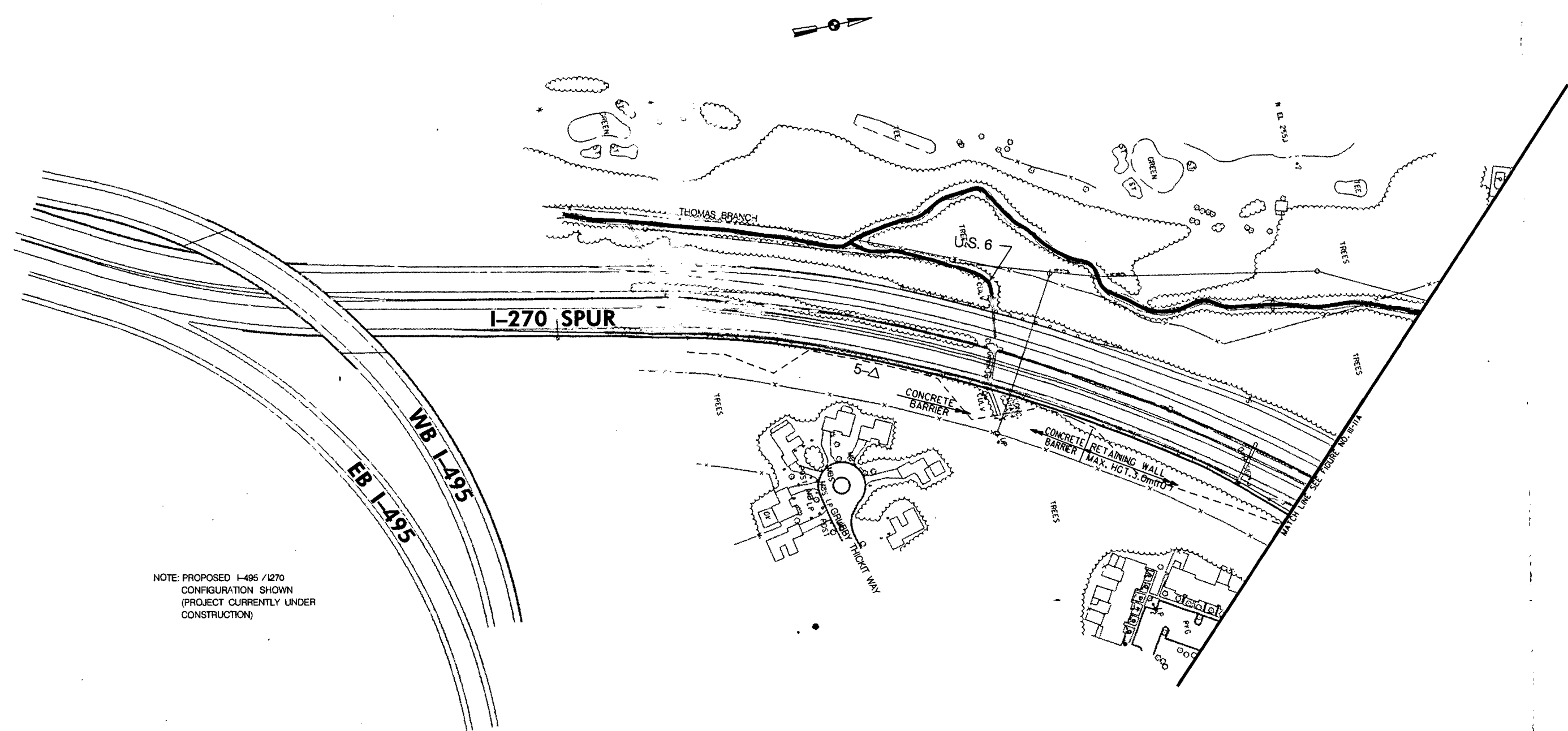
DATE: NOV. 1995 SCALE 1 : 2400 (1" = 200') FIGURE III-10B



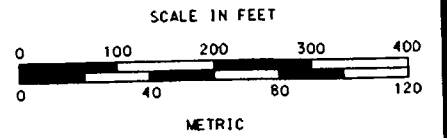
FILE NO. P528270.DGN
08-09-95 5M



STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 4A
DATE NOV, 1995 SCALE 1 : 2400 (1" = 200') FIGURE III-11A

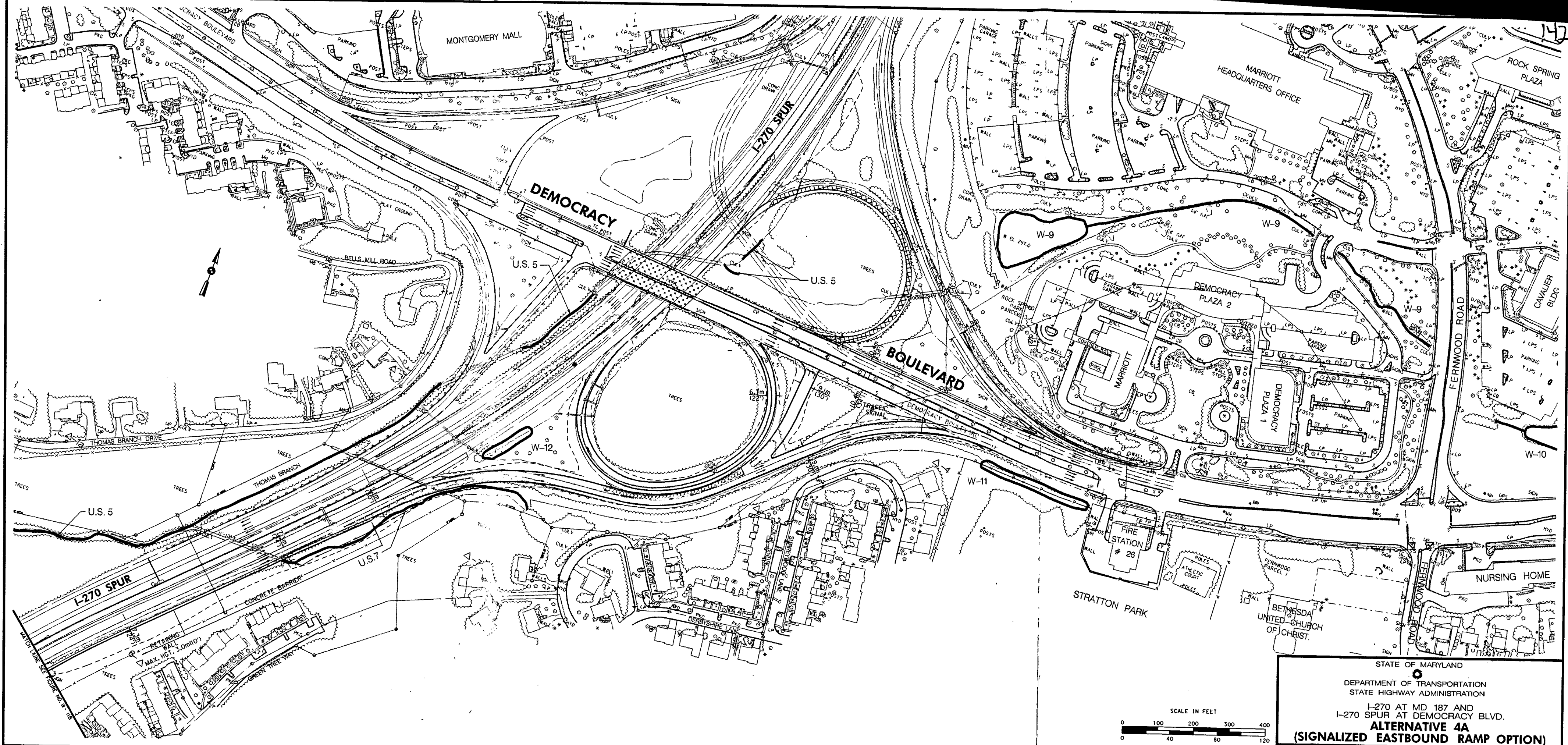


NOTE: PROPOSED I-495 / I-270
 CONFIGURATION SHOWN
 (PROJECT CURRENTLY UNDER
 CONSTRUCTION)



STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION		
I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD.		
ALTERNATIVE 4A		
DATE NOV., 1995	SCALE 1:2400 (1" = 200')	FIGURE III-11B

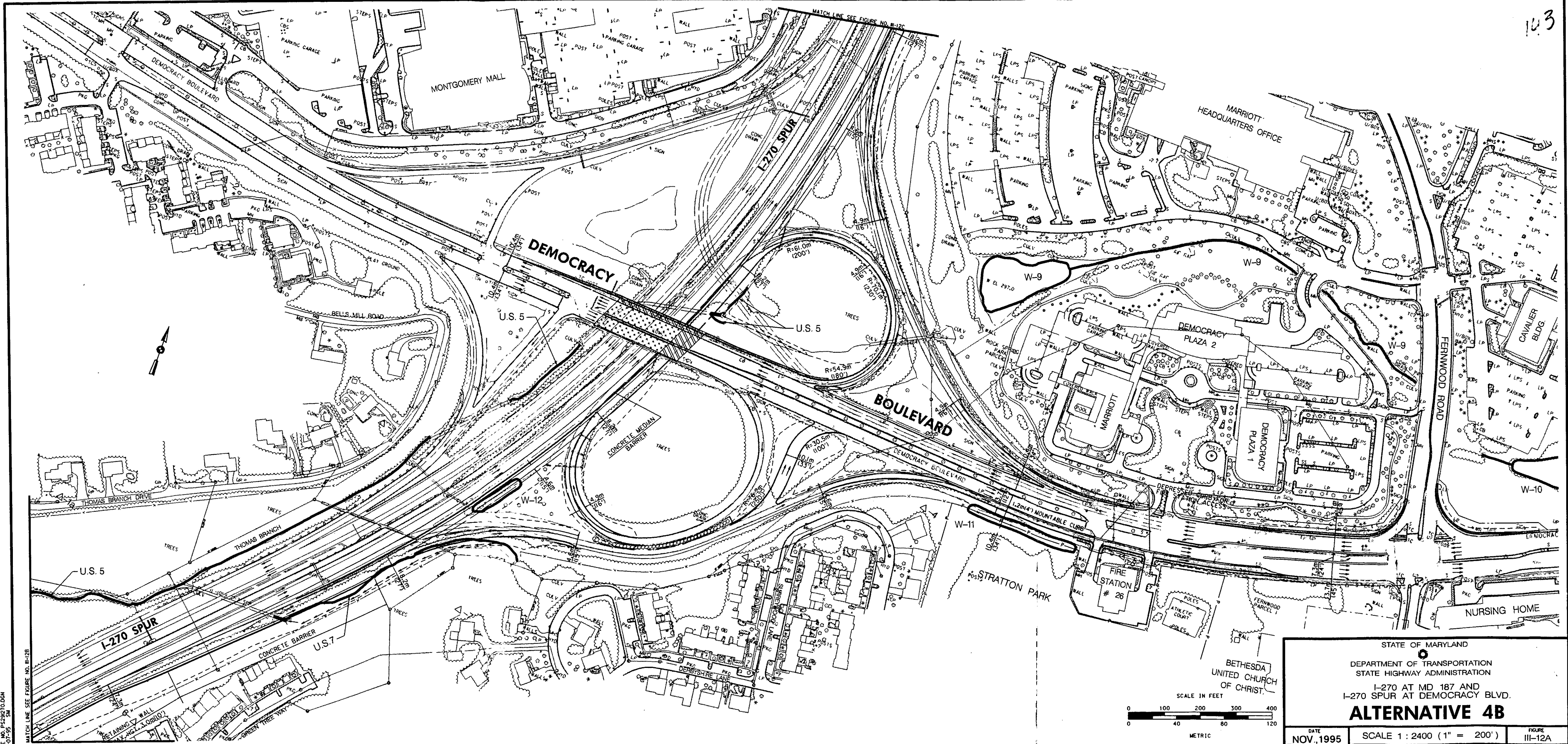
FILE NO. PS421270.DGN
08-07-95 SM



STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 4A
(SIGNALIZED EASTBOUND RAMP OPTION)

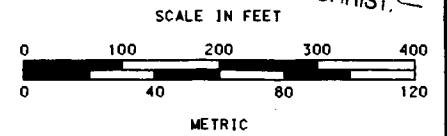
DATE: NOV. 1995
SCALE: 1" = 200'
FIGURE: III-11C



FILE NO. PC228270.DGN
08-07-95 SM

MATCH LINE SEE FIGURE NO. III-12B

MATCH LINE SEE FIGURE NO. III-12C



STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

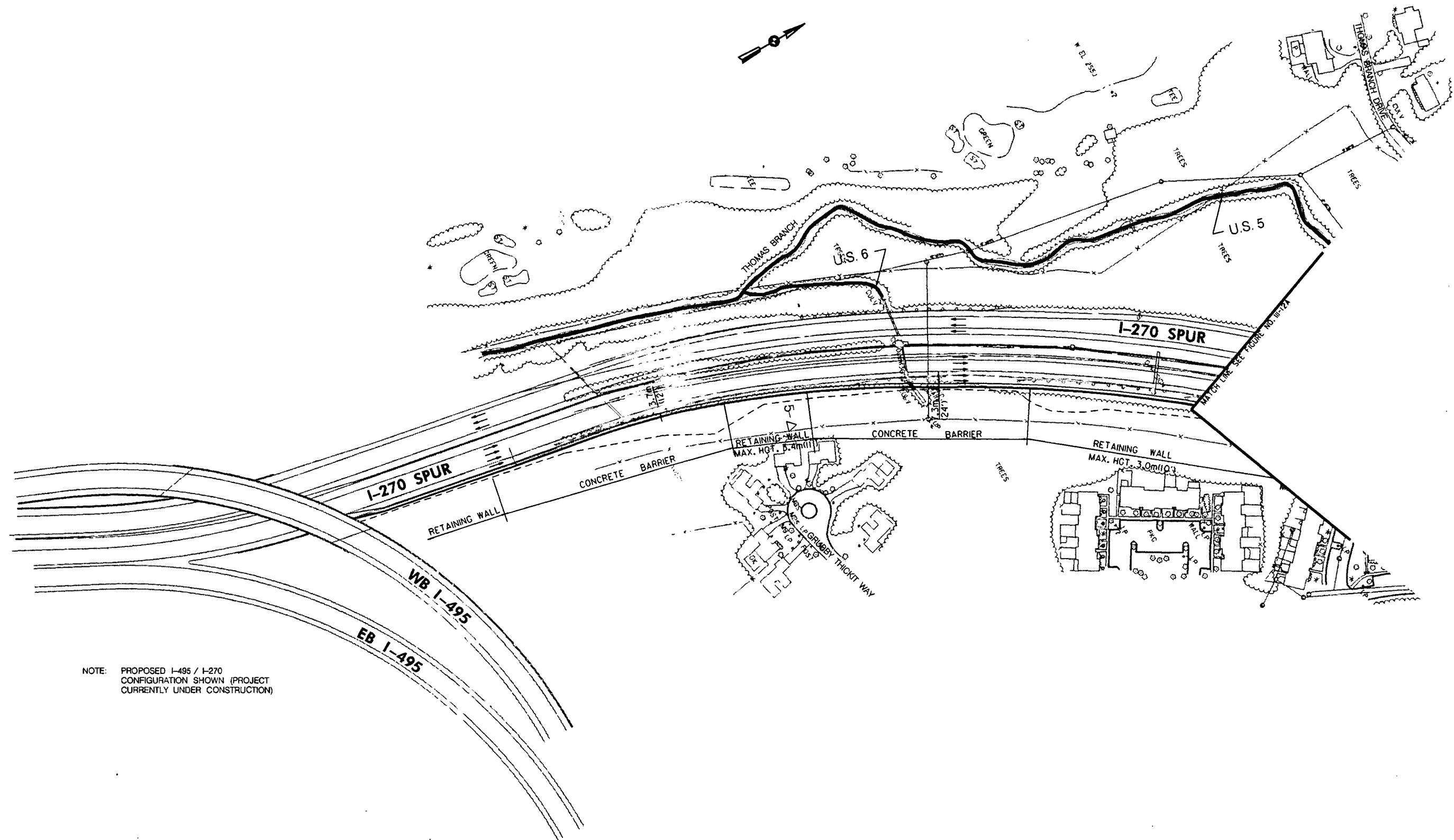
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.

ALTERNATIVE 4B

DATE: NOV. 1995

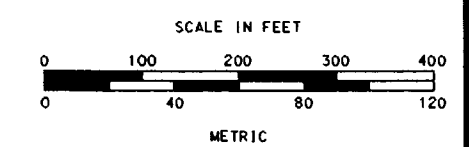
SCALE: 1" = 200'

FIGURE III-12A



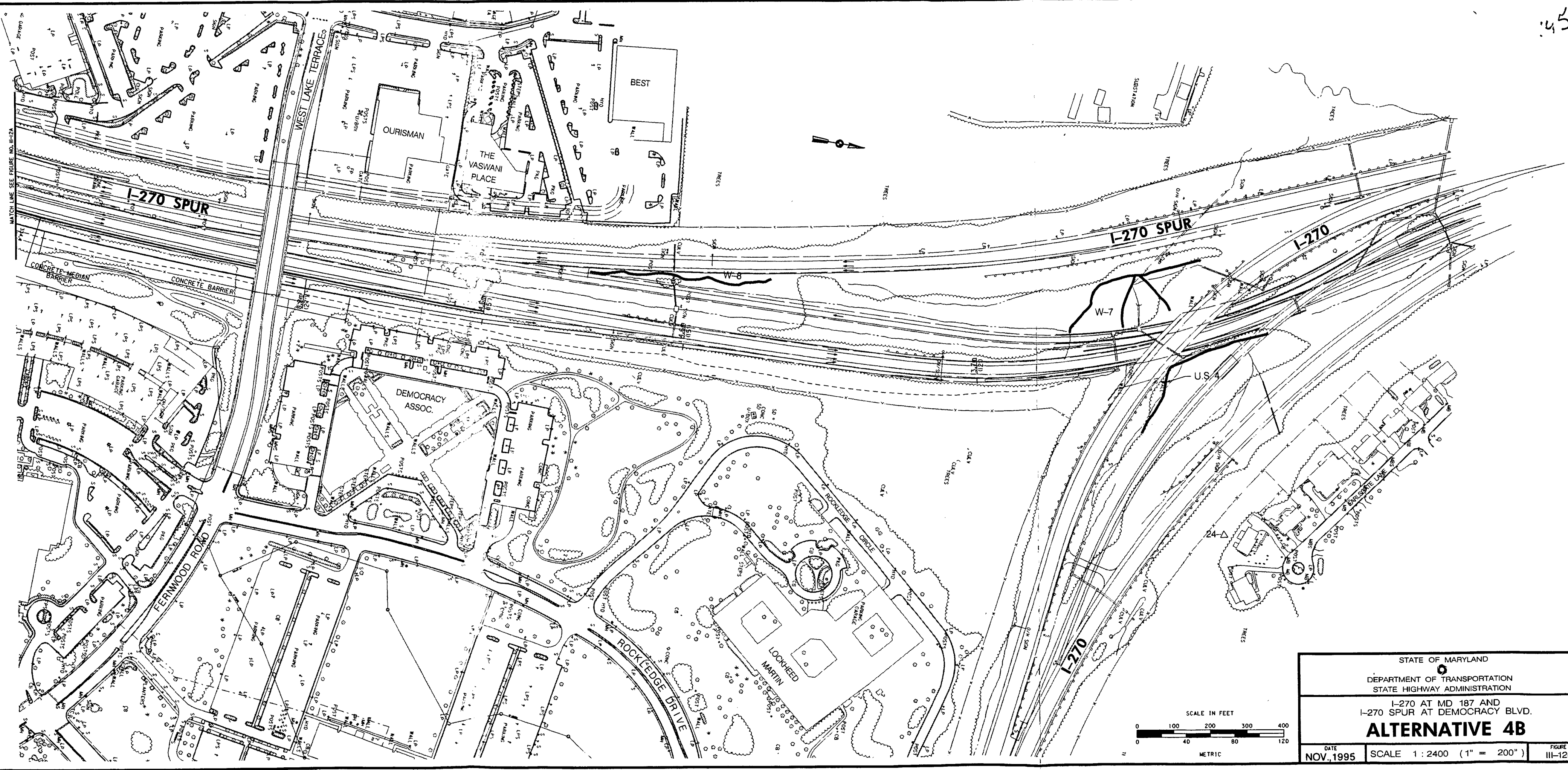
NOTE: PROPOSED I-495 / I-270
CONFIGURATION SHOWN (PROJECT
CURRENTLY UNDER CONSTRUCTION)

FILE NO. P530270.DGN
08-07-95 SM

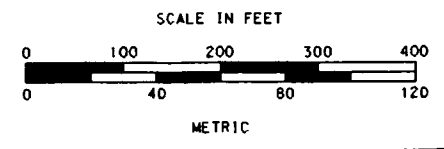


STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 4B

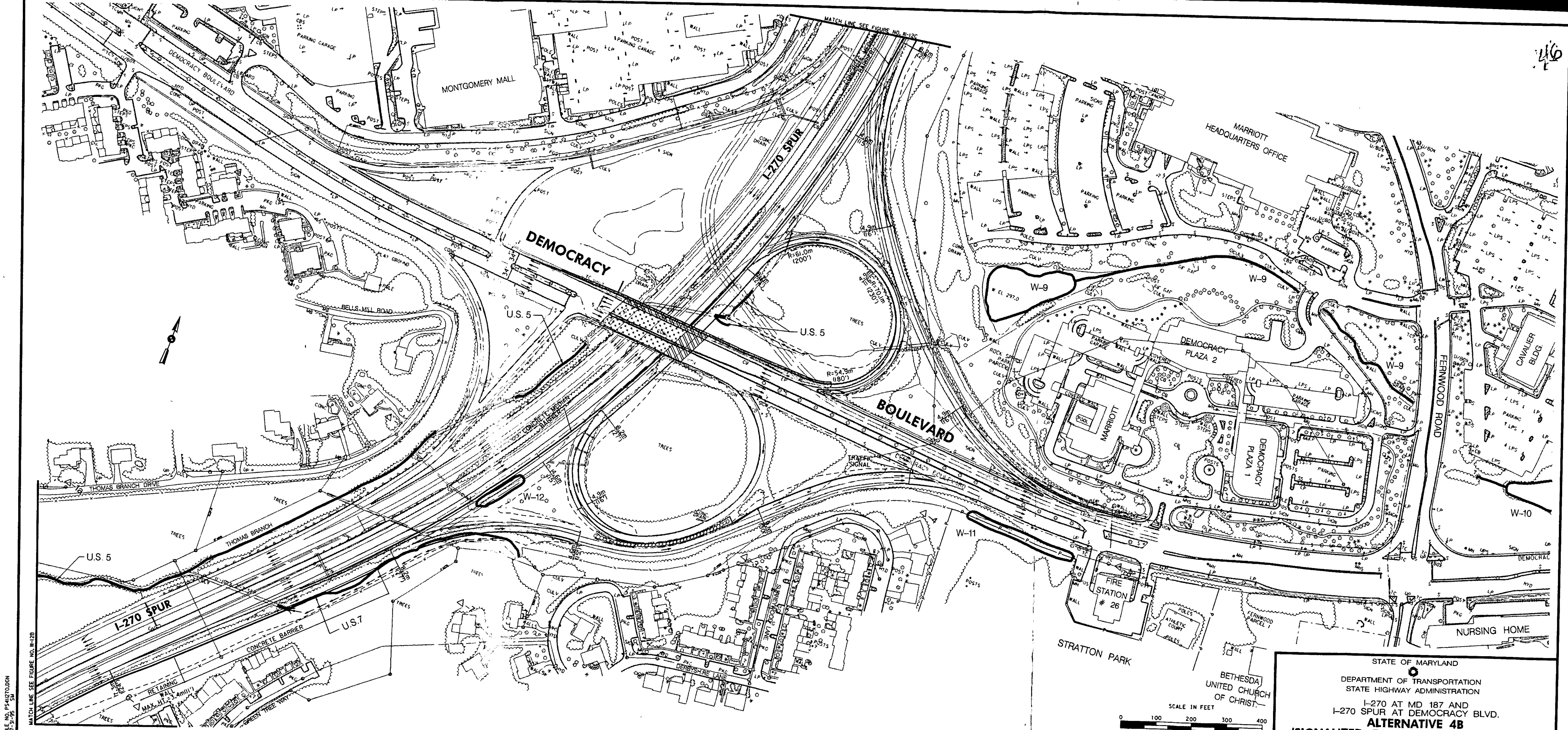
DATE: NOV., 1995
SCALE 1 : 2400 (1" = 200')
FIGURE III-12B



FILE NO. PSH270.DGN
08-07-95 SM



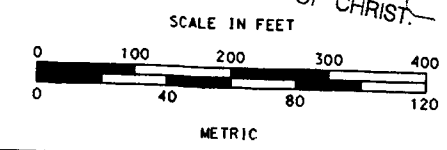
STATE OF MARYLAND		
DEPARTMENT OF TRANSPORTATION		
STATE HIGHWAY ADMINISTRATION		
I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD.		
ALTERNATIVE 4B		
DATE NOV., 1995	SCALE 1 : 2400 (1" = 200')	FIGURE III-12C



FILE NO. PS-41270.DGN
01-23-95 3M

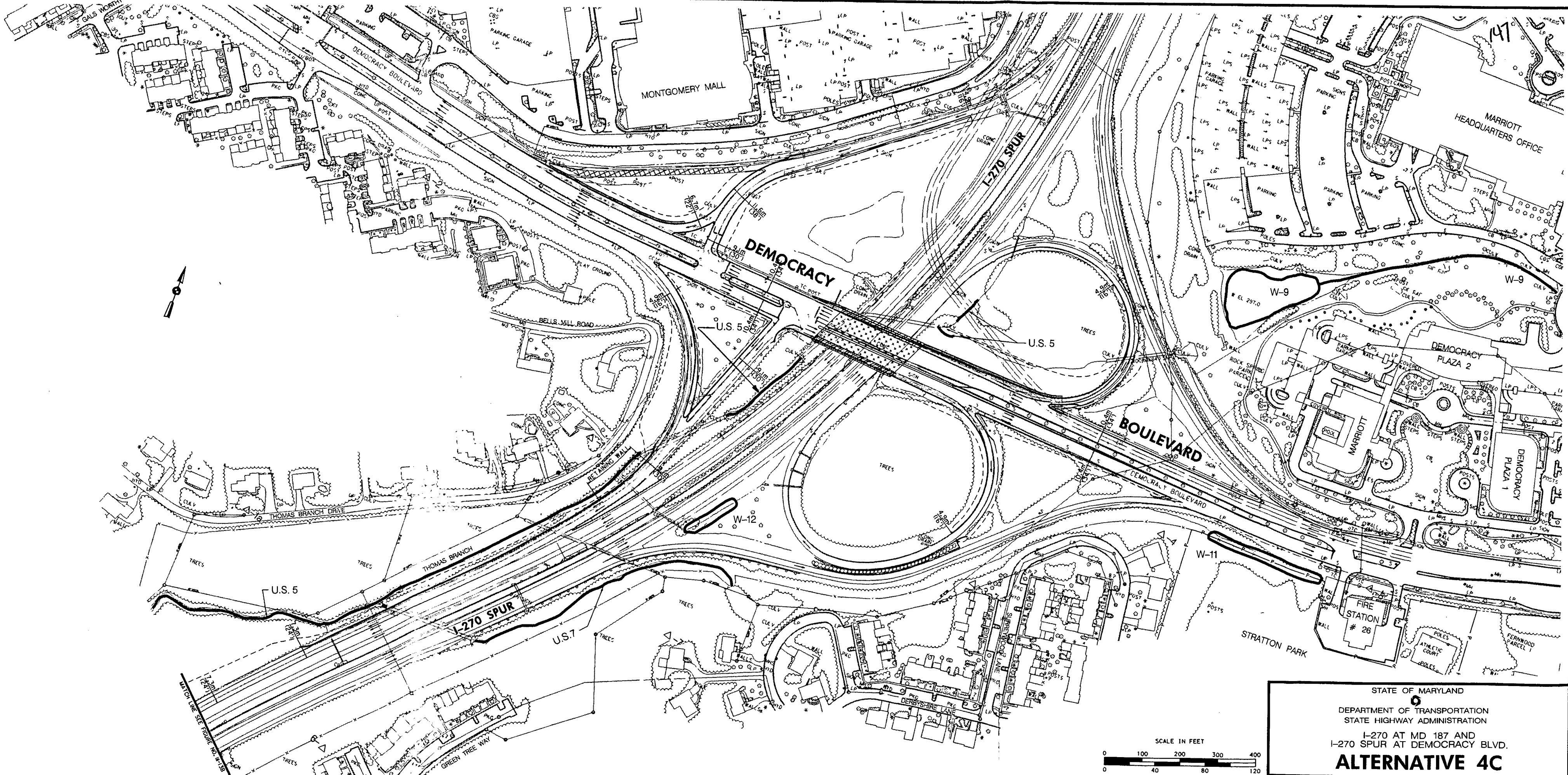
MATCH LINE SEE FIGURE NO. III-12B

MATCH LINE SEE FIGURE NO. III-12C

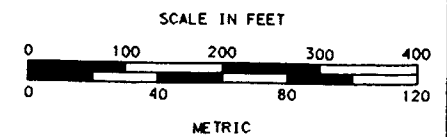


STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 4B
(SIGNALIZED EASTBOUND RAMP OPTION)

DATE NOV. 1995	SCALE 1:2400 (1" = 200')	FIGURE III-12D
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FILE NO. P53270.DGN
08-08-95 SM



STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.

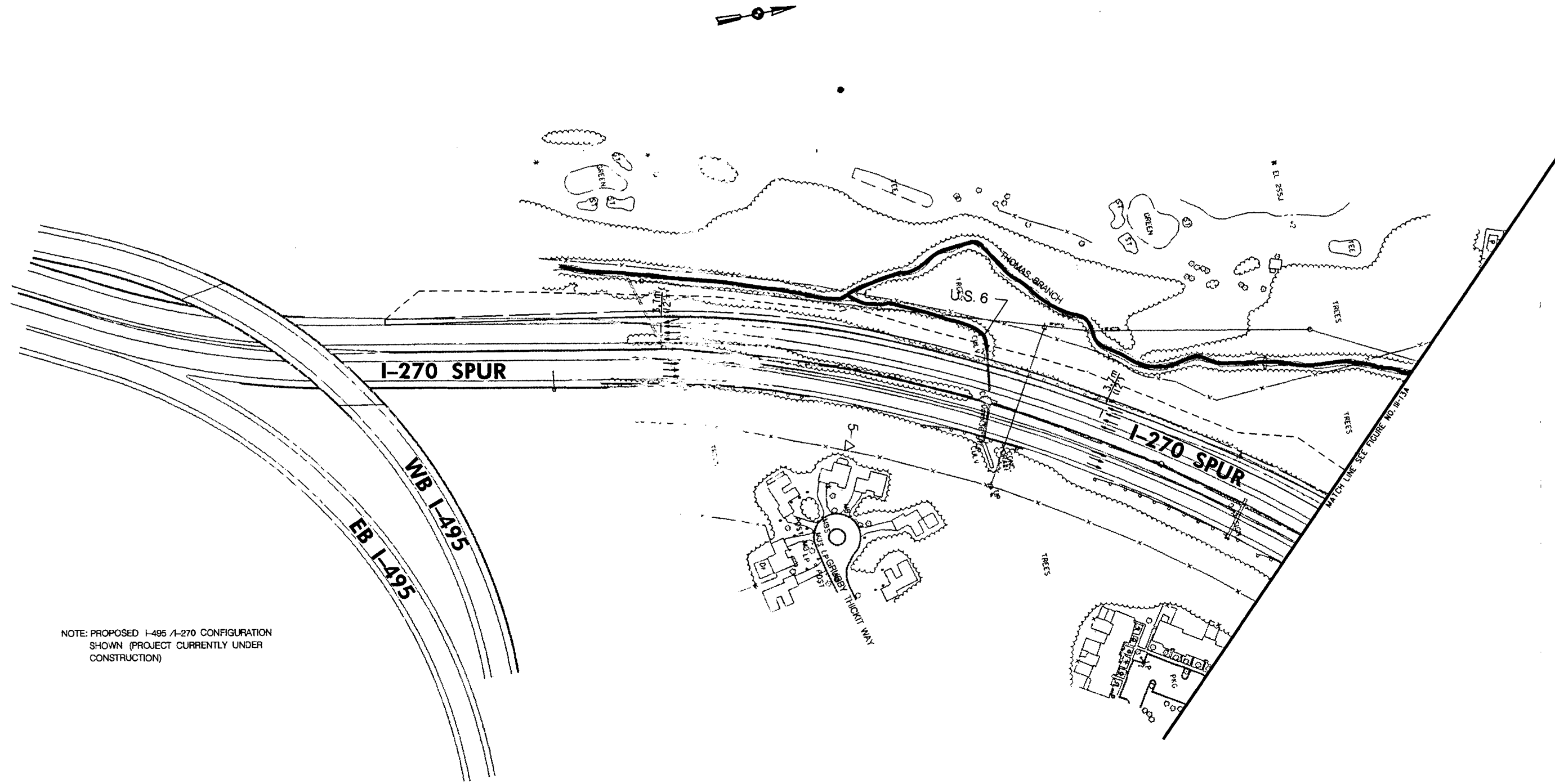
ALTERNATIVE 4C

DATE
NOV. 1995

SCALE 1 : 2400 (1" = 200')

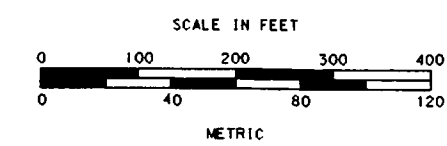
FIGURE
III-13A

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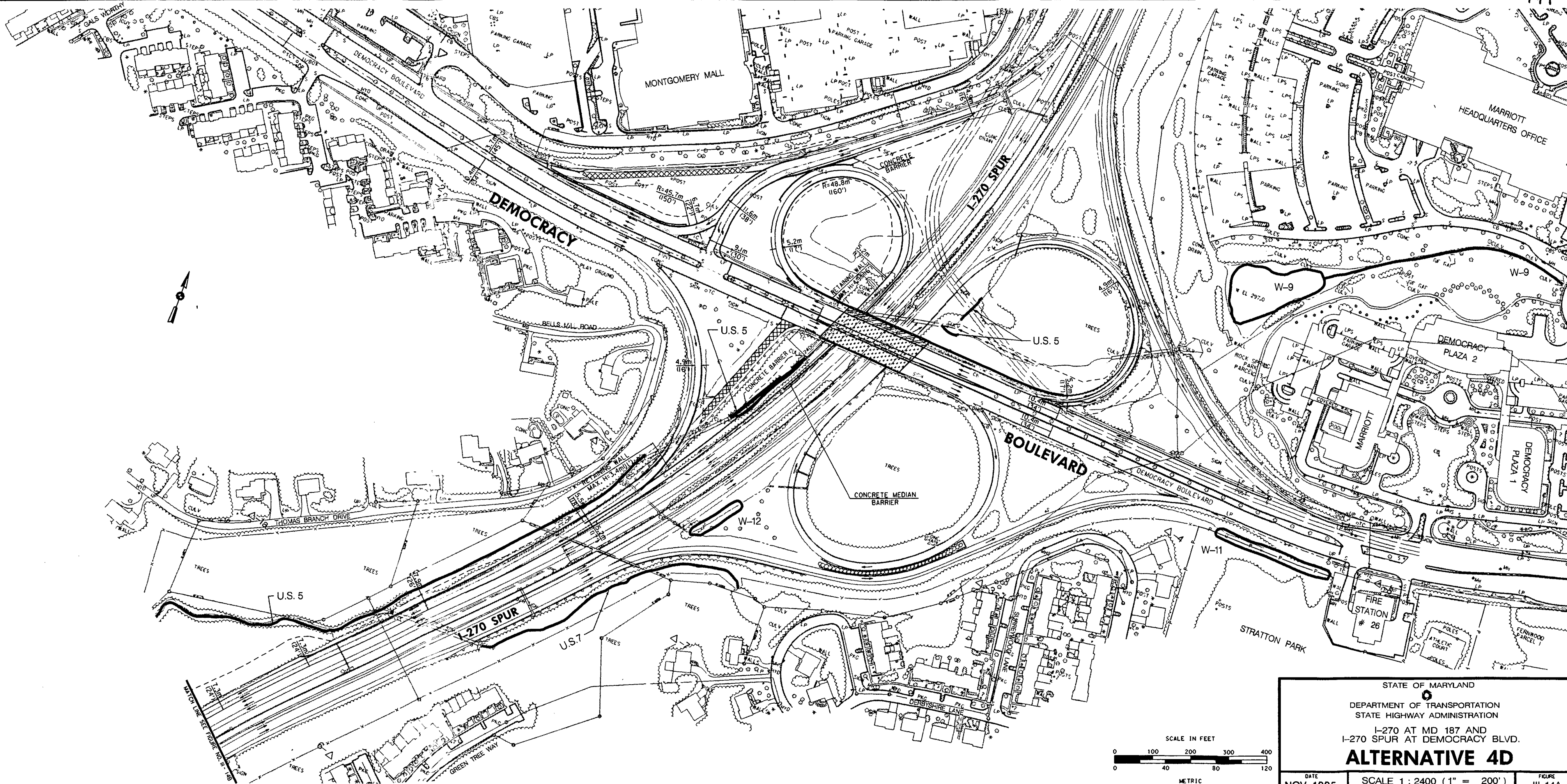


NOTE: PROPOSED I-495 / I-270 CONFIGURATION SHOWN (PROJECT CURRENTLY UNDER CONSTRUCTION)

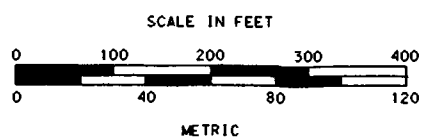
FILE NO. PS131270.DGN
08-01-95 SM



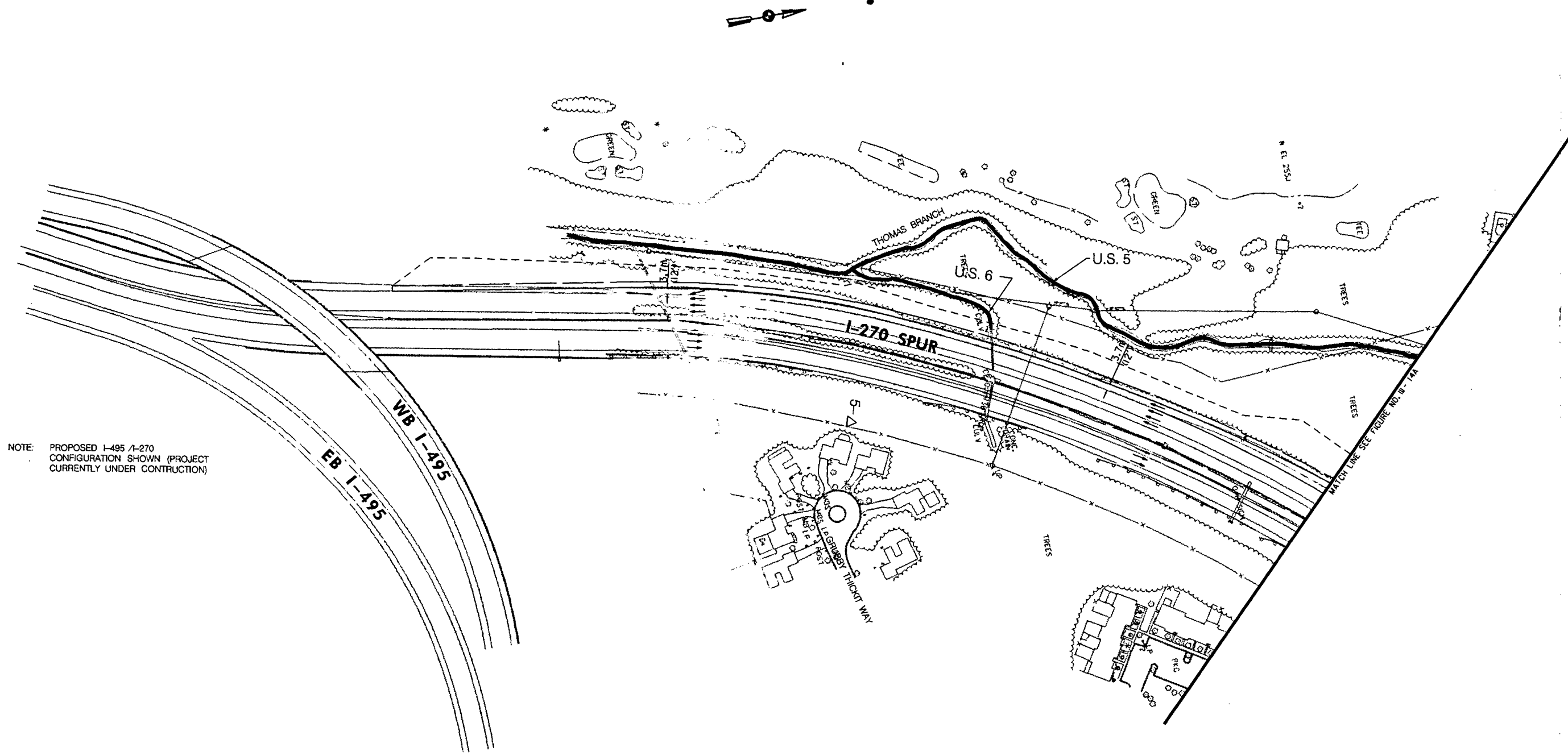
STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION		
I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD. ALTERNATIVE 4C		
DATE NOV. 1995	SCALE 1:2400 (1" = 200')	FIGURE III-13B



FILE NO. P535070.DGN
08-08-95 3M

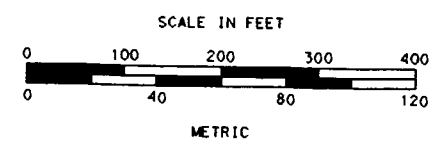


STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 4D
DATE NOV. 1995 SCALE 1:2400 (1" = 200') FIGURE III-14A

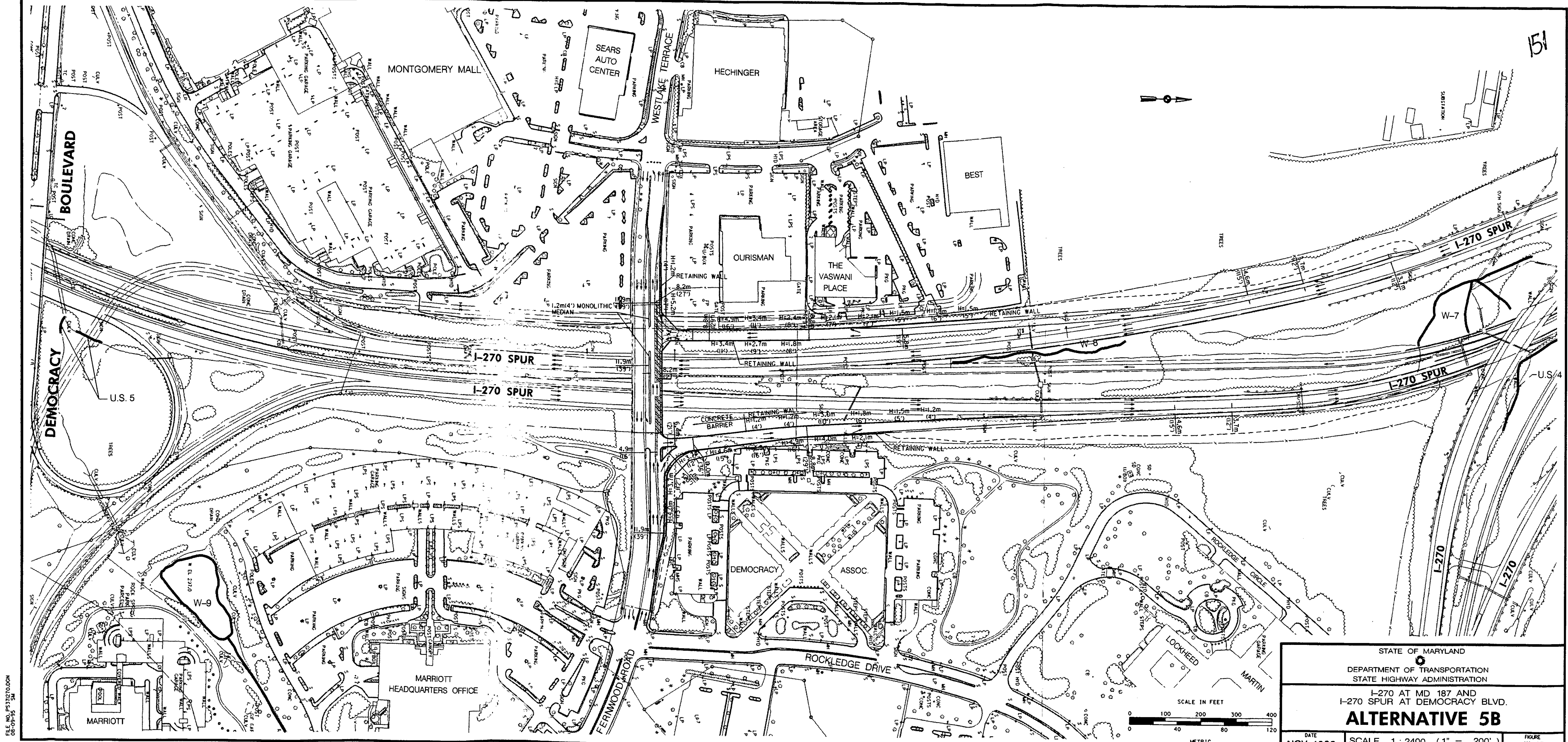
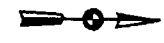


NOTE: PROPOSED I-495/I-270
CONFIGURATION SHOWN (PROJECT
CURRENTLY UNDER CONSTRUCTION)

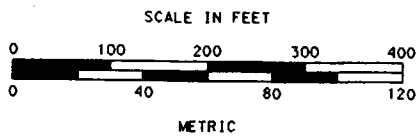
FILE NO. P536270.DGN
08-08-95 SM



STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION		
I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD. ALTERNATIVE 4D		
DATE NOV., 1995	SCALE 1 : 2400 (1" = 200')	FIGURE III-14B



FILE NO. P312170.DGN
08-09-95 3M

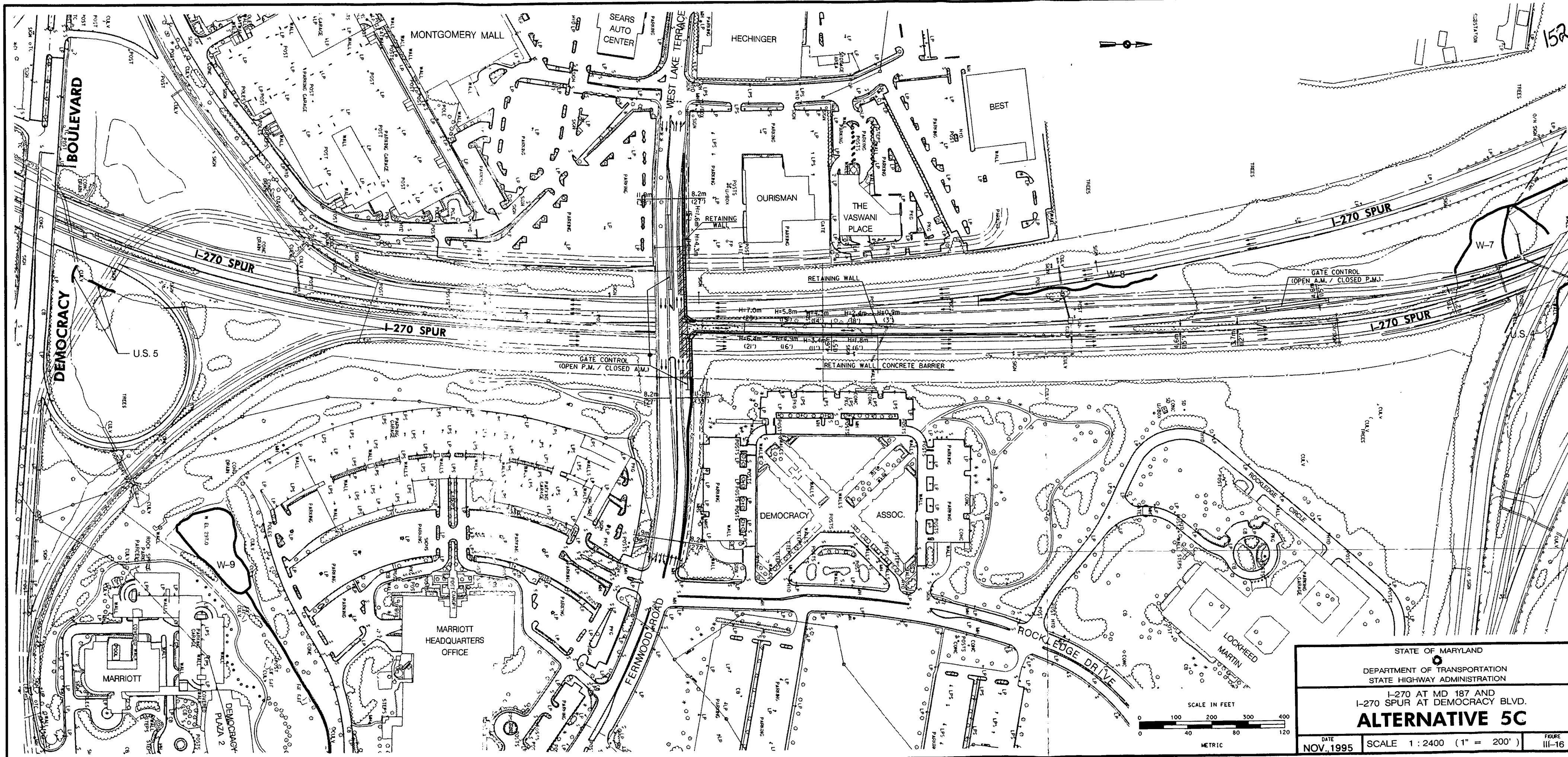


STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION

I-270 AT MD 187 AND
 I-270 SPUR AT DEMOCRACY BLVD.

ALTERNATIVE 5B

DATE NOV. 1995 SCALE 1:2400 (1" = 200') FIGURE III-15

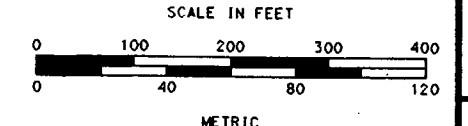
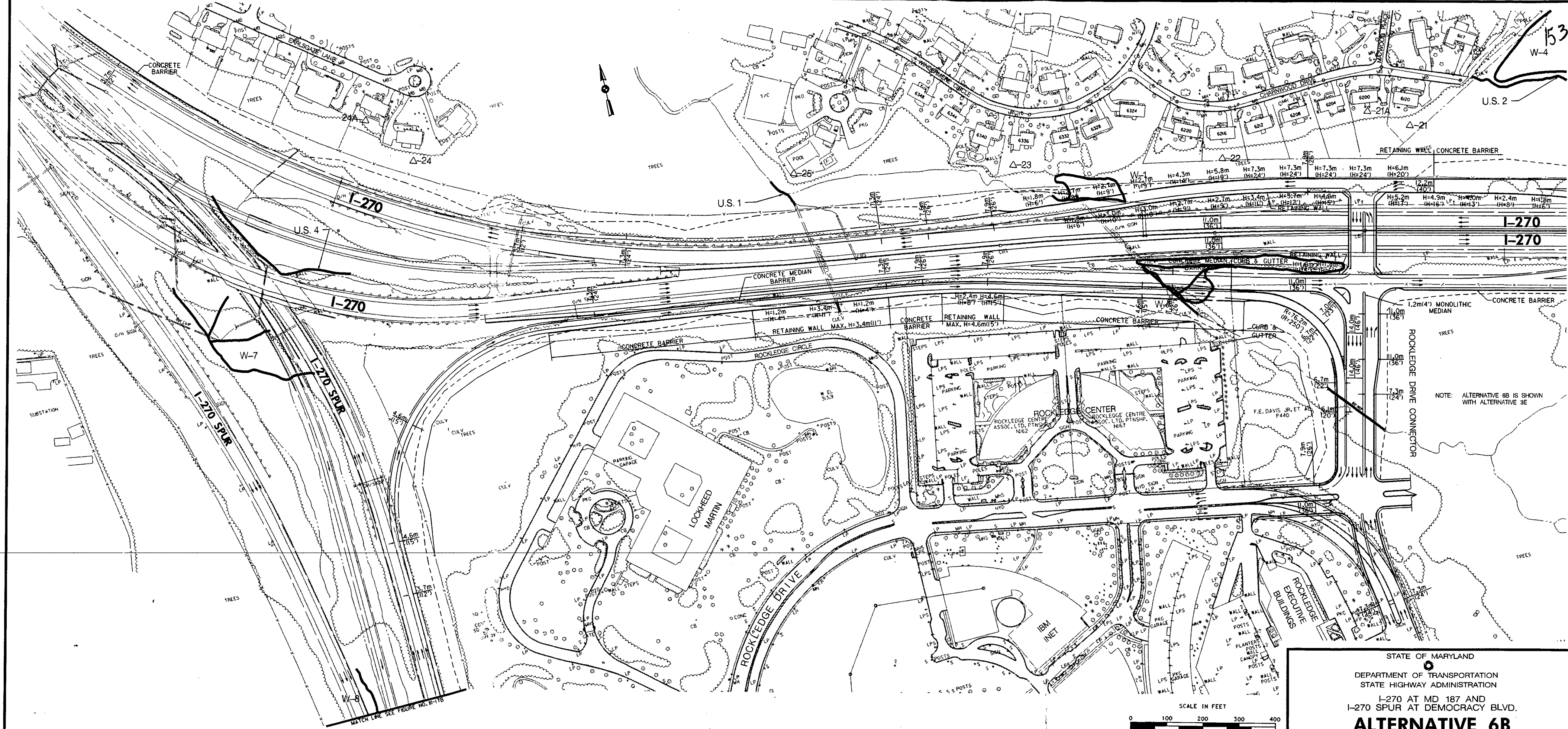


STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

I-270 AT MD 187 AND
I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 5C

DATE NOV. 1995	SCALE 1:2400 (1" = 200')	FIGURE III-16
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FILE NO. PS44270.DGN
08-09-95 34



STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 I-270 AT MD 187 AND
 I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 6B

DATE: NOV., 1995
 SCALE: 1" = 200'
 FIGURE: III-17A

NOTE: ALTERNATIVE 6B IS SHOWN WITH ALTERNATIVE 3E

MATCH LINE SEE FIGURE NO. III-17B



FILE NO. 549270.DGN
05/06/95

STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 I-270 AT MD 187 AND
 I-270 SPUR AT DEMOCRACY BLVD.
ALTERNATIVE 6B

DATE: NOV., 1995
 SCALE 1" = 200'
 FIGURE III-17B

SCALE IN FEET
 0 100 200 300 400
 METRIC
 0 40 80 120

IV. ENVIRONMENTAL CONSEQUENCES

IV. ENVIRONMENTAL CONSEQUENCES

A. Social

1. Disruption of Neighborhoods and Communities

This project would not result in any residential or business displacements with any of the alternatives currently considered.

There is no evidence that minority, elderly, or handicapped populations will be adversely affected by any of the build alternatives proposed.

Since I-270, I-270 Spur, MD 187 and Democracy Boulevard and the associated interchanges are existing facilities, the selection of any build alternative, which are basically modifications of these facilities, would not cause the separation of residents from other residents or community facilities, nor produce any adverse changes in social interaction, or disrupt community cohesion.

Construction of any of the build alternatives would have effects on adjacent communities in the following ways. During construction, there would be a temporary increase in noise from heavy equipment and fugitive dust. Alternative 2E proposes a cul-de-sac on Lux Lane, eliminating its intersection with MD 187 (full access would remain off of Tuckerman Lane). The Alternative 3's would require 6.1 meters (20 feet) - 7.6 meters (25 feet) high retaining walls along the existing right-of-way line behind some of the homes in the Windermere community, thereby affecting visibility to the southwest from these properties.

Traffic patterns for the area residents would not be significantly changed by any of the build alternatives. Depending on the build alternative, there could actually be less traffic on study area arterials such as MD 187 and Democracy Boulevard, as compared to the no-build alternative, as a result of more direct access to and from the interstate system. For example, Alternatives 5B and 5C provide more direct access to and from Montgomery Mall and Rock Spring Office Park, and the Alternative 3's provide more direct access to and from Rock Spring Office Park. Other alternatives simply modify the location, configuration or number of lanes associated with some of the ramp movements.

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None of the build alternatives would require the acquisition of any land from a residential property. (Note: Zoned residential, but not occupied.)

Alternative 1 (no-build) would not address the need for additional capacity which would result in additional traffic congestion on both the interstate and the arterials, lengthen the peak hours, and worsen travel time and safety for local and through traffic. Additionally, commuters may seek alternative routes through residential neighborhoods in an effort to avoid delays.

2. Title VI Statement

TITLE VI STATEMENT

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, sex, national origin, age, religion, physical or mental handicap in all State Highway Administration 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 Office of Equal Opportunity of the Maryland State Highway Administration for investigation.

3. Effects on Parks and Recreation Facilities

None of the build alternatives would require the acquisition of land from any park or recreation area, nor affect the use of any park forest, wildlife management area, scenic river or wildland. Stratton Park is the only such area in close proximity to any proposed improvements. Alternative 4A or 4B would require the widening of Democracy Boulevard as much as 3.7 meters (12 feet) - 4.6 meters (15 feet) towards Stratton Park. However, all grading associated with this widening would remain within existing right-of-way. Access to Stratton Park would not be affected.

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4. **Effects on Access to Community Services**

The impacts on the means of access to existing services and facilities resulting from any of the build alternatives would be minor. Each build alternative would, to varying degrees, improve the capacity of connections between the various communities and I-270. Alternatives 2D and 2E propose the extension of the acceleration lane on northbound MD 187, north of I-270, to connect with the auxiliary right-turn lane for the entrance to St. Mark Church and Tuckerman Lane. The extension of this acceleration lane would improve the merge on northbound MD 187 and allow better visibility of the St. Mark Church entrance. Alternative 2E would require a cul-de-sac on Lux Lane, eliminating its intersection with MD 187.

Alternatives 4A and 4B propose improvements to Democracy Boulevard, east of the I-270 Spur, in the area in front of the Bethesda Fire Department Station No. 26. Widening, median modifications and possibly a narrow raised concrete island to channelize traffic off the I-270 ramp would be constructed with these alternatives. However, access into and out of the Fire Station would remain as it is currently.

The selection of any build alternative, with associated retaining walls, would not impede pedestrian mobility. All build alternatives, including the new bridges and bridge widenings associated with the build alternatives, propose new sidewalks to maintain continuity with the existing sidewalk system through the project area.

The no-build alternative does not address the existing or projected traffic congestion, safety problems or existing access in the project area. As a result, peak congestion periods would lengthen and access to community services would worsen over time. The selection of this alternative is anticipated to worsen emergency response time as capacity at the interchanges is exceeded on a more frequent basis.

The build alternatives will, to varying degrees, improve emergency vehicle response times through the interchange areas, both on the interstate and the secondary roads. The traffic flow patterns associated with Bethesda Fire Station No. 26 on Democracy Boulevard would remain unchanged.

B. Economic Impacts

1. Effects on Local Business

Alternative 1 (no-build) would not require the relocation or displacement of any business in the study area. This alternative would result in increased congestion, traffic conflicts, and increased travel time for commuter access to and from local businesses. This may create a shift in travel demand to other roadways that could lure customers and tenants away from area facilities.

None of the build alternatives currently proposed would require the displacement of any business in the study area. Other benefits associated with the build alternatives would be the improved levels of service for the individual interchange movements and corresponding decreases in delays. More direct access to and from I-270 to Rock Spring Office Park, as proposed with the Alternative 3's and 5's, would make this strategic location even more attractive as a corporate headquarters location.

Retaining walls would be included with many of the build alternatives to minimize the amount of right-of-way required from any parcel. Any right-of-way required would be in vacant areas and would not impact any buildings, parking areas or access roadways.

Any improvements in capacity and levels of service at the I-270 Spur/Democracy Boulevard Interchange would be beneficial to Montgomery Mall, as many of its patrons are likely to use this interchange.

2. Effects on Regional Business

The I-270 corridor is a vital, growing extension of the Washington Metropolitan regional economy. Named the I-270 Technology Corridor, this interstate continues to be a focal point of major commercial development.

Alternative 1 (no-build) would not help address the growing needs of the County, and, in particular, the study area. This alternative is anticipated to have a negative impact on the County's business, as additional traffic congestion and reduced safety will deter additional residential and business development in the study area, and/or may encourage additional suburban sprawl. The no-build alternative would have only a minor impact on overall regional business activity, for businesses attracted to the region will select a location where access is or will be available.

1.60

The build alternatives, and in particular, the Alternative 3's, would provide the greatest increase in traffic capacity, provide the most relief to traffic congestion and the most improvement to mainline levels of service. The Build Alternatives would also address the growth needs of the County and have a positive effect on regional business activities. These alternatives would alleviate congestion at the existing interchanges, thereby reducing travel time to and from the study area employment centers, and provide increased traffic capacity to accommodate planned commercial growth, and the attraction of that planned growth which would translate to increased employment opportunities in the area.

3. Effects on The Tax Base

The selection of the no-build alternative (Alternative 1) will only worsen existing traffic conditions and may have a detrimental effect on continued development in the study area and its vicinity.

Improvements to the I-270/MD 187 and I-270 Spur/Democracy Boulevard interchanges, as presented under the build alternates, will support continued, planned development in the study area. Increased traffic capacity and safety will accommodate growth and relieve congestion problems. The expansion of residential and commercial areas will have a positive effect on the County's tax base and revenues since, typically, developed land is more valuable than vacant land, and developable parcels in an area served by adequate transportation facilities are more highly valued and tend to attract potential developers, which would lead to new sources of tax revenues.

Since there are no residential or business displacements associated with any of the build alternatives, any reduction in the County's tax base or revenues would only be in the form of vacant land acquisition.

C. Land Use Impacts

The 1992 North Bethesda-Garrett Park Master Plan, which covers most of the study area, has recognized the need to increase the capacity of the I-270/MD 187 and I-270 Spur/Democracy Boulevard interchanges to accommodate the planned future growth and to relieve existing traffic. Future land use and development densities planned in the County and study area are based on increased traffic capacity. The build alternatives, therefore, would not alter the ultimate intensity pattern of land use development and redevelopment. The long-term secondary impacts of the

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build alternatives, which would provide increased traffic capacity and safety, will play a vital role in the future development plans for the study area.

The Build Alternatives, therefore, are consistent with the County's Master Plan for the area which, as stated in Section I.C.9, recommends one or more direct access ramps from I-270 and/or I-270 Spur to Rock Spring Office Park and a direct access HOV ramp from I-270 Spur to Rock Spring Office Park. The Master Plan includes sketches of a future I-270/Rockledge Drive interchange near MD 187 that closely resemble Alternatives 3E, 3F and 3G.

Although the build alternatives would enhance operational characteristics of the interchanges, it is not expected that they would place additional development pressure on low growth areas in the general vicinity, nor cause or encourage land uses that are not compatible with area Master Plans.

Alternative 1 (no-build) ultimately, is not consistent with the County's Master Plans, for it will not serve the planned residential and commercial land uses, and may serve to inhibit the implementation of the approved Master Plan and associated Staging Amendments. The increasing traffic congestion and service problems would contribute to restricting additional development and add delays to commuter and resident mobility.

D. Effects on Historic and Archeological Resources

No sites on or eligible for listing on the National Register of Historic Places were identified within the study area. Therefore, this project would not have any impact on any historic resources.

A Phase I archeological survey was performed by the State Highway Administration for the anticipated right-of-way associated with each of the build alternatives. One prehistoric site (18MO63) is in the project vicinity. However, the survey indicates that the site was disturbed by construction of the Rockledge Center. A no effect determination has been received from the State Historic Preservation Officer concerning archeological resources in the project area.

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E. Natural Environment

1. Effects on Geology, Topography, Soils

a. Geology and Topography

The Build Alternatives would not substantially change the existing topographic conditions along I-270, I-270 Spur, MD 187 or Democracy Boulevard. The grades of the build alternatives closely follow the existing grades in all cases except Alternatives 3E, 3F, 3G, and 3H, at the Rockledge Connector Bridge and Alternatives 5B and 5C at the Fernwood Road Bridge where new ramps, supported by retaining walls, would intersect an elevated bridge. This would create a new physical and visual overview of the existing landscape. However, the new landscape would not block the view of any scenic or important physical features, or create undesirable drainage patterns. No impacts to the underlying geological structures will occur as a result of the build alternates. Some cut and fill would be required to adjust for the auxiliary lane and ramp widenings for all build alternatives, but will not cut below the "B" soil horizon.

The no-build alternate (Alternative 1) would have no effect on the geology, topography or soils in the study corridor.

b. Soils

Implementation of any build alternative would result in some disturbance of soils, notably erosion and sedimentation during construction. Many of the soil series found in the project area are listed as susceptible to erosion. The removal of vegetation from the construction area would expose soils and increase the probability of runoff. Removal of vegetation also would reduce the beneficial effects of the vegetation's ability to intercept sediment loaded runoff.

The potential for soil erosion and sedimentation would become greater as soils are disturbed. The highest potential for sedimentation to receiving waters would occur where these soils are in close proximity to surface waters. Therefore, it is important that soil erosion and sedimentation be minimized as much as possible. Measures to mitigate these effects include structural, vegetative and operational methods. These methods will be developed as part of a Soil Erosion and Sediment Control Plan for the project, which will be prepared in accordance with the Maryland Standards and Specifications for Soil Erosion and Sediment Control. Long-term impacts to the soils in the project area would be negligible. Introduction and establishment of

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grasses and herbaceous vegetation would stabilize the soils as soon as possible after construction is completed. None of the build alternatives would have an effect on Prime Farmland Soils or Soils of Statewide Importance as the study area does not contain any such soils.

2. Water Resources

Impacts to water resources under the build alternatives are not significant and can be minimized using standard mitigation measures during construction and operation:

- Watershed effects would be minimized through a limited construction schedule and adherence to storm management and sediment and erosion control measures.
- Effects to the water quality in the study area would be minimized by the use of Best Management Practices (BMP's).
- Alternatives 3E, 3F, 3G, 4A, 4B, 4C, and 4D would require filling of and/or retaining wall construction within some of the floodplain associated with Old Farm Creek, Thomas Branch and their tributaries.

Water resources in the project area are limited to Old Farm Creek, Thomas Branch and their tributaries, which are the only streams being crossed. Culverts and/or pipes within the project would be extended no farther than the limits of the proposed slopes.

Alternatives 2E, 3E, 3F, 3G, 3H and 6B cross Old Farm Creek on the I-270 East Segment at two existing locations.

The existing 1,524 millimeter (60-inch) diameter culvert (670.6 meters [2,200 feet] north of MD 187) would require the following extensions:

- | | |
|---|-------------------------------------|
| 1) Alt. 2E - 7.6 meters (25 Linear Feet (LF)) ± | 4) Alt. 3G - 83.8 meters (275 LF) ± |
| 2) Alt. 3E - 36.6 meters (120 LF) ± | 5) Alt. 3H - 19.8 meters (65 LF) ± |
| 3) Alt. 3F - 41.1 meters (135 LF) ± | 6) Alt. 6B - 29.0 meters (95 LF) ± |

The existing 1,524 millimeter (60-inch) diameter culvert (914.4 meters [3,000 feet] north of MD 187) would require the following extensions:

- | | |
|------------------------------------|------------------------------------|
| 1) Alt. 3E - 10.7 meters (35 LF) ± | 3) Alt. 3G - 9.1 meters (30 LF) ± |
| 2) Alt. 3F - 7.6 meters (25 LF) ± | 4) Alt. 3H - 10.7 meters (35 LF) ± |

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Alternatives 3E, 3F, 3G, 3H and 6B would require a new crossing on the proposed Rockledge Connector. The proposed culvert lengths which would be required are as follows:

- 1) Alt. 3E - 61.0 meters (200 LF) ±
- 2) Alt. 3F - 48.8 meters (160 LF) ±
- 3) Alt. 3G - 57.9 meters (190 LF) ±
- 4) Alt. 3H - 24.4 meters (80 LF) ±
- 5) Alt. 6B - 18.3 meters (60 LF) ±

Alternatives 4A, 4B, 4C and 4D cross Thomas Branch on I-270 Spur at two locations. There would be no new stream crossings on the I-270 Spur.

The existing 2,438.4 millimeter (96-inch) diameter culvert would require the following extensions:

- 1) Alt. 4B - 12.2 meters (40 LF) ±
- 2) Alt. 4D - 76.2 meters (250 LF) ±

The existing 3.6 meters (11 feet - 10 inches) x 2.3 meters (7 feet - 7 inches) arch culvert would require the following extensions:

- 1) Alt. 4A - 6.1 meters (20 LF) ±
- 2) Alt. 4B - 10.7 meters (35 LF) ±
- 3) Alt. 4C - 3.0 meters (10 LF) ±
- 4) Alt. 4D - 3.0 meters (10 LF) ±

Culvert modifications would be in accordance with practices (e.g., check dams, culvert invert depression) that would maintain the aquatic habitat.

a. Surface Water

For all alternatives under study, highway runoff is a potential source of pollutants to surface water resources. The No-Build Alternative would not degrade water quality in the surface waters in the study area over and above existing conditions.

The long-term effects on the water quality from the proposed build alternatives would be minimal. Generally, the build alternatives would require the extension of existing drainage culverts under I-270 or I-270 Spur. Several build alternatives would also include retaining walls on stream banks to limit stream impacts as much as possible. Several of the alternatives would require minor stream relocations, as indicated in Table S-1 and the following discussion.

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Old Farm Creek, on the I-270 East Segment, would be impacted by alternatives 2E, 3E, 3F, 3G and 6B and would require the following stream relocations:

- 1) Alt. 2E - 106.7 meters (350 LF) ±
- 2) Alt. 3E - 88.4 meters (290 LF) ±
- 3) Alt. 3F - 243.8 meters (800 LF) ±
- 4) Alt. 3G - 121.9 meters (400 LF) ±
- 5) Alt. 6B - 22.9 meters (75 LF) ±

Thomas Branch, on the I-270 Spur, would be impacted by alternatives 4A, 4B, 4C and 4D and would require the following stream relocations:

- 1) Alt. 4A - 182.9 meters (600 LF) ±
- 2) Alt. 4B - 289.6 meters (950 LF) ±
- 3) Alt. 4C - 83.8 meters (275 LF) ±
- 4) Alt. 4D - 83.8 meters (275 LF) ±

All stream waters in the study area are designated Use 1 by the Department of the Environment. Therefore, in-stream construction will be prohibited from March 1st to June 15th. A Waterway Construction Permit will be required from the Maryland Department of the Environment, Water Management Administration.

Best Management Practices (BMP's), to control stormwater runoff, and sediment and erosion control measures would be applied to protect stream quality. BMP's which would be considered for use include extended detention, infiltration, ponds and grassed swales. If necessary, any increased runoff to the streams caused by the increase in impervious area due to additional pavement would be addressed with quantity control stormwater management.

The increase in runoff of pollutants such as soils, nutrients, organics, heavy metals, lead, petroleum, and other highway salts resulting from the increase in traffic would be addressed with quality control stormwater management. The increase in impervious surface area resulting from the proposed improvements will produce a proportionate increase in the amount of roadway runoff carrying vehicle generated pollutants (i.e., oil, coolants, brake lining, rubber, etc.). Infiltration of stormwater runoff would be investigated as a means to provide quality control by filtering the runoff through the soil.

Water quality indices (e.g., parameters that quantify sediment, nutrients, bacteria, oxygen demand, etc.) for all streams affected should remain in the permissible range. The use of Best Management Practices (BMP's) to provide sound stormwater management would be implemented where any disturbance could affect water quality in the corridor.

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Stormwater runoff for the project will be managed in accordance with the State of Maryland Department of the Environment's "Stormwater Management Guidelines for State and Federal Projects". These regulations will require stormwater management practices in the following order of preference:

- On-site infiltration;
- Flow attenuation by open vegetated swales and natural depressions;
- Stormwater retention structures; and
- Stormwater detention structures.

It has been demonstrated that these measures can substantially reduce pollutant loads and control runoff. Stormwater management areas will be identified during the final design phase.

To minimize water quality impacts, final design for the proposed improvements will include plans for grading, sediment and erosion control, and stormwater management, in accordance with State and Federal laws and regulations. Final plans require review and approval by the Maryland Department of the Environment, Water Management Administration. Sediment and erosion control measures will be designed and implemented in accordance with the "1991 Maryland Standards and Specifications for Soil Erosion and Sediment Control". Typical temporary sediment control measures which are installed in a project of this type include straw bale structures, slope silt fence, sediment traps, rip-rap linings, fiberglass erosion stops, dikes and swales, soil stabilization matting and stabilized construction entrances. The area disturbed by the construction will be held to a minimum and revegetated promptly after grading to minimize the potential for erosion and sedimentation.

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b. Groundwater Effects

The no-build alternative would not affect groundwater in the study area.

It is not anticipated that the proposed interchange improvements associated with the build alternatives would have any adverse affect on groundwater in the study area. Efforts to provide protection for groundwater in the vicinity of proposed highway improvements would include the following:

- Stormwater Best Management Practices
- Final design and construction effects would comply with DNR's WRA standards and specifications

3. Floodplains

The no-build alternative would not adversely affect floodplains in the study corridor.

Effects to floodplains in the study area under the build alternates, as indicated on Table IV-1, would occur at Old Farm Creek and Thomas Branch. Pursuant to the Flood Hazard Management Act of 1976 and in accordance with Executive Order 11988, the State Highway Administration has determined that all highway projects should not restrict the flow of the 100-year storm event.

It is intended that the project would not cause an increase in the 100-year floodplain. The State Highway Administration will prepare a detailed hydrologic and hydraulic study for the selected alternative during final design to identify the existing 100-year storm discharge and floodplain. Stormwater management will be provided and all hydraulic structures will be designed to accommodate the 100-year flood without causing substantial impact.

The use of standard hydraulic design techniques for all waterway openings which limit upstream flood level increases and approximate existing downstream flow rates will be utilized where feasible.

Use of state-of-the-art sediment and erosion control techniques and stormwater management controls will ensure that none of the encroachments would result in risks or impacts

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TABLE IV-1

EFFECTS ON 100-YEAR FLOODPLAINS

ALTERNATIVE	ACREAGE AND DESCRIPTION OF FLOODPLAIN IMPACT
Alternative 3E	<p>FLOODPLAIN IMPACT: 0.04 hectares (0.1 Ac.) LOCATION: 609.6 meters (2000 feet) ± north of MD 187; on the east side of I-270 DESCRIPTION: 6.1 meters (20 linear feet) ± 1,524 millimeter (60-inch) diameter culvert extension and 45.7 meters (150 linear feet) ± channel relocation on Old Farm Creek</p>
Alternative 3F	<p>FLOODPLAIN IMPACT: 0.04 hectares (0.1 Ac.) LOCATION: 609.6 meters (2000 feet) ± north of MD 187; on the east side of I-270 DESCRIPTION: 6.1 meters (20 linear feet) ± 1,524 millimeter (60-inch) diameter culvert extension and 45.7 meters (150 linear feet) ± channel relocation on Old Farm Creek</p>
Alternative 3G	<p>FLOODPLAIN IMPACT: 0.04 hectares (0.1 Ac.) LOCATION: 609.6 meters (2000 feet) ± north of MD 187; on the east side of I-270 DESCRIPTION: 9.1 meters (30 linear feet) ± 1,524 millimeter (60-inch) diameter culvert extension and 45.7 meters (150 linear feet) ± channel relocation on Old Farm Creek</p>
Alternative 4B	<p>FLOODPLAIN IMPACT: 0.08 hectares (0.2 Ac.) LOCATION: Inside the loop ramp in the northeast I-270 Spur/Democracy Blvd. interchange quadrant DESCRIPTION: 10.7 meters (35 linear feet) ± 2,438.4 millimeters (96-inch) diameter culvert extension and 76.2 meters (250 linear feet) ± channel relocation on Thomas Branch</p>
Alternative 4C	<p>FLOODPLAIN IMPACT: 0.16 hectares (0.4 Ac.) LOCATION: Inside the northeast quadrant and along southbound I-270 Spur, south of Democracy Boulevard DESCRIPTION: 91.4 meters (300 linear feet) ± channel relocation at interchange; 3.0 meters (10 linear feet) ± 3.6 meters (11 feet - 10 inches) x 2.3 meters (7 feet - 7 inches) arch culvert extension and retaining wall along southbound I-270 Spur on Thomas Branch</p>
Alternative 4D	<p>FLOODPLAIN IMPACT: 0.20 hectares (0.5 Ac.) LOCATION: Inside the northeast quadrant and along southbound I-270 Spur, south of Democracy Boulevard DESCRIPTION: 91.4 meters (300 linear feet) ± channel relocation and 76.2 meters (250 linear feet) ± 2,438.4 millimeters (96-inch) diameter culvert extension at interchange; 3.0 meters (10 linear feet) ± (11 feet - 10 inches) x 2.3 meters (7 feet - 7 inches) arch culvert extension along southbound I-270 Spur on Thomas Branch</p>

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to the beneficial floodplain values or provide direct or indirect support to further development within the floodplain.

In accordance with the requirements of FHPM 6-7-3-2, which is a FHWA guideline for ensuring compliance with Executive Order No. 11988, the impacts of each encroachment have been evaluated to determine if it is a significant encroachment. A significant encroachment would involve one of the following:

- a significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route,
- a significant risk, or
- a significant adverse impact on natural and beneficial floodplain values.

Preliminary analyses indicate that no significant floodplain impacts are expected to occur as a result of any proposed build alternates. A floodplain finding, if required, will be presented in the final environmental document.

4. Effects on Hazardous Materials/Waste Sites

A field survey and land use examination of the project area did not identify any land use likely to have potential for hazardous waste contamination. In addition, the U.S. Environmental Protection Agency (EPA) listing of Superfund sites (CERCLIS) did not identify any sites within the project area.

5. Ecological Conditions

a. Wetlands

In accordance with Executive Order 11990, efforts were made to avoid or minimize harm to wetlands in the project corridor. Following is a discussion of each wetland and the impacts resulting from the alternatives. Only the no-build alternative would completely avoid the wetlands. However, the no-build is not a practical alternative because it is inconsistent with local

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master plans; does not support the planned development, does not improve existing levels-of-service, and does not address the existing traffic safety problems.

Federal, state and local regulations require the mitigation and/or compensation for unavoidable loss of wetland habitats. The affected wetland areas for each alternative are compared in Tables IV-2 through IV-4. A joint federal and state Section 404 Corps of Engineers permit would be required for any disturbance to wetlands associated with the alternatives. Replacement wetlands will be created as close to the disturbed wetland as possible at the specified replacement ratio.

As indicated on Tables IV-2 through IV-4, wetlands labelled W-1, W-2, W-3, W-4, W-11 and W-12 would be impacted by the build alternatives for this project. As such, these are the areas addressed in the following discussion.

WETLAND W-1

Wetland 1 (W-1) is located on the north and south sides of I-270, approximately 670.6 meters (2,200 feet) west of MD 187. It consists of a stream channel (Old Farm Creek) and associated forested floodplain and is classified as palustrine forested broadleafed deciduous (PF01A), and is of medium value. The soil is saturated and has low chroma.

ALTERNATIVE 2E

Alternative 2E would impact W-1 as a result of grading associated with the proposed ramp acceleration lanes connecting MD 187 with northbound I-270 and the proposed ramp deceleration lane connecting southbound I-270 and MD 187. Alternative 2E would impact 0.06 hectares (0.15 Ac.) of W-1 on the north side of I-270 and 0.02 hectares (0.05 Ac.) on the south side of I-270. Lengthening the existing 1,524 millimeter (60-inch) diameter culvert under I-270 and rechannelization would also be required into the wetland area.

Avoidance (Wetland W-1/Alt. 2E)

Avoidance of the northern segment could take place with one of the following two modifications:

- 1) Reduction of the width of the ramp carrying traffic from MD 187 onto northbound I-270 from 2-lanes to 1-lane and reducing the acceleration lane length from 1,097.3 meters (3,600 feet) \pm to 182.9 meters (600 feet) \pm . Because this

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modification would result in failing ramp and merge levels of service and substandard acceleration lane lengths, it is not considered feasible.

- 2) Construction of a 91.4 meters (300 feet) \pm long by 4.3 meters (14 feet) (average height) retaining wall at a cost of \$500,000 adjacent to the MD 187 ramp onto northbound I-270. This option is not considered feasible due to excessive cost.

Avoidance of the southern segment would be possible with one of the following two modifications:

- 1) Reduction of the width of the exit ramp from southbound I-270 to MD 187 from 2-lanes to 1-lane and maintaining the existing retaining wall along southbound I-270. Because this modification would result in failing levels of service at the ramp diverge, it is not considered feasible.
- 2) Construction of a 91.4 meters (300 feet) \pm long by 2.7 meter (9 feet) average height retaining wall at a cost of \$400,000 adjacent to the southbound I-270 exit ramp to MD 187. This option is not considered feasible due to excessive cost.

Minimization (Wetland W-1/Alt. 2E)

For Alternative 2E (north and south of I-270), the use of a 80 kilometer per hour (kmh) (50 mph) versus a 100 kmh (60 mph) design speed for roadside grading in open sections would minimally reduce overall impacts throughout the wetland area with a slight reduction in cost and some sacrifice in safety. Additionally, the use of a closed section (curb and gutter, concrete barrier) with reduced grading and steepened slopes would minimize impacts with a slight increase in cost and some sacrifice in safety.

ALTERNATIVE 3E

Alternative 3E would impact W-1 as a result of the embankment for the proposed ramp connecting MD 187/Rockledge Connector to northbound I-270 and the proposed ramp connecting southbound I-270 to Rockledge Connector/MD 187. Alternative 3E would impact 0.06 hectares (0.15 Ac.) of W-1 on the north side of I-270 and 0.06 hectares (0.15 Ac.) on the south side of I-270. Lengthening the existing 1,524 millimeters (60-inch) RCP under I-270 and rechannelization would also be required into the wetland area.

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Avoidance (Wetland W-1/Alt. 3E)

Avoidance of the northern segment of W-1 could be accomplished by a southerly shift of the proposed 2-lane ramp carrying traffic from MD 187/Rockledge Connector onto northbound I-270. A horizontal realignment adjacent to existing northbound I-270 would require construction of a 91.4 meters (300 feet) \pm long by 7.3 meters (24 feet) average height retaining wall at a cost of \$700,000 north of the proposed ramp and construction of a 76.2 meter (250 feet) \pm long by 2.1 meter (7 feet) (average height) retaining wall at a cost of \$300,000 south of the proposed ramp. This option is not considered feasible due to excessive cost.

Avoidance of the southern segment could be accomplished by a northerly shift of the proposed ramp carrying traffic from southbound I-270 onto Rockledge Connector/MD 187. A horizontal realignment adjacent to existing southbound I-270 would require construction of a 61.0 meter (200 feet) \pm long by 3.7 meter (12 feet) average height retaining wall at a cost of \$300,000 north of the proposed ramp and construction of a 61.0 meter (200 feet) \pm long by 7.3 meter (24 feet) (average height) retaining wall at a cost of \$500,000 south of the proposed ramp. This option is not considered feasible due to excessive cost.

Minimization (Wetland W-1/Alt. 3E)

For Alternative 3E, the northern segment W-1 impact could be minimally reduced by heightening the proposed retaining wall and eliminating grading slopes behind the proposed wall. Construction of the 91.4 meter (300 feet) \pm long by additional 3.7 meter (12 feet) (average height) retaining wall would cost \$300,000. This option is not considered feasible due to excessive cost.

The southern segment impact could be reduced by replacing the proposed curb and gutter with construction of a 61.0 meter (200 feet) \pm long by 7.9 meter (26 feet) (average height) retaining wall at a cost of \$500,000. This option is not considered feasible due to excessive cost.

ALTERNATIVE 3F

Alternative 3F would impact W-1 as a result of the embankment for the proposed ramp connecting MD 187/Rockledge Connector to northbound I-270 and the proposed ramp connecting southbound I-270 to Rockledge Connector/MD 187. Alternative 3F would impact 0.06 hectares (0.15 Ac.) of W-1 on the north side of I-270 and 0.06 hectares (0.15 Ac.) on the south side of I-270. Lengthening the existing 1,524 millimeters (60-inch) RCP under I-270 and rechannelization would also be required into the wetland area.

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Avoidance (Wetland W-1/Alt. 3F)

Avoidance of the northern segment could only be accomplished by a southerly shift of the proposed 2-lane ramp carrying traffic from MD 187/Rockledge Connector onto northbound I-270. A horizontal realignment adjacent to existing northbound I-270 would require construction of a 91.4 meter (300 feet) ± long by 7.3 meter (24 feet) (average height) retaining wall at a cost of \$700,000 north of the proposed ramp and construction of a 7.6 meter (25 feet) ± long by 2.1 meter (7 feet) (average height) retaining wall at a cost of \$300,000 south of the proposed ramp. This option is not considered feasible due to excessive cost.

Avoidance of the southern segment of W-1 can be accomplished by constructing a 91.4 meter (300 feet) ± long by 4.0 meter (13 feet) (average height) retaining wall at a cost of \$500,000 south of ramp carrying southbound I-270 traffic to MD 187 and horizontally realigning southward the ramp carrying southbound I-270 traffic onto Rockledge Connector. The horizontal shift would require moving closer to the Rockledge Centre Property and constructing a 61.0 meter (200 feet) ± long by 5.2 meter (17 feet) (average height) retaining wall at a cost of \$400,000, north of the realigned ramp, and a 61.0 meter (200 feet) ± long by 4.3 meter (14 feet) (average height) retaining wall at a cost of \$300,000, south of realigned ramp. This option is not considered feasible due to excessive cost.

Minimization (Wetland W-1/Alt. 3F)

For Alternative 3F, the northern segment W-1 impact could be reduced by heightening the proposed retaining wall and eliminating grading slopes behind the proposed wall. Construction of the 91.4 meter (300 feet) ± long by additional 3.7 meter (12 feet) (average height) retaining wall would cost \$300,000. This option is not considered feasible due to excessive cost.

The southern segment impact could be reduced by replacing proposed curb and gutter with construction of a 61.0 meter (200 feet) ± long by 5.2 meter (17 feet) (average height) retaining wall at a cost of \$400,000. This option is not considered feasible due to excessive cost.

ALTERNATIVE 3G

Alternate 3G would impact W-1 resulting from the embankment for the proposed ramp connecting MD 187/Rockledge Connector to northbound I-270 and the proposed ramp connecting southbound I-270 to Rockledge Connector/MD 187. Alternative 3G would impact 0.06 hectares (0.15 Ac.) of W-1 on the north side of I-270 and 0.06 hectares (0.15 Ac.) on the south side of I-270. Lengthening the existing 1,524 millimeter (60-inch) RCP under I-270 and rechannelization would also be required into the wetland area.

Avoidance (Wetland W-1/Alt. 3G)

Avoidance of the northern segment of W-1 could be accomplished by a southerly shift of the proposed 2-lane ramp carrying traffic from MD 187/Rockledge Connector onto northbound I-270. A horizontal realignment adjacent to existing northbound I-270 would require construction of a 91.4 meter (300 feet) ± long by 8.8 meter (29 feet) (average height) retaining wall at a cost of \$900,000, north of the proposed ramp, and construction of a 91.4 meter (300 feet) ± long by 4.0 meter (13 feet) average height retaining wall at a cost of \$500,000 south of the proposed ramp. This option is not considered feasible due to excessive cost.

Avoidance of the southern segment of W-1 could be accomplished by construction of a 61.0 meter (200 feet) ± long by 5.5 meter (18 feet) (average height) retaining wall at a cost of \$400,000, south of the ramp carrying southbound I-270 traffic to MD 187, and horizontally realigning southward the ramp carrying southbound I-270 traffic onto Rockledge Connector. The horizontal shift would require moving closer to the Rockledge Centre Property and constructing a 61.0 meter (200 feet) ± long by 9.1 meter (30 feet) (average height) retaining wall at a cost of \$600,000, north of the realigned ramp, and a 61.0 meter (200 feet) ± long by 7.0 meter (23 feet) average height retaining wall at a cost of \$500,000, south of the realigned ramp. This option is not considered feasible due to excessive cost.

Minimization (Wetland W-1/Alt. 3G)

For Alternative 3G, the northern segment W-1 impact could be reduced by heightening the proposed retaining wall and eliminating grading slopes behind the proposed wall. Construction of the 91.4 meter (300 feet) ± long by additional 0.9 meter (3 feet) average height retaining wall would cost \$100,000. This option is not considered feasible due to excessive cost.

The southern segment impact could be reduced by replacing proposed curb and gutter with a 61.0 meter (200 feet) ± long by 8.8 meter (29 feet) (average height) retaining wall at a cost of \$600,000. This option is not considered feasible due to excessive cost.

ALTERNATIVE 3H

Alternative 3H would impact W-1 resulting from embankment for the widening of southbound I-270 to accommodate a 1-lane reversible HOV in the median. Alternative 3H would impact 0.04 hectares (0.1 Ac.) of W-1 on the south side of I-270, as lengthening the existing 1,524 millimeter (60-inch) diameter culvert under I-270 into the wetland area would be required.

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Avoidance (Wetland W-1/Alt. 3H)

Avoidance of the southern segment could take place with construction of a 91.4 meter (300 feet) ± long by 5.2 meter (17 feet) (average height) retaining wall at a cost of \$500,000 adjacent to southbound I-270.

Minimization (Wetland W-1/Alt. 3H)

For Alternative 3H, the southern W-1 segment impact could be reduced by approximately 0.01 hectares (0.02 Ac.) using one of the following modifications:

- 1) Use of a 80 kmh (50 mph) versus 100 kmh (60 mph) design speed for roadside grading in open sections and steepened slopes with some reduction in cost and sacrifice in safety.
- 2) Use of a closed section (curb and gutter, concrete barrier) and steepened slopes with a slightly higher cost and sacrifice in safety.

WETLAND W-2

Wetland 2 (W-2) is located adjacent to the southern half of W-1, 548.6 meters (1800 feet) ± west of MD 187 along the southbound I-270 roadway. The wetland is an intermittent stream/ditch and associated topographic depression adjacent to a recently constructed retaining wall and is of medium value. It is classified as palustrine forested broadleafed deciduous (PF01A) and contains evidence of soil saturation.

ALTERNATIVE 2E

Alternative 2E impacts would result from grading associated with the extension and widening of the deceleration lane for the ramp connecting southbound I-270 to MD 187. Alternative 2E would impact 0.16 hectares (0.4 Ac.) of W-2 on the south side of I-270.

Avoidance (Wetland W-2/Alt. 2E)

Avoidance of wetland W-2 could only be accomplished by reduction of the width of the exit ramp from southbound I-270 to MD 187 from 2-lanes to 1-lane and maintaining the existing retaining wall along southbound I-270 with construction of an additional 121.9 meter (400 feet) ± long by 1.2 meter (4 feet) (average height) retaining wall at a cost of \$300,000. Because this modification would result in failing levels of service at the ramp diverge, it is not considered a feasible option.

Minimization (Wetland W-2/Alt. 2E)

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For Alternative 2E, wetland impacts could be reduced by:

- 1) Construction of a 182.9 meter (600 feet) \pm long by 21 meter (7 feet) (average height) retaining wall at a cost of \$600,000 adjacent to southbound I-270. Due to excessive cost, this option is not considered feasible.
- 2) Use of a 80 kmh (50 mph) versus 100 kmh (60 mph) design speed for roadside grading in open sections with a slight reduction in cost and some sacrifice in safety.
- 3) Use of a closed section with reduced grading would minimally (less than 0.004 hectares (0.01 Ac.)) reduce the impacts to wetland W-2 with a slight increase in cost and some sacrifice in safety.

ALTERNATIVE 3E

Alternative 3E impacts to wetland W-2 would result from the embankment required for the ramp from southbound I-270 to the Rockledge Connector Bridge. Alternative 3E would impact 0.16 hectares (0.4 Ac.) of W-2 on the south side of I-270.

Avoidance (Wetland W-2/Alt. 3E)

Avoidance of W-2 could be accomplished by maintaining the existing retaining wall and construction of an additional 121.9 meter (400 feet) \pm long by 1.2 meter (4 feet) (average height) retaining wall at a cost of \$300,000 adjacent to I-270. Avoidance would also require construction of a 182.9 meter (600 feet) \pm long by 7.6 meter (25 feet) (average height) retaining wall at a cost of \$1,500,000 adjacent to the ramp carrying traffic from southbound I-270 to the Rockledge Connector. Due to excessive cost, this option is not considered feasible.

Minimization (Wetland W-2/Alt. 3E)

A slight (less than 0.004 hectares (0.01 Ac.)) reduction in impacts to W-2 could be accomplished by replacing the proposed open section with curb and gutter and/or reducing backing, safety grading or slope ratios.

ALTERNATIVE 3F

Alternative 3F impacts to wetland W-2 would result from the embankment required for the ramp from southbound I-270 to MD 187. Alternative 3F would impact 0.16 hectares (0.4 Ac.) of W-2 on the south side of I-270.

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Avoidance (Wetland W-2/Alt. 3F)

Avoidance of W-2 could only be accomplished by a southerly shift to the ramp carrying traffic from southbound I-270 to MD 187, while maintaining the existing retaining wall along southbound I-270, resulting in the lengthening of the proposed Rockledge Connector Bridge over I-270 at a cost of \$1,000,000. A reduction of the radius on the loop ramp carrying Rockledge Connector traffic to MD 187/southbound I-270 from a 40 kmh (25 mph) design speed to a 40 kmh (20 mph) design speed would also be required. The resulting horizontal realignment would result in no change to this alternative's impacts to wetland W-1 (0.12 hectares [0.3 Ac.]). Due to excessive cost, this option is not considered feasible.

Minimization (Wetland W-2/Alt. 3F)

Minimization of impacts to wetland W-2 with Alternative 3F could be accomplished by construction of a 182.9 meter (600 feet) \pm long by 2.7 meter (9 feet) (average height) retaining wall at a cost of \$700,000 adjacent to the proposed ramp. Due to excessive cost, this option is not considered feasible.

ALTERNATIVE 3G

Alternative 3G would impact W-2 as a result of the embankment for the ramp from southbound I-270 to MD 187. Alternative 3G would impact 0.16 hectares (0.4 Ac.) of W-2 on the south side of I-270.

Avoidance (Wetland W-2/Alt. 3G)

Avoidance of W-2 could be accomplished by a southerly shift to the ramp carrying traffic from southbound I-270 to MD 187, resulting in lengthening the proposed Rockledge Connector Bridge over I-270 at a cost of \$1,000,000. The existing retaining wall along southbound I-270 would also need to be retained at its current location, thereby eliminating the buffer and barrier between mainline southbound I-270 and the C-D road. This option is not considered feasible due to excessive costs.

Minimization (Wetland W-2/Alt. 3G)

Minimization of the impacted wetland W-2 for Alternative 3G could be accomplished by construction of a 182.9 meter (600 feet) \pm long by 3.4 meter (11 feet) (average height) retaining wall at a cost of \$800,000 adjacent to the proposed ramp. This option is not considered feasible due to excessive costs.

ALTERNATIVE 3H

Alternative 3H would impact W-2 resulting from embankment associated with an outward shift to the southbound I-270 roadway. Alternative 3H would impact 0.16 hectares (0.4 Ac.) of W-2 on the south side of I-270.

Minimization (Wetland W-2/Alt. 3H)

For Alternative 3H, the impacted wetland area could be reduced by construction of a 182.9 meter (600 feet) \pm long by 4.0 meter (13 feet) (average height) retaining wall adjacent to southbound I-270 at a cost of \$900,000. This option is not considered feasible due to excessive costs.

WETLAND W-3

Wetland 3 (W-3) is located on the north side of I-270, 213.4 meters (700 feet) \pm west of MD 187. This wetland is a drainage channel, classified as palustrine emergent persistent (PEM1A) and is of medium value. Soils are saturated with low chroma and mottles.

ALTERNATIVE 2E

Alternative 2E grading associated with northbound I-270 shoulder improvements near the proposed northbound I-270 to southbound MD 187 loop ramp would fall just at the edge of W-3. However, since W-3 is mostly within existing right-of-way, it is assumed that the entire area would be impacted. Therefore, Alternative 2E impacts 0.04 hectares (0.1 Ac.) of W-3 on the north side of I-270.

Avoidance (Wetland W-3/Alt. 2E)

Construction of a 61.0 meter (200 feet) \pm long by 0.9 meter (3 feet) (average height) retaining wall, adjacent to northbound I-270 shoulder improvements, at a cost of \$150,000, would avoid impact to W-3. This option is not considered feasible due to excessive costs.

Minimization (Wetland W-3/Alt. 2E)

Minimization of W-3 impacts could be accomplished by one of the two following modifications:

- 1) Use of a 80 kmh (50 mph) versus 100 kmh (60 mph) design speed for roadside grading in open sections with a slight reduction in cost and some sacrifice in safety.

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- 2) Use of a closed section (curb and gutter, concrete barrier) with reduced grading would minimally reduce impacts throughout the wetland area with a slight increase in cost.

ALTERNATIVES 3E AND 3F

Alternatives 3E and 3F are identical in the area of W-3 and would require ramp construction covering the entire area. Alternatives 3E and 3F impact 0.04 hectares (0.1 Ac.) of W-3 on the north side of I-270.

Avoidance (Wetland W-3/Alts. 3E and 3F)

Avoidance of wetland W-3 could be accomplished by a northerly shift of the proposed 2-lane ramp carrying traffic from MD 187 to Rockledge Connector/Northbound I-270. The horizontal realignment requires construction of a 61.0 meter (200 feet) \pm long by 4.0 meter (13 feet) (average height) retaining wall at a cost of \$300,000 and would result in 0.06 hectares (0.14 acre) of wetland W-4 being impacted. Avoidance also requires a horizontal realignment of the proposed 1-lane ramp carrying northbound I-270 traffic to the Rockledge Connector, resulting in construction of a 61.0 meter (200 feet) \pm long by 2.7 meter (9 feet) (average height) retaining wall at a cost of \$250,000. This option is not considered feasible due to the 0.06 hectares (0.14 Ac.) of additional impact to W-4 and to excessive cost.

Minimization (Wetland W-3/Alts. 3E and 3F)

Construction of a 61.0 meter (200 feet) long by 3.0 meter (10 feet) average height retaining wall at a cost of \$300,000 adjacent to the ramp carrying traffic from MD 187 to Rockledge Connector/northbound I-270 and a 61.0 meter (200 feet) long by 2.7 meter (9 feet) (average height) retaining wall at a cost of \$250,000 adjacent to the ramp carrying northbound I-270 traffic to the Rockledge Connector. This option is not considered feasible due to excessive cost.

ALTERNATIVE 3G

Alternative 3G, similar to Alternatives 3E and 3F, would require ramp construction covering the entire area. Alternative 3G impacts 0.04 hectares (0.1 acre) of W-3 on the north side of I-270.

Avoidance of wetland W-3 could be accomplished by a northerly shift to the proposed 2-lane ramp carrying traffic from MD 187 to Rockledge Connector/Northbound I-270. The horizontal realignment requires construction of a 61.0 meter (200 feet) \pm long by 3.0 meter (10 feet) average height retaining wall at a cost of \$300,000, resulting in wetland W-4 being impacted. Avoidance also requires a horizontal realignment of the proposed 1-lane ramp carrying

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northbound I-270 traffic to the Rockledge Connector, resulting in construction of a 61.0 meter (200 feet) ± long by 1.8 meter (6 feet) (average height) retaining wall at a cost of \$200,000.

Minimization

Construction of a 61.0 meter (200 feet) ± long by 1.8 meter (6 feet) average height retaining wall at a cost of \$200,000 adjacent to the ramp carrying traffic from MD 187 to Rockledge Connector/northbound I-270 and a 61.0 meter (200 feet) ± long by 2.4 meter (8 feet) average height retaining wall at a cost of \$200,000 adjacent to the ramp carrying northbound I-270 traffic to the Rockledge Connector.

WETLAND W-4

Wetland 4 (W-4) is located northwest of the I-270/MD 187 interchange, and consists of a diked lowland fresh meadow, classified as palustrine emergent persistent (PEM1A) with segments of palustrine open water impoundment (POWZh) and palustrine forested broad leafed deciduous (PF01A) and is of high value. Soils are characterized by low chroma, mottles and saturation.

ALTERNATIVE 2E

Alternative 2E would impact W-4 as a result of the embankment for the proposed ramp connecting MD 187 with northbound I-270, as well as the proposed loop ramp for the northwest quadrant. Alternative 2E would impact 0.32 hectares (0.8 Ac.) of W-4 on the north side of I-270.

Avoidance (Wetland W-4/Alt. 2E)

Avoidance of W-4 could only be accomplished by construction of a 106.7 meter (350 feet) long bridge at a cost of \$2,800,000. This option is not considered feasible due to excessive cost.

Minimization (Wetland W-4/Alt. 2E)

For Alternative 2E, the W-2 impact could be reduced by horizontally realigning the ramps in the northwest quadrant of the MD 187 interchange. The loop ramp carrying northbound I-270 traffic to southbound MD 187 would revise the proposed 76.2 meter (250 feet) radius at a 50 kmh (30 mph) design speed to a 61.0 meter (200 feet) radius at a 40 kmh (25 mph) design speed, thus allowing a southerly shift to the ramp carrying traffic from MD 187 to northbound I-270. The horizontal revision would decrease the wetland W-4 impacts from 0.32 hectares (0.8 acres) to 0.08 hectares (0.2 acres), and the fresh water pond would also be avoided. This modification would

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also reduce the distance between successive gores on northbound I-270 to 280.4 meters (920 feet); 304.8 meters (1,000 feet) is desirable. Costs with this modification would be approximately 10% less than the base Alternative 2E estimated cost of \$13.6 million.

WETLAND W-11

Wetland 11 (W-11) is located along the south side of Democracy Boulevard, between I-270 Spur and the Fire Station. This is an intermittent stream/ditch and associated topographic depression, classified as palustrine forested broad leafed deciduous (PF01A). Soils are characterized by low chroma, mottles and saturation. This wetland is of low value.

ALTERNATIVES 4A AND 4B

Alternatives 4A and 4B would result in some grading impact to W-11, as they propose the widening of Democracy Boulevard to the south in order to provide an acceleration/merge area for the northbound I-270 Spur movement onto eastbound Democracy Boulevard. Alternatives 4A and 4B would impact 0.04 hectares (0.1 Ac.) of W-11 on the south side of Democracy Boulevard.

Avoidance (Wetland W-11/Alts. 4A and 4B)

Avoidance of wetland W-11 could be accomplished by construction of a 91.4 meters (300 feet) \pm long by 2.4 meter (8 feet) (average height) retaining wall at a cost of \$300,000 adjacent to the proposed acceleration lane. This option is not considered feasible due to excessive cost.

Minimization (Wetland W-11/Alts. 4A and 4B)

For Alternatives 4A and 4B, the impacted wetland area could be reduced by approximately 0.02 hectares (0.05 Ac.) by replacing proposed curb and gutter with a concrete barrier in fill with a steepened grading slope at an additional cost of approximately \$25,000.

WETLAND W-12

Wetland 12 (W-12) is located in the southeast quadrant of the I-270 Spur/Democracy Boulevard Interchange. This wetland is a shallow topographic depression classified as palustrine emergent persistent, with an intermittently flooded water regime (PEM1A). Soils are characterized by low chroma, mottles and saturation. This wetland is of medium value.

ALTERNATIVE 4B

Alternative 4B would require ramp construction covering the entire W-12 area. Alternative 4B would impact 0.04 hectares (0.1 Ac.) of W-12 east of the northbound I-270 Spur.

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TABLE IV-2

AFFECTED WETLANDS - BY ALTERNATIVE

ALTERNATIVE	AFFECTED WETLANDS (WETLAND NUMBER: AREA)
2E	W-1: 0.08 hectares (0.2 Ac.) W-2: 0.16 hectares (0.4 Ac.) W-3: 0.04 hectares (0.1 Ac.) W-4: <u>0.32 hectares (0.8 Ac.)</u> Total: 0.60 hectares (1.5 Ac.)
3E	W-1: 0.12 hectares (0.3 Ac.) W-2: 0.16 hectares (0.4 Ac.) W-3: <u>0.04 hectares (0.1 Ac.)</u> Total: 0.32 hectares (0.8 Ac.)
3F	W-1: 0.12 hectares (0.3 Ac.) W-2: 0.16 hectares (0.4 Ac.) W-3: <u>0.04 hectares (0.1 Ac.)</u> Total: 0.32 hectares (0.8 Ac.)
3G	W-1: 0.12 hectares (0.3 Ac.) W-2: 0.16 hectares (0.4 Ac.) W-3: <u>0.04 hectares (0.1 Ac.)</u> Total: 0.32 hectares (0.8 Ac.)
3H	W-1: 0.04 hectares (0.1 Ac.) W-2: <u>0.16 hectares (0.4 Ac.)</u> Total: 0.20 hectares (0.5 Ac.)
4A	W-11: 0.04 hectares (0.1 Ac.)
4B	W-11: 0.04 hectares (0.1 Ac.) W-12: <u>0.04 hectares (0.1 Ac.)</u> Total: 0.08 hectares (0.2 Ac.)

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TABLE IV-3

AFFECTED WETLANDS - COMBINATIONS OF ALTERNATIVES

COMBINATIONS OF ALTERNATIVES	AFFECTED WETLANDS (WETLAND NUMBER: AREA)
2E with 3H	W-1: 0.16 hectares (0.4 Ac.) W-2: 0.20 hectares (0.5 Ac.) W-3: 0.04 hectares (0.1 Ac.) W-4: <u>0.32 hectares (0.8 Ac.)</u> Total: 0.72 hectares (1.8 Ac.)
2E with 4A or 4B	W-1: 0.08 hectares (0.2 Ac.) W-2: 0.16 hectares (0.4 Ac.) W-3: 0.04 hectares (0.1 Ac.) W-4: 0.32 hectares (0.8 Ac.) W-11: 0.04 hectares (0.1 Ac.) W-12: <u>0.04 hectares (0.1 Ac.)</u> Total: 0.68 hectares (1.7 Ac.)
2E with 3H and 4A or 4B	W-1: 0.16 hectares (0.4 Ac.) W-2: 0.20 hectares (0.5 Ac.) W-3: 0.04 hectares (0.1 Ac.) W-4: 0.32 hectares (0.8 Ac.) W-11: 0.04 hectares (0.1 Ac.) W-12: <u>0.04 hectares (0.1 Ac.)</u> Total: 0.80 hectares (2.0 Ac.)
3E, 3F or 3G with 4A or 4B	W-1: 0.12 hectares (0.3 Ac.) W-2: 0.16 hectares (0.4 Ac.) W-3: 0.04 hectares (0.1 Ac.) W-11: 0.04 hectares (0.1 Ac.) W-12: <u>0.04 hectares (0.1 Ac.)</u> Total: 0.40 hectares (1.0 Ac.)

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TABLE IV-4

AFFECTED WETLANDS - BY AREA

AFFECTED WETLAND	LOCATION	ALTERNATIVE AND IMPACTED AREA IN HECTARES
W-1	North and South of I-270, 2200 feet± West of MD 187	2E: 0.08 (0.2 Ac.) 3E: 0.12 (0.3 Ac.) 3F: 0.12 (0.3 Ac.) 3G: 0.12 (0.3 Ac.) 3H: 0.04 (0.1 Ac.)
W-2	South Side of I-270, West of MD 187	2E: 0.16 (0.4 Ac.) 3E: 0.16 (0.4 Ac.) 3F: 0.16 (0.4 Ac.) 3G: 0.16 (0.4 Ac.) 3H: 0.16 (0.4 Ac.)
W-3	North Side of I-270, 700 feet± West of MD 187	2E: 0.04 (0.1 Ac.) 3E: 0.04 (0.1 Ac.) 3F: 0.04 (0.1 Ac.) 3G: 0.04 (0.1 Ac.)
W-4	Northwest of the I-270/MD 187 Interchange	2E: 0.32 (0.8 Ac.)
W-11	West of the Fire Station on Democracy Boulevard	4A: 0.04 (0.1 Ac.) 4B: 0.04 (0.1 Ac.)
W-12	Southeast Quadrant of the I-270 Spur/Democracy Boulevard Interchange	4B: 0.04 (0.1 Ac.)

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Avoidance (Wetland W-12/Alt. 4B)

Avoidance of W-12 could only take place with an easterly shift of the proposed CD road. The resulting horizontal CD road shift would lengthen the Democracy Boulevard Bridge over I-270 Spur by 22.9 meters (75 feet) at a cost of \$1,300,000, create the need for right-of-way acquisition in the southeast quadrant of I-270 Spur/Democracy Interchange and necessitate drainage channel relocation along the northbound to eastbound ramp. Based on cost and additional impacts, this option is not considered feasible.

Minimization (Wetland W-12/Alt. 4B)

For Alternative 4B, the impacted wetland area could be reduced by construction of a 61.0 meter (200 feet) \pm long by 3.0 meter (10 feet) (average height) retaining wall at a cost of \$250,000. This option is not considered feasible due to excessive cost.

As described in Section III.D., various combinations of the build alternatives, including those that impact wetlands, are possible. The resulting total wetland areas impacted by all possible wetland impacting alternatives combinations are provided in Table IV-4.

b. Wildlife, Terrestrial and Aquatic Habitats

The no-build alternative would have no further effect on wildlife in the study area beyond what has already occurred with the extensive development in the corridor.

The most substantial effect of the build alternatives on wildlife along the corridor would be in the removal and alteration of vegetation. The destruction of naturally existing vegetation -- hedgerows, forest and fields -- along the road affects erosion and sediment control and alters the habitat for birds, mammals and insects. The loss of habitat is typically accompanied by a proportional loss in wildlife populations inhabiting these areas based upon its holding capacity.

Reduction in populations and diversity of species due to the build alternatives would be, in large part, proportional to the area affected by each alternative, factoring in the condition that so much of the study area is already developed. The disturbed habitat would not be densely populated due to its proximity to the existing highway.

The number and total size of woodland areas affected by each alternative is indicated in Table IV-5 below.

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TABLE IV-5
AFFECTED WOODLAND/FORESTED AREAS

<u>BUILD ALTERNATIVE</u>	<u>AREA AFFECTED</u>
2E	3.2 hectares (7.8 Ac.){4}*
3E	4.8 hectares (11.9 Ac.){4}
3F	5.8 hectares (14.3 Ac.){6}
3G	4.7 hectares (11.7 Ac.){6}
3H	1.7 hectares (4.3 Ac.){4}
4A	1.1 hectares (2.6 Ac.){3}
4B	2.4 hectares (6.0 Ac.){4}
4C	0.8 hectares (2.1 Ac.){3}
4D	1.0 hectares (2.4 Ac.){2}
5B	1.7 hectares (4.2 Ac.){2}
6B	1.5 hectares (3.6 Ac.){5}

* Number in braces indicates the number of contiguous woodland sites associated with the affected acreages.

Note: 2C, 2D and 5C each affect less than 10,000 S.F. of Forested Area

The State Forest Conservation Act of 1991 includes Section 2 (the "Reforestation Act") which requires the minimization of cutting or clearing trees, replacement of wooded areas affected and/or contributions to a Reforestation Fund for highway construction projects. The build alternatives for this project would comply with the Forest Conservation Act.

The study area does not contain any Prime or Unique Farmland or Farmland of Statewide Importance as classified by the U.S. Department of Agriculture.

c. Threatened and Endangered Species

Coordination with the U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources indicates that no federally listed threatened or endangered species are known to inhabit the study area and therefore, would not be affected by the build alternatives.

F. Noise Impacts

1. Noise Prediction Methodology

a. Federal Highway Administration Standards

The effects of noise from the proposed roadways are judged in accordance with the Federal Highway Administration as established by 23 Code of Federal Regulations (CFR) part 772. The FHWA criteria shown in Table IV-6 are based on specific land uses and are used in determining the need for studying noise attenuation. All locations within the study area are of land use category B, which has a design noise level of 67 dBA.

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TABLE IV-6

NOISE ABATEMENT CRITERIA
(SPECIFIED IN 23CFR 772)

<u>LAND USE CATEGORY</u>	<u>DESIGN NOISE LEVEL - Leq</u>	<u>DESCRIPTION OF LAND USE CATEGORY</u>
A	57 dBA (exterior)	Tracts of land in which serenity and quiet are of extraordinary significance and preservation of those qualities is essential if the area is to continue its intended purpose. Such areas could include amphitheaters, particular parks, or open spaces which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	67 dBA (exterior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, playgrounds, active sports areas, and parks.
C	72 dBA (exterior)	Developed lands, properties or activities not included in categories A or B above.
D	None Prescribed	Land which is undeveloped on the date of public knowledge of the project, and on which no known future development is planned.
E	52 dBA (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

In this assessment, noise levels are presented in terms of the A-weighted equivalent sound level, abbreviated here as Leq. Leq is a single number representation of the actual fluctuating sound level that accounts for all sound energy during a given period of time. The units of Leq are A-weighted decibels or dBA. The A-weighting means that the sound level is measured in a method that approximates the response of the human ear with de-emphasis of the low and very high frequencies and emphasis on the mid-frequency range. In order to give a sense of

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perspective to the noise levels discussed, a quiet rural night would register about 25 dBA, a quiet suburban nighttime about 60 dBA, a noisy daytime about 80 dBA, a gas mower at 30.5 m (100 feet) about 70 dBA and a diesel truck at 15.2 m (50 feet) about 85 dBA. Under typical field conditions, noise level changes of 2-3 dBA are barely perceptible, whereas a change of 5 dBA is readily noticeable. A 10 dBA increase in noise level is judged by most people as a doubling of sound loudness (This information is presented in the Fundamentals and Abatement of Highway Traffic Noise by Bolt, Beranek and Newman, Inc. for the FHWA, 1980).

The FHWA criteria states that noise impacts occur when predicted noise levels for the design year approach or exceed 67 dBA, or when predicted noise levels are substantially higher than existing ambient levels. The Maryland State Highway Administration's Noise Policy Guidelines characterize a substantial increase as 10 dBA or greater. Under the SHA policy, once an impact has been identified, feasibility and reasonability of noise mitigation measures must be determined. Mitigation measures are considered reasonable and feasible if:

- A) the mitigation measure is effective; that is, it provides a 7-10 dBA attenuation as a primary design goal,
- B) the mitigation measure is cost effective - approximately \$40,000 per impacted and benefitted residence,
- C) the difference between design year build and no-build noise levels is 5 dBA or greater, and
- D) the mitigation measure is acceptable to affected property owners.

An impacted residence is considered benefitted if it will receive a 5 dBA reduction in noise level (insertion loss). Additional consideration is given to schools, religious sites such as churches, and recreational facilities such as parks. For this study, an impacted and benefitted church counts as 5 residences, and impacted and benefitted swimming pools and tennis courts count as 1 residence per 38.1 m (125 feet) of linear distance of noise sensitive use area parallel to highway. A total cost of \$177.97 per square meter (\$16.54 per square foot) is assumed to estimate the total barrier cost, which conforms to the SHA Noise Policy Guidelines.

b. Noise Prediction Methodology Using FHWA Model

The method used to model noise levels was developed by the Federal Highway Administration of the U.S. Department of Transportation. This method utilizes an experimentally and statistically determined reference sound level for each of the three classes of vehicles (autos, medium duty trucks, and heavy duty trucks) and applies a series of adjustments to each reference level to arrive at the predicted sound level. The adjustments include; 1) traffic flow corrections, taking into account the number of vehicles and the average vehicle speed; 2) distance adjustments comparing a reference and actual distance between receiver and roadway; and 3) adjustments for ground softness and for various types of physical barriers that would reduce noise transmission from source (roadway) to receiver.

Noise level modeling for this analysis was performed with the computer adaptation of the FHWA model, STAMINA 2.0/OPTIMA. Traffic counts were taken during the 15-minute ambient measurements and were used for calibration.

Traffic information for this analysis was obtained through the Maryland State Highway Administration, Project Planning Division. The Design Hour Volume (DHV), which produced the highest noise levels, was used in this study to represent the worst case condition.

2. Noise Prediction Results

Noise levels projected for the design year 2020 build and no-build alternatives are shown in Table IV-7. All projected noise levels are exterior maximum Leq noise levels. At impacted NSA's, mitigation was investigated by analyzing noise barriers. Results of noise mitigation barrier analysis, including feasibility and cost-effectiveness, are shown in Table IV-8.

Each noise sensitive area will be reevaluated following development of final engineering to verify that effective and reasonable solutions can be implemented. During final engineering, the specific horizontal and vertical location of the proposed highway will be established, and detailed mitigation alternatives will be examined at each location. The cost of mitigation for each noise sensitive area will be determined based on these detailed studies. Those barriers that meet the SHA criteria as accepted by FHWA will be constructed. The noise policy and criteria are currently under review. Once new criteria have been established, an evaluation of barriers will be completed.

**TABLE IV-7
PROJECTED NOISE LEVELS (Leq dBA)**

NSA-A

RECEPTOR	2020 NO BUILD	ALT. 2D BUILD	ALT. 2E BUILD	ALT.3E BUILD	ALT.3F BUILD	ALT.3G BUILD	ALT. 3H BUILD	ALT. 4A BUILD	ALT. 4B BUILD	ALT. 4C BUILD	ALT. 4D BUILD	ALT. 5B BUILD	ALT. 5C BUILD	ALT.6B BUILD
R-1	72	72	72	72	72	72	72	72	72	72	72	72	72	72
R-1A	66	66	66	66	66	66	66	66	66	66	66	66	66	66
R-2	66	66	66	66	66	66	66	66	66	66	66	66	66	66

NSA-B

RECEPTOR	2020 NO BUILD	ALT. 2D BUILD	ALT. 2E BUILD	ALT.3E BUILD	ALT.3F BUILD	ALT.3G BUILD	ALT. 3H BUILD	ALT. 4A BUILD	ALT. 4B BUILD	ALT. 4C BUILD	ALT. 4D BUILD	ALT. 5B BUILD	ALT. 5C BUILD	ALT.6B BUILD
R-3	67	67	67	67	67	67	67	67	66	66	66	66	67	65
R-4	70	70	70	70	70	70	70	71	69	68	68	69	70	68
R-5	75	75	75	75	75	75	75	75	74	75	75	75	75	75
R-6	72	72	72	72	72	72	72	72	72	72	72	72	72	72
R-7	69	69	69	69	69	69	69	70	70	70	70	69	69	69

NSA-C

RECEPTOR	2020 NO BUILD	ALT. 2D BUILD	ALT. 2E BUILD	ALT.3E BUILD	ALT.3F BUILD	ALT.3G BUILD	ALT. 3H BUILD	ALT. 4A BUILD	ALT. 4B BUILD	ALT. 4C BUILD	ALT. 4D BUILD	ALT. 5B BUILD	ALT. 5C BUILD	ALT.6B BUILD
R-8	68	68	68	68	68	68	68	71	68	68	68	68	70	67
R-9	71	71	71	71	71	71	71	74	71	71	71	71	71	70

NSA-D

RECEPTOR	2020 NO BUILD	ALT. 2D BUILD	ALT. 2E BUILD	ALT.3E BUILD	ALT.3F BUILD	ALT.3G BUILD	ALT. 3H BUILD	ALT. 4A BUILD	ALT. 4B BUILD	ALT. 4C BUILD	ALT. 4D BUILD	ALT. 5B BUILD	ALT. 5C BUILD	ALT.6B BUILD
R-10	64	64	64	62	62	62	64	64	64	64	64	64	64	62

NSA-E

RECEPTOR	2020 NO BUILD	ALT. 2D BUILD	ALT. 2E BUILD	ALT.3E BUILD	ALT.3F BUILD	ALT.3G BUILD	ALT. 3H BUILD	ALT. 4A BUILD	ALT. 4B BUILD	ALT. 4C BUILD	ALT. 4D BUILD	ALT. 5B BUILD	ALT. 5C BUILD	ALT.6B BUILD
R-11	76	76	76	76	76	76	76	76	76	76	76	76	76	76
R-12	73	73	73	73	73	73	73	73	73	73	73	73	73	73
R-12A	71	71	71	71	71	71	71	71	71	71	71	71	71	71
R-13	74	74	74	74	74	74	74	74	74	74	74	74	74	74

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TABLE IV-7 (CONT.)
PROJECTED NOISE LEVELS (Leq dBA)
NSA-F

RECEPTOR	2020 NO BUILD	ALT. 2D BUILD	ALT. 2E BUILD	ALT.3E BUILD	ALT.3F BUILD	ALT.3G BUILD	ALT. 3H BUILD	ALT. 4A BUILD	ALT. 4B BUILD	ALT. 4C BUILD	ALT. 4D BUILD	ALT. 5B BUILD	ALT. 5C BUILD	ALT.6B BUILD
R-14	72	72	72	72	72	72	72	72	72	72	72	72	72	72
R-15	70	70	70	70	70	70	70	70	70	70	70	70	70	70
R-16	71	71	71	71	70	71	71	71	71	71	71	71	71	71
R-17	71	73	71	71	71	71	71	71	71	71	71	71	71	71

NSA-G

RECEPTOR	2020 NO BUILD	ALT. 2D BUILD	ALT. 2E BUILD	ALT.3E BUILD	ALT.3F BUILD	ALT.3G BUILD	ALT. 3H BUILD	ALT. 4A BUILD	ALT. 4B BUILD	ALT. 4C BUILD	ALT. 4D BUILD	ALT. 5B BUILD	ALT. 5C BUILD	ALT.6B BUILD
R-18	72	71	71	72	72	72	72	72	72	72	72	72	72	72
R-19	74	74	74	74	74	74	73	74	74	74	74	74	74	74

NSA-H

RECEPTOR	2020 NO BUILD	ALT. 2D BUILD	ALT. 2E BUILD	ALT.3E BUILD	ALT.3F BUILD	ALT.3G BUILD	ALT. 3H BUILD	ALT. 4A BUILD	ALT. 4B BUILD	ALT. 4C BUILD	ALT. 4D BUILD	ALT. 5B BUILD	ALT. 5C BUILD	ALT.6B BUILD
R-20	65	65	65	62	63	63	64	65	65	65	65	64	65	62
R-21*	60	60	60	52	55	56	58	60	60	60	60	59	60	53
R-21A*	63	63	63	55	57	57	61	63	63	63	63	63	63	55
R-22	73	73	73	64	62	62	71	73	73	73	73	72	73	64
R-23	73	73	73	70	68	68	72	73	73	73	73	72	73	70
R-25	71	71	71	71	70	70	70	71	71	71	71	71	71	71

NSA-I

RECEPTOR	2020 NO BUILD	ALT. 2D BUILD	ALT. 2E BUILD	ALT.3E BUILD	ALT.3F BUILD	ALT.3G BUILD	ALT. 3H BUILD	ALT. 4A BUILD	ALT. 4B BUILD	ALT. 4C BUILD	ALT. 4D BUILD	ALT. 5B BUILD	ALT. 5C BUILD	ALT.6B BUILD
R-24	75	75	75	75	75	75	75	75	75	75	75	74	74	75
R-24A	73	73	73	73	73	73	73	73	73	73	73	73	73	73
R-24B	74	74	74	74	74	74	74	74	74	74	74	73	73	74
R-24C	71	71	71	69	71	71	71	71	71	71	71	70	70	71

* INCLUDES SHIELDING FACTORS DUE TO OWNER CONSTRUCTED BERM

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TABLE IV-8
DESIGN YEAR 2020 NOISE ABATEMENT ANALYSIS SUMMARY

NOISE SENSITIVE AREAS	BENEFITED RESIDENCES	NOISE LEVELS RANGE (Leq)				BARRIER			
		AMBIENT	NO BUILD (DESIGN)	BUILD (DESIGN)	WITH BARRIER	LENGTH m(ft.)	HEIGHT m(ft.)	COST (\$)#	COST PER RES. (\$)
A	5	57-67	66-72	66-72	61-66	429.4(1409)	5.5-7.3(18-24)	463,900	92,800
B	38	58-72	67-75	69-75	62-66	1306.6(4287)	3.7-7.3(12-24)	1,344,600	35,400
C*	-	59-67	68-71	67-74	-	-	-	-	-
D*	-	58	64	62-64	-	-	-	-	-
E	44	64-67	71-76	71-75	60-64	1092(3583)	6.1-6.7(20-22)	1,218,200	27,700
F**	55	63-70	70-72	71-72	60-64	1151.1(3777)	3.7-7.3(12-24)	1,462,600	26,600
G*	-	63-68	72-74	72-73	-	-	-	-	-
H-ALT.3E***	10	56-65	60-73	52-69	52-62	532.2(1746)	1.2-5.5(4-18)	399,700	40,000
H-ALT.3G***	10	56-65	60-73	55-68	55-63	434.3(1425)	3.7-5.5(12-18)	394,200	39,500
H-ALT. 3H***	22	56-65	60-73	58-72	55-63	684.2(2245)	6.7-7.3(22-24)	877,700	39,900
I	29	63-64	71-75	71-75	59-64	1052.4(3453)	6.1(20)	1,142,115	39,390

BASED ON A SQUARE METER COST OF \$177.97(SQUARE FOOT COST OF \$16.54)

*BARRIER NOT FEASIBLE DUE TO DRIVEWAYS AND INTERSECTIONS

** INCLUDES ST. MARK'S CHURCH AND TENNIS COURTS ON VALERIAN LA.

*** INCLUDES THE WINDERMERE COMM. POOL AND TENNIS COURTS

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Noise Sensitive Area A

NSA A includes receptors R-1, R-1A, and R-2, which are located in the Wildwood Hills Community. Alternatives 4A, 4B, 4C, 4D, 5B, and 5C directly affect this area. There is no substantial increase in the no-build to build noise levels, but because these noise levels exceed 67 dBA, a noise mitigation barrier was analyzed for this area. A 429.4 meter (1,409 foot) long noise barrier ranging from 5.5 meters to 7.3 meters (18 feet to 24 feet) in height was studied. The total cost is estimated to be \$463,900, and the total number of benefitted residences is 5. Since the cost per benefitted residence is \$92,800, this barrier does not prove to be cost effective. This area does not meet the current criteria for consideration of a noise barrier.

Noise Sensitive Area B

NSA B includes receptors R-3, R-4, R-5, R-6, and R-7, of the Stratton Woods and Bradley Manor communities. This area is affected by Alternatives 4A, 4B, 4C, 4D, 5B, and 5C. Because the design year 2020 build and no-build noise levels exceed 67 dBA, barrier analysis was performed. Thirty-eight residences would benefit from a 1,306.6 meter (4,287 foot) long barrier, with heights ranging from 3.7 meters to 7.3 meters (12 feet to 24 feet). The total estimated cost is \$1,344,600, with a cost per residence of \$35,400. This area does not meet the current criteria for consideration of a noise barrier.

Noise Sensitive Area C

NSA C includes R-8 and R-9, which are Stratton Park and a private residence along Democracy Boulevard at Fernwood Road. This site is directly affected by Alternatives 4A, 4B, 4C, 4D, 5B, and 5C. Although 2020 no-build and build noise levels exceed 67 dBA, noise barriers are not feasible at this area due to roadway intersections and private driveways along Democracy Boulevard. Therefore, no barrier analysis was performed at NSA C.

Noise Sensitive Area D

NSA D consists of R-10, which is a private residence along Old Georgetown Road at Rockspring Drive. Similar to NSA C, barrier placement at this noise sensitive area is not feasible due to roadway intersections and private driveways. Although this receptor site is directly affected by Alternatives 2D, 2E, 3E, 3F, 3G, 3H, 5B, 5C and 6B, 2020 no-build and build noise levels do not differ by more than 2 dBA, and do not exceed 67 dBA.

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Noise Sensitive Area E

NSA E includes R-11, R-12, R-12A, and R-13. This noise sensitive area, which encompasses the Wildwood Manor community, is affected by Alternatives 2D, 2E, 3E, 3F, 3G, 3H, 5B, 5C and 6B. Barrier analysis was performed because 2020 noise levels exceed 67 dBA. A 1,092 meter (3,583 foot) long noise barrier with heights ranging from 6.1 meters to 6.7 meters (20 feet to 22 feet) would benefit 44 residences. The total estimated cost is \$1,218,200, and the estimated cost per residence is \$27,700. This area does not meet the current criteria for consideration of a noise barrier.

Noise Sensitive Area F

NSA F includes R-14, R-15, R-16, and R-17 of the Timberlawn community. The alternatives which affect this site are 2D, 2E, 3E, 3F, 3G, 3H, 5B, 5C and 6B. Barrier analysis was performed for this area because no-build and build noise levels for the design year 2020 exceed 67 dBA. A 1,151.1 meter (3,777 foot) long noise barrier with heights ranging from 3.7 meters to 7.3 meters (12 feet to 24 feet) was studied. The total estimated cost is \$1,462,600, and the cost per residence is \$26,600. The total number of benefitted residences is 55, which includes St. Mark's Church and tennis courts adjacent to Valerian Lane. This area does not meet the current criteria for consideration of a noise barrier.

Noise Sensitive Area G

This NSA consists of R-18 and R-19, adjacent to Old Georgetown Road at Tuckerman Lane. This area is directly affected by Alternatives 2D, 2E, 3E, 3F, 3G, 3H, 5B, 5C and 6B. Although noise levels at this area exceed 67 dBA for the design year 2020, noise mitigation barriers are not feasible at this site due to roadway intersections and private driveways. Therefore, no barrier analysis was performed for this area.

Noise Sensitive Area H

This NSA consists of the Windermere community, which includes R-20, R-21, R-21A, R-22, R-23, and R-25. Alternatives 2D, 2E, 3E, 3F, 3G, 3H, 5B, 5C and 6B affect this site, and 2020 no-build and build noise levels exceed 67 dBA. Three barriers were analyzed for this NSA, to accommodate the differing projected noise levels of Alternatives 3E, 3G, and 3H. This area does

not meet the current criteria for consideration of a noise barrier.

For Alternative 3E, a 532.2 meter (1,746 foot) long barrier with heights ranging from 1.2 meters to 5.5 meters (4 feet to 18 feet) would benefit 10 residences. A portion of this wall is atop a retaining wall adjacent to Ramp D. The total estimated cost would be \$399,700, and the cost per benefitted residence would be \$40,000.

A 434.3 meter (1,425 foot) long barrier was studied for Alternative 3G, and it would benefit 10 residences as well. This barrier would range from 3.7 meters to 5.5 meters (12 to 18 feet) and would cost \$39,500 per benefitted residence. A portion of this wall is atop a retaining wall adjacent to Ramp D. The total estimated cost would be \$394,200.

For Alternative 3H, a 684.2 meter (2,245 foot) long barrier with heights ranging from 6.7 meters to 7.3 meters (22 to 24 feet) would cost \$877,700. With 22 benefitted residences, the cost per residence would be \$39,900.

Noise Sensitive Area I

This NSA consists of 4 receptors sites on Earls Gate Lane, R-24, R-24A, R-24B, and R-24C in the Windermere community. Alternatives 2D, 2E, 3E, 3F, 3G, 3H, 5B, 5C, and 6B directly affect this site. Noise levels for the 2020 design year exceed 67 dBA. Barrier analysis calls for a 1,052.4 meter (3,453 foot) long barrier, 6.1 meters (20') high. The total cost is estimated at \$1,142,115.00. This wall would benefit 29 residences with a cost per residence of \$39,390.00. This area does not meet the current criteria for consideration of a noise barrier.

3. Construction Noise

As with any major construction project, areas around the construction site are likely to experience varied periods and degrees of noise impact. This type of project would probably employ the following pieces of equipment which would likely be sources of construction noise:

- Bulldozers and Earth Movers
- Graders
- Front End Loaders

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Dump and other Diesel Trucks
Compressors

Construction activity would usually occur during normal working hours on weekdays. Therefore, noise intrusion from construction activities probably would not occur during critical sleep or outdoor recreation periods.

Maintenance of construction equipment will be regular and thorough to minimize noise emissions because of inefficiently tuned engines, poorly lubricated moving parts, ineffective muffling systems, etc.

Temporary fencing will be considered in residential areas, where feasible, to screen construction activities.

G. Air Quality

1. Objectives and Type of Analysis

The air quality analysis has been prepared in accordance with the U.S. Environmental Protection Agency (US EPA), the Federal Highway Administration (FHWA), and the Maryland State Highway Administration (MD SHA) guidelines. Carbon monoxide (CO) impacts were analyzed as the accepted indicator of vehicle-generated air pollution. The years of analysis were 2000 and 2020. The EPA CAL3QHC dispersion model was used to predict carbon monoxide (CO) concentrations at air quality sensitive receptors. These detailed analyses predict air quality impacts from carbon monoxide vehicular emissions for the no-build and build alternatives for each analysis year. Modeled 1-hour and 8-hour average CO concentrations were added to background CO concentrations for comparison to the State and National Ambient Air Quality Standards (S/NAAQS).

2. Construction Impacts

The construction phase of the proposed project has the potential to impact the local ambient air quality by generating fugitive dust through activities such as demolition and materials handling. The State Highway Administration has addressed this possibility by establishing "Standard Specifications for Construction and Materials" which specifies procedures to be followed by contractors involved in site work.

The Maryland Air Management Administration was consulted to determine the adequacy of the "Specifications" in terms of satisfying the requirements of the "Regulations of Governing the Control of Air Pollution in the State of Maryland". The Maryland Air Management Administration found the specifications to be consistent with the requirements of these regulations. Therefore, during the construction period, all appropriate measures (Code of Maryland Regulations 10.18.06.03 D) would be incorporated to minimize the impact of the proposed transportation improvements on the air quality of the area.

3. Receptor Sites

Receptors for the microscale CO pollutant diffusion analysis are identical to those used in the noise analysis. These sites are described in Section I.C.7 and indicated on Figures I-9 and III-4 thru III-17.

4. Results of Microscale Analysis

The results of the calculations of CO concentrations at each of the sensitive receptor sites for the no-build and build alternatives are shown on Tables IV-9 through IV-17. The values shown consist of predicted CO concentration attributable to traffic on various roadway links plus projected background levels.

The air quality analysis indicates that carbon monoxide impact resulting from the implementation of the no-build or build alternatives would not result in a violation of the 1-hour or 8-hour S/NAAQS of 35ppm and 9ppm, respectively, at any receptor location. Relative comparison of impacts for the no-build versus the build alternatives indicate that implementation of the proposed alternatives would result in a slight increase or decrease in CO concentration depending on alternative alignment, traffic volume and speed, and the location of the specific receptor. Changes in concentrations are less than 1 ppm.

5. Conformity with Regional Air Quality Standards

This project is located in Montgomery County which is an air quality non-attainment area for CO and Ozone and has transportation control measures in the state in the State Implementation Plan (SIP). The project conforms with the SIP, as it originates from the conforming Transportation Improvement Program (TIP).

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6. Analysis Inputs

a. Traffic Data

The traffic data used for this *Air Quality Analysis* include average daily traffic volumes (ADT), hourly a.m. and p.m. peak hour volumes, percent daily distributions (diurnal traffic curves), and peak and off-peak vehicle speeds. Traffic data were obtained through the Project Planning Division of the Maryland State Highway Administration for the years 2000 and 2020. Free flow speeds were assumed to be the posted speed limits for Interstate 270, Democracy Boulevard, Tuckerman Lane, and Old Georgetown Road. On other side roads the free flow speeds were assumed to be 30 mph. Signal timing was assumed based on current and future traffic conditions. Signalized intersections were analyzed at the intersections of Old Georgetown Road and Tuckerman Lane, Old Georgetown Road at Rockspring Drive, Democracy Boulevard at Rockledge Drive, Democracy Boulevard at Fernwood Road, Democracy Boulevard at Montgomery Mall Entrance Road, and Democracy Boulevard at Westlake Drive. Because of low ramp traffic volumes, the signalized intersections on Old Georgetown Road and Democracy Boulevard were analyzed assuming free flow links, with a traffic speed of 30 mph.

b. Vehicular Emissions

Mobile source emission factors were obtained for us in the CO prediction models using the latest version of the (EPA) Mobile Source Emission Factors Model, MOBILE5a. The emission rates of individual vehicles are influenced by factors such as ambient air temperature, engine temperature, operating mode, average speed, and maintenance. The average emission rate for a fleet of vehicles operating on a highway is further influenced by the composition of the fleet, vehicle type, and vehicle age.

Vehicle CO emission rates increase with decreasing ambient temperatures. An ambient temperature of 20° F was used to determine peak hour impacts, while an average temperature of 35° F was selected to represent the composite hours which together make up the 8-hour average impact. Engine operating temperature is included in the emission rate calculation as that fraction of vehicles operating in the cold or hot start modes. For this analysis FTP starts was assumed. The vehicle fleet mix and age also influence the average fleet emission rates. The fleet mix was assumed based on the average daily truck traffic on I-270, Old Georgetown Road, Democracy Boulevard, and Tuckerman Lane.

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Because MOBILE5a cannot currently directly calculate idle emissions factor, the methodology contained in EPA Information Sheet #2 was used. This method uses MOBILE5a to calculate emissions (g/mi) for a speed of 2.5 mph and then multiplies the resulting emissions by 2.5 mph to get idle emission factors in g/hr.

All traffic data used for this analysis can be found in the Air Quality Technical Report for this project.

To estimate the maximum eight-hour average CO concentration, the daily traffic distributions (diurnal traffic curve) were analyzed to determine which consecutive eight-hour period resulted in the highest average traffic volume combined with worst case meteorological conditions. Each hour within the eight-hour period was then analyzed. Free flow travel speed for each link was determined based on the traffic volume in the link with 2 m/sec wind speed and atmospheric stability class D, if before 5 p.m., or 1 m/sec wind speed and atmospheric stability class F, if after 5 p.m. The CO impacts were arranged into a spreadsheet matrix as a function of time, and maximum average hourly CO concentration identified for each receptor/year/scenario combination. Maximum 8-hour averages were calculated in the spreadsheet.

H. Caline3 Analysis

The mathematical model used to estimate future air quality concentrations was the current version of the EPA CAL3QHC dispersion model. The CAL3QHC dispersion model is a microcomputer-based modeling methodology developed to predict the level of CO or other inert pollutant concentrations from motor vehicles traveling near roadway intersections, under worst case meteorological conditions. CAL3QHC is a consolidation of CALINE3 line source dispersion model and an algorithm that internally estimates the length of queues formed by idling vehicles at signalized intersections. Based on the assumption that vehicles at an intersection are either in motion or in an idling state, the program is designed to predict air pollution concentrations by combining the emissions from both moving and idling vehicles. By including emissions from idling vehicles, CAL3QHC represents a more reliable model than CALINE3 alone for predicting CO concentrations near signalized intersections where idling vehicles interact with moving vehicles in complex configurations. Predictions of free flow traffic volumes using either CALINE3 or CAL3QHC would yield equivalent results.

The CAL3QHC CO dispersion model requires that each highway network be broken down into individual roadway links. A link is defined for any change in traffic volume, speed (emission

factor), or geometry. The information provided to the model includes the link end point coordinates, the link types (at grade, depressed, on fill, or structures), the link width for free flow lanes, link width for queue lanes, the average height of the emission release, the average rate of running emissions, average vehicle volume per link. Other input required by the model includes receptor coordinates, averaging time, surface roughness, settling velocity, deposition velocity, and a metric conversion scale factor. Variables held constant throughout the analysis are presented as follows:

**CAL3QHC INPUTS
HELD CONSTANT FOR INTERSTATE 270**

<u>VARIABLE</u>	<u>VALUE</u>
Average Time	60 Minutes
Surface Roughness	108 cm
Settling Velocity	0.0 cm/second
Deposition Velocity	0.0 cm/second
Scale Factor	0.3048 meters/foot
Source Height	0.0 feet

For direct comparison to the S/NAAQS, CO concentrations were estimated for worst-case one-hour and eight-hour periods. The meteorological conditions which would result in the maximum one-hour concentrations are: (1) conditions of very light wind speeds (1.0 m/sec) and (2) very stable atmospheric conditions (F Stability). The wind direction which results in the maximum receptor concentration is dependent upon roadway/receptor geometrics. In general, for receptors near a limited access or free flow roadway, wind angles nearly parallel to the roadway yield the highest CO concentrations. For receptors near a signalized intersection, wind angles which yield the highest CO concentrations are dependent upon the interaction of moving and idling vehicles, e.g., level of service, signal cycle length, approach link red time, and average speed. The interaction of multiple variables at signalized intersections results in a complex condition which may result in worst case wind angles varying from those nearly parallel to the roadway to those nearly perpendicular to the roadway.

The worst case 1-hour average analyses conducted for this study were performed using the highest one-hour traffic volumes, Stability Class F, and a 1.0 m/sec wind speed. Both a.m. and p.m. peak hours were analyzed. Wind angles were varied in five degree increments through a full 360 degrees. The maximum one-hour CO impact was obtained for each air quality sensitive receptor by adding the background concentration to the one-hour CO receptor-specific

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concentration. The maximum CO impacts for each receptor was then compared to the S/NAAQS to determine if any violations of the standards would occur.

In order to calculate the total concentration of CO which occurs at a particular receptor site during worst cast meteorological conditions, the background levels are considered in addition to the levels directly attributable to the facility under consideration.

The background levels were derived from the application of rollback methodology to on-site monitoring conducted by the Maryland Air Management Administration at their Rockville Pike Site in Montgomery County during the period of 1992.

Background CO, PPM

	<u>1 Hour</u>	<u>8 Hour</u>
2000	4.4	2.6
2020	4.4	2.6

Data obtained from Maryland Air Quality Data Report 1992

Maryland Department of the Environment
Air Management Administration
2500 Broening Highway
Baltimore, Maryland 21224

TABLE IV-9

YEAR 2000 CO CONCENTRATION ESTIMATES (PPM)
ALTERNATIVES 2C, 2D, AND 2E

RECEPTOR	2000 NO-BUILD		2000 ALT. 2C		2000 ALT. 2D		2000 ALT. 2E	
	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR
R-10	9.8/9.3	4.9	9.8/9.3	4.9	9.9/9.3	4.8	10.4/9.9	5.3
R-11	8.4/8.5	4.0	8.4/8.5	4.0	8.6/8.5	4.1	9.1/8.6	4.1
R-12	7.8/7.5	3.7	7.8/7.5	3.7	7.9/7.6	3.7	8.0/7.5	3.7
R-12a	7.1/6.8	3.6	7.1/6.8	3.6	7.3/6.8	3.6	7.2/6.7	3.6
R-13	7.8/7.7	3.8	7.8/7.7	3.8	7.8/7.6	3.8	8.0/7.8	3.9
R-14	7.0/6.7	3.5	7.0/6.7	3.5	7.0/6.8	3.5	7.2/6.8	3.6
R-15	7.3/7.2	3.7	7.3/7.2	3.7	7.3/7.3	3.6	7.4/6.8	3.6
R-16	8.0/7.9	3.9	8.0/7.9	3.9	8.0/8.1	3.9	7.5/7.0	3.6
R-17	8.7/8.5	4.2	8.7/8.5	4.2	8.5/8.3	4.2	8.4/8.1	4.1
R-18	14.4/12.9	7.3	14.4/12.9	7.3	14.5/13.0	7.4	14.4/13.1	7.4
R-19	12.6/10.7	5.9	12.6/10.7	5.9	12.8/10.8	5.9	13.5/11.0	6.2
R-20	6.7/6.6	3.4	6.7/6.6	3.4	6.7/6.6	3.4	6.7/6.5	3.5
R-21	7.1/6.9	3.5	7.1/6.9	3.5	7.1/7.0	3.6	7.0/6.7	3.5
R-21a	7.1/6.9	3.5	7.1/6.9	3.5	7.1/7.0	3.5	7.0/6.7	3.5
R-22	7.3/7.2	3.7	7.3/7.2	3.7	7.3/7.3	3.7	7.4/7.3	3.6
R-23	7.6/7.3	3.7	7.6/7.3	3.7	7.7/7.5	3.7	7.8/7.6	3.8
R-24	7.0/7.0	3.7	7.0/7.0	3.7	7.0/7.0	3.7	7.2/7.0	3.7
R-24a	6.3/6.4	3.5	6.3/6.4	3.5	6.4/6.4	3.5	6.6/6.4	3.5
R-25	7.3/7.4	3.6	7.3/7.4	3.6	7.5/7.6	3.6	7.7/7.4	3.6

NOTES: 1-hour average CO concentrations include a 4.4 ppm background concentration.
8-hour average CO concentrations include a 2.6 ppm background concentration.
The S/NAAQS for the 1-hour average is 35.0 ppm.
The S/NAAQS for the 8-hour average is 9.0 ppm.

TABLE IV-10

YEAR 2020 CO CONCENTRATION ESTIMATES (PPM)
ALTERNATIVES 2C, 2D, AND 2E

RECEPTOR	2020 NO-BUILD		2020 ALT. 2C		2020 ALT. 2D		2020 ALT. 2E	
	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR
R-10	11.1/14.1	5.9	11.1/14.1	5.9	11.2/14.3	5.9	10.3/12.4	5.9
R-11	8.2/8.5	4.0	8.2/8.5	4.0	8.2/8.5	4.1	8.7/8.4	4.0
R-12	7.5/7.6	3.8	7.5/7.6	3.8	7.5/7.6	3.8	7.6/7.3	3.7
R-12a	6.9/6.8	3.6	6.9/6.8	3.6	6.9/6.8	3.6	6.9/6.7	3.6
R-13	7.6/7.7	3.6	7.6/7.7	3.6	7.6/7.9	3.9	7.7/7.5	3.8
R-14	7.4/7.5	3.7	7.4/7.5	3.7	7.4/7.5	3.7	7.0/7.2	3.6
R-15	7.7/7.7	3.8	7.7/7.7	3.8	7.7/7.6	3.8	7.1/7.2	3.7
R-16	7.9/8.2	4.1	7.9/8.2	4.1	8.0/8.3	4.1	7.2/7.1	3.7
R-17	9.4/10.7	4.7	9.4/10.7	4.7	9.3/10.6	4.6	8.4/8.8	4.3
R-18	13.5/12.8	7.9	13.5/12.8	7.9	13.6/13.0	7.6	13.6/13.0	7.6
R-19	12.7/14.0	6.1	12.7/14.0	6.1	12.7/13.9	6.1	13.4/12.7	6.4
R-20	6.9/8.7	3.8	6.9/8.7	3.8	6.9/8.9	3.8	6.8/7.7	3.6
R-21	7.0/7.8	3.7	7.0/7.8	3.7	6.9/7.8	3.7	6.9/7.6	3.5
R-21a	7.0/7.8	3.6	6.9/7.8	3.6	6.9/7.8	3.6	6.9/7.7	3.5
R-22	7.4/7.8	3.7	7.4/7.8	3.7	7.3/7.8	3.8	7.3/7.5	3.7
R-23	7.4/7.8	3.8	7.4/7.8	3.8	7.4/7.9	3.8	7.6/7.3	3.7
R-24	6.8/7.1	3.7	6.8/7.1	3.7	6.8/7.1	3.7	6.9/7.1	3.7
R-24a	6.4/6.6	3.5	6.4/6.6	3.5	6.5/6.6	3.5	6.5/6.6	3.5
R-25	7.4/7.4	3.7	7.4/7.4	3.7	7.5/7.5	3.7	7.4/7.3	3.6

NOTES: 1-hour average CO concentrations include a 4.4 ppm background concentration.
8-hour average CO concentrations include a 2.6 ppm background concentration.
The S/NAAQS for the 1-hour average is 35.0 ppm.
The S/NAAQS for the 8-hour average is 9.0 ppm.

TABLE IV-11

YEAR 2000 CO CONCENTRATION ESTIMATES (PPM)
ALTERNATIVES 3E, 3F, AND 3G

RECEPTOR	2000 NO-BUILD		2000 ALT. 3E		2000 ALT. 3F		2000 ALT. 3G	
	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR
R-10	9.8/9.3	4.9	9.0/8.6	4.8	8.9/8.5	4.8	9.0/8.7	4.8
R-11	8.4/8.5	4.0	9.9/8.7	4.2	9.2/8.9	4.4	9.6/8.7	4.2
R-12	7.8/7.5	3.7	8.4/7.9	3.9	8.1/7.9	4.0	8.1/7.6	3.9
R-12a	7.1/6.8	3.6	7.2/7.1	3.6	7.3/7.1	3.5	7.2/7.1	3.6
R-13	7.8/7.7	3.8	8.6/8.0	3.8	8.4/8.1	4.1	8.6/8.0	3.9
R-14	7.0/6.7	3.5	7.2/7.0	3.6	7.1/6.9	3.6	7.3/6.9	3.6
R-15	7.3/7.2	3.7	7.9/7.1	3.7	7.6/7.6	3.8	7.2/7.0	3.6
R-16	8.0/7.9	3.9	8.4/8.0	3.9	8.6/8.3	4.1	7.7/7.7	3.8
R-17	8.7/8.5	4.2	10.0/9.1	4.4	10.5/9.5	4.5	9.1/9.0	4.2
R-18	14.4/12.9	7.3	14.4/14.1	7.8	14.4/14.1	7.7	14.4/14.1	7.8
R-19	12.6/10.7	5.9	12.7/12.4	6.1	12.7/12.4	5.5	12.7/12.4	6.1
R-20	6.7/6.6	3.4	6.7/6.5	3.5	6.7/6.6	3.4	6.7/6.6	3.5
R-21	7.1/6.9	3.5	7.5/7.3	3.6	8.3/8.2	4.3	7.8/7.0	3.7
R-21a	7.1/6.9	3.5	7.9/7.6	3.6	7.8/8.0	4.0	7.8/7.0	3.6
R-22	7.3/7.2	3.7	8.4/7.9	3.9	9.4/8.8	4.3	10.1/8.4	4.2
R-23	7.6/7.3	3.7	8.0/7.6	3.7	9.0/8.7	4.2	8.8/8.2	3.8
R-24	7.0/7.0	3.7	7.5/7.6	3.9	7.2/7.3	3.6	7.1/7.4	3.8
R-24a	6.3/6.4	3.5	6.8/6.8	3.6	6.9/6.7	3.5	6.7/6.4	3.5
R-25	7.3/7.4	3.6	7.7/7.5	3.7	8.1/8.3	4.0	7.9/7.6	3.7

NOTES: 1-hour average CO concentrations include a 4.4 ppm background concentration
8-hour average CO concentrations include a 2.6 ppm background concentration
The S/NAAQS for the 1-hour average is 35.0 ppm.
The S/NAAQS for the 8-hour average is 9.0 ppm.

TABLE IV-12

YEAR 2020 CO CONCENTRATION ESTIMATES (PPM)
ALTERNATIVES 3E, 3F, AND 3G

RECEPTOR	2020 NO-BUILD		2020 ALT. 3E		2020 ALT. 3F		2020 ALT. 3G	
	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR
R-10	11.1/14.1	5.9	8.6/10.1	4.6	8.7/9.8	4.8	8.8/10.3	4.6
R-11	8.2/8.5	4.0	9.4/10.4	4.2	9.2/9.3	4.4	9.8/10.6	4.2
R-12	7.5/7.6	3.8	7.9/8.9	3.8	7.8/8.1	3.9	8.1/9.1	3.8
R-12a	6.9/6.8	3.6	7.0/7.7	3.6	7.1/6.9	3.5	7.1/7.7	3.6
R-13	7.6/7.7	3.6	8.5/9.3	3.8	8.0/8.3	4.1	9.5/9.8	3.9
R-14	7.4/7.5	3.7	7.0/7.7	3.5	6.9/6.9	3.8	7.2/7.8	3.6
R-15	7.7/7.7	3.8	7.6/8.3	3.6	7.7/7.7	3.8	8.0/8.3	3.6
R-16	7.9/8.2	4.1	8.5/8.9	3.8	8.7/8.2	4.1	9.5/8.9	3.7
R-17	9.4/10.7	4.7	10.1/10.2	4.2	10.2/9.5	4.5	10.6/10.3	4.1
R-18	13.5/12.8	7.9	13.3/16.1	7.4	13.3/13.9	7.2	13.3/16.1	7.3
R-19	12.7/14.0	6.1	12.0/14.6	6.0	12.0/12.8	5.4	12.0/14.6	5.9
R-20	6.9/8.7	3.8	6.6/7.1	3.4	6.9/6.6	3.5	6.7/7.3	3.5
R-21	7.0/7.8	3.7	7.5/7.5	3.9	8.9/8.1	4.4	8.5/7.7	3.7
R-21a	7.0/7.8	3.6	8.2/7.6	4.0	8.2/8.2	4.2	8.6/7.6	3.7
R-22	7.4/7.8	3.7	8.0/8.5	3.9	8.8/8.7	4.4	11.5/9.2	4.2
R-23	7.4/7.8	3.8	8.0/8.5	3.8	9.0/8.8	4.2	9.8/9.4	3.9
R-24	6.8/7.1	3.7	7.8/8.1	3.9	7.2/7.2	3.6	7.3/8.0	3.8
R-24a	6.4/6.6	3.5	7.0/7.3	3.6	6.9/6.8	3.5	7.2/7.1	3.5
R-25	7.4/7.4	3.7	7.4/8.1	3.6	7.9/8.2	3.9	8.7/8.6	3.7

NOTES: 1-hour average CO concentrations include a 4.4 ppm background concentration.
8-hour average CO concentrations include a 2.6 ppm background concentration.
The S/NAAQS for the 1-hour average is 35.0 ppm.
The S/NAAQS for the 8-hour average is 9.0 ppm.

TABLE IV-13

YEAR 2000 CO CONCENTRATION ESTIMATES (PPM)
ALTERNATIVES 4A, 4B, 4C, AND 4D

RECEPTOR	2000 NO-BUILD		2000 ALT. 4A3		2000 ALT. 4B		2000 ALT. 4C		2000 ALT. 4D	
	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR
R-1	7.4/8.0	3.9	7.3/8.0	3.9	7.8/8.3	4.0	7.4/8.3	4.0	7.5/8.1	4.0
R-1a	6.2/6.4	3.4	6.3/7.0	3.5	6.6/6.5	3.5	6.2/7.0	3.5	6.2/7.1	3.5
R-2	8.6/9.4	4.5	8.6/9.2	4.5	8.5/9.2	4.4	8.8/9.3	4.4	9.0/9.6	4.6
R-3	6.5/7.0	3.6	6.5/7.7	3.8	6.9/7.0	3.8	6.3/7.3	3.6	6.4/7.2	3.7
R-4	8.3/8.9	4.2	8.9/9.9	4.5	8.3/8.9	4.4	8.4/8.7	4.3	8.0/8.7	4.3
R-5	7.2/7.3	3.9	7.4/8.7	4.2	7.8/7.5	4.4	7.3/8.2	4.1	7.3/8.3	4.1
R-6	6.0/6.0	3.2	6.0/6.7	3.4	6.1/5.9	3.3	6.0/6.7	3.4	6.0/6.6	3.4
R-7	7.1/6.9	3.9	7.1/6.9	3.9	7.3/7.1	3.8	7.2/6.9	3.8	7.1/7.0	3.9
R-8	8.3/9.2	4.2	9.4/10.2	4.6	8.3/9.2	4.3	8.3/9.2	4.3	8.1/9.1	4.3
R-9	9.4/12.6	5.1	10.3/12.3	5.2	9.6/12.7	5.0	9.4/11.9	5.0	9.6/12.3	5.2

IV-51

NOTES: 1-hour average CO concentrations include a 4.4 ppm background concentration.
8-hour average CO concentrations include a 2.6 ppm background concentration.
The S/NAAQS for the 1-hour average is 35.0 ppm.
The S/NAAQS for the 8-hour average is 9.0 ppm.

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TABLE IV-14

YEAR 2020 CO CONCENTRATION ESTIMATES (PPM)
ALTERNATIVES 4A, 4B, 4C, AND 4D

RECEPTOR	2020 NO-BUILD		2020 ALT. 4A3		2020 ALT. 4B		2020 ALT. 4C		2020 ALT. 4D	
	1-HOUR AM/PM	8-HOUR	1-HOUR AM/PM	8-HOUR	1-HOUR AM/PM	8-HOUR	1-HOUR AM/PM	8-HOUR	1-HOUR AM/PM	8-HOUR
R-1	7.3/8.1	4.1	7.4/8.1	4.2	7.5/8.5	4.3	7.5/8.1	4.3	7.5/8.3	4.1
R-1a	6.0/6.5	3.4	6.3/7.2	3.5	6.4/6.9	3.7	6.2/6.8	3.5	6.1/7.0	3.6
R-2	8.8/9.3	4.6	8.9/9.5	4.5	8.8/9.4	4.4	8.9/9.2	4.4	9.4/9.5	4.8
R-3	6.7/7.2	3.9	6.8/7.9	4.1	7.0/7.5	4.1	6.7/7.2	3.9	6.6/7.4	3.9
R-4	8.9/8.8	4.2	9.5/10.0	4.5	8.9/9.0	4.4	8.9/8.6	4.3	8.3/8.7	4.3
R-5	7.2/7.2	4.1	7.3/8.7	4.5	7.6/8.9	4.7	7.2/8.2	4.3	7.2/8.3	4.3
R-6	6.0/6.0	3.4	6.0/6.5	3.5	6.0/6.6	3.4	5.9/6.5	3.5	6.0/6.5	3.5
R-7	7.0/6.9	4.0	7.1/6.8	4.1	7.0/7.4	4.1	7.0/6.9	3.9	7.0/6.9	4.0
R-8	8.7/9.2	4.3	10.0/10.1	4.7	8.7/9.0	4.4	8.9/8.8	4.3	8.6/8.8	4.3
R-9	10.0/13.2	5.8	11.3/12.4	5.3	10.1/11.9	5.2	10.2/12.0	5.3	10.4/12.7	5.5

NOTES: 1-hour average CO concentrations include a 4.4 ppm background concentration.
8-hour average CO concentrations include a 2.6 ppm background concentration.
The S/NAAQS for the 1-hour average is 35.0 ppm.
The S/NAAQS for the 8-hour average is 9.0 ppm.

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TABLE IV-15

YEAR 2000 CO CONCENTRATION ESTIMATES (PPM)
ALTERNATIVES 5B, 5C, AND 3H

RECEPTOR	2000 NO-BUILD		2000 ALT. 5B		2000 ALT. 5C		2000 ALT. 3H	
	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR
R-1	7.4/8.0	3.9	7.4/7.7	3.9	7.4/7.8	4.0	7.4/7.9	4.0
R-1a	6.2/6.4	3.4	6.1/6.4	3.4	6.2/6.4	3.4	6.2/6.4	3.4
R-2	8.6/9.4	4.5	8.5/8.9	4.3	8.5/9.2	4.5	8.6/9.2	4.5
R-3	6.5/7.0	3.6	6.1/6.7	3.5	6.4/6.9	3.6	6.5/7.0	3.6
R-4	8.3/8.9	4.2	7.7/8.6	4.0	8.2/8.8	4.2	8.3/8.8	4.2
R-5	7.2/7.3	3.9	7.1/7.3	3.9	7.2/7.3	3.9	7.2/7.3	3.9
R-6	6.0/6.0	3.2	6.1/6.0	3.2	6.0/6.0	3.2	6.0/6.0	3.2
R-7	7.1/6.9	3.9	6.9/6.9	3.8	7.1/7.9	3.9	7.1/6.9	3.9
R-8	8.3/9.2	4.2	7.9/8.9	4.1	8.1/9.1	4.2	8.2/9.2	4.2
R-9	9.4/12.6	5.1	9.2/12.1	5.0	9.4/12.5	5.1	9.4/12.5	5.1
R-10	9.8/9.3	4.9	9.7/9.2	4.8	9.8/9.2	4.9	9.8/9.7	4.9
R-11	8.4/8.5	4.0	8.4/8.3	4.0	8.4/8.5	4.0	8.6/8.3	4.0
R-12	7.8/7.5	3.7	7.8/7.3	3.7	7.8/7.5	3.7	7.7/7.4	3.7
R-12a	7.1/6.8	3.6	7.1/6.8	3.6	7.1/6.8	3.6	7.1/7.0	3.6
R-13	7.8/7.7	3.8	7.8/7.4	3.7	7.8/7.7	3.8	7.9/7.9	3.8
R-14	7.0/6.7	3.5	6.9/6.6	3.5	7.0/6.7	3.5	7.0/8.1	3.6
R-15	7.3/7.2	3.7	7.2/7.2	3.6	7.2/7.2	3.7	7.1/8.1	3.6
R-16	8.0/7.9	3.9	8.0/7.6	3.8	8.0/7.9	3.9	8.0/8.0	4.0
R-17	8.7/8.5	4.2	8.5/8.3	4.1	8.7/8.4	4.2	8.3/8.6	4.0
R-18	14.4/12.9	7.3	14.4/12.9	7.3	14.4/12.9	7.3	14.4/14.1	7.3
R-19	12.6/10.7	5.9	12.6/10.7	5.8	12.6/10.7	5.9	12.6/12.4	5.9
R-20	6.7/6.6	3.4	6.7/6.4	3.4	6.7/6.6	3.4	6.7/6.5	3.4
R-21	7.1/6.9	3.5	7.0/6.8	3.5	7.1/6.9	3.5	6.9/6.8	3.5
R-21a	7.1/6.9	3.5	7.0/6.8	3.4	7.1/6.9	3.5	6.9/6.8	3.5
R-22	7.3/7.2	3.7	7.2/7.2	3.6	7.3/7.2	3.7	7.2/7.2	3.6
R-23	7.6/7.3	3.7	7.5/7.2	3.6	7.6/7.3	3.7	7.5/7.2	3.7
R-24	7.0/7.0	3.7	6.9/7.0	3.7	7.0/7.0	3.7	6.8/6.8	3.6
R-24a	6.3/6.4	3.5	6.4/6.4	3.5	6.4/6.4	3.5	6.3/6.6	3.4
R-25	7.3/7.4	3.6	7.2/7.2	3.5	7.3/7.4	3.6	7.1/7.1	3.6

NOTES: 1-hour average CO concentrations include a 4.4 ppm background concentration.
8-hour average CO concentrations include a 2.6 ppm background concentration.
The S/NAAQS for the 1-hour average is 35.0 ppm.
The S/NAAQS for the 8-hour average is 9.0 ppm.

TABLE IV-16

YEAR 2020 CO CONCENTRATION ESTIMATES (PPM)
ALTERNATIVES 5B, 5C, AND 3H

RECEPTOR	2020 NO-BUILD		2020 ALT. 5B		2020 ALT. 5C		2020 ALT. 3H	
	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR
R-1	7.3/8.1	4.1	7.3/7.8	4.1	7.3/8.0	4.1	7.3/8.1	4.1
R-1a	6.0/6.5	3.4	6.1/6.5	3.4	6.0/6.4	3.4	6.0/6.4	3.4
R-2	8.8/9.3	4.6	8.6/8.9	4.4	8.6/9.1	4.6	8.0/9.2	4.5
R-3	6.7/7.2	3.9	6.4/6.9	3.7	6.7/7.1	3.9	6.7/7.2	3.9
R-4	8.9/8.8	4.2	8.3/8.7	4.0	8.6/8.8	4.2	8.7/8.8	4.2
R-5	7.2/7.2	4.1	7.1/7.2	4.1	7.2/7.2	4.1	7.2/7.2	4.1
R-6	6.0/6.0	3.4	6.0/6.0	3.4	6.0/6.0	3.4	6.0/6.0	3.4
R-7	7.0/6.9	4.0	6.7/6.8	3.9	7.0/6.8	4.0	7.0/6.9	4.0
R-8	8.7/9.2	4.3	8.2/9.2	4.2	8.4/9.2	4.3	8.7/9.2	4.3
R-9	10.0/13.2	5.8	9.9/12.4	5.6	9.9/13.0	5.8	9.9/13.2	5.7
R-10	11.1/14.1	5.9	9.7/12.1	5.2	11.0/14.1	5.9	9.6/13.9	5.9
R-11	8.2/8.5	4.0	8.1/8.2	3.9	8.1/8.5	4.0	8.3/8.5	4.1
R-12	7.5/7.6	3.8	7.5/7.5	3.7	7.5/7.5	3.8	7.3/7.6	3.8
R-12a	6.9/6.8	3.6	6.9/6.8	3.6	6.9/6.8	3.6	6.9/6.8	3.6
R-13	7.6/7.7	3.6	7.3/7.5	3.7	7.6/7.7	3.6	7.5/7.8	4.0
R-14	7.4/7.5	3.7	6.8/6.9	3.5	7.4/7.4	3.7	7.4/7.1	3.6
R-15	7.7/7.7	3.8	7.0/7.1	3.6	7.7/7.6	3.8	7.7/7.4	3.8
R-16	7.9/8.2	4.1	7.8/7.8	3.9	7.9/8.2	4.1	7.8/8.1	4.0
R-17	9.4/10.7	4.7	8.1/9.4	4.2	9.2/10.6	4.7	8.6/10.6	4.5
R-18	13.5/12.8	7.9	13.5/12.8	7.9	13.5/12.8	7.9	13.5/12.8	7.9
R-19	12.7/14.0	6.1	12.7/12.9	6.1	12.7/14.0	6.1	12.7/13.8	6.1
R-20	6.9/8.7	3.8	6.7/8.3	3.6	6.8/8.7	3.8	6.7/8.6	3.9
R-21	7.0/7.8	3.7	6.9/7.6	3.5	7.0/7.8	3.7	6.8/8.5	3.8
R-21a	7.0/7.8	3.6	6.9/7.5	3.5	7.0/7.8	3.6	6.8/8.6	3.8
R-22	7.4/7.8	3.7	6.8/7.4	3.6	7.4/7.7	3.7	7.0/8.3	3.9
R-23	7.4/7.8	3.8	7.2/7.1	3.7	7.4/7.8	3.8	7.1/8.0	3.8
R-24	6.8/7.1	3.7	6.7/6.9	3.8	6.7/7.0	3.7	6.6/7.0	3.7
R-24a	6.4/6.6	3.5	6.2/6.4	3.5	6.4/6.6	3.5	6.2/6.7	3.5
R-25	7.4/7.4	3.7	7.2/6.9	3.6	7.4/7.4	3.7	7.1/7.4	3.7

NOTES: 1-hour average CO concentrations include a 4.4 ppm background concentration.
8-hour average CO concentrations include a 2.6 ppm background concentration.
The S/NAAQS for the 1-hour average is 35.0 ppm.
The S/NAAQS for the 8-hour average is 9.0 ppm.

TABLE IV-17

YEAR 2000 AND 2020 CO CONCENTRAION ESTIMATES (PPM)
ALTERNATIVE 6B

RECEPTOR	2000 NO-BUILD		2000 ALT. 6B		2020 NO-BUILD		2020 ALT. 6B	
	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM / PM	8-HOUR	1-HOUR AM/PM	8-HOUR
R-1	7.4/8.0	3.9	7.4/7.8	4.0	7.3/8.1	4.1	7.2/8.1	4.1
R-1A	6.2/6.4	3.4	6.1/6.4	3.4	6.0/6.5	3.4	6.0/6.4	3.4
R-2	8.6/9.4	4.5	8.4/9.1	4.5	8.8/9.3	4.6	8.7/9.1	4.6
R-3	6.5/7.0	3.6	6.5/6.8	3.6	6.7/7.2	3.9	6.5/6.9	3.7
R-4	8.3/8.9	4.2	7.4/8.4	4.0	8.9/8.8	4.2	8.0/8.5	4.1
R-5	7.2/7.3	3.9	7.2/7.3	3.9	7.2/7.2	4.1	7.2/7.2	4.1
R-6	6.0/6.0	3.2	6.1/6.0	3.3	6.0/6.0	3.4	5.9/6.0	3.4
R-7	7.1/6.9	3.9	7.3/7.0	3.9	7.0/6.9	4.0	7.1/6.9	4.0
R-8	8.3/9.2	4.2	7.5/8.8	4.1	8.7/9.2	4.3	7.9/8.8	4.2
R-9	9.4/12.6	5.1	8.9/12.4	5.5	10.0/13.2	5.8	9.6/12.8	5.5
R-10	9.8/9.3	4.9	9.0/8.6	4.7	11.1/14.1	5.9	8.6/10.1	4.6
R-11	8.4/8.5	4.0	9.9/8.7	4.2	8.2/8.5	4.0	9.4/10.4	4.2
R-12	7.8/7.5	3.7	8.4/7.9	3.9	7.5/7.6	3.8	7.9/8.9	3.8
R-12a	7.1/6.8	3.6	7.2/7.1	3.6	6.9/6.8	3.6	7.0/7.7	3.6
R-13	7.8/7.7	3.8	8.6/8.0	3.8	7.6/7.7	3.6	8.5/9.3	3.8
R-14	7.0/6.7	3.5	7.2/7.0	3.6	7.4/7.5	3.7	7.0/7.7	3.5
R-15	7.3/7.2	3.7	7.9/7.1	3.7	7.7/7.7	3.8	7.6/8.3	3.6
R-16	8.0/7.9	3.9	8.4/8.0	3.9	7.9/8.2	4.1	8.5/8.9	3.8
R-17	8.7/8.5	4.2	10.0/9.1	4.4	9.4/10.7	4.7	10.1/10.2	4.2
R-18	14.4/12.9	7.3	14.4/14.1	7.8	13.5/12.8	7.9	13.3/16.1	7.4
R-19	12.6/10.7	5.9	12.7/12.4	6.1	12.7/14.0	6.1	12.0/14.6	6.0
R-20	6.7/6.6	3.4	6.7/6.5	3.5	6.9/8.7	3.8	6.6/7.1	3.4
R-21	7.1/6.9	3.5	7.5/7.3	3.6	7.0/7.8	3.7	7.5/7.5	3.9
R-21a	7.1/6.9	3.5	7.9/7.6	3.6	7.0/7.8	3.6	8.2/7.6	4.0
R-22	7.3/7.2	3.7	8.4/7.9	3.9	7.4/7.8	3.7	8.0/8.5	3.9
R-23	7.6/7.3	3.7	8.0/7.6	3.7	7.4/7.8	3.8	8.0/8.5	3.8
R-24	7.0/7.0	3.7	7.6/7.5	3.9	6.8/7.1	3.7	7.7/8.0	3.9
R-24a	6.3/6.4	3.5	6.8/6.7	3.6	6.4/6.6	3.5	6.9/7.2	3.6
R-25	7.3/7.4	3.6	7.7/7.5	3.7	7.4/7.4	3.7	7.4/8.1	3.7

NOTES: 1-hour average CO concentrations include a 4.4 ppm background concentration.
8-hour average CO concentrations include a 2.6 ppm background concentration.
The S/NAAQS for the 1-hour average is 35.0 ppm.
The S/NAAQS for the 8-hour average is 9.0 ppm.

V. COMMENTS AND COORDINATION

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V. COMMENTS AND COORDINATION

PROJECT MEETINGS AND COORDINATION

An Alternates Public Meeting was held on March 3, 1988 at Walter Johnson High School in Bethesda, Maryland. Ten alternates for interchanges at MD 187, a new Rockledge Drive connector, Democracy Boulevard and Fernwood Road were presented to the public for its review and comment. Approximately 100 citizens attended the meeting. In general, citizens recognized the need for the project, but objected to the proposed development in the Davis Tract. Citizens requested that noise barriers and landscaping be provided to minimize noise impacts, including the St. Mark Church location.

Because SHA did not want to proceed with new interchange studies without an approved Master Plan, the project was put on hold until the Master Plan was approved in 1992.

A Supplemental Alternates Public Meeting was held on June 8, 1994 at Walter Johnson High School in Bethesda, Maryland. Twelve alternates for interchanges at MD 187, a new Rockledge connector, Democracy Boulevard, Fernwood Road and the I-270 Y-Split were presented to the public for its review and comment. Approximately 150 citizens attended the meeting. Alternates 3A and 3B and 6A and 6B were more supported than alternates 4A, 4B, 4C, and 4D. Citizens requested that noise barriers be provided to minimize noise impacts, including the St. Mark Church location. Citizens requested that pedestrian access be considered at MD 187 and at Rock Spring Drive. They also requested that a transit option be considered.

The project was discussed at two Quarterly Interagency Meetings. On October 21, 1992, a project update was presented. SHA indicated that additional traffic data was being developed for the interchanges and would be included in the project purpose and need in the future. Representatives from National Marine Fisheries Service, Maryland Historical Trust, Environmental Protection Agency, and Baltimore Metropolitan Council were present. The agencies requested a status update of the inside widening projects occurring within the same location and any development plans.

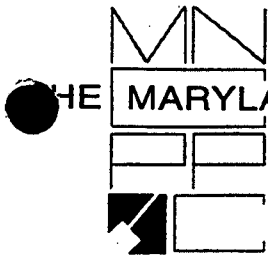
On October 19, 1994, the project purpose and need and preliminary alternates were presented. The alternates included 2A, 2B, 3A, 3B, 4A, 4B, 4C, 4D, 5B, 5C, 6A, 6C, and HOV connections from Grosvenor Lane bridge to I-270. Representatives from Environmental Protection Agency, the U.S. Army Corps of Engineers, the Maryland Office of Planning, the

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Department of Natural Resources, and the Maryland Historical Trust were present. SHA requested agency concurrence that the combined NEPA/404 process would not be required.

The U.S. Army Corps of Engineers requested quantification of length of stream impacted, and subsequently concurred that the combined NEPA/404 process would not be required (see correspondence) conditioned upon a field review and further consultation with SHA. While an interagency field review was conducted in December, 1994, a wetland jurisdictional field review was held on July 18, 1995 (See correspondence).

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THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION
8787 Georgia Avenue • Silver Spring, Maryland 20910-3760

January 23, 1986

Mr. Louis H. Ege, Jr., Acting Chief
Bureau of Project Planning
Maryland Department of Transportation
State Highway Administration
P.O. Box 717/707 North Calvert Street
Baltimore, MD 21203-0717

JAN 27 9 22 AM '86
BUREAU OF
PROJECT PLANNING

RE: Contract No. M 401-153-372 (N)
I-270, west segment from Y-split
to south of Maryland Route 191
P.D.M.S. No. 151104

Dear Mr. Ege:

In response to your letter of January 13, 1986 regarding the above referenced item, I am providing the following material:

1. Copy of our property survey of Stratton Local Park;
2. Copy of our facilities map showing the layout and types of equipment present in the park. This map should give you a good idea as to how this park is used;
3. Copies of our recorded deeds to the parcels which make up the park; and
4. A copy of a street map showing Stratton Park and the neighborhood it is intended to serve.

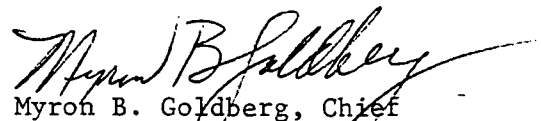
With regards to your question of what funding sources were used in creating this park, be advised that both Maryland's Program Open Space and HUD's Open Space Land Program contributed monies to acquire this parkland. Commission bond monies were used to fund the development while maintenance costs are covered by the Commission's operating budget.

In response to your question of the significance of Stratton Park to the local community and whether or not it is critical to the community's recreational needs, I can only respond by saying that Stratton Park is indeed both significant and critical to the recreation needs of the community it serves. Stratton Park is the only local park serving the residential neighborhood of Bethesda which is bounded on the north by Democracy Boulevard, on the east by Old Georgetown Road, on the south by the Capital Beltway, and on the west by I-270. This situation is evident when looking at the enclosed street map which has these major roadways highlighted in yellow.

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If I can provide additional information concerning this matter, please let me know.

Sincerely,


Myron B. Goldberg, Chief
Park Planning, Engineering
and Design

_ MBG:WEG:lmk

Enclosures

cc: Don Cochran, Director of Parks

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Maryland Department of Natural Resources

Water Resources Administration
Tawes State Office Building
Annapolis, Maryland 21401
Telephone: (301) 974-2265

William Donald Schaefer
Governor

Torrey C. Brown, M.D.
Secretary

James W. Peck
Director

July 23, 1987

Mr. Ronald T. Burns, P.E.
Johnson, Mirmiran and Thompson, P.A.
810 Gleneagles Court - Suite 200
Baltimore, MD 21204

Re: Interstate 270 at MD Route 187
Rock Spring Center
JMT Job No. 86132

Dear Mr. Burns:

This is in response to your inquiry if a Waterway Construction Permit is required on the above referenced project.

We have reviewed the information you submitted and have determined this watershed is Class I Waters and the size of the drainage area for this project is less than 400 acres. We have also examined the Flood Insurance Rate Map for Montgomery County and do not find any of the project area included in an area identified as having a special flood hazard.

Based on these considerations, a Waterway Construction Permit is not required from the Water Resources Administration.

Thank you for allowing us an opportunity to review and provide comments on this project.

Sincerely,

Stan Wong

Stan Wong
Chief, Waterway Permits Division

SW:MMG:das

cc: WRA Enforcement Division

Cathy Pecora

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Red
JUL 27 1987

DAN

JOHNSON, MIRMIAN & THOMPSON

87113

Check for Me



United States Department of the Interior

FISH AND WILDLIFE SERVICE
DIVISION OF ECOLOGICAL SERVICES
1825 VIRGINIA STREET
ANNAPOLIS, MARYLAND 21401

August 7, 1987

Mr. Ronald T. Burns
Johnson, Mirmiran and Thompson, P.A.
810 Gleneagles Court
Baltimore, Maryland 21204

Dear Mr. Burns:

This responds to your July 9, 1987 request for information on the presence of Federally listed endangered or threatened species within the area of the proposed interchange improvements to I-270 at Maryland Route 187, 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.

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 Judy Jacobs of our Endangered Species staff at (301) 269-5448.

Sincerely yours,

G. A. Kinser

Glenn Kinser
Supervisor
Annapolis Field Office

Don Sparklin

217
RECEIVED

BONE

ALJ

Jan

JOHNSON, MIRMIAN & THOMPSON

86132



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, U.S. ARMY CORPS OF ENGINEERS
PROJ. BOX 1715
BALTIMORE, MD-21203-1715
DEVELOPMENT
DIVISION

JAN 28 1995

Operations Division JAN 5 9 11 AM '94

Subject: MD SHA/I-270 AT MD 187 AND I-270 SPUR AT DEMOCRACY BLVD

Maryland State Highway Administration
Attn: Mr. Louis Ege, Jr.
707 North Calvert Street
Baltimore, Maryland 21202

Dear Mr. Ege:

I am replying to the December 1, 1994 field review which was conducted by State Highway Administration (SHA) representatives to discuss the I-270 spur upgrade at Democracy Boulevard and Old Georgetown Roads, in Montgomery County, Maryland.

After reviewing potential impacts to waters of the United States, including wetlands, occurring from the subject project, this office has concluded that it will not be necessary to carry the project through the NEPA/404 process.

We entreat the SHA to continue future presentations of proposed projects at monthly Interagency meetings so that a determination, such as the subject project, can be achieved as to whether the project needs to follow the NEPA/404 process.

Although the subject project will not require NEPA/404 review, it does not exempt SHA from acquiring a Section 404 permit for activities in waters of the United States, including wetlands.

If you have any questions concerning this matter, please call Mr. Arthur Coppola of this office at (410) 962-1723.

Sincerely,

Paul R. Wittauer

for
Keith A. Harris
Chief, Special Projects
Permits Section

cc: MD, DNR
FWS
MDE
MHT

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**THE WILSON T. BALLARD COMPANY
17 GWYNNS MILL COURT
OWINGS MILLS, MARYLAND 21117**

OFFICE MEMORANDUM

DATE TYPED: July 18, 1995

PROJECT: I-270 at MD 187 and I-270 Spur at Democracy Boulevard

FILE: 0100-190.05

SUBJECT: Wetland Jurisdictional Field Review held on July 13, 1995

PRESENT:

Mr. Tom Folse	State Highway Administration - PPD
Mr. Bill Carver	State Highway Administration - PPD
Ms. Anne Elrays	State Highway Administration - PPD
Mr. Mike Callahan	State Highway Administration - Env. Prog.
Mr. Art Coppola	Army Corps of Engineers
Mr. Greg Golden	DNR Env. Review
Mr. Al Wiedmann	MDE/WMA
Mr. John Nichols	NMFS
Dr. Howard Erickson	The Wilson T. Ballard Company
Mr. Mark Lotz	The Wilson T. Ballard Company

A Wetland Jurisdictional Field Review was held on July 13, 1995, starting at 10:00 a.m. This review allowed participants an opportunity to provide comments on wetland and Waters of the U.S. boundaries, established by The Wilson T. Ballard Company, and the alternatives developed in this study. A handout indicating the wetlands, Waters of the U.S., the alternatives and their impacts was provided.

As a general comment, Mr. Golden inquired as to whether this project would include any stormwater management retrofitting. Mr. Lotz responded that the Spur widening project will include a pond filling most of the vacant northwest I-270 Spur/Democracy Blvd. quadrant. The East Segment widening, completed last year, included several infiltration locations.

Mr. Coppola stated that the Corps of Engineers wants to be on record in its request for 1:1 replacement for all Waters of the U.S., and 2:1 or 1:1 replacement for all wetlands, depending upon classification.

The field review began at the Democracy Blvd. interchange, along SB I-270 Spur, proceeded along the NB I-270 Spur to Democracy Blvd., and then to the East Segment. Comments pertaining to each wetland and Waters of the U.S. location are summarized as follows:

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Office Memorandum
July 18, 1995
Page 2

U.S. 1

Participants felt it unnecessary to view this location. The upstream side of this stream which is the outfall for the Marietta pond was observed without comment.

W-1 and W-2

W-1 is located at the upstream and downstream ends of an existing 60" pipe which would be lengthened under the Alt. 3's. Mr. Coppola requested that these two segments be given separate designations. W-2 is strictly along the south side, adjacent to the recently constructed retaining wall. It appears that the stream channel at the outfall (north side of I-270) is not shown accurately on photogrammetry. The existing channel is actually close to where the alternatives displays indicate the stream would be relocated. Therefore, stream relocation may not be required as part of the Alt. 3's. At this location and in general, pipe inverts should be depressed when extended to allow fish passage. Rip-rap should not be placed in the stream channel. There are concerns at this location regarding water quality and fish passage; DNR would like to see water and fish sampling made as part of any further studies. It appears that minnows and/or micro invertebrates may be present.

Pipe extensions should be avoided if possible. DNR and COE support the use of the south side (near W-2 location) for stormwater management retrofit. In-stream stormwater management may be advisable, as clearing for stormwater management is a concern. Participants concurred on delineation.

W-3

W-3 would be impacted by 2E, 3E, 3F or 3G. Mr. Coppola questioned the need for a two to three lane ramp as part of the 3's. (Based on heavy SB MD 187 and NB I-270 movement into Rock Spring Park.) This would be a good location for stormwater management retrofit including a shallow marsh with vegetation. Participants concurred on delineation.

W-4 and U.S. 2

W-4 is a high quality wetland in the northwest I-270/MD 187 quadrant that would be impacted by Alt. 2E only. Mr. Coppola requested that this alternative be modified to reduce impacts and that other alternatives be developed. Alternatives 2D, 3E, 3F and 3G are all alternatives to 2E. Given a choice, agencies would support impacting W-1/W-2 to build the 3's vs. impacting W-4 to build 2E. Several questions arose concerning this site that affect how impacts should be addressed: 1) What is the history of the pond? (Determines who has jurisdiction -- if pond is old, it is exempt from COE jurisdiction); has it been recently recreated? and 2) Would it need to be restored if impacted? Mr. Coppola stated that the COE would take jurisdiction over this wetland. Mr. Nichols concurred. Participants concurred on delineation.

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W-5, W-6 and U.S. 3

These areas, located east of MD 187 and south (or west) of the I-270 SB roadway, were not viewed as they are well outside the area affected by any alternative.

Unnamed and Undelineated channel upstream of W-1

Participants viewed this area which is the potential location for the Rockledge Drive Connector roadway with Alt. 3E, 3F or 3G. These alternatives would require a new culvert and possibly some stream channel relocation. This area was observed to be a high quality headwaters location, although it would not have a Waters of the U.S. or wetland designation. Further investigation will be made into the use of retaining walls to avoid stream relocation.

Mr. Coppola stated that this study's delineations should include all wetlands associated with the Davis Tract and that these wetlands should be listed as secondary impacts caused by the Alt. 3's. Mr. Foise explained that these areas would not be affected by the I-270 interchange improvements. The areas are being addressed as part of the Davis Tract development process.

U.S. 4, W-7, and W-8

These areas, located in the vicinity of the Y-Split, were not viewed as they are located outside the areas affected by any alternative.

W-9 and W-10

These areas, located east of I-270 Spur and north of Democracy Blvd., were not viewed as they are located outside the areas affected by any alternative.

W-11 (and new Waters of the U.S. area)

W-11 is located along the south side of Democracy Blvd., east of I-270 Spur. A portion of the stream channel along the NB to EB ramp, from the western edge of W-11 to 150' west of the W-11 edge, is to be designated as Waters of the U.S. Retaining walls to avoid impacts to W-11 will be investigated. Mr. Nichols requested that, if regrading is required along the drainage channel outside the NB to EB ramp, the regraded area be revegetated.

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U.S. 5 and W-12

These areas are located in the vicinity of the I-270 Spur/Democracy Blvd. Interchange. W-12 does not satisfy all wetland criteria; therefore, its designation should be changed to Waters of the U.S. In general, the concrete channels in the interchange area should be replaced with vegetated swales and check dams to limit velocities. Agency representatives concluded that the main culvert under I-270 Spur and Democracy Blvd. is probably not passable for fish. A small additional wetland area (150' x 10') was found in the drainage ditch along NB I-270 Spur between the NB to EB ramp and the EB to NB loop. In general, the culverting, channel bank retaining wall construction and stream rechannelizations that may be necessary for Thomas Branch (U.S. 5) with Alternatives 4C or 4D are objectionable to the agencies. Mr. Coppola requested that minimization measures such as mainline alignment shifts (reduce I-270 median) and fewer lanes on ramps be investigated. Mr. Golden requested that ramps cantilevered over the stream be considered. If culvert outfalls into Thomas Branch are extended, the inverts should be depressed to accommodate fish passage. Implementation of baffles may also be beneficial. Ideally, the channel itself should be left alone and banks stabilized as necessary.

U.S. 7

Comments at this location (stream channel along NB I-270 Spur) were very similar to those provided at Thomas Branch (U.S. 5). The potential impacts from Alt. 4A or 4B are quite objectionable to the agencies. If, as a last resort, stream relocation is required, the "Razdan" method may need to be considered. If this meandering method is found to result in too many impacts or not be feasible, check dams should be implemented. Alternatives 4A and 4B will be evaluated to determine how well they will operate if the retaining/jersey wall that is currently under construction along the NB roadway is left at its current location.

By *Mark D. Fry*

MDL
cc: attendees



Maryland Department of Transportation
State Highway Administration

PROJECT DEVELOPMENT DIVISION
Oct 10 10 48 AM '95

August 29, 1995

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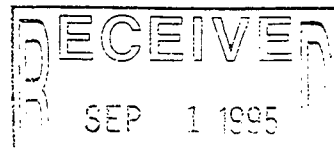
David L. Winstead
Secretary
Hal Kassoff
Administrator

9502278

223

RE: Contract No. M 401-156-372 (P)
I 270 at MD 187 and
I-270 Spur at Democracy Boulevard
Montgomery County MD

Mr. J. Rodney Little
State Historic Preservation Officer
Maryland Historical Trust
100 Community Place
Crownsville MD 21032-2023



Dear Mr. Little:

The State Highway Administration is proposing to reconfigure and/or modify the existing I-270 interchanges at MD 187 and at Democracy Boulevard, modify the Y-Split at I-270 and I-270 Spur, and construct a connector between I-270 and existing Rockledge Drive. These proposed improvements are included within the study area of a Project Planning Study which occurred in the late 1980's (I-270, from the Y-Split to I-495, M 401-154-372). The locations of these proposed improvements are noted on Enclosures 1 and 2.

The area of potential effect for historic standing structures is identified on Enclosure 2. It was subject to an historic sites reconnaissance conducted for the I-270 project (Y-split to I-495). There is one historic standing structure within the APE and it was identified in the previous study--the Davis Farm (M30/19). Our offices concurred that it would not meet the criteria for listing in the National Register of Historic Places. The April 4, 1986 letter concerning that earlier project is included as Enclosure 4.

Recent inspection and inquiries concerning the property, indicates that deleterious changes have occurred. Its immediate environs has been subject to intense development, in the form of office, educational, commercial and residential construction. All of the buildings on the Davis property (see photographs), with the sole exception of a residence constructed in the second quarter of the twentieth century, have been removed or destroyed. The acreage which remains of the property is only a small portion of the original farm which is the current location of a major development known as the Rock Spring Office Park. The environs of the twentieth century dwelling is the location of the final installment of the

Structures IA.
Reaffirm prior determination of not eligible 10/2/95 EAM

Rockville: Kensington

Archives: IA BC 10/4/95

My telephone number is _____

Maryland Relay Service for Impaired Hearing or Speech
1-800-735-2258 Statewide Toll Free

Mailing Address: P.O. Box 717 • Baltimore, MD 21203-0717
Street Address: 707 North Calvert Street • Baltimore, Maryland 21202

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Mr. J. Rodney Little
Page Two

complex. The site has not been utilized for agriculture for many years and all agricultural buildings have been removed. The current state of the property confirms our earlier assessment that it would not meet the criteria for listing in the National Register of Historic Places. The July 25, 1995 letter from a representative of the owner is included as Enclosure 6.

The area of potential effect for archeological resources is depicted on Figures 7a, 7b and 7c in the Phase Ib Archeological Survey Report prepared by John Milner Associates, included as Enclosure 7. Alternates which propose construction within existing right-of-way, or extend into disturbed areas immediately adjacent to existing right-of-way, were excluded from the Phase IB reconnaissance.

Current plans included Alternates 2A, 2B, 3A, 3B, 4A, 4B, 4C, 4D, 5B, 5C, 6A, and 6B, which were presented at a Supplemental Alternates Public Meeting on June 8, 1994. Subsequent to the meeting, Alternate 2B was modified and renamed Alternate 2E; Alternate 2C, 2D, 3E, 3F, 3G, HOV-1, and HOV-2, were added. Since that time, Alternates 2A, 3A, 3B, 6B, and HOV-2 have been dropped from study. Consequently, Alternates 2C, 2D, 2E, 3E, 3F, 3G, 4A, 4B, 4C, 4D, 5B, 5C, 6B, and HOV-1, have been retained for study. These alternates are depicted in Enclosure 3.

Prior to the initiation of archeological studies, the project area was assessed for archeological potential by Mary F. Barse. The assessment included several field visits and informal walk-over of all the alternate corridors. Based upon observations of field conditions and the scope of work planned under each alternate scenario, several alternates were deleted from the archeological survey universe. Alternates which propose construction within existing right-of-way, or extend into disturbed areas immediately adjacent to existing right-of-way, were excluded from the Phase IB survey due to low archeological potential. Excluded alternates are: 2C, 4A, 4B, 4C, 4D, 5B, and 5C. Alternates retained for study which propose construction within new right-of-way and were subject to archeological survey are: 2D, 2E, 3E, 3F, 3G, 6B, and HOV-1.

The enclosed draft technical report (Enclosure 5) presents the findings and recommendations of the archeological survey for your review and comment. No archeological sites were identified. Our comments on the draft report itself are appended as Enclosure 7. Aside from some minor changes to the report, we believe our consultant has adequately documented an absence of archeological resources within this project's proposed area of potential effects, and no additional archeological work is warranted.

We seek your concurrence that the proposed project encompassing Alternates 2C, 2D, 2E, 3E, 3F, 3G, 4A, 4B, 4C, 4D, 5B, 5C, 6B, and HOV-1 will have no effect on National Register eligible historic standing structures or archeological resources. Please document your agreement in this determination by signing the concurrence line below, and returning this correspondence by September 25, 1995.

Mr. J. Rodney Little
Page Three

Thank you for your consideration. Should you have any questions or wish additional information, please feel free to contact Ms. Rita Suffness for structures at (410) 333-1183, or Ms. Mary Barse for archeology at (410) 321-2213.

Very truly yours,

Louis H. Ege, Jr.
Deputy Director
Office of Planning and
Preliminary Engineering

by:

Cynthia D. Simpson
Cynthia D. Simpson
Deputy Division Chief
Project Planning Division

Concurrence:

Ephraim J. Cole
State Historic Preservation Officer

10/4/95
Date

LHE:MFB/RMS

Enclosures (7)

cc: Ms. Mary F. Barse
Ms. Anne Elrays
Mr. Tom Folse
Mr. Bruce M. Grey
Dr. Charles L. Hall
Ms. Rita M. Suffness



**Maryland Department of Transportation
State Highway Administration**

O. James Lighthizer
Secretary
Hal Kassoff
Administrator

4-21-94
2018

May 24, 1994

Mr. Samuel H. Suls, President
Heritage Walk Homes Corporation
P. O. Box 2025
Pike Station
Rockville MD 20847-2025

Dear Mr. Suls:

Thank you for your informative response to our February 3 letter. In approximately one week you should receive a brochure from us briefly describing the alternatives under consideration in our project planning study of the I-270 interchange at MD 187 and the I-270 Spur interchange at Democracy Boulevard.

To see larger scale drawings you can either attend our Supplemental Alternates Public Meeting, June 8th at 7:30 p.m., at Walter Johnson High School or we can meet with your association independently at another time.

Following the public meeting, detailed studies will begin, including noise studies. Decisions concerning the inclusion of noise barriers will be made after the studies are completed.

Please call the project manager, Thomas K. Folse, at (410) 333-1109, or toll-free at 1-800-548-5026 to discuss this further.

Sincerely,

Louis H. Ege, Jr.
Deputy Director
Office of Planning and
Preliminary Engineering

by: Thomas K. Folse
Thomas K. Folse
Project Manager
Project Planning Division

My telephone number is _____

Maryland Relay Service for Impaired Hearing or Speech
1-800-735-2258 Statewide Toll Free
707 North Calvert Street, Baltimore, Maryland 21202

Foley

22.1

PROJECT DEVELOPMENT DIVISION

HERITAGE WALK

HOMES CORPORATION
Post Office Box 2025
Pike Station

MAR 8 11 15 AM '94

Rockville, Maryland 20847-2025

Telephone 301+530-6666
Fax 301+340-6659

March 1, 1994

Maryland Department of Transportation
State Highway Administration
707 N. Calvert Street
Baltimore, Maryland 21203-0717

ATTENTION: Anne Elrays

RE: Heritage Walk/Winderemere

Dear Ms. Elrays:

My letter responds to Mr. Ege's letter to us of February 3, 1994. The Heritage Walk Homes Corporation is a homeowners association that maintains the community property of Heritage Walk, now called Winderemere. Some 202 homes are members. Apparently you are studying modifications to two roads, MD 187 (Old Georgetown Road) and I-270, the latter of which runs along one of the borders of our property. One of our officers, J.T. Holt, talked with you by telephone and indicated that this letter would follow.

The following sections answer your questions and provide amplifying information.

The corporation does in fact own the following properties which lie adjacent to I-270:

- Parcel 999, Liber 5717, District 4,, Subdivision 401, Folio 506,
- Parcel 8, Liber 4856, District 4, Subdivision 10, Folio 823, Block D,
- Parcel P670. Liber 4856, District 4, Subdivision 510, Folio 823,
- Parcel B, Liber 5286, District 4, Subdivision 10, Folio 448, Block H.

I enclose a copy of a community map that we periodically include in our annual reports to members; our community's properties are those shaded dark. Each parcel is labeled, although the exact boundaries between our parcels are not clear. We do not have more detailed maps readily available to send to you but you can certainly find these kinds of plats in the Montgomery County Courthouse.

No "Program Open Space" or "Land Water Conservation" funds were used to acquire or develop these properties, which actually were deeded to the Corporation by the developer about fifteen years ago. This land area was needed in order to provide the requisite amount of land/house to permit being one-half acre zoning.

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Maryland Department of Transportaion
ATTN: Anne Elrays

March 1, 1994

In the early 1970's the developer built a community swimming pool, two tennis courts, a clubhouse, a parking lot, and several storm drains on the south part of Parcel 8, most of which improvements are noted briefly on the enclosed community map. Since obtaining title from the developer, the Corporation has added various improvements: basketball, volleyball, picnic areas, a gate, and a hiking trail. In addition, we have planted numerous trees, especially evergreen trees to shield our pool area from the unwanted sights and sounds of I-270 right-of-way,, now have grown high enough to shield the swimming pool from direct view from I-270. We have not yet had to plant any trees on Parcel P999 but anticipate the possibility of having to do so in the future (see note below.)

These facilities are used by our member families every day from late May to mid-September, for that is when the pool is open. Usage generally is from mid-morning through early evening. Further, usage of the tennis courts for at lease a few hours per day (in daylight) extends from about mid-March to mid-November, with occasional usage in the winter as weather permits. Volleyball use occurs mainly in the summer; basketball is played for a few hours per week all-year, except when severe weather keeps people inside. The clubhouse is used for meetings and small parties, mainly from mid--April to mid-October. The parking lot is used not just for parking but for skating and hockey, mainly in the April to October period and a few times in the winter. It is important to note that the trees on parcel P999 are "used" to try to screen much of our community from the unwanted sights and sounds of I-270,, the latter of which has grown greatly since our community was started in 1971. The trees on P999 are mainly deciduous trees, and thus this screening is effective only against sight and mainly during the April-October period when leaves are out.

None of our facilities are open to "the public", but only to members of the residences that make up the Corporation.

Our master plan for these properties is to maintain them in their present state and improve them where possible, and when our resources permit. The fixed facilities will not move; there is nowhere else to go. The large areas darkened on our map (mainly parcel B) are steep hillsides and a flood plain for Old Farm Creek. The Washington Suburban Sanitary Commission (WSSC) has a 50-foot wide construction right-of-way lying on our properties (parcels P999, 8i, and B) where they border with I-270. Whenever the WSSC used this strip of land to lay a pipeline, a good many trees will probably be lost. Hopefully, WSSC will replant this land with trees; if not we will have to plant replacement trees (or possibly bamboo) because these trees (and the others on the I-270 right-of-way and in the back of some of our houses) are our community's only barrier to the unwanted sights and sounds of I-270.

These points should answer your questions. Thank you for soliciting information on our activities and plans for our property. We are quite interest in learning what specific movements the SHA is considering or is proposing for our neighborhood. Could you please let us know what alternatives are being considered and where and when any road-associated construction might occur? Also, it is our understanding that if the I-270 roadway were to be brought closer to our community, then noise barriers would be included and budgeted in the project's cost; is this correct? Indeed, we would appreciate your leaving existing trees on

March 1, 1990

Maryland Department of Transportation
ATTN: Anne Elrays

the I-270 right-of-way,, unless a solid noise barrier is built there, for your trees as well as ours help to screen us from I-270 today.

In closing, I would ask you to not heighten I-270's impact on our community. It is noisy enough already, and unsightly when it is visible. Make it quieter and less visible, if that is possible. If you have further questions, write or call me at 301+340-6655, or Mr. J.T. Holt at 703+697-0521 weekdays.

Very Truly Yours,
HERITAGE WALK HOMES CORPORATION



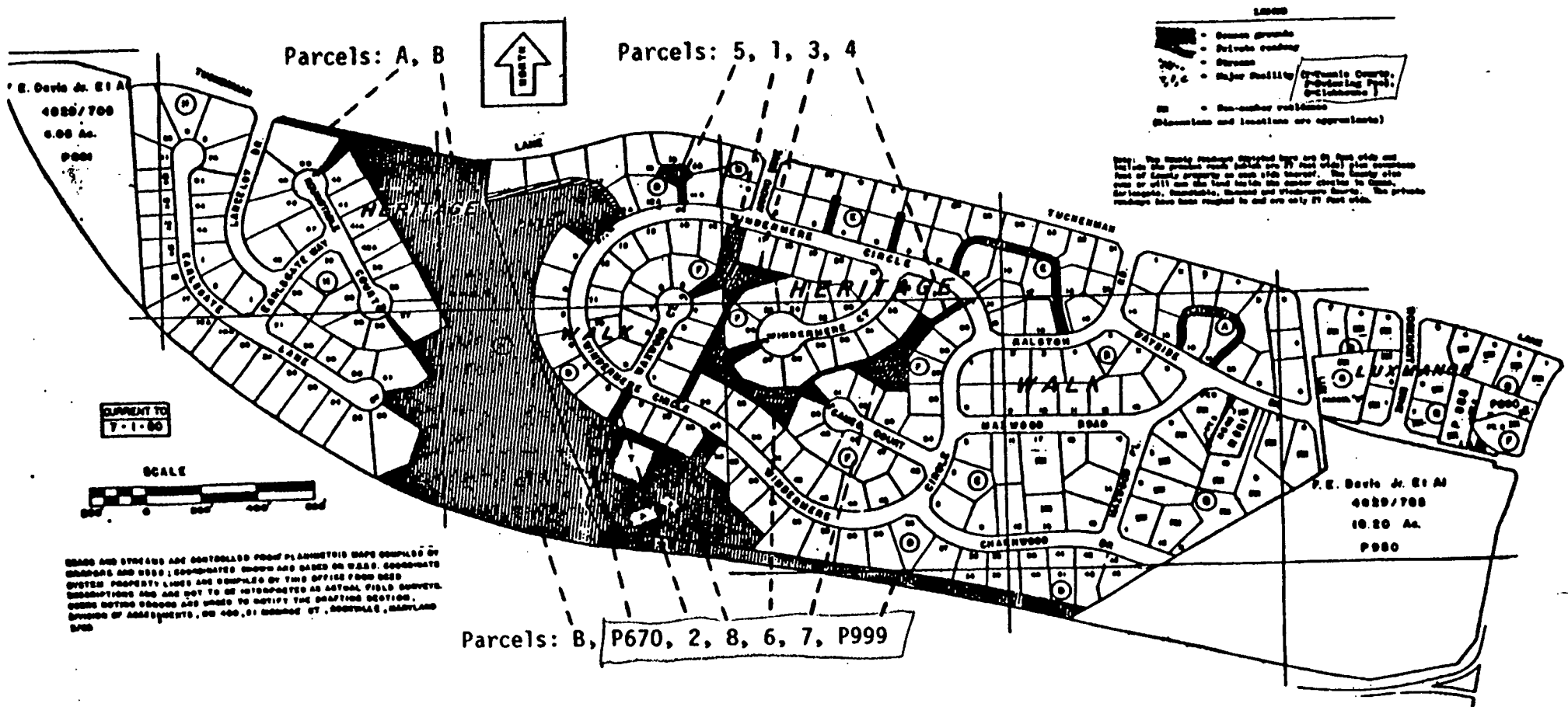
Samuel H. Suls, President

Copy: Mr. J.T. Holt
6200 Charwood Drive
Rockville, Maryland 20852

Mr. Joel Michaels, President
Luxmanor Citizens Association
6208 Meadow Court
Rockville, Maryland 20852

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FIGURE ONE
 HERITAGE HALL HOMES CORPORATION
 LOCATION OF HERITAGE RESIDENCES AND COMMON GROUNDS



- LEGEND
- Common grounds
 - Private roadway
 - Stream
 - Major Facility
 - Non-author residences
- (Dimensions and locations are approximate)

Note: The street frontages depicted here are 21 feet wide and follow the ground level (shown on 21 foot wide) clear entrance front of family property on each side thereof. The family also own or will own the land within the outer circles to Green, Oak, Laurel, Chestnut, Walnut and Windermere Street. The private roadways have been required to and are only 21 feet wide.

ROADS AND STREAMS ARE CONTROLLED FROM PLANNING THIS MAPS COMPOSED OF CORNER AND BESS; COORDINATES SHOWN ARE BASED ON U.S.S. COORDINATE SYSTEM. PROPERTY LINES ARE COMPILED BY THIS OFFICE FROM BESS DESCRIPTIONS AND ARE NOT TO BE CONSIDERED AS ACTUAL FIELD SURVEYS. CORRECTIONS SHOWN ARE MADE TO VERIFY THE DRAFTING SECTION. DIVISION OF ADJUSTMENTS, ON 400, ST. GEORGE ST., BOSTON, MASSACHUSETTS.

F. E. Davis Jr. Et Al
 4829/708
 10.20 Ac.
 P980

Parcels: B, P670, 2, 8, 6, 7, P999

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Maryland Department of Transportation
State Highway Administration

O. James Lighthizer
Secretary
Hal Kassoff
Administrator

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February 3, 1994

Heritage Walk Home Corporation
P.O. Box 2025 Pike Station
Rockville MD 20852

Dear Sir or Madam:

The State Highway Administration is proposing improvements to the I-270 and MD 187 roadways in the vicinity of the Windermere recreational center.

We request the following information concerning this center:

- ◆ Verification that the corporation, as stated above, owns the center
- ◆ Mapping showing the center boundaries
- ◆ Funding sources: Were Program Open Space or Land Water Conservation (6(f)) funds used to acquire or develop this area?
- ◆ Types of uses or facilities associated with the center
- ◆ Frequency with which the public uses these facilities
- ◆ Master plans for the center

We have enclosed mapping which outlines the project area and indicates the approximate location of the Windermere recreation center.

Very truly yours,

Louis H. Ege, Jr.
Deputy Director
Office of Planning and
Preliminary Engineering

by: George W. Walton
George W. Walton
Assistant Division Chief
Project Planning Division

LHE:AE:sc
Attachment
cc: Mr. Tom Folsie

My telephone number is _____

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THE WILSON T. BALLARD COMPANY
17 GWYNNS MILL COURT
OWINGS MILLS, MARYLAND 21117

OFFICE MEMORANDUM

R

DATE TYPED: June 15, 1994

PROJECT: I-270 at MD 187 and I-270 Spur at Democracy Boulevard

FILE: 0100-190.05

SUBJECT: Comments heard at the wall displays prior to and following the formal presentation at the Supplemental Alternates Public Meeting held at Walter Johnson High School on June 8, 1994.

The following is summary of comments received at the wall displays by Ronald Rye, Joseph DeMent, and Mark Lotz. A subsequent memorandum will contain a complete summary of the meeting, including formal comments made by citizens immediately following the presentation.

The following comments were heard once unless otherwise noted:

1. Support alternatives which address no merge areas at the ends of ramps on MD 187.
2. Now that the Fernwood Road bridge is open, consider allowing the thru movement across Democracy Boulevard (2 people).
3. Do not change the Democracy Boulevard/Fernwood Road intersection. Additional traffic on Fernwood Road would disrupt neighborhood.
4. Noise walls are strongly urged throughout the project.
5. The SHA did not reach enough people early enough. Suggested direct mailings.
6. Strongly opposed to Alternate 4A since it adds traffic to the ramp adjacent to Stratton Commons. Noise walls would make this alternative more acceptable.
7. Look at pedestrian accessibility at MD 187 and Rock Spring Drive.
8. What is the source of transitway funding? Is federal money available?
9. How much funding are the commercial/business occupants of the Rock Spring Park going to contribute?
10. Has a loop ramp in the southwest quadrant of the I-270/MD 187 interchange been considered?

11. Shift MD 187 to the west in the vicinity of I-270 to avoid St. Mark's Church.
12. Traffic operations are poor at the entrance to St. Mark's Church. The proposed improvements would only make the situation worse.
13. The SHA needs to be in more frequent contact with community groups.
14. Shift Alternative 3A away from Charnwood Drive residences.
15. The existing traffic volumes and the projections given are overstated.
16. High accident areas are questioned. Long time resident has not seen any accidents at locations having high accident status.
17. Alternatives 3 and 6 are supported over alternatives in Category 4. Alternative 4A is opposed because it introduces another signal on Democracy Boulevard.
18. A representative from the Bethesda Fire Department stated the following:
 - They are in the process of revising their signal system (Driveway detector will be moved and new signal heads installed)
 - They are in support of building a merge lane on eastbound Democracy Boulevard as with Alternates 4A and 4B. However, an advance signal may be required on the ramp to stop traffic in emergencies.
 - The curbing proposed to prohibit weaving from the NB to EB ramp into the left turn lanes at Democracy Boulevard / Fernwood Road can be depressed allowing emergency vehicles to return to the station. It was requested that the mountable median be designed with a storage bay for vehicles turning left into the station.

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Office Memorandum
June 15, 1994
Page 3

- During construction, an SHA representative should keep in contact with the fire station regarding road closures and water service/fire hydrant disruptions.

- 19. The study area should be expanded along the East Segment to Grosvenor Lane and include (or not preclude) consideration of a busway along the shoulder with a bus-only interchange at I-270/Grosvenor Lane.

By: Mark A. Fj

MDL:ah

CC: Mr. Thomas Folsie
File

235

THE WILSON T. BALLARD COMPANY
17 GWYNNS MILL COURT
OWINGS MILLS, MARYLAND 21117

OFFICE MEMORANDUM

DATE TYPED: July 5, 1994
PROJECT: I-270 at MD 187 and I-270 Spur at Democracy Blvd.
FILE: 0100-190.05
SUBJECT: Summary of formal comments given at the Supplemental Alternates Public Meeting held on June 8, 1994

Approximately 150 citizens attended the public meeting, held at Walter Johnson High School in Bethesda, Maryland.

Comments were received outside of the formal meeting and are summarized in a separate memorandum, dated June 15, 1994. Following the formal presentation by the State Highway Administration's Creston Mills, Thomas Folse and Anne Elrays, 24 individuals gave formal comments at the microphone. The following is a summary of the speakers and key points made:

1. Vicky Solben
6734 Surveywood Lane
Stratton Woods/Stratton Commons/Bethesda Place
 - Supports direct access ramps to Rock Spring Park (supports alternatives 3A or 3B)
 - Support alternative 4D (eliminates signal controlled intersection on Democracy Blvd.)
 - Supports merge lanes, uninterrupted ramp operations and sound barriers along interchange ramps
 - Does not support Alternatives 4A, 4B, 5B and 5C
 - Opposes 4A because it introduces another signal

2. Gerald Garson
12912 Michen Wood Way
Potomic, MD
 - Recommends none of the alternates
 - Traffic patterns are different today compared to four years ago
 - Today 1512 vehicles join I-270 and 285 exit at Democracy Blvd., where as in 1990, 690 vehicles joined and 1037 exited because of construction at the time. This is the reason for the over-loading of I-270
 - Extend right lane 0.6 miles NB on West Spur
 - HOV makes no sense because it slows traffic down as a result of the additional lane changes that are required.
 - Provide ramp metering for WB Democracy to NB I-270
 - Provide merge lane from I-270 to EB Democracy

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3. Tom Marciniak
6400 Windermere Circle
Rockville, MD

- Office Park is not the only thing causing traffic problems
- Impact on quality of life has not been considered
- Impact of residences has not been considered
- Alternative 5A residents may want to use it
- Alternatives 3A and 3B are very complex interchanges, and these complex interchanges can introduce traffic safety problems

4. Kenneth Mason
Elder St. Mark's Church

- Supports Alternative 1
- Opposes Alternatives 2A, 2B and 3A
- Opposes action to remove trees on church property because they act as a natural sound barrier to the sanctuary
- There are ashes scattered between the sanctuary and the R/W fence along the ramp and they should not be disturbed
- The drainage of the septic system could be affected, which in turn could adversely affect the environment
- Opposes acceleration lane at exit from I-270 onto NB MD 187 because it will promote a high speed exit
- The church's landscaping should be left alone
- If land is needed, take from vacant parcel opposite the church property

5. John Byner
11515 Danville Drive
North Bethesda Congress of Citizens Associations

- Include consideration of E. Spur for express bus lanes as an alternative to the proposed transitway. Provide a bus only lane from Grosenor Road through Rock Spring Park to Montgomery Mall

6. Melvine Blume
10521 Farnham Drive
Wildwood Manor Area

- 23 year resident
- Supports No-Build

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7. Mary Ann Rubenstein
7501 Democracy Boulevard

- Pedestrian crosswalks are not marked
- Pedestrian signals should include an all red phase
- Need a safe passage from north side to south side of Democracy Boulevard

8. Charles Markel
750 Lakeside Terrace Condo Association

- Increase use of alternatives that take traffic off Democracy Boulevard
- In favor of 3A, 3B, 4B, 4C, 4D and 5B
- Acceleration lane for NB I-270 Spur to WB Democracy Boulevard is favorable
- Loop from WB Democracy to SB I-270 Spur is favorable because it would eliminate a signal and a left turn
- Concern with impact to community stormwater management facility which handles run off from Montgomery Mall
- Increase number of crosswalks on Democracy Boulevard from MD 187 to a point far west of the mall
- Analysis of floodplain impacts is needed
- Supports improved ingress and egress

9. J.T. Holt
6200 Charnwood Drive

- Opposes 3A and 6A
- Expand I-270 to the south if expansion is needed
- Look at impacts of Lux Lane closure
- Is there room enough to build noise barriers and how much will that add to the cost?

10. Burton Hoffman
6724 Surreywood Lane
Bethesda, MD

Director of 123 Units in Stratton Woods/Stratton Commons

- Opposes 4A and 4B on grounds of added noise and air pollution
- Supports sound barriers

11. Eric Eisen

- Supports sound barriers
- What percentage of cost is taken up by sound barriers?
- Residents need protection

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12. Herbert Rupman
7505 Democracy Boulevard

- On I-270 Spur between I-495 north to Democracy Boulevard, there is an overgrowth of trees along the NB to EB (Democracy Boulevard) ramp, preventing visibility of headlights until it is too late
- Suggestion is to cut back trees 50' or 60' to allow clear visibility of traffic

13. Ellen Paul
11004 Round Table Court

- Opposes 3A and 3B because issues are not addressed (i.e. signals, merge areas, length of ramp, crosswalks, and sound barriers)

14. John Starhold
Pine Haven Terrace

- Need for sound barrier
- Noise studies need more emphasis

15. Susan Cohen
9814 Ingleview Drive

- No human dimension
- What are the impacts on Fernwood Road residents?

16. Bob Wall
Old Georgetown Villiage

- HOV progress report should have been made available at or prior to this meeting, as promised

17. Gail Shomberg
10804 Windemere Circle

- Promised access to Rock Spring, but has not seen any change
- Don't allow any more development

18. Davis McHarm
Windemere

Option 7 should be considered: entrance to commercial park from an interchange north of Westlake Terrace

July 5, 1994

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19. Arnold Meteller
George Washington University Engineering Professor
10131 Ashburyon Lane
Bethesda, MD

- Alternate 2A is extremely difficult
- Shift alternate 2B west onto Davis property
- Why not a third loop in clover leaf
- Opposes alternate 3B because it takes too much land from residents
- Supports 3A because it doesn't take as much residential land
- Slight relocation of MD 187 a lane or tow to the west so it doesn't impact the church

20. Arlene Allen
President of North Bethesda Congress

- Office park was supposed to be an island unto itself; make it that way
- Put public transit to forefront of planning efforts

21. Betty Trapinski
Surveywood Lane

- Object is to get traffic off of Democracy and Old Gerogetown Road
- Supports 6B

22. George Wolfhand
9925 Derby Shire
V.P. of Sales and Marketing

- Did not show pedestrian right-of-ways, or address noise pollution and air pollution

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Office Memorandum
July 5, 1994
Page 6

23. Fran Darby
6725 Surreywood Lane

- Developers should pay

24. Gerald Lawson

- All roads in Montgomery County are overloaded
- Remove HOV signs, they just cause distractions

By: Mark D. [Signature]

MDL:ah

CC: Mr. Thomas Folse
File

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THE WILSON T. BALLARD COMPANY
17 GWYNNS MILL COURT
OWINGS MILLS, MARYLAND 21117

OFFICE MEMORANDUM

DATE TYPED: July 22, 1994

PROJECT: I-270 at MD 187 and I-270 Spur at Democracy Boulevard

FILE: 0100-190.05

SUBJECT: Debriefing Meeting held on July 11, 1994

PRESENT:	Mr. Robert Houst	Project Planning Division
	Ms. Cynthia Simpson	Project Planning Division
	Mr. Tom Folse	Project Planning Division
	Mr. Rich Cutshaw	Project Planning Division
	Mr. Bill Carver	Project Planning Division
	Ms. Anne Elrays	Project Planning Division
	Mr. Marty Cohn	Highway Design Division
	Mr. Glenn Smith	Regional and Intermodal Planning
	Ms. Gina Anthony	District #3 Right-of-Way
	Mr. Bob Simpson	Montgomery County
	Mr. Mark Lotz	The Wilson T. Ballard Company

The purpose of the meeting was to discuss the comments received at the Supplemental Alternates Meeting held on June 8, 1994 and to discuss the next steps in the study.

I. Citizen Comments Provided

A. Wall Displays

A memorandum, prepared by The Wilson T. Ballard Company (June 15, 1994), summarizing comments heard by their personnel, was distributed. In addition, other SEA representatives heard the following:

- Pedestrian crossings on Democracy Boulevard need to be addressed.
- Direct access to the Rock Spring Park should be provided.
- The Stratton Commons and Wildwood Hills communities requested that noise studies consider the cumulative effects of all highway improvements.
- Timberlawn residents requested noise barriers.

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- Direct access should be provided into Rock Spring Park without widening MD 187 or Democracy Boulevard.
- The Windermere area residents are concerned with the impacts resulting from the proposed cul-de-sac on Lux Lane (additional traffic at MD 187/Tuckerman Lane).

B. Formal Meeting Comments

A Wilson T. Ballard Company Memorandum, dated July 5, 1994, which summarized comments made by those speaking formally at the public meeting, was distributed.

C. Written Comments

Mr. Folse gave an overview of the comment forms received subsequent to the meeting. He is in the process of tallying all comments (alternatives favored, opposed, etc.). These comments generally echoed the formal and informal public meeting comments. Mr. Folse will respond to all written comments by mid-August.

II. Next Steps/Miscellaneous Issues

A. Based on public meeting comments, Mr. Houst recommended the following:

1. Regarding St. Mark's Church:

- Coordinate with Environmental Management regarding what, if anything to do about the Memorial Gardens scattered ashes issue.
- If something needs to be analyzed, tell that to the church.
- Be sensitive to the Memorial Gardens issue.
- Sunday morning traffic observations should be made.

2. Regarding the request for a report on HOV lane performance, Mr. Folse will research what commitments, if any, have been made to the public.

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3. Pedestrian issues need to be carefully addressed. Mr. Folse will coordinate with the Office of Traffic and Maj Shakib to determine what strategies are underway and what opportunities for better pedestrian mobility can be created with this project.
 4. Regarding requests for direct access to Rock Spring Park, research should be conducted to develop a statement as to why direct access to private developments from interstate highways is not allowed.
 5. A list of "people issues" and how they are being addressed needs to be developed.
 6. Plans need to be provided to the Office of Traffic and Safety and to District #3 traffic personnel to review overall traffic operations of the alternatives.

B. Ms. Simpson gave the following comments:

1. Statements made concerning noise should be made with extreme caution. Research should be performed into previous community coordination, as Mr. Kasoff has made several commitments in this area.
2. Noise receptor locations selected should include some of the receptors from previous studies. The Wildwood Manor community has requested that they be involved in the receptor selection process.
3. Steps in the development of the Environmental Document should include:
 - An assessment of Congestion Management Strategy
 - An analysis of the impacts of providing HOV facilities
 - Multi-Modal Study
 - Major Investment Study (Ms. Simpson will coordinate with Mr. Folse on this issue)

C. The team should give consideration to a concept suggested by Neil Pedersen for an HOV ramp at Grosvenor Lane.

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- D. A team meeting to select alternates for detailed studies was scheduled for August 10. (Subsequent to this meeting, Mr. Folse postponed the team meeting until September because traffic analysis, being performed by BMI, will not be completed until late August.

- E. Mr. Simpson provided the following comments:
 - 1. Access at Grosvenor Lane would have master plan implications. Could an interchange ramp be for general use for access to the metro station, or would it need to be HOV only?

 - 2. The County is still pursuing the transitway

 - 3. This study should give consideration to the master plan's proposed bikeway plan (excerpt provided at meeting) which includes a corridor for a Class I bikeway (i.e. independent bikeway on separate R/W or easement) throughout the study area. A bikeway is related to both multi-modal and pedestrian issues associated with this project.

By Mark A. Folse

MDL:kd
cc: Mr. Tom Folse
File

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THE WILSON T. BALLARD COMPANY
17 GWYNNS MILL COURT
OWINGS MILLS, MARYLAND 21117

OFFICE MEMORANDUM

DATE TYPED: October 24, 1994

PROJECT: I-270 at MD 187 and I-270 Spur at Democracy Boulevard

FILE: 100-190.05

SUBJECT: Meeting held at St. Mark Presbyterian Church on Old Georgetown Road in Bethesda on October 12, 1994

PRESENT:

Rev. Jim Macdoennel	St. Mark Church
Mr. Ken Mason	St. Mark Church
Mr. Tom Polse	State Highway Administration
Mr. Mark Lotz	The Wilson T. Ballard Company

The purpose of the meeting was to visit the St. Mark site and discuss issues of concern for the Church. General comments were as follows:

- The St. Mark Church accommodates a variety of functions in addition to two Sunday morning services, including meetings for 4-5 community associations, day care, weddings and AA meetings.
- The church was originally built in 1965; several additions have been constructed since. A future addition to the classroom building is being considered.
- Vehicles accessing the site from the north make u-turns at the signal for the SB MD 187 to SB I-270 movement. U-turns are made at Tuckerman Lane for vehicles exiting to the south.
- The Church property includes a 55 space paved parking lot and 45± space auxiliary gravel lot, both of which fill on Sundays.

Mr. Mason described four areas of concern related to proposed I-270/MD 187 interchange improvements, as follows:

1. Extension of the northbound MD 187 accel lane from I-270 and extension of the decel lane to Tuckerman Lane.

The existing merge area for the northbound I-270 to northbound MD 187 ramp is very short and ends 600'± south of the church entrance. The auxiliary right turn lane for Tuckerman Lane begins 300'± south of the church entrance. If the auxiliary lane is made continuous between I-270 and Tuckerman Lane, Mr. Mason believes that the potential for rear end collisions will increase at the church entrance.

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2. Impacts to Wooded Area

Any interchange improvements that require church property will impact trees that provide an important buffer between the highway and sanctuary. One oak tree, approximately 35' from the right of way line, is believed to be registered because of its significance. The church would be in favor of noise barriers along I-270, but not along MD 187 north of the ramp merge point.

3. Memorial Gardens

There are several areas within the property with buried ashes. These areas were sketched on mapping. Several of the alternates, as currently configured would impact these areas.

4. Septic System

The church is served by a septic system with tank and leaching pits that are close to the existing I-270 R/W line. We received copy of the site plan showing the septic system location and made measurements of several surface features.

By: Mark D. [Signature]

MDL:ah
CC: File

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VI. SELECTED REFERENCES

VI. SELECTED REFERENCES

Bolt, Beranek and Newman, Inc., "Fundamentals and Abatement of Highway Traffic Noise", Federal Highway Administration, 1980.

Approved and Adopted North Bethesda - Garrett Park Master Plan Interim Reference Edition, The Maryland-National Capital Park and Planning Commission, December, 1992.

Bowlby, William et. al., "Noise Barrier Cost Reduction Procedure STAMINA 2.0/OPTIMA User's Manual", Federal Highway Administration, Arlington, VA., April, 1982.

FHWA and Maryland State Highway Administration, Environment Assessment for Contract No. M 401-154-372 I-270 East Segment from the Y-Split to I-495, December, 1986.

FHWA and Maryland State Highway Administration, Finding of No Significant Impact for Contract No. M 401-154-372 I-270 East Segment from the Y-Split to I-495, February, 1989.

FHWA and Maryland State Highway Administration, Environmental Assessment for Contract No. M 401-153-372 I-270 West Spur from the Y-Split to I-495 Including I-495 to North of MD 190, August, 1987.

FHWA and Maryland State Highway Administration, Finding of No Significant Impact for Contract No. M 401-153-372 I-270 West Spur from the Y-Split to I-495 Including I-495 to North of MD 190, January, 1989.

VII. APPENDICES

SUMMARY OF THE RELOCATION ASSISTANCE PROGRAM OF THE
STATE HIGHWAY ADMINISTRATION OF MARYLAND

All State Highway Administration projects must comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 USC 4601) as amended by Title IV of the Surface Transportation & Uniform Relocation Assistance Act of 1987 (P.L. 100-17), the Annotated Code of Maryland entitled "Real Property Article" Section 12-112 and Subtitle 2, Sections 12-201 to 12-212. The Maryland Department of Transportation, State Highway Administration, Office of Real Estate administers the Transportation Relocation Assistance Program in the State of Maryland.

The provisions of the Federal and State laws require the State Highway Administration to provide payments and services to persons displaced by a public project. The payments include replacement housing payments and moving costs. The maximum limits of the replacement housing payments are \$22,500 for owner-occupants and \$5,250 for tenant-occupants. Certain payments may also be made for increased mortgage interest costs and incidental expenses. In order to receive these payments, the displaced person must occupy decent, safe and sanitary replacement housing. In addition to these payments, there are also moving expense payments to persons, businesses, farms and non-profit organizations. Actual moving expenses for residences are reimbursed for a move of up to 50 miles or a schedule moving payment of up to \$1,300 may be used.

The moving cost payments to businesses are broken down into several categories, which include actual moving expense payments, reestablishment expenses limited to \$10,000 or fixed payments "in lieu of" actual moving expenses of \$1,000 to \$20,000. Actual moving expenses may also include actual direct losses of tangible personal property and expenses for searching for a replacement site up to \$1,000.

The actual reasonable moving expenses may be paid for a move by a commercial mover or for a self-move. Payments for the actual reasonable expenses are limited to a 50-mile radius unless the State determines a longer distance is necessary. The expenses claimed for actual cost moves must be supported by firm bids and receipted bills. An inventory of the items to be moved must be prepared in all cases. In self-moves, the State will negotiate an amount for payment, usually lower than the lowest acceptable bid. The allowable expenses of a self-move may include amounts paid for equipment hired, the cost of using the business vehicles or equipment, wages paid to persons who participate in the move, the cost of actual supervision of the move, replacement insurance for the personal property moved, costs of licenses or permits required and other related expenses.

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In order to determine the amount of the "in lieu of" moving expenses payment, the average annual net earnings of the business is to be one-half of the net earnings, before taxes during the two taxable years immediately preceding the taxable year in which the business is relocated. If the two taxable years are not representative, the State may use another two-year period that would be more representative. Average annual net earnings include any compensation paid by the business to the owner, owner's spouse, or dependents during the period. Should a business be in operation less than two years, the owner of the business may still be eligible to receive the "in lieu of" payment. In all cases, the owner of the business must provide information to support its net earnings, such as income tax returns, or certified financial statements, for the tax years in question.

Displaced farms and non-profit organizations are also eligible for actual reasonable moving costs up to 50 miles, actual direct losses of tangible personal property, search costs up to \$1,000 and reestablishment expenses up to \$10,000 or a fixed payment "in lieu of actual moving expenses of \$1,000 to \$20,000. The State may determine that a displaced farm may be paid a minimum of \$1,000 to a maximum of \$20,000, based upon the net income of the farm, provided that the farm has been relocated or the partial acquisition caused a substantial change in the nature of the farm. In some cases, payments "in lieu of" actual moving costs may be made to farm operations that are affected by a partial acquisition. A non-profit organization is eligible to receive a fixed payment or an "in lieu of" actual moving cost payment, in the amount of \$1,000 to \$20,000 based on gross annual revenues less administrative expenses.

A more detailed explanation of the benefits and payments available to displaced persons, businesses, farms and non-profit organizations is available in the "Relocation Assistance" brochure that will be distributed at the public hearing for this project and be given to displaced persons.

In the event comparable replacement housing is not available to rehouse persons displaced by public projects or available replacement housing is beyond their financial means, replacement "housing as a last resort" will be utilized to accomplish the rehousing. Detailed studies must be completed by the State Highway Administration before "housing as a last resort" can be utilized.

Federal & State laws require that the State Highway Administration shall not proceed with any phase of a project which will cause the relocation of any persons, or proceed with any construction project, until it has furnished satisfactory assurances that the above payments will be provided, and that all displaced persons will be satisfactorily relocated to comparable decent, safe and sanitary housing within their financial means, or that such housing is in place and has been made available to the displaced person.